

PP5600 COMMAND DETAILS

CODES (HEX/CONTROL): <09> / {HT}

NAME: Horizontal tab

FUNCTION: Move the print position to the next horizontal tab position

EXPLANATION:

1. If all horizontal tab position has been cleared by {ESC} {D} {NUL}, this command is ignored.
2. If there is no more horizontal tab position set to the right of the print position, this command sets the print position to the beginning of next line.
3. Horizontal tab positions are set with {ESC}{D}.
4. The default setting of the horizontal tab positions prior to any {ESC} {D} command are set at every 8th character (9th, 17th, 25th, ...column) when printing font B (7 x 9) characters regardless of whether the printer is printing font A (9 x 9) or font B (7 x 9).
5. When print data before a {LF} received exceeds a line's worth, the printer executes print buffer-full printing. If this command is received with the printing position already at the next line, the horizontal tab processing is executed from the beginning of this next line.

CODES (HEX/CONTROL): <0A> / {LF}

NAME: Print and line feed

FUNCTION: Print data in print buffer and feed one line

EXPLANATION:

1. Print buffer is cleared after data printed. When printer receives data more than a line's worth before a {LF}, the printer executes print buffer-full printing.
2. Paper advances by one line based on the current line spacing after print.
3. This command sets the print position to the beginning of the line after line feed.

CODES (HEX/CONTROL): <0D> / {CR}

NAME: Print and Carriage return

FUNCTION: This command has no effect in PP5600

EXPLANATION:

1. In PP5600 series only the LF code works.

CODES (HEX/CONTROL): <10> <04> <n> / {DLE} {EOT} n

NAME: Real-time status transmission

FUNCTION: Transmits the selected printer status in real time

RNAGE: $01 \leq n \leq 04$

EXPLANATION:

1. The parameter n specifies printer status group to be transmitted as below.
 - $n = 01$: Transmit printer status
 - $n = 02$: Transmit off-line status
 - $n = 03$: Transmit error status
 - $n = 04$: Transmit paper sensor status
2. The printer transmits the current status as specified by n . Each status is represented by one-byte data.
3. If the value of n is out of the specified range ($1 \leq n \leq 4$), This command is ignored.
4. The status is transmitted whenever the data sequence of <10>h <04>h <n> ($1 \leq n \leq 4$) is received even when this sequence is in fact part of data in other command. However, that command containing this data sequence still works when it takes its turn in printer processing queue.
5. Example: In **ESC * m nL nH d1...dk**, $d1 = <10>h$, $d2 = <04>h$, $d3 = <01>h$
6. The printer executes this command upon receiving it regardless of unprocessed data in receive buffer when this command is sent from host regardless of printer BUSY status.
7. The printer transmits the status regardless of the handshaking condition of the host computer.
8. This command is executed even when the printer is off-line, the receive buffer is

full, or when there is an error status with a serial interface model provided the host sends this command regardless of hardware handshaking status of the printer.

9. With a parallel interface model, this command has no effect.
10. This command should not be used when the printer is processing data sequence of another command that consists of 2 or more bytes.

Example:

If the printer is going to execute {ESC} {3} *n* by retrieving it from input buffer, DTR (DSR for the host computer) goes to MARK (busy) before *n* is retrieved, but {DLE} {ENQ} {2} interrupts before *n* is retrieved from input buffer, the code <10>H for {DEL} {ENQ} {2} is processed as the code for {ESC} {3} <10>h.

11. When Auto Status Back (ASB) is enabled by using the {GS} {a} command, the status transmitted by the {DLE} {EOT} command and the ASB status must be differentiated. Please refer to Appendix A.
12. This command is effective even if the printer is unselected by device select command, {ESC}{=}
13. Status responses from the printer are regulated in tables below as defined by value of *n*.

n = 1: Printer status

| Bit | Off/On | Hex | Decimal | Function |
|-----|--------|-----|---------|--|
| 0 | Off | 00 | 0 | Not used. Fixed to Off |
| 1 | On | 02 | 2 | Not used. Fixed to On |
| 2 | Off | 00 | 0 | Drawer open/close signal is LOW (connector pin 3) |
| | On | 04 | 4 | Drawer open/close signal is HIGH (connector pin 3) |
| 3 | Off | 00 | 0 | On-line |
| | On | 08 | 8 | Off-line |
| 4 | On | 10 | 16 | Not used. Fixed to On |
| 5 | Off | 00 | 0 | Not waiting for on-line recovery |
| | On | 20 | 32 | Waiting for on-line recovery |
| 6 | - | - | - | Undefined |
| 7 | Off | 00 | 00 | Not used. Fixed to Off |

n = 2 : Off-line status

| Bit | Off/On | Hex | Decimal | Function |
|-----|--------|-----|---------|---|
| 0 | Off | 00 | 0 | Not used. Fixed to Off |
| 1 | On | 02 | 2 | Not used. Fixed to On |
| 2 | - | - | - | Undefined |
| 3 | Off | 00 | 0 | Paper is not being fed by using the paper feed button |
| | On | 08 | 8 | Paper is being fed by the paper feed button |
| 4 | On | 10 | 16 | Not used. Fixed to On |
| 5 | Off | 00 | 0 | No paper-end stop |
| | On | 20 | 32 | Printing stops due to paper end |
| 6 | Off | 00 | 0 | No error |
| | On | 40 | 64 | Error occurs |
| 7 | Off | 00 | 0 | Not used Fixed to Off |

Bit 5: On (printing stops due to paper-end) when printing stops due to paper-end detected by the paper-end sensor or the paper near-end enabled by using the {ESC}{c}{4}.

n = 3: Error status

| Bit | Off/On | Hex | Decimal | Function |
|-----|--------|-----|---------|----------------------------|
| 0 | Off | 00 | 0 | Not used. Fixed to Off |
| 1 | On | 02 | 2 | Not used. Fixed to On |
| 2 | Off | 00 | 0 | No mechanical error |
| | On | 04 | 4 | Mechanical error |
| 3 | Off | 00 | 0 | No auto-cutter error |
| | On | 08 | 8 | Auto-cutter error occurs |
| 4 | On | 10 | 16 | Not used. Fixed to On |
| 5 | Off | 00 | 0 | Unrecoverable error |
| | On | 20 | 32 | Recoverable error |
| 6 | Off | 00 | 0 | Automatic recover error |
| | On | 40 | 64 | No automatic recover error |
| 7 | Off | 00 | 0 | Not used. Fixed to Off |

Bit 2: If these errors occur due to paper jams or the like, it is possible to recovery by correcting the cause of the error and executing {DLE}{ENQ}{2}. If an error due to a circuit failure (e.g. wire break) occurs, it is impossible to recover.

Bit 6: If the print head temperature becomes high, bit 6 it transmitted until the print head temperature drops sufficiently. The printer automatically recovers from this error.

$n = 4$: Continuous paper sensor status

| Bit | Off/On | Hex | Decimal | Function |
|-----|--------|-----|---------|--|
| 0 | Off | 00 | 0 | Not used. Fixed to Off |
| 1 | On | 02 | 2 | Not used. Fixed to On |
| 2,3 | Off | 00 | 0 | Paper roll near-end sensor: paper adequate |
| | On | 0C | 12 | Paper roll near-end is detected by the paper near-end sensor |
| 4 | On | 10 | 16 | Not used. Fixed to On |
| 5,6 | Off | 00 | 0 | Paper end sensor: paper adequate |
| | On | 60 | 96 | Paper end is detected by the paper end sensor |
| 7 | Off | 00 | 0 | Not used. Fixed to Off |

Bit 2 and 3: The “paper roll near-end” detector is an option; on units that do not have this option, bits 2 and 3 are “0” (paper adequate).

CODES (HEX/CONTROL): <10> <05> < n > / {DLE} {ENQ} n

NAME: Real-time request to printer

FUNCTION: Request to printer in real-time

RANGE: $n = 00, n = 02$

EXPLANATION:

1. This command is effective both in serial interface models and parallel interface models. However the host should send the command regardless of printer BUSY status.
2. The parameter n specifies real time request to the printer as below:
 $n = 0$: Recover to on-line state after reloading paper.

- $n = 2$: Recover from an error after clearing the receive and print buffers.
- If n is out of the specified range, this command is ignored.
 - The printer starts processing this command upon receiving it regardless of whether there is still unprocessed data in print buffer or not.
 - This command is effective at receiving even if it is in fact part of code sequence for another command. For example,
In **{ESC} {*} m nL nH dk**, $d1 = \langle 10 \rangle h$, $d2 = \langle 05 \rangle h$, $d3 = \langle 02 \rangle h$
 - When the printer goes off-line and printing stopped due to a lack of paper, this command must be issued with $n = 0$ or the “Feed” button must be pressed to make the printer go on-line again after paper is loaded. The command with other value of n will be ignored.
 - When a mechanical error or an auto-cutter error has occurred, this command must be issued with $n = 2$ to clear print buffer and make the printer go on-line again. Pressing “Feed” button after the error status resolved without powering off will cause the printer to go on printing from point of error.
 - This command is executed even when the receive buffer is full if the host sends this command regardless of printer BUSY status.
 - This command should not be contained within another command that consists of two or more bytes.

Example:

If you attempt to transmit **{ESC} {3} n** to the printer, but DTR (DSR for the host computer) goes to MARK before n is transmitted, and **{DLE} {ENQ} 2** interrupts before n is received, the code $\langle 10 \rangle H$ for **{DLE} {ENQ} 2** is processed as the code for **{ESC} {3} $\langle 10 \rangle h$** .

- {DLE} {ENQ} 2** clears only the data in the receive buffer and the print buffer. The printer retains the settings that were in effect when the error occurred. This command is effective only for errors that have the possibility of recovery, except for print head temperature error.
- This command is effective even when the printer is de-selected by device select command **{ESC} {=}**.

CODES (HEX/CONTROL): <1B> <20> <n>/ {ESC} {SP} n

NAME: Set right-side character spacing

FUNCTION: Set right-side character spacing

RANGE: $00 \leq n \leq FF$

EXPLANATION:

1. Set the additional character spacing at the right side of each character to [$n \times 0.15\text{mm}$ (1/170 inches)].
2. The right-side character spacing in double-width mode is also doubled from the normal value.
3. In underline mode the underline is also applied in right-side character spacing.
4. If the right-side character spacing exceeds printing area, the printer sets the printing position to the beginning of next line.

CODES (HEX/CONTROL): <1B> <21> <n> / {ESC}{!} n

NAME: Select print mode

FUNCTION: Selects print mode

RANGE: $00 \leq n \leq FF$

EXPLANATION:

1. The parameter n in this command specifies print modes as below:

| Bit | Off/On | Hex | Decimal | Function |
|-----|--------|-----|---------|--------------------------|
| 0 | Off | 00 | 0 | Character font A (9 x 9) |
| | On | 01 | 1 | Character font B (7 x 9) |
| 1 | - | - | - | Undefined |
| 2 | - | - | - | Undefined |
| 3 | Off | 00 | 0 | Non-emphasized mode |
| | On | 08 | 8 | Emphasized mode |
| 4 | Off | 00 | 0 | Single-height mode |
| | On | 10 | 16 | Double-height mode |
| 5 | Off | 00 | 0 | Single-width mode |
| | On | 20 | 32 | Double-width mode |

| | | | | |
|---|-----|----|-----|--------------------|
| 6 | - | - | - | Undefined |
| 7 | Off | 00 | 0 | Non-underline mode |
| | On | 80 | 128 | Underline mode |

- When both double-height and double-width modes are selected, quadruple size characters are printed.
- The printer can underline all characters, but can not underline the space set by {HT}.
- When there are both single and double height characters in a line, all the characters on the line are aligned at the baseline which coincides in position with the underline.
- {ESC} {E} can also turn on or off emphasized mode However, the setting by the command last received is effective.
- {ESC}{-} can also turn on or off underline mode. However, the setting by the command last received is effective.

CODES (HEX/CONTROL) : <1B> <25> <n> / {ESC} {%} n

NAME: Select/cancel user-defined character set

FUNCTION: Select or cancels the user-defined character set

RANGE: $00 \leq n \leq FF$

EXPLANATION:

- When the LSB of $n = 0$ the user-defined character set is canceled.
When the LSB of $n = 1$ the user-defined character set is selected.
- When the user-defined character set is canceled, the internal character set is automatically selected.
- Only the least significant bit of n is valid.

CODES (HEX/CONTROL): <1B> <26> <y> <c₁> <c₂> [<x₁> <d₁>...<d(y x x₁)>]... [<x_k> <d_{k1}>...<d_k(y x x_k)>] / {ESC} {&} y c₁ c₂ [x₁

$d_1...d(y \times x_1)]...[x_k d_{k1}...d_k(y \times x_k)]$

NAME: Define user-defined characters

FUNCTION: Define user-defined characters

RANGE: $y = 02 \quad 20h \leq c_1 \leq c_2 \leq 7Eh \quad 00 \leq x \leq 0Ch$ for Font A (9 x 9)

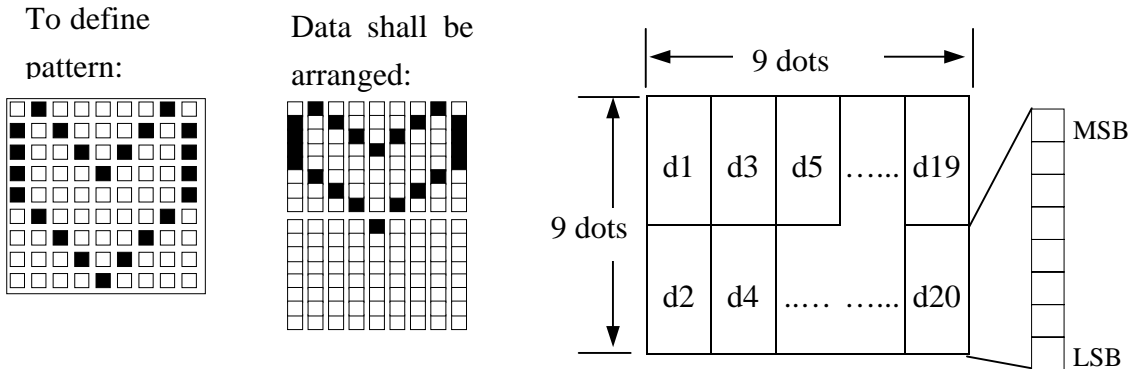
$00 \leq x \leq 09$ for Font B (7 x 9) $00 \leq d_1...d(y \times x) \leq FFh$

EXPLANATION:

1. The parameter y in this command indicates the number of bytes in the vertical direction.
2. c_1 specifies the beginning character code for the definition, c_2 specifies the final character code, and x specifies the number of dots in the horizontal direction of each character.
3. The allowable character code range is from ASCII code 20h to 7Eh (95 character).
4. It is possible to define multiple characters for consecutive character codes. If only one character is desired, use $c_1 = c_2$
5. When a new define user-defined character command covers a character code previously defined, the new definition will replace the previous one.
6. d is the dot data for the characters. The dot pattern is arranged in horizontal direction from the left side of the character. Any remaining dots on the right side (when value of x is not the maximum allowable figure for the font type) are filled with blank.
7. The data required to define each user - defined characters is $[y \times x]$ bytes.
8. Set a corresponding bit to 1 to print a dot or 0 not to print a dot.
9. This command can define different user-defined character patterns by each font type. To select a font, Use {ESC}{!}.
10. The user-defined character definition is cleared when:
 - {ESC} {@} is executed
 - {ESC} {?} is executed
 - The printer is reset or the power is turned off

Example:

Font A (9 x 9) is selected



d1 = <78>h d2 = <00>h d3 = <84>h d4 = <00>h d5 = <42>h d6 = <00>h
d7 = <21>h d8 = <00>h d9 = <10>h d10 = <80>h d11 = <21>h d12 = <00>h
d13 = <42>h d14 = <00>h d15 = <84>h d16 = <00>h d17 = <78>h d18 = <00>h

CODES (HEX/CONTROL): <1B> <2A> <m> <nL> <nH> <d₁>...<d_k>
/ {ESC} {*} m nL nH d₁...d_k

NAME: Define bit-image

FUNCTION: Define bit-image

RANGE: m = 00, 01 00 ≤ nL ≤ FF 00 ≤ nH ≤ 03 00 ≤ d ≤ FF

EXPLANATION:

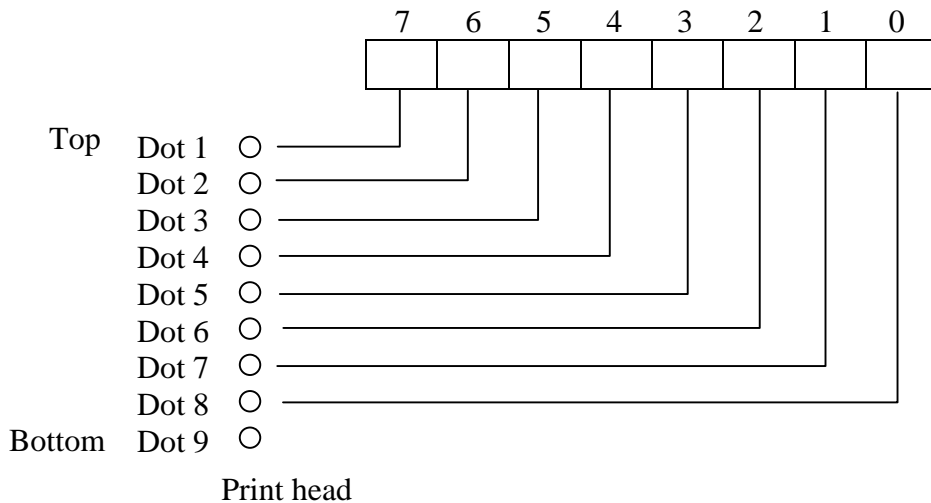
- The parameter *m* in this command specifies the number of dots for the bit image by *nL* and *nH*, as follows:

| <i>m</i> | Number of dots | Horizontal Direction | | |
|----------|----------------|----------------------|--------------|------------------------|
| | | Dot Density | Adjacent Dot | Maximum Number of Data |
| 0 | 8 | Single Density | Permitted | 200 |
| 1 | 8 | Double Density | Prohibited | 400 |

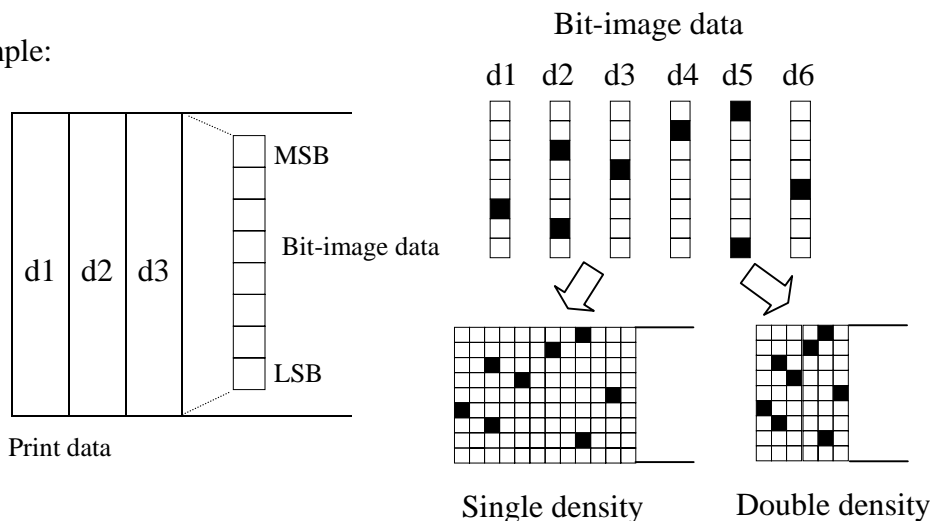
- If the values of *m* is out of the specified range, the following data *nL*'s and *nH*'s are processed as normal data.
- The *nL* and *nH* indicate the number of dots of the bit image in the horizontal direction. The number of dots is calculated by $nL + nH \times 256$

4. If the bit-image data input exceeds the number of dots to be printed on a line, the excess are processed as normal data.
5. *d* indicates the bit-image data. Set a corresponding bit to 1 to print a dot or to 0 not to print a dot.
6. This command is not affected by print mode commands: {ESC}{SP}, {ESC}{-}, {ESC}{E}, {ESC}{G}, except upside-down printing mode {ESC}{{}.
7. After printing a bit image, the printer returns to normal data processing mode.
8. The relationship between the image data and the dots to be printed is as follows:

When 8-dot bit image is selected:



Example:



CODES (HEX/CONTROL): <1B> <2D> <n> / {ESC} {-} n**NAME:** Turn underline mode on/off**FUNCTION:** Turn underline mode on or off**RANGE:** $00 \leq n \leq 01$, $30 \leq n \leq 32$ **EXPLANATION:**

1. Turns underline mode on or off, according to the values of n as following:

| n in hexadecimal | Function |
|--------------------|--------------------------|
| 0, 30 | Turns off underline mode |
| 1, 31 | Turns on underline mode |

2. If n is out of the specified range, this command is ignored.
3. The printer can underline all characters (including right-side character spacing, user-defined character) but cannot underline the space set by {HT} and all bit image printing.
4. Changing the character size does not affect thickness of the underline.
5. Underline mode can also be turned on or off by using {ESC}{!}. Note, however, that the last received command is effective.

CODES (HEX/CONTROL): <1B> <32> / {ESC} {2}**NAME:** Select default line spacing**FUNCTION:** Select default line spacing**EXPLANATION:**

1. Select default line spacing 1/6-inch.

CODES (HEX/CONTROL): <1B> <33> <n> / {ESC} {3} n**NAME:** Set line spacing**FUNCTION:** Sets the line spacing**RANGE:** $0 \leq n \leq FF$ **EXPLANATION:**

1. Set the line spacing to $[n \times (1/144)]$ inches.

CODES (HEX/CONTROL): <1B> <3C> / {ESC} {<}

NAME: Return home

FUNCTION: Move the print head to the standby position

EXPLANATION:

1. The print head first moves to the left-most position, then to the right-most position, and then to the left-most position again.
2. The leftmost end is detected by the home position sensor.
3. The data of the line that contains this command will be printed after the return home operation.
4. Since the home position is detected when this command is executed, the printing position may shift after this command is executed.

CODES (HEX/CONTROL): <1B> <3D> <n> / {ESC} {=} n

NAME: Select device

FUNCTION: Selects device to respond to host computer

RANGE: $00 \leq n \leq FF$

EXPLANATION:

1. Selects device to respond to data from host computer, determined by value *n* as follows:

| Bit | Off/On | Hex | Decimal | Function |
|-----|--------|-----|---------|---------------------------|
| 0 | Off | 00 | 1 | Printer disabled |
| | On | 01 | 0 | Printer enabled |
| 1 | Off | 00 | 0 | Customer display disabled |
| | On | 02 | 2 | Customer display enabled |
| 2-7 | - | - | - | Ignored |

2. When the printer is disabled, it ignores all data except real time commands {DLE} {EOT}, {DLE} {ENQ} or this device select command.

CODES (HEX/CONTROL): <1B> <3F> <n> / {ESC} {?} n

NAME: Cancels user-defined character

FUNCTION: Cancels user-defined character

RANGE: $20 \leq n \leq 7E$

EXPLANATION:

3. This command clears the pattern defined for the character code specified by n , the corresponding pattern for the internal character is printed.
4. This command deletes the defined pattern for the specified code in current font type selected by <ESC> <!> only.
5. If there is no user-defined character defined for the specified character code n , this command has no effect.

CODES (HEX/CONTROL): <1B> <40> / {ESC} {@}

NAME: Initialize printer

FUNCTION: Reset printer settings

EXPLANATION:

1. Clears all user defined characters and resets the printer mode to the mode that was in effect when the power was turned on except horizontal tab positions, right-side character spacing and upside-down printing mode.
2. The DIP switch settings are not checked again.
3. The data in the receive buffer is not cleared.

CODES (HEX/CONTROL): <1B> <44> <n₁>...<n_k> <00> / {ESC} {D}n₁...n_k {NUL}

NAME: Horizontal tab position setting

FUNCTION: Sets horizontal tab positions

RANGE: $01 \leq n \leq FF$ $01 \leq k \leq 20$

EXPLANATION:

1. Each n in this command specifies a column number for setting a horizontal tab

- position from the beginning of the line.
2. k indicates the total number of horizontal tab position to be set.
 3. The horizontal tab position is stored as a value of [character width x n] measured from the beginning of the line. The character width includes the font type, right-side character spacing, and double-width characters are set with twice the width of normal characters.
 4. This command deletes horizontal tab positions that have already been set.
 5. When setting $n = 8$, the print position is moved to column 9 by sending {HT}.
 6. Up to 32 tab positions [$k \leq 32$] can be set. Data exceeding 32 tab positions is processed as normal data.
 7. Arrange nk 's in ascending order and place a {NUL} code 00h at the end. When nk is less than or equal to the preceding value $n(k-1)$, tab setting is finished and the following data is processed as normal data.
 8. {ESC} {D} {NUL} cancels all horizontal tab positions.
 9. The horizontal tab positions set by this command will not reset by {ESC} {@}.
 10. The physical position of specified horizontal tab position does not move, even if the character width changes.

CODES (HEX/CONTROL): <1B> <45> < n > /{ESC} {E} n

NAME: Turn emphasized mode on/off

FUNCTION: Turns emphasized mode on or off

RANGE: $00 \leq n \leq FF$

EXPLANATION:

1. The parameter n specifies turning emphasized mode on or off as below:
LSB of $n = 0$ emphasized mode is turned off.
LSB of $n = 1$ emphasized mode is turned on.
2. 2- pass printing is slower in emphasized mode.
3. Only the least significant bit of n is valid.
4. This command and {ESC} {!} turn on and off emphasized mode in the same way. However, the last received command is effective.

5. Printer output is the same in double-strike {ESC} {G} and in emphasized.
6. This command cannot affect bit images.

CODES (HEX/CONTROL): <1B> <47> <n> / {ESC} {G} n

NAME: Turn on/off double-strike mode

FUNCTION: Turn double-strike mode on or off

Range: $00 \leq n \leq FF$

EXPLANATION:

1. The parameter n specifies turn on/off double-strike mode as below:
 - LSB of $n = 0$ double-strike mode is turned off
 - LSB of $n = 1$ double-strike mode is turned on
2. Only the lowest bit of n is valid.
3. Printer output is the same in double-strike mode and in emphasized mode {ESC} {E}.
4. The printer does not double-strike for bit-images.

CODES (HEX/CONTROL): <1B> <4A> <n> / {ESC} {J} n

NAME: Print and feed paper

FUNCTION: Prints the data in the print buffer and feeds n steps of paper

RANGE: $00 \leq n \leq FF$

EXPLANATION:

1. Prints the data in the print buffer and feed the paper [$n \times 0.176\text{mm}$ (1/144 inches)].
2. After printing, this command sets the print starting position to the beginning of the line.
3. The paper feed amount set by this command does not affect the values set by {ESC} {2} or {ESC} {3}.

CODES (HEX/CONTROL): <1B> <4B> <n>/ {ESC} {K} n**NAME:** Print and reverse feed**FUNCTION:** Prints the data and feed the paper by n steps in the reverse direction**RANGE:** $00 \leq n \leq 30$ **EXPLANATION:**

1. Prints the data in the print buffer and feed the paper [$n \times 0.176$ mm (1/144 inches)].
2. This command must not be issued continuously more than two times.
3. Reverse direction paper feeding may cause the following problems:
 - Paper feed pitch is incorrect.
 - Printer noise is louder than normal.
 - The paper may rub against the ribbon and become dirty.
4. If n is out of the specified range, the printer prints the data and does not feed the paper.

CODES (HEX/CONTROL): <1B> <52> <n> / {ESC} {R} n**NAME:** Select an international character set**FUNCTION:** Selects an international character set**RANGE:** $00 \leq n \leq 0D$, or $n = 0F$ **EXPLANATION:**

1. Selects an international character set n from the below table:

| n | Character set |
|-----|---------------|
| 0 | U.S.A. |
| 1 | France |
| 2 | Germany |
| 3 | U.K. |
| 4 | Denmark I |
| 5 | Sweden |
| 6 | Italy |
| 7 | Spain |

| | |
|---|---------------|
| 8 | Japan |
| 9 | Norway |
| A | Denmark II |
| B | Spain II |
| C | Latin America |
| D | Korea |
| F | Croatia |

2. If n is out of the specified range, this command is ignored.
3. The selected an international character is cleared when:
 - {ESC} {@} is executed.
 - The printer is reset (the power is turned off).

CODES (HEX/CONTROL): <1B> <55> < n > / {ESC} {U} n

NAME: Turn unidirectional printing mode

FUNCTION: Turns unidirectional printing mode on or off

RANGE: $00 \leq n \leq FF$

EXPLANATION:

1. When the LSB of $n = 0$, turn off unidirectional printing mode. (Turn bi-directional printing mode on)
When the LSB of $n = 1$, turn on unidirectional printing mode and turn off bi-directional printing mode.
2. Only the lowest bit of n is enabled.
3. When unidirectional printing mode is turned on, the printer prints from left to right.
4. To avoid horizontal printing misalignment, unidirectional printing mode should be used.

CODES (HEX/CONTROL): <1B> <61> <n> / {ESC} {a} n

NAME: Select justification

FUNCTION: Aligns all the data in each line

RANGE: $00 \leq n \leq 02$, $30 \leq n \leq 32$

EXPLANATION:

- The parameter n specifies justification select as below:

| n | Justification |
|------|---------------------|
| 0,30 | Left justification |
| 1,31 | Centering |
| 2,32 | Right justification |

- The command enabled only when processed at the beginning of a line.
- A portion of data skipped by means of {HT} is also target data for the justification function.
- This command also valid for bit image printing.

Left justification

| |
|-------|
| ABC |
| ABCD |
| ABCDE |

Centering

| |
|-------|
| ABC |
| ABCD |
| ABCDE |

Right justification

| |
|-------|
| ABC |
| ABCD |
| ABCDE |

CODES (HEX/CONTROL): <1B> <63> <33> <n> / {ESC} {c} {3} n

NAME: Select paper sensor(s) to output paper end signals

FUNCTION: Selects the paper sensor(s) to output paper end signals

RANGE: $00 \leq n \leq FF$

EXPLANATION:

- The parameter n specifies paper end signals as below:

| Bit | Off/On | Hex | Decimal | Function |
|-----|--------|-----|---------|-------------------------------------|
| 0 | Off | 00 | 0 | Paper roll near-end sensor disabled |

| | | | | |
|-----|-----|----|---|-------------------------------------|
| | On | 01 | 1 | Paper roll near-end sensor enabled |
| 1 | Off | 00 | 0 | Paper roll near-end sensor disabled |
| | On | 02 | 2 | Paper roll near-end sensor enabled |
| 2 | Off | 00 | 0 | Paper roll end sensor disabled |
| | On | 04 | 4 | Paper roll end sensor enabled |
| 3 | Off | 00 | 0 | Paper roll end sensor disabled |
| | On | 08 | 8 | Paper roll end sensor enabled |
| 4-7 | - | - | - | Undefined |

2. This command is available only with a parallel interface.
3. It is possible to select multiple detectors to output signals. Then, if any of the detectors detects a paper end, the paper end signal is output.
4. Detector is switched when executing this command. Because of this, the paper-out signal switching may delay depending on the receive buffer state.
5. The paper near-end sensor is an option; therefore, if the sensor is not equipped, the sensor always detects that paper is installed, not near-end.

CODES (HEX/CONTROL): <1B> <63> <34> <n> / {ESC} {c}{4} n

NAME: Select paper sensor(s) to stop printing

FUNCTION: Select paper sensor(s) used to stop printing

RANGE: $00 \leq n \leq FF$

EXPLANATION:

1. Selects the paper sensor(s) used to stop printing when a paper-end is detected using *n* as follows:

| Bit | Off/On | Hex | Decimal | Function |
|-----|--------|-----|---------|-------------------------------------|
| 0 | Off | 00 | 0 | Paper roll near-end sensor disabled |
| | On | 01 | 1 | Paper roll near-end sensor enabled |
| 1 | Off | 00 | 0 | Paper roll near-end sensor disabled |
| | On | 02 | 2 | Paper roll near-end sensor enabled |
| 2-7 | - | - | - | Undefined |

2. When a paper end is detected, printing stops after printing the current line and feeding the paper.
3. The printer goes off-line after printing stops.
4. When a paper-end is detected by the paper roll sensor, the printer goes off-line after printing stops.
5. The paper roll near-end sensor is an option, therefore, if the paper roll near-end sensor is enabled by this command when the sensor is not equipped, it does not stop printing.
6. The paper roll near-end sensor is enabled when either bit 0 or 1 is 1.
7. The paper roll end is a sensor which is always used to make an effective to stop printing.

CODES (HEX/CONTROL): <1B> <63> <35> <n> / {ESC} {c}{5} n

NAME: Enable/disable panel button

FUNCTION: Enables or disables the panel button

RANGE: $00 \leq n \leq FF$

EXPLANATION:

1. This command n specifies panel button as below:
LSB of $n = 0$ Panel button is enabled.
LSB of $n = 1$ Panel button is disabled.
2. Only the lowest bit of n is valid.
3. If “disabled” is set, the paper feed switch no longer function. However, when loading roll paper, if the paper loading wait time has been set with {GS}{z}{0}, the paper feed switch can be used to feed the paper forward within the set time.
4. For this printer, “panel switch” refers to the feed button.

CODES (HEX/CONTROL): <1B> <64> <n> / {ESC} {d} n

NAME: Print and feed n lines

FUNCTION: Prints the data in the print buffer and feeds n lines

RANGE: $00 \leq n \leq FF$

EXPLANATION:

1. This command does not affect the line spacing set by {ESC} {2} or {ESC} {3}.
2. The maximum paper feed amount is 40 inches. If the paper feed amount ($n \times$ line spacing) of more than 40 inches is specified, the printer feeds the paper only by 40 inches.
3. The print starting position is set to the beginning of next line after this command.

CODES (HEX/CONTROL): <1B> <65> <n> / {ESC} {e} n

NAME: Print and reverse feed n lines

FUNCTION: Prints the data in the print buffer and feeds n lines in the reverse direction

RANGE: $00 \leq n \leq 02$

EXPLANATION:

1. This command must not be issued continuously more than two times.
2. Reverse direction paper feeding may cause the following problems:
 - Paper feed pitch is incorrect.
 - Printer noise is louder than normal.
 - The paper may rub against the ribbon and become dirty
3. If n is out of the specified range this command is ignored.

CODES (HEX/CONTROL): <1B> <70> <m> <t1> <t2> / {ESC} {p} m
t1 t2

NAME: Generate pulse

FUNCTION: Outputs the pulse specified to peripheral port

RANGE: $m = 00, 01, 30, 31$ $00 \leq t1 \leq t2 \leq FF$

EXPLANATION:

1. The parameter $t1$ and $t2$ specifies generate pulse as below:

| m | Connector pin |
|-------|---------------------------------|
| 0, 30 | Drawer kick-out connector pin 2 |
| 1, 31 | Drawer kick-out connector pin 5 |

2. The pulse ON time is [$t1 \times 2\text{ms}$] and the OFF time is [$t2 \times 2\text{ms}$]
3. If $t2 < t1$, the OFF time is [$t1 \times 2\text{ms}$]
4. If $t2$ is less than 50 (decimal), the OFF time is set to 100 ms.

CODES (HEX/CONTROL): <1B> <74> < n > / {ESC} {t} n

NAME: Select character code table

FUNCTION: Select character code table

RANGE: $00 \leq n \leq 05$ or $14 \leq n \leq 1A$ or $n = 11, 12, FF$

EXPLANATION:

1. Selects a page n from the character code table:

| n in Decimal | n in Hex | Page |
|----------------|------------|---|
| 0 | 00 | 0 [PC437 (U.S.A., Europe)] |
| 2 | 02 | 2 [PC850 (Multilingual)] Standard model only |
| 3 | 03 | 3 [PC860 (Portuguese)] Standard model only |
| 4 | 04 | 4 [PC863 (Canadian-French)] Standard model only |
| 5 | 05 | 5 [PC865 (Nordic)] Standard model only |
| 17 | 11 | 17 [PC 866 (Cyrillic #2)] Standard model only |
| 18 | 12 | 18 [PC852 (Latin II)] Standard model only |
| 20 | 14 | 20 [Code 42 (Thai)] Thai model only |
| 21 | 15 | 21 [Code 11 (Thai)] Thai model only |
| 22 | 16 | 22 [Code 13 (Thai)] Thai model only |
| 23 | 17 | 23 [Code 14 (Thai)] Thai model only |
| 24 | 18 | 24 [Code 16 (Thai)] Thai model only |
| 25 | 19 | 25 [Code 17 (Thai)] Thai model only |
| 26 | 1A | 26 [Code 18 (Thai)] Thai model only |
| 255 | FF | 255 [PC869 (Greek)] Standard model only |

2. The selected character code page is cleared when:

- {ESC} {@} is executed.
- The printer is reset (the power is turned off).

CODES (HEX/CONTROL): <1B> <7B> <n> / {ESC} {{} n

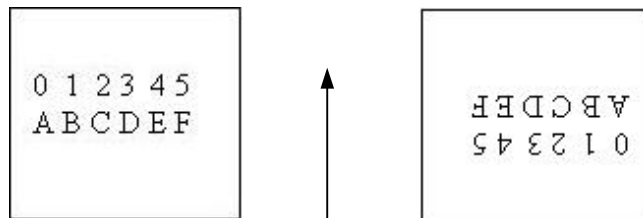
NAME: Turns on/off upside-down printing mode

FUNCTION: Turns upside-down printing mode on or off

RANGE: $00 \leq n \leq FF$

EXPLANATION:

1. The parameter n specifies upside-down printing as below:
LSB of $n = 0$ upside-down printing mode is turned off.
LSB of $n = 1$ upside-down printing mode is turned on.
2. Only the lowest bit of n is valid.
3. This command is enabled only when processed at the beginning of a line.
4. In upside-down printing mode, the printer rotates the line to be printed by 180° and then prints it.



Paper feed direction

5. The up side down printing mode will not reset at {ESC} {@} command.

CODES (HEX/CONTROL): <1C> <21> <n> / {ESC} {!!} n

NAME: Turns on/off two byte character coding mode

FUNCTION: Turns two byte character coding mode on or off

RANGE: $00 \leq n \leq FF$ **EXPLANATION:**

1. This command is only applicable in two byte character coded language models.
2. The parameter n specifies two byte character coding as below:
 - LSB of $n = 0$ two byte character coding mode is turned off.
 - LSB of $n = 1$ two byte character coding mode is turned on.
3. Only the lowest bit of n is valid.

CODES (HEX/CONTROL): <1D> <28> <41> <02> <00> <n> <m> /
{GS} {() {A} {STX} {NUL} n m

NAME: Execute test print**FUNCTION:** Execute a test print with a specified test pattern on a specified paper**RANGE:** $n = 00, 01, 02, 30, 31, 32$ $m = 02, 03, 32, 33$ **EXPLANATION:**

1. The parameter n specifies the paper to be tested as below:

| n | Paper |
|--------|--------------------------|
| 00, 30 | Basic sheet (paper roll) |
| 01, 31 | Paper roll |
| 02, 32 | |

2. The parameter m specifies a test pattern as below:

| m | Test pattern |
|--------|--------------------------------|
| 02, 32 | Printer self test status print |
| 03, 33 | Rolling pattern print |

3. If m is out of the specified range, this command is ignored.
4. This command is suggested to be at the beginning of a line.
5. At the end of the test print, the printer cuts the paper if auto cutter model is used.
6. After the test print is finished and paper cut, all printer settings remain.
7. The printer goes BUSY and stops data receiving while doing the test print.

CODES (HEX/CONTROL): <1D> <49> <n> / {GS} {I} n

NAME: Transmit printer ID

FUNCTION: Transmits the printer ID

RANGE: $01 \leq n \leq 03$, $31 \leq n \leq 33$, $41 \leq n \leq 45$

EXPLANATION:

1. The printer will transmit the printer ID according to n in this command as follows:

| n in hex | Printer ID Specification | Printer Response (ID) |
|------------|--------------------------------------|--|
| 1, 31 | Printer series ID (hexadecimal code) | 0D |
| 2, 32 | Type ID | (1 byte per table below) |
| 3, 33 | ROM version ID | (Depends on ROM version) |
| 41 | Firmware version | (Depends on firmware version) |
| 42 | Manufacturer | POSIFLEX |
| 43 | Printer name | PP5000 |
| 44 | Serial number | (Depends on serial number) |
| 45 | Language Support ID | (English model:) ALPHA (Chinese model:) GB2312 (Taiwanese model:) BIG-5 (Thai model:) THAI (Korean model:) KOREA |

$n = 2$, Type ID response

| Bit | Off/on | Hex | Decimal | Function |
|------|--------|-----|---------|---------------------------------------|
| 0 | Off | 00 | 0 | Two-byte character code not supported |
| | On | 01 | 1 | Two-byte character code supported |
| 1 | Off | 00 | 0 | Auto-cutter not equipped |
| | On | 02 | 2 | Auto-cutter equipped |
| 2, 3 | - | - | - | Undefined |
| 4 | Off | 00 | 0 | Not used. Fixed to off |
| 5, 6 | - | - | - | Undefined |
| 7 | Off | 00 | 0 | Not used. Fixed to off |

2. For the printer ID with parameter n in range 41 to 45, the response is transmitted in following format:

Header: Hexadecimal = 5Fh / Decimal = 95 (1 byte)

Data: Printer information

NUL: Hexadecimal = 00h / Decimal = 0 (1 byte)

After the data is ready to be transmitted, the printer executes the following process.

- Executes READY to BUSY. If it is already BUSY, the printer executes nothing.
 - Transmits [Header + Data +NUL].
 - Executes BUSY to READY. If it is already BUSY from any other cause, the printer executes nothing.
3. For the multi-byte response, the printer first transmits only first byte of the printer response ID before confirming that the host is ready to receive data. If the host computer is not ready to receive data, the printer waits until the host is ready and sends the rest of printer response ID as regulated above.
 4. The printer ID is transmitted when the data in the receive buffer is processed. Therefore, there may be a time lag between receiving this command and transmitting the response ID. It depends on the receive buffer status.
 5. When Auto Status Back (ASB) is enabled by command {GS} {a}, the printer ID response to {GS} {I} and the ASB status must be differentiated. Please refer to Appendix A.

CODES (HEX/CONTROL):

1. **<1D> <56> <m> / {GS} {V} m**
2. **<1D> <56> <m> <n> / {GS} {V} m n**

NAME: Partial paper cut

FUNCTION: Partial paper cut or feed and partial cut

RANGE: 1. $m = 00, 01, 30, 31$
 2. $m = 42 \quad 00 \leq n \leq FF$

EXPLANATION:

1. The value of m determines the command as follows:

| m in hex | Printer operation |
|----------------|------------------------------------|
| 00, 01, 30, 31 | Partial cut (one point left uncut) |

| | |
|----|--|
| 42 | Feeds paper to [cutting position + $n \times 0.176\text{mm}$ (1/144inches)] and cuts the paper partially [one point left (center) uncut] |
|----|--|

2. Here cutting position is defined for each model as:
 - PP5600B: Position of the auto cutter.
 - PP5600D: Position of the manual cutter.
3. PP5600D model ignores the paper cut operation.

CODES (HEX/CONTROL): <1D> <61> <n> / {GS} {a} n

NAME: Enable/Disable Automatic Status Back (ASB)

FUNCTION: Enables or disables ASB

RANGE: $00 \leq n \leq FF$

EXPLANATION:

1. The parameter n in this command configures the ASB function as below:

| Bit # in n | Off/On | Hex | Decimal | Coverage for ASB function |
|--------------|--------|-----|---------|-----------------------------------|
| 0 | Off | 00 | 0 | Drawer open status disabled. |
| | On | 01 | 1 | Drawer open status enabled. |
| 1 | Off | 00 | 0 | On-line/off-line status disabled. |
| | On | 02 | 2 | On-line/off-line status enabled. |
| 2 | Off | 00 | 0 | Error status disabled. |
| | On | 04 | 4 | Error status enabled. |
| 3 | Off | 00 | 0 | Paper sensor status disabled. |
| | On | 08 | 8 | Paper sensor status enabled. |
| 4-7 | - | - | - | Undefined. |

2. If $n \neq 0$, the ASB function is enabled for the non-zero bit in n and the ASB status is transmitted by the printer when this command is processed. Whenever any one of the enabled status items in printer is changed after this command is executed, the ASB status is always sent without confirming the condition of hardware handshaking signal. If any status not enabled in this command changes in the printer, no ASB status will be sent.
3. If $n = 0$, the ASB function is all disabled and no ASB status will be transmitted

when this command is processed.

4. This command is executed when the data in the receive buffer is processed. Therefore, there may be a time lag between receiving this command and transmitting the status, depending on the receive buffer status.
5. When the printer is disabled by {ESC} {=} (Device select), the four ASB status bytes are still transmitted whenever the status changes.
6. The ASB status transmitted by this command must be differentiated from the response to other commands like {DLE} {EOT}, {GS} {I}, or {GS} {r}. Please refer to Appendix A.
7. The ASB status to be transmitted are 4 consecutive bytes as follows:

First bytes (printer information)

| Bit | Off/On | Hex | Decimal | Status for ASB |
|-----|--------|-----|---------|---|
| 0 | Off | 00 | 0 | Not used. Fixed to Off |
| 1 | Off | 00 | 0 | Not used. Fixed to Off |
| 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 | On-line |
| | On | 08 | 8 | Off-line |
| 4 | On | 10 | 16 | Not used. Fixed to On |
| 5 | - | - | - | Undefined |
| 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 | Not used. Fixed to Off |

Second byte (printer error information)

| Bit | Off/On | Hex | Decimal | Status for ASB |
|-----|--------|-----|---------|----------------------------------|
| 0 | Off | 00 | 0 | Not waiting for on-line recovery |
| | On | 01 | 1 | Waiting for on-line recovery |
| 1 | - | - | - | Undefined |
| 2 | Off | 00 | 0 | No mechanical error |
| | On | 04 | 4 | Mechanical error |

| | | | | |
|---|-----|----|----|--|
| 3 | Off | 00 | 0 | No auto cutter error |
| | On | 08 | 8 | Auto cutter error occurred |
| 4 | Off | 00 | 0 | Not used. Fixed to Off |
| 5 | Off | 00 | 0 | No unrecoverable error |
| | On | 20 | 32 | Unrecoverable error occurred |
| 6 | Off | 00 | 0 | No temporary abnormality of the print head temperature |
| | On | 40 | 64 | Temporary abnormality of the print head temperature |
| 7 | Off | 00 | 0 | Not used Fixed to Off |

Third byte (paper sensor information)

| Bit | Off/On | Hex | Decimal | Status for ASB |
|------|--------|-----|---------|--|
| 0, 1 | Off | 00 | 0 | Paper roll near-end sensor: paper adequate |
| | On | 03 | 3 | Paper roll near-end sensor: paper near end |
| 2, 3 | Off | 00 | 0 | Paper roll end sensor: paper present |
| | On | 0C | 12 | Paper roll end sensor: paper not present |
| 4 | Off | 00 | 0 | Not used. Fixed to Off |
| 5, 6 | - | - | - | Undefined |
| 7 | Off | 00 | 0 | Not used. Fixed to Off |

Bit 0 and 1: The “paper roll near end” sensor is an option; on units that’s do not have this sensor, the “paper roll near end” sensor always indicates that paper is present (bits 0 and 1 = 1), whether or not it actually is.

Fourth byte (paper sensor information)

| Bit | Off/On | Hex | Decimal | Status for ASB |
|------|--------|-----|---------|-----------------------|
| 0-3 | - | - | - | Undefined |
| 4 | Off | 00 | 0 | Not used Fixed to Off |
| 5, 6 | - | - | - | Undefined |
| 7 | Off | 00 | 0 | Not used Fixed to Off |

CODES (HEX/CONTROL): <1D> <72> <n> / {GS} {r} n

NAME: Transmit status

FUNCTION: Transmits the printer status

RANGE: n = 01, 02, 31, 32

EXPLANATION:

1. The parameter n specifies transmits the status as follows:

| n in hex | Function |
|----------|--|
| 01, 31 | Transmits paper sensor status |
| 02, 32 | Transmits drawer kick-out connector status |

2. The printer transmits only 1 byte after confirming the host is ready to receive data. If the host computer is not ready to receive data, the printer waits until the host is ready.
3. This command is executed when the data in the receive buffer is processed. Therefore, there may be a time lag between receiving this command and transmitting the status, depending on the receive buffer status.
4. When Auto Status Back (ASB) is enabled using {GS} {a}, the status transmitted by {GS} {r} and the ASB status must be differentiated. Please refer to Appendix A.
5. The status types to be transmitted are shown below:

Paper sensor status [n = 01, 31]

| Bit | Off/On | Hex | Decimal | Status for ASB |
|------|--------|------|---------|--|
| 0, 1 | Off | 00 | 0 | Paper roll near-end sensor: paper adequate |
| | On | (03) | (3) | Paper roll near-end sensor: paper near end |
| 2, 3 | Off | 00 | 0 | Paper roll end sensor: paper adequate |
| | On | 0C | 12 | Paper roll and sensor: no paper present |
| 4 | Off | 00 | 0 | Not used Fixed to Off. |
| 5, 6 | - | - | - | Undefined. |
| 7 | Off | 00 | 0 | Not used Fixed to Off. |

- Bit 0 and 1: The “paper roll near end” sensor is an option; on units that do not have this sensor, the “paper roll near end” sensor always indicates that paper is present (bits 0 and 1 = 1), whether or not it actually is.

Drawer kick-out connector status [$n = 02, 32$]

| Bit | Off/On | Hex | Decimal | Function |
|------|--------|-----|---------|--|
| 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 | - | - | - | Undefined. |
| 4 | Off | 00 | 0 | Not used Fixed to Off. |
| 5, 6 | - | - | - | Undefined. |
| 7 | Off | 00 | 0 | Not used Fixed to Off. |

CODES (HEX/CONTROL): <1D> <7A> <30> <t1> <t2> / {GS} {z} {0},
t1 t2

NAME: Setting of on-line recovery wait time

FUNCTION: This command has no effect in PP5600

RANGE: $00 \leq t1 \leq FF$, $00 \leq t2 \leq FF$

EXPLANATION:

1. When the printer has gone off-line because printing stopped due to a lack of paper, it begins waiting for paper re-loading. After paper reloaded, the printer waits for either a Feed button press or a {DLE} {ENQ} command to become on-line again. There is no programmed time out function in PP5600 series.
2. When the printer has gone off-line because printing stopped due to an error status, it waits after error correction for a {DLE} {ENQ} command to become on-line again. There is still no programmed time out function in PP5600 series.

APPENDIX A: Transmission Status Identification

The values of specific bits are fixed in the status information transmitted by the printer, so that the status bytes of commands can be identified. The user can therefore confirm the command to which the status belongs, as shown in the following table.

When using Auto Status Back (ASB), however, process the consecutive three-byte code as ASB data after confirming the first byte of the ASB. Otherwise, the status transmitted by using the {GS}{I} and the status of the second and following bytes of the ASB cannot be differentiated.

Table E-1 Transmission Status Identification

| Command | Status Reply |
|--------------------------|--------------|
| {GS} {I} | <0**0****>B |
| {GS} {r} | <0**0****>B |
| {DLE} {EOT} | <0**1**10>B |
| ASB (1st byte) | <0**1**00>B |
| ASB (2nd byte- 4th byte) | <0**0****>B |