GS (k <Function 165>

[Name] QR Code: Select the model

[Format]

ASCII	GS	(	k	**pL**	**pH**	**cn**	**fn**	**n1**	**n2**
Hex	1D	28	6B	**04**	**00**	**31**	**41**	**n1**	**n2**
Decimal	29	40	107	**4**	**0**	**49**	**65**	**n1**	**n2**

[Range] **(pL + pH × 256) = 4 (pL = 4, pH = 0)**
cn = 49
fn = 65
n1 = 49, 50
n2 = 0

[Default] **n1** = 50, **n2** = 0

[Description] Selects the model for QR Code.

n1	Function
49	Select mode 1.
50	Select mode 2.

[Notes] ■ Settings of this function affect the processing of Functions 181 and 182.
■ Settings of this function are effective until **ESC @** is executed, the printer is reset, or the power is turned Off.

GS (k <Function 167>

[Name] QR Code: Set the size of module

[Format]

ASCII	GS	(	k	**pL**	**pH**	**cn**	**fn**	**n**
Hex	1D	28	6B	**03**	**00**	**31**	**43**	**n**
Decimal	29	40	107	**3**	**0**	**49**	**67**	**n**

[Range] **(pL + pH × 256) = 3 (pL = 3, pH = 0)**
cn = 49
fn = 67
1 ≤ n ≤ 16

[Default] **n = 3**

[Description] Sets the size of the module for QR Code to **n** dots.

[Notes] ■ Settings of this function affect the processing of Functions 181 and 182.
■ Settings of this function are effective until **ESC @** is executed, the printer is reset, or the power is turned off.
■ **n** = width of a module = height of a module. (Because the QR code modules are square.)

GS (k <Function 169>

[Name] QR Code: Select the error correction level

[Format]

ASCII	GS	(	k	**pL**	**pH**	**cn**	**fn**	**n**
Hex	1D	28	6B	**03**	**00**	**31**	**45**	**n**
Decimal	29	40	107	**3**	**0**	**49**	**69**	**n**

[Range] (**pL** + **pH** × 256) = 3 (**pL** = 3, **pH** =0)

cn = 49

fn = 69

48 ≤ **n** ≤ 51

[Default] **n** = 48

[Description] Selects the error correction level for QR Code.

n	Function	Recovery Capacity %(approx.)
48	Selects Error correction level L	7
49	Selects Error correction level M	15
50	Selects Error correction level Q	25
51	Selects Error correction level H	30

[Notes] ■ Settings of this function affect the processing of Functions 181 and 182.

■ QR Code employs Reed-Solomon error correction to generate a series of error correction codewords.

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

GS (k <Function 180>

[Name] QR Code: 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**	**31**	**50**	**30**	**d1...dk**
Decimal	29	40	107	**pL**	**pH**	**49**	**80**	**48**	**d1...dk**

[Range] $4 \le (\mathbf{pL} + \mathbf{pH} \times 256) \le 7092$ ($0 \le \mathbf{pL} \le 255$, $0 \le \mathbf{pH} \le 27$)

cn = 49

fn = 80

m = 48

$0 \le \mathbf{d} \le 255$

$\mathbf{k} = (\mathbf{pL} + \mathbf{pH} \times 256) - 3$

[Description] Stores the QR Code symbol data (**d1...dk**) in the symbol storage area.

[Notes] ■ The symbol data saved in the symbol archive area by this function is encoded by <Function 081> and <Function 082> of this command. After <Function 081> and <Function 082> are executed, the symbol Archive area symbol data is kept.

■ **k** bytes of **d1...dk** are processed as symbol data.

■ It is possible to encode to a QR Code as follows. Be sure not to include anything except the following data in the data **d1...dk**.

Category of data	Characters it is possible to specify
Numerical Mode data	"0"~"9"
Alphanumeric Mode data	"0"~"9","A"~"Z",SP,$,%,*,+,-,.,/,:
Kaji Mode data	Shift JIS value (Shift value from JISX0208)
8-Bit Byte Mode data	00H~FFH

■ Settings of this function are effective until the following processing is performed:

- Function 080 or 180 or 280 or 380 or 480 is executed
- **ESC @** is executed
- The printer is reset or the power is turned off

GS (k <Function 181>

[Name] QR Code: Print the symbol data in the symbol storage area

[Format]

ASCII	GS	(	k	**pL**	**pH**	**cn**	**fn**	**m**
Hex	1D	28	6B	**03**	**00**	**31**	**51**	**m**
Decimal	29	40	107	**3**	**0**	**49**	**81**	**m**

[Range] (**pL** + **pH** × 256) = 3 (**pL** = 3, **pH** = 0)

cn = 49

fn = 81

m = 48

[Description] Encodes and prints the QR Code symbol data in the symbol storage area using the process of <Function 180>.

[Notes]

■ In standard mode, use this function when printer is "at the beginning of a line," or "there is no data in the print buffer."

■ The symbol size that exceeds the print area cannot be printed.

■ If there is any error described below in the data of the symbol storage area, it cannot be printed.

- There is no data (Function 180 is not processed).
- If the data of the symbol storage area is more than the data allowed by specified model and data compaction mode. (This case is an abnormal number of data.)
- The four data compaction modes are listed below (in order of compaction rate). Automatically selects best compaction mode by the data of the symbol storage area.
  – Numerical mode
  – Alphanumeric mode
  – Kanji mode
  – 8-Bit Byte Mode

■ The following data are added automatically by the encode processing.

- Position Detection Patterns
- Separators for Position Detection Patterns
- Timing Patterns
- Format Information
- Version Information
- Error Correction codewords (employs the Reed-Solomon Error Detection and Correction algorithm)
- Pad codeword
- Number of bits in Character Count Indicator
- Mode Indicator
- Terminator
- Alignment Patterns (when model 2 is selected)
- Extension Patterns (when model 1 is selected)

■ 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 print 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 print 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 print 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 include the quiet zone when using this function.

GS (k <Function 182>

[Name] QR Code: 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**	**31**	**52**	**m**
Decimal	29	40	107	**3**	**0**	**49**	**82**	**m**

[Range] (**pL** + **pH** × 256) = 3 (**pL** = 3, **pH** = 0)

cn = 49

fn = 82

m = 48

[Description] Transmits the size information for the encoded QR Code symbol data in the symbol storage area using the process of <Function 180>.

[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	1byte
Identifier	36H	54	1byte
Horizontal size(*1)	30H-39H	48-57	1-5byte
Separator	1FH	31	1byte
Vertical size(*1)	30H~39H	48-57	1-5byte
Separator	1FH	31	1byte
Fixed value	31H	49	1byte
Separator	1FH	31	1byte
Other information(*2)	30H or 31H	48 or 49	1byte
NUL	00H	0	1byte

(*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, and 30H / in decimal:49, 50, and 48), which is 3 bytes of data.)
(*2)"Other information" indicates whether printing of the data in the symbol storage area is possible or impossible. The "Other information" is the following.

Other information

Hex	Decimal	Condition
30H	48	Printing is possible
31H	49	Printing is impossible

■ Size information indicates size of symbol that is printed by Function 181.

■ The quiet zone is not included in the size information.

■ If "other information" is "Printing is impossible "(in decimal: 49), use one of the solutions shown below.

Cause	Solution
There are data in the print buffer in the standard mode	Put the printer in the “there is no data in the print buffer” status by executing **GS T** or print commands (**LF, CR, ESC J**).
Symbol is bigger than the current print area.	Expand the print area by **GS W**, **ESC W**, **ESC $**. Reduce the module size by Function 167. Lower the error correction level by Function 169.
The data in the symbol storage area is too large.	Send correct data by Function 180. Select other model by Function 165 Lower the error correction level by Function 169.
There is no data in the symbol storage area.	Send data to the symbol storage area by Function 180.

■ See previous [Notes for transmission process] for process sending data group.