



Paper Roll/Cut Sheet Printers

***ESC/POS® Application
Programming Guide***

Ver. 10.03

Printers & Commands

What's New In This Version?

ESC/POS Information

How to Use This Guide

Character Code Tables

About This Guide

Confidentiality Agreement

EPSON

printers & commands

- **Commands in Alphanumeric Order**
- **Commands Arranged by Function**
- **Commands Arranged by Printer**

TM-J7000/J7100 supported commands

TM-J7500/J7600 supported commands

TM-H5000II supported commands

TM-H6000III supported commands

TM-U675 supported commands

TM-J9000/J9100 supported commands

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how to use this guide

**blue
text****Text**

Any text colored blue is a link to another screen.
Click the text to go to that topic.

**PRINTER
name****Printer information**

Most information applies to all printers in a category.
If there is information specific to one printer, you see its name in colored text, with a different color for each printer. The model dependent information appears if you click on the name of the printer or look at the bottom of the screen for text in the appropriate color.

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what's new in this version?

Version 10.00

TM-J7500/TM-J7600 added.

This guide (Paper Roll/Cut Sheet) is now separate from the guides for other types of printers.

Version 10.01

TM-H6000II Photo-ID and TM-H6000II Validation models added.

Version 10.02

TM-H6000III added.

Version 10.03

TM-H6000III Photo-ID, Validation, Scanner, and Simplified / Traditional Chinese models added.

TM-J9000/J9100 added.



about this guide

ESC/POS® Application Programming Guide for Paper Roll/Cut Sheet Printers
Version 10.03.
Seiko Epson Corporation, Imaging Products Marketing Division

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ESC/POS® PROPRIETARY COMMAND SYSTEM

The market for store automation equipment is changing rapidly with the widespread introduction of POS (point of sale) terminals. These terminals are now appearing even in small retail stores and specialty shops.

As personal computers begin to be used as POS terminals, the demand for matching uniform peripheral devices is expected to rise. At present, however, many of the competing POS terminal printers on the market employ mutually incompatible command sets. This imposes limits on the expandability and range of applications possible with PC-based systems. There is a need for a new command set designed to provide the expandability and universal applicability demanded by the market.

ESC/POS

EPSON took the initiative by introducing ESC/POS, a proprietary POS printer command system, which includes patented or patent pending commands and enables versatile POS system construction with high scalability. Compatible with all types of EPSON POS printers and displays, this proprietary control system also offers the flexibility to easily make future upgrades. Its popularity is worldwide.

ESC/POS is designed to reduce the processing load on the host computer in POS environments. It comprises a set of highly functional and efficient commands that enables the full realization of the potential of printers.

A command set designed for universal applicability

The commands that are supported by all EPSON POS printers and those that are specific to individual models are clearly described. This means that ESC/POS compatible software will work with any system and be suitable for a wide range of applications.

Superb expandability allowing the addition of new functions

New functions can be added and accommodated by the categories already provided in the command system.

Allows more effective use of software

Once a software application has been created for one printer in the TM series, it can be used as the basis for versions for the other printers in the series. Only a small portion of the program source code needs to be modified.

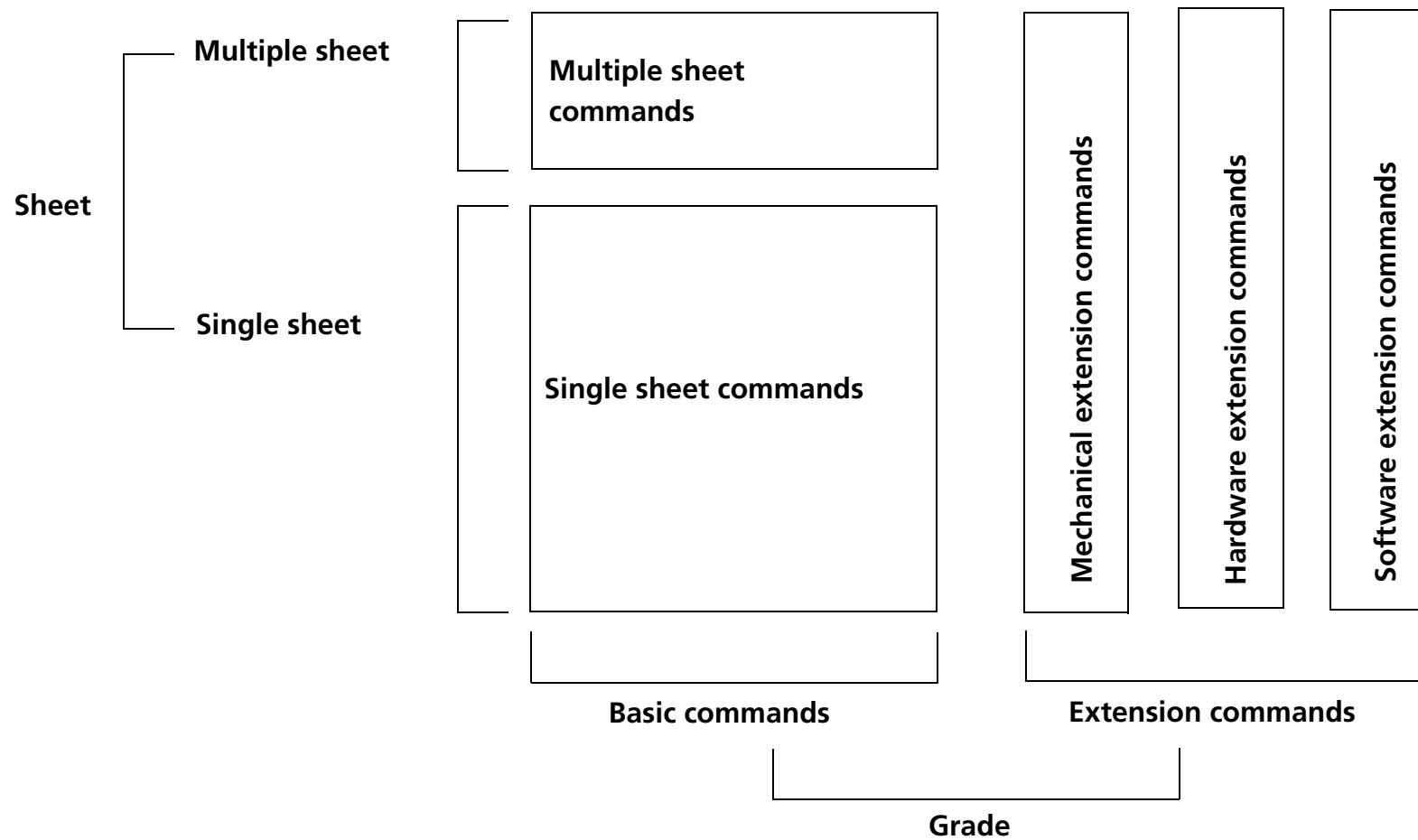
COMMAND CLASSIFICATION

ESC/POS printer commands are classified by functions such as print, character, print position, printing paper, line spacing, panel button, paper sensor, mechanism control, status, bar code, bit-image, macro function, control option, and miscellaneous functions. The classification is called function classification.

ESC/POS printer commands are also classified by sheet and grade. The sheet and grade classification is called matrix classification.

The sheet classification is divided into single sheet commands and multiple sheet commands. The grade classification is separated into basic commands and extension commands.

Basic commands are defined as fundamental printer controls, including print commands and character type selection commands. Extension commands are defined as control codes for functions specific to individual printers. These commands are further divided into mechanical extension commands that relate to additional mechanical functions such as stamp and autocutter units, hardware extension commands that relate to additional hardware functions such as panel button and status transmission controls, and software extension commands that relate to additional software functions such as user-defined and bar code controls. The next screen is an overview diagram of the matrix classification of ESC/POS.



OVERVIEW OF DATA PROCESSING

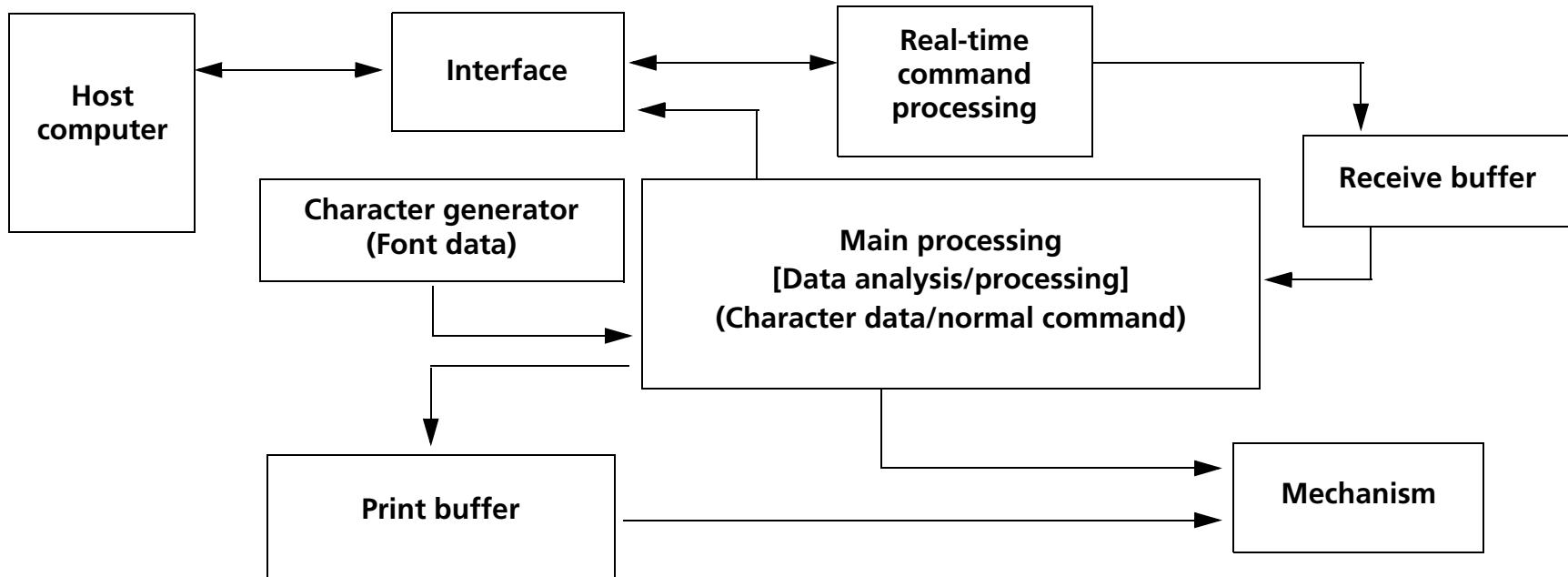
Character Data and Normal Commands

The printer stores data sent from the host computer in the receive buffer temporarily, and then the printer interprets the data and classifies them into commands or character data sequentially. If the data from the receive buffer is a normal command, the printer processes the command corresponding to its function; for example, if the data interpreted is **ESC 3**, the printer changes a setting value for the line spacing, and if it is **LF**, the printer prints the data in the print buffer and feeds the paper one line.

If the data from the receive buffer is character data, the printer reads the appropriate font data from the resident character generator and writes image data to the print buffer.

Real-time Commands

The printer stores data sent from the host computer in the receive buffer, interprets the data, and processes the commands corresponding to their function one line at a time. The real-time commands are the commands that consist of a **DLE** extension, such as **DLE EOT** or **DLE ENQ**. They are processed immediately. The real-time commands are ignored as undefined codes in the main processing.

Data processing diagram

DEFINITIONS

Normal commands

Normal commands are all the commands except real-time commands. The normal commands are stored in the receive buffer temporarily and then processed sequentially.

Real-time commands

Real-time commands are the commands that consist of a **DLE** extension (such as **DLE EOT** or **DLE ENQ**). The real-time commands execute processing when received. After executing, they are stored in the receive buffer and then discarded as undefined codes when the normal commands are processed.

Receive buffer

The receive buffer is used to store data from the host computer. All received data is stored in this buffer and processed in the order received. Buffer capacity depends on the printer model used.

Obsolete commands

These are commands that will not be supported by future printer models. The command descriptions give a better command to use for the same function.

Print buffer

The print buffer is used to store image data for printing.

Print buffer-full

This state occurs when the print buffer becomes full.

Print buffer-full printing

If new print data (such as characters or bit images) or horizontal tabs are processed in standard mode when the print buffer is full, the image data already stored in the print buffer is printed, and a line feed is executed. This is the same operation as **LF**. The data (print data or horizontal tab) that causes the print buffer-full is processed from the beginning of the next line.

If new print data (such as characters or bit images) or horizontal tabs are processed in page mode when the print buffer is full, the printer moves the print position to the beginning of the next line (the same operation as **LF**) and processes the data (print data or horizontal tabs) that causes the print buffer-full.

Beginning of the line

The beginning of the line meets all of the following conditions:

- No data exists in the print buffer.
- No spaces are skipped by **HT** in the print buffer.
- The print position has not been specified by **ESC \$** or **ESC **.

In standard mode, the beginning of the line is the left margin.

Printable area

This is the maximum printable area specified for each printer model.

This can be changed by setting the paper width with **GS (E fn = 5** or DIP switch or setting of paper layout that is supported by the label printer model.

Printing area

This is the printing range set by a command. The printing area should be equal to or smaller than the printable area.

In standard mode, the printing area is set by **GS L** and **GS W**, and in page mode, it is set by **ESC W**.

Ignoring a command

This is the printer state in which the printer does nothing after receiving all codes, including parameters.

Horizontal/vertical direction

Horizontal direction is the direction that is perpendicular to the paper feed direction. Vertical direction is the paper feed direction. In page mode, however, horizontal/vertical direction differs, depending on the print direction of a character, not the paper feed direction.

Baseline

The baseline for character sets that are 9 dots high (for example, 7 × 9 and 9 × 9) is the invisible line marking the bottom of the character matrix (the bottom of the lowest dot possible). For other character sets, the baseline is the bottom of all characters, excluding descenders, such as the bottom parts of "g" and "y", which are below the baseline.

Setting commands

Setting commands change printer status by processing a command and affect printer operation and print results thereafter. The commands that can specify enhanced characters, set paper feed amount, and select a character are setting commands as are some of the normal commands.

Executing commands

Executing commands affect printer operation and change the printer status temporarily but do not affect the following printer operation. Functions of printing, paper cutting, and status transmission are executing commands and the real-time commands and some of the normal commands are executing commands.

MSB

Most Significant Bit

LSB

Least Significant Bit

Obsolete commands

These are commands that will not be supported by future printer models. The description of each of these commands gives a better command to use for the same function.

"Reserved" bit

"Reserved" bits are as follows:

- Bit that will be used for an extended function in the future.
- Bit that has a function in the ESC/POS specification; however, the printer does not support the function.

Use a bit with a value indicated in a table.

"Fixed" bit

Use a bit only with a value indicated in a table.

TM-J7000/J7100 SUPPORTED COMMANDS

Command	Classification	Name	Function type
HT	EXECUTING COMMAND	Horizontal tab	PRINT POSITION COMMANDS
LF	EXECUTING COMMAND	Print and line feed	PRINT COMMANDS
FF (in standard mode)	EXECUTING COMMAND	Print and eject cut sheet (in standard mode)	PRINT COMMANDS
FF (in page mode)	EXECUTING COMMAND	Print and return to standard mode (in page mode)	PRINT COMMANDS
CR	EXECUTING COMMAND	Print and carriage return	PRINT COMMANDS
CAN	EXECUTING COMMAND	Cancel print data in page mode	CHARACTER COMMANDS
DLE EOT	EXECUTING COMMAND	Transmit real-time status	STATUS COMMANDS
DLE EOT (n = 8)	EXECUTING COMMAND	Transmit real-time status for ink	CONTROL OPTION COMMANDS
DLE ENQ	EXECUTING COMMAND	Send real-time request to printer	MISCELLANEOUS COMMANDS
DLE DC4 (fn = 1)	EXECUTING + SETTING	Generate pulse in real time	MISCELLANEOUS COMMANDS
DLE DC4 (fn = 2)	EXECUTING + SETTING	Execute power-off sequence	MISCELLANEOUS COMMANDS
DLE DC4 (fn = 7)	EXECUTING + SETTING	Transmit specified status in real time	MISCELLANEOUS COMMANDS
DLE DC4 (fn = 8)	EXECUTING + SETTING	Clear buffer(s)	MISCELLANEOUS COMMANDS
ESC FF	EXECUTING COMMAND	Print data in page mode	PRINT COMMANDS
ESC SP	SETTING COMMAND	Set right-side character spacing	CHARACTER COMMANDS
ESC !	SETTING COMMAND	Select print mode(s)	CHARACTER COMMANDS
ESC \$	EXECUTING COMMAND	Set absolute print position	PRINT POSITION COMMANDS

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Command	Classification	Name	Function type
ESC %	SETTING COMMAND	Select/cancel user-defined character set	CHARACTER COMMANDS
ESC &	SETTING COMMAND	Define user-defined characters	CHARACTER COMMANDS
ESC *	EXECUTING COMMAND	Select bit-image mode	BIT-IMAGE COMMANDS
ESC -	SETTING COMMAND	Turn underline mode on/off	CHARACTER COMMANDS
ESC 2	SETTING COMMAND	Select default line spacing	LINE SPACING COMMANDS
ESC 3	SETTING COMMAND	Set line spacing	LINE SPACING COMMANDS
ESC <	EXECUTING COMMAND	Return home	MECHANISM CONTROL COMMANDS
ESC =	SETTING COMMAND	Select peripheral device	MISCELLANEOUS COMMANDS
ESC ?	SETTING COMMAND	Cancel user-defined characters	CHARACTER COMMANDS
ESC @	EXECUTING + SETTING	Initialize printer	MISCELLANEOUS COMMANDS
ESC D	SETTING COMMAND	Set horizontal tab positions	PRINT POSITION COMMANDS
ESC E	SETTING COMMAND	Turn emphasized mode on/off	CHARACTER COMMANDS
ESC F	SETTING COMMAND	Set/cancel cut sheet reverse eject	MECHANISM CONTROL COMMANDS
ESC G	SETTING COMMAND	Turn double-strike mode on/off	CHARACTER COMMANDS
ESC J	EXECUTING COMMAND	Print and feed paper	PRINT COMMANDS
ESC K	EXECUTING COMMAND	Print and reverse feed	PRINT COMMANDS
ESC L	EXECUTING COMMAND	Select page mode	MISCELLANEOUS COMMANDS
ESC M	SETTING COMMAND	Select character font	CHARACTER COMMANDS
ESC R	SETTING COMMAND	Select an international character set	CHARACTER COMMANDS

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Command	Classification	Name	Function type
ESC S	EXECUTING COMMAND	Select standard mode	MISCELLANEOUS COMMANDS
ESC T	SETTING COMMAND	Select print direction in page mode	PRINT POSITION COMMANDS
ESC U	SETTING COMMAND	Turn unidirectional printing mode on/off	MECHANISM CONTROL COMMANDS
ESC W	SETTING COMMAND	Set print area in page mode	PRINT POSITION COMMANDS
ESC \	EXECUTING COMMAND	Set relative print position	PRINT POSITION COMMANDS
ESC a	SETTING COMMAND	Select justification	PRINT POSITION COMMANDS
ESC c 0	EXECUTING + SETTING	Select paper type(s) for printing	PRINTING PAPER COMMANDS
ESC c 1	SETTING COMMAND	Select paper type(s) for command settings	PRINTING PAPER COMMANDS
ESC c 3	SETTING COMMAND	Select paper sensor(s) to output paper-end signals	PAPER SENSOR COMMANDS
ESC c 4	SETTING COMMAND	Select paper sensor(s) to stop printing	PAPER SENSOR COMMANDS
ESC c 5	SETTING COMMAND	Enable/disable panel buttons	PANEL BUTTON COMMAND
ESC d	EXECUTING COMMAND	Print and feed n lines	PRINT COMMANDS
ESC e	EXECUTING COMMAND	Print and reverse feed n lines	PRINT COMMANDS
ESC f	SETTING COMMAND	Set cut sheet wait time	PRINTING PAPER COMMANDS
ESC p	EXECUTING COMMAND	Generate pulse	MISCELLANEOUS COMMANDS
ESC q	EXECUTING COMMAND	Release paper	MECHANISM CONTROL COMMANDS
ESC t	SETTING COMMAND	Select character code table	CHARACTER COMMANDS
ESC {	SETTING COMMAND	Turn upside-down printing mode on/off	CHARACTER COMMANDS
FS (e	EXECUTING COMMAND	Enable/disable Automatic Status Back (ASB) for optional functions (extended status)	STATUS COMMANDS

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Command	Classification	Name	Function type
FS (f	EXECUTING COMMAND	Select MICR data handling	CONTROL OPTION COMMANDS
FS c	EXECUTING COMMAND	Clean MICR mechanism	CONTROL OPTION COMMANDS
GS !	SETTING COMMAND	Select character size	CHARACTER COMMANDS
GS \$	EXECUTING COMMAND	Set absolute vertical print position in page mode	PRINT POSITION COMMANDS
GS (A	EXECUTING COMMAND	Execute test print	MISCELLANEOUS COMMANDS
GS (B	SETTING COMMAND	Customize ASB-status bits	STATUS COMMANDS
GS (C	EXECUTING + SETTING	Edit NV user memory	CUSTOMIZE COMMANDS
GS (D	EXECUTING + SETTING	Enable/disable real-time command	MISCELLANEOUS COMMANDS
GS (E	EXECUTING + SETTING	Set user setup commands	CUSTOMIZE COMMANDS
GS (G	EXECUTING COMMAND	Select cut sheet control function(s)	CONTROL OPTION COMMANDS
GS (H	EXECUTING COMMAND	Request transmission of response or status	MISCELLANEOUS COMMANDS
GS (K	EXECUTING COMMAND	Select print control method(s)	MISCELLANEOUS COMMANDS
GS (L GS 8 L	EXECUTING + SETTING	Set graphics data	BIT-IMAGE COMMANDS
GS (M	EXECUTING + SETTING	Customize printer control value(s)	CUSTOMIZE COMMANDS
GS (N	SETTING COMMAND	Select character style(s)	CHARACTER COMMANDS
GS (P	EXECUTING COMMAND	Select page mode control function(s)	MISCELLANEOUS COMMANDS
GS (k	EXECUTING + SETTING	Set up and print symbol	TWO DIMENSION CODE COMMANDS
GS B	SETTING COMMAND	Turn white/black reverse printing mode on/off	CHARACTER COMMANDS
GS H	SETTING COMMAND	Select printing position of HRI characters	BAR CODE COMMANDS

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Command	Classification	Name	Function type
GS I	EXECUTING COMMAND	Transmit printer ID	MISCELLANEOUS COMMANDS
GS L	SETTING COMMAND	Set left margin	PRINT POSITION COMMANDS
GS P	SETTING COMMAND	Set horizontal and vertical motion units	MISCELLANEOUS COMMANDS
GS T	EXECUTING COMMAND	Set print position to the beginning of print line	PRINT POSITION COMMANDS
GS V	EXECUTING COMMAND	Select cut mode and cut paper	MECHANISM CONTROL COMMANDS
GS W	SETTING COMMAND	Set print area width	PRINT POSITION COMMANDS
GS \	EXECUTING COMMAND	Set relative vertical print position in page mode	PRINT POSITION COMMANDS
GS a	EXECUTING + SETTING	Enable/disable Automatic Status Back (ASB)	STATUS COMMANDS
GS f	SETTING COMMAND	Select font for HRI characters	BAR CODE COMMANDS
GS g 0	SETTING COMMAND	Initialize maintenance counter	MISCELLANEOUS COMMANDS
GS g 2	EXECUTING COMMAND	Transmit maintenance counter	MISCELLANEOUS COMMANDS
GS h	SETTING COMMAND	Set bar code height	BAR CODE COMMANDS
GS j	EXECUTING COMMAND	Enable/disable Automatic Status Back (ASB) for ink	STATUS COMMANDS
GS k	EXECUTING COMMAND	Print bar code	BAR CODE COMMANDS
GS r	EXECUTING COMMAND	Transmit status	STATUS COMMANDS
* GS v 0	EXECUTING COMMAND	Print raster bit image	BIT-IMAGE COMMANDS
GS w	SETTING COMMAND	Set bar code width	BAR CODE COMMANDS

* obsolete commands

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The following commands are supported only by the printers with the optional Magnetic Ink Character Recognition (MICR) reader. (The MICR reader is a factory-installed option.)

Command	Classification	Name	Function type
DLE EOT	EXECUTING COMMAND	Transmit real-time status	STATUS COMMANDS
FS (f	EXECUTING COMMAND	Select MICR data handling	CONTROL OPTION COMMANDS
FS c	EXECUTING COMMAND	Clean MICR mechanism	CONTROL OPTION COMMANDS
GS (G	EXECUTING COMMAND	Select cut sheet control function(s)	CONTROL OPTION COMMANDS

TM-J7500/J7600 SUPPORTED COMMANDS

Command	Classification	Name	Function type
HT	EXECUTING COMMAND	Horizontal tab	PRINT POSITION COMMANDS
LF	EXECUTING COMMAND	Print and line feed	PRINT COMMANDS
FF (in standard mode)	EXECUTING COMMAND	Print and eject cut sheet (in standard mode)	PRINT COMMANDS
FF (in page mode)	EXECUTING COMMAND	Print and return to standard mode (in page mode)	PRINT COMMANDS
CR	EXECUTING COMMAND	Print and carriage return	PRINT COMMANDS
CAN	EXECUTING COMMAND	Cancel print data in page mode	CHARACTER COMMANDS
DLE EOT	EXECUTING COMMAND	Transmit real-time status	STATUS COMMANDS
DLE EOT (n = 8)	EXECUTING COMMAND	Transmit real-time status for ink	CONTROL OPTION COMMANDS
DLE ENQ	EXECUTING COMMAND	Send real-time request to printer	MISCELLANEOUS COMMANDS
DLE DC4 (fn = 1)	EXECUTING + SETTING	Generate pulse in real time	MISCELLANEOUS COMMANDS
DLE DC4 (fn = 2)	EXECUTING + SETTING	Execute power-off sequence	MISCELLANEOUS COMMANDS
DLE DC4 (fn = 7)	EXECUTING + SETTING	Transmit specified status in real time	MISCELLANEOUS COMMANDS
DLE DC4 (fn = 8)	EXECUTING + SETTING	Clear buffer(s)	MISCELLANEOUS COMMANDS
ESC FF	EXECUTING COMMAND	Print data in page mode	PRINT COMMANDS
ESC SP	SETTING COMMAND	Set right-side character spacing	CHARACTER COMMANDS
ESC !	SETTING COMMAND	Select print mode(s)	CHARACTER COMMANDS
ESC \$	EXECUTING COMMAND	Set absolute print position	PRINT POSITION COMMANDS

CONFIDENTIAL

Command	Classification	Name	Function type
ESC %	SETTING COMMAND	Select/cancel user-defined character set	CHARACTER COMMANDS
ESC &	SETTING COMMAND	Define user-defined characters	CHARACTER COMMANDS
ESC *	EXECUTING COMMAND	Select bit-image mode	BIT-IMAGE COMMANDS
ESC -	SETTING COMMAND	Turn underline mode on/off	CHARACTER COMMANDS
ESC 2	SETTING COMMAND	Select default line spacing	LINE SPACING COMMANDS
ESC 3	SETTING COMMAND	Set line spacing	LINE SPACING COMMANDS
ESC <	EXECUTING COMMAND	Return home	MECHANISM CONTROL COMMANDS
ESC =	SETTING COMMAND	Select peripheral device	MISCELLANEOUS COMMANDS
ESC ?	SETTING COMMAND	Cancel user-defined characters	CHARACTER COMMANDS
ESC @	EXECUTING + SETTING	Initialize printer	MISCELLANEOUS COMMANDS
ESC D	SETTING COMMAND	Set horizontal tab positions	PRINT POSITION COMMANDS
ESC E	SETTING COMMAND	Turn emphasized mode on/off	CHARACTER COMMANDS
ESC F	SETTING COMMAND	Set/cancel cut sheet reverse eject	MECHANISM CONTROL COMMANDS
ESC G	SETTING COMMAND	Turn double-strike mode on/off	CHARACTER COMMANDS
ESC J	EXECUTING COMMAND	Print and feed paper	PRINT COMMANDS
ESC K	EXECUTING COMMAND	Print and reverse feed	PRINT COMMANDS
ESC L	EXECUTING COMMAND	Select page mode	MISCELLANEOUS COMMANDS
ESC M	SETTING COMMAND	Select character font	CHARACTER COMMANDS
ESC R	SETTING COMMAND	Select an international character set	CHARACTER COMMANDS

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Command	Classification	Name	Function type
ESC S	EXECUTING COMMAND	Select standard mode	MISCELLANEOUS COMMANDS
ESC T	SETTING COMMAND	Select print direction in page mode	PRINT POSITION COMMANDS
ESC U	SETTING COMMAND	Turn unidirectional printing mode on/off	MECHANISM CONTROL COMMANDS
ESC W	SETTING COMMAND	Set print area in page mode	PRINT POSITION COMMANDS
ESC \	EXECUTING COMMAND	Set relative print position	PRINT POSITION COMMANDS
ESC a	SETTING COMMAND	Select justification	PRINT POSITION COMMANDS
ESC c 0	EXECUTING + SETTING	Select paper type(s) for printing	PRINTING PAPER COMMANDS
ESC c 1	SETTING COMMAND	Select paper type(s) for command settings	PRINTING PAPER COMMANDS
ESC c 3	SETTING COMMAND	Select paper sensor(s) to output paper-end signals	PAPER SENSOR COMMANDS
ESC c 4	SETTING COMMAND	Select paper sensor(s) to stop printing	PAPER SENSOR COMMANDS
ESC c 5	SETTING COMMAND	Enable/disable panel buttons	PANEL BUTTON COMMAND
ESC d	EXECUTING COMMAND	Print and feed n lines	PRINT COMMANDS
ESC e	EXECUTING COMMAND	Print and reverse feed n lines	PRINT COMMANDS
ESC f	SETTING COMMAND	Set cut sheet wait time	PRINTING PAPER COMMANDS
ESC p	EXECUTING COMMAND	Generate pulse	MISCELLANEOUS COMMANDS
ESC q	EXECUTING COMMAND	Release paper	MECHANISM CONTROL COMMANDS
ESC t	SETTING COMMAND	Select character code table	CHARACTER COMMANDS
ESC {	SETTING COMMAND	Turn upside-down printing mode on/off	CHARACTER COMMANDS
GS !	SETTING COMMAND	Select character size	CHARACTER COMMANDS

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Command	Classification	Name	Function type
GS \$	EXECUTING COMMAND	Set absolute vertical print position in page mode	PRINT POSITION COMMANDS
* GS *	SETTING COMMAND	Define downloaded bit image	BIT-IMAGE COMMANDS
* GS /	EXECUTING COMMAND	Print downloaded bit image	BIT-IMAGE COMMANDS
GS (A	EXECUTING COMMAND	Execute test print	MISCELLANEOUS COMMANDS
GS (B	SETTING COMMAND	Customize ASB-status bits	STATUS COMMANDS
GS (C	EXECUTING + SETTING	Edit NV user memory	CUSTOMIZE COMMANDS
GS (D	EXECUTING + SETTING	Enable/disable real-time command	MISCELLANEOUS COMMANDS
GS (E	EXECUTING + SETTING	Set user setup commands	CUSTOMIZE COMMANDS
GS (G	EXECUTING COMMAND	Select cut sheet control function(s)	CONTROL OPTION COMMANDS
GS (H	EXECUTING COMMAND	Request transmission of response or status	MISCELLANEOUS COMMANDS
GS (K	EXECUTING COMMAND	Select print control method(s)	MISCELLANEOUS COMMANDS
GS (L GS 8 L	EXECUTING + SETTING	Set graphics data	BIT-IMAGE COMMANDS
GS (M	EXECUTING + SETTING	Customize printer control value(s)	CUSTOMIZE COMMANDS
GS (N	SETTING COMMAND	Select character style(s)	CHARACTER COMMANDS
GS (P	EXECUTING COMMAND	Select page mode control function(s)	MISCELLANEOUS COMMANDS
GS (k	EXECUTING + SETTING	Set up and print symbol	TWO DIMENSION CODE COMMANDS
GS B	SETTING COMMAND	Turn white/black reverse printing mode on/off	CHARACTER COMMANDS
GS H	SETTING COMMAND	Select printing position of HRI characters	BAR CODE COMMANDS

* **obsolete commands**

CONFIDENTIAL

Command	Classification	Name	Function type
GS I	EXECUTING COMMAND	Transmit printer ID	MISCELLANEOUS COMMANDS
GS L	SETTING COMMAND	Set left margin	PRINT POSITION COMMANDS
GS P	SETTING COMMAND	Set horizontal and vertical motion units	MISCELLANEOUS COMMANDS
* GS Q 0	EXECUTING COMMAND	Print variable vertical size bit image	BIT-IMAGE COMMANDS
GS T	EXECUTING COMMAND	Set print position to the beginning of print line	PRINT POSITION COMMANDS
GS V	EXECUTING COMMAND	Select cut mode and cut paper	MECHANISM CONTROL COMMANDS
GS W	SETTING COMMAND	Set print area width	PRINT POSITION COMMANDS
GS \	EXECUTING COMMAND	Set relative vertical print position in page mode	PRINT POSITION COMMANDS
GS a	EXECUTING + SETTING	Enable/disable Automatic Status Back (ASB)	STATUS COMMANDS
GS f	SETTING COMMAND	Select font for HRI characters	BAR CODE COMMANDS
GS g 0	SETTING COMMAND	Initialize maintenance counter	MISCELLANEOUS COMMANDS
GS g 2	EXECUTING COMMAND	Transmit maintenance counter	MISCELLANEOUS COMMANDS
GS h	SETTING COMMAND	Set bar code height	BAR CODE COMMANDS
GS j	EXECUTING COMMAND	Enable/disable Automatic Status Back (ASB) for ink	STATUS COMMANDS
GS k	EXECUTING COMMAND	Print bar code	BAR CODE COMMANDS
GS r	EXECUTING COMMAND	Transmit status	STATUS COMMANDS
* GS v 0	EXECUTING COMMAND	Print raster bit image	BIT-IMAGE COMMANDS
GS w	SETTING COMMAND	Set bar code width	BAR CODE COMMANDS

* obsolete commands

The following commands are obsolete commands and will not be supported by future printer models. More suitable substitute commands are listed to the right.

Command	Classification	Name	Substitute command
GS *	SETTING COMMAND	Define downloaded bit image	GS (L GS 8 L
GS /	EXECUTING COMMAND	Print downloaded bit image	GS (L GS 8 L
GS Q 0	EXECUTING COMMAND	Print variable vertical size bit image	GS (L GS 8 L
GS v 0	EXECUTING COMMAND	Print raster bit image	GS (L GS 8 L

TM-H5000II SUPPORTED COMMANDS

Command	Classification	Name	Function type
HT	EXECUTING COMMAND	Horizontal tab	PRINT POSITION COMMANDS
LF	EXECUTING COMMAND	Print and line feed	PRINT COMMANDS
FF (in standard mode)	EXECUTING COMMAND	Print and eject cut sheet (in standard mode)	PRINT COMMANDS
FF (in page mode)	EXECUTING COMMAND	Print and return to standard mode (in page mode)	PRINT COMMANDS
CR	EXECUTING COMMAND	Print and carriage return	PRINT COMMANDS
CAN	EXECUTING COMMAND	Cancel print data in page mode	CHARACTER COMMANDS
DLE EOT	EXECUTING COMMAND	Transmit real-time status	STATUS COMMANDS
DLE ENQ	EXECUTING COMMAND	Send real-time request to printer	MISCELLANEOUS COMMANDS
DLE DC4 (fn = 1)	EXECUTING + SETTING	Generate pulse in real time	MISCELLANEOUS COMMANDS
DLE DC4 (fn = 8)	EXECUTING + SETTING	Clear buffer(s)	MISCELLANEOUS COMMANDS
ESC FF	EXECUTING COMMAND	Print data in page mode	PRINT COMMANDS
ESC SP	SETTING COMMAND	Set right-side character spacing	CHARACTER COMMANDS
ESC !	SETTING COMMAND	Select print mode(s)	CHARACTER COMMANDS
ESC \$	EXECUTING COMMAND	Set absolute print position	PRINT POSITION COMMANDS
ESC %	SETTING COMMAND	Select/cancel user-defined character set	CHARACTER COMMANDS
ESC &	SETTING COMMAND	Define user-defined characters	CHARACTER COMMANDS

CONFIDENTIAL

Command	Classification	Name	Function type
ESC *	EXECUTING COMMAND	Select bit-image mode	BIT-IMAGE COMMANDS
ESC -	SETTING COMMAND	Turn underline mode on/off	CHARACTER COMMANDS
ESC 2	SETTING COMMAND	Select default line spacing	LINE SPACING COMMANDS
ESC 3	SETTING COMMAND	Set line spacing	LINE SPACING COMMANDS
ESC <	EXECUTING COMMAND	Return home	MECHANISM CONTROL COMMANDS
ESC =	SETTING COMMAND	Select peripheral device	MISCELLANEOUS COMMANDS
ESC ?	SETTING COMMAND	Cancel user-defined characters	CHARACTER COMMANDS
ESC @	EXECUTING + SETTING	Initialize printer	MISCELLANEOUS COMMANDS
ESC C	SETTING COMMAND	Set cut sheet eject length	LINE SPACING COMMANDS
ESC D	SETTING COMMAND	Set horizontal tab positions	PRINT POSITION COMMANDS
ESC E	SETTING COMMAND	Turn emphasized mode on/off	CHARACTER COMMANDS
ESC F	SETTING COMMAND	Set/cancel cut sheet reverse eject	MECHANISM CONTROL COMMANDS
ESC G	SETTING COMMAND	Turn double-strike mode on/off	CHARACTER COMMANDS
ESC J	EXECUTING COMMAND	Print and feed paper	PRINT COMMANDS
ESC K	EXECUTING COMMAND	Print and reverse feed	PRINT COMMANDS
ESC L	EXECUTING COMMAND	Select page mode	MISCELLANEOUS COMMANDS
ESC M	SETTING COMMAND	Select character font	CHARACTER COMMANDS
ESC R	SETTING COMMAND	Select an international character set	CHARACTER COMMANDS

CONFIDENTIAL

Command	Classification	Name	Function type
ESC S	EXECUTING COMMAND	Select standard mode	MISCELLANEOUS COMMANDS
ESC T	SETTING COMMAND	Select print direction in page mode	PRINT POSITION COMMANDS
ESC U	SETTING COMMAND	Turn unidirectional printing mode on/off	MECHANISM CONTROL COMMANDS
ESC V	SETTING COMMAND	Turn 90° clockwise rotation mode on/off	CHARACTER COMMANDS
ESC W	SETTING COMMAND	Set print area in page mode	PRINT POSITION COMMANDS
ESC \	EXECUTING COMMAND	Set relative print position	PRINT POSITION COMMANDS
ESC a	SETTING COMMAND	Select justification	PRINT POSITION COMMANDS
ESC c 0	EXECUTING + SETTING	Select paper type(s) for printing	PRINTING PAPER COMMANDS
ESC c 1	SETTING COMMAND	Select paper type(s) for command settings	PRINTING PAPER COMMANDS
ESC c 3	SETTING COMMAND	Select paper sensor(s) to output paper-end signals	PAPER SENSOR COMMANDS
ESC c 4	SETTING COMMAND	Select paper sensor(s) to stop printing	PAPER SENSOR COMMANDS
ESC c 5	SETTING COMMAND	Enable/disable panel buttons	PANEL BUTTON COMMAND
ESC d	EXECUTING COMMAND	Print and feed n lines	PRINT COMMANDS
ESC e	EXECUTING COMMAND	Print and reverse feed n lines	PRINT COMMANDS
ESC f	SETTING COMMAND	Set cut sheet wait time	PRINTING PAPER COMMANDS
ESC p	EXECUTING COMMAND	Generate pulse	MISCELLANEOUS COMMANDS
ESC q	EXECUTING COMMAND	Release paper	MECHANISM CONTROL COMMANDS

CONFIDENTIAL

Command	Classification	Name	Function type
ESC t	SETTING COMMAND	Select character code table	CHARACTER COMMANDS
ESC {	SETTING COMMAND	Turn upside-down printing mode on/off	CHARACTER COMMANDS
* FS g 1	SETTING COMMAND	Write to NV user memory	MISCELLANEOUS COMMANDS
* FS g 2	EXECUTING COMMAND	Read from NV user memory	MISCELLANEOUS COMMANDS
* FS p	EXECUTING COMMAND	Print NV bit image	BIT-IMAGE COMMANDS
* FS q	SETTING COMMAND	Define NV bit image	BIT-IMAGE COMMANDS
GS !	SETTING COMMAND	Select character size	CHARACTER COMMANDS
GS \$	EXECUTING COMMAND	Set absolute vertical print position in page mode	PRINT POSITION COMMANDS
GS (A	EXECUTING COMMAND	Execute test print	MISCELLANEOUS COMMANDS
* GS *	SETTING COMMAND	Define downloaded bit image	BIT-IMAGE COMMANDS
* GS /	EXECUTING COMMAND	Print downloaded bit image	BIT-IMAGE COMMANDS
GS :	EXECUTING + SETTING	Start/end macro definition	MACRO FUNCTION COMMANDS
GS B	SETTING COMMAND	Turn white/black reverse printing mode on/off	CHARACTER COMMANDS
GS H	SETTING COMMAND	Select printing position of HRI characters	BAR CODE COMMANDS
GS I	EXECUTING COMMAND	Transmit printer ID	MISCELLANEOUS COMMANDS
GS L	SETTING COMMAND	Set left margin	PRINT POSITION COMMANDS
GS P	SETTING COMMAND	Set horizontal and vertical motion units	MISCELLANEOUS COMMANDS
GS V	EXECUTING COMMAND	Select cut mode and cut paper	MECHANISM CONTROL COMMANDS

* obsolete commands

CONFIDENTIAL

Command	Classification	Name	Function type
GS W	SETTING COMMAND	Set print area width	PRINT POSITION COMMANDS
GS \	EXECUTING COMMAND	Set relative vertical print position in page mode	PRINT POSITION COMMANDS
GS ^	EXECUTING COMMAND	Execute macro	MACRO FUNCTION COMMANDS
GS a	EXECUTING + SETTING	Enable/disable Automatic Status Back (ASB)	STATUS COMMANDS
GS b	SETTING COMMAND	Turn smoothing mode on/off	CHARACTER COMMANDS
GS f	SETTING COMMAND	Select font for HRI characters	BAR CODE COMMANDS
GS g 0	SETTING COMMAND	Initialize maintenance counter	MISCELLANEOUS COMMANDS
GS g 2	EXECUTING COMMAND	Transmit maintenance counter	MISCELLANEOUS COMMANDS
GS h	SETTING COMMAND	Set bar code height	BAR CODE COMMANDS
GS k	EXECUTING COMMAND	Print bar code	BAR CODE COMMANDS
GS r	EXECUTING COMMAND	Transmit status	STATUS COMMANDS
* GS v 0	EXECUTING COMMAND	Print raster bit image	BIT-IMAGE COMMANDS
GS w	SETTING COMMAND	Set bar code width	BAR CODE COMMANDS

* obsolete commands

CONFIDENTIAL

The following commands are supported only by the printers with the optional Magnetic Ink Character Recognition (MICR) reader. (The MICR reader is a factory-installed option.)

Command	Name	Function type
DLE EOT	Transmit real-time status	STATUS COMMANDS
FS (f	Select MICR data handling	CONTROL OPTION COMMANDS
* FS a 0	Read check paper	CONTROL OPTION COMMANDS
* FS a 1	Load check paper to print starting position	CONTROL OPTION COMMANDS
* FS a 2	Eject check paper	CONTROL OPTION COMMANDS
* FS b	Request retransmission of check paper reading result	CONTROL OPTION COMMANDS
FS c	Clean MICR mechanism	CONTROL OPTION COMMANDS

* obsolete commands

CONFIDENTIAL

The following commands are supported only by Simplified Chinese/Traditional Chinese/Korean/Japanese models.

Command	Classification	Name	Function type
FS !	SETTING COMMAND	Select print mode(s) for Kanji characters	KANJI COMMANDS
FS &	SETTING COMMAND	Select Kanji character mode	KANJI COMMANDS
FS -	SETTING COMMAND	Turn underline mode on/off for Kanji characters	KANJI COMMANDS
FS .	SETTING COMMAND	Cancel Kanji character mode	KANJI COMMANDS
FS 2	SETTING COMMAND	Define user-defined Kanji characters	KANJI COMMANDS
FS C	SETTING COMMAND	Select Kanji character code system	KANJI COMMANDS
FS S	SETTING COMMAND	Set Kanji character spacing	KANJI COMMANDS
FS W	SETTING COMMAND	Turn quadruple-size mode on/off for Kanji characters	KANJI COMMANDS

TM-H6000III SUPPORTED COMMANDS

See TM-H6000II for TM-H6000II.

Command	Classification	Name	Function type
HT	EXECUTING COMMAND	Horizontal tab	PRINT POSITION COMMANDS
LF	EXECUTING COMMAND	Print and line feed	PRINT COMMANDS
FF (in standard mode)	EXECUTING COMMAND	Print and eject cut sheet (in standard mode)	PRINT COMMANDS
FF (in page mode)	EXECUTING COMMAND	Print and return to standard mode (in page mode)	PRINT COMMANDS
CR	EXECUTING COMMAND	Print and carriage return	PRINT COMMANDS
CAN	EXECUTING COMMAND	Cancel print data in page mode	CHARACTER COMMANDS
DLE EOT	EXECUTING COMMAND	Transmit real-time status	STATUS COMMANDS
DLE EOT (n = 8)	EXECUTING COMMAND	Transmit real-time status for ink	CONTROL OPTION COMMANDS
DLE ENQ	EXECUTING COMMAND	Send real-time request to printer	MISCELLANEOUS COMMANDS
DLE DC4 (fn = 1)	EXECUTING + SETTING	Generate pulse in real time	MISCELLANEOUS COMMANDS
DLE DC4 (fn = 2)	EXECUTING + SETTING	Execute power-off sequence	MISCELLANEOUS COMMANDS
DLE DC4 (fn = 8)	EXECUTING + SETTING	Clear buffer(s)	MISCELLANEOUS COMMANDS
ESC FF	EXECUTING COMMAND	Print data in page mode	PRINT COMMANDS
ESC SP	SETTING COMMAND	Set right-side character spacing	CHARACTER COMMANDS
ESC !	SETTING COMMAND	Select print mode(s)	CHARACTER COMMANDS

CONFIDENTIAL

Command	Classification	Name	Function type
ESC \$	EXECUTING COMMAND	Set absolute print position	PRINT POSITION COMMANDS
ESC %	SETTING COMMAND	Select/cancel user-defined character set	CHARACTER COMMANDS
ESC &	SETTING COMMAND	Define user-defined characters	CHARACTER COMMANDS
ESC *	EXECUTING COMMAND	Select bit-image mode	BIT-IMAGE COMMANDS
ESC -	SETTING COMMAND	Turn underline mode on/off	CHARACTER COMMANDS
ESC 2	SETTING COMMAND	Select default line spacing	LINE SPACING COMMANDS
ESC 3	SETTING COMMAND	Set line spacing	LINE SPACING COMMANDS
ESC <	EXECUTING COMMAND	Return home	MECHANISM CONTROL COMMANDS
ESC =	SETTING COMMAND	Select peripheral device	MISCELLANEOUS COMMANDS
ESC ?	SETTING COMMAND	Cancel user-defined characters	CHARACTER COMMANDS
ESC @	EXECUTING + SETTING	Initialize printer	MISCELLANEOUS COMMANDS
ESC D	SETTING COMMAND	Set horizontal tab positions	PRINT POSITION COMMANDS
ESC E	SETTING COMMAND	Turn emphasized mode on/off	CHARACTER COMMANDS
ESC F	SETTING COMMAND	Set/cancel cut sheet reverse eject	MECHANISM CONTROL COMMANDS
ESC G	SETTING COMMAND	Turn double-strike mode on/off	CHARACTER COMMANDS
ESC J	EXECUTING COMMAND	Print and feed paper	PRINT COMMANDS
ESC K	EXECUTING COMMAND	Print and reverse feed	PRINT COMMANDS
ESC L	EXECUTING COMMAND	Select page mode	MISCELLANEOUS COMMANDS

CONFIDENTIAL

Command	Classification	Name	Function type
ESC M	SETTING COMMAND	Select character font	CHARACTER COMMANDS
ESC R	SETTING COMMAND	Select an international character set	CHARACTER COMMANDS
ESC S	EXECUTING COMMAND	Select standard mode	MISCELLANEOUS COMMANDS
ESC T	SETTING COMMAND	Select print direction in page mode	PRINT POSITION COMMANDS
ESC U	SETTING COMMAND	Turn unidirectional printing mode on/off	MECHANISM CONTROL COMMANDS
ESC V	SETTING COMMAND	Turn 90° clockwise rotation mode on/off	CHARACTER COMMANDS
ESC W	SETTING COMMAND	Set print area in page mode	PRINT POSITION COMMANDS
ESC \	EXECUTING COMMAND	Set relative print position	PRINT POSITION COMMANDS
ESC a	SETTING COMMAND	Select justification	PRINT POSITION COMMANDS
ESC c 0	EXECUTING + SETTING	Select paper type(s) for printing	PRINTING PAPER COMMANDS
ESC c 1	SETTING COMMAND	Select paper type(s) for command settings	PRINTING PAPER COMMANDS
ESC c 3	SETTING COMMAND	Select paper sensor(s) to output paper-end signals	PAPER SENSOR COMMANDS
ESC c 4	SETTING COMMAND	Select paper sensor(s) to stop printing	PAPER SENSOR COMMANDS
ESC c 5	SETTING COMMAND	Enable/disable panel buttons	PANEL BUTTON COMMAND
ESC d	EXECUTING COMMAND	Print and feed n lines	PRINT COMMANDS
ESC e	EXECUTING COMMAND	Print and reverse feed n lines	PRINT COMMANDS
ESC f	SETTING COMMAND	Set cut sheet wait time	PRINTING PAPER COMMANDS
ESC p	EXECUTING COMMAND	Generate pulse	MISCELLANEOUS COMMANDS

CONFIDENTIAL

Command	Classification	Name	Function type
ESC q	EXECUTING COMMAND	Release paper	MECHANISM CONTROL COMMANDS
ESC t	SETTING COMMAND	Select character code table	CHARACTER COMMANDS
ESC {	SETTING COMMAND	Turn upside-down printing mode on/off	CHARACTER COMMANDS
FS (e	EXECUTING COMMAND	Enable/disable Automatic Status Back (ASB) for optional functions (extended status)	STATUS COMMANDS
FS (g	EXECUTING COMMAND	Set processing method for image data	CONTROL OPTION COMMANDS
FS L	SETTING COMMAND	Select double-density page mode	MISCELLANEOUS COMMANDS
* FS p	EXECUTING COMMAND	Print NV bit image	BIT-IMAGE COMMANDS
* FS q	SETTING COMMAND	Define NV bit image	BIT-IMAGE COMMANDS
GS (A	EXECUTING COMMAND	Execute test print	MISCELLANEOUS COMMANDS
GS (B	SETTING COMMAND	Customize ASB-status bits	STATUS COMMANDS
GS (C	EXECUTING + SETTING	Edit NV user memory	CUSTOMIZE COMMANDS
GS (D	EXECUTING + SETTING	Enable/disable real-time command	MISCELLANEOUS COMMANDS
GS (E	EXECUTING + SETTING	Set user setup commands	CUSTOMIZE COMMANDS
GS (G	EXECUTING + SETTING	Select cut sheet control function(s)	PRINTING PAPER COMMANDS
GS (L GS 8 L	EXECUTING + SETTING	Set graphics data	BIT-IMAGE COMMANDS
GS (M	EXECUTING + SETTING	Customize printer control value(s)	CUSTOMIZE COMMANDS
GS (N	SETTING COMMAND	Select character style(s)	CHARACTER COMMANDS

* obsolete commands

CONFIDENTIAL

Command	Classification	Name	Function type
GS (k	EXECUTING + SETTING	Set up and print symbol	TWO DIMENSION CODE COMMANDS
GS !	SETTING COMMAND	Select character size	CHARACTER COMMANDS
GS \$	EXECUTING COMMAND	Set absolute vertical print position in page mode	PRINT POSITION COMMANDS
* GS *	SETTING COMMAND	Define downloaded bit image	BIT-IMAGE COMMANDS
* GS /	EXECUTING COMMAND	Print downloaded bit image	BIT-IMAGE COMMANDS
GS :	EXECUTING + SETTING	Start/end macro definition	MACRO FUNCTION COMMANDS
GS B	SETTING COMMAND	Turn white/black reverse printing mode on/off	CHARACTER COMMANDS
* GS E	SETTING COMMAND	Select head control method	MISCELLANEOUS COMMANDS
GS H	SETTING COMMAND	Select printing position of HRI characters	BAR CODE COMMANDS
GS I	EXECUTING COMMAND	Transmit printer ID	MISCELLANEOUS COMMANDS
GS L	SETTING COMMAND	Set left margin	PRINT POSITION COMMANDS
GS P	SETTING COMMAND	Set horizontal and vertical motion units	MISCELLANEOUS COMMANDS
GS T	EXECUTING COMMAND	Set print position to the beginning of print line	PRINT POSITION COMMANDS
GS V	EXECUTING COMMAND	Select cut mode and cut paper	MECHANISM CONTROL COMMANDS
GS W	SETTING COMMAND	Set print area width	PRINT POSITION COMMANDS
GS \	EXECUTING COMMAND	Set relative vertical print position in page mode	PRINT POSITION COMMANDS
GS ^	EXECUTING COMMAND	Execute macro	MACRO FUNCTION COMMANDS
GS a	EXECUTING + SETTING	Enable/disable Automatic Status Back (ASB)	STATUS COMMANDS

* obsolete commands

CONFIDENTIAL

Command	Classification	Name	Function type
GS b	SETTING COMMAND	Turn smoothing mode on/off	CHARACTER COMMANDS
GS f	SETTING COMMAND	Select font for HRI characters	BAR CODE COMMANDS
GS g 0	SETTING COMMAND	Initialize maintenance counter	MISCELLANEOUS COMMANDS
GS g 2	EXECUTING COMMAND	Transmit maintenance counter	MISCELLANEOUS COMMANDS
GS h	SETTING COMMAND	Set bar code height	BAR CODE COMMANDS
GS k	EXECUTING COMMAND	Print bar code	BAR CODE COMMANDS
GS r	EXECUTING COMMAND	Transmit status	STATUS COMMANDS
* GS v 0	EXECUTING COMMAND	Print raster bit image	BIT-IMAGE COMMANDS
GS w	SETTING COMMAND	Set bar code width	BAR CODE COMMANDS

* obsolete commands

CONFIDENTIAL

The following commands are supported only by Simplified Chinese/Traditional Chinese/Korean/Japanese models.

Command	Classification	Name	Function type
FS !	SETTING COMMAND	Select print mode(s) for Kanji characters	KANJI COMMANDS
FS &	SETTING COMMAND	Select Kanji character mode	KANJI COMMANDS
FS -	SETTING COMMAND	Turn underline mode on/off for Kanji characters	KANJI COMMANDS
FS .	SETTING COMMAND	Cancel Kanji character mode	KANJI COMMANDS
FS 2	SETTING COMMAND	Define user-defined Kanji characters	KANJI COMMANDS
FS C	SETTING COMMAND	Select Kanji character code system	KANJI COMMANDS
FS S	SETTING COMMAND	Set Kanji character spacing	KANJI COMMANDS
FS W	SETTING COMMAND	Turn quadruple-size mode on/off for Kanji characters	KANJI COMMANDS

CONFIDENTIAL

The following commands are supported only by the printers with the optional Magnetic Ink Character Recognition (MICR) reader. (The MICR reader is a factory-installed option.)

Command	Name	Function type
DLE EOT	Transmit real-time status	STATUS COMMANDS
FS (f	Select MICR data handling	CONTROL OPTION COMMANDS
* FS a 0	Read check paper	CONTROL OPTION COMMANDS
* FS a 1	Load check paper to print starting position	CONTROL OPTION COMMANDS
* FS a 2	Eject check paper	CONTROL OPTION COMMANDS
* FS b	Request retransmission of check paper reading result	CONTROL OPTION COMMANDS
FS c	Clean MICR mechanism	CONTROL OPTION COMMANDS

The following commands are supported only by the printers with the Image scanner.

Command	Name	Function type
FS (g	Sets processing method for image data	CONTROL OPTION COMMANDS
GS (G	Select cut sheet control function(s)	CONTROL OPTION COMMANDS

* **obsolete commands**

TM-U675 SUPPORTED COMMANDS

Command	Classification	Name	Function type
HT	EXECUTING COMMAND	Horizontal tab	PRINT POSITION COMMANDS
LF	EXECUTING COMMAND	Print and line feed	PRINT COMMANDS
FF (in standard mode)	EXECUTING COMMAND	Print and eject cut sheet (in standard mode)	PRINT COMMANDS
FF (in page mode)	EXECUTING COMMAND	Print and return to standard mode (in page mode)	PRINT COMMANDS
CR	EXECUTING COMMAND	Print and carriage return	PRINT COMMANDS
CAN	EXECUTING COMMAND	Cancel print data in page mode	CHARACTER COMMANDS
DLE EOT	EXECUTING COMMAND	Transmit real-time status	STATUS COMMANDS
DLE ENQ	EXECUTING COMMAND	Send real-time request to printer	MISCELLANEOUS COMMANDS
DLE DC4 (fn = 1)	EXECUTING + SETTING	Generate pulse in real time	MISCELLANEOUS COMMANDS
DLE DC4 (fn = 2)	EXECUTING + SETTING	Execute power-off sequence	MISCELLANEOUS COMMANDS
DLE DC4 (fn = 8)	EXECUTING + SETTING	Clear buffer(s)	MISCELLANEOUS COMMANDS
ESC FF	EXECUTING COMMAND	Print data in page mode	PRINT COMMANDS
ESC SP	SETTING COMMAND	Set right-side character spacing	CHARACTER COMMANDS
ESC !	SETTING COMMAND	Select print mode(s)	CHARACTER COMMANDS
ESC \$	EXECUTING COMMAND	Set absolute print position	PRINT POSITION COMMANDS

CONFIDENTIAL

Command	Classification	Name	Function type
ESC %	SETTING COMMAND	Select/cancel user-defined character set	CHARACTER COMMANDS
ESC &	SETTING COMMAND	Define user-defined characters	CHARACTER COMMANDS
ESC *	EXECUTING COMMAND	Select bit-image mode	BIT-IMAGE COMMANDS
ESC -	SETTING COMMAND	Turn underline mode on/off	CHARACTER COMMANDS
ESC 2	SETTING COMMAND	Select default line spacing	LINE SPACING COMMANDS
ESC 3	SETTING COMMAND	Set line spacing	LINE SPACING COMMANDS
ESC <	EXECUTING COMMAND	Return home	MECHANISM CONTROL COMMANDS
ESC =	SETTING COMMAND	Select peripheral device	MISCELLANEOUS COMMANDS
ESC ?	SETTING COMMAND	Cancel user-defined characters	CHARACTER COMMANDS
ESC @	EXECUTING + SETTING	Initialize printer	MISCELLANEOUS COMMANDS
ESC D	SETTING COMMAND	Set horizontal tab positions	PRINT POSITION COMMANDS
ESC E	SETTING COMMAND	Turn emphasized mode on/off	CHARACTER COMMANDS
ESC F	SETTING COMMAND	Set/cancel cut sheet reverse eject	MECHANISM CONTROL COMMANDS
ESC G	SETTING COMMAND	Turn double-strike mode on/off	CHARACTER COMMANDS
ESC J	EXECUTING COMMAND	Print and feed paper	PRINT COMMANDS
ESC K	EXECUTING COMMAND	Print and reverse feed	PRINT COMMANDS
ESC L	EXECUTING COMMAND	Select page mode	MISCELLANEOUS COMMANDS
ESC M	SETTING COMMAND	Select character font	CHARACTER COMMANDS

CONFIDENTIAL

Command	Classification	Name	Function type
ESC R	SETTING COMMAND	Select an international character set	CHARACTER COMMANDS
ESC S	EXECUTING COMMAND	Select standard mode	MISCELLANEOUS COMMANDS
ESC T	SETTING COMMAND	Select print direction in page mode	PRINT POSITION COMMANDS
ESC U	SETTING COMMAND	Turn unidirectional printing mode on/off	MECHANISM CONTROL COMMANDS
ESC V	SETTING COMMAND	Turn 90° clockwise rotation mode on/off	CHARACTER COMMANDS
ESC W	SETTING COMMAND	Set print area in page mode	PRINT POSITION COMMANDS
ESC \	EXECUTING COMMAND	Set relative print position	PRINT POSITION COMMANDS
ESC a	SETTING COMMAND	Select justification	PRINT POSITION COMMANDS
ESC c 0	EXECUTING + SETTING	Select paper type(s) for printing	PRINTING PAPER COMMANDS
ESC c 1	SETTING COMMAND	Select paper type(s) for command settings	PRINTING PAPER COMMANDS
ESC c 3	SETTING COMMAND	Select paper sensor(s) to output paper-end signals	PAPER SENSOR COMMANDS
ESC c 4	SETTING COMMAND	Select paper sensor(s) to stop printing	PAPER SENSOR COMMANDS
ESC c 5	SETTING COMMAND	Enable/disable panel buttons	PANEL BUTTON COMMAND
ESC d	EXECUTING COMMAND	Print and feed n lines	PRINT COMMANDS
ESC e	EXECUTING COMMAND	Print and reverse feed n lines	PRINT COMMANDS
ESC f	SETTING COMMAND	Set cut sheet wait time	PRINTING PAPER COMMANDS
ESC p	EXECUTING COMMAND	Generate pulse	MISCELLANEOUS COMMANDS
ESC q	EXECUTING COMMAND	Release paper	MECHANISM CONTROL COMMANDS

CONFIDENTIAL

Command	Classification	Name	Function type
ESC t	SETTING COMMAND	Select character code table	CHARACTER COMMANDS
ESC {	SETTING COMMAND	Turn upside-down printing mode on/off	CHARACTER COMMANDS
* FS (e	EXECUTING COMMAND	Enable/disable Automatic Status Back (ASB) for optional functions (extended status)	STATUS COMMANDS
FS L	SETTING COMMAND	Select double-density page mode	MISCELLANEOUS COMMANDS
* FS p	EXECUTING COMMAND	Print NV bit image	BIT-IMAGE COMMANDS
* FS q	SETTING COMMAND	Define NV bit image	BIT-IMAGE COMMANDS
GS !	SETTING COMMAND	Select character size	CHARACTER COMMANDS
GS \$	EXECUTING COMMAND	Set absolute vertical print position in page mode	PRINT POSITION COMMANDS
GS (A	EXECUTING COMMAND	Execute test print	MISCELLANEOUS COMMANDS
GS (B	SETTING COMMAND	Customize ASB-status bits	STATUS COMMANDS
GS (C	EXECUTING + SETTING	Edit NV user memory	CUSTOMIZE COMMANDS
GS (D	EXECUTING + SETTING	Enable/disable real-time command	MISCELLANEOUS COMMANDS
GS (E	EXECUTING + SETTING	Set user setup commands	CUSTOMIZE COMMANDS
GS (G	EXECUTING + SETTING	Select cut sheet control function(s)	PRINTING PAPER COMMANDS
GS (L GS 8 L	EXECUTING + SETTING	Set graphics data	BIT-IMAGE COMMANDS
GS (M	EXECUTING + SETTING	Customize printer control value(s)	CUSTOMIZE COMMANDS
* GS *	SETTING COMMAND	Define downloaded bit image	BIT-IMAGE COMMANDS
* GS /	EXECUTING COMMAND	Print downloaded bit image	BIT-IMAGE COMMANDS

* obsolete commands

CONFIDENTIAL

Command	Classification	Name	Function type
GS :	EXECUTING + SETTING	Start/end macro definition	MACRO FUNCTION COMMANDS
* GS E	SETTING COMMAND	Select head control method	MISCELLANEOUS COMMANDS
GS I	EXECUTING COMMAND	Transmit printer ID	MISCELLANEOUS COMMANDS
GS L	SETTING COMMAND	Set left margin	PRINT POSITION COMMANDS
GS P	SETTING COMMAND	Set horizontal and vertical motion units	MISCELLANEOUS COMMANDS
GS T	EXECUTING COMMAND	Set print position to the beginning of print line	PRINT POSITION COMMANDS
GS W	SETTING COMMAND	Set print area width	PRINT POSITION COMMANDS
GS \	EXECUTING COMMAND	Set relative vertical print position in page mode	PRINT POSITION COMMANDS
GS ^	EXECUTING COMMAND	Execute macro	MACRO FUNCTION COMMANDS
GS a	EXECUTING + SETTING	Enable/disable Automatic Status Back (ASB)	STATUS COMMANDS
GS f	SETTING COMMAND	Select font for HRI characters	BAR CODE COMMANDS
GS g 0	SETTING COMMAND	Initialize maintenance counter	MISCELLANEOUS COMMANDS
GS g 2	EXECUTING COMMAND	Transmit maintenance counter	MISCELLANEOUS COMMANDS
GS r	EXECUTING COMMAND	Transmit status	STATUS COMMANDS
* GS v 0	EXECUTING COMMAND	Print raster bit image	BIT-IMAGE COMMANDS

* obsolete commands

CONFIDENTIAL

The following commands are supported only by the printers with the optional Magnetic Ink Character Recognition (MICR) reader. (The MICR reader is a factory-installed option.)

Command	Name	Function type
DLE EOT	Transmit real-time status	STATUS COMMANDS
FS (f	Select MICR data handling	CONTROL OPTION COMMANDS
* FS a 0	Read check paper	CONTROL OPTION COMMANDS
* FS a 1	Load check paper to print starting position	CONTROL OPTION COMMANDS
* FS a 2	Eject check paper	CONTROL OPTION COMMANDS
* FS b	Request retransmission of check paper reading result	CONTROL OPTION COMMANDS
FS c	Clean MICR mechanism	CONTROL OPTION COMMANDS

* obsolete commands

CONFIDENTIAL

The following commands are supported only by Simplified Chinese/Traditional Chinese/Korean/Japanese models.

Command	Classification	Name	Function type
FS !	SETTING COMMAND	Select print mode(s) for Kanji characters	KANJI COMMANDS
FS &	SETTING COMMAND	Select Kanji character mode	KANJI COMMANDS
FS -	SETTING COMMAND	Turn underline mode on/off for Kanji characters	KANJI COMMANDS
FS .	SETTING COMMAND	Cancel Kanji character mode	KANJI COMMANDS
FS 2	SETTING COMMAND	Define user-defined Kanji characters	KANJI COMMANDS
FS C	SETTING COMMAND	Select Kanji character code system	KANJI COMMANDS
FS S	SETTING COMMAND	Set Kanji character spacing	KANJI COMMANDS
FS W	SETTING COMMAND	Turn quadruple-size mode on/off for Kanji characters	KANJI COMMANDS

TM-J9000/J9100 SUPPORTED COMMANDS

Command	Classification	Name	Function type
FF (in standard mode)	EXECUTING COMMAND	Print and eject cut sheet (in standard mode)	PRINT COMMANDS
ESC K	EXECUTING COMMAND	Print and reverse feed	PRINT COMMANDS
ESC 2	SETTING COMMAND	Select default line spacing	LINE SPACING COMMANDS
ESC 3	SETTING COMMAND	Set line spacing	LINE SPACING COMMANDS
ESC SP	SETTING COMMAND	Set right-side character spacing	CHARACTER COMMANDS
ESC !	SETTING COMMAND	Select print mode(s)	CHARACTER COMMANDS
ESC &	SETTING COMMAND	Define user-defined characters	CHARACTER COMMANDS
ESC -	SETTING COMMAND	Turn underline mode on/off	CHARACTER COMMANDS
ESC M	SETTING COMMAND	Select character font	CHARACTER COMMANDS
ESC R	SETTING COMMAND	Select an international character set	CHARACTER COMMANDS
GS (N	SETTING COMMAND	Select character style(s)	CHARACTER COMMANDS
GS !	SETTING COMMAND	Select character size	CHARACTER COMMANDS
ESC c 0	EXECUTING + SETTING	Select paper type(s) for printing	PRINTING PAPER COMMANDS
ESC c 1	SETTING COMMAND	Select paper type(s) for command settings	PRINTING PAPER COMMANDS
ESC f	SETTING COMMAND	Set cut sheet wait time	PRINTING PAPER COMMANDS
GS (G	EXECUTING + SETTING	Select cut sheet control function(s)	PRINTING PAPER COMMANDS

CONFIDENTIAL

Command	Classification	Name	Function type
ESC c 5	SETTING COMMAND	Enable/disable panel buttons	PANEL BUTTON COMMAND
ESC c 3	SETTING COMMAND	Select paper sensor(s) to output paper-end signals	PAPER SENSOR COMMANDS
ESC c 4	SETTING COMMAND	Select paper sensor(s) to stop printing	PAPER SENSOR COMMANDS
ESC \$	EXECUTING COMMAND	Set absolute print position	PRINT POSITION COMMANDS
ESC T	SETTING COMMAND	Select print direction in page mode	PRINT POSITION COMMANDS
ESC W	SETTING COMMAND	Set print area in page mode	PRINT POSITION COMMANDS
ESC \	EXECUTING COMMAND	Set relative print position	PRINT POSITION COMMANDS
GS \$	EXECUTING COMMAND	Set absolute vertical print position in page mode	PRINT POSITION COMMANDS
GS L	SETTING COMMAND	Set left margin	PRINT POSITION COMMANDS
GS W	SETTING COMMAND	Set print area width	PRINT POSITION COMMANDS
GS \	EXECUTING COMMAND	Set relative vertical print position in page mode	PRINT POSITION COMMANDS
ESC *	EXECUTING COMMAND	Select bit-image mode	BIT-IMAGE COMMANDS
GS (L GS 8 L	EXECUTING + SETTING	Set graphics data	BIT-IMAGE COMMANDS
DLE EOT	EXECUTING COMMAND	Transmit real-time status	STATUS COMMANDS
FS (e	EXECUTING COMMAND	Enable/disable Automatic Status Back (ASB) for optional functions (extended status)	STATUS COMMANDS
GS a	EXECUTING + SETTING	Enable/disable Automatic Status Back (ASB)	STATUS COMMANDS
GS j	EXECUTING COMMAND	Enable/disable Automatic Status Back (ASB) for ink	STATUS COMMANDS

CONFIDENTIAL

Command	Classification	Name	Function type
GS r	EXECUTING COMMAND	Transmit status	STATUS COMMANDS
GS f	SETTING COMMAND	Select font for HRI characters	BAR CODE COMMANDS
GS k	EXECUTING COMMAND	Print bar code	BAR CODE COMMANDS
GS h	SETTING COMMAND	Set bar code height	BAR CODE COMMANDS
GS w	SETTING COMMAND	Set bar code width	BAR CODE COMMANDS
ESC <	EXECUTING COMMAND	Return home	MECHANISM CONTROL COMMANDS
ESC U	SETTING COMMAND	Turn unidirectional print mode on/off	MECHANISM CONTROL COMMANDS
DLE EOT (n = 8)	EXECUTING COMMAND	Transmit real-time status for ink	CONTROL OPTION COMMANDS
FS (f	EXECUTING COMMAND	Select MICR data handling	CONTROL OPTION COMMANDS
GS (G	EXECUTING COMMAND	Select cut sheet control function(s) (MICR and image scanner functions)	CONTROL OPTION COMMANDS
DLE ENQ	EXECUTING COMMAND	Send real-time request to printer	MISCELLANEOUS COMMANDS
DLE DC4 (fn = 1)	EXECUTING + SETTING	Generate pulse in real time	MISCELLANEOUS COMMANDS
ESC (A	EXECUTING + SETTING	Control beeper tones	MISCELLANEOUS COMMANDS
ESC =	SETTING COMMAND	Select peripheral device	MISCELLANEOUS COMMANDS
ESC @	EXECUTING + SETTING	Initialize printer	MISCELLANEOUS COMMANDS
ESC L	EXECUTING COMMAND	Select page mode	MISCELLANEOUS COMMANDS
GS (A	EXECUTING COMMAND	Execute test print	MISCELLANEOUS COMMANDS

CONFIDENTIAL

Command	Classification	Name	Function type
GS (D	EXECUTING + SETTING	Enable/disable real-time command	MISCELLANEOUS COMMANDS
GS (H	EXECUTING COMMAND	Request transmission of response or status	MISCELLANEOUS COMMANDS
GS (K	EXECUTING COMMAND	Select print control method(s)	MISCELLANEOUS COMMANDS
GS I	EXECUTING COMMAND	Transmit printer ID	MISCELLANEOUS COMMANDS
GS P	SETTING COMMAND	Set horizontal and vertical motion units	MISCELLANEOUS COMMANDS
GS g 0	SETTING COMMAND	Initialize maintenance counter	MISCELLANEOUS COMMANDS
GS g 2	EXECUTING COMMAND	Transmit maintenance counter	MISCELLANEOUS COMMANDS
GS (z pL pH fn [parameter]	SETTING COMMAND	Model specific control	MISCELLANEOUS COMMANDS
GS (E	EXECUTING + SETTING	Set user setup commands	CUSTOMIZE COMMANDS
GS (M	EXECUTING + SETTING	Customize printer control value(s)	CUSTOMIZE COMMANDS

COMMAND LIST

- **Commands Arranged by Function**
- **Commands in Alphanumeric Order**

COMMANDS ARRANGED BY FUNCTION

The print samples are images of the printing results of the program examples; they do not represent actual printing.

In this table, click any item to see the command description with program examples and print samples. You can also use the bookmarks on the left side of the screen.

[Print Commands](#)

[Line Spacing Commands](#)

[Character Commands](#)

[Printing Paper Commands](#)

[Panel Button Commands](#)

[Paper Sensor Commands](#)

[Print Position Commands](#)

[Bit Image Commands](#)

[Status Commands](#)

[Bar Code Commands](#)

[Macro Function Commands](#)

[Mechanism Control Commands](#)

[Control Option Commands](#)

[Miscellaneous Commands](#)

[Kanji Commands](#)

[Two Dimension Code Commands](#)

[Customize Commands](#)

COMMANDS IN ALPHANUMERIC ORDER

In this table, click any name to see the command description with program examples and print samples. The print samples are images of the printing results of the program examples; they do not represent actual printing.

Command	Name	Function type
HT	Horizontal tab	PRINT POSITION COMMANDS
LF	Print and line feed	PRINT COMMANDS
FF (in standard mode)	Print and eject cut sheet (in standard mode)	PRINT COMMANDS
FF (in page mode)	Print and return to standard mode (in page mode)	PRINT COMMANDS
CR	Print and carriage return	PRINT COMMANDS
CAN	Cancel print data in page mode	CHARACTER COMMANDS
*DLE EOT	Transmit real-time status	STATUS COMMANDS
*DLE EOT (n = 8)	Transmit real-time status for ink	CONTROL OPTION COMMANDS
DLE ENQ	Send real-time request to printer	MISCELLANEOUS COMMANDS
DLE DC4 (fn = 1)	Generate pulse in real time	MISCELLANEOUS COMMANDS
DLE DC4 (fn = 2)	Execute power-off sequence	MISCELLANEOUS COMMANDS
DLE DC4 (fn = 7)	Transmit specified status in real time	MISCELLANEOUS COMMANDS
DLE DC4 (fn = 8)	Clear buffer(s)	MISCELLANEOUS COMMANDS

* Three command names have been changed:

from **DLE EOT NUL** to **DLE EOT (n = 0)**

from **DLE EOT BEL** to **DLE EOT (n = 7)**

from **DLE EOT BS** to **DLE EOT (n = 8)**

CONFIDENTIAL

Command	Name	Function type
ESC FF	Print data in page mode	PRINT COMMANDS
ESC SP	Set right-side character spacing	CHARACTER COMMANDS
ESC !	Select print mode(s)	CHARACTER COMMANDS
ESC \$	Set absolute print position	PRINT POSITION COMMANDS
ESC %	Select/cancel user-defined character set	CHARACTER COMMANDS
ESC &	Define user-defined characters	CHARACTER COMMANDS
ESC *	Select bit-image mode	BIT-IMAGE COMMANDS
ESC -	Turn underline mode on/off	CHARACTER COMMANDS
ESC 2	Select default line spacing	LINE SPACING COMMANDS
ESC 3	Set line spacing	LINE SPACING COMMANDS
ESC <	Return home	MECHANISM CONTROL COMMANDS
ESC =	Select peripheral device	MISCELLANEOUS COMMANDS
ESC ?	Cancel user-defined characters	CHARACTER COMMANDS
ESC @	Initialize printer	MISCELLANEOUS COMMANDS
ESC C	Set cut sheet eject length	LINE SPACING COMMANDS
ESC D	Set horizontal tab positions	PRINT POSITION COMMANDS
ESC E	Turn emphasized mode on/off	CHARACTER COMMANDS
ESC F	Set/cancel cut sheet reverse eject	MECHANISM CONTROL COMMANDS

CONFIDENTIAL

Command	Name	Function type
ESC G	Turn double-strike mode on/off	CHARACTER COMMANDS
ESC J	Print and feed paper	PRINT COMMANDS
ESC K	Print and reverse feed	PRINT COMMANDS
ESC L	Select page mode	MISCELLANEOUS COMMANDS
ESC M	Select character font	CHARACTER COMMANDS
ESC R	Select an international character set	CHARACTER COMMANDS
ESC S	Select standard mode	MISCELLANEOUS COMMANDS
ESC T	Select print direction in page mode	PRINT POSITION COMMANDS
ESC U	Turn unidirectional printing mode on/off	MECHANISM CONTROL COMMANDS
ESC V	Turn 90° clockwise rotation mode on/off	CHARACTER COMMANDS
ESC W	Set print area in page mode	PRINT POSITION COMMANDS
ESC \	Set relative print position	PRINT POSITION COMMANDS
ESC a	Select justification	PRINT POSITION COMMANDS
ESC c 0	Select paper type(s) for printing	PRINTING PAPER COMMANDS
ESC c 1	Select paper type(s) for command settings	PRINTING PAPER COMMANDS
ESC c 3	Select paper sensor(s) to output paper-end signals	PAPER SENSOR COMMANDS
ESC c 4	Select paper sensor(s) to stop printing	PAPER SENSOR COMMANDS
ESC c 5	Enable/disable panel buttons	PANEL BUTTON COMMAND

CONFIDENTIAL

Command	Name	Function type
ESC d	Print and feed n lines	PRINT COMMANDS
ESC e	Print and reverse feed n lines	PRINT COMMANDS
ESC f	Set cut sheet wait time	PRINTING PAPER COMMANDS
ESC p	Generate pulse	MISCELLANEOUS COMMANDS
ESC q	Release paper	MECHANISM CONTROL COMMANDS
ESC t	Select character code table	CHARACTER COMMANDS
ESC {	Turn upside-down printing mode on/off	CHARACTER COMMANDS
FS !	Select print mode(s) for Kanji characters	KANJI COMMANDS
FS &	Select Kanji character mode	KANJI COMMANDS
FS (e	Enable/disable Automatic Status Back (ASB) for optional functions (extended status)	STATUS COMMANDS
FS (g	Set processing method for image data	CONTROL OPTION COMMANDS
FS -	Turn underline mode on/off for Kanji characters	KANJI COMMANDS
FS .	Cancel Kanji character mode	KANJI COMMANDS
FS 2	Define user-defined Kanji characters	KANJI COMMANDS
FS C	Select Kanji character code system	KANJI COMMANDS
FS L	Select double-density page mode	MISCELLANEOUS COMMANDS
* FS a 0	Read check paper	CONTROL OPTION COMMANDS

* **obsolete commands**

CONFIDENTIAL

Command	Name	Function type
* FS a 1	Load check paper to print starting position	CONTROL OPTION COMMANDS
* FS a 2	Eject check paper	CONTROL OPTION COMMANDS
* FS b	Request retransmission of check paper reading result	CONTROL OPTION COMMANDS
* FS g 1	Write to NV user memory	CUSTOMIZE COMMANDS
* FS g 2	Read from NV user memory	CUSTOMIZE COMMANDS
* FS p	Print NV bit image	BIT-IMAGE COMMANDS
* FS q	Define NV bit image	BIT-IMAGE COMMANDS
GS (A	Execute test print	MISCELLANEOUS COMMANDS
GS (B	Customize ASB-status bits	STATUS COMMANDS
GS (C	Edit NV user memory	CUSTOMIZE COMMANDS
GS (D	Enable/disable real-time command	MISCELLANEOUS COMMANDS
GS (E	Set user setup commands	CUSTOMIZE COMMANDS
GS (G	Select cut sheet control function(s)	CONTROL OPTION COMMANDS
GS (G	Select cut sheet control function(s)	PRINTING PAPER COMMANDS
GS (H	Request transmission of response or status	MISCELLANEOUS COMMANDS
GS (K	Select print control method(s)	MISCELLANEOUS COMMANDS
GS (L GS 8 L	Set graphics data	BIT-IMAGE COMMANDS

* **obsolete commands**

CONFIDENTIAL

Command	Name	Function type
GS (M	Customize printer control value(s)	CUSTOMIZE COMMANDS
GS (N	Select character style(s)	CHARACTER COMMANDS
GS (P	Select page mode control function(s)	MISCELLANEOUS COMMANDS
GS (k	Set up and print symbol	TWO DIMENSION CODE COMMANDS
GS (z	Model specific control	MISCELLANEOUS COMMANDS
GS !	Select character size	CHARACTER COMMANDS
GS \$	Set absolute vertical print position in page mode	PRINT POSITION COMMANDS
* GS *	Define downloaded bit image	BIT-IMAGE COMMANDS
* GS /	Print downloaded bit image	BIT-IMAGE COMMANDS
GS :	Start/end macro definition	MACRO FUNCTION COMMANDS
GS B	Turn white/black reverse printing mode on/off	CHARACTER COMMANDS
* GS E	Select head control method	MISCELLANEOUS COMMANDS
GS H	Select printing position of HRI characters	BAR CODE COMMANDS
GS I	Transmit printer ID	MISCELLANEOUS COMMANDS
GS L	Set left margin	PRINT POSITION COMMANDS
GS P	Set horizontal and vertical motion units	MISCELLANEOUS COMMANDS
* GS Q 0	Print variable vertical size bit image	BIT-IMAGE COMMANDS

* obsolete commands

CONFIDENTIAL

Command	Name	Function type
GS T	Set print position to the beginning of print line	PRINT POSITION COMMANDS
GS V	Select cut mode and cut paper	MECHANISM CONTROL COMMANDS
GS W	Set print area width	PRINT POSITION COMMANDS
GS \	Set relative vertical print position in page mode	PRINT POSITION COMMANDS
GS ^	Execute macro	MACRO FUNCTION COMMANDS
GS a	Enable/disable Automatic Status Back (ASB)	STATUS COMMANDS
GS b	Turn smoothing mode on/off	CHARACTER COMMANDS
GS f	Select font for HRI characters	BAR CODE COMMANDS
GS g 0	Initialize maintenance counter	MISCELLANEOUS COMMANDS
GS g 2	Transmit maintenance counter	MISCELLANEOUS COMMANDS
GS h	Set bar code height	BAR CODE COMMANDS
GS j	Enable/disable Automatic Status Back (ASB) for ink	STATUS COMMANDS
GS k	Print bar code	BAR CODE COMMANDS
GS r	Transmit status	STATUS COMMANDS
* GS v 0	Print raster bit image	BIT-IMAGE COMMANDS
GS w	Set bar code width	BAR CODE COMMANDS

* obsolete command

CONFIDENTIAL

The following commands are supported only by Simplified Chinese/Traditional Chinese/Korean/Japanese models.

Command	Name	Function type
FS !	Select print mode(s) for Kanji characters	KANJI COMMANDS
FS &	Select Kanji character mode	KANJI COMMANDS
FS -	Turn underline mode on/off for Kanji characters	KANJI COMMANDS
FS .	Cancel Kanji character mode	KANJI COMMANDS
FS 2	Define user-defined Kanji characters	KANJI COMMANDS
FS C	Select Kanji character code system	KANJI COMMANDS
FS S	Set Kanji character spacing	KANJI COMMANDS
FS W	Turn quadruple-size mode on/off for Kanji characters	KANJI COMMANDS

The following commands are obsolete commands and will not be supported by future printer models. More suitable substitute commands are listed to the right.

Command	Name	Function type	Substitute command
FS a 0	Read check paper	CONTROL OPTION COMMANDS	GS (G <Function 60>
FS a 1	Load check paper to print starting position	CONTROL OPTION COMMANDS	GS (G
FS a 2	Eject check paper	CONTROL OPTION COMMANDS	GS (G <Function 85>
FS b	Request retransmission of check paper reading result	CONTROL OPTION COMMANDS	GS (G <Function 61>
FS g 1	Write to NV user memory	CUSTOMIZE COMMANDS	GS (C
FS g 2	Read from NV user memory	CUSTOMIZE COMMANDS	GS (C
FS p	Print NV bit image	BIT-IMAGE COMMANDS	GS (L GS 8 L
FS q	Define NV bit image	BIT-IMAGE COMMANDS	GS (L GS 8 L
GS E	Select head control method	MISCELLANEOUS COMMANDS	GS (H
GS /	Print downloaded bit image	BIT-IMAGE COMMANDS	GS (L GS 8 L
GS *	Define downloaded bit image	BIT-IMAGE COMMANDS	GS (L GS 8 L
GS Q 0	Print variable vertical size bit image	BIT-IMAGE COMMANDS	GS (L GS 8 L
GS v 0	Print raster bit image	BIT-IMAGE COMMANDS	GS (L GS 8 L

The following commands are supported only by the printers with the optional Magnetic Ink Character Recognition (MICR) reader or the image scanner. (The MICR reader and image scanner are factory-installed options.)

Command	Name	Function type
DLE EOT	Transmit real-time status	STATUS COMMANDS
DLE EOT (n = 8)	Transmit real-time status for ink	CONTROL OPTION COMMANDS
FS (f	Select MICR data handling	CONTROL OPTION COMMANDS
FS (g	Sets processing method for image data	CONTROL OPTION COMMANDS
* FS a 0	Read check paper	CONTROL OPTION COMMANDS
* FS a 1	Load check paper to print starting position	CONTROL OPTION COMMANDS
* FS a 2	Eject check paper	CONTROL OPTION COMMANDS
* FS b	Request retransmission of check paper reading result	CONTROL OPTION COMMANDS
FS c	Clean MICR mechanism	CONTROL OPTION COMMANDS
GS (G	Select cut sheet control function(s) (Control Option)	PRINTING PAPER COMMANDS

* obsolete commands

PRINT COMMANDS

Command	Name
LF	Print and line feed
FF (in standard mode)	Print and eject cut sheet (in standard mode)
FF (in page mode)	Print and return to standard mode (in page mode)
CR	Print and carriage return
ESC FF	Print data in page mode
ESC J	Print and feed paper
ESC K	Print and reverse feed
ESC d	Print and feed n lines
ESC e	Print and reverse feed n lines

[Name] Print and line feed

[Format] ASCII LF
Hex 0A
Decimal 10

[Range] None

[Default] None

[Printers not featuring this command] None

[Description] Prints the data in the print buffer and feeds one line, based on the current line spacing.

- [Notes]
- The amount of paper fed per line is based on the value set using the line spacing command (**ESC 2** or **ESC 3**).
 - After printing, the print position moves to the beginning of the line, and the state of the printer becomes "beginning of the line" and "no data in print buffer."
 - When this command is processed in page mode, only the print position moves, and the printer does not perform actual printing.

[Model-dependent variations]

TM-H6000III, TM-U675

Program Example for all printers

```
PRINT #1, "AAAAAA"; CHR$(&HA);  
PRINT #1, "BBBBB"; CHR$(&HA);
```

Print Sample

AAAAAA
BBBBB

TM-H6000III

When the back of a slip is selected as the paper type, the line spacing is approximately 3.175 mm {1/8 inch}.

In standard mode, if the printer executes this command when the slip (face or back) is selected as the paper type but no paper is in the print head position, the printer executes the three steps below. (The status of "whether paper is in the print head position" can be checked by the slip paper status of **GS r [n = 3,51]**.)

1. The printer ejects the current paper (including the slip removal waiting state). The direction of paper ejection is set to forward.
2. The printer performs waiting process for paper insertion.
3. The printer performs this command for the inserted paper.

TM-U675

In standard mode, if the printer executes this command when the slip is selected as the paper type but no paper is in the print head position, the printer executes the three steps below. (The status of "whether paper is in the print head position" can be checked by the slip paper status of **GS r [n = 3,51]**.)

1. The printer ejects the current paper (including the slip removal waiting state). The direction of paper ejection is set to forward.
2. The printer performs waiting process for paper insertion.
3. The printer performs this command for the inserted paper.

FF (in standard mode)

EXECUTING COMMAND

[Name] Print and eject cut sheet (in standard mode)

[Format] ASCII FF
Hex 0C
Decimal 12

[Range] None

[Default] None

[Printers not featuring this command] None

[Description] In standard mode, prints the data in the print buffer and ejects the cut sheet (slip paper or validation paper), when slip/validation is selected as the active sheet.

- [Notes]
- The description on this page is for standard mode. See **FF** (in page mode) to use this command in page mode.
 - This command is enabled when validation paper or slip paper is selected as the active sheet by **GS (G <Function 80>** or **ESC c 0**.
 - The amount of paper fed is based on the value set using **ESC C**.
 - The cut sheet is ejected in the direction specified by **ESC F**.
 - After the cut sheet is ejected, the printer selects roll paper as the active sheet and the print position moves to the beginning of the line, and the state of the printer becomes "beginning of the line" and "no data in print buffer."
 - For the printer models that support the function of paper ejection waiting, when this command is processed, the printer is in the paper ejection waiting status, and the SLIP LED blinks. In this case, after confirming the paper ejection, the printer performs the next operation. The cut sheet waiting status can be checked by normal ASB status after executing customizing.

[Model-dependent variations]

TM-9000/9100, TM-H6000III, TM-U675**Program Example for all printers**

```
PRINT #1, CHR$(&H1B); "c0";CHR$(4); ← Select paper type
PRINT #1, "AAAAAA"; CHR$(&HA);
PRINT #1, "BBBBBB"; CHR$(&HC);
```

Print Sample

AAAAAA
BBBBBB

Slip paper ejected

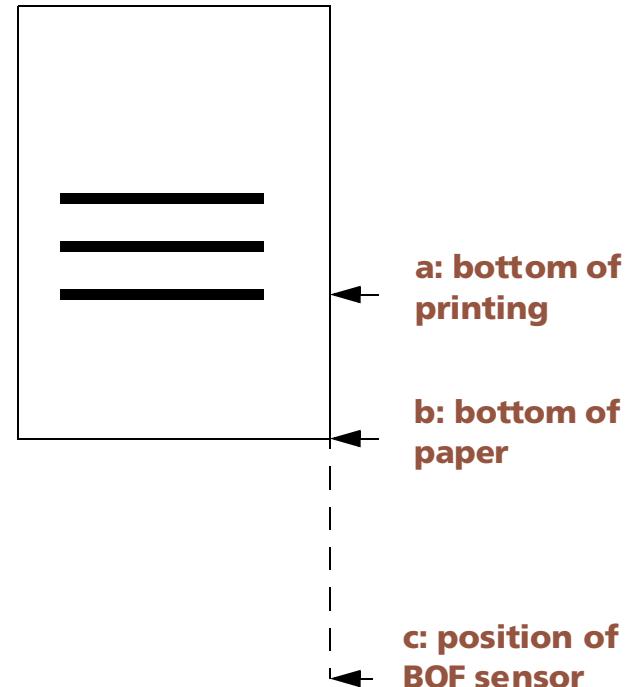
TM-J9000/J9100

After finishing printing, select validation as the active sheet.

TM-H6000III

In standard mode, if the printer executes this command when the slip (face or back) is selected as the paper type but no paper is in the print head position, the printer executes the three steps below. (The status of whether paper is in the print head position can be checked by the slip paper status of GS r [n = 3, 51].)

1. The printer ejects the current paper (including the slip removal waiting state). The direction of paper ejection is set to forward.
 2. The printer performs waiting process for paper insertion.
 3. The printer performs this command for the inserted paper.
- When the face of the slip is selected, there is an area in which reverse feeding is not possible. When the bottom of a slip is in this area, the printer prints data in the print buffer and feeds paper (forward direction), ignoring the setting of ESC F.



Area in which reverse feeding is not possible

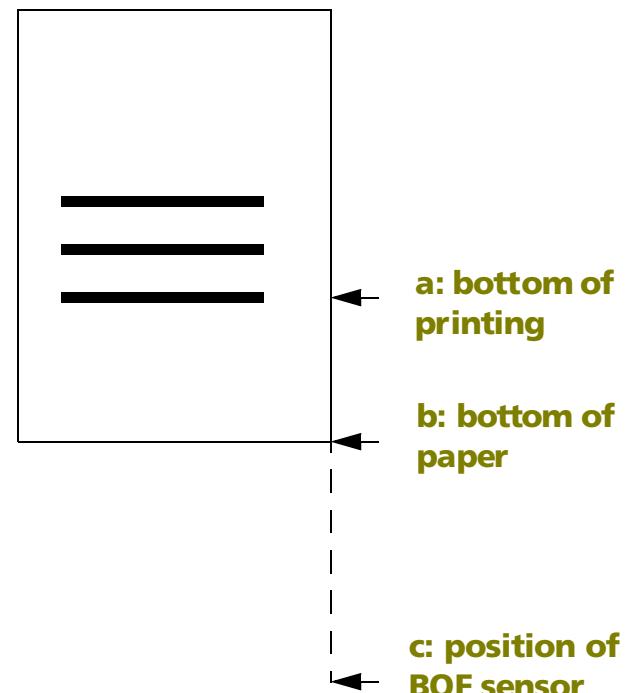
	Equipped with endorsement printer	Not equipped with endorsement printer	Using paper more than 90 mm wide
Maximum distance between a and b	41 mm	58 mm	84 mm
Maximum distance between b and c	92 mm	75 mm	

- The status of "feeds the paper in the reverse direction is disabled" can be checked by the slip paper status of GS r (n = 3, 51).

TM-U675

In standard mode, if the printer executes this command when the slip (face or back) is selected as the paper type but no paper is in the print head position, the printer executes the three steps below. (The status of whether paper is in the print head position can be checked by the slip paper status of GS r (n = 3, 51).)

1. The printer ejects the current paper (including the slip removal waiting state). The direction of paper ejection is set to forward.
 2. The printer performs waiting process for paper insertion.
 3. The printer performs this command for the inserted paper.
- When the face of the slip is selected, there is an area in which reverse feeding is not possible. When the bottom of a slip is in this area, the printer prints data in the print buffer and feeds paper (forward direction), ignoring the setting of ESC F.



Area in which reverse feeding is not possible

	Normal check paper	Using paper more than 90 mm wide
Maximum distance between a and b	58 mm	84 mm
Maximum distance between b and c	75 mm	

- The status of "feeds the paper in the reverse direction is disabled" can be checked by the slip paper status of **GS r (n = 3, 51)**.

FF (in page mode)

EXECUTING COMMAND

[Name] Print and return to standard mode (in page mode)

[Format] ASCII FF
Hex 0C
Decimal 12

[Default] None

[Range] None

[Printers not featuring this command] **TM-U325D**

[Description] In page mode or double-density page mode, prints all the data in the print buffer collectively and switches from page mode or double-density page mode to standard mode.

- The description on this page is for page mode. See **FF (in standard mode)** to use this command in standard mode. Page mode can be selected by **ESC L**.
- The data is deleted in the print area after being printed.
- This command returns the values set by **ESC W** to the default values.
- The value set by **ESC T** is maintained.
- After printing, the print position moves to the beginning of the line, and the state of the printer becomes "beginning of the line" and "no data in print buffer."

[Model-dependent variations]

TM-H6000III, TM-U675

Program Example for all printers

```
PRINT #1, CHR$(&H1B);"L"; ←Select page mode
PRINT #1, CHR$(&H1D);"P";CHR$(180);CHR$(180);
PRINT #1, CHR$(&H1B);"W";CHR$(0);CHR$(0);CHR$(0);
CHR$(0);CHR$(60);CHR$(0);CHR$(90);CHR$(0);
PRINT #1, CHR$(&H1B);"T";CHR$(0);
PRINT #1, "AAAAA"; CHR$(&HA); ←Store characters for printing
PRINT #1, "BBBBB"; CHR$(&HA); ←Store characters for printing
PRINT #1, "CCCCC"; CHR$(&HC); ←Batch print
```

Print Sample

AAAAA
BBBBB
CCCCC

TM-H6000III

In standard mode, if the printer executes this command when the slip (face) is selected as the paper type but no paper is in the print head position, the printer executes the three steps below. (The status of whether paper is in the print head position can be checked by the slip paper status of **GS r [n = 3, 51]**.)

1. The printer ejects the current paper (including the slip removal waiting state).
The direction of paper ejection is set to forward.
2. The printer performs waiting process for paper insertion.
3. The printer performs this command for the inserted paper.

<Validation model has the following notices>

When this printer receives this command when emphasized mode (**ESC !**, **ESC E**) or double-strike mode (**ESC G**) is enabled, it prints all the data in emphasized or double-strike mode.

TM-U675

In standard mode, if the printer executes this command when the slip (face or back) is selected as the paper type but no paper is in the print head position, the printer executes the three steps below. (The status of whether paper is in the print head position can be checked by the slip paper status of **GS r [n = 3, 51]**.)

1. The printer ejects the current paper (including the slip removal waiting state).
The direction of paper ejection is set to forward.
2. The printer performs waiting process for paper insertion.
3. The printer performs this command for the inserted paper.

[Name] Print and carriage return

[Format] ASCII CR
Hex 0D
Decimal 13

[Range] None

[Default] None

[Printers not featuring this command] None

[Description] Executes one of the following operations.

Print head	When auto line feed is enabled	When auto line feed is disabled
Line thermal/shuttle head	Executes printing and one line feed as LF	This command is ignored.
Serial dot head	Executes printing and one line feed as LF	In standard mode, prints the data in the print buffer and moves the print position to the beginning of the print line. In page mode, moves the print position to the beginning of the print line.

- [Notes]
- With a serial interface, auto line feed is disabled.
 - With the parallel interface specification, enabling/disabling auto line feed is selected with a DIP switch or memory switch. The memory switch is changed with **GS (E <Function 3>**.
 - After printing, the print position moves to the beginning of the line, and the state of the printer becomes "beginning of the line" and "no data in print buffer."
 - When this command is processed in page mode, only the print position moves, and the printer does not perform actual printing.

CONFIDENTIAL

[Model-dependent variations]

**TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III,
TM-H5000II, TM-U675, TM-U325D**

Program Example (Line thermal)

```
PRINT #1, "AAAAA";CHR$(&HD);  
PRINT #1, "BBBBB";CHR$(&HA);
```

Print Sample (Line thermal)

AAAAA ←Auto line feed enabled
BBBBB
AAAAA BBBBB ←Auto line feed disabled

Program Example (Serial dot head)

```
PRINT #1, "AAAAA";CHR$(&HD);  
PRINT #1, "BBBBB";CHR$(&HA);
```

Print Sample (Serial dot head)

AAAAA
BBBBB ←Auto line feed enabled
AAAAABBBBB ←Auto line feed disabled

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

Auto line feed for a parallel interface is selected by DIP switch 1-5.

This printer has only a serial dot head.

TM-H6000III

Auto line feed for a parallel interface is selected by DIP switch 1-1.

This command operates in a different way depending on the paper type. A line thermal head is used for printing on roll paper. A serial dot head is used for printing on the face of a slip or validation. A shuttle head is used for printing on the back of a slip.

TM-H5000II

Auto line feed for a parallel interface is selected by DIP switch 1-1.

This command operates in a different way depending on the paper type. A line thermal head is used for printing on roll paper. A serial dot head is used for printing on a slip.

CONFIDENTIAL

TM-U675

Auto line feed for a parallel interface is selected by DIP switch 1-1.

This printer has only a serial dot head.

TM-U325D

This printer has only a serial dot head. Auto line feed for a parallel interface is selected by DIP switch 1-1.

ESC FF

EXECUTING COMMAND

[Name] Print data in page mode

[Format] ASCII ESC FF
Hex 1B 0C
Decimal 27 12

[Range] None

[Default] None

[Printers not featuring this command] **TM-U325D**

[Description] In page mode or double-density page mode, prints all the data in the print buffer collectively.

- [Notes]
 - This command is enabled only in page mode. Page mode can be selected by **ESC L**, **FS L**.
 - After printing, the printer does not clear the buffered data, the print position, or values set by other commands.
 - The printer returns to standard mode with **FF**, **ESC S**, and **ESC @**. When it returns to standard mode by **ESC @**, all settings are canceled.
 - This command is used to print the data in page mode repeatedly.

[Model-dependent variations]

TM-H6000III, TM-U675

Program Example for all printers

```
PRINT #1, CHR$(&H1B); "L"; ← Select page mode
PRINT #1, CHR$(&H1D); "P"; CHR$(180);CHR$(180);
PRINT #1, CHR$(&H1B); "W"; CHR$(0);CHR$(0);CHR$(0);
CHR$(0);CHR$(120);CHR$(0);CHR$(170);CHR$(0);
PRINT #1, CHR$(&H1B); "T";CHR$(0); ← Select print direction
PRINT #1, "AAAAA"; CHR$(&HA); ← Store characters for printing
PRINT #1, "BBBBB"; CHR$(&HA); ← Store characters for printing
PRINT #1, "CCCCC"; CHR$(&H1B);CHR$(&HC); ← Batch print
PRINT #1, CHR$(&HC); ← Batch print and return to standard mode
```

Print Sample

AAAAA
BBBBB
CCCCC

AAAAA
BBBBB
CCCCC

TM-H6000III

In standard mode, if the printer executes this command when the slip (face) is selected as the paper type but no paper is in the print head position, the printer executes the three steps below. (The status of whether paper is in the print head position can be checked by the slip paper status of **GS r [n = 3, 51]**.)

1. The printer ejects the current paper (including the slip removal waiting state). The direction of paper ejection is set to forward.
2. The printer performs waiting process for paper insertion.
3. The printer performs this command for the inserted paper.

<Validation model>

When this printer receives this command when emphasized mode (**ESC !**, **ESC E**) or double-strike mode (**ESC G**) is enabled, it prints all data with the emphasis.

TM-U675

In standard mode, if the printer executes this command when the slip (face or back) is selected as the paper type but no paper is in the print head position, the printer executes the three steps below. (The status of whether paper is in the print head position can be checked by the slip paper status of **GS r [n = 3, 51]**.)

1. The printer ejects the current paper (including the slip removal waiting state). The direction of paper ejection is set to forward.
2. The printer performs waiting process for paper insertion.
3. The printer performs this command for the inserted paper.

ESC J

EXECUTING COMMAND

[Name]	Print and feed paper
[Format]	ASCII ESC J n Hex 1B 4A n Decimal 27 74 n
[Range]	$0 \leq \mathbf{n} \leq 255$
[Default]	None
[Printers not featuring this command]	None
[Description]	Prints the data in the print buffer and feeds the paper [n × (vertical or horizontal motion unit)].
[Notes]	<ul style="list-style-type: none">■ When standard mode is selected, the vertical motion unit is used.■ When page mode is selected, the vertical or horizontal motion unit is used for the print direction set by ESC T.<ul style="list-style-type: none">• When the starting position is set to the upper left or lower right of the print area using ESC T, the vertical (the direction of paper feed) motion unit is used.• When the starting position is set to the upper right or lower left of the print area using ESC T, the horizontal (perpendicular to the direction of paper feed) motion unit is used.■ The maximum paper feed amount is 1016 mm {40 inches}. If the specified amount exceeds 1016 mm {40 inches}, the paper feed amount is automatically set to 1016 mm {40 inches}.■ After printing, the print position moves to the beginning of the line, and the state of the printer becomes "beginning of the line" and "no data in print buffer."■ When this command is processed in page mode, only the print position moves; the printer does not perform actual printing.■ This command is used to temporarily feed a specific length without changing the line spacing set by other commands.

[Model-dependent variations]

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III,
TM-H5000II, TM-U675, TM-U325D

Program Example for all printers

```
PRINT #1, CHR$(&H1D); "P";CHR$(180);CHR$(180);
PRINT #1, "AAAAA"; CHR$(&HA);
PRINT #1, "BBBBB"; CHR$(&H1B); "J";CHR$(100);
PRINT #1, "CCCCC"; CHR$(&HA);
PRINT #1, "DDDDD"; CHR$(&HA);
```

Print Sample

AAAAA
BBBBB
CCCCC
DDDDD



ESC J used to print one line and advance the paper by 100/180 inch

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

The vertical or horizontal motion unit is specified by GS P.

TM-H6000III

The vertical or horizontal motion unit for roll paper, validation, and slip (face) is specified by GS P.

The vertical or horizontal motion unit for a slip (back) is approximately 0.176 mm {1/144 inch}. This is equivalent to 1/2 dot pitch.

When roll paper is selected as the paper type in standard mode or slip (back side) is selected, if the line spacing is less than the highest character in a line, paper is fed to the height of the character.

Example:

If you specify a line spacing as 30 dots to print a line that includes a double-size character vertically (48-dot structure), the printer feeds paper for 48 dots.

In standard mode, if the printer executes this command when the slip (face or back) is selected as the paper type but no paper is in the print head position, the printer executes the three steps below. (The status of “whether paper is in the print head position” can be checked by the slip paper status of GS r [n = 3,51].)

- 1. The printer ejects the current paper (including the slip removal waiting state). The direction of paper ejection is set to forward.**
- 2. The printer performs waiting process for paper insertion.**
- 3. The printer performs this command for the inserted paper.**

TM-H5000II

The vertical or horizontal motion unit is specified by **GS P**.

When roll paper is selected as the paper type in standard mode, if the paper feed amount specified is shorter than the maximum height of the character in the print buffer, paper is fed to the amount of the height of the character.

Example: When a line with double-size characters vertically (48-dot structure) is printed by **ESC J**, if paper feed of 30 dots is specified (**n = 30**), paper is fed 48 dots.

TM-U675

The vertical or horizontal motion unit is specified by **GS P**.

In standard mode, if the printer executes this command when the slip (face or back) is selected as the paper type but no paper is in the print head position, the printer executes the three steps below. (The status of "whether paper is in the print head position" can be checked by the slip paper status of **GS r [n = 3,51]**.)

1. The printer ejects the current paper (including the slip removal waiting state). The direction of paper ejection is set to forward.
2. The printer performs waiting process for paper insertion.
3. The printer performs this command for the inserted paper.

TM-U325D

The vertical motion unit is approximately 0.176 mm {1/144 inch}. This value equals 1/2 dot pitch.

ESC K

EXECUTING COMMAND

[Name] Print and reverse feed

[Format] ASCII ESC K **n**
 Hex 1B 4B **n**
 Decimal 27 75 **n**

[Printers not featuring this command] **TM-J9000/J9100**

[Range] **TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II, TM-U675: 0 ≤ n ≤ 255**
TM-U325D: 0 ≤ n ≤ 48

[Default] None

[Printers not featuring this command] None

[Description] Prints the data in the print buffer and feeds the paper [**n** × (vertical or horizontal motion unit)] in the reverse direction.

- [Notes]
- When standard mode is selected, the vertical (direction of paper feed) motion unit is used.
 - When page mode is selected, the vertical or horizontal motion unit is used for the print direction set by **ESC T**.
 - When the starting position is set to the upper left or lower right of the print area using **ESC T**, the vertical (direction of paper feed) motion unit is used.
 - When the starting position is set to the upper right or lower left of the print area using **ESC T**, the horizontal (perpendicular to direction of paper feed) motion unit is used.
 - The maximum paper feed amount depends on the printer model.
 - After printing, the print position moves to the beginning of the line, and the state of the printer becomes "beginning of the line" and "no data in print buffer."
 - When this command is processed in page mode, only the print position moves; the printer does not perform actual printing.
 - This command is used to temporarily feed a specific length without changing the line spacing set by other commands.

[Model-dependent variations]

**TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II, TM-U675,
TM-U325D****Program Example for all printers**

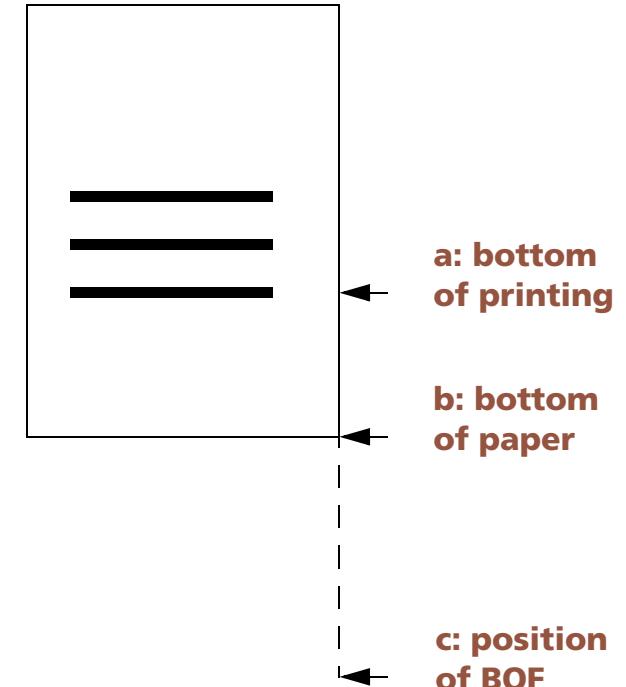
```
PRINT #1, CHR$(&H1D); "P";CHR$(180);CHR$(180);
PRINT #1, "AAAAAA"; CHR$(&HA);
PRINT #1, "BBBBBB"; CHR$(&H1B); "K";CHR$(30);
PRINT #1, "        CCCCCC"; CHR$(&HA);
```

Print SampleAAAAA
BBBBBESC K used to print one line and then reverse
feed the paper by 30/180 inch**TM-J7500/7600****When slip is selected as the active sheet, the printer processes this command.****The vertical motion unit for the face of a slip is specified by GS P.****The maximum paper feed amount is 1016 mm {40 inches} in the reverse direction. If the specified amount exceeds the maximum paper feed amount, the printer feeds the paper for the maximum amount in the reverse direction.****TM-J7000/7100****When slip (face) is selected as the active sheet, the printer processes this command.****Don't use this command when the back of a slip is selected as the active sheet.****The vertical motion unit for the face of a slip is specified by GS P.****The maximum paper feed amount is 1016 mm {40 inches} in the reverse direction. If the specified amount exceeds the maximum paper feed amount, the printer feeds the paper for the maximum amount in the reverse direction.****TM-H6000III**

- **When slip (face or back) is selected as the active sheet, the printer processes this command.**
- **The vertical motion unit for the face of a slip is specified by GS P.**

- The maximum paper feed amount is 1016 mm {40 inches} in the reverse direction. If the specified amount exceeds the maximum paper feed amount, the printer feeds the paper for the maximum amount in the reverse direction.
- On the back of the slip, the paper feed amount is set to [vertical motion unit = 0.176 mm {1/144 inch}]. The unit equals 1/2 dot pitch.
- When the back of the slip is selected as the active sheet and print data is stored in the print buffer, the printer prints the data in the print buffer and feeds in the forward direction by the amount corresponding to the print data.
- In standard mode, if the printer executes this command when the slip (face or back) is selected as the active sheet but no paper is in the print head position, the printer executes the three steps below. (The status of "whether paper is in the print head position" can be checked by the slip paper status of GS r [n = 3,51].)
 - The printer ejects the current paper (including the slip removal waiting state). The direction of paper ejection is set to forward.
 - The printer performs waiting process for paper insertion.
 - The printer performs this command for the inserted paper.
- The maximum paper feed amount is 1016 mm {40 inches}.
- When the face of the slip is selected, there is an area in which reverse feeding is not possible. When the bottom of a paper is in this area, the printer prints data in the print buffer and does not feed paper. See the diagram and table below.

Area in which reverse feeding is not possible



	Equipped with endorsement printer	Not equipped with endorsement printer	Using paper more than 90 mm wide
Maximum distance between a and b	41 mm	58 mm	84 mm
Maximum distance between b and c	92 mm	75 mm	

- The status of "feeds the paper in the reverse direction is disabled" can be checked by the slip paper status of **GS r (n = 3,51)**.

TM-H5000II

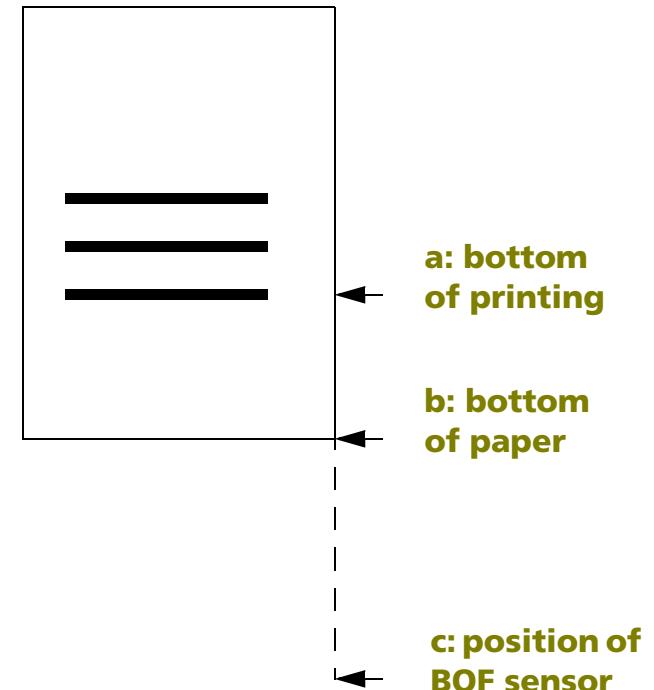
When slip is selected as the active sheet, the printer processes this command. The vertical motion unit is specified by **GS P. In the reverse direction, the maximum paper feed amount is 1016 mm {40 inches}. If the specified amount exceeds 1016 mm {40 inches}, the paper feed amount is automatically set to 1016 mm {40 inches}.**

TM-U675

- The vertical motion unit specified by **GS P** is used.
- The maximum paper feed amount is 1016 mm {40 inches} in the reverse direction. If the specified amount exceeds the maximum paper feed amount, the printer feeds the paper for the maximum amount in the reverse direction.
- In standard mode, if the printer executes this command when the slip (face or back) is selected as the active sheet but no paper is in the print head position, the printer executes the three steps below. (The status of whether paper is in the print head position can be checked by the slip paper status of **GS r [n = 3,51]**.)
 1. The printer ejects the current paper (including the slip removal waiting state). The direction of paper ejection is set to forward.
 2. The printer performs waiting process for paper insertion.
 3. The printer performs this command for the inserted paper.

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- When roll paper is selected as the active sheet in standard mode, the printer prints the data in the print buffer and does not feed paper.
- The command controls printing on slip paper.
- When slip paper is selected, there is an area in which reverse feeding is not possible. When the bottom of a paper is in this area, the printer prints data in the print buffer and does not feed the paper. See the diagram and table below.



Area in which reverse feeding is not possible

	Normal check paper	Using paper more than 90 mm wide
Maximum distance between a and b	58 mm	84 mm
Maximum distance between b and c	75 mm	

- The status of "feeds the paper in the reverse direction is disabled" can be checked by the slip paper status of GS r (n = 3,51).

TM-U325D

This command must not be executed consecutively two times or more. Also, this command must not be used when validation paper is selected. The vertical motion unit is approximately 0.176 mm {1/144 inch}. This value equals 1/2 dot pitch. In the reverse direction, the maximum paper feed amount is 8.467 mm {48/144 inch}. If the specified amount exceeds 8.467 mm {48/144 inch}, the printer only prints the data and does not feed the paper.

ESC d

EXECUTING COMMAND

[Name]	Print and feed n lines
[Format]	ASCII ESC d n Hex 1B 64 n Decimal 27 100 n
[Range]	$0 \leq \mathbf{n} \leq 255$
[Default]	None
[Printers not featuring this command]	None
[Description]	Prints the data in the print buffer and feeds the paper [n × (current line spacing)].
[Notes]	<ul style="list-style-type: none">■ The amount of paper fed per line is based on the value set using the line spacing command (ESC 2 or ESC 3).■ The maximum paper feed amount is 1016 mm {40 inches}. If the specified amount exceeds 1016 mm {40 inches}, the paper feed amount is automatically set to 1016 mm {40 inches}.■ After printing, the print position moves to the beginning of the line, and the state of the printer becomes "beginning of the line" and "no data in print buffer."■ When this command is processed in page mode, only the print position moves; the printer does not perform actual printing.■ This command is used to temporarily feed a specific line without changing the line spacing set by other commands.

[Model-dependent variations]

TM-H6000III, TM-U675

Program Example for all printers	Print Sample
<pre>PRINT #1, "AAAAAA"; CHR\$(&HA); PRINT #1, "BBBBBB"; CHR\$(&H1B); "d";CHR\$(6); PRINT #1, "CCCCC"; CHR\$(&HA);</pre>	<p style="text-align: center;">AAAAAA BBBBBB CCCCC</p>  <p>ESC d used to print one line and advance the paper by six lines</p>

TM-H6000III

When slip (back) is selected as the paper type, the amount of paper feed is $n \times$ approximately 3.175 mm {1/144 inch}.

In standard mode, if the printer executes this command when the slip (face or back) is selected as the paper type but no paper is in the print head position, the printer executes the three steps below. (The status of whether paper is in the print head position can be checked by the slip paper status of GS r [n = 3,51].)

- 1. The printer ejects the current paper (including the slip removal waiting state). The direction of paper ejection is set to forward.**
- 2. The printer performs waiting process for paper insertion.**
- 3. The printer performs this command for the inserted paper.**

TM-U675

In standard mode, if the printer executes this command when the slip is selected as the paper type but no paper is in the print head position, the printer executes the three steps below. (The status of whether paper is in the print head position can be checked by the slip paper status of GS r [n = 3,51].)

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1. The printer ejects the current paper (including the slip removal waiting state). The direction of paper ejection is set to forward.
2. The printer performs waiting process for paper insertion.
3. The printer performs this command for the inserted paper.

ESC e

EXECUTING COMMAND

[Name] Print and reverse feed **n** lines

[Format] ASCII ESC e **n**
 Hex 1B 65 **n**
 Decimal 27 101 **n**

[Printers not featuring this command] **TM-J9000/J9100**

[Range] **TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II, TM-U675: 0 ≤ n ≤ 255**
TM-U325D: 0 ≤ n ≤ 2

[Default] None

[Printers not featuring this command] None

[Description] Prints the data in the print buffer and feeds the paper [**n** × (current line spacing)] in the reverse direction.

[Notes]

- The amount of paper fed per line is based on the value set using the line spacing command (**ESC 2** or **ESC 3**).
- The maximum paper feed amount depends on the printer model.
- After printing, the print position moves to the beginning of the line, and the state of the printer becomes "beginning of the line" and "no data in print buffer."
- In page mode, the print position moves, and the printer does not perform actual printing.
- This command is used to temporarily feed a specific line without changing the line spacing set by other commands.

[Model-dependent variations] **TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II, TM-U675,**
TM-U325D

Program Example for all printers

```
PRINT #1, "AAAAAA"; CHR$(&HA);
PRINT #1, "BBBBB"; CHR$(&H1B); "e";CHR$(1);
PRINT #1, "      CCCCC"; CHR$(&HA);
```

Print Sample

AAAAA
BBBBB



Paper reverse fed one line after printing the
line of Bs

TM-J7500/7600

When slip is selected as the paper type, the printer processes this command.

The maximum reverse paper feed amount is 1016 mm {40 inches}. If the specified amount exceeds 1016 mm {40 inches}, the paper feed amount is automatically set to 1016 mm {40 inches}.

TM-J7000/7100

When slip (face) is selected as the paper type, the printer processes this command. Don't use this command when the back of a slip is selected as the active sheet.

The maximum reverse paper feed amount is 1016 mm {40 inches}. If the specified amount exceeds 1016 mm {40 inches}, the paper feed amount is automatically set to 1016 mm {40 inches}.

TM-H5000II

When slip is selected as the paper type, the printer processes this command. The maximum reverse paper feed amount is 1016 mm {40 inches}. If the specified amount exceeds 1016 mm {40 inches}, the paper feed amount is automatically set to 1016 mm {40 inches}.

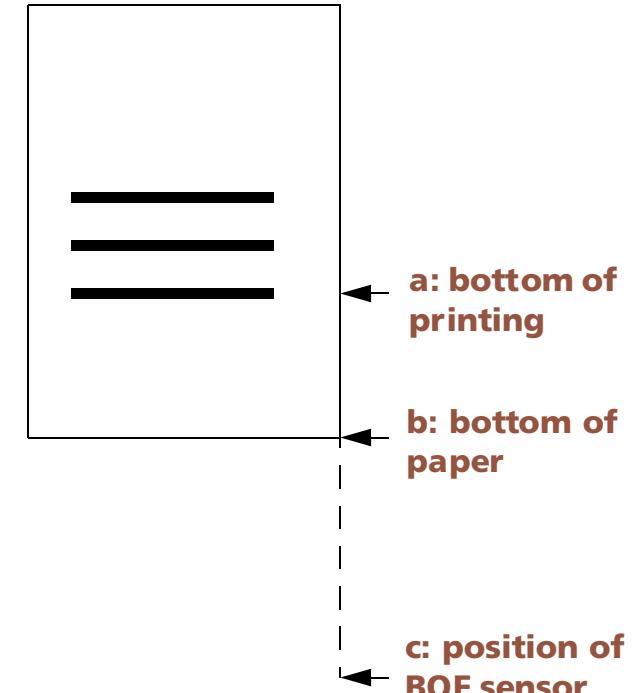
TM-U325D

This command must not be executed consecutively two times or more. Also, this command must not be used when validation paper is selected. In the reverse direction, the maximum paper feed amount is 8.467 mm {48/144 inch}. If the specified amount exceeds 8.467 mm {48/144 inch}, the printer only prints the data and does not feed the paper.

TM-H6000III

- When slip (face or back) is selected as the active sheet, the printer processes this command.
- When the back of the slip is selected, the paper feed amount is set to [$n \times$ approximately 3.175 mm {1/8 inch}].
- When slip (back) is selected as the paper type and print data is stored in the print buffer, the printer prints the data in the print buffer and feeds in the forward direction by the height corresponding to the print data.
- In standard mode, if the printer executes this command when the slip (face or back) is selected as the paper type but no paper in print head position, the printer executes the steps below. The status of whether paper is in the print head position can be checked by the slip paper status of GS r ($n = 3,51$).
 - The printer ejects the current paper (including the slip removal waiting state). The direction of paper ejection is set to forward.
 - The printer performs waiting process for paper insertion.
 - The printer performs this command for the inserted paper.
- When the face of the slip is selected, there is an area in which reverse feeding is not possible. When the bottom of a paper is in this area, the printer prints data in the print buffer and does not feed paper. See the diagram and table below.

Area in which reverse feeding is not possible



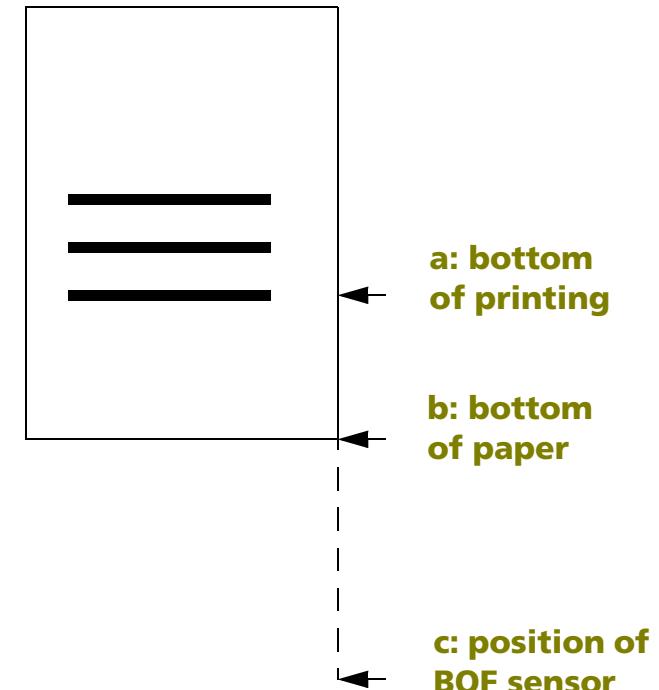
	Equipped with endorsement printer	Not equipped with endorsement printer	Using paper more than 90 mm wide
Maximum distance between a and b	41 mm	58 mm	84 mm
Maximum distance between b and c	92 mm	75 mm	

- The status of "feeds the paper in the reverse direction is disabled" can be checked by the slip paper status of GS r ($n = 3,51$).

TM-U675

- The maximum paper feed amount is 1016 mm {40 inches}. If the specified amount exceeds the maximum paper feed amount, the printer feeds the paper for the maximum amount in the reverse direction.
- When roll paper is selected as the paper type, the printer performs as follows:
 - In standard mode, the printer prints the data in the print buffer and does not feed the paper.
 - In page mode, the print position moves in the reverse direction.
 - In standard mode, if the printer executes this command when the slip (face or back) is selected as the paper type but no paper in print head position, the printer executes the steps below. The status of whether paper is in the print head position can be checked by the slip paper status of **GS r (n = 3,51)**.
 - The printer ejects the current paper (including the slip removal waiting state). The direction of paper ejection is set to forward.
 - The printer performs waiting process for paper insertion.
 - The printer performs this command for the inserted paper.
 - When slip paper is selected, there is an area in which reverse feeding is not possible. When the bottom of a paper is in this area, the printer prints data in the print buffer and does not feed the paper. See the diagram and table below.

Area in which reverse feeding is not possible



	Normal check paper	Using paper more than 90 mm wide
Maximum distance between a and b	58 mm	84 mm
Maximum distance between b and c	75 mm	

- The status of "feeds the paper in the reverse direction is disabled" can be checked by the slip paper status of **GS r (n = 3,51)**.

LINE SPACING COMMANDS

Command	Name
---------	------

- | | |
|--------------|-----------------------------|
| ESC 2 | Select default line spacing |
| ESC 3 | Set line spacing |
| ESC C | Set cut sheet eject length |

ESC 2

SETTING COMMAND

[Name] Select default line spacing

[Format] ASCII ESC 2
 Hex 1B 32
 Decimal 27 50

[Range] None

[Default] None

[Printers not featuring this command] None

[Description] Sets the line spacing to "default line spacing" for the paper type selected by **ESC c 1**.

[Notes]

- This command specifies the line spacing for the paper type selected by **ESC c 1**. The line spacing can be set independently for roll paper, slip, and validation paper.
- The line spacing can be set independently in standard mode and in page mode.
 - Executing this command in standard mode sets the line spacing to "default line spacing" in standard mode.
 - Executing this command in page mode sets the line spacing to "default line spacing" in page mode.
- Selected line spacing is effective until **ESC 3** is executed, **ESC @** is executed, the printer is reset, or the power is turned off.

[Model-dependent variations] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III,**
TM-H5000II, TM-U675, TM-U325D

See program example and print sample for ESC 2 and ESC 3.

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

The default line spacing is 4.23 mm {1/6 inch}; it is equivalent to 30 dots.

TM-H5000II

The default line spacing is 4.23 mm {1/6 inch}; it is equivalent to 30 dots for roll paper and 12 dots for slip. When roll paper is selected as the paper type in standard mode, if the paper feed amount specified is shorter than the maximum height of the character in the line, paper is fed to the amount of the height of the character.

Example: When a line with double-size characters (48 dots) vertically is printed, paper is fed 48 dots.

When a line with normal-size characters (24 dots) vertically is printed, paper is fed 30 dots.

TM-U325D

The default line spacing is 4.23 mm {1/6 inch}; it is equivalent to 12 dots.

TM-H6000III

The default line spacing is 4.23 mm {1/6 inch}; it is equivalent to 30 dots for roll paper and 12 dots for slip/validation. The line spacing set for slip affects the line spacing for the face of the slip. When roll paper is selected as the paper type in standard mode, if the paper feed amount specified is shorter than the maximum height of the character in the line, paper is fed to the amount of the height of the character.

Example: When a line with double-size characters (48 dots) vertically is printed, paper is fed 48 dots.

When a line with normal-size characters (24 dots) vertically is printed, paper is fed 30 dots.

TM-U675

The default line spacing is 4.23 mm {1/6 inch}; it is equivalent to 12 dots.

ESC 3

SETTING COMMAND

[Name]	Set line spacing		
[Format]	ASCII	ESC 3	n
	Hex	1B	33 n
	Decimal	27	51 n
[Range]	$0 \leq \mathbf{n} \leq 255$		
[Default]	“default line spacing” (See ESC 2 for “default line spacing”)		
[Printers not featuring this command]	None		
[Description]	Sets the line spacing to [n × (vertical or horizontal motion unit)] for the paper type selected by ESC c 1 .		
[Notes]	<ul style="list-style-type: none"> ■ The maximum line spacing amount is 1016 mm {40 inches}. If the specified amount exceeds 1016 mm {40 inches}, the paper feed amount is automatically set to 1016 mm {40 inches}. ■ When standard mode is selected, the vertical motion unit is used. ■ When page mode is selected, the vertical or horizontal motion unit is used for the print direction set by ESC T. <ul style="list-style-type: none"> • When the starting position is set to the upper left or lower right of the print area using ESC T, the vertical (direction of paper feed) motion unit is used. • When the starting position is set to the upper right or lower left of the print area using ESC T, the horizontal (perpendicular to paper feed) motion unit is used. ■ This command specifies the line spacing for the paper type selected by ESC c 1. The line spacing can be set independently for roll paper, slip, and validation paper. ■ The line spacing can be set independently in standard mode and in page mode. <ul style="list-style-type: none"> • Executing this command in standard mode sets the line spacing to “default line spacing” in standard mode. • Executing this command in page mode sets the line spacing to “default line spacing” in page mode. ■ If the vertical motion unit is changed after this command is performed, the amount of line spacing is not changed. ■ Selected line spacing is effective until ESC 2 is executed, ESC @ is executed, the printer is reset, or the power is turned off. 		

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[Model-dependent variations]

**TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III,
TM-H5000II, TM-U675, TM-U325D**

See program example and print sample for ESC 2 and ESC 3.

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

The vertical or horizontal motion unit is specified by **GS P**.

TM-H5000II

The vertical or horizontal motion unit is specified by **GS P**.

When roll paper is selected as the paper type in standard mode, if the line spacing is less than the highest character in a line, paper is fed to the height of the character with line feed.

Example: When the line spacing is 30 dots, paper is fed 30 dots with a Font A (normal size).
When the line spacing is 30 dots, paper is fed 48 dots with a double size Font A vertically.

TM-U325D

The vertical motion unit is 0.176 mm {1/144 inch}. This value equals 1/2 dot pitch.

TM-H6000III

The vertical or horizontal motion unit is specified by **GS P**.

The line spacing set for a slip affects the paper feed for the face of the slip. When roll paper is selected as the paper type in standard mode, if the line spacing is less than the highest character in a line, paper is fed to the height of the character.

Example:

When a line spacing of 30 dots is specified, the printer feeds paper 30 dots to print a normal size Font A and 48 dots to print a double size vertically for Font A.

TM-U675

The vertical or horizontal motion unit is specified by **GS P**. This command does not use the horizontal motion unit because this printer does not support page mode.

Program example for ESC 2 and ESC 3 n

Program Example

```
PRINT #1, CHR$(&H1B); "c0";CHR$(1); ←Select paper type  
PRINT #1, CHR$(&H1B); "c1";CHR$(1); ←Select paper type for commands  
PRINT #1, CHR$(&H1D); "P";CHR$(180);CHR$(180);  
FOR n=25 TO 50 STEP 5  
    PRINT #1, CHR$(&H1B); "3";CHR$(n); ← Set line spacing  
    PRINT #1, "AAAAA"; CHR$(&HA);  
NEXT n  
PRINT #1, CHR$(&H1B); "2"; ← Set the default  
PRINT #1, "BBBBB"; CHR$(&HA);  
PRINT #1, "CCCCC"; CHR$(&HA);
```

Print Sample

AAAAAA	25/180-inch line spacing
AAAAAA	30/180-inch line spacing
AAAAAA	35/180-inch line spacing
AAAAAA	40/180-inch line spacing
AAAAAA	45/180-inch line spacing
BBBBBB	50/180-inch line spacing
CCCCCC	1/6-inch line spacing

ESC C

SETTING COMMAND

[Name] Set cut sheet eject length

[Format] ASCII ESC C **n**

 Hex 1B 43 **n**

 Decimal 27 67 **n**

[Range] $0 \leq \mathbf{n} \leq 255$

[Default] **n** = 0

[Printers not featuring this command] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675, TM-U325D**

[Description] Sets the eject length for a cut sheet (slip or validation paper) to **n** lines.

- When **n** = 0, the eject length setting is canceled.

[Notes]

- The amount of paper fed per line is based on the value set using the line spacing commands (**ESC 2** or **ESC 3**).
- When **n** = 0, eject operation differs, depending on the printer model.
- The maximum amount of the eject length depends on the printer model.
- This command specifies the eject length for the paper type selected by **ESC c 1**. The eject length can be set independently for slip and validation paper.
- If the amount of line spacing is changed after this command is executed, the amount of eject length is not changed.
- The eject length setting is effective until **ESC @** is executed, the printer is reset, or the power is turned off.
- The eject length set by this command is effective only when the cut sheet is selected as the paper type and affects ejection.
- The cut sheet eject direction is specified by **ESC F**.

[Model-dependent variations]

TM-H5000II**Program Example for all printers**

```
PRINT #1, CHR$(&H1B); "c0";CHR$(4); ← Select paper type  
PRINT #1, CHR$(&H1B); "c1";CHR$(4); ←Select paper type for commands  
PRINT #1, CHR$(&H1B); "C";CHR$(8); ← Set eject length  
PRINT #1, "AAAAA"; CHR$(&HA);  
PRINT #1, "BBBBB"; CHR$(&HC);
```

Print SampleAAAAA
BBBBB

Eject length set to 8
lines using ESC C

TM-H5000II

The maximum eject length is 450 mm {17.72 inches}. If the specified amount exceeds 450 mm {17.72 inches}, the eject length is automatically set to 450 mm {17.72 inches}.

When n = 0, the printer continues paper feed until the printer gets to the position where the slip paper can be ejected.

Selecting paper type by ESC c 1 is unnecessary because this printer has only a slip as the cut sheet.

CHARACTER COMMANDS

Command	Name
CAN	Cancel print data in page mode
ESC SP	Set right-side character spacing
ESC !	Select print mode(s)
ESC %	Select/cancel user-defined character set
ESC &	Define user-defined characters
ESC -	Turn underline mode on/off
ESC ?	Cancel user-defined characters
ESC E	Turn emphasized mode on/off
ESC G	Turn double-strike mode on/off
ESC M	Select character font
ESC R	Select an international character set
ESC V	Turn 90° clockwise rotation mode on/off
ESC t	Select character code table
ESC {	Turn upside-down print mode on/off
GS (N	Select character style(s)
GS !	Select character size
GS B	Turn white/black reverse print mode on/off
GS b	Turn smoothing mode on/off

[Name] Cancel print data in page mode

[Format] ASCII CAN

Hex 18

Decimal 24

[Range] None

[Default] None

[Printers not featuring this command] **TM-U325D**

[Description] In page mode, deletes all the print data in the current print area.

[Notes] ■ This command is enabled only in page mode. Page mode is selected by **ESC L, FS L**.

■ If data set in the previously specified print area is set in the currently specified print area, it is deleted.

[Model-dependent variations] None

Program Example for all printers

```
PRINT #1, CHR$(&H1B); "L"; ← Select page mode
PRINT #1, CHR$(&H1D); "P";CHR$(180);CHR$(180);
PRINT #1, CHR$(&H1B); "W";CHR$(0);CHR$(0);CHR$(0);
CHR$(0);CHR$(240);CHR$(0);CHR$(44);CHR$(1);
PRINT #1, CHR$(&H1B); "T";CHR$(0); ← Select print direction
FOR i=1 TO 200 : PRINT #1, "A"; : NEXT i
PRINT #1, CHR$(&H1B); "W";CHR$(60);CHR$(0);CHR$(90);
CHR$(0);CHR$(60);CHR$(0);CHR$(120);CHR$(0);
PRINT #1, CHR$(&H18); ← Cancel print data
PRINT #1, CHR$(&HC); ← Batch print and return to standard mode
```

Print Sample

```
AAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAA
AAAAAA      AAAAAAAA
AAAAAA      AAAAAAAA
AAAAAA      AAAAAAAA
AAAAAA      AAAAAAAA
AAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAA
```

ESC SP

SETTING COMMAND

[Name] Set right-side character spacing

[Format] ASCII ESC SP **n**
 Hex 1B 20 **n**
 Decimal 27 32 **n**

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

[Default] **n = 0**

[Printers not featuring this command] None

[Description] Sets the right-side character spacing to [**n** × (horizontal or vertical motion unit)].

- [Notes]
 - The right-side character spacing set by this command is effective for alphanumeric, Kana, and user-defined characters.
 - When characters are enlarged **n** times, the character spacing is **n** times normal value. The character spacing for double-width mode is twice the normal value.
 - When standard mode is selected, the horizontal (perpendicular to paper feed) motion unit is used.
 - When page mode is selected, the vertical or horizontal motion unit is used for the print direction set by **ESC T**.
 - When the starting position is set to the upper left or lower right of the print area using **ESC T**, the horizontal (perpendicular to paper feed) motion unit is used.
 - When the starting position is set to the upper right or lower left of the print area using **ESC T**, the vertical (direction of paper feed) motion unit is used.
 - The character spacing can be set independently in standard mode and in page mode. If executed in standard mode, this command sets the character spacing in standard mode. If this command is executed in page mode, it sets the character spacing in page mode.
 - If the motion unit is changed after this command is executed, the character spacing is not changed.
 - Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.
 - It is used to change the spacing between characters.

[Model-dependent variations]

**TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III,
TM-H5000II, TM-U675, TM-U325D**

Program Example for all printers	Print Sample
<pre>PRINT #1, CHR\$(&H1D);"P";CHR\$(180);CHR\$(180); PRINT #1, CHR\$(&H1B);" ";CHR\$(0); ← Character spacing set to 0 PRINT #1, "AAAAAA"; CHR\$(&HA); PRINT #1, CHR\$(&H1B);" ";CHR\$(6); ← Character spacing set to 6 PRINT #1, "BBBBBB"; CHR\$(&HA); PRINT #1, CHR\$(&H1B);" ";CHR\$(12); ← Character spacing set to 12 PRINT #1, "CCCCCC"; CHR\$(&HA);</pre>	AAAAAA ← 0-inch character spacing BBBBBB ← 6/180-inch character spacing CCCCCC ← 12/180-inch character spacing

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100**The vertical or horizontal motion unit is specified by GS P.****TM-H5000II****The vertical or horizontal motion unit is specified by GS P.****TM-U325D****The horizontal motion unit is 0.16 mm {1/160 inch}. This value equals 1/2 dot pitch.****TM-H6000III****The vertical or horizontal motion unit for roll paper, the face of a slip, and validation is specified by GS P.****The vertical or horizontal motion unit for the back of a slip is 0.2 mm {1/127 inch}. This is equivalent to 1 dot.****TM-U675****The vertical or horizontal motion unit is specified by GS P.**

ESC !

SETTING COMMAND

[Name]	Select print mode(s)			
[Format]	ASCII ESC ! n Hex 1B 21 n Decimal 27 33 n			
[Range]	0 ≤ n ≤ 255			
[Default]	TM-J9000/J9100, TM-J7000/7100, TM-J7500/7600, TM-H5000II, TM-H6000III: n = 0; TM-U325D, TM-U675: n = 1			
[Printers not featuring this command]	None			
[Description]	Selects the character font and styles (emphasized, double-height, double-width, and underline) together as follows:			

n: Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Character Font A selected.
	On	01	1	Character Font B selected.
1, 2	Off	00	0	Reserved.
3	Off	00	0	Emphasized mode is turned off.
	On	08	8	Emphasized mode is turned on.
4	Off	00	0	Double-height canceled
	On	10	16	Double-height selected.
5	Off	00	0	Double-width canceled
	On	20	32	Double-width selected.
6	Off	00	0	Reserved.
7	Off	00	0	Underline mode is turned off.
	On	80	128	Underline mode is turned on.

... how to use
this table

[Notes]

- Configurations of Font A and Font B are different, depending on the printer model. To specify the other font, use **ESC M**.
- The character font (Bit 0), the character size (Bits 4 and 5), and the underline mode (Bit 7) set by this command are effective for alphanumeric, Kana, and user-defined characters.
- The emphasized mode (Bit 3) set by this command is effective for alphanumeric, Kana, user-defined, multilingual, and user-defined Kanji characters.
- Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off, executed by the following commands:
 - Bit 0 (character font): **ESC M**
 - Bit 3 (emphasized mode): **ESC E**
 - Bit 4, 5 (character size): **GS !**
 - Bit 7 (underline mode): **ESC -**
- When some characters in a line are double-height, all characters on the line are aligned at the baseline.
- When double-width mode is turned on, the characters are enlarged to the right, based on the left side of the character.
- When both double-height and double-width modes are turned on, quadruple size characters are printed.
- In standard mode, the character is enlarged in the paper feed direction when double-height mode is selected, and it is enlarged perpendicular to the paper feed direction when double-width mode is selected. However, when character orientation changes in 90° clockwise rotation mode, the relationship between double-height and double-width is reversed.
- In page mode, double-height and double-width are in the character orientation.
- Setting underline mode underlines with the line width set with **ESC -**, regardless of the character size. The underline's color is the same as the printing character's color. Printing color is specified by **GS (N <Function 48>**.
- Even if underline mode is turned on, 90° clockwise-rotated characters, white/black reverse characters , and parts skipped with HT, **ESC \$**, **ESC ** are not underlined.
- The printer cannot underline the space set by **HT**, **ESC \$**, and **ESC **.

[Model-dependent variations]

**TM-9000/9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II,
TM-U675, TM-U325D**
Program Example for all printers

```
PRINT #1, CHR$(&H1B); !" ;CHR$(0); "AA";
PRINT #1, CHR$(&H1B); !" ;CHR$(8); "BB";
PRINT #1, CHR$(&H1B); !" ;CHR$(16); "CC";
PRINT #1, CHR$(&H1B); !" ;CHR$(24); "DD";
PRINT #1, CHR$(&H1B); !" ;CHR$(32); "EE";
PRINT #1, CHR$(&H1B); !" ;CHR$(40); "FF";
PRINT #1, CHR$(&H1B); !" ;CHR$(48); "GG";
PRINT #1, CHR$(&H1B); !" ;CHR$(56); "HH"; CHR$(&HA);
PRINT #1, CHR$(&H1B); !" ;CHR$(129); "AA";
PRINT #1, CHR$(&H1B); !" ;CHR$(137); "BB";
PRINT #1, CHR$(&H1B); !" ;CHR$(145); "CC";
PRINT #1, CHR$(&H1B); !" ;CHR$(153); "DD";
PRINT #1, CHR$(&H1B); !" ;CHR$(161); "EE";
PRINT #1, CHR$(&H1B); !" ;CHR$(169); "FF";
PRINT #1, CHR$(&H1B); !" ;CHR$(177); "GG";
PRINT #1, CHR$(&H1B); !" ;CHR$(185); "HH"; CHR$(&HA);
```

Print Sample

AABB~~CCDD~~EEFFGGHH ← Font A
AABB~~CCDD~~EEFFGGHH ← Font B
 with underline

AA: Normal
 BB: Emphasized
 CC: Double-height
 DD: Emphasized + Double-height
 EE: Double-width
 FF: Emphasized + Double-width
 GG: Double-height + Double-width
 HH: Emphasized + Double-height + Double-width

TM-J9000/J9100**Character configurations (Bit 0):****Font A (When the memory switch is off: 12 x 24 / When the memory switch is on: 11 x 24)****Font B (When the memory switch is off: 9 x 17/When the memory switch is on: 8 x 17)**

The memory switches for switching character configurations differ according to the active sheet as follows. Validation: [Msw8-5]/Slip: [Msw8-6]/Roll paper: [Msw8-7]

The baseline of each font is the following position.

Font A (12 x 24/11 x 24): The 21st dot from the top edge of the character**Font B (9 x 17/8 x 17): The 16th dot from the top edge of the character**

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TM-J7000/7100

Character configurations (Bit 0):

Font A (When the memory switch is off: 12 x 24 / When the memory switch is on: 11 x 24)

Font B (When the memory switch is off: 9 x 17/When the memory switch is on: 8 x 17)

The memory switches for switching character configurations differ according to the active sheet as follows. Validation: Slip: [Msw8-6]/Roll paper: [Msw8-7]

The character's baseline for each font is as follows.

Font A: 12 × 24/ 11 × 24: 21 dots from the top of a character

Font B: 9 × 17/ 8 × 17: 16 dots from the top of a character

TM-J7500/7600

Character configurations (Bit 0):

Font A (When the memory switch is off: 12 x 24 / When the memory switch is on: 11 x 24)

Font B (When the memory switch is off: 9 x 17/When the memory switch is on: 8 x 17)

The memory switches for switching character configurations differ according to the active sheet as follows. Validation: Slip: [Msw8-6]/Roll paper: [Msw8-7]

The character's baseline for each font is as follows.

Font A: 12 × 24/ 11× 24: 21 dots from the top of a character

Font B: 9 × 17/ 8 × 17: 16 dots from the top of a character

ESC M command is able to specify Extended Font A. However, the setting of this command doesn't affect Extended Font A.

TM-H5000II

Character configurations

Bit 0: Font A:12 × 24 (roll paper), 9 × 9 (slip)

Font B:9 × 17 (roll paper), 7 × 9 (slip)

Each character's baseline is as follows.

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- Roll paper:** Font A (12×24): 21 dots from the top of a character.
 Font B (9×17): 16 dots from the top of a character.
Slip paper: Both fonts have no baseline.

Selecting character font is not effective for page mode printing of slip and 90° clockwise rotation mode.

Selecting emphasized mode is not effective for page mode printing of slip.

TM-U325D

Character configurations

- Bit 0:** Font A: 9×9
 Font B: 7×9

Both fonts have no baseline.

The default value of this command as below.

- When DIP switch [SW2-3] is ON $n = 0$
When DIP switch [SW2-3] is OFF $n = 1$

TM-H6000III

Character configurations

- Bit 0:** Font A: 12×24 (roll paper), 5×9 (slip), 5×9 (validation)
 Font B: 9×17 (roll paper), 7×9 (slip), 7×9 (validation)

The character's baseline for each font is as follows.

- Roll paper:** Font A (12×24): 21 dots from the top of a character.
 Font B (9×17): 16 dots from the top of a character.

Slip/validation paper: Both fonts have no baseline.

This command does not affect printing on the back of a slip.

<Validation model>

In page mode, selecting Font B (7×9) does not affect the face of a slip and validation.

<Note for all models except the above model>

In page mode, selecting Font B (7 × 9) and emphasized printing does not affect the face of a slip.

TM-U675

Character configurations

Bit 0: **Font A: 5 × 9**
 Font B: 7 × 9

Both fonts have no baseline.

The character Font B (7 × 9) and emphasized mode are not effective in page mode.

ESC %

SETTING COMMAND

[Name] Select/cancel user-defined character set

[Format]

ASCII	ESC	%	n
Hex	1B	25	n
Decimal	27	37	n

[Range] $0 \leq \mathbf{n} \leq 255$

[Default] **n** = 0

[Printers not featuring this command] None

[Description] Selects or cancels the user-defined character set.

- When the LSB of **n** is 0, the user-defined character set is canceled.
- When the LSB of **n** is 1, the user-defined character set is selected.

[Notes]

- When the user-defined character set is canceled, the resident character set is automatically selected.
- Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.

[Model-dependent variations] **TM-J7500/7600, TM-H6000III**

See program example and print sample for ESC %, ESC &, and ESC ?.

TM-J7500/7600

The resident characters are always specified for Extended Font A.

TM-H6000III

The resident characters are always specified for slip (back) printing.

[Name]	Define user-defined characters				
[Format]	ASCII	ESC	&	y c1 c2 [x1 d1 ... d(y × x1)] ... [xk d1 ... d(y × xk)]	
	Hex	1B	26	y c1 c2 [x1 d1 ... d(y × x1)] ... [xk d1 ... d(y × xk)]	
	Decimal	27	38	y c1 c2 [x1 d1 ... d(y × x1)] ... [xk d1 ... d(y × xk)]	

[Range] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100: y = 3**

32 ≤ c1 ≤ c2 ≤ 126
0 ≤ x ≤ 12 (Font A (12 × 24/ 11 × 24))
0 ≤ x ≤ 9 (Font B (9 × 17/ 8 × 17))
0 ≤ d ≤ 255
k = c2-c1 + 1

TM-H5000II:

y = 3 [For roll paper]
y = 2 [For slip paper]
32 ≤ c1 ≤ c2 ≤ 126
0 ≤ x ≤ 12 (Font A (roll paper: 12 × 24, slip: 9 × 9))
0 ≤ x ≤ 9 (Font B (roll paper: 9 × 17, slip: 7 × 9))
0 ≤ x ≤ 6 [In slip page mode: Font C (5 × 9)]
0 ≤ d ≤ 255
k = c2-c1+1

TM-H6000III:

For roll paper:
y = 3
32 ≤ c1 ≤ c2 ≤ 126
0 ≤ x ≤ 12 (Font A (12 × 24))
0 ≤ x ≤ 9 (Font B (9 × 17))
0 ≤ d ≤ 255
k = c2-c1+1
For slip paper and validation:
y = 2
32 ≤ c1 ≤ c2 ≤ 126
0 ≤ x ≤ 6 (Font A (5 × 9))

$0 \leq x \leq 9$ (Font B (7 × 9)) **$0 \leq d \leq 255$** **$k = c2 - c1 + 1$** **TM-U675: When DIP switch [SW2-4] is off or [SW2-4] is on and [SW2-3] is on:** **$y = 2$** **$32 \leq c1 \leq c2 \leq 126$** **$0 \leq x \leq 6$ (Font A (5 × 9))** **$0 \leq x \leq 9$ (Font B (7 × 9))** **$0 \leq d \leq 255$** **$k = c2 - c1 + 1$** **When DIP switch [SW2-4] is on and [SW2-3] is off:** **$y = 2$** **$32 \leq c1 \leq c2 \leq 126$** **$0 \leq x \leq 6$ (Font A (5 × 9))** **$0 \leq x \leq 10$ (Font B (7 × 9))** **$0 \leq d \leq 255$** **$k = c2 - c1 + 1$** **TM-U325D: $y = 2$** **$32 \leq c1 \leq c2 \leq 126$** **$0 \leq x \leq 12$ (Font A (9 × 9))** **$0 \leq x \leq 10$ (Font B (7 × 9))** **$0 \leq d \leq 255$** **$k = c2 - c1 + 1$**

[Default] None

[Printers not featuring this command] None

[Description] Defines the user-defined character pattern in the character code specified for the currently selected character font.

- **y** specifies the number of bytes in the vertical direction.
- **c1** specifies the beginning character code for the definition, and **c2** specifies the final code.

- **x** specifies the number of dots in the horizontal direction from the left edge.
- **d** specifies the defined data (column format).
- **k** indicates the number of defined data. **k** is an explanation parameter; therefore it does not need to be transmitted.

[Notes]

- Character codes from the alphanumeric characters (in Hexadecimal: 20H to 7EH / in Decimal: 32 to 126) can be defined.
- Data (**d**) specifies a bit printed as 1 and not printed as 0. The dot pattern is in the horizontal direction from the left side. Any remaining dots on the right side are blank.
- The data to define a user-defined character is (**y** × **x**) bytes.
- This command can define user-defined characters for each font independently. To select a font, use **ESC !** or **ESC M**.
- A user-defined character and downloaded bit image cannot be defined simultaneously. When this command is executed, the downloaded bit image is cleared.
- Once the user-defined characters have been defined, they are available until **ESC ?**, **GS (L** <Function 83>, <Function 84>, **GS ***, or **ESC @** is executed. The user-defined characters are lost when the power is turned off or the printer is reset.
- If the printer has multiple print heads, this command defines the pattern for the paper type selected by **ESC c 1**. The user-defined characters can be defined independently for each paper type.
- The user-defined characters are not defined in the default settings, and the resident characters are printed.
- The relationship between the definition data and printing result is as follows.
Example: Downloaded character definition consists of 9 × 7 dots. (**y** = 2, **x** = 7)
(In the second byte in the vertical direction (**d2**, **d4**, **d6**, **d8**, **d10**, **d12**, **d14**), use MSB only.)

d1	d3	d5	d7	d9	d11	d13
d2	d4	d6	d8	d10	d12	d14

[Model-dependent variations]

**TM-9000/9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II,
TM-U675, TM-U325D****See program example and print sample for ESC %, ESC &, and ESC ?.****TM-J7500/7600**

For user-defined characters using Font B ($9 \times 17 / 8 \times 17$), only the most significant bit of the third byte vertically is available. The Extended Font A does not support user-defined characters.

TM-J9000/J9100, TM-J7000/7100

For user-defined characters using Font B ($9 \times 17 / 8 \times 17$), only the most significant bit of the third byte vertically is available.

TM-H5000II

This command defines the pattern for the paper type selected by **ESC c 1**. The user-defined characters can be defined independently for roll paper and slip paper.

Only the MSB can be printed in the third byte for vertical direction when defining user-defined character of Font B of roll paper.

If slip paper is selected, dots adjoining each other horizontally cannot be printed. Only the MSB can be printed in the second byte for vertical direction.

TM-U325D

Dots adjoining each other horizontally cannot be printed. Only the MSB can be printed in the second byte for vertical direction.

The maximum number of user-defined characters differs, depending on the receive buffer capacity as described below. When the maximum number of user-defined characters is defined, it is possible to redefine user-defined characters for the defined ASCII code, but not for the new ASCII code.

Receive buffer capacity	Maximum number of user-defined characters
4 KB	20
45 bytes	95

TM-H6000III

The command defines a pattern of user-defined characters for the paper type selected by **ESC c 1**. If slip is selected as the paper type, user-defined characters for the face of a slip are defined. The user-defined patterns can be defined independently both for roll paper and the face of a slip. For user-defined characters for roll paper using Font B, only the most significant bit of the third byte vertically is available. For user-defined characters for a slip, only the most significant bit of the second byte vertically is available. When using Font B, adjacent dots horizontally cannot be used as print data.

<Validation model>

This printer prints the same font on slip and validation. Therefore, whether slip or validation is selected with **ESC c 1**, the registered user-defined characters are used for both types of paper.

TM-U675

If **Font B (7 × 9)** is selected, the dots adjoining each other horizontally cannot be printed. Only the MSB can be printed in the second byte for vertical direction.

ESC –

SETTING COMMAND

[Name]	Turn underline mode on/off								
[Format]	ASCII ESC – n Hex 1B 2D n Decimal 27 45 n								
[Range]	TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II, TM-U675: 0 ≤ n ≤ 2, 48 ≤ n ≤ 50 TM-U325D: n = 0, 1, 48, 49								
[Default]	n = 0								
[Printers not featuring this command]	None								
[Description]	Turns underline mode on or off using n as follows:								
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">n</th> <th style="text-align: center;">Function</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">0, 48</td> <td>Turns off underline mode.</td> </tr> <tr> <td style="text-align: center;">1, 49</td> <td>Turns on underline mode, set at 1-dot width.</td> </tr> <tr> <td style="text-align: center;">2, 50</td> <td>Turns on underline mode, set at 2-dot width.</td> </tr> </tbody> </table>		n	Function	0, 48	Turns off underline mode.	1, 49	Turns on underline mode, set at 1-dot width.	2, 50	Turns on underline mode, set at 2-dot width.
n	Function								
0, 48	Turns off underline mode.								
1, 49	Turns on underline mode, set at 1-dot width.								
2, 50	Turns on underline mode, set at 2-dot width.								
[Notes]	<ul style="list-style-type: none"> ■ The underline mode is effective for alphanumeric, Kana, and user-defined characters. ■ When underline mode is selected, 90° clockwise-rotated characters and white/black reverse characters cannot be underlined. ■ The color of the underline is the same as that of the printing character. The printing character's color is selected by GS (N <Function 48>. ■ The printer cannot underline the space set by HT, ESC \$, and ESC \. ■ Changing the character size does not affect the current underline thickness. ■ When underline mode is canceled, the following data is not underlined, but the line width is maintained. ■ Settings of this function are effective until ESC ! or ESC @ is executed, the printer is reset, or the power is turned off. 								

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- Some printer models support the 2-dot thick underline.

[Model-dependent variations]

TM-J7500/7600, TM-H6000III, TM-H5000II, TM-U675

Program Example for all printers

```
PRINT #1, CHR$(&H1B);"-";CHR$(1); ← Select  
PRINT #1, "AAAAAA"; CHR$(&HA);  
PRINT #1, CHR$(&H1B);"-";CHR$(0); ← Cancel  
PRINT #1, "BBBBBB"; CHR$(&HA);
```

Print Sample

AAAAAA ← Underline (1-dot thick) turned on
BBBBBB ← Underline turned off

TM-J7500/7600

Underline mode is not effective for Extended Font A.

TM-H5000II

If slip is selected as the paper type, the underline is 1 dot wide when n = 1, 2, 49, or 50.

TM-H6000III

If slip (face) or validation is selected as the paper type, the underline is 1 dot wide when n = 1, 2, 49, or 50.

When the underline is selected for printing on the back of a slip, the underline is not affected.

TM-U675

When n = 1, 2, 49, or 50, an underline with 1-dot width is selected.

ESC ?

SETTING COMMAND

[Name]	Cancel user-defined characters
[Format]	ASCII ESC ? n Hex 1B 3F n Decimal 27 63 n
[Range]	$32 \leq n \leq 126$
[Default]	None
[Printers not featuring this command]	None
[Description]	Deletes the user-defined character pattern in the character code specified for the currently selected character font. <ul style="list-style-type: none"> • n specifies the character code for the deletion.
[Notes]	<ul style="list-style-type: none"> ■ After the user-defined characters are canceled, the resident character set is printed. ■ This command can cancel user-defined characters for each font independently. To select a font, use ESC ! or ESC M. ■ If the printer has multiple print heads, this command cancels the pattern for the paper type selected by ESC c 1.
[Model-dependent variations]	TM-J7500/7600, TM-H6000III, TM-H5000II

TM-J7500/7600

The Extended Font A does not support the user-defined characters.

TM-H5000II

This command cancels the pattern defined for the paper type selected by **ESC c 1**. The user-defined characters can be defined independently for roll paper and slip paper.

TM-H6000III

This command cancels the pattern defined for the paper type selected by **ESC c 1**. The user-defined characters can be defined independently for roll paper and slip paper. In slip paper (back), this printer does not support user-defined characters.

<Validation model>

This printer prints the same font on slip and validation. Therefore, the user-defined characters deleted for either slip or validation are deleted for both.

Program example for ESC %, ESC &, and ESC ?

Program Example

```

PRINT #1, CHR$(&H1B); "%" ;CHR$(2) ;"AC";
PRINT #1, CHR$(9);
FOR i=1 TO 2*9
  READ d: PRINT #1, CHR$(d);
NEXT i
PRINT #1, CHR$(9);
FOR i=1 TO 2*9
  READ d: PRINT #1, CHR$(d);
NEXT i
PRINT #1, CHR$(10);
FOR i=1 TO 2*10
  READ d: PRINT #1, CHR$(d);
NEXT i
PRINT #1, CHR$(&H1B); "%" ;CHR$(0); ← Select resident character
PRINT #1, "A B C D E"; CHR$(&HA);
PRINT #1, CHR$(&H1B); "%" ;CHR$(1); ← Select user-defined character
PRINT #1, "A B C D E"; CHR$(&HA):
PRINT #1, CHR$(&H1B); "?" ;"A"; ← Cancel the user-defined character
PRINT #1, "A B C D E"; CHR$(&HA);

```

Program Example (continued)

```

DATA &H18, &H00, &H00, &H00, &H3C, &H00, &H00, &H00
DATA &H7E, &H00, &H00, &H00, &H3C, &H00, &H00, &H00
DATA &H18, &H00
DATA &H18, &H00, &H00, &H00, &H24, &H00, &H00, &H00
DATA &H42, &H00, &H00, &H00, &H24, &H00, &H00, &H00
DATA &H18, &H00
DATA &H00, &H00, &H10, &H00, &H20, &H00, &H5F, &H00
DATA &H00, &H00, &H81, &H00, &H00, &H00, &H5F, &H00
DATA &H20, &H00, &H10, &H00

```

Print Sample

A B C D E ← Characters from resident character set
 ♦ ◊ ↑ D E ← Characters from user-defined character set
 A ◊ ↑ D E ← Characters from user-defined character set (cancel one character)

ESC E

SETTING COMMAND

[Name] Turn emphasized mode on/off

[Format] ASCII ESC E **n**
 Hex 1B 45 **n**
 Decimal 27 69 **n**

[Range] $0 \leq \mathbf{n} \leq 255$

[Default] **n = 0**

[Printers not featuring this command] None

[Description] Turns emphasized mode on or off.

- When the LSB of **n** is 0, emphasized mode is turned off.
- When the LSB of **n** is 1, emphasized mode is turned on.

[Notes]

- The emphasized mode is effective for alphanumeric, Kana, user-defined, multilingual, and user-defined Kanji characters.
- The setting of this function is effective until **ESC !** or **ESC @** is executed, the printer is reset, or the power is turned off.

[Model-dependent variations]

TM-J7500/7600, TM-H6000III, TM-H5000II, TM-U675

Program Example for all printers

```
PRINT #1, CHR$(&H1B); "E";CHR$(1); ← Select
PRINT #1, "AAAAA"; CHR$(&HA);
PRINT #1, CHR$(&H1B); "E";CHR$(0); ← Cancel
PRINT #1, "BBBBB"; CHR$(&HA);
```

Print Sample

AAAAA ← Emphasized
 BBBB ← Normal

TM-J7500/7600

Emphasized mode is not effective for Extended Font A.

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TM-H6000III

<Validation model >

Specifying emphasized mode does not affect printing on the face of a slip in page mode or printing on the back of a slip.

TM-U675

Emphasized mode is not effective in page mode.

TM-H5000II

Specifying emphasized mode does not affect printing on a slip in page mode.

ESC G

SETTING COMMAND

[Name] Turn double-strike mode on/off

[Format] ASCII ESC G **n**
 Hex 1B 47 **n**
 Decimal 27 71 **n**

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

[Default] **n = 0**

[Printers not featuring this command] None

[Description] Turns double-strike mode on or off.

- When the LSB of **n** is 0, double-strike mode is turned off.
- When the LSB of **n** is 1, double-strike mode is turned on.

[Notes]

- The double-strike mode is effective for alphanumeric, Kana, user-defined, multilingual, and user-defined Kanji characters.
- Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.

[Model-dependent variations]

TM-J7500/7600, TM-H6000III, TM-H5000II, TM-U675

Program Example for all printers

```
PRINT #1, CHR$(&H1B); "G";CHR$(1); ← Select
PRINT #1, "AAAAAA"; CHR$(&HA);
PRINT #1, CHR$(&H1B); "G";CHR$(0); ← Cancel
PRINT #1, "BBBBBB"; CHR$(&HA);
```

Print Sample

```
AAAAAA ← Double-strike
BBBBBB ← Normal
```

TM-H6000III

<Validation model>

Specifying double-strike mode does not affect printing on the face of a slip in page mode or printing on the back of a slip.

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TM-U675

Double-strike mode is not effective in page mode.

TM-H5000II

Double-strike mode is not effective in page mode of slip.

TM-J7500/7600

Double-strike mode is not effective for Extended Font A.

ESC M

SETTING COMMAND

[Name]	Select character font								
[Format]	ASCII ESC M n Hex 1B 4D n Decimal 27 77 n								
[Range]	TM-J9000/J9100, TM-J7500/7600: n = 0, 1, 48, 49, 97 (When standard mode is specified) n = 0, 1, 48, 49 (When page mode is specified) TM-J7000/7100, TM-H6000III, TM-H5000II, TM-U675, TM-U325D: n = 0, 1, 48, 49								
[Default]	TM-J9000/J9100, TM-J7000/7100, TM-J7500/7600, TM-H5000II, TM-H6000III: n = 0 TM-U325D, TM-U675: n = 1								
[Printers not featuring this command]	None								
[Description]	Selects a character font, using n as follows:								
	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>n</th> <th>Font</th> </tr> </thead> <tbody> <tr> <td>0, 48</td> <td>Font A</td> </tr> <tr> <td>1, 49</td> <td>Font B</td> </tr> <tr> <td>97</td> <td>Extended font</td> </tr> </tbody> </table>	n	Font	0, 48	Font A	1, 49	Font B	97	Extended font
n	Font								
0, 48	Font A								
1, 49	Font B								
97	Extended font								
[Notes]	<ul style="list-style-type: none"> ■ Configurations of Font A and Font B depend on the printer model. ■ The character font selected affects alphanumeric, Kana, and user-defined characters. ■ Settings of this command are effective until ESC ! or ESC @ is executed, the printer is reset, or the power is turned off. 								

[Model-dependent variations]

**TM-9000/9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II,
TM-U675, TM-U325D****Program Example for all printers**

```
PRINT #1, CHR$(&H1B); "M";CHR$(0);← Select font A  
PRINT #1, "AAAAAA";CHR$(&HA);  
PRINT #1, CHR$(&H1B); "M";CHR$(1); ← Select font B  
PRINT #1,"BBBBBB";CHR$(&HA);
```

Print Sample

AAAAAA ← Font A
BBBBBB ← Font B

TM-J9000/J9100**Character configurations (Bit 0):****Font A (When the memory switch is off: 12 x 24 / When the memory switch is on: 11 x 24)****Font B (When the memory switch is off: 9 x 17/When the memory switch is on: 8 x 17)****The memory switches for switching character configurations differ according to the active sheet as follows.****Validation: [Msw8-5]/Slip: [Msw8-6]/Roll paper: [Msw8-7]****The baseline of each font is the following position.****Font A (12 x 24/11 x 24): The 21st dot from the top edge of the character****Font B (9 x 17/8 x 17): The 16th dot from the top edge of the character****TM-J7000/7100****Character configurations****Font A: 12 × 24****Font B: 9 × 17****The character's baseline for each font is as follows.****Font A: 12 × 24/ 11 × 24: 21 dots from the top of a character****Font B: 9 × 17/ 8 × 17: 16 dots from the top of a character****The memory switches for switching character configurations differ according to the active sheet as follows.****Validation: [Msw8-5]/Slip: [Msw8-6]/Roll paper: [Msw8-7]**

Character configurations

Font A (When the memory switch is off: 12 x 24 / When the memory switch is on: 11 x 24)

Font B (When the memory switch is off: 9 x 17/When the memory switch is on: 8 x 17)

Extended Font (Extended Font A: 15 x 24)

The memory switches for switching character configurations differ according to the active sheet as follows.

Validation: [Msw8-5]/Slip: [Msw8-6]/Roll paper: [Msw8-7]

The character configuration of Special Font A cannot be switched.

The character's baseline for each font is as follows.

Font A: 12 x 24/ 11 x 24 : 21 dots from the top of a character

Font B: 9 x 17/ 8 x 17: 16 dots from the top of a character

Extended Font A: 15 x 24: 21 dots from the top of a character

The Extended Font A has limits. It can print only the 16 characters shown in the table. Any character code that is not in the table is processed as a space. The only attribute that can be applied to the Extended Font A is upside down.

Character type		Numeric	Sign					
		0 - 9	SP	+	,	-	<	>
Character code	Hex	30-39	20	2B	2C	2D	3C	3E
	Decimal	48-57	32	43	44	45	60	62

Extended Font A is the same as the OCR-B font: however, optical character reading is not guaranteed.

Extended Font A does not support user-defined characters and user-defined code page data.

When the Extended Font A is printed, select printing control mode as "Normal" or "High Speed." Printing control mode is selected by Function 48 of GS (K).

In page mode, Extended Font A cannot be used. When you switch the printer to page mode using ESC L when Extended Font A is selected, the printer prints with Font A.

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TM-H5000II

Character configurations

Font A: 12×24 (roll paper), 9×9 (slip)

Font B: 9×17 (roll paper), 7×9 (slip)

Each character's baseline is as follows.

Roll paper: **Font A (12×24): 21 dots from the top of a character.**

Font B (9×17): 16 dots from the top of a character.

Slip paper: **Both fonts have no baseline.**

Selecting font does not affect printing on slip in page mode and 90° clockwise rotation mode.

TM-H6000III

Character configurations

Font A: 12×24 (roll paper), 5×9 (slip), 5×9 (validation)

Font B: 9×17 (roll paper), 7×9 (slip), 7×9 (validation)

The character's baseline for each font is as follows.

Roll paper: **Font A (12×24): 21 dots from the top of a character.**

Font B (9×17): 16 dots from the top of a character.

Slip/Validation paper: **Both fonts have no baseline.**

In page mode, Font B (7×9) cannot be printed on the face of a slip or validation.

This command does not affect printing on the back of a slip.

TM-U675

Character configurations

Font A: 5×9

Font B: 7×9

Both fonts have no baseline.

The character Font B (7×9) and emphasized mode are not effective in page mode.

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TM-U325D

Character configurations

Font A: 9 × 9

Font B: 7 × 9

Both fonts have no baseline.

ESC R

SETTING COMMAND

[Name] Select an international character set

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

[Range] **TM-J9000/J9100: 0 ≤ n ≤ 15**
TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II, TM-U675: 0 ≤ n ≤ 13
TM-U325D: 0 ≤ n ≤ 10

[Default] **n = 0**

[Printers not featuring this command] None

[Description] Selects an international character set **n** as follows:

n	Country name	n	Country name
0	U.S.A.	8	Japan
1	France	9	Norway
2	Germany	10	Denmark II
3	England	11	Spain II
4	Denmark I	12	Latin America
5	Sweden	8	Japan
6	Italy	14	Slovenia/ Croatia
7	Spain I	15	China

[Notes] ■ Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.

[Model-dependent variations]

TM-J7500/7600**Program Example for all printers**

```
FOR n=0 TO 10
  PRINT #1, CHR$(&H1B); "R"; CHR$(n);
  PRINT #1, "# $ @ [ \ ] ^ ` { | } ~"; CHR$(&HA);
NEXT n
```

Print Sample

```
# $ @ [ \ ] ^ ` { | } ~ ← n=0 (Default setting)
# $ à ° ç $ ^ ` é ù è " ← n=1
# $ $ Ä Ö Ü ^ ` ä ö ü ß ← n=2
£ $ @ [ \ ] ^ ` { | } ~ ← n=3
# $ @ È Ø Å ^ ` æ ø å ~ ← n=4
# ø É Ä Ö Å Ü é ä ö å ü ← n=5
# $ @ ° \ é ^ ` ù à ò è ì ← n=6
Pt $ @ ; Ñ ï ^ ` " ñ } ~ ← n=7
# $ @ [ ¥ ] ^ ` { | } ~ ← n=8
# ø É È Ø Å Ü é æ ø å ü ← n=9
# $ É È Ø Å Ü é æ ø å ü ← n=10
```

TM-J7500/7600

The setting of this command doesn't affect Extended Font A.

ESC V

SETTING COMMAND

[Name] Turn 90° clockwise rotation mode on/off

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

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

[Default] **n** = 0

[Printers not featuring this command] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-U325D**

[Description] In standard mode, turns 90° clockwise rotation mode on or off for characters, using **n** as follows:

n	Function
0, 48	Turns off 90° clockwise rotation mode.
1, 49	Turns on 90° clockwise rotation mode with 1-dot horizontal spacing.
2, 50	Turns on 90° clockwise rotation mode with 1.5-dot horizontal spacing.

- [Notes]
- The 90° clockwise rotation mode is effective for alphanumeric, Kana, user-defined, multilingual, and user-defined Kanji characters.
 - The 90° clockwise rotation mode has no effect in page mode.
 - Even if underline mode is turned on, the printer does not underline 90° clockwise-rotated characters.
 - Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.
 - When character orientation changes in 90° clockwise rotation mode, the relationship between vertical and horizontal directions is reversed.
 - Some printer models support 90° clockwise rotation mode when **n** = 2 or 50.
 - Not all printers can rotate the fonts.

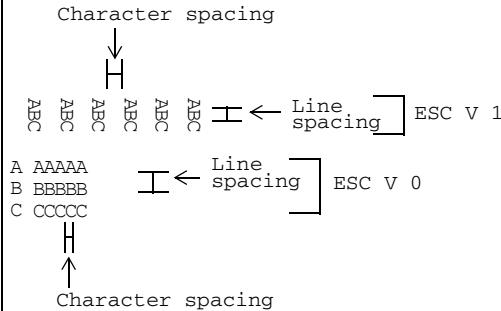
[Model-dependent variations] **TM-H6000III, TM-H5000II, TM-U675**

Program Example for all printers

```

PRINT #1, CHR$(&H1B); "c0";CHR$(1);← Select paper type
PRINT #1, CHR$(&H1B); "c1";CHR$(1);← Select paper type for
commands
PRINT #1, CHR$(&H1D); "P";CHR$(180);CHR$(180);
PRINT #1, CHR$(&H1B); " ";CHR$(20);← Set character spacing
PRINT #1, CHR$(&H1B); "3";CHR$(15);← Set line spacing
PRINT #1, CHR$(&H1B); "V";CHR$(1);← Select
    PRINT #1, "AAAAA"; CHR$(&HA);
    PRINT #1, "BBBBB"; CHR$(&HA);
    PRINT #1, "CCCCC"; CHR$(&HA);
PRINT #1, CHR$(&H1B); "2";← Set line spacing
PRINT #1, CHR$(&H1B); "V";CHR$(0);← Cancel
    PRINT #1, "AAAAA"; CHR$(&HA);
    PRINT #1, "BBBBB"; CHR$(&HA);
    PRINT #1, "CCCCC"; CHR$(&HA);

```

Print Sample**TM-H5000II**

Specifying ($n = 1, 49$) or ($n = 2, 50$) gives the same printing result.

When specifying 90° clockwise rotation mode, Font C is specified automatically for slip paper.

The multilingual model does not have 90° clockwise rotation mode for slip paper.

TM-H6000III

When specifying 90° clockwise rotation mode for roll paper, the print results of ($n = 1, 49$) and ($n = 2, 50$) are the same.

The 90° clockwise rotation mode is effective in the following situations.

- Roll paper Font A/Font B and Kanji characters.
- Printing Font A on the slip (face) and Kanji characters.
- Validation Font A.

TM-U675

The 90° clockwise rotation mode is effective for Font A.

ESC t

SETTING COMMAND

[Name]	Select character code table										
[Format]	ASCII ESC t n Hex 1B 74 n Decimal 27 116 n										
[Range]	TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100: $0 \leq n \leq 5, 16 \leq n \leq 19, n = 255$ TM-H5000II: For roll paper: $0 \leq n \leq 5, n = 19, 255$ For slip: $0 \leq n \leq 5, n = 19, 255$ (except Japanese model) $0 \leq n \leq 8, n = 19, 255$ (Japanese model) TM-H6000III: For roll paper: $0 \leq n \leq 5, 16 \leq n \leq 19, n = 255$ For slip (face): $n \leq 8, 16 \leq n \leq 19, n = 254, 255$ [Japanese models] $0 \leq n \leq 5, 16 \leq n \leq 19, n = 254, 255$ [Models other than the above] For slip (back): $0 \leq n \leq 5, 16 \leq n \leq 19, n = 255$ For validation: $0 \leq n \leq 5, 16 \leq n \leq 19, n = 254, 255$ TM-U325D: $0 \leq n \leq 5, n = 254, 255$ TM-U675: $0 \leq n \leq 5, 16 \leq n \leq 19, n = 254, 255$ (except Japanese model) $0 \leq n \leq 8, 16 \leq n \leq 19, n = 254, 255$ (Japanese model)										
[Default]	n = 0										
[Printers not featuring this command]	None										
[Description]	Selects a page n from the character code table, as follows:										
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">n</th> <th style="text-align: center;">Character code table</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">0</td> <td>Page 0 [PC437 (U.S.A., Standard Europe)]</td> </tr> <tr> <td style="text-align: center;">1</td> <td>Page 1 [Katakana]</td> </tr> <tr> <td style="text-align: center;">2</td> <td>Page 2 [PC850 (Multilingual)]</td> </tr> <tr> <td style="text-align: center;">3</td> <td>Page 3 [PC860 (Portuguese)]</td> </tr> </tbody> </table>		n	Character code table	0	Page 0 [PC437 (U.S.A., Standard Europe)]	1	Page 1 [Katakana]	2	Page 2 [PC850 (Multilingual)]	3	Page 3 [PC860 (Portuguese)]
n	Character code table										
0	Page 0 [PC437 (U.S.A., Standard Europe)]										
1	Page 1 [Katakana]										
2	Page 2 [PC850 (Multilingual)]										
3	Page 3 [PC860 (Portuguese)]										

n	Character code table
4	Page 4 [PC863 (Canadian-French)]
5	Page 5 [PC865 (Nordic)]
6	Page 6 [One-pass printing Kanji characters, Hiragana]
7	Page 7 [One-pass printing Kanji characters]
8	Page 8 [One-pass printing Kanji characters]
16	Page 16 [WPC1252]
17	Page 17 [PC866 (Cyrillic #2)]
18	Page 18 [PC852 (Latin 2)]
19	Page 19 [PC858 (Euro)]
254	Page 254
255	Page 255

[Notes]

- The alphanumeric characters (ASCII code (in Hexadecimal: 20H to 7FH / in Decimal: 32 to 127)) are the same for each page. The extended characters (ASCII code (in Hexadecimal: 80H to FFH / in Decimal: 128 to 255)) are different for each page.
- Selected page is effective until **ESC @** is executed, the printer is reset, or the power is turned off.

[Model-dependent variations]

**TM-9000/9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II,
TM-U675, TM-U325D**

Program Example for all printers

```

PRINT #1, CHR$(&H1B); "t";CHR$ (0); ← Select page 0
GOSUB printing
PRINT #1, CHR$(&H1B); "t";CHR$ (1); ← Select page 1
GOSUB printing
END

printing:
FOR i=&H20 TO &H7F
    PRINT #1, CHR$(i);
NEXT i
PRINT #1, CHR$(&HA);
FOR i=&H80 TO &HFF
    PRINT #1, CHR$(i);
NEXT i
PRINT #1, CHR$(&HA);
RETURN

```

Print Sample

Page 0

Page 1

TM-J9000/J9100, TM-J7000/7100

Page 255 is editable with <Function 7> ~ <Function 10> of GS (E. The factory setting for this page is [space].

TM-J7500/7600

Page 255 is editable with <Function 7> ~ <Function 10> of GS (E. The factory setting for this page is [space]. The setting of this command doesn't affect Extended Font A.

TM-H6000III

The character type for pages 254 and 255 on the face of a slip and validation using Font B (7 × 9) is special characters and the character type for other paper types and for Font A is space characters.

TM-H5000II

**Page 255 for roll paper and using Font A (9 × 9), Font C (5 × 9) on a slip are space characters.
Page 255 using Font B (7 × 9) on a slip are special characters.**

Page 19 [pc858] support differs, depending on the version of the firmware.

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TM-U325D

Pages 254 and 255 are the space characters.

TM-U675

The character type for pages 254 and 255, using Font A (5 × 9) is space characters and for Font B (7 × 9) is special characters.

ESC {

SETTING COMMAND

[Name] Turn upside-down print mode on/off

[Format]

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

[Printers not featuring this command] **TM-J9000/J9100**

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

[Default] n = 0

[Printers not featuring this command] None

[Description] In standard mode, turns upside-down print mode on or off.

- When the LSB of n is 0, upside-down print mode is turned off.
- When the LSB of n is 1, upside-down print mode is turned on.

[Notes]

- When standard mode is selected, this command is enabled only when processed at the beginning of the line.
- Upside-down print mode is effective for all data in standard mode except for the following.
 - Graphics from **GS (L** <Function 112> or <Function 113>.
 - Raster bit image from **GS v O**.
 - Variable vertical size bit image from **GS Q O**.
- The upside-down print mode has no effect in page mode.
- When upside-down print mode is turned on, the printer prints 180°-rotated characters from right to left. The line printing order is not reversed; therefore, be careful of the order of the data transmitted.
- Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.

[Model-dependent variations]

None

Program Example for all printers

```
PRINT #1, CHR$(&H1B);";";CHR$(0); ← Cancel  
PRINT #1, "ABCDE"; CHR$(&HA);  
PRINT #1, "BCDEF"; CHR$(&HA);  
PRINT #1, CHR$(&H1B);";";CHR$(1); ← Select  
PRINT #1, "ABCDE"; CHR$(&HA);  
PRINT #1, "BCDEF"; CHR$(&HA);
```

Print Sample

Normal printing

ABCDE
BCDEFABCDE
BCDEF
Upside-down
printing

[Name] Select character style(s)

[Printers not featuring this command] **TM-H5000II, TM-U675, TM-U325D**

[Description] Selects the character style(s).

- Function code (**fn**) specifies the function.

fn	Function No.	Function name
48	Function 48	Select character color
49	Function 49	Select background color
50	Function 50	Turn shading mode on/off

- **PL, PH** specify (**PL** + **PH** × 256) as the number of bytes after **PH** (**fn** and **[parameters]**).
- Description of the **[parameters]** is described in each function.

[Notes]

- The function is defined by function code (**fn**). Details of performance differ, depending on the function.
- Settings of this command affect printing of alphanumeric, Katakana, multilingual, user-defined, and user-defined Kanji characters.
- Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.

[Model-dependent variations] **TM-9000/9100, TM-J7000/7100, TM-J7500/7600, TM-H6000III**

Program Example for all printers

```
PRINT #1, CHR$(&H1D);" (N";CHR$(2);CHR$(0);
PRINT #1, CHR$(48); CHR$(48);← function 48
PRINT #1, "Color1";← Set character color1
PRINT #1, CHR$(&H1D);" (N";CHR$(2);CHR$(0);← Select
PRINT #1, CHR$(48); CHR$(49);
PRINT #1, "Color2";← Set character color2
```

Print Sample

Color1 Color2

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TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

When using ink cartridges (SJIC8) only for TM-J9100, TM-J7500, TM-J7000, only Color1 is available.

When using ink cartridges (SJIC6 and SJIC7) only for TM-J9100, TM-J7600, TM-J7100, the following character colors are available.

Color selection	Character color
Color1	Black (SJIC6 (K))
Color2	Red (SJIC7 (R)), Blue (SJIC7 (B)), or Green (SJIC7 (G))
Color3	Color1 + Color2

TM-H6000III

This printer supports <Function 48> of this command.

This command is effective for printing roll paper characters in two-color printing control mode.

When using the two-color thermal paper, the following character colors are available.

Color selection	Character color	Controls
Color1	Black	Print by high energy
Color2	Red	Print by low energy

Characters printed with Color 2 may fade, depending on the storage environment. Therefore, if the printing needs to last a long time, print with Color 1.

See GS (E <Function 3> for selecting (single-color printing control/two-color printing control).

GS (N pL pH fn m <Function 48>

[Name] Select character color

[Format]

ASCII	GS	(N	pL	pH	fn	m
Hex	1D	28	4E	02	00	30	m
Decimal	29	40	78	2	0	48	m

[Range] $(\text{pL} + \text{pH} \times 256) = 2$ (**pL** = 2, **pH** = 0)
fn = 48

TM-J9000/J9100: **m = 48, 49 [TM-J9000 (monochrome model)]**
48 ≤ m ≤ 51 [TM-J9100(two-color model)]

TM-J7500/7600: **m = 48, 49 [TM-J7500 (monochrome model)]**
48 ≤ m ≤ 51 [TM-J7600(two-color model)]

TM-J7000/7100: **m = 48, 49 [TM-J7000 (monochrome model)]**
48 ≤ m ≤ 51 [TM-J7100(two-color model)]

TM-H6000III: **m = 49, 50**

[Default] **m = 49**

[Description] Selects character color specified by **m** as follows:

m	Character color
48	None (not print)
49	Color1
50	Color2
50	Color3

- [Notes]
- When None (**m** = 48) is selected, the printer treats the character as nonprinting dots. When using this parameter combined with Function 50, characters can be printed in white with shadow on a black background.
 - When underline mode is turned on, the underline will be printed in the color specified by this function.

- In white/black reverse print mode, the printer treats the character as nonprinting dots and prints the background in the color specified by this function.
- When character with shadow is selected by Function 50, dots, except for the background and shadow parts, are printed in the color specified by this function.
- Settings of this model do not affect printing of graphics, bit image, bar codes (including HRI characters), and two dimension code.
- The color of the graphics can be specified by **GS (L**.

[Model-dependent variations]

TM-J7500/7600

TM-J7500/7600

Extended font A is printed in Color1 regardless of the setting of this command.

GS (N pL pH fn m <Function 49>

[Name] Select background color

[Format]

ASCII	GS	(N	pL	pH	fn	m
Hex	1D	28	4E	02	00	31	m
Decimal	29	40	78	2	0	49	m

[Range] $(pL + pH \times 256) = 2$ (**pL** =2, **pH** =0)

TM-J9000/J9100: **m** = 48, 49 [TM-J9000 (monochrome model)]

48 ≤ **m** ≤ 51 [TM-J9100(two-color model)]

TM-J7500/J7600: **m** = 48, 49 [TM-J7500 (monochrome model)]

48 ≤ **m** ≤ 51 [TM-J7600(two-color model)]

TM-J7000/J7100: **m** = 48, 49 [TM-J7000 (monochrome model)]

48 ≤ **m** ≤ 51 [TM-J7100(two-color model)]

[Default] **m** = 48

[Description] Selects background color by **m** as follows:

m	Background color
48	None (not print)
49	Color1
50	Color2
51	Color3

- This function does not affect the color of the spaces skipped by **HT**, **ESC \$**, and **ESC **; the spaces between rows; and background of the characters in white/black reverse print mode.
- The color of the spaces between characters set by **ESC SP**, **FS S** will be printed in the color specified by this function.
- Specifying this function does not affect the characters if graphics, bit image, bar code (including HRI characters), 2-dimensional code, data other than character background (parts skipped with **HT**, **ESC \$**, **ESC ** and spaces between lines), and white/black reverse characters are specified.

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[Model-dependent variations]

TM-J7500/7600, TM-H6000III

TM-J7500/7600

When this printer prints Extended Font A, the background is not printed (None) regardless of the setting of this command.

TM-H6000III

This printer does not support this function.

GS (N pL pH fn m <Function 50>

[Name] Turn shading mode on/off

[Format]

ASCII	GS	(N	pL	pH	fn	m	a
Hex	1D	28	4E	03	00	32	m	a
Decimal	29	40	78	3	0	50	m	a

[Range] $(\text{pL} + \text{pH} \times 256) = 3$ (**pL** = 3, **pH** = 0)

fn = 50

m = 0, 1, 48, 49

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100: a = 48

[Default] **m** = 0, **a** = 48

[Description] Turns the character shadow mode on or off.

m	Function
0, 48	Character shadow mode is turned on.
0, 49	Character shadow mode is turned off.

Prints the character shadow in the color specified by **a** as follows:

a	Shadow color
48	None (not print)
49	Color1
50	Color2
51	Color3

- [Notes]
- Even if underline mode is turned on, the shadow of the underline is not printed.
 - In white/black reverse print mode, the color of the shadow specified by this function does not change.
 - Settings of this model do not affect printing of graphics, bit image, bar codes (including HRI characters), and two dimension code.

[Model-dependent variations]

TM-9000/9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III

TM-J7500/7600

The color of the shadow cannot be specified. Always select None (a = 48).

The character shadow mode doesn't affect Extended Font A.

TM-J9000/J9100, TM-J7000/7100

The color of the shadow cannot be specified. Always select None (a = 48).

TM-H6000III

This printer does not support this function.

[Name] Select character size

[Format]

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

[Range] **TM-J7000/7100, TM-J7500/7600, TM-H6000III, TM-H5000II:**

$0 \leq n \leq 7, 16 \leq n \leq 23, 32 \leq n \leq 39, 48 \leq n \leq 55, 64 \leq n \leq 71,$

$80 \leq n \leq 87, 96 \leq n \leq 103, 112 \leq n \leq 119$ ($1 \leq \text{height} \leq 8, 1 \leq \text{width} \leq 8$)

TM-J9000/J9100, TM-U325D, TM-U675: n = 0, 1, 16, 17

[Default] **n = 0**

[Printers not featuring this command] None

[Description] Selects the character height (vertical number of times normal font size) using bits 0 to 2 and selects the character width (horizontal number of times normal font size) using bits 4 to 6, as follows:

Character Width Selection					
Bit6	Bit5	Bit4	Hex	Decimal	Width
Off	Off	Off	00	0	1 (normal)
Off	Off	On	10	16	2 (double-width)
Off	On	Off	20	32	3
Off	On	On	30	48	4
On	Off	Off	40	64	5
On	Off	On	50	80	6
On	On	Off	60	96	7
On	On	On	70	112	8

Character Height Selection					
Bit2	Bit1	Bit0	Hex	Decimal	Height
Off	Off	Off	00	0	1 (normal)
Off	Off	On	01	1	2 (double-height)
Off	On	Off	02	2	3
Off	On	On	03	3	4
On	Off	Off	04	4	5
On	Off	On	05	5	6
On	On	Off	06	6	7
On	On	On	07	7	8

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[Notes]

- The character size set by this command is effective for alphanumeric, Kana, user-defined, multilingual, and user-defined Kanji characters.
- When the height of characters is enlarged, the characters on the line are aligned at the baseline.
- When characters are enlarged by width, the characters are enlarged to the right, based on the left side of the character.
- In standard mode, the character is enlarged in the paper feed direction when double-height mode is selected, and it is enlarged perpendicular to the paper feed direction when double-width mode is selected. However, when character orientation changes in 90° clockwise rotation mode, the relationship between double-height and double-width is reversed.
- In page mode, double-height and double-width are in the character orientation.
- Settings of this function for alphanumeric and Kana characters are effective until **ESC !** or **ESC @** is executed, the printer is reset, or the power is turned off.
- Settings of this command for multilingual characters are effective until **FS !**, **FS W** or **ESC @** are executed, the printer is reset, or the power is turned off.

[Model-dependent variations]

TM-J7500/7600, TM-H6000III, TM-H5000II

Program Example for all printers

```
PRINT #1, CHR$(&H1D);"!";CHR$(17);  
PRINT #1, "AAAAA"; CHR$(&HA);  
PRINT #1, CHR$(&H1D);"!";CHR$(0);  
PRINT #1, "BBBBB"; CHR$(&HA);
```

Print Sample

AAAAA ← Select quadruple (double-height x double-width)
BBBBB

TM-J7500/7600

The font size of Extended Font A cannot be changed.

TM-H5000II

When the character width or height is set to three times the normal font size or more, double-width or double-height is printed with slip.

TM-H6000III

If triple-size or larger is selected, a double-size character is printed on the face of a slip or validation. The character size printed on the back of a slip cannot be changed.

[Name] Turn white/black reverse print mode on/off

[Format]	ASCII	GS	B	n
	Hex	1D	42	n
	Decimal	29	66	n

[Range] $0 \leq \mathbf{n} \leq 255$

[Default] **n** = 0

[Printers not featuring this command] **TM-U675**, **TM-U325D**

[Description] Turns white/black reverse print mode on or off.

- When the LSB of **n** is 0, white/black reverse print mode is turned off.
- When the LSB of **n** is 1, white/black reverse print mode is turned on.

[Notes]

- The white/black reverse print mode is effective for alphanumeric, Kana, user-defined, multilingual, and user-defined Kanji characters.
- When white/black reverse print mode is turned on, it also affects the right-side character spacing set by **ESC SP**, and the both-side Kanji character spacing set by **FS S**.
- When white/black reverse print mode is turned on, it does not affect the space between lines. The space includes being set by **HT**, **ESC \$**, and **ESC **.
- Even if underline mode is turned on, the printer does not underline white/black reverse characters.
- In white/black reverse print mode, characters are printed in white on a black background.
- Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.
- White/black reverse print mode prints white characters on a black background.

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[Model-dependent variations]

TM-J7500/7600, TM-H6000III, TM-H5000II

Program Example for all printers

```
PRINT #1, CHR$(&H1D); "B"; CHR$(1); ← Select  
PRINT #1, "AAAAA"; CHR$(&HA);  
PRINT #1, CHR$(&H1D); "B"; CHR$(0); ← Cancel  
PRINT #1, "BBBBB"; CHR$(&HA);
```

Print Sample

AAAAA ← White/black reverse printing
BBBBB ← Normal printing

TM-J7500/7600

This command is not effective for Extended Font A.

TM-H5000II

This command is effective for roll paper.

TM-H6000III

This command is effective for roll paper.

GS b

SETTING COMMAND

[Name] Turn smoothing mode on/off

[Format] ASCII GS b **n**
Hex 1D 62 **n**
Decimal 29 98 **n**

[Range] $0 \leq \mathbf{n} \leq 255$

[Default] **n** = 0

[Printers not featuring this command] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-U675, TM-U325D**

[Description] Turns smoothing mode on or off.

- When the LSB of **n** is 0, smoothing mode is turned off.
- When the LSB of **n** is 1, smoothing mode is turned on.

[Notes]

- The smoothing mode is effective for alphanumeric, Kana, user-defined, multilingual, and user-defined Kanji characters.
- Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.

[Model-dependent variations]

TM-H6000III, TM-H5000II

Program Example for all printers

```
PRINT #1, CHR$(&H1D);!"";CHR$(68); ← Select font size
PRINT #1, CHR$(&H1D);"b";CHR$(1); ← Select smoothing
PRINT #1, "AAAAA"; CHR$(&HA);
```

Print Sample

AAAAA

TM-H5000II

Smoothing is available for quadruple-size or larger characters for roll paper.

TM-H6000III

Smoothing is available for quadruple-size or larger characters for roll paper.

PRINTING PAPER COMMANDS

Command	Name
ESC c 0	Select paper type(s) for printing
ESC c 1	Select paper type(s) for command settings
ESC f	Set cut sheet wait time
GS (G	Select cut sheet control function(s)

ESC c 0

[Name] Select paper type(s) for printing

[Format] ASCII ESC c 0 **n**
 Hex 1B 63 30 **n**
 Decimal 27 99 48 **n**

[Range] **TM-J7500/7600, TM-J7000/7100, TM-H5000II: $1 \leq n \leq 4$**

TM-H6000III : $1 \leq n \leq 4$, n = 8 [Validation model]
: $1 \leq n \leq 4$ [Except the above model]

TM-U325D: $1 \leq n \leq 3$, $8 \leq n \leq 11$

TM-U675: $1 \leq n \leq 4$, n = 8

[Default] **TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II, TM-U675: n = 3**

TM-U325D: n = 1

[Printers not featuring this command] None

[Description] Selects the active sheet(s) for printing, using **n** as follows:

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Roll paper disabled.
	On	01	1	Roll paper enabled.
1	Off	00	0	Roll paper disabled.
	On	02	2	Roll paper enabled.
2	Off	00	0	Slip paper disabled.
	On	04	4	Slip paper enabled.
3	Off	00	0	Validation paper disabled.
	On	08	8	Validation paper enabled.
4-7	Off	00	0	Reserved.

... how to use
this table

This command is not able to specify check paper as the active sheet. That is a difference between this command and **GS (G <Function 80>**.

[Notes]

- This command is enabled only when processed at the beginning of the line in standard mode.
- This function is disabled in page mode. Use this function before selecting the sheet for printing data in the page mode.
- Both bits 0 and 1 select roll paper and when either bit location 0 or bit location 1 is on, roll paper is selected as the active sheet.
- When cut sheet is first enabled, the printer enters the cut sheet waiting status. The printer waits for the cut sheet until the cut sheet is inserted, the waiting time **t1** set by **ESC f** elapses, the printer is reset, or the power is turned off.
- When the printer is in cut sheet mode and it is disabled, the printer ejects the cut sheet. In "cut sheet removal waiting" supported models, the printer waits for the removal of the cut sheet. "Cut sheet removal waiting" is not canceled until the cut sheet is removed or the printer is reset or turned off.
- If the current active sheet is specified again, this command is ignored.
- The status of cut sheet pre-processing can be checked with the basic ASB status customized using **GS (B**, or any of the following.
- Slip pre-processing: **DLE EOT (n=5: slip status)**
- Validation pre-processing: **DLE EOT (n=6: validation status)**

[Model-dependent variations]

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III,
TM-H5000II, TM-U675, TM-U325D

Program Example for all printers

```
PRINT #1, CHR$(&H1B); "c0";CHR$(1); ← Select active sheet (roll paper)
PRINT #1, "AAAAA"; CHR$(&HA); ← Print on roll paper
PRINT #1, CHR$(&H1B); "c0";CHR$(4); ← Select print sheet (slip)
PRINT #1, "BBBBB"; CHR$(&HC); ← Print on slip
```

Print Sample <roll paper>

AAAAA

Print Sample <slip>

BBBBB

TM-J9000/J9100

This function is not supported. Select the active sheet (print sheet) with GS (G <Function 80>.

TM-J7500/7600

Roll paper or slip can be used as the active sheet. Roll paper and slip cannot be selected simultaneously.

The SLIP LED blinks when the printer is in the slip ejection waiting status. The printer processes the next operation after checking that the slip is removed.

TM-J7000/7100

Roll paper or slip can be used as the active sheet. Roll paper and slip cannot be selected simultaneously. When slip is selected as the active sheet by this command, the face of the slip is selected.

The SLIP LED blinks when the printer is in the slip ejection waiting status. The printer processes the next operation after checking that the slip is removed.

TM-H5000II

Either roll paper or slip paper can be used as the active sheet. Slip and roll paper cannot be selected simultaneously. When a slip is not inserted correctly, the printer ejects the slip and waits for the slip to be inserted again. The SLIP LED blinks when the printer is in the slip ejection waiting status. The printer processes the next operation after checking that the slip is removed. The slip ejection waiting status can be checked by normal ASB status after customization.

TM-H6000III

Roll paper, slip, or validation can be used as the active sheet. Only one type can be selected at one time. When slip is selected as the active sheet by this command, the face of the slip is selected. If the length of the slip is too short or the slip is not inserted correctly, the printer ejects the slip and waits for insertion of another slip.

The SLIP LED blinks when the printer is in the slip or validation ejection waiting status. The printer processes the next operation after checking that the paper is removed.

TM-U675

Roll paper, slip, or validation paper can be used for the active sheet. They cannot be selected simultaneously. If the length of the slip is too short or the slip is not inserted correctly, the printer ejects the slip and waits for insertion of another slip. The SLIP LED blinks when the printer is in the slip ejection waiting status. The printer processes the next operation after checking that the slip is removed.

TM-U325D

Roll paper and validation paper can be used as the active sheet. Be sure to use pressure-sensitive paper when roll paper and validation are selected simultaneously; otherwise, the print on roll paper will not be the expected output.

ESC c 1

SETTING COMMAND

[Name] Select paper type(s) for command settings

[Format] ASCII ESC c 1 **n**
 Hex 1B 63 31 **n**
 Decimal 27 99 49 **n**

[Range] **TM-J7500/7600: 1 ≤ n ≤ 7**

TM-J7000/7100: 1 ≤ n ≤ 7, 64 ≤ n ≤ 71

TM-H5000II: 1 ≤ n ≤ 4

TM-H6000III: 1 ≤ n ≤ 4, n = 8 [Validation model]
 1 ≤ n ≤ 4 [Except above model]

TM-J9000/J9100, TM-U675: 1 ≤ n ≤ 15

TM-U325D: 1 ≤ n ≤ 3, 8 ≤ n ≤ 11

[Default] **TM-J9000/J9100: n = 15**

TM-J7500/7600: n = 7

TM-J7000/7100: n = 71

TM-H5000II, TM-H6000III, TM-U675: n = 3

TM-U325D: n = 11

[Printers not featuring this command] None

[Description] Selects the paper type(s) for command settings, using **n** as follows:

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Roll paper disabled.
	On	01	1	Roll paper enabled.
1	Off	00	0	Roll paper disabled.
	On	02	2	Roll paper enabled.
2	Off	00	0	Face of slip paper disabled.
	On	04	4	Face of slip paper enabled.

*... how to use
this table*

Bit	Off/On	Hex	Decimal	Function
3	Off	00	0	Validation paper disabled.
	On	08	8	Validation paper enabled.
4, 5	Off	00	0	Reserved.
6	Off	00	0	Back of slip paper disabled.
	On	40	64	Back of slip paper enabled.
7	Off	00	0	Reserved.

[Notes]

- When multiple paper types are selected, each setting is used for all paper types selected.
- Both bits 0 and 1 indicate roll paper and when either bit 0 or bit 1 is on or both are on, roll paper is selected as the paper type for command settings.
- The commands that you need to select a paper type for command settings are **ESC 2**, **ESC 3**, **GS (K**, **GS L**, and **GS W**.
- If the printer supports both slip and validation, **ESC C** needs to select a paper type for command settings.
- If the printer has multiple print heads with different pitches, the commands that need you to select paper types for settings are **ESC &**, **ESC ?**, **GS ***, and **GS P**.

[Model-dependent variations]

TM-J9000/J9100, **TM-J7500/7600**, **TM-J7000/7100**, **TM-H6000III**,
TM-H5000II, **TM-U675**, **TM-U325D**

Program Example for all printers

```
PRINT #1, CHR$(&H1B); "c1";CHR$(1); ← Select paper type for command settings (roll paper)
PRINT #1, CHR$(&H1D); "P";CHR$(180);CHR$(180);
PRINT #1, CHR$(&H1B); "3";CHR$(30); ← Set line spacing for roll paper
```

TM-J9000/J9100

Roll paper and slip paper and validation can be used as the paper type for command settings. Each paper can be selected at the same time. The setting of this command affects ESC 2, ESC 3, GS (K, GS L, and GS W.

CONFIDENTIAL

TM-J7500/7600

Roll paper and slip paper can be used as the paper type for command settings. Roll paper and slip paper can be selected at the same time. The setting of this command affects **ESC 2, ESC 3, GS (K, GS L, and GS W.**

TM-J7000/7100

Roll paper and the face of slip paper and the back of slip paper can be used as the paper type for command settings. Each paper type can be enabled at the same time. The setting of this command affects **ESC 2, ESC 3, GS (K, GS L, and GS W.**

TM-H5000II

Roll paper and slip paper can be used as the paper type for command settings. Slip and roll paper cannot be selected simultaneously. The commands that need you to select a paper type for command settings are **ESC &, ESC 2, ESC 3, ESC ?, FS 2, GS *, GS L, GS P and GS W.**

TM-U325D

Roll paper and validation paper can be used as the paper type for command settings. The commands that need you to select paper type for command settings are **ESC 2, ESC 3, GS L, and GS W.** If different settings are set for roll paper and validation and both roll paper and validation are selected for printing by **ESC c 0**, printer operation is based on the settings for validation.

TM-H6000III

<Validation model>

Roll paper, slip, and validation paper can be used as the paper type for command settings. Only one type can be selected at a time. The commands that are affected by this command are the following.

- **ESC 2, ESC 3, GS L, and GS W** can be set for roll paper, slip, and validation independently.
- **ESC &, ESC ?, GS P, and GS *** can be set for roll paper and cut sheet (slip and validation) independently. Slip and validation have the same setting value.
- **ESC f** can be set for slip, and validation independently.

<Note for all models except the above>

**Roll paper and the face of slip paper can be used as the paper type for command settings.
Roll paper and the face of slip paper cannot be selected simultaneously. The commands that
are affected by this command are **ESC &, ESC 2, ESC 3, ESC ?, FS 2, GS *, GS L, GS P, and
GS W.****

TM-U675

**Roll paper, slip, and validation paper can be used as the paper type for command settings. Each
paper type can be enabled at the same time. The commands that are affected by this command
are **ESC 2, ESC 3, GS L, and GS W.****

- This setting alone, however, does not cause the printer to immediately start waiting for the cut sheet to be inserted. The setting becomes effective when the printer executes **ESC c 0**, **GS (G**, **FS a 0**, or **FS c**.

[Model-dependent variations]

TM-J9000/J9100, TM-H6000III, TM-H5000II

Program Example for all printers

```
PRINT #1, CHR$(&H1B) ; "f" ;CHR$(15) ;CHR$(20) ;
PRINT #1, CHR$(&H1B) ; "c0" ;CHR$(4) ; ← Select paper type
```

TM-J9000/J9100

These printers do not support this function.

TM-H5000II

Changing the parameter t2 is not recommended, because increasing t2 (the time from detection of the cut sheet to the start of printing) may cause problems.

TM-H6000III

<Photo-ID model>

The setting of this command affects the “waiting for slip or check paper insertion” action.

<Validation model>

This command is enabled when slip or validation is selected as the paper type for the command setting by **ESC c 1. This command can be set for slip and validation independently. The setting value for slip affects the “waiting for slip or check paper insertion” action.**

[Name] Select cut sheet control function(s)

[Printers not featuring this command] **TM-H5000II, TM-U325D**

[Description] Various processes are performed on the cut sheet.

- Function code (**fn**) specifies the function.

fn	Function No.	Function name
32	Function 32	Transmit the status of the cut sheet.
48	Function 48	Select the side of the slip (face or back).
80	Function 80	Select the active sheet.
81	Function 81	Start pre-process for cut sheet insertion.
82	Function 82	End pre-process for cut sheet insertion.
83	Function 83	Executes waiting process for cut sheet insertion.
84	Function 84	Feed to the print starting position for the slip.
85	Function 85	Finish the processing of the cut sheet.

- **pl, ph** specify (**pl** + **ph** × 256) as the number of bytes after **ph** (**fn** and **[parameters]**).
- Description of the **[parameters]** is described in each function.

* The following functions are described in "Control option commands."

- **Function 60:** Read the magnetic ink character and transmit the reading result.
- **Function 61:** Retransmit the magnetic ink character reading result.
- **Function 64:** Read the data and transmit the scanned information.
- **Function 65:** Scan image data and transmit the image scanning result.
- **Function 66:** Retransmit the image scanning result.

- **Function 67:** Execute a pre-scan.
- **Function 68:** Delete the image scanning result with the specified data ID.
- **Function 69:** Delete all image scanning results.
- **Function 70:** Transmit the data ID list of the image scanning results.
- **Function 71:** Transmit the remaining capacity of the NV memory for image data storage.

[Notes]

- The function of this command is defined by function code **fn** and the operation differs, depending on the function selected.
- The “active sheet” is the target sheet of commands. The active sheet can be set to “roll paper,” “slip paper,” “validation paper,” “check,” or “card” by the following commands.

Command	Settable active sheet
This command < Function 80 >	Roll paper, slip paper, validation paper, check, card
ESC c 0	Roll paper, slip paper, validation paper
FS a 0 (*1)	Check

(*1) **FS a 0** is supported by only some printer models and will not be supported by future models. The command is an obsolete command.

- The functions of this command may be ignored, depending on the current active sheet.

[Notes for transmission process]

- Data send operations are performed using Function 32. When you use this command, obey the following rules.
 - After the host PC transmits the function data, the printer will send response data or status back to the PC. Do not transmit more data from the PC until the response data or status data are received from the printer.
 - When operating with a serial interface, be sure to configure the operation so that the host computer only uses the printer when it is READY.

- When operating with a parallel interface, the data sent by this function (starting with Header and ending with NUL), as with other data, is first stored in the send buffer, then output in sequential order when the host computer changes to the reverse mode. Note that the send buffer capacity is 99 bytes, and any data exceeding this volume limit will be lost; therefore, when using this command, it is important to configure the operation so that the host computer's change to the reverse mode and the subsequent status send/receive process is performed quickly.
- When communication with the printer uses XON/XOFF control with serial interface, the XOFF code may interrupt the "Header to NUL" data string.
- The information for each function can be identified to other transmission data according to specific data of the transmission data block. When the header transmitted by the printer is [hex = 37H/decimal = 55], treat NUL [hex = 00H/decimal = 0] as a data group and identify it according to the combination of the header and the identifier.

Program example and print samples

```

PRINT #1, CHR$(&H1D); "(G";CHR$(2);CHR$(0);CHR$(80);CHR$(4); ← Select slip for active sheet [function 80]
PRINT #1, CHR$(&H1D); "(G";CHR$(2);CHR$(0);CHR$(81);CHR$(48); ← Starts pre-process for cut sheet insertion
                                                [function 81]

<Do confirmation for cut sheet inserting: (example: "Waiting process" for the ASB which indicates "TOF/BOF sensor : Paper
present.">

PRINT #1, CHR$(&H1D); "(G";CHR$(2);CHR$(0);CHR$(82);CHR$(48); ← Pre-process for cut sheet insertion ends
                                                [function 82]
PRINT #1, CHR$(&H1D); "(G";CHR$(2);CHR$(0);CHR$(48);CHR$(4); ← Specifies slip as the paper type and the
                                                face to be printed. [function 48]
PRINT #1, CHR$(&H1D); "(G";CHR$(2);CHR$(0);CHR$(84);CHR$(1); ← Move to a print starting position
                                                [function 48]
PRINT #1, "AAAAAA";CHR$(&HA); ← Print on the front side of the slip
PRINT #1, CHR$(&H1D); "(G";CHR$(2);CHR$(0);CHR$(48);CHR$(68); ← Select the back of the slip [function 48]
PRINT #1, CHR$(&H1D); "(G";CHR$(2);CHR$(0);CHR$(84);CHR$(1); ← Move to a print starting position
                                                [function 84]
PRINT #1, "BBBBBB";CHR$(&HA); ← Print on the back of the slip
PRINT #1, CHR$(&H1D); "(G";CHR$(2);CHR$(0);CHR$(85);CHR$(48); ← Eject the slip
                                                [function 85]

```

Print sample (face of a slip)

AAAAAA

Print sample (back of a slip)

BBBBBB

[Model-dependent variations]

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675

TM-J9000/J9100

This printer supports <Function 32>, <Function 80>, <Function 81>, <Function 82> and <Function 85> only.

TM-J7500/7600

This printer supports <Function 32> and <Function 80 ~ 85> only.

TM-J7000/7100

This printer supports <Function 32>, <Function 48>, <Function 80> to <Function 85>.

TM-H6000III

<Photo ID model>

This model supports <Function 32>, <Function 48>, <Function 80> and <Functions 83 ~ 85>.

<Image Scanner model>

This model supports <Function 32>, <Function 48>, <Function 80> and <Function 84>.

<For all other models>

All other models support <Function 48> and <Function 84> only.

TM-U675

This printer supports <Function 48> and <Function 84> only.

GS (G pL pH fn m <Function 32>

[Name] Transmit the status of the cut sheet.

[Format]

ASCII	GS	(G	pL	pH	fn	m
Hex	1D	28	47	02	00	20	m
Decimal	29	40	71	2	0	32	m

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 2$ ($\mathbf{pL} = 2$, $\mathbf{pH} = 0$)

fn = 32

m = 48

[Description] Transmits the status of the cut sheet.

[Notes] ■ This function sends the following data groups, beginning with the Header and ending with NUL.

Send data	Hexadecimal	Decimal	Data length
Header	37H	55	1 byte
Identifier	3AH	58	1 byte
Status	40H to 4FH	64 to 79	1 byte
NUL	00H	0	1 byte

■ This status is as follows.

Bit	Off/On	Hex	Decimal	Status
0	Off	00	0	Paper feeding to the print start position of the current clamped slip paper is enabled.
	On	01	1	Paper feeding to the print start position of the current clamped slip paper is disabled.
1	Off	00	0	MICR processing of the current clamped check is enabled.
	On	02	2	MICR processing of the current clamped check is disabled.

... **how to use
this table**

Bit	Off/On	Hex	Decimal	Status
2	Off	00	0	Image processing of the current clamped check is enabled.
	On	04	4	Image processing of the current clamped check is disabled.
3	Off	00	0	Image processing of the current clamped card is enabled.
	On	08	8	Image processing of the current clamped card is disabled.
4-5	Off	00	0	Reserved.
6	On	40	64	Fixed.
7	Off	00	0	Fixed.

- Each bit becomes "ON (processing is enabled)" in the following cases.
 - Bit 0: Active sheet is specified to slip paper.
Bit 1, 2: Active sheet is specified to check.
 - Bit 3: Active sheet is specified as card.
 - The paper / card is clamped.
 - Each process can be performed without ejecting the clamped paper / card.
- See previous [Notes for transmission process] for a description of the transmission process.

[Model-dependent variations]

TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675

TM-J7500/7600

This printer doesn't support the status of Bits 1, 2 and 3.

TM-J7000/7100

This printer doesn't support the status of Bit 1, 2 and 3.

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TM-H6000III

<Photo-ID model>

This model supports all bits.

<Image Scanner model>

This model doesn't support bit 3.

<For all other models>

All other models don't support this function.

TM-U675

This printer does not support this function.

GS (G pL pH fn m <Function 48>

[Name] Select the side of the slip (face or back).

[Format]

ASCII	GS	(G	pL	pH	fn	m
Hex	1D	28	47	02	00	30	m
Decimal	29	40	71	2	0	48	m

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 2$ (**pL** = 2, **pH** = 0)

fn = 48

TM-U675: **m** = 4

TM-J7000/7100: **m** = 4, 68

TM-H6000III: **m** = 4, 68 [Endorsement printer installed model]
m = 4 [Except the above model]

[Description] Selects slip as the active sheet and selects the side of the slip to be printed:

- **m** specifies the side to be printed on a slip.

m	Function
4	Selects the face of the slip
68	Selects the back of the slip

- [Notes]
- This function is enabled only when processed at the beginning of the line in standard mode.
 - In page mode, this function cannot be used. Use this function before selecting the printing side for printing data in the page mode.
 - Slip is selected as active sheet by this function.
 - When slip is selected as active sheet, this function executes only switching the print side. The printer does not perform paper feeding, such as ejecting paper, waiting for paper insertion, and moving to the print starting position.
 - If this function is executed when MICR is selected, the MICR function is canceled. The printer selects a slip as active sheet and does not perform paper feeding, such as ejecting paper, waiting for paper insertion, and moving to the print starting position.
 - When roll paper is selected as the active sheet during the execution of this function, the printer waits for a slip to be inserted.

- When validation is selected as the paper type during the execution of this function, the printer waits for a slip to be inserted after the validation paper is ejected.
- The printer is in the slip insertion waiting status until the slip sheet is inserted, the waiting time **t1** set by **ESC f** elapses, the printer is reset, or the power is turned off.
- It is possible to cancel the slip sheet insertion waiting status using **DLE ENQ 3**. In this case, however, data in the print and receive buffers is cleared. The slip sheet insertion waiting status can be confirmed by **DLE EOT** (**m** = 5: slip status) or ASB status after executing customizing by **GS (B)**.
- "Cut sheet removal waiting" is not canceled until the cut sheet is removed or the printer is reset or turned off. The "cut sheet removal waiting" status can be confirmed by ASB status after executing customizing by **GS (B)**.

[Model-dependent variations]

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675

TM-J9000/J9100, TM-J7500/7600

This printer doesn't support this function.

TM-J7000/7100

The face is the visible side when inserting a cut sheet.

The back can be specified (**m** = 68) when the printer has the endorsement mechanism.

The SLIP LED blinks when the printer waits for a slip to be ejected. In this case, the printer processes the next operation after checking to confirm that the slip has been ejected.

TM-H6000III

The SLIP LED blinks when the printer waits for a slip to be ejected. In this case, the printer processes the next operation after checking to confirm that the slip has been ejected.

Face is the side on which printing is performed by a serial impact dot head.

Back is the side on which printing is performed by a shuttle head.

The back can be specified (**m** = 68) when the printer has the endorsement printer (E/P).

TM-U675

The SLIP LED blinks when the printer waits for the cut sheet to be ejected. In this case, the printer processes the next operation after checking to confirm that the cut sheet has been ejected.

GS (G pL pH fn m <Function 80>

[Name]

Select the active sheet.

[Format]

ASCII	GS	(G	pL	pH	fn	m
Hex	1D	28	47	02	00	50	m
Decimal	29	40	71	2	0	80	m

[Range]

 $(\mathbf{pL} + \mathbf{pH} \times 256) = 2$ (**pL** = 2, **pH** = 0)**fn** = 80

TM-J9000/J9100: **1 ≤ m ≤ 4, m = 8, 16, 32** [When memory switch [Msw8-4] is off]
m = 4, 8, 16, 32 [When memory switch [Msw8-4] is on]

TM-J7500/7600: **1 ≤ m ≤ 4****TM-J7000/7100:** **1 ≤ m ≤ 4, m = 32**

TM-H6000III: **1 ≤ m ≤ 3, m = 16, 32** [Photo-ID model]
1 ≤ m ≤ 3, m = 32 [Image scanner model]

[Default]

TM-J7500/7600, TM-J7000/7100, TM-H6000III: **m = 3****TM-J9000/J9100:** **m = 8**

[Description]

Selects the active sheet to be targeted for processing data.

Bit	Off/On	Hex	Decimal	Status
0	Off	00	0	Does not select roll paper as the active sheet.
	On	01	1	Selects roll paper as the active sheet.
1	Off	00	0	Does not select roll paper as the active sheet.
	On	02	2	Selects roll paper as the active sheet.
2	Off	00	0	Does not select slip as the active sheet.
	On	04	4	Selects slip as the active sheet.
3	Off	00	0	Does not select validation as the active sheet.
	On	08	8	Selects validation as the active sheet.
4	Off	00	0	Does not select card as the active sheet.
	On	10	16	Selects card as the active sheet.

... how to use
this table

Bit	Off/On	Hex	Decimal	Status
5	Off	00	0	Does not select check paper as the active sheet.
	On	20	32	Selects check paper as the active sheet.
6	Off	00	0	Reserved.
7	Off	00	0	Reserved.

[Notes]

- This function is enabled only when processed at the beginning of the line in standard mode.
- This function is disabled in page mode. Use this function before selecting the sheet for printing data in the page mode.
- Bit 0 and Bit 1 select the same roll paper. The active sheet is selected to roll paper when the odd or both bits are selected or enabled.
- Selecting card (Bit 4) allows the image scanner device to be selected.
- Enabling check paper (Bit 5) allows the image MICR device to be selected.
- Setting of this function is effective until **ESC @** is executed, the printer is reset, or the power is turned off.

[Model-dependent variations]

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675

TM-J9000/J9100

When memory switch [Msw8-4] is off, all sheets can be specified. Sheets cannot be selected at the same time.

When memory switch [Msw8-4] is on, slip, validation, card, and check paper can be specified. Sheets cannot be selected at the same time.

[Roll paper/Validation/Check paper/Card] cannot be selected as the active sheet between executing <Function 82> and <Function 85> of this command.

[Slip] can be selected as the active sheet only between executing <Function 64> and <Function 85> of this command.

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TM-J7500/7600

This function is able to specify roll paper, or slip as the active sheet. These papers cannot be specified simultaneously as the active sheet.

TM-J7000/7100

This function is able to specify roll paper, slip, or check paper as the active sheet. These papers cannot be specified simultaneously as the active sheet.

TM-H6000III

<Photo-ID model>

This function is able to specify roll paper, check paper, or card as the active sheet. These papers cannot be specified simultaneously as the active sheet.

<Image Scanner model>

This function is able to specify roll paper or check paper as the active sheet. These papers cannot be specified simultaneously as the active sheet.

<All other models>

All other models do not support this function.

TM-U675

This printer does not support this function.

GS (G pL pH fn m <Function 81>

[Name]	Start pre-process for cut sheet insertion.																								
[Format]	<table border="0"> <tr> <td>ASCII</td> <td>GS</td> <td>(</td> <td>G</td> <td>pL</td> <td>pH</td> <td>fn</td> <td>m</td> </tr> <tr> <td>Hex</td> <td>1D</td> <td>28</td> <td>47</td> <td>02</td> <td>00</td> <td>51</td> <td>30</td> </tr> <tr> <td>Decimal</td> <td>29</td> <td>40</td> <td>71</td> <td>2</td> <td>0</td> <td>81</td> <td>48</td> </tr> </table>	ASCII	GS	(G	pL	pH	fn	m	Hex	1D	28	47	02	00	51	30	Decimal	29	40	71	2	0	81	48
ASCII	GS	(G	pL	pH	fn	m																		
Hex	1D	28	47	02	00	51	30																		
Decimal	29	40	71	2	0	81	48																		
[Range]	$(\mathbf{pL} + \mathbf{pH} \times 256) = 2(\mathbf{pL} = 2, \mathbf{pH} = 0)$ fn = 81 m = 48																								
[Description]	<p>Starts the pre-processing for the cut sheet (slip, validation, check paper) selected as the active sheet for insertion.</p> <ul style="list-style-type: none"> The printer executes a release to get ready for the selected active sheet. The printer flashes the SLIP LED. (It indicates the cut sheet insertion / removal waiting state.) 																								
[Notes]	<ul style="list-style-type: none"> This function is ignored if paper other than a cut sheet (slip, validation, check) is selected as the active sheet and the paper isn't clamped. Selecting the active sheet is performed by Function 80 of this command. This function doesn't change the current active sheet. The pre-processing for the cut sheet is ended by Function 82 of this command. Execute the function when confirmation is received that a cut sheet is inserted. It is useful for the confirmation that "Cut sheet sensor and status enabled" of ASB. The status of cut sheet pre-processing can be checked with the basic ASB status customized using GS (B, or any of the following. <ul style="list-style-type: none"> Slip pre-processing: DLE EOT (n=5: slip status) Validation pre-processing: DLE EOT (n=6: validation status) Check pre-processing: DLE EOT (n=8,a=1: MICR status) 																								
[Model-dependent variations]	TM-H6000III, TM-U675																								

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TM-H6000III

This printer does not support this function.

TM-U675

This printer does not support this function.

GS (G pL pH fn m <Function 82>

[Name] End pre-process for cut sheet insertion.

[Format]

ASCII	GS	(G	pL	pH	fn	m
Hex	1D	28	47	02	00	52	30
Decimal	29	40	71	2	0	82	48

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 2 (\mathbf{pL} = 2, \mathbf{pH} = 0)$

fn = 82

m = 48

[Description] Ends the pre-processing for the cut sheet (slip, validation, check paper) selected as the active sheet for insertion.

- The printer executes clamping.
- The CUT SHEET LED lights. (It indicates that cut sheet (slip, validation, check) is selected as the active sheet.)

[Notes]

- This function is ignored if paper other than a cut sheet (slip, validation, check) is selected as the active sheet and the paper isn't clamped. Selecting the active sheet is performed by **Function 80** of this command.
- On the model that has a clamp condition for cut sheet, this command is ignored if the condition isn't satisfied.
- This function doesn't change the current active sheet.
- The pre-processing for the cut sheet is started by **Function 81** of this command.
- The status of cut sheet pre-processing can be checked with the basic ASB status customized using **GS (B**, or any of the following.
- Slip pre-processing: **DLE EOT (n=5: slip status)**
- Validation pre-processing: **DLE EOT (n=6: validation status)**
- Check pre-processing: **DLE EOT (n=8,a=1: MICR status)**

[Model-dependent variations]

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675

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TM-J9000/J9100

This function operates when the clamp conditions shown below are satisfied.

When both the validation sensor and ejection sensor show "Paper present" when validation is selected as the active sheet

When the ASF sensor shows "Paper present" when check paper is selected as the active sheet

When the card sensor shows "Paper present" when card is selected as the active sheet

TM-J7500/7600, TM-J7000/7100

For this model the clamp condition for cut sheet is enabled only when the TOF/BOF sensor indicates "Paper present."

TM-H6000III

This printer does not support this function.

TM-U675

This printer does not support this function.

GS (G pL pH fn m <Function 83>

[Name]	Execute waiting process for cut sheet insertion.																								
[Format]	<table border="0"> <tr> <td>ASCII</td> <td>GS</td> <td>(</td> <td>G</td> <td>pL</td> <td>pH</td> <td>fn</td> <td>m</td> </tr> <tr> <td>Hex</td> <td>1D</td> <td>28</td> <td>47</td> <td>02</td> <td>00</td> <td>53</td> <td>30</td> </tr> <tr> <td>Decimal</td> <td>29</td> <td>40</td> <td>71</td> <td>2</td> <td>0</td> <td>83</td> <td>48</td> </tr> </table>	ASCII	GS	(G	pL	pH	fn	m	Hex	1D	28	47	02	00	53	30	Decimal	29	40	71	2	0	83	48
ASCII	GS	(G	pL	pH	fn	m																		
Hex	1D	28	47	02	00	53	30																		
Decimal	29	40	71	2	0	83	48																		
[Range]	$(\mathbf{pL} + \mathbf{pH} \times 256) = 2(\mathbf{pL} = 2, \mathbf{pH} = 0)$ fn = 83 m = 48																								
[Description]	<p>Executes the waiting process for the cut sheet (slip, validation, check paper) selected as the active sheet for insertion.</p> <ul style="list-style-type: none"> The printer executes a release to get ready for the selected active sheet. The printer flashes the SLIP LED. (It indicates the cut sheet insertion / removal waiting state) The printer executes clamp. The CUT SHEET LED lights. (It indicates that a cut sheet (slip, validation, check) is selected as the active sheet.) 																								
[Notes]	<ul style="list-style-type: none"> This function is ignored if paper other than a cut sheet (slip, validation, check) is selected as active sheet and the paper isn't clamped. Selecting the active sheet is performed by Function 80 of this command. This function doesn't change the current active sheet. The processing for the cut sheet is kept until insertion of a cut sheet, the end of the current cut sheet wait time, resetting of the printer, or turning off the printer. The current cut sheet wait time is set by t1 of ESC f. The processing for the cut sheet insertion can be canceled by DLE ENQ (n = 3). In this case, the printer clears the data in the print buffer and the receive buffer. The status of cut sheet pre-processing can be checked with the basic ASB status customized using GS (B, or any of the following. <ul style="list-style-type: none"> Slip pre-processing:DLE EOT (n=5: slip status) Validation pre-processing: DLE EOT (n=6: validation status) Check pre-processing: DLE EOT (n=8,a=1: MICR status) 																								

[Model-dependent variations]

TM-J9000/J9100, TM-H6000III, TM-U675

TM-H6000III

<Photo-ID model>

This function is available when card is selected as active sheet.

<All other models>

All other models do not support this function.

TM-J9000/J9100, TM-U675

This printer does not support this function.

GS (G pL pH fn m <Function 84>

[Name] Feed to the print starting position for the slip.

[Format] ASCII GS (G **pL** **pH** **fn** **m**
 Hex 1D 28 47 02 00 54 **m**
 Decimal 29 40 71 2 0 84 **m**

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 2$ (**pL** = 2, **pH** = 0)

fn = 84

m = 1

[Description] Feeds a slip to the print starting position on the currently selected paper side.

- This function is ignored if paper other than a slip is selected as active sheet.
- When processing this function, the printer performs either of the following, depending on the position where paper is stopped. What was actually performed can be confirmed by the status of <Function32> of this command.

Performing	Status of <Function32> of this command
Feeds paper to the print starting position.	Bit 0 = 0: Paper feeding to the print start position of the current clamped slip paper is enabled.
Ejects paper and waits for slip insertion.	Bit 0 = 1: Paper feeding to the print start position of the current clamped slip paper is disabled.

[Model-dependent variations]

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675

TM-J9000/J9100

These printers do not support this function.

TM-J7500/7600

This printer can do paper feeding to the print position only one time for a slip insertion.

Example:

When doing [paper feeding to the print position on the slip] → [printing on the slip], the slip must be ejected before using this function again.

TM-J7000/7100

This printer can do paper feeding to the print position only one time each for the face and back of a slip.

Example:

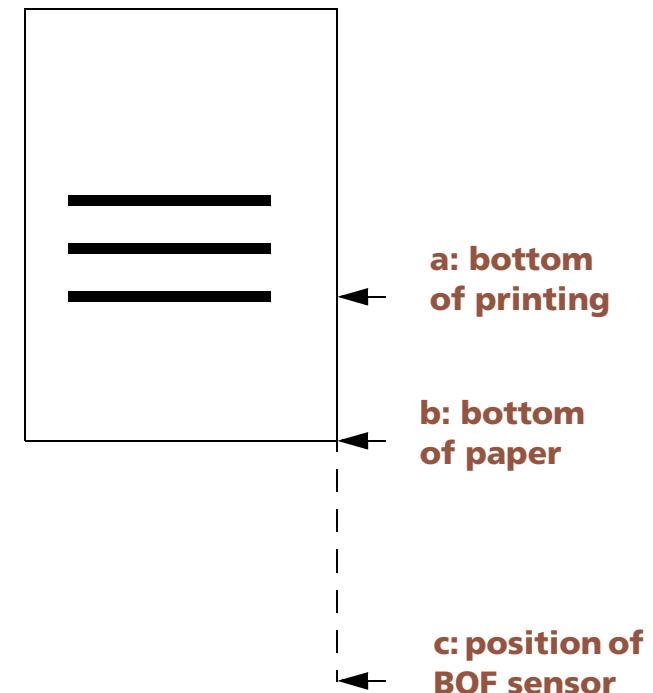
When doing [paper feeding to the print position on the face of the slip] → [printing on the face of the slip] → [paper feeding to the print position on the back of the slip] → [printing on the back of the slip], the slip must be ejected before using this function again.

TM-H6000III

- When the face of the slip is selected, there is an area in which reverse feeding is not possible. When the bottom of a paper is in this area, the printer prints data in the print buffer and does not feed paper. See the diagram and table below.

Area in which reverse feeding is not possible

	Equipped with endorsement printer	Not equipped with endorsement printer	Using paper more than 90 mm wide
Maximum distance between a and b	41 mm	58 mm	84 mm
Maximum distance between b and c	92 mm	75 mm	



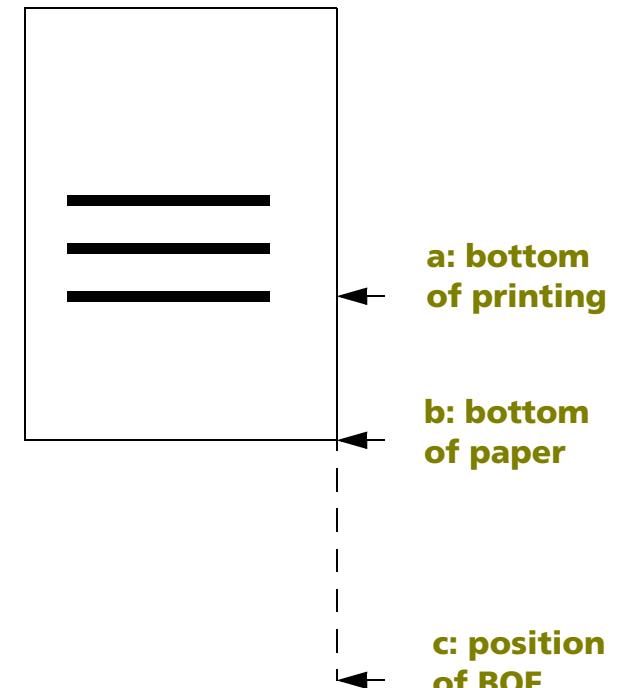
- The status of "feeds the paper in the reverse direction is disabled" can be checked by the slip paper status of GS r (n = 3, 51: cut sheet status).

TM-U675

- When slip paper is selected, there is an area in which reverse feeding is not possible. When the bottom of a paper is in this area, the printer prints data in the print buffer and does not feed the paper. See the diagram and table below.

Area in which reverse feeding is not possible

	Normal check paper	Using paper more than 90 mm wide
Maximum distance between a and b	58 mm	84 mm
Maximum distance between b and c	75 mm	



- The status of "feeds the paper in the reverse direction is disabled" can be checked by the slip paper status of GS r (n = 3, 51: cut sheet status).

GS (G pL pH fn m <Function 85>

[Name] Finish the processing of the cut sheet.

[Format]

ASCII	GS	(G	pL	pH	fn	m
Hex	1D	28	47	02	00	55	m
Decimal	29	40	71	2	0	85	m

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 2$ (**pL** = 2, **pH** = 0)

fn = 85

m = 48, 49

[Description] Finishes the processing of a cut sheet after performing the function specified by **m** and selects roll paper as the active sheet.

- If the printer clamps the cut sheet, it ejects the cut sheet depending on **m**.

m	Ejecting paper operation
48	Executes ejecting operation
49	Executes releasing operation

- [Notes]
- This function is ignored only when processed at the beginning of the line in standard mode.
 - This function is disabled in page mode. Use this function before selecting the sheet for printing data in the page mode.
 - This function is enabled when cut sheet (slip paper, validation paper, check or card) is selected as active sheet. Active sheet can be selected by <Function 80> of this command.
 - The paper feeding amount for ejecting paper is set by **ESC C**.
 - The cut sheet feeding direction for ejecting paper is set by **ESC F**.
 - After executing this function, active sheet is selected to roll paper.
 - In “cut sheet removal waiting” supported model, the printer enters “cut sheet removal waiting” status and the SLIP LED blinks during executing cut sheet ejecting process. “Cut sheet removal waiting” is not canceled until cut sheet is removed or the printer is reset or the power is turned off.

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[Model-dependent variations]

TM-J9000/J9100, TM-H6000III, TM-U675

TM-J9000/J9100

After finishing the specified operation, select validation as the active sheet.

TM-H6000III

<Photo-ID model>

This function is available when card is selected as the active sheet.

<All other models>

All other models do not support this function.

TM-U675

This printer does not support this function.

PANEL BUTTON COMMANDS

Command	Name
---------	------

ESC c 5	Enable/disable panel buttons
----------------	------------------------------

ESC c 5

SETTING COMMAND

[Name] Enable/disable panel buttons

[Format] ASCII ESC c 5 **n**
 Hex 1B 63 35 **n**
 Decimal 27 99 53 **n**

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

[Default] **n** = 0

[Printers not featuring this command] None

[Description] Enables or disables the panel buttons.

- When the LSB of **n** is 0, all buttons are enabled.
- When the LSB of **n** is 1, all buttons are disabled.

[Notes]

- When all operating panel buttons are enabled, then the functions of the panel button (paper feed, release etc.) can be executed.
- To prevent problems caused by accidentally pressing the buttons, use this command to disable the buttons.
- Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.
- When the printer cover is open, there are buttons that are always enabled or disabled regardless of this command. The buttons are different, depending on the printer model.
- When the LED blinks to indicate that the printer is waiting for a macro to be executed (by **GS ^**), the paper feed button is enabled (but paper cannot be fed).

[Model-dependent variations]

**TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III,
 TM-H5000II, TM-U675, TM-U325D**

Program Example for all printers

```
PRINT #1, CHR$(&H1B);;"c5";CHR$(1); ← Disable panel buttons
```

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TM-J9000/J9100

The panel buttons include the PAPER FEED button and CLEANING button. Settings of this command do not affect the CLEANING button.

The button is disabled in any of the following cases, irrespective of the settings of this command.

- A. When [Slip/Check paper/Card] is selected as the active sheet
- B. When the paper is not clamped when validation is selected as the active sheet
- C. During validation removal standby
- D. During printing or during mechanical operation
- E. When the carriage cover is open/when the roll paper cover is open/when the scanner cover is open
- F. During cleaning
- G. When an error has occurred

TM-J7500/7600

The panel buttons are PAPER FEED and CLEANING. This command doesn't affect the CLEANING button.

In the following cases, all the buttons are disabled, regardless of the setting of this command:

- A. When the paper roll cover is open when roll paper is selected as the active sheet.
- B. During paper pre-processing and during removal standby when slip is selected as the active sheet.
- C. When the printer is doing cleaning.
- D. When the printer status is error.

TM-J7000/7100

The panel buttons are PAPER FEED and CLEANING. This command doesn't affect the CLEANING button.

In the following cases, all the buttons are disabled, regardless of the setting of this command:

- A. When the paper roll cover is open when roll paper is selected as the active sheet .
- B. During paper pre-processing and during removal standby when slip (front side or back side) is selected as the active sheet.

- C. When check paper is selected as the active sheet .
- D. When the printer is doing cleaning.
- E. When the printer status is error.

TM-H5000II

The panel buttons are FEED, FORWARD, REVERSE, and RELEASE. When the PAPER OUT LED and RELEASE LED blink during GS ^ execution, the FEED, FORWARD, and REVERSE buttons are enabled regardless of the setting of this command (but paper cannot be fed).

When the roll paper cover is open, the FEED button is disabled regardless of the setting of this command.

When the front cover is open, the FORWARD, REVERSE, and RELEASE buttons are disabled regardless of the setting of this command.

TM-H6000III

- The panel buttons are FEED and RELEASE. When the PAPER FEED LED blinks during GS ^ execution, the FEED button is enabled, regardless of the setting of the command. In this case, paper cannot be fed with the button.
- In the following cases, the FEED button is disabled, regardless of the setting of the command.
 - A. When roll paper is selected as the active sheet and the roll paper cover is open.
 - B. When roll paper is selected as the active sheet and the unit is open.
 - C. When the front cover is open when roll paper is selected as the active sheet.
- In the following cases, the FEED button is enabled, regardless of the setting of the command.
 - A. When slip or validation paper is selected as the active sheet, and the front cover is open.
 - B. When slip or validation paper is selected as the active sheet, and the unit is open.
- When the roll paper cover, front cover, or unit is open, the RELEASE button is enabled regardless of the setting of the command.

TM-U675

- The panel buttons are FEED and RELEASE. When the PAPER FEED LED blinks during GS ^ execution, the FEED button is enabled, regardless of the setting of the command. In this case, paper cannot be fed with the button.
- In the following cases, the FEED button is enabled, regardless of the setting of the command.
 - A. When roll paper is selected as the active sheet and the roll paper cover is open.
 - B. When a slip or validation sheet is selected as the active sheet and the front cover is open.
- When the roll paper cover or the front cover is open, the RELEASE button is enabled, regardless of the setting of this command.

TM-U325D

The panel buttons are FEED and RELEASE.

When the cover is open, these buttons are enabled regardless of the settings of this command.

PAPER SENSOR COMMANDS

Command	Name
---------	------

- | | |
|----------------|--|
| ESC c 3 | Select paper sensor(s) to output paper-end signals |
| ESC c 4 | Select paper sensor(s) to stop printing |

ESC c 3

SETTING COMMAND

[Name] Select paper sensor(s) to output paper-end signals

[Format] ASCII ESC c 3 **n**
 Hex 1B 63 33 **n**
 Decimal 27 99 51 **n**

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

[Default] **TM-J9000/J9100, TM-H5000II, TM-U325D: n = 15**
TM-J7000/J100, TM-J7500/7600, TM-H6000III, TM-U675: n = 0

[Printers not featuring this command] None

[Description] Selects the paper sensor(s) to output paper end signals when a paper end is detected using **n** as follows:

n: Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Roll paper near-end sensor disabled.
	On	01	1	Roll paper near-end sensor enabled.
1	Off	00	0	Roll paper near-end sensor disabled.
	On	02	2	Roll paper near-end sensor enabled.
2	Off	00	0	Roll paper end sensor disabled.
	On	02	4	Roll paper end sensor enabled.
3	Off	00	0	Roll paper end sensor disabled.
	On	08	8	Roll paper end sensor enabled.
4	Off	00	0	Slip TOF sensor disabled.
	On	10	16	Slip TOF sensor enabled.
5	Off	00	0	Slip BOF sensor disabled.
	On	20	32	Slip BOF sensor enabled

*... how to use
this table*

n: Bit	Off/On	Hex	Decimal	Function
6	Off	00	0	Validation sensor disabled.
	On	40	64	Validation sensor enabled.
7	Off	00	0	Validation sensor disabled.
	On	80	128	Validation sensor enabled.

[Notes]

- This command is enabled only with a parallel interface and is ignored with a serial interface.
- It is possible to select multiple sensors enabled. When any of the sensors detects a paper-end, the printer sends paper-end status to the host.
- When all sensor are disabled, the printer does not send paper-end status to the host, regardless of the paper presence.
- The roll paper near-end sensor is enabled when either bit 0 or bit 1 is on or both are on.
- The roll paper end sensor is enabled when either bit 2 or bit 3 is on or both are on.
- Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.
- Bit 6 and Bit 7 indicate the same validation sensor, and if either or both bits are selected, the validation sensor is enabled.
- Some sensors are not supported or there are some sensors that are not used to output a paper-end signal, depending on the printer model.
- The names of some sensors differ, depending on the printer model.

[Model-dependent variations]

**TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III,
TM-H5000II, TM-U325D**

Program Example for all printers

```
PRINT #1, CHR$(&H1B);"c3";CHR$(4); ← Roll paper end sensor enabled
```

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TM-J9000/J9100

Bits 4 ~7 are not supported

When memory switch [Msw8-4] is on, the paper roll near end sensor and paper roll end sensor are always not selected.

TM-J7500/7600, TM-J7000/7100

Bits 6 and 7 are not supported.

TM-H5000II

Bits 6 and 7 are not supported.

TM-U325D

Bits 4 and 5 are not supported.

TM-H6000III

<Validation model>

Bits 6 and 7 indicate the same paper sensor. The sensor is a validation sensor. If either bit 6 or bit 7 or both are enabled, the validation sensor is enabled.

<All other models>

Bits 6 and 7 are not supported.

ESC c 4

SETTING COMMAND

[Name] Select paper sensor(s) to stop printing

[Format] ASCII ESC c 4 **n**
 Hex 1B 63 34 **n**
 Decimal 27 99 52 **n**

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

[Default] **TM-J9000/J9100, TM-J7000/7100, TM-J7500/7600, TM-H5000II: n = 0;**

TM-U325D: **n = 12;**

TM-H6000III: **n = 160** [Validation model]
 n = 32 [Except the above model]

TM-U675: **n = 160**

[Printers not featuring this command] None

[Description] Selects the paper sensor(s) to use to stop printing when a paper end is detected using **n** as follows:

n: Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Roll paper near-end sensor disabled.
	On	01	1	Roll paper near-end sensor enabled.
1	Off	00	0	Roll paper near-end sensor disabled
	On	02	2	Roll paper near-end sensor enabled.
2	Off	00	0	Roll paper end sensor disabled.
	On	02	4	Roll paper end sensor enabled.
3	Off	00	0	Roll paper end sensor disabled.
	On	08	8	Roll paper end sensor enabled.
4	Off	00	0	Slip TOF sensor disabled.
	On	10	16	Slip TOF sensor enabled.

... how to use
this table

n: Bit	Off/On	Hex	Decimal	Function
5	Off	00	0	Slip BOF sensor disabled.
	On	20	32	Slip BOF sensor enabled.
6	Off	00	0	Validation sensor disabled.
	On	40	64	Validation sensor enabled.
7	Off	00	0	Validation sensor disabled.
	On	80	128	Validation sensor enabled.

[Notes]

- When a paper near-end is detected, printing stops after printing the current line and feeding the paper. The printer goes offline and PAPER LED comes on after printing stops. To resume printing, cancel the "roll paper near-end" status by replacing the roll paper.
- If the roll paper near-end sensor is disabled and a paper near-end is detected, printing does not stop and the printer does not go offline, but the PAPER LED comes on.
- The roll paper near-end sensor is enabled when either bit 0 or bit 1 is on or both are on.
- When a roll paper end is detected, the printer performs the same operations as when a roll paper near-end is detected.
- The roll paper end sensor is enabled when either bit 2 or bit 3 is on or both are on.
- When the slip TOF sensor or the slip BOF sensor is enabled and a paper-end is detected, the printer ejects the paper after printing as much as possible and enters the cut sheet waiting state. The printer does not go offline.
- When the slip TOF sensor or the slip BOF sensor is disabled and a paper-end is detected, the printer does not stop printing and ejects the paper.
- Bit 6 and Bit 7 indicate the same validation sensor, and if either or both bits are selected, the validation sensor is enabled.
- When the validation sensor detects a paper-end, the printer performs the same operations as when the slip sensor detects a paper-end.

- When a paper sensor is enabled with this command, printing stops only when the corresponding paper is selected as the paper type. Select the active sheet with **GS (G <Function 80> or ESC c 0**.
(Example: When "Slip TOF sensor enabled" only is selected by this command and roll paper is selected as the paper type, it does not stop printing to roll paper even if there is no slip paper.)
- When multiple sensors are enabled and any sensor detects a paper-end of the selected paper type, printing stops.
- Multiple sensors can be enabled or disabled simultaneously by this command.
- Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.
- Some sensors are not present, depending on the printer model.
- The names of some sensors differ, depending on the printer model.

[Model-dependent variations]

**TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III,
TM-H5000II, TM-U675, TM-U325D**

Program Example for all printers

```
PRINT #1, CHR$(&H1B);"c4";CHR$(1); ← Roll paper near-end sensor enabled
```

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

Bits 2 ~ 7 are undefined.

The roll paper end sensor is always enabled, and when it detects a paper-end, the printer stops printing.

When a roll paper near-end or a roll paper end are detected, the PAPER OUT LED comes on.

TM-H6000III

Roll paper end sensor is always enabled, and printing stops when the sensor detects a paper end.

When a paper end or paper near end is detected, the PAPER OUT LED comes on.

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<Validation model>

Bits 2, 3, 4, and 6 are not supported.

<Note for all other models>

Bits 2, 3, 4, 6, and 7 are not supported.

TM-H5000II

Bits 2, 3, 6, and 7 are undefined.

The roll paper end sensor is always enabled, and when it detects a paper-end, the printer stops printing.

When a roll paper near-end or a roll paper end are detected, the PAPER OUT LED comes on.

TM-U325D

Bits 4 and 5 are not supported.

When a roll paper near-end or a roll paper end is detected, the RECEIPT OUT LED comes on.

TM-U675

Bits 2, 3, 4, and 6 are not supported.

Roll paper end sensor is always enabled, and printing stops when the sensor detects a paper end.

When a paper end or paper near end is detected, the PAPER OUT LED comes on.

PRINT POSITION COMMANDS

Command	Name
HT	Horizontal tab
ESC \$	Set absolute print position
ESC D	Set horizontal tab positions
ESC T	Select print direction in page mode
ESC W	Set print area in page mode
ESC \	Set relative print position
ESC a	Select justification
GS \$	Set absolute vertical print position in page mode
GS L	Set left margin
GS T	Set print position to the beginning of print line
GS W	Set print area width
GS \	Set relative vertical print position in page mode

[Name] Horizontal tab

[Format] ASCII HT
 Hex 09
 Decimal 9

[Range] None

[Default] None

[Printers not featuring this command] None

[Description] Moves the print position to the next horizontal tab position.

[Notes]

- This command is ignored unless the next horizontal tab position has been set.
- Horizontal tab positions are set by **ESC D**.
- If the next horizontal tab position exceeds the print area, the printer sets the print position to [Print area width + 1].
- If this command is processed when the print position is at [Print area width + 1], the printer executes print buffer-full printing of the current line and horizontal tab processing from the beginning of the next line. In this case, in page mode, the printer does not execute printing but the print position is moved.
- When this command is executed, the state of the printer becomes "not at beginning of the line."
- Even if underline mode is turned on, parts skipped with this command are not underlined.

[Model-dependent variations] None

See program example and print sample for HT and ESC D.

ESC \$

EXECUTING COMMAND

[Name]	Set absolute print position			
[Format]	ASCII ESC \$ nl nh Hex 1B 24 nl nh Decimal 27 36 nl nh			
[Range]	$0 \leq (\text{nl} + \text{nh} \times 256) \leq 65535$ ($0 \leq \text{nl} \leq 255, 0 \leq \text{nh} \leq 255$)			
[Printers not featuring this command]	None			
[Description]	Moves the print position to $[(\text{nl} + \text{nh} \times 256) \times (\text{horizontal or vertical motion unit})]$ from the left edge of the print area.			
[Notes]	<ul style="list-style-type: none"> ■ The printer ignores any setting that exceeds the print area. ■ When standard mode is selected, the horizontal (perpendicular to paper feed) motion unit is used. ■ When page mode is selected, the horizontal or vertical motion unit is used for the print direction set by ESC T. <ul style="list-style-type: none"> • When the starting position is set to the upper left or lower right of the print area using ESC T, the horizontal (perpendicular to paper feed) motion unit is used. • When the starting position is set to the upper right or lower left of the print area using ESC T, the vertical (direction of paper feed) motion unit is used. ■ If the horizontal or vertical motion unit is changed after this command is executed, the print position is not changed. ■ When this command is executed, the state of the printer becomes "not at beginning of the line." ■ Even if underline mode is turned on, parts skipped with this command are not underlined. 			

[Model-dependent variations] **TM-9000/9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II, TM-U675, TM-U325D**

See program example and print sample for ESC \$ and ESC \.

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

The vertical or horizontal motion unit is specified by GS P.

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TM-H5000II

The vertical or horizontal motion unit is specified by GS P.

TM-U325D

The horizontal motion unit is 0.16 mm {1/160 inch}. This value equals 1/2 dot pitch.

TM-H6000III

The vertical or horizontal motion unit for roll paper, the face of a slip, and validation is specified by GS P.

The horizontal motion unit for the back of a slip is approximately 0.2 mm {1/127 inch}. This is equivalent to 1 dot pitch.

TM-U675

The vertical or horizontal motion unit is specified by GS P.

[Name]	Set horizontal tab positions				
[Format]	ASCII ESC D n1 ... nk NUL Hex 1B 44 n1 ... nk 00 Decimal 27 68 n1 ... nk 0				
[Range]	$1 \leq n \leq 255$ $0 \leq k \leq 32$				
[Default]	n = 8, 16, 24, 32, ... (Every eight characters for the default font)				
[Printers not featuring this command]	None				
[Description]	Sets horizontal tab positions. <ul style="list-style-type: none"> • n specifies the number of digits from the setting position to the left edge of the print area. • k indicates the number of horizontal tab positions to be set. k is an explanation parameter; therefore it does not need to be transmitted. 				
[Notes]	<ul style="list-style-type: none"> ■ The horizontal tab position is stored as a value of [character width × n] measured from the beginning of the line. The character width includes the right-side character spacing, and double-width characters are selected with twice the width of normal characters. ■ If changing character width, change it before this command. Character width is affected by current font, spacing amount, and enlarge modes. ■ A maximum of 32 horizontal tab positions can be set. ■ This command cancels any previous horizontal tab settings. ■ Transmit [n]k in ascending order and place a NUL code at the end. ESC D NUL cancels all horizontal tab positions. ■ If character width is changed after this command is executed, horizontal tab position is not changed. ■ Settings of this command are effective until ESC @ is executed, the printer is reset, or the power is turned off. ■ The HT command executes a horizontal tab. 				

- When changing left margin, horizontal tab position moves to corresponding position. Left margin is set by **GS L**.

[Model-dependent variations] None

Program example for HT and ESC D

Program Example

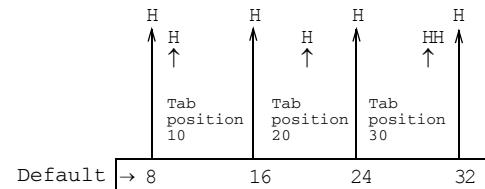
```

PRINT #1, "0123456789012345678901234567890123456";
PRINT #1, CHR$(&HA);
FOR i=1 TO 4
  PRINT #1, CHR$(&H9); "H"; ← Execute HT
NEXT i : PRINT #1, CHR$(&HA);
PRINT #1, CHR$(&H1B); "D";CHR$(10);CHR$(20);
PRINT #1, CHR$(30);CHR$(0); ← Set HT positions
FOR i=1 TO 4
  PRINT #1, CHR$(&H9); "H"; ← Execute HT
NEXT i : PRINT #1, CHR$(&HA);

```

Print Sample

0123456789012345678901234567890123456



ESC T

SETTING COMMAND

[Name] Select print direction in page mode

[Format] ASCII ESC T **n**
 Hex 1B 54 **n**
 Decimal 27 84 **n**

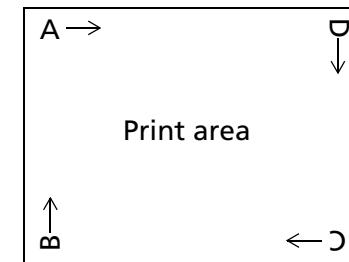
[Range] $0 \leq \mathbf{n} \leq 3, 48 \leq \mathbf{n} \leq 51$

[Default] **n** = 0

[Printers not featuring this command] **TM-U325D**

[Description] In page mode, selects the print direction and starting position using **n** as follows:

n	Print direction	Starting position
0, 48	Left to right	Upper left (A in the figure)
1, 49	Bottom to top	Lower left (B in the figure)
2, 50	Right to left	Lower right (C in the figure)
3, 51	Top to bottom	Upper right (D in the figure)



- [Notes]
- The print direction set by this command is effective only in page mode. Page mode is selected by **ESC L**, **FS L**.
 - The parameters for the horizontal or vertical motion unit differ, depending on the starting position of the print area as follows:
 - If the starting position is the upper left or lower right of the print area (**n** = 0, 2, 48, 50):
 These commands use horizontal motion units: **ESC SP**, **ESC \$**, **ESC **, **FS S**
 These commands use vertical motion units: **ESC 3**, **ESC J**, **ESC K**, **GS \$**, **GS **
 - If the starting position is the upper right or lower left of the print area (**n** = 1, 3, 49, 51):
 These commands use horizontal motion units: **ESC 3**, **ESC J**, **ESC K**, **GS \$**, **GS **
 These commands use vertical motion units: **ESC SP**, **ESC \$**, **ESC **, **FS S**

- Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.
- This command setting has no effect in standard mode.

[Model-dependent variations]

TM-9000/9100**TM-J9000/J9100**

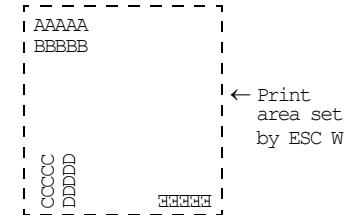
Specify (n = 0, 48) when slip is selected as the active sheet.

Program Example for all printers

```

PRINT #1, CHR$(&H1B); "L"; ← Select page mode
PRINT #1, CHR$(&H1D); "P"; CHR$(180);CHR$(180);
PRINT #1, CHR$(&H1B); "W";CHR$(0);CHR$(0);CHR$(0);CHR$(0);
CHR$(240);CHR$(0);CHR$(200);CHR$(0); ← Set print area
PRINT #1, CHR$(&H1B); "T";CHR$(0); ← Select print direction
PRINT #1, "AAAAAA"; CHR$(&HA);
PRINT #1, "BBBBBB"; CHR$(&HA);
PRINT #1, CHR$(&H1B); "T";CHR$(1); ← Select print direction
PRINT #1, "CCCCCC"; CHR$(&HA);
PRINT #1, "DDDDDD"; CHR$(&HA);
PRINT #1, CHR$(&H1B); "T";CHR$(2); ← Select print direction
PRINT #1, "EEEEEE"; CHR$(&HC); ← Batch print and return to standard mode

```

Print Sample

[Name]	Set print area in page mode																			
[Format]	ASCII ESC W XL XH YL YH dxL dxH dyL dyH Hex 1B 57 XL XH YL YH dxL dxH dyL dyH Decimal 27 87 XL XH YL YH dxL dxH dyL dyH																			
[Range]	$0 \leq (\text{XL} + \text{XH} \times 256) \leq 65535$ ($0 \leq \text{XL} \leq 255, 0 \leq \text{XH} \leq 255$) $0 \leq (\text{YL} + \text{YH} \times 256) \leq 65535$ ($0 \leq \text{YL} \leq 255, 0 \leq \text{YH} \leq 255$) $1 \leq (\text{dxL} + \text{dxH} \times 256) \leq 65535$ ($0 \leq \text{dxL} \leq 255, 0 \leq \text{dxH} \leq 255$) $1 \leq (\text{dyL} + \text{dyH} \times 256) \leq 65535$ ($0 \leq \text{dyL} \leq 255, 0 \leq \text{dyH} \leq 255$)																			
[Default]	XL = 0, XH = 0, YL = 0, YH = 0 Print area width and print area height = entire printable area																			
TM-J9000/J9100: For roll paper:																				
For slip paper:																				
For validation paper:																				
TM-J7500:																				
For roll paper (82.5 mm):																				
For roll paper (76 mm):																				
For roll paper (69.5 mm):																				
For roll paper (57.5 mm):																				
For slip paper:																				
TM-J7600:																				
For roll paper (82.5 mm):																				
(dxL + dxH × 256) = 480 (dxL = 224, dxH = 1)																				
(dyL + dyH × 256) = 880 (dyL = 112, dyH = 3)																				
(dyL + dyH × 256) = 744 (dyL = 232, dyH = 2)																				
(dyL + dyH × 256) = 64 (dyL = 64, dyH = 0)																				
(dyL + dyH × 256) = 744 (dyL = 232, dyH = 2)																				
(dyL + dyH × 256) = 193 (dyL = 193, dyH = 0)																				
(dxL + dxH × 256) = 512 (dxL = 0, dxH = 2)																				
(dyL + dyH × 256) = 832 (dyL = 64, dyH = 3)																				
(dxL + dxH × 256) = 480 (dxL = 224, dxH = 1)																				
(dyL + dyH × 256) = 880 (dyL = 112, dyH = 3)																				
(dxL + dxH × 256) = 432 (dxL = 176, dxH = 1)																				
(dyL + dyH × 256) = 984 (dyL = 216, dyH = 3)																				
(dxL + dxH × 256) = 360 (dxL = 104, dxH = 1)																				
(dyL + dyH × 256) = 1176 (dyL = 152, dyH = 4)																				
(dxL + dxH × 256) = 960 (dxL = 192, dxH = 3)																				
(dyL + dyH × 256) = 440 (dyL = 184, dyH = 1)																				
(dxL + dxH × 256) = 512 (dxL = 0, dxH = 2)																				
(dyL + dyH × 256) = 416 (dyL = 160, dyH = 1)																				

	For roll paper (76 mm):	$(dxL + dxH \times 256) = 480$ ($dxL = 224$, $dxH = 1$) $(dyL + dyH \times 256) = 440$ ($dyL = 184$, $dyH = 1$) $(dxL + dxH \times 256) = 432$ ($dxL = 176$, $dxH = 1$) $(dyL + dyH \times 256) = 488$ ($dyL = 232$, $dyH = 1$) $(dxL + dxH \times 256) = 360$ ($dxL = 104$, $dxH = 1$) $(dyL + dyH \times 256) = 584$ ($dyL = 72$, $dyH = 2$) $(dxL + dxH \times 256) = 960$ ($dxL = 64$, $dxH = 2$) $(dyL + dyH \times 256) = 216$ ($dyL = 112$, $dyH = 1$)
TM-J7000:	For roll paper (82.5 mm):	$(dxL + dxH \times 256) = 512$ ($dxL = 0$, $dxH = 2$) $(dyL + dyH \times 256) = 832$ ($dyL = 64$, $dyH = 3$) $(dxL + dxH \times 256) = 480$ ($dxL = 224$, $dxH = 1$) $(dyL + dyH \times 256) = 880$ ($dyL = 112$, $dyH = 3$) $(dxL + dxH \times 256) = 432$ ($dxL = 176$, $dxH = 1$) $(dyL + dyH \times 256) = 984$ ($dyL = 216$, $dyH = 3$) $(dxL + dxH \times 256) = 360$ ($dxL = 104$, $dxH = 1$) $(dyL + dyH \times 256) = 1176$ ($dyL = 152$, $dyH = 4$) $(dxL + dxH \times 256) = 576$ ($dxL = 64$, $dxH = 2$) $(dyL + dyH \times 256) = 736$ ($dyL = 224$, $dyH = 2$) $(dxL + dxH \times 256) = 512$ ($dxL = 0$, $dxH = 2$) $(dyL + dyH \times 256) = 416$ ($dyL = 160$, $dyH = 1$) $(dxL + dxH \times 256) = 480$ ($dxL = 224$, $dxH = 1$) $(dyL + dyH \times 256) = 440$ ($dyL = 184$, $dyH = 1$) $(dxL + dxH \times 256) = 432$ ($dxL = 176$, $dxH = 1$) $(dyL + dyH \times 256) = 488$ ($dyL = 232$, $dyH = 1$) $(dxL + dxH \times 256) = 360$ ($dxL = 104$, $dxH = 1$) $(dyL + dyH \times 256) = 584$ ($dyL = 72$, $dyH = 2$) $(dxL + dxH \times 256) = 576$ ($dxL = 64$, $dxH = 2$) $(dyL + dyH \times 256) = 368$ ($dyL = 112$, $dyH = 1$)
TM-J7100:	For roll paper (82.5 mm):	
	For roll paper (76 mm):	
	For roll paper (69.5 mm):	
	For roll paper (57.5 mm):	
	For slip paper (face):	
TM-H5000II:	For roll paper:	$(dxL + dxH \times 256) = 512$ ($dxL = 0$, $dxH = 2$) $(dyL + dyH \times 256) = 1662$ ($dyL = 126$, $dyH = 6$)
	For slip paper:	$(dxL + dxH \times 256) = 800$ ($dxL = 32$, $dxH = 3$) $(dyL + dyH \times 256) = 1804$ ($dyL = 12$, $dyH = 7$)

TM-H6000III:

- For roll paper: $(dxL + dxH \times 256) = 512$ ($dxL = 0$, $dxH = 2$)
- For roll paper: In single color printing control mode
 $(dyL + dyH \times 256) = 1662$ ($dyL = 126$, $dyH = 6$)
- For roll paper: (in two-color printing control mode)
 $(dyL + dyH \times 256) = 831$ ($dyL = 63$, $dyH = 3$)
- For slip paper (face): $(dxL + dxH \times 256) = 540$ ($dxL = 28$, $dxH = 2$)
 $(dyL + dyH \times 256) = 1408$ ($dyL = 128$, $dyH = 5$)
- For double-density page mode in slip paper (face) and validation:
 $(dxL + dxH \times 256) = 540$ ($dxL = 28$, $dxH = 2$)
 $(dyL + dyH \times 256) = 704$ ($dyL = 192$, $dyH = 2$)

TM-U675:

- When DIP switch [SW2-4] is off:
 - For roll paper: $(dxL + dxH \times 256) = 450$ ($dxL = 192$, $dxH = 1$)
 $(dyL + dyH \times 256) = 1408$ ($dyL = 128$, $dyH = 5$)
 - For cut sheet: $(dxL + dxH \times 256) = 540$ ($dxL = 28$, $dxH = 2$)
 $(dyL + dyH \times 256) = 1408$ ($dyL = 128$, $dyH = 5$)
- When DIP switch [SW2-4] is on:
 - $(dxL + dxH \times 256) = 400$ ($dxL = 144$, $dxH = 1$)
 $(dyL + dyH \times 256) = 1408$ ($dyL = 128$, $dyH = 5$)
- For double-density page mode for roll paper, slip paper, validation:
 $(dxL + dxH \times 256) = 540$ ($dxL = 28$, $dxH = 2$)
 $(dyL + dyH \times 256) = 704$ ($dyL = 192$, $dyH = 2$)

[Printers not featuring this command] **TM-U325D**

- [Description] In page mode, sets the size and the logical origin of the print area.
- Horizontal logical origin = $[(xL + xH \times 256) \times (\text{horizontal motion unit})]$ from absolute origin.
 - Vertical logical origin = $[(yL + yH \times 256) \times (\text{vertical motion unit})]$ from absolute origin.
 - Print area width = $[(dxL + dxH \times 256) \times (\text{horizontal motion unit})]$.
 - Print area height = $[(dyL + dyH \times 256) \times (\text{vertical motion unit})]$.
- [Notes] ■ Execute this command in page mode. Page mode is selected by **ESC L**, **FS L**.

- Executing this command moves the printing position to the starting position selected with **ESC T** in the printing area set.
- In this command, horizontal indicates "vertical to the feed direction," while vertical indicates "the feed direction."
- Both print area width and height cannot be set to 0.
- The absolute origin is the upper left of the printable area.
- Horizontal logical origin is the left edge of the print area. Vertical logical origin is the upper edge of the print area.
- Keep the following conditions in mind for printers that support <Function 48> of **GS (P)**.
 - The maximum area that can be specified by this command is the same as the printable area specified by <Function 48> of **GS (P)**.
 - The origin of this command is the same as the upper left point of the printable area specified by <Function 48> of **GS (P)**.
 - When adjusting the printable area of the page mode with <Function 48> of **GS (P)**, specify the printable area to be the same as the setting of the printable area by this command after executing **ESC L** and **FS L**.
- If the printable area is exceeded, the following corrective action is taken.
 - If [horizontal logical origin + print area width] exceeds the printable area, the print area width is automatically set to [horizontal printable area – horizontal logical origin].
 - If [vertical logical origin + print area height] exceeds the printable area, the print area height is automatically set to [vertical printable area – vertical logical origin].
 - The print area and the logical origin set by this command are effective only in page mode.
- Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.
- If horizontal or vertical motion unit is changed after this command, the print area is not changed.

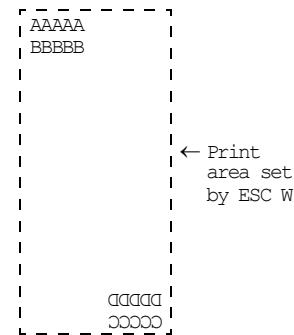
[Model-dependent variations]

**TM-9000/9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II,
TM-U675**
Program Example for all printers

```

PRINT #1, CHR$(&H1B); "L"; ← Select page mode
PRINT #1, CHR$(&H1D); "P"; CHR$(180);CHR$(180);
PRINT #1, CHR$(&H1B); "W";CHR$(0);CHR$(0);CHR$(0);CHR$(180);
CHR$(0);CHR$(44);CHR$(1); ← Set print area
PRINT #1, CHR$(&H1B); "T";CHR$(0); ← Select print direction
PRINT #1, "AAAAAA"; CHR$(&HA);
PRINT #1, "BBBBBB"; CHR$(&HA);
PRINT #1, CHR$(&H1B); "T";CHR$(2); ← Select print direction
PRINT #1, "CCCCCC"; CHR$(&HA);
PRINT #1, "DDDDDD"; CHR$(&HC); ← Batch print and return to standard mode

```

Print Sample**TM-J9000/J9100**

The GS P setting value is used for horizontal and vertical motion units.

- **The vertical motion unit of the TM-J9000 (single-color) can be set to a maximum of 248.36 mm {1,760/203 inch}.**
- **The vertical motion unit of the TM-J9100 (2-color) can be set to a maximum of 124.18 mm {880/203 inch}.**

TM-J7500/7600, TM-J7000/7100

The vertical or horizontal motion unit is specified by GS P.

TM-H6000III

The vertical or horizontal motion unit is specified by GS P.

The height that can be set is as follows.

- **Roll paper: 234.53 mm {3324/360 inches}**

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- Slip (front side) page mode: 248.36 mm {1408/144 inches}
- Slip (front side) double-density page mode: 248.36 mm {1408/144 inches}

See **GS (E <Function 3>** for specifying roll paper width, or paper (single color printing control / two-color printing control).

TM-H5000II

The vertical or horizontal motion unit is specified by **GS P.**

TM-U675

The vertical or horizontal motion unit is specified by **GS P.**

[Name]	Set relative print position			
[Format]	ASCII ESC \ nl nh Hex 1B 5C nl nh Decimal 27 92 nl nh			
[Range]	$-32768 \leq (\text{nl} + \text{nh} \times 256) \leq 32767$			
[Default]	None			
[Printers not featuring this command]	None			
[Description]	Moves the print position to $[(\text{nl} + \text{nh} \times 256) \times (\text{horizontal or vertical motion unit})]$ from the current position.			
[Notes]	<ul style="list-style-type: none"> ■ The printer ignores any setting that exceeds the print area. ■ A positive number specifies movement to the right, and a negative number specifies movement to the left. ■ When standard mode is selected, the horizontal (perpendicular to paper feed) motion unit is used. ■ When page mode is selected, the horizontal or vertical motion unit is used for the print direction set by ESC T. <ul style="list-style-type: none"> • When the starting position is set to the upper left or lower right of the print area using ESC T, the horizontal (perpendicular to paper feed) motion unit is used. • When the starting position is set to the upper right or lower left of the print area using ESC T, the vertical (direction of paper feed) motion unit is used. ■ If horizontal or vertical motion unit is changed after this command is executed, the print position is not changed. ■ When this command is executed, the state of the printer becomes "not at beginning of the line." ■ Even if underline mode is turned on, parts skipped with this command are not underlined. 			
[Model-dependent variations]	TM-9000/9100 , TM-J7500/7600 , TM-J7000/7100 , TM-H6000III , TM-H5000II , TM-U675 , TM-U325D			

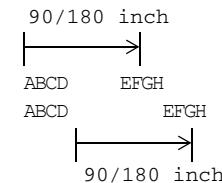
See program example and print sample for ESC \$ and ESC \.

Program example for ESC \$ and ESC \

Program Example

```
PRINT #1, CHR$(&H1D); "P";CHR$(180);CHR$(180);
PRINT #1, "ABCD";
PRINT #1, CHR$(&H1B); "$";CHR$(90);CHR$(0); ←Set absolute position
PRINT #1, "EFGH"; CHR$(&HA);
PRINT #1, "ABCD";
PRINT #1, CHR$(&H1B); "\";CHR$(90);CHR$(0); ←Set relative position
PRINT #1, "EFGH"; CHR$(&HA);
```

Print Sample



TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

The vertical or horizontal motion unit is specified by GS P.

TM-H5000II

The vertical or horizontal motion unit is specified by GS P.

TM-U325D

The horizontal motion unit is 0.16 mm {1/160 inch}. This value equals 1/2 dot pitch.

TM-H6000III

The vertical or horizontal motion unit for roll paper, slip (face), and validation is specified by GS P.

The horizontal motion unit for a slip (back) is approximately 0.2 mm {1/127 inch}. This is equivalent to 1 dot pitch.

TM-U675

The vertical or horizontal motion unit is specified by GS P.

ESC a

SETTING COMMAND

[Name] Select justification

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

[Range] $0 \leq n \leq 2$, $48 \leq n \leq 50$ [Default] **n = 0**

[Printers not featuring this command] None

[Description] In standard mode, aligns all the data in one line to the selected layout, using **n** as follows:

n	Justification
0, 48	Left justification
1, 49	Centered
2, 50	Right justification

- [Notes]
- When standard mode is selected, this command is enabled only when processed at the beginning of the line in standard mode.
 - The justification has no effect in page mode.
 - This command executes justification in the print area set by **GS L** and **GS W**.
 - This command justifies printing data (such as characters, various graphics, bit images, bar codes, and two-dimension bar codes) and space area set by **HT**, **ESC \$**, and **ESC **.
 - Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.

[Model-dependent variations]

TM-H6000III**Program Example for all printers**

```
FOR n=0 TO 2
    PRINT #1, CHR$(&H1B); "a"; CHR$(n);
    PRINT #1, "ABC";
    PRINT #1, "ABCD";
    PRINT #1, "ABCDE";
NEXT n
```

Print Sample

ABC
ABCD
ABCDE

ABC
ABCD
ABCDE

ABC
ABCD
ABCDE

ABC
ABCD
ABCDE

TM-H6000III

This command does not affect printing on the back of a slip.

[Name] Set absolute vertical print position in page mode

[Format]

ASCII	GS	\$	nl	nh
Hex	1D	24	nl	nh
Decimal	29	36	nl	nh

[Range] $0 \leq (\text{nl} + \text{nh} \times 256) \leq 65535$ ($0 \leq \text{nl} \leq 255$, $0 \leq \text{nh} \leq 255$)

[Default] None

[Printers not featuring this command] **TM-U325D**

[Description] In page mode, moves the vertical print position to $[(\text{nl} + \text{nh} \times 256) \times (\text{vertical or horizontal motion unit})]$ from the starting position set with **ESC T**.

- [Notes]
- This command is enabled only in page mode. Page mode is selected by **ESC L**, **FS L**.
 - The printer ignores any setting that exceeds the print area set by **ESC W**.
 - The horizontal or vertical motion unit is used for the print direction set by **ESC T**.
 - When the starting position is set to the upper left or lower right of the print area using **ESC T**, the vertical (direction of paper feed) motion unit is used.
 - When the starting position is set to the upper right or lower left of the print area using **ESC T**, the horizontal (perpendicular to paper feed) motion unit is used.
 - If the horizontal or vertical motion unit is changed after this command is executed, print position is not changed.

[Model-dependent variations] **TM-9000/9100**, **TM-J7500/7600**, **TM-J7000/7100**, **TM-H6000III**, **TM-H5000II**,
TM-U675

See program example and print sample for GS \$ and GS \.

TM-J9000/J9100, **TM-J7500/7600**, **TM-J7000/7100**

The vertical or horizontal motion unit is specified by GS P.

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TM-H5000II

The vertical or horizontal motion unit is specified by **GS P.**

TM-H6000III

The vertical or horizontal motion unit is specified by **GS P.**

TM-U675

The vertical or horizontal motion unit is specified by **GS P.**

[Name]	Set left margin
[Format]	ASCII GS L nl nh Hex 1D 4C nl nh Decimal 29 76 nl nh
[Range]	$0 \leq (\text{nl} + \text{nh} \times 256) \leq 65535$ ($0 \leq \text{nl} \leq 255, 0 \leq \text{nh} \leq 255$)
[Default]	nl = 0, nh = 0
[Printers not featuring this command]	None
[Description]	In standard mode, sets the left margin to $[(\text{nl} + \text{nh} \times 256) \times (\text{horizontal motion unit})]$ from the left edge of the printable area for the paper type selected by ESC c 1 .
[Notes]	<ul style="list-style-type: none"> ■ This command is enabled only when processed at the beginning of the line in standard mode. ■ The left margin has no effect in page mode. ■ This command is available for the paper type selected by ESC c 1. The left margin can be set independently for roll paper, slip (face and back), and validation paper. ■ If the setting exceeds the printable area, the left margin is automatically set to the maximum value of the printable area. ■ The horizontal (perpendicular to paper feed direction) motion unit is used to set left margin. ■ If changing the horizontal motion unit after executing this command, left margin is not changed. ■ Setting of left margin is effective until ESC @ is executed, the printer is reset, or the power is turned off. ■ Left margin is "left edge of print area." If changing left margin, "left edge of print area" is also changed. ■ If this command and GS W set the print area width to less than the width of one character, the print area width is extended to accommodate one character for the line only.
[Model-dependent variations]	TM-9000/9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II, TM-U675, TM-U325D

See program example and print sample for GS L and GS W.

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TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

The horizontal motion unit is specified by **GS P.**

TM-H5000II

The horizontal motion unit is specified by **GS P.**

TM-U325D

The horizontal motion unit is 0.16 mm {1/160 inch}. This value equals 1/2 dot pitch.

TM-H6000III

The vertical or horizontal motion unit is specified by **GS P.** The left margin set for a slip affects the print area on the face of the slip.

TM-U675

The horizontal motion unit is specified by **GS P.**

[Name] Set print position to the beginning of print line

[Format]

ASCII	GS	T	n
Hex	1D	54	n
Decimal	29	84	n

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

[Default] None

[Printers not featuring this command] **TM-H5000II, TM-U325D**

[Description] In standard mode, moves the print position to the beginning of the print line after performing the operation specified by **n**.

n	Function
0, 48	Cancel data in the current print buffer
1, 49	Print data in the current print buffer

- [Notes]
- In page mode, this command is ignored.
 - This command is ignored if the print position is already the beginning of the line.
 - If the print position is not set to the beginning of the line, when **n** = 1, 49, this command functions the same as **LF**.
 - Setting values of each command, definitions, and receive buffer content are not changed.
 - When this command is executed, print position is set to the beginning of the line. Also, the state of the printer is “print position is beginning of the line” and “no data in the print buffer.”
 - When using commands that are enabled only at the beginning of the line, these commands are sure to be executed if this command is used immediately before using those commands.

[Model-dependent variations]

None

Program Example

```
PRINT #1, CHR$(&H1D); "T";CHR$(49):  
PRINT #1, CHR$(&H1B); "c0";CHR$(2):  
PRINT #1, CHR$(&H1D); "v";CHR$(66);CHR$(0):
```

[Name] Set print area width

[Format]	ASCII	GS	W	nl	nh
	Hex	1D	57	nl	nh
	Decimal	29	87	nl	nh

[Range] $0 \leq (\text{nl} + \text{nh} \times 256) \leq 65535$ ($0 \leq \text{nl} \leq 255, 0 \leq \text{nh} \leq 255$)

TM-J9000/J9100: For roll paper: $(\text{nl} + \text{nh} \times 256) = 480$ ($\text{nl} = 224, \text{nh} = 1$)
 For roll paper: $(\text{nl} + \text{nh} \times 256) = 744$ ($\text{nl} = 232, \text{nh} = 2$)

TM-J7500/7600: For roll paper (when width is 82.5 mm): $(\text{nl} + \text{nh} \times 256) = 512$ ($\text{nl} = 0, \text{nh} = 2$)
 For roll paper (when width is 76 mm): $(\text{nl} + \text{nh} \times 256) = 480$ ($\text{nl} = 224, \text{nh} = 1$)
 For roll paper (when width is 69.5 mm): $(\text{nl} + \text{nh} \times 256) = 432$ ($\text{nl} = 176, \text{nh} = 1$)
 For roll paper (when width is 57.5 mm): $(\text{nl} + \text{nh} \times 256) = 360$ ($\text{nl} = 104, \text{nh} = 1$)
 For slip paper: $(\text{nl} + \text{nh} \times 256) = 960$ ($\text{nl} = 192, \text{nh} = 3$)

TM-J7000/7100: For roll paper (when width is 82.5 mm): $(\text{nl} + \text{nh} \times 256) = 512$ ($\text{nl} = 0, \text{nh} = 2$)
 For roll paper (when width is 76 mm): $(\text{nl} + \text{nh} \times 256) = 480$ ($\text{nl} = 224, \text{nh} = 1$)
 For roll paper (when width is 69.5 mm): $(\text{nl} + \text{nh} \times 256) = 432$ ($\text{nl} = 176, \text{nh} = 1$)
 For roll paper (when width is 57.5 mm): $(\text{nl} + \text{nh} \times 256) = 360$ ($\text{nl} = 104, \text{nh} = 1$)
 For slip paper (face): $(\text{nl} + \text{nh} \times 256) = 576$ ($\text{nl} = 64, \text{nh} = 2$)
 For slip paper (back): $(\text{nl} + \text{nh} \times 256) = 552$ ($\text{nl} = 40, \text{nh} = 2$)

TM-H5000II: For roll paper: $(\text{nl} + \text{nh} \times 256) = 512$ ($\text{nl} = 0, \text{nh} = 2$)
 For slip paper: $(\text{nl} + \text{nh} \times 256) = 800$ ($\text{nl} = 32, \text{nh} = 3$)

TM-H6000III: For roll paper: $(\text{nl} + \text{nh} \times 256) = 512$ ($\text{nl} = 0, \text{nh} = 2$)
 For slip paper (face) and validation: $(\text{nl} + \text{nh} \times 256) = 540$ ($\text{nl} = 28, \text{nh} = 2$)

TM-U325D: $(\text{nl} + \text{nh} \times 256) = 400$ ($\text{nl} = 144, \text{nh} = 1$)

TM-U675: When DIP switch [SW2-4] is off:

For roll paper: $(nL + nh \times 256) = 450$ ($nL = 194$, $nh = 1$)

For slip paper: $(nL + nh \times 256) = 540$ ($nL = 28$, $nh = 2$)

For validation paper: $(nL + nh \times 256) = 540$ ($nL = 28$, $nh = 2$)

When DIP switch [SW2-4] is on and [SW2-3] is off:

$(nL + nh \times 256) = 400$ ($nL = 144$, $nh = 1$)

When DIP switch [SW2-4] is on and [SW2-3] is on:

$(nL + nh \times 256) = 385$ ($nL = 129$, $nh = 1$)

[Printers not featuring this command] None

[Description] In standard mode, sets the print area width to $[(nL + nh \times 256) \times (\text{horizontal motion unit})]$ for the paper type selected by **ESC c 1**.

[Notes]

- When standard mode is selected, this command is enabled only when processed at the beginning of the line.
- The print area width has no effect in page mode.
- This command is available for the paper type selected by **ESC c 1**. The print area width can be set independently for roll paper, slip (face and back), and validation paper.
- If the [left margin + print area width] exceeds the printable area, the print area width is automatically set to [printable area - left margin].
- The horizontal (perpendicular to paper feed direction) motion unit is used to set the print area width.
- If the horizontal motion unit is changed after executing this command, the print area width is not changed.
- Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.
- If this command and **GS L** set the print area width to less than the width of one character, the print area width is extended to accommodate one character for the line.

[Model-dependent variations]

**TM-9000/9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II,
TM-U675, TM-U325D**

See program example and print sample for GS L and GS W.

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TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

The horizontal motion unit is specified by **GS P.**

TM-H5000II

The horizontal motion unit is specified by **GS P.**

TM-U325D

The horizontal motion unit is 0.16 mm {1/160 inch} (the minimum movement amount). This value equals a half dot pitch.

TM-H6000III

The horizontal motion unit is specified by **GS P.** The print area width set for a slip affects the print area on the face of the slip.

See **GS (E <Function 3>** for selecting (single-color printing control/two-color printing control).

TM-U675

The horizontal motion unit is specified by **GS P.**

Program example for GS L and GS W

Program Example

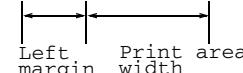
```
PRINT #1, CHR$(&H1B); "c0";CHR$(1); ← Select paper type  
PRINT #1, CHR$(&H1B); "c1";CHR$(1); ← Select paper type for commands  
PRINT #1, CHR$(&H1D); "P";CHR$(180);CHR$(180);  
PRINT #1, "01234567890123456789"; CHR$(&HA);  
PRINT #1, CHR$(&H1D); "L";CHR$(60);CHR$(0); ← Set left margin  
PRINT #1, CHR$(&H1D); "W";CHR$(120);CHR$(0); ← Set print area width  
PRINT #1, "01234567890123456789"; CHR$(&HA);
```

Print Sample

01234567890123456789

0123456789

0123456789



[Name] Set relative vertical print position in page mode

[Format]

ASCII	GS	\	nl	nh
Hex	1D	5C	nl	nh
Decimal	29	92	nl	nh

[Range] $-32768 \leq (\text{nl} + \text{nh} \times 256) \leq 32767$

[Default] None

[Printers not featuring this command] **TM-U325D**

[Description] In page mode, moves the vertical print position to $[(\text{nl} + \text{nh} \times 256) \times (\text{vertical or horizontal motion unit})]$ from the current position.

[Notes]

- This command is enabled only in page mode. Page mode is selected by **ESC L**, **FS L**.
- The printer ignores any setting that exceeds the print area set by **ESC W**.
- A positive number specifies movement downward, and a negative number specifies movement upward.
- The horizontal or vertical motion unit is used for the print direction set by **ESC T**.
 - When the starting position is set to the upper left or lower right of the print area using **ESC T**, the vertical (direction of paper feed) motion unit is used.
 - When the starting position is set to the upper right or lower left of the print area using **ESC T**, the horizontal (perpendicular to paper feed) motion unit is used.
- If the horizontal or vertical motion unit is changed after this command is executed, print position is not changed.

[Model-dependent variations]

TM-9000/9100, **TM-J7500/7600**, **TM-J7000/7100**, **TM-H6000III**, **TM-H5000II**,
TM-U675

See program example and print sample for GS \$ and GS \.

Program example for GS \$ and GS \

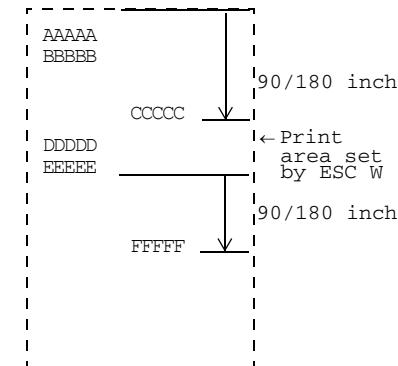
Program Example

```

PRINT #1, CHR$(&H1B); "L"; ← Select page mode
PRINT #1, CHR$(&H1D); "P"; CHR$(180); CHR$(180);
PRINT #1, CHR$(&H1B); "W"; CHR$(0); CHR$(0); CHR$(0); CHR$(0); CHR$(180); CHR$(0); CHR$(144); CHR$(1);
← Set print area
PRINT #1, CHR$(&H1B); "T"; CHR$(0); ← Select print direction
PRINT #1, "AAAAA"; CHR$(&HA);
PRINT #1, "BBBBB";
PRINT #1, CHR$(&H1D); "$"; CHR$(90); CHR$(0); ← Set absolute position
PRINT #1, "CCCCC"; CHR$(&HA);
PRINT #1, "DDDDD"; CHR$(&HA);
PRINT #1, "EEEEE";
PRINT #1, CHR$(&H1D); "\"; CHR$(90); CHR$(0); ← Set relative position
PRINT #1, "FFFFF"; CHR$(&HC); ← Batch print and return to standard mode

```

Print Sample



TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

The vertical or horizontal motion unit is specified by GS P.

TM-H5000II

The vertical or horizontal motion unit is specified by GS P.

TM-H6000III

The vertical or horizontal motion unit is specified by GS P.

TM-U675

The vertical or horizontal motion unit is specified by GS P.

BIT IMAGE COMMANDS

Command	Name
ESC *	Select bit-image mode
* FS p	Print NV bit image
* FS q	Define NV bit image
GS (L	Set graphics data
GS 8 L	
* GS *	Define downloaded bit image
* GS /	Print downloaded bit image
* GS Q 0	Print variable vertical size bit image
* GS v 0	Print raster bit image

* obsolete commands

[Name]	Select bit-image mode
[Format]	ASCII ESC * m nL nH d1 ... dk Hex 1B 2A m nL nH d1 ... dk Decimal 27 42 m nL nH d1 ... dk
[Range]	TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100: m = 0, 1, 32, 33 0 ≤ nL ≤ 255 0 ≤ nH ≤ 3, where 1 ≤ (nL + nH × 256) ≤ 1023 0 ≤ d ≤ 255 k = nL + nH × 256 (when m = 0, 1) k = (nL + nH × 256) × 3 (when m = 32, 33)
TM-H5000II:	For roll paper: m = 0, 1, 32, 33 For slip paper (in standard mode): m = 0, 1 For slip paper (in page mode): m = 0 0 ≤ nL ≤ 255 0 ≤ nH ≤ 3 (1 ≤ nL + nH × 256 ≤ 1023) 0 ≤ d ≤ 255 k = nL + nH × 256 (when m = 0, 1) k = (nL + nH × 256) × 3 (when m = 32, 33)
TM-H6000III:	For roll paper: m = 0, 1, 32, 33 0 ≤ nL ≤ 255 0 ≤ nH ≤ 3 (1 ≤ nL + nH × 256 ≤ 1023) 0 ≤ d ≤ 255 k = nL + nH × 256 (when m = 0, 1) k = (nL + nH × 256) × 3 (when m = 32, 33) For slip paper (face) / validation: m = 0, 1 (standard mode) m = 0 (page mode) m = 0, 1 (double-density page mode) 0 ≤ nL ≤ 255 0 ≤ nH ≤ 3 (1 ≤ nL + nH × 256 ≤ 1023)

**For slip paper
(back):**

$0 \leq d \leq 255$
 $k = nL + nh \times 256$
 $m = 0$
 $0 \leq nL \leq 255$
 $0 \leq nh \leq 3 \ (1 \leq nL + nh \times 256 \leq 1023)$
 $0 \leq d \leq 255$
 $k = nL + nh \times 256$

TM-U675:

$m = 0, 1$ (standard mode)
 $m = 0$ (page mode)
 $m = 0, 1$ (double density page mode)
 $0 \leq nL \leq 255$
 $0 \leq nh \leq 3 \ (1 \leq nL + nh \times 256 \leq 1023)$
 $0 \leq d \leq 255$
 $k = nL + nh \times 256$

TM-U325D:

$m = 0, 1$
 $0 \leq nL \leq 255$
 $0 \leq nh \leq 3 \ (1 \leq nL + nh \times 256 \leq 1023)$
 $0 \leq d \leq 255$
 $k = nL + nh \times 256$

[Default] None

[Printers not featuring this command] None

[Description] Stores the bit image data in the print buffer using the bit image mode specified by **m**, as follows:

m	Bit image mode	Number of bits for vertical data	Dot density in horizontal	Amount of data (k)
0	8-dot single-density	8	Single-density	$nL + nh \times 256$
1	8-dot double-density	8	Double-density	$nL + nh \times 256$
32	24-dot single-density	24	Single-density	$(nL + nh \times 256) \times 3$
33	24-dot double-density	24	Double-density	$(nL + nh \times 256) \times 3$

- **nl, nh** specifies a bit image in the horizontal direction as (**nl + nh** × 256) dots.
- **d** specifies the bit image data (column format).
- **k** indicates the number of bit image data. **k** is an explanation parameter; therefore it does not need to be transmitted.

[Notes]

- **k** bytes of data of **d1 ... dk** are processed as bit image data. Data (**d**) specifies a bit printed as 1 and not printed as 0.
- If the bit image data exceeds the number of dots to be printed on a line, the excess data is ignored.
- The bit image is not affected by print mode (emphasized, double-strike, underline, white/black reverse printing, or 90° clockwise-rotated), except for character size and upside-down print mode.
- After printing a bit image, the printer returns to processing data as normal data.
- When printing multiple line bit images, selecting unidirectional print mode with **ESC U** enables printing patterns in which the top and bottom parts are aligned vertically.
- When this command is executed, print position is moved to [current position + (**nl + nh** × 256) dots]. Also, the printer state becomes "not beginning of the line" and "some data in print buffer."
- This command is used to print a picture or logo.
- The relationship between bit image data and the print result is as follows:

8-dot mode (**m** = 0, 1)24-dot mode (**m** = 32, 33)

d1	d2	...	dk

d1	d4	...	dk-2
d2	d5	...	dk-1
d3	d6	...	dk

[Model-dependent variations]

**TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III,
TM-H5000II, TM-U675, TM-U325D**

Program Example for all printers	Print Sample
<pre>m=0: GOSUB bitimage8 ← 8-dot single-density m=1: GOSUB bitimage8 ← 8-dot double-density END bitimage8: PRINT #1, CHR\$(&H1B); "*" ;CHR\$ (m) ;CHR\$ (70) ;CHR\$ (0); FOR i=1 TO 5 PRINT #1, CHR\$ (1) ;CHR\$ (2) ;CHR\$ (4) ;CHR\$ (8) ; PRINT #1, CHR\$ (16) ;CHR\$ (32) ;CHR\$ (64) ;CHR\$ (128) ; PRINT #1, CHR\$ (64) ;CHR\$ (32) ;CHR\$ (16) ;CHR\$ (8) ; PRINT #1, CHR\$ (4) ;CHR\$ (2) ; NEXT i PRINT #1, CHR\$(&HA); RETURN</pre>	<p style="text-align: center;">Print Sample</p>  <p style="text-align: right;">m=0 m=1</p>

TM-J9000/J9100

The bit image modes selectable by **m** are as follows:

“Vertical” is in the direction of paper feeding and “horizontal” is perpendicular (at right angles) to the direction of paper feeding.

Page mode can't be used when back of a slip is selected as the active sheet.

When both standard mode and page mode are selected (the starting position specified by **ESC T** is the upper left or lower right).

m	Bit image mode	Vertical dot density	Horizontal				
			Dot density	Set adjacent dots	Maximum number of dots		
					Roll paper	Slip paper	Validation paper
0	8-dot single-density	60 dpi	90 dpi	Permitted	240	372	372
1	8-dot double-density	60 dpi	180 dpi	Permitted	480	744	744
32	24-dot single-density	180 dpi	90 dpi	Permitted	240	372	372
33	24-dot double-density	180 dpi	180 dpi	Permitted	480	744	744

When the starting position specified by **ESC T** is the upper right or lower left in page mode.

m	Bit image mode	Vertical					Horizontal dot density	
		Dot density	Set adjacent dots	Maximum number of dots				
				Roll paper	Slip paper	Validation paper		
0	8-dot single-density	90 dpi	Permitted	Single color printing model:880 Two-color printing model:440	32	96	60 dpi	
1	8-dot double-density	180 dpi	Permitted	Single color printing model:1760 Two-color printing model:880	64	193	60 dpi	
32	24-dot single-density	90 dpi	Permitted	Single color printing model:880 Two-color printing model:440	32	96	180 dpi	
33	24-dot double-density	180 dpi	Permitted	Single color printing model:1760 Two-color printing model:880	64	193	180 dpi	

90° or 270° rotated bit-image data will be printed.

dpi: dots per 25.4 mm (dots per inch)

TM-J7500/7600

The bit image modes selectable by **m** are as follows:

“Vertical” is in the direction of paper feeding and “horizontal” is perpendicular (at right angles) to the direction of paper feeding.

See Functions 5 of **GS E** for the specifying of the paper.

Page mode can't be used when back of a slip is selected as the active sheet.

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<TM-J7500 (single color printing model)>

When both standard mode and page mode are selected (the starting position specified by **ESC T** is the upper left or lower right).

m	Bit image mode	Vertical dot density	Horizontal						
			Dot density	Set adjacent dots	Maximum number of dots				Slip
					82.5 mm	76 mm	69.5 mm	57.5 mm	
0	8-dot single-density	60 dpi	90 dpi	Permitted	256	240	216	180	480
1	8-dot double-density	60 dpi	180 dpi	Permitted	512	480	432	360	960
32	24-dot single-density	180 dpi	90 dpi	Permitted	256	240	216	180	480
33	24-dot double-density	180 dpi	180 dpi	Permitted	512	480	432	360	960

When the starting position specified by **ESC T** is the upper right or lower left in page mode.

m	Bit image mode	Vertical							Horizontal dot density	
		Dot density	Set adjacent dots	Maximum number of dots				Slip		
				82.5 mm	76 mm	69.5 mm	57.5 mm			
0	8-dot single-density	90 dpi	Permitted	416	440	492	588	220	60 dpi	
1	8-dot double-density	180 dpi	Permitted	832	880	984	1176	440	60 dpi	
32	24-dot single-density	90 dpi	Permitted	416	440	492	588	220	180 dpi	
33	24-dot double-density	180 dpi	Permitted	832	880	984	1176	440	180 dpi	

90° or 270° rotated bit-image data will be printed.

dpi: dots per 25.4 mm (dots per inch)

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<TM-J7600 (two-color printing model)>

When both standard mode and page mode are selected (the starting position specified by **ESC T** is the upper left or lower right).

m	Bit image mode	Vertical dot density	Horizontal						
			Dot density	Set adjacent dots	Maximum number of dots				Slip
					Roll paper width				
			82.5 mm	76 mm	69.5 mm	57.5 mm			
0	8-dot single-density	60 dpi	90 dpi	Permitted	256	240	216	180	480
1	8-dot double-density	60 dpi	180 dpi	Permitted	512	480	432	360	960
32	24-dot single-density	180 dpi	90 dpi	Permitted	256	240	216	180	480
33	24-dot double-density	180 dpi	180 dpi	Permitted	512	480	432	360	960

When the starting position specified by **ESC T** is the upper right or lower left in page mode.

m	Bit image mode	Vertical							Horizontal dot density	
		Dot density	Set adjacent dots	Maximum number of dots				Slip		
				Roll paper width						
		82.5 mm	76 mm	69.5 mm	57.5 mm					
0	8-dot single-density	90 dpi	Permitted	208	220	244	292	108	60 dpi	
1	8-dot double-density	180 dpi	Permitted	416	440	488	584	216	60 dpi	
32	24-dot single-density	90 dpi	Permitted	208	220	244	292	108	180 dpi	
33	24-dot double-density	180 dpi	Permitted	416	440	488	584	216	180 dpi	

90° or 270° rotated bit-image data will be printed.

dpi: dots per 25.4 mm (dots per inch)

TM-J7000/7100

Don't use this command when the back of a slip is selected as the active sheet.

The bit image modes selectable by **m** are as follows:

- "Vertical" is in the direction of paper feeding and "horizontal" is perpendicular (at right angles) to the direction of paper feeding.
- See Functions 5 of **GS E** for the specifying of the paper.

<TM-J7000 (single-color printing model)>

When both standard mode and page mode are selected (a starting position specified by **ESC T** is upper left or lower right).

m	Bit image mode	Vertical dot density	Horizontal								
			Dot density	Set adjacent dots	Maximum number of dots					Slip	
					Roll paper width				82.5 mm	76 mm	69.5 mm
0	8-dot single-density	60 dpi	90 dpi	Permitted	256	240	216	180	288	276	
1	8-dot double-density	60 dpi	180 dpi	Permitted	512	480	432	360	576	552	
32	24-dot single-density	180 dpi	90 dpi	Permitted	256	240	216	180	288	276	
33	24-dot double-density	180 dpi	180 dpi	Permitted	512	480	432	360	576	552	

When the starting position specified by **ESC T** is upper right or lower left in page mode.

m	Bit image mode	Vertical								Horizontal dot density
		Dot density	Set adjacent dots	Maximum number of dots					Slip	
				Roll paper width				82.5 mm	76 mm	69.5 mm
0	8-dot single-density	90 dpi	Permitted	416	440	492	588	368	60 dpi	60 dpi
1	8-dot double-density	180 dpi	Permitted	832	880	984	1176	736	60 dpi	60 dpi
32	24-dot single-density	90 dpi	Permitted	416	440	492	588	368	180 dpi	180 dpi
33	24-dot double-density	180 dpi	Permitted	832	880	984	1176	736	180 dpi	180 dpi

90° or 270° rotated bit-image data will be printed.

dpi: dots per 25.4 mm (dots per inch)

<TM-J7100 (two-color printing model)>

When both standard mode and page mode are selected (a starting position specified by **ESC T** is upper left or lower right).

m	Bit image mode	Vertical dot density	Horizontal								
			Dot density	Set adjacent dots	Maximum number of dots					Slip	
					Roll paper width				82.5 mm	76 mm	69.5 mm
0	8-dot single-density	60 dpi	90 dpi	Permitted	256	240	216	180	288	276	
1	8-dot double-density	60 dpi	180 dpi	Permitted	512	480	432	360	576	552	
32	24-dot single-density	180 dpi	90 dpi	Permitted	256	240	216	180	288	276	
33	24-dot double-density	180 dpi	180 dpi	Permitted	512	480	432	360	576	552	

When the starting position specified by **ESC T** is upper right or lower left in page mode.

m	Bit image mode	Vertical								Horizontal dot density
		Dot density	Set adjacent dots	Maximum number of dots					Slip	
				Roll paper width				82.5 mm	76 mm	69.5 mm
0	8-dot single-density	90 dpi	Permitted	208	220	244	292	184	60 dpi	
1	8-dot double-density	180 dpi	Permitted	416	440	488	584	368	60 dpi	
32	24-dot single-density	90 dpi	Permitted	208	220	244	292	184	180 dpi	
33	24-dot double-density	180 dpi	Permitted	416	440	488	584	368	180 dpi	

90° or 270° rotated bit-image data will be printed.

dpi: dots per 25.4 mm (dots per inch)

TM-H5000II

The bit image modes that can be specified are different for roll paper and slip, using **m** as follows:
(dpi: dots per 25.4 mm (dots per inch))

<Roll paper>

When standard mode or page mode is selected. (The starting position is set to the upper left or lower right of the print area using **ESC T.**)

m	Bit image mode	Vertical dot density	Horizontal direction		
			Dot density	Set adjacent dots	Maximum print area
0	8-dot single-density	60 dpi	90 dpi	Permitted	256 dots
1	8-dot double-density	60 dpi	180 dpi	Permitted	512 dots
32	24-dot single-density	180 dpi	90 dpi	Permitted	256 dots
33	24-dot double-density	180 dpi	180 dpi	Permitted	512 dots

When page mode is selected. (The starting position is set to the upper right or lower left of the print area using **ESC T.**)

m	Bit image mode	Vertical direction			Horizontal dot density
		Dot density	Set adjacent dots	Maximum print area	
0	8-dot single-density	90 dpi	Permitted	831 dots	60 dpi
1	8-dot double-density	180 dpi	Permitted	1662 dots	60 dpi
32	24-dot single-density	90 dpi	Permitted	831 dots	180 dpi
33	24-dot double-density	180 dpi	Permitted	1662 dots	180 dpi

In this case, the bit image rotated by 90 degrees or 270 degrees is printed.

<Slip>

When both standard mode and page mode are selected (a starting position specified by **ESC T is upper left or lower right).**

m	Bit image mode	Vertical dot density	Horizontal direction		
			Dot density	Set adjacent dots	Maximum print area
0	8-dot single-density	72 dpi	75 dpi	Permitted	400 dots
1	8-dot double-density	72 dpi	150 dpi	Prohibited	800 dots

When double-density page mode or standard mode is selected, 8-dot double-density mode (m = 1**) is enabled.**

When the starting position specified by **ESC T is the upper right or lower left in page mode.**

m	Bit image mode	Vertical direction			Horizontal dot density
		Dot density	Set adjacent dots	Maximum print area	
0	8-dot single-density	72 dpi	Permitted	902 dots	75 dpi

90° or 270° rotated bit-image data will be printed.

TM-U325D

The modes selectable by **m are as follows: (dpi: dots per inch (dots per 25.4 mm))**

m	Bit image mode	Vertical dot density	Horizontal direction		
			Dot density	Set adjacent dots	Maximum print area
0	8-dot single-density	72 dpi	80 dpi	Permitted	200 dots
1	8-dot double-density	72 dpi	160 dpi	Prohibited	400 dots

TM-H6000III

The bit image modes that can be specified are different for roll paper, the face of a slip, and the back of a slip.

In the following tables, "vertical direction" means direction of paper feed, "horizontal direction" means perpendicular to paper feed.

See memory switch **GS (E <Function 3>** for selecting roll paper (single-color printing control/two-color printing control).

Page mode can be selected by **ESC L**. Double-density page mode can be selected by **FS L**.

Roll paper (when standard mode or when page mode at the starting position is set to the upper left or lower right of the print area using **ESC T)**

m	Bit image mode	Vertical dot density	Horizontal direction		
			Dot density	Set adjacent dots	Maximum print area
0	8-dot single-density	60 dpi	90 dpi	Permitted	256 dots
1	8-dot double-density	60 dpi	180 dpi	Permitted	512 dots
32	24-dot single-density	180 dpi	90 dpi	Permitted	256 dots
33	24-dot double-density	180 dpi	180 dpi	Permitted	512 dots

Roll paper (when the starting position is set to the upper right or lower left of the print area using **ESC T)**

m	Bit image mode	Vertical direction				Horizontal dot density	
		Dot density	Set adjacent dots	Maximum print area			
				Two-color printing control mode	Single color printing control mode		
0	8-dot single-density	90 dpi	Permitted	207 dots	415 dots	60 dpi	
1	8-dot double-density	180 dpi	Permitted	415 dots	831 dots	60 dpi	
32	24-dot single-density	90 dpi	Permitted	207 dots	415 dots	180 dpi	
33	24-dot double-density	180 dpi	Permitted	415 dots	831 dots	180 dpi	

In this case, the bit image rotated by 90 degrees or 270 degrees is printed.

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Slip (face) / validation (when standard mode or when page mode at the starting position is set to the upper left or lower right of the print area using **ESC T).**

m	Bit image mode	Vertical dot density	Horizontal direction		
			Dot density	Set adjacent dots	Maximum print area
0	8-dot single-density	72 dpi	80 dpi	Permitted	270 dots
1	8-dot double-density	72 dpi	160 dpi	Prohibited	540 dots

When double-density page mode or standard mode is selected, 8-dot double-density mode (m = 1**) is enabled.**

When page mode or double-density page mode is selected (when the starting position is set to the upper right or lower left of the print area using **ESC T)**

m	Bit image mode	Vertical direction				Horizontal dot density	
		Dot density	Set adjacent dots	Maximum print area			
				When page mode is selected	When double-density page mode is selected		
0	8-dot single-density	72 dpi	Permitted	704 dots	352 dots	80 dpi	
1	8-dot double-density	144 dpi	Prohibited	—	704 dots	80 dpi	

In this case, the bit image rotated by 90 degrees or 270 degrees is printed.

When double-density page mode is selected, 8-dot double-density mode (m = 1**) is enabled.**

Slip (back)

m	Bit image mode	Vertical dot density	Horizontal direction		
			Dot density	Set adjacent dots	Maximum print area
0	8-dot single-density	72 dpi	127 dpi	Permitted	240 dots

TM-U675

The modes selectable by **m** are as follows: (dpi: dots per inch (dots per 25.4 mm))

In the following tables, "vertical direction" means direction of paper feed, "horizontal direction" means perpendicular to paper feed.

In the following tables, A, B, C, D mean the following:

- A: Roll paper is selected as the paper type when DIP switch [SW2-4] is off
- B: Slip or validation is selected as the paper type when DIP switch [SW2-4] is off
- C: When DIP switch [SW2-4] is on and [SW2-3] is off
- D: When DIP switch [SW2-4] is on and [SW2-3] is on

Page mode can be selected by **ESC L**. Double-density page mode can be selected by **FS L**.

In standard mode

m	Bit image mode	Vertical dot density	Horizontal direction					
			Dot density	Set adjacent dots	Maximum print area			
					A	B	C	D
0	8-dot single-density	72 dpi	80 dpi	Permitted	225 dots	270 dots	200 dots	192 dots
1	8-dot double-density	72 dpi	160 dpi	Prohibited	450 dots	540 dots	400 dots	385 dots

In page mode (when the starting position is set to the upper left or lower right of the printarea using **ESC T**)

m	Bit image mode	Vertical dot density	Horizontal direction					
			Dot density	Set adjacent dots	Maximum print area			
					A	B	C, D	
0	8-dot single-density	72 dpi	80 dpi	Permitted	225 dots	270 dots	200 dots	
1	8-dot double-density	72 dpi	160 dpi	Prohibited	450 dots	540 dots	400 dots	

When double-density page mode is selected, 8-dot double-density mode (**m = 1**) is enabled.

In page mode (when the starting position is set to the upper right or lower left of the print area using ESC T)

m	Bit image mode	Vertical direction				Horizontal dot density	
		Dot density	Set adjacent dots	Maximum print area (A,B,C,D)			
				Page mode is selected	Double-density page mode is selected		
0	8-dot single-density	72 dpi	Permitted	704 dots	352 dots	80 dpi	
1	8-dot double-density	144 dpi	Prohibited	— dots	704 dots	80 dpi	

In this case, the bit image rotated by 90 degrees or 270 degrees is printed.

When double-density page mode is selected, 8-dot double-density mode ($m = 1$) is enabled.

FS p

EXECUTING COMMAND

[Name] Print NV bit image

[Format]

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

[Printers not featuring this command] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-U325D**

[Range]

TM-H5000II: **$1 \leq n \leq 255$**
 $0 \leq m \leq 3, 48 \leq m \leq 51$

TM-H6000III: **$1 \leq n \leq 255$**
For roll paper: **$0 \leq m \leq 3, 48 \leq m \leq 51$**
For slip (face), validation: **$m = 0, 1, 48, 49$ (standard mode)**
 $m = 1, 49$ (page mode)
 $m = 0, 1, 48, 49$ (double-density page mode)

TM-U675: **$1 \leq n \leq 255$,**
 $m = 0, 1, 48, 49$ (standard mode)
 $m = 1, 49$ (page mode)
 $m = 0, 1, 48, 49$ (double-density page mode)

[Description] Prints NV bit image **n** using the process of **FS q** and using the mode specified by **m**.

m	Mode	Scale of width	Scale of height
0, 48	Normal	× 1	× 1
1, 49	Double-width	× 2	× 1
2, 50	Double-height	× 1	× 2
3, 51	Quadruple	× 2	× 2

[Recommended Functions]

This function is supported only by some printer models and may not be supported by future models.

It is recommended that NV graphics functions (**GS (L GS 8 L:** <Function 51> and <Function 64> ~ <Function 69>) be used instead of **FS p** because the NV graphics functions offer the following additional features:

- Multiple logo data and mark data can be specified (except for some models).
- Data can be controlled by key code.
- It is possible to redefine or delete the data for each key code.
- Color can be specified for the definition data.
- Data can be defined by raster format.
- The remaining capacity of the definition area can be confirmed.

[Notes]

- This command is not effective when the NV bit image specified by **n** has not been defined.
- In standard mode, this command is effective only when there is no data in the print buffer and beginning of the line.
- In page mode, the NV bit image is only stored in the print buffer and is not printed.
- If the NV bit image exceeds one line of print area, the printer does not print it.
- The scales for width and height of NV bit images are specified by **m**. Therefore, in page mode with 90° or 270° clockwise rotated NV bit image, the printer applies print area and dot density from [width: direction of paper feed, height: perpendicular to direction of paper feed].
- This command is not affected by print modes (emphasized, underline, or 90° rotated characters, etc.) except character size and upside-down print mode.
- This command executes paper feeding for the amount needed for printing the NV bit image, regardless of the paper feed amount set by the paper feed setting command.
- After printing the bit image, this command sets the print position to the beginning of the line, and the printer's state is set to no data in print buffer.
- When printing the NV bit image, selecting unidirectional print mode with **ESC U** enables printing patterns in which the top and bottom parts are aligned vertically.
- The NV bit image is defined by **FS q**.

[Model-dependent variations]

TM-H6000III, TM-H5000II, TM-U675

See program example and print sample for FS q and FS p.

TM-H5000II

The dot density and the maximum print area are described in the following table: (dpi: dots per inch (dots per 25.4 mm))

In the following table, "Vertical" is in the direction of paper feeding and "horizontal" is perpendicular (at right angles) to the direction of paper feeding.

Scale	Horizontal		Vertical
	Dot density	Maximum print area	Dot density
× 1	180 dpi	512 dots	180 dpi
× 2	90 dpi	256 dots	90 dpi

TM-U675

The dot density and the maximum print area are described in the following tables: (dpi: dots per inch (dots per 25.4 mm))

"Vertical" is in the direction of paper feeding and "horizontal" is perpendicular (at right angles) to the direction of paper feeding.

In the following tables, "-" means "printing NV graphics is not available."

The maximum print area of vertical is for printing NV bit image in page mode. Page mode can be selected by **ESC L**. Double-density page mode can be selected by **FS L**.

In the following tables, A, B, C, D mean following

- A: Roll paper is selected as the paper type when DIP switch [SW2-4] is off
- B: Slip or validation is selected as the paper type when DIP switch [SW2-4] is off
- C: When DIP switch [SW2-4] is on and [SW2-3] is off
- D: When DIP switch [SW2-4] is on and [SW2-3] is on

In standard mode

Scale	Dot density	Horizontal				Vertical	
		Maximum print area (dot)					
		A	B	C	D		
× 1	160 dpi	450	540	400	385	72 dpi	
× 2	80 dpi	225	270	200	192	—	

In page mode when the starting position is set to the upper left or lower right of the print area using ESC T.

Scale	Dot density	Horizontal						Vertical		
		Maximum print area						Dot density	Maximum print area	
		Page mode			Double dot density page mode				Page mode A, B, C, D	Double dot density page mode A, B, C, D
× 1	160 dpi	-	-	-	450	540	400	72 dpi	704 dots	352 dots
× 2	80 dpi	225	270	200	225	270	200	—	—	—

In page mode when the starting position is set to the upper right or lower left of the print area using ESC T

Scale	Dot density	Horizontal						Vertical		
		Maximum print area						Dot density	Maximum print area	
		Page mode			Double dot density page mode				Page mode A, B, C, D	Double dot density page mode A, B, C, D
× 1	80 dpi	225	270	200	225	270	200	144 dpi	704 dots	352 dots
× 2	—	—	—	—	—	—	72 dpi	704 dots	352 dots	—

In this case, the NV bit image rotated by 90 degrees or 270 degrees is printed.

TM-H6000III

This function is available when roll paper, slip (face), or validation is selected as the active sheet.

This printer supports NV graphics function of **GS (L / GS 8 L**.

NV graphics function (**GS (L / GS 8L**) is recommended.

This model information (dot density and maximum print area and others) is the same as for the graphics function. See the description of **GS (L / GS 8 L <Function 69>**.

FS q

SETTING COMMAND

[Name] Define NV bit image

[Format]

ASCII	FS	q	n	[XL XH YL YH d1...dk]1...[XL XH YL YH d1...dk] n
Hex	1C	71	n	[XL XH YL YH d1...dk]1...[XL XH YL YH d1...dk] n
Decimal	28	113	n	[XL XH YL YH d1...dk]1...[XL XH YL YH d1...dk] n

[Printers not featuring this command] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-U325D**

[Range]

TM-H5000II:

$$\begin{aligned} & 1 \leq n \leq 255 \\ & 1 \leq (XL + XH \times 256) \leq 1023 \quad (0 \leq XL \leq 255, 0 \leq XH \leq 3) \\ & 1 \leq (YL + YH \times 256) \leq 288 \quad (0 \leq YL \leq 1, 0 \leq YH \leq 1) \\ & 0 \leq d \leq 255 \\ & k = (XL + XH \times 256) \times (YL + YH \times 256) \times 8 \\ & \text{Total defined data area is 384 KB} \end{aligned}$$
TM-U675, TM-H6000III:

$$\begin{aligned} & 1 \leq n \leq 255 \\ & 1 \leq (XL + XH \times 256) \leq 1023 \quad (0 \leq XL \leq 255, 0 \leq XH \leq 3) \\ & 1 \leq (YL + YH \times 256) \leq 288 \quad (0 \leq YL \leq 255, 0 \leq YH \leq 1) \\ & 0 \leq d \leq 255 \\ & k = (XL + XH \times 256) \times (YL + YH \times 256) \times 8 \\ & \text{Total defined data area is 384 KB} \end{aligned}$$

[Description] Defines the NV bit image in the NV graphics area.

- **n** specifies the number of defined NV bit images.
- **XL, XH** specifies the NV image in the horizontal direction as $(XL + XH \times 256)$ bytes.
- **YL, YH** specifies the NV image in the vertical direction as $(YL + YH \times 256)$ bytes.
- **d** specifies the definition data (column format).
- **k** indicates the number of the definition data. **k** is an explanation parameter; therefore it does not need to be transmitted.

[Recommended Functions]

This function is supported only by some printer models and may not be supported by future models. It is recommended that NV graphics functions (**GS (L GS 8 L**: <Function 51> and <Function 64> ~ <Function 69>) be used instead of **FS q** because the NV graphics functions offer the following additional features:

- Multiple logo data and mark data can be specified (except for some models).
- Data can be controlled by key code.
- It is possible to redefine or delete the data for each key code.
- Color can be specified for the definition data.
- Data can be defined by raster format.
- The remaining capacity of the definition area can be confirmed.
- It is available to continue operation. (Executing this command does not execute software reset process.)

[Notes]

- NV bit image means a bit image that is defined in a non-volatile memory. The NV bit image defined is effective until the next NV bit image is defined.
- In standard mode, this command is effective only when processed at the beginning of the line.
- If this command is processed while a macro is being defined, the printer cancels macro definition and starts processing this command. At this time, the macro becomes undefined.
- **k** bytes data of **d1...dk** is processed as a defined data of a NV bit image. The defined data (**d**) specifies a bit printed to 1 and not printed to 0.
- All NV bit images previously defined are canceled.
- After processing this command, the printer executes a software reset. Therefore, processing this command enables the printer to be in the correct status when the power is turned on.
- The limitations during processing of this command are as follows:
 - The paper feed button does not operate.
 - Real-time commands are not processed.
 - Even if the ASB function is effective, the ASB status cannot be transmitted.
- The NV bit image is printed by **FS p**.

- Bit image data and print result are as follows:

d1	dY+1	MSB
			.	LSB
d2	dY+2	...	dk-2	MSB
				LSB
.	dk-1	MSB
.	.			LSB
dY	dY×2	...	dk	MSB
				LSB

$$Y = yL + yH \times 256$$

- Data is written to the non-volatile memory by this command. Note the following when using this command.
 - Do not turn off the power or reset the printer from the interface when this command is being executed.
 - The printer is BUSY when writing the data to the non-volatile memory. In this case, be sure not to transmit data from the host because the printer does not receive data.
 - Excessive use of this function may destroy the non-volatile memory. As a guideline, do not use any combination of the following commands more than 10 times per day for writing data to the non-volatile memory: **GS (C** (part of functions), **GS (E** (part of functions), **GS (L** (part of functions), **GS (M** (part of functions), **GS g 0**, **FS g 1** and **FS q**.

[Model-dependent variations]

TM-H6000III, **TM-H5000II**, **TM-U675**

See program example and print sample for FS q and FS p.

Program Example for FS q and FS p

Program Example

```

PRINT #1, CHR$(&H1C); "q";CHR$(1);CHR$(18);CHR$(0);CHR$(5);CHR$(0);
FOR i=1 TO 18*5*8
  READ a$: d=VAL("&H"+a$)
  PRINT #1, CHR$(d);
NEXT i

PRINT #1, CHR$(&H1B); "U";CHR$(1); ← Select direction
PRINT #1, CHR$(&H1C); "p";CHR$(0);CHR$(&HA); ← Normal
PRINT #1, CHR$(&H1C); "p";CHR$(1);CHR$(&HA); ← Double width

DATA AA,AA,AA,AA,AA,55,55,55,55,54,80,00,00,00,02
DATA 40,00,00,00,04,80,00,00,00,02,40,00,00,00,04
DATA 8A,AA,AA,AA,A2,45,55,55,55,44,8A,AA,AA,AA,A2
DATA 45,55,55,55,44,8A,AA,AA,A2,45,00,50,01,44
DATA 8A,80,A8,02,A2,45,00,50,01,44,8A,80,A8,02,A2
DATA 45,00,50,01,44,8A,80,A8,02,A2,45,00,50,01,44
DATA 8A,80,A8,02,A2,45,00,00,01,44,8A,80,00,02,A2
DATA 40,00,00,00,04,80,00,00,00,02,40,00,00,00,04
DATA 80,AA,00,02,A2,41,55,00,01,44,82,AA,80,02,A2
DATA 45,55,40,01,44,8A,AA,A0,02,A2,45,45,50,01,44
DATA 8A,82,A8,02,A2,45,01,54,01,44,8A,80,AA,02,A2
DATA 45,00,55,01,44,8A,80,2A,82,A2,45,00,15,55,44
DATA 8A,80,0A,AA,A2,45,00,05,55,44,8A,80,02,AA,82
DATA 40,00,01,55,04,80,00,00,00,02,40,00,00,00,04
DATA 80,00,00,00,02,40,15,55,50,04,80,2A,AA,A8,02
DATA 40,55,55,54,04,80,AA,AA,AA,02,41,55,55,55,04
DATA 82,A8,00,2A,82,45,50,00,15,44,8A,A0,00,0A,A2
DATA 45,40,00,05,44,8A,80,00,02,A2,45,00,00,01,44
DATA 8A,80,00,02,A2,45,00,00,01,44,8A,80,00,02,A2
DATA 45,00,00,01,44,8A,80,00,02,A2,40,00,00,00,04
DATA 80,00,00,00,02,40,00,00,00,04,80,00,00,00,62
DATA 40,00,00,03,84,80,00,00,1C,02,40,00,00,60,04
DATA 80,00,03,80,02,40,00,1C,00,04,80,00,60,00,02
DATA 40,03,80,00,04,80,0C,00,00,02,40,70,00,00,04

```

Definition

Program Example (continued)

```

DATA 83,80,00,00,02,4C,00,00,00,04,80,00,00,00,02
DATA 40,00,00,00,04,80,00,00,00,02,4A,AA,AA,AA,A4
DATA 85,55,55,55,42,4A,AA,AA,AA,A4,85,55,55,55,42
DATA 4A,AA,AA,AA,A4,85,00,05,00,02,4A,08,0A,80,04
DATA 85,00,05,00,02,4A,80,0A,80,04,85,00,05,00,02
DATA 4A,80,0A,80,04,85,00,05,00,02,4A,80,0A,80,04
DATA 85,55,55,00,02,42,AA,AA,00,04,81,55,54,00,02
DATA 40,AA,A8,00,04,80,55,50,00,02,40,00,00,00,04
DATA 80,00,00,00,02,40,00,00,00,04,80,2A,AA,A8,02
DATA 40,55,55,54,04,80,AA,AA,AA,02,41,55,55,55,04
DATA 82,AA,AA,AA,82,45,40,00,05,44,8A,80,00,02,A2
DATA 45,00,00,01,44,8A,80,00,02,A2,45,00,00,01,44
DATA 8A,80,00,02,A2,45,00,00,01,44,8A,80,00,02,A2
DATA 45,00,00,01,44,8A,80,00,02,A2,45,40,00,05,44
DATA 82,AA,AA,AA,82,41,55,55,55,04,80,AA,AA,AA,02
DATA 40,55,55,54,04,80,2A,AA,A8,02,40,00,00,00,04
DATA 80,00,00,00,02,40,00,00,00,04,80,AA,00,02,A2
DATA 41,55,00,01,44,82,AA,80,02,A2,45,55,40,01,44
DATA 8A,AA,A0,02,A2,45,45,50,01,44,8A,82,A8,02,A2
DATA 45,01,54,01,44,8A,80,AA,02,A2,45,00,55,01,44
DATA 8A,80,2A,82,A2,45,00,15,55,44,8A,80,0A,AA,A2
DATA 45,00,05,55,44,8A,80,02,AA,82,40,00,01,55,04
DATA 80,00,00,00,02,40,00,00,00,04,80,00,00,00,02
DATA 40,00,00,00,04,AA,AA,AA,AA,55,55,55,55,54

```

Print Sample

 ← Normal mode

 ← Double-width mode

TM-H5000II

This printer specifies NV bit image for roll paper as paper type.

TM-H6000III

This printer supports the define NV graphics data function of **GS (L / GS 8 L**.
The defined NV bit image can be printed on roll paper, face of slip, or validation.

Definition area capacity can be selected from the following by <Function 5> of **GS (E** with
[0,64K,128K,192K,256K,320K,384K] byte.

TM-U675

Definition area capacity can be selected from the following by <Function 5> of **GS (E**

Model	Capacity that can be selected (KB)	Default (KB)
Except for multilingual model	0, 64, 128, 192, 256, 320, 384	384
Multilingual model	0, 64, 128, 192	192

GS (L GS 8 L

[Name] Set graphics data

[Printers not featuring this command] **TM-H5000II, TM-U325D**

[Description] Processes graphics data.

- Function code (**fn**) specifies the function.

fn	Function No.	Function name
0, 48	Function 48	Transmit the NV graphics memory capacity.
2, 50	Function 50	Print the graphics data in the print buffer.
3, 51	Function 51	Transmit the remaining capacity of the NV graphics memory.
4, 52	Function 52	Transmit the remaining capacity of the download graphics memory.
64	Function 64	Transmit the key code list for defined NV graphics.
65	Function 65	Delete all NV graphics data.
66	Function 66	Delete the specified NV graphics data.
67	Function 67	Define the NV graphics data (raster format).
68	Function 68	Define the NV graphics data (column format).
69	Function 69	Print the specified NV graphics data.
80	Function 80	Transmit the key code list for defined download graphics.
81	Function 81	Delete all NV graphics data.
82	Function 82	Delete the specified download graphics data.
83	Function 83	Define the downloaded graphics data (raster format).
84	Function 84	Define the downloaded graphics data (column format).
85	Function 85	Print the specified download graphics data.

fn	Function No.	Function name
112	Function 112	Store the graphics data in the print buffer (raster format).
113	Function 113	Store the graphics data in the print buffer (column format).

- **pl, ph** specify (**pl + ph × 256**) as the number of bytes after **ph** (**m, fn**, and **[parameters]**).
- **p1, p2, p3, and p4** specify (**p1 + p2 × 256 + p3 × 65536 + p4 × 16777216**) as the number of bytes after **ph** (**m, fn**, and **[parameters]**).
- Description of the **[parameters]** is described in each function.

■ Differences between **GS (L** and **GS 8 L**

- All commands possess the same functions for "Graphics data processing."
- Specifications (conventions) concerning function code (**fn**) are identical, while only the parameters (**pl, ph, p1, p2, p3, and p4**) used to specify the parameter values from **m** differ.

Command	Description
GS (L	Parameter value is 2 bytes less than that for GS 8 L . Used to fix the parameter value. Used when sending data divided into blocks.
GS 8 L	Possesses powerful range of expression. Used for batch transfer of large volumes of data.

- Be sure to use **GS 8 L** when the parameter value exceeds 65535 bytes for Functions 67, 68, 83, 84, 112, and 113.

[Recommended Functions]

- This command is recommended for use when printing image data.
- The image processing controlled using this command is referred to as the "Graphics function." The name is important as it distinguishes it from conventional bit image functions.

- The graphics functions provided here maintain upward compatibility with conventional bit image processing.

Graphics type	Corresponding bit image command
NV graphics	FS p, FS q
Download graphics	GS *, GS /
Graphics	GS Q O, GS v O

(*1) These commands are supported by only some of printer models and will not be supported by future models.

- The various graphics functions (of this command), more user-friendly than conventional bit image functions, offer the following advantages.
 - Definition of multiple items of logo mark and insignia data (with most functions).
 - Management of data using key codes.
 - Deletion of and redefinition of single items of data in a unit key code.
 - Color coding of image data.
 - Image data can be defined as either raster format or column format.
 - Confirmation of available capacity in domain.
 - Continuous processing possible (without a software reset when a command has been processed).
- The following three types of graphics functions are included.
 - NV graphics [Functions 48, 51, 64, 65, 66, 67, 68, and 69]
Stores data in non-volatile memory.
Defined data is retained when power is turned off.
There is a limit on the number of times that non-volatile memory can be written to.
 - Download graphics [Functions 52, 80, 81, 82, 83, 84, and 85]
Stores data in volatile memory (RAM).
Defined data is lost when the **ESC @** command is executed, the system is reset, or power is turned off.

- Graphics [Functions 50, and 112, 113]
Stores data in the print buffer.
When standard mode is selected, prints data using Function 50 and clears the print buffer.
When page mode is selected, prints data using **FF** and **ESC FF** and clears the print buffer after **FF** is executed.

[Notes]

- The functions of this command are determined by the (**fn**) setting. Actual command operation varies according to function.
- The NV graphics and download graphics data is managed using key codes.
 - Expressed as **kc1** and **kc2**, the key codes are used to identify data groups.
 - The key codes have a 2-byte configuration and can be specified using the full range of character codes (in Hexadecimal: 20H to 7EH / in Decimal: 32 to 126).
 - The data referred to here is image data specified using **d1** through **dk** of Functions 67, 68, 83, or 84.
 - The printer automatically adds control information when it stores the data. The image data domain is used as the control information. Control information formats and data values vary according to function.
- Note that it is not possible to create definitions for both NV graphics data (this command) and NV bit image data (**FS q**). NV bit image data definitions are deleted when this command is executed.
- Note that it is not possible to create definitions for both download graphics data (this command) and download bit image data (**GS ***). Download bit image data definitions are deleted when this command is executed.
- With certain printers, it is not possible to create definitions for both download graphics data (this command) and download character data (**ESC &**).
- Always execute Function 50 after executing Function 112 or Function 113 of this command when the standard mode is selected.
- When printing the various types of graphics data, using the **ESC U** command will ensure that the printed results are properly aligned vertically by printing in a single direction.
- Functions 65, 66, 67, or 68 write data to a non-volatile memory. Note the following items when using the function.

- Do not turn off the power or reset the printer from the interface when the relevant functions are being executed.
 - The printer may be BUSY when storing data and will not receive any data. In this case, be sure not to transmit data from the host.
 - Excessive use of this function may destroy the non-volatile memory. As a guideline, do not use any combination of the following commands more than 10 times per day for writing data to the non-volatile memory: **GS (C** (part of functions), **GS (E** (part of functions), **GS (L / GS 8 L** (part of functions), **GS (M** (part of functions), **GS g 0, FS g 1, FS q**.
- The following restrictions apply when performing non-volatile memory operations (including data store and delete).
- The paper feed button does not operate.
 - Real-time commands are not processed.
 - The ASB status will not be sent, even when the ASB function is set to enable.

[Notes for transmission process]

- Data send operations are performed using Functions 48, 51, 52, 64, and 80. When you use these functions, obey the following rules.
- When the host PC transmits the function data, transmit the next data after receiving the first data from the printer.
 - When operating with a serial interface, be sure to configure operation so that the host computer uses the printer only when it is READY.
 - When operating with a parallel interface, the data sent by this function (starting with Header and ending with NUL), as with other data, is first stored in the send buffer, then output in sequential order when the host computer changes to the reverse mode. Note that the send buffer capacity is 99 bytes, and any data exceeding this volume limit will be lost; therefore, when using this command, it is important to configure the operation so that the host computer's change to the reverse mode and the subsequent status send/receive process is performed quickly.
- When communication with the printer uses XON/XOFF control with serial interface, the XOFF code may interrupt the "Header to NUL" data string.

- The information for each function can be identified to other transmission data according to specific data of the transmission data group. When the header transmitted by the printer is [hex = 37H/decimal =55], treat NUL [hex = 00H/decimal =0] as a data group and identify it according to the combination of the header and the identifier.

[Notes for ESC/POS Handshaking Protocol]

- It will be necessary to perform the ESC/POS Handshaking Protocol procedures listed below when using Functions 64, 80.

Procedure	Host operation	Printer operation
1	GS (L sends Function 64.	Function 64 is initiated.
2	Data is received from printer.	Key code list is sent.
3	Response code (*1) is sent.	Procedures (*2 and *3) are performed according to response code.

(*1) Response Code

ASCII	Hexadecimal	Decimal	Request definition
ACK	06	6	Send next data group.
NAK	15	21	Resend just-received data group.
CAN	18	24	Cancel send operation.

(*2) Processing According to Response Code (When there is unsent data (indicated by identification status of send data group))

Response code	Description
ACK	Initiates operation to send next data.
NAK	Resends the just-received data.
CAN	Cancels processing initiated by this command.

(*3) Processing According to Response Code (When there is no unsent data (indicated by identification status of send data group))

Response code	Description
ACK, CAN	Cancels procedure initiated by this command.
NAK	Resends the just-received data.

■ When codes other than the ACK, NAK, or CAN codes are received, the CAN procedure is executed.

[Model-dependent variations]

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675

Program Sample 1 (Defining and printing NV graphics data)

* Description for image data has been omitted.

```

PRINT #1, CHR$(&H1D); "(L";CHR$(76);CHR$(6);CHR$(48);CHR$(67);CHR$(48); ← Function 67: defining data
(raster)
PRINT #1, "G1"; ← Key code
PRINT #1, CHR$(2); ← Color no.
PRINT #1, CHR$(80);CHR$(0); ← Horizontal size (80 dots)
PRINT #1, CHR$(80);CHR$(0); ← Vertical size (80 dots)
PRINT #1, CHR$(49); ← Specifies Color 1
FOR i=1 to 800 ← Image data (800 bytes) for Color 1
  READ a$: d=VAL("&H"+a$): PRINT #1, CHR$(d);
NEXT i
PRINT #1, CHR$(50); ← Specifies color 2
FOR i=1 to 800 ← Image data (800 bytes) for Color 2
  READ a$: d=VAL("&H"+a$): PRINT #1, CHR$(d);
NEXT i

PRINT #1, CHR$(&H1D); "(L";CHR$(6);CHR$(0);CHR$(48);CHR$(69); ← Function 69: Printing NV graphics Data
PRINT #1, "G1"; ← Key code
PRINT #1, CHR$(2);CHR$(1); ← Specifies size (horizontal (times 2) × vertical (times 1))

```

Program Sample 2 (Printing graphics data)

* Description for image data has been omitted.

```
PRINT #1, CHR$(&H1D); "(L";CHR$(250);CHR$(0);CHR$(48);CHR$(112);CHR$(48); ← Function 112: sending data  
(raster)  
PRINT #1, CHR$(1);CHR$(1); ← Specifies size (horizontal (times 1) × vertical (times 1))  
PRINT #1, CHR$(49); ← Specifies color 1  
PRINT #1, CHR$(80);CHR$(0); ← Horizontal size (80 dots)  
PRINT #1, CHR$(24);CHR$(0); ← Vertical size (24 dots)  
FOR i=1 to 240 ← Image data (240 bytes)  
    READ a$: d=VAL("&H"+a$): PRINT #1, CHR$(d);  
NEXT i  
  
PRINT #1, CHR$(&H1D); "(L";CHR$(250);CHR$(0);CHR$(48);CHR$(112);CHR$(48); ← Function 112: sending data  
(raster)  
PRINT #1, CHR$(1);CHR$(1); ← Specifies size (horizontal (times 1) × vertical (times 1))  
PRINT #1, CHR$(50); ← Specifies color 2  
PRINT #1, CHR$(80);CHR$(0); ← Horizontal size (80 dots)  
PRINT #1, CHR$(24);CHR$(0); ← Vertical size (24 dots)  
FOR i=1 to 240 ← Image data (240 bytes)  
    READ a$: d=VAL("&H"+a$): PRINT #1, CHR$(d);  
NEXT i  
  
PRINT #1, CHR$(&H1D); "(L";CHR$(2);CHR$(0);CHR$(48);CHR$(50); ← Function 50: printing graphics data
```

Program Sample 3 (Transmission key code list)

```
* Description for image data has been omitted.  
PRINT #1, CHR$(&H1D); "(L";CHR$(4);CHR$(0);CHR$(48);CHR$(64);CHR$(75);CHR$(67); ← Function 64:  
*LOOP:  
GOSUB *RECEIVE ← Receives "Header to NUL" data and stores it in ST$ (description omitted)  
PRINT #1,CHR$(6); ← Sends response code  
PRINT MID$(ST$,4) ← Displays received data on the monitor  
IF MID$(ST$,3,1)=CHR$(65) THEN *LOOP ← Checks for presence of continuing data
```

Program Sample 4 (Transmission information on capacity available in NV graphics domain)

```
PRINT #1, CHR$(&H1D); "(L";CHR$(2);CHR$(0);CHR$(48);CHR$(51); ← Function 51:  
GOSUB *RECEIVE ← Receives "Header to NUL" data and stores it in ST$ (description omitted)  
PRINT MID$(ST$,4) ← Displays available capacity information on monitor.
```

TM-H6000III

This printer supports <Function 48>, <Function 50>, <Function 51>, <Function 64 ~ 67> <Function 69>, and <Function 112>.

The domain of the NV graphics data can be selected by using Function 5 of the **GS (E** command with [0,64K,128K,192K,256K,320K,384K] byte. (Unit: byte)

Printing with the following colors is supported in two-color printing control mode.

Color selection	Printing color	Controls
Color1	Black	Print by high energy
Color2	Red	Print by low energy

Note that graphics data in raster format is processed more quickly than data in column format on this series of printers.

See **GS (E** <Function 3> for selecting (single-color printing control/two-color printing control)).

TM-J7000/7100

This printer supports all functions of this command.

NV graphics data shares the same domain used by user NV memory (**GS (C)** record data).
The entire capacity is 384 KB.

The entire capacity of the download graphics data domain is 12 KB.

Don't use any printing graphics functions with back of slip selected as the active sheet.

Note that graphics data in raster format is processed more quickly than data in column format on this series of printers.

Only "Color 1" can be used in special ink cartridge (SJIC8) of **TM-J7000** (single color printing model).

The following printing colors are available when the SJIC6 and SJIC7 cartridges specially designed for the **TM-J7100** (two-color printer), are used.

Color selection	Printing color
Color 1	Black (SJIC6(K))
Color 2	Red (SJIC7(R)), blue (SJIC7(B)) or green (SJIC7(G))
Color 3	Color 1 + Color 2

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TM-J9000/J9100, TM-J7500/7600

This printer supports all functions of this command.

NV graphics data shares the same domain used by user NV memory (**GS (C)** record data).
The entire capacity is 384 KB.

The entire capacity of the download graphics data domain is 12 KB.

Note that graphics data in raster format is processed more quickly than data in column format on this series of printers.

Only "Color 1" can be used in special ink cartridge (SJIC8) of **TM-J9000** and **TM-J7500** (single color printing mode).

The following printing colors are available when the SJIC6 and SJIC7 cartridges especially designed for the **TM-J9100** and **TM-J7600** (two color printing model), are used.

Color selection	Printing color
Color 1	Black (SJIC6(K))
Color 2	Red (SJIC7(R)), blue (SJIC7(B)) or green (SJIC7(G))
Color 3	Color 1 + Color 2

TM-U675

This printer supports <Function 48> only.

The domain of the NV graphics data can be selected by using Function 5 of the **GS (E)** command.
(Unit: byte)

Model	Selectable data domain	Default
Other than multilingual model	0, 64 K, 128 K, 192 K, 256 K, 320 K, 384 K	384 K
Multilingual model	0, 64 K, 128 K, 192 K, 256 K	256 K

GS (L pL pH m fn <Function 48>

[Name] Transmit the NV graphics memory capacity.

[Format]

ASCII	GS	(L	pL	pH	m	fn
Hex	1D	28	4C	02	00	30	fn
Decimal	29	40	76	2	0	48	fn

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 2$ (**pL** = 2, **pH** = 0)

m = 48

fn = 0, 48

[Description] Transmits the entire capacity of the NV graphics area (number of bytes in the NV graphics area).

- This function does not require ESC/POS Handshaking Protocol.

[Notes] ■ This function is used to send the following data groups, beginning with the Header and ending with NUL.

Send data	Hexadecimal	Decimal	Data length
Header	37H	55	1 byte
Identifier	30H	48	1 byte
Entire capacity (*1)	30H to 39H	48 to 57	1 to 8 bytes
NUL	00H	0	1 byte

(*1) The entire capacity is the total byte count for that domain. The decimal value for the entire capacity is converted to text data and sent starting from the high order end.

Example:

If the entire capacity is 1200 bytes, the "1200" (expressed hexadecimally as 31H, 32H, 30H, 30H and decimal as 49, 50, 48, and 48) is converted to 4-byte data.

- When this command is used to send the entire capacity, the entire byte capacity of the domain is sent, regardless of definitions currently entered for NV graphics data. The entire capacity referred to here includes the area used for control information.
- Note that the NV graphics function cannot be used when the value for the entire capacity is "0" (expressed hexadecimally as 30H and decimal as 48).
- See previous [Notes for transmission process] for type of settings.

[Model-dependent variations]

TM-H6000III, TM-U675

TM-H6000III

If you set a combination of settings that is not possible, the entire capacity of the NV graphics memory that can be in actual use will be sent instead of the memory size set by GS (E.

TM-U675

If you set a combination of settings that is not possible, the entire capacity of the NV graphics memory that can be in actual use will be sent instead of the memory size set by GS (E.

GS (L pL pH m fn <Function 50 >

[Name] Print the graphics data in the print buffer.

[Format]

ASCII	GS	(L	pL	pH	m	fn
Hex	1D	28	4C	02	00	30	fn
Decimal	29	40	76	2	0	48	fn

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 2$ (**pL** = 2, **pH** = 0)

m = 48

fn = 2, 50

[Description] Prints the buffered graphics data stored by the process of **GS (L <Function 112 or 113>**.

- The printer cannot print when there is no graphics data stored in the print buffer.
- Function 112 or 113 of this command is used to store graphics data in the print buffer.
- This function cannot be used when the page mode is enabled.
- Feeds the paper the required distance when printing graphics data, regardless of line feed pitch settings entered using the Set line feed command.
- Moves print position to the left side of the print area after printing of graphics data is completed. The printer then enters the "beginning of the line" or "no data in print buffer" state.

[Model-dependent variations] **TM-J7000/7100, TM-H6000III, TM-U675**

TM-J7000/7100

Don't use this function when back of slip is selected as the active sheet.

TM-H6000III

This function is available when roll paper is selected as the paper type.

TM-U675

This printer does not support this function.

GS (L pL pH m fn <Function 51 >

[Name] Transmit the remaining capacity of the NV graphics memory.

[Format]

ASCII	GS	(L	pL	pH	m	fn
Hex	1D	28	4C	02	00	30	fn
Decimal	29	40	76	2	0	48	fn

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 2$ ($\mathbf{pL} = 2$, $\mathbf{pH} = 0$)

m = 48

fn = 3, 51

[Description] Transmits the number of bytes of remaining memory (unused area) in the NV graphics area.

- This function does not require ESC/POS Handshaking Protocol.

[Notes] ■ This function is used to send the following data groups, beginning with the Header and ending with NUL.

Send data	Hexadecimal	Decimal	Data length
Header	37H	55	1 byte
Identifier	31H	49	1 byte
Unused capacity (*1)	30H to 39H	48 to 57	1 to 8 bytes
NUL	00H	0	1 byte

(*1) The unused capacity is the total byte count for the unused area. The decimal value for unused capacity is converted to text data and sent starting from the high order end.

Example:

If the available capacity is 120 bytes, the "120" (expressed hexadecimally as 31H, 32H, and 30H and decimal as 49, 50, and 48) is converted to 3-byte data.

■ The control information for NV graphics data is included in the capacity in use.

■ Do not use this function in conjunction with NV bit images (**FS q**).

■ See previous [Notes for transmission process] for description of transmission process.

[Model-dependent variations]

TM-U675

TM-U675

This printer does not support this function.

GS (L pL pH m fn <Function 52 >

[Name] Transmit the remaining capacity of the download graphics memory.

[Format]

ASCII	GS	(L	pL	pH	m	fn
Hex	1D	28	4C	02	00	30	fn
Decimal	29	40	76	2	0	48	fn

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 2$ ($\mathbf{pL} = 2$, $\mathbf{pH} = 0$)

m = 48

fn = 4, 52

[Description] Transmits the number of bytes of remaining memory (unused area) in the downloaded graphics area.

- This function does not require ESC/POS Handshaking Protocol.

[Notes] ■ This function is used to send the following data groups, beginning with the Header and ending with NUL.

Send data	Hexadecimal	Decimal	Data length
Header	37H	55	1 byte
Identifier	32H	50	1 byte
Unused capacity (*1)	30H to 39H	48 to 57	1 to 8 bytes
NUL	00H	0	1 byte

(*1) The unused capacity is the total byte count for the unused area. The decimal value for the unused capacity is converted to text data and sent starting from the high order end.

Example:

If the available capacity is 120 bytes, the "120" (expressed hexadecimally as 31H, 32H, and 30H and decimal as 49, 50, and 48) is converted to 3-byte data.

- The control information for download graphics data is included in the capacity in use.
- Do not use this function in conjunction with download bit images (**GS ***) or user-defined characters (**ESC &**).
- See previous [Notes for transmission process] for description of transmission process.

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[Model-dependent variations]

TM-H6000III, TM-U675

TM-H6000III

This printer does not support this function.

TM-U675

This printer does not support this function.

GS (L pL pH m fn d1 d2 <Function 64 >

[Name] Transmit the key code list for defined NV graphics.

[Format]

ASCII	GS	(L	pL	pH	m	fn	d1	d2
Hex	1D	28	4C	04	00	30	40	4B	43
Decimal	29	40	76	4	0	48	64	75	67

[Range] **(pL + pH × 256) = 4 (pL = 4, pH = 0)**

m = 48

fn = 64

d1 = 75

d2 = 67

[Description] Transmits the defined NV graphics key code list.

- This function does require ESC/POS Handshaking Protocol.

[Notes] ■ When key codes are present, the data shown below (beginning with Header and ending with NUL) is sent.

Send data	Hexadecimal	Decimal	Data length
Header	37H	55	1 byte
Identifier	72H	114	1 byte
Identification status (*1) (*2)	40H or 41H	64 or 64	1 byte
Data (*3)	30H to 39H	48 to 57	2 to 80 bytes
NUL	00H	0	1 byte

(*1) When the number of NV graphics data groups exceeds 40, the groups are divided into blocks:

- When unsent data is present, the Identification status byte (byte 3) is set to hexadecimal value 41H and decimal value 65.
- When unsent data is not present, the Identification status byte (byte 3) is set to hexadecimal value 40H and decimal value 64.

(*2) If the number of NV graphics data groups is 40 or less, they are sent in a single batch, with the Identification status byte (byte 3) set to hexadecimal value 40H and decimal value 64.

(*3) The data groups are arranged according to the key codes.

- When no key codes are present, the data shown below (beginning with Header and ending with NUL) is sent.

Send data	Hexadecimal	Decimal	Data length
Header	37H	55	1 byte
Identifier	72H	114	1 byte
Identification status	40H	64	1 byte
NUL	00H	0	1 byte

- Do not use this function in conjunction with NV bit images (**FS q**).
- See previous [Notes for transmission process] for description of transmission process.
- See previous [Notes for ESC/POS Handshaking Protocol] for description of ESC/POS Handshaking Protocol.

[Model-dependent variations]

TM-U675

This printer does not support this function.

GS (L pL pH m fn d1 d2 d3 <Function 65>

[Name] Delete all NV graphics data.

[Format]	ASCII	GS	(L	pL	pH	m	fn	d1	d2	d3
	Hex	1D	28	4C	05	00	30	41	43	4C	52
	Decimal	29	40	76	5	0	48	65	67	76	82

[Range] **(pL + pH × 256) = 5 (pL = 5, pH = 0)**

m = 48

fn = 65

d1 = 67

d2 = 76

d3 = 82

[Description] Deletes all NV graphics data that has been defined using **GS (L <Functions 67 or 68>**.

- Deleted areas are designated “Unused areas.”
- All key codes are designated as undefined.

[Notes]

- Use this function at the beginning of the line when the standard mode is selected.
- This function is incompatible with macros, so be sure to avoid including it when defining macros.
- When NV graphics data is being shared by multiple applications, executing this function will delete all data being used by all applications. Caution is required when using this function.

[Model-dependent variations]

TM-U675

TM-U675

This printer does not support this function.

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

[Name] Delete the specified NV graphics data.

[Format]	ASCII	GS	(L	pL	pH	m	fn	kc1	kc2
	Hex	1D	28	4C	04	00	30	42	kc1	kc2
	Decimal	29	40	76	4	0	48	66	kc1	kc2

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 4$ ($\mathbf{pL} = 4$, $\mathbf{pH} = 0$)

m = 48

fn = 66

$32 \leq \mathbf{kc1} \leq 126$

$32 \leq \mathbf{kc2} \leq 126$

[Description] Deletes the NV graphics data defined by the key codes (**kc1** and **kc2**).

- Deleted areas are designated “Unused areas.”
- Deleted key codes are designated as undefined.

[Notes] ■ Use this function at the beginning of the line when the standard mode is selected.

■ This function is incompatible with macros, so be sure to avoid including it when defining macros.

[Model-dependent variations] **TM-U675**

TM-U675

This printer does not support this function.

GS (L pL pH m fn a kc1 kc2 b xl xh yL yH [c d1...dk]1...[c d1...dk]b <Function 67 >**GS 8 L p1 p2 p3 p4 m fn a kc1 kc2 b xl xh yL yH [c d1...dk]1...[c d1...dk]b**

[Name]	Define the NV graphics data (raster format).																		
[Format]	ASCII	GS	(L	pL	pH	m	fn	a	kc1	kc2	b	xl	xh	yL	yH	[c d1...dk]1...[c d1...dk]b		
	Hex	1D	28	4C	pL	pH	30	43	30	kc1	kc2	b	xl	xh	yL	yH	[c d1...dk]1...[c d1...dk]b		
	Decimal	29	40	76	pL	pH	48	67	48	kc1	kc2	b	xl	xh	yL	yH	[c d1...dk]1...[c d1...dk]b		
	ASCII	GS	8	L	p1	p2	p3	p4	m	fn	akc1	kc2	b	xl	xh	yL	yH	[c d1...dk]1...[c d1...dk]b	
	Hex	1D	38	4C	p1	p2	p3	p4	30	43	30	kc1	kc2	b	xl	xh	yL	yH	[c d1...dk]1...[c d1...dk]b
	Decimal	29	56	76	p1	p2	p3	p4	48	67	48	kc1	kc2	b	xl	xh	yL	yH	[c d1...dk]1...[c d1...dk]b
[Range]	$12 \leq (\mathbf{pL} + \mathbf{pH} \times 256) \leq 65535$ ($0 \leq \mathbf{pL} \leq 255, 0 \leq \mathbf{pH} \leq 255$)																		
	[When using GS 8 L : $12 \leq (\mathbf{p1} + \mathbf{p2} \times 256 + \mathbf{p3} \times 65536 + \mathbf{p4} \times 16777216) \leq 4294967295$]																		
	m = 48, fn = 67, a = 48																		
	$32 \leq \mathbf{kc1} \leq 126$																		
	$32 \leq \mathbf{kc2} \leq 126$																		
	b = 1, 2																		
	$1 \leq (\mathbf{xl} + \mathbf{xh} \times 256) \leq 8192$ ($0 \leq \mathbf{xl} \leq 255, 0 \leq \mathbf{xh} \leq 32$)																		
	$1 \leq (\mathbf{yL} + \mathbf{yH} \times 256) \leq 2304$ ($0 \leq \mathbf{yL} \leq 255, 0 \leq \mathbf{yH} \leq 9$)																		
	c = 49, 50 (when the recommended two-color paper is used)																		
	c = 49 (when the recommended monochrome paper is used)																		
	$0 \leq \mathbf{d} \leq 255$																		
	k = $(\text{int}((\mathbf{xl} + \mathbf{xh} \times 256) + 7)/8) \times (\mathbf{yL} + \mathbf{yH} \times 256)$																		

TM-J9000, TM-J7500, TM-J7000 (In single color printing control mode):**b** = 1 $1 \leq (\mathbf{xl} + \mathbf{xh} \times 256) \leq 8192$ ($0 \leq \mathbf{xl} \leq 255, 0 \leq \mathbf{xh} \leq 32$) $1 \leq (\mathbf{yL} + \mathbf{yH} \times 256) \leq 2304$ ($0 \leq \mathbf{yL} \leq 255, 0 \leq \mathbf{yH} \leq 9$)**c** = 49**TM-J9100, TM-J7600, TM-J7100 (In two-color printing control mode):****b** = 1, 2 (when **c** = 49, or 50)

b = 1 (when c = 51) **$1 \leq (XL + XH \times 256) \leq 8192$ ($0 \leq XL \leq 255, 0 \leq XH \leq 32$)** **$1 \leq (YL + YH \times 256) \leq 2304$ ($0 \leq YL \leq 255, 0 \leq YH \leq 9$)** **$49 \leq c \leq 50$** **TM-H6000III:****b = 1, 2 (In two-color printing control mode)****b = 1 (In single color printing control mode)** **$1 \leq (XL + XH \times 256) \leq 8192$ ($0 \leq XL \leq 255, 0 \leq XH \leq 32$)** **$1 \leq (YL + YH \times 256) \leq 2304$ ($0 \leq YL \leq 255, 0 \leq YH \leq 9$)****c = 49, 50 (In two-color printing control mode)****c = 49 (In single color printing control mode)****[Description]**

Defines the NV graphics data (raster format) as a record specified by the key codes (**kc1** and **kc2**) in the NV graphics area.

- **b** specifies the number of colors of the defined data.
- **XL, XH** specifies the NV graphics in the horizontal direction as (**XL + XH × 256**) dots.
- **YL, YH** specifies the NV graphics in the vertical direction as (**YL + YH × 256**) dots.
- **c** specifies the color of the defined data.

c	Defined data color
49	Color 1
50	Color 2
51	Color 3

- **d** specifies the defined data (raster format).
 - **k** indicates the number of the definition data. **k** is an explanation parameter; therefore it does not need to be transmitted.
- In cases where the specified key code already exists in memory, it will be necessary to overwrite the data.

[Notes]

- NV graphics indicate image data groups defined in the printer's internal non-volatile memory. Data definitions for NV graphics data created using this command are valid until redefined by this command or <Function 68>.
- The functions used to define NV graphics data are this function and Function 68. Even with printer models that support both, it is recommended that only one of the functions be used for data definition tasks.
 - The two functions differ only in that one function (this function) defines data in raster format, while the other (Function 68) defines data in column format. The domains and control information are identical.
 - In cases where the key code specified by this function coincides with a key code being used by Function 68, a new data definition is created.
- Use this function at the beginning of the line when the standard mode is selected.
- This function is incompatible with macros, so make sure to avoid including it when defining macros.
- In cases where there is insufficient capacity available for storing NV graphics data, this function cannot be used. Use Function 51 to confirm the available capacity in the NV graphics data area.
- One option is to delete items of NVI graphics data that were previously defined to the same key code.
- The data for byte **k** of **d1 ... dk** is processed as a single item of defined NV graphics data. The defined data (**d**) specifies "1" for bits corresponding to dots that will be printed and "0" for bits corresponding to dots that will not be printed.
- Specify single data groups [**c d1 ... dk**] when monochrome is selected (**b = 1**) as the color.
- Specify **b** number of data groups [**c d1 ... dk**] when multiple colors are selected (**b ≠ 1**). It is also important to specify different colors in units of data groups when specifying color (**c**).
- NV graphics data is printed using Function 69.
- Note that it is not possible to create definitions for both NV graphics data (this command) and NV bit image data (**FS q**). NV bit image data definitions are deleted when this command is used.

■ The relationship between NV graphics data (raster format) and print results is shown in the table below.

d1	d2	...	dx
dx+1	dx+2	...	dx_{x2}
:	:	...	:
...	dk-2	dk-1	dk
MSB LSB	MSB LSB	MSB LSB	MSB LSB

x = (xL + xH × 256)

[Model-dependent variations]

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

This printer is equipped with a print head configured in column format, which makes it faster to define data using Function 68 (column format) than with this function.

Executing this function uses the NV graphics area equivalent to [Amount of data (k) + amount of control information data (32 bytes)].

TM-H6000III

See **GS (E <Function 3>** for selecting (single-color printing control/two-color printing control).

Executing this function uses the NV graphics area equivalent to [Amount of data (k) + amount of control information data (table below)].

Condition	Data length of control information
When specifying two-color (b=2)	9 bytes
When specifying single color (b=1)	8 bytes

TM-U675

This printer does not support this function.

GS (L p_L p_H m fn a kc1 kc2 b x_L x_H y_L y_H [c d1...dk]1...[c d1...dk]b <Function 68>

GS 8 L p₁ p₂ p₃ p₄ m fn a kc1 kc2 b x_L x_H y_L y_H [c d1...dk]1...[c d1...dk]b

[Name]	Define the NV graphics data (column format).														
[Format]	ASCII	GS	(L	p _L	p _H	m	fn	a	kc1	kc2	b	x _L x _H y _L y _H [c d1...dk]1...[c d1...dk]b		
	Hex	1D	28	4C	p _L	p _H	30	44	30	kc1	kc2	b	x _L x _H y _L y _H [c d1...dk]1...[c d1...dk]b		
	Decimal	29	40	76	p _L	p _H	48	68	48	kc1	kc2	b	x _L x _H y _L y _H [c d1...dk]1...[c d1...dk]b		
	ASCII	GS	8	L	p ₁	p ₂	p ₃	p ₄	m	fn	akc1	kc2	b	x _L x _H y _L y _H [c d1...dk]1...[c d1...dk]b	
	Hex	1D	38	4C	p ₁	p ₂	p ₃	p ₄	30	44	30	kc1	kc2	b	x _L x _H y _L y _H [c d1...dk]1...[c d1...dk]b
	Decimal	29	56	76	p ₁	p ₂	p ₃	p ₄	48	68	48	kc1	kc2	b	x _L x _H y _L y _H [c d1...dk]1...[c d1...dk]b

[Range] $12 \leq (p_L + p_H \times 256) \leq 65535$ ($0 \leq p_L \leq 255$, $0 \leq p_H \leq 255$)

[When using **GS 8 L**: $12 \leq (p_1 + p_2 \times 256 + p_3 \times 65536 + p_4 \times 16777216) \leq 4294967295$]

m = 48, fn = 68, a = 48

$32 \leq kc1 \leq 126$

$32 \leq kc2 \leq 126$

$0 \leq d \leq 255$

$k = (x_L + x_H \times 256) \times (\text{int}(y_L + y_H \times 256) + 7)/8$

TM-J9000, TM-J7500, TM-J7000 (In single color printing control mode):

b = 1

$1 \leq (x_L + x_H \times 256) \leq 8192$ ($0 \leq x_L \leq 255$, $0 \leq x_H \leq 32$)

$1 \leq (y_L + y_H \times 256) \leq 2304$ ($0 \leq y_L \leq 255$, $0 \leq y_H \leq 9$)

c = 49

TM-J9100, TM-J7600, TM-J7100 (In two-color printing control mode):

b = 1, 2 (when c = 49, 50)

b = 1 (when c = 51)

$1 \leq (x_L + x_H \times 256) \leq 8192$ ($0 \leq x_L \leq 255$, $0 \leq x_H \leq 32$)

$1 \leq (y_L + y_H \times 256) \leq 2304$ ($0 \leq y_L \leq 255$, $0 \leq y_H \leq 9$)

49 ≤ c ≤ 51

[Description] Defines the NV graphics data (column format) as a record specified by the key codes (**kc1** and **kc2**) in the NV graphics area.

- **b** specifies the number of colors of the defined data.
- **XL, XH** specifies the NV graphics in the horizontal direction as (**XL + XH** × 256) dots.
- **YL, YH** specifies the NV graphics in the vertical direction as (**YL + YH** × 256) dots.
- **c** specifies the color of the defined data.

c	Defined data color
49	Color 1
50	Color 2
51	Color 3

- **d** specifies the defined data (column format).
- **k** indicates the number of the definition data. **k** is an explanation parameter; therefore it does not need to be transmitted.
- In cases where the specified key code already exists in memory, it will be necessary to overwrite the data.
- NV graphics indicate image data groups defined in the printer's internal non-volatile memory. Data definitions for NV graphics data created using this command are valid until redefined by this function or function 67.
- The functions used to define NV graphics data are this function and Function 67. Even with printer models that support both, it is recommended that only one of the functions be used for data definition tasks.
 - The two functions differ only in that one function (this function) defines data in raster format, while the other (Function 67) defines data in column format. The domains and control information are identical.
 - In cases where the key code specified by this function coincides with a key code being used by Function 67, a new data definition is created.
- Use this function at the beginning of the line when the standard mode is selected.
- This function is incompatible with macros, so make sure to avoid including it when defining macros.
- In cases where there is insufficient capacity available for storing NV graphics data, this function cannot be used. Use Function 51 to confirm the available capacity in the NV graphics data area.
- One option is to delete items of NV graphics data that were previously defined to the same key code.

- The data for byte **k** of **d1 ... dk** is processed as a single item of defined NV graphics data. The defined data (**d**) specifies "1" for bits corresponding to dots that will be printed and "0" for bits corresponding to dots that will not be printed.
- Specify single data groups [**c d1 ... dk**] when monochrome is selected (**b = 1**) as the color.
- Specify **b** number of data groups [**c d1 ... dk**] when multiple colors are selected (**b ≠ 1**). It is also important to specify different colors in units of data groups when specifying color (**c**).
- NV graphics data is printed using Function 69.
- Note that it is not possible to create definitions for both NV graphics data (this command) and NV bit image data (**FS q**). NV bit image data definitions are deleted when this command is used.
- The relationship between NV graphics data (column format) and print results is shown in the table below.

d1	dv+1	...	:	MSB LSB
d2	dv+2	...	dk-2	MSB LSB
:	:	...	dk-1	MSB LSB
dv	dvx2	...	dk	MSB LSB

y = (yL + yH × 256)

[Model-dependent variations]

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

This printer is equipped with a print head configured in column format, which makes it faster to define data using this function than with Function 67 (raster format). Executing this function uses the NV graphics area equivalent to [Amount of data (k) + amount of control information data (32 bytes)].

TM-H6000III

The printer does not support this function.

TM-U675

The printer does not support this function.

GS (L pL pH m fn kc1 kc2 x y <Function 69>

[Name] Print the specified NV graphics data.

[Format]

ASCII	GS	(L	pL	pH	m	fn	kc1	kc2	x	y
Hex	1D	28	4C	06	00	30	45	kc1	kc2	x	y
Decimal	29	40	76	6	0	48	69	kc1	kc2	x	y

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 6$ (**pL** = 6, **pH** = 0)

m = 48

fn = 69

32 ≤ **kc1** ≤ 126

32 ≤ **kc2** ≤ 126

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100: x = 1, 2, y = 1, 2

TM-H6000III:

x = 1, 2, y = 1,2(roll paper)

x = 1, 2, y = 1 (slip (face) or validation in standard mode)

x = 2, y = 1 (slip (face) or validation in page mode)

x = 1, 2, y = 1 (slip (face) or validation

in double-density page mode)

[Description] Prints the NV graphics data defined by the key codes (**kc1** and **kc2**).

- Users have the option of specifying horizontal (times **x**) × vertical (times **y**) size settings for the selected data.

[Notes]

- This function is used to print NV graphics data defined using Functions 67 or 68 of this command.
- The printer only prints when NV graphics data corresponding to the specified key code is present.
- Use this command when the printer enters the “beginning of the line” or “no data in print buffer” state during standard mode.
- Note that during page mode, printing operations will not be performed simply because image data has been stored to the print buffer.
- NV graphics data that exceeds the print area for one line will not be printed.
- The scales for width and height of graphics are specified by (**x, y**). Therefore, in page mode with 90° or 270° clockwise rotated graphics, the printer applies print area and dot density from [**x**: direction of paper feed, **y**: perpendicular to direction of paper feed].

- Settings for text effect (bold, underline, orientation etc.) except upside-down and font size do not affect the printing of the NV graphics data.
- Feeds the paper the required distance when printing graphics data, regardless of line feed pitch settings entered using the Set line feed command.
- Moves print position to the left side of the print area after printing of graphics data is completed. The printer then enters the "beginning of the line" or "no data in print buffer" state.
- When printing NV graphic files, use **ESC U** to specify unidirectional print for vertical alignment of printed text.

[Model-dependent variations]

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675

TM-J9000/J9100

The dot density and the maximum print area are described in the next tables (dpi: number of dots per 25.4 mm).

- In each table, "Vertical" indicates paper feed direction, and "horizontal" is perpendicular (at right angles) to the direction of paper feeding.
- The maximum print area in the vertical direction is information used when graphics are printed with the page mode selected (when the starting position specified with **ESC T** is Upper right or Lower left). In this case, graphics that are rotated by 90 degrees or 270 degrees are printed.

Scaling	Horizontal				Vertical			
	Dot density	Maximum print area (dot)			Dot density	Maximum print area (dot)		
		Roll Paper	Slip Paper	Validation Paper		Roll Paper	Slip Paper	Validation Paper
× 1	180 dpi	480	744	744	180 dpi	Single color printing model: 1760 Two-color printing model: 880	64	193
× 2	90 dpi	240	372	372	90 dpi	Single color printing model: 880 Two-color printing model: 440	32	96

TM-J7500/7600

The dot density and the maximum print area are described in the next tables (dpi: number of dots per 25.4 mm).

- In each table, "Vertical" indicates paper feed direction, and "horizontal" is perpendicular (at right angles) to the direction of paper feeding.
- The maximum print area in the vertical direction is information used when graphics are printed with the page mode selected (when the starting position specified with **ESC T** is Upper right or Lower left). In this case, graphics that are rotated by 90 degrees or 270 degrees are printed.
- See Functions 5 of **GS (E** for specifying the paper width.

<TM-J7500 (single color printing model): For roll paper>

Scaling	Horizontal					Vertical				
	Dot density	Maximum print area (dot)				Dot density	Maximum print area (dot)			
		Paper width 82.5 mm	Paper width 26 mm	Paper width 69.5 mm	Paper width 57.5 mm		Paper width 82.5 mm	Paper width 76 mm	Paper width 69.5 mm	Paper width 57.5 mm
× 1	180 dpi	512	480	432	360	180 dpi	832	880	984	1176
× 2	90 dpi	256	240	216	180	90 dpi	416	440	492	583

<TM-J7500 (single color printing model): For slip>

Scaling	Horizontal		Vertical	
	Dot density	Maximum print area (dot)	Dot density	Maximum print area (dot)
× 1	180 dpi	960	180 dpi	440
× 2	90 dpi	480	90 dpi	220

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<TM-J7600 (two-color printing model): For roll paper>

Scaling	Horizontal					Vertical				
	Dot density	Maximum print area (dot)				Dot density	Maximum print area (dot)			
		Paper width 82.5 mm	Paper width 26 mm	Paper width 69.5 mm	Paper width 57.5 mm		Paper width 82.5 mm	Paper width 76 mm	Paper width 69.5 mm	Paper width 57.5 mm
× 1	180 dpi	512	480	432	360	180 dpi	416	440	488	584
× 2	90 dpi	256	240	216	180	90 dpi	208	220	244	292

<TM-J7600 (two-color printing model): For slip>

Scaling	Horizontal		Vertical	
	Dot density	Maximum print area (dot)	Dot density	Maximum print area (dot)
× 1	180 dpi	960	180 dpi	216
× 2	90 dpi	480	90 dpi	108

TM-J7000/7100

Don't use this function when back of slip is selected as the active sheet.

The dot density and the maximum print area are described in the next tables (dpi: number of dots per 25.4 mm).

- In each table, "Vertical" indicates paper feed direction, and "horizontal" is perpendicular (at right angles) to the direction of paper feeding. Graphics shown as "-" in the tables are not printed.**
- The maximum print area in the vertical direction is information used when graphics are printed with the page mode selected (for the starting position specified with **ESC T** is "Upper right" or "Lower left"). In this case, graphics that are rotated by 90 degrees or 270 degrees are printed.**
- See Functions 5 of GS (E for specifying the paper width.**

<TM-J7000 (single color printing model): For roll paper>

Scaling	Horizontal					Vertical				
	Dot density	Maximum print area (dot)				Dot density	Maximum print area (dot)			
		Paper width 82.5 mm	Paper width 26 mm	Paper width 69.5 mm	Paper width 57.5 mm		Paper width 82.5 mm	Paper width 76 mm	Paper width 69.5 mm	Paper width 57.5 mm
× 1	180 dpi	512	480	432	360	180 dpi	832	880	984	1176
× 2	90 dpi	256	240	216	180	90 dpi	416	440	492	583

<TM-J7000 (single color printing model): For slip>

Scaling	Horizontal				Vertical			
	Dot density	Maximum print area (dot)			Dot density	Maximum print area (dot)		
		Face side	Back side			Face side	Back side	
× 1	180 dpi	576	552		180 dpi	736	-	
× 2	90 dpi	288	276		90 dpi	368	-	

<TM-J7100 (two-color printing model): For roll paper>

Scaling	Dot density	Horizontal				Vertical				
		Maximum print area (dot)				Dot density	Maximum print area (dot)			
		Paper width 82.5 mm	Paper width 26 mm	Paper width 69.5 mm	Paper width 57.5 mm		Paper width 82.5 mm	Paper width 76 mm	Paper width 69.5 mm	
× 1	180 dpi	512	480	432	360	180 dpi	416	440	488	584
× 2	90 dpi	256	240	216	180	90 dpi	208	220	244	292

<TM-J7100 (two-color printing model): For slip>

Scaling	Dot density	Horizontal			Vertical		
		Maximum print area (dot)		Dot density	Maximum print area (dot)		
		Face side	Back side		Face side	Back side	
× 1	180 dpi	576	552	180 dpi	368	-	-
× 2	90 dpi	288	276	90 dpi	184	-	-

TM-H6000III

This function is available when roll paper, slip (face), or validation is selected as the paper type.

The dot density and the maximum print area are described in the following tables (dpi: dots per inch (dots per 25.4 mm)).

"Vertical" is in the direction of paper feeding and "horizontal" is perpendicular (at right angles) to the direction of paper feeding.

In the following tables, "-" means "printing graphics is not available."

The maximum print area of vertical is for printing graphics in page mode. Page mode can be selected by **ESC L**. Double-density page mode can be selected by **FS L**.

<For roll paper>

Scale	Horizontal		Vertical		
	Dot density	Maximum print area	Dot density	Maximum print area	
				Two-color printing control mode	Single color printing control mode
× 1	180 dpi	512 dots	180 dpi	415 dots	831 dots
× 2	90 dpi	256 dots	90 dpi	207 dots	415 dots

See memory switch GS (E <Function 3> for selecting (single-color printing control/two-color printing control).

<For face of slip and validation>

In standard mode

Scale	Horizontal			Vertical
	Dot density	Maximum print area	Adjacent dot printing	Dot density
× 1	160 dpi(*1)	540 dots	Not possible	72 dpi
× 2	80 dpi	270 dots	Possible	—

(*1) Adjacent dot printing is not possible.

In page mode when the starting position is set to the upper left or lower right of the print area using ESC T.

Scale	Horizontal (depending on x)			Vertical (depending on y)		
	Dot density	Maximum print area		Dot density	Maximum print area	
		Page mode	Double dot density page mode		Page mode	Double dot density page mode
× 1	160 dpi	—	540 dots	72 dpi	704 dots	352 dots
× 2	80 dpi	270 dots	270 dots	—	—	—

In page mode when the starting position is set to the upper right or lower left of the print area using **ESC T**

Scale	Horizontal (depending on y)				Vertical (depending on x)		
	Dot density	Maximum print area		Dot density	Maximum print area		
		Page mode	Double dot density page mode		Page mode	Double dot density page mode	
× 1	80 dpi	270 dots	270 dots	144 dpi	—	704 dots	
× 2	—	—	—	72 dpi	704 dots	352 dots	

In this case, the graphics rotated by 90 degrees or 270 degrees are printed.

TM-U675

This printer does not support this function.

GS (L pL pH m fn d1 d2 <Function 80 >

[Name] Transmit the key code list for defined download graphics.

[Format]

ASCII	GS	(L	pL	pH	m	fn	d1	d2
Hex	1D	28	4C	04	00	30	50	4B	43
Decimal	29	40	76	4	0	48	80	75	67

[Range] **(pL + pH × 256) = 4 (pL = 4, pH = 0)**

m = 48

fn = 80

d1 = 75

d2 = 67

[Description] Transmits the defined downloaded graphics key code list.

- This function does require ESC/POS Handshaking Protocol.

[Notes] ■ When key codes are present, the data shown below (beginning with Header and ending with NUL) is sent.

Send data	Hexadecimal	Decimal	Data length
Header	37H	55	1 byte
Identifier	73H	115	1 byte
Identification status (*1) (*2)	40H or 41H	64 or 64	1 byte
Data (*3)	30H to 39H	48 to 57	2 to 80 bytes
NUL	00H	0	1 byte

(*1) When the number of downloaded graphics data groups exceeds 40, the groups are divided into blocks:

- When unsent data is present, the Identification status byte (byte 3) is set to hexadecimal value 41H and decimal value 65.
- When unsent data is not present, the Identification status byte (byte 3) is set to hexadecimal value 40H and decimal value 64.

(*2) If the number of downloaded graphics data groups is 40 or less, they are sent in a single batch, with the Identification status byte (byte 3) set to hexadecimal value 40H and decimal value 64.

(*3) The data groups are arranged according to the key codes.

- When no key codes are present, the data shown below (beginning with Header and ending with NUL) is sent.

Send data	Hexadecimal	Decimal	Data length
Header	37H	55	1 byte
Identifier	73H	115	1 byte
Identification status	40H	64	1 byte
NUL	00H	0	1 byte

- Do not use this function in conjunction with downloaded bit images (**GS ***) or user-defined characters (**ESC &**).
- See previous [Notes for transmission process] for process transmission data group.
- See previous [Notes for ESC/POS Handshaking Protocol] for ESC/POS Handshaking Protocol.

[Model-dependent variations]

TM-H6000III, TM-U675

TM-H6000III

This printer does not support this function.

TM-U675

This printer does not support this function.

GS (L pL pH m fn d1 d2 d3 <Function 81>

[Name] Delete all NV graphics data.

[Format]	ASCII	GS	(L	pL	pH	m	fn	d1	d2	d3
	Hex	1D	28	4C	05	00	30	51	43	4C	52
	Decimal	29	40	76	5	0	48	81	67	76	82

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 5$ (**pL** = 5, **pH** = 0)

m = 48

fn = 65

d1 = 67

d2 = 76

d3 = 82

[Description] Deletes all downloaded graphics data that has been defined using **GS (L <Functions 83 and 84>**.

- Deleted areas are designated “Unused areas.”
- All key codes are designated as undefined.

[Notes]

- Use this function at the beginning of the line when the standard mode is selected.
- This function is incompatible with macros, so be sure to avoid including it when defining macros.
- When downloaded graphics data is being shared by multiple applications, executing this function will delete all data being used by all applications. Caution is required when using this function.

[Model-dependent variations]

TM-H6000III, TM-U675

TM-H6000III

This printer does not support this function.

TM-U675

This printer does not support this function.

GS (L pL pH m fn kc1 kc2 <Function 82 >

[Name]	Delete the specified download graphics data.																														
[Format]	<table border="0"> <tr> <td>ASCII</td> <td>GS</td> <td>(</td> <td>L</td> <td>pL</td> <td>pH</td> <td>m</td> <td>fn</td> <td>kc1</td> <td>kc2</td> </tr> <tr> <td>Hex</td> <td>1D</td> <td>28</td> <td>4C</td> <td>04</td> <td>00</td> <td>30</td> <td>52</td> <td>kc1</td> <td>kc2</td> </tr> <tr> <td>Decimal</td> <td>29</td> <td>40</td> <td>76</td> <td>4</td> <td>0</td> <td>48</td> <td>82</td> <td>kc1</td> <td>kc2</td> </tr> </table>	ASCII	GS	(L	pL	pH	m	fn	kc1	kc2	Hex	1D	28	4C	04	00	30	52	kc1	kc2	Decimal	29	40	76	4	0	48	82	kc1	kc2
ASCII	GS	(L	pL	pH	m	fn	kc1	kc2																						
Hex	1D	28	4C	04	00	30	52	kc1	kc2																						
Decimal	29	40	76	4	0	48	82	kc1	kc2																						
[Range]	<p>(pL + pH × 256) = 4 (pL = 4, pH = 0)</p> <p>m = 48</p> <p>fn = 82</p> <p>$32 \leq \mathbf{kc1} \leq 126$</p> <p>$32 \leq \mathbf{kc2} \leq 126$</p>																														
[Description]	<p>Deletes the downloaded graphics data defined by the key codes (kc1 and kc2).</p> <ul style="list-style-type: none"> • Deleted areas are designated “Unused areas.” • Deleted key codes are designated as undefined. 																														
[Notes]	<ul style="list-style-type: none"> ■ Use this function at the beginning of the line when the standard mode is selected. ■ This function is incompatible with macros, so be sure to avoid including it when defining macros. 																														
[Model-dependent variations]	TM-H6000III, TM-U675																														

TM-H6000III

This printer does not support this function.

TM-U675

This printer does not support this function.

GS (L pL pH m fn a kc1 kc2 b xl xH yL yH [c d1...dk]1...[c d1...dk]b <Function 83 >**GS 8 L p1 p2 p3 p4 m fn a kc1 kc2 b xl xH yL yH [c d1...dk]1...[c d1...dk]b**

[Name]	Define the downloaded graphics data (raster format).																		
[Format]	ASCII	GS	(L	pL	pH	m	fn	a	kc1	kc2	b	xl	xH	yL	yH	[c d1...dk]1...[c d1...dk]b		
	Hex	1D	28	4C	pL	pH	30	53	30	kc1	kc2	b	xl	xH	yL	yH	[c d1...dk]1...[c d1...dk]b		
	Decimal	29	40	76	pL	pH	48	83	48	kc1	kc2	b	xl	xH	yL	yH	[c d1...dk]1...[c d1...dk]b		
	ASCII	GS	8	L	p1	p2	p3	p4	m	fn	a	kc1	kc2	b	xl	xH	yL	yH	[c d1...dk]1...[c d1...dk]b
	Hex	1D	38	4C	p1	p2	p3	p4	30	53	30	kc1	kc2	b	xl	xH	yL	yH	[c d1...dk]1...[c d1...dk]b
	Decimal	29	56	76	p1	p2	p3	p4	48	83	48	kc1	kc2	b	xl	xH	yL	yH	[c d1...dk]1...[c d1...dk]b
[Range]	$12 \leq (pL + pH \times 256) \leq 65535$ ($0 \leq pL \leq 255$, $0 \leq pH \leq 255$)																		
	[When using GS 8 L : $12 \leq (p1 + p2 \times 256 + p3 \times 65536 + p4 \times 16777216) \leq 4294967295$]																		
	m = 48, fn = 83, a = 48,																		
	$32 \leq kc1 \leq 126$																		
	$32 \leq kc2 \leq 126$																		
	$0 \leq d \leq 255$																		
	k = (int((xl + xH × 256) + 7)/8) × (yL + yH × 256)																		

TM-J9000, TM-J7500, TM-J7000 (Single color printing model):**b = 1** **$1 \leq (xl + xH \times 256) \leq 8192$ ($0 \leq xl \leq 255$, $0 \leq xH \leq 32$)** **$1 \leq (yL + yH \times 256) \leq 2304$ ($0 \leq yL \leq 255$, $0 \leq yH \leq 9$)****c = 49****TM-J9100, TM-J7600, TM-J7100(Two-color printing model):****b = 1, 2 (when c = 49, 50)****b = 1 (when c = 51)** **$1 \leq (xl + xH \times 256) \leq 8192$ ($0 \leq xl \leq 255$, $0 \leq xH \leq 32$)** **$1 \leq (yL + yH \times 256) \leq 2304$ ($0 \leq yL \leq 255$, $0 \leq yH \leq 9$)****49 ≤ c ≤ 51**

[Description] Defines the downloaded graphics data (raster format) as a record specified by the key codes (**kc1** and **kc2**) in the downloaded graphics area.

- **b** specifies the number of colors for defined data.
- **XL, XH** specifies the downloaded graphics in the horizontal direction as (**XL + XH** × 256) dots.
- **YL, YH** specifies the downloaded graphics in the vertical direction as (**YL + YH** × 256) dots.
- **c** specifies the color of the defined data.

c	Defined data color
49	Color 1
50	Color 2
51	Color 3

- **d** specifies the defined data (raster format).
- **k** indicates the number of the definition data. **k** is an explanation parameter; therefore it does not need to be transmitted.
- In cases where the specified key code already exists in memory, it will be necessary to overwrite the data.
- Downloaded graphics indicate image data groups defined in the printer's internal volatile memory (RAM). Once the downloaded graphics data have been defined, they are available until **GS (L** <Function 83>, <Function 84> or **ESC @** is executed. The downloaded graphics data are lost when the power is turned off or the printer is reset.
- The functions used to define downloaded graphics data are this function and Function 84. Even with printer models that support both, it is recommended that only one of the functions be used for data definition tasks.
 - The two functions differ only in that one function (this function) defines data in raster format, while the other (Function 84) defines data in column format. The domains and control information are identical.
 - In cases where the key code specified by this function coincides with a key code being used by Function 84, a new data definition is created.
- Use this function at the beginning of the line when the standard mode is selected.

- This function is incompatible with macros, so make sure to avoid including it when defining macros.
- In cases where there is insufficient capacity available for storing downloaded graphics data, this function cannot be used. The remaining capacity of the download graphics memory is able to be confirmed by <Function 52> of this command.
- One option is to delete items of downloaded graphics data that were previously defined to the same key code.
- The data for byte **k** of **d1 ... dk** is processed as a single item of defined downloaded graphics data. The defined data (**d**) specifies "1" for bits corresponding to dots that will be printed and "0" for bits corresponding to dots that will not be printed.
- Specify single data groups [**c d1 ... dk**] when monochrome is selected (**b = 1**) as the color.
- Specify **b** number of data groups [**c d1 ... dk**] when multiple colors are selected (**b ≠ 1**). It is also important to specify different colors in units of data groups when specifying color (**c**).
- Downloaded graphics data is printed using Function 85.
- Note that it is not possible to create definitions for both downloaded graphics data (this command) and downloaded bit image data (**GS ***). Downloaded bit image data definitions are deleted when this command is used.
- For some models, downloaded graphics (this command) and user-defined characters (**ESC &**) cannot be defined simultaneously.
 - User-defined characters defined are deleted by using this command.
 - Downloaded graphics data are deleted by **ESC &**.
- The relationship between downloaded graphics data (raster format) and print results is shown in the table below.

d1	d2	...	dx
dx+1	dx+2	...	dxx2
:	:	...	:
...	dk-2	dk-1	dk

$$\mathbf{x} = (\mathbf{xl} + \mathbf{xh} \times 256)$$

[Model-dependent variations] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675**

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

This printer is equipped with a print head configured in column format, which makes it faster to define data using Function 84 (column format) than with this function.

Executing this function uses the download graphics area equivalent to [Amount of data (k) + amount of control information data (16 bytes)].

TM-H6000III

This printer does not support this function.

TM-U675

This printer does not support this function.

GS (L p_L p_H m fn a kc1 kc2 b x_L x_H y_L y_H [c d1...dk]1...[c d1...dk]b <Function 84>**GS 8 L p1 p2 p3 p4 m fn a kc1 kc2 b x_L x_H y_L y_H [c d1...dk]1...[c d1...dk]b**

[Name]	Define the downloaded graphics data (column format).														
[Format]	ASCII	GS	(L	p_L	p_H	m	fn	a	kc1 kc2 b	x _L	x _H	y _L	y _H [c d1...dk]1...[c d1...dk]b	
	Hex	1D	28	4C	p_L	p_H	30	44	30	kc1 kc2 b	x _L	x _H	y _L	y _H [c d1...dk]1...[c d1...dk]b	
	Decimal	29	40	76	p_L	p_H	48	68	48	kc1 kc2 b	x _L	x _H	y _L	y _H [c d1...dk]1...[c d1...dk]b	
	ASCII	GS	8	L	p₁	p₂	p₃	p₄	m	fn	akc1 kc2 b	x _L	x _H	y _L	y _H [c d1...dk]1...[c d1...dk]b
	Hex	1D	38	4C	p₁	p₂	p₃	p₄	30	44 30	kc1 kc2 b	x _L	x _H	y _L	y _H [c d1...dk]1...[c d1...dk]b
	Decimal	29	56	76	p₁	p₂	p₃	p₄	48	68 48	kc1 kc2 b	x _L	x _H	y _L	y _H [c d1...dk]1...[c d1...dk]b
[Range]	$12 \leq (\mathbf{p_L} + \mathbf{p_H} \times 256) \leq 65535$ ($0 \leq \mathbf{p_L} \leq 255$, $0 \leq \mathbf{p_H} \leq 255$)														
	[When using GS 8 L : $12 \leq (\mathbf{p1} + \mathbf{p2} \times 256 + \mathbf{p3} \times 65536 + \mathbf{p4} \times 16777216) \leq 4294967295$]														
	m = 48, fn = 83, a = 48														
	$32 \leq \mathbf{kc1} \leq 126$														
	$32 \leq \mathbf{kc2} \leq 126$														
	$0 \leq \mathbf{d} \leq 255$														
	$\mathbf{k} = (\mathbf{xL} + \mathbf{xH} \times 256) \times (\text{int}((\mathbf{yL} + \mathbf{yH} \times 256) + 7)/8)$														

TM-J9000, TM-J7500, TM-J7000(Single color printing model):**b = 1** **$1 \leq (\mathbf{xL} + \mathbf{xH} \times 256) \leq 8192$ ($0 \leq \mathbf{xL} \leq 255$, $0 \leq \mathbf{xH} \leq 32$)** **$1 \leq (\mathbf{yL} + \mathbf{yH} \times 256) \leq 2304$ ($0 \leq \mathbf{yL} \leq 255$, $0 \leq \mathbf{yH} \leq 9$)****c = 49****TM-J9100, TM-J7600, TM-J7100(Two-color printin model):****b = 1, 2 (when c = 49, 50)****b = 1 (when c = 51)** **$1 \leq (\mathbf{xL} + \mathbf{xH} \times 256) \leq 8192$ ($0 \leq \mathbf{xL} \leq 255$, $0 \leq \mathbf{xH} \leq 32$)** **$1 \leq (\mathbf{yL} + \mathbf{yH} \times 256) \leq 2304$ ($0 \leq \mathbf{yL} \leq 255$, $0 \leq \mathbf{yH} \leq 9$)** **$49 \leq \mathbf{c} \leq 51$**

[Description] Defines the downloaded graphics data (column format) as a record specified by the key codes (**kc1** and **kc2**) in the downloaded graphics area.

- **b** specifies the number of colors for defined data.
- **XL, XH** specifies the downloaded graphics in the horizontal direction as (**XL + XH** × 256) dots.
- **YL, YH** specifies the downloaded graphics in the vertical direction as (**YL + YH** × 256) dots.
- **c** specifies the color of the defined data.

c	Defined data color
49	Color 1
50	Color 2
51	Color 3

- **d** specifies the defined data (column format).
- **k** indicates the number of the definition data. **k** is an explanation parameter; therefore it does not need to be transmitted.
- In cases where the specified key code already exists in memory, it will be necessary to overwrite the data.
- Downloaded graphics indicate image data groups defined in the printer's internal volatile memory (RAM). Once the downloaded graphics data have been defined, they are available until **GS (L** <Function 83>, <Function 84> or **ESC @** is executed. The downloaded graphics data are lost when the power is turned off or the printer is reset.
- The functions used to define downloaded graphics data are this function and Function 83. Even with printer models that support both, it is recommended that only one of the functions be used for data definition tasks.
 - The two functions differ only in that one function (this function) defines data in raster format, while the other (Function 83) defines data in column format. The domains and control information are identical.
 - In cases where the key code specified by this function coincides with a key code being used by Function 83, a new data definition is created.
- Use this function at the beginning of the line when the standard mode is selected.

- This function is incompatible with macros, so make sure to avoid including it when defining macros.
- In cases where there is insufficient capacity available for storing downloaded graphics data, this function cannot be used. Use Function 52 to confirm the available capacity in the downloaded graphics data area.
- One option is to delete items of download graphics data that were previously defined to the same key code.
- The data for byte **k** of **d1 ... dk** is processed as a single item of defined download graphics data. The defined data (**d**) specifies "1" for bits corresponding to dots that will be printed and "0" for bits corresponding to dots that will not be printed.
- Specify single data groups [**c d1 ... dk**] when monochrome is selected (**b = 1**) as the color.
- Specify **b** number of data groups [**c d1 ... dk**] when multiple colors are selected (**b ≠ 1**). It is also important to specify different colors in units of data groups when specifying color (**c**).
- Downloaded graphics data is printed using Function 85.
- Note that it is not possible to create definitions for both downloaded graphics data (this command) and downloaded bit image data (**GS ***). Downloaded bit image data definitions are deleted when this command is used.
- For some models, downloaded graphics (this command) and user-defined characters (**ESC &**) cannot be defined simultaneously.
 - User-defined characters defined are deleted by using this command.
 - Downloaded graphics data are deleted by **ESC &**.
- The relationship between download graphics data (column format) and print results is shown in the table below.

d1	dy+1	...	:
d2	dy+2	...	dk-2
:	:	...	dk-1
dy	dyx2	...	dk

$$\mathbf{y} = (\mathbf{yL} + \mathbf{yH} \times 256)$$

[Model-dependent variations] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675**

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

This printer is equipped with a print head configured in column format, which makes it faster to define data using this function than with Function 67 (raster format).

Executing this function uses the download graphics area equivalent to [Amount of data (k) + amount of control information data (16 bytes)].

TM-H6000III

This printer does not support this function.

TM-U675

This printer does not support this function.

GS (L pL pH m fn kc1 kc2 x y <Function 85>

[Name] Print the specified download graphics data.

[Format]

ASCII	GS	(L	pL	pH	m	fn	kc1	kc2	x	y
Hex	1D	28	4C	06	00	30	55	kc1	kc2	x	y
Decimal	29	40	76	6	0	48	85	kc1	kc2	x	y

[Range] $(pL + pH \times 256) = 6$ (**pL** = 6, **pH** = 0)

m = 48

fn = 85

$32 \leq \mathbf{kc1} \leq 126$

$32 \leq \mathbf{kc2} \leq 126$

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100: **x = 1, 2**
y = 1, 2

[Description] Prints the downloaded graphics data defined by the key codes (**kc1** and **kc2**).

- Users have the option of specifying horizontal (times **x**) × vertical (times **y**) size settings for the selected data.

[Notes]

- This function is used to print downloaded graphics data defined using Function 83 or 84 of this command.
- The printer prints only when downloaded graphics data corresponding to the specified key code is present.
- Use this command when the printer enters the “beginning of the line” or “no data in print buffer” state during the standard mode.
- Note that during the page mode, printing operations will not be performed simply because image data has been stored to the print buffer.
- Downloaded graphics data that exceeds the print area for one line will not be printed.
- The scales for width and height of raster bit images are specified by (**x**, **y**). Therefore, in page mode with 90° or 270° clockwise rotated raster bit image, the printer applies the print area and dot density from [**x**: direction of paper feed, **y**: perpendicular to direction of paper feed].
- Settings for text effect (bold, underline, orientation, etc.) except upside-down and font size do not affect the printing of the downloaded graphics data.

- Feeds the paper the required distance when printing graphics data, regardless of line feed pitch settings entered using the Set line feed command.
- Moves print position to the left side of the print area after printing of graphics data is completed. The printer then enters the "beginning of the line" or "no data in print buffer" state.
- When printing downloaded graphic files, use **ESC U** to specify unidirectional print for vertical alignment of printed text.

[Model-dependent variations]

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675

TM-J9000/J9100, TM-J7500/7600

The model information for this function (the dot density and maximum print area and others) is the same as Function 69. See the model information for Function 69.

TM-J7000/7100

Don't use this command when back of slip is selected as the active sheet.

The model information for this function (the dot density and maximum print area and others) is the same as Function 69. See the model information of Function 69.

TM-H6000III

This printer does not support this function.

TM-U675

This printer does not support this function.

GS (L pL pH m fn a bx by c XL XH yL yH d1...dk <Function 112>**GS 8 L p1 p2 p3 p4 m fn a bx by c XL XH yL yH d1...dk**

[Name] Store the graphics data in the print buffer (raster format).

[Format]	ASCII	GS	(L	pL	pH	m	fn	a	bx	by	c	XL	XH	yL	yH	d1...dk		
	Hex	1D	28	4C	pL	pH	30	70	30	bx	by	c	XL	XH	yL	yH	d1...dk		
	Decimal	29	40	76	pL	pH	48	112	48	bx	by	c	XL	XH	yL	yH	d1...dk		
	ASCII	GS	8	L	p1	p2	p3	p4	m	fn	a	bx	by	c	XL	XH	yL	yH	d1...dk
	Hex	1D	38	4C	p1	p2	p3	p4	30	70	30	bx	by	c	XL	XH	yL	yH	d1...dk
	Decimal	29	56	76	p1	p2	p3	p4	48	112	48	bx	by	c	XL	XH	yL	yH	d1...dk

[Range] $11 \leq (\mathbf{pL} + \mathbf{pH} \times 256) \leq 65535$ ($0 \leq \mathbf{pL} \leq 255, 0 \leq \mathbf{pH} \leq 255$)

[When using **GS 8 L**: $11 \leq (\mathbf{p1} + \mathbf{p2} \times 256 + \mathbf{p3} \times 65536 + \mathbf{p4} \times 16777216) \leq 4294967295$]

m = 48, fn = 112, a = 48

$0 \leq \mathbf{d} \leq 255$

k = (int((XL + XH × 256) + 7)/8) × (yL + yH × 256)

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100:

bx = 1, 2

by = 1, 2

49 ≤ c ≤ 51 (two-color printing model)

c = 49 (single-color printing model)

1 ≤ (XL + XH × 256) ≤ 2048 (0 ≤ XL ≤ 255, 0 ≤ XH ≤ 8)

1 ≤ (yL + yH × 256) ≤ 64 (1 ≤ yL ≤ 64, yH = 0)

TM-H6000III:

bx = 1, 2

by = 1, 2

c = 49, 50 (In two-color printing control mode)

c = 49 (In single color printing control mode)

1 ≤ (XL + XH × 256) ≤ 1024 (0 ≤ XL ≤ 255, 0 ≤ XH ≤ 4)

1 ≤ (yL + yH × 256) ≤ 1662 (0 ≤ yL ≤ 255, 0 ≤ yH ≤ 6)

- [Description] Stores the graphics data (raster format) in the print buffer.
- Users have the option of specifying horizontal (times **bx**) × vertical (times **by**) size settings for the selected data.
 - **c** specifies the color of the stored data.

c	Graphics data color
49	Color 1
50	Color 2
51	Color 3

- **XL, XH** specifies the graphics in the horizontal direction as (**XL** + **XH** × 256) dots.
- **YL, YH** specifies the graphics in the vertical direction as (**YL** + **YH** × 256) dots.
- **d** specifies the stored data (raster format).
- **k** indicates the number of graphics data. **k** is an explanation parameter; therefore it does not need to be transmitted.

- [Notes]
- The functions used to store graphics data directly to the print buffer are this function and Function 113. Even with printer models that support both, it is recommended that only one of the functions be used for data definition tasks.
 - With both functions, only the data processing differs between raster format (this function) and column format (Function 113), and the print results are the same.
 - Use this command when the printer enters the “beginning of the line” or “no data except for graphics data in print buffer” state during the standard mode.
 - This function is incompatible with macros, so make sure to avoid including it when defining macros.
 - NV graphics data that exceeds the print area for one line will not be printed.
 - The scales for width and height of raster bit images are specified by (**bx**, **by**). Therefore, in page mode with 90° or 270° clockwise rotated raster bit image, the printer applies the print area and dot density from [**x**: direction of paper feed, **y**: perpendicular to direction of paper feed].
 - Settings for text effect (bold, underline, orientation) and font size do not affect the printing of the NV graphics data.

- Print position does not change before and after this function is used. Overprinting of data of multiple colors can be performed by simply changing the selected color (**c**) and running this function again, but it is not possible to specify the same color to overprint.
- Use Function 50 to print graphics after graphics data has been stored in the print buffer when the standard mode is selected.
- The data for byte **k** of **d1 ... dk** is processed as a single item of defined NV graphics data. The defined data (**d**) specifies "1" for bits corresponding to dots that will be printed and "0" for bits corresponding to dots that will not be printed.
- Real time commands cannot be used during the processing of this function.
- The relationship between NV graphics data (raster format) and print results is shown in the table below.

d1	d2	...	dx
dx+1	dx+2	...	dxx2
:	:	...	:
...	dk-2	dk-1	dk

x = (XL + XH × 256)

[Model-dependent variations]

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675

TM-J9000/J9100, TM-J7500/7600

This printer is equipped with a print head configured in column format, which makes it faster to define data using Function 113 (column format) than with this function.

The model information for this function (the dot density and maximum print area and others) is the same as Function 69. See the model information of Function 69.

TM-J7000/7100

Don't use this function when back of slip is selected as the active sheet.

This printer is equipped with a print head configured in column format, which makes it faster to define data using Function 113 (column format) than with this function.

The model information for this function (the dot density and maximum print area and others) is the same as Function 69. See the model information of Function 69.

TM-H6000III

This function is enabled when roll paper is selected as the paper type.

When defining 2-color graphics data in standard mode, define each graphics data in the same size and the same scale.

The model information for this function (the dot density and maximum print area and others) is the same as Function 69. See the model information of Function 69.

TM-U675

This printer does not support this function.

GS (L pL pH m fn a bx by c xl xH yL yH d1...dk <Function 113>**GS 8 L p1 p2 p3 p4 m fn a bx by c xl xH yL yH d1...dk**

[Name] Store the graphics data in the print buffer (column format).

[Format]	ASCII	GS	(L	pL	pH	m	fn	a	bx by c xl xH yL yH d1...dk
	Hex	1D	28	4C	pL	pH	30	71	30	bx by c xl xH yL yH d1...dk
	Decimal	29	40	76	pL	pH	48	113	48	bx by c xl xH yL yH d1...dk
	ASCII	GS	8	L	p1	p2	p3	p4	m	fn abx by c xl xH yL yH d1...dk
	Hex	1D	38	4C	p1	p2	p3	p4	30	71 30 bx by c xl xH yL yH d1...dk
	Decimal	29	56	76	p1	p2	p3	p4	48	113 48 bx by c xl xH yL yH d1...dk

[Range] $11 \leq (pL + pH \times 256) \leq 65535$ ($0 \leq pL \leq 255, 0 \leq pH \leq 255$)

[When using **GS 8 L**: $11 \leq (p1 + p2 \times 256 + p3 \times 65536 + p4 \times 16777216) \leq 4294967295$]

m = 48, **fn** = 113, **a** = 48

$0 \leq d \leq 255$

k = $(xl + xH \times 256) \times (\text{int}((yL + yH \times 256) + 7)/8)$

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100:

bx = 1, 2

by = 1, 2

49 ≤ c ≤ 51 (two-color printing model)

c = 49 (single-color printing model)

1 ≤ (xl + xH × 256) ≤ 2048 (0 ≤ xl ≤ 255, 0 ≤ xH ≤ 8)

1 ≤ (yL + yH × 256) ≤ 64 (1 ≤ yL ≤ 64, yH = 0)

[Description] Stores the graphics data (column format) in the print buffer.

- Users have the option of specifying horizontal **bx** × vertical **by** size settings for the selected data.

- **c** specifies the color of the stored data.

c	Graphics data color
49	Color 1
50	Color 2
51	Color 3

- **XL, XH** specifies the graphics in the horizontal direction as $(XL + XH \times 256)$ dots.
- **YL, YH** specifies the graphics in the vertical direction as $(YL + YH \times 256)$ dots.
- **d** specifies the stored data (column format).
- **k** indicates the number of graphics data. **k** is an explanation parameter; therefore it does not need to be transmitted.

[Notes]

- The functions used to store graphics data directly to the print buffer are this function and Function 112. Even with printer models that support both, it is recommended that only one of the functions be used for data definition tasks.
 - With both functions, only the data processing differs between raster format (this function) and column format (Function 112), and the print results are the same.
- Use this function when the printer enters the “beginning of the line” or “no data in print buffer” state during the standard mode.
- This function is incompatible with macros, so make sure to avoid including it when defining macros.
- Graphics data that exceeds the print area for one line will not be printed.
- The scales for width and height of raster bit images are specified by **(bx, by)**. Therefore, in page mode with 90° or 270° clockwise rotated raster bit image, the printer applies the print area and dot density from [**x**: direction of paper feed, **y**: perpendicular to direction of paper feed].
- Settings for text effect (bold, underline, orientation) and font size do not affect the printing of the graphics data.
- Print position does not change before or after this function is used. Overprinting of data of multiple colors can be performed by simply changing the selected color (**c**) and running this function again, but it is impossible to specify the same color to overprint.

- Use Function 50 to print graphics after graphics data has been stored in the print buffer when the standard mode is selected.
- The data for byte **k** of **d1 ... dk** is processed as a single item of defined graphics data. The defined data (**d**) specifies "1" for bits corresponding to dots that will be printed and "0" for bits corresponding to dots that will not be printed.
- Real time commands cannot be used during the processing of this function.
- The relationship between graphics data (column format) and print results is shown in the table below.

d1	dv+1	...	:
d2	dv+2	...	dk-2
:	:	...	dk-1
dv	dvx2	...	dk

y = (yL + yH × 256)

[Model-dependent variations]

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675

TM-J9000/J9100, TM-J7500/7600

This printer is equipped with a print head configured in column format, which makes it faster to define data using Function 113 (column format) than with this function.

Use the following settings for best performance.

- Specify the horizontal size of graphics as 64 dot and horizontal **single** × vertical **single** size settings [$(yL + yH \times 256) = 64$, **bx** = 1, **by** = 1].

The model information for this function (the dot density and maximum print area and others) is the same as Function 69. See the model information of Function 69.

TM-J7000/7100

Don't use this function when back of slip is selected as the active sheet.

This printer is equipped with a print head configured in column format, which makes it faster to define data using Function 113 (column format) than with this function.

Use the following settings for best performance.

- Specify the horizontal size of graphics as 64 dot and horizontal single × vertical single size settings
[(yL + yH × 256) = 64, bx = 1, by = 1].**

The model information for this function (the dot density and maximum print area and others) is the same as Function 69. See the model information of Function 69.

TM-H6000III

This printer does not support this function.

TM-U675

This printer does not support this function.

GS *

SETTING COMMAND

[Name] Define downloaded bit image

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

[Range] **TM-J7500/7600, TM-J7000/7100:**

1 ≤ x ≤ 255
1 ≤ y ≤ 48 (**1 ≤ x × y ≤ 1536**)
0 ≤ d ≤ 255
k = x × y × 8

TM-H5000II:

1 ≤ x ≤ 255
1 ≤ y ≤ 48 (For roll paper: **1 ≤ x × y ≤ 1536**)
1 ≤ y ≤ 255 (For slip: **1 ≤ x × y ≤ 404**)
0 ≤ d ≤ 255
k = x × y × 8

TM-H6000III:

1 ≤ x ≤ 255
1 ≤ y ≤ 48 (For roll paper: **1 ≤ x × y ≤ 1536**)
1 ≤ y ≤ 255 (For slip paper, and validation: **1 ≤ x × y ≤ 512**)
0 ≤ d ≤ 255
k = x × y × 8

TM-U675:

1 ≤ x ≤ 255
1 ≤ y ≤ 255, where 1 ≤ x × y ≤ 512
0 ≤ d ≤ 255
k = x × y × 8

[Default] None

[Printers not featuring this command] **TM-J9000/J9100, TM-U325D**

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[Description]	<p>Defines the downloaded bit image in the downloaded graphic area.</p> <ul style="list-style-type: none">• x specifies the downloaded bit image in the horizontal direction as x bytes.• y specifies the downloaded bit image in the vertical direction as y bytes.• d defines the bit image data (column format).• k indicates the number of the definition data. k is an explanation parameter; therefore it does not need to be transmitted.
[Recommended Functions]	<p>This command is supported only by some printer models and may not be supported by future models.</p> <p>It is recommended that download graphics functions (GS (L GS 8 L <Function 52>, <Function 80> to <Function 85>) be used instead of this command because the download graphics functions offer the following additional features:</p> <ul style="list-style-type: none">• Multiple logo data and mark data can be specified (except for some models).• Data can be controlled by key code.• It is possible to redefine or delete the data for each key code.• Color can be specified for the definition data.• Data can be defined in raster format.• The amount of definition area remaining can be confirmed.
[Notes]	<ul style="list-style-type: none">■ The data for byte k of d1 ... dk is processed as a single item of defined NV graphics data. The defined data (d) specifies "1" for bits corresponding to dots that will be printed and "0" for bits corresponding to dots that will not be printed.■ The downloaded bit image is not defined in the default settings.■ Once a downloaded bit image has been defined, it is maintained until another definition is made, ESC & or ESC @ is executed, the printer is reset, or the power is turned off.■ A downloaded bit image and a user-defined character cannot be defined simultaneously. When this command is executed, the user-defined character is cleared.■ The downloaded bit image is printed by GS /.

- The relationship between the bit image data and the printed result is as follows:

d1	dy+1	...	:
d2	dy+2	...	dk-2
:	:	...	dk-1
dy	dy×2	...	dk

[Model-dependent variations]

TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II

See program example and print sample for GS * and GS /.

TM-J7500/7600, TM-J7000/7100

This printer supports the graphics functions of **GS (L/GS 8 L**. It is recommended to use **GS (L /GS 8 L** instead of **GS v 0**.

TM-H5000II

This command defines the downloaded bit image defined for the paper type selected by **ESC c 1**. The downloaded bit image can be set independently for roll paper and slip.

TM-H6000III

The user-defined bit image for the paper type selected by **ESC c 1** is defined. When slip is selected as the paper type, the user-defined bit image is defined for the face of the slip. The user-defined bit image can be defined for roll paper and the face of the slip independently.

<Validation model>

Slip and validation use a common downloaded bit image. Therefore, the defined downloaded bit image affects slip and validation both when "paper type for command setting" is slip or validation.

[Name] Print downloaded bit image

[Format] ASCII GS / **m**
Hex D 2F **m**
Decimal 29 47 **m**

[Range] **TM-H5000II:** **For roll paper:** $0 \leq m \leq 3, 48 \leq m \leq 51$
For slip paper (in standard mode): $m = 0, 1, 48, 49$
For slip paper (in page mode): $m = 1, 49$

TM-H6000III: **For roll paper:** $0 \leq m \leq 3, 48 \leq m \leq 51$
For slip paper (face), validation:
 $m = 0, 1, 48, 49$ (standard mode)
 $m = 1, 49$ (page mode)
 $m = 0, 1, 48, 49$ (double-density page mode)

TM-J7500/7600, TM-J7000/7100: $0 \leq m \leq 3, 48 \leq m \leq 51$

TM-U675: $m = 0, 1, 48, 49$ (standard mode)
 $m = 1, 49$ (page mode)
 $m = 0, 1, 48, 49$ (double-density page mode)

[Default] None

[Printers not featuring this command] **TM-J9000/J9100, TM-U325D**

[Description] Prints downloaded bit image using the process of **GS** * and using the mode specified by **m**, as follows:

m	Mode	Scale of width	Scale of height
0, 48	Normal	$\times 1$	$\times 1$
1, 49	Double-width	$\times 2$	$\times 1$
2, 50	Double-height	$\times 1$	$\times 2$
3, 51	Quadruple	$\times 2$	$\times 2$

[Recommended Functions]

This command is supported only by some printer models and may not be supported by future models.

It is recommended that download graphics functions (**GS (L GS 8 L**: <Function 52>, <Function 80> to <Function 85>) be used instead of this command because the download graphics functions offer the following additional features:

- Multiple logo data and mark data can be specified (except for some models).
 - Data can be controlled by key code.
 - It is possible to redefine or delete the data for each key code.
 - Color can be specified for the definition data.
 - Data can be defined by raster format.
 - The amount of definition area remaining can be confirmed.
- [Notes]
- This command is ignored if a downloaded bit image has not been defined.
 - When standard mode is selected, this command is enabled only when there is "no data in the print buffer" or "print position is beginning of the line."
 - When page mode is selected, this command stores the downloaded bit image data in the print buffer but the printer does not print the downloaded bit image data.
 - If a downloaded bit image exceeds one line, the excess data is not printed.
 - The scales for width and height of downloaded bit images are specified by **m**. Therefore, in page mode with 90° or 270° clockwise rotated bit image, the printer applies the print area and dot density from [width: direction of paper feed, height: perpendicular to direction of paper feed].
 - The downloaded bit image is not affected by print mode (emphasized, double-strike, underline, white/black reverse printing, or 90° clockwise-rotated), except for character size and upside-down print mode.
 - This command feeds as much paper as is required to print the downloaded bit image, regardless of the line spacing specified by command of setting line spacing.
 - Moves print position to the left side of the print area after printing of graphics data is completed. The printer then enters the "beginning of the line" or "no data in print buffer" state.
 - When printing a downloaded bit image, selecting unidirectional print mode with **ESC U** enables printing patterns in which the top and bottom parts are aligned vertically.
 - The downloaded bit image is defined by **GS ***.

[Model-dependent variations]

TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II, TM-U675

See program example and print sample for GS * and GS /.

Program example for GS * and GS /

Program Example

```

PRINT #1, CHR$(&H1D);";*";CHR$(18);CHR$(5);
FOR i=1 TO 18*5*8
  READ a$: d=VAL("&H"+a$)
  PRINT #1, CHR$(d);
NEXT i

PRINT #1, CHR$(&H1B);"U";CHR$(1);
PRINT #1, CHR$(&H1D);"/";CHR$(0);CHR$(&HA); ← Normal
PRINT #1, CHR$(&H1D);"/";CHR$(1);CHR$(&HA); ← Double width

DATA AA,AA,AA,AA,AA,55,55,55,55,54,80,00,00,00,02
DATA 40,00,00,00,04,80,00,00,00,02,40,00,00,00,04
DATA 8A,AA,AA,AA,A2,45,55,55,55,44,8A,AA,AA,AA,A2
DATA 45,55,55,55,44,8A,AA,AA,AA,A2,45,00,50,01,44
DATA 8A,80,A8,02,A2,45,00,50,01,44,8A,80,A8,02,A2
DATA 45,00,50,01,44,8A,80,A8,02,A2,45,00,50,01,44
DATA 8A,80,A8,02,A2,45,00,00,01,44,8A,80,00,02,A2
DATA 40,00,00,00,04,80,00,00,00,02,40,00,00,00,04
DATA 80,AA,00,02,A2,41,55,00,01,44,82,AA,80,02,A2
DATA 45,55,40,01,44,8A,AA,A0,02,A2,45,45,50,01,44
DATA 8A,82,A8,02,A2,45,01,54,01,44,8A,80,AA,02,A2
DATA 45,00,55,01,44,8A,80,2A,82,A2,45,00,15,55,44
DATA 8A,80,0A,AA,A2,45,00,05,55,44,8A,80,02,AA,82
DATA 40,00,01,55,04,80,00,00,00,02,40,00,00,00,04
DATA 80,00,00,00,02,40,15,55,50,04,80,2A,AA,A8,02
DATA 40,55,55,54,04,80,AA,AA,AA,02,41,55,55,55,04
DATA 82,A8,00,2A,82,45,50,00,15,44,8A,A0,00,0A,A2
DATA 45,40,00,05,44,8A,80,00,02,A2,45,00,00,01,44
DATA 8A,80,00,02,A2,45,00,00,01,44,8A,80,00,02,A2
DATA 45,00,00,01,44,8A,80,00,02,A2,40,00,00,00,04
DATA 80,00,00,00,02,40,00,00,00,04,80,00,00,00,62
DATA 40,00,00,03,84,80,00,00,1C,02,40,00,00,60,04
DATA 80,00,03,80,02,40,00,1C,00,04,80,00,60,00,02
DATA 40,03,80,00,04,80,0C,00,00,02,40,70,00,00,04

```

Define
downloaded
bit image

Program Example (continued)

```

DATA 83,80,00,00,02,4C,00,00,00,04,80,00,00,00,02
DATA 40,00,00,00,04,80,00,00,00,02,4A,AA,AA,AA,A4
DATA 85,55,55,55,42,4A,AA,AA,AA,A4,85,55,55,55,42
DATA 4A,AA,AA,AA,A4,85,00,05,00,02,4A,08,0A,80,04
DATA 85,00,05,00,02,4A,80,0A,80,04,85,00,05,00,02
DATA 4A,80,0A,80,04,85,00,05,00,02,4A,80,0A,80,04
DATA 85,55,55,00,02,42,AA,AA,00,04,81,55,54,00,02
DATA 40,AA,A8,00,04,80,55,50,00,02,40,00,00,00,04
DATA 80,00,00,00,02,40,00,00,00,04,80,2A,AA,A8,02
DATA 40,55,55,54,04,80,AA,AA,02,41,55,55,55,04
DATA 82,AA,AA,AA,82,45,40,00,05,44,8A,80,00,02,A2
DATA 45,00,00,01,44,8A,80,00,02,A2,45,00,00,01,44
DATA 8A,80,00,02,A2,45,00,00,01,44,8A,80,00,02,A2
DATA 45,00,00,01,44,8A,80,00,02,A2,45,40,00,05,44
DATA 82,AA,AA,AA,82,41,55,55,04,80,AA,AA,02
DATA 40,55,55,54,04,80,2A,AA,A8,02,40,00,00,00,04
DATA 80,00,00,00,02,40,00,00,00,04,80,AA,00,02,A2
DATA 41,55,00,01,44,82,AA,80,02,A2,45,55,40,01,44
DATA 8A,AA,A0,02,A2,45,45,50,01,44,8A,82,A8,02,A2
DATA 45,01,54,01,44,8A,80,AA,02,A2,45,00,55,01,44
DATA 8A,80,2A,82,A2,45,00,15,55,44,8A,80,0A,AA,A2
DATA 45,00,05,55,44,8A,80,02,AA,82,40,00,01,55,04
DATA 80,00,00,00,02,40,00,00,00,04,80,00,00,00,02
DATA 40,00,00,00,04,AA,AA,AA,AA,55,55,55,55,54

```

Print Sample

 ← GS / 0

 ← GS / 1

CONFIDENTIAL

TM-J7500/7600

This printer supports the graphics functions of **GS (L/GS 8 L**. We recommend using **GS (L /GS 8 L** instead of **GS v 0**.

For the model information for this function (the dot density and maximum print area and others) see the model information of Function 69 of **GS (L/GS 8 L**.

TM-J7000/7100

This printer supports the graphics functions of **GS (L/GS 8 L**. We recommend using **GS (L /GS 8 L** instead of **GS v 0**.

Don't use this command when back of slip is selected as the active sheet.

The model information for this function (the dot density and maximum print area and others) is for the graphics functions. See the model information of Function 69 of **GS (L/GS 8 L**.

TM-H5000II

The dot density and the maximum print area are described in the following tables (dpi: dots per inch (dots per 25.4 mm)).

"Vertical" is in the direction of paper feeding and "horizontal" is perpendicular (at right angles) to the direction of paper feeding.

In the following tables, "--" means "printing graphics is not available".

<For roll paper>

Scale	Horizontal		Vertical	
	Dot density	Maximum print area	Dot density	Maximum print area
× 1	180 dpi	512 dots	180 dpi	831 dots
× 2	90 dpi	256 dots	90 dpi	415 dots

<For slip>

Scale	Horizontal			Vertical
	Dot density	Maximum print area (dot)	Dot density	
× 1	150 dpi	800 dots	72 dpi	
× 2	75 dpi	400 dots	-	

In page mode when the starting position is set to the upper left or lower right of the printing area using ESC T.

Scale	Horizontal (depending on x)		Vertical (depending on y)	
	Dot density	Maximum print area	Dot density	Maximum print area
		Page mode		Page mode
× 1	—	—	72 dpi	902 dots
× 2	75 dpi	400 dots	—	—

In page mode when the starting position is set to the upper right or lower left of the printing area using ESC T

Scale	Horizontal (depending on x)		Vertical (depending on y)	
	Dot density	Maximum print area	Dot density	Maximum print area
		Page mode		Page mode
× 1	75 dpi	400 dots	—	—
× 2	—	—	72 dpi	902 dots

In this case, the downloaded bit image rotated by 90 degrees or 270 degrees is printed.

TM-U675

The dot density and the maximum print area are described in the following tables (dpi: dots per inch (dots per 25.4 mm)).

"Vertical" is in the direction of paper feeding and "horizontal" is perpendicular (at right angles) to the direction of paper feeding.

In the following tables, "--" means "printing graphics is not available".

The maximum print area of vertical is for printing downloaded bit image in page mode. Page mode can be selected by **ESC L**. Double-density page mode can be selected by **FS L**.

In the following tables, A, B, C, D mean the following:

A: Roll paper is selected as the paper type when DIP switch [SW2-4] is OFF

B: Slip or validation is selected as the paper type when DIP switch [SW2-4] is OFF

C: When DIP switch [SW2-4] is ON and [SW2-3] is OFF

D: When DIP switch [SW2-4] is ON and [SW2-3] is ON

In standard mode

Scale	Dot density	Horizontal				Vertical
		Maximum print area (dot)				Dot density
		A	B	C	D	
× 1	160 dpi	450	540	400	385	72 dpi
× 2	80 dpi	225	270	200	192	—

In page mode when the starting position is set to the upper left or lower right of the print area using **ESC T**.

Scale	Dot density	Horizontal						Vertical		
		Maximum print area			Double dot density page mode			Dot density	Maximum print area	
		Page mode		C, D	A	B	C, D		Page mode	Double dot density page mode
× 1	160 dpi	—	—	—	450	540	400	72 dpi	704 dots	352 dots
× 2	80 dpi	225	270	200	225	270	200	—	—	—

In page mode when the starting position is set to the upper right or lower left of the print area using **ESC T**.

Scale	Horizontal							Vertical			
	Dot density	Maximum print area						Dot density	Maximum print area		
		Page mode			Double dot density page mode				Page mode	Double dot density page mode	
		A	B	C, D	A	B	C, D		A, B, C, D	A, B, C, D	
× 1	80 dpi	225	270	200	225	270	200	144 dpi		704 dots	
× 2	—	—	—	—	—	—	—	72	704 dots	352 dots	

In this case, the downloaded bit image rotated by 90 degrees or 270 degrees is printed.

TM-H6000III

This function is available when roll paper, slip (face), or validation is selected as the paper type. This function prints the specified downloaded bit image for the paper type.

The dot density and the maximum print area are described in the following tables (dpi: dots per inch (dots per 25.4 mm)).

“Vertical” is in the direction of paper feeding and “horizontal” is perpendicular (at right angles) to the direction of paper feeding.

In the following tables, “-” means “printing graphics is not available”.

The maximum print area of vertical is for printing downloaded bit image in page mode. Page mode can be selected by **ESC L**. Double-density page mode can be selected by **FS L**.

<For roll paper>

Scale	Horizontal			Vertical		
	Dot density	Maximum print area	Dot density	Maximum print area		
				Two-color printing control mode	Single color printing control mode	
× 1	180 dpi	512 dots	180 dpi	415 dots		831 dots
× 2	90 dpi	256 dots	180 dpi	207 dots		415 dots

CONFIDENTIAL

See memory switches (GS (E <Function 3>) for specifying single color printing control mode and two-color printing control mode.

<For face of slip, and validation>

In standard mode

Scale	Horizontal			Vertical
	Dot density	Maximum print area	Adjacent dot printing	Dot density
× 1	160 dpi	540 dots	Not possible	72 dpi
× 2	80 dpi	270 dots	Possible	—

In page mode when the starting position is set to the upper left or lower right of the print area using ESC T.

Scale	Horizontal (depending on x)			Vertical (depending on y)		
	Dot density	Maximum print area		Dot density	Maximum print area	
		Page mode	Double dot density page mode		Page mode	Double dot density page mode
× 1	160 dpi(*1)	—	540 dots	72 dpi	704 dots	352 dots
× 2	80 dpi	270 dots	270 dots	—	—	—

(*1) Adjacent dot printing is not possible.

In page mode when the starting position is set to the upper right or lower left of the print area using ESC T.

Scale	Horizontal (depending on y)			Vertical (depending on x)		
	Dot density	Maximum print area		Dot density	Maximum print area	
		Page mode	Double dot density page mode		Page mode	Double dot density page mode
× 1	80 dpi	270 dots	270 dots	144 dpi	—	704 dots
× 2	—	—	—	72 dpi	704 dots	352 dots

In this case, the downloaded bit image rotated by 90 degrees or 270 degrees is printed.

[Name] Print variable vertical size bit image

[Format] ASCII GS Q 0 **m XL XH yL yH d1...dk**
 Hex 1D 51 30 **m XL XH yL yH d1...dk**
 Decimal 29 81 48 **m XL XH yL yH d1...dk**

[Printers not featuring this command] **TM-J9000/J9100, TM-H6000III, TM-H5000II, TM-U675, TM-U325D**

[Range] **TM-J7500/7600, TM-J7000/7100:**

0 ≤ m ≤ 3, 48 ≤ m ≤ 51
1 ≤ (XL + XH × 256) ≤ 4256 (0 ≤ XL ≤ 255, 0 ≤ XH ≤ 16)
1 ≤ (yL + yH × 256) ≤ 8 (1 ≤ yL ≤ 8, yH = 0)
0 ≤ d ≤ 255
k = (XL + XH × 256) × (yL + yH × 256)

[Description] Prints a variable vertical size bit image using the mode specified by **m**, as follows:

m	Mode	Scale of width	Scale of height
0, 48	Normal	× 1	× 1
1, 49	Double-width	× 2	× 1
2, 50	Double-height	× 1	× 2
3, 51	Quadruple	× 2	× 2

- **XL, XH** specifies a variable vertical size bit image in the horizontal direction as $(XL + XH \times 256)$ dots.
- **yL, yH** specifies a variable vertical size bit image in the vertical direction as $(yL + yH \times 256)$ bytes.
- **d** specifies the bit image data (column format).
- **k** indicates the number of the bit image data. **k** is an explanation parameter; therefore, it does not need to be transmitted.

[Recommended Functions]

This command is supported only by some printer models and will not be supported by future models.

It is recommended that graphics function (**GS (L GS 8 L:** <Function 50> and <Function 113>) be used instead of this command because the graphics function offers the following additional features:

- Specifying size in unit a dot is enabled.
 - Color can be specified for the definition data.
- [Notes]
- In standard mode, this command is effective only when printer's state is "no data in print buffer" or "beginning of the line."
 - When page mode is selected, this command stores the downloaded bit image data in the print buffer but the printer does not print the downloaded bit image data.
 - This command processes **k** bytes data of **d1...dk** as a bit image data. Image data (**d**) specifies a bit printed to 1 and not printed to 0.
 - If a variable vertical bit image that exceeds a print area for a line is specified, the excess image data is ignored.
 - The scales for width and height of NV bit images are specified by **m**. Therefore, in page mode with 90° or 270° clockwise rotated NV bit image, the printer applies the print area and dot density from [width: direction of paper feed, height: perpendicular to direction of paper feed].
 - Character size and all print modes such as emphasize, underline, 90° clockwise rotation, and upside-down do not affect printing of a variable vertical size bit image data.
 - This command feeds paper for amount needed for printing a variable vertical bit image regardless of the paper feed setting set by paper feed setting commands.
 - Do not use this command during macro definition because the command cannot be included in a macro.
 - After printing a variable vertical bit-image, normal data processing is started.
 - The print position is set to the beginning of a line, and the printer's state becomes "no data in print buffer."
 - Relationship between bit-image data and printing result is as follows:

d1	dv + 1	...	:
d2	dv + 2	...	dk - 2
:	:	...	dk - 1
dv	dv × 2	...	dk

$$v = (y_L + y_H \times 256)$$

[Model-dependent variations]

TM-J7500/7600, TM-J7000/7100**TM-J7500/7600**

This printer supports the graphics functions of **GS (L/GS 8 L**. We recommend using **GS (L /GS 8 L** instead of **GS v 0**.

For the model information for this function (the dot density and maximum print area and others) see the model information of Function 69 and 113 of **GS (L/GS 8 L**.

TM-J7000/7100

This printer supports the graphics functions of **GS (L/GS 8 L**. We recommend using **GS (L /GS 8 L** instead of **GS v 0**.

Don't use this command when back of slip is selected as the active sheet.

For the model information for this function (the dot density and maximum print area and others) see the model information of Function 69 and 113 of **GS (L/GS 8 L**.

Program Example for GS Q 0

Program Example

```

PRINT #1, CHR$(&H1B); "U";CHR$(1); ← Specify unidirection
PRINT #1, CHR$(&H1D); "p";CHR$(0);
PRINT #1, CHR$(144);CHR$(0);CHR$(5);CHR$(0);
FOR i=1 TO 144*5
  READ a$: d=VAL("&H"+a$)
  PRINT #1, CHR$(d);
NEXT i

PRINT #1, CHR$(&H1B); "U";CHR$(1); ← Select direction
PRINT #1, CHR$(&H1C); "p";CHR$(0);CHR$(&HA); ← Normal
PRINT #1, CHR$(&H1C); "p";CHR$(1);CHR$(&HA); ← Double width

DATA AA,AA,AA,AA,AA,55,55,55,55,54,80,00,00,00,02
DATA 40,00,00,00,04,80,00,00,00,02,40,00,00,00,04
DATA 8A,AA,AA,AA,A2,45,55,55,55,44,8A,AA,AA,AA,A2
DATA 45,55,55,55,44,8A,AA,AA,AA,A2,45,00,50,01,44
DATA 8A,80,A8,02,A2,45,00,50,01,44,8A,80,A8,02,A2
DATA 45,00,50,01,44,8A,80,A8,02,A2,45,00,50,01,44
DATA 8A,80,A8,02,A2,45,00,00,01,44,8A,80,00,02,A2
DATA 40,00,00,00,04,80,00,00,00,02,40,00,00,00,04
DATA 80,AA,00,02,A2,41,55,00,01,44,82,AA,80,02,A2
DATA 45,55,40,01,44,8A,AA,A0,02,A2,45,45,50,01,44
DATA 8A,82,A8,02,A2,45,01,54,01,44,8A,80,AA,02,A2
DATA 45,00,55,01,44,8A,80,2A,82,A2,45,00,15,55,44
DATA 8A,80,0A,AA,A2,45,00,05,55,44,8A,80,02,AA,82
DATA 40,00,01,55,04,80,00,00,00,02,40,00,00,00,04
DATA 80,00,00,00,02,40,15,55,50,04,80,2A,AA,A8,02
DATA 40,55,55,54,04,80,AA,AA,AA,02,41,55,55,55,04
DATA 82,A8,00,2A,82,45,50,00,15,44,8A,A0,00,0A,A2
DATA 45,40,00,05,44,8A,80,00,02,A2,45,00,00,01,44
DATA 8A,80,00,02,A2,45,00,00,01,44,8A,80,00,02,A2
DATA 45,00,00,01,44,8A,80,00,02,A2,40,00,00,00,04
DATA 80,00,00,00,02,40,00,00,00,04,80,00,00,00,62
DATA 40,00,00,03,84,80,00,00,1C,02,40,00,00,60,04
DATA 80,00,03,80,02,40,00,1C,00,04,80,00,60,00,02
DATA 40,03,80,00,04,80,0C,00,00,02,40,70,00,00,04

```

Definition

Program Example (continued)

```

DATA 83,80,00,00,02,4C,00,00,00,04,80,00,00,00,02
DATA 40,00,00,00,04,80,00,00,00,02,4A,AA,AA,AA,A4
DATA 85,55,55,55,42,4A,AA,AA,AA,A4,85,55,55,55,42
DATA 4A,AA,AA,AA,A4,85,00,05,00,02,4A,08,0A,80,04
DATA 85,00,05,00,02,4A,80,0A,80,04,85,00,05,00,02
DATA 4A,80,0A,80,04,85,00,05,00,02,4A,80,0A,80,04
DATA 85,55,55,00,02,42,AA,AA,00,04,81,55,54,00,02
DATA 40,AA,A8,00,04,80,55,50,00,02,40,00,00,00,04
DATA 80,00,00,00,02,40,00,00,00,04,80,2A,AA,A8,02
DATA 40,55,55,54,04,80,AA,AA,02,41,55,55,55,04
DATA 82,AA,AA,AA,82,45,40,00,05,44,8A,80,00,02,A2
DATA 45,00,00,01,44,8A,80,00,02,A2,45,00,00,01,44
DATA 8A,80,00,02,A2,45,00,00,01,44,8A,80,00,02,A2
DATA 45,00,00,01,44,8A,80,00,02,A2,45,40,00,05,44
DATA 82,AA,AA,AA,82,41,55,55,55,04,80,AA,AA,02
DATA 40,55,55,54,04,80,2A,AA,A8,02,40,00,00,00,04
DATA 80,00,00,00,02,40,00,00,00,04,80,AA,00,02,A2
DATA 41,55,00,01,44,82,AA,80,02,A2,45,55,40,01,44
DATA 8A,AA,A0,02,A2,45,45,50,01,44,8A,82,A8,02,A2
DATA 45,01,54,01,44,8A,80,AA,02,A2,45,00,55,01,44
DATA 8A,80,2A,82,A2,45,00,15,55,44,8A,80,0A,AA,A2
DATA 45,00,05,55,44,8A,80,02,AA,82,40,00,01,55,04
DATA 80,00,00,00,02,40,00,00,00,04,80,00,00,00,02
DATA 40,00,00,00,04,AA,AA,AA,AA,55,55,55,55,54

```

Print Sample

ESPECS

GS v 0

EXECUTING COMMAND

[Name] Print raster bit image

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

[Range] **TM-J7500/7600, TM-J7000/7100:**

0 ≤ m ≤ 3, 48 ≤ m ≤ 51
1 ≤ XL + XH × 256 ≤ 255 (0 ≤ XL ≤ 255, XH = 0)
1 ≤ yL + yH × 256 ≤ 4607 (0 ≤ yL ≤ 255, 0 ≤ yH ≤ 17)
0 ≤ d ≤ 255
k = (XL + XH × 256) × (yL + yH × 256)

TM-H5000II:

0 ≤ m ≤ 3, 48 ≤ m ≤ 51
1 ≤ XL + XH × 256 ≤ 65535 (0 ≤ XL ≤ 255, 0 ≤ XH ≤ 255)
1 ≤ yL + yH × 256 ≤ 2047 (0 ≤ yL ≤ 255, 0 ≤ yH ≤ 8)
0 ≤ d ≤ 255
k = (XL + XH × 256) × (yL + yH × 256)

TM-H6000III:

0 ≤ m ≤ 3, 48 ≤ m ≤ 51 (when roll paper is selected)
m = 0, 1, 48, 49 (when slip paper (face) or validation is selected in standard mode)
m = 1, 49 (when slip paper (face) or validation is selected in page mode)
m = 0, 1, 48, 49 (when slip paper (face) or validation is selected in double-density page mode)
1 ≤ (XL + XH × 256) ≤ 128 (1 ≤ XL ≤ 128, XH = 0)
1 ≤ (yL + yH × 256) ≤ 4095 (0 ≤ yL ≤ 255, 0 ≤ yH ≤ 15)
0 ≤ d ≤ 255
k = (XL + XH × 256) × (yL + yH × 256)

TM-U675: **m = 0, 1, 48, 49 (standard mode)****m = 1, 49 (page mode)****m = 0, 1, 48, 49 (double-density page mode)**

$$\begin{aligned}
 & 1 \leq (\mathbf{xL} + \mathbf{xH} \times 256) \leq 128 \quad (1 \leq \mathbf{xL} \leq 128, \mathbf{xH} = 0) \\
 & 1 \leq (\mathbf{yL} + \mathbf{yH} \times 256) \leq 4095 \quad (0 \leq \mathbf{yL} \leq 255, 0 \leq \mathbf{yH} \leq 15) \\
 & 0 \leq \mathbf{d} \leq 255 \\
 & \mathbf{k} = (\mathbf{xL} + \mathbf{xH} \times 256) \times (\mathbf{yL} + \mathbf{yH} \times 256)
 \end{aligned}$$

[Default] None

[Printers not featuring this command] **TM-J9000/J9100, TM-U325D**

[Description] Prints a raster bit image using the mode specified by **m**, as follows:

m	Mode	Scale of width	Scale of height
0, 48	Normal	× 1	× 1
1, 49	Double-width	× 2	× 1
2, 50	Double-height	× 1	× 2
3, 51	Quadruple	× 2	× 2

- **XL, XH** specifies a raster bit image in the horizontal direction as $(\mathbf{xL} + \mathbf{xH} \times 256)$ bytes.
- **YL, YH** specifies a raster bit image in the vertical direction as $(\mathbf{yL} + \mathbf{yH} \times 256)$ dots.
- **d** specifies the bit image data (raster format).
- **k** indicates the number of bit image data. **k** is an explanation parameter; therefore, it does not need to be transmitted.

[Recommended Functions]

This command is supported only by some printer models and will not be supported by future models.

It is recommended to use graphics function (**GS (L GS 8 L**: <Function 50> and <Function 112>). The graphics function is better than that of **GS v 0** for the following reasons:

- Selecting a color for printing is possible.
- Size setting in dot units is possible.

It is recommended that graphics function (**GS (L GS 8 L**: <Function 50> and <Function 112>) be used instead of this command because the graphics function offers the following additional features:

- Specifying size in dot units is enabled.
- Color can be specified for the definition data.

[Notes]

- When standard mode is selected, this command is enabled only when there is no data in the print buffer.
- In page mode, this command only stores bit image data in print buffer, does not execute printing actually
- **k** bytes data of **d1...dk** is processed as a defined data of a raster bit image. The defined data (**d**) specifies a bit printed to 1 and not printed to 0.
- If a raster bit image exceeds one line, the excess data is not printed.
- The scales for width and height of raster bit images are specified by **m**. Therefore, in page mode with 90° or 270° clockwise rotated raster bit image, the printer applies the print area and dot density from [width: direction of paper feed, height: perpendicular to direction of paper feed].
- The raster bit image is not affected by character size and print modes (emphasized, double-strike, underline, white/black reverse printing, upside-down printing, or 90° clockwise-rotated).
- This command feeds as much paper as is required to print the raster bit image, regardless of the line spacing specified by **ESC 2** or **ESC 3**.
- Do not use this command during macro execution because the command cannot be included in a macro.
- After printing a raster bit image, the printer processes additional data as normal data.
- After printing, the print position moves to the beginning of the line.
- The relationship between the bit image data and the printed result is as follows:

d1	d2	...	dx
dx+1	dx+2	...	dx×2
:	:	...	:
...	dk-2	dk-1	dk

$$\mathbf{x} = \mathbf{xL} + \mathbf{xH} \times 256$$

[Model-dependent variations]

TM-J7500/7600, **TM-J7000/7100**, **TM-H6000III**, **TM-H5000II**, **TM-U675**

Program Example

```

PRINT #1, CHR$(&H1B); "U";CHR$(1);← Select unidirectional printing
PRINT #1, CHR$(&H1D); "v0";CHR$(0);
PRINT #1, CHR$(16);CHR$(0);CHR$(40);CHR$(0);
FOR i=1 TO 16*40
    READ a$: d=VAL("&H"+a$)
    PRINT #1, CHR$(d);
NEXT i

DATA FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF
DATA FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF
DATA C0,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,03
DATA C0,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,03
DATA CF,FF,E0,FF,E0,3F,F8,00,5F,FF,80,1F,FC,00,FF,E3
DATA CF,FF,E3,FF,E0,FF,F8,00,5F,FF,E0,7F,FF,03,FF,E3
DATA CF,FF,E7,FF,E1,FF,F8,00,DF,FF,E0,FF,FF,87,FF,E3
DATA CF,FF,E7,FF,E1,FF,F8,00,9F,FF,F0,FF,FF,87,FF,E3
DATA CF,FF,EF,FF,E3,FF,F8,00,9F,FF,F1,FF,FF,CF,FF,E3
DATA CF,FF,EF,FF,E3,FF,F8,01,9F,FF,F1,FF,FF,CF,FF,E3
DATA CF,80,0F,E0,07,F0,00,01,1F,83,F9,F8,0F,CF,E0,03
DATA CF,80,0F,C0,07,F0,00,01,1F,81,F9,F8,0F,CF,C0,03
DATA CF,80,0F,C0,07,E0,00,03,1F,81,FB,F0,07,EF,C0,03
DATA CF,80,0F,C0,07,E0,00,02,1F,81,FB,F0,07,EF,C0,03
DATA CF,80,0F,E0,07,E0,00,06,1F,81,FB,F0,07,EF,E0,03
DATA CF,80,0F,F0,07,E0,00,04,1F,81,FB,F0,07,EF,F0,03
DATA CF,FF,C7,F8,07,E0,00,04,1F,81,FB,F0,07,E7,F8,03
DATA CF,FF,C7,FC,07,E0,00,0C,1F,81,FB,F0,07,E7,FC,03
DATA CF,FF,C3,FE,07,E0,00,08,1F,81,FB,F0,07,E3,FE,03
DATA CF,FF,C1,FF,07,E0,00,18,1F,83,FB,F0,07,E1,FF,03
DATA CF,FF,C0,FF,87,E0,00,18,1F,FF,F3,F0,07,E0,FF,83
DATA CF,FF,C0,7F,C7,E0,00,10,1F,FF,F3,F0,07,E0,7F,C3

```

Program Example (continued)

```

DATA CF,80,00,3F,E7,E0,00,30,1F,FF,F3,F0,07,E0,3F,E3
DATA CF,80,00,1F,E7,E0,00,20,1F,FF,E3,F0,07,E0,1F,E3
DATA CF,80,00,0F,F7,E0,00,20,1F,FF,E3,F0,07,E0,0F,F3
DATA CF,80,00,07,F7,E0,00,60,1F,FF,83,F0,07,E0,07,F3
DATA CF,80,00,03,F7,E0,00,40,1F,80,03,F0,07,E0,03,F3
DATA CF,80,00,03,F7,E0,00,C0,1F,80,03,F0,07,E0,03,F3
DATA CF,80,00,03,F7,F0,00,80,1F,80,01,F8,0F,C0,03,F3
DATA CF,80,00,07,F7,F0,00,80,1F,80,01,F8,0F,C0,07,F3
DATA CF,FF,EF,FF,F3,FF,F9,80,1F,80,01,FF,FF,CF,FF,F3
DATA CF,FF,EF,FF,F3,FF,F9,00,1F,80,01,FF,FF,CF,FF,F3
DATA CF,FF,EF,FF,F3,FF,F9,00,1F,80,00,FF,FF,8F,FF,F3
DATA CF,FF,EF,FF,E1,FF,FB,00,1F,80,00,FF,FF,8F,FF,F3
DATA CF,FF,EF,FF,C0,FF,FA,00,1F,80,00,7F,FF,0F,FF,C3
DATA CF,FF,EF,FF,00,3F,FA,00,1F,80,00,1F,FC,0F,FF,03
DATA C0,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,03
DATA C0,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,03
DATA FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF
DATA FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF,FF

```

Print Sample

 ← Normal mode

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TM-J7500/7600

This printer supports the graphics functions of **GS (L/GS 8 L**. We recommend using **GS (L /GS 8 L** instead of **GS v 0**.

For the model information for this function (the dot density and maximum print area and others) see the model information of Functions 69 and 112 of **GS (L/GS 8 L**.

TM-J7000/7100

This printer supports the graphics functions of **GS (L/GS 8 L**. We recommend using **GS (L /GS 8 L** instead of **GS v 0**.

Don't use this command when back of slip is selected as the active sheet.

For the model information for this function (the dot density and maximum print area and others) See the model information of Function 69 and 112 of **GS (L/GS 8 L**.

TM-H5000II

The dot density and the maximum print area are described in the following tables (dpi: dots per inch (dots per 25.4 mm)).

In the following table, "Vertical" is in the direction of paper feeding and "horizontal" is perpendicular (at right angles) to the direction of paper feeding.

<For slip>

Scale	Horizontal		Vertical
	Dot density	Maximum print area (dot)	Dot density
× 1	180 dpi	512 dots	180 dpi
× 2	90 dpi	256 dots	90

TM-H6000III

This function is available when roll paper, slip (face), or validation is selected as the paper type. This function prints the specified raster bit image for the paper type.

This printer supports the graphics functions of **GS (L/GS 8 L**. We recommend using **GS (L /GS 8 L** instead of **GS v 0**.

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On this printer, we recommend using graphics function (GS (L /GS 8 L).

The model information for this function (the dot density and maximum print area and others) is for the graphics functions. See the model information of Function 69 and 112 of GS (L/GS 8 L.

TM-U675

The dot density and the maximum print area are described in the following tables (dpi: dots per inch (dots per 25.4 mm)).

"Vertical" is in the direction of paper feeding and "horizontal" is perpendicular (at right angles) to the direction of paper feeding.

In the following tables, "-" means "printing raster graphics is not available".

The maximum print area of vertical is for printing raster bit image in page mode. Page mode can be selected by ESC L. Double-density page mode can be selected by FS L.

In the following tables, A, B, C, D mean the following:

- A: Roll paper is selected as the paper type when DIP switch [SW2-4] is OFF
- B: Slip or validation is selected as the paper type when DIP switch [SW2-4] is OFF
- C: When DIP switch [SW2-4] is ON and [SW2-3] is OFF
- D: When DIP switch [SW2-4] is ON and [SW2-3] is ON

In standard mode

Scale	Dot density	Horizontal				Vertical
		Maximum print area (dot)				Dot density
		A	B	C	D	
× 1	160 dpi	450	540	400	385	72 dpi
× 2	80 dpi	225	270	200	192	—

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In page mode when the starting position is set to the upper left or lower right of the print area using **ESC T**.

Scale	Dot density	Horizontal						Vertical			
		Maximum print area						Dot density	Maximum print area		
		Page mode			Double dot density page mode				Page mode	Double dot density page mode	
		A	B	C, D	A	B	C, D		A, B, C, D	A, B, C, D	
× 1	160 dpi	—	—	—	450	540	400	72 dpi	704 dots	352 dots	
× 2	80 dpi	225	270	200	225	270	200	—	—	—	

In page mode when the starting position is set to the upper right or lower left of the print area using **ESC T**.

Scale	Dot density	Horizontal						Dot density	Vertical		
		Maximum print area							Maximum print area		
		Page mode			Double dot density page mode				Page mode	Double dot density page mode	
		A	B	C, D	A	B	C, D		A, B, C, D	A, B, C, D	
× 1	80 dpi	225	270	200	225	270	200	144 dpi		704 dots	
× 2	—	—	—	—	—	—	—	72 dpi	704 dots	352 dots	

In this case, the raster bit image rotated by 90 degrees or 270 degrees is printed.

STATUS COMMANDS

Command	Name
DLE EOT	Transmit real-time status
FS (e	Enable/disable Automatic Status Back (ASB) for optional functions (extended status)
GS (B	Customize ASB-status bits
GS a	Enable/disable Automatic Status Back (ASB)
GS j	Enable/disable Automatic Status Back (ASB) for ink
GS r	Transmit status

DLE EOT

EXECUTING COMMAND

[Name] Transmit real-time status

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

[Range] **TM-J9000/J9100:** $0 \leq n \leq 7$
 a = 1 [when n = 0]
 a = 1, 2 [when n = 7]

TM-J7500/7600: $1 \leq n \leq 5, n = 7$
 a = 1, 2 [when n = 7]

TM-J7000/7100: $0 \leq n \leq 5, n = 7$
 a = 1 [when n = 0]
 a = 1, 2 [when n = 7]

TM-H6000III: $0 \leq n \leq 6$ [Validation model]
 $0 \leq n \leq 5$ [other models]
 a = 1 [when n = 0]

TM-H5000II: $1 \leq n \leq 5$

TM-U675: $0 \leq n \leq 6$
 a = 1 [when n = 0]

TM-U325D: $1 \leq n \leq 4, n = 6$

[Default] None

[Printers not featuring this command] None

[Description]

Transmits the real-time status, using **n** as follows:

n	a	Function
0	1	Transmits cut sheet status.
1	-	Transmits printer status.
2	-	Transmits offline cause status.
3	-	Transmits error cause status.
4	-	Transmits roll paper sensor status.
5	-	Transmits slip status.
6	-	Transmits validation status.
7	1	Transmits ink status A.
	2	Transmits ink status B.

- Omit the parameter **a** when ($1 \leq n \leq 6$)
Transmit the parameter **a** when (**n** = 0 or 7)
- **DLE EOT NUL** is **DLE EOT (n=0)**, **DLE EOT BEL** is **DLE EOT (n=7)**. For some previous printer models this command was called **DLE EOT NUL**, **DLE EOT BEL**.

[Notes]

- This is a real-time command that the printer executes upon receiving it. Take the following into consideration:
 - If this command interrupts the code string of another command, this command is processed as a parameter of the other command; therefore, the print result will not be correct.
 - If a command such as graphics data or defined data has a code string that is the same code string as **DLE EOT** in a parameter, the printer processes the **DLE EOT** command and then continues with the graphics data or other command.
- With a serial interface model, this command is executed even when the printer is offline, the receive buffer is full, or an error occurs.

- With a parallel interface model, this command is not executed in the following conditions, because the printer is busy and unable to receive data from the host computer. The DIP switch (BUSY condition) is different, depending on the printer model.
 - Receive buffer is full when DIP switch or memory switch (BUSY condition) is set to on.
 - Printer is offline, an error occurs, or receive buffer is full when DIP switch or memory switch (BUSY condition) is set to off.
- This command can be used even if the printer is specified as an invalid peripheral device with **ESC =**.
- This command is ignored when transmitting block data (Header ~ NUL).
- Each status equals 1 byte. The printer executes this real-time command upon receiving it.
- The real-time status to be transmitted is as follows:
 - Cut sheet status (**n** = 0, **a** = 1) is as follows:

Bit	Binary	Hex	Decimal	Function
0	0	00	0	Fixed
1	1	02	2	Fixed
2	0	00	0	Paper width sensor: paper present
	1	04	4	Paper width sensor: paper not present
3	0	00	0	Ejection sensor detects the presence of paper
	1	08	8	Ejection sensor does not detect the presence of paper
4	1	10	16	Fixed
5	0	00	0	Select the face of a slip
	1	20	32	Select the back of a slip
6	—	—	—	Reversed
7	0	00	0	Fixed

... how to
use this
table

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- Printer status (**n** = 1)

Bit	Off/On	Hex	Decimal	Status
0	Off	00	0	Fixed.
1	On	02	2	Fixed.
2	Off	00	0	Drawer kick-out connector pin 3 is LOW.
	On	04	4	Drawer kick-out connector pin 3 is HIGH.
3	Off	00	0	Online.
	On	08	8	Offline.
4	On	10	16	Fixed.
5	Off	00	0	Not waiting for online recovery.
	On	20	32	Waiting for online recovery.
6	0	00	0	Paper feed button is not being fed (off).
	1	40	64	Paper feed button is being fed (on).
7	Off	00	0	Fixed.

... how to use
this table

Changes to waiting for recovery (bit 5) when **GS ^** is executed.

- Offline status (**n** = 2)

Bit	Off/On	Hex	Decimal	Status
0	Off	00	0	Fixed.
1	On	02	2	Fixed.
2	Off	00	0	Cover is closed.
	On	04	4	Cover is open.
3	Off	00	0	Paper is not being fed by the paper feed button.
	On	08	8	Paper is being fed by the paper feed button.

... how to use
this table

Bit	Off/On	Hex	Decimal	Status
4	On	10	16	Fixed.
5	Off	00	0	No printing stops due to a paper-end (roll paper).
	On	20	32	Printing stops due to a paper-end (roll paper).
6	Off	00	0	No error.
	On	40	64	Error occurred.
7	Off	00	0	Fixed.

- Error status (**n** = 3)

Bit	Off/On	Hex	Decimal	Status
0	Off	00	0	Fixed.
1	On	02	2	Fixed.
2	Off	00	0	No recoverable error (except autocutter error).
	On	04	4	Recoverable error (except autocutter error) occurred.
3	Off	00	0	No autocutter error.
	On	08	8	Autocutter error occurred.
4	On	10	16	Fixed.
5	Off	00	0	No unrecoverable error.
	On	20	32	Unrecoverable error occurred.
6	Off	00	0	No auto-recoverable error.
	On	40	64	Auto-recoverable error occurred.
7	Off	00	0	Fixed.

... how to use
this table

If recoverable error (bit 2) or autocutter error (bit 3) occurs due to paper jams or the like, it is possible to recover by correcting a cause of the error and executing **DLE ENQ (n = 2)**. But if an error due to a circuit failure (such as a wire break) occurs, it is impossible to recover.

If an unrecoverable error (bit 5) occurs, turn off the power as soon as possible. You can check the cause of the errors with offline response (when offline cause is added). See **GS (H <Function 49>** for details of offline response.

- You can check the cause of the errors with offline response (when offline cause is added). See **GS (H <Function 49>** for details of offline response.
- Roll paper sensor status (**n = 4**)

Bit	Off/On	Hex	Decimal	Status
0	Off	00	0	Fixed.
1	On	02	2	Fixed.
2, 3	Off	00	0	Roll paper near-end sensor: paper adequate.
	On	0C	12	Roll paper near-end sensor: paper near end.
4	On	10	16	Fixed.
5, 6	Off	00	0	Roll paper end sensor: paper present.
	On	60	96	Roll paper end sensor: paper not present.
7	Off	00	0	Fixed.

*... how to use
this table*

Some paper sensors are not present, depending on the printer model.

The names of some paper sensors are different, depending on the printer model.

- Slip status (**n** = 5)

Bit	Off/On	Hex	Decimal	Status
0	Off	00	0	Fixed.
1	On	02	2	Fixed.
2	Off	00	0	Slip paper selected.
	On	04	4	Slip paper not selected.
3	Off	00	0	Does not wait for slip paper insertion.
	On	08	8	Waits for slip insertion.
4	On	10	16	Fixed.
5	Off	00	0	Slip TOF sensor: paper present.
	On	20	32	Slip TOF sensor: paper not present.
6	Off	00	0	Slip BOF sensor: paper present.
	On	40	64	Slip BOF sensor: paper not present.
7	Off	00	0	Fixed.

*... how to use
this table*

Some paper sensors are not present, depending on the printer model.

The names of some paper sensors are different, depending on the printer model.

- Validation status (**n** = 6)

Bit	Off/On	Hex	Decimal	Status
0	Off	00	0	Fixed.
1	On	02	2	Fixed.
2	Off	00	0	Validation paper selected.
	On	04	4	Validation paper not selected.
3	Off	00	0	Does not wait for validation paper insertion.
	On	08	8	Waits for validation insertion.
4	On	10	16	Fixed.
5,6	Off	00	0	Validation sensor: paper present.
	On	60	96	Validation sensor: paper not present.
7	Off	00	0	Fixed.

... how to use
this table

Some paper sensors are not present, depending on the printer model.

The names of some paper sensors are different, depending on the printer model.

- Ink status A (**n** = 7, **a** = 1) is as follows:

Bit	Function	Binary	Hexadecimal	Decimal
0	Fixed	0	00	0
1	Fixed	1	02	2
2	No ink near-end detected (1st color)	0	00	0
	Ink near-end detected (1st color)	1	04	4
3	No ink end detected (1st color)	0	00	0
	Ink end detected (1st color)	1	08	8
4	Fixed	1	10	16

5	Ink cartridge detected (1st color)	0	00	0
	Ink cartridge not detected (1st color)	1	20	32
6	Cleaning is not being performed	0	00	0
	Cleaning is being performed	1	40	64
7	Fixed	0	00	0

■ Ink status B (**n** = 7, **a** = 2) is as follows:

Bit	Function	Binary	Hexadecimal	Decimal
0	Fixed	0	00	0
1	Fixed	1	02	2
2	No ink near-end detected (2nd color)	0	00	0
	Ink near-end detected (2nd color)	1	04	4
3	No ink end detected (2nd color)	0	00	0
	Ink end detected (2nd color)	1	08	8
4	Fixed	1	10	16
5	Ink cartridge detected (2nd color)	0	00	0
	Ink cartridge not detected (2nd color)	1	20	32
6	Reserved	-	-	-
7	Fixed	0	00	0

- Please use this command according to the following rules: otherwise, the status might not be transmitted.
- The next data is not transmitted until status is received when the **DLE EOT** command is transmitted.
 - This command can be transmitted continuously only when it is necessary to acquire multiple, real-time status items continuously, up to the limit of each printer model. However, the next data is not transmitted until all status items are received in this case.

- With serial interface, use this command when the printer is in Ready status.
 - With a parallel interface, a real-time status is stored in the transmission buffer of the printer temporarily the same as the other transmission data (except for ASB status), and when the host enters Reverse Mode, data is transmitted in order from the beginning of the transmission buffer. The transmission buffer is 99 bytes; therefore, data that exceeds 99 bytes is ignored. When using this command, the host should enter the Reverse Mode immediately to receive status.
- Real-time status can be differentiated by the information of bits 0, 1, 4, and 7 from other transmission data. If the data transmitted from the printer is "0 x x1 x x10" (x = 0 or 1), process the data as a real-time status.

[Model-dependent variations]

**TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III,
TM-H5000II, TM-U675, TM-U325D**

Program Example for all printers

```
PRINT #1, CHR$(&H10);CHR$(&H4);CHR$(2); ← Transmits offline status  
  
PRINT #1, CHR$(&H10);CHR$(&H4);CHR$(0); CHR$(1); ← Transmits cut sheet status
```

TM-J9000/J9100

BUSY condition for a parallel interface is selected by memory switch 1-3.

This printer can transmit this command continuously up to 11 times.

■ **Cut paper status (n = 0, a = 1)**

Bit 2 and 5 of the cut sheet status is not supported.

■ **Printer status (n = 1)**

Bit 2 and 5 of the cut sheet status is not supported.

■ **Cut paper status (n = 3)**

Bit 3 of the cut sheet status is not supported.

■ **Roll paper sensor status (n = 4)**

While the roll cover is open, the status of the roll paper end sensor indicates the status when the cover was closed.

Bits 2, 3, 5 and 6 are always set to "0" when memory switch [Msw8-4] is on.

■ Slip status (n = 5)

Bit 3 of the cut sheet status is not supported.

Bit 5 and 6 indicate following status.

Bit	Function	Binary	Hexadecimal	Decimal
5	TOF sensor: paper present.	0	00	0
	TOF sensor: paper not present.	1	20	32
6	ASF sensor: paper present.	0	00	0
	ASF sensor: paper not present.	1	40	64

■ Validation status (n = 6)

Bit 5 is not supported.

■ Ink status A / B (n = 7, a = 1,2)

When an ink near-end is detected, the INK OUT light blinks. It is possible to print approximately 160,000 characters using Font B with the EPSON standard printing pattern and high speed print control specified between the time an ink near-end is detected to the time an ink end is detected. However, the value is only a reference value; it depends on such environmental factors as printing data and timing of head cleaning. Therefore, replace an old ink cartridge with a new one when an ink near-end is detected.

TM-J9000 (single-color) does not support the ink status B (n = 7, a = 2)

When the carriage cover, the roll paper cover and the scanner cover are opened, this status holds the status immediately before the opening because the ink status cannot be checked when the carriage cover is opened.

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TM-J7500/7600

BUSY condition for a parallel interface is selected by memory switch 1-3.

This printer can transmit this command continuously up to 9 times.

■ **Printer status (n = 1)**

Bit 5 of the cut sheet status is not supported.

■ **Roll paper sensor status (n = 4)**

When the roll paper cover is open, paper detection (detected by the roll paper end sensor) may be incorrect.

■ **Validation status (n = 6)**

The BOF sensor (bit 6) may be incorrect when the roll paper is selected as the active sheet.

■ **Ink status A / B (n = 7, a = 1,2)**

When an ink near-end is detected, the INK OUT light blinks. It is possible to print approximately 160,000 characters using Font B with the EPSON standard printing pattern and high speed print control specified between the time an ink near-end is detected to the time an ink end is detected. However, the value is only a reference value; it depends on such environmental factors as printing data and timing of head cleaning. Therefore, replace an old ink cartridge with a new one when an ink near-end is detected.

TM-J7500 (single-color) does not support the ink status B (n = 7, a = 2)

When the carriage cover is opened, this status holds the status immediately before the opening because the ink status cannot be checked when the carriage cover is opened.

TM-J7000/7100

BUSY condition for a parallel interface is selected by memory switch 1-3.

This printer can transmit this command continuously up to 9 times.

■ **Cut sheet status (n = 0, a = 1)**

Bits 2 and 3 of the cut sheet status are not supported.

■ **Printer status (n = 1)**

Bit 5 of the cut sheet status is not supported.

■ Roll paper sensor status (n = 4)

When the roll paper cover is open, paper detection (detected by the roll paper end sensor) may be incorrect.

■ Validation status (n = 6)

The BOF sensor (bit 6) may be incorrect when the roll paper is selected to the active sheet.

■ Ink status A / B (n = 7, a = 1,2)

When an ink near-end is detected, the INK OUT light blinks. It is possible to print approximately 160,000 characters using Font B with the EPSON standard printing pattern and high speed print control specified between the time an ink near-end is detected to the time an ink end is detected. However, the value is only a reference value; it depends on such environmental factors as printing data and timing of head cleaning. Therefore, replace an old ink cartridge with new one when an ink near-end is detected.

TM-J7000 (single-color) does not support the ink status B (n = 7, a = 2)

When the carriage cover is opened, this status holds the status immediately before the opening because, the ink status cannot be checked when the carriage cover is opened.

TM-H5000II

BUSY condition for a parallel interface is selected by DIP switch 2-1.

■ Printer status (n = 1)

Bits 5 and 6 of the printer status are not supported.

■ Roll paper sensor status (n = 4)

When the roll paper cover is open, paper detection (detected by the roll paper end sensor) may be incorrect.

TM-U325D

When the printer is specified as an invalid peripheral device with **ESC =**, this command cannot be used.

BUSY condition for a parallel interface is selected by DIP switch 2-1.

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■ Printer status (n = 1)

Bit 5 and 6 of the printer status are not supported.

TM-H6000III

BUSY condition is selected by DIP switch 2-1.

This printer can transmit this command continuously up to 8 times.

■ Cut sheet status (n = 0, a = 1)

Bit 2 of the cut sheet status is not supported.

■ Roll paper sensor status (n = 4)

While the receipt cover is open, the status of the roll paper end sensor indicates the status immediately before when the cover was closed.

TM-U675

BUSY condition is selected by DIP switch 2-1.

■ Cut sheet status (n = 0, a = 1)

Bits 2 and 5 of the cut sheet status are not supported.

■ Validation status (n = 6)

Bits 5 and 6 of the validation status indicate the same sensor. The name of the sensor is Validation sensor.

FS (e

EXECUTING COMMAND

[Name] Enable/disable Automatic Status Back (ASB) for optional functions (extended status)

[Format] ASCII FS (e **pL** **pH** **m** **n**
 Hex 1C 28 65 **pL** **pH** **m** **n**
 Decimal 28 44 101 **pL** **pH** **m** **n**

[Printers not featuring this command] **TM-J7500/7600**, **TM-H5000II**, **TM-U325D**

[Range] **pL** = 2, **pH** = 0 ((**pL** + **pH** × 256) = 2)

m = 51

0 ≤ **n** ≤ 255

[Default] **n** = 0

[Description] Enables or disables extended ASB (Automatic Status Back) and specifies the status items to include, using **n** as follows:

n: Bits	Function	Binary	Hexdecimal	Decimal
0	MICR status disabled	0	00	0
	MICR status enabled	1	01	1
1	Print side selection status disabled	0	00	0
	Print side selection status enabled	1	02	2
2	Card image scanner status disabled	0	00	0
	Card image scanner status enabled	1	04	4
3–7	Reserved	0	00	0

[Notes]

- The functions that operate with this command are restricted by the optional devices attached.
 - When the MICR reader is attached, the function of Bit 0 of **n** operates.
 - When the endorsement printer is attached, the function of Bit 1 of **n** operates.
 - When the card image scanner is attached, the function of Bit 2 of **n** operates.

- ASB (Automatic Status Back) transmits the status such as MICR is selected / not selected automatically to the printer in real-time. It is called [ASB function] and the status is [ASB status]. If you use the ASB, an application can acquire the printer change in real-time and passively.
- Enabling any status (specifying $n \neq 0$) starts extended ASB. Then the current extended ASB status is transmitted. After that, when ASB is active, the selected extended ASB status is transmitted each time the status changes.
- When specifying $n = 0$, extended ASB is disabled. While ASB is disabled, the extended ASB status is not transmitted.
- When the ASB function is operating, even if the printer is specified as an invalid peripheral device with **ESC** =, the extended ASB status is transmitted if the status of the printer changes.
- This command is effective until **ESC @** is executed, the printer is reset, or the power is turned off.
- All extended ASB status represents the enabled status whenever the status changes. Therefore, the disabled status items may change, because each status transmission represents the current status.
- The extended ASB statuses, corresponding to each bit for **n** are as follows:

n		Extended ASB status	
Bit	Function	Function	Bit
0	MICR operation	MICR selection	Status A: bit 0
1	Print side	Print side selection for a slip	Status A: bit 5
2	Card image scanner operation	Card image scanner selection	Status A: bit 1

- The extended ASB status is a 4-byte message as shown in the following table..

Send data	Hexadecimal	Decimal	Data length
Header	39H	57	1 byte
Status A (*1)	40H to 7FH	64 to 127	1 byte
Status B	40H	64	1 byte
NUL	00H	0	1 byte

(*1) Status A is as follows:

Bits	Function	Binary	Hexdecimal	Decimal
0	Status bit for MICR enabled (It indicates check paper is active sheet)	0	00	0
	Status bit for MICR disabled (It indicates check paper is not active sheet)	1	01	1
1	Status bit for Card image scanner enabled (It indicates check paper is active sheet)	0	00	0
	Status bit for Card image scanner disabled (It indicates check paper is not active sheet)	1	02	2
2-4	Reserved	—	—	—
5	Face of slip selected	0	00	0
	Back of slip selected	1	20	32
6	Fixed	1	40	64
7	Fixed	0	00	0

Note: Bit 5 may be incorrect when slip is not selected as the paper type.

- When block data [Header ~ NUL] is being transmitted, ASB status cannot be transmitted. Therefore, you cannot get the printer status change through the ASB status when Block data [Header ~ NUL] is transmitted.
- With a serial interface, the 4-byte status message is transmitted without confirming whether the host computer is ready to receive data.
- When communication with the printer uses XON/XOFF control with serial interface, the XOFF code may interrupt the 4-byte ASB status.
- With a parallel interface, when ASB is used, it is desirable for the host to be in the reverse idle state. However, if the host computer cannot always be in the reverse idle state, it is necessary to enter Reverse Mode regularly to watch for ASB status. If the host is not in the Reverse Mode for a long time, and the

printer has to store ASB status bits to be transmitted when each status item changes, the following 2 sets (8 bytes) of ASB status are changed to special data and transmitted prior to other transmission data when the host enters Reverse Mode.

ASB-1: Status information that shows whether status changes occurred

ASB-2: The latest ASB status information

If bits have a different value between (ASB-1) and (ASB-2), it shows at least one change occurred. An example is shown below:

	Header	Status A	Status B	NUL
ASB-1	0011 1001	0100 0000	0100 0000	0000 0000
ASB-2	0011 1001	0100 0001	0100 0000	0000 0000

Bit 0 of status A is different. This information shows MICR has been selected at least once, but the current status is that MICR is unselected.

- The extended ASB status can be differentiated from other transmission data by the specific data of the transmission data block. When the printer transmits the header [Hex = 39H/Decimal = 57], data up to NUL [Hex = 00H/Decimal = 0] are processed as extended ASB status.

[Model-dependent variations]

TM-J9000/J9100, TM-J7000/7100, TM-H6000III, TM-U675

Program Example

```
PRINT #1, CHR$(&H1C);"(e";CHR$(2);CHR$(0);CHR$(51);CHR$(1); ← Only MICR status is enabled
```

TM-J9000/J9100

Extended ASB status [Status A]

- Bits 5 is not supported.

TM-U675

Extended ASB status [Status A]

- Bits 1 and 5 are not supported.

CONFIDENTIAL

TM-J7000/7100

Extended ASB status [Status A]

- Bits 1 is not supported.

TM-H6000III

Extended ASB status [Status A]

- Models that do not have a MICR reader or slip image scanner do not support bit 0.
- Models that do not have a card image scanner do not support bit 1.
- Models that do not have an endorsement printer (E/P) do not support bit 5.

[Name] Customize ASB-status bits

[Format] ASCII GS (B **pL pH m [a1 b1]...[ak bk]**
 Hex 1D 28 42 **pL pH m [a1 b1]...[ak bk]**
 Decimal 29 81 48 **pL pH m [a1 b1]...[ak bk]**

[Printers not featuring this command] **TM-J9000/J9100, TM-H5000II, TM-U325D**

[Range] **TM-J7500/7600, TM-J7000/7100:**

(pL + pH × 256) = 2, 3, 5 (pL = 2, 3, 5, pH = 0)
m = 97
a = 0, 49, 51
b = 44 [when a = 49]
b = 45 [when a = 51]

TM-U675:

pL = 2, 3, 5, 7
pH = 0
m = 97
a = 0, 49, 51, 70
b = 44 [when a = 49]
b = 45 [when a = 51]
b = 55 [when a = 70]

TM-H6000III/TM-H6000II (Photo-ID model):

pL = 2, 3, 5, 7, 9
pH = 0
m = 97
a = 0, 49, 69, 70
b = 44 [when a = 49]
b = 45 [when a = 51]
b = 56 [when a = 69]
b = 55 [when a = 70]

TM-H6000II (other models):

pL = 2, 3, 5, 7
pH = 0
m = 97
a = 0, 49, 51, 70
b = 44 [when a = 49]
b = 45 [when a = 51]
b = 55 [when a = 70]

[Description]

Changes the bit assignments of the basic ASB status bit specified with **GS a**.

- **pL, pH** specify (**pL + pH × 256**) as the number of bytes after **pH** (**m** and **[a1 b1] ... [ak bk]**).
- When **a** = 0, the setting of the basic ASB status bit assignment is canceled. **b** is not necessary, and (**pL + pH × 256**) = 2.
- When **a** is not 0, basic ASB status bit is specified for customizing. The status is specified by bit 7, 6, 5, or 4, and the bit is specified by bit 3, 2, 1, or 0. **a** can be specified as follows:

a	Specifying customization of status			
	First byte	Second byte	Third byte	Fourth byte
Specifies the bit for customization as bit 0	Cannot be specified	32	48	64
Specifies the bit for customization as bit 1	Cannot be specified	33	49	65
Specifies the bit for customization as bit 2	18	34	50	66
Specifies the bit for customization as bit 3	19	35	51	67
Specifies the bit for customization as bit 5	21	37	53	69
Specifies the bit for customization as bit 6	22	38	54	70

- **b** specifies the status to be customized.

b	Function
44	Specifies "cut sheet insertion waiting status"
45	Specifies "cut sheet removal waiting status"
54	Specifies "paper width sensor status"
55	Specifies "slip paper ejection sensor status"
56	Specifies "card sensor status"

[Notes]

- This command customizes a status bit, but does not change the enabled/disabled setting for basic ASB status transmission.
- When customizing a bit with this command, temporarily disable basic ASB status automatic transmission with a **GS a** command.
- Bit customization by this command affects basic ASB status (ASB status for **GS a**). See **GS a** for details.
- Customizing is not specified by default.
- The Settings of this command are effective until the printer is reset or the power is turned off. This command is not initialized by executing **ESC @**.

[Model-dependent variations]

None

Program Example

```
PRINT #1, CHR$(&H1D);"(B";CHR$(3);CHR$(0);CHR$(97);CHR$(69);CHR$(44);
```

GS a

EXECUTING + SETTING

[Name] Enable/disable Automatic Status Back (ASB)

[Format] ASCII GS a **n**
 Hex 1D 61 **n**
 Decimal 29 97 **n**

[Range] $0 \leq \mathbf{n} \leq 255$

[Default] **n** = 0 (when DIP switch or memory switch (BUSY condition) is off)
 n = 2 (when DIP switch or memory switch (BUSY condition) is on)

[Printers not featuring this command] None

[Description] Enables or disables basic ASB (Automatic Status Back) and specifies the status items to include, using **n** as follows:

n: Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Drawer kick out connector status disabled.
	On	01	1	Drawer kick out connector status enabled.
1	Off	00	0	Online/offline status disabled.
	On	02	2	Online/offline status enabled.
2	Off	00	0	Error status disabled.
	On	04	4	Error status enabled.
3	Off	00	0	Roll paper sensor status disabled.
	On	08	8	Roll paper sensor status enabled.
4	0	00	0	Reserved.
5	Off	00	0	Cut sheet sensor and status disabled.
	On	20	32	Cut sheet sensor and status enabled.

... how to use
this table

n: Bit	Off/On	Hex	Decimal	Function
6	Off	00	0	Panel button status disabled.
	On	40	64	Panel button status enabled.
7	0	00	0	Reserved.

[Notes]

- ASB is the function that transmits the status of [cover open/close], [Online/Offline] from the printer automatically. It is called [ASB function] and the status is [ASB status]. If you use ASB, application can acquire the printer change in real time and passively.
- Select any status enabled (except **n** = 0) and basic ASB starts by this command. Then the current basic ASB status is transmitted from the printer. After that while ASB is active, the selected enabled basic ASB status is transmitted whenever the status changes.
- When **n** = 0, basic ASB is disabled. While ASB is disabled, basic ASB status is not transmitted.
- Multiple status items can be selected.
- When the ASB function is operating, even if the printer is specified as an invalid peripheral device with **ESC =**, the basic ASB status is transmitted if the status of the printer changes.
- This command is effective until **ESC @** is executed, the printer is reset, or power is turned off.
- All basic ASB status items represent the enabled status whenever the status changes. Therefore the disabled status items may change because each status transmission represents the current status.
- Bits of basic ASB status can be customized by **GS (B**. The bits that can be customized are different, depending on the printer.

■ The current basic ASB status items, corresponding to each bit of **n** are as follows:

n	Basic ASB status		
Bit	Function	Bit	ASB status
0	Drawer kick-out connector	Bit 2 of the first byte	Status of drawer kick-out connector pin 3 (high or low).
1	Online/offline status	Bit 3 of the first byte	Online/offline status.
		Bit 5 of the first byte	Cover status.
		Bit 6 of the first byte	Status of whether paper is being fed by paper FEED button.
		Bit 0 of the second byte	Status of whether the printer is waiting for online recovery.
		*1) Bits 0, 1 of the third byte	Roll paper near-end sensor status.
		*1) Bits 2, 3 of the third byte	Roll paper end sensor status.
2	Error status	Bit 2 of the second byte	Recoverable error status.
		Bit 3 of the second byte	Autocutter error status.
		Bit 5 of the second byte	Unrecoverable error status.
		Bit 6 of the second byte	Automatically recoverable error status.
3	Roll paper sensor status	Bits 0 and 1 of the third byte	Roll paper near-end sensor status.
		Bits 2 and 3 of the third byte	Roll paper end sensor status.

... how to use
this table

*1) Note: Only when the paper-end sensor is enabled by **ESC c 4**.

n		Basic ASB status	
Bit	Function	Bit	ASB status
5	Cut sheet sensor and status	Bit 5 of the third byte	Slip TOF sensor status.
		Bit 6 of the third byte	Slip BOF sensor status.
		Bit 0 of the fourth byte	Slip paper selection status.
		Bit 1 of the fourth byte	Slip printing status.
		Bit 2 of the fourth byte	Validation paper selection status.
		Bit 3 of the fourth byte	Validation printing status.
		Bits 5, 6 of the fourth byte	Validation sensor status.
		*2) Depends on GS (B setting	Cut sheet insertion waiting status.
		*2) Depends on GS (B setting	Cut sheet removal waiting status.
		*2) Depends on GS (B setting	Paper-width sensor status.
6	Panel switch status	Bit 1 of the second byte	Paper FEED button status.

*2) Note: Only when customization is set by **GS (B**.

- Basic ASB status is 4-byte configuration [first byte - fourth byte].

- First byte (printer information) of basic ASB is as follows:

Bit	Off/On	Hex	Decimal	ASB status description
0	Off	00	0	Fixed.
1	Off	00	0	Fixed.
2	Off	00	0	Drawer kick-out connector pin 3 is LOW.
	On	04	4	Drawer kick-out connector pin 3 is HIGH.
3	Off	00	0	Online.
	On	08	8	Offline.
4	On	10	16	Fixed.
5	Off	00	0	Cover is closed.
	On	20	32	Cover is open.
6	Off	00	0	Paper is not being fed by the paper FEED button.
	On	40	64	Paper is being fed by the paper FEED button.
7	Off	00	0	Fixed.

*... how to use
this table*

- Second byte (printer information) of basic ASB is as follows:

Bit	Off/On	Hex	Decimal	ASB status description
0	Off	00	0	Not waiting for online recovery.
	On	01	1	Waiting for online recovery.
1	Off	00	0	Paper FEED not pressed (Off).
	On	02	2	Paper FEED pressed (On).
2	Off	00	0	No recoverable error (excluding autocutter errors).
	On	04	4	Recoverable error (excluding autocutter errors) occurred.
3	Off	00	0	No autocutter error.
	On	08	8	Autocutter error occurred.
4	Off	00	0	Fixed.
5	Off	00	0	No unrecoverable error.
	On	20	32	Unrecoverable error occurred.
6	Off	00	0	No automatically recoverable error.
	On	40	64	Automatically recoverable error occurred.
7	Off	00	0	Fixed.

... *how to use
this table*

- Changes to waiting for recovery (bit 0) when **GS ^** is executed.
- If a Recoverable error (bit 2) or an autocutter error (bit 3) occurs due to paper jams or the like, it is possible to recover by correcting the cause of the error and executing **DLE ENQ (n = 2)**.
- If an unrecoverable error (bit 5) occurs, turn off the power as soon as possible.
- You can check the cause of the errors with offline response (when offline cause is added). See **GS (H** <Function 49> for details of offline response.

- Third byte (paper sensor information) of basic ASB is as follows:

Bit	Off/On	Hex	Decimal	ASB status description
0, 1	Off	00	0	Roll paper near-end sensor: paper adequate.
	On	03	3	Roll paper near-end sensor: paper near end.
2, 3	Off	00	0	Roll paper end sensor: paper present.
	On	0C	12	Roll paper end sensor: paper not present.
4	Off	00	0	Fixed.
5	Off	00	0	Slip TOF sensor: paper present.
	On	20	32	Slip TOF sensor: paper not present.
6	Off	00	0	Slip BOF sensor: paper present.
	On	40	64	Slip BOF sensor: paper not present.
7	Off	00	0	Fixed.

*... how to use
this table*

- Some paper sensors are not present, depending on the printer model.
- The names of some paper sensors are different, depending on the printer model.

- Fourth byte (paper sensor information) of basic ASB is as follows:

Bit	Off/On	Hex	Decimal	ASB status description
0	Off	00	0	Slip paper selected.
	On	01	1	Slip paper not selected.
1	Off	00	0	Slip printing possible.
	On	02	2	Slip printing not possible.
2	Off	00	0	Validation paper selected.
	On	04	4	Validation paper not selected.
3	Off	00	0	Validation printing possible.
	On	08	8	Validation printing not possible.
4	Off	00	0	Fixed.
5,6	Off	00	0	Validation sensor: paper present.
	On	60	96	Validation sensor: paper not present.
7	Off	00	0	Fixed.

... **how to use
this table**

- Some paper sensors are not present, depending on the printer model.
- The names of some paper sensors are different, depending on the printer model.
- During Block data [header - NUL] transmission, ASB is disabled temporarily. Therefore, you cannot get the printer status change through ASB status during block data [header - NUL] transmission.
- With serial interface, use this command only when host computer is ready to receive.
- With a parallel interface, when ASB status is used, it is desirable for the host to be in reverse idle state. However, if the host computer cannot always be in the reverse idle state, it is necessary to enter Reverse Mode regularly to watch for ASB status. If the host is not in the Reverse Mode for a long time and the printer has to store ASB status bits to be transmitted when each status item changes, the following 2 sets (8 bytes) of ASB status are changed to special data and transmitted prior to other transmission data when the host enters the Reverse Mode:

- ASB-1: Status information that shows whether status changes occurred
- ASB-2: The latest ASB status information

If the bits have a different value between (ASB-1) and (ASB-2), at least one change occurred. An example is shown below:

	The first byte	The second byte	The third byte	The fourth byte
ASB-1	0011 1000	0000 0000	0110 0011	0000 1111
ASB-2	0001 0000	0000 0000	0110 0011	0000 1111

- Bits 5 and 3 of the first byte are different. From this information, the printer went offline (bit 3) due to a cover open (bit 5), but the current status is that the printer is online and the cover is closed.
- The host can differentiate normal ASB status from other transmission data by the information in bits 0, 1, 4, and 7. If the data transmitted from the printer is "0xx1xx00" (x = 0 or 1), it processes the following 3 bytes of data as an ASB status item. When identifying an ASB status item, there are exceptions, as follows:
 - When communication with the printer uses XON/XOFF control, the XOFF code may interrupt the 4-byte ASB status. Therefore, it processes 4 bytes of data from the printer, except for the XOFF code, as ASB status. The configuration of ASB status is different from that of the XOFF code.

[Model-dependent variations]

**TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III,
TM-H5000II, TM-U675, TM-U325D**

Program Example for all printers

```
PRINT #1, CHR$(&H1D);"a";CHR$(4); ← Enable "Error" status
```

TM-J9000/J9100

The default value is set by DIP switch 1-3.

■ **First byte of basic ASB (printer information)**

Bit 2 is not supported.

Bit 5 of the first byte indicates the roll paper cover, the carriage cover and the scanner cover.

- Second byte of basic ASB (printer information)
Bit 0 indicates the following status.

Bit	Function	Binary	Hexadecimal	Decimal
0	Not cut sheet removal standby	0	00	0
	Cut sheet removal standby	1	01	1

Bit 3 is not supported.

- Third byte of basic ASB (paper sensor information)

Bit 0, 2 and 6 indicate the following status.

Bit	Function	Binary	Hexadecima l	Decimal
0	Card sensor: paper present.	Off	00	0
	Card sensor: paper not present.	On	03	3
1	Roll paper near-end sensor: paper present	0	00	0
	Roll paper near-end sensor: paper not present.	1	02	2
2	Ejection sensor: paper present.	0	00	0
	Ejection end sensor: paper not present.	1	04	4
3	Roll paper end sensor: paper present.	0	00	0
	Roll paper end sensor: paper not present.	1	08	8
4	Fixed.	0	00	0
5	TOF sensor: paper present.	0	00	0
	TOF sensor: paper not present.	1	20	32

Bit	Function	Binary	Hexadecimal	Decimal
6	ASF sensor: paper present.	0	00	0
	ASF sensor: paper not present.	1	40	64
7	Fixed.	0	00	0

- While the roll cover is open, the status of the roll paper end sensor indicates the status when the cover was closed.
- Bits 1 and 3 are always set to "0" when memory switch [Msw8-4] is on.
- Fourth byte of basic ASB (paper sensor information)
Bits 5 and 6 indicated following status..

Bit	Function	Binary	Hexadecimal	Decimal
5	Cut sheet insertion waiting status	0	00	0
	Cut sheet insertion not waiting status	1	20	32
6	Validation sensor: paper present.	0	00	0
	Validation sensor: paper not present.	1	40	64

TM-J7500/7600, TM-J7000/7100

The default value is set by DIP switch 1-3.

- First byte of basic ASB (printer information)
 - Bit 5 of the first byte indicates the roll paper cover and the carriage cover.
- Second byte of basic ASB (printer information)
 - Bit 0 of the second byte is not supported.
- Third byte of basic ASB (paper sensor information)
 - When the roll paper cover is open, paper detection (detected by the roll paper end sensor) may be incorrect.

Bits 1 and 3 are able to be customized by GS (B.

Bit 1: cut sheet insertion waiting status

Bit 3: cut sheet removal waiting status

The BOF sensor (bit 6) may be incorrect when roll paper is selected as the active sheet.

■ Fourth byte of basic ASB (paper sensor information)

Bits 2, 3, 5, and 6 of the fourth byte are not supported.

TM-H5000II

The default value is set by DIP switch 2-1.

■ Second byte of basic ASB (printer information)

Bits 0 and 1 of the second byte are not supported.

■ Third byte of basic ASB (paper sensor information)

When the roll paper cover is open, paper detection (detected by the roll paper end sensor) may be incorrect.

Bit 5 indicates the sensor. The sensor's name is "TOF sensor."

Bit 6 indicates the sensor. The sensor's name is "BOF sensor."

■ Fourth byte of basic ASB (paper sensor information)

Bits 2, 3, 5, and 6 of the fourth byte are not supported.

TM-U325D

The default value is set by DIP switch 2-1.

■ Second byte of basic ASB (printer information)

Bits 0, 1, and 3 of the second byte are not supported.

■ Third byte of basic ASB (paper sensor information)

Bits 5 and 6 of the third byte are not supported.

■ Fourth byte of basic ASB (paper sensor information)

Bits 0 and 1 of the fourth byte are not supported.

TM-H6000III

- The default is selected by DIP switch 2-1.

<Photo-ID model>

- The third byte of basic ASB (paper sensor information)

While the receipt cover is open, the status of the roll paper end sensor indicates the status immediately before the cover was closed.

Bits 1 and 3 are able to be customized by GS (B.

 Bit 1: cut sheet insertion waiting status.

 Bit 3: cut sheet removal waiting status.

- Fourth byte of basic ASB (paper sensor information)

Bits 2, 3, 5, and 6 are not supported.

Bit 5 and 6 are able to be customized by GS (B.

 Bit 5: card sensor status.

 Bit 6: ejection sensor status.

<Validation model>

- The third byte of basic ASB (paper sensor information)

While the receipt cover is open, the status of the roll paper end sensor indicates the status immediately before when the cover was closed.

Bits 1 and 3 are able to be customized by GS (B.

 Bit 1: cut sheet insertion waiting status.

 Bit 3: cut sheet removal waiting status.

- Fourth byte of basic ASB (paper sensor information)

Bit 6 is able to be customized by GS (B.

 Bit 6: ejection sensor status.

<All other models>

■ The third byte of basic ASB (paper sensor information)

While the receipt cover is open, the status of the roll paper end sensor indicates the status immediately before when the cover was closed.

Bits 1 and 3 are able to be customized by GS (B.

 Bit 1: cut sheet insertion waiting status.

 Bit 3: cut sheet removal waiting status.

■ Fourth byte of basic ASB (paper sensor information)

Bits 5 and 6 indicate the same paper sensor. The sensor's name is "validation sensor."

Bits 2, 3, 5, and 6 are not supported.

Bit 6 is able to be customized by GS (B.

 Bit 6: ejection sensor status.

TM-U675

■ The default is selected by DIP switch 2-1.

■ The third byte of basic ASB (paper sensor information)

Bits 1 and 3 are able to be customized by GS (B.

 Bit 1: cut sheet insertion waiting status.

 Bit 3: cut sheet removal waiting status.

■ The fourth byte of basic ASB (paper sensor information)

Bit 6 is able to be customized by GS (B.

 Bit 6: ejection sensor status.

[Name] Enable/disable Automatic Status Back (ASB) for ink

[Format] ASCII GS j **n**
Hex 1D 6A **n**
Decimal 29 106 **n**

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

[Default] **n** = 0 (When DIP switch or memory switch (BUSY condition) is off)
n = 1 (When DIP switch or memory switch (BUSY condition) is on)

[Printers not featuring this command] **TM-H6000III, TM-H5000II, TM-U675, TM-U325D**

[Description] Enables or disables ink ASB (Automatic Status Back) and specifies the status items to include, using **n** as follows:

n: Bit	Function	Binary	Hexadecimal	Decimal
0	Online/offline status of ink unit disabled.	0	00	0
	Online/offline status of ink unit enabled.	1	01	1
1	Ink sensor status disabled.	0	00	0
	Ink sensor status enabled.	1	02	2
2~7	Reserved	0	00	0

- [Notes]
- ASB (Automatic Status Back) transmits the status such as ink near-end, ink cartridge installed/not installed automatically to the printer in real-time. It is called [ASB function] and the status is [ASB status]. If you use ASB, application can acquire the printer change in real-time and passively.
 - Enabling any status (specifying **n** = 0) starts ink ASB. Then the current ink ASB status is transmitted. After that, when ASB is active, the selected enabled ink ASB status is transmitted each time the status changes.
 - When specifying **n** = 0, ink ASB is disabled. While ASB is disabled, ink ASB status is not transmitted.

- When the ASB function is operating, even if the printer is specified as an invalid peripheral device with **ESC =**, the extended ASB status is transmitted if the status of the printer changes.
- This command is effective until **ESC @** is executed, the printer is reset, or the power is turned off.
- All ink ASB status items represent the enabled status whenever the status changes. Therefore, the disabled status items may change because each status transmission represents the current status.
- The ink ASB status items, corresponding to each bit for **n** are as follows:

n		ASB status description	
Bit	Function	Function	Bit
0	Online/offline status of ink mechanism	Detect ink end	Status A: Bit 1 Status B: Bit 1
		Detect ink cartridge	Status A: Bit 2 Status A: Bit 3
		Cleaning	Status A: Bit 5
1	Ink detection status	Detect ink near-end	Status A: Bit 0 Status B: Bit 0
		Detect ink end	Status A: Bit 1 Status B: Bit 1
		Detect ink cartridge	Status A: Bit 2 Status B: Bit 3

- The ink ASB status is a 4-byte message as shown in the following table.

Send data	Hexadecimal	Decimal	Data length
Header	35H	53	1 byte
Status A (*1)	40H to 7FH	64 to 127	1 byte
Status B (*2)	40H to 7FH	64 to 127	1 byte
NUL	00H	0	1 byte

(*1) Status A is shown in the table below:

Bit	Function	Binary	Hexadecimal	Decimal
0	Ink near-end not detected (The first color)	0	00	0
	Ink near-end detected (The first color)	1	01	1
1	Ink end not detected (The first color)	0	00	0
	Ink end detected (The first color)	1	02	2
2	Ink cartridge installed (The first color)	0	00	0
	Ink cartridge not installed (The first color)	1	04	4
3	Ink cartridge installed (The second color)	0	00	0
	Ink cartridge not installed (The second color)	1	08	8
4	Reserved	-	-	-
5	Cleaning is not being performed	0	00	0
	Cleaning is being performed	1	20	32
6	Fixed	1	40	64
7	Fixed	0	00	0

(*2) Status B is shown in the table below:

Bit	Function	Binary	Hexadecimal	Decimal
0	Ink near-end not detected (The second color)	0	00	0
	Ink near-end detected (The second color)	1	01	1
1	Ink end not detected (The second color)	0	00	0
	Ink end detected (The second color)	1	02	2
2 ~ 5	Reserved	-	-	-
6	Fixed	1	40	64
7	Fixed	0	00	0

- NUL is [Hexadecimal = 00H/Decimal = 0]
- When block data [Header ~ NUL] is being transmitted, ASB status cannot be transmitted. Therefore, you cannot get the printer status change through the ASB status when Block data [Header ~ NUL] is transmitted.
- With a serial interface, the printer transmits a 4-byte ASB status message without confirming whether the host can receive data.
- When communication with the printer uses XON/XOFF control with serial interface, the XOFF code may interrupt the 4-byte ASB status.
- With a parallel interface, when ASB status is used, it is desirable for the host to be in a reverse idle state. However, if the host computer cannot always be in the reverse idle state, it is necessary to enter Reverse Mode regularly to watch for ASB status. If the host is not in the Reverse Mode for a long time, and the printer has to store ASB status changes to be transmitted, the following 2 sets (8 bytes) of ASB status are changed to special data and transmitted prior to other transmission data when the host enters Reverse Mode:

- ASB-1: Status information that shows whether status changes occurred
- ASB-2: The latest ASB status information

If bits have a different value between (ASB-1) and (ASB-2), this means at least one change has occurred. An example is shown below:

	Header	Status A	Status B	NUL
ASB-1	0011 0101	0110 0000	0100 0000	0000 0000
ASB-2	0011 0001	0100 0000	0100 0000	0000 0000

Bit 5 of Status A for ASB-1 and ASB-2 is different. From this information, you can see that the printer executed a cleaning but it has already finished.

- The extended ASB status can be differentiated from other transmission data by the specific data of the transmission data block. If the header transmitted from the printer is [Hex = 35H/Decimal = 53], the host should process up to NUL [Hex = 00H/Decimal = 0] as ink ASB status.

[Model-dependent variations]

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

Program Example

```
PRINT #1, CHR$(&H1D);"j";CHR&(2); ← Only sensor status can be selected.
```

TM-J9000/J9100

The default is selected by memory switch 1-3.

When an ink near-end is detected, the INK OUT light blinks. It is possible to print approximately 160,000 characters using Font B with high speed print control specified between the time an ink near-end is detected to the time an ink end is detected. However, the value is only a reference value, it depends on various environmental factors, such as printing data and the timing of head cleaning. Therefore, replace an old ink cartridge with a new one when an ink near-end is detected.

Ink ASB Status A: TM-J9000 (single-color) does not support bit 3.

When the carriage cover, roll paper cover or scanner cover are opened, this status holds the status immediately

before the opening because the ink status cannot be checked when the carriage cover is opened.

Ink ASB Status B: TM-J9000 (single-color) does not support bits 0 and 1.

When the carriage cover, roll paper cover or scanner cover are opened, this status holds the status immediately

before the opening because the ink status cannot be checked when the carriage cover is opened.

TM-J7500/7600, TM-J7000/7100

The default is selected by memory switch 1-3.

When an ink near-end is detected, the INK OUT light blinks. It is possible to print approximately 160,000 characters using Font B with high speed print control specified between the time an ink near-end is detected to the time an ink end is detected. However, the value is only a reference value, it depends on various environmental factors, such as printing data and the timing of head cleaning. Therefore, replace an old ink cartridge with a new one when an ink near-end is detected.

Ink ASB Status A: TM-J7000/TM-J7500 (single-color) does not support bit 3.

When the carriage cover is opened, this status holds the status immediately before the opening because the ink status cannot be checked when the carriage cover is opened.

Ink ASB Status B: TM-J7000/TM-J7500 (single-color) does not support bits 0 and 1.

When the carriage cover is opened, this status holds the status immediately before the opening because the ink status cannot be checked when the carriage cover is opened.

GS r

EXECUTING COMMAND

[Name] Transmit status

[Format]

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

[Range] **TM-J9000/J9100: n = 1, 4, 5, 49, 52, 53, 80****TM-J7500/7600, TM-J7000/7100: 1 ≤ n ≤ 4, 49 ≤ n ≤ 52, n = 80****TM-H5000II, TM-U325D: 1 ≤ n ≤ 3, 49 ≤ n ≤ 51****TM-U675: 1 ≤ n ≤ 3, 49 ≤ n ≤ 51, n = 80****TM-H6000III [All other models]: 1 ≤ n ≤ 3, 49 ≤ n ≤ 51, n = 80****Photo-ID model: 1 ≤ n ≤ 3, 49 ≤ n ≤ 51, n = 53, 80**

[Default] None

[Printers not featuring this command] None

[Description] Transmits the status using **n** as follows:

n	Function
1, 49	Transmits paper sensor status [A].
2, 50	Transmits drawer kick out connector status.
3, 51	Transmits cut sheet (slip or validation) status.
4, 52	Transmits ink status.
5, 53	Transmits paper sensor status [B].
80	Transmits the remaining print area on cut sheet (slip or validation) in dots.

- [Notes]
- When $1 \leq n \leq 5$ or $49 \leq n \leq 53$ is specified, the printer transmits each status as 1 byte.
 - When $n = 80$, the printer transmits the status of character string data that consists of [Header ~ NUL].
 - The status to be transmitted is as follows:

- Paper sensor status [A] ($n = 1, 49$)

Bit	Off/On	Hex	Decimal	Status
0, 1	Off	00	0	Roll paper near-end sensor: paper adequate.
	On	03	3	Roll paper near-end sensor: paper near end.
2, 3	Off	00	0	Roll paper end sensor: paper present.
	On	0C	12	Roll paper end sensor: paper not present.
4	Off	00	0	Fixed.
5	Off	00	0	TOF sensor: paper present.
	On	20	32	TOF sensor: paper not present.
6	Off	00	0	BOF sensor: paper present.
	On	40	64	BOF sensor: paper not present.
7	Off	00	0	Fixed.

*... how to use
this table*

- Some paper sensors are not present, depending on the printer model.
- The names of some paper sensors are different, depending on the printer model.
- Drawer kick-out connector status ($n = 2, 50$)

Bit	Off/On	Hex	Decimal	Status
0	Off	00	0	Drawer kick-out connector pin 3 is LOW.
	On	01	1	Drawer kick-out connector pin 3 is HIGH.
1-3	—	—	—	Reserved.
4	Off	00	0	Fixed.
5, 6	—	—	—	Reserved.
7	Off	00	0	Fixed.

*... how to use
this table*

- Cut sheet status (**n** = 3, 51)
 - Transmits the remaining printing area, which is determined by the height of resident characters using the values from 00H to 0FH (in Hexadecimal) / 0 to 15 (in Decimal).
 - The range of the status depends on the printer model.
 - When cut sheet is not selected as the paper type, the status is 00H (in Hexadecimal) / 0 (in Decimal).
- Ink status (**n** = 4, 52)

Bits	Function	Binary	Hexadecimal	Decimal
0	Ink near-end sensor: ink present (The first color)	0	00	0
	Ink near-end sensor: ink not present (The first color)	1	01	1
1	Ink near-end sensor: ink present (The second color)	0	00	0
	Ink near-end sensor: ink not present (The second color)	1	02	2
2, 3	Reserved	—	—	—
4	Fixed	0	00	0
5, 6	Reserved	—	—	—
7	Fixed	0	00	0

■ The status to be transmitted is as follows:

- Paper sensor status [B] (**n** = 5, 53)

Bits	Function	Binary	Hexadecimal	Decimal
0	Paper width sensor: paper present	0	00	0
	Paper width sensor: paper not present	1	01	1

1,2	Card sensor: paper present	0	00	0
	Card sensor: paper not present	11	06	6
3	Reserved	—	—	—
4	Fixed	0	00	0
5, 6	Reserved	—	—	—
7	Fixed	0	00	0

- The names of some paper sensors are different, depending on the printer model.
- When the status of the number of dots for a cut sheet is specified ($n = 80$), the printer transmits the number of dots of the remaining printing area for the cut sheet as a character string code to the host. The status consists of [Header ~ NUL].

Transmission data	Hex	Decimal	Number of bytes
Header	37H	55	1
Identifier	2BH	43	1
Number of dots (*)	30H~39H	48~57	1~4
NUL	00H	0	1

For the number of dots, values are converted to character data from decimal data, and the data is transmitted in order starting with the most significant character. When the number of dots is "120," 3 bytes of data are transmitted from the starting with the most significant character: 49, 50, and 48 in decimal (1 = 49, 2 = 50, 0 = 48), in hexadecimal (1 = 31H, 2 = 32H, 0 = 30H).

- If the cut sheet is not selected as the paper type or printing is not possible, the printer transmits the status (4-byte character string data) of "number of dots is 0."
- When the cut sheet is selected as the paper type but the printer does not start counting the remaining printing area, the printer transmits the status (7-byte character string data) of "number of dots is 9999."
- When you use this command, obey the following rules.

- After the host PC transmits the function data, the printer will send response data or status data back to the PC. Do not transmit more data from the PC until the response data or status data are received from the printer.
- When operating with a serial interface, be sure to configure operation so that the host computer uses the printer only when it is READY.
- With a parallel interface, normal status is stored in the transmission buffer of the printer temporarily just as the other transmission data (except for ASB status), and when the host enters Reverse Mode, data is transmitted in order from the beginning of the transmission buffer. The transmission buffer is 99 bytes; therefore, data that exceeds 99 bytes is ignored. When using this command, the host should enter the Reverse Mode immediately to receive status.
- When communication with the printer uses XON/XOFF control with serial interface, the XOFF code may interrupt the "Header to NUL" data string.
- Specifying paper sensor status [A] ($n = 1, 49$) is processed after print and line feed commands are executed. If **GS r** ($n = 1$ or 49) is used immediately after a print command, the printer can notify that printing is completed by using paper sensor status [A].
- Normal status (it is excepted number of dots of the remaining printing) can be differentiated from other transmission data by the information in bits 4 and 7. After outputting status with **GS r**, if the data transmitted from the printer is "0xx0xxxx"(x = 0 or 1), the host should process the data as normal status.
- The status of the number of dots for the remaining area can be differentiated from other transmission data by a special transmission data block. If a header of the transmission data from the printer is [Hex=37H/Decimal=55], the host should processes data up to NUL [Hex=00H/Decimal=0] as a group of data differentiated from the combination of header and identifier.

[Model-dependent variations]

**TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III,
TM-H5000II, TM-U675, TM-U325D**

Program Example for all printers

```
PRINT #1, CHR$(&H1D);"r";CHR$(1); ← Transmits paper sensor status
```

TM-J9000/J9100**■ Paper sensor status [A] (n = 1, 49)**

- When the roll paper end sensor detects a paper-end, the printer goes offline and does not execute this command. Therefore, bits 2 and 3 of the paper sensor status do not transmit a paper-end status.
- While the roll cover is open, the status of the roll paper end sensor indicates the status when the cover was closed.
- Bits 0, 1, 2 and 3 are always set to "0" when memory switch [Msw8-4] is on.
- Bits 5 and 6 indicate the following status.

Bit	Function	Binary	Hexadecima l	Decimal
5	Ejection sensor: paper present.	0	00	0
	Ejection end sensor: paper not present.	1	20	32
6	Validation sensor: paper present.	0	00	0
	Validation sensor: paper not present.	1	40	64

■ Ink status (n = 4, 52)

TM-J9000 (Single-color) doesn't support bit 1.

When the carriage cover, the roll paer cover or scanner image cover are opened, this status holds the status immediately before the opening because the ink status cannot be checked when the carriage cover is opened.

■ Paper sensor status [A] (n = 80)

- Bit 0 is not supported.

■ Status of the number of dots for the remaining print area (n = 80)

- This status indicates the number of dots for the remaining print area of a slip and validation that are selected as the active sheet.

TM-J7500/7600**■ Paper sensor status (n = 1, 49)**

When the roll paper end sensor detects a paper-end, the printer goes offline and does not execute this command. Therefore, bits 2 and 3 of the paper sensor status do not transmit a paper-end status.

When roll paper is selected as the active sheet, the BOF sensor (bit 6) may be incorrect.

When the roll paper cover is open, paper detection (detected by the roll paper end sensor) may be incorrect.

■ Cut sheet status (n = 3, 51)

Slip status can be confirmed by the cut sheet status:

Status		Number of remaining dots
Hexadecimal	Decimal	
00	0	0~23
01	1	24 ~ 47
02	2	48 ~ 71
03	3	72 ~ 95
04	4	96 ~ 119
05	5	120 ~ 143
06	6	144 ~ 167
07	7	168 ~ 191

Status		Number of remaining dots
Hexadecimal	Decimal	
08	8	192 ~ 215
09	9	216 ~ 239
0A	10	240 ~ 263
0B	11	264 ~ 287
0C	12	288 ~ 311
0D	13	312 ~ 335
0E	14	336 ~ 359
0F	15	360 or more

■ Ink status (n = 4, 52)

TM-J7500 (Single-color) doesn't support bit 1.

When the carriage cover is opened, this status holds the status immediately before the opening because the ink status cannot be checked when the carriage cover is opened.

■ Status of the number of dots for the remaining print area (n = 80)

- This status indicates the number of dots for the remaining print area of a slip that is selected as the active sheet.
- 1 dot equals 0.141 mm {1/180 inch}.

TM-J7000/7100**■ Paper sensor status (n = 1, 49)**

When the roll paper end sensor detects a paper-end, the printer goes offline and does not execute this command. Therefore, bits 2 and 3 of the paper sensor status do not transmit a paper-end status.

When roll paper is selected as the active sheet, the BOF sensor (bit 6) may be incorrect.

When the roll paper cover is open, paper detection (detected by the roll paper end sensor) may be incorrect.

■ Cut sheet status (n = 3, 51)

Slip (face or back) status can be confirmed by the cut sheet status:

Status		Number of remaining dots
Hexadecimal	Decimal	
00	0	0~23
01	1	24 ~ 47
02	2	48 ~ 71
03	3	72 ~ 95
04	4	96 ~ 119
05	5	120 ~ 143
06	6	144 ~ 167
07	7	168 ~ 191

Status		Number of remaining dots
Hexadecimal	Decimal	
08	8	192 ~ 215
09	9	216 ~ 239
0A	10	240 ~ 263
0B	11	264 ~ 287
0C	12	288 ~ 311
0D	13	312 ~ 335
0E	14	336 ~ 359
0F	15	360 or more

■ Ink status (n = 4, 52)

TM-J7000 (Single-color) doesn't support bit 1.

When the carriage cover is opened, this status holds the status immediately before the opening because the ink status cannot be checked when the carriage cover is opened.

■ Status of the number of dots for the remaining print area (n = 80)

- This status indicates the number of dots for the remaining print area of slip (face or back) which is selected as the active sheet.
- 1 dot equals 0.141 mm {1/180 inch}.

TM-H5000II**■ Paper sensor status [A] (n = 1, 49)**

When the roll paper end sensor detects a paper-end, the printer goes offline and cannot execute this command. Therefore, bits 2 and 3 of the paper sensor status do not transmit paper-end status.

When the roll paper cover is open, paper detection (detected by the roll paper end sensor) may be incorrect.

■ Slip status (n = 3, 51)

Slip status is indicated as cut sheet status.

Number of remaining dots	Status	
	Hex	Decimal
0 to 8	00	0
9 to 17	01	1
18 to 26	02	2
27 to 35	03	3
36 to 44	04	4
45 to 53	05	5
54 or more	06	6

TM-U325D**■ Paper sensor status [A] (n = 1, 49)**

Bits 5 and 6 indicate the same paper sensor. The name of the paper sensor is “validation sensor.”

■ Validation sensor status (n = 3, 51)

Validation status can be confirmed by cut sheet status.

Status		Number of remaining dots
Hexadecimal	Decimal	
00	0	0~8
01	1	9~17
02	2	18~26
03	3	27~35
04	4	36~44
05	5	45~53
06	6	54~62

Status		Number of remaining dots
Hexadecimal	Decimal	
07	7	63~71
08	8	72~80
09	9	81~89
0A	10	90~98
0B	11	99~107
0C	12	108 or more

TM-H6000III**■ Paper sensor status [A] (n = 1, 49)**

When the roll paper end sensor detects a paper end, the printer stops printing and goes offline; therefore, paper not present status of bit 2 or 3 is not transmitted with this command.

■ Cut sheet sensor status (n = 3, 51)

The cut sheet sensor status can check the face and back of a slip.

If the paper source is the face of a slip:

Status		Number of remaining dots
Hexadecimal	Decimal	
00	0	0~8
01	1	9~17
02	2	18~26
03	3	27~35
04	4	36~44
05	5	45~53
06	6	54~62
07	7	63~71

Status		Number of remaining dots
Hexadecimal	Decimal	
08	8	72~80
09	9	81~89
0A	10	90~98
0B	11	99~107
0C	12	108~116
0D	13	117~125
0E	14	126~134
0F	15	135 or more

If the paper source is the back of a slip:

Status		Number of remaining dots
Hexadecimal	Decimal	
00	0	0~6
01	1	7~13
02	2	14~20
03	3	21~27
04	4	28~34
05	5	35~41
06	6	42~48
07	7	49~55

Status		Number of remaining dots
Hexadecimal	Decimal	
08	8	56~62
09	9	63~69
0A	10	70~76
0B	11	77~83
0C	12	84~90
0D	13	91~97
0E	14	98~104
0F	15	105 or more

■ When the face of a slip is selected as the print sheet, the following items can be checked by this status.

When equipped with an endorsement printer:

Status		Printer status
Hexadecimal	Decimal	
00	0	No paper in print head position or paper cannot be fed in reverse
01~07	1~7	Paper cannot be fed in reverse
08	8	Possibility that paper cannot be fed in reverse
09~0F	9~15	Paper can be fed in reverse

When not equipped with an endorsement printer:

Status		Printer status
Hexadecimal	Decimal	
00	0	No paper in print head position or paper cannot be fed in reverse
01~0C	1~12	Paper cannot be fed in reverse
0D	13	Possibility that paper cannot be fed in reverse
0E, 0F	14, 15	Paper can be fed in reverse

■ When the slip (back) is selected as the print sheet, the following statuses can be checked by this status.

Status		Printer status
Hexadecimal	Decimal	
00	0	No paper in print head position or paper cannot be fed in reverse
01~0F	1~15	Paper can be fed in reverse

■ Status of the number of dots for the remaining print area ($n = 80$)

- The status of a slip (face or back) selected as the active sheet is indicated for this status.
- 1 dot equals 0.353 mm {1/72 inch}.

When a surface of the slip is selected as the paper type, the following can be checked.

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When the printer is equipped with an endorsement unit:

Status	Printer status
0	No paper in print head position or paper cannot be fed in reverse
1~72	Paper cannot be fed in reverse
73~334	Paper can be fed in reverse
9999	Paper can be fed in reverse: counting for the remaining print area is not started (BOF detects a paper presence)

When the printer is not equipped with an endorsement unit:

Status	Printer status
0	No paper in print head position or paper cannot be fed in reverse
1~121	Paper cannot be fed in reverse
122~334	Paper can be fed in reverse
9999	Paper can be fed in reverse: counting for the remaining print area is not started (BOF detects a paper presence)

When the back of a slip is selected as the paper type:

Status	Printer status
0~6	No paper in print head position or paper cannot be fed in reverse
7 or more	Paper can be fed in reverse

<Photo-ID model>

- Paper sensor status [B] ($n = 5, 53$)
 - This printer does not support bit 0.

TM-U675

■ Paper sensor status [A] (n = 1, 49)

When the paper end sensor detects a paper-end, the printer stops printing and goes offline; therefore, paper not present status of bit 2 or 3 is not transmitted with this command. When the roll paper cover is open, the status of the roll paper end sensor may not be correct.

■ Cut sheet status (n = 3, 51)

The cut sheet status can check the status of a slip (face or back) and a validation sheet which is selected as the active sheet.

Status		Number of remaining dots
Hexadecimal	Decimal	
00	0	0~8
01	1	9~17
02	2	18~26
03	3	27~35
04	4	36~44
05	5	45~53
06	6	54~62
07	7	63~71

Status		Number of remaining dots
Hexadecimal	Decimal	
08	8	72~80
09	9	81~89
0A	10	90~98
0B	11	99~107
0C	12	108~116
0D	13	117~125
0E	14	126~134
0F	15	135 or more

■ When slip is selected as the print sheet, the following items can be checked by this status.

Status		Printer status
Hexadecimal	Decimal	
00	0	No paper in print head position or paper cannot be fed in reverse
01~0C	1~12	Paper cannot be fed in reverse
0D	13	Possibility that paper cannot be fed in reverse
0E, 0F	14, 15	Paper can be fed in reverse

■ When validation is selected as the paper type, the following items can be checked by this status.

Status		Printer status
Hexadecimal	Decimal	
00	0	Paper is ejected when printing starts
01	1	Normal size in vertical of a character can be printed
02~0A	2~10	A character with double size in vertical can be printed

■ Status of the number of dots for the remaining print area ($n = 80$)

- The supporting of this status depends on the version of firmware.
- The status of a slip or validation paper selected as the active sheet is indicated as this status.
- 1 dot equals 0.353 mm {1/72 inch}.

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When a slip is selected as the paper type, the following items can be checked this status.

Status	Printer status
0	No paper in print head position or paper cannot be fed in reverse
1~121	Paper cannot be fed in reverse
122~334	Paper can be fed in reverse
9999	Paper can be fed in reverse: counting for the remaining print area is not started (BOF detects a paper presence)

When validation is selected as the paper type, the following items can be checked by this status.

Status	Printer status
0~8	Paper is ejected when printing starts
9~17	Normal size in vertical of a character can be printed
18~93	A character with double size in vertical can be printed

BAR CODE COMMANDS

Command	Name
GS H	Select print position of HRI characters
GS f	Select font for HRI characters
GS h	Set bar code height
GS k	Print bar code
GS w	Set bar code width

[Name] Select print position of HRI characters

[Format] ASCII GS H **n**
 Hex 1D 48 **n**
 Decimal 29 72 **n**

[Range] $0 \leq \mathbf{n} \leq 3$
 $48 \leq \mathbf{n} \leq 51$

[Default] **n** = 0

[Printers not featuring this command] **TM-U325D**

[Description] Selects the print position of Human Readable Interpretation (HRI) characters when printing a bar code, using **n** as follows:

n	Print position
0, 48	Not printed
1, 49	Above the bar code
2, 50	Below the bar code
3, 51	Both above and below the bar code

- [Notes]
- HRI characters are printed using the font specified by **GS f**.
 - Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.
 - Human Readable Interpretation (HRI) is indicating the contents of bar code, it is printed with bar code.

[Model-dependent variations]

None

Program Example for all printers

```
PRINT #1, CHR$(&H1D);"h";CHR$(80); ← Set height  
PRINT #1, CHR$(&H1D);"f";CHR$(n); ← Select font  
FOR r=0 to 3  
    PRINT #1, CHR$(&H1D);"H";CHR$(n); ← Select print position  
    PRINT #1, CHR$(&H1D);"k";CHR$(2); ← Print bar code  
    PRINT #1, "496595707379";CHR$(0);  
    PRINT #1, CHR$(&HA);  
NEXT n
```

Print Sample

← GS H 0



← GS H 1



← GS H 2



← GS H 3

GS f

SETTING COMMAND

[Name] Select font for HRI characters

[Format] ASCII GS f **n**
 Hex 1D 66 **n**
 Decimal 29 102 **n**

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

[Default] **n** = 0

[Printers not featuring this command] **TM-U325D**

[Description] Selects a font for the Human Readable Interpretation (HRI) characters when printing a bar code, using **n** as follows:

n	Font of HRI characters
0, 48	Font A
1, 49	Font B

- [Notes]
- The font set by this command is effective only for HRI characters.
 - Configuration of the fonts is different, depending on the printer model.
 - Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.
 - HRI characters are printed at the position specified by **GS H**.
 - Human Readable Interpretation (HRI) is indicating the contents of bar code, it is printed with bar code.

[Model-dependent variations]

**TM-9000/9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II,
TM-U675****Program Example for all printers**

```
PRINT #1, CHR$(&H1D); "h";CHR$(80); ← Set height  
PRINT #1, CHR$(&H1D); "H";CHR$(2); ← Select print position  
PRINT #1, CHR$(&H1D); "f";CHR$(0); ← Select font  
PRINT #1, CHR$(&H1D); "k";CHR$(2); ← Print bar code  
PRINT #1, "496595707379";CHR$(0);  
PRINT #1, CHR$(&HA);  
PRINT #1, CHR$(&H1D); "f";CHR$(1); ← Select font  
PRINT #1, CHR$(&H1D); "k";CHR$(2); ← Print bar code  
PRINT #1, "496595707379";CHR$(0);
```

Print Sample**TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100****Character configurations:****Font A: 12 × 24****Font B: 9 × 17****TM-H5000II****Character configurations:****Font A: 12 × 24****Font B: 9 × 17****TM-H6000III****Font configurations:****Font A: (roll paper: 12 × 24, slip (face): 5 × 9)****Font B: (roll paper: 9 × 17, slip (face): 7 × 9)****TM-U675****Font configurations:****Font A: 5 × 9****Font B: 7 × 9**

GS h

SETTING COMMAND

[Name] Set bar code height**[Format]** ASCII GS h **n**
Hex 1D 68 **n**
Decimal 29 104 **n****[Range]** $1 \leq \mathbf{n} \leq 255$ **[Default]** **TM-J7500/7600, TM-J7000/7100, TM-H5000II, TM-H6000III, TM-U675: n = 162****[Printers not featuring this command]** **TM-U325D****[Description]** Sets the height of the bar code to **n** dots.**[Notes]** ■ The setting unit differs, depending on the printer model.■ The settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.**[Model-dependent variations]****TM-9000/9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II,
TM-U675****Program Example for all printers**

```

PRINT #1, CHR$(&H1D); "h";CHR$(50); ← Set height to 50
PRINT #1, CHR$(&H1D); "k";CHR$(2); ← Print bar code
PRINT #1, "496595707379";CHR$(0);
PRINT #1, CHR$(&HA);
PRINT #1, CHR$(&H1D); "h";CHR$(100); ← Set height to 100
PRINT #1, CHR$(&H1D); "k";CHR$(2); ← Print bar code
PRINT #1, "496595707379";CHR$(0);

```

Print Sample

← Height: 50



← Height: 100

TM-H5000II

Bar code printing is possible only when roll paper is selected as the paper type.

The setting unit is 1 dot. It is possible to set units of approximately 0.141 mm {1/180 inch}.

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

The setting unit is 1 dot.

It is possible to set units of approximately 0.141 mm {1/180 inch}.

TM-H6000III

Setting unit is 1 dot.

It is possible to set units of approximately 0.141 mm {1/180 inch}.

TM-U675

Setting unit is 1 dot.

It is possible to set units of approximately 0.353 mm {1/72 inch}.

GS k

EXECUTING COMMAND

[Name] Print bar code

[Format]

(A) ASCII	GS	k	m	d1 ... dk	NUL
Hex	1D	6B	m	d1 ... dk	NUL
Decimal	29	107	m	d1 ... dk	NUL
(B) ASCII	GS	k	m	n	d1 ... dn
Hex	1D	6B	m	n	d1 ... dn
Decimal	29	107	m	n	d1 ... dn

[Range]

(A)	TM-H5000II, TM-H6000III, TM-U675: $0 \leq m \leq 6$
	(k and d depend on the bar code system used)
(B)	TM-H5000II, TM-H6000III, TM-U675: $65 \leq m \leq 73$
	(n and d depend on the bar code system used)

[Default] None

[Printers not featuring this command] **TM-U325D**

[Description] Prints the bar code using the bar code system specified by **m**.
 <Function A>

Bar code data ("SP" in the table indicates space.)					
m	Bar code system	Amount of data	The range of k	Characters	Character code (d)
0	UPC-A	Fixed	k = 11, 12	0~9	$48 \leq d \leq 57$
1	UPC-E	Fixed	k = 11, 12	0~9	$48 \leq d \leq 57$ (d1 = 48)
2	JAN13 / EAN13	Fixed	k = 12, 13	0~9	$48 \leq d \leq 57$
3	JAN8 / EAN8	Fixed	k = 7, 8	0~9	$48 \leq d \leq 57$
4	CODE39	Can be changed	1 ≤ k	0~9, A~Z SP, \$, %, *, +, -, ., /	$48 \leq d \leq 57, 65 \leq d \leq 90,$ d = 32, 36, 37, 42, 43, 45, 46, 47

m	Bar code system	Bar code data ("SP" in the table indicates space.)			
		Amount of data	The range of k	Characters	Character code (d)
5	ITF (Interleaved 2 of 5)	Can be changed	$1 \leq k$ (even number)	0~9	$48 \leq d \leq 57$
6	CODABAR (NW-7)	Can be changed	$1 \leq k$	0~9, A~D \$, +, -, ., /,: $d = 36, 43, 45, 46, 47, 58$ $(65 \leq d1 \leq 68, 65 \leq dk \leq 68)$	$48 \leq d \leq 57, 65 \leq d \leq 68$ $d = 36, 43, 45, 46, 47, 58$ $(65 \leq d1 \leq 68, 65 \leq dk \leq 68)$

- **k** indicates the number of bytes of bar code data . **k** is an explanation parameter; therefore it does not need to be transmitted.
- **d** specifies the character code data of the bar code data to be printed.

<Function B>

m	Bar code system	Bar code data ("SP" in the table indicates space.)			
		Amount of data	The range of n	Characters	Character code (d)
65	UPC-A	Fixed	n = 11, 12	0~9	$48 \leq d \leq 57$
66	UPC-E	Fixed	n = 11, 12	0~9	$48 \leq d \leq 57 (d1 = 1)$
67	JAN13 / EAN13	Fixed	n = 12, 13	0~9	$48 \leq d \leq 57$
68	JAN8 / EAN8	Fixed	n = 7, 8	0~9	$48 \leq d \leq 57$
69	CODE39	Can be changed	$1 \leq n \leq 255$	0~9, A~Z SP, \$, %, *, +, -, ., /	$48 \leq d \leq 57, 65 \leq d \leq 90,$ $d = 32, 36, 37, 42, 43, 45, 46, 47$
70	ITF (Interleaved 2 of 5)	Can be changed (even number)	$2 \leq n \leq 255$ (even number)	0~9	$48 \leq d \leq 57$
71	CODABAR (NW-7)	Can be changed	$1 \leq n \leq 255$	0~9, A~D, a~d \$, +, -, ., /,: $d = 36, 43, 45, 46, 47, 58$ $(65 \leq d1 \leq 68, 65 \leq dn \leq 68)$	$48 \leq d \leq 57, 65 \leq d \leq 68$ $d = 36, 43, 45, 46, 47, 58$ $(65 \leq d1 \leq 68, 65 \leq dn \leq 68)$

m	Bar code system	Bar code data ("SP" in the table indicates space.)			
		Amount of data	The range of n	Characters	Character code (d)
72	CODE93	Can be changed	$1 \leq n \leq 255$	00H~7FH	$0 \leq d \leq 127$
73	CODE128	Can be changed	$2 \leq n \leq 255$	00H~7FH	$0 \leq d \leq 127$ ($d1 = 123, 65 \leq d2 \leq 67$)

- **n** specifies the number of bytes of bar code data.
- **d** specifies the character code data of the bar code data to be printed.

[Notes]

- When standard mode is selected, this command is enabled only when no data exists in the print buffer or printing position is beginning of the line.
- A bar code width that exceeds the printing area cannot be set.
- This command feeds as much paper as is required to print the bar code, regardless of the line spacing specified by command.
- When page mode is selected, this command develops the bar code data in the print buffer but the printer does not print the bar code data.
- The bar code (include HRI characters) is not affected by character size and print mode (emphasized, double-strike, underline, white/black reverse printing, or 90° clockwise-rotated), except for upside-down printing mode.
- After printing bar code, printing position moves to the left edge of printing area. The printer's state becomes "printing position is beginning of the line" and "no data in print buffer."
- Values of **m** from 0 to 6 (when (A)) and from 65 to 71 (when (B)) select the same bar code system; the printing results are the same.
- When the value of **m** is from 0 to 6, processing of this command ends with **NUL** code.
- If the number of a bar code data [ITF (**m** = 5)] is an odd number, the last data is ignored.
- When the value of **m** is from 65 to 71, the printer processes **n** bytes of data following **n** as bar code data.
- This command does not set the quiet zone (left and right margins). When using the command, be sure to take this into consideration.

[UPC-A (**m** = 0, 65)]

- Modular check characters (1 character) are processed as follows:
 - When the amount of data to be processed is 11 bytes, the modular check characters are added automatically.
 - When the data to be processed is 12 bytes, the 12th byte of the data is processed as modular check characters. However, the amount of characters is not checked.
- Left guard bar, center bar, and right guard bar are automatically added.

[UPC-E (**m** = 1, 66)]

- The first data (**d1**) is processed as a number system character (NSC). Be sure to specify 0.
- Modular check characters (1 character) are processed as follows:
 - When the amount of data to be processed is 11 bytes, the modular check characters are added automatically.
 - When the data to be processed is 12 bytes, the 12th byte of the data is processed as modular check characters. However, the amount of characters is not checked.
 - Modular check characters are data used to decide bar code pattern; it is not included in printing data.
- Prints a 6-column short code from 10 digit (**d2...d11**) except NSC and modular check characters.

Data of transmitted by host PC											Printing data					
d2	d3	d4	d5	d6	d7	d8	d9	d10	d11		d2	d3	d9	d10	d11	0
0 ~ 9	0 ~ 9	0	0	0	-	-	0 ~ 9	0 ~ 9	0 ~ 9		d2	d3	d9	d10	d11	0
0 ~ 9	0 ~ 9	1	0	0	-	-	0 ~ 9	0 ~ 9	0 ~ 9		d2	d3	d9	d10	d11	1
0 ~ 9	0 ~ 9	2	0	0	-	-	0 ~ 9	0 ~ 9	0 ~ 9		d2	d3	d9	d10	d11	2
0 ~ 9	0 ~ 9	3 ~ 9	0	0	-	-	-	0 ~ 9	0 ~ 9		d2	d3	d4	d10	d11	3
0 ~ 9	0 ~ 9	0 ~ 9	1 ~ 9	0	-	-	-	-	0 ~ 9		d2	d3	d4	d5	d11	4
0 ~ 9	0 ~ 9	0 ~ 9	0 ~ 9	1 ~ 9	-	-	-	-	5 ~ 9		d2	d3	d4	d5	d6	d11

Specify 0 at indicated data by "—" in the table.

When $1 \leq \mathbf{d6} \leq 9$, be sure to specify ($5 \leq \mathbf{d11} \leq 9$).

- Left guard bar and right guard bar are automatically added.

[JAN13/EAN13 (**m** = 2, 67)]

- Modular check characters (1 character) are processed as follows:
 - When the data to be processed is 12 bytes, the characters are added automatically.
 - When the data to be processed is 13 bytes, the thirteenth byte is processed as a modular check character. However, the amount of characters is not checked.
- Left guard bar, center bar, and right guard bar are added automatically.

[JAN8/EAN8 (**m** = 3, 68)]

- Modular check characters (1 character) are processed as follows:
 - When the data to be processed is 7 bytes, the characters are added automatically.
 - When the data to be processed is 8 bytes, the 8th byte is processed as a modular check character. However, the amount of characters is not checked.
- Left guard bar, center bar, and right guard bar are added automatically.

[CODE39 (**m** = 4, 69)]

- Start (character) (ASCII="*"/Hex=2AH/Decimal=42) is processed as follows:
 - When the first bar code byte (**d1**) is "*", the printer processes the data as a start (character).
 - If the first bar code byte (**d1**) is not "*", the printer adds a start character automatically.
- Stop character (ASCII="*"/Hex=2AH/Decimal=42) is processed as follows:
 - When the last code (**dk** or **dn**) is "*", the printer processes the data as a stop character.
 - When the last code (**dk** or **dn**) is not "*", the printer adds a stop character automatically.
 - If the printer encounters "*" in the bar code, the printer processes the data as a stop character. In this case, the bar code followed by "*" is printed and the processing is ended.
- A check digit is not calculated and added.

[ITF (Interleaved 2 of 5)(**m** = 5, 70)]

- The start code and stop code are added automatically.
- A check digit is not calculated and added.

[CODABAR (NW-7) (**m** = 6, 71)]

- The start character and stop character are not added automatically; therefore, these should be included in the data and transmitted.
 - Specify the start character (ASCII = "A" ~ "D," / Hex = 41H ~ 44H, / Decimal = 65 ~ 68) at the beginning of the data (**d1**).
 - Specify the stop character (ASCII = "A" ~ "D," / Hex = 41H ~ 44H, / Decimal = 65 ~ 68) at the end of the data (**dk** or **dn**).
 - The start character or stop character (ASCII = "A" ~ "D," / Hex = 41H ~ 44H, / Decimal = 65 ~ 68) cannot be specified in the middle of barcode data.
- A check digit is not calculated and added.

[CODE93 (**m** = 72)]

- Start and stop characters are added automatically.
- Check digits (2 characters) are calculated and added automatically.
- Special characters in an HRI character set are processed as follows:
 - " □ " is printed for the HRI start and stop characters.
 - "■ + an alphabetic character" is printed for an HRI control character.

[CODE 128 (**m** = 73)]

- Always specify a start character (CODE A, CODE B, CODE C) as the first 2 bytes (**d1**, **d2**) of the data.
- Check digit (1 character) is calculated and added automatically.
- The stop character is added automatically.
- When HRI characters are designated to be added, special character HRI characters are processed as follows.
 - The HRI characters for shift character (SHIFT) and code set selection character (CODE A, CODE B, CODE C) are not printed.
 - Space is printed for the HRI function characters (FNC1, FNC2, FNC3, FNC4) and control characters (in Hexadecimal: 00H to 1FH, 7FH / in Decimal: 0 to 31, 127).

- The range of data (d) that can be processed in each code set (CODE A, CODE B, CODE C) is shown in the table below. Data where the character field is diagonal cannot be used. Transmit the 2-byte data shown in the following table ([Hexadecimal = 7BH / Decimal = 123] + character code) from the host for the special characters and bar code data "{" .

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
1E	30	RS	/	30
1F	31	US	/	31
20	32	SP	SP	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
28	40	((40
29	41))	41
2A	42	*	*	42
2B	43	+	+	43
2C	44	.	.	44
2D	45	-	-	45
2E	46	.	.	46
2F	47	/	/	47
30	48	O	O	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 Character		
Hex	Decimal	CODE A	CODE B	CODE C
7B, 31	123, 49	FNC1	FNC1	FNC1
7B, 32	123, 50	FNC2	FNC2	
7B, 33	123, 51	FNC3	FNC3	
7B, 34	123, 52	FNC4	FNC4	
7B, 41	123, 65		CODE A	CODE A
7B, 43	123, 66	CODE B		CODE B
7B, 43	123, 67	CODE C	CODE C	
7B, 53	123, 83	SHIFT	SHIFT	

[Model-dependent variations]

**TM-9000/9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II,
TM-U675**

Program Example for all printers

```
PRINT #1, CHR$(&H1D); "h";CHR$(80); ← Set height  
PRINT #1, CHR$(&H1D); "k";CHR$(2); ← Print bar code  
PRINT #1, "496595707379";CHR$(0);  
PRINT #1, CHR$(&HA);  
PRINT #1, CHR$(&H1D); "k";CHR$(67);CHR$(12);  
PRINT #1, "496595707379"; ← Print bar code
```

Print Sample**TM-J9000/J9100**

When printing a bar code (without HRI characters), the printing mode is unidirectional printing and normal printing control mode regardless of the settings of ESC U and GS (K. We recommend that you choose unidirectional printing and normal mode settings when printing a bar code in page mode.

When printing ladder bar code, we recommend specifying the module width and the thin element width to 0.423 mm or more with GS w.

TM-J7500/7600

Don't print "ladder barcode" (90° or 270° rotated barcode) when slip is selected as the active sheet.

When printing a bar code (without HRI characters), the printing mode is unidirectional printing and normal printing control mode regardless of the settings of ESC U and GS (K. We recommend that you choose unidirectional printing and normal mode settings when printing a bar code in page mode.

When printing ladder bar code, we recommend specifying the module width and the thin element width to 0.423 mm or more with GS w.

TM-J7000/7100

Don't print "ladder barcode" (90° or 270° rotated barcode) when slip (face or back) is selected as the active sheet.

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When printing a bar code (without HRI characters), the printing mode is unidirectional printing and normal printing control mode regardless of the settings of **ESC U** and **GS (K**. We recommend that you choose unidirectional printing and normal mode settings when printing a bar code in page mode.

When printing ladder bar code, we recommend specifying the module width and the thin element width to 0.423 mm or more with **GS w**.

TM-H5000II

A bar code can be printed only when roll paper is selected as the paper type.

TM-H6000III

This command can be used in either of the following cases.

- When roll paper is selected as the active sheet
- In the standard mode when slip (front side) is selected as the active sheet

When printing a bar code on the face of slip, take the following into account.

- In page mode, this command is unavailable.
- Add HRI characters.
- It is recommended to use a black ribbon, ERC-32 (B) sold separately.
- Bar code recognition ratio will differ, depending on density and color balance of a black ribbon and capability of a bar code reader.

TM-U675

When printing a bar code, take the following into account.

- In page mode, this command is unavailable.
- Add HRI characters.
- It is recommended to use a black ribbon, ERC-32 (B) sold separately.
- Bar code recognition ratio will differ, depending on density and color balance of a black ribbon and capability of a bar code reader.

GS w

SETTING COMMAND

[Name] Set bar code width

[Format] ASCII GS w **n**
 Hex 1D 77 **n**
 Decimal 29 119 **n**

[Range] $2 \leq n \leq 6$

[Default] **n = 3**

[Printers not featuring this command] **TM-U325D**

[Description] Sets the horizontal size of the bar code.

- **n** specifies the width of module.

[Notes] ■ The units for **n** depend on the printer model.

■ Multi-level bar codes are as follows.

[UPC-A, UPC-E, JAN13 / EAN13, JAN8 / EAN8, CODE93, CODE128]

■ Binary-level bar codes are as follows.

[CODE39, ITF, CODABAR (NW-7)]

■ Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.

[Model-dependent variations]

**TM-9000/9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II,
TM-U675**
Program Example for all printers

```

PRINT #1, CHR$(&H1D);"h";CHR$(80); ← Set height
PRINT #1, CHR$(&H1D);"w";CHR$(3); ← Set width size to 3
PRINT #1, CHR$(&H1D);"k";CHR$(2); ← Print bar code
PRINT #1, "496595707379";CHR$(0);
PRINT #1, CHR$(&HA);
PRINT #1, CHR$(&H1D);"w";CHR$(4); ← Set width size to 4
PRINT #1, CHR$(&H1D);"k";CHR$(2); ← Print bar code
PRINT #1, "496595707379";CHR$(0);
PRINT #1, CHR$(&HA);
PRINT #1, CHR$(&H1D);"w";CHR$(5); ← Set width size to 5
PRINT #1, CHR$(&H1D);"k";CHR$(2); ← Print bar code
PRINT #1, "496595707379";CHR$(0);

```

Print Sample

← Width size 3



← Width size 4



← Width size 5

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100**Module width is as follows: (Unit: mm)**

n	Module width (mm) for multilevel bar code	Binary level bar code	
		Thin element width (mm)	Thick element width (mm)
2	0.282	0.282	0.706
3	0.423	0.423	1.129
4	0.564	0.564	1.411
5	0.706	0.706	1.834
6	0.847	0.847	2.258

When printing a ladder bar code, we recommend specifying the module width and the thin element width to 0.423 mm or more

TM-H6000III

Module width is as follows (Unit: mm):

<Roll paper>

n	Module width (mm) for multilevel bar code	Binary level bar code	
		Thin element width (mm)	Thick element width (mm)
2	0.282	0.282	0.706
3	0.423	0.423	1.129
4	0.564	0.564	1.411
5	0.706	0.706	1.834
6	0.847	0.847	2.258

<Slip paper (front side) / validation>

n	Module width (mm) for multilevel bar code	Binary level bar code	
		Thin element width (mm)	Thick element width (mm)
2	0.635	0.635	1.588
3	0.953	0.953	2.540
4	1.270	1.270	3.175
5	1.588	1.588	4.128
6	1.905	1.905	5.080

TM-H5000II

Module width is as follows (Unit: mm):

n	Module width (mm) for multilevel bar code	Binary level bar code	
		Thin element width (mm)	Thick element width (mm)
2	0.282	0.282	0.706
3	0.423	0.423	1.129
4	0.564	0.564	1.411
5	0.706	0.706	1.834
6	0.847	0.847	2.258

TM-U675

Module width is as follows (Unit: mm):

n	Module width (mm) for multilevel bar code	Binary level bar code	
		Thin element width (mm)	Thick element width (mm)
2	0.635	0.635	1.588
3	0.953	0.953	2.54
4	1.27	1.27	3.175
5	1.588	1.588	4.128
6	1.905	1.905	5.08

MACRO FUNCTION COMMANDS

Command	Name
---------	------

GS :	Start/end macro definition
GS ^	Execute macro

GS :

EXECUTING + SETTING

[Name] Start/end macro definition

[Format] ASCII GS :
Hex 1D 3A
Decimal 29 58

[Range] None

[Default] None

[Printers not featuring this command] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-U325D**

[Description] Starts or ends macro definition.

- Macro definition starts when this command is processed during normal operation and ends when it is processed during macro definition.
- While the macro is defined, the printing is also executed.
- The maximum amount of data that can be defined as a macro is different, depending on the printer model. If the macro definition exceeds the maximum amount of data, the excess data is not stored.
- If the printer processes this command again immediately after previously processing it, the printer clears the definition.
- If **GS ^** is processed during macro definition, this command is canceled and the definition is cleared.
- A macro is not defined when the power is turned on.
- The defined contents of the macro are not cleared by **ESC @**.
- The macro is executed by **GS ^**.
- The following commands cannot be included. Therefore, don't use these commands while defining macro. **FS g1, FS q, GS (A, GS (C** (part of functions), **GS (E** (part of functions), **GS (L / GS 8 L** (part of functions), **GS (M** (part of functions), **GS Q 0, GS ^, GS g 0, GS v 0**.

[Model-dependent variations] **TM-H6000III, TM-H5000II, TM-U675**

See program example and print sample for GS : and GS ^.

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TM-H5000II

The maximum amount of data that can be defined is 2048 bytes.

TM-H6000III

The maximum amount of data that can be defined is 2048 bytes.

TM-U675

The maximum amount of data that can be defined is 2048 bytes.

GS ^

EXECUTING COMMAND

[Name]	Execute macro
[Format]	ASCII GS ^ r t m Hex 1D 5E r t m Decimal 29 94 r t m
[Range]	$0 \leq \mathbf{r} \leq 255$ $0 \leq \mathbf{t} \leq 255$ $\mathbf{m} = 0, 1$
[Default]	None
[Printers not featuring this command]	TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-U325D
[Description]	Executes a macro r times while waiting t × 100 msec for each macro execution, using the mode specified by m as follows: <ul style="list-style-type: none"> • When m = 0, the macro executes r times continuously at the interval specified by t. • When m = 1, the printer waits for the period specified by t, blinks the LED, and then waits for the paper FEED button to be pressed. After this button is pressed, the printer executes the macro once. The printer repeats this operation r times.
[Notes]	<ul style="list-style-type: none"> ■ If a macro is not defined, this command is ignored. ■ This command cannot be included in a macro. Do not use this command during a macro execution. ■ Even if the panel buttons are disabled by ESC C 5, paper feed button will be enabled temporarily while printer is waiting for the buttons to be pressed when execution mode by button (m = 1) is specified. However, paper cannot be fed if the paper feed button is pressed. When the printer is in button standby status, if DLE ENQ (n = 0) is processed, the operation is the same as if the button is pressed once. ■ You can check the button standby status with DLE EOT (n = 1: Printer status) or ASB status. ■ The LED and the paper FEED button are different, depending on the printer model. ■ The macro is defined by GS : ■ The macro function is useful to print the same data repeatedly. To define a macro, send GS : just before and after the data to be repeated. And then execute macro by using GS ^ to print the same data repeatedly. The macro function eliminates the need for sending all the print data every time.

Program example for GS : and GS ^

Program Example	Print Sample
<pre> PRINT #1, CHR\$(&H1D);":"; PRINT #1, CHR\$(&H1B);"a";CHR\$(1); PRINT #1, "*** Hello"; PRINT #1, CHR\$(&H1D);!"";CHR\$(17); PRINT #1, "EPSON"; PRINT #1, CHR\$(&H1D);!"";CHR\$(0); PRINT #1, "World! ***"; PRINT #1, CHR\$(&HA); CHR\$(&HA); PRINT #1, CHR\$(&H1B);"a";CHR\$(0); PRINT #1, CHR\$(&H1B);"-";CHR\$(1); PRINT #1, "No. "; CHR\$(&HA); PRINT #1, "Name "; CHR\$(&HA); PRINT #1, "Address "; CHR\$(&HA); PRINT #1, CHR\$(&H1B);"d";CHR\$(5); PRINT #1, CHR\$(&H1B);"-";CHR\$(0); PRINT #1, CHR\$(&H1D);":"; PRINT #1, CHR\$(&H1D);"^";CHR\$(2);CHR\$(0);CHR\$(0); </pre> <p style="text-align: center;">Defines a macro</p>	<p>*** Hello EPSON World! ***</p> <p>No. _____</p> <p>Name _____</p> <p>Address _____</p> <p>*** Hello EPSON World! ***</p> <p>No. _____</p> <p>Name _____</p> <p>Address _____</p>

TM-H5000II

When $m = 1$, the PAPER OUT and RELEASE LED indicators blink during the macro waiting state.

When $m = 1$, FEED, FORWARD, and REVERSE can be used as paper feed buttons.

TM-H6000III

When $m = 1$, the PAPER OUT LED blinks when the printer is in the macro standby state. Use the FEED button to execute the macro.

TM-U675

When $m = 1$, the PAPER OUT LED blinks when the printer is in the macro standby state. Use the FEED button to execute the macro.

MECHANISM CONTROL COMMANDS

Command	Name
ESC <	Return home
ESC F	Set/cancel cut sheet reverse eject
ESC U	Turn unidirectional print mode on/off
ESC q	Release paper
GS V	Select cut mode and cut paper

ESC <

EXECUTING COMMAND

[Name] Return home

[Format] ASCII ESC <
 Hex 1B 3C
 Decimal 27 60

[Range] None

[Default] None

[Printers not featuring this command] None

[Description] Moves the print head to the standby position.

[Notes]

- The standby position is different, depending on the printer model.
- The command rechecks the standby position; therefore, print position might be shifted before and after checking the standby position.

[Model-dependent variations] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III,
TM-H5000II, TM-U675, TM-U325D**

Program Example for all printers

```
PRINT #1, CHR$(&H1B) ; "<" ;
```

TM-H5000II

The standby position is on the left.

This command is effective only when the slip is selected as the paper type.

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

The standby position is on the right.

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TM-U325D

The standby position is on the left.

TM-H6000III

The standby position is on the right.

The print head (serial impact dot head) for the slip (face) moves with this command.

TM-U675

The standby position is on the right.

ESC F

SETTING COMMAND

[Name] Set/cancel cut sheet reverse eject

[Format] ASCII ESC F **n**
 Hex 1B 46 **n**
 Decimal 27 70 **n**

[Range] $0 \leq \mathbf{n} \leq 255$

[Default] **TM-H5000II: n = 1**
TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675: n = 0

[Printers not featuring this command] **TM-U325D**

[Description] Sets or cancels the reverse eject setting for slip paper.

- When the LSB of **n** is 0, cancels slip reverse eject.
- When the LSB of **n** is 1, sets slip reverse eject.

[Notes]

- When the cut sheet reverse ejection is canceled, forward ejection is set.
- Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.
- This command is only setting command. Actually, the printer does not perform.
- The eject length is specified by **ESC C**.

[Model-dependent variations] **TM-H6000III, TM-U675**

Program Example for all printers

```
PRINT #1, CHR$(&H1B); "F";CHR$(0); ← Cancel reverse eject
```

TM-H6000III

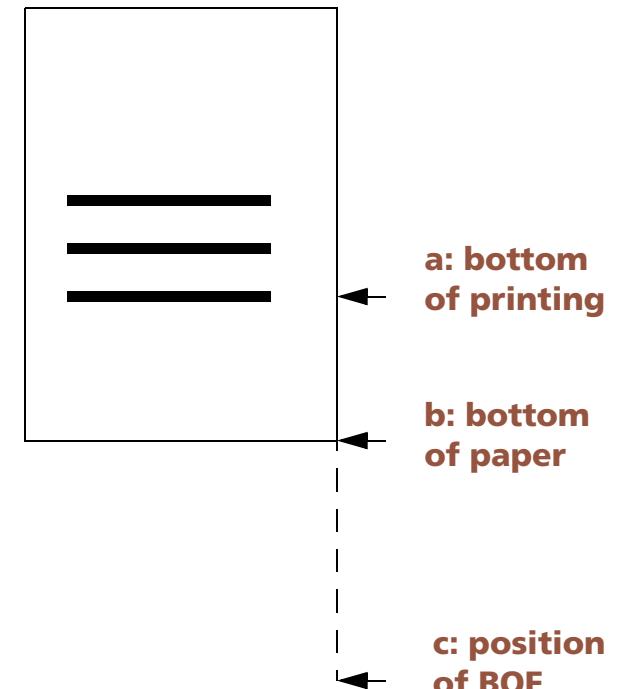
When no paper is in print head position, the printer ejects in the forward direction, ignoring the setting of this command. “No paper in print head position” can be checked by cut sheet status of **GS r (n = 3, 51).**

This command affects printing only on roll paper and the face of slip paper.

When the face of the slip is selected, there is an area in which reverse feeding is not possible. See the diagram and table below. "Paper cannot be fed in reverse" status can be checked by cut sheet status of **GS r (n = 3, 51)**.

Area in which reverse feeding is not possible

	Equipped with endorsement printer	Not equipped with endorsement printer	Using paper more than 90 mm wide
Maximum distance between a and b	41 mm	58 mm	84 mm
Maximum distance between b and c	92 mm	75 mm	



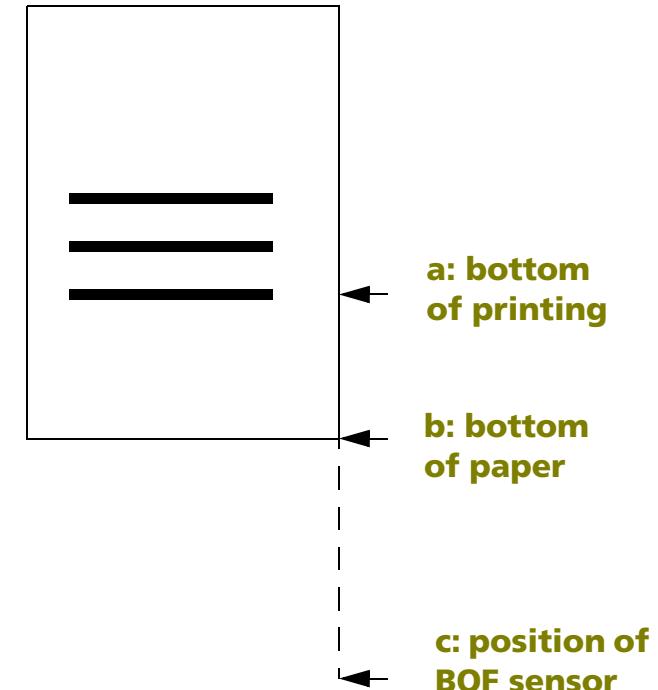
TM-U675

When no paper is in print head position, the printer ejects in the forward direction, ignoring the setting of this command. "No paper in print head position" can be checked by cut sheet status of **GS r (n = 3, 51)**.

- When slip paper is selected, there is an area in which reverse feeding is not possible. See the diagram and table below. "Paper cannot be fed in reverse" status can be checked by cut sheet status of **GS r (n = 3, 51)**.

Area in which reverse feeding is not possible

	Normal check paper	Using paper more than 90 mm wide
Maximum distance between a and b	58 mm	84 mm
Maximum distance between b and c	75 mm	



ESC U

SETTING COMMAND

[Name] Turn unidirectional print mode on/off

[Format]

ASCII	ESC	U	n
Hex	1B	55	n
Decimal	27	85	n

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

[Default] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H5000II, TM-U325D: n = 0**
TM-H6000III, TM-U675: Standard mode: n = 0
Page mode: n = 1

[Printers not featuring this command] None

[Description] Turns unidirectional print mode on or off.

- When the LSB of **n** is 0, unidirectional print mode is turned off.
- When the LSB of **n** is 1, unidirectional print mode is turned on.

[Notes]

- This mode can be set independently in standard mode and in page mode.
 - When this command is executed in standard mode, it turns unidirectional print mode on or off in standard mode.
 - When this command is executed in page mode, it turns unidirectional print mode on or off in page mode.
- When unidirectional print mode is turned off, bidirectional print mode is automatically turned on.
- When page mode is selected, the printer performs unidirectional printing for all data that is to be collectively printed using **FF** or **ESC FF**.
- Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.
- Unidirectional print mode can be turned on when printing double-height characters or downloaded bit image, or bar code, two-dimension code to ensure that the top and bottom of the printing patterns are aligned.

[Model-dependent variations]

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II**Program Example for all printers**

```
PRINT #1, CHR$(&H1B); "U";CHR$(1); ← Unidirectional print mode turned on
```

TM-J9000/J9100

When printing bar code (without HRI characters), the print mode is unidirectional printing and normal printing control mode regardless of the settings of this command. We recommend that you choose unidirectional printing and normal mode settings when printing a bar code in page mode.

TM-J7500/7600, TM-J7000/7100

When printing bar code (without HRI characters) and two-dimensional code, the print mode is unidirectional printing and normal printing control mode regardless of the settings of this command and GS (K. We recommend that you choose unidirectional printing and normal mode settings when printing a bar code in page mode.

TM-H5000II

This command is effective only when slip is selected as the paper type.

When printing page mode of slip, unidirectional print mode is always on, ignoring the setting of this command.

TM-H6000III

The setting of this command affects printing on the face of a slip.

ESC q

EXECUTING COMMAND

[Name] Release paper
 [Format] ASCII ESC q
 Hex 1B 71
 Decimal 27 113

[Range] None
 [Default] None

[Printers not featuring this command] **TM-J9000/J9100**

[Description] Releases the cut sheet.

[Notes]

- When cut sheet (slip or validation) is selected as the paper type, the printer waits for the paper to be removed after executing a release; then the printer selects roll paper as the paper type.
- When roll paper is selected as the paper type, the printer starts the next operation immediately after executing a release.
- Select the active sheet with **GS (G <Function 80>** or **ESC c 0**.

[Model-dependent variations] **TM-H6000III, TM-H5000II, TM-U675**

Program Example for all printers

```
PRINT #1, CHR$(&H1B); "q";
```

TM-H5000II

When standard mode is selected, this command is enabled only when processed at the beginning of the line.

TM-H6000III

When standard mode is selected, this command is enabled only when processed at the beginning of the line.

TM-U675

When standard mode is selected, this command is enabled only when processed at the beginning of the line.

[Name] Select cut mode and cut paper

[Format]

(A) ASCII	GS	V	m
Hex	1D	56	m
Decimal	29	86	m
(B) ASCII	GS	V	m n
Hex	1D	56	m n
Decimal	29	86	m n

[Printers not featuring this command] **TM-J9000/J9100**

[Range]

(A)	TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675: $m = 0, 1, 48, 49$
(B)	TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675: $m = 65, 66; 0 \leq n \leq 255$
(A)	TM-H5000II: m = 1, 49
(B)	TM-H5000II: m = 66; 0 \leq n \leq 255
(B)	TM-U325D: m = 65, 66; 0 \leq n \leq 255

[Default] None

[Description] Executes paper cutting specified by **m**, as follows:

m		Function
(A)	0, 48	Executes a full cut (cuts the paper completely).\\
	1, 49	Executes a partial cut (one point left uncut).
(B)	65	Feeds paper to (cutting position + [$n \times$ vertical motion unit]) and executes a full cut (cuts the paper completely).
	66	Feeds paper to (cutting position + [$n \times$ vertical motion unit]) and executes a partial cut (one point left uncut).

[Notes for (A) and (B)]

- This command can be used when roll paper is selected as the active sheet. Select the active sheet with **GS (G <Function 80> or ESC c 0)**.
- When standard mode is selected, these commands are enabled only when processed at the beginning of the line.
- When using these commands, there is a gap between the autocutter position and the printing position.

[Note for (A)]

- This command can be used when there is an autocutter.

[Notes for (B)]

- When **n = 0**, the printer feeds the paper to the cutting position and cuts it.
- The amount of paper feeding is calculated with the vertical (direction of paper feeding) motion unit.
- When there is no autocutter, only the amount of paper feed specified is executed.

[Model-dependent variations]

**TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II, TM-U675,
TM-U325D**

Program Example for all printers

```
PRINT #1, CHR$(&H1B); "c0";CHR$(2); ← Select paper type  
PRINT #1, "        AAAAA"; CHR$(&HA);  
PRINT #1, CHR$(&H1D); "V";CHR$(66);CHR$(0); ← Feed paper and cut
```

Print Sample

AAAAA

Paper fed to the cutting position and
partial cut (one point left uncut)
performed

TM-J7500/7600, TM-J7000/7100

The vertical motion unit is specified by GS P.

**The autocutter mounted on the printer executes only a partial cut (one point left uncut);
therefore, the printer executes a partial cut even if m = 0, 48, or 65.**

TM-H5000II

The vertical motion unit is specified by GS P.

TM-H6000III

The vertical motion unit is specified by **GS P**.

The autocutter mounted on the printer executes only a partial cut (one point left uncut); therefore, the printer executes a partial cut even if **m = 0, 48, or 65**.

TM-U325D

Since this printer does not have an autocutter, when the command is executed, the amount of paper fed is [manual cutter position + ($n \times$ about 0.176 mm {1/144 inches})].

TM-U675

The vertical motion unit is specified by **GS P**.

The autocutter mounted on the printer executes only a partial cut (one point left uncut); therefore, the printer executes a partial cut even if **m = 0, 48, or 65**.

CONTROL OPTION COMMANDS

Command	Name
DLE EOT (n = 8)	Transmit real-time status for ink
FS (f	Select MICR data handling
FS (g	Set processing method for image data
* FS a 0	Read check paper
* FS a 1	Load check paper to print starting position
* FS a 2	Eject check paper
* FS b	Request retransmission of check paper reading result
FS c	Clean MICR mechanism
GS (G	Select cut sheet control function(s) (MICR and image scanner functions)

* **obsolete commands**

DLE EOT (n = 8)

EXECUTING COMMAND

[Name] Transmit real-time status for ink

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

[Range] **TM-J9000/J9100:**

n = 8

a = 1, 2

TM-J7000/7100, TM-H5000II, TM-U675 :

n = 8

a = 1

TM-H6000III

n = 8

a = 1, 2

TM-H6000III [other models equipped with MICR reader]:

n = 8

a = 1

[Default] None

[Printers not featuring this command] **TM-J7500/7600, TM-U325D**

[Description] Transmits the real-time status, using **n** and **a** as follows:

n	a	Function
8	1	Transmits MICR status.
	2	Send the status of the card image scanner.

- [Notes]
- This command is supported only by printers with a MICR reader or Image scanner.
 - This is a real-time command that the printer executes upon receiving it. Take the following into consideration:
 - If this command interrupts the code string of another command, this command is processed as a parameter of the other command; therefore, the print result will not be correct.

- If a command such as graphics data or defined data has a code string that is the same as a code string in a parameter, the printer processes it and then continues with the graphics data or other command.
- With a serial interface model, this command is executed even when the printer is offline, the receive buffer is full, or an error occurs.
- With a parallel interface model, this command is not executed in the following status conditions, because the printer is busy and unable to receive data from the host computer. The DIP switch (BUSY condition) is different, depending on the printer model.
 - Receive buffer is full when DIP switch or memory switch (BUSY condition) is set to On.
 - Printer is offline, an error occurs, or receive buffer is full when DIP switch or memory switch (BUSY condition) is set to Off.
- This command can be used even if the printer is specified as an invalid peripheral device with **ESC =**.
- This function cannot be used while block data [header to NUL] is being transmitted.
- Each status message is 1 byte.
- The MICR status to be transmitted is as follows:

- MICR status (**n** = 1, **a** = 1)

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Fixed
1	On	02	2	Fixed
2	Off	00	0	MICR function selected. (It indicates check paper is active sheet)
	On	04	4	MICR function not selected. (It indicates check paper is active sheet)
3	Off	00	0	Does not wait for check paper or cleaning sheet insertion.
	On	08	8	Waits for check paper or cleaning sheet insertion.
4	On	10	16	Fixed
5,6	Off	00	0	Card sensor: paper present.
	On	60	96	Card sensor: paper not present.
7	Off	00	0	Fixed

*... how to use
this table*

- Some paper sensors are not present, depending on the printer model.
- The names of some paper sensors are different, depending on the printer model.

- The Image Scanner status to be transmitted is as follows:

- Image scanner status (**n** = 8, **a** = 2)

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Fixed
1	On	02	2	Fixed
2	Off	00	0	Card image scanner function selected. (Active sheet = Card)
	On	04	4	Card image scanner function not selected. (Active sheet ≠ Card)
3	Off	00	0	Does not wait for check paper or cleaning sheet insertion.
	On	08	8	Waits for check paper or cleaning sheet insertion.
4	On	10	16	Fixed
5,6	Off	00	0	Card sensor: paper present.
	On	60	96	Card sensor: paper not present.
7	Off	00	0	Fixed

*... how to use
this table*

- Some paper sensors are not present, depending on the printer model.
 - The names of some paper sensors are different, depending on the printer model.
- Please use this command according to the following rules; otherwise, the status might not be transmitted.
- The next data is not transmitted until status is received when a DLE EOT command is transmitted.
 - Only when it is necessary to acquire plural, real-time status continuously, up to limitation of each printer model this command can be transmitted continuously. However, the next data is not transmitted until all status items are received in this case.
 - With a serial interface, be sure that the host can receive data.

- With a parallel interface, real-time status is stored in the transmission buffer of the printer temporarily as with other transmission data (except ASB status), and when the host enters Reverse Mode, data is transmitted in order from the beginning of the transmission buffer. The transmission buffer is 99 bytes; therefore, data that exceeds 99 bytes is ignored. When using this command, the host should enter the Reverse Mode immediately and to receive status.
- Real-time status can be differentiated by bits 0, 1, 4, and 7 from the other transmitted data. If the data transmitted from the printer is "0xx1xx10" (x is 0 or 1), the host should process the data as real-time status.

[Model-dependent variations]

TM-J9000/J9100, TM-J7000/7100, TM-H6000III, TM-H5000II, TM-U675

Program Example for all printers

```
PRINT #1, CHR$(&H10);CHR$(&H4);CHR$(&H8);CHR$(1); ← Transmits MICR status
```

TM-J9000/J9100

BUSY condition for a parallel interface is selected by memory switch 1-3.

This printer can transmit this command continuously up to 11 times.

■ MICR status (n = 1, a = 1)

Bit 6 indicates following status.

6	ASF sensor: paper present.	0	00	0
	ASF sensor: paper not present.	1	40	64

TM-J7000/7100

BUSY condition for a parallel interface is selected by memory switch 1-3.

■ MICR status (n = 8, a = 1)

The BOF sensor (bit 6) may be incorrect when roll paper is selected as the active sheet.

This printer can transmit this command (up to 9 times) continuously.

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TM-H5000II

BUSY condition is selected by DIP switch 2-1.

TM-H6000III

BUSY condition is selected by DIP switch 2-1.

This printer can transmit this command (up to 9 times) continuously.

TM-U675

BUSY condition is selected by DIP switch 2-1.

FS (f

EXECUTING COMMAND

[Name] Select MICR data handling

[Format] ASCII FS (f **PL PH [n m]1...[n m]k**
 Hex 1C 28 66 **PL PH [n m]1...[n m]k**
 Decimal 28 40 102 **PL PH [n m]1...[n m]k**

[Range] $2 \leq (\text{PL} + \text{PH} \times 256) \leq 65535$ ($0 \leq \text{PL} \leq 255$, $0 \leq \text{PH} \leq 255$)**TM-J7000/7100, TM-H6000III, TM-H5000II, TM-U675**

$0 \leq n \leq 3$, $48 \leq m \leq 51$	
$0 \leq m \leq 255$	(When $n = 0$ or 48)
$0 \leq m \leq 255$	(When $n = 1$ or 49)
$m = 0, 1, 48, 49$	(When $n = 2$ or 50)
$m = 0, 1, 48, 49$	(When $n = 3$ or 51)

TM-J9000/J9100: $n = 0$ or 48)
 $0 \leq m \leq 255$

[Default] Always $m = 0$ for each n [Printers not featuring this command] **TM-J7500/7600, TM-U325D**

[Description] Selects the magnetic ink character reading operations.

- **PL, PH** specifies the number of parameters after **PH ([n m]1...[n m]k)** as $(\text{PL} + \text{PH} \times 256)$ bytes.
- **n** specifies the type of reading processing.

n	Function
0, 48	Specifies processing for unrecognized characters
1, 49	Specifies detailed information for the reading result
2, 50	Specifies no addition of the reading result in an abnormal end
3, 51	Specifies a header for transmission data

- **m** specifies each operation as follows:

When **n** = 0, 48, **m** specifies processing of characters that have not been recognized by analyzing magnetic waveforms:

m	Function
0	Reading is stopped when a character that cannot be recognized is detected.
1 ~ 255	The character that cannot be recognized is replaced with the character "?" and reading is continued. When the number of characters that are replaced with "?" becomes (m + 1), the reading is stopped.

When **n** = 1, 49, **m** specifies whether detailed information is added to the reading result or not:

m	Function
0	Not to add detailed information for an abnormal end.
1	Add detailed information for an abnormal end.

When **n** = 2, 50, **m** specifies no addition of the reading result for an abnormal end:

m	Function
0, 48	The MICR function ends after transmission the reading result.
1, 49	The MICR function is continued after transmission the reading result only for the following abnormal ends: <ul style="list-style-type: none"> • When the length of the sheet inserted is other than that specified. • When a magnetic that cannot be read is detected by analyzing the magnetic waveform. • When the characters that have not been recognized by analyzing magnetic waveforms. • When an abnormality is detected by noise measurement. • When the process of FS a O is stopped by a cover open. • When the FS a O process stopped due to a paper jam.

When **m** = 3, 51, **m** specifies the header of the reading result sent to the host.

m	Function
0, 48	Specifies a 1-byte header. <ul style="list-style-type: none">• Hex = 5FH/Decimal = 55
1, 49	Specifies a header with an identifier of 2 bytes. <ul style="list-style-type: none">• The first byte: Hex = 37H/ Decimal = 55• The second byte: Hex = 2AH/ Decimal = 42

[Notes]

- This command operates when there is an MICR reader.
- The setting value (**n** = 0, 48) affects performance of **GS (G** <Function 60>.
- The value set by this command affects the process of **FS a O**.
- There is no effect on the result of MICR scanning performed before this command is executed.
- The reading result for an unrecognized character detected by analyzing the magnetic waveform is an abnormal end, regardless of the setting specified by **n** (**n** = 0, 48).
- When **n** = 1, 49, if **m** = 1 (add detailed information), transmission of the reading result by **FS a O** consists of [header + reading status + detailed information + separation + reading data + NUL].
 - [header] is 1 byte or 2 bytes specified by **n** (3 or 51).
 - [detailed information] is 1-byte data as follows:

Data		Detailed information
Hex	Decimal	
40	64	No error has occurred (normal end).
41	65	FS a O command is not executed yet.
42	66	The check insertion waiting status has been canceled with the command.
43	67	The check insertion waiting status has been canceled because the time set by ESC f command has passed.

Data		Detailed information
Hex	Decimal	
44	68	A check with a length other than that specified is inserted.
45	69	A magnetic waveform cannot be detected in reading process.
46	70	An unrecognized character is detected by waveform analysis.
47	71	A recoverable error or automatically recoverable error occurred during the processing of FS a 0 .
48	72	An error was detected during noise measurement.
49	73	The processing of an FS a 0 command is stopped due to a cover open.
4A	74	The processing of an FS a 0 command is stopped due to a paper jam.

- [Separation] is a 1-byte code consisting of [Hex=1FH/Decimal=31].
 - [Reading data] is added when the result of **FS a 0** is a normal end or when (**m** = 0, 48) and if **m** is not 0, and the number of "?" is less than **m**.
 - [NUL] is a 1-byte code consisting of [Hex = 00H/Decimal = 0].
- When **n** = 2, 50 [MICR function end after transmission the reading result (**m** = 0, 48)] is selected, after transmitting the reading result, the printer processes the following operations during **FS a 0**.
- Ejects the check (including waiting time for the check sheet to be ejected).
 - MICR status is set to [MICR function = not selected].
 - Specifies roll paper as the active sheet.
 - Printing position is moved to left edge of printing area.
 - The printer's state becomes "beginning of the line" and "no data in print buffer."
- Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.
- The MICR function is continued after transmitting the reading result in either of the following situations. In this case, the check is not ejected and the MICR status is not changed.

- The reading result is normal.
- The reading result is abnormal:
 - When **n** = 0, 48, **m** ≠ 0 (unrecognized character is replaced with "?"), and the reading data is added to the reading result.
 - When **n** = 2, 50, **m** = 1, 49 (MICR function is continued), and the cause of the abnormal end is the same as specified in the command.

[Model-dependent variations]

TM-H5000II**Program Example for all printers**

```
PRINT #1, CHR$(&H1C);"(f";CHR$(4);CHR$(0);CHR$(1);CHR$(1);CHR$(3);CHR$(1); ← Addition of detailed information and a header with an identifier are selected
PRINT #1, CHR$(&H1C);"a0";CHR$(0);
```

TM-H5000II

The support of this command depends on the version of firmware.

FS (g

EXECUTING COMMAND

[Name] Set processing method for image data

[Printers not featuring this command] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H5000II, TM-U675, TM-U325D**

[Description] Sets the image data scanning operations.

- Function code (**fn**) specifies the function..

fn	Function	
32	Function 32	Select the image scanner for command settings
40	Function 40	Set the basic operation of the image scanner.
41	Function 41	Set the scanning area.
50	Function 50	Select the compression method for the image data.
56	Function 56	Delete the cropping area.
57	Function 57	Set the cropping area.
60	Function 60	Select the transmission format for the image scanning result.
80	Function 80	Transmit the setting value for the basic operations of the image scanner.
81	Function 81	Transmit the setting value of the scanning area.
90	Function 90	Transmit the setting value of the compression method for the image data.
97	Function 97	Transmit the setting value of the cropping area.
100	Function 100	Transmit the setting value of the transmission format for the image scanning result.

- **pl, ph** specify (**pl + ph × 256**) as the number of bytes after **ph** (**fn** and **[parameters]**).
- Description of the **[parameters]** is described in each function.

- [Notes]
- The function of this command is defined by function code **fn** and the operation differs, depending on the function selected.
 - This function is enable for the image scanner mounted printer only.

[Notes for transmission process]

- Data send operations are performed using <Function 80>, <Function 81>, <Function 90>, <Function 97>, and <Function 100>. Use the relevant command according to the following rules.
- After transmitting the relevant function, do not send the next data until receipt of the corresponding data.
- When operating with a serial interface, be sure to configure operation so that the host computer uses the printer only when it is READY.
- When operating with a parallel interface, the data sent by this function (starting with Header and ending with NUL), as with other data, is first stored in the send buffer, then output in sequential order when the host computer changes to the reverse mode. Note that the send buffer capacity is 99 bytes, and any data exceeding this volume limit will be lost; therefore, when using this command, it is important to configure the operation so that the host computer's change to the reverse mode and the subsequent status send/receive process is performed quickly.
- When communication with the printer uses XON/XOFF control with serial interface, the XOFF code may interrupt the "Header to NUL" data string.
- The information for each function can be identified to other transmission data according to specific data of the transmission data block.
 - When the header transmitted by the printer is [hex = 37H/decimal =55], the header to NUL [hex = 00H/decimal =0] data is treated as a data group and identified according to the combination of the header and the identifier.

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[Notes for ESC/POS Handshaking Protocol]

- It will be necessary to perform the ESC/POS Handshaking Protocol procedures listed below when using <Function 97> of this command.

Procedure	Host operation	Printer operation
1	FS (g sends Function 97.	Function 97 is initiated.
2	Data is received from printer.	Transmits the setting value.
3	Response code (*1) is sent.	Procedures (*2 and *3) are performed according to response code.

(*1) Response Code

ASCII	Hexadecimal	Decimal	Request definition
ACK	06	6	Send next data group.
NAK	15	21	Resend just-received data group.
CAN	18	24	Cancel send operation.

(*2) Processing According to Response Code (When Send Data Remains (indicated by identification status of send data group))

Response code	Description
ACK	Initiates operation to send next data.
NAK	Resends the just-received data.
CAN	Cancels processing initiated by this command.

(*3) Processing According to Response Code (When No More Send Data Remains (indicated by identification status of send data group))

Response code	Description
ACK, CAN	Cancels procedure initiated by this command.
NAK	Resends the just-received data.

- When codes other than the ACK, NAK, or CAN codes are received, the CAN procedure is executed.

Program example (Sets scanning image tone and compressing image data format)

```
PRINT #1, CHR$(&H1C); "(g";CHR$(5);CHR$(0);CHR$(40);CHR$(48);CHR$(8);CHR$(49);CHR$(0); '--- <Function 40>
PRINT #1, CHR$(&H1C); "(g";CHR$(3);CHR$(0);CHR$(50);CHR$(50);CHR$(49); '--- <Function 50>
```

Program example (Sets scanning area and cropping area)

```
PRINT #1, CHR$(&H1C); "(g";CHR$(2);CHR$(0);CHR$(56);CHR$(0); '--- <Function 56>
PRINT #1, CHR$(&H1C); "(g";CHR$(5);CHR$(0);CHR$(41);CHR$(0);CHR$(0);CHR$(50);CHR$(200); '--- <Function 41>
PRINT #1, CHR$(&H1C); "(g";CHR$(6);CHR$(0);CHR$(57);CHR$(1);CHR$(0);CHR$(0);CHR$(20);CHR$(200); '--- <Function 57>
PRINT #1, CHR$(&H1C); "(g";CHR$(6);CHR$(0);CHR$(57);CHR$(2);CHR$(35);CHR$(40);CHR$(50);CHR$(150); '--- <Function 57>
```

[Model-dependent variations]

TM-H6000III

[Photo-ID model]

This printer supports all the functions.

[Image scanner model]

This printer supports <Function 40> ~ <Function 100>.

FS (g pL pH fn m d1 d2 d3 <Function 32>

[Name] Select the image scanner for command settings

[Format] ASCII FS (g **pL** **pH** **fn**
 Hex 1C 28 67 02 00 20
 Decimal 28 40 103 2 0 32

[Default] **(pL + pH × 256) = 5** (**pL** = 5, **pH** = 0)
fn = 32
n = 48, 49

[Range] **n** = 48

[Description] Select the image scanner for command settings..

n	Function
48	Selects the slip image scanner. Image scanner that operates when [Active sheet = check paper]
49	Selects the card image scanner. Image scanner that operates when [Active sheet = card]

- [Notes]
- The settings of this function affect the processing of all functions except <Function 60> and <Function 100> of this command.
 - Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.

[Model-dependent variations]

TM-H6000III

[Photo ID model]

The card image scanner of this printer does not support <Function 41>, <Function 56>, <Function 57>, <Function 81>, or <Function 97>. When these functions are used, it is necessary to select slip image scanner (n** = 48) with this function.**

[Image scanner model]

The printer does not support this function.

FS (g pL pH fn m d1 d2 d3 <Function 40>

[Name] Set the basic operation of the image scanner.

[Format]

ASCII	FS	(g	pL	pH	fn	m	d1	d2	d3
Hex	1C	28	67	05	00	28	30	d1	d2	d3
Decimal	28	40	103	5	0	40	48	d1	d2	d3

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 5$ ($\mathbf{pL} = 5$, $\mathbf{pH} = 0$)

fn = 40

m = 48

TM-H6000III:d1 = 1, 8 [Photo ID model]

d2 = 49, 50

0 ≤ d3 ≤ 255

d1 = 1, 8 [Image scanner model]

d2 = 49,

0 ≤ d3 ≤ 255

[Default]

TM-H6000III: d1 = 1, d2 = 49, d3 = 0 (Slip image scanner) [Photo ID model]

d1 = 8, d2 = 49, d3 = 0 (Card image scanner)

d1 = 1, d2 = 49, d3 = 0 [Image scanner model]

[Description]

Sets the data tone, the threshold level for the tone, and the processing of the image data for the image scanner selected by **FS (g)** <Function 32>.

- **d1** specifies the data tone of the scanned image as shown in the following table.

d1	Function
1	Selects the process with bi-tonal data (black/white).
8	Selects the process with 256-level gray scale data

- **d2** specifies the processing of the image data.

d2	Function
49	Does not select sharpness processing.
50	Select sharpness processing.

- **d3** specifies the threshold level for the scanning density. This setting affects the scanned data only for the bi-tonal data.

Hex	Decimal	Function
80H ~ FFH	128 ~ 255	Sets a density lighter than the standard density level (the lightest density: 128).
00H	0	Sets the standard density level.
01H ~ 7FH	1 ~ 127	Sets a density darker than the standard density level (the darkest density: 127).

[Notes]

- Sets the basic operation of the image scanner selected with <Function 32> of this command. Separate values can be set for the slip image scanner and card image scanner.
- The threshold level specified by **d3** affects scanning an image with binary data tone only for (**d1** = 1). The parameter **d3** must be included when **d1** = 8, but the parameter doesn't affect the scanning image density.
- The setting value of this function affects performing of **GS (G** <Function 65>. It does not affect retransmission image data from performing of **GS (G** <Function 66>.
- Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.
- When you specify the scanning image tone, specify the suitable compression image data format for the specified tone. The compression image data format can be specified by <Function 50> of this command.

[Model-dependent variations]

TM-H6000III

TM-H6000III

[Photo ID model]

Even if 2-tone is set as the scanning gradation, if sharpening is specified ($d2 = 50$), density set with $d3$ has no effect. However, when any of the following are specified, $d3$ must be transmitted.

- When 256 tones is specified ($d1 = 8$) as the scanning gradation
- When sharpening is specified ($d2 = 50$)

The card image scanner supports only the functions for sharpening ($d2$). $d1$ and $d3$ must be sent when setting the basic operation of the card image scanner, but they do not affect image scanning.

FS (g pL pH fn x1 y1 x2 y2 <Function 41>

[Name] Set the scanning area.

[Format]

ASCII	FS	(g	pL	pH	fn	x1	y1	x2	y2
Hex	1C	28	67	05	00	29	x1	y1	x2	y2
Decimal	28	40	103	5	0	41	x1	y1	x2	y2

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 5$ ($\mathbf{pL} = 5, \mathbf{pH} = 0$)

fn = 41

TM-H6000III: **0 ≤ x1 ≤ 98**
0 ≤ y1 ≤ 228
2 ≤ x2 ≤ 100, x2 = 0
2 ≤ y2 ≤ 230, y2 = 0

[Default] **TM-H6000III:** **x1 = 0, y1 = 0, x2 = 70, y2 = 0**

[Description] Sets the scanning area for the image scanner selected by **FS (g <Function 32>**.

- **(x1, y1)** specify [horizontal starting position of x, vertical starting position of y] of scanning area.
(x2, y2) specify [horizontal ending position of x, vertical ending position of y] of scanning area.
When **(x2 = 0)**, horizontal starting position of x is specified to maximum value of scannable area.
When **(y2 = 0)**, vertical starting position of y is specified to the bottom of the check.
- The all setting value is defined from the origin by mm unit. The origin depends on printer model.

- Sets the basic operation of the image scanner selected with <Function 32> of this command. Separate values can be set for the slip image scanner and card image scanner.
- If specifies **(x2, y2)** to not 0, specify them as "starting position < ending position."
- Starting position of x (**x1**) and ending position of x(**x2**), these specify vertical length of scanning area. (Vertical, it means perpendicular to paper feed).
- Starting position of y (**y1**) and ending position of y (**y2**), these specify length of scanning area for direction of paper feeding.
- If **x2** or **y2** is specified outside the scannable area setting, **x2** or **y2** is specified as the maximum setting of this model. The scannable area depends on printer model.

- The origin of this function and <Function 57> of this command indicate same position. If this command is executed, the origin is not changed.
- The setting value of this function affects performance of **GS (G** <Function 65>. It does not affect retransmission image data from performing of **GS (G** <Function 66>.
- Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.

[Model-dependent variations]

TM-H6000III

TM-H6000III

Origin of this printer is upper right of the scannable area.

The scannable area is [x = 100 mm, y = 230 mm].

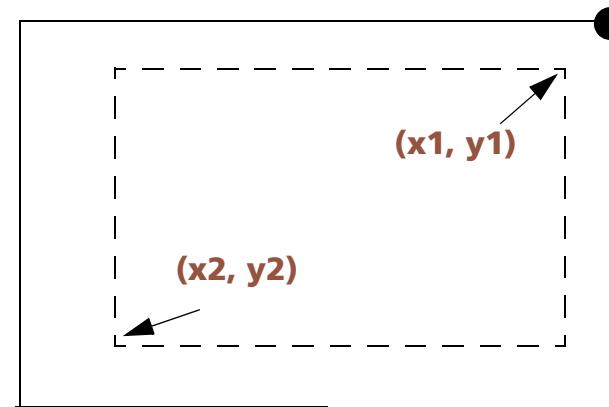
Specify (y1) to be the paper length - 50 mm or less.

If y2 = 0, the ending position of y is specified as the bottom of the check. If length from origin to bottom of the check is over 230 mm, scanning area is treated as 230 mm.

Scanning area is actually treated in 2 mm units. Therefore if this function specifies an odd setting value, scanning area may be performed as 1 mm larger than setting value.

[Photo ID model]

The card image scanner of this printer does not support this function. Before using this function, first select slip image scanner with <Function 32> of this command.



Solid line : scannable area

Dashed line: scannable area

● : the origin

FS (g pL pH fn m n <Function 50>

[Name] Select the compression method for the image data.

[Format]	ASCII	FS	(g	pL	pH	fn	m	n
	Hex	1C	28	67	03	00	32	m	n
	Decimal	28	40	103	3	0	50	m	n

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 3$ ($\mathbf{pL} = 3$, $\mathbf{pH} = 0$)

fn = 50

m = 48, 49, 50

n = 48, 49, 50 [When **m** = 48]

n = 48) [When **m** = 49]

n = 48, 49, 50

[Default] **TM-H6000III: m = 49, n = 48 (Slip image scanner) [Photo ID model]**

m = 48, n = 50 (Card image scanner)

m = 49, n = 48 [Image scanner model]

[Description] Selects the compression method and file format for the image data for the image scanner selected by **FS (g** <Function 32>.

- **m** and **n** specify the way of compressing image data and file format of image data.

m	n	Function			Enabled or Disabled(*)
		Compression method	Image data file format	Bi-tonal	256-level grayscale data tone
48	48	Does not compress	Raw data	Enabled	Enabled
	49	Does not compress	BMP format	Enabled	Enabled
	50	Does not compress	TIFF format	Disabled	Enabled
49	48	Compression with CCITT (Grp4)	TIFF format	Enabled	Disabled
50	48	Compression with JPEG at a high compression rate.	JPEG format	Disabled	Enabled
	49	Compression with JPEG at a standard compression rate.	JPEG format	Disabled	Enabled
	50	Compression with JPEG at a low compression rate.	JPEG format	Disabled	Enabled

(*)The command <Function 40> due to setting

- [Notes]
- Sets the basic operation of the image scanner selected with <Function 32> of this command. Separate values can be set for the slip image scanner and card image scanner.
 - If (**m** = 48, **n** = 48) image data file format is "raw data," send file is raster image data group. (Raster image data is image data in order from right to left, and in order from bottom to top.)

- When you specify JPEG format by **m** (**m** = 50), the result of scanning image has the characteristics shown in the following table.

n	Characteristic
48	high compression rate File size is smaller, but image quality is worse than other compression rates.
49	standard compression rate File size and image quality are middle level in these compression rates.
50	low compression rate Image quality is better, but file size is bigger than other compression rates.

- The setting value of this function affects performing of **GS (G** <Function 65>. It does not affect retransmission image data from performing of **GS (G** <Function 66>.
- Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.
- When you specify compression format by this function, specify tone of scanning image before using this function. Tone of scanning image can be specified by <Function 40> of this command.

FS (g pL pH fn n <Function 56>

[Name] Delete the cropping area.

[Format]

ASCII	FS	(g	pL	pH	fn	n
Hex	1C	28	67	02	00	38	n
Decimal	28	40	103	2	0	56	n

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 2$ (**pL** = 2, **pH** = 0)

fn = 56

TM-H6000III: **0 ≤ n ≤ 10**

[Description] Deletes the cropping area numbered **n** for the image scanner selected by **FS (g <Function 32>**.

- When **n** = 0, deletes all cropping areas (no cropping area is set).
- After executing this function, the cropping area of cropping area number (**n**) is undefined.

[Notes] ■ <Function 32> of this command specifies what cropping area is deleted by this function.

■ See the description of <Function 57> of this command for detail of cropping area.

[Model-dependent variations] **TM-H6000III**

TM-H6000III

[Photo ID model]

The card image scanner of this printer does not support this function. Before using this function, first select slip image scanner with <Function 32> of this command.

FS (g pL pH fn n x1 y1 x2 y2 <Function 57>

[Name]	Set the cropping area.
[Format]	ASCII FS (g pL pH fn n x1 y1 x2 y2 Hex 1C 28 67 06 00 39 n x1 y1 x2 y2 Decimal 28 40 103 6 0 57 n x1 y1 x2 y2
[Range]	$(\mathbf{pL} + \mathbf{pH} \times 256) = 6 (\mathbf{pL} = 6, \mathbf{pH} = 0)$ fn = 57 TM-H6000III: 0 ≤ n ≤ 10 0 ≤ x1 ≤ 98 0 ≤ y1 ≤ 228 2 ≤ x2 ≤ 100, 2 ≤ y2 ≤ 230,
[Default]	Cropping area is not defined.
[Description]	Sets the cropping area numbered n for the image scanner selected by FS (g <Function 32> . <ul style="list-style-type: none"> • (x1, y1) specify [horizontal starting position of x, vertical stating position of y] of cropping area. • (x2, y2) specify [horizontal ending position of x, vertical stating position of y] of cropping area. • If cropping area number has not been specified, a new cropping area is made. • If specified cropping area number has been specified, the cropping area is re-specified. • All setting values are defined from the origin in mm unit. The origin depends on printer model.
[Notes]	<ul style="list-style-type: none"> ■ Sets the cropping area processed by the image scanner selected with <Function 32> of this command. Separate values can be set for the slip image scanner and card image scanner. ■ Cropping area is data area as treated sent data in scanning area by <Function 41> of this command. Multi cropping areas can be specified. ■ Specify cropping area as "starting position < ending position." ■ Starting position of x (x1) and ending position of x(x2), these specify vertical length of scanning area. (Vertical means perpendicular to paper feed).

- Starting position of y (**y1**) and ending position of y (**y2**) specify length of scanning area for direction of paper feeding.
- If **x2** or **y2** is outside the scannable area, the maximum setting is used. The scanning area setting is specified by Function 41 of **FS (g)**.
- The origin of this function and <Function 41> of this command indicate the same position. If this command is executed, the origin is not changed.
- The setting value of this function affects performing of **GS (G)** <Function 65>. It does not affect retransmission image data from performing of **GS (G)** <Function 66>. If some cropping area has been specified, the printer executes processing of masking image data. See **GS (G)** <Function 65> for details.
- Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.

[Model-dependent variations]

TM-H6000III

TM-H6000III

Origin of this printer is upper right of the scannable area. (The illustration shows the situation of setting two cropping areas)

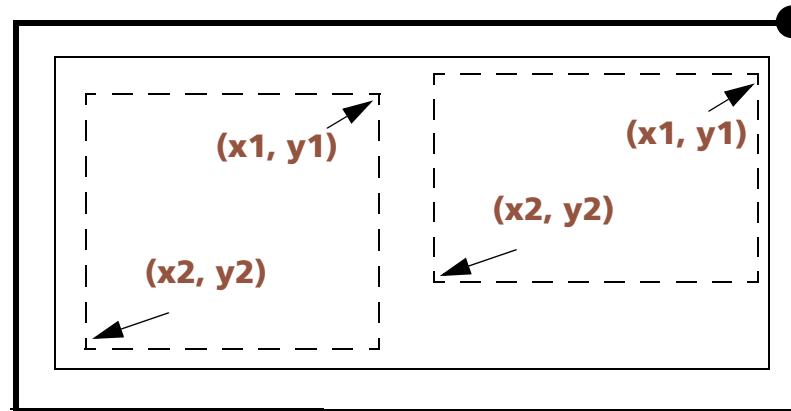
The scannable area is x = 100 mm, y = 230 mm.

If y2 = 0, the ending position of y is specified as the bottom of the check. If length from origin to bottom of the check is over 230 mm, scanning area is treated as 230 mm.

Scanning area is actually treated in 2 mm units. Therefore, if this function specifies an odd setting value, the actual scanning area may be 1 mm larger than the setting value.

[Photo ID model]

The card image scanner of this printer does not support this function. Before using this function, first select slip image scanner with <Function 32> of this command.



Solid line (thick) : scannable area

Solid line (thin) : scanning area

Dashed line : cropping area

● : the origin

FS (g pL pH fn m <Function 60>

[Name] Select the transmission format for the image scanning result.

[Format] ASCII FS (g **pL** **pH** **fn** **m**
 Hex 1C 28 67 02 00 3C **m**
 Decimal 28 40 103 2 0 60 **m**

[Range] **(pL + pH × 256) = 2** (**pL** = 2, **pH** = 0)
fn = 60
m = 48, 49

[Default] It depends on interface model.

m = 48: Printer with interface that allows "transmission all type of binary data."

m = 49: Printer with interface that does not allow "transmission binary data."

[Description] Selects the transmission format for the image scanning results.

- If the printer clamps cut sheet, it ejects cut sheet depend on **m**.

m	Function
48	Selects "transmission image data by binary data format"
49	Selects "transmission image data by hexadecimal character string format"

[Notes]

- The default value of setting of this function is optimized for the model of interface. Therefore, we recommend don't change the setting. The setting of this function can be confirmed by <Function 100> of this command.
- If the model of interface for the printer is "transmission some type of binary data is impossible" model, you cannot set "**m** = 48."
- The setting value of this function affects performing of **GS (G** <Function 65>. It does not affect retransmission image data from performing of **GS (G** <Function 66>.
- Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.

CONFIDENTIAL

[Model-dependent variations]

TM-H6000III

TM-H6000III

In serial interface model, if "XON/XOFF control is enabled" is set by DIP switch [SW1-3], set to "m = 49" (transmission image data by hexadecimal character string format).

FS (g pL pH fn m <Function 80>

[Name] Transmit the setting value for the basic operations of the image scanner.

[Format]

ASCII	FS	(g	pL	pH	fn	m
Hex	1C	28	67	02	00	50	m
Decimal	28	40	103	2	0	80	m

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 2$ (**pL** = 2, **pH** = 0)

fn = 80

m = 48

[Description] Transmits the setting value for the data tone, the threshold level for the tone, and the processing of the image data for the image scanner selected by **FS (g <Function 32>**

- This function does not require the ESC/POS Handshaking Protocol.

[Notes]

- This function can confirm the setting value of **FS (g <Function 40>**.
- This function sends data beginning with the Header and ending with NUL as shown in the following table.

Send data	Hexadecimal	Decimal	Data length
Header	37H	55	1 byte
Identifier	3BH	59	1 byte
Fixed value	34H, 38H	52, 56	2 bytes
Separator	1FH	31	1 byte
Fixed value	34H, 38H	52, 56	2 bytes
Separator	1FH	31	1 byte
Specified tone (d1) (*1)	31H to 38H	49 to 56	1 byte
Separator	1FH	31	1 byte

Processing type (d2) ^(*1)	30H, 39H	48, 57	2 bytes
Threshold level of scanning density (d3) ^(*1)	30H to 39H	49 to 57	1 ~ 3 bytes
NUL	00H	0	1 byte

(*1) The decimal value for <Function 40> of the each setting value is converted to text data and sent starting from the high order end.

Example:

If the setting value is 10, the "10" (expressed hexadecimally as 31H, 30H. Decimally as 49, 48) is converted to 2-byte data.

■ See previous [Notes for transmission process] for processing transmission data group.

[Model-dependent variations]

TM-H6000III

[Photo ID model]

The card image scanner of this printer does not support this function. Before using this function, first select slip image scanner with <Function 32> of this command.

FS (g pL pH fn m <Function 81>

[Name] Transmit the setting value of the scanning area.

[Format]

ASCII	FS	(g	pL	pH	fn	m
Hex	1C	28	67	02	00	51	m
Decimal	28	40	103	2	0	81	m

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 2$ (**pL** = 2, **pH** = 0)

fn = 81

m = 48

[Description] Transmits the setting value of the scanning area for the image scanner selected by **FS (g <Function 32>**.

- This function does not require the ESC/POS Handshaking Protocol.

[Notes] ■ This function can confirm the setting value of **FS (g <Function 41>**.

■ This function sends data beginning with the Header and ending with NUL as shown in the following table.

Send data	Hexadecimal	Decimal	Data length
Header	37H	55	1 byte
Identifier	3CH	60	1 byte
Fixed value	34H, 38H	52, 56	2 bytes
Separator	1FH	31	1 byte
X starting position (x1) (*1)	30H to 39H	48 to 57	1 ~ 3 bytes
Separator	1FH	31	1 byte
Y starting position (y1)(*1)	30H to 39H	48 to 57	1 ~ 3 bytes
Separator	1FH	31	1 byte
X ending position (x2)(*1)	30H to 39H	48 to 57	1 ~ 3 bytes

Separator	1FH	31	1 byte
Y ending position (y1)(*1)	30H to 39H	48 to 57	1 ~ 3 bytes
NUL	00H	0	1 byte

(*1) The decimal value for the each setting value is converted to text data and sent starting from the high order end.

Example:

If the setting value is 10, the "10" (expressed hexadecimally as 31H, 30H. Decimally as 49, 48) is converted to 2-byte data.

- See previous [Notes for transmission process] for processing transmission data group.

FS (g pL pH fn m <Function 90>

[Name] Transmit the setting value of the compression method for the image data.

[Format]

ASCII	FS	(g	pL	pH	fn	m
Hex	1C	28	67	02	00	5A	m
Decimal	28	40	103	2	0	90	m

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 2$ (**pL** = 2, **pH** = 0)

fn = 90

m = 48

[Description] Transmits the setting value of the compression method and file format for the image scanner selected by **FS (g <Function 32>**.

- This function does not require ESC/POS Handshaking Protocol.

[Notes] ■ This function can confirm the setting value of **FS (g <Function 50>**.

■ This function send beginning with the Header and ending with NUL as following table.

Send data	Hexadecimal	Decimal	Data length
Header	37H	55	1 byte
Identifier	3DH	61	1 byte
Fixed value	34H, 38H	52, 56	2 bytes
Separator	1FH	31	1 byte
Setting value of process of compressing (m) (*1)	30H ~ 39H	48~ 57	2 bytes
Setting value of process of compressing (n) (*1)	30H ~ 39H	48~ 57	2 bytes
NUL	00H	0	1 byte

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(*1) Function 50 of the decimal value for the each setting value is converted to text data and sent starting from the high order end.

Example:

If the setting value is 10, the "10" (expressed hexadecimally as 31H, 30H. Decimally as 52, 56 is converted to 2-byte data.

■ See previous [Notes for transmission process] for processing transmission data group.

FS (g pL pH fn m <Function 97>

[Name] Transmit the setting value of the cropping area.

[Format]

ASCII	FS	(g	pL	pH	fn	m
Hex	1C	28	67	02	00	61	m
Decimal	28	40	103	2	0	97	m

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 2$ (**pL** = 2, **pH** = 0)

fn = 97

m = 48

[Description] Transmits the setting value of the cropping area for the image scanner selected by **FS (g <Function 32>**.

- This function requires the ESC/POS Handshaking Protocol.

[Notes] ■ This function can confirm the setting value of **FS (g <Function 57>**.

■ This function sends data beginning with the Header and ending with NUL as shown in the following table.

Send data	Hexadecimal	Decimal	Data length
Header	37H	55	1 byte
Identifier	75H	117	1 byte
Identification status (*1)	40H or 41H	64 or 65	1 byte
Fixed value	34H, 38H	52, 56	2 bytes
Separator	1FH	31	1 byte
Setting value	As stated elsewhere	As stated elsewhere	6 ~ 80 bytes
NUL	00H	0	1 byte

(*1) When transmitting two or more data groups, division processing is performed.

- If identifying status is [Hex: 41H / Decimal: 65], there are data groups following this data group.
- If identifying status is [Hex: 40H / Decimal: 64], there are no data groups following this data group.

- "Setting value" in above table is sent as setting value of cropping area as shown in the following table. If multi cropping areas have been specified, "setting value" includes the data group repeatedly as shown in the following table.

Send data	Hexadecimal	Decimal	Data length
Cropping area number (n) ^(*1)	30H ~ 39H	48 ~ 57	1 ~ 3 bytes
Separator	1FH	31	1 byte
X starting position (x1) ^(*1)	30H to 39H	48 to 57	1 ~ 3 bytes
Separator	1FH	31	1 byte
Y starting position (y1) ^(*1)	30H to 39H	48 to 57	1 ~ 3 bytes
Separator	1FH	31	1 byte
X ending position (x2) ^(*1)	30H to 39H	48 to 57	1 ~ 3 bytes
Separator	1FH	31	1 byte
Y ending position (y2) ^(*1)	30H to 39H	48 to 57	1 ~ 3 bytes
Separator	1FH	31	1 byte

(*1) Function 57 of the decimal value for the each setting value is converted to text data and sent starting from the high order end.

Example:

If the setting value is 10, the "10" (expressed hexadecimally as 31H, 30H. Decimally as 49, 48) is converted to 2-byte data.

- When any cropping area is not specified, "setting value" in previous table is sent as shown in the following table.

Send data	Hexadecimal	Decimal	Data length
Cropping area number	30H	48	1 bytes
Separator	1FH	31	1 byte
Separator	1FH	31	1 byte
Separator	1FH	31	1 byte
Separator	1FH	31	1 byte
Separator	1FH	31	1 byte

- See previous [Notes for transmission process] for processing transmission data group.
- See previous [Notes for ESC/POS Handshaking Protocol] for processing ESC/POS Handshaking Protocol.

[Model-dependent variations]

TM-H6000III

[Photo ID model]

The card image scanner of this printer does not support this function. Before using this function, first select slip image scanner with <Function 32> of this command.

FS (g pL pH fn m <Function 100>

[Name] Transmit the setting value of the transmission format for the image scanning result.

[Format]

ASCII	FS	(g	pL	pH	fn	m
Hex	1C	28	67	02	00	64	m
Decimal	28	40	103	2	0	100	m

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 2$ (**pL** = 2, **pH** = 0)

fn = 100

m = 48

[Description] Transmits the setting value of the transmission format of the image scanning results.

- This function does not require the ESC/POS Handshaking Protocol.

[Notes] ■ This function can confirm the setting value of **FS (g <Function 60>**.

■ This function sends data beginning with the Header and ending with NUL as shown in the following table.

Send data	Hexadecimal	Decimal	Data length
Header	37H	55	1 byte
Identifier	3EH	62	1 byte
Fixed value	34H, 38H	52, 56	2 bytes
Separator	1FH	31	1 byte
Image data transmission format (m) (*1)	30H to 39H	49 to 57	1 ~ 3 bytes
NUL	00H	0	1 byte

(*1) Function 60 of the decimal value for the each setting value is converted to text data and sent starting from the high order end.

Example:

If the setting value is 10, the "10" (expressed hexadecimally as 31H, 30H. Decimally as 49, 48) is converted to 2-byte data.

- See previous [Notes for transmission process] for processing transmission data group.

FS a 0

EXECUTING COMMAND

[Name] Read check paper

[Format]	ASCII	FS	a	0	n
	Hex	1C	61	30	n
	Decimal	28	97	48	n

[Range] $0 \leq \mathbf{n} \leq 255$

[Default] None

[Printers not featuring this command] **TM-J9000/J9100, TM-J7500/7600, TM-U325D**[Description] Reads magnetic ink characters in the readable font specified by **n**, and transmits the reading result.

n: Bit	Off/On	Hex	Decimal	Function
0	See the table below.			Readable fonts.
1				
2-7	0	00	0	Reserved

Readable fonts:

Bit 1	Bit 0	Hex	Decimal	Font
Off	Off	00	0	E13B
Off	On	01	1	CMC7
On	Off	02	2	Reserved
On	On	03	3	Reserved

- If an undefined font is selected, this command is ignored.

[Recommended Functions]

This function is supported only by some printer models and may not be supported by future models.

- **GS (G** <Function 61> for processing MICR is recommended.

[Notes]

- This command is supported only by printers with a MICR reader.
- This command is enabled only when processed at the beginning of the line in standard mode.
- Don't do the following actions between the starting of reading magnetic ink characters and the ending of transmission the reading result.
 - Opening or closing any paper cover
 - Operating the panel buttons
 - Executing **DLE DC4 (fn = 8)**
- Readable fonts indicate the character standard for converting a readable waveform to character data. This command is ignored when a reserved font is specified.
- If this command is processed in page mode, it is ignored.
- If MICR function is not selected when this command is executed, the MICR function is selected and the printer enters the check paper waiting status. The printer waits for the check paper until it is inserted, the waiting time **t1** set by **ESC f** elapses, the printer is reset, or the power is turned off. The selected/unselected status of the MICR function is confirmed by the extended ASB status or **DLE EOT (n = 8, a = 1: MICR status)**.
- During the check paper waiting period, the printer processes only real-time commands.
- It is possible to cancel the check paper waiting status using **DLE ENQ 3**. In this case, however, data in the print and receive buffer is cleared. The check paper insertion waiting status can be confirmed by **DLE EOT (n = 8, a = 1: MICR status)** or customized basic ASB with **GS (B)**.
- The scanning results for the magnetic ink characters are erased by executing this command, executing **ESC @**, resetting the printer, or turning the power off.
- The printer transmits the reading magnetic ink character result to the host computer after reading.
 - When the printer ends reading normally, it transmits "header + reading status (normal end) + data + NUL" to the host computer.
 - When a reading result is abnormal, the printer transmits "header + reading status (abnormal end) + NUL" to the host computer.
 - [Detailed information + separation], [reading data], or [detailed information + separation + reading data] is added after [reading status (abnormal end)] by **FS (f)**.

- Header can be specified by **FS (f** as follows:
 - 1-byte header (Hex = 5FH/Decimal = 95)
 - 2-byte header with an identifier (Hex = 37H + 2AH/Decimal = 55 + 42)
- Reading status:

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Readable font: E13B
	On	01	1	Readable font: CMC7
1	-	-	-	Reserved
2	-	-	-	Reserved
3	Off	00	0	Detailed information: not added
	On	08	1	Detailed information: added
4	Off	00	0	Rereading possible
	On	10	16	Rereading not possible
5	Off	00	0	Reading: Normal end
	On	20	32	Reading: Abnormal end
6	On	40	64	Fixed
7	Off	00	0	Fixed

... how to use
this table

- Detailed information is the data of a byte. When reading result is normal, it is "normal (in hexadecimal: 40H, in decimal: 64)." When reading result is normal, it is the data corresponding to the error. See the description of "detailed information" of **GS (f (n = 1, or 49)** for details.
- The separation is [in hexadecimal: 1FH, in decimal: 31].
- Detailed information and separation are continuous. And, when reading status is "Detailed information: added", following the data is the detailed information.
- The reading data is a series of ASCII codes corresponding to the reading results. When the reading status is abnormal end, the reading data includes "?". Refer **GS (G <Function 60>** for detailed information of the reading data.

- NUL is [Hex = 00H/Decimal = 0].
- Bits 0 and 1 of the reading status indicate identified character fonts. When an abnormal end occurs, bit 0 and bit 1 have no meaning.
- In the following cases, rereading is not possible (bit 4 is on):
 - When the printer does not support the function of rereading.
 - When the printer reaches the maximum times for rereading (the maximum times are different for different models).
 - When the MICR status is not selected. It can be checked by the extended ASB status or **DLE EOT (n = 8, a = 1: MICR status)**.
- When bit 4 of reading status is off (rereading possible), **FS a 0, FS a 1, FS a 2, FS b, FS (e, GS (G** and real-time commands are processed. When processing the other codes, the MICR function ends after specifying the reading status as [rereading not possible].
- When the MICR function (MICR status) is selected and bit 4 of reading status is on (rereading not possible), **FS a 1, FS a 2, FS b, FS (e, GS (G** and real-time commands are processed. When processing the other codes, the MICR function ends.
- If unrecoverable error occurs while executing this command, the printer can be recovered from the error by **DLE ENQ (n = 2)**. After recovering, finish MICR function. In this case, the printer does not transmit result of reading.
- The end processing of the MICR functions is as follows:
 - The MICR function is set to [MICR not selected (MICR status)].
 - The check paper is ejected (including the paper ejection waiting status).
 - Roll paper is selected as the paper source.
 - Printing position is set to left edge of printing area.
 - The printer's state becomes "beginning of the line" and "no data in print buffer."
- In either of the following cases, the check paper is not ejected after transmitting the reading result:
 - The reading ends normally.
 - The reading ends abnormally, and the reading result is added (specified by **FS (f**).
 - The MICR function is continued after the abnormal end (specified by **FS (f**).

- In serial interface model, when communication with the printer uses XON/XOFF control, the XOFF code may interrupt the "Header to NUL" data string.
- When you use this command, obey the following rules.
 - When the host PC transmits the function data, transmit next data after receiving the previous data from the printer.
 - When operating with a serial interface, be sure to configure operation so that the host computer only uses the printer when it is READY.
 - With a parallel interface, data of "Header ~ NUL" is stored in the transmission buffer of the printer temporarily the same as the other transmission data (except for ASB status), and when the host enters Reverse Mode, data is transmitted in order from the beginning of the transmission buffer. The transmission buffer is 99 bytes; therefore, data that exceeds 99 bytes is ignored. When using this command, the host should enter the Reverse Mode immediately to receive status.
- The result of reading magnetic ink character can be identified to other transmission data according to specific data of the transmission data block. When the header transmitted by the printer is [hex = 5FH/decimal =95] or [hex = 37H/decimal =55], treat NUL [hex = 00H/decimal =0] as a data group and identify it according to the combination of the header and the identifier.

[Model-dependent variations]

TM-J7000/7100, TM-H6000III, TM-H5000II, TM-U675

Program Example for all printers

```
PRINT #1, CHR$(&H1C); "a0";CHR$(0); ←Readable font as E13B
```

TM-J7000/7100

This printer supports **GS (G <Function 60>)**.

We recommend using **GS (G <Function 60>)**. See the description of **GS (G <Function 60>)** for details.

TM-H5000II

The printer does not support the rereading function.

Bit 4 of reading status is always fixed to on (rereading not possible).

When eject check paper with end of MICR function, the printer feeds until the printer gets to the position where the slip paper can be ejected.

forward direction ignore setting of **ESC F** or **ESC F**.

- The readable characters printed with CMC7 are 15 types as shown below:

Character type		Numeric	Special symbols				
Transmission data	ASCII	0 ~ 9	#	/	=	>	^
	Hex	31 ~ 39	23	2F	3D	3E	5F
	Decimal	48 ~ 57	35	47	61	62	94

TM-H6000III

This printer does not support the rereading function; therefore, reading status is always [rereading not possible (Bit 4 = 1)].

When eject check paper with end of MICR function, the printer feeds paper to forward direction ignore setting of **ESC F**.

- The readable characters printed with CMC7 are 15 types as shown below:

Character type		Numeric	Special symbols				
Transmission data	ASCII	0 ~ 9	#	/	=	>	^
	Hex	31 ~ 39	23	2F	3D	3E	5F
	Decimal	48 ~ 57	35	47	61	62	94

TM-U675

The printer does not support the rereading function.

Bit 4 of reading status is always fixed to on (rereading not possible).

When eject check paper with end of MICR function, the printer feeds paper to forward direction ignore setting of ESC F.

- The readable characters printed with CMC7 are 15 types as shown below:

Character type		Numeric	Special symbols				
Transmission data	ASCII	0 ~ 9	#	/	=	>	^
	Hex	31 ~ 39	23	2F	3D	3E	5F
	Decimal	48 ~ 57	35	47	61	62	94

FS a 1

EXECUTING COMMAND

[Name] Load check paper to print starting position

[Format] ASCII FS a 1
 Hex 1C 61 31
 Decimal 28 97 49

[Range] None

[Default] None

[Printers not featuring this command] **TM-J9000/J9100, TM-J7500/7600, TM-U325D**

[Description] Feeds the check paper to the print starting position and selects slip paper (face) as the active sheet.

[Recommended Functions]

This function is supported by only some printer models and will not be supported by future models.

- **GS (G** is recommended for processing of check paper loading.
GS (G supports paper feeding to the print start position of the slip for face or back. The procedure is as follows.
 1. Select slip to the active sheet by **GS (G** <Function 80>.
 2. Select the side of slip for printing by **GS (G** <Function 48>.
 3. Feed the paper to the printing position by **GS (G** <Function 84>.

And, the combination of **GS (G** <Function 48> and <Function 84> supports paper feeding to the print start position of the check for face and back.

- [Notes]
- This command is supported only by printers with the MICR option.
 - This command is ignored unless the MICR function is selected. Select the MICR function with **FS a 0**.
 - When this command is executed, bit 4 of reading status for **FS b** is on (rereading not possible).
 - After loading the check paper, the printer ends the MICR function and selects the face of slip paper as the active sheet. The printer's state becomes "beginning of the line" and "no data in print buffer."

[Model-dependent variations]

TM-J7000/7100, TM-H6000III**Program Example for all printers**

```
PRINT #1, CHR$(&H1C); "a1";
```

TM-J7000/7100

This printer supports **GS (G <Function 80>, <Function 48>, <Function 84>.**

We recommend using **GS (G**. See each function of **GS (G** for details of the functions.

TM-H6000III

This printer supports **GS (G <Function 80>, <Function 48>, <Function 84>.**

We recommend using **GS (G**. See each function of **GS (G** for details of the functions.

FS a 2

EXECUTING COMMAND

[Name]	Eject check paper			
[Format]	ASCII	FS	a	2
	Hex	1C	61	32
	Decimal	28	97	50

[Range] None

[Default] None

[Printers not featuring this command] **TM-J9000/J9100, TM-J7500/7600, TM-U325D**

[Description] Ejects the check paper and selects roll paper as the active sheet.

[Recommended Functions]

This function is supported by only some printer models and will not be supported by future models.

- **GS (G** <Function 85> is recommended for process of ejecting check paper.

- This command is supported only by printers with the MICR option.
- This command is ignored unless the MICR function is selected. Select the MICR function with **FS a 0**.
- When this command is executed, bit 4 of reading status for **FS b** is on (rereading not possible).
- After ejecting the check paper, the printer ends the MICR function and selects roll paper as the paper source. The printer's state becomes "beginning of the line" and "no data in print buffer."

[Model-dependent variations] **TM-J7000/7100, TM-H6000III, TM-H5000II, TM-U675**

Program Example for all printers

```
PRINT #1, CHR$(&H1C); "a2";
```

TM-J7000/7100

This printer supports **GS (G** <Function 85>.

We recommend using **GS (G**. See the description of **GS (G** <Function 85>.

TM-H6000III

This printer ejects check paper in the forward direction regardless of the setting of **ESC F** when ending the MICR function.

TM-U675

This printer ejects check paper in the forward direction regardless of the setting of **ESC F** when ending the MICR function.

TM-H5000II

This printer ejects check paper by back feeding to the paper removable position regardless of the setting of **ESC C** and **ESC F** when ending the MICR function.

[Name] Request retransmission of check paper reading result

[Format] ASCII FS b
Hex 1C 62
Decimal 28 98

[Range] None

[Default] None

[Printers not featuring this command] **TM-J9000/J9100, TM-J7500/7600, TM-U325D**

[Description] Retransmits the magnetic ink character reading result using the process of **FS a 0**.

[Recommended Functions]

This function is supported only by some printer models and will not be supported by future models.

- **GS (G** <Function 61> is recommended for process of retransmitting the previous check paper reading results.

- [Notes]
- This command is supported only by printers with a MICR reader.
 - The transmitted information is the same as that previously transmitted by **FS a 0**.
 - If **FS a 0** is not executed before the execution of this command, the printer transmits [Header + reading status (abnormal end)] to host PC. In this case, reading data is not added. If "Detailed information: add" is specified by **FS (f**, the detailed information is as follows.
FS a 0 has not processed yet. (in Hex: 41H, in Decimal: 65)
 - See the description of **FS a 0** for details of reading result of MICR and transmission.

Program Example for all printers

```
PRINT #1, CHR$(&H1C); "b";
```

[Model-dependent variations]

TM-J7000/7100

TM-J7000/7100

This printer supports **GS (G** <Function 61>.

We recommend using **GS (G**. See the description of **GS (G** <Function 61>.

[Name] Clean MICR mechanism

[Format] ASCII FS c
 Hex 1C 63
 Decimal 28 99

[Range] None

[Default] None

[Printers not featuring this command] **TM-J7500/7600, TM-U325D**

[Description] Cleans the MICR mechanism.

- This command is supported only by printers with a MICR reader.
- This command is enabled only when processed at the beginning of the line in standard mode.
- If this command is encountered in page mode, it is ignored.
- When this command is executed, the printer enters the cleaning sheet waiting status. Insert the cleaning sheet into the check paper entrance. The printer waits for the cleaning sheet until a cleaning sheet is inserted, the waiting time **t1** set by **ESC f** elapses, the printer is reset, or the power is turned off.
- During the cleaning sheet waiting period, the printer processes only real-time commands.
- It is possible to cancel the cleaning sheet waiting status using **DLE ENQ 3**. In this case, however, data in the print and receive buffer is cleared. The cleaning sheet insertion waiting status can be confirmed by **DLE EOT (n = 8, a = 1: MICR status)** or customized basic ASB with **GS (B**.
- After cleaning the MICR mechanism, the printer automatically selects roll paper as the paper source. And, printing position is moved to left edge of printing area, the printer enters "beginning of the line" and "no data in print buffer."

[Model-dependent variations] **TM-H6000III, TM-H5000II, TM-U675**

Program Example for all printers

```
PRINT #1, CHR$(&H1C); "c";
```

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TM-H6000III

For the ejection after MICR function, the printer feeds forward regardless of setting by ESC F.

TM-U675

For the ejection after MICR function, the printer feeds forward regardless of setting by ESC F.

TM-H5000II

For the ejection after MICR function, the printer reverse feeds until the printer gets to the position where the paper can be ejected regardless of setting by ESC C or ESC F.

[Name] Select cut sheet control function(s) (MICR and image scanner functions)

[Printers not featuring this command] **TM-J7500/7600, TM-U675, TM-H5000II, TM-U325D**

[Description] Performs miscellaneous processes for MICR reading or image scanning control.

- Function code (**fn**) specifies the function.

fn	Function	
60	Function 60	Read the magnetic ink character and transmit the reading result.
61	Function 61	Retransmit the magnetic ink character reading result.
64	Function 64	Read the data and transmit the resulting information.
65	Function 65	Scan image data and transmit the image scanning result.
66	Function 66	Retransmit the image scanning result.
67	Function 67	Execute a pre-scan.
68	Function 68	Delete the image scanning result with the specified data ID.
69	Function 69	Delete all image scanning results.
70	Function 70	Transmit the data ID list of the image scanning results.
71	Function 71	Transmit the remaining capacity of the NV memory for image data storage.

- **pl, ph** specify (**pl + ph × 256**) as the number of bytes after **ph** (**fn** and **[parameters]**).
- Description of the **[parameters]** is described in each function.

* The following functions are described in "Printing paper commands."

- **Function 32:** Transmit the status of the cut sheet.
- **Function 48:** Select the side of the slip (face or back).
- **Function 80:** Select the active sheet.

- **Function 81:** Start pre-process for cut sheet insertion.
- **Function 82:** End pre-process for cut sheet insertion.
- **Function 83:** Execute waiting process for cut sheet insertion.
- **Function 84:** Feed to the print starting position for the slip.
- **Function 85:** Finish the processing for the cut sheet.

[Notes]

- The function of this command is defined by function code **fn** and the operation differs, depending on the function selected.
- The "active sheet" is the target sheet of commands. Active sheet can be set to "roll paper," "slip paper," "validation paper," "check" or "Card" by the following commands.

Command	Settable active sheet
This command <Function 80>	Roll paper, slip paper, validation paper, check, Card
ESC c 0	Roll paper, slip paper, validation paper
FS a 0 (*1)	Check

(*1) **FS a 0** is supported only by some printer models and will not be supported by future models. The command is an obsolete command.

- The functions of this command may be ignored depending on the current active sheet.
- <Function 64>, <Function 65>, <Function 68> and <Function 69> of this command write to the non-volatile memory. Note the following points when using these functions.
 - Do not turn off the power or reset the printer from the interface when the relevant functions are being executed.
 - When the relevant functions are being executed, the printer may enter the BUSY status. The printer will not receive data when it is BUSY, so do NOT send data from the host.

[Notes for transmission process]

- Data send operations are performed using <Function 60>, <Function 61>, <Function 64>, <Function 65>, <Function 66>, <Function 67>, <Function 70>, and <Function 71>. When you use this command, obey the following rules.

- After the host PC transmits the function data, the printer will send response data or status data back to the PC. Do not transmit more data from the PC until the response data or status data are received from the printer.
 - When operating with a serial interface, be sure to configure operation so that the host computer only uses the printer when it is READY.
 - When operating with a parallel interface, the data sent by this function (starting with Header and ending with NUL), as with other data, is first stored in the send buffer, then output in sequential order when the host computer changes to the reverse mode. Note that the send buffer capacity is 99 bytes, and any data exceeding this volume limit will be lost; therefore, when using this command, it is important to configure the operation so that the host computer's change to the reverse mode and the subsequent status send/receive process is performed quickly.
- When communication with the printer uses XON/XOFF control with serial interface, the XOFF code may interrupt the "Header to NUL" data string.
- The information for each function can be identified to other transmission data according to specific data of the transmission data block.
- When the header transmitted by the printer is [hex = 37H/decimal =55], the data after the header to NUL [hex = 00H/decimal =0] is treated as a data group and identified according to the combination of the header and the identifier.
 - When the header transmitted by the printer is [hex = 53H/decimal =83], the 3rd byte and the 4th byte indicate the amount as a data group and identify it according to the combination of the header and the identifier.

[Notes for ESC/POS Handshaking Protocol]

- It will be necessary to perform the ESC/POS Handshaking Protocol procedures listed below when using <Function 65>, <Function 66>, and <Function 70>.

Procedure	Host operation	Printer operation
1	GS (G sends Function 65.	Function 65 is initiated.
2	Data is received from printer.	Transmits result of reading image.
3	Response code (*1) is sent.	Procedures (*2 and *3) are performed according to response code.

(*1) Response Code

ASCII	Hexadecimal	Decimal	Request definition
ACK	06	6	Send next data group.
NAK	15	21	Resend just-received data group.
CAN	18	24	Cancel send operation.

(*2) Processing According to Response Code (When Send Data Remains (indicated by identification status of send data group))

Response code	Description
ACK	Initiates operation to send next data.
NAK	Resends the just-received data.
CAN	Cancels processing initiated by this command.

(*3) Processing According to Response Code (When No More Send Data Remains (indicated by identification status of send data group))

Response code	Description
ACK, CAN	Cancels procedure initiated by this command.
NAK	Resends the just-received data.

- When codes other than the ACK, NAK, or CAN codes are received, the CAN procedure is executed.

Program example and print samples

```

PRINT #1, CHR$(&h1D); "(G"; CHR$(2); CHR$(0); CHR$(80); CHR$(32);      ' <- selecting check paper to the active sheet <Function 80>
PRINT #1, CHR$(&h1D); "(G"; CHR$(2); CHR$(0); CHR$(81); CHR$(48);      ' <- starts pre-process for check paper insertion <Function 81>
    '<Confirm check paper insertion: (Ex: waiting that TOF and BOF sensor indicate "paper present" with the ASB status.>
PRINT #1, CHR$(&h1D); "(G"; CHR$(2); CHR$(0); CHR$(82); CHR$(48);      ' <- ends pre-process for check paper insertion <Function 82>
PRINT #1, CHR$(&h1D); "(G"; CHR$(4); CHR$(0); CHR$(60); CHR$(1); CHR$(0); CHR$(0);      '<- reading the magnetic ink character.
GOSUB *RECEIVE                                '<- receiving result of the reading (omitting detail.)

PRINT #1, CHR$(&H1D); "(G"; CHR$(2); CHR$(0); CHR$(67); CHR$(48);      '<- executing pre-scan <Function 67>.
GOSUB *RECEIVE                                '<- receiving result of pre-scanning (omitting detail.)

PRINT #1, CHR$(&H1D); "(G"; CHR$(2); CHR$(0); CHR$(80); CHR$(4);      ' <- selecting active sheet (to slip paper) <Function 80>.
PRINT #1, CHR$(&H1D); "(G"; CHR$(2); CHR$(0); CHR$(48); CHR$(4);      ' <- selecting face of slip <Function 48>.
PRINT #1, CHR$(&H1D); "(G"; CHR$(2); CHR$(0); CHR$(84); CHR$(1);      ' <- the paper feed to the print start position of the slip <Function 84>.
PRINT #1, "AAAAAA"; CHR$(&HA);                  ' <- printing on face of slip.

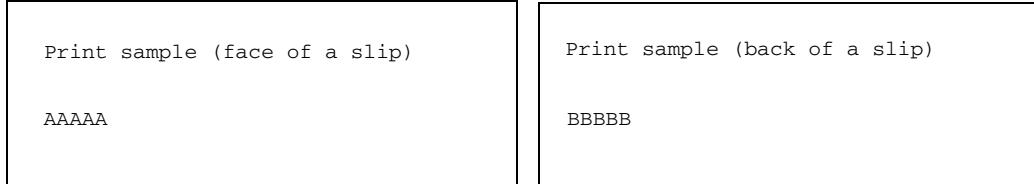
PRINT #1, CHR$(&H1D); "(G"; CHR$(2); CHR$(0); CHR$(80); CHR$(32);      ' <- selecting active sheet (to check) <Function 80>.
PRINT #1, CHR$(&H1D); "(G"; CHR$(5); CHR$(0); CHR$(65); CHR$(1); CHR$(0); CHR$(48); CHR$(48);      ' scanning the image <Function 65>.

*LOOP:
GOSUB *RECEIVE                                '<- receiving result of the scanning (omitting detail.)
PRINT #1, CHR$(6);                            '<- sending response code.

IF (MID$(ST$,3,1)=CHR$(65) or MID$(ST$,3,1)=CHR$(67)) THEN *LOOP      '<- confirming following data.

PRINT #1, CHR$(&h1D); "(G"; CHR$(2); CHR$(0); CHR$(85); CHR$(48);      '<-paper ejection
PRINT #1, CHR$(&H1D); "(G"; CHR$(2); CHR$(0); CHR$(80); CHR$(3);      ' <- selecting active sheet (to roll paper) <Function 80>.

```



[Model-dependent variations]

TM-J9000/J9100, TM-J7000/7100, TM-H6000III

TM-J9000/J9100

The printer supports <Function 61>, <Function 64> and <Function 66>

TM-H6000III

<Function 65> ~ <Function 71> are supported by Image scanner model (with NV memory for saving image scan results).

Printers with image scanners (without NV memory for saving image scan results) support <Function 65> to <Function 67>.

TM-J7000/7100

This printer supports <Function 60> and <Function 61> only.

GS (G pL pH fn nL nh m <Function 60>

[Name] Read the magnetic ink character and transmit the reading result.

[Format]

ASCII	GS	(G	pL	pH	nL	nh	fn	m
Hex	1D	28	47	04	00	nL	nh	3C	m
Decimal	29	40	71	4	0	nL	nh	60	m

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 4$ ($\mathbf{pL} = 4$, $\mathbf{pH} = 0$)

fn = 60

m = 0, 1

TM-J7000/7100: (nL + nh × 256) = 1 (nL = 1, nh = 0)

[Description] Reads magnetic ink characters in the readable font specified by **m**, and transmits the reading result.

- The magnetic ink character reading result is associated with the data ID specified by $(\mathbf{nL} + \mathbf{nh} \times 256)$ and stored. When the data ID is already in the memory, the data related to the data ID is overwritten by the latest data.

m	Function
0	Readable font is selected to "E13B."
1	Readable font is selected to "CMC7."

- This function does not require the ESC/POS Handshaking Protocol.
- This function is enabled for the MICR reader mounted printer only.
- This function is enabled when cut sheet status of <Function 32> of this command is [Bit1 = 0: the MICR processing of the current clamped check is enabled].
- Don't do the following actions between starting of reading magnetic ink character and the ending of transmission the reading result.
 - Opening or closing any paper cover
 - Operating the panel buttons
 - Executing **DLE DC4 (fn = 8)**
- Readable font is the character standard for converting a readable waveform to character data.

- Reading process for magnetic ink character is affected by the setting value of command **FS (f (n = 0, 48)**.
- Saved MICR scanning results are deleted by any of the following processes.
 - When an identical data ID is specified, and this function or <Function 64> of this command is executed.
 - Turning off the power or resetting.
- Readable font is the character standard for converting a readable waveform to character data.
- When the printer finishes reading magnetic ink characters, it sends the result of MICR reading data groups as shown in the following table, beginning with the Header and ending with NUL.

Send data	Hexadecimal	Decimal	Data length
Header	37H	55	1 byte
Identifier	3FH	63	1 byte
Reading status(*1)	As stated elsewhere	As stated elsewhere	1 byte
Detailed information(*2)	40H to 4AH	64 to 74	1 byte
Separator	1FH	31	1 byte
Data ID (*3)	30H ~ 39H	48 ~ 57	1 ~ 5 bytes
Separator	1FH	31	1 byte
Reading data(*4)	20H to 7EH	32 to 126	0 ~ 80 bytes
NUL	00H	0	1 byte

■ (*1) This status mainly indicates reading process is normal or abnormal ending as following table.

Bit	Off/On	Hex	Decimal	Status
0	Off	00	0	Readable fonts: E13B
	On	01	1	Readable fonts: CMC 7
1	Off	00	0	Reserved.
2	Off	00	0	Reserved.
3	On	08	8	Reserved.
4	Off	00	0	Rereading is possible.
	On	10	16	Rereading is impossible (*1-1)
5	Off	00	0	The reading processing is normal end.
	On	20	32	The reading processing is abnormal end.
6	On	40	64	Fixed.
7	Off	00	0	Fixed.

*... how to use
this table*

(*1-1) In the following cases, rereading is not possible (bit 4 is on):

- When the printer does not support the function of rereading.
- When the printer reaches the maximum times for rereading (the maximum times are different for different models).
- When the MICR status is not selected. It can be checked by **DLE EOT (n = 8, a = 1: MICR status)**.

(*2) This detailed information mainly describes abnormal endings as shown in the following table.

Anything other than [Normal end (Hexadecimal = 40H / Decimal = 64)] is abnormal end.

Hex	Decimal	Detailed information
40	64	The reading process had a normal ending.
41	65	There is no reading result of magnetic ink character with the specified data ID. (*2-1)
44	68	When check paper with a length other than that specified is inserted.

Hex	Decimal	Detailed information
45	69	Normal waveform reading cannot be detected.
46	70	An unrecognized character is detected by waveform analysis.
47	71	An error occurred between the start of this function and header transmission (excluding communication errors)
48	72	When an error is detected by noise measurement.
49	73	The processing of this function is stopped due to a cover open.
4A	74	The processing of this function is stopped due to a paper jam.
4B	75	Abnormal paper feed occurred during scanning.

(*2-1) This error doesn't occur when the function is executed. This error may occur when <Function 61> of this command is executed.

(*3) The data ID of the reading result is converted to character codes corresponding to decimal data, then transmitted from the MSB.

Ex: When the data ID is 12, the transmitted data is 2 bytes data as "12" [Hex: 31H, 32H / Decimal: 49, 50].

(*4) Reading data is converted reading to ASCII code.

- If reading status is "normal end," the reading data is added to the reading result.
- If reading status is "abnormal end," the reading data is not added to the reading result. But, if **FS (f** has specified "The character that cannot be recognized is replaced with the character "?" , the reading data including "?" is added to the reading result.

■ The recognition character strings when E13B is specified as the scanning font are as follows.

MICR	Transmit data			MICR	Transmit data		
	ASCII	Hex	Decimal		ASCII	Hex	Decimal
0	0	30	48	*	A	41	65
1	1	31	49	..	D	44	68
2	2	32	50	..*	O	4F	79
3	3	33	51	..:	T	54	84
4	4	34	52				
5	5	35	53	space	SP	20	32
6	6	36	54	unrecognizable	?	3F	63
7	7	37	55				
8	8	38	56				
9	9	39	57				

- The recognition character strings when CRC7 is specified as the scanning font are as follows.

MICR	Transmit data			MICR	Transmit data		
	ASCII	Hex	Decimal		ASCII	Hex	Decimal
0	0	30	48	0	#	23	35
1	1	31	49	1	/	2F	47
2	2	32	50	2	=	3D	61
3	3	33	51	3	>	3E	62
4	4	34	52	4	^	5E	94
5	5	35	53				
6	6	36	54	space	SP	20	32
7	7	37	55	unrecognizable	?	3F	63
8	8	38	56				
9	9	39	57				

- When bit 4 of reading status is off (rereading possible), **FS a 0, FS a 1, FS a 2, FS b, FS (e, GS (G** and real-time commands are processed. When processing the other codes, the MICR function ends after specifying the reading status as [rereading not possible].
- When the MICR function is selected and bit 4 of reading status is on (rereading not possible), **FS a 1, FS a 2, FS b, FS (e, GS (G** and real-time commands are processed. When processing the other codes, the MICR function ends.
- If a recoverable error occurs when executing this command recovery is possible with **DLE ENQ (n = 2)**. After recovering, finish the MICR function. In this case, the printer does not transmit result of reading.
- The end processing of the MICR functions is as follows:
 - The MICR function is set to [MICR not selected (MICR status)].
 - The check paper is ejected (including the paper ejection waiting status).
 - Roll paper is selected as the paper source.

- Printing position is set to left edge of printing area.
 - The printer's state becomes "beginning of the line" and "no data in print buffer."
- In either of the following cases, the check paper is not ejected after transmitting the reading result:
- The reading ends normally.
 - The reading ends abnormally, and the reading result is added (specified by **FS (f)**).
 - The MICR function is continued after the abnormal end (specified by **FS (f)**).

[Model-dependent variations]

TM-J9000/J9100, TM-J7000/7100, TM-H6000III

TM-J7000/7100

This printer doesn't support rereading function. The reading status always indicates Rereading is impossible (Bit 4 = 1).

In reading processing of CMC7, the recognizable characters are 15 characters as shown in the following table.

Character category	Numeric	Special characters						
Transmit data	(ASCII)	0 ~ 9	#	/	=	>	^	
	Hexadecimal	30 ~ 39	23	2F	3D	3E	5E	
	Decimal	48 ~ 57	35	47	61	62	94	

TM-J9000/J9100, TM-H6000III

This printer does not support this function.

GS (G pL pH fn nL nh <Function 61>

[Name] Retransmit the magnetic ink character reading result.

[Format]

ASCII	GS	(G	pL	pH	fn	nL	nh
Hex	1D	28	47	03	00	3D	nL	nh
Decimal	29	40	71	3	0	61	nL	nh

[Range] $(\text{pL} + \text{pH} \times 256) = 3$ (**pL** = 3, **pH** = 0)

fn = 61

TM-J9000/J9100, TM-J7000/7100: (nL + nh × 256) = 1 (nL = 1, nh = 0)

[Description] Transmits the magnetic ink character reading result for the data ID specified by (**nL** + **nh** × 256).

- MICR scanning results saved with <Function 60> or <Function 64> of this command are subject to this function.
- The information sent is the same information as the transmission data group explained in <Function 60>.
- This function does not require ESC/POS Handshaking Protocol.

[Notes]

- This function is enabled for the MICR reader equipped printer only.
- If <Function 60> was never executed before executing this function, this function sends reading result of "abnormal ending." In this case, "detailed information" is as below.
 - Reading magnetic ink character has not been executed yet. (in Hex: 41H, in Decimal: 65)
- See <Function 60> of this command for details of result of the reading magnetic ink character and transmission it.

[Model-dependent variations]

TM-J9000/J9100, TM-J7000/7100, TM-H6000III

TM-J9000/J9100

With this printer, magnetic ink character scanning is executed with <Function 64>. Also when <Function 64> is executed, the MICR scanning results are not sent, so after executing <Function 64>, acquire the MICR scanning results with this function.

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TM-J7000/7100

With this printer, magnetic ink character scanning is executed with <Function 60>. Also, when <Function 60> is executed, the MICR scanning results are sent.

TM-H6000III

This printer does not support this function.

GS (G pL pH fn nL nh m1 m2 [d1...dk] <Function 64>

[Name] Read the data and transmit the resulting information.

[Format]	ASCII GS (G pL pH fn nL nh m1 m2 a b1 b2L b2H [d1...dk]
	Hex 1D 28 47 pL pH 40 nL nh m1 m2 a b1 b2L b2H [d1...dk]
	Decimal 29 40 71 pL pH 64 nL nh m1 m2 a b1 b2L b2H [d1...dk]

[Range] $5 \leq (\text{pL} + \text{pH} \times 256) \leq 1029$ ($0 \leq \text{pL} \leq 255$, $0 \leq \text{pH} \leq 4$)

fn = 65

$0 \leq \text{d} \leq 255$

$0 \leq \text{k} \leq 1024$

TM-J9000/J9100: $(\text{pL} + \text{pH} \times 256) = 9$ ($\text{pL} = 9$, $\text{pH} = 0$)

fn = 66

$(\text{nL} + \text{nh} \times 256) = 1$ ($\text{nL} = 1$, $\text{nh} = 0$)

m1 = 48

m2 = 48 =

a = 0

b1 = 48

$(\text{b2L} + \text{b2H} \times 256) = 0$ ($\text{b2L} = 0$, $\text{b2H} = 0$)

[Description] Scans the image, saves the scanned results, and sends the scanned information of the check paper or card selected in magnetic ink character and active sheet.

- The MICR scanning result or image scanning result is saved with the related data ID specified with $(\text{nL} - \text{nh} \times 256)$. The scanning result of each data is saved with the related data ID specified with $(\text{nL} - \text{nh} \times 256)$. If a scanning result with the related data ID specified already exists in the memory, it is overwritten by the latest data.
- m2** specifies the data to be scanned.

m2	Data for scanning	Scanning results saved
1	Magnetic ink character	The MICR scanning result.
2	Image data	The image scanning result.
3	Magnetic ink character and image data	The MICR and scanning result.

- **a** specifies the scanning font when magnetic ink characters are specified to be scanned.

m	Function
0	Readable font is selected to "E13B."
1	Readable font is selected to "CMC7."

- **[d1...dk]** is treated as string data which is included in sent file when sent file format is specified as TIFF format or JPEG format by **FS (g <Function 50>**. The parameters **[d1...dk]** can be omitted.
- **k** indicates the number of characters to embed in the transmission file. **k** is an explanatory parameter and does not need to be transmitted.
- This function does not require the ESC/POS Handshaking Protocol.

[Notes]

- This function is enabled for the MICR reader or image scanner equipped printer only.
- Cut sheet status of <Function 32> of this command allows you to check whether this function can be used.
- See <Function 65> of this command for details of the result of reading image data and transmission of it.
- When scanning of the data finishes, the scanned information shown in the following table is sent to the host.

Send data	Hexadecimal	Decimal	Data length
Header	37H	55	1 byte
Identifier	74H	68	1 byte
Identifying status(*1)	It is described separately.	It is described separately.	1 byte
Data ID(*2)	30H ~ 39H	48 ~ 57	1 ~ 5 bytes
NUL	00H	0	1 byte

(*1) This status mainly indicates reading process is normal or abnormal ending as following table.

Bit	Status	Binary	Decimal	Hex
0	The reading magnetic ink character processing is normal end.	0	00	0
	The reading magnetic ink character processing is abnormal end.	1	01	1
1	The reading image data processing is normal end.	0	00	0
	The reading image data processing is abnormal end.	1	02	2
2~5	Reserved.	-	-	-
6	Fixed.	1	40	64
7	Fixed.	0	00	0

- If magnetic ink character is not specified for scanning (**m2 = 2**), Bit 0 is always "0."
- If image data is not specified for scanning (**m2 = 1**), Bit 1 is always "0."

(*2) The specified data ID is expressed as a decimal, and the value converted to text data is sent from high-order bytes first.

Example: When the data ID is 12, the data is the 2 bytes "12" [Hexadecimal = 31H, 32H / Decimal = 49, 50].

[Model-dependent variations]

TM-J9000/J9100, TM-J7000/7100, TM-H6000III

TM-J9000/J9100

When check paper is selected as the active sheet, magnetic ink characters and the image data of both sides is scanned. The font for the magnetic ink characters is E13B. Also, the card image scanning result saved in the printer is discarded at this time.

When card is selected as the active sheet, the front side of the image data is scanned. Also, the check paper image scanning results saved in the printer are discarded at this time.

Models that have an auto sheet feeder support the function for detecting double feed.
Notification of double feed information uses Bit 5 of "Scanning result."

Bit	Status	Binary	Decimal	Hex
5	No double feed detected	0	00	0
	Double feed detected	1	20	32

TM-J7000/7100, TM-H6000III

These printers do not support this function.

GS (G pL pH fn nL nh m1 m2 [d1...dk] <Function 65>

[Name]	Scan image data and transmit the image scanning result.						
[Format]	ASCII GS (G pL pH fn nL nh m1 m2 [d1...dk] Hex 1D 28 47 pL pH 41 nL nh m1 m2 [d1...dk] Decimal 29 40 71 pL pH 65 nL nh m1 m2 [d1...dk]						
[Range]	$5 \leq (\text{pL} + \text{pH} \times 256) \leq 1029$ ($0 \leq \text{pL} \leq 255$, $0 \leq \text{pH} \leq 4$) fn = 65 $0 \leq \text{d} \leq 255$ $0 \leq \text{k} \leq 1024$ TM-H6000III: $1 \leq (\text{nL} + \text{nh} \times 256) \leq 65535$ ($0 \leq \text{nL} \leq 255$, $0 \leq \text{nh} \leq 255$) m1 = 48 [When NV memory for image data storage is not installed] m1 = 48, 49 [When NV memory for image data storage is installed] m2 = 48						
[Description]	Scans image data for check paper or a card selected as the active sheet, and transmits the image scanning result. <ul style="list-style-type: none"> The image scanning result is associated with the data ID specified by $(\text{nL} + \text{nh} \times 256)$ and stored. When the data ID is already in the memory, the data related to the data ID is overwritten by the latest data. m1 specifies the destination to store the image scanning result. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; padding: 2px;">m1</th> <th style="text-align: left; padding: 2px;">Function</th> </tr> </thead> <tbody> <tr> <td style="text-align: left; padding: 2px;">48</td> <td style="text-align: left; padding: 2px;">The image scanning result is stored in the work area (RAM) temporarily.</td> </tr> <tr> <td style="text-align: left; padding: 2px;">49</td> <td style="text-align: left; padding: 2px;">The image scanning result is stored in the NV memory for image data storage.</td> </tr> </tbody> </table> <ul style="list-style-type: none"> [d1...dk] is treated as string data which is included in sent file when sent file format is specified as TIFF format or JPEG format by FS (g <Function 50>. The parameters [d1...dk] can be omitted. This function requires the ESC/POS Handshaking Protocol. 	m1	Function	48	The image scanning result is stored in the work area (RAM) temporarily.	49	The image scanning result is stored in the NV memory for image data storage.
m1	Function						
48	The image scanning result is stored in the work area (RAM) temporarily.						
49	The image scanning result is stored in the NV memory for image data storage.						
[Notes]	<ul style="list-style-type: none"> ■ This function is enabled for image scanner equipped printers only. And, (m1 = 49) is able to be specified only when the printer has NV memory for image data storage. ■ The scanning image result is kept until the printer is reset, or the power is turned off. 						

- This function is enabled when cut sheet status of <Function 32> of this command is [Bit2 = 0] or [Bit3 = 0].
 - [Bit 2 = 0: Image processing of the currently clamped check paper is possible], the slip image scanner operates.
 - When [Bit 3 = 0: Image processing of the currently clamped card is possible], the card image scanner operates.
- Don't do the following actions between starting of reading magnetic ink character and ending of transmission the reading result.
 - Opening or closing any paper cover
 - Operating the panel buttons
 - Executing **DLE DC4 (fn = 8)**
- Reading process for image is affected by setting values of the command **FS (g**. And pre-scan value from <Function 67> of this command also affects it when binary data tone is specified for basic performance of the image scanner.

Item	Setting value that affects the item
Area of scanning image	Setting value of FS (g <Function 41>
Scanning density (*1)	If the printer has pre-scan value (See <Function 67>), it affects this command for pre-scan value. If the printer does not have a pre-scan value, setting of FS (g <Function 40> affects this command.
Area of mask processing image data (*2)	Setting value of FS (g <Function 57>
Image data processing type	Setting value of FS (g <Function 40>
Compression method for image data	Setting value of FS (g <Function 50>
Transmission format of image data	Setting value of FS (g <Function 60>

(*1) When binary data tone is specified for basic performing of the image scanner, the pre-scan value affects the quality of the data of scanning image. Executing pre-scan (<Function 67> of this command) after inserting the check but before executing this function is recommended when binary data tone is specified.

(*2) **FS (g** <Function 57> performs mask processing image data (that is conversion of part of the data to blank data.)

- If cropping area is specified, the printer executes processing for send data (compressing and making file etc.) after converting the scanning image data area which is within the cropping area.
 - If cropping area is unspecified, the printer executes processing for send data (compressing and making file etc.).
- Strings [**d1...dk**] can be used when sent file format is specified as TIFF format or JPEG format. [**d1...dk**] is stored as shown in the following table for each format. The file format can be specified by **FS (g** <Function 50>.

File format	Function
TIFF format	(Tag = 270) in TIFF 6.0 format
JPEG format	COM marker in header part of JPEG

- When (**m1** = 48) is specified, the printer processes the result of the reading image and saves it in working area (RAM).
- The result of reading image that is saved in working area (RAM) is cleared when this command or <Function64> are executed or the printer is reset or turned off.
- When an error occurs during writing to NV memory and (**m1** = 49), saving to NV memory isn't processed, but sending to the PC host is processed. In this case, the result of scanning image data cannot be sent to the host PC by <Function 66> of this command.
- The result of scanning image data is cleared by one of the following processes.
 - This function , <Function64> or <Function 68> of this command with specifying the data ID.
 - <Function 69> of this command.
- When the printer finishes scanning an image (and saving the image data to NV memory), it sends the result of scanning image data to host PC.

- If scanning image is “normal end,” the printer sends “file information block” + “size information block” + “image data block” to the host PC. If the size of image data is large, the “image data block” is divided into separate blocks. In this case, the printer sends “file information block” + “size information block” + “image data block” + … + “image data block” to host PC.
 - If reading status is “abnormal end” except if the detailed information is [Hex: 60H ~ 62H / Decimal: 96 ~ 98], the printer sends “file information block” to host PC.
- If “Transmission format = binary” is specified by **FS (g <Function 60>**, each block data is as shown in the following tables.

<File information block>

- File information block is sent for both normal ending and abnormal ending.

Data sent	Hexadecimal	Decimal	Data length
Header	53H	83	1 byte
Identifier	20H	32	1 byte
Identifying status (*1)	42H or 43H	66 or 67	1 byte
Amount of transmission data (low order) (*2)	07H to 16H	7 to 22	1 byte
Amount of transmission data (upper order) (*2)	00H	0	1 byte
File information data	It is described separately	It is described separately	7 ~ 22 bytes

(*1) When transmitting two or more data groups, division processing is performed.

- If identifying status is [Hex: 43H / Decimal: 67], there are data groups following this data group.
- If identifying status is [Hex: 42H / Decimal: 66], there are no data groups following this data group.

(*2) “Amount of transmission data” indicates number of bytes of [File information data].

<Size information block>

- A size information block is sent when the ending is normal or abnormal ending if detailed information is [Hex: 60H ~ 62H / Decimal: 96 ~ 98].

Data sent	Hexadecimal	Decimal	Data length
Header	53H	83	1 byte
Identifier	20H	32	1 byte
Identifying status	43H	67	1 byte
Amount of transmission data (low order) (*1)	0FH to 1DH	15 to 29	1 byte
Amount of transmission data (upper order) (*1)	00H	0	1 byte
Size information data	It is described separately.	It is described separately.	15 ~ 29 bytes

(*1) "Amount of transmission data" indicates number of bytes of [Size information data].

<Image data block>

- Image data block is sent when normal ending or abnormal ending if detailed information is [Hex: 60H ~ 62H / Decimal: 96 ~ 98]

Send data	Hexadecimal	Decimal	Data length
Header	53H	83	1 byte
Identifier	20H	32	1 byte
Identifying status (*1)	40H or 41H	64 or 65	1 byte

Amount of transmission data (low order) (*2)	00H to FFH	0 to 255	1 byte
Amount of transmission data (upper order) (*1)	00H to FFH	0 to 255	1 byte
Image data	00H to FFH	0 to 255	1 ~ 65535 byte

(*1) When transmitting two or more data groups, division processing is performed.

- If identifying status is [Hex: 41H / Decimal: 65], there are data groups following this data group.
- If identifying status is [Hex: 40H / Decimal: 64], there are no data groups following this data group.

(*2) "Amount of transmission data" indicates number of bytes following image data.

■ If "Transmission format = hexadecimal character string" is specified by **FS (g <Function 60>**, each block data is as shown in the following tables.

<File information block>

- File information block is sent when normal ending or abnormal ending if detailed information is [Hex: 60H ~ 62H / Decimal: 96 ~ 98].

Send data	Hexadecimal	Decimal	Data length
Header	37H	55	1 byte
Identifier	74H	116	1 byte
Identifying status (*1)	42H or 43H	66 or 67	1 byte
File information data	It is described separately.	It is described separately.	7 ~ 22 bytes
NUL	00H	0	1 byte

(*1) When transmitting two or more data groups, division processing is performed.

- If identifying status is [Hex: 43H / Decimal: 67], there are data groups following this data group.
- If identifying status is [Hex: 42H / Decimal: 66], there are no data groups following this data group.

<Size information >

- Size information block is sent at normal ending or abnormal ending if detailed information is [Hex: 60H ~ 62H / Decimal: 96 ~ 98]

Send data	Hexadecimal	Decimal	Data length
Header	37H	55	1 byte
Identifier	74H	116	1 byte
Identifying status	43H	67	1 byte
File information data	It is described separately.	It is described separately.	15 ~ 29 bytes
NUL	00H	0	1 byte

<Image data block>

- Image data block is sent at normal or abnormal ending if detailed information is [Hex: 60H ~ 62H / Decimal: 96 ~ 98].

Send data	Hexadecimal	Decimal	Data length
Header	37H	55	1 byte
Identifier	74H	116	1 byte
Identifying status (*1)	40H or 41H	64 or 65	1 byte
Image data(*2)	30H to 39H 41H to 46H	48 to 57 65 to 70	1 ~ 80 bytes
NUL	00H	0	1 byte

(*1) When transmitting two or more data groups, division processing is performed.

- If identifying status is [Hex: 41H / Decimal: 65], there are data groups following this data group.
- If identifying status is [Hex: 40H / Decimal: 64], there are no data groups following this data group.

(*2) The hexadecimal value for the image data in X direction is converted to text data and sent starting from the high order end.

Example:

If the image data is 3FH, the "3FH" (expressed hexadecimally as 33H, 46H. Decimally as 51, 70) is converted to 2-byte data.

■ [File information data] of File information block is constructed as the following table.

Block code	46H	70	1 byte
Data ID (*1)	30H ~ 39H	48 ~ 57	1 ~ 5 byte
Separator	1FH	31	1 byte
Reading status (*2)	It is described separately	80 or 112	1 byte
Detailed information (*3)	40H ~ 63H	64 ~ 99	1 byte
Separator	1FH	31	1 byte
Setting value of compressing process (*4) (*5)	30H to 39H	48 to 57	0 or 2 bytes
File format (*4) (*5)	30H to 39H	48 to 57	0 or 2 bytes
Separator	1FH	31	1 byte
Fixed value (*5)	34H, 38H, 30H, 34H, 38H, 34H, 38H	52, 56, 48, 52, 56, 52, 56	0 byte or 7bytes

(*1) The decimal value for the data ID of the result of scanning image is converted to ASCII character data and sent starting from the high order end.

Example:

If the data ID is 12, the "12" (expressed hexadecimally as 31H, 32H. Decimally as 49, 50) is converted to 2-byte data.

(*2) The "reading status" indicates the scanning process is "normal end" or "abnormal end" as shown below.

Bit	Binary	Hex	Decimal	Status
0~2	0	00	0	Reserved.
3	0	00	0	Image data of the surface
	1	08	8	Image data of the back
4	On	10	16	Reserved.
5	Off	00	0	Scanning process end is normal.
	On	20	32	Scanning process end is abnormal.
6	On	40	64	Reserved.
7	Off	00	0	

*... how to use
this table*

(*3) The "detailed information" indicates detail of abnormal ending. Anything other than [Normal end (Hexadecimal = 40H / Decimal = 64)] is abnormal end.

Hex	Decimal	Detailed information
40H	64	The reading process ending is normal.
41H	65	There is no result of scanning image specified by data ID. (*3-1)
44H	68	This operation was terminated by opening the cover.
45H	69	An error occurred during processing image data.
46H	70	Check paper or card longer than the standard was inserted. An insertion error occurred when positioning the image scanning paper.
47H	71	An error occurred during process of compressing image data. (*3-2)
48H	72	An error occurred in the paper feeding or the paper insertion. (*3-3)
60H	96	There is no capacity in NV memory for saving the result of scanning image. (*3-4) (*3-5)

Hex	Decimal	Detailed information
61H	97	Failure of writing process for NV memory for image data storage. (*3-4) (*3-6)
62H	98	Failure of deleting process for NV memory for image data storage. (*3-4) (*3-6)
63H	99	Failure of reading process from NV memory for image data storage. (*3-1) (*3-6)

(*3-1) This error doesn't occur when processing this function. This error may occur when a resending is processed by <Function 66> of this command.

(*3-2) This error occurs in the following condition.

- No capacity error for work area causes low compression rate of the result of scanning.

(*3-3) This error occurs in the following condition.

- The paper length cannot be measured because a check is inserted at an angle (not straight).

(*3-4) Whether or not this errors occurs, size information block and image data block are sent after file information block.

(*3-5) This error occurs in any of the following conditions.

- The remaining capacity of the NV memory is smaller than the size of result of scanning image.
- A new data ID is specified for the result of scanning image when the printer's NV memory has already saved the maximum number of scanned images.

(*3-6) This error occurs in the following condition.

- The NV memory is not working.

(*4) The decimal value for the setting value of **FS (g)** <Function 50> (**m, n**) is converted to text data and sent starting from the high order end.

Example:

If the setting value of compressing process is 48, the "48" (expressed hexadecimally as 34H, 38H. Decimally as 52, 56) is converted to 2-byte data.

[If an unsuitable compression format for the current basic performing of the image scanner is specified, this data indicates the actually applied compression format as the setting value of **FS (g)** <Function 50> (**m, n**).]

(*5) This data is sent for either normal ending or abnormal ending if detailed information is [Hex: 60H ~ 62H / Decimal: 96 ~ 98].

■ [Size information data] of Size information block is as shown in the following table

Data sent	Hexadecimal	Decimal	Data length
Block code	53H	83	1 byte
Fixed value	30H, 30H	48, 48	2 bytes
Separator	1FH	31	1 byte
X starting position (*1)	30H to 39H	48 to 57	1 ~ 3 bytes
Separator	1FH	31	1 byte
Y starting position (*1)	30H to 39H	48 to 57	1 ~ 3 bytes
Separator	1FH	31	1 byte
X ending position (*2)	30H to 39H	48 to 57	1 ~ 3 bytes
Separator	1FH	31	1 byte
Y ending position (*2)	30H to 39H	48 to 57	1 ~ 3 bytes
Separator	1FH	31	1 byte
Data amount of X (*3)	30H to 39H	48 to 57	1 ~ 4 bytes
Separator	1FH	31	1 byte
Data amount of Y (*4)	30H to 39H	48 to 57	1 ~ 4 bytes

(*1) The decimal value for the setting value of **FS (g)** <Function 41> (**x1, y1**) is converted to text data and sent starting from the high order end.

Example:

If the setting value is 10 mm, the "10" (expressed hexadecimally as 31H, 30H. Decimally as 49, 48) is converted to 2-byte data.

(*2) The decimal value for the setting value of **FS (g)** <Function 41> (**x2, y2**) is converted to text data and sent starting from the high order end.

Example:

If the setting value is 70 mm, the "70" (expressed hexadecimally as 37H, 30H. Decimally as 55, 48) is converted to 2-byte data.

(If the setting value of the range for scanning is unsuitable, the data indicates the effective value.)

(*3) The decimal value for the amount of bytes of image data in X direction is converted to text data and sent starting from the high order end.

Example:

If the amount of data is 60 bytes, the "60" (expressed hexadecimally as 36H, 30H. Decimally as 54, 48) is converted to 2-byte data.

(*4) The decimal value for the amount of bytes of image data in Y direction is converted to text data and sent starting from the high order end.

Example:

If the amount of data is 200 dots, the "200" (expressed hexadecimally as 32H, 30H, 30H. Decimally as 50, 48, 48) is converted to 3-byte data.

- The status of "MICR function is selected" is not changed after transmission scanning result. After performing this function, select active sheet for next operation, the active sheet can be selected by <Function 80> of this command.
- If recoverable error occurs during executing this command, the printer can recover from the error with **DLE ENQ (n = 2)**. In this case, the printer does not transmit scanning result.
- When the printer's status is "MICR function is selected," paper feeding by the PAPER FEED button is disabled.
- See previous [Notes for transmission process] for process transmission data group.
- See previous [Notes for ESC/POS Handshaking Protocol] for ESC/POS Handshaking Protocol.

[Model-dependent variations]

TM-J9000/J9100, TM-J7000/7100, TM-H6000III

TM-J9000/J9100, TM-J7000/7100

This printer does not support this function.

TM-H6000III

The printer clears the image scanning result according to standard specification and also executes <Function 66> or <Function 67> of this command.

The capacity of NV memory for image data storage is 16MB. The maximum number for storing in the NV memory is 2000 under the capacity of the NV memory.

This printer has an image scanner with a resolution of 8 dots / mm both vertically and horizontally (200dpi).

The 3rd byte of the file information block of [Scanning status] is always "0."

Whether the image scanner is set for binary or grayscale can be judged from part of the data of the size information block as shown in the following table.

Data of size information block	Basic performing of image scanner
Amount of data for X (X ending position - X starting position)	Binary data tone
Amount of data for X (X ending position - X starting position) × 8	256-level grayscale data tone

GS (G pL pH fn nL nh [m] <Function 66>

[Name] Retransmit the image scanning result.

[Format] ASCII GS (G **pL** **pH** **fn** **nL** **nh** [m]
 Hex 1D 28 47 03 00 42 **nL** **nh** [m]
 Decimal 29 40 71 3 0 66 **nL** **nh** [m]

[Range] **TM-J9000/J9100:** (**pL** + **pH** × 256) = 3 (**pL** = 3, **pH** = 0)
fn = 66
 $1 \leq (\text{nL} + \text{nh} \times 256) \leq 65535$ ($0 \leq \text{nL} = 255$, $0 \leq \text{nh} = 255$)
m = 48, 49

TM-H6000III: (**pL** + **pH** × 256) = 3 (**pL** = 3, **pH** = 0)

fn = 66

$1 \leq (\text{nL} + \text{nh} \times 256) \leq 65535$ ($0 \leq \text{nL} = 255$, $0 \leq \text{nh} = 255$)

[Description] Transmits the image scanning result for the data ID specified by (**nL** + **nh** × 256) using the process of **GS (G** <Function 65>.

- **m** specifies the front side or back side. m can be omitted.

m	Function
48	Specifies the image scanning result for the face side.
49	Specifies the image scanning result for the back side

- Image scanning results saved with <Function 64> or <Function 65> of this command are subject to this function.
- The information sent is the same information as the transmission data group explained in <Function 65> of this command.
- This function requires the ESC/POS Handshaking Protocol.

[Notes]

- This function is enabled for the image scanner equipped printer only.
- Printer can't resend the result of scanning image if the detailed information is [in Hex: 60H ~ 62H / in Decimal 96 ~ 98] and the ending is abnormal ending at processing <Function 64> or<Function 65> of this command.

- If there is no specified data ID as a result of scanning an image, this function sends the reading result of "abnormal ending." In this case, "detailed information" is as below.
 - in Hex: 41H / in Decimal: 65
- If loading from NV memory for image data storage fails at processing to resend the result of scanning image, the printer sends the data group as abnormal ending. In this case, "detailed information" is as below.
 - in Hex: 63H / in Decimal: 99
- See <Function 65> of this command for details of the results of scanning the image and transmission it.

[Model-dependent variations]

TM-J9000/J9100, TM-J7000/7100, TM-H6000III

TM-J9000/J9100

This function operates only when the standard USB interface is used. In order to control this printer with the USB interface, one of the following printer drivers is necessary.

When using this function, using the "OPOS driver" or "APD" provided by Epson is recommended.

- **OPOS: OPOS ADK with USB support**
- **APD: Printer Driver and Port Monitor for USB**
- **USB device driver**

With this printer, to scan image data, execute <Function 64>. Also when <Function 64> is executed, the image scanning results are not sent, so after executing <Function 64>, acquire the image scanning results with this function.

When acquiring the image scanning result of the check paper with this printer, the front side or back side can be specified with [m]. When acquiring the image scanning result of the card, specify the back side.

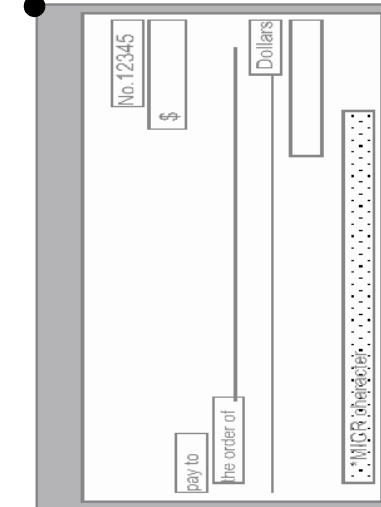
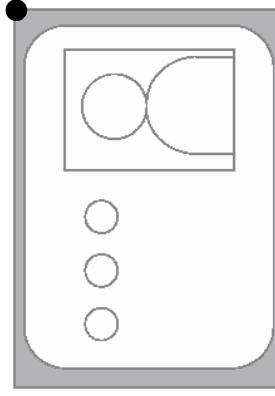
The image scanning result (front side) indicates the underside (roll paper side) in the scanning direction.

The image scanning results of this printer have the following features.

- **The resolution of the image scanner of this printer is 200 dpi (8 dots/mm) in either aspect, and it has a scanning gradation of 256 tones (grayscale).**

- The [X data amount] of [Size information block] is [(X end position - X start position) x 8 bytes].
- The [Y data amount] of [Size information block] is [(Y end position - Y start position) x 8 bytes].
- The [X start position] and [Y start position] of [Size information block] is always "0" irrespective of the scanning paper size.
- Check paper (front side or back side) size information
 - Since the check paper scanning width is 100 mm, [X end position] is always "100," and [X data amount] is always "800."
 - [Y end position] and [Y data amount] changes according to the length of the check paper.
- Card size information
 - Since the card scanning width is 60 mm, [X end position] is always "60," and [X data amount] is always "480."
 - Since the card scanning length is 100 mm, [Y end position] is always "100," and [Y data amount] is always "800."

- The raster format image data ordered left to right/top to bottom is sent with the data origin (specified position when the check paper or card is set: black dot in the diagram below) as the first bit.

Paper	Check paper (Face)	Check paper (Back)	Card
Starting point: Examples	Top right with paper set. 	Bottom right with paper set 	Top right with card set. 

- In the check paper (front side) and card examples, the left side of the image is the top when the paper or card is set.
- In the check paper (back side) example, the right side of the image is the top when the paper is set.

- The image data sent with [Image data block] is sent as it is scanned by the image scanner (unformatted data). The array of the image data is as shown below.

d1	d2	...	dx
dX+1	dX+2	...	dXx2
:	:	...	:
...	dk
MSB	LSB	MSB	LSB
		LSB	MSB
			LSB

TM-J7000/7100

This printer does not support this function.

TM-H6000III

With this printer, to scan image data, execute <Function 65>. Also, when <Function 65> is executed, the image scanning results are sent.

This printer does not send parameter [m].

The results of scanning image in the work area (RAM) are cleared when executing this function.

GS (G pL pH fn m <Function 67>

[Name]	Execute a pre-scan.																								
[Format]	<table border="0"> <tr> <td>ASCII</td> <td>GS</td> <td>(</td> <td>G</td> <td>pL</td> <td>pH</td> <td>fn</td> <td>m</td> </tr> <tr> <td>Hex</td> <td>1D</td> <td>28</td> <td>47</td> <td>02</td> <td>00</td> <td>43</td> <td>30</td> </tr> <tr> <td>Decimal</td> <td>29</td> <td>40</td> <td>71</td> <td>2</td> <td>0</td> <td>67</td> <td>48</td> </tr> </table>	ASCII	GS	(G	pL	pH	fn	m	Hex	1D	28	47	02	00	43	30	Decimal	29	40	71	2	0	67	48
ASCII	GS	(G	pL	pH	fn	m																		
Hex	1D	28	47	02	00	43	30																		
Decimal	29	40	71	2	0	67	48																		
[Range]	<p>(pL + pH × 256) = 2 (pL = 2, pH = 0)</p> <p>fn = 67</p> <p>m = 48</p>																								
[Description]	<p>Executes a pre-scan for check paper or a card selected as the active sheet, and transmits the pre-scan result.</p> <ul style="list-style-type: none"> After scanning for fixed area, saves the pre-scan value and sends the result of this processing. This function does not require the ESC/POS Handshaking Protocol. 																								
[Notes]	<ul style="list-style-type: none"> ■ This function is enabled for image scanner equipped printer only. ■ This function is enabled when cut sheet status of <Function 32> of this command is [Bit2 = 0: Image processing of the current clamped check is enabled.] ■ Pre-scan value is threshold level for scanning image for the current clamped check when binary data tone is specified. It affects the quality of scanning image with binary data tone. ■ The prescan value is the value that determines the scanning density of the currently clamped check paper, and it affects the scanning quality of the image data when 2-tone is specified. If 2-tone image scanning is specified, executing this function between inserting the check paper and scanning the image data is recommended. ■ The pre-scan value is kept until this function is executed or the ejecting process for the current clamped check is executed. ■ This function performs transmission result of this processing and pre-scan value. 																								

Send data	Hexadecimal	Decimal	Data length
Header	37H	55	1 byte
Identifier	40H	64	1 byte

Fixed value	30H, 38H	48, 56	2 bytes
Separator	1FH	31	1 byte
Result status (*1)	40H or 60H	64 or 96	1 byte
Pre-scan value(*2)	30H to 39H	48 to 57	1 ~ 3 bytes
NUL	00H	0	1 byte

(*1) It indicates "normal end" or "abnormal end" of pre-scan processing.

- If result status is [Hex: 40H / Decimal: 64], the processing is normal end.
- If result status is [Hex: 60H / Decimal: 96], the processing is abnormal end.

It indicates as described below.

- If result status indicates normal end, the decimal value for the pre-scan value is converted to text data and sent starting from the high order end.
For example, if the pre-scan value is 40 dots, the "40" (expressed hexadecimally as 34H, 30H. Decimally as 52, 48) is converted to 2-byte data.
 - If result status indicates abnormal end, the pre-scan value is sent as fixed value "0" (expressed hexadecimally as 30H. Decimally as 48).
- See previous [Notes for transmission process] for process transmission data group.

[Model-dependent variations]

TM-J9000/J9100, TM-H6000III, TM-J7000/7100

TM-H6000III

If it executes this function, the printer clears the image scanning result which is saved in the working area (RAM).

If [Result status = abnormal end], 2-tone image processing is probably improper, so specifying "256 tones" for the scanning gradation of the image scanner is recommended. However, since the size of the image data increases if 256 tones is specified, the data transmission time increases when <Function 65> or <Function 66> of this command is executed. For information on specifying the scanning gradation of the image scanner, see **FS (g <Function 40>**.

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[Photo ID model]

This function operates when check paper is selected as the active sheet.

The prescan value affects scanning when sharpening is not selected and when 2 is specified for scanning gradation.

TM-J9000/J9100, TM-J7000/7100

This printer does not support this function.

GS (G pL pH fn m nL nH <Function 68>

[Name] Delete the image scanning result with the specified data ID.

[Format]

ASCII	GS	(G	pL	pH	fn	m	nL	nH
Hex	1D	28	47	04	00	44	30	nL	nH
Decimal	29	40	71	4	0	68	48	nL	nH

[Range] $(pL + pH \times 256) = 4$ (**pL** = 4, **pH** = 0)

fn = 68

m = 48

$1 \leq (nL + nH \times 256) \leq 65535$ ($0 \leq nL = 255$, $0 \leq nH = 255$)

[Description] Deletes the image scanning result for the data ID specified by (**nL + nH × 256**).

- The deleted data ID becomes “unused.”
- The deleted area becomes “unused area.”

[Notes]

- This function is enabled for image scanner equipped printer only.
- This command is enabled only when processed at the beginning of the line in standard mode.
- This function is incompatible with macros, so be sure to avoid including it when defining macros.

[Model-dependent variations] **TM-J9000/J9100, TM-J7000/7100, TM-H6000III**

TM-J9000/J9100, TM-J7000/7100

This printer does not support this function.

TM-H6000III

This function is supported by the printers with Image Scanner and installed NV memory for image data storage only.

GS (G pL pH fn m d1 d2 d3 <Function 69>

[Name] Delete all image scanning results.

[Format]	ASCII	GS	(G	pL	pH	fn	m	d1	d2	d3
	Hex	1D	28	47	05	00	45	30	43	4C	52
	Decimal	29	40	71	5	0	69	48	67	76	83

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 5$ ($\mathbf{pL} = 5$, $\mathbf{pH} = 0$)

fn = 68

m = 48

$1 \leq (\mathbf{nL} + \mathbf{nh} \times 256) \leq 65535$ ($0 \leq \mathbf{nL} = 255$, $0 \leq \mathbf{nh} = 255$)

[Description] Deletes all image scanning results.

- Any data ID becomes "unused."
- Any area becomes "unused area."

[Notes]

- This function is enabled for image scanner equipped printer only.
- This command is enabled only when processed at the beginning of the line in standard mode.
- This function is incompatible with macros, so be sure to avoid including it when defining macros.

[Model-dependent variations] **TM-J9000/J9100, TM-J7000/7100, TM-H6000III**

TM-J9000/J9100, TM-J7000/7100

This printer does not support this function.

TM-H6000III

This function is supported by printers with Image Scanner and installed NV memory for image data storage only.

GS (G pL pH fn m d1 d2 <Function 70>

[Name] Transmit the data ID list of the image scanning results.

[Format]

ASCII	GS	(G	pL	pH	fn	m	d1	d2
Hex	1D	28	47	04	00	46	30	49	44
Decimal	29	40	71	4	0	70	48	73	68

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 4$ ($\mathbf{pL} = 4$, $\mathbf{pH} = 0$)

fn = 70

m = 48

d1 = 73

d2 = 68

[Description] Transmits the data ID list for the image scanning results in the NV memory for image data storage.

- This function requires the ESC/POS Handshaking Protocol.

[Notes]

- This function is supported by printers with Image Scanner and installed NV memory for image data storage only.
- When there is a scanning image result in the NV memory for image data storage, the printer transmits data groups as shown in the following table, beginning with the Header and ending with NUL.

Send data	Hexadecimal	Decimal	Data length
Header	37H	55	1 byte
Identifier	76H	118	1 byte
identification status (*1) (*2)	40H, or 41H	64, or 65	1 byte
Data (*3)	30H ~ 39H, 1FH	48 ~ 57, 31	2 ~ 80 bytes
NUL	00H	0	1 byte

(*1) When the "Data" which follows the identification status exceeds 80 bytes, the printer performs partial processing:

- If there is unsent data, the identification status of the third byte is 41H or 65 decimal.

- If there is no unsent data, the identification status of the third byte is 40H or 64 decimal.
- (*2) The printer performs batch processing when the "Data" which follows the identifying status is 80 bytes or less. At this time, the identification status of the third byte is 40H or 64 decimal.
- (*3) The "Data" is enumerated data converted to character codes corresponding to decimal data, then transmitted from the MSB with the separation character [Hex: 1FH / Decimal: 31] placed between each item of data, as shown in the example below.

Ex: When there are two results of scanning image as [Data ID = 99, 100], the "Data" is 7 bytes data as [in Hex: 39H, 39H, 1FH, 31H, 30H, 30H, 1FH / in Decimal: 57, 57, 31, 49, 48, 48, 31].

- When there is no result of scanning image in the NV memory for image data storage, the printer transmits data groups as in the following table, beginning with the Header and ending with NUL.

Send data	Hexadecimal	Decimal	Data length
Header	37H	55	1 byte
Identifier	76H	118	1 byte
Identification status	40H	64	1 byte
NUL	00H	0	1 byte

- See previous [Notes for transmission process] for process transmission data group.
- See previous [Notes for ESC/POS Handshaking Protocol] for ESC/POS Handshaking Protocol.

[Model-dependent variations]

TM-J9000/J9100, TM-J7000/7100

TM-J9000/J9100, TM-J7000/7100

This printer does not support this function.

GS (G pL pH fn m <Function 71>

[Name]	Transmit the remaining capacity of the NV memory for image data storage.
[Format]	ASCII GS (G pL pH fn m Hex 1D 28 47 02 00 47 30 Decimal 29 40 71 2 0 71 48
[Range]	(pL + pH × 256) = 2 (pL = 2, pH = 0) fn = 71 m = 48
[Description]	Transmits the number of bytes of remaining memory (unused area) in the NV memory for image data storage. <ul style="list-style-type: none"> • This function doesn't require the ESC/POS Handshaking Protocol.
[Notes]	<ul style="list-style-type: none"> ■ This function is supported by printers with Image Scanner and installed NV memory for image data storage only. ■ The printer transmits data groups as in the following table, beginning with the Header and ending with NUL.

Send data	Hexadecimal	Decimal	Data length
Header	37H	55	1 byte
Identifier	41H	65	1 byte
Remaining capacity (*1)	30H ~ 39H	48 ~ 57	1 ~ 8 bytes
NUL	00H	0	1 byte

(*1) The remaining capacity indicates number of bytes of the unused area. The remaining capacity is converted to character codes corresponding to decimal data, then transmitted from the MSB.

Ex: When the number of bytes of the unused area is 120 bytes, the remaining capacity is 3 bytes of data as '120' [in Hex: 31H, 32H, 30H / in Decimal: 49, 50, 48].

- When "The printer saves the result of the reading image to NV memory for image data storage (**m1 = 49**)" is specified by <Function 65> of this command, we recommend making sure that the remaining capacity of the NV memory for image data storage is sufficient before executing <Function 65> of this command.
- See previous [Notes for transmission process] for process transmission data group.

[Model-dependent variations]

TM-J9000/J9100, TM-J7000/7100

TM-J9000/J9100, TM-J7000/7100

This printer does not support this function.

MISCELLANEOUS COMMANDS

Command	Name
DLE ENQ	Send real-time request to printer
DLE DC4 (fn = 1)	Generate pulse in real time
DLE DC4 (fn = 2)	Execute power-off sequence
DLE DC4 (fn = 7)	Transmit specified status in real time
DLE DC4 (fn = 8)	Clear buffer(s)
ESC (A	Control beeper tones
ESC =	Select peripheral device
ESC @	Initialize printer
ESC L	Select page mode
ESC S	Select standard mode
ESC p	Generate pulse
FS L	Select double-density page mode
GS (A	Execute test print
GS (D	Enable/disable real-time command
GS (H	Request transmission of response or status
GS (K	Select print control method(s)
GS (P	Select page mode control function(s)
* GS E	Select head control method
GS I	Transmit printer ID
GS P	Set horizontal and vertical motion units
GS g 0	Initialize maintenance counter
GS g 2	Transmit maintenance counter
GS (z pL pH fn [parameter]	Model specific control

* obsolete commands

DLE ENQ

EXECUTING COMMAND

[Name] Send real-time request to printer

[Format] ASCII DLE ENQ **n**

Hex 10 05 **n**

Decimal 16 5 **n**

[Range] **TM-J9000/J9100: n = 2, 3**

TM-H6000III, TM-U675: 0 ≤ n ≤ 3

TM-J7500/7600, TM-J7000/7100, TM-H5000II, TM-U325D: 1 ≤ n ≤ 3

[Default] None

[Printers not featuring this command] None

[Description] Responds to a request in real time from the host computer, using **n** as follows:

n	Request
0	During waiting to press button status of GS ^ , performs the same process as pressing the FEED button 1 time.
1	Recovers from a recoverable error and restarts printing from the line where the error occurred.
2	Recovers from a recoverable error after clearing the receive and print buffers.
3	Cancels the cut sheet insertion waiting status after clearing the receive and print buffers.

- [Notes]
- This is a real-time command that the printer executes upon receiving it. Take the following into consideration:
 - If this command interrupts the code string of another command, this command is processed as a parameter of the other command; therefore, the print result will not be correct.
 - If a command such as graphics data or defined data has a code string that is the same as a code string in a parameter, the printer processes it and then continues with the bit-image or other command.
 - (**n = 0**) is available during waiting to press button status of **GS ^**.

- (**n** = 1) or (**n** = 2) is enabled when a recoverable error has occurred with the exception of an automatically recoverable error and is ignored in other cases. Errors recoverable by (**n** = 1) or (**n** = 2) depend on the printer model.
- When the printer recovers from an error using (**n** = 1) with cut sheet (slip or validation paper) selected, the printer ejects the current sheet completely and waits for new sheet insertion. However, the printer only ejects the sheet and does not wait for new sheet insertion when the printer recovers from a cut sheet ejection error.
- When the printer recovers from an error using (**n** = 2) with cut sheet selected, the printer ejects the current sheet completely and selects roll paper as the paper type.
- In page mode, if the printer recovers from a recoverable error by using (**n** = 2), the printer returns to standard mode after clearing the data in receive and print buffers and changing the values set by **ESC W** to the default values.
- (**n** = 3) is enabled only when the printer is in the cut sheet (slip paper, validation paper, check paper, card, and cleaning sheet) insertion waiting status. After cut sheet pre-processing is canceled, select roll paper as the active sheet. Cut sheet pre-processing can be checked with the basic ASB status customized using **GS (B)**, or any of the following:
 - Slip pre-processing: **DLE EOT** (**n** = 5: slip status)
 - Validation pre-processing: **DLE EOT** (**n** = 6: validation status)
 - Check paper/cleaning sheet pre-processing: **DLE EOT** (**n** = 8, **a** = 1: MICR status)
 - Card pre-processing: **DLE EOT** (**n** = 8, **a** = 2: card image scanner)
- After executing (**n** = 2) and (**n** = 3), the printing position is moved to the left edge of the printing area. The printer's state becomes "beginning of the line" and "data is in print buffer."
- With a serial interface model, this command is executed even when the printer is offline, the receive buffer is full, or an error occurs.
- With a parallel interface, if the printer is in BUSY condition, this command cannot be used in the following status conditions.
 - When DIP switch or memory switch (BUSY condition) is on: receive buffer-full
 - When DIP switch or memory switch (BUSY condition) is off: offline, receive buffer-full, or error status
- This command can be executed even if the printer is specified as an invalid peripheral device with **ESC =**.
- This command is ignored when transmitting block data (Header~NUL).

[Model-dependent variations]

**TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III,
TM-H5000II, TM-U675, TM-U325D**

Program Example for all printers

```
PRINT #1, CHR$(&H10);CHR$(&H5);CHR$(2);
```

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

Busy condition is specified by Memory switch [Msw1-3].

TM-H5000II

The BUSY condition is selected by DIP switch 2-1.

TM-U325D

If the printer is specified as an invalid peripheral device with ESC =, only functions related to error recovery (n = 1,2) can be used.

The BUSY condition for the parallel interface is selected by DIP switch 2-1.

TM-H6000III

The BUSY condition is selected by DIP switch 2-1.

TM-U675

The BUSY condition is selected by DIP switch 2-1.

DLE DC4 (fn = 1)

EXECUTING + SETTING

[Name] Generate pulse in real time

[Format]

ASCII	DLE	DC4	fn	m	t
Hex	10	14	fn	m	t
Decimal	16	20	fn	m	t

[Printers not featuring this command] **TM-J9000/J9100, TM-U325D**

[Range]

fn = 1
m = 0, 1
 $1 \leq \mathbf{t} \leq 8$

[Description] Outputs the pulse specified by **t** in real-time to connector pin **m** as follows:

m	Connector pin
0	Drawer kick-out connector pin 2
1	Drawer kick-out connector pin 5

- The pulse ON time is [$\mathbf{t} \times 100$ ms] and the OFF time is [$\mathbf{t} \times 100$ ms]
- This is a real-time command that the printer executes upon receiving it. Take the following into consideration:
- If this command interrupts the code string of another command, this command is processed as a parameter of the other command; therefore, the print result will not be correct.
 - If a command such as graphics data or defined data has a code string that is the same as a code string in a parameter, the printer processes and then continues with the graphics data or other command.
- The printer executes this command upon receiving it.
- This command is disabled in the following status conditions:
- In unrecoverable error status
 - When a pulse is being output to the connector pin (When **ESC p** or this command is being executed)
 - During transmission of block data (Header~NUL)
 - When this command is disabled by **GS (D**.

- With a serial interface, the printer executes this command when it is in offline, or receive buffer-full status.
- With a parallel interface, if the printer is in BUSY condition, this command cannot be used in the following status conditions.
 - When DIP switch or memory switch (BUSY condition) is on: receive buffer-full
 - When DIP switch or memory switch (BUSY condition) is off: offline, receive buffer-full, or error status
- This command is effective even if the printer is specified as an invalid peripheral device with ESC =.

[Model-dependent variations]

TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II, TM-U675

Program Example for all printers

```
PRINT #1, CHR$(&H10);CHR$(&H14);CHR$(1)1;CHR$(0);CHR$(5);
```

TM-J7500/7600, TM-J7000/7100

Memory switch 1-3 selects whether the printer is in BUSY condition.

TM-H5000II

DIP switch 2-1 selects whether the printer is in BUSY condition.

TM-H6000III

DIP switch 2-1 selects whether the printer is in BUSY condition.

TM-U675

DIP switch 2-1 selects whether the printer is in BUSY condition.

DLE DC4 (fn = 2)

EXECUTING + SETTING

[Name] Execute power-off sequence

[Format]

ASCII	DLE	DC4	fn	a	b
Hex	10	14	fn	a	b
Decimal	16	20	fn	a	b

[Printers not featuring this command] **TM-H5000II, TM-U325D**

[Range] **fn** = 2

a = 1

b = 8

[Description] Executes the printer power-off sequence and transmits the power-off notice.

- Stores the values of the maintenance counter.
- Sets the interface to BUSY.
- Changing to waiting state of mechanism

Executes power off processing (this processing depends on printer model).

- This is a real-time command that the printer executes upon receiving it. Take the following into consideration:
 - If this command is embedded within the code string of another command, it is processed as a parameter of the other command, and the print result is not correct.
 - If another command (graphics data and defined data, etc.) has a code string that is the same as this command in a parameter, the printer starts processing this command.
- This command is disabled in the following status conditions:
 - In the status of transmitting block data [Header~NUL]
 - When this command is disabled by **GS (D**.
- With a serial interface, this command is executed when the printer is in offline, receive buffer full, or error state.

- With a parallel interface, the printer cannot receive data when it is BUSY. This command cannot be used in the following cases:
 - When DIP switch or memory switch (BUSY condition) is on: receive buffer full
 - When DIP switch or memory switch (BUSY condition) is off: offline, receive buffer full, or error state.
- This command can be used even if the printer is specified as an invalid peripheral device with **ESC =**.
- All information and data stored in RAM will be deleted by processing this command.
- When preparation to turn the power off is completed, the following power-off notice is transmitted.

Power off notice	Hex	Decimal	Amount of data
Header	3BH	59	1 byte
Identifier	30H	48	1 byte
NUL	00H	0	1 byte

- Maintenance counter values are maintained by executing this command; therefore the maintenance counter values will be more accurate if the user uses this command before turning off the power switch.
- When you use these functions, obey the following rules.
 - After the host PC transmits the function data, the printer will send response data or status data back to the PC. Do not transmit more data from the PC until the response data or status data are received from the printer.
 - When operating with a serial interface, be sure to configure operation so that the host computer uses the printer only when it is READY.
 - When operating with a parallel interface, the power-off notice, as with other data, is first stored in the send buffer, then output in sequential order when the host computer changes to the reverse mode. Note that the send buffer capacity is 99 bytes, and any data exceeding this volume limit will be lost; therefore, when using this command, it is important to configure the operation so that the host computer's change to the reverse mode and the subsequent status send/receive process is performed quickly.
- The power-off notice can be differentiated from other transmission data according to specific data of the transmission data block. When the header transmitted from the printer is [Hex=3BH/Decimal=59], treat NUL [hex = 00H/decimal =0] as a data group and identify it according to the combination of the header and the identifier.

[Model-dependent variations]

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675**Program Example**

```
PRINT #1, CHR$(&H10);CHR$(&H14);CHR$(2);CHR$(1);CHR$(8);  
GOSUB *RECEIVE      ' Confirmation of the power-off notice
```

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

The BUSY condition is selected by memory switch 1-3.

During a setup for power-off processing, the POWER LED blinks quickly. After a setup of power off processing, the POWER LED blinks slowly. Be sure to wait until the POWER LED blinks slowly before you turn off the printer's power.

TM-U675

The BUSY condition is selected by DIP switch 2-1.

After a setup of power-off processing, the POWER LED blinks. Turn off the printer's power after confirming this blinking.

Support for this command depends on firmware version.

TM-H6000III

The BUSY condition is selected by DIP switch 2-1.

After a setup of power-off processing, the POWER LED blinks. Turn off the printer's power after confirming this blinking.

DLE DC4 (fn = 7)

EXECUTING + SETTING

[Name] Transmit specified status in real time

[Format] ASCII DLE DC4 **fn** **m**
 Hex 10 14 **fn** **m**
 Decimal 16 20 **fn** **m**

[Range] **fn** = 7

TM-J7500/7600: **m** = 1, 3, 4

TM-J7000/7100: 1 ≤ **m** ≤ 4

[Printers not featuring this command] **TM-J9000/J9100**, **TM-H6000III**, **TM-H5000II**, **TM-U675**, **TM-U325D**

[Description] Transmits the specified status or response in real-time as follows.

m	Function	Related command
1	Transmits basic ASB status.	GS a
2	Transmits extended ASB status.	FS (e
3	Transmits ink ASB status.	GS j
4	Transmits offline response.	GS (H <Function 49>

- [Notes]
- This is a real-time command that the printer executes upon receiving it. Take the following into consideration:
 - If this command interrupts the code string of another command, this command is processed as a parameter of the other command; therefore, the print result will not be correct.
 - If a command such as graphics data or defined data has a code string that is the same as a code string in a parameter, the printer processes this command and then continues with the graphics data or other command.
 - The status or response format is the same as the format of the related command in the table above. See the description of the related command corresponding to **m**.

- Each ASB status transmission has the following rules.
 - This function makes the printer transmit the specified ASB to the host PC regardless of whether the setting for ASB is enabled or disabled.
 - When the specified ASB status is bit-customized, this function makes the printer use the specified ASB status with bit-customize.
 - This function doesn't affect the setting for whether ASB is enabled or disabled.
- Each response transmission has following rules.
 - This function isn't performed when the printer is online.
 - When storing some untransmitted offline response, this function isn't performed. Confirm that untransmitted offline responses aren't stored in the printer before using this function.
 - This function makes the printer transmit the specified response to host PC regardless of whether the setting for response transmitting is on or off.
 - On printer models that support transmitting offline response including offline cause, this function makes the printer transmit offline response including offline cause.
 - This function doesn't affect the setting of offline response transmission being on or off.
- This command is effective even if the printer is specified as an invalid peripheral device with ESC =.
- During transmission of block data (Header~NUL), this function is disabled.
- With a serial interface, the printer executes this command when it is in offline, or in receive buffer-full status.
- When you use this command, obey the following rules.
 - After the host PC transmits the function data, the printer will send response data or status data back to the PC. Do not transmit more data from the PC until the response data or status data are received from the printer.
 - When operating with a serial interface, be sure to configure operation so that the host computer uses the printer only when it is READY.
 - When operating with a parallel interface, the data sent by this function (starting with Header and ending with NUL), as with other data, is first stored in the send buffer, then output in sequential order when the host computer changes to the reverse mode. Note that the send buffer capacity is 99 bytes,

and any data exceeding this volume limit will be lost; therefore, when using this command, it is important to configure the operation so that the host computer's change to the reverse mode and the subsequent status send/receive process is performed quickly.

- With a parallel interface, if the printer is in BUSY condition, this command cannot be used in the following status conditions.
 - When DIP switch or memory switch (BUSY condition) is on: receive buffer-full.
 - When DIP switch or memory switch (BUSY condition) is off: offline, receive buffer-full, or error status.

[Model-dependent variations]

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

Busy condition is specified by Memory switch [Msw1-3].

Program Example for all printers

```
PRINT #1, CHR$(&H10);CHR$(&H14);CHR$(7);CHR$(1)
```

DLE DC4 (fn = 8)

EXECUTING + SETTING

[Name]	Clear buffer(s)
[Format]	ASCII DLE DC4 fn d1...d7 Hex 10 14 fn d1...d7 Decimal 16 20 fn d1...d7
[Range]	fn = 8 d1 = 1, d2 = 3, d3 = 20, d4 = 1, d5 = 6, d6 = 2, d7 = 8
[Printers not featuring this command]	TM-U325D
[Description]	<p>Clears all data stored in the receive buffer and the print buffer and transmits Clear response.</p> <ul style="list-style-type: none"> ■ Do not use this command in a system in which the printer is used with the OPOS driver and Java POS driver that are provided by SEIKO EPSON Corporation. ■ If a code string of this command is embedded within parameters of other commands (graphics data or, defined data), the printer performs a buffer clear. If the printer has this command, be sure to check if the code string of this command is embedded within the parameters of another command before transmitting the bit-image data and defined data.
[Notes]	<ul style="list-style-type: none"> ■ This command is a real-time command and the printer executes this command upon receiving it. Take the following into consideration: <ul style="list-style-type: none"> • If another command (bit-image, defined data, etc.) has a code string that is the same as this command in a parameter, the printer processes this command. ■ This command is ignored during transmission of block data (Header~NUL). ■ This command is effective even if the printer is specified as an invalid peripheral device with ESC =. ■ When this command is processed, if there are any other commands that are being processed, the processing of the other commands is canceled. Examples: when defining graphics data or or when processing a command that specifies a character mode ■ If this command is processed when the printer is in the cut sheet insertion waiting state, the paper waiting state is canceled. This is the same function as the DLE ENQ3 command.

- Roll paper is selected as the paper type by this command. When this command is processed, if the printer is in one of the following conditions, the printer processes a paper ejection (if the printer has the function of waiting for the paper to be removed, this function is also included). However, if the printer is offline when this command is processed, the paper is ejected when the printer comes online.
 - When the cut sheet (a slip or validation paper) is selected as the paper type.
 - When the printer has a MICR reader, and the MICR function is enabled.
- If this command is processed in page mode, the printer returns to standard mode. The setting of **ESC W** is changed to the default value.
- This command does not change or initialize settings of other commands (except for **ESC W** with the page mode selected).
- Executing this command moves the printing position to the left edge of the printing area and printer's state becomes "beginning of the line" and "no data in print buffer."
- If this command is executed when a recoverable error has occurred, the printer recovers from the error. This is the same function as the **DLE ENQ2** command.
- With a serial interface, the printer executes this command when it is in offline, receive buffer-full, or error status.
- With a parallel interface, if the printer is in BUSY condition, this command cannot be used in the following status conditions.
 - When DIP switch or memory switch (BUSY condition) is on: receive buffer-full
 - When DIP switch or memory switch (BUSY condition) is off: offline, receive buffer-full, or error status
- When the buffer is cleared, the following clear response is transmitted.

Clear response	Hex	Decimal	Data
Header	37H	55	1 byte
Identifier	25H	37	1 byte
NUL	00H	0	1 byte

- When you use this command, obey the following rules.
 - After the host PC transmits the function data, the printer will send response data or status data back to the PC. Do not transmit more data from the PC until the response data or status data are received from the printer.
 - When operating with a serial interface, be sure to configure operation so that the host computer uses the printer only when it is READY.
 - When operating with a parallel interface, the data sent by this function (starting with Header and ending with NUL), as with other data, is first stored in the send buffer, then output in sequential order when the host computer changes to the reverse mode. Note that the send buffer capacity is 99 bytes, and any data exceeding this volume limit will be lost; therefore, when using this command, it is important to configure the operation so that the host computer's change to the reverse mode and the subsequent status send /receive process is performed quickly.
- When communication with the printer uses XON/XOFF control with serial interface, the XOFF code may interrupt the "Header to NUL" data string.
- The clear response can be differentiated from other transmission data according to specific data of the transmission data block. When the data transmitted from the printer is [Hex=37H/Decimal=55], treat NUL [hex = 00H/decimal =0] as a data group and identify it according to the combination of the header and identifier.

[Model-dependent variations]

**TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III,
TM-H5000II, TM-U675**

Program Example for all printers

```
PRINT #1, CHR$(&H10) ;CHR$(&H14) ;CHR$(8) ;CHR$(1) ;CHR$(3) ;CHR$(20) ;CHR$(1) ;CHR$(6) ;CHR$(2) ;CHR$(8) ;
```

TM-J9000/J9100

Busy condition is specified by Memory switch [Msw1-3].

When you use the following commands, be sure to check whether the code string of this command is embedded within the parameters of the commands.

Graphics commands: GS (L, ESC *.

Character pattern defining commands: ESC &

TM-J7500/7600, TM-J7000/7100

Busy condition is specified by Memory switch [Msw1-3].

When you use the following commands, be sure to check whether the code string of this command is embedded within the parameters of the commands.

Graphics commands: GS (L, ESC *, FS q, GS *, GS v 0

Character pattern defining commands: ESC &

TM-H5000II

Busy condition is specified by DIP switch [SW2-1].

When you use the following commands, be sure to check whether the code string of this command is embedded within the parameters of the commands.

Bit-image commands: ESC *, FS q, GS *, GS v 0

Character pattern defining commands: ESC &, FS 2

Support for this command depends on the firmware version.

TM-H6000III

Busy condition is specified by DIP switch [SW2-1].

When you use the following commands, be sure to check whether the code string of this command is embedded within the parameters of the commands.

Graphics commands: GS (L, ESC *, FS q, GS *, GS v 0

Character pattern defining commands: ESC &, FS 2

TM-U675

Busy condition is specified by DIP switch [SW2-1].

When you use the following commands, be sure to check whether the code string of this command is embedded within the parameters of the commands.

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Bit-image commands: **ESC ***, **FS q**, **GS ***, **GS v 0**

Character pattern defining commands: **ESC &**, **FS 2**

Support for this command depends on the firmware version.

[Name] Control beeper tones

[Printers not featuring this command] **TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675, TM-U325D**

[Description] Performs the various tasks related to the control of the beeper (listed in the table below).

- Function code (**fn**) specifies the function.

fn	Function No.	Function name
97	Function 97	Beep integrated beeper in TM-J9000/J9100 .
99	Function 99	TM-J9000/J9100 : Setting for the built-in buzzer that sounds when GS(G <Function 64> is executed.

- **PL, PH** specifies (**PL** + **PH** × 256) as the number of bytes after **PH** (**fn** and **[parameters]**). Description of the **[parameters]** is described in each function.

[Notes]

- The functions of this command are determined by the (**fn**) setting. Actual command operation varies according to function.

Program Example 1

```
PRINT #1, CHR$(&h1B); " (A";CHR$(5);CHR$(0);CHR$(97);CHR$(100);CHR$(3);CHR$(8);CHR$(5); ← <Function  
97>
```

ESC (A pL pH fn n c t1 t2 <Function 97 > (TM-J9000/J9100)

[Name] Beep integrated beeper in **TM-J9000/J9100** models

[Format]

ASCII	ESC	(A	pL	pH	fn	n	c	t1	t2
Hex	1B	28	41	05	00	61	n	c	t1	t2
Decimal	27	40	65	5	0	97	n	c	t1	t2

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 5$ ($\mathbf{pL} = 5$, $\mathbf{pH} = 0$)

fn = 97

$100 \leq \mathbf{n} \leq 102$

$0 \leq \mathbf{c} \leq 63$

$0 \leq \mathbf{t1} \leq 255$

$0 \leq \mathbf{t2} \leq 255$

[Description] Beeps the integrated beeper.

- **n** specifies the type of sound signal.

n	Beep kinds
100	40K Hz
101	440 Hz
102	880 Hz

- **c** specifies times of beeping.
- **t1** specifies beeping time ($\mathbf{t1} \times 100$ ms).
- **t2** specifies time for stop beeping ($\mathbf{t2} \times 100$ ms).

- [Notes]
- This function repeats integrated beeper control of [$(\mathbf{t1} \times 100$ ms) beep/ $(\mathbf{t2} \times 100$ ms) stop] **c** times.
 - If this command is newly processed during beeping of the buzzer, the current process for beeping the buzzer is stopped and the new process for beeping the buzzer is started.
 - Integrated beeper beeping by this function stops due to any of the following factors.
 - Finish specification of (**c**).

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- Offline factor specified by Function 98 has occurred.
- Execute GS(G <Function 64>).
- Reset or power off.

ESC (A pL pH fn a b n c <Function 99 > (TM-J9000/J9100)

[Name] Set integrated beeper except when offline factors occur in **TM-J9000/J9100** models

[Format]

ASCII	ESC	(A	pL	pH	fn	a	b	n	c	t1	t2
Hex	1B	28	41	05	00	63	a	b	n	c	t1	t2
Decimal	27	40	65	5	0	99	a	b	n	c	t1	t2

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 5$ ($\mathbf{pL} = 5$, $\mathbf{pH} = 0$)

fn = 99

a = 48

b = 1

$100 \leq \mathbf{n} \leq 102$

$0 \leq \mathbf{c} \leq 63$

[Default] The built-in buzzer does not sound for any cause.

[Description] Sets the integrated beeper control when roll paper near end detector detects [No roll paper].

a	Offline factor	Priority
48	When GS(G <Function 64> scanning operation finishes normally	3
49	When GS(G <Function 64> scanning operation finishes abnormally	1
50	When double feed is detected in the GS(G <Function 64> scanning operation	2

- If the auto sheet feeder (ASF) is not installed, the buzzer does not sound even if (**a** = 50) is specified.
- **n** specifies the type of sound signal.

n	Beep kinds
100	40K Hz: Beep 100ms --> Silent 100ms
101	440 Hz: Beep 100ms --> Silent 100ms
102	880 Hz: Beep 100ms --> Silent 100ms

- **c** specifies the number of times the buzzer sounds. When (c = 0), specifies "Do not sound the buzzer."

- [Notes]
- When "Sound the buzzer (**c** = 1,2,3)" is specified for multiple causes, the buzzer sounds for the cause with the highest priority when multiple causes arise at the same time.
 - If the printer goes offline when the buzzer is sounding, the buzzer stops temporarily. The buzzer starts again when the printer comes online.
 - Operation of the built-in buzzer specified by this function finishes with any of the following.
 - The end of the specified count (**c**)
 - Execute ESC (A <Function 97>
 - Execute GS (G <Function 64>
 - Reset or power off.
 - Setting of this function is enabled until reset or power off.

ESC =

SETTING COMMAND

[Name] Select peripheral device

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

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

[Default] **TM-J9000/J9100:n = 1**
TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II, TM-U675, TM-U325D:

A serial interface model:

n = 1: When the DIP switch for selecting connection of a customer display is off

n = 2: When the DIP switch for selecting connection of a customer display is on

A parallel interface model

n = 1

[Printers not featuring this command] None

[Description] Selects the device to which the host computer transmits data, using **n** as follows:

n	Function
1, 3	Enables printer.
2	Disables printer.

- [Notes]
- If the printer is specified as an invalid peripheral device, received character data and normal commands are ignored except for this command, except real time commands.
 - When the ASB function is operating, even if the printer is specified as an invalid peripheral device, the ASB status is transmitted when the relevant status changes. See **GS a**, **GS j**, **FS (e** for ASB functions.
 - Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.

- When executing **ESC @**, the default value of this command is as follows, depending on the value set by this command just before processing **ESC @** and on the setting of the DIP switch for selecting connection of a customer display.

	n
Setting when the power is turned on	When the DIP switch for selecting connection of customer display is off.
	When the DIP switch for selecting connection of customer display is on.
Setting value immediately before executing ESC @ (*1)	1 2 3
Setting value immediately before executing ESC @	When the DIP switch for selecting connection of customer display is off.
	When the DIP switch for selecting connection of customer display is on.

(*1)If the setting value of this command is (**n** = 2), the value of n does not change since **ESC @** is not executed.

If the printer does not support a DIP switch for selecting connection of a customer display, the default value of this command is the same as when DIP switch is off in the above table.

[Model-dependent variations]

**TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III,
TM-H5000II, TM-U675, TM-U325D**

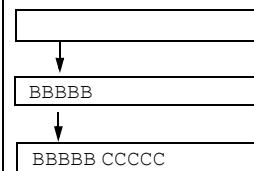
Program Example for all printers

```
PRINT #1, CHR$(&H1B); "=";CHR$(1); ←Printer enabled
PRINT #1, "AAAAAA";
PRINT #1, CHR$(&H1B); "=";CHR$(2); ←Printer disabled
PRINT #1, "BBBBBB";
PRINT #1, CHR$(&H1B); "=";CHR$(3);←Printer enabled
```

Print Sample

AAAAAA CCCCC

Customer Display Sample



TM-J9000/J9100

DM-D (Customer display) connection selected is not supported.

TM-J7500/7600, TM-J7000/7100

DM-D (Customer display) connection is selected by Memory switch 1-6.

TM-H5000II

DM-D (Customer display) connection is selected by DIP switch 2-2.

TM-U325D

If the printer is specified as an invalid peripheral device, **DLE EOT and **DLE ENQ (n = 3)** cannot be used.**

The printer does not support the DIP switch for selecting connection of customer display.

TM-H6000III

DM-D (Customer display) connection is selected by DIP switch 2-2.

TM-U675

DM-D (Customer display) connection is selected by DIP switch 2-2.

[Name]	Initialize printer
[Format]	ASCII ESC @ Hex 1B 40 Decimal 27 64
[Range]	None
[Default]	None
[Printers not featuring this command]	None
[Description]	<p>Clears the data in the print buffer and resets the printer modes to the modes that were in effect when the power was turned on.</p> <p>Keeps the following data:</p> <ul style="list-style-type: none">• Offline response setting.• Contents defined for the NV graphics (NV bit image).• Contents stored in the NV user memory.• Setting value specified with GS (E.• Maintenance counter value .• Customizing assignment for the ASB status bit.• Macro definition data.• The image scanning results in the NV memory for image data storage.
[Notes]	<ul style="list-style-type: none">■ When this command is processed with cut sheet selected as the paper type, all settings are initialized after ejecting the cut sheet.■ When this command is processed in page mode, the printer deletes the data in the printing areas, initializes all settings, and selects standard mode.■ After this command is executed, the printing position moves to left edge of printing area and printer's state becomes "beginning of the line" and "no data in print buffer."■ The DIP switch settings are not checked again.

- The data in the receive buffer is not cleared.
- When **ESC @** is executed, the setting differs from the default value when the power is turned on.
 - The setting of **ESC =** after **ESC @** is executed is different, depending on the status of the peripheral device selection just before executing **ESC @** and the DIP switch setting (customer display (DM-D) connection) as follows:

		n (the setting of ESC =)
Setting value of ESC = immediately before executing ESC @ (*1)		1 2 3
Setting value immediately before executing ESC @	DIP switch (customer display (DM-D) connection) is off.	1 - 1
	DIP switch (customer display (DM-D) connection) is on.	1 - 2

- (*1) If the setting value of **ESC =** is (**n** = 2), the value of **n** does not change since **ESC @** is not executed.
- If the printer does not support the DIP switch (connection of customer display) or with parallel interface, the setting is the same as when the DIP switch is off in above table.

- This command can cancel all settings, such as print mode and line feed, at the same time.

[Model-dependent variations]

**TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III,
TM-H5000II, TM-U675, TM-U325D**

Program Example for all printers

```
PRINT #1, CHR$(&H1D); "P";CHR$(180);CHR$(180);
PRINT #1, CHR$(&H1B); "3";CHR$(60);
PRINT #1, CHR$(&H1B); "U";CHR$(1);
PRINT #1, CHR$(&H1B); "E";CHR$(1);
PRINT #1, CHR$(&H1B); "-";CHR$(1);
PRINT #1, CHR$(&H1D); "!" ;CHR$(17);
PRINT #1, "AAAAA"; CHR$(&HA);
PRINT #1, CHR$(&H1B); "@"; ← Initialize printer
PRINT #1, "BBBBB"; CHR$(&HA);
```

Print Sample

AAAAA

BBBBB ← All settings are canceled after ESC @ is executed

TM-J9000/J9100

The button for selecting [DM-D (customer display) connection] is supported.

Besides the setting values described in this document, this printer keeps the data shown below.

- **ESC(A <Function 99> setting values**
- **NICR scanning results and image scanning results**

TM-J7500/7600, TM-J7000/7100

Customer display (DM-D) connection is set by DIP switch 1-6.

TM-H5000II

Customer display (DM-D) connection is set by DIP switch 2-2.

TM-U325D

This printer does not have a DIP switch for customer display (DM-D) connection.

TM-H6000III

Customer display (DM-D) connection is set by DIP switch 2-2.

TM-U675

Customer display (DM-D) connection is set by DIP switch 2-2.

[Name] Select page mode

[Format] ASCII ESC L
Hex 1B 4C
Decimal 27 76

[Range] None

[Default] None

[Printers not featuring this command] **TM-U325D**

[Description] Switches from standard mode to page mode.

- This command is enabled only when processed at the beginning of the line in standard mode. In other cases, this command is ignored.
- The printing position is moved to the starting position specified by **ESC T** within the printing area defined by **ESC W**.
- The following commands switch the settings for page mode, because these commands can be set independently in standard mode and in page mode:
 - **ESC SP, ESC 2, ESC 3, ESC U, and FS F.**
- In page mode, **ESC L, ESC c 0, FS L, FS a 0, FS c, FS g 1, FS q, GS (A, GS (C** (some functions), **GS (E, GS (G** (some functions), **GS (L / GS 8 L** (some functions), **GS (M** (some functions), **GS (P, GS T, and GS g 0** are disabled.
- The following commands are not effective in page mode.
 - **ESC V, ESC a, ESC {, GS L / GS 8 L, and GS W**
- The printer returns to standard mode with **ESC S, FF, and ESC @**. When it returns to standard mode using **ESC @**, all settings are initialized.
- Standard mode is selected as the default.
- Some double dot density functions are not processable in page mode, depending on printer model.
- In page mode, the printer prints the data in the print buffer for the printing area specified by **ESC W** collectively with **FF** or **ESC FF**. When executing print and paper feed commands, such as **LF, CR, ESC J, and ESC d**, only the printing position moves, and the printer does not perform actual printing.

[Model-dependent variations]

**TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III,
TM-H5000II, TM-U675**

See program example and print sample for ESC L, FS L, and ESC S.

TM-J9000/J9100

In the page mode for slips, specify ($n = 0, 48$) as the setting value for ESC T.

TM-J7500/7600

Page mode for this printer has the following exception in addition to normal specifications:

- Extended Font A cannot be used.

(Extended Font A is selected by ESC M ($n = 97$))

If you try to use Extended Font A in page mode, this printer will substitute font A.

TM-J7000/7100

This command is ignored when the back of a slip is selected as the active sheet.

TM-H5000II

Page mode for this printer has the following exception in addition to normal specifications:

- GS v 0 cannot be enabled.

In the multilingual model, page mode for slip paper cannot be enabled.

In the page mode for slip paper, Font C (5 × 9) is selected automatically.

Font A (9 × 9) and Font B (7 × 9) cannot be selected in the page mode.

Selecting font: ESC !, ESC M

Page mode for slip paper for this printer has the following exception in addition to the normal specifications:

- Bit images that need data processing using a double-density unit cannot be used in page mode.

Double-density bit image: ESC * (m = 1)

Normal mode of the bit image: GS / 0 (m = 0, 48)

- The setting of the function using the double-density unit does not affect the printing in page mode.

Selecting font : **ESC !, ESC M**

Character modification: **ESC ! (emphasized), ESC E, ESC G**

TM-U675

Page mode for this printer has the following exception in addition to the normal specifications:

- Bit images that need data processing using a double-density unit cannot be used.

Double-density bit image: **ESC * (m = 1)**

Normal mode bit image: **FS p, GS /, GS v 0 (m = 0, 48)**

- The setting of the function using a double-density unit does not affect the printing in page mode.

Selecting Font B: **ESC !, ESC M**

Character modification: **ESC ! (emphasized), ESC E, ESC G**

TM-H6000III

<Validation model>

In the page mode, there is the following exception for slip and validation in addition to the normal specifications:

- Graphics (bit images) that need data processing using a double-density unit cannot be used.

The graphics with (Width = 1): **GS (L / GS 8 L <Function 69> (x = 1).**

Double-density bit image: **ESC * (m = 1)**

Normal mode bit image: **FS p, GS /, GS v 0 (m = 0, 48)**

- Settings for functions that operate in double density do not affect characters in page mode.

Selecting Font B: **ESC !, ESC M**

<Note for other models>

This command is ignored when the back (endorsement side) of a slip is selected as the active sheet.

In the page mode, there is the following exception for the slip (face) in addition to the normal specifications:

- Graphics (bit images) that need data processing using a double-density unit cannot be used.
The graphics with (Width =1): **GS (L / GS 8 L <Function 69> (x = 1).**
Double-density bit image: **ESC * (m = 1)**
Normal mode bit image: **FS p, GS /, GS v 0 (m = 0, 48)**
- Settings for functions that operate in double density do not affect characters in page mode.
Selecting Font B: **ESC !, ESC M**
Character modification: **ESC ! (emphasized), ESC E, ESC G**

ESC S

EXECUTING COMMAND

[Name] Select standard mode

[Format] ASCII ESC S
 Hex 1B 53
 Decimal 27 83

[Range] None

[Default] None

[Printers not featuring this command] **TM-U325D**

[Description] Switches from page mode or double-density page mode to standard mode.

- [Notes]
- This command is enabled only in page mode. Page mode is selected by **ESC L** or **FS L**.
 - When this command is executed, data in all the printing area is cleared, the printing area set by **ESC W** returns to the default value, but the value set by **ESC T** is maintained.
 - After this command is executed, the printing position is moved to left edge of printing area. The printer's state becomes "beginning of the line" and "no data in print buffer."
 - The following commands switch the settings for standard mode, because these commands can be set independently in standard mode and in page mode:
 - **ESC SP**, **ESC 2**, **ESC 3**, and **ESC U**
 - In standard mode, **CAN**, **ESC FF**, **GS \$**, and **GS ** are ignored.
 - The settings of **ESC T** and **ESC W** are not effective in standard mode.
 - Standard mode is selected as the default.

[Model-dependent variations] None

See program example and print sample for ESC L, FS L, and ESC S.

Program Example for ESC L, FS L, and ESC S.**Program Example for all printers**

```
PRINT #1, CHR$(&H1B); "L"; ← Select page mode  
PRINT #1, CHR$(&H1B); "W";CHR$(0);CHR$(0);CHR$(0);  
CHR$(0);CHR$(240);CHR$(0);CHR$(200);CHR$(0);  
PRINT #1, CHR$(&H1B); "T";CHR$(0); ← Select print direction  
PRINT #1, "AAAAA"; CHR$(&HA);  
PRINT #1, "BBBBB"; CHR$(&HA);  
PRINT #1, "CCCCC";  
PRINT #1, CHR$(&H1B);CHR$(&HC); ← Batch print  
PRINT #1, CHR$(&H1B);"S"; ← Select standard mode
```

Print Sample

AAAAA
BBBBB
CCCCC

ESC p

EXECUTING COMMAND

[Name] Generate pulse

[Format]	ASCII	ESC	p	m	t1	t2
	Hex	1B	70	m	t1	t2
	Decimal	27	112	m	t1	t2

[Printers not featuring this command] **TM-J9000/J9100**

[Range]
m = 0, 1, 48, 49
 $0 \leq t1 \leq 255$
 $0 \leq t2 \leq 255$

[Default] None

[Printers not featuring this command] None

[Description] Outputs the pulse specified by **t1** and **t2** to connector pin **m** as follows:

m	Connector pin
0, 48	Drawer kick-out connector pin 2
1, 49	Drawer kick-out connector pin 5

- The pulse for ON time is (**t1** × 2 msec) and for OFF time is (**t2** × 2 msec).

[Notes] ■ Specify a value so that the OFF time is longer than the ON time (**t1** < **t2**).

[Model-dependent variations] None

Program Example for all printers

```
PRINT #1, CHR$(&H1B); "p";CHR$(0);CHR$(25);CHR$(250);
```

FS L

SETTING COMMAND

[Name] Select double-density page mode

[Format] ASCII FS L
 Hex 1C 4C
 Decimal 28 76

[Printers not featuring this command] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H5000II, TM-U325D**

[Range] None

[Default] None

[Description] Switches from standard mode to double-density page mode.

- [Notes]
 - This command is enabled only when processed at the beginning of the line in standard mode.
 - The printing position is moved to the starting position specified by **ESC T** within the printing area defined by **ESC W**.
 - The following commands switch the settings for page mode, because these commands can be set independently in standard mode and in page mode:
 - **ESC SP, ESC 2, ESC 3, ESC U, FS S**
 - In double-density page mode, the following commands cannot be used; **ESC L, ESC c 0, FS L, FS a 0, FS c, FS g 1, FS q, GS (A, GS (C** (some functions), **GS (E, GS (G** (some functions), **GS (L / GS 8 L** (some functions), **GS (M** (some functions), **GS T, GS (P**, and **GS g 0** are disabled.
 - The following commands are not effective in double-density page mode:
 - **ESC V, ESC a, ESC {, GS L, and GS W**
 - The printer returns to standard mode with **ESC S, FF**, and **ESC @**. When it returns to standard mode with **ESC @**, all settings are initialized.
 - Standard mode is selected as the default.
 - In page mode selected by **ESC L**, data is processed in single-density units. In double-density page mode selected by this command, data is processed in double-density units both in vertical and horizontal directions.

- In page mode, the printer prints the data in the print buffer for the printing area specified by **ESC W** collectively with **FF** or **ESC FF**. When executing the print and paper feed commands, such as **LF**, **CR**, **ESC J**, and **ESC d**, only the printing position moves, and the printer does not perform actual printing.

[Model-dependent variations]

TM-H6000III, TM-U675

TM-H6000III

This command can be used when slip (front side) or validation is selected as the active sheet.

With this printer, in addition to the standard specification, the character ornaments shown below do not affect characters in the double-density page mode.

Character modifications: ESC ! (emphasized), ESC E, ESC G

TM-U675

With this printer, in addition to the standard specification, the character ornaments shown below do not affect characters in the double-density page mode.

Character modifications: ESC ! (emphasized), ESC E, ESC G

Support for this command depends on the firmware version.

[Name] Execute test print

[Format]	ASCII	GS	(A	pL	pH	n	m
	Hex	1D	28	41	pL	pH	n	m
	Decimal	29	40	65	pL	pH	n	m

[Printers not featuring this command] **TM-U325D**

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 2$, $\mathbf{pL} = 2$, $\mathbf{pH} = 0$

TM-J9000/J9100: $0 \leq \mathbf{n} \leq 2$, $48 \leq \mathbf{n} \leq 50$, $\mathbf{n} = 4, 52$
 $1 \leq \mathbf{m} \leq 3$, $49 \leq \mathbf{m} \leq 51$ (When $\mathbf{n} = 1, 2, 49, 50$)
 $\mathbf{m} = 2, 3, 50, 51$ (When $\mathbf{n} = 0, 4, 48, 52$)

TM-J7500/J7600: $0 \leq \mathbf{n} \leq 4$, $48 \leq \mathbf{n} \leq 52$
 $1 \leq \mathbf{m} \leq 3$, $49 \leq \mathbf{m} \leq 51$ (When $0 \leq \mathbf{n} \leq 2$, $48 \leq \mathbf{n} \leq 50$)
 $\mathbf{m} = 2, 3, 50, 51$ (When $\mathbf{n} = 3, 4, 51, 52$)

TM-J7000/J7100: $0 \leq \mathbf{n} \leq 5$, $48 \leq \mathbf{n} \leq 53$
 $1 \leq \mathbf{m} \leq 3$, $49 \leq \mathbf{m} \leq 51$ (When $0 \leq \mathbf{n} \leq 2$, $48 \leq \mathbf{n} \leq 50$)
 $\mathbf{m} = 2, 3, 50, 51$ (When $\mathbf{n} = 3, 4, 51, 52$)
 $\mathbf{m} = 3, 51$ (When $\mathbf{n} = 5, 53$)

TM-H5000II: $1 \leq \mathbf{n} \leq 4$, $48 \leq \mathbf{n} \leq 52$
 $1 \leq \mathbf{m} \leq 3$, $49 \leq \mathbf{m} \leq 51$

TM-H6000III [Validation model]: $0 \leq \mathbf{n} \leq 4$, $48 \leq \mathbf{n} \leq 52$
 $1 \leq \mathbf{m} \leq 3$, $49 \leq \mathbf{m} \leq 51$ (When $0 \leq \mathbf{n} \leq 3$, $48 \leq \mathbf{n} \leq 51$)
 $\mathbf{m} = 2, 3, 50, 51$ (When $\mathbf{n} = 4, 52$)

TM-H6000III [Other models]: $0 \leq \mathbf{n} \leq 4$, $48 \leq \mathbf{n} \leq 52$
 $1 \leq \mathbf{m} \leq 3$, $49 \leq \mathbf{m} \leq 51$ (When $0 \leq \mathbf{n} \leq 3$, $48 \leq \mathbf{n} \leq 51$)
 $\mathbf{m} = 2, 3, 50, 51$ (When $\mathbf{n} = 4, 52$)

TM-U675: **$1 \leq n \leq 4, 48 \leq n \leq 52$** **$1 \leq m \leq 3, 49 \leq m \leq 51$ (When $0 \leq n \leq 3, 48 \leq n \leq 51$)** **$m = 2, 3, 50, 51$ (When $n = 4, 52$)**

[Description] Executes a specified test print.

- **n** specifies the paper used for the test print as follows:

n	Paper
0, 48	Default print station (roll paper)
1, 49	Roll paper
2, 50	
3, 51	Slip (face)
4, 52	Validation
5, 53	Slip (back)

- **m** specifies a test pattern as follows:

m	Type
1, 49	Hexadecimal dump
2, 50	Printer status printing
3, 51	Rolling pattern

[Notes]

- This command is effective only when processed at the beginning of the line in standard mode.
- Do not use this command while a macro is being defined, because this command cannot be included in the macro.
- If a cut sheet is selected as the paper type while processing this command, the current paper is ejected.
- When cut sheet is selected for printing the test print, the printer waits for the sheet to be inserted. The paper wait status continues until the cut sheet is inserted, paper insertion waiting time (**t1**) set by **ESC f** is elapsed, paper insertion waiting status is canceled by **DLE ENQ** (**n** = 3), the printer is reset, or the power is turned off.

- The printer processes only real-time commands when waiting for the cut sheet to be inserted.
- After processing this command, the printer performs a software reset. Executing this command puts the printer in the same status as when the power is turned on. Transmit commands or data after confirming the complete software reset.
- If hexadecimal dump ($m = 1, 49$) is specified, the printer prints a message. Transmit commands or data after the printing.
- The following restrictions apply when printing the printer status ($m = 2, 50$) and rolling pattern ($m = 3, 51$).
 - The real time command must not be executed.
 - The ASB status will not be sent, even when the ASB function is set to enable.

[Model-dependent variations]

**TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III,
TM-H5000II, TM-U675**

Program Example

```
PRINT #1, CHR$(&H1D); "A"; CHR$(2); CHR$(0); CHR$(1); CHR$(2);
```

TM-J9000/J9100

The paper types are roll paper and validation paper. Even when memory switch [Msw8-4] is on, with this command, roll paper can be specified.

When validation is selected as paper type, test printing of Hexadecimal dump is disabled.

TM-J7500/7600

Paper types are roll paper and face and back for slip.

($m = 3, 51$) and ($m = 4, 52$) select the same paper (face of slip).

When slip (face) is selected as paper type, test printing of Hexadecimal dump is disabled.

TM-J7000/7100

Paper types are roll paper and face and back for slip.

($m = 3, 51$) and ($m = 4, 52$) select the same paper (face of slip).

When slip (face) is selected as paper type, test printing of Hexadecimal dump is disabled.

When slip (back) is selected as paper type, test printing of Hexadecimal dump and printer status are disabled.

TM-H5000II

Paper types are roll paper and slip.

(n = 3, 51) and (n = 4, 52) select the same paper (slip).

The support for this command depends on the printer model.

TM-H6000III

<Validation model>

Paper types are roll paper, slip, and validation.

When validation is selected as paper type, test printing of Hexadecimal dump is disabled.

<Note for other models>

Paper types are roll paper and slip.

(m = 3, 51) and (m = 4, 52) select the same paper (face of slip).

TM-U675

When validation paper is selected as paper source, test printing of Hexadecimal dump is disabled.

[Name] Enable/disable real-time command

[Format] ASCII GS (D **pL pH m [a1 b1]...[ak bk]**
 Hex 1D 28 44 **pL pH m [a1 b1]...[ak bk]**
 Decimal 29 40 68 **pL pH m [a1 b1]...[ak bk]**

[Printers not featuring this command] **TM-H5000II, TM-U325D**

[Range] **(pL + pH × 256) = 3, 5 (pL = 3, 5, pH = 0)**

m = 20

TM-J9000/J9100: a = 2

TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-H5000II, TM-U325D

a = 1, 2

b = 0, 1, 48, 49

[Default] **b = 1 (when a = 1/ DLE DC4 fn m t (fn = 1): enable)**

b = 0 (when a = 2/ DLE DC4 fn a b (fn = 2): disable)

[Description] Enables or disables the real-time command.

- **pL, pH** specify **(pL + pH × 256)** as the number of bytes after **pH** (**m** and **[a1 b1]...[ak bk]**).
- **a** specifies the type of real-time command.
- **b** specifies enable/disable of real-time command processing.

a	b	function
1	0, 48	Disable DLE DC4 n m t (fn = 1) (does not execute the process)
	1, 49	Enable DLE DC4 n m t (fn = 1) (execute the process)
2	0, 48	Disable DLE DC4 n m t (fn = 2) (does not execute the process)
	1, 49	Enable DLE DC4 n m t (fn = 2) (execute the process)

- **DLE DC4 n m t (n = 1):** Output a specified pulse in real-time.
- **DLE DC4 n a b (n = 2):** Executes power-off processing.

- The printer processes each real-time command that is enabled (**b** = 1, 49) upon receiving it.
- A real-time command specified as disabled (**b** = 0, 48) is processed as an undefined code.
- The settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.
- If you transmit a command for graphics or defined data that contains the sequence **DLE DC4**, be sure to disable real-time command processing (**b** = 0, 48) before transmitting the graphics or defined data command or the printer will process the sequence **DLE DC4** as image data.

Program Example

```

PRINT #1, CHR$(&H1D); "(D";CHR$(3);CHR$(0);CHR$(20);CHR$(2);CHR$(0); ← Set disabled
PRINT #1, CHR$(&H1B); "*" ;CHR$(0);CHR$(9);CHR$(0);CHR$(240);CHR$(15);
PRINT #1, CHR$(16);CHR$(20);CHR$(2);CHR$(1);CHR$(8); ← Process as image data
PRINT #1, CHR$(15);CHR$(240); "END";CHR$(&HA); ← Execute print and line feed
PRINT #1, CHR$(&H1D); "(D";CHR$(3);CHR$(0);CHR$(20);CHR$(2);CHR$(1); ← Set enabled
PRINT #1, CHR$(16);CHR$(20);CHR$(2);CHR$(1);CHR$(8); ← Execute power off
GOSUB * RECEIVE           ← Confirmation of the power-off notice

```

[Model-dependent variations]

TM-U675

Support for this command depends on the firmware version.

[Name] Request transmission of response or status

[Printers not featuring this command] **TM-H5000II, TM-U675, TM-U325D**

[Description] Various processes are performed for the response or status.

- Function code (**fn**) specifies the function.

fn	Function No.	Function name
48	Function 48	Set the process ID response.
49	Function 49	Enable/disable the offline response transmission.
64	Function 64	Enable/disable transmission of paper status.

- **PL, PH** specify (**PL** + **PH** × 256) as the number of bytes after **PH** (**fn** and **[parameters]**).
- Description of the **[parameters]** is described in each function.

[Notes]

- Do not use this command in a system in which the printer is used with the OPOS driver and Java POS driver that are provided by Seiko Epson Corporation.
- The function of this command is defined by function code **fn** and the operation differs depending on the function selected.
- "Response" is a data block to inform the host of the processing status. There are three kinds of "Response" as shown in the following table. Untransmitted multi-kind responses are stored in the printer and transmitted in the order of priority shown in the following table, ignoring the order of occurrence.

Kind of Response	Related Command	Priority
Process ID response	<Function 48> of this command	1
Offline response	<Function 49> of this command	2
Clear response 25	DLE DC4 (fn = 8)	3

Notes for response/status transmission process

- When the host PC isn't able to receive when the response or status is transmitted, the response or status is reserved and the printer starts processing the next data. The reserved response and status are processed again at the next time for transmitting responses or status.
 - When specifying any response or status with a serial interface, make sure that the host PC is able to receive data. When host is unable to receive data, responses and status cannot be received correctly.
- When operating with a parallel interface, the data sent by this function (starting with Header and ending with NUL), as with other data, is first stored in the send buffer, then output in sequential order when the host computer changes to the reverse mode. Note that the send buffer capacity is 99 bytes, and any data exceeding this volume limit will be lost; therefore, when using this command, it is important to configure the operation so that the host computer's change to the reverse mode and the subsequent status send/receive process is performed quickly.
- When communication with the printer uses XON/XOFF control with a serial interface, the XOFF code may interrupt the "Header to NUL" data string.
- The response for each function can be identified to other transmission data according to specific data of the transmission data block. When the header transmitted by the printer is [hex = 37H/decimal =55], treat NUL [hex = 00H/decimal =0] as a data group and identify it according to the combination of the header and the identifier.

Program Example

```
PRINT #1, CHR$(&h1D); " (H";CHR$(2);CHR$(0);CHR$(64);CHR$(49);0!_Enable/disable transmission of paper status  
<Function 64>
```

Program Example

```

PRINT #1, CHR$(&H1D);"(G";CHR$(3);CHR$(0);CHR$(49);CHR$(48);CHR$(1); ← specifies the offline response
                                         [function 49]
PRINT #1, "AAAAAA";CHR$(&HA); ← Print data on paper

PRINT #1, CHR$(&H1D);"(G";CHR$(2);CHR$(0);CHR$(82);CHR$(48); ← Pre-process for cut sheet insertion ends
                                         [function 82]
PRINT #1, CHR$(&H1D);"(H";CHR$(6);CHR$(0);CHR$(48);CHR$(48);"0001" ← Specifies process ID [function 48]

PRINT #1, "BBBBBB";CHR$(&HA); ← Print data on paper

PRINT #1, CHR$(&H1D);"(H";CHR$(6);CHR$(0);CHR$(48);CHR$(48);"0002" ← Specifies process ID [function 48]

PRINT #1, CHR$(&H1D);"(V";CHR$(66);CHR$(0); ← Cutting paper

```

Print Example

Print sample	
AAAAAA	← The process ID response (0001)
BBBBBB	← The process ID response (0002)
— — — — —	← Paper cutting

[Model-dependent variations]

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

This printer supports <Function 48> to <Function 49>.

TM-H6000III

This printer supports <Function 64>.

GS (H pL pH fn m d1 d2 d3 d4 <Function 48>

[Name] Set the process ID response.

[Format]	ASCII	GS	(H	pL	pH	fn	m	d1	d2	d3	d4
	Hex	1D	28	48	06	00	30	30	d1	d2	d3	d4
	Decimal	29	40	72	6	0	48	48	d1	d2	d3	d4

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 6 (\mathbf{pL} = 6, \mathbf{pH} = 0)$

fn = 48

m = 48

32 ≤ d1 ≤ 126

32 ≤ d2 ≤ 126

32 ≤ d3 ≤ 126

32 ≤ d4 ≤ 126

[Description] Saves the specified process ID for the data processed just before this function.

- (**d1, d2, d3, d4**) specifies the process ID. The process ID is able to be related to printing data and any command data without a real-time command.
- When the related data is processed, the process ID is transmitted to the host PC.

[Notes]

- The time when the response is transmitted differs depending on the related data.
 - When the related data is printing data, the process ID response is transmitted when the printing is completed.
 - When the related data is any data without the commands described above, the process ID response is transmitted at the time of processing the data.
- Process ID response is the “header to NUL” data shown below:

Send data	Hex	Decimal	Data quantity
Header	37H	55	1 byte
Identifier	22H	34	1 byte
Process ID ^(*1)	20H ~ 7EH	32 ~ 126	4 byte
NUL	00H	0	1 byte

(*1) [Process ID] is same data as the parameters of this function (**d1, d2, d3, d4**).

- Process ID (**d1, d2, d3, d4**) is specified by a character string data format. When the strings are specified in ascending order ("0001" ~ "9999"), confirming for the processing order becomes easy.
- When the transmitting of a process ID response occurs while some untransmitted process ID is being stored, the printer transmits the latest process ID only.

Example:

There are three lines of printing data, and a process ID ("0001," "0002," and "0003") is specified for each line. (When the host receives the process ID response "0003," the host can judge that "the three line printing is completed.")

- When the host PC is always able to receive data from the printer, the printer transmits three process ID responses ("0001," "0002," "0003").
 - When the host PC isn't able to receive data from the printer when the second line of printing is done, the printer transmits two process ID responses ("0001," "0003").
 - When the host PC isn't able to receive data from the printer when the first and second lines of printing are done, the printer transmits one process ID response ("0003").
- When unprocessed data is cleared by **DLE DC4 (fn = 8)** or **DLE ENQ (n = 2)** or others, it is cleared without transmitting the process IDs that are related to the cleared data.
 - When specifying process an ID response by this function, execute response confirmation processing on the host PC for the responses from the printer.
 - For a description of transmission of response , see the overall specification "Notes for response transmission process"

[Model-dependent variations]

TM-H6000III

TM-H6000III

This function is not supported.

GS (H pL pH fn m d <Function 49>

[Name] Enable/disable the offline response transmission.

[Format]

ASCII	GS	(H	pL	pH	fn	m	d
Hex	1D	28	48	03	00	31	30	d
Decimal	29	40	72	3	0	49	48	d

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 3$ ($\mathbf{pL} = 3$, $\mathbf{pH} = 0$)

fn = 49

m = 48

TM-J9000/J9100: d = 0, 2, 48, 50

TM-J7500/7600, TM-J7000/J7100: 0 ≤ d ≤ 2, 48 ≤ d ≤ 50

[Default] **d** = 0

[Description] Enables or disables the offline response transmission.

d	Function
0, 48	Disables the offline response transmission.
1, 49	Enables the offline response transmission (not including the offline cause).
2, 50	Enables the offline response transmission (including the offline cause).

When specifying offline response transmitting (**d** = 1, 2, 49, 50), offline response is transmitted when the printer goes offline for any of the following causes.

- Any paper cover open
- Printing stop by the roll paper out
- Automatically recoverable error
- Recoverable error
- Unrecoverable error

[Notes]

- Confirm that untransmitted offline responses aren't stored in the printer when specifying or turning off offline response transmitting by this function.
 - When operating with a serial interface, make sure that the host PC is able to receive data before executing this function.
 - When operating with a parallel interface, change the host PC to the reverse mode for confirming any responses.
- Offline response is the "header to NUL" data shown below:

Send data	Hex	Decimal	Data quantity
Header	37H	55	1 byte
Identifier	23H	35	1 byte
Offline cause ^(*)1)	40H ~ 7FH	64 ~ 127	0 ~ 10 byte
NUL	00H	0	1 byte

(*1) When specifying (**d** = 1, 49), [Offline cause] is not added. Details of the offline cause differ, depending on each model.

- When transmitting an offline response occurs at the same time that an untransmitted offline response is being stored, the printer transmits the latest offline response only.
- You can get detailed information of offline occurrences by using the combination of ASB status and offline response with offline cause.
- When specifying offline response by this function, execute response confirmation processing on the host PC for the responses from the printer.
- For a description of transmission of response , see the overall specification "Notes for response transmission process"

[Model-dependent variations]

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III

The offline cause of this printer is constructed of 5 bytes as shown in the following tables.

Table 1: <The first byte: information for unrecoverable error>

Bit	Off/On	Hex	Decimal	Information
0	Off	00	0	Main board of CPU execution error hasn't occurred.
	On	01	1	Main board of CPU execution error has occurred.
1	Off	00	0	Main board of Read/Write error hasn't occurred in the memory.
	On	02	2	Main board of Read/Write error has occurred in the memory.
2	Off	00	0	Read/Write error hasn't occurred in the gate array.
	On	04	4	Read/Write error has occurred in the gate array.
3	Off	00	0	Sub board of CPU execution error hasn't occurred.
	On	04	4	Sub board of CPU execution error has occurred.
4	Off	00	0	Sub board of Read/Write error hasn't occurred in the memory.
	On	04	4	Sub board of Read/Write error has occurred in the memory.
5	-	-	-	Reserved.
6	On	40	64	Fixed.
7	0	00	0	Fixed.

When one of above errors occurs, turn off the printer immediately.

Table 2: <The second byte: information for unrecoverable errors>

Bit	Off/On	Hex	Decimal	Information
0	Off	00	0	High voltage error hasn't occurred.
	On	01	1	High voltage error has occurred.
1	Off	00	0	Low voltage error hasn't occurred.
	On	02	2	High voltage error has occurred.
2 ~ 5	-	-	-	Reserved.
6	On	40	64	Fixed.
7	0	00	0	Fixed.

When one of above errors occurs, turn off the printer immediately.

Table 3: <The third byte: information for unrecoverable errors>

Bit	Off/On	Hex	Decimal	Information
0	Off	00	0	Internal circuit connection error (thermostat) hasn't occurred.
	On	01	1	Internal circuit connection error (thermostat) has occurred.
1	-	-	-	Reserved.
2	Off	00	0	Internal circuit connection error (head low voltage) hasn't occurred.
	On	04	4	Internal circuit connection error (head low voltage) has occurred.
3	-	-	-	Reserved.
4	Off	00	0	CIS error hasn't occurred.
	On	10	16	CIS error has occurred.

Table 3: <The third byte: information for unrecoverable errors>

Bit	Off/On	Hex	Decimal	Information
5	Off	00	0	Internal circuit connection error (number of pump driving) hasn't occurred.
	On	20	32	Internal circuit connection error (number of pump driving) has occurred.
6	On	40	64	Fixed.
7	-	-	-	Reserved.

When one of above errors occurs, turn off the printer immediately.

Table 4: <The fourth byte: information for recoverable error>

Bit	Off/On	Hex	Decimal	Information
0	-	-	-	Reserved.
1	Off	00	0	Roll paper cover open error hasn't occurred. (When Msw [8-8] is ON)
	On	02	2	Roll paper cover open error hasn't occurred. (When Msw [8-8] is ON)
2	Off	00	0	Internal circuit connection error (head low voltage) hasn't occurred.
	On	04	4	Internal circuit connection error (head low voltage) has occurred.
3	-	-	-	Reserved.
4	Off	00	0	Carriage home position detection error hasn't occurred.
	On	10	16	Carriage home position detection error has occurred.
5	Off	00	0	Carriage out of phase detection error hasn't occurred.
	On	20	32	Carriage out of phase detection error has occurred.
6	On	40	64	Fixed.
7	0	00	0	Fixed.

When one of above errors occurs, the error can be canceled by executing DLE ENQ after clearing the error cause.

Table 5: <The fifth byte: information for unrecoverable error>

Bit	Off/On	Hex	Decimal	Information
0	Off	00	0	Roll paper cover open error hasn't occurred. (When Msw [8-8] is OFF)
	On	01	1	Roll paper cover open error has occurred. (When Msw [8-8] is OFF)
1	Off	00	0	Print head high temperature error hasn't occurred.
	On	02	2	Print head high temperature error has occurred.
2	Off	00	0	Print head low temperature error hasn't occurred.
	On	04	4	Print head low temperature error has occurred.
3	Off	00	0	Carriage cover is opened
	On	08	8	Carriage cover is closed
4	Off	00	0	Scanner cover is opened
	On	10	16	Scanner cover is closed
5	Off	00	0	Roll paper cover is opened
	On	20	32	Roll paper cover is closed
6	On	40	64	Fixed.
7	0	00	0	Fixed.

When the error of bit 0 occurs, the error can be canceled by closing the roll paper cover.

When the error of bit 0, 3, 4 or 5 occurs, the error is automatically canceled when the temperature of the print head returns to the specified temperature range.

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TM-J7500/7600, TM-J7000/7100

The offline cause of this printer is constructed of 5 bytes as shown in the following tables.

Table 6: <The first byte: information for unrecoverable error>

Bit	Off/On	Hex	Decimal	Information
0	Off	00	0	CPU execution error hasn't occurred.
	On	01	1	CPU execution error has occurred.
1	Off	00	0	Read/Write error hasn't occurred in the memory.
	On	02	2	Read/Write error has occurred in the memory.
2	Off	00	0	Read/Write error hasn't occurred in the gate array.
	On	04	4	Read/Write error has occurred in the gate array.
3 ~ 5	-	-	-	Reserved.
6	On	40	64	Fixed.
7	0	00	0	Fixed.

When one of above errors occurs, turn off the printer immediately.

Table 7: <The second byte: information for unrecoverable errors>

Bit	Off/On	Hex	Decimal	Information
0	Off	00	0	High voltage error hasn't occurred.
	On	01	1	High voltage error has occurred.
1	Off	00	0	Low voltage error hasn't occurred.
	On	02	2	High voltage error has occurred.
2 ~ 5	-	-	-	Reserved.
6	On	40	64	Fixed.
7	0	00	0	Fixed.

When one of above errors occurs, turn off the printer immediately.

Table 8: <The third byte: information for unrecoverable errors>

Bit	Off/On	Hex	Decimal	Information
0	Off	00	0	Internal circuit connection error (thermostat) hasn't occurred.
	On	01	1	Internal circuit connection error (thermostat) has occurred.
1	Off	00	0	Internal circuit connection error (head high voltage) hasn't occurred.
	On	02	2	Internal circuit connection error (head high voltage) has occurred.
2	Off	00	0	Internal circuit connection error (head low voltage) hasn't occurred.
	On	04	4	Internal circuit connection error (head low voltage) has occurred.
3	Off	00	0	Internal circuit connection error (EEP ROM) hasn't occurred.
	On	08	8	Internal circuit connection error (EEP ROM) has occurred.
4	-	-	-	Reserved.
5	Off	00	0	Internal circuit connection error (number of pump driving) hasn't occurred.
	On	20	32	Internal circuit connection error (number of pump driving) has occurred.
6	On	40	64	Fixed.
7	-	-	-	Reserved.

When one of above errors occurs, turn off the printer immediately.

Table 9: <The fourth byte: information for recoverable error>

Bit	Off/On	Hex	Decimal	Information
0	Off	00	0	Autocutter error hasn't occurred.
	On	01	1	Autocutter error has occurred.
1	Off	00	0	Roll paper cover open error hasn't occurred. (When Msw [8-8] is ON)
	On	02	2	Roll paper cover open error hasn't occurred. (When Msw [8-8] is ON)
2	Off	00	0	Internal circuit connection error (head low voltage) hasn't occurred.
	On	04	4	Internal circuit connection error (head low voltage) has occurred.
3	-	-	-	Reserved.
4	Off	00	0	Carriage home position detection error hasn't occurred.
	On	10	16	Carriage home position detection error has occurred.
5	Off	00	0	Carriage out of phase detection error hasn't occurred.
	On	20	32	Carriage out of phase detection error has occurred.
6	On	40	64	Fixed.
7	0	00	0	Fixed.

When one of above errors occurs, the error can be canceled by executing DLE ENQ after clearing the error cause.

Table 10: <The fifth byte: information for unrecoverable error>

Bit	Off/On	Hex	Decimal	Information
0	Off	00	0	Roll paper cover open error hasn't occurred. (When Msw [8-8] is OFF)
	On	01	1	Roll paper cover open error has occurred. (When Msw [8-8] is OFF)
1	Off	00	0	Print head high temperature error hasn't occurred.
	On	02	2	Print head high temperature error has occurred.
2	Off	00	0	Print head low temperature error hasn't occurred.
	On	04	4	Print head low temperature error has occurred.
3 ~ 5	-	-	-	Reserved.
6	On	40	64	Fixed.
7	0	00	0	Fixed.

When the error of bit 0 occurs, the error can be canceled by closing the roll paper cover.

When the error of bit 1 or 2 occurs, the error is automatically canceled when the temperature of the print head returns to the specified temperature range.

TM-H6000III

This function is not supported.

GS (H pL pH fn n <Function 64>

[Name] Enable/disable transmission of paper status.

[Format] Set/cancel paper status notice

[Format]

ASCII	GS	(H	pL	pH	fn	n
Hex	1D	28	48	02	00	40	n
Decimal	29	40	72	2	0	64	n

[Range]

$$(\mathbf{pL} + \mathbf{pH} \times 256) = 2 (\mathbf{pL} = 2, \mathbf{pH} = 0)$$

fn = 64
m = 0, 1, 48, 49

[Default]

[Description]

Enables or disables transmission of paper status when the cut sheet is removed abnormally.

d	Function
0, 48	Disable transmission of paper status.
1, 49	Enable transmission of paper status.

- Transmits a paper status notice when the cut sheet is detected as pulled out if paper status notice is specified (**n** = 1, 49).
- [Notes]
- When setting or canceling paper status notice by this function, check that no unsent paper status notices are held inside the printer.
 - With serial interface, use this command when the printer is in Ready status.
 - With parallel interface, change to Reverse Mode and check for paper status notices.

- Paper status notices are comprised of the following Header to NUL.

Paper status notice	Hex	Decimal	Data quantity
Header	37H	55	1 byte
Identifier	23H	78	1 byte
Paper type ^(*)1)	30H or 32H	48 or 50	1 byte
Status type	30H	48	1 byte
NUL	00H	0	1 byte

(*1) Paper status notices are indicated as follows.

Hex	Decimal	Information
30H	48	Information related to slip
32H	50	Information related to check paper

- When the cut sheet is detected as pulled out with slip selected as the active sheet, the status of GS r (**n** = 3, 51: cut sheet status) or GS r (**n** = 80: cut sheet number of dots status) is remaining printing area = 0.
- When specifying paper status notice by this function, always check for paper status notices from the printer.
- For a description of transmission of paper status notices, see the overall specification "Notes for response transmission process"

[Model-dependent variations]

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

This function is not supported.

TM-H6000III

If paper status notice is specified ($n = 1, 49$), it is possible to detect when the operator pulls out a cut sheet. In this case, from the time that a slip or check is inserted until any of the following occurs, is the period when pull-out detection is effective. However, depending on the position in which the paper is set, the timing of the pulling out operation and the paper status notice may not match.

- Ejection starts
- A recoverable error or unrecoverable error occurs

Sheets may be detected as pulled out when the following operations are performed. Take care when using the relevant commands.

- When slip (front side) is selected as the active sheet and the paper is reverse fed to the position where the TOF sensor detects no paper with **ESC K** or **ESC e**
- When slip (back side) is selected as the active sheet and the paper is fed to the position where the TOF sensor detects no paper with **ESC J** or **ESC d**

When paper is detected as pulled out during printing, printing stops after the current line is printed. If there is unprinted data in the printer, the status changes to waiting for paper.

[Name] Select print control method(s)

[Printers not featuring this command] **TM-H6000III, TM-H5000II, TM-U675, TM-U325D**

[Description] Selects the print control methods.

- Function code (**fn**) specifies the function.

fn	Function No.	Function name
48	Function 48	Select the print control mode

- **PL, PH** specify (**PL** + **PH** × 256) as the number of bytes after **PH** (**fn** and **[parameters]**).
- Description of the **[parameters]** is described in each function.

[Notes]

- This command decides the function according to the function code (**fn**). Performance of the functions differs depending on the function.
- Sets the print control method for the set sheet selected with **ESC c 1**. The print control method can be set independently for roll paper, slip (face and back), and validation paper.
- The settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.

[Model-dependent variations] None

Program Example

```
PRINT #1, CHR$(&H1D); " (K";CHR$(2);CHR$(0);CHR$(048);CHR$(049); ← Function 48
```

GS (K <Function 48>

[Name] Select the print control mode

[Format] ASCII GS (K **PL PH fn m**
 Hex 1D 28 4B 02 **00 30 m**
 Decimal 29 49 75 2 0 **48 m**

[Range] **(PL + PH × 256) = 2, PL = 2, PH = 0**
fn = 48

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100: 1 ≤ m ≤ 3, 48 ≤ m ≤ 52

[Default] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100: m = 2**

[Description] Selects the print control mode by **m** for the paper type selected by **ESC c 1**.

m	Print control mode
0, 48	Print mode when power is turned on
1, 49	Print control mode 1
2, 50	Print control mode 2
3, 51	Print control mode 3
4, 52	Print control mode 4

- The specification of each print control mode differs, depending on the printer model. See model-dependent variations.

[Notes] None.

[Model-dependent variations] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100**

TM-J9000/J9100

The following print control modes are available.

m	Print control mode	Specification
1, 49	Normal	Enables high density printing
2, 50	High speed	Enables high speed and ink saving printing
3, 51	Economy	Prints saving more ink than "High speed"

Even when "high speed" or "economy" is selected, the throughput might not be improved because of the data communication speed between the printer and the host.

When printing a bar code (not including HRI characters), the print control mode is specified as "Normal" ($m = 1, 49$). When printing a bar code (not including HRI character) in page mode, we recommend that you previously specify the "Normal mode."

TM-J7500/7600

The following print control modes are available.

m	Print control mode	Specification
1, 49	Normal	Enables high density printing
2, 50	High speed	Enables high speed and ink saving printing
3, 51	Economy	Prints saving more ink than "High speed"

Even when "high speed" or "economy" is selected, the throughput might not be improved because of the data communication speed between the printer and the host.

When printing a bar code (not including HRI characters) or two-dimensional code, the print control mode is specified as "Normal" ($m = 1, 49$). When printing a bar code (not including HRI character) or two-dimensional code in page mode, we recommend that you previously specify the "Normal mode."

CONFIDENTIAL

When printing Extended Font A, the print control mode is specified as "Normal" or "High speed." When printing Extended Font A, we recommend that you previously specify the "Normal mode" ($m = 1, 49$) or "High speed mode" ($m = 2, 50$).

Setting of print control mode when Extended Font A is printed	Applied print control mode
Normal ($m = 1, 49$)	It is printed with Normal mode
High speed ($m = 2, 50$)	It is printed with High speed mode
Economy ($m = 3, 51$)	It is printed with High speed mode

TM-J7000/7100

The following print control modes are available.

m	Print control mode	Specification
1, 49	Normal	Enables high density printing
2, 50	High speed	Enables high speed and ink saving printing
3, 51	Economy	Prints saving more ink than "High speed"

Even when "high speed" or "economy" is selected, the throughput might not be improved because of the data communication speed between the printer and the host.

When printing a bar code (not including HRI characters) or two-dimensional code, the print control mode is specified as "Normal" ($m = 1, 49$). When printing a bar code (not including HRI character) or two-dimensional code in page mode, we recommend that you previously specify the "Normal mode."

GS (P

EXECUTING COMMAND

[Name] Select page mode control function(s)

[Printers not featuring this command] **TM-J9000/J9100, TM-H6000III, TM-H5000II, TM-U675, TM-U325D**

[Description] Various processes are performed for page mode.

- Function code (**fn**) specifies the function.

fn	Function No.	Function name
48	Function 48	Set the printable area for page mode.

- **pl, ph** specify (**pl** + **ph** × 256) as the number of bytes after **ph** (**fn** and **[parameters]**).
- Description of the **[parameters]** is described in each function.

[Notes]
■ The function of this command is defined by function code **fn** and the operation differs depending on the function selected.

Program example and print samples

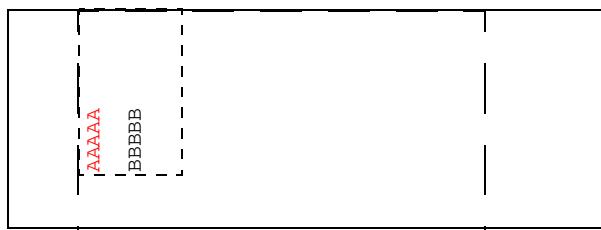
```

PRINT #1, CHR$(&H1D);"(P";CHR$(8);CHR$(0);CHR$(48); ← [function 48]
PRINT #1, CHR$(64);CHR$(1); ← Sets the width of printable area for page mode to 320
PRINT #1, CHR$(128);CHR$(2); ← Sets the height of printable area for page mode to 640
PRINT #1, CHR$(40);CHR$(0); ← Sets the horizontal offset of printable area for page mode to 40
PRINT #1, CHR$(3); ← Selects the color for printing in page mode

PRINT #1, CHR$(&H1B);"L"; ← Selects page mode
PRINT #1, CHR$(&H1B);"W";CHR$(0);CHR$(0);CHR$(0);CHR$(0);CHR$(180);CHR$(0);CHR$(44);CHR$(1); ← Sets printing area
PRINT #1, CHR$(&H1B);"T";CHR$(1); ← Selects a printing direction
PRINT #1, CHR$(&H1D);"(N";CHR$(2);CHR$(0);CHR$(48);CHR$(50); ← Selects a printing color (for the second color)
PRINT #1, "AAAAAA";CHR$(&HA); ← Printing data
PRINT #1, CHR$(&H1D);"(N";CHR$(2);CHR$(0);CHR$(48);CHR$(49); ← Selects a printing color (for the first color)
PRINT #1, "BBBBBB";CHR$(&HC); ← Prints the data in the print buffer collectively and returns to standard mode.

```

Print sample



("AAAAAA" is printed by the first color)
("BBBBBB" is printed by the second color)

← Solid rectangle:
the maximum printable area.

← Dashed rectangle:
the specified printable area
by <Function 48> of this command.

← Hidden rectangle:
the specified printing area
by **ESC W**.

GS (P pl ph fn wXL wXH wYL wYH oXL oXH c <Function 48>

[Name] Set the printable area for page mode.

[Format] ASCII GS (P pl ph fn wXL wXH wYL wYH oXL oXH c
 Hex 1D 28 50 08 00 30 wXL wXH wYL wYH oXL oXH c
 Decimal 29 40 80 8 0 48 wXL wXH wYL wYH oXL oXH c

[Range] $(pl + ph \times 256) = 8$ ($pl = 8, ph = 0$)

fn = 48

1 ≤ (wXL + wXH × 256) ≤ 65535 (0 ≤ wXL ≤ 255, 0 ≤ wXH ≤ 255)

1 ≤ (wYL + wYH × 256) ≤ 65535 (0 ≤ wYL ≤ 255, 0 ≤ wYH ≤ 255)

0 ≤ (oXL + oXH × 256) ≤ 65535 (0 ≤ oXL ≤ 255, 0 ≤ oXH ≤ 255)

TM-J7500, TM-J7000: c = 1

TM-J7600, TM-J7100: 1 ≤ c ≤ 3

[Default] **TM-J7500:**

[For roll paper when the width is 82.5 mm]

(wXL + wXH × 256) = 512 (wXL = 0, wXH = 2)

(wYL + wYH × 256) = 832 (wYL = 64, wYH = 3)

[For roll paper when the width is 76 mm]

(wXL + wXH × 256) = 480 (wXL = 224, wXH = 1)

(wYL + wYH × 256) = 880 (wYL = 112, wYH = 3)

[For roll paper when the width is 69.5 mm]

(wXL + wXH × 256) = 432 (wXL = 176, wXH = 1)

(wYL + wYH × 256) = 984 (wYL = 216, wYH = 3)

[For roll paper when the width is 57.5 mm]

(wXL + wXH × 256) = 360 (wXL = 104, wXH = 1)

(wYL + wYH × 256) = 1176 (wYL = 152, wYH = 4)

[For Slip]

(wXL + wXH × 256) = 960 (wXL = 192, wXH = 3)

(wYL + wYH × 256) = 440 (wYL = 184, wYH = 1)

[For any roll paper and slip]

(oXL + oXH × 256) = 0 (wXL = 0, wXH = 0)

c = 1

TM-J7600:

[For roll paper when the width is 82.5 mm]

$$(wxL + wxH \times 256) = 512 (wxL = 0, wxH = 2)$$

$$(wyL + wyH \times 256) = 416 (wyL = 160, wyH = 1)$$

[For roll paper when the width is 76 mm]

$$(wxL + wxH \times 256) = 480 (wxL = 224, wxH = 1)$$

$$(wyL + wyH \times 256) = 440 (wyL = 184, wyH = 1)$$

[For roll paper when the width is 69.5 mm]

$$(wxL + wxH \times 256) = 432 (wxL = 176, wxH = 1)$$

$$(wyL + wyH \times 256) = 488 (wyL = 232, wyH = 1)$$

[For roll paper when the width is 57.5 mm]

$$(wxL + wxH \times 256) = 360 (wxL = 104, wxH = 1)$$

$$(wyL + wyH \times 256) = 584 (wyL = 72, wyH = 2)$$

[For Slip]

$$(wxL + wxH \times 256) = 960 (wxL = 192, wxH = 3)$$

$$(wyL + wyH \times 256) = 216 (wyL = 216, wyH = 0)$$

[For any roll paper and slip]

$$(oxL + oxH \times 256) = 0 (wxL = 0, wxH = 0)$$

$$(wyL + wyH \times 256) = 368 (wyL = 112, wyH = 1)$$

$$c = 3$$

TM-J7000:

[For roll paper when the width is 82.5 mm]

$$(wxL + wxH \times 256) = 512 (wxL = 0, wxH = 2)$$

$$(wyL + wyH \times 256) = 832 (wyL = 64, wyH = 3)$$

[For roll paper when the width is 76 mm]

$$(wxL + wxH \times 256) = 480 (wxL = 224, wxH = 1)$$

$$(wyL + wyH \times 256) = 880 (wyL = 112, wyH = 3)$$

[For roll paper when the width is 69.5 mm]

$$(wxL + wxH \times 256) = 432 (wxL = 176, wxH = 1)$$

$$(wyL + wyH \times 256) = 984 (wyL = 216, wyH = 3)$$

[For roll paper when the width is 57.5 mm]

$$(wxL + wxH \times 256) = 360 (wxL = 104, wxH = 1)$$

$$(wyL + wyH \times 256) = 1176 (wyL = 152, wyH = 4)$$

[For Slip] $(wxL + wxH \times 256) = 576 (wxL = 0, wxH = 0)$ $(wyL + wyH \times 256) = 738 (wyL = 224, wyH = 2)$ **[For any roll paper and slip]** $(oxL + oxH \times 256) = 0 (wxL = 0, wxH = 0)$ $c = 1$ **TM-J7100:****[For roll paper when the width is 82.5 mm]** $(wxL + wxH \times 256) = 512 (wxL = 0, wxH = 2)$ $(wyL + wyH \times 256) = 416 (wyL = 160, wyH = 1)$ **[For roll paper when the width is 76 mm]** $(wxL + wxH \times 256) = 480 (wxL = 224, wxH = 1)$ $(wyL + wyH \times 256) = 440 (wyL = 184, wyH = 1)$ **[For roll paper when the width is 69.5 mm]** $(wxL + wxH \times 256) = 432 (wxL = 176, wxH = 1)$ $(wyL + wyH \times 256) = 488 (wyL = 232, wyH = 1)$ **[For roll paper when the width is 57.5 mm]** $(wxL + wxH \times 256) = 360 (wxL = 104, wxH = 1)$ $(wyL + wyH \times 256) = 584 (wyL = 72, wyH = 2)$ **[For Slip]** $(wxL + wxH \times 256) = 576 (wxL = 64, wxH = 2)$ $(wyL + wyH \times 256) = 368 (wyL = 112, wyH = 1)$ **[For any roll paper and slip]** $(oxL + oxH \times 256) = 0 (wxL = 0, wxH = 0)$ $(wyL + wyH \times 256) = 368 (wyL = 112, wyH = 1)$ $c = 3$ **[Description]**

Sets the printable area for page mode.

- Printable area width (horizontal dimension) = $[(wxL + wxH) \times 256] \times$ horizontal motion unit from the horizontal offset.
- Printable area height (vertical dimension) = $[(wyL + wyH) \times 256] \times$ vertical motion unit from the absolute origin.

- The horizontal offset of the printable area = $[(\text{OXL} + \text{OXH}) \times 256] \times \text{vertical motion unit}$.
- The printing color in page mode by the parameter **c** as the following table.

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Does not use the first color in page mode
	On	01	1	Uses the first color in page mode
1	Off	00	0	Does not use the second color in page mode
	On	02	2	Uses the second color in page mode
2 ~ 7	0	00	0	Reserved.

[Notes]

- Use this function in standard mode only.
- In this function, "vertical" means "direction of paper feed," and "horizontal" means "perpendicular to direction of paper feed."
- It isn't possible to specify that the width or height is 0.
- A width (horizontal dimension) of the printable area and a horizontal offset are calculated by horizontal motion unit.
- A height (vertical dimension) of the printable area is calculated by vertical motion unit.
- If horizontal or vertical motion unit is changed after setting a printable area by this function, the printable area is not changed.
- When this function specifies a setting that exceeds the maximum settable area settable area the printer automatically revises as following.
 - When the specified width of printable area exceeds the maximum, the width is set to the maximum.
 - When (the specified width of printable area + the horizontal offset) exceeds the maximum settable area the offset width is set to (the maximum width - the specified width of printable area).
 - When the specified horizontal offset width exceeds 40 inches (1016 mm), the width is set to the maximum.
 - When the specified printable area setting exceeds the maximum size for each printer model, the printer revises by the printer's rule.

- The specified printable area affects all supported active sheets for the printer.
- This function sets the printable area of all supported active sheets for printing.
- The three notes below apply to a printer that supports this command using page mode printing.
 - This function specifies the printable area which is able to be specified as the area by **ESC W**.
 - In processing **ESC W** with a printer that supports this function, the absolute origin of **ESC W** is the upper-right of the specified printable area of this function.
 - When adjusting the printable area with this function, specify the printing area to the same size as the printable area specified by **ESC W** after executing **ESC L** and **FS L**.
- Setting of this command is effective until **ESC @** is executed, the printer is reset, or the power is turned off.
- The setting by this function doesn't affect standard-mode printing.
- On a two-color printer model, the printable area of the page mode is extended to the same as single-color printer model when specifying only one color in page mode, but don't use second color only when printing bar codes or two-dimensional code in page mode.

[Model-dependent variations]

TM-J7500/7600, TM-J7000/7100

TM-J7500/7600, TM-J7000/7100

The motion unit is the setting value of GS P.

The maximum printable area size is 53352 bytes. When the size is exceeded in the specifying of this function, the printer revises the specified height as shown in the following table.

Conditions	Revised height (vertical length)
Single-color is specified (c = 1 or 2)	int (53352 / (number of horizontal dot + 1) × 8)
Two-color is specified (c = 3)	int (53352 / (2 × number of horizontal dot + 2) × 8)

The number of horizontal data in the above table means [(wyl + wnh) × 256] × horizontal motion unit].

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Only "Color 1" can be used with special ink cartridge (SJIC8) of **TM-J7000/TM-J7500**.

The following printing colors are available when the SJIC6 and SJIC7 cartridges specially designed for the **TM-J7100/TM-J7600** printer, are used.

Color selection	Printing color
Color 1	Black (SJIC8(K))
Color 2	Red (SJIC7(R)), blue (SJIC7(B)) or green (SJIC7(G))

[Name] Select head control method

[Format] ASCII GS E **n**
Hex 1D 45 **n**
Decimal 29 69 **n**

[Range] **TM-H6000III, TM-U675: 0 ≤ n ≤ 255**

[Default] **TM-U675:** For roll paper: **n = 1**
For cut sheet: **n = 0**
TM-H6000III: n = 0

[Printers not featuring this command] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H5000II, TM-U325D**

[Description] Selects the head control method, using **n** as follows:

n: Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Head energizing time: copy.
	On	01	1	Head energizing time: normal.
1	Off	00	0	Reserved.
2	Off	00	0	Print quality: economy.
	On	04	4	Print quality: fine.
3	Off	00	0	Reserved.
4	Off	00	0	Printing speed: high.
	On	10	16	Printing speed: low.
5-7	Off	00	0	Reserved.

... how to use
this table

[Recommended Functions]

This command is supported only by some printer models and may not be supported by future models.

It is recommended to use **GS (H: <Function 48>**. The command can do the same process.

- [Notes]
- When standard mode is selected, this command is enabled only when processed at the beginning of the line.
 - Affects the print operation of the active sheet selected with **ESC c 0**. The head control method can be selected independently for roll paper, slip, and validation paper.
 - In standard mode, all data on one line is printed with the same head control method.
 - Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.
 - In page mode, the setting for this command is effective for all data to be printed collectively by **FF** or **ESC FF**.

[Model-dependent variations]

TM-H6000III, TM-U675

Program Example for all printers

```
PRINT #1,CHR$(&H1D) ; "E" ;CHR$(16) ; ← Select printing speed to Low
```

TM-H6000III

Bits 2 and 4 are not supported.

The command specifies the print head (serial impact dot head) control method for a slip (face).

TM-U675

Bits 2 and 4 are not supported.

[Name] Transmit printer ID

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

[Range] **TM-J9000/J9100: n = 1, 2, 49, 50 , 65 ≤ n ≤ 68, n = 33, 112**

TM-J7500/7600, TM-J7000/7100: 1 ≤ n ≤ 3, 49 ≤ n ≤ 51, 65 ≤ n ≤ 69, n = 112

TM-H5000II: 1 ≤ n ≤ 3, 49 ≤ n ≤ 51, 65 ≤ n ≤ 69

TM-H6000III: n = 1, 2, 49, 50 , 65 ≤ n ≤ 69, n = 33, 112

TM-U675: 1 ≤ n ≤ 3, 49 ≤ n ≤ 51, 65 ≤ n ≤ 69, n = 112

TM-U325D: 1 ≤ n ≤ 3, 49 ≤ n ≤ 51

[Default] None

[Printers not featuring this command] None

[Description] Transmits the printer ID or printer information.

- Transmits 1 byte of printer ID, using **n** as follows:

n	Printer ID	Specification
1, 49	Printer model ID	Printer model
2, 50	Type ID	Printer type
3, 51	Version ID	Firmware version

- Transmits the printer information A, using **n** as follows:

n	Type of printer information	Specification
33	Type information	Indicates the supported optional functions

- Transmits the printer information B, using **n** as follows:

n	Type of printer information	Specification
65	Firmware version	Indicates firmware version
66	Manufacturer	"EPSON"
67	Printer name	Indicates printer name
68	Serial number	Indicates serial number of a product
69	Type of mounted additional fonts	"KANJI JAPANESE" (Japanese model) "CHINA GB2312" (Simplified Chinese model) "TAIWAN BIG-5" (Traditional Chinese model)
112	See Model-dependent information	See Model-dependent information

[Notes]

- When you use this function, obey the following rules.

- After the host PC transmits the function data, the printer will send response data or status data back to the PC. Do not transmit more data from the PC until the response data or status data are received from the printer.
- When operating with a serial interface, be sure to configure operation so that the host computer uses the printer only when it is READY.
- With a parallel interface, the printer ID and printer information transmitted from the printer are stored in the transmission buffer of the printer temporarily the same as other transmitted data (except ASB status), and when the host enters Reverse Mode, data is transmitted in order from the beginning of the transmission buffer. The transmission buffer is 99 bytes; therefore, data that exceeds 99 bytes is ignored. When using this command, the host should enter the Reverse Mode immediately to receive status.

[Notes for Printer ID]

- Printer model ID (when $1 \leq n \leq 3, 49 \leq n \leq 51$) consists of 1-byte data.
- Printer model ID (when $n = 1$ or 49) differs, depending on the printer model.

- Type ID (when $n = 2$ or 50) to be transmitted is as follows:

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Multi-byte character code not supported
	On	01	1	Multi-byte character code supported
1	Off	00	0	Autocutter not installed
	On	02	2	Autocutter installed
2	Off	00	0	Customer display is not connected
	On	04	4	Customer display is connected
3	Off	00	0	Without MICR reader
	On	08	8	With MICR reader
4	Off	00	0	Fixed
5	-	-	-	Reserved
6	Off	00	0	Endorsement printer is not installed
	On	40	64	Endorsement is installed
7	Off	00	0	Fixed

*... how to use
this table*

- With a parallel interface model, bit 2 is fixed to off (Customer display is disconnected.)
- Each version ID ($n = 3, 51$) corresponds to a firmware version. Details depend on printer model.
- When printer information (common or model-dependent) transmission is specified, the printer transmits a character string data [Header ~ NUL].

[Notes for Printer Information A]

- Printer information A (**n** = 33) consists of [Header ~ NUL] as following table:

Transmitted data	Hex	Decimal	Amount of data
Header	3DH	61	1 byte
Identifier(*1)	20H ~ 2FH	32 ~ 47	1 byte
Printer information A	Depends on printer model	Depends on printer model	0 ~ 80 bytes
NUL	00H		1 byte

(*1) The identifier is transmitted as the transmitted parameter **n** of this command.

Example: When type information is specified (**n** = 33), the identifier is [hex = 21H/decimal = 33].

- Depending on the model, type information (when **n** = 33 is specified) may consist either of 1 byte for the first byte, or 2 bytes for the first byte and second byte.

<First byte of the type information>

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Multi-byte code character (Kanji) is not supported.
	On	01	1	Multi-byte code character (Kanji) is supported.
1	Off	00	0	Autocutter is not installed.
	On	02	2	Autocutter is installed.
2	Off	00	0	DM-D (Customer display) is not connected.
	Off	04	4	DM-D (Customer display) is connected.
3	Off	00	0	MICR reader is not installed.
	On	08	8	MICR reader is installed.
4	Off	00	0	Image scanner is not installed.
	On	10	16	Image scanner is installed.
5	Off	00	0	Endorsement printer is not installed.
	On	20	32	Endorsement printer is installed.
6	On	40	64	Fixed.
7	Off	00	0	Fixed.

*... how to use
this table*

<Second byte of the type information>

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	NV memory for image data storage is not installed.
	On	01	1	NV memory for image data storage is installed.
1	Off	00	0	256-level gray scale data tone is not supported.
	On	02	2	256-level gray scale data tone is supported.
2	Off	00	0	Card image scanner is not installed.
	On	04	4	Card image scanner is installed.
3	Off	00	0	Auto sheet feeder (ASF) is not installed.
	On	08	8	Auto sheet feeder (ASF) is installed.
4	-	-	-	Reserved.
5	Off	00	0	Validation specification type is not installed.
	On	20	32	Validation specification type is installed.
6	On	40	64	Fixed.
7	Off	00	0	Fixed.

*... how to use
this table*

- When using parallel interface, the Bit 2 is fixed to 0 "DM-D (Customer display) is not connected."
- When communication with the printer uses XON/XOFF control, the XOFF code may interrupt the "Header to NUL" data string.
- The printer information A can be differentiated by the header of the block data from other transmission data. After outputting **GS I**, if the header transmitted from the printer is [Hex = 3DH/Decimal = 61], data is processed up to NUL [Hex = 00H/Decimal = 0] as the data block, according to the header and identifier.

[Notes for Printer Information B]

- Printer information (when $65 \leq n \leq 69$, $n = 112$) consists of [Header ~ NUL] as in following table:

Transmitted data	Hex	Decimal	Amount of data
Header	5FH	95	1 byte
Printer information B (*1)	Depends on printer model	Depends on printer model	0 ~ 80 bytes
NUL	00H		1 byte

(*1) If the printer information cannot be transmitted by some cause, the printer transmits 2-byte code of [Header + NUL].

- The firmware version can be checked by self-test printing. The self test can be executed by **GS (A** or panel switch operation while the power is turned on.
- When communication with the printer uses XON/XOFF control, the XOFF code may interrupt the "Header to NUL" data string.
- The printer information B can be differentiated by the header of the block data from other transmission data. After outputting **GS I**, if the header transmitted from the printer is [Hex = 5FH/Decimal = 95], data is processed up to NUL [Hex = 00H/Decimal = 0] as the data block, according to the header.

[Model-dependent variations]

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III,
TM-H5000II, TM-U675, TM-U325D

Program Example for all printers

```
PRINT #1, CHR$(&H1D); "I";CHR$(67);← Transmits printer name
```

TM-J9000/J9100

- **Printer ID (n = 1, 49): Hex: 4BH / Decimal: 75**
- **Type ID (n = 2, 50)**
Bit 3: [MICR is installed/not installed] indicates the status
Bit 0, 1, 2, 6 are not supported.
- **Type information(n = 33):**
1st byte - Bit 3: Always transmits [MICR reader is installed].

1st byte - Bit 4: Always transmits [Image scanner (for scanning check paper) is installed].

1st byte: Bits 0, 1, 2 and 5 are not supported.

2nd byte - Bit 1: Always transmits [Image scanner (for scanning cards) is installed].

2nd byte: Bits 0 and 5 are not supported.

- **Printer model (n = 67)**
Printer name is **[TM-J9000] or [TM-J9100]**.
- **For model-dependent information (n = 112).**
- **Transmits a 3-byte data block comprised of Header + Type Information (B) information (1 byte) + NUL.**

<Type information (B)>

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Single color model (TM-J9000)
	On	01	1	Two color model (TM-J9100)
1 ~ 5	-	-	-	Reserved.
6	On	40	64	Fixed.
7	Off	00	0	Fixed.

TM-H5000II

Printer information (65 ≤ n ≤ 69) support depends on firmware version.

- **Printer model ID (n = 1, 49)**

Hex: 0FH / Decimal: 15

Type ID (when n = 2, 50)

- **Bit 1 always indicates [Autocutter installed].**
- **Bit 2 [Status of connection customer display] indicates the state of the DIP switch [SW 2-2].**

Printer name (when n = 67)

- **Printer name is TM-H5000II**

TM-U325D

- **Printer model ID (n = 1, 49)**
Hex: 22H / Decimal: 34
- **Type ID (n = 2, 50)**
Bit 1 always indicates [Autocutter not installed].
Bit 2 indicates [DM-D (Customer display) is not connected].

TM-H6000III

- **Printer ID (n = 1, 49): Hex: 24H / Decimal: 36**
- **Type ID (n = 2, 50):**
Bit 1 of the first byte always indicates [Autocutter installed].
Bit 2 of the first byte [Status of connection customer display] indicates the state of the DIP switch [SW 2-2].
Image scanner installed model transmits the Type ID with [First byte + second byte].
Other than image scanner installed model transmits the Type ID with [First byte] only.
- **Type ID (n = 33):**
Image scanner specification and validation specification type information is comprised of 2 bytes for the first byte and second byte. For other specifications, it consists of 1 byte for the first byte.
Bit 1 of the first byte always indicates [Autocutter installed].
Bit 2 of the first byte [Status of connection customer display] indicates the state of the DIP switch [SW 2-2].
- **Printer model (n = 67)**
Printer name is **TM-H6000III**.
- **For model-dependent information (n = 112).**
- **Transmits a 6-byte data block comprised of Header + DIP switch information (4 bytes) + NUL.**

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<First byte of DIP switch information>

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	DIP switch 1-1 is off
	On	01	1	DIP switch 1-1 is on
1	Off	00	0	DIP switch 1-2 is off
	On	02	2	DIP switch 1-2 is on
2	Off	00	0	DIP switch 1-3 is off
	On	04	4	DIP switch 1-3 is on
3	Off	00	0	DIP switch 1-4 is off
	On	08	8	DIP switch 1-4 is on
4, 5	-	-	-	Reserved
6	On	40	64	Fixed to off
7	Off	00	0	Fixed to off

<Second byte of DIP switch information>

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	DIP switch 1-5 is off
	On	01	1	DIP switch 1-5 is on
1	Off	00	0	DIP switch 1-6 is off
	On	02	2	DIP switch 1-6 is on
2	Off	00	0	DIP switch 1-7 is off
	On	04	4	DIP switch 1-7 is on
3	Off	00	0	DIP switch 1-8 is off
	On	08	8	DIP switch 1-8 is on
4, 5	-	-	-	Reserved
6	On	40	64	Fixed to on
7	Off	00	0	Fixed to off

CONFIDENTIAL

<Third byte of DIP switch information>

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	DIP switch 2-1 is off
	On	01	1	DIP switch 2-1 is on
1	Off	00	0	DIP switch 2-2 is off
	On	02	2	DIP switch 2-2 is on
2	Off	00	0	DIP switch 2-3 is off
	On	04	4	DIP switch 2-3 is on
3	Off	00	0	DIP switch 2-4 is off
	On	08	8	DIP switch 2-4 is on
4, 5	-	-	-	Reserved
6	On	40	64	Fixed to off
7	Off	00	0	Fixed to off

<Fourth byte of DIP switch information>

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	DIP switch 2-5 is off
	On	01	1	DIP switch 2-5 is on
1-5	-	-	-	Reserved
6	On	40	64	Fixed to on
7	Off	00	0	Fixed to off

TM-U675

- **Printer ID (n = 1, 49): Hex: 25H / Decimal: 37**
- **Type ID (when n = 2, 50)**
Bit 2 [Status of connection customer display] indicates the state of the DIP switch [SW 2-2].
- **Printer name (n = 67)**
Printer name is **TM-U675**
- **For model-dependent information (n = 112).**
- **This information support depends on the firmware version.**
- **Transmits a 6-byte data block comprised of Header + DIP switch information (4 bytes) + NUL.**
[Header + model-dependent information (4-byte) + NUL].

<First byte of DIP switch information>

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	DIP switch 1-1 is off
	On	01	1	DIP switch 1-1 is on
1	Off	00	0	DIP switch 1-2 is off
	On	02	2	DIP switch 1-2 is on
2	Off	00	0	DIP switch 1-3 is off
	On	04	4	DIP switch 1-3 is on

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Bit	Off/On	Hex	Decimal	Function
3	Off	00	0	DIP switch 1-4 is off
	On	08	8	DIP switch 1-4 is on
4, 5	-	-	-	Reserved
6	On	40	64	Fixed
7	Off	00	0	Fixed

<Second byte of DIP switch information>

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	DIP switch 1-5 is off
	On	01	1	DIP switch 1-5 is on
1	Off	00	0	DIP switch 1-6 is off
	On	02	2	DIP switch 1-6 is on
2	Off	00	0	DIP switch 1-7 is off
	On	04	4	DIP switch 1-7 is on
3	Off	00	0	DIP switch 1-8 is off
	On	08	8	DIP switch 1-8 is on
4, 5	-	-	-	Reserved
6	On	40	64	Fixed
7	Off	00	0	Fixed

CONFIDENTIAL

<Third byte of DIP switch information>

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	DIP switch 2-1 is off
	On	01	1	DIP switch 2-1 is on
1	Off	00	0	DIP switch 2-2 is off
	On	02	2	DIP switch 2-2 is on
2	Off	00	0	DIP switch 2-3 is off
	On	04	4	DIP switch 2-3 is on
3	Off	00	0	DIP switch 2-4 is off
	On	08	8	DIP switch 2-4 is on
4, 5	-	-	-	Reserved
6	On	40	64	Fixed
7	Off	00	0	Fixed

<Fourth byte of DIP switch information>

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	DIP switch 2-5 is off
	On	01	1	DIP switch 2-5 is on
1-5	-	-	-	Reserved
6	On	40	64	Fixed
7	Off	00	0	Fixed

TM-J7000/7100

- **Printer ID (n = 1, 49): Hex: 43H / Decimal: 67**
- **Type ID (n = 2, 50)**
Bit 1: [Autocutter is installed/not installed] indicates the state of Memory switch 2-2.
Bit 2: [DM-D (Customer display) is connected/not connected] indicates the state of Memory switch 1-6.
Bit 6: This printer doesn't support this bit.
- **Printer model (n = 67)**
The two-color printer model name is TM-J7100, and the single color printer model name is TM-J7000.
- **For model-dependent information (n = 112), Transmits a 3-byte data block comprised of Header + Type ID (B) (1 byte) + NUL.**

<Type ID (B)>

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Single color model (TM-J7000)
	On	01	1	Two color model (TM-J7100)
1	Off	00	0	The printer doesn't have an endorsement printing function.
	On	02	2	The printer has an endorsement printing function.
2 ~ 5	-	-	-	Reserved.
6	On	40	64	Fixed.
7	Off	00	0	Fixed.

TM-J7500/7600

- **Printer ID (n = 1, 49): Hex: 47H / Decimal: 71**
- **Type ID (n = 2, 50)**
Bit 1: [Autocutter is installed/not installed] indicates the state of Memory switch 2-2.
Bit 2: [DM-D (Customer display) is connected/not connected] indicates the state of Memory switch 1-6.
Bit 6: This printer doesn't support this bit.
- **Printer model (n = 67)**
The two-color printer model name is TM-J7600, and the single color printer model name is TM-J7500.
- **For model-dependent information (n = 112), the printer transmits type information. The transmitted data is 3 bytes of data as constructed by [Header + model-dependent information (1 byte) + NULL]. It is as shown in the following table.**

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Single color model (TM-J7500)
	On	01	1	Two color model (TM-J7600)
1	Off	00	0	The printer doesn't have an endorsement printing function.
	On	02	2	The printer has an endorsement printing function.
2 ~ 5	-	-	-	Reserved.
6	On	40	64	Fixed.
7	Off	00	0	Fixed.

[Name] Set horizontal and vertical motion units

[Format] ASCII GS P **x** **y**
 Hex 1D 50 **x** **y**
 Decimal 29 80 **x** **y**

[Range] $0 \leq \mathbf{x} \leq 255$
 $0 \leq \mathbf{y} \leq 255$

[Default] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100: x = 180, y = 180**

TM-H5000II: For roll paper: **x = 180, y = 360**
 For slip paper: **x = 150, y = 144**

TM-H6000III: For roll paper: **x = 180, y = 360**
 For slip paper (face): **x = 160, y = 144**

TM-U675: x = 160, y = 144

[Printers not featuring this command] **TM-U325D**

[Description] Sets the horizontal and vertical motion units to approximately $25.4/\mathbf{x}$ mm {1/ \mathbf{x} "} and approximately $25.4/\mathbf{y}$ mm {1/ \mathbf{y} "}, respectively.

- When **x** = 0, the default value of the horizontal motion unit is used.
- When **y** = 0, the default value of the vertical motion unit is used.

[Notes]

- The horizontal direction is perpendicular to the paper feed direction and the vertical direction is the paper feed direction.
- The horizontal and vertical motion units indicate the minimum pitch used for calculating the values of related commands (shown on the next screen).
- In standard mode, the following commands use **x** or **y**.
 - Commands using **x**: **ESC SP, ESC \$, ESC \, FS S, GS (P, GS L and GS W**
 - Commands using **y**: **ESC 3, ESC J, ESC K GS (P and GS V**

- In page mode, the following commands use **x** or **y**, when the starting position is set to the upper left or lower right of the printing area using **ESC T**.
 - Commands using **x**: **ESC SP**, **ESC \$**, **ESC W**, **ESC **, and **FS S**
 - Commands using **y**: **ESC 3**, **ESC J**, **ESC K**, **ESC W**, **GS \$**, **GS V**, and **GS **
- In page mode, the following commands use **x** or **y**, when the starting position is set to the upper right or lower left of the printing area using **ESC T**.
 - Commands using **x**: **ESC 3**, **ESC J**, **ESC K**, **ESC W**, **GS \$**, and **GS **
 - Commands using **y**: **ESC SP**, **ESC \$**, **ESC W**, **ESC **, **FS S**, and **GS V**
- Because the printer has multiple print heads, this command defines the pattern for the paper type selected by **ESC c 1**. User-defined characters can be defined independently for each paper type.
- Settings of this command are effective until **ESC @** is executed, the printer is reset, or the power is turned off.
- The calculated result from combining this command with others is truncated to the minimum value of the mechanical pitch.
- This command does not affect the current setting values.

[Model-dependent variations]

TM-J9000/J9100, **TM-J7500/7600**, **TM-J7000/7100**, **TM-H6000III**,
TM-H5000II, **TM-U675**

Program Example for all printers

```
PRINT #1, CHR$(&H1D); "P";CHR$(180);CHR$(180);
PRINT #1, CHR$(&H1B); "3";CHR$(30); ← Set line spacing
PRINT #1, "AAAAAA"; CHR$(&HA);
PRINT #1, "BBBBBB"; CHR$(&HA);
PRINT #1, CHR$(&H1D); "P";CHR$(180);CHR$(90);
PRINT #1, CHR$(&H1B); "3";CHR$(30); ← Set line spacing
PRINT #1, "CCCCCC"; CHR$(&HA);
PRINT #1, "DDDDDD"; CHR$(&HA);
PRINT #1, "EEEEEE"; CHR$(&HA);
```

Print Sample

AAAAA	↓	
BBBBB	↓	30/180-inch line spacing
CCCCC	↓	
DDDDD	↓	30/90-inch line spacing
EEEEE	↓	

TM-H5000II

This command sets the motion units for the paper type selected by **ESC c 1**. The horizontal and vertical motion units can be set independently for roll paper and slip paper.

The default values for roll paper equal 1 dot pitch horizontally and a half dot pitch vertically. The default value for slip corresponds to the 1/2 bit pitch for both horizontal/vertical.

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

Default values equal 1 dot pitch in both vertical and horizontal directions.

TM-H6000III

This command sets the motion units for the paper type selected by **ESC c 1**. The value set for a slip affects printing on the face of the slip. The horizontal and vertical motion units can be set independently for roll paper and slip paper (face).

The default values for roll paper equal 1 dot pitch horizontally and a half dot pitch vertically. The default value for slip (front side) corresponds to the 1/2 bit pitch for both horizontal/vertical.

<Validation model>

Slip and validation use the common motion units. Therefore, the defined motion units affect printing for the both sheets when “paper type for command setting” is slip or validation.

TM-U675

The default values equal a half dot pitch horizontally and a half dot pitch vertically.

GS g 0

SETTING COMMAND

[Name]	Initialize maintenance counter					
[Format]						
	ASCII	GS	g	0	m	nl
	Hex	1D	67	30	m	nl
	Decimal	29	103	48	m	nl

[Printers not featuring this command] **TM-U325D**

[Range] **m = 0**
 $0 \leq (\text{mL} + \text{mH} \times 256) \leq 65535$

TM-J9000/J9100: $30 \leq (nL + nh \times 256) \leq 35$, $(nL + nh \times 256) = 60, 61, 62, 70$

TM-J7500/J7600: $30 \leq (\text{mL} + \text{mH} \times 256) \leq 35, (\text{mL} + \text{mH} \times 256) = 50, 70$

TM-J7000/J100: 30 (nL + nh × 256) ≤ 35, (nL + nh × 256) ≥ 50, 60, 61, 70

TM-H6000III:

- : $(nL + nH \times 256) = 10, 11, 20, 21, 50, 60, 70$ [Validation model]
- : $(nL + nH \times 256) = 10, 11, 20, 21, 40, 41, 50, 60, 61, 62, 63, 64, 70$ [Photo-ID model]
- : $(nL + nH \times 256) = 10, 11, 20, 21, 40, 41, 50, 60, 61, 62, 70$ [Image scanner model]
- : $(nL + nH \times 256) = 10, 11, 20, 21, 40, 41, 50, 60, 70$ [MICR model]
- : $(nL + nH \times 256) = 10, 11, 20, 21, 50, 70$ [Other models]

TM-U675: $(nL + nH \times 256) = 10, 11, 40, 41, 50, 60, 70$

TM-H5000II: $(n_L + n_H \times 256) = 10, 11, 20, 21, 50, 60, 70$

(nL + nh x 256)	Maintenace counter
10 ~ 19	Serial impact head
20 ~ 29	Thermal head
30 ~ 39	Ink jet head

(nL + nh × 256)	Maintenace counter
40 ~ 49	Shuttle head
50 ~ 59	Devices that conform to the normal specification
60 ~ 69	Optional devices
70 ~ 79	Time

[Notes]

- There are two types of maintenance counters: resettable counters and accumulation counters. A resettable counter is a maintenance counter that can be initialized, and an accumulation counter indicates the counter value from when the printer starts operation. An accumulation counter cannot be initialized.
- In standard mode, this command is effective only when processed in the beginning of a line.
- If the counter specified by **(nL + nh × 256)** is not supported, this command is ignored.
- Do not use this command while a macro is being defined, because the command cannot be included in the macro.
- Types of maintenance counters differ, depending on the printer models. See [Model-dependent variations] of **GS g 2** for description of detail.
- When a counter reaches its maximum value, its value is reset to 0 in the next updating process. Units and maximum values of counters differ, depending on the printer model and function. See the model-dependent variations for details.
- This command writes data to a non-volatile memory. Note the following items when using this command.
 - Do not turn off the power or reset the printer from the interface when the relevant functions are being executed.
 - The printer may be BUSY when storing data and will not receive any data. In this case, be sure not to transmit data from the host.
 - Excessive use of this function may destroy the non-volatile memory. As a guideline, do not use any combination of the following commands more than 10 times per day for writing data to the non-volatile memory: **GS (C** (part of functions), **GS (E** (part of functions), **GS (L / GS 8 L** (part of functions), **GS (M** (part of functions), **GS g 0**, **FS g 1**, **FS q**.

- The following restrictions apply when performing non-volatile memory operations (including data store and delete).
 - The paper feed button does not operate.
 - Real time commands are not processed.
 - The ASB status will not be sent, even when the ASB function is set to enable.
- The maintenance counter value can be transmitted by **GS g 2**.
- The maintenance counter value can be used for establishing the time for replacing consumed parts or cleaning.

Program Example

```
PRINT #1, CHR$(&H1D); "g0";CHR$(0);CHR$(11);CHR$(0); ← Initializes print character counter
```

GS g 2

EXECUTING COMMAND

[Name]	Transmit maintenance counter
[Format]	ASCII GS g 2 m nL nH Hex 1D 67 32 m nL nH Decimal 29 103 50 m nL nH
[Range]	m = 0 TM-J9000/J9100: $30 \leq (nL + nH \times 256) \leq 35$, $(nL + nH \times 256) = 60, 61, 62, 70$ $158 \leq (nL + nH \times 256) \leq 163$, $(nL + nH \times 256) = 188, 189, 190, 198$
	TM-J7500/7600: $30 \leq (nL + nH \times 256) \leq 35$, $(nL + nH \times 256) = 50, 70$ $158 \leq (nL + nH \times 256) \leq 163$, $(nL + nH \times 256) = 178, 198$
	TM-J7000/7100: $30 \leq (nL + nH \times 256) \leq 35$, $(nL + nH \times 256) = 50, 60, 61, 70$ $158 \leq (nL + nH \times 256) \leq 163$, $(nL + nH \times 256) = 178, 188, 189, 198$
TM-H6000III:	$(nL + nH \times 256) = 10, 11, 20, 21, 50, 60, 70$ [Validation model] $(nL + nH \times 256) = 138, 139, 148, 149, 178, 188, 198$ $(nL + nH \times 256) = 10, 11, 20, 21, 40, 41, 50, 60, 61, 62, 63, 64, 70$ [Photo-ID model] $(nL + nH \times 256) = 138, 139, 148, 149, 168, 169, 178, 188, 189, 190, 191, 192, 198$ $(nL + nH \times 256) = 10, 11, 20, 21, 40, 41, 50, 60, 61, 62, 70$ [Image scanner model] $(nL + nH \times 256) = 138, 139, 148, 149, 168, 169, 178, 188, 189, 190, 198$ $(nL + nH \times 256) = 10, 11, 20, 21, 40, 41, 50, 60, 70$ [MICR model] $(nL + nH \times 256) = 138, 139, 148, 149, 168, 169, 178, 188, 198$ $(nL + nH \times 256) = 10, 11, 20, 21, 50, 70$ [Other models] $(nL + nH \times 256) = 138, 139, 148, 149, 178, 198$
TM-H5000II:	$(nL + nH \times 256) = 10, 11, 20, 21, 50, 60, 70,$ $138, 139, 148, 149, 178, 188, 198$
TM-U675:	$(nL + nH \times 256) = 10, 11, 40, 41, 50, 60, 70,$ $138, 139, 168, 169, 178, 188, 198$

[Printers not featuring this command] **TM-U325D**

[Description] Transmits the value of the maintenance counter specified by (**nl** + **nh** × 256).

(nl + nh × 256)	Type	Maintenance counter
10 ~ 19	Resettable counter	Serial impact head
20 ~ 29	Resettable counter	Thermal head
30 ~ 39	Resettable counter	Ink jet head
40 ~ 49	Resettable counter	Shuttle head
50 ~ 59	Resettable counter	Devices that conform to the normal specification
60 ~ 69	Resettable counter	Option devices
70 ~ 79	Resettable counter	Time
138 ~ 147	Accumulation counters	Serial impact head
148 ~ 157	Accumulation counters	Thermal head
158 ~ 167	Accumulation counters	Ink jet head
168 ~ 177	Accumulation counters	Shuttle head
178 ~ 187	Accumulation counters	Devices that conform to the normal specification
188 ~ 197	Accumulation counters	Option devices
168 ~ 207	Accumulation counters	Time

[Notes]

- There are two types of maintenance counters: resettable counters and accumulation counters. A resettable counter is a maintenance counter that can be initialized by **GS g 0**, and an accumulation counter indicates the counter value from when the printer starts operation.
- When a counter reaches its maximum value, its value is reset to 0 in the next updating process. Units and maximum values of counters differ, depending on the printer model and function. See the model-dependent variations for details.
- If the counter specified by (**nl** + **nh** × 256) is not supported, this command is ignored.

- This command transmits the following Header to NUL.

Transmitted data	Hex	Decimal	Amount of data
Header	5FH	95	1 byte
Counter value (*1)	30H ~ 39H	48 ~ 57	1 ~ 10 byte
NUL	00H	0	1 byte

- When the maintenance counter values are transmitted, the printer converts them to character codes corresponding to the decimal value, and transmits from the most significant bit.
Example: When the maintenance counter value is 120, the transmission data for "120" is 3 bytes consisting of [Hex: 31H, 32H, and 30H / Decimal: 49, 50, and 48].
- The resettable counter can be initialized by **GS g 0**.
- Types of the maintenance counters differ, depending on the printer models.
- Executing the power-off sequence by **DLE DC4 (fn = 2)** is recommended for most accurate counter values.
- The maintenance counter values are measurements; therefore, their values will be different depending on the timing of errors or turning off the power.
- The maintenance counter can be used for establishing the time for replacing consumed parts or cleaning.
- When you use these functions, obey the following rules.
 - After the host PC transmits the function data, the printer will send response data or status data back to the PC. Do not transmit more data from the PC until the response data or status data are received from the printer.
 - When operating with a serial interface, be sure to configure operation so that the host computer uses the printer only when it is READY.
 - When operating with a parallel interface, the data sent by this function (starting with Header and ending with NUL), as with other data, is first stored in the send buffer, then output in sequential order when the host computer changes to the reverse mode. Note that the send buffer capacity is 99 bytes, and any data exceeding this volume limit will be lost; therefore, when using this command, it is important to configure the operation so that the host computer's change to the reverse mode and the subsequent status send/receive process is performed quickly.

- With a serial interface, when communication with the printer uses XON/XOFF control, the XOFF code may interrupt the "Header to NUL" data string.
- Maintenance counter data can be identified to other transmission data according to specific data of the transmission data block. When the header transmitted by the printer is [Hex=5FH/Decimal=95], treat NUL [hex = 00H/decimal =0] as a data group and identify it according to the combination of the header.

[Model-dependent variations]

**TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III,
TM-H5000II, TM-U675**

Program Example

```
PRINT #1, CHR$(&H1D); "g2";CHR$(0);CHR$(11);CHR$(0); ← Transmit a counter value of print characters
```

TM-J9000/J9100

The units and maximum values of the counters are as follows:

Number	Counter	Counting method	Unit	Maximum value
30,158	The number of roll paper feed lines	Counts a roll paper feed of 30 dots as one line (+1)	Lines	143,165,576
31,159	The average number of head strokes (1st color)	Counts head driving strokes in 64-stroke units (+1)	Strokes	4,294,967,295
32,160	The average number of head strokes (2nd color)	Counts head driving strokes in 64-stroke units (+1)	Strokes	4,294,967,295
33,161	The number of times of carriage passes	Counts the number of carriage passes when printing (+1)	Times	4,294,967,295
34,162	The number of pumping	Counts the number of pumping (+1)	Times	4,294,967,295
35,163	The number of validation feed lines	Counts a validation feed of 30 dots as one line (+1)	Lines	143,165,576
60, 188	The number of reading magnetic ink character	Counts a reading magnetic ink character on a check paper (+1)	Times	4,294,967,295

Number	Counter	Counting method	Unit	Maximum value
61,189	Image scanning count. • Image scanner for scanning check paper.	Counts (+1) the number of times image scanning is executed by the image scanner (for scanning check paper).	Times	4,294,967,295
62,190	Image scanning count. • Image scanner for scanning cards.	Counts (+1) the number of times image scanning is executed by the image scanner (for scanning cards).	Times	4,294,967,295
70,198	Period of printer operation	Counts the number of hours power has been on	Hours	71,582,788

Note: Commas used in the maximum values in the table above are not included in the transmission data.

TM-J7500/7600

The units and maximum values of the counters are as follows:

Number	Counter	Counting method	Unit	Maximum value
30,158	The number of roll paper feed lines	Counts a roll paper feed of 30 dots as one line (+1)	Lines	143,165,576
31,159	The average number of head strokes (1st color)	Counts a head driving stroke in 64-stroke unit (+1)	Strokes	4,294,967,295
32,160	The average number of head strokes (2nd color)	Counts a head driving stroke in 64-stroke unit (+1)	Strokes	4,294,967,295
33,161	The number of times of carriage driving	Counts the number of carriage passes when printing (+1)	Times	4,294,967,295
34,162	The number of pumping	Counts the number of pumping (+1)	Times	4,294,967,295

Number	Counter	Counting method	Unit	Maximum value
35,163	The number of slip paper feed lines	Counts a slip paper feed of 30 dots as one line (+1)	Lines	143,165,576
50,178	The number of autocutter operations	Counts an autocutter operation (+1)	Times	4,294,967,295
70,198	Period of printer operation	Counts the number of hours power has been on	Hours	71,582,788

Note: Commas used in the maximum values in the table above are not included in the transmission data.

TM-J7000/7100

The units and maximum values of the counters are as follows:

Number	Counter	Counting method	Unit	Maximum value
30,158	The number of roll paper feed lines	Counts a roll paper feed of 30 dots as one line (+1)	Lines	143,165,576
31,159	The average number of head strokes (1st color)	Counts a head driving stroke in 64-stroke unit (+1)	Strokes	4,294,967,295
32,160	The average number of head strokes (2nd color)	Counts a head driving stroke in 64-stroke unit (+1)	Strokes	4,294,967,295
33,161	The number of times of carriage driving	Counts the number of carriage passes when printing (+1)	Times	4,294,967,295
34,162	The number of pumping	Counts the number of pumping (+1)	Times	4,294,967,295
35,163	The number of slip paper feed lines	Counts a slip paper (face and back) feed of 30 dots as one line (+1)	Lines	143,165,576
50,178	The number of autocutter operations	Counts an autocutter operation (+1)	Times	4,294,967,295

Number	Counter	Counting method	Unit	Maximum value
60, 188	The number of reading magnetic ink character	Counts a reading magnetic ink character on a check paper (+1)	Times	4,294,967,295
61, 189	The number of endorsement mechanism driving	Counts a feeding paper to the printing position of back of slip (+1)	Times	4,294,967,295
70,198	Period of printer operation	Counts the number of hours power has been on	Hours	71,582,788

Note: Commas used in the maximum values in the table above are not included in the transmission data.

TM-H5000II

The units and maximum values of the counters are as follows:

Number	Counter	Counting method	Unit	Maximum value
10,138	The number of paper feed lines (for slip)	Counts a paper feed of 12 dots as one line (+1)	Lines	178,956,970
11,139	The number of print characters (for slip)	Counts 6 head energizing strokes as one character (+1)	Characters	715,827,882
20,148	The number of paper feed lines (for roll paper)	Counts a paper feed of 30 dots as one line (+1)	Lines	143,165,576
21,149	The number of times of head energizing strokes (for roll paper)	Counts a head energizing stroke of the thermal head (+1)	Times	4,294,967,295
50,178	The number of autocutter operations	Counts an autocutter operation (+1)	Times	4,294,967,295
60,188	The number of reading magnetic ink character	Counts a reading magnetic ink character on a check paper (+1)	Times	4,294,967,295
70,198	Period of printer operation	Counts the number of hours power has been on	Hours	71,582,788

Note: Commas used in the maximum values in the table above are not included in the transmission data.

TM-H6000III

The units and maximum values of the counters are as follows:

Number	Counter	Counting method	Unit	Maximum value
10,138	The number of paper feed lines (for both sides of a slip)	Counts a paper feed of 12dots as one line (both for face and back) (+1)	Lines	178,956,970
11,139	The number of print characters (for the face of a slip)	Counts 6 head energizing strokes of a serial impact dot head as one character (+1)	Characters	715,827,882
20,148	The number of paper feed lines (for roll paper)	Counts a paper feed of 30 dots as one line (+1)	Lines	143,165,576
21,149	The number of head energizing strokes (for roll paper)	Counts a head energizing stroke of the thermal head (+1)	Times	4,294,967,295
40,168	The number of head round-trips (for the back of a slip)	Counts a head round-trip of the shuttle head as one character (+1)	Times	4,294,967,295
41,169	The number of print characters (for the back of a slip)	Counts a character printed by the shuttle head (+1)	Characters	4,294,967,295
50,178	The number of autocutter operations	Counts an autocutter operation (+1)	Times	4,294,967,295
60,188	The number of times reading magnetic ink character	Counts the times magnetic ink character on check paper is read (+1)	Times	4,294,967,295
61,189	The number of times scanning image	Counts the times image on check is scanned or pre-scanned (+1)	Times	4,294,967,295
62,190	The number of paper feeding step at scanning image	Counts a paper feed of 0.13 mm {1/200 inch} at scanning or pre-scanning image as one (+1)	Steps	4,294,967,295

Number	Counter	Counting method	Unit	Maximum value
62,191	Image scanning count • Card image scanner	Counts (+1) the number of times image scanning is executed by the card image scanner.	Times	4,294,967,295
62,192	Number of paper feed steps when scanning the image • Card image scanner	Counts (+1) the number of paper feed steps when the card image scanner scans the image, in units of about 0.13mm {1/200 inch}.	Steps	4,294,967,295
70,198	Period of printer operation	Counts the number of hours the power has been on	Hours	71,582,788

Note: Commas used in the maximum values in the table above are not included in the transmission data.

TM-U675

The units and maximum values of the counters are as follows:

Number	Counter	Counting method	Unit	Maximum value
10,138	The number of paper feed lines (for slip)	Counts a paper feed of 12 dots as one line (+1)	Lines	178,956,970
11,139	The number of print characters	Counts 6 head energizing strokes as one character (+1)	Characters	715,827,882
40,168 41,169	(Reserved)	No counts	—	—
50,178	The number of autocutter operations	Counts an autocutter operation (+1)	Times	4,294,967,295
60,188	The number of reading magnetic ink character	Counts a reading magnetic ink character on a check paper (+1)	Times	4,294,967,295
70,198	Period of printer operation	Counts the number of hours the power has been on	Hours	71,582,788

Note: Commas used in the maximum values in the table above are not included in the transmission data.

GS (z pL pH fn [parameter]

SETTING COMMAND

[Name] Model specific control

[Printers not featuring this command] **TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675, TM-U325D**

[Description] Performs model specific control

- Function code (**fn**) specifies the function.

fn	Function	Function name
48	Function 48	TM-H5000II: Set/cancels the operation to feed cut sheets to the print starting position.
48	Function 48	TM-J9000/J9100: Send the product lifetime warning status of the pump unit

- **pL, pH** specify (**pL** + **pH** × 256) as the number of bytes after **pH** (**fn** and **[parameters]**).
- Description of the **[parameters]** is described in each function.

[Notes]

- The command function is defined by function code (fn). The command operation differs, depending on the function.

GS (z pL pH fn m (TM-J9000/J9100) <Function 48>

[Name] **TM-J9000/J9100:** Sets/cancels the operation to feed cut sheets to the print starting position

[Format] ASCII GS (z **pL pH fn m**
 Hex 1D 28 7A 02 00 30
 Decimal 29 40 122 2 0 48 **m**

[Range] **(pL + pH × 256) = 2 (pL = 2, pH = 0)**

fn = 48

m = 48

[Default] **m** = 48

[Description] Send the product lifetime warning status of the pump unit

[Notes] ■ The pump unit product lifetime warning status consists of the following Header to NUL..

Transmitted data	Hex	Decimal	Amount of data
Header	37H	95	1 byte
Identifier	46H	70	1 byte
Fixed value	4BH, 31H	75, 49	2 byte
Status (*1)	30H ~ 31H	48 or 49	1 byte
NUL	00H	0	1 byte

- (*1) Status indicates following.

Hex	Decimal	Function
30H	48	No pump unit product lifetime warning
31H	49	Pump unit product lifetime nearly over

■ When the [Status = Pump unit product lifetime nearly over] product lifetime warning status is sent, the pump unit must be replaced. Please contact Epson. If you continue using the printer after the [Status = Pump unit product lifetime nearly over] warning is issued, the product will stop working when the pump unit reaches its product lifetime.

- Follow the rules below when using this function.
 - After sending this function, do not send the next data until the corresponding data has been received.
 - With the serial interface specification, only use this function when the host is ready to receive.
 - With the parallel interface specification, [Header - NUL] of this function is saved in the transmission buffer of the printer similarly to other transmission data (excluding the ASB status), and subsequently when the host enters Reverse Mode, it is transmitted sequentially from the start of the transmission buffer. The capacity of the transmission buffer is 99 bytes, and data that exceeds this is lost. Therefore, when using this function, change to the Reverse Mode and receive the data quickly.
- With the serial interface specification, when communicating with the printer with XON/XOFF control, the XOFF code may interrupt [Header - NUL].
- With each function you can identify the data to transmit from other transmission data by the specific data of the transmission data group. When the header transmitted from the printer is [Hexadecimal = 37H / Decimal = 55], handle the part up to NUL [Hexadecimal = 00H / Decimal = 0] as the data group, and identify it by the combination of the [Header] and [Identifier].

KANJI COMMANDS

Command	Name
FS !	Select print mode(s) for Kanji characters
FS &	Select Kanji character mode
FS -	Turn underline mode on/off for Kanji characters
FS .	Cancel Kanji character mode
FS 2	Define user-defined Kanji characters
FS C	Select Kanji character code system
FS S	Set Kanji character spacing
FS W	Turn quadruple-size mode on/off for Kanji characters

[Name] Select print mode(s) for Kanji characters

[Format] ASCII FS ! **n**
 Hex 1C 21 **n**
 Decimal 28 33 **n**

[Printers not featuring this command] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-U325D**

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

[Default] **n = 0**

[Description] Selects the character styles (double-height, double-width, and Kanji-underlined) together for multi-byte code character as follows:

n: Bit	Function	Binary	Hexadecimal	Decimal
0	Reserved	Off	00	0
1	Reserved	Off	00	0
2	Double-width canceled	0ff	00	0
	Double-width selected.	On	04	4
3	Double-height canceled	Off	00	0
	Double-height selected.	On	08	8
4~6	Reserved	Off	00	0
7	Kanji underline mode is turned off.	Off	00	0
	Kanji underline mode is turned on.	On	80	128

- [Notes]
- Settings of this command affect Kanji and user-defined Kanji characters.
 - Settings of this command are effective until any of the following commands is executed, **ESC @** is executed, the printer is reset, or the power is turned off.
 - Character size (bits 2 and 3): **FS W, GS !**

- Underline (bit 7): **FS -**
- When a double-height mode is specified, a character is enlarged based on a baseline of the character.
- When a double-width mode is specified, a character is enlarged based on the left side of the character.
- When both double-width and double-height modes are specified, quadruple-size characters are printed.
- When double-height mode is selected in standard mode, a character is enlarged in the paper feed direction and when double-width mode is selected, a character is enlarged in the direction which is perpendicular to the paper feed direction. Therefore, when 90° clockwise-rotation is selected, the relationship between directions of enlargement of double-height and double-width is opposite from normal direction.
- When double-height mode is selected in page mode, height size is enlarged and when double-width mode is selected in page mode, width size is enlarged.
- Setting Kanji underline mode underlines with the line width set with FS-. Changing character size does not change the underline width. The underline's color is the same as the printing character's color. Printing color is specified by **GS (N <Function 48>**.
- Even if Kanji underline mode is turned on, 90° clockwise-rotated characters, white/black reverse characters, and parts skipped with **HT**, **ESC \$**, **ESC ** are not underlined.

[Model-dependent variations]

None

Program Example	Print Sample
<pre> PRINT #1, CHR\$(&H1C); "C";CHR\$(0); ← Select JIS code system PRINT #1, CHR\$(&H1C); "&"; ← Specify Kanji mode PRINT #1, CHR\$(&H1C); "!" ;CHR\$(0); PRINT #1, CHR\$(&H24);CHR\$(&H22);CHR\$(&H24);CHR\$(&H22); PRINT #1, CHR\$(&H1C); "!" ;CHR\$(4); PRINT #1, CHR\$(&H24);CHR\$(&H24);CHR\$(&H24);CHR\$(&H24); PRINT #1, CHR\$(&H1C); "!" ;CHR\$(8); PRINT #1, CHR\$(&H24);CHR\$(&H26);CHR\$(&H24);CHR\$(&H26); PRINT #1, CHR\$(&H1C); "!" ;CHR\$(12); PRINT #1, CHR\$(&H24);CHR\$(&H28);CHR\$(&H24);CHR\$(&H28); PRINT #1, CHR\$(&HA); PRINT #1, CHR\$(&H1C); "."; </pre>	<p style="text-align: center;">ああいいううええ</p> <p style="text-align: center;">ああ：装飾なし いい：倍幅拡大 うう：縦倍拡大 ええ：倍幅拡大+縦倍拡大</p>

[Name] Select Kanji character mode

[Format] ASCII FS &
 Hex 1C 26
 Decimal 28 38

[Printers not featuring this command] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-U325D**

[Description] Selects Kanji character mode.

- [Notes]
- This command is effective only when Japanese, Simplified Chinese, or Traditional Chinese models are selected.
 - Settings of this command are effective until **FS .** is executed, **ESC @** is executed, the printer is reset, or the power is turned off.
 - Kanji codes are processed in order of the first byte and the second byte.
 - Notes for Japanese model:
 - Settings of this command affect a character code processing only when JIS code system is selected by **FS C**.
 - If Kanji mode is specified when JIS code system is selected, the printer processes a character code as a 2-byte code.
 - Kanji mode is canceled at default.
 - Notes for Simplified Chinese model:
 - When Kanji mode is selected, the printer processes a character code that corresponds to the first byte of Kanji code, and then processes a consecutive byte as the second byte of Kanji code. Therefore, when Kanji code is specified, an ASCII code character that corresponds to the first byte of Kanji code cannot be printed.
 - Kanji mode is selected at default.

■ Notes for Traditional Chinese model:

- When Kanji mode is selected, the printer processes a character code that corresponds to the first byte of Kanji code, and then processes a consecutive byte as the second byte of Kanji code. Therefore, when Kanji code is specified, an ASCII code character that corresponds to the first byte of Kanji code cannot be printed.
- Kanji mode is selected at default.

[Model-dependent variations]

TM-H6000III

Program Example	Print Sample
<pre>PRINT #1, CHR\$(&H1C);"C";CHR\$(0); ← Select JIS code system PRINT #1, CHR\$(&H1C);"&"; ← Specify Kanji mode PRINT #1, CHR\$(&H34);CHR\$(&H41); PRINT #1, CHR\$(&H3B);CHR\$(&H7A); CHR\$(&HA);</pre>	

TM-H6000III

This command affects only printing on roll paper and the face of a slip.

[Name] Turn underline mode on/off for Kanji characters

[Format] ASCII FS – **n**
 Hex 1C 2D **n**
 Decimal 28 45 **n**

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

[Default] **n** = 0

[Printers not featuring this command] **TM-J9000/J9100**, **TM-J7500/7600**, **TM-J7000/7100**, **TM-U325D**

[Description] Turns on or off underline mode for multi-byte code character (Kanji-underline), using **n** as follows:

n	Function
0, 48	Turns off Kanji-underline mode
1, 49	Turns on Kanji-underline mode, set at 1-dot width.
2, 50	Turns on Kanji-underline mode, set at 2-dot width.

- [Notes]
- Settings of this command affect Kanji characters and user-defined Kanji characters.
 - The color of the Kanji underline is the same as that of the printing character. The printing character's color is selected by **GS (N <Function 48>**.
 - Even if Kanji underline mode is specified, 90° clockwise-rotation characters, white/black reverse characters, and spaces skipped by **HT**, **ESC \$**, or **ESC ** are not underlined.
 - When a character size is changed, an underline width is not changed.
 - When underline mode is canceled, the following characters are not underlined. However, an underline width set right before the mode is canceled remains.
 - Settings of this command are effective until **FS !** is executed, **ESC @** is executed, the printer is reset, or the power is turned off.
 - Some printer models support Kanji underline mode with 2-dot width.

[Model-dependent variations]

TM-H6000III, TM-H5000II, TM-U675

Program Example	Print Sample
<pre>PRINT #1, CHR\$(&H1C); "C"; CHR\$(0); ← Select JIS code system PRINT #1, CHR\$(&H1C); "&"; PRINT #1, CHR\$(&H1C); "-"; CHR\$(1); ← Select underline mode PRINT #1, CHR\$(&H34); CHR\$(&H41); PRINT #1, CHR\$(&H3B); CHR\$(&H7A); CHR\$(&HA); PRINT #1, CHR\$(&H1C); "-"; CHR\$(0); ← Cancel underline mode PRINT #1, CHR\$(&H34); CHR\$(&H41); PRINT #1, CHR\$(&H3B); CHR\$(&H7A); CHR\$(&HA); PRINT #1, CHR\$(&H1C); "."; </pre>	<p style="text-align: center;">漢字 漢字</p> <p style="text-align: right;">← 1-dot width underline added ← No underline</p>

TM-H6000III

When the face of a slip is selected, turns Kanji underline mode on or off, based on the following values of n:

n	Function
0, 48	Turns off underline mode for Kanji characters
1, 2, 49, 50	Turns on underline mode for Kanji characters (1-dot width)

TM-H5000II

When n =1, 2, 49, or 50 with a slip selected, sets Kanji underline mode with 1-dot width.

TM-U675

When n =1, 2, 49, or 50, sets Kanji underline mode with 1-dot width.

[Name] Cancel Kanji character mode

[Format] ASCII FS .
Hex 1C 2E
Decimal 28 46

[Printers not featuring this command] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-U325D**

[Description] Cancels Kanji character mode.

- [Notes]
- This command is effective only when Japanese, Simplified Chinese, or Traditional Chinese models are selected.
 - Settings of this command are effective until **FS &** is executed, **ESC @** is executed, the printer is reset, or the power is turned off.
 - Notes for Japanese model:
 - Settings of this command affect character code processing only when JIS code system is selected by **FS C**.
 - When JIS code system is selected, if Kanji mode is canceled, the printer processes a character code as a 1-byte code of alphanumeric Katakana characters.
 - Kanji mode is canceled at default.
 - Notes for Simplified Chinese model:
 - If Kanji mode is canceled, the printer processes a character code as a 1-byte code of alphanumeric Katakana characters.
 - Kanji mode is selected at default.
 - Notes for Traditional Chinese model:
 - If Kanji mode is canceled, the printer processes a character code as a 1-byte code of alphanumeric Katakana characters.
 - Kanji mode is selected at default.

[Model-dependent variations]

TM-H6000III

Program Example	Print Sample
<pre>PRINT #1, CHR\$(&H1C); "C";CHR\$(0); ← Select JIS code system PRINT #1, CHR\$(&H1C); "&"; ← Specify Kanji mode PRINT #1, CHR\$(&H34);CHR\$(&H41); PRINT #1, CHR\$(&H3B);CHR\$(&H7A); CHR\$(&HA); PRINT #1, CHR\$(&H1C); ". "; ← Cancel Kanji mode PRINT #1, "kanji"; CHR\$(&HA);</pre>	<p>漢字 kanji</p>

TM-H6000III

This command affects only printing on roll paper and the face of a slip.

[Name] Define user-defined Kanji characters

[Format] ASCII FS 2 **c1** **c2** **d1...dk**
 Hex 1C 32 **c1** **c2** **d1...dk**
 Decimal 28 50 **c1** **c2** **d1...dk**

[Range] The ranges of **c1** and **c2** differ, depending on models and the character code system used. The ranges of **c1** and **c2** for each model are as follows.

Model	c1	c2
Japanese (JIS code)	77H	21H ≤ c2 ≤ 7EH
Japanese (SHIFT JIS code)	ECH	40H ≤ c2 ≤ 7EH, 80H ≤ c2 ≤ 9EH
Simplified Chinese	FEH	A1H ≤ c2 ≤ FEH
Traditional Chinese	FEH	A1H ≤ c2 ≤ FEH

0 ≤ **d** ≤ 255

TM-H5000II: **k = 72 (roll paper);**
 k = 32 (face of slip)

TM-H6000III: **k = 72 (roll paper);**
 k = 32 (face of slip)

TM-U675: k = 32

[Printers not featuring this command] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-U325D**

[Description] Defines the user-defined Kanji character for the character codes specified by **c1** and **c2**.

- **c1** specifies the first byte of a character code for a user-defined Kanji character.
- **c2** specifies the second byte of a character code for a user-defined Kanji character.
- **d** specifies the definition data (column format).
- **k** indicates the number of defined data. **k** is an explanation parameter; therefore it does not need to be transmitted.

[Notes] ■ This command is effective only for Japanese, Simplified Chinese, or Traditional Chinese models.

- The printer processes **k** byte data of **d1...dk** as defined data. The defined data (**d**) sets a corresponding bit to 1 to print a dot or to 0 not to print a dot.
- If the printer has multiple print heads that have different dot density, the user-defined Kanji character is defined for the sheet selected by **ESC c 1**.
A user-defined Kanji character can be defined for each print head.
- The number of characters to be defined differs, depending on the printer models.
- Defined data is effective until it is redefined, **ESC @** is executed, the printer is reset, or the power is turned off.
- User-defined Kanji characters are not defined, and space is printed at the default.
- The relationship between the defined data and a print result is as follows:

Example of defining a user-defined Kanji character for the printer model which has 16×16 dots Kanji configuration. (In this case, the printer needs (2 bytes in vertical \times 16 dots in horizontal) to define user-defined kanji character. (**k** = 32)):

d1	d3	d5	...	d27	d29	d31
d2	d4	d6	...	d28	d30	d32

[Model-dependent variations]

TM-H6000III, TM-H5000II, TM-U675

Program Example	Print Sample
<pre> PRINT #1, CHR\$(&H1C); "C"; CHR\$(0): ← Select JIS code system PRINT #1, CHR\$(&H1C); "2"; PRINT #1, CHR\$(&H77);CHR\$(&H21); FOR k = 1 To 32 READ d: PRINT #1, CHR\$(d); NEXT k PRINT #1, CHR\$(&H1C); "&"; ← Specify Kanji mode PRINT #1, CHR\$(&H77);CHR\$(&H21); PRINT #1, CHR\$(&H33);CHR\$(&H30); PRINT #1, CHR\$(&H3B);CHR\$(&H7A);CHR\$(&HA); PRINT #1, CHR\$(&H3B);CHR\$(&H7A);CHR\$(&HA); PRINT #1, CHR\$(&H1C); ".": ← Cancel Kanji mode DATA &H00, &H00, &H00, &H00, &H01, &HE0, &H07, &HF0 DATA &H0F, &HF0, &H1F, &HF2, &H3F, &HE2, &H7F, &HFE DATA &H7F, &HFE, &H3F, &HE2, &H1F, &HF2, &H0F, &HFO DATA &H07, &HF0, &H01, &HE0, &H00, &H00, &H00 </pre>	 外字

TM-H6000III

The user-defined Kanji characters can be defined for all the character codes in a range. User-defined Kanji character pattern is defined for a sheet selected by **ESC c 1**. When slip is selected as the print sheet, the user-defined Kanji character is defined for the face of a slip. The back of the slip does not support Kanji. The user-defined Kanji character pattern can be set for roll paper and a slip (face) independently. When a slip is selected, horizontal adjacent dots cannot be specified as print data.

This command affects only printing on roll paper and the face of a slip.

TM-H5000II

User-defined Kanji characters can be defined for all the character codes in a range.

User-defined Kanji character pattern is defined for a sheet selected by **ESC c 1**. The user-defined Kanji character pattern can be set for roll paper and a slip independently. When a slip is selected, horizontal adjacent dots cannot be specified as print data.

TM-U675

The user-defined Kanji characters can be defined for all the character codes in a range.

For the user-defined Kanji characters, horizontal adjacent dots cannot be specified as print data.

[Name] Select Kanji character code system

[Format] ASCII FS C **n**
 Hex 1C 43 **n**
 Decimal 28 67 **n**

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

[Default] **n** = 0

[Printers not featuring this command] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-U325D**

[Description] Selects a Kanji character code system for the Japanese model as follows:

n	Kanji character code system
0, 48	JIS code
1, 49	SHIFT JIS code

- [Notes]
- This command is effective only with the Japanese model.
 - The command is effective until **ESC @** is executed, the printer is reset, or the power is turned off.
 - When JIS code system is selected, Kanji mode should be specified by **FS &** to print Kanji characters.
 - When SHIFT JIS code system is selected, if the printer processes a character code that corresponds to the first byte of the Kanji code, the printer processes a consecutive byte as the second byte of the Kanji code. Therefore, when this code system is selected, ASCII code that corresponds to the first byte of the Kanji code cannot be printed.
 - Kanji code processes the first byte and the second byte in order.

[Model-dependent variations]

None

Program Example	Print Sample
<pre> PRINT #1, CHR\$(&H1C);"C";CHR\$(0); ← Select JIS code system PRINT #1, CHR\$(&H1C);"&"; ← Specify Kanji mode PRINT #1, CHR\$(&H34);CHR\$(&H41); PRINT #1, CHR\$(&H3B);CHR\$(&H7A); CHR\$(&HA); PRINT #1, CHR\$(&H1C);"."; </pre> <pre> PRINT #1, CHR\$(&H1C);"C";CHR\$(1); ← Select SHIFT JIS code system PRINT #1, CHR\$(&H8A);CHR\$(&HBF); PRINT #1, CHR\$(&H8E);CHR\$(&H9A); CHR\$(&HA); </pre>	<p style="text-align: center;">漢字 漢字</p> <p style="text-align: right;">← Print using JIS code ← Print using SHIFT JIS code</p>

[Name]	Set Kanji character spacing				
[Format]	ASCII FS S n1 n2 Hex 1C 53 n1 n2 Decimal 28 83 n1 n2				
[Range]	$0 \leq \mathbf{n1} \leq 255, 0 \leq \mathbf{n2} \leq 255$				
[Default]	TM-H6000III: n1 = 0, n2 = 0 (roll paper); n1 = 0, n2 = 2 (slip, face side) TM-H5000II: n1 = 0, n2 = 0 (roll paper); n1 = 0, n2 = 2 (slip) TM-U675: n1 = 0, n2 = 2				
[Printers not featuring this command]	TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-U325D				
[Description]	Sets left- and right-side spacing of the multi-byte code character n1 and n2 , respectively. <ul style="list-style-type: none"> • Sets the left-side character spacing of the multi-byte code character to [n1 × horizontal or vertical motion units]. • Sets the right-side character spacing of the multi-byte code character to [n2 × horizontal or vertical motion units]. 				
[Notes]	<ul style="list-style-type: none"> ■ Settings affect Kanji characters and user-defined Kanji characters. ■ When a character size is set to N times as large as a normal size, both right- and left-side character spacings are also set to N times as large as a normal size. ■ In standard mode, the horizontal motion unit (perpendicular to the paper feed direction) is used. ■ In page mode, the horizontal or vertical motion unit differs, depending on the starting position set by ESC T. <ul style="list-style-type: none"> • When the starting position is set to the upper left or lower right, the horizontal motion unit (perpendicular to the paper feed direction) is used. • When the starting position is set to the upper right or lower left, the vertical motion unit (paper feed direction) is used. 				

- Different character spacing can be set for standard mode and page mode. When this command is set in standard mode, character spacing for Kanji printed in standard mode is set and when this command is set in page mode, character spacing for Kanji printed in page mode is set.
- If the horizontal or vertical motion unit is changed after setting the character spacing, the spacing between Kanji characters is not changed.
- Kanji character spacing set is effective until **ESC @** is executed, the printer is reset, or the power is turned off.
- This command is used to change a spacing between Kanji characters.

[Model-dependent variations]

TM-H6000III, TM-H5000II, TM-U675

Program Example	Print Sample
<pre> PRINT #1, CHR\$(&H1D); "P";CHR\$(180);CHR\$(180); PRINT #1, CHR\$(&H1C); "C"; CHR\$(0): ← Select JIS code system PRINT #1, CHR\$(&H1C); "&"; ← Specify Kanji mode PRINT #1, CHR\$(&H1C); "S";CHR\$(0);CHR\$(0); PRINT #1, CHR\$(&H34);CHR\$(&H41); PRINT #1, CHR\$(&H3B);CHR\$(&H7A);CHR\$(&HA); PRINT #1, CHR\$(&H1C); "S";CHR\$(8);CHR\$(8); PRINT #1, CHR\$(&H34);CHR\$(&H41); PRINT #1, CHR\$(&H3B);CHR\$(&H7A);CHR\$(&HA); PRINT #1, CHR\$(&H1C); ".": ← Cancel Kanji mode </pre>	<p style="text-align: center;">漢字 漢字</p> <p style="font-size: small; margin-left: 200px;">← Left- and right-side character spacing: 0 mm ← Left- and right-side character spacing: approx. 1.129 mm (8/180")</p>

TM-H6000III

The horizontal and vertical motion units are set by **GS P.**

TM-U675

The horizontal and vertical motion units are set by **GS P.**

TM-H5000II

The horizontal and vertical motion units are set by **GS P.**

FS W

SETTING COMMAND

[Name] Turn quadruple-size mode on/off for Kanji characters

[Format]

ASCII	FS	W	n
Hex	1C	57	n
Decimal	28	87	n

[Range] $0 \leq \mathbf{n} \leq 255$

[Default] **n** = 0

[Printers not featuring this command] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-U325D**

[Description] Turns quadruple-size mode on or off for multi-byte code character.

- When the LSB of **n** is 0, quadruple-size mode is turned off and normal size is selected.
- When the LSB of **n** is 1, quadruple-size mode is turned on.

[Notes]

- Settings of this command affect Kanji characters and user-defined Kanji characters.
- When a double-height mode is specified, a character is enlarged based on a baseline of the character and when a double-width mode is specified, a character is enlarged based on the left side of the character.
- Settings of this command are effective until **FS !** is executed, **GS !** is executed, **ESC @** is executed, the printer is reset, or the power is turned off.

[Model-dependent variations] None

Program Example	Print Sample
<pre> PRINT #1, CHR\$(&H1C); "C"; CHR\$(0); ← Select JIS code system PRINT #1, CHR\$(&H1C); "&"; PRINT #1, CHR\$(&H1C); "W"; CHR\$(0); ← Cancel quadruple-size mode PRINT #1, CHR\$(&H34); CHR\$(&H41); PRINT #1, CHR\$(&H3B); CHR\$(&H7A); CHR\$(&HA); PRINT #1, CHR\$(&H1C); "W"; CHR\$(1); ← Specify quadruple-size mode PRINT #1, CHR\$(&H34); CHR\$(&H41); PRINT #1, CHR\$(&H3B); CHR\$(&H7A); CHR\$(&HA); PRINT #1, CHR\$(&H1C); "."; </pre>	<p style="text-align: center;">漢字</p> <p style="text-align: center;">漢字</p>

TWO DIMENSION CODE COMMANDS

Command	Name
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GS (k	Set up and print symbol
---------------	-------------------------

[Name] Set up and print symbol

[Printers not featuring this command] **TM-J9000/J9100, TM-H5000II, TM-U675, TM-U325D**

[Description] Processes the data for two-dimensional codes. (PDF417)

- Function code (**fn**) specifies the function.

fn	Function
65	Function 065 PDF 417: Set the number of columns in the data region
66	Function 066 PDF 417: Set the number of rows
67	Function 067 PDF 417: Set the width of the module
68	Function 068 PDF 417: Set the row height
69	Function 069 PDF 417: Set the error correction level
70	Function 070 PDF 417: Select the options
80	Function 080 PDF 417: Store the data in the symbol storage area
81	Function 081 PDF 417: Print the symbol data in the symbol storage area
82	Function 082 PDF 417: Transmit the size information of the symbol data in the symbol storage area.

- **pL, pH** specify (**pL** + **pH** × 256) as the number of bytes after **pH** (**cn**, **fn**, and **[parameters]**).
- Description of the **[parameters]** is described in each function.

[Notes] ■ The function is specified with the function code (**fn**). Details of the performance differ according to the function.

[Notes for PDF417 symbol processing]

- The symbol data specified by <Function 080> (d1...dk) is stored in the printer and is printed by <Function 081>. The symbol data in the save area is reserved until the following processing is performed:
 - Function 080 or 180 or 280 is executed
 - **ESC @** is executed

- The printer is reset or the power is turned off
- When processing Function 081 or 082, the setting values of Functions 065 to 070 are used. If the printable area is not large enough, the symbol may not be printed.
- Executing Function 081 after executing Function 080 repeatedly prints the same symbol data.
- By using Functions 065 to 070 combined with Function 081, the same symbol data **d1...dk** is printed differently.
- By using Function 082, the symbol size printed by Function 081 is available.

[Notes for transmission process]

- Transmission process is performed by <Function 082>. When you use this command, obey the following rules.
- After the host PC transmits the function data, the printer will send response data or status data back to the PC. Do not transmit more data from the PC until the response data or status data are received from the printer.
 - When operating with a serial interface, be sure to configure operation so that the host computer uses these functions only when it is READY.
 - With a parallel interface, a [Header ~ NUL] is stored at first in the transmission buffer of the printer with the other transmission data (except for ASB status). When the host enters Reverse Mode, the data is transmitted in order from the beginning. Data that exceeds the transmission buffer size (99 bytes) is ignored. When using this command, the host should enter Reverse Mode immediately and execute receive processing of status.
- When communication with the printer uses XON/XOFF control with serial interface, the XOFF code may interrupt the "Header to NUL" data string.
- The information for each function can be identified to other transmission data according to specific data of the transmission data group. When the header transmitted by the printer is [hex = 37H/decimal = 55], treat NUL [hex = 00H/decimal = 0] as a data group and identify it according to the combination of the header and the identifier.

[Model-dependent variations]**TM-J7500/7600, TM-J7000/7100, TM-H6000III**

Program Example1 (Print a symbol repeatedly)

```
>PRINT #1, CHR$(&H1D); "(k";CHR$(13);CHR$(0);CHR$(48);CHR$(80);CHR$(48); "TEST PRINT"; ←Save data <Function080>
>PRINT #1, CHR$(&H1D); "(k";CHR$(3);CHR$(0);CHR$(48);CHR$(81);CHR$(48); ←Print symbol <Function081>
>PRINT #1, CHR$(&H1D); "(k";CHR$(3);CHR$(0);CHR$(48);CHR$(81);CHR$(48); ←Print symbol <Function081>
```

Program Example2 (Print a symbol which module width is different)

```
>PRINT #1, CHR$(&H1D); "(k";CHR$(13);CHR$(0);CHR$(48);CHR$(80);CHR$(48); "TEST PRINT"; ←Save data <Function080>
>PRINT #1, CHR$(&H1D); "(k";CHR$(3);CHR$(0);CHR$(48);CHR$(67);CHR$(3); ←Set module width to 3 <Function067>
>PRINT #1, CHR$(&H1D); "(k";CHR$(3);CHR$(0);CHR$(48);CHR$(81);CHR$(48); ←Print symbol <Function081>
>PRINT #1, CHR$(&H1D); "(k";CHR$(3);CHR$(0);CHR$(48);CHR$(67);CHR$(5); ←Set module width to 5 <Function067>
>PRINT #1, CHR$(&H1D); "(k";CHR$(3);CHR$(0);CHR$(48);CHR$(81);CHR$(48); ←Print symbol <Function081>
```

TM-J7500/7600

Don't use this command when slip is selected as the active sheet.

When printing two-dimensional code, the printing mode is unidirectional printing and normal printing control mode regardless of the settings of ESC U, GS (K. We recommend that you choose unidirectional printing and normal printing control mode when printing two-dimensional code in page mode.

When printing two-dimensional code with rotation of 90° or 270°, we recommend specifying the module width to 0.423 mm or more with <Function 67> of this command.

When printing PDF417 with this printer, note the following:

The recognition rate of the symbol is affected by the height of the symbol, module height, module width ratio, and the performance of the reader.

It is recommended that the module height and module width be set so that the height of the symbol is bigger than 5 mm {0.2 inch}.

It is recommended that the module height be set three to five times the width of the module.

The module height is specified by Function 068. The width of a module is specified by Function 067. The number of the rows is specified by Function 066.

The size of the symbol is confirmed by the transmission data of Function 082.

TM-J7000/7100

Don't use this command when slip (face or back) is selected as the active sheet.

When printing two-dimensional code, the printing mode is unidirectional printing and normal printing control mode regardless of the settings of **ESC U, GS (K. We recommend that you choose unidirectional printing and normal printing control mode when printing two-dimensional code in page mode.**

When printing two-dimensional code with rotation of 90° or 270°, we recommend specifying the module width to 0.423 mm or more with <Function 67> of this command.

When printing PDF417 with this printer, note the following:

- **The recognition rate of the symbol is affected by the height of the symbol, module height, module width ratio, and the performance of the reader.**
- **It is recommended that the module height and module width be set so that the height of the symbol is bigger than 5 mm {0.2 inch}.**
- **It is recommended that the module height be set three to five times the width of the module.**
- **The module height is specified by Function 068. The width of a module is specified by Function 067. The number of the rows is specified by Function 066.**
- **The size of the symbol is confirmed by the transmission data of Function 082.**

TM-H6000III

This model supports two-dimensional code (PDF417) when roll paper is selected as paper type.

When printing PDF417 with this printer, note the following:

- **The recognition rate of the symbol is affected by the height of the symbol, module height, module width ratio, and the performance of the reader.**
- **It is recommended that the module height and module width be set so that the height of the symbol is bigger than 5 mm {0.2 inch}.**
- **It is recommended that the module height be set three to five times the width of the module.**
- **The module height is specified by Function 068. The width of a module is specified by Function 067. The number of the rows is specified by Function 066.**
- **The size of the symbol is confirmed by the transmission data of Function 082.**

GS (k <Function 065>

[Name] PDF 417: Set the number of columns in the data region

[Format]	ASCII	GS	(k	PL	PH	cn	fn	n
	Hex	1D	28	6B	03	00	30	41	n
	Decimal	29	40	107	3	0	48	65	n

[Range] $(\text{PL} + \text{PH} \times 256) = 3$ (**PL** = 3, **PH** = 0)

cn = 48

fn = 65

$0 \leq \text{n} \leq 30$

[Default] **n** = 0

[Description] Sets the number of columns in the data region for PDF417.

- When **n** = 0, specifies automatic processing.
- When **n** is not 0, sets the number of columns in the data region to **n** codeword.

[Notes]

- Settings of this function affect the processing of Functions 081 and 082.
- When auto processing (**n** = 0) is specified, the maximum number of columns in the data area is 30 columns.
- The following data is not included in the number of columns:
 - Start pattern and stop pattern
 - Indicator code word of left and right
- When auto processing (**n** = 0) is specified, the number of columns is calculated by the printing area when processing Functions 081, 082, module width (Function 067), and option setting (Function 070).
- Settings of this function are effective until **ESC @** is executed, the printer is reset, or the power is turned off.

GS (k <Function 066>

[Name] PDF 417: Set the number of rows

[Format]	ASCII	GS	(k	pL	pH	cn	fn	n
	Hex	1D	28	6B	03	00	30	42	n
	Decimal	29	40	107	3	0	48	66	n

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 3$ ($\mathbf{pL} = 3$, $\mathbf{pH} = 0$)

cn = 48

fn = 66

n = 0, $3 \leq \mathbf{n} \leq 90$

[Default] **n** = 0

[Description] Sets the number of rows for PDF417.

- When **n** = 0 specifies automatic processing.
- When **n** is not 0, sets the number of rows to **n** rows.

[Notes] ■ Settings of this function affect the processing of Functions 081 and 082.

■ When auto processing (**n** = 0) is specified, the maximum number of rows is 90.

■ When auto processing (**n** = 0) is specified, the number of rows is calculated by the printing area when processing Functions 081, 082, and module height (Function 068).

■ Settings of this function are effective until **ESC @** is executed, the printer is reset, or the power is turned off.

GS (k <Function 067>

[Name] PDF 417: Set the width of the module

[Format] ASCII GS (k **PL PH cn fn n**
 Hex 1D 28 6B **03 00 30 43 n**
 Decimal 29 40 107 **3 0 48 67 n**

[Range] $(\text{PL} + \text{PH} \times 256) = 3$ (**PL** = 3, **PH** = 0)

cn = 48

fn = 67

TM-J7500/7600, TM-J7000/7100, TM-H6000III: $2 \leq n \leq 8$

TM-J7500/7600, TM-J7000/7100, TM-H6000III: n = 3

[Description] Sets the width of the module for PDF417 to **n** dots.

- Settings of this function affect the processing of Functions 081 and 082.
- The setting unit differs, depending on the printer models.
- Settings of this function are effective until **ESC @** is executed, the printer is reset, or the power is turned off.

[Model-dependent variations] **TM-J7500/7600, TM-J7000/7100, TM-H6000III**

TM-J7500/7600, TM-J7000/7100

The setting unit is 1 dot.

When printing two-dimensional code with rotation of 90° or 270°, we recommend specifying the module width to 0.423 mm or more with <Function 67> of this command.

TM-H6000III

The setting unit is 1 dot.

The width is set in units of 0.141 mm {1/180 inch}.

GS (k <Function 068>

[Name]	PDF 417: Set the row height
[Format]	ASCII GS (k pL pH cn fn n Hex 1D 28 6B 03 00 30 44 n Decimal 29 40 107 3 0 48 68 n
[Range]	(pL + pH × 256) = 3 (pL = 3, pH = 0) cn = 48 fn = 68 TM-J7500/7600, TM-J7000/7100, TM-H6000III: 2 ≤ n ≤ 8
[Default]	TM-J7500/7600, TM-J7000/7100, TM-H6000III: n = 3
[Description]	Sets the row height for PDF417 to [n × (the width of the module)].
[Notes]	<ul style="list-style-type: none"> ■ Settings of this function affect the processing of Functions 081 and 082. ■ Settings of this function are effective until ESC @ is executed, the printer is reset, or the power is turned off.
[Model-dependent variations]	TM-J7500/7600, TM-J7000/7100, TM-H6000III

TM-J7500/7600, TM-J7000/7100

The module height influences the recognition rate of the symbol.

The module height should be set to 3-5 times the module width.

The recognition rate might decrease if the vertical size of the symbol is 5 mm {0.2 inch} or less.

The vertical size of the symbol can be confirmed by the transmission data of Function 082.

TM-H6000III

The module height influences the recognition rate of the symbol.

The module height is recommended to be set to 3-5 times the module width.

The recognition rate might decrease when the vertical size of the symbol is 5 mm {0.2 inch} or less.

The vertical size of the symbol can be confirmed by the transmission data of Function 082.

GS (k <Function 069>

[Name] PDF 417: Set the error correction level

[Format]

ASCII	GS	(k	pL	pH	cn	fn	m	n
Hex	1D	28	6B	04	00	30	45	m	n
Decimal	29	40	107	4	0	48	69	m	n

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 4$ ($\mathbf{pL} = 4$, $\mathbf{pH} = 0$)

cn = 48

fn = 69

m = 48, 49

$48 \leq \mathbf{n} \leq 56$ [$\mathbf{m} = 48$]

$1 \leq \mathbf{n} \leq 40$ [$\mathbf{m} = 49$]

[Default] **m** = 49, **n** = 1 [ratio: 10%]

[Description] Sets the error correction level for PDF417.

m	Function
48	The error correction level is set by "level."
49	The error correction level is set by "ratio." The ratio is [$\mathbf{n} \times 10\%$].

- [Notes]
- Settings of this function affect the processing of Functions 081 and 082.
 - Error correction level is specified by either "level" or "ratio."
 - Error correction level specified by "level" (**m** = 48) is as follows. The number of the error correction code word is fixed regardless of the number of code words in the data area.

n	Function	Number of error correction code word
48	Error correction level 0	2
49	Error correction level 1	4
50	Error correction level 2	8
51	Error correction level 3	16

n	Function	Number of error correction code word
52	Error correction level 4	32
53	Error correction level 5	64
54	Error correction level 6	128
55	Error correction level 7	256
56	Error correction level 8	512

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

Calculated value (A)	Correction level	Number of error correction code word
0 – 3	Error correction level 1	4
4 – 10	Error correction level 2	8
11 – 20	Error correction level 3	16
21 – 45	Error correction level 4	32
46 – 100	Error correction level 5	64
101 – 200	Error correction level 6	128
201 – 400	Error correction level 7	256
401 or more	Error correction level 8	512

- The error correction code word calculated by modulus 929.
- Settings of this function are effective until **ESC @** is executed, the printer is reset, or the power is turned off.

GS (k <Function 070>

[Name] PDF 417: Select the options

[Format] ASCII GS (k **pL** **pH** **cn** **fn** **n**
 Hex 1D 28 6B **03** **00** **30** **46** **n**
 Decimal 29 40 107 **3** **0** **48** **70** **n**

[Range] **(pL + pH × 256) = 3** (**pL** = 3, **pH** = 0)

cn = 48

fn = 70

m = 0,1

[Default] **m** = 0

[Description] Selects the option for PDF417.

m	Function
0	Selects the standard PDF417.
1	Selects the truncated PDF417.

[Notes] ■ Settings of this function affect the processing of Functions 081 and 082.

■ Settings of this function are effective until **ESC @** is executed, the printer is reset, or the power is turned off.

GS (k <Function 080>

[Name]	PDF 417: Store the data in the symbol storage area
[Format]	ASCII GS (k pL pH cn fn m d1...dk Hex 1D 28 6B pL pH 30 50 30 d1...dk Decimal 29 40 107 pL pH 48 80 48 d1...dk
[Range]	$4 \leq (\mathbf{pL} + \mathbf{pH} \times 256) \leq 65535$ ($0 \leq \mathbf{pL} \leq 255$, $0 \leq \mathbf{pH} \leq 255$) cn = 48 fn = 80 m = 48 $0 \leq \mathbf{d} \leq 255$ k = $(\mathbf{pL} + \mathbf{pH} \times 256) - 3$

[Description] Stores the PDF417 symbol data (**d1...dk**) in the symbol storage area.

- [Notes]
- Data stored in the symbol save area by this function are processed by Functions 081 and 082. The data in the symbol save area are reserved after processing Function 081 or 082.
 - **k** bytes of **d1...dk** are processed as the symbol data.
 - Specify only the data code word of the symbol with this function. Be sure not to include the following data in the data **d1...dk** because they are added automatically by the printer.
 - Start pattern and stop pattern
 - Indicator code word of left and right
 - The descriptor of symbol length (the first code word in the data area)
 - The error correction code word calculated by modulus 929
 - Settings of this function are effective until the following processing is performed:
 - This function is executed
 - **ESC @** is executed
 - The printer is reset or the power is turned off

GS (k <Function 081>

[Name]	PDF 417: Print the symbol data in the symbol storage area																											
[Format]	<table border="0"> <tr> <td>ASCII</td> <td>GS</td> <td>(</td> <td>k</td> <td>PL</td> <td>PH</td> <td>cn</td> <td>fn</td> <td>m</td> </tr> <tr> <td>Hex</td> <td>1D</td> <td>28</td> <td>6B</td> <td>03</td> <td>00</td> <td>30</td> <td>51</td> <td>m</td> </tr> <tr> <td>Decimal</td> <td>29</td> <td>40</td> <td>107</td> <td>3</td> <td>0</td> <td>48</td> <td>81</td> <td>m</td> </tr> </table>	ASCII	GS	(k	PL	PH	cn	fn	m	Hex	1D	28	6B	03	00	30	51	m	Decimal	29	40	107	3	0	48	81	m
ASCII	GS	(k	PL	PH	cn	fn	m																				
Hex	1D	28	6B	03	00	30	51	m																				
Decimal	29	40	107	3	0	48	81	m																				
[Range]	$(\text{PL} + \text{PH} \times 256) = 3$ (PL = 3, PH = 0) cn = 48 fn = 81 m = 48																											
[Description]	Encodes and prints the PDF417 symbol data in the symbol storage area using the process of GS (k <Function 080> .																											
[Notes]	<ul style="list-style-type: none"> ■ In standard mode, use this function when printer is "at the beginning of a line," or "there is no data in the print buffer." ■ A symbol that size exceeds the printing area cannot be printed. ■ If there is any error described below in the data of the symbol save area, it cannot be printed. <ul style="list-style-type: none"> • There is no data (Function 080 is not processed). • If [(number of columns × number of rows) < number of code word] when auto processing is specified for number of columns and number of rows. • Number of code word exceeds 928 in the data area. ■ The following data are added automatically by the encode processing. <ul style="list-style-type: none"> • Start pattern and stop pattern • Indicator code word of left and right • The descriptor of symbol length (the first code word in the data area) • The error correction code word calculated by modulus 929 • Pad code word 																											

- The data area includes the following code words.
 - Data specified by Function 080.
 - The descriptor of symbol length (the first code word in the data area).
 - The error correction code word calculated by modulus 929.
 - Pad code word
- When auto processing (Function 065) is specified, the number of columns is calculated by the current printing area, module width (Function 067), option setting (Function 070), and the code word in the data area. Maximum number of the columns is 30.
- When auto processing (Function 066) is specified in page mode, the number of rows is calculated by the current printing area, module height (Function 068), and the code word in the data area. The maximum number of rows is 90.
- Printing of symbol is not affected by print mode (emphasized, double-strike, underline, white/ black reverse printing, or 90° clockwise-rotated), except for character size and upside-down printing mode.
- In standard mode, this command executes paper feeding for the amount needed for printing the symbol, regardless of the paper feed amount set by the paper feed setting command. The printing position returns to the left side of the printable area after printing the symbol, and printer is in the status "beginning of the line," or "there is no data in the print buffer."
- In page mode, the printer stores the symbol data in the print buffer without executing actual printing. The printer moves printing position to the next dot of the last data of the symbol.
- The quiet zone is not included in the printing data. Be sure to secure the quiet zone when using this function.

[Model-dependent variations]

TM-J7500/7600, TM-J7000/7100, TM-H6000III

TM-J7500/7600, TM-J7000/7100

In standard mode, a symbol higher than 831 dots cannot be printed with this printer.

TM-H6000III

This function is available when roll paper is selected as paper type.

In standard mode, a symbol higher than 1662 dots cannot be printed with this printer.

GS (k <Function 082>

[Name] PDF 417: Transmit the size information of the symbol data in the symbol storage area.

[Format]

ASCII	GS	(k	pL	pH	cn	fn	m
Hex	1D	28	6B	03	00	30	52	m
Decimal	29	40	107	3	0	48	82	m

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 3$ ($\mathbf{pL} = 3$, $\mathbf{pH} = 0$)

cn = 48

fn = 82

m = 48

[Description] Transmits the size information for the encoded PDF417 symbol data in the symbol storage area using the process of **GS (k <Function 080>**.

- [Notes]
- In standard mode, use this function when the printer is "at the beginning of a line," or "there is no data in the print buffer."
 - The size information for each data is as follows:

Send data	Hex	Decimal	Data
Header	37H	55	1 byte
Identifier	2FH	47	1 byte
Horizontal size (*1)	30H – 39H	48 – 57	1 – 5 byte
Separator	1FH	31	1 byte
Vertical size (*1)	30H – 39H	48 – 57	1 – 5 byte
Separator	1FH	31	1 byte
Fixed value	31H	49	1 byte
Separator	1FH	31	1 byte
Other information (*2)	30H or 31H	48 or 49	1 byte
NUL	00H	0	1 byte

(*1)"Horizontal size" and "vertical size" indicate the number of dots of the symbol.The decimal value of the vertical size and horizontal size is converted to text data and sent starting from the high order end.

(ex: When horizontal size is 120 dots, horizontal size is "120" (in Hexadecimal: 31H, 32H, 30H / in Decimal: 49, 50, 48) which is 3 bytes of data.)

(*2)"Other information" indicates the printing of the data in the save area is possible or impossible.

Other information

Hex	Decimal	Condition
30H	48	Printing is possible
31H	49	Printing is impossible

- The quiet zone is not included in the size information.
- Size information indicates size of symbol that is printed by <Function 081>.
- If "other information" is "Printing is impossible" (in decimal: 49), use one of the following solutions:

Cause	Solution
There are data in the print buffer in the standard mode	Put the printer in the state "there is no data in the print buffer" by executing GS T or print commands (LF , CR , ESC J).
Symbol is bigger than the current printing area.	Expand the printing area by GS W , ESC W , ESC \$. Reduce the module width by Function 067. Reduce the module height by Function 068. Lower the error correction level by Function 069.
(Number of columns × number of rows) < number of code word	Increase the number of columns by Function 065. Increase the number of rows by Function 066.
Number of the code word in the data area is more than 928.	Reduce the data by Function 080. Lower the error correction level by Function 069.
There is no data in the save area.	Sends data to the save area by Function 080.

- See [Notes for transmission process] for description of transmission process.

[Model-dependent variations]

TM-J7500/7600, TM-J7000/7100, TM-H6000III

TM-J7500/7600, TM-J7000/7100

In standard mode, when symbols have a height greater than 831 dots, they cannot be printed with this printer according to [Other information] [Hexadecimal = 31H/Decimal = 49].

TM-H6000III

This function is available when roll paper is selected as paper type.

In standard mode, when symbols have a height greater than 1662 dots, they cannot be printed with this printer according to [Other information] [Hexadecimal = 31H/Decimal = 49].

CUSTOMIZE COMMANDS

Command	Name
* FS g 1	Write to NV user memory
* FS g 2	Read from NV user memory
GS (C	Edit NV user memory
GS (E	Set user setup commands
GS (M	Customize printer control value(s)

* obsolete commands

FS g 1

SETTING COMMAND

[Name] Write to NV user memory

[Format]	ASCII	FS	g	1	m a1 a2 a3 a4 nL nh d1...dk
	Hex	1C	67	31	m a1 a2 a3 a4 nL nh d1...dk
	Decimal	28	103	49	m a1 a2 a3 a4 nL nh d1...dk

[Printers not featuring this command] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675, TM-U325D**

[Range] **TM-H5000II:** **m = 0**
0 ≤ (a1 + a2 × 256) ≤ 1023 (0 ≤ a1 ≤ 255, 0 ≤ a2 ≤ 3, a3 = 0, a4 = 0)
1 ≤ (nL + nh × 256) ≤ 1024 (0 ≤ nL ≤ 255, 0 ≤ nh ≤ 4)
32 ≤ d ≤ 255
k = (nL + nh × 256)

[Description] Stores the data in the NV user memory.

- **a1, a2, a3, and a4** specify the stored data starting address as $(a1 + a2 \times 256 + a3 \times 65536 + a4 \times 16777216)$.
- **nL, nh** specifies the number of stored data as $(nL + nh \times 256)$ bytes.
- **d** specifies the stored data.
- **k** indicates the number of stored data. **k** is an explanation parameter; therefore, it does not need to be transmitted.

[Recommended Functions]

- This is an unrecommended command. It is supported by some printer models but will not be supported by future models.
- It is recommended to use **GS (C** to write to NV user memory instead of **FS g 1**. Operation of **GS (C** offers the following improvements:
 - Data can be controlled by the record.
 - Each record can be redefined, retrieved, or deleted by key code.
 - Memory can be used efficiently because the printer controls the data.
 - The amount of definition area remaining can be confirmed.

[Notes]

- The NV user memory is the memory area used for storing character font data in non-volatile memory.
- In standard mode, this command is effective only when processed at the beginning of a line.
- Do not use this command while a macro is being defined, because the command cannot be included in the macro.
- All the previously stored data in the specified area is replaced with new data.
- This command writes data to a non-volatile memory. Note the following items when using this command.
 - Do not turn off the power or reset the printer from the interface when this command is being executed.
 - The printer may be BUSY when storing data and will not receive any data. In this case, be sure not to transmit data from the host.
 - Excessive use of this function may destroy the non-volatile memory. As a guideline, do not use any combination of the following commands more than 10 times per day for writing data to the non-volatile memory: **GS (C** (part of functions), **GS (E** (part of functions), **GS (L / GS 8 L** (part of functions), **GS (M** (part of functions), **GS g 0, FS g 1, FS q**.
- The following restrictions apply when performing non-volatile memory operations (including data store and delete).
 - The paper feed button does not operate.
 - Real-time commands are not processed.
 - The ASB status will not be sent, even when the ASB function is set to enable.
- The NV user memory data can be read by **FS g 2**.

[Model-dependent variations]

None

Program Example

```

PRINT #1, CHR$(&H1C); "g1";CHR$(0);
PRINT #1, CHR$(0);CHR$(0);CHR$(0);CHR$(0);CHR$(14);CHR$(0);
PRINT #1, "NVimage1=Stamp";

```

[Name] Read from NV user memory

[Format]

ASCII	FS	g	2	m a1 a2 a3 a4 nL nh
Hex	1C	67	32	m a1 a2 a3 a4 nL nh
Decimal	28	103	50	m a1 a2 a3 a4 nL nh

[Printers not featuring this command] **TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675, TM-U325D**

[Range] **TM-H5000II:** **m = 0**
 $0 \leq (a1 + a2 \times 256) \leq 1023$ $(0 \leq a1 \leq 255, 0 \leq a2 \leq 3, a3 = 0, a4 = 0)$
 $1 \leq (nL + nh \times 256) \leq 1024$ $(0 \leq nL \leq 255, 0 \leq nh \leq 4)$

[Description] Transmits the data in the NV user memory.

- **a1, a2, a3, and a4** specify the starting address of transmission data as $(a1 + a2 \times 256 + a3 \times 65536 + a4 \times 16777216)$.
- **nL, nh** specifies the number of transmission data as $(nL + nh \times 256)$ bytes.

[Recommended Functions]

- This is an unrecommended command. It is supported by some printer models but will not be supported by future models.
- **GS (C** is recommended to write to NV user memory instead of **FS g 1**. Operation of **GS (C** offers the following improvements:
 - Data can be controlled by the record.
 - Each record can be redefined, retrieved, or deleted by key code.
 - Memory can be used efficiently because the printer controls the data.
 - The sent data can be identified.
 - The amount of definition area remaining can be confirmed.

[Notes] ■ The NV user memory is the memory area used for storing character font data in non-volatile memory.

- This command transmits the following Header to NUL.

Transmitted data	Hex	Decimal	Amount of data
Header	5FH	95	1 byte
NV user memory data	20H ~ FEH	32 ~ 254	($\text{mL} + \text{mH} \times 256$) bytes
NUL	00H	0	1 byte

- Writing data to the NV user memory is enabled by **FS g 1**.
- When you use this command, obey the following rules.
 - After the host PC transmits the function data, the printer will send response data or status data back to the PC. Do not transmit more data from the PC until the response data or status data are received from the printer.
 - When operating with a serial interface, be sure to configure operation so that the host computer uses the printer only when it is READY.
 - With a parallel interface, a [Header to NUL] is stored first in the transmission buffer with the other transmission data (except for ASB status). When the host enters Reverse Mode, the data is transmitted in order from the beginning. Data that exceeds the transmission buffer (99 bytes) is ignored. When using the command, the host should enter Reverse Mode immediately and start processing the status.
- With serial interface, when communication with the printer uses XON/XOFF control, the XOFF code may interrupt the "Header to NUL" data string.
- User NV memory data can be identified to other transmission data according to specific data of the transmission data block. When the header transmitted by the printer is [Hex=5FH/Decimal=95], treat NUL [hex = 00H/decimal =0] as a data group and identify it according to the combination of the header.

[Model-dependent variations]

None

Program Example

```
PRINT #1, CHR$(&H1C); "g2"; CHR$(0);CHR$(0);CHR$(0);CHR$(0);CHR$(0);CHR$(14);CHR$(0)
```

[Name] Edit NV user memory

[Printers not featuring this command] **TM-H5000II, TM-U325D**

[Description] Edits the data in the NV user memory.

- Function code (**fn**) specifies the function.

fn	Function No.	Function name
0, 48	Function 0	Delete the specified record
1, 49	Function 1	Store the data in the specified record
2, 50	Function 2	Transmit the data in the specified record
3, 51	Function 3	Transmit capacity of the NV user memory currently being used
4, 52	Function 4	Transmit the remaining capacity of the NV user memory
5, 53	Function 5	Transmits the key code list
6, 54	Function 6	Delete all data in the NV user memory

- **pl, ph** specify (**pl** + **ph** × 256) as the number of bytes after **ph** (**m, fn, b, [c1 c2], and [d1 ...dk]**).
- The other parameters are explained under each of the functions.

[Notes]

- The command function is defined by function code **fn**. The command operation differs, depending on the function.
- The NV user memory area is especially provided for storing character data in the non-volatile memory built into the printer.
- The NV user memory data configuration is as follows: key code + data + terminator. This unit is called a record.
 - A record is one data processing unit in the NV user memory. It is controlled by a key code.

- The key code is a two-byte ID code used to identify records, and is created with parameters **c1, c2** in the command. You can specify any desired character code (in Hexadecimal: 20H to 7EH / in Decimal: 32 to 126).
 - Data is the character string specified by **d1... dk** in Function 1 of the **GS (C** command. You cannot specify control codes (in Hexadecimal: 00H to 1FH, 7FH / in Decimal: 0 to 31, 127) as character string data.
 - The terminator is a one-byte code, automatically assigned when the printer stores data.
 - The printer automatically adds control information when it stores the data. The image data domain is used as the control information. Control information formats and data values vary according to function.
- NV user memory data remains valid until the host sends a deletion or storage function command.
- Data is written to the non-volatile memory by Functions 1 and 3. Note the following when using those functions:
- Do not turn off the power or reset the printer from the interface when the relevant functions are being executed.
 - The printer might be BUSY. In this case, be sure not to transmit a command from the host because the printer will not receive the data.
 - Excessive use of this function may destroy the non-volatile memory. As a guideline, do not use any combination of the following commands more than 10 times per day for writing data to the non-volatile memory: **GS (C** (part of functions), **GS (E** (part of functions), **GS (L** (part of functions), **GS (M** (part of functions), and **GS g 0, FS g 1, FS q**.
- Note the rules below for the operating NV memory (store data / cancel data):
- The paper feed button does not operate.
 - Real-time commands are not processed.
 - Even if “ASB is enabled” is specified, the printer does not send ASB status.
- You can use the NV user memory as an index of note for following.
- Customize information: index of the NV graphic definition contents, title of setting by **GS (M**
 - Maintenance information: ink ribbon replacement date, telephone number of repair company, etc.

[Notes for transmission process]

- Data send operations are performed using Functions 2, 3, 4, and 5. When you use these functions, obey the following rules.
 - After the host PC transmits the function data, the printer will send response data or status data back to the PC. Do not transmit more data from the PC until the response data or status data are received from the printer.
 - When operating with a serial interface, be sure to configure operation so that the host computer uses the printer only when it is READY.
 - When operating with a parallel interface, the data sent by this function (starting with Header and ending with NUL), as with other data, is first stored in the send buffer, then output in sequential order when the host computer changes to the reverse mode. Note that the send buffer capacity is 99 bytes, and any data exceeding this volume limit will be lost; therefore, when using this command, it is important to configure the operation so that the host computer's change to the reverse mode and the subsequent status send/receive process is performed quickly.
- When communication with the printer uses XON/XOFF control with serial interface, the XOFF code may interrupt the "Header to NUL" data string.
- The transmission information for each function can be identified to other transmission data according to specific data of the transmission data block. When the header transmitted by the printer is [hex = 37H/decimal = 55], treat NUL [hex = 00H/decimal = 0] as a data group and identify it according to the combination of the header and the identifier.

[Notes for ESC/POS Handshaking Protocol]

- It will be necessary to perform the ESC/POS Handshaking Protocol procedures listed below when using Functions 2 or 5

Step	Host process	Printer process
1	Send GS (C <Function 2> or <Function 5> .	Start processing of Function 2 or Function 5. (Read specified record back to host.)
2	Receive data from printer.	Transmit data in memory.
3	Send response code ^(*1)	Continue processing ^{(*2) (*3)} according to response.

(*1) Response code

ASCII	Hex	Decimal	Request
ACK	06	6	Transmit next data.
NAK	15	21	Resend previously sent data.
CAN	18	24	Cancel send process.

(*2) Processing according to response (unsent data exists, identified by send data set "status")

Response code	Process
ACK	Start send processing for next data.
NAK	Resend previously sent data.
CAN	End processing for this command.

(*3) Processing according to response (no unsent data, identified by send data set "status")

Response code	Process
ACK, CAN	End processing for this command.
NAK	Resend previously sent data.

- When codes other than the ACK, NAK, or CAN codes are received, the CAN procedure is executed.

[Model-dependent variations]

TM-9000/9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675

Program Example 1 (Write data for record \$1)

```
PRINT #1, CHR$(&H1D); "(C";CHR$(18);CHR$(0);CHR$(0);CHR$(1);CHR$(0);"$1";"EPSON ESC/POS";" " ← <Function 1>
```

Program Example 2 (Read data for record %5)

```
PRINT #1, CHR$(&H1D); "(C";CHR$(5);CHR$(0);CHR$(0);CHR$(2);CHR$(0);"%5"; " " ← <Function 2>
*LOOP:
GOSUB *RECEIVE ← "Header to NUL" is received and stored under ST$ (details omitted)
PRINT #1,CHR$(6); ← Response code is sent
PRINT MID$(ST$,4) ← Record (%5) data is displayed on CRT
IF MID$(ST$,3,1)=CHR$(65) THEN *LOOP ← Check for any subsequent data
```

Program Example 3 (Read available memory capacity)

```
PRINT #1, CHR$(&H1D); "(C";CHR$(3);CHR$(0);CHR$(0);CHR$(4);CHR$(0); ← <Function 4>
GOSUB *RECEIVE ← "Header to NUL" is received and stored under ST$ (details omitted)
PRINT MID$(ST$,4) ← Available capacity is displayed on CRT
```

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

**Definition area of record data shares the same definition area with NV graphics memory (GS (L)).
There is a total of 384 KB available for both uses combined.**

TM-H6000III

Record data definition area capacity is selectable GS (E <Function 5> with [1K, 64K, 128K, 192K] byte.

TM-U675

Record data definition area capacity is selectable GS (E <Function 5> as follows.

Model	Selectable capacity	Default
Other than multilingual	1K, 64K, 128K, 192K	1K [units: byte]
Multilingual	1K, 64K	1K [units: byte]

GS (C pL pH m fn b c1 c2 <Function 0>

[Name] Delete the specified record

[Format]

ASCII	GS	(C	pL	pH	m	fn	b	c1	c2
Hex	1D	28	43	05	00	00	fn	00	c1	c2
Decimal	29	40	67	5	0	0	fn	0	c1	c2

[Range] **(pL + pH × 256) = 5** (**pL = 5, pH = 0**)

m = 0

fn = 0, 48

b = 0

32 ≤ **c1** ≤ 126

32 ≤ **c2** ≤ 126

[Description] Deletes the record specified by the key codes (**c1, c2**) in the NV user memory.

- Deleted areas are designated “Unused areas.”
- Deleted key codes are designated as undefined.

[Notes] ■ In standard mode, this command is valid only at the beginning of the line.

■ In page mode, this command is ignored.

■ You cannot include macros with this command, so do not use this command while defining macros.

[Model-dependent variations] None

GS (C pL pH m fn b c1 c2 d1...dk <Function 1>

[Name]	Store the data in the specified record																																				
[Format]	<table border="0"> <tr> <td>ASCII</td><td>GS</td><td>(</td><td>C</td><td>pL</td><td>pH</td><td>m</td><td>fn</td><td>b</td><td>c1</td><td>c2</td><td>d1...dk</td></tr> <tr> <td>Hex</td><td>1D</td><td>28</td><td>43</td><td>pL</td><td>pH</td><td>00</td><td>fn</td><td>00</td><td>c1</td><td>c2</td><td>d1...dk</td></tr> <tr> <td>Decimal</td><td>29</td><td>40</td><td>67</td><td>pL</td><td>pH</td><td>0</td><td>fn</td><td>0</td><td>c1</td><td>c2</td><td>d1...dk</td></tr> </table>	ASCII	GS	(C	pL	pH	m	fn	b	c1	c2	d1...dk	Hex	1D	28	43	pL	pH	00	fn	00	c1	c2	d1...dk	Decimal	29	40	67	pL	pH	0	fn	0	c1	c2	d1...dk
ASCII	GS	(C	pL	pH	m	fn	b	c1	c2	d1...dk																										
Hex	1D	28	43	pL	pH	00	fn	00	c1	c2	d1...dk																										
Decimal	29	40	67	pL	pH	0	fn	0	c1	c2	d1...dk																										
[Range]	$6 \leq (\text{pL} + \text{pH} \times 256) \leq 65535$ ($0 \leq \text{pL} \leq 255, 0 \leq \text{pH} \leq 255$) m = 0 fn = 1, 49 b = 0 $32 \leq \text{c1} \leq 126$ $32 \leq \text{c2} \leq 126$ $32 \leq \text{d} \leq 254$ k = $(\text{pL} + \text{pH} \times 256) - 5$																																				
[Description]	Stores the data (d1... dk) as the record specified by the key codes (c1, c2) in the NV user memory. <ul style="list-style-type: none"> • When the specified record already exists, the data is overwritten. • A terminator is automatically assigned. 																																				
[Notes]	<ul style="list-style-type: none"> ■ In standard mode, this command is valid only at the beginning of the line. ■ In page mode, this command is ignored. ■ You cannot include macros with this command, so do not use this command while defining macros. ■ If the capacity is too small to store the specified record, this function is disabled. The available capacity of user memory can be checked by <Function 4>. 																																				
[Model-dependent variations]	TM-9000/9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675 TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675																																				
Executing this function uses the area equivalent to [Amount of data (k) + amount of control information data (3 bytes)].																																					

GS (C pL pH m fn b c1 c2 <Function 2>

[Name] Transmit the data in the specified record

[Format]

ASCII	GS	(C	pL	pH	m	fn	b	c1	c2
Hex	1D	28	43	05	00	00	fn	00	c1	c2
Decimal	29	40	67	5	0	0	fn	0	c1	c2

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 5$ ($\mathbf{pL} = 5, \mathbf{pH} = 0$)

m = 0

fn = 2, 50

b = 0

$32 \leq \mathbf{c1} \leq 126$

$32 \leq \mathbf{c2} \leq 126$

[Description] Transmits the data for the record specified by the key codes (**c1**, **c2**) in the NV user memory.

- ESC/POS Handshaking Protocol is required for this function.

[Notes] ■ When the specified record exists, the printer sends the "header to NUL" data shown below:

Send data	Hex	Decimal	Data quantity
Header	37H	55	1 byte
Identifier	70H	112	1 byte
Identification status ^{(*1) (*2)}	40H or 41H	64 or 65	1 byte
Data ^(*3)	20H – FFH	32 – 255	1 – 80 bytes
NUL	00H	0	1 byte

(*1) When the quantity of stored data exceeds 80 bytes, the printer performs partial processing:

- If there is unsent data, the identification status of the third byte is 41H or 65 decimal.
- If there is no unsent data, the identification status of the third byte is 40H or 64 decimal.

(*2) The printer performs batch processing when the data to be stored is 80 bytes or less. At this time, the identification status of the third byte is 40H or 64 decimal.

(*3) The key code and terminator are not included in the data. If there is an error in the saved record data, the data is the one byte Hexadecimal = FFH / Decimal = 255.

■ If the specified record does not exist, the following Header to NUL is transmitted.

Send data	Hex	Decimal	Data quantity
Header	37H	55	1 byte
Identifier	70H	112	1 byte
Status	40H	64	1 byte
NUL	00H	0	1 byte

■ See [Notes for transmission process] for description of transmission process.

■ See [Notes for ESC/POS Handshaking Protocol] for description of ESC/POS Handshaking Protocol.

GS (C pL pH m fn b <Function 3>

[Name] Transmit capacity of the NV user memory currently being used

[Format]

ASCII	GS	(C	pL	pH	m	fn	b
Hex	1D	28	43	03	00	00	fn	00
Decimal	29	40	67	3	0	0	fn	0

[Range] $(\text{pL} + \text{pH} \times 256) = 3$ (**pL** = 3, **pH** = 0)

m = 0

fn = 3, 51

b = 0

[Description] Transmits the number of bytes of memory used in the NV user memory.

- ESC/POS Handshaking Protocol is not required for this function.

[Notes] ■ With this function, the printer sends the "Header to NUL" data shown below:

Send data	Hex	Decimal	Data quantity
Header	37H	55	1 byte
Identifier	28H	40	1 byte
Capacity Used (*1)	30H – 39H	48 – 57	1 – 8 bytes
NUL	00H	0	1 byte

(*1) Quantity Used indicates the number of bytes of the area used to save the data. This includes the area used for the key code and terminator. The decimal value expressing the capacity being used is converted to ASCII character data and sent from the most significant digit.

Example: When 120 bytes is used, the number 120 is expressed with three bytes of data
(Hexadecimal: 31H, 32H, 30H / decimal numbers: 49, 50, 48).

When no memory area is used, the number 0 is expressed with 1 byte of data
(Hexadecimal: 30H / decimal number 48).

- The area that stores the control information of the record data is calculated as the area of use.
- See [Notes for transmission process] for description of transmission process.

GS (C pL pH m fn b <Function 4>

[Name] Transmit the remaining capacity of the NV user memory

[Format]

ASCII	GS	(C	pL	pH	m	fn	b
Hex	1D	28	43	03	00	00	fn	00
Decimal	29	40	67	3	0	0	fn	0

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 3$ ($\mathbf{pL} = 3$, $\mathbf{pH} = 0$)

m = 0

fn = 4, 52

b = 0

[Description] Transmits the number of bytes of remaining memory (unused area) in the NV user memory.

- ESC/POS Handshaking Protocol is not required for this function.

[Notes] ■ With this function, the printer sends the "Header to NUL" data shown below:

Send data	Hex	Decimal	Data quantity
Header	37H	55	1 byte
Identifier	29H	41	1 byte
Available Capacity (*1)	30H – 39H	48 – 57	1 – 8 bytes
NUL	00H	0	1 byte

(*1) The available capacity indicates the number of bytes not being used. The decimal value for the available capacity is converted to ASCII character data and sent from the most significant digit.

Example: When 120 bytes is available (not being used), the number 120 is expressed with three bytes of data (Hexadecimal: 31H, 32H, 30H / decimal numbers: 49, 50, 48).

■ See [Notes for transmission process] for description of transmission process.

GS (C pL pH m fn b <Function 5>

[Name] Transmits the key code list

[Format]

ASCII	GS	(C	pL	pH	m	fn	b
Hex	1D	28	43	03	00	00	fn	00
Decimal	29	40	67	3	0	0	fn	0

[Range]

(pL + pH × 256) = 3 (**pL** = 3, **pH** = 0)
m = 0
fn = 5, 53
b = 0

[Description]

Transmits the key code list in the NV user memory.

- ESC/POS Handshaking Protocol is required for this function.

[Notes]

■ When the specified record exists, the printer sends the “header to NUL” data shown below:

Send data	Hex	Decimal	Data quantity
Header	37H	55	1 byte
Identifier	71H	113	1 byte
Identification status ^{(*1)(*2)}	40H or 41H	64 or 65	1 byte
Data ^(*3)	20H – FEH	32 – 254	1 – 80 bytes
NUL	00H	0	1 byte

(*1) When the quantity of stored data exceeds 40 records, the printer performs partial processing:

- If there is unsent data, the identification status of the third byte is [Hex: 41H / Decimal: 65].
- If there is no unsent data, the identification status of the third byte is [Hex: 40H / Decimal: 64].

(*2) The printer performs batch processing when the data to be stored in the specified record is 40 records or less. At this time, the status of the third byte is [Hex: 40H / Decimal: 64].

(*3) The data is the key code. A terminator is not included in the data.

- If the host specifies a nonexistent record, the printer sends the "Header to NUL" data shown below:

Send data	Hex	Decimal	Data quantity
Header	37H	55	1 byte
Identifier	71H	113	1 byte
Status	40H	64	1 byte
NUL	00H	0	1 byte

- See [Notes for transmission process] for description of transmission process.
- See [Notes for ESC/POS Handshaking Protocol] for description of ESC/POS Handshaking Protocol.

GS (C pL pH m fn b d1 d2 d3 <Function 6>

[Name] Delete all data in the NV user memory

[Format]	ASCII	GS	(C	pL	pH	m	fn	b	d1	d2	d3
	Hex	1D	28	43	06	00	00	fn	00	d1	d2	d3
	Decimal	29	40	67	6	0	0	fn	0	d1	d2	d3

[Range] **(pL + pH × 256) = 6** (**pL** = 6, **pH** = 0)

m = 0

fn = 6, 54

b = 0

d1 = 67

d2 = 76

d3 = 82

[Description] Deletes all data in the NV user memory.

- All area is changed to unused area.
- All key codes are designated as undefined.

[Notes]

- In standard mode, this command is effective only at the beginning of the line.
- In page mode, this command is ignored.
- This command cannot include a macro; therefore, do not use this command when defining the macro.
- When NV graphics data is being shared by multiple applications, executing this function will delete all data being used by all applications. Caution is required when using this function.

[Name] Set user setup commands

[Printers not featuring this command] **TM-H5000II, TM-U325D**

[Description] Controls the user setting modes.

- Function code (**fn**) specifies the function.

fn	Function No.	Function name
1	Function 1	Change into the user setting mode.
2	Function 2	End the user setting mode session.
3	Function 3	Change the setting of the memory switch.
4	Function 4	Transmit the setting of the memory switch.
5	Function 5	Set the customized setting values.
6	Function 6	Transmit the customized setting values.
7	Function 7	Copy the user-defined page.
8	Function 8	Define the data (column format) for the character code page.
9	Function 9	Define the data (raster format) for the character code page.
10	Function 10	Delete the data for the character code page.
11	Function 11	Set the configuration item for the serial interface.
12	Function 12	Transmit the configuration item for the serial interface.

- **PL, PH** specify (**PL** + **PH** × 256) as the number of bytes after **PH** (**fn** and **[parameters]**).
- Description of the **[parameters]** is described in each function.

[Notes]

- The value of parameter **fn** determines the function number for this command. Command operation differs, depending on the function number.
- To change a setting, you must change the printer into user setting mode, using Function 1.

- The setting you specify is activated by sending a Function 2 command upon completion of making the setting.
- Note the rules below for the user setting mode:
 - The printer does not process character data.
 - The printer does not process commands other than this command and the **GS I** command.
 - Real-time commands are not processed.
 - Even when the ASB function is selected, the ASB status is not transmitted.
- Functions 4, 6, and 12, the functions used to transmit the current settings to the host, can be used at any time, without changing into the user setting mode
- Data is written to the non-volatile memory by Functions 3, 5, 7, and 11. Note the following when using those functions:
 - Do not turn off the power or reset the printer from the interface when the relevant functions are being executed.
 - The printer might be BUSY. In this case, be sure not to transmit a command from the host because the printer will not receive the data.
 - Excessive use of this function may destroy the non-volatile memory. As a guideline, do not use any combination of the following commands more than 10 times per day for writing data to the non-volatile memory: **GS (C** (part of functions), **GS (E** (part of functions), **GS (L** (part of functions), **GS (M** (part of functions), and **GS g 0, FS g 1, FS q**.

[Notes for the processing to transmit data]

- Data is transmitted by Functions 1, 4, 6 and 12. When you use these functions, obey the following rules.
 - After the host PC transmits the function data, the printer will transmit response data or status data back to the PC. Do not transmit more data from the PC until the response data or status data are received from the printer.
 - With a serial interface printer, be sure to use this function when the host can receive data.
 - With a parallel interface printer, data sent (excluding ASB status) with this command ("header to NUL") is temporarily stored in the printer send buffer, as with other data. When the host goes into Reverse mode, the printer then sends the data sequentially from the beginning of the send buffer. Send buffer capacity is 99 bytes. Data exceeding this amount is lost. Therefore, when using this command, promptly change into Reverse mode to start the data receive process.

- When communication with the printer uses XON/XOFF control with serial interface, the XOFF code may interrupt the "Header to NUL" data string.
- The transmission information for each function can be identified to other transmission data according to specific data of the transmission data block. When the header transmitted by the printer is [hex = 37H/decimal = 55], treat NUL [hex = 00H/decimal = 0] as a data group and identify it according to the combination of the header and the identifier.

Program Example 1 (Set the memory switch and customized value)

```
PRINT #1, CHR$(&H1D); "(E";CHR$(3);CHR$(0);CHR$(1);CHR$(73);CHR$(78); ← <Function 1>
      GOSUB *RECEIVE      " Confirmation of the mode change notice (Details omitted)

PRINT #1, CHR$(&H1D); "(E";CHR$(10);CHR$(0);CHR$(3);CHR$(1); ← <Function 3>
      PRINT #1, CHR$(50);CHR$(50);CHR$(50);CHR$(50);CHR$(48);CHR$(49);CHR$(48);CHR$(49);
      PRINT #1, CHR$(&H1D); "(E";CHR$(2);CHR$(0);CHR$(4);CHR$(1); ← <Function 4>
      GOSUB *RECEIVE4 ← Checks the setting value (Details omitted)
      PRINT #1, CHR$(&H1D); "(E";CHR$(7);CHR$(0);CHR$(5);CHR$(1);CHR$(2);CHR$(0);CHR$(2);CHR$(5);CHR$(0); ← <Function 5>
      PRINT #1, CHR$(&H1D); "(E";CHR$(2);CHR$(0);CHR$(6);CHR$(1); ← <Function 6>
      GOSUB *RECEIVE6 ← Checks the setting value (Details omitted)
      PRINT #1, CHR$(&H1D); "(E";CHR$(4);CHR$(0);CHR$(2);CHR$(79);CHR$(85);CHR$(84); ← <Function 2>
```

Program Example 2 (Read back customized memory value)

```
PRINT #1, CHR$(&H1D); "(E";CHR$(2);CHR$(0);CHR$(6);CHR$(1); ← <Function 6>
```

[Model-dependent variations]

TM-9000/9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100

This printer supports all functions of this command.

TM-H6000III

This printer supports <Function 1> to <Function 6>.

TM-U675

This printer supports <Function 1> to <Function 6>.

GS (E pL pH fn d1 d2 <Function 1>

[Name] Change into the user setting mode.

[Format]

ASCII	GS	(E	pL	pH	fn	d1	d2
Hex	1D	28	45	03	00	01	49	4E
Decimal	29	40	69	3	0	1	73	78

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 3$ (**pL** = 3, **pH** = 0)

fn = 1

d1 = 73

d2 = 78

[Description] Enters the user setting mode and transmits the mode change notice.

- [Notes]
- If the printer is in standard mode, this command is valid only at the beginning of the line.
 - If the printer is in page mode, this command is ignored.
 - Do not use this command while defining macros, since macros cannot be included with this command.
 - When the printer goes into the user setting mode, it transmits a "mode change notice" back to the host.

Mode switching notice	Hex	Decimal	Data quantity
Header	37H	55	1 byte
Identifier	20H	32	1 byte
NUL	00H	0	1 byte

- When it has executed this function, send the next commands after checking the "mode change notice."
- See [Notes for the processing to transmit data] for description of the processing to transmit data.

GS (E pL pH fn d1 d2 d3 <Function 2>

[Name] End the user setting mode session.

[Format]

ASCII	GS	(E	pL	pH	fn	d1	d2	d3
Hex	1D	28	45	04	00	02	4F	55	54
Decimal	29	40	69	4	0	2	79	85	84

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 4$ (**pL** = 4, **pH** = 0)

fn = 2

d1 = 79

d2 = 85

d3 = 84

[Description] Ends the user setting mode, and performs a software reset.

[Notes] ■ This function is performed when the printer is in user setting mode.

■ After the software reset, the printer goes into the power on status.

■ Executing this function enables setting values set in user setting mode (such as memory switch or customize value).

■ Be sure to execute this function after changing all the setting values.

GS (E pL pH fn [a1 b18...b11]...[ak nk8 nk1] <Function 3>

[Name] Change the setting of the memory switch.

[Format] ASCII GS (E pL pH fn [a1 b18...b11]...[ak nk8 nk1]
 Hex 1D 28 45 pL pH 03 [a1 b18...b11]...[ak nk8 nk1]
 Decimal 29 40 69 pL pH 3 [a1 b18...b11]...[ak nk8 nk1]

[Range] $10 \leq (pL + pH \times 256) \leq 65530$ ($0 \leq pL \leq 255$, $0 \leq pH \leq 255$: $(pL + pH \times 256) = 9 \times k + 1$)

fn = 3

b = 48, 49, 50

$1 \leq k \leq 7281$

TM-J7500/7600, TM-J7000/7100: a = 1, 2, 8

TM-J9000/J9100, TM-H6000III, TM-U675: a = 1, 8

[Default] **TM-J7500/7600, TM-J7000/7100:**

[Msw 2-2] is ON (b = 49). Other memory switches are all off (b = 48).

TM-J9000/J9100, TM-H6000III, TM-U675: memory switches are all off (b = 48).

[Description] Changes the settings of the memory switch specified by **a** to the values specified by **b**.

- When **a = 1**, memory switch 1 is set as follows:

Msw	Setting value (b)	Function
1-1	48	Does not transmit the power-on notice.
	49	Transmits the power-on notice when processing an initialization.
1-2	48	Sets receive buffer capacity to "big"
	49	Sets receive buffer capacity to "small"
1-3	48	BUSY when "receive buffer full" or "offline"
	49	BUSY when "receive buffer full"
1-4	48	Data processing when occurring receive error: Replace with "?"
	49	Data processing when occurring receive error: Ignore the data

Msw	Setting value (b)	Function
1-5	48	Automatic line feed is disabled.
	49	Automatic line feed is enabled.
1-6	48	DM-D (customer display) connection: disconnected
	49	DM-D (customer display) connection: connected
1-7	48	Uses #6 pin for reset signal
	49	Does not use #6 pin for reset signal
1-8	48	Uses #25 pin for reset signal
	49	Does not use #25 pin for reset signal

Msw 1-2: The receive buffer capacity differs, depending on the printer model.

Msw 1-4, 1-6, 1-7, 1-8: Activated only with the serial interface printers.

Msw 1-5: Activated only with the parallel interface printers.

- When **a** = 2, memory switch 2 is set as follows:

Msw	Setting value (b)	Function
2-1	49	Reserved
2-2	48	Autocutter is not installed.
	49	Autocutter is installed.
2-3 to 2-8	50	Reserved

- Specifications for memory switch 8 (**a** = 8) is different, depending on the printer models.
- Specify (**b** = 50) as the reserved bit, or a value that matches the specifications of the model.
- To activate the memory switch you set with this function, you must send a Function 2 command.
- The value of the memory switch is specified from bit 8 to bit 1 by **b18...b11**. When **b** = 50, the status of a bit applied is not changed.

Example: Transmission data that specifies memory switch 1, "Transmits the power ON notice" and does not change other settings:

ASCIIGS(E **pL** **pH** **fn** **a** **b8b7** **b6** **bsb4** **b3** **b2** **b1**
 Hex1DH28H45H0AH00H03H01H32H32H32H32H32H32H31H
 Decimal294069100 3 1 5050 50 5050 50 50 49

- Specifies **b** = 50 for a reserved bit.
- Explanation for memory switch 1 (**a** = 2): Under “[Range]”, “**a**” can only be 1 or 8.
 - Power On notice specified by [Msw1-1]:

Power ON notice	Hex	Decimal	Data quantity
Header	3BH	59	1 byte
Identifier	31H	49	1 byte
NUL	00H	0	1 byte

- The printer transmits the power on notice for the following processes:
 - Initializing by turning on the power by switch.
 - Initializing by hardware reset.
 - Initializing by software reset, such as by sending Function 2.
 - Initializing after the self test.
- With a serial interface, when communication with the printer uses XON/XOFF control, the XOFF code may interrupt the “Header to NUL” data string.
- With a parallel interface, it is desirable for the host to be in a reverse idle state. However, because the host computer cannot always be in the reverse idle state, it is necessary to enter Reverse Mode regularly to watch for a notice.

[Model-dependent variations]

TM-9000/9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675

TM-J9000/J9100

This printer doesn't support [Msw 1-2] [Msw 1-6].

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- When $a = 8$, memory switch 8 is set as follows:

Msw	Setting value (b)	Function
8-1 ~ 8-2	50	Reserved
8-3	48	Output an ERROR signal when an error occurs
	49	Do not output an ERROR signal when an error occurs
8-4	48	Roll paper enabled
	49	Roll paper not enabled
8-5	48	Specifies the print columns on validation to "standard"
	49	Specifies the print columns on validation to "many"
8-6	48	Specifies the print columns on slip to "standard"
	49	Specifies the print columns on slip to "many"
8-7	48	Specifies the print columns on roll paper to "standard"
	49	Specifies the print columns on roll paper to "many"
8-8	48	The paper roll cover open during printing is an automatically recoverable error
	49	The paper roll cover open during printing is a recoverable error

[Msw 8-3]: Operates with the parallel interface model.

The print columns specified by [Msw 8-5] or [Msw 8-7]

Maximum digits printed (digits)				
Setting	Standard		Many	
Font	Font A	Font B	Font A	Font B
Structure of the font (dot)	12 × 24	9 × 17	11 × 24	8 × 17
[Msw 8-5] Validation	62	82	67	93
[Msw 8-6] Slip	62	82	67	93
[Msw 8-7] Roll paper	40	53	43	60

Memory switches are also able to be set by a panel operation “memory switch setting mode.”

TM-J7500/7600

This printer doesn't support [Msw 1-2].

- When a = 8, memory switch 8 is set as follows:

Msw	Setting value (b)	Function
8-1 ~ 8-5	50	Reserved
8-6(*)	48	Specifies the print columns on slip to “standard”
	49	Specifies the print columns on slip to “many”
8-7(*)	48	Specifies the print columns on roll paper to “standard”
	49	Specifies the print columns on roll paper to “many”
8-8	48	The paper roll cover open during printing is an automatically recoverable error
	49	The paper roll cover open during printing is a recoverable error

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(*) The print columns specified by [Msw 8-6] or [Msw 8-7].

Setting	Standard			Many		
Font	Font A	Font B	Extended Font A	Font A	Font B	Extended Font A
Structure of the font (dot)	12 × 24	9 × 17	15 × 24	11 × 24	8 × 17	15 × 24
[Msw 8-6] Slip maximum print columns (printing face: columns)	80	106	64	87	120	64
[Msw 8-6] Slip maximum print columns (printing face: columns)	82.5 mm: 42 76 mm: 40 69.5 mm: 36 57.5 mm: 30	82.5 mm: 56 76 mm: 53 69.5 mm: 48 57.5 mm: 40	82.5 mm: 34 76 mm: 32 69.5 mm: 28 57.5 mm: 24	82.5 mm: 46 76 mm: 43 69.5 mm: 39 57.5 mm: 32	82.5 mm: 64 76 mm: 60 69.5 mm: 54 57.5 mm: 45	82.5 mm: 34 76 mm: 32 69.5 mm: 28 57.5 mm: 24

Memory switches are also able to be set by a panel operation "memory switch setting mode."

TM-J7000/7100

This printer doesn't support [Msw 1-2].

- When a = 8, memory switch 8 is set as follows:

Msw	Setting value (b)	Function
8-1 ~ 8-5	50	Reserved
8-6(*)	48	Specifies the print columns on slip to "standard"
	49	Specifies the print columns on slip to "many"

8-7(*)	48	Specifies the print columns on roll paper to "standard"
	49	Specifies the print columns on roll paper to "many"
8-8	48	The paper roll cover open during printing is automatically recoverable error
	49	The paper roll cover open during printing is recoverable error

(*) The print columns specified by [Msw 8-6] or [Msw 8-7].

Setting	Standard		Many	
Font	Font A	Font B	Font A	Font B
Structure of the font (dot)	12 × 24	9 × 17	11 × 24	8 × 17
[Msw 8-6] Slip maximum print columns (printing face: columns)	Face: 48 Back: 46	Face: 64 Back: 61	Face: 52 Back: 50	Face: 72 Back: 69
[Msw 8-6] Slip maximum print columns (printing face: columns)	82.5 mm: 42 76 mm: 40 69.5 mm: 36 57.5 mm: 30	82.5 mm: 56 76 mm: 53 69.5 mm: 48 57.5 mm: 40	82.5 mm: 46 76 mm: 43 69.5 mm: 39 57.5 mm: 32	82.5 mm: 64 76 mm: 60 69.5 mm: 54 57.5 mm: 45

Memory switches are also able to be set by a panel operation "memory switch setting mode."

TM-H6000III

This printer doesn't support [Msw 1-2] ~ [Msw 1-8].

- When $a = 8$, memory switch 8 is set as follows:

Msw	Setting value (b)	Function
8-1 and 8-3	50	Reserved
8-4	48	Paper roll: Select single-color printing control
	49	Paper roll: Select tow-color printing control
8-5	50	Reserved
8-6	48	Output ERROR signal when an error is occurred
	49	Not output ERROR signal when an error is occurred
8-7	48	Specify the slip paper jam sensor is enabled
	49	Specify the slip paper jam sensor is disabled
8-8	48	The unit open during printing: Offline
	49	The unit open during printing: recoverable error

- Msw8-4: Single color paper should not be used when [two-color printing control] is selected.
- Msw8-6: Operates with the parallel interface.

TM-U675

This printer doesn't support [Msw 1-2] ~ [Msw 1-8].

- When $a = 8$, memory switch 8 is set as follows:

Msw	Setting value (b)	Function
8-1 to 8-6	50	Reserved
8-7	48	Specify the slip paper jam sensor is enabled.
	49	Specify the slip paper jam sensor is disableed.
8-8	48	Roll paper cover open during printing: Offline
	49	Roll paper cover open during printing: recoverable error

GS (E pL pH fn a <Function 4>

[Name] Transmit the setting of the memory switch.

[Format] ASCII GS (E **pL** **pH** **fn** a
 Hex 1D 28 45 **02** **00** **04** a
 Decimal 29 40 69 **2** **0** **4** a

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 2$ (**pL** = 2, **pH** = 0)
fn = 4

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100: a = 1, 2, 8
TM-H6000III, TM-U675: a = 1, 8

[Description] Transmits the setting value of the memory switch specified by **a**.

[Notes]

- This function works both in user setting mode and during normal printer operation.
- The printer transmits the "header to NUL" data shown below:

Send data	Hex	Decimal	Data quantity
Header	37H	55	1 byte
Identifier	21H	33	1 byte
Setting value	30H or 31H	48 or 49	8 byte
NUL	00H	0	1 byte

- The memory switch setting values are transmitted in order from bit 8 to bit 1.
Example: The data transmitted when bit 8 and 7 are on and the other bits are off is the following 11-byte data: Hexadecimal = 37H, 21H, 31H, 31H, 30H, 30H, 30H, 30H, 30H, 00H / Decimal = 55, 33, 49, 49, 48, 48, 48, 48, 48, 0
- See description of <Function 3> of this command for detail of memory switch.
- Refer [Notes for the processing to transmit data] for description of the processing to transmit data.

GS (E pL pH fn [a1 n1L n1H]...[ak nkL nkH] <Function 5>

[Name] Set the customized setting values.

[Format] ASCII GS (E pL pH fn [a1 n1L n1H] ... [ak nkL nkH]
 Hex 1D 28 45 pL pH 05 [a1 n1L n1H] ... [ak nkL nkH]
 Decimal 29 40 69 pL pH 5 [a1 n1L n1H] ... [ak nkL nkH]

[Range] $4 \leq (pL + pH \times 256) \leq 65533$ ($0 \leq pL \leq 255$, $0 \leq pH \leq 255$: $(pL + pH \times 256) = 3 \times k + 1$)
 $fn = 5$, $0 \leq k \leq 21844$

TM-J9000/J9100:

a = 116

$0 \leq nL + nh \times 256 \leq 40$ ($0 \leq nL \leq 40$, $nh = 0$) [a = 116]

TM-J7500/7600, TM-J7000/7100:

a = 3

$(nL + nh \times 256) = 2, 4, 5, 6$ ($nL = 2, 4, 5, 6$, $nh = 0$)

TM-H6000III:

a = 1, 2, 5, 118

$1 \leq (nL + nh \times 256) \leq 4$ ($1 \leq nL \leq 4$, $nh = 0$) [a = 1]

$1 \leq (nL + nh \times 256) \leq 7$ ($1 \leq nL \leq 7$, $nh = 0$) [a = 2]

$0 \leq (nL + nh \times 256) \leq 4$ ($250 \leq nL \leq 255$, $nh = 255$) ($0 \leq nL \leq 6$, $nh = 0$) [a = 5]

$(nL + nh \times 256) = 70, 85, 100$ ($nL = 1$, $nh = 0, 1$) [a = 118]

TM-U675:

a = 1, 2

$1 \leq (nL + nh \times 256) \leq 3$ ($1 \leq nL \leq 3$, $nh = 0$) [a = 1 (multilingual model)]

$1 \leq (nL + nh \times 256) \leq 5$ ($1 \leq nL \leq 5$, $nh = 0$) [a = 2 (multilingual model)]

$1 \leq (nL + nh \times 256) \leq 4$ ($1 \leq nL \leq 4$, $nh = 0$) [a = 1 (except multilingual model)]

$1 \leq (nL + nh \times 256) \leq 7$ ($1 \leq nL \leq 7$, $nh = 0$) [a = 2 (except multilingual model)]

[Default]

TM-J9000/J9100: $nL + nh \times 256 = 18$ ($nL = 18$, $nh = 0$) [Default (a = 116)]

TM-J7500/7600, TM-J7000/7100:

$(nL + nh \times 256) = 5$ ($nL = 5$, $nh = 0$) [a = 3]

TM-H6000III:

$(nL + nH \times 256) = 1 (nL = 1, nH = 0) [a = 1]$
 $(nL + nH \times 256) = 7 (nL = 7, nH = 0) [a = 2]$
 $(nL + nH \times 256) = 100 (nL = 100, nH = 0) [a = 5]$
 $(nL + nH \times 256) = 85 (nL = 85, nH = 0) [a = 118]$

TM-U675:

$(nL + nH \times 256) = 1 (nL = 1, nH = 0) [a = 1]$
 $(nL + nH \times 256) = 5 (nL = 5, nH = 0) [a = 2 (\text{multilingual model})]$
 $(nL + nH \times 256) = 7 (nL = 7, nH = 0) [a = 2 (\text{except multilingual model})]$

[Description] Sets the customized value specified by **a** to the values specified by $(nL + nH \times 256)$.

a	Type of customized value
1	NV user memory capacity
2	NV graphics (NV bit image) memory capacity
3	Width of roll paper
5	Print density
116, 118	Depends on printer model (See [Model-dependent variations])

- The setting unit specified by $(nL + nH \times 256)$ differs, depending on the printer model.
- Negative value is expressed by twos complement (16 bits).

[Notes]

- This function works in user setting mode.
- Customized value is specified by unit of 3 bytes (**a**, **nL**, **nH**)
Ex: A transmitted data as specifying paper width;
ASCII: GS (E pL pH fn a nL nH
Hexadecimal: 1D 2B 45 04 00 05 03 06 00
Decimal: 29 40 69 4 0 5 3 6 0
- When you change the (**a** = 1) or (**a** = 2) setting, the printer clears all data in the NV user memory and NV graphics memory.

- About (**a** = 1) or (**a** = 2) setting, if you attempt to set a combination of settings that is not possible, the NV graphics memory setting is reduced to an allowable value.

[Model-dependent variations]

TM-9000/9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675

TM-J9000/J9100

This printer supports the model dependent customized value as shown in the following table.

a	Type of customized value
116	Threshold for double feed detection.

Setting value for threshold (**a** = 116) for double feed detection.

(nL + nH × 256)	
0	No double feed detection.
1	0.01mm
2	0.02mm
:	:
39	0.039mm
40	0.40mm

TM-J7500/7600, TM-J7000/7100

Paper width of roll paper settings (**a** = 3)

(nL + nH × 256)	Paper width
2	57.5 mm
4	69.5 mm
5	76 mm {3.0"}
6	82.5 mm {3.3"}

TM-H6000III

This printer supports the model dependent customized value as shown in the following table.

a	Type of customized value
118	Selects the black-color density in two-color printing

The customized value is shown in the following tables.

NV user memory capacity settings (a = 1)

(nL + nH × 256)	Memory capacity
1	1 KB
2	64 KB
3	128 KB
4	192 KB

- **NV graphics memory capacity settings (a = 2)**

NV graphics memory capacity settings	
(nL + nH × 256)	Memory capacity
1(*1)	None (0 bytes)
2	64 KB
3	128 KB
4	192 KB
5	256 KB
6	320 KB
7	384 KB

(*1): With this setting the printer cannot use the NV graphics function.

Memory combinations (a = 1 and a = 2) can be specified as follows:
<Except for TM-H6000III multilingual model>

NV user memory capacity	NV graphics memory capacity
1 KB	384 KB or less
64 KB	256 KB or less
128 KB	128 KB or less
192 KB	None (0 bytes)

Print density settings (a = 5)

(nL + nH × 256)	Print density
-6 (65530)	70 %
-5 (65531)	75 %
-4 (65532)	80 %
-3 (65533)	85 %
-2 (65534)	90 %
-1 (65535)	95
0	100 %
1	105 %
2	110 %
3	115 %
4	120 %
5	125 %
6	130 %
100	Depends on DIP switch [2-3, and 2-4]

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Selects the black color density in a two-color printing (a = 118)

(nL + nH × 256)	Coefficient of the black-color density
70	Light
85	Medium
100	Dark

This settings value affects printing in black for two-color printing.

* When the coefficient is high, black is darker.

TM-U675

The customized value is shown in the following tables.

NV user memory capacity settings (a = 1)	
(nL + nH × 256)	Memory capacity
1	1 KB
2	64 KB
3	128 KB
4(*)	192 KB

(*): It is not supported by multilingual model.

NV bit image memory capacity settings (a = 2)	
(nL + nH × 256)	Memory capacity
1(*1)	None (0 bytes)
2	64 KB
3	128 KB
4	192 KB

NV bit image memory capacity settings (a = 2)	
(nL + nH × 256)	Memory capacity
5	256 KB
6 (*2)	320 KB
7 (*2)	384 KB

(*1): With this setting, the printer cannot use NV bit iamge function.

(*2): It is not supported by multilingual model.

Memory combinations (a = 1 and a = 2) that can be specified:

<Multilingual model>

NV user memory capacity	NV bit image memory capacity
1 KB	256 KB or less
64 KB	128 KB or less
128 KB	None (0 bytes)

<Except multilingual model>

NV user memory capacity	NV bit image memory capacity
1 KB	384 KB or less
64 KB	256 KB or less
128 KB	128 KB or less
192 KB	None (0 bytes)

GS (E pL pH fn a <Function 6>

[Name] Transmit the customized setting values.

[Format] ASCII GS (E **pL** **pH** **fn** **a**
 Hex 1D 28 45 **02** **00** **06** **a**
 Decimal 29 40 69 **2** **0** **6** **a**

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 2$ (**pL** = 2, **pH** = 0)

fn = 6

TM-J9000/J9100: **a** = 116

TM-J7500/7600, TM-J7000/7100: **a** = 3

TM-H6000III: **a** = 1, 2, 5, 118

TM-U675: **a** = 1, 2

[Description] Transmits the customized value specified by **a**.

a	Type of customized value
1	NV user memory capacity
2	NV bit image (NV bit image) memory capacity
3	Width of roll paper
5	Print density
116, 118	Depends on printer model (See [Model-dependent variations])

- This function works both in user setting mode and during normal printer operation.
- The printer transmits the data below ("Header to NUL") with this function:

Transmit data	Hex	Decimal	Data quantity
Header	37H	55	1 byte
Identifier	27H	39	1 byte
Customized value number (*1)	30H – 39H	48 – 57	1 – 3 bytes

Transmit data	Hex	Decimal	Data quantity
Separation code	1FH	31	1 byte
Customized value (*2)	30H – 39H	48 – 57	1 – 5 bytes
NUL	00H	0	1 byte

(*1) The decimal value for the customized value number (**a** of this function) is converted to ASCII character data and sent starting from the high order end.

Example:

If the **a** is 118, the “118” (expressed hexadecimally as 31H, 31H, 38H. Decimally as 49, 49, 56) is converted to 3 bytes of data.

(*2) The customized value is determined by the value defined in Function 5. The decimal value for the customized value is converted to ASCII character data and sent starting from the high order end.

Example

- When customized value value is 120, it is “120” expressed with 3 bytes of data (hex numbers: 31H, 32H, 30H / decimal numbers: 49, 50, 48).

Even if the combination of settings requested in Function 5 (**a** = 1 or 2) is not possible, the printer transmits the customized value made with Function 5. Note that this will differ from the memory capacity used during actual operation. The capacity of memory In fact can be checked by the following commands.

- Capacity or unused capacity of NV user memory: **GS (C <Function 3>, <Function 4>**
 - Capacity or unused capacity of NV graphics domain: **GS (L <Function 48>, <Function 51>**
- See [Notes for the processing to transmit data] for description of the processing to transmit data.

[Model-dependent variations]

TM-9000/9100, TM-H6000III

TM-J9000/J9100

When a = 116, this printer transmits setting value of “Threshold for double feed detection.”

TM-H6000III

When a = 118, this printer transmits setting value of “Selects the black color density in a two-color printing.”

GS (E pL pH fn a d1 d2 <Function 7>

[Name] Copy the user-defined page.

[Format]

ASCII	GS	(E	pL	pH	fn	a	d1	d2
Hex	1D	28	45	04	00	07	a	d1	d2
Decimal	29	40	69	2	0	7	a	d1	d2

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 4$ ($\mathbf{pL} = 4$, $\mathbf{pH} = 0$)

fn = 7

d1 = 30, 31

d2 = 30, 31 (**d1** ≠ **d2**)

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100: a = 10, 12

[Description] Copies the data in the user-defined code page.

- Font number is specified by **a**.

a	User defined code page	Number of horizontal dots	Number of vertical dots
10	Font configuration 9 × 14 (page 255)	9	17
12	Font configuration 12 × 24 (page 255)	12	24

- Copy operation is specified by **d1, d2**.

d1	d2	Copy operation
31	30	Copy the font number data (a) from the archive area into the work area
30	31	Copy the data from the work area into the archive area specified by font number (a)

[Notes]

- This function works in user setting mode.
- User defined code pages are page 255 or page 254 in the character code pages of alphanumeric Katakana characters built in the printer. Character data defined in the user-defined code page can be printed by specifying the character code after selecting the page with **ESC t**.
- Work area means RAM area that is used to edit character data.

- Archive area means non-volatile memory area that is used to store page data of user-defined code pages.
- The data in the work area is deleted when this function ($d1 = 30$, $d2 = 31$) or <Function 2> of this command is executed.
- Character data can be specified as follows:

Procedure	Processing	Used function
1	Shifts to the user setting mode	Function 1
2	Copy data from archive area into work area	Function 7 (d1 = 31 , d2 = 30)
3	Change pattern of the character data	Function 8 or Function 9
4	Copy data from work area into archive area	Function 7 (1 = 30 , d2 = 31)
5	Exit user setting mode	Function 2

- Character data can be changed in the work area.
- Step 4 rewrites the data in the user-defined code page (archive area).
- Step 2 should be executed before defining character data, and step 4 should be executed after defining character data.
- Specify the same font number in processing Step 2 and Step 4.

[Model-dependent variations]

TM-9000/9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675

TM-J7500/7600

The following table shows the relationship of the Font No. (a) of this function with the code page of this printer.

Font No. (configuration) (a)	Code page
10 (9 × 17)	Page 255 of Font B
12 (12 × 24)	Page 255 of Font A

Extended Font A doesn't support user-defined code page.

TM-J9000/J9100, TM-J7000/7100

The following table shows the relationship of the Font No. (a) of this function with the code page of this printer.

Font No. (configuration) (a)	Code page
10 (9 × 17)	Page 255 of Font B
12 (12 × 24)	Page 255 of Font A

TM-H6000III

This printer does not support this function.

TM-U675

This printer does not support this function.

GS (E pL pH fn y c1 c2[x d1...d(y × x)] k <Function 8>

[Name] Define the data (column format) for the character code page.

[Format]

ASCII	GS	(E	pL	pH	fn	y	c1	c2	[x	d1...d(y × x)]k
Hex	1D	28	45	pL	pH	08	y	c1	c2	[x	d1...d(y × x)]k
Decimal	29	40	69	pL	pH	8	y	c1	c2	[x	d1...d(y × x)]k

[Range] $5 \leq (\text{pL} + \text{pH} \times 256) \leq 65535$ ($0 \leq \text{pL} \leq 255, 0 \leq \text{pH} \leq 255$)

fn = 8

$128 \leq \text{c1} \leq \text{c2} \leq 255$

$0 \leq \text{d} \leq 255$

k = **c2** - **c1** + 1

Font No. (configuration)	y	x
10 (9 × 17)	3	9
12 (12 × 24)	3	12

[Description] Defines the character pattern (column format) for the character code page in the work area.

- **y** specifies the number of bytes of the character pattern in the vertical direction.
- **c1** specifies the beginning character code for the definition, and **c2** specifies the final code.
- **x** specifies the number of dots of the character pattern in the horizontal direction from the left edge.
- **d** specifies the defined data (column format).
- **k** indicates the number of defined data. **k** is an explanation parameter; therefore, it does not need to be transmitted.

- [Notes]
- This function works in user setting mode.
 - Characters 80H to FFH (in Hexadecimal) / 128 to 255 (in Decimal) in ASCII code can be defined.
 - If **y**, **c1**, **c2**, or **x** process a value out of the definition range, processing of this function is canceled.
 - Changes the data of the user-defined code page that is copied into the work area by Function 7.
 - If data in the user-defined code pages is not copied into the work area, this function is not available. In this case, execute Function 7 first.

- Definition data (**d**) specifies a bit printed to 1 and not printed to 0. The data to define a character is (**y** × **x**) bytes.
- When defining the character of the Font No. 10 (configuration: 9 × 17), only the MSB can be used in the third byte for vertical direction. All bits can be used when defining characters of other fonts.
- Definition data (**d**) defines the **x** dots pattern from the left side of the characters. When **x** is smaller than the number of dots composing the built-in character, any remaining dots on the right side are blank.
- Deletes the character data defined in the same code.
- Function 9 can also define character data. It is recommended that either of the functions be used, even if both functions are supported.
 - Definition area and printing results are the same in both functions, although Function 8 processes the data in column format, and Function 9 processes the data in raster format.
- The relation between the definition data and printing result is as follows.

Example: Characters composed of 24 × 12 dots (**y** = 3, **x** = 12)

The second bytes in vertical position use only the MSB.

d1	d4	d7	~~~	d28	d31	d34	MSB LSB
d2	d5	d8	~~~	d29	d32	d35	MSB LSB
d3	d6	d9	~~~	d30	d33	d36	MSB LSB

[Model-dependent variations]

TM-H6000III, TM-U675

TM-H6000III

This printer does not support this function.

TM-U675

This printer does not support this function.

GS (E pL pH fn x c1 c2[y d1...d(x × y)] k <Function 9>

[Name] Define the data (raster format) for the character code page.

[Format]

ASCII	GS	(E	pL	pH	fn	x	c1	c2	[x	d1...d(x × y)]k
Hex	1D	28	45	pL	pH	08	x	c1	c2	[x	d1...d(x × y)]k
Decimal	29	40	69	pL	pH	8	x	c1	c2	[x	d1...d(x × y)]k

[Range]

$5 \leq (\mathbf{pL} + \mathbf{pH} \times 256) \leq 65535 \quad (0 \leq \mathbf{pL} \leq 255, 0 \leq \mathbf{pH} \leq 255)$

fn = 9

$128 \leq \mathbf{c1} \leq \mathbf{c2} \leq 255$

$0 \leq \mathbf{d} \leq 255$

k = c2 - c1 + 1

Font No. (configuration)	y	x
10 (9 × 17)	2	17
12 (12 × 24)	2	24

[Description] Defines the character pattern (raster format) for the character code page in the work area.

- **x** specifies the number of bytes of the character pattern in the horizontal direction.
- **c1** specifies the beginning character code for the definition, and **c2** specifies the final code.
- **y** specifies the number of dots of the character pattern in the vertical direction from the top edge.
- **d** specifies the defined data (raster format).
- **k** indicates the number of defined data. **k** is an explanation parameter; therefore, it does not need to be transmitted.

- [Notes]
- This function works in user setting mode.
 - Characters 80H to FFH (in Hexadecimal) / 128 to 255 (in Decimal) in ASCII code can be defined.
 - If **y**, **c1**, **c2**, or **x** process a value out of the definition range, processing of this function is canceled.
 - Changes the data of the user-defined code page that is copied into the work area by Function 7.
 - If the data in the user-defined code pages is not copied into the work area, this function is not available. In this case, execute Function 7 of this command first.

- Definition data (**d**) specifies a bit printed to 1 and not printed to 0. The data to define a character is (**x** × **y**) bytes.
- When defining the character of the Font No. 10 (configuration: 9 × 17), only the MSB can be used in the second byte for horizontal direction. When defining the character of the Font No. 12 (configuration: 12 × 24), only the upper four bits can be used in the second byte for horizontal direction. All bits can be used when defining characters of other fonts.
- Definition data (**d**) defines the **y** dots pattern from the top of the characters. When **y** is smaller than the number of dots composing the built-in character, any remaining dots below are blank.
- Deletes the character data defined in the same code.
- Function 8 can also define character data. It is recommended that either of the functions be used even if both functions are supported.
 - Definition area and printing results are the same in both functions, although Function 8 processes the data in column format, and Function 9 processes the data in raster format.
- The relation between the definition data and printing result is as follows.

Example: Characters composed of 9 × 7 dots (**x** = 24, **y** = 12)

The second bytes in the vertical position (**d2,d4,d6, ..., d44, d46,d48**) use the upper 4 bits.

d1	d2
d3	d4
:	:
d45	d46
d47	d48

MSB LSB MSB LSB

[Model-dependent variations]

TM-H6000III, TM-U675

TM-H6000III

This printer does not support this function.

TM-U675

This printer does not support this function.

GS (E pL pH fn c1 c2 <Function 10>

[Name] Delete the data for the character code page.

[Format]

ASCII	GS	(E	pL	pH	fn	c1	c2
Hex	1D	28	45	03	00	0A	c1	c2
Decimal	29	40	69	3	0	10	c1	c2

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 3$ (**pL** = 3, **pH** = 0)

fn = 10

y = 2

128 ≤ **c1** ≤ **c2** ≤ 255

[Description] Deletes the character pattern for the character code page in the work area.

- **c1** specifies the beginning character code for the deletion, and **c2** specifies the final code.

[Notes]

- This function works in user setting mode.
- Characters 80H to FFH (in Hexadecimal) / 128 to 255 (in Decimal) in ASCII code can be defined.
- After deleting the character pattern, the dots are blank.
- Deletes the data of the user-defined code page that is copied into the work area by Function 7.
- If data in the user-defined code pages is not copied into the work area, this function is not available. In this case, execute Function 7 first.

[Model-dependent variations]

TM-H6000III, TM-U675

TM-H6000III

This printer does not support this function.

TM-U675

This printer does not support this function.

GS (E pL pH fn a d1...dk <Function 11>

[Name] Set the configuration item for the serial interface.

[Format]

ASCII	GS	(E	pL	pH	fn	a	d1...dk
Hex	1D	28	45	pL	pH	OB	a	d1...dk
Decimal	29	40	69	pL	pH	11	a	d1...dk

[Range] $3 \leq (\text{pL} + \text{pH} \times 256) \leq 8$ ($3 \leq \text{pL} \leq 8$, $0 \leq \text{pH} \leq 255$)

fn = 11

$1 \leq \text{a} \leq 4$

$48 \leq \text{d} \leq 57$ [**a = 1**]

$48 \leq \text{d} \leq 50$ [**a = 2**]

d = 48, 49 [**a = 3**]

d = 55, 56 [**a = 4**]

$1 \leq \text{k} \leq 6$

[Default] **d1...dk** = "19200" [**a = 1**]

d = 48 [**a = 2**]

d = 48 [**a = 3**]

d = 56 [**a = 4**]

[Description] Sets the configuration item for the serial interface specified by **a** to the values specified by **d1...dk**.

a	Configuration item
1	Transmission speed
2	Parity
3	Flow control
4	Data length

- Transmission speed (**a = 1**) is specified by number. The baud rate that can be specified differs, depending on the printer model.

Example: When defining 19200 bps: 5 bytes as "19200" (Hexadecimal = 31H, 39H, 32H, 30H, 30H / Decimal = 49, 57, 50, 48, 48)

- Parity (**a** = 2) is specified by **d** as follows:

d	Function
48	Select no parity
49	Select odd parity
50	Select even parity

- Flow control (**a** = 3) is specified by **d** as follows:

d	Function
48	Select Flow control of DTR/DSR
49	Select Flow control of XON/XOFF

- Data length (**a** = 4) is specified by **d** as follows:

d	Function
55	Select 7 bits length
56	Select 8 bits length

[Notes]

- It is recommended that the DIP switch be used to change communication condition.
 - If the communication control between host and printer does not correspond, the printer cannot process data from the host normally, and the host cannot receive data from the printer normally.
- This function works in user setting mode.
- This function works with serial interface printers.
- The communication condition set by this function is enabled by executing Function 2 or restarting the printer. It is necessary to change the communication condition of the host to be the same as the printer to communicate with the printer.
- To enable the communication condition set by this function, select "by memory switch" in the DIP switch settings (Interface condition selection).

[Model-dependent variations]

TM-9000/9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675

TM-J9000/J9100

DIP switch for setting interface is Sw 2. When DIP switch is "UB series is enabled." this function is enabled. 7 baud rates are selectable.

[“2400”, “4800”, “9600”, “19200”, “38400”, “57600”, “115200”]

TM-J7500/7600, TM-J7000/7100

DIP switch for setting communication condition is Sw 2. When DIP switch is off, this function is enabled. 7 baud rates are selectable.

[“2400”, “4800”, “9600”, “19200”, “38400”, “57600”, “115200”]

TM-H6000III

This printer does not support this function.

TM-U675

This printer does not support this function.

GS (E pL pH fn a <Function 12>

[Name] Transmit the configuration item for the serial interface.

[Format]

ASCII	GS	(E	pL	pH	fn	a
Hex	1D	28	45	pL	pH	OB	a
Decimal	29	40	69	pL	pH	11	a

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 2$ ($\mathbf{pL} = 2$, $\mathbf{pH} = 0$)

fn = 12

$1 \leq \mathbf{a} \leq 4$

[Description] Transmits the configuration item for the serial interface specified by **a**.

a	Communication item
1	Transmission speed
2	Parity
3	Flow control
4	Data length

[Notes] ■ This function works in user setting mode and during normal operation.

■ This function transmits “Header to NUL” as follows:

Transmit data	Hex	Decimal	Data
Header	37H	55	1 byte
Identifier	33H	51	1 byte
Communication condition (*1)	30H–34H	48–52	1 byte
Separator	1FH	31	1 byte
Setting value (*2)	30H–39H	48–57	1–5 byte
NUL	00H	0	1 byte

(*1) Communication condition is expressed by parameter (**a**) of this function as a decimal, and is sent as a value converted to character data.

(*2) Setting value is set by Function 11. It might differ from the current communication condition before executing Function 2 or depending on the setting of the DIP switch.

- This function is used to confirm whether Function 11 ends normally before executing Function 2.
- See previous [Notes for transmission process] for process transmission data group.

[Model-dependent variations]

TM-H6000III, TM-U675

TM-H6000III

This printer does not support this function.

TM-U675

This printer does not support this function.

[Name] Customize printer control value(s)

[Printers not featuring this command] **TM-H5000II, TM-U325D**

[Description] Customizes the printer control value(s).

- Function code (**fn**) specifies the function.

fn	Function No.	Function name
1, 49	Function 1	Save the setting values from the work area into the storage area.
2, 50	Function 2	Load the setting values stored in the storage area to the work area.
3, 51	Function 3	Select the setting values loaded to the work area after the initialization process.

- **PL, PH** specify (**PL** + **PH** × 256) as the number of bytes after **PH** (**fn** and **m**).
- Description of the **m** is described in each function.

- [Notes]
- The value of parameter **fn** determines the function number for this command. Command operation differs, depending on the function number.
 - Setting value means the values stored in the work area and they are set by commands such as line spacing, print area, or ASB function specification commands, are defined data such as user-defined data or 2-byte characters, and are the setting status such as Kanji mode. The values are different depending on the printer models. See the Model-dependent information.
 - Work area means the area that stores the values and is cleared when the power is turned off. The printer's actions are based on the values in the work area.
 - Archive area means non-volatile memory area that is used to accomplish the functions of this command. The values stored in the archive area are not cleared when power is turned off. The values in the archive area do not affect the printer operation.
 - A default value for each command is stored in the archive area when the printer is shipped.
 - The values stored in the archive area are loaded to the work area when executing Function 2 or initializing with an autoload specified by Function 3 and affect the printer operation afterward.

- The combination of Functions 2 and 3 can change the default value of each command.
- Data is written to the non-volatile memory by Functions 1 and 3. Note the following when using those functions:
 - Do not turn off the power or reset the printer from the interface when the relevant functions are being executed.
 - The printer might be BUSY. In this case, be sure not to transmit a command from the host because the printer will not receive the data.
 - Excessive use of this function may destroy the non-volatile memory. As a guideline, do not use any combination of the following commands more than 10 times per day for writing data to the non-volatile memory: **GS (C** (part of functions), **GS (E** (part of functions), **GS (L** (part of functions), **GS (M** (part of functions), and **GS g 0, FS g 1, FS q**.
- Note the rules below for the operating NV memory (store data / cancel data):
 - The paper feed button does not operate.
 - Real-time commands are not processed.
 - Even if "ASB is enabled" is specified, the printer does not send ASB status.

[Model-dependent variations]

TM-9000/9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675**Program Example 1**

```

PRINT #1, CHR$(&H1D); "L";CHR$(24);CHR$(0);← Set left margin
PRINT #1, CHR$(&H1D); "W";CHR$(104);CHR$(1);← Print area width (30 columns)
PRINT #1, CHR$(&H1D); "(M";CHR$(2);CHR$(0);CHR$(1);CHR$(1);← <Function 1>
PRINT #1, "AAAAAAAAAAAAAAA"; CHR$(&HA);← Execute 20-column printing
PRINT #1, CHR$(&H1D); "I";CHR$(0);CHR$(0);← Set left margin
PRINT #1, CHR$(&H1D); "W";CHR$(120);CHR$(0);← Print area width (10 columns)
PRINT #1, "BBBBBBBBBBBBBBBBBB"; CHR$(&HA);← Execute 20-column printing
PRINT #1, CHR$(&H1D); "(M";CHR$(2);CHR$(0);CHR$(2);CHR$(1);← <Function 2>
PRINT #1, "CCCCCCCCCCCCCCCC"; CHR$(&HC); ← Execute 20-column printing

```

Print Sample 1

```

AAAAAAAAAAAAAAA
BBBBBBBBBBB
BBBBBBBBBBB
CCCCCCCCCCCCCCCC

```

Program Example 2

```

PRINT #1, CHR$(&H1D); "L";CHR$(24);CHR$(0);← Set left margin
PRINT #1, CHR$(&H1D); "W";CHR$(104);CHR$(1);← Print area width (30 columns)
PRINT #1, CHR$(&H1D); "(M";CHR$(2);CHR$(0);CHR$(1);CHR$(1);← <Function 1>
PRINT #1, CHR$(&H1D); "(M";CHR$(2);CHR$(0);CHR$(3);CHR$(1);← <Function 3>
PRINT #1, CHR$(&H1D); "L";CHR$(0);CHR$(0);← Set left margin
PRINT #1, CHR$(&H1D); "W";CHR$(120);CHR$(0);← Print area width (10 columns)
PRINT #1, "AAAAAAAAAAAAAAA"; CHR$(&HA);← Execute 20-column printing
PRINT #1, CHR$(&H1B); "@";← Initialize printer
PRINT #1, "BBBBBBBBBBBBBBBBBBBB"; CHR$(&HA);← Execute 20-column printing

```

Print Sample 2

AAAAAAAAAA
AAAAAAAAAA
BBBBBBBBBBBBBBBBBBBBBBB

TM-J9000/J9100**GS (M affects the following commands:**

Setting value	Command
Line spacing	ESC 2, ESC 3
Print character	ESC SP, ESC !, ESC -, ESC E, ESC G, ESC M, ESC R, ESC t, ESC {, GS !, GS N, GS B
Panel switch	ESC c 5
Paper sensor	ESC c 3, ESC c 4
Print position	ESC D, ESC T, ESC a, GS L, GS W
Status	FS (e, GS a, GS j
Bar code	GS H, GS f, GS h, GS w
Mechanism control	ESC U
Option	FS (f
Miscellaneous function	GS (D, GS (H <Function 49>, GS (K, GS P

GS (M affects the following commands:

Setting value	Command
Line spacing	ESC 2, ESC 3
Print character	ESC SP, ESC !, ESC -, ESC E, ESC G, ESC M, ESC R, ESC V, ESC t, ESC {, GS !
Print paper	ESC f
Panel switch	ESC c 5
Paper sensor	ESC c 3, ESC c 4
Print position	ESC D, ESC T, ESC a, GS L, GS W
Status	FS (e, GS (B, GS a
Macro function	GS :
Mechanism control	ESC F, ESC U
Kanji control	FS !, FS &, FS -, FS ., FS 2, FS C, FS S, FS W
Option	FS (f
Miscellaneous function	GS (D, GS E, GS P

TM-H6000III

GS (M affects the following commands:

Setting value	Command
Line spacing	ESC 2, ESC 3
Print character	ESC SP, ESC !, ESC -, ESC E, ESC G, ESC M, ESC R, ESC V, ESC t, ESC {, GS !, GS (N <function 48>, GS B, GS b
Print paper	ESC f
Panel switch	ESC c 5
Paper sensor	ESC c 3, ESC c 4
Print position	ESC D, ESC T, ESC a, GS L, GS W
Status	FS (e, GS (B, GS a
Bar code	GS H, GS f, GS h, GS w
Two-dimension code	GS (k <Function 65 ~ 70>
Macro function	GS :
Mechanism control	ESC F, ESC U
Kanji control	FS !, FS &, FS -, FS ., FS 2, FS S, FS W
Option	FS (f, FS (g
Miscellaneous function	GS (D, GS (H <Function 64> GS E, GS P

GS (M affects the following commands:

Setting value	Command
Line spacing	ESC 2, ESC 3
Print character	ESC SP, ESC !, ESC -, ESC E, ESC G, ESC M, ESC R, ESC t, ESC {, GS !, GS N, GS B
Print paper	ESC f
Panel switch	ESC c 5
Paper sensor	ESC c 3, ESC c 4
Print position	ESC D, ESC T, ESC a, GS L, GS W
Status	FS (e, GS (B, GS a, GS j
Bar code	GS H, GS f, GS h, GS w
Two-dimension code	GS (k <Function 65 ~ 70>
Mechanism control	ESC F, ESC U
Option	FS (f
Miscellaneous function	GS (D, GS (H <Function 49>, GS (K, GS P

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TM-J7500/7600

GS (M affects the following commands:

Setting value	Command
Line spacing	ESC 2, ESC 3
Print character	ESC SP, ESC !, ESC -, ESC E, ESC G, ESC M, ESC R, ESC t, ESC {, GS !, GS N, GS B
Print paper	ESC f
Panel switch	ESC c 5
Paper sensor	ESC c 3, ESC c 4
Print position	ESC D, ESC T, ESC a, GS L, GS W
Status	GS (B, GS a, GS j
Bar code	GS H, GS f, GS h, GS w
Two-dimension code	GS (k <Function 65 ~ 70>
Mechanism control	ESC F, ESC U
Miscellaneous function	GS (D, GS (H <Function 49>, GS (K, GS P

GS (M pL pH fn m <Function 1>

[Name] Save the setting values from the work area into the storage area.

[Format]

ASCII	GS	(M	pL	pH	fn	m
Hex	1D	28	4D	02	00	fn	m
Decimal	29	40	77	2	0	fn	m

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 2$, (**pL** = 2, **pH** = 0)

fn = 1, 49,

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675: m = 1, 49

[Description] Saves the setting values of commands listed in the tables on the previous pages and stored in the work area in the storage area specified by **m**.

[Notes]

- The values that have been already stored in the archive area specified by **m** are cleared by this command.
- The values in the work area are not changed.
- The values saved in the archive area are loaded to the work area by the following.
 - Executing Function 2 with the archive area specified.
 - Initializing when an autoload process has been specified by Function 3.
- The values affected by this command are different depending on the printer models. See the Model-dependent variations in the first part of this command description for details.
- When multiple applications use the archive area at the same time, if this command is executed, the values saved by other applications are deleted. Be sure to take this into account when using this command.

[Model-dependent variations] None

GS (M pL pH fn m <Function 2>

[Name] Load the setting values stored in the atorage area to the work area.

[Format]

ASCII	GS	(M	pL	pH	fn	m
Hex	1D	28	4D	02	00	fn	m
Decimal	29	40	77	2	0	fn	m

[Range] $(\mathbf{pL} + \mathbf{pH} \times 256) = 2$, ($\mathbf{pL} = 2$, $\mathbf{pH} = 0$), $\mathbf{fn} = 2, 50$

TM-J9000/J9100, TM-J7500/7600, TM-J7000/7100, TM-H6000III, TM-U675: $\mathbf{m} = 0, 1, 48, 49$

[Description] Loads the command setting values stored in the storage area specified by **m** to the work area.

- When $\mathbf{m} = 0, 48$, the default values described in this guide are applied.
- When $\mathbf{m} \neq 0, 48$, the setting values are stored in the storage area specified by **m**.

[Notes]

- This function is effective at the beginning of a line in standard mode.
- This function cannot be included in a macro. Do not use this function when defining a macro.
- The value in the work area is set to the default value described in this document by the following.
 - Executing this function by specifying $\mathbf{m} = 0, 48$.
 - Executing this function with the condition that the archive area that has not executed function 1 is specified.
 - Initializing by Function 3 when an autoload process has been canceled.
- The values in the work area that are not affected by this command are not changed.
- The values in the archive area are not changed.
- The values affected by this command are different depending on the printer models. See the Model-dependent variations in the Function 1 part of this command description for details.

GS (M pL pH fn m <Function 3>

[Name]	Select the setting values loaded to the work area after the initialization process.
[Format]	ASCII GS (M pL pH fn m Hex 1D 28 4D 02 00 fn m Decimal 29 40 77 2 0 fn m
[Range]	$(\text{pL} + \text{pH} \times 256) = 2$, (pL = 2, pH = 0), fn = 3, 51 TM-J9000/J9100 , TM-J7500/7600 , TM-J7000/7100 , TM-H6000III , TM-U675 : m = 0, 1, 48, 49
[Default]	m = 0
[Description]	Selects the command setting values loaded to the work area after the printer performs the initialization process. <ul style="list-style-type: none"> • When m = 0, 48, the default values described in this guide are applied. • When m ≠ 0, 48, the setting values are stored in the storage area specified by m.
[Notes]	<ul style="list-style-type: none"> ■ This function does not change the values in the work area and archive area. ■ The setting of this function affects the following initializations. <ul style="list-style-type: none"> • Turning on the power. • Resetting the hardware by using a reset terminal. • Executing ESC @. • Executing a software reset. ■ In initializing process when the autoload process is canceled (m = 0, 48), the default value described in this guide is loaded in the work area. ■ The specification of this function is maintained after turning off the power. ■ In autoload processing, the values of the commands that are in the work area and are not affected by this function and the values in the archive area are not changed. ■ The values affected by autoload processing of this function are different depending on the printer models. See the Model-dependent variations of this command description for details.
[Model-dependent variations]	None

USING BIT VALUE TABLES

For each command that has a complex method of determining the variable **n**, there is a table showing how to calculate the variable in three numbering systems: binary, hexadecimal, and decimal.

When you look at the table, first find the value of each component of the variable. Then add the values of the components together to determine the value of the variable **n**.

For example, here is how you would use the table below, which selects the print mode, to combine double-height, double-width, and underline. In the table, you see that bit 4 on (or hex 10 or decimal 16) turns on double-height, bit 5 on (or hex 20 or decimal 32) turns on double-width, and bit 7 on (or hex 80 or decimal 128) turns on underline mode.

To combine all three, turn on bits 4, 5, and 7, which is 10110000 in binary. Or you can add the hex values 10, 20, and 80 for the hex sum of B0, or you can add the decimal values 16, 32, and 128 for the decimal value of 176.

Therefore, you send the following to turn on double-height, double-width, and underline, depending on the numbering system used:

ASCII	ESC	!	n
Hex	1B	21	B0
Decimal	28	33	176

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Character Font A selected.
	On	01	1	Character Font B selected.
1, 2	—	—	—	Undefined.
3	Off	00	0	Emphasized mode not selected.
	On	08	8	Emphasized mode selected.
4	Off	00	0	Double-height mode not selected.
	On	10	16	Double-height mode selected.
5	Off	00	0	Double-width mode not selected.
	On	20	32	Double-width mode selected.
6	—	—	—	Undefined.
7	Off	00	0	Cancels underline mode.
	On	80	128	Selects underline mode.

Note that although the program examples throughout this chapter use decimal numbers, binary, decimal, and hexadecimal numbers all have the same printing results.

CHARACTER CODE TABLES

SP in a table represents space. See [Using the character code tables](#) for information on how to read these tables.

Page 0 (PC437: U.S.A., Standard Europe) (International character set: U.S.A.)

	HEX	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
HEX	BIN	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	NUL	DLE	SP	0	@	P	'	p	Ç	É	á	„	„	„	„	„
1	0001		XON	!	1	A	Q	a	q	ü	æ	í	„	„	„	„	„
2	0010			"	2	B	R	b	r	é	Æ	ó	„	„	„	„	„
3	0011		XOFF	#	3	C	S	c	s	â	ô	ú			π	≤	≥
4	0100	EOT	DC4	\$	4	D	T	d	t	ä	ö	ñ	-	-	Σ	Γ	244
5	0101	ENQ		%	5	E	U	e	u	à	ò	Ñ	+	+	σ	J	245
6	0110		&	6	F	V	f	v	å	ú	a	„	„	μ	÷		246
7	0111		,	7	G	W	g	w	ç	ù	o	„	„	τ	≈		247
8	1000	BS	CAN	(8	H	X	h	x	ë	ÿ	ż	„	+	Φ	°	248
9	1001	HT)	9	I	Y	i	y	ë	Ö	„	„	„	θ	·	249
A	1010	LF	*	:	J	Z	j	z	è	Ü	„	„	„	„	Ω	.	250
B	1011	ESC	+	;	K	[k	{	í	c	½	„	„	■	δ	√	251
C	1100	FF	FS	,	L	\	l	i	î	£	¼	„	„	„	∞	n	252
D	1101	CR	GS	=	M]	m	}	ì	¥	í	„	„	„	ø	2	253
E	1110		.	>	N	~	n	~	Ä	Pt	„	„	„	„	„	■	254
F	1111		/	?	O	-	o	SP	Å	f	»	„	„	„	„	SP	255

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	—	—	—	—	タ	ミ	=	×
		[128]	[144]	[160]	[176]	[192]	[208]	[224]	[240]
1	0001	—	—	。	ア	チ	ム	ト	円
		[129]	[145]	[161]	[177]	[193]	[209]	[225]	[241]
2	0010	—	—	「	イ	ツ	メ	丰	年
		[130]	[146]	[162]	[178]	[194]	[210]	[226]	[242]
3	0011	■	ト	」	ウ	テ	モ	ヨ	月
		[131]	[147]	[163]	[179]	[195]	[211]	[227]	[243]
4	0100	■	—	、	エ	ト	ヤ	▲	日
		[132]	[148]	[164]	[180]	[196]	[212]	[228]	[244]
5	0101	■	—	・	オ	ナ	ユ	◀	時
		[133]	[149]	[165]	[181]	[197]	[213]	[229]	[245]
6	0110	■		ヲ	カ	ニ	ヨ	▼	分
		[134]	[150]	[166]	[182]	[198]	[214]	[230]	[246]
7	0111	■		ア	キ	ヌ	ラ	▶	秒
		[135]	[151]	[167]	[183]	[199]	[215]	[231]	[247]
8	1000		「	イ	ク	ネ	リ	♠	〒
		[136]	[152]	[168]	[184]	[200]	[216]	[232]	[248]
9	1001		」	ウ	ケ	ノ	ル	♥	市
		[137]	[153]	[169]	[185]	[201]	[217]	[233]	[249]
A	1010		』	エ	コ	ハ	レ	♦	区
		[138]	[154]	[170]	[186]	[202]	[218]	[234]	[250]
B	1011		』	オ	サ	ヒ	ロ	♣	町
		[139]	[155]	[171]	[187]	[203]	[219]	[235]	[251]
C	1100		、	ヤ	シ	フ	ワ	●	村
		[140]	[156]	[172]	[188]	[204]	[220]	[236]	[252]
D	1101		、	ユ	ス	ヘ	ン	○	人
		[141]	[157]	[173]	[189]	[205]	[221]	[237]	[253]
E	1110		、	ヨ	セ	ホ	、	/	瑩
		[142]	[158]	[174]	[190]	[206]	[222]	[238]	[254]
F	1111	+	、	ツ	ソ	マ	。	\	SP
		[143]	[159]	[175]	[191]	[207]	[223]	[239]	[255]

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	ç	é	á	â	ł	ð	ó	—
		[128]	[144]	[160]	[176]	[192]	[208]	[224]	[240]
1	0001	ü	æ	í	í	ł	đ	þ	±
		[129]	[145]	[161]	[177]	[193]	[209]	[225]	[241]
2	0010	é	æ	ó	ó	ł	ê	ô	=
		[130]	[146]	[162]	[178]	[194]	[210]	[226]	[242]
3	0011	â	ô	ú	ú	ł	ë	ò	$\frac{3}{4}$
		[131]	[147]	[163]	[179]	[195]	[211]	[227]	[243]
4	0100	ä	ö	ñ	ñ	—	è	ð	¶
		[132]	[148]	[164]	[180]	[196]	[212]	[228]	[244]
5	0101	à	ò	ñ	á	+	í	õ	§
		[133]	[149]	[165]	[181]	[197]	[213]	[229]	[245]
6	0110	å	û	a	â	ã	í	μ	÷
		[134]	[150]	[166]	[182]	[198]	[214]	[230]	[246]
7	0111	ç	ù	o	à	ã	î	p	,
		[135]	[151]	[167]	[183]	[199]	[215]	[231]	[247]
8	1000	ê	ÿ	¿	©	ł	ï	p	°
		[136]	[152]	[168]	[184]	[200]	[216]	[232]	[248]
9	1001	ë	ö	®	®	—	ú	ú	..
		[137]	[153]	[169]	[185]	[201]	[217]	[233]	[249]
A	1010	è	ü	—		—	û	û	.
		[138]	[154]	[170]	[186]	[202]	[218]	[234]	[250]
B	1011	ï	ø	$\frac{1}{2}$	—	—	û	û	1
		[139]	[155]	[171]	[187]	[203]	[219]	[235]	[251]
C	1100	î	ƒ	$\frac{1}{4}$	—	—	ý	ý	3
		[140]	[156]	[172]	[188]	[204]	[220]	[236]	[252]
D	1101	ì	ø	í	¢	—	ÿ	ÿ	2
		[141]	[157]	[173]	[189]	[205]	[221]	[237]	[253]
E	1110	Ä	×	«	¥	+	—	—	■
		[142]	[158]	[174]	[190]	[206]	[222]	[238]	[254]
F	1111	Å	f	»	—	—	—	—	sp
		[143]	[159]	[175]	[191]	[207]	[223]	[239]	[255]

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	ç	é	á	í	ó	ú	à	≡
1	0001	ü	À	í	í	ó	ú	ß	±
2	0010	é	È	ó	ó	ó	ú	Γ	≥
3	0011	â	ô	ú	ú	ú	à	π	≤
4	0100	ã	õ	ñ	ñ	ñ	à	Σ	ƒ
5	0101	à	ò	Ñ	Ñ	Ñ	à	σ	J
6	0110	Á	Ú	a	a	a	á	μ	÷
7	0111	ç	ù	o	o	o	ó	τ	≈
8	1000	ê	ì	¿	¿	¿	í	Φ	°
9	1001	Ê	Ò	ò	ò	ò	ò	θ	•
A	1010	è	Ü	—	—	—	—	Ω	.
B	1011	Í	¢	½	½	½	½	δ	√
C	1100	Ô	£	¼	¼	¼	¼	∞	n
D	1101	ì	Ù	í	í	í	í	ø	²
E	1110	Ã	Pt	«	«	«	«	€	■
F	1111	Â	Ó	»	»	»	»	∩	SP

	HEX	8	9	A	B	C	D	E	F	
	HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	ç	[128]	é	[144]	[160]	[176]	[192]	[208]	[224]
1	0001	ü	[129]	è	[145]	[161]	[177]	[193]	[209]	[225]
2	0010	é	[130]	ê	[146]	ó	[162]	[178]	[194]	[210]
3	0011	â	[131]	ô	[147]	ú	[163]	[179]	[195]	[211]
4	0100	À	[132]	Ë	[148]	[164]	[180]	[196]	[212]	[228]
5	0101	à	[133]	ï	[149]	[165]	[181]	[197]	[213]	[229]
6	0110	¶	[134]	û	[150]	[166]	[182]	[198]	[214]	[230]
7	0111	ç	[135]	ù	[151]	[167]	[183]	[199]	[215]	[231]
8	1000	ê	[136]	¤	[152]	î	[168]	[184]	[200]	[216]
9	1001	ë	[137]	ô	[153]	[169]	[185]	[201]	[217]	[233]
A	1010	è	[138]	Ü	[154]	[170]	[186]	[202]	[218]	[234]
B	1011	ï	[139]	¢	[155]	$\frac{1}{2}$	[171]	[187]	[203]	[219]
C	1100	î	[140]	£	[156]	$\frac{1}{4}$	[172]	[188]	[204]	[220]
D	1101	=	[141]	Ù	[157]	$\frac{3}{4}$	[173]	[189]	[205]	[221]
E	1110	À	[142]	Û	[158]	«	[174]	[190]	[206]	[222]
F	1111	§	[143]	f	[159]	»	[175]	[191]	[207]	[223]
									∞	n
									ø	2
									€	■
									∩	SP
										255

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	ç	é	á	ø	«	»	a	≡
		[128]	[144]	[160]	[176]	[192]	[208]	[224]	[240]
1	0001	ü	æ	í	œ	—	—	ß	±
		[129]	[145]	[161]	[177]	[193]	[209]	[225]	[241]
2	0010	é	æ	ó	ø	—	—	Γ	≥
		[130]	[146]	[162]	[178]	[194]	[210]	[226]	[242]
3	0011	â	ô	ú	—	—	—	π	≤
		[131]	[147]	[163]	[179]	[195]	[211]	[227]	[243]
4	0100	ä	ö	ñ	—	—	—	Σ	ƒ
		[132]	[148]	[164]	[180]	[196]	[212]	[228]	[244]
5	0101	à	ò	ñ	—	+	—	σ	ј
		[133]	[149]	[165]	[181]	[197]	[213]	[229]	[245]
6	0110	å	û	a	—	—	—	μ	÷
		[134]	[150]	[166]	[182]	[198]	[214]	[230]	[246]
7	0111	ç	ù	o	—	—	—	τ	≈
		[135]	[151]	[167]	[183]	[199]	[215]	[231]	[247]
8	1000	ê	ÿ	ö	—	—	—	Φ	°
		[136]	[152]	[168]	[184]	[200]	[216]	[232]	[248]
9	1001	ë	ö	—	—	—	—	θ	•
		[137]	[153]	[169]	[185]	[201]	[217]	[233]	[249]
A	1010	è	Ü	—	—	—	—	Ω	·
		[138]	[154]	[170]	[186]	[202]	[218]	[234]	[250]
B	1011	ï	ø	½	—	—	■	δ	√
		[139]	[155]	[171]	[187]	[203]	[219]	[235]	[251]
C	1100	î	£	¼	—	—	■	∞	n
		[140]	[156]	[172]	[188]	[204]	[220]	[236]	[252]
D	1101	ì	Ø	—	—	—	■	ø	²
		[141]	[157]	[173]	[189]	[205]	[221]	[237]	[253]
E	1110	Ä	Pt	«	—	—	■	€	■
		[142]	[158]	[174]	[190]	[206]	[222]	[238]	[254]
F	1111	Å	f	¤	—	—	■	∩	SP
		[143]	[159]	[175]	[191]	[207]	[223]	[239]	[255]

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	礎 [128]	本 [144]	SP [160]	一 [176]	た [192]	み [208]	遇 [224]	換 [240]
1	0001	。 [129]	あ [145]	。 [161]	あ [177]	ち [193]	む [209]	225	241
2	0010	除 [130]	荷 [146]	「 [162]	い [178]	つ [194]	め [210]	足 [226]	攻 [242]
3	0011	」 [131]	う [147]	」 [163]	う [179]	て [195]	も [211]	227	243
4	0100	定 [132]	特 [148]	、 [164]	え [180]	と [196]	や [212]	利 [228]	産 [244]
5	0101	。	お [149]	。	お [165]	な [197]	ゆ [213]	229	245
6	0110	信 [134]	越 [150]	を [166]	か [182]	に [198]	よ [214]	用 [230]	打 [246]
7	0111	。	あ [151]	あ [167]	き [183]	ぬ [199]	ら [215]	231	247
8	1000	緑 [136]	他 [152]	い [168]	く [184]	ね [200]	り [216]	移 [232]	納 [248]
9	1001	。	う [153]	う [169]	け [185]	の [201]	る [217]	233	249
A	1010	科 [138]	社 [154]	え [170]	こ [186]	は [202]	れ [218]	下 [234]	変 [250]
B	1011	。	お [155]	お [171]	さ [187]	ひ [203]	ろ [219]	235	251
C	1100	目 [140]	瓶 [156]	や [172]	し [188]	ふ [204]	わ [220]	加 [236]	眺 [252]
D	1101	。	ゆ [157]	ゆ [173]	す [189]	へ [205]	ん [221]	237	253
E	1110	々 [142]	奉 [158]	よ [174]	せ [190]	ほ [206]	、 [222]	解 [238]	件 [254]
F	1111	。	つ [159]	つ [175]	そ [191]	ま [207]	。	239	255

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	日 [128]	会 [144]	水 [160]	受 [176]	点 [192]	課 [208]	買 [224]	非 [240]
1	0001	[129]	[145]	[161]	[177]	[193]	[209]	[225]	[241]
2	0010	扱 [130]	客 [146]	木 [162]	前 [178]	中 [194]	証 [210]	号 [226]	承 [242]
3	0011	[131]	[147]	[163]	[179]	[195]	[211]	[227]	[243]
4	0100	外 [132]	券 [148]	土 [164]	残 [180]	内 [196]	組 [212]	有 [228]	送 [244]
5	0101	[133]	[149]	[165]	[181]	[197]	[213]	[229]	[245]
6	0110	額 [134]	回 [150]	振 [166]	止 [182]	部 [198]	店 [214]	期 [230]	一 [246]
7	0111	[135]	[151]	[167]	[183]	[199]	[215]	[231]	[247]
8	1000	割 [136]	在 [152]	数 [168]	純 [184]	別 [200]	認 [216]	限 [232]	棄 [248]
9	1001	[137]	[153]	[169]	[185]	[201]	[217]	[233]	[249]
A	1010	検 [138]	算 [154]	精 [170]	替 [186]	戻 [202]	廃 [218]	頭 [234]	累 [250]
B	1011	[139]	[155]	[171]	[187]	[203]	[219]	[235]	[251]
C	1100	高 [140]	上 [156]	銭 [172]	代 [188]	門 [204]	両 [220]	差 [236]	違 [252]
D	1101	[141]	[157]	[173]	[189]	[205]	[221]	[237]	[253]
E	1110	価 [142]	火 [158]	総 [174]	値 [190]	料 [206]	効 [222]	括 [238]	番 [254]
F	1111	[143]	[159]	[175]	[191]	[207]	[223]	[239]	[255]

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	訂 [128]	計 [144]	払 [160]	壳 [176]	名 [192]	次 [208]	万 [224]	室 [240]
1	0001	[129]	[145]	[161]	[177]	[193]	[209]	[225]	[241]
2	0010	正 [130]	小 [146]	掛 [162]	取 [178]	個 [194]	不 [210]	責 [226]	商 [242]
3	0011	[131]	[147]	[163]	[179]	[195]	[211]	[227]	[243]
4	0100	品 [132]	金 [148]	入 [164]	係 [180]	領 [196]	枚 [212]	終 [228]	人 [244]
5	0101	[133]	[149]	[165]	[181]	[197]	[213]	[229]	[245]
6	0110	円 [134]	現 [150]	貸 [166]	未 [182]	収 [198]	誤 [214]	了 [230]	大 [246]
7	0111	[135]	[151]	[167]	[183]	[199]	[215]	[231]	[247]
8	1000	種 [136]	釣 [152]	出 [168]	消 [184]	予 [200]	休 [216]	免 [232]	安 [248]
9	1001	[137]	[153]	[169]	[185]	[201]	[217]	[233]	[249]
A	1010	担 [138]	預 [154]	支 [170]	費 [186]	約 [202]	契 [218]	伝 [234]	仕 [250]
B	1011	[139]	[155]	[171]	[187]	[203]	[219]	[235]	[251]
C	1100	当 [140]	税 [156]	单 [172]	年 [188]	込 [204]	開 [220]	自 [236]	控 [252]
D	1101	[141]	[157]	[173]	[189]	[205]	[221]	[237]	[253]
E	1110	合 [142]	引 [158]	返 [174]	月 [190]	明 [206]	閉 [222]	設 [238]	基 [254]
F	1111	[143]	[159]	[175]	[191]	[207]	[223]	[239]	[255]

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	€ 128	SP 144	SP 160	° 176	À 192	Ð 208	à 224	ð 240
1	0001	SP 129	' 145	í 161	± 177	Á 193	Ñ 209	á 225	ñ 241
2	0010	,	,	¢ 146	² 162	Â 194	Ò 210	â 226	ò 242
3	0011	f 131	" 147	£ 163	³ 179	Ã 195	Ó 211	ã 227	ó 243
4	0100	” 132	” 148	¤ 164	’ 180	Ä 196	Ô 212	ää 228	ô 244
5	0101	… 133	.	¥ 149	µ 165	Å 197	Õ 213	å 229	õ 245
6	0110	† 134	- 150	 166	¶ 182	Æ 198	Ö 214	æ 230	ö 246
7	0111	‡ 135	— 151	§ 167	· 183	Ç 199	× 215	ç 231	+
8	1000	^ 136	~ 152	.. 168	> 184	È 200	Ø 216	è 232	ø 248
9	1001	%o 137	™ 153	© 169	¹ 185	É 201	Ù 217	é 233	ù 249
A	1010	Š 138	š 154	¤ 170	¤ 186	Ê 202	Ú 218	ê 234	ú 250
B	1011	< 139	> 155	« 171	» 187	Ë 203	Û 219	ë 235	û 251
C	1100	Œ 140	œ 156	¬ 172	¹/₄ 188	Ì 204	Ü 220	ì 236	ü 252
D	1101	SP 141	SP 157	- 173	¹/₂ 189	Í 205	Ý 221	í 237	ý 253
E	1110	Ž 142	ž 158	® 174	³/₄ 190	Î 206	Þ 222	î 238	þ 254
F	1111	SP 143	ÿ 159	— 175	¿ 191	Ĩ 207	Þ 223	ï 239	ÿ 255

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	А 128	Р 144	а 160	□ 176	□ 192	□ 208	р 224	Ё 240
1	0001	Б 129	С 145	б 161	█ 177	□ 193	□ 209	с 225	ё 241
2	0010	В 130	Т 146	в 162	█ 178	□ 194	□ 210	т 226	Є 242
3	0011	Г 131	Ү 147	г 163	□ 179	□ 195	□ 211	у 227	€ 243
4	0100	Д 132	Ф 148	д 164	□ 180	□ 196	□ 212	ф 228	ї 244
5	0101	Е 133	Х 149	е 165	□ 181	□ 197	□ 213	х 229	ї 245
6	0110	Ж 134	Ц 150	ж 166	█ 182	█ 198	█ 214	ц 230	Ӵ 246
7	0111	З 135	Ч 151	з 167	█ 183	█ 199	█ 215	ч 231	ӵ 247
8	1000	И 136	Ш 152	и 168	█ 184	█ 200	█ 216	ш 232	◦ 248
9	1001	Й 137	Щ 153	й 169	█ 185	█ 201	█ 217	щ 233	• 249
A	1010	К 138	҃ 154	к 170	█ 186	█ 202	█ 218	҃ 234	. 250
B	1011	Л 139	҄ 155	л 171	█ 187	█ 203	█ 219	҄ 235	√ 251
C	1100	М 140	҅ 156	м 172	█ 188	█ 204	█ 220	҅ 236	N ² 252
D	1101	Н 141	҆ 157	н 173	█ 189	█ 205	█ 221	҆ 237	¤ 253
E	1110	О 142	҇ 158	о 174	█ 190	█ 206	█ 222	҇ 238	█ 254
F	1111	П 143	҈ 159	п 175	█ 191	█ 207	█ 223	҈ 239	SP 255

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç 128	É 144	á 160	â 176	à 192	d 208	Ó 224	- 240
1	0001	ü 129	Í 145	í 161	í 177	í 193	D 209	ß 225	" 241
2	0010	é 130	Í 146	ó 162	ó 178	ó 194	Đ 210	Ô 226	' 242
3	0011	â 131	ô 147	ú 163	ú 179	ú 195	Ë 211	Ñ 227	~ 243
4	0100	ä 132	ö 148	À 164	À 180	À 196	đ 212	ń 228	~ 244
5	0101	ü 133	Ł 149	ą 165	Á 181	á 197	ň 213	њ 229	§ 245
6	0110	ć 134	Ĩ 150	Ž 166	Â 182	Ã 198	í 214	š 230	÷ 246
7	0111	ç 135	Ś 151	ž 167	Ě 183	ă 199	î 215	š 231	, 247
8	1000	ì 136	ś 152	Ę 168	Ş 184	ş 200	ě 216	Ŕ 232	° 248
9	1001	ë 137	Ö 153	e 169	e 185	e 201	ú 217	Ú 233	.. 249
A	1010	Ö 138	Ü 154	ı 170	ı 186	ı 202	í 218	ŕ 234	· 250
B	1011	ö 139	ТЬ 155	ż 171	ż 187	ż 203	ń 219	ū 235	ū 251
C	1100	î 140	ť 156	Č 172	č 188	č 204	ń 220	ý 236	ŕ 252
D	1101	Ž 141	Ł 157	ſ 173	ž 189	ž 205	ń 221	ÿ 237	ŕ 253
E	1110	Ä 142	×	« 158	« 174	ż 190	ń 206	ű 222	Ń 238
F	1111	Ć 143	č 159	» 175	» 191	» 207	ń 223	’ 239	SP 255

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	ç	é	á	í	ł	ð	ó	—
1	0001	ü	æ	í	ó	ł	ð	ß	±
2	0010	é	æ	ó	í	ł	ê	ô	=
3	0011	â	ô	ú	í	ł	ë	ò	$\frac{3}{4}$
4	0100	ä	ö	ñ	í	—	è	õ	¶
5	0101	à	ò	ñ	á	+	€	ö	§
6	0110	å	û	á	â	ã	í	μ	÷
7	0111	ç	ù	o	à	ã	î	þ	,
8	1000	ê	ÿ	ç	®	ł	ï	þ	°
9	1001	ë	ö	®	—	—	ú	ú	..
A	1010	è	ü	—	—	—	û	û	.
B	1011	ï	ø	$\frac{1}{2}$	—	—	■	ù	¹
C	1100	î	£	$\frac{1}{4}$	—	—	■	ý	³
D	1101	ì	ø	í	—	—	—	ÿ	²
E	1110	Ä	×	«	¥	+	ì	—	■
F	1111	Å	f	»	—	—	■	,	SP
		[128]	[144]	[160]	[176]	[192]	[208]	[224]	[240]
		[129]	[145]	[161]	[177]	[193]	[209]	[225]	[241]
		[130]	[146]	[162]	[178]	[194]	[210]	[226]	[242]
		[131]	[147]	[163]	[179]	[195]	[211]	[227]	[243]
		[132]	[148]	[164]	[180]	[196]	[212]	[228]	[244]
		[133]	[149]	[165]	[181]	[197]	[213]	[229]	[245]
		[134]	[150]	[166]	[182]	[198]	[214]	[230]	[246]
		[135]	[151]	[167]	[183]	[199]	[215]	[231]	[247]
		[136]	[152]	[168]	[184]	[200]	[216]	[232]	[248]
		[137]	[153]	[169]	[185]	[201]	[217]	[233]	[249]
		[138]	[154]	[170]	[186]	[202]	[218]	[234]	[250]
		[139]	[155]	[171]	[187]	[203]	[219]	[235]	[251]
		[140]	[156]	[172]	[188]	[204]	[220]	[236]	[252]
		[141]	[157]	[173]	[189]	[205]	[221]	[237]	[253]
		[142]	[158]	[174]	[190]	[206]	[222]	[238]	[254]
		[143]	[159]	[175]	[191]	[207]	[223]	[239]	[255]

	8	9	A	B	C	D	E	F
0	ຮ	ອ	ຮ	ອ	ຮ	ອ	ຮ	ຮ
1	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ
2	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ
3	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ
4	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ
5	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ
6	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ
7	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ
8	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ
9	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ
A	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ
B	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ
C	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ
D	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ
E	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ
F	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ	ໜ	ໝ

	8	9	A	B	C	D	E	F
0	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
1	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
2	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
3	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
4	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
5	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
6	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
7	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
8	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
9	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
A	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
B	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
C	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
D	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
E	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
F	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ

	8	9	A	B	C	D	E	F
0	ા	િ	િ	િ	િ	િ	િ	૦
1	ા	ા	ા	ા	ા	ા	ા	૧
2	ા	ા	ા	ા	ા	ા	ા	૨
3	ા	ા	ા	ા	ા	ા	ા	૩
4	ા	ા	ા	ા	ા	ા	ા	૪
5	ા	ા	ા	ા	ા	ા	ા	૫
6	ા	ા	ા	ા	ા	ા	ા	૬
7	ા	ા	ા	ા	ા	ા	ા	૭
8	ા	ા	ા	ા	ા	ા	ા	૮
9	ા	ા	ા	ા	ા	ા	ા	૯
A	ા	ા	ા	ા	ા	ા	ા	ા
B	ા	ા	ા	ા	ા	ા	ા	ા
C	ા	ા	ા	ા	ા	ા	ા	ા
D	ા	ા	ા	ા	ા	ા	ા	ા
E	ા	ા	ા	ા	ા	ા	ા	ા
F	ા	ા	ા	ા	ા	ા	ા	ા

	8	9	A	B	C	D	E	F
0	ົ	ຼ	ິ	ີ	ຶ	ື	ຸ	ູ
1	ັ	າ	ຳ	ິ	ີ	ຶ	ື	ູ
2	ົ	ຳ	ີ	ຶ	ື	ຸ	ົ	ູ
3	ັ	ຳ	ິ	ີ	ຶ	ື	ຸ	ູ
4	ີ	ີ	ົ	ຶ	ື	ຸ	ົ	ູ
5	-	ີ	ົ	ຶ	ື	ຸ	ົ	ູ
6	ົ	ີ	ິ	ີ	ຶ	ື	ຸ	ູ
7	ັ	ີ	ິ	ີ	ຶ	ື	ຸ	ູ
8	ົ	ີ	ິ	ຶ	ື	ຸ	ົ	ູ
9	ັ	ີ	ິ	ຶ	ື	ຸ	ົ	ູ
A	ື	ີ	ິ	ຶ	ື	ຸ	ົ	ູ
B	ົ	ີ	ິ	ຶ	ື	ຸ	ົ	ູ
C	ີ	ີ	ິ	ຶ	ື	ຸ	ົ	ູ
D	ີ	ີ	ິ	ຶ	ື	ຸ	ົ	ູ
E	ີ	ີ	ິ	ຶ	ື	ຸ	ົ	ູ
F	ີ	ີ	ິ	ຶ	ື	ຸ	ົ	ູ

	8	9	A	B	C	D	E	F
0	ຮ	້		ແ	ກ	ຂ	່	ໝ
1	້	໊	່	ໜ	໙	໛	໕	໖
2	໌	ໍ	ປ	ແ	ຢ	໇	໒	໘
3	໌	ໍ	ປ	ແ	ກ	໇	໒	໘
4	ໍ	ໍ	ຄ	ຄ	ດ	ໍ	ໍ	ໍ
5	-	ໍ	ຄ	ຄ	ດ	ໍ	ໍ	ໍ
6	ຫ	໌	ຍ	ທ	ກ	ໍ	ໍ	ໍ
7	ຫ	໌	ຍ	ທ	ກ	ໍ	ໍ	ໍ
8	ຫ	໌	ຍ	ທ	ກ	ໍ	ໍ	ໍ
9	ຫ	໌	ຍ	ທ	ກ	ໍ	ໍ	ໍ
A	ຫ	໌	ຍ	ທ	ກ	ໍ	ໍ	ໍ
B	໌	໌	ປ	ປ	ດ	ໍ	ໍ	ໍ
C	໌	໌	ພ	ພ	ິ	ໍ	ໍ	ໍ
D	ຫ	໌	ພ	ພ	ດ	ໍ	ໍ	ໍ
E	ຫ	໌	ພ	ພ	ດ	ໍ	ໍ	ໍ
F	ຫ	໌	ພ	ພ	ດ	ໍ	ໍ	ໍ

	8	9	A	B	C	D	E	F
0	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
1	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
2	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
3	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
4	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
5	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
6	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
7	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
8	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
9	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
A	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
B	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
C	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
D	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
E	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ
F	ດ	ດ	ດ	ດ	ດ	ດ	ດ	ດ

	8	9	A	B	C	D	E	F
0	ກ	ຂ	ງ	ຍ	ຢ	ຢ	ຢ	ຢ
1	ັ	າ	ຳ	ິ	ີ	ຶ	ື	ຸ
2	ົ	ຼ	ົ	ົ	ົ	ົ	ົ	ົ
3	ູ	຺	ູ	ູ	ູ	ູ	ູ	ູ
4	ົ	ົ	ົ	ົ	ົ	ົ	ົ	ົ
5	-	ົ	ົ	ົ	ົ	ົ	ົ	ົ
6	ົ	ົ	ົ	ົ	ົ	ົ	ົ	ົ
7	ົ	ົ	ົ	ົ	ົ	ົ	ົ	ົ
8	ົ	ົ	ົ	ົ	ົ	ົ	ົ	ົ
9	ົ	ົ	ົ	ົ	ົ	ົ	ົ	ົ
A	ົ	ົ	ົ	ົ	ົ	ົ	ົ	ົ
B	ົ	ົ	ົ	ົ	ົ	ົ	ົ	ົ
C	ົ	ົ	ົ	ົ	ົ	ົ	ົ	ົ
D	ົ	ົ	ົ	ົ	ົ	ົ	ົ	ົ
E	ົ	ົ	ົ	ົ	ົ	ົ	ົ	ົ
F	ົ	ົ	ົ	ົ	ົ	ົ	ົ	ົ

USING THE CHARACTER CODE TABLES

The example below uses Page 0 (PC437) to illustrate the use of the character code tables.

You can find the character "A" in Page 0 as follows:

The decimal value for the character "A" is 65.

Follow its column straight up to find the digits.

Hexadecimal 4

Binary 0100

These numbers are the most significant bits of the ASCII code.

Follow its row to the left to find the digits.

Hexadecimal 1

Binary 0001

These numbers are the least significant bits of the ASCII code.

The combination of the numbers above is the ASCII code for character "A".

Decimal 65

Hexadecimal 41

Binary 01000001