RP-U420 *Application Programming Guide*

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RP-U420 Application Programming Guide

Version 1.0

Seiko Epson Corporation
System Device Division

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USABLE APPLICATION PROGRAMS AND TIPS

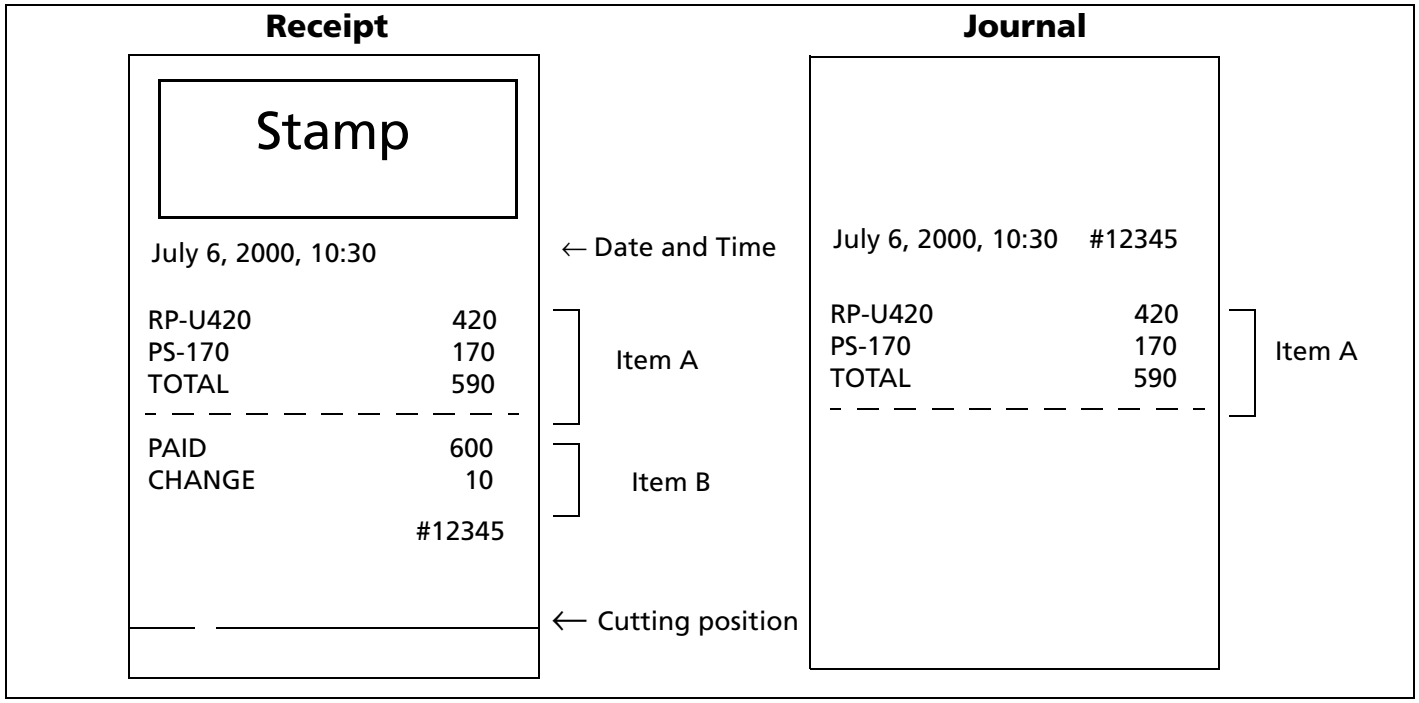
System Processing

This example illustrates ESC/POS command functions and printing results. Item 2-1 shows a combination of receipt and journal printing. Item 2-2 shows processing to issue a Taiwan receipt. Tips include features of stamp printing and usage of the **ESC o** command. Note: Print samples are images of the printing results of the program samples. They do not represent the actual printing.

2-1 Journal and Receipt Combination Printing

The example shows procedures and a program sample for printing part of data on a receipt and journal at the same time. At first you need to set DIP Switch 1-8 (Printer mode selection) to Off (Standard mode); then turn on the power.

Print Sample



System Processing Procedures

Procedure	Commands used	Description
1. Initialization	**ESC @**	Executes initialization.
2. Print date and time	**ESC c 0, ESC z** **RS, LF**	Prints different data on receipt and journal. Jumps to the print position on journal (journal tab).
3. Print Item A	**ESC z, LF**	Prints Item A. **ESC z** a parallel printing for the same data on both receipt and journal.
4. Execute a stamp for the next receipt	**ESC c 0, ESC o**	Executes a stamp for the next receipt.
5. Print Item B	**LF**	Prints Item B.
6. Issue a receipt	**ESC p 0, GS V** **ESC c 0, LF**	Prints a slip number, operates a drawer, cuts a receipt, feeds journal paper.

Step 4 is necessary for effective use of paper. Refer to the tips section for details.

Programming Example

```
PRINT #1, CHR$(&H1B);"@"; ← Initializes the printer

PRINT #1, CHR$(&H1B);"c0";CHR$(3); ← Selects a print sheet
PRINT #1, CHR$(&H1B);"z";CHR$(0); ← Cancels parallel printing on receipt and journal
PRINT #1, "July 6, 2000  10:30";CHR$(&H1E);
PRINT #1, "July 6, 2000  10:30   #12345";CHR$(&HA);CHR$(&HA);
PRINT #1, CHR$(&H1B);"z";CHR$(1); ← Selects parallel printing on receipt and journal

PRINT #1, "RP-U420                  420";CHR$(&HA);
PRINT #1, "PS-170                   170";CHR$(&HA);
PRINT #1, "TOTAL                    590";CHR$(&HA);
PRINT #1, "----------------------------";CHR$(&HA);

PRINT #1, CHR$(&H1B);"c0";CHR$(2); ← Selects receipt
PRINT #1, CHR$(&H1B);"o";← Executes stamp for the next sheet

PRINT #1, "PAID                     600";CHR$(&HA);
PRINT #1, "CHANGE                    10";CHR$(&HA);CHR$(&HA);

PRINT #1, CHR$(&H1B);"p";CHR$(0);CHR$(2);CHR$(20); ← drawer kick-out
PRINT #1, "                       #12345";CHR$(&HA);CHR$(&HA);
PRINT #1, CHR$(&H1D);"V";CHR$(66);CHR$(0); ← Feeds paper to the cutting position
PRINT #1, CHR$(&H1B);"c0";CHR$(1); ← Selects journal
PRINT #1, CHR$(&HA);← Feeds journal
END
```

Prints date and time

Item A

Stamp

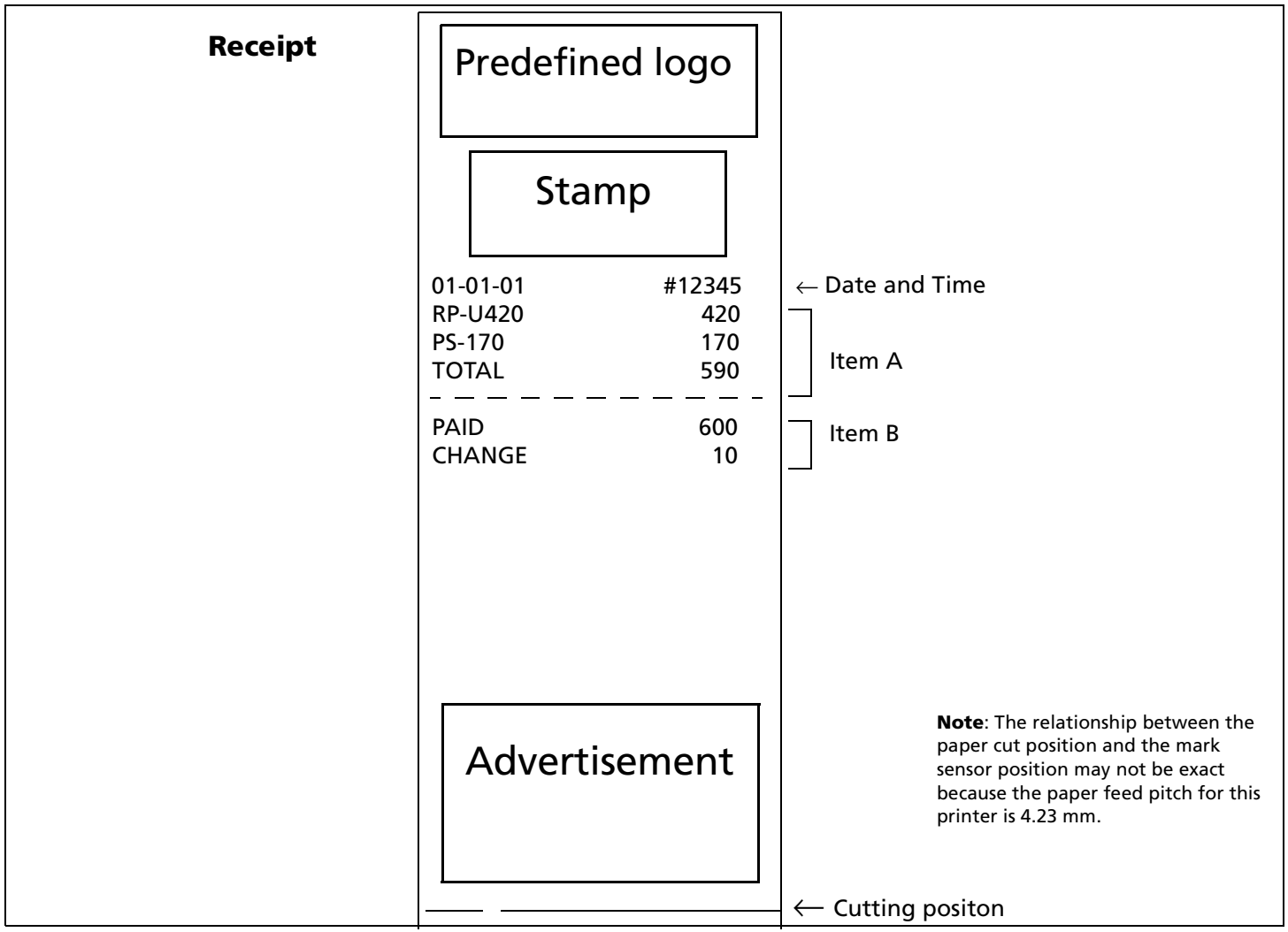
Item B

Issues receipt

2-2 Issuing Taiwan Receipt

The example shows procedures and a program sample for issuing a Taiwan receipt, which has black marks. At first you need to set DIP Switch 1-8 (Printer mode selection) to On (Taiwan mode); then turn on the power.

Print Sample



System Processing Procedures

Procedure	Commands used	Description
1. Initialization	**ESC @**	Executes initialization.
2. Print details	**ESC c 0, ESC z** **ESC d, LF**	Prints date, slip number, and details on both receipt and journal. **ESC z** executes parallel printing of the same data on both receipt and journal.
3. Execute a stamp for the next receipt	**ESC d, ESC o**	Executes a stamp for the next receipt.
4. Issue a receipt	**FF**	Feeds a receipt to the next black mark position and cuts the receipt.

Step 3 is necessary to execute a stamp at the correct position. Refer to the tips section for details.

Programming Example

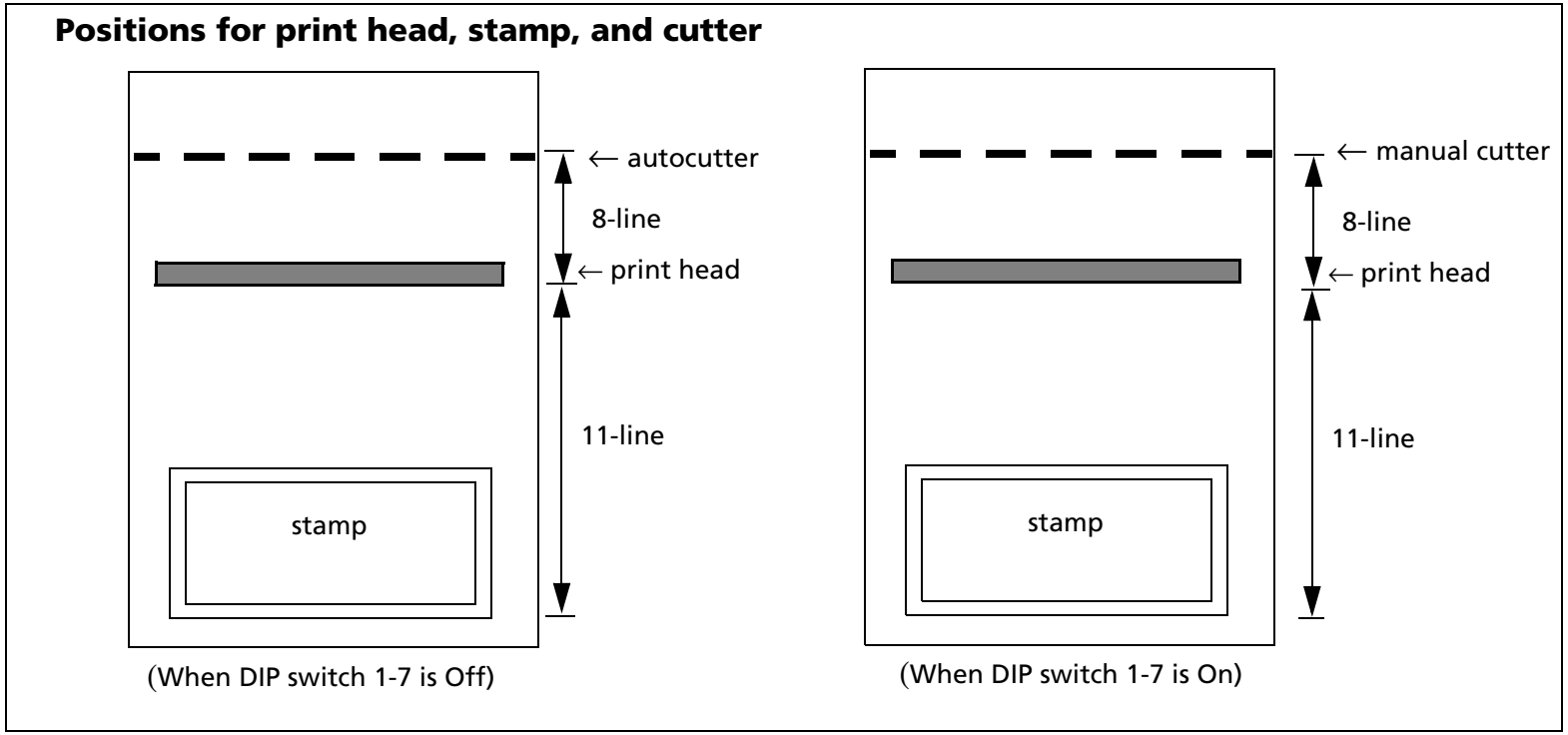
```
PRINT #1, CHR$(&H1B);"@"; ← Initializes the printer

PRINT #1, CHR$(&H1B);"c0";CHR$(3); ← Selects a print sheet
PRINT #1, CHR$(&H1B);"z";CHR$(1); ← Selects parallel printing on receipt and journal

PRINT #1, CHR$(&H1B);"d";CHR$(6); ← Feeds 6-line
PRINT #1, "01-01-01              #12345";CHR$(&HA);
PRINT #1, "RP-U420                  420";CHR$(&HA);
PRINT #1, "PS-170                   170";CHR$(&HA);
PRINT #1, "TOTAL                    590";CHR$(&HA);
PRINT #1, "--------------------------";CHR$(&HA);
PRINT #1, "PAID                     600";CHR$(&HA);
PRINT #1, "CHANGE                    10";CHR$(&HA);

PRINT #1, CHR$(&H1B);"d";CHR$(23); ← Feeds 23-line
PRINT #1, CHR$(&H1B);"o";← Executes stamp for the next sheet
PRINT #1, CHR$(&HC); ← Issues a receipt
END
```

Prints details

Stamp

Tips

RP-U420 has a stamp function. **ESC o** executes a stamp once. When printing a stamp, you need to set line spacing, depending on the position of each mechanism.



If you want to print characters just below the stamp after executing it, you need to feed 12 lines in advance.

1. Execute a stamp (**ESC o**).
2. Feed 12 lines (**ESC d 12**).
3. Print data (pint data + **LF**).

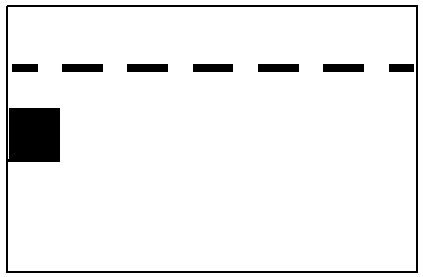
However, if you do the procedures above at the beginning of a receipt issue transaction, there will be space of about 14 lines above the stamp. As the program examples in this section show, if printing of a stamp for the second receipt is executed during the receipt printing for the first receipt, you can print a receipt without unnecessary spaces. If you use the autocutter, follow the steps below.

1. Print data up to the line so that the rest of the lines to be printed are 5 lines from the edge of the receipt.
2. Execute a stamp (**ESC o**).
3. Print data for the last 5 lines (print data + **LF**).
4. Feed paper to the cutting position and execute a paper cut (**GS V**).

Note: 5 lines used in the procedures are a reference value.

When deciding the stamp position in the Taiwan mode, you need to take the current position of the black mark into consideration. In Taiwan mode, feed paper to the black by **FF** and execute a paper cut.

Paper position after FF is executed



← autocutter or manual cutter position
1 to 6 mm (*)

(*) The relationship between the paper cut position and the mark sensor position may not be exact because the paper feed pitch for this printer is 4.23 mm.

When issuing a black mark receipt, follow the same procedures as when you print a stamp for the second receipt during receipt printing for the first receipt. Refer to 2-2, Issuing Taiwan Receipt, for details.

DEFINITIONS

(1) 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.

(2) 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.

(3) 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.

(4) Print buffer
The print buffer is used to store image data for printing.

(5) Print buffer-full
This is the state which occurs when the print buffer becomes full.

(6) 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.

(7) Beginning of the line
The beginning of the line means that no data exists in the print buffer, and the beginning of the line is the left margin.

(8) Printable area
This is the maximum printable area specified for each printer model.

(10) Ignoring a command
This is the printer state in which the printer does nothing after receiving all codes, including parameters.

(11) Horizontal/vertical direction
Horizontal direction is the direction which is perpendicular to the paper feed direction. Vertical direction is the paper feed direction.

(12) 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), but for other character sets, the baseline is the bottom of all characters, except that descenders, such as the bottom parts of “g” and “y,” are below the baseline.

(13) Setting commands
The commands that 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 and some of the normal commands are setting commands.

(14) Executing commands
The commands that 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.

(15) MSB
Most Significant Bit

(16) LSB
Least Significant Bit

(18) “Reserved” bit
“Reserved” bits are as follows:

- Bit which will be used for an extended function in the future.
- Bit which 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.

(19) “Fixed” bit
Use a bit only with a value indicated in a table.

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 00	DLE 16	SP 32	0 48	@ 64	P 80	` 96	p 112	Ç 128	É 144	á 160	▒ 176	└ 192	╨ 208	α 224	≡ 240
1	0001	01	XON 17	! 33	1 49	A 65	Q 81	a 97	q 113	ü 129	æ 145	í 161	▒ 177	┴ 193	╤ 209	ß 225	± 241
2	0010	02	18	" 34	2 50	B 66	R 82	b 98	r 114	é 130	Æ 146	ó 162	▒ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	0011	03	XOFF 19	# 35	3 51	C 67	S 83	c 99	s 115	â 131	ô 147	ú 163	▏ 179	├ 195	╙ 211	π 227	≤ 243
4	0100	EOT 04	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	ä 132	ö 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	0101	ENQ 05	21	% 37	5 53	E 69	U 85	e 101	u 117	à 133	ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	0110	06	22	& 38	6 54	F 70	V 86	f 102	v 118	å 134	û 150	ª 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
7	0111	07	23	' 39	7 55	G 71	W 87	g 103	w 119	ç 135	ù 151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	1000	BS 08	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	ê 136	ÿ 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	1001	HT 09	25	) 41	9 57	I 73	Y 89	i 105	y 121	ë 137	Ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	θ 233	• 249
A	1010	LF 10	26	* 42	: 58	J 74	Z 90	j 106	z 122	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	1011	11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	ï 139	¢ 155	½ 171	╗ 187	╦ 203	■ 219	δ 235	√ 251
C	1100	FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108	¦ 124	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	n 252
D	1101	CR 13	GS 29	— 45	= 61	M 77	] 93	m 109	} 125	ì 141	¥ 157	¡ 173	╜ 189	═ 205	▌ 221	ø 237	² 253
E	1110	14	30	. 46	> 62	N 78	^ 94	n 110	~ 126	Ä 142	Pt 158	« 174	╛ 190	╬ 206	▐ 222	∈ 238	■ 254
F	1111	15	31	/ 47	? 63	O 79	_ 95	o 111	SP 127	Å 143	ƒ 159	» 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	128	144	SP 160	ー 176	タ 192	ミ 208	三 224	× 240
1	0001	129	145	。 161	ア 177	チ 193	ム 209	上 225	円 241
2	0010	130	146	「 162	イ 178	ツ 194	メ 210	下 226	年 242
3	0011	131	147	」 163	ウ 179	テ 195	モ 211	丰 227	月 243
4	0100	132	148	、 164	エ 180	ト 196	ヤ 212	◢ 228	日 244
5	0101	133	149	・ 165	オ 181	ナ 197	ユ 213	◣ 229	時 245
6	0110	134	150	ヲ 166	カ 182	ニ 198	ヨ 214	◥ 230	分 246
7	0111	135	151	ァ 167	キ 183	ヌ 199	ラ 215	◤ 231	秒 247
8	1000	136	152	ィ 168	ク 184	ネ 200	リ 216	♠ 232	〒 248
9	1001	137	153	ゥ 169	ケ 185	ノ 201	ル 217	♥ 233	市 249
A	1010	138	154	ェ 170	コ 186	ハ 202	レ 218	✦ 234	区 250
B	1011	139	155	ォ 171	サ 187	ヒ 203	ロ 219	♣ 235	町 251
C	1100	140	156	ャ 172	シ 188	フ 204	ワ 220	● 236	村 252
D	1101	141	157	ュ 173	ス 189	ヘ 205	ン 221	○ 237	人 253
E	1110	142	158	ョ 174	セ 190	ホ 206	゛ 222	／ 238	▒ 254
F	1111	┼ 143	159	ッ 175	ソ 191	マ 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	▒ 176	└ 192	ð 208	Ó 224	— 240
1	0001	ü 129	æ 145	í 161	▒ 177	┴ 193	Ð 209	ß 225	± 241
2	0010	é 130	Æ 146	ó 162	▒ 178	┬ 194	Ê 210	Ô 226	= 242
3	0011	â 131	ô 147	ú 163	| 179	├ 195	Ë 211	Ò 227	¾ 243
4	0100	ä 132	ö 148	ñ 164	┤ 180	— 196	È 212	õ 228	¶ 244
5	0101	à 133	ò 149	Ñ 165	Á 181	┼ 197	ı 213	Õ 229	§ 245
6	0110	å 134	û 150	ª 166	Â 182	ã 198	Í 214	µ 230	÷ 246
7	0111	ç 135	ù 151	º 167	À 183	Ã 199	Î 215	þ 231	¸ 247
8	1000	ê 136	ÿ 152	¿ 168	© 184	╚ 200	Ï 216	Þ 232	° 248
9	1001	ë 137	Ö 153	® 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249
A	1010	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Û 234	· 250
B	1011	ï 139	ø 155	½ 171	╗ 187	╦ 203	█ 219	Ù 235	¹ 251
C	1100	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	ý 236	³ 252
D	1101	ì 141	Ø 157	¡ 173	¢ 189	═ 205	¦ 221	Ý 237	² 253
E	1110	Ä 142	× 158	« 174	¥ 190	╬ 206	Ì 222	— 238	■ 254
F	1111	Å 143	ƒ 159	» 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	▒ 176	└ 192	╨ 208	α 224	≡ 240
1	0001	ü 129	À 145	í 161	▒ 177	┴ 193	╤ 209	ß 225	± 241
2	0010	é 130	È 146	ó 162	▒ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	0011	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	0100	ã 132	õ 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	0101	à 133	ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	0110	Á 134	Ú 150	ª 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
7	0111	ç 135	ù 151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	1000	ê 136	Ì 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	1001	Ê 137	Õ 153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	• 249
A	1010	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	1011	Í 139	¢ 155	½ 171	╗ 187	╦ 203	▉ 219	δ 235	√ 251
C	1100	Ô 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	ⁿ 252
D	1101	ì 141	Ù 157	¡ 173	╜ 189	═ 205	▌ 221	ø 237	² 253
E	1110	Ã 142	₧ 158	« 174	╛ 190	╬ 206	▐ 222	∈ 238	■ 254
F	1111	Â 143	Ó 159	» 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	¦ 160	▒ 176	└ 192	╨ 208	α 224	≡ 240
1	0001	ü 129	È 145	´ 161	▒ 177	┴ 193	╤ 209	ß 225	± 241
2	0010	é 130	Ê 146	ó 162	▒ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	0011	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	0100	Â 132	Ë 148	¨ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	0101	à 133	Ï 149	¸ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	0110	¶ 134	û 150	³ 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
7	0111	ç 135	ù 151	— 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	1000	ê 136	¤ 152	Î 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	1001	ë 137	Ô 153	⌐ 169	╣ 185	╔ 201	┘ 217	θ 233	• 249
A	1010	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	1011	ï 139	¢ 155	½ 171	╗ 187	╤ 203	■ 219	δ 235	√ 251
C	1100	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	n 252
D	1101	═ 141	Ù 157	¾ 173	╜ 189	═ 205	▌ 221	ø 237	² 253
E	1110	À 142	Û 158	« 174	╛ 190	╬ 206	▐ 222	∈ 238	■ 254
F	1111	§ 143	ƒ 159	» 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	▒ 176	└ 192	╨ 208	α 224	≡ 240
1	0001	ü 129	æ 145	í 161	▒ 177	┴ 193	╤ 209	ß 225	± 241
2	0010	é 130	Æ 146	ó 162	▒ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	0011	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	0100	ä 132	ö 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	0101	à 133	ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	0110	å 134	û 150	ª 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
7	0111	ç 135	ù 151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	1000	ê 136	ÿ 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	1001	ë 137	Ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	θ 233	• 249
A	1010	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	1011	ï 139	ø 155	½ 171	╗ 187	╦ 203	▉ 219	δ 235	√ 251
C	1100	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	ⁿ 252
D	1101	ì 141	Ø 157	¡ 173	╜ 189	═ 205	▌ 221	ø 237	² 253
E	1110	Ä 142	₧ 158	« 174	╛ 190	╬ 206	▐ 222	∈ 238	■ 254
F	1111	Å 143	ƒ 159	¤ 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	€ 128	SP 144	SP 160	° 176	À 192	Ð 208	à 224	ð 240
1	0001	SP 129	‘ 145	¡ 161	± 177	Á 193	Ñ 209	á 225	ñ 241
2	0010	’ 130	’ 146	¢ 162	² 178	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	ä 228	ô 244
5	0101	… 133	· 149	¥ 165	µ 181	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	+ 247
8	1000	ˆ 136	˜ 152	¨ 168	¸ 184	È 200	Ø 216	è 232	ø 248
9	1001	‰ 137	™ 153	© 169	¹ 185	É 201	Ù 217	é 233	ù 249
A	1010	Š 138	š 154	ª 170	º 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	¼ 188	Ì 204	Ü 220	ì 236	ü 252
D	1101	SP 141	SP 157	- 173	½ 189	Í 205	Ý 221	í 237	ý 253
E	1110	Ž 142	ž 158	® 174	¾ 190	Î 206	Þ 222	î 238	þ 254
F	1111	SP 143	Ÿ 159	¯ 175	¿ 191	Ï 207	ß 223	ï 239	ÿ 255

Page 17 (PC866: Cyrillic #2)

	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	У 147	г 163	179	195	211	у 227	є 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	Ў 246
7	0111	З 135	Ч 151	з 167	183	199	215	ч 231	ў 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	Ъ 154	к 170	186	202	218	ъ 234	· 250
B	1011	Л 139	Ы 155	л 171	187	203	219	ы 235	√ 251
C	1100	М 140	Ь 156	м 172	188	204	220	ь 236	№ 252
D	1101	Н 141	Э 157	н 173	189	205	221	э 237	¤ 253
E	1110	О 142	Ю 158	о 174	190	206	222	ю 238	254
F	1111	П 143	Я 159	п 175	191	207	223	я 239	SP 255

Page 18 (PC862: Latin2)

	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	176	192	đ 208	Ó 224	ˉ 240
1	0001	ü 129	Ĺ 145	í 161	177	193	Đ 209	ß 225	˝ 241
2	0010	é 130	Í 146	ó 162	178	194	Ď 210	Ô 226	˛ 242
3	0011	â 131	ô 147	ú 163	179	195	Ë 211	Ń 227	ˇ 243
4	0100	ä 132	ö 148	Ą 164	180	196	ď 212	ń 228	˘ 244
5	0101	ů 133	Ľ 149	ą 165	Á 181	197	Ň 213	ň 229	§ 245
6	0110	ć 134	ľ 150	Ž 166	Â 182	Ă 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	200	ě 216	Ŕ 232	° 248
9	1001	ë 137	Ö 153	ę 169	185	201	217	Ú 233	¨ 249
A	1010	Ö 138	Ü 154	170	186	202	218	ŕ 234	· 250
B	1011	ö 139	Ť 155	ź 171	187	203	219	Ũ 235	ũ 251
C	1100	î 140	ť 156	Č 172	188	204	220	ý 236	Ř 252
D	1101	Ź 141	Ł 157	ş 173	Ż 189	205	Ţ 221	Ý 237	ř 253
E	1110	Ä 142	× 158	« 174	ż 190	206	Ů 222	ţ 238	■ 254
F	1111	Ć 143	č 159	» 175	191	¤ 207	223	´ 239	SP 255

Page 19 (PC858: Euro)

	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	▒ 176	└ 192	ð 208	Ó 224	— 240
1	0001	ü 129	æ 145	í 161	▒ 177	┴ 193	Ð 209	ß 225	± 241
2	0010	é 130	Æ 146	ó 162	▒ 178	┬ 194	Ê 210	Ô 226	═ 242
3	0011	â 131	ô 147	ú 163	│ 179	├ 195	Ë 211	Ò 227	¾ 243
4	0100	ä 132	ö 148	ñ 164	┤ 180	─ 196	È 212	õ 228	¶ 244
5	0101	à 133	ò 149	Ñ 165	Á 181	┼ 197	€ 213	Õ 229	§ 245
6	0110	å 134	û 150	ª 166	Â 182	ã 198	Í 214	µ 230	÷ 246
7	0111	ç 135	ù 151	º 167	À 183	Ã 199	Î 215	þ 231	¸ 247
8	1000	ê 136	ÿ 152	¿ 168	© 184	╚ 200	Ï 216	Þ 232	° 248
9	1001	ë 137	Ö 153	® 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249
A	1010	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Û 234	· 250
B	1011	ï 139	ø 155	½ 171	╗ 187	╦ 203	▉ 219	Ù 235	¹ 251
C	1100	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	ý 236	³ 252
D	1101	ì 141	Ø 157	¡ 173	¢ 189	═ 205	¦ 221	Ý 237	² 253
E	1110	Ä 142	× 158	« 174	¥ 190	╬ 206	Ì 222	¯ 238	▮ 254
F	1111	Å 143	ƒ 159	» 175	┐ 191	¤ 207	▀ 223	´ 239	SP 255

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

RP-U420 SUPPORTED COMMANDS

Command	Classification	Name	Function type	Page
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RS	EXECUTING COMMAND	Journal tab	PRINT POSITION COMMANDS	31
ESC !	SETTING COMMAND	Select print mode(s)	CHARACTER COMMANDS	32
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ESC c 0	EXECUTING COMMAND SETTING COMMAND	Select paper type(s) for printing	PRINTING PAPER COMMANDS	47
ESC c 3	SETTING COMMAND	Select paper sensor(s) to output paper-end signals	PAPER SENSOR COMMANDS	49

LF

[Name] Print and line feed

[Format]

ASCII	LF
Hex	0A
Decimal	10

[Range] None

[Default] None

[Description] Prints the data in the print buffer and feeds one line, using 4.2 mm {1/6"}.

[Notes] This command sets the print position to the beginning of the line.

Program Example

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

Print Sample

```
AAAAA
BBBBB
```

FF

[Name] Print and feed paper to print starting position

[Format]

ASCII	FF
Hex	0C
Decimal	12

[Range] None

[Default] None

[Description] When DIP switch 1-7 is OFF (autocutter installed):

When receipt is selected as the print sheet, prints the data in the print buffer and feeds to the next print starting position and cut (one point left uncut).

When journal is selected as the print sheet, prints the data in the print buffer and feeds to the next print starting position.

When DIP switch 1-7 is ON (manual cutter installed):

When receipt or journal is selected as the print sheet, prints the data in the print buffer and feeds to the next print starting position.

[Notes]

- This command is effective only in the Taiwan mode (when DIP switch 1-8 is ON). This mode can be set to the printer which is equipped with the Taiwan black mark sensor.
- This command is effective only when receipt or journal is selected as the print sheet.
- After the operation, the printer sets the print starting position to the beginning of a line.
- The paper is not fed when the paper is present at the print starting position or when the mark sensor detects the marked portion. The paper is fed when the paper is not present at the print starting position or when the mark sensor does not detect the marked portion.

Program Example for all printers

```
PRINT #1, CHR$(&H1B);"c0";CHR$(2); ← Select paper type
PRINT #1, "AAAAA"; CHR$(&HA);
PRINT #1, "BBBBB"; CHR$(&HC);
```

Print Sample

```
AAAAA
BBBBB

Cut receipt
```

CR

[Name] Print and carriage return

[Format]

ASCII	CR
Hex	0D
Decimal	13

[Range] None

[Default] None

[Description] Prints the data in the print buffer and does not feed the paper.

[Notes] Sets the print starting position to the beginning of the line.

Program Example

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

Print Sample

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

RS

[Name] Journal tab

[Format]

ASCII	RS
Hex	1E
Decimal	30

[Range] None

[Default] None

[Description] Moves the print starting position to the beginning of the print area for the journal.

[Notes] This command is effective when all the following conditions are satisfied simultaneously:

- Both receipt and journal are selected for the print sheet.
- The parallel printing mode for receipt and journal is turned off.
- The print area is set within a printable area on the receipt.

Program Example

```
PRINT #1, CHR$(&H1B);"c0";CHR$(3); ←Select paper type (receipt and journal)
PRINT #1, CHR$(&H1B);"z";CHR$(0);  ←Cancel parallel printing mode
PRINT #1, "AAAAAAAAAAAAAAAAAAAAAAAAAAAAAA";
PRINT #1, "BBBBBBBBBBBBBBBBBBBBBBBBBBBBB";CHR$(&HA);
PRINT #1, "CCCCCCCCCCCCCCCCCCCC";CHR$(&H1E);
PRINT #1, "DDDDDDDDDDDDDDDDDDDD";CHR$(&HA);
```

Print Sample <Receipt>

```
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
CCCCCCCCCCCCCCCCCCCC           ----------journal tab--------
```

Print Sample <Journal>

```
BBBBBBBBBBBBBBBBBBBBBBBBBBBBB
DDDDDDDDDDDDDDDDDDDD
```

ESC !

[Name] Select print mode(s)

[Format]

ASCII	ESC	!	***n***
Hex	1B	21	***n***
Decimal	27	33	***n***

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

[Default] ***n*** = 0

[Description] Selects print mode(s) using ***n*** as follows:

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Reserved
1	Off	00	0	Reserved
2	Off	00	0	Reserved
3	Off	00	0	Reserved
4	Off	00	0	Reserved
5	Off	00	0	Double-width mode not selected
	On	20	32	Double-width mode selected
6	Off	00	0	Reserved
7	Off	00	0	Underline mode not selected
	On	80	128	Underline mode selected

[Notes] If the underline is added to the characters to be printed, the lowest bit of the characters overlaps the underline; therefore, this may cause difficulty in reading. Keep this in mind when the underline is added.

Program Example

```
PRINT #1, CHR$(&H1B);"!";CHR$(0); "AA";
PRINT #1, CHR$(&H1B);"!";CHR$(32); "BB"; CHR$(&HA);
PRINT #1, CHR$(&H1B);"!";CHR$(128); "AA";
PRINT #1, CHR$(&H1B);"!";CHR$(160); "BB"; CHR$(&HA);
```

Print Sample

AA

AABB ← with underline

AA: Normal

BB, Double-width

ESC %

[Name] Select/cancel user-defined character set

[Format]

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

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

[Default] ***n*** = 0

[Description] Selects or cancels the user-defined character set.
When the Least Significant Bit (LSB) is 0, the user-defined character set is canceled and the internal character set is enabled.
When the LSB is 1, the user-defined character set is selected.

[Notes]

- Only the LSB of ***n*** is valid.
- When the user-defined character set has been released, the internal character set is specified automatically.

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 &

[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]

$y = 2$
$32 \leq c1 \leq c2 \leq 126$
$0 \leq x \leq 9$
$0 \leq d \leq 255$
$k = c2 - c1 + 1$

[Default] None

[Description] Defines user-defined characters.

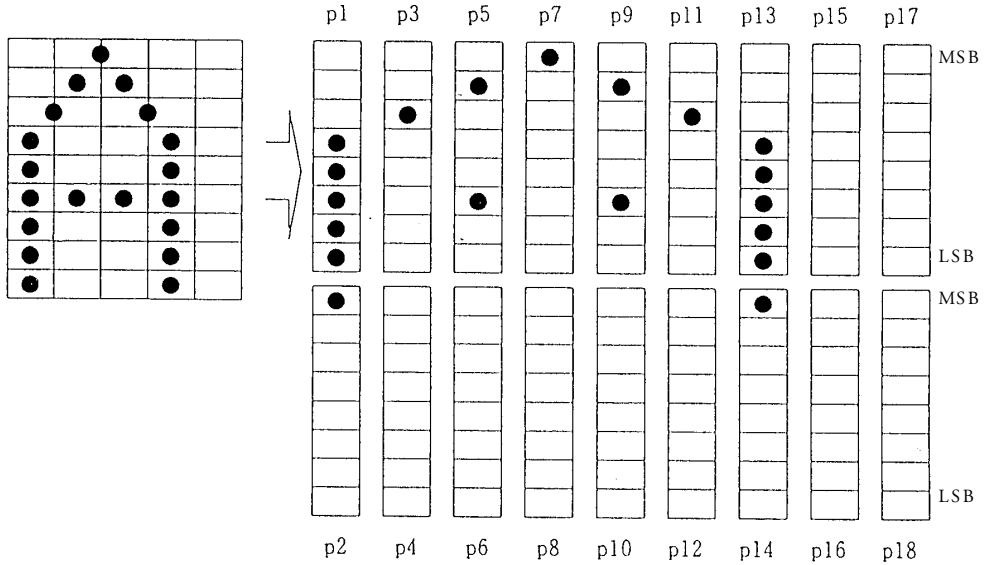
- ***y*** specifies the number of bytes in the vertical direction
- ***c1*** specifies the beginning character code for the definition, and ***c2*** specifies the final code
- ***x*** specifies the number of dots in the horizontal direction
- ***d*** specifies the defined character data pattern

[Notes]

- Consecutive character codes for multiple characters can be defined in one definition.
- "***d***" is definition data that indicates the pattern for "***x***" dots in the horizontal direction, starting from the left edge. If "***x***" does not satisfy dots in the character configuration pattern (9 dots), the remaining dots on the right are spaces.
- In the definition data, a "1" represents a dot that is to be printed, and a "0" represents a dot that is not to be printed.
- Only the most significant bit of the second data byte in the vertical direction can be printed.
- Independent user-defined character definitions are possible for the fonts if the character pattern is different in the international character sets.

- The defined downloaded characters are cleared in the following circumstances:
  - When deleted by **ESC ?**
  - When **ESC @** is executed
  - When a hardware reset is executed or the power is turned off
- No user-defined characters are defined in the initial state.
- If any user-defined characters are not defined, the internal character set (built-in) is selected.
- If **ESC R *n*** is executed, the user-defined characters that have been already defined are canceled.

[Example] 7 × 9 font with 2-dot character space



When the dot pattern for code 20H is defined as shown above:

	ESC	&	***y***	***c1***	***c2***	X	p1	p2	p3	p4	p5	p6	p7	p8	p9	p10	p11	p12	p13	p14
Code	1B	26	02	20	20	07	1F	80	20	00	44	00	80	00	44	00	20	00	1F	80

The corresponding bit is 1 when printing and 0 when not printing.

See program and print example for ESC %.

ESC *

[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]

m = 16, 17
$0 \le$ ***nL*** ≤ 255
$0 \le$ ***nH*** ≤ 3
$0 \le$ ***d*** ≤ 255
k = (***nL*** + ***nH*** $\times 256) \times 2$

[Default] None

[Description] Selects a bit-image mode using ***m*** for the number of dots specified by ***nL*** and ***nH***, as follows:

m	Mode	Vertical Direction	Max. Number of Dots			Min. number of dots in horizontal
		Number of Dots	Receipt	Journal	Validation	
16	9-dot single-density	9	108	108	248	2 half dots
17	9-dot double-density	9	216	216	495	1 half dot

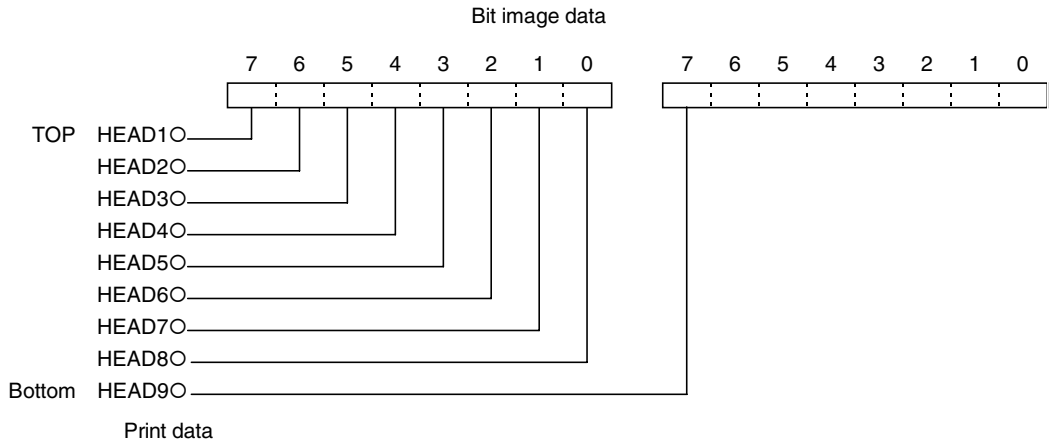
- ***m*** specifies the print mode of the bit image
- ***nL*** and ***nH*** specify the number of dots of the bit image in the horizontal direction as (***nL*** + ***nH*** $\times 256$) dots
- ***d*** indicates the bit-image data
- ***k*** specifies the number of bit-image data

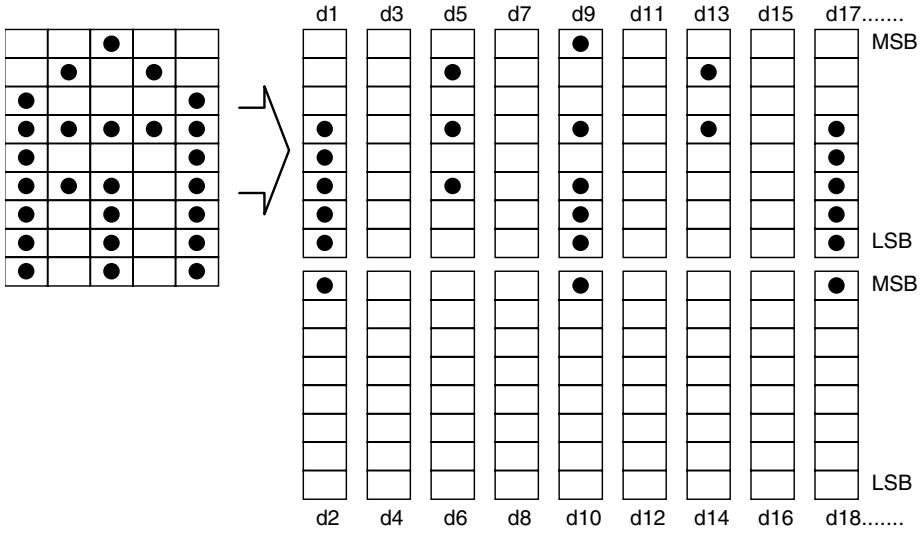
[Notes]

- ***d*** indicates the bit-image data. Set a corresponding bit to 1 to print a dot or to 0 not to print a dot.
- If bit-image data and character data are printed on a line, the bottom of the bit image is aligned to the baseline (the second dot from the bottom) of the built-in internal character.
- If bit-image data input exceeds the number of dots to be printed on a line, the excess data and the number of dots of the bit image in the horizontal direction which is specified by ***nL*** and ***nH***, are discarded. Then the printer performs the buffer-full process when the next data is input.

- If an adjacent dot is specified for the bit image in double-density mode (***m*** = 17), the right side of the adjacent dot is not printed.
- This command is not affected by print modes (double width or underline).
- After finishing processing the bit image, the printer returns to normal data processing mode. The next print starting position is located at the next dot of the last bit-image data.
- "Dot density in the vertical direction" indicates the dot density in the paper feeding direction, and "Dot density in the horizontal direction" indicates the direction perpendicular to the paper feeding direction.
- The bit-image data is developed based on the current print position.
- If the width set for the printing area is less than the minimum width of the bit-image data to be printed, the printer performs buffer full printing for the current print line; then the remaining data is printed from the beginning of the next line.

[Example] The relationship between the image data and the dots to be printed is as follows:





Program Example

```
m=16:  GOSUB bitimage9 ← 9-dot single-density
m=17:  GOSUB bitimage9 ← 9-dot double-density
END

bitimage9:
  PRINT #1, CHR$(&H1B);"[";CHR$(m);CHR$(70);CHR$(0);
  FOR i=1 TO 5
    PRINT #1, CHR$(0);CHR$(128);CHR$(1);CHR$(0);CHR$(2);CHR$(0);CHR$(4);CHR$(0);
    PRINT #1, CHR$(8);CHR$(0);CHR$(16);CHR$(0);CHR$(32);CHR$(0);CHR$(64);CHR$(0);
    PRINT #1, CHR$(128);CHR$(0);CHR$(64);CHR$(0);CHR$(32);CHR$(0);CHR$(16);CHR$(0);
    PRINT #1, CHR$(8);CHR$(0);CHR$(4);CHR$(0);CHR$(2);CHR$(0);CHR$(1);CHR$(0);
  NEXT i
  PRINT #1, CHR$(&HA);
  RETURN
```

Print Sample

m=16
m=17

ESC <

[Name] Return home

[Format]

ASCII	ESC	<
Hex	1B	3C
Decimal	27	60

[Range] None

[Default] None

[Description] Detects the home position again; then moves the print head to the standby position.

Program Example

```
PRINT #1, CHR$(&H1B);"<";
```


ESC =

[Name] Select device

[Format]

ASCII	ESC	=	***n***
Hex	1B	3D	***n***
Decimal	27	61	***n***

[Range] $1 \leq n \leq 3$

[Default] ***n*** = 1

[Description] Selects the device to which the host computer sends data, using ***n*** as follows:

n	**Function**
1	Enables printer
2	Enables customer display
3	Enables printer and customer display

[Notes]

- When the printer is disabled, it ignores all data except for real-time commands until it is enabled by this command.

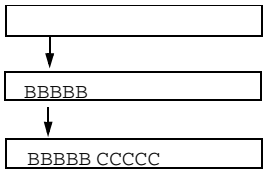
Program Example

```
PRINT #1, CHR$(&H1B);"=";CHR$(1); ← Only printer selected
PRINT #1, "AAAAA";
PRINT #1, CHR$(&H1B);"=";CHR$(2); ← Only customer display selected
PRINT #1, "BBBBB";
PRINT #1, CHR$(&H1B);"=";CHR$(3);← Both printer and customer display selected
PRINT #1, " CCCCC"; CHR$(&HA);
```

Print Sample

```
AAAAA CCCCC
```

Customer Display Sample



ESC ?

[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

[Description] Deletes the user-defined character pattern that corresponds to the specified character code.

- ***n*** specifies the character code corresponding to the user-defined character to be canceled

[Notes]

- If a user-defined character has not been defined for the specified character code, the printer ignores this command.
- After the user-defined character is canceled, the corresponding pattern for the internal character is printed.

See program and print example for ESC %.

ESC @

[Name] Initialize printer

[Format]

ASCII	ESC	@
Hex	1B	40
Decimal	27	64

[Range] None

[Default] None

[Description] Clears the data in the print buffer and resets the printer mode to the mode that was in effect when the power was turned on.

[Notes]

- The data in the receive buffer is not cleared.
- After this command is executed; the printer goes to the following state:
  - Both receipt and journal are selected for the print sheet
  - The parallel printing mode is canceled if this command is executed
  - The print starting position is set to the beginning of a line

Program Example

```
PRINT #1, CHR$(&H1B);"!";CHR$(32);
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
```


ESC R

SETTING COMMAND

[Name] Select an international character set

[Format]

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

[Range] $0 \leq n \leq 13$

[Default] ***n*** = 0

[Description] Selects an international character set ***n*** from the following table:

		ASCII code												
		Hex	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
n	Country	Dec	35	36	64	91	92	93	94	96	123	124	125	126
0	U.S.A.		#	$	@	[	\	]	^	`	{	¦	}	~
1	France		#	$	à	°	ç	§	^	`	é	ù	è	¨
2	Germany		#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
3	U.K.		£	$	@	[	\	]	^	`	{	¦	}	~
4	Denmark I		#	$	@	Æ	Ø	Å	^	`	æ	ø	å	~
5	Sweden		#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
6	Italy		#	$	@	°	\	é	^	ù	à	ò	è	ì
7	Spain I		Pt	$	@	¡	Ñ	¿	^	`	¨	ñ	}	~
8	Japan		#	$	@	[	¥	]	^	`	{	¦	}	~
9	Norway		#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
10	Denmark II		#	$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
11	Spain II		#	$	á	¡	Ñ	¿	é	`	í	ñ	ó	ú
12	Latin America		#	$	á	¡	Ñ	¿	é	ü	í	ñ	ó	ú
13	Korea		#	$	@	[	W	]	^	`	{	¦	}	~

[Notes]

- If **ESC R *n*** is executed, the user-defined characters that are defined with **ESC &** are canceled.

Program Example

```
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
#  $  @  Æ  Ø  Å  ^  `  æ  ø  å  ~  ← n=4
#  ¤  É  Ä  Ö  Å  Ü  é  ä  ö  å  ü  ← n=5
#  $  @  °  \  é  ^  ù  à  ò  è  ì  ← n=6
Pt $  @  ¡  Ñ  ¿  ^  `  ¨  ñ  }  ~  ← n=7
#  $  @  [  ¥  ]  ^  `  {  ¦  }  ~  ← n=8
#  ¤  É  Æ  Ø  Å  Ü  é  æ  ø  å  ü  ← n=9
#  $  É  Æ  Ø  Å  Ü  é  æ  ø  å  ü  ← n=10
```

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] $1 \leq n \leq 3$, $n = 8$

[Default] $n = 3$

[Description] Selects the type of paper for printing, using ***n*** as follows:

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Journal paper roll disabled
	On	01	1	Journal paper roll enabled
1	Off	00	0	Receipt paper roll disabled
	On	02	2	Receipt paper roll enabled
2	Off	00	0	Reserved
3	Off	00	0	Validation disabled
	On	08	8	Validation enabled
4-7	Off	00	0	Reserved

[Notes]

- This command is effective only when processed at the beginning of a line.
- When validation is selected, the printer waits for insertion of a validation sheet.
- For the validation wait time, use **ESC f**.
- The validation waiting state does not cause an offline or busy state.

- The printer waits for validation insertion until one of the following events occur:
  - A validation sheet is inserted
  - The wait time set by **ESC f** has passed
  - Hardware reset or power off
  - When **DLE ENQ 3** is executed
- When validation is set from enabled to disabled, the printer waits for removal of the validation sheet.
- When the printer receives **DLE ENQ 3** during the validation waiting state, the printing sheet will return to default (***n*** = 3).

Program Example

```
PRINT #1, CHR$(&H1B);"c0";CHR$(1); ←Select paper type (journal)
PRINT #1, "AAAAA"; CHR$(&HA); ← Print on journal
PRINT #1, CHR$(&H1B);"c0";CHR$(2); ← Select paper type (receipt)
PRINT #1, "BBBBB"; CHR$(&HA); ← Print on receipt
```

Print Sample <receipt>

```
BBBBB
```

Print Sample <journal>

```
AAAAA
```


ESC c 3

[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] ***n*** = 0

[Description] Selects the paper sensor(s) to output paper-end signals

- Each bit of ***n*** is used as follows:

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Journal near-end sensor disabled
	On	01	1	Journal near-end sensor enabled
1	Off	00	0	Receipt near-end sensor disabled
	On	02	2	Receipt near-end sensor enabled
2-7	Off	00	0	Reserved

[Notes]

- The command is available only with a parallel interface and is ignored with a serial interface.
- When all the sensors are disabled, the paper-end signal always outputs a paper present status.

Program Example

```
PRINT #1, CHR$(&H1B);"c3";CHR$(1); ← Journal near-end sensor enabled
```

ESC c 4

[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] ***n*** = 0

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

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Journal near-end sensor disabled
	On	01	1	Journal near-end sensor enabled
1	Off	00	0	Receipt near-end sensor disabled
	On	02	2	Receipt near-end sensor enabled
2-7	Off	00	0	Reserved

[Notes]

- When all of the following conditions are satisfied, the printer stops printing:
  - Paper near-end sensor(s) is enabled
  - The applicable sensor(s) detects a paper end
  - The print sheet(s) for the applicable sensor(s) is selected
- If the paper near-end sensor for the print sheet to be disabled detects a paper end, the printer executes paper LED light processing only.

Program Example

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

ESC c 5

[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

[Description] Enables or disables the receipt/journal feed buttons.

- When the Least Significant Bit (LSB) of ***n*** is 0, the receipt/journal feed buttons are enabled
- When the LSB of ***n*** is 1, the receipt/journal feed buttons are disabled

[Notes]

- Only the LSB of ***n*** is valid.
- When the receipt/journal feed buttons are disabled, no buttons on the receipt/journal feed are usable, except in the following case:
  - Receipt/journal feed buttons are enabled when the cover is opened

Program Example

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

ESC d

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

[Format]

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

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

[Default] None

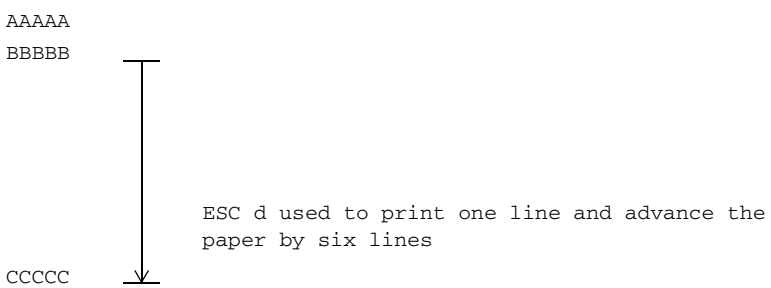
[Description] Prints the data in the print buffer and feeds ***n*** × 4.23 mm {1/6"}.

[Notes]
- This command sets the print starting position to the beginning of the line.

Program Example

```
PRINT #1, "AAAAA"; CHR$(&HA);
PRINT #1, "BBBBB"; CHR$(&H1B);"d";CHR$(6);
PRINT #1, "CCCCC"; CHR$(&HA);
```

Print Sample



ESC f

[Name] Set validation paper waiting time

[Format]

ASCII	ESC	f	***t1***	***t2***
Hex	1B	66	***t1***	***t2***
Decimal	27	102	***t1***	***t2***

[Range]
$0 \leq t1 \leq 15$
$0 \leq t2 \leq 64$

[Default] ***t1*** = 0, ***t2*** = 10

[Description] Sets the time that the printer waits for validation paper to be inserted and the time from insertion of the validation paper to the start of printing.

- ***t1*** specifies the wait time for validation paper to be inserted as [***t1*** × 1] minutes.
- When ***t1*** is set to 0, the printer waits until validation paper is inserted.
- ***t2*** specifies time from insertion of the validation paper to the start of printing as [***t2*** × 0.1] seconds.

[Notes]

- The setting values for this command are used for validation paper insertion.
- When the waiting time ***t1*** set by this command has passed, even though the validation paper is not detected, the printer ends the validation paper waiting state. Then the printer selects both paper sources—journal and receipt—for printing. If data is in the print buffer, the print data is printed on both journal and receipt paper.
- Waits for a validation paper to be inserted when the printer recovers from an error.

Program Example

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

ESC o

[Name] Stamp

[Format]

ASCII	ESC	o
Hex	1B	6F
Decimal	27	111

[Range] None

[Default] None

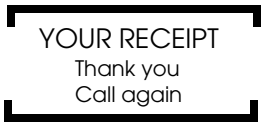
[Description] Executes a stamp operation on the receipt.

[Notes]
- This command is enabled only when processed at the beginning of a line.
- If a receipt is not selected as the paper source, this command is ignored.

Program Example

```
PRINT #1,CHR$(&H1B);"c0";CHR$(2); ←Select paper type
PRINT #1,CHR$(&H1B);"o"; ←Stamp
PRINT #1,CHR$(&H1B);"d";CHR$(13);
PRINT #1,"    AAAAA";CHR$(&HA);
```

Print Sample



AAAAA

ESC p

[Name] Generate pulse

[Format]

ASCII	ESC	p	***m***	***t1***	***t2***
Hex	1B	70	***m***	***t1***	***t2***
Decimal	27	112	***m***	***t1***	***t2***

[Range]

m = 0, 1, 48, 49
0 ≤ ***t1*** ≤ 255
0 ≤ ***t2*** ≤ 255

[Default] None

[Description] Outputs the pulse specified by ***t1*** and ***t2*** to connector pin ***m*** as follows:

m	**Function**
0, 48	Drawer kick-out connector pin 2
1, 49	Drawer kick-out connector pin 5

[Notes]

- The pulse ON time is [***t1*** × 2] ms, and the OFF time is [***t2*** × 2] ms.
- When ***t2*** < ***t1***, the printer processes ***t1*** × 2 ms as the OFF time.

Program Example

```
PRINT #1, CHR$(&H1B);"p";CHR$(0);CHR$(25);CHR$(250);
```

ESC t

[Name] Select character code table

[Format]

ASCII	ESC	t	***n***
Hex	1B	74	***n***
Decimal	27	116	***n***

[Range] $0 \leq n \leq 5$, $16 \leq n \leq 19$, $254 \leq n \leq 255$

[Default] $n = 0$

[Description] Selects a page ***n*** from the character code table.

n	**Character Code Table**
0	PC437 (U.S.A., Standard Europe)
1	Katakana
2	PC850 (Multilingual)
3	PC860 (Portuguese)
4	PC863 (Canadian-French)
5	PC865 (Nordic)
16	WPC1252
17	PC866 (Cyrillic2)
18	PC852 (Latin 2)
19	PC858 (Euro)
254	PC857 (Latin 5)
255	Space page

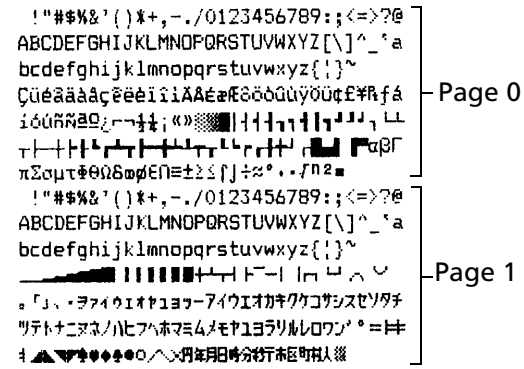
See character code tables.

Program Example

```
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



ESC z

[Name] Turn parallel printing mode on/off for receipt and journal

[Format]

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

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

[Default] ***n*** = 1 (when DIP switch 1-8 is ON: Taiwan mode)
n = 0 (when DIP switch 1-8 is OFF: standard mode)

[Description] Turns parallel printing mode for receipt and journal on or off. When parallel printing mode is turned on, the printer prints the same data on both receipt and journal paper.

- When the Least Significant Bit (LSB) of ***n*** is 0, turns off parallel printing mode
- When the LSB of ***n*** is 1, turns on parallel printing mode

[Notes]

- Only the lowest bit of ***n*** is enabled.
- This command is enabled only when input at the beginning of a line.
- This command affects printing only when both print sources—journal and receipt—are selected for printing.
- When the parallel printing mode is turned off, the printing area can be developed for receipt and journal. The first column in the print buffer is printed on the receipt. The print starting position moves to the first column of the journal in the following case.
  - When **RS** is executed
  - When buffer full is processed at the end of the printing area on the receipt
    (The data that causes the buffer full is printed on the first column of the journal)

Program Example

```
PRINT #1, CHR$(&H1B);"c0";CHR$(3); ←Select paper types (receipt and journal)
PRINT #1, "AAAAAAAAAAAAAAAAAAAA";
PRINT #1, "BBBBBBBBBBBBBBBBBBBB";CHR$(&HA);
PRINT #1, CHR$(&H1B);"z";CHR$(1);  ←Turn on parallel printing mode
PRINT #1, "CCCCCCCCCCCCCCCCCCCC";
PRINT #1, "DDDDDDDDDDDDDDDDDDDD";CHR$(&HA);
```

Print Sample <Receipt>

```
AAAAAAAAAAAAAAAAAAAABBBBBBBBBB
CCCCCCCCCCCCCCCCCCCCDDDDDDDDDD
DDDDDDDDDD
```

Print Sample <Journal>

```
BBBBBBBBBB
CCCCCCCCCCCCCCCCCCCCDDDDDDDDDD
DDDDDDDDDD
```


FS &

[Name] Select Kanji character mode

[Format]

ASCII	FS	&
Hex	1C	26
Decimal	28	38

[Description] Selects Kanji character mode.

- Kanji character mode is selected when DIP switch 1-8 is ON (Taiwan mode).
- Kanji character mode is canceled when DIP switch 1-8 is OFF (standard mode).

[Notes]

- When the Kanji character mode is selected, the printer checks whether the code is for Kanji or not, then processes 1-byte character, which has the same code as the first byte and the second byte if the code is for Kanji.
- Kanji character mode should be selected when the power is turned on.
- The printer supports the subset of the Big5 code system (Chinese font: 13053 characters) for Kanji character printing. If the printer processes a Kanji code that is not supported, the printer prints a space character.

Program Example

```
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 Sample

漢字

FS .

[Name] Cancel Kanji character mode

[Format]

ASCII	FS	.
Hex	1C	2E
Decimal	28	46

[Description] Cancels Kanji character mode.

- Kanji character mode is selected when DIP switch 1-8 is ON (Taiwan mode).
- Kanji character mode is canceled when DIP switch 1-8 is OFF (standard mode).

[Notes]

- When the Kanji character mode is not selected, all character codes are processed one byte at a time as ASCII code.
- Kanji character mode is initialized to default when the power is turned on, when **ESC @** is executed.

Program Example

```
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);
```

Print Sample

漢字
kanji

GS I

[Name] Transmit printer ID

[Format]

ASCII	GS	I	***n***
Hex	1D	49	***n***
Decimal	29	73	***n***

[Range] $1 \leq n \leq 3$, $49 \leq n \leq 51$, $65 \leq n \leq 67$, $n = 69$

[Default] None

[Description] Transmits the printer ID specified by ***n*** as follows:

n	**Printer ID**	**Contents**
1, 49	Model ID	<2C>H
2, 50	Type ID	See the table on the next page.
3, 51	Firmware version ID	Depends on firmware version. Example: <02>H
65	Firmware version	Depends on firmware version. Example: <5F>H, “2.00”, <00>H
66	Manufacturer	<5F>H, “EPSON”, <00>H
67	Model name	<5F>H, “RP-U420”, <00>H
69	Supporting Kanji type	<5F>H, “TAIWAN BIG5 ”, <00>H

n = 2: Type ID

Bit	Off/On	Hex	Decimal	Function
0	On	01	1	Two-byte character code supported.
1	Off	00	0	Manual cutter installed.
	On	02	2	Autocutter installed.
2	Off	00	0	Reserved
3	Off	00	0	Reserved
4	Off	00	0	Not used. Fixed to Off
5	Off	00	0	Reserved
6	Off	00	0	Reserved
7	Off	00	0	Not used. Fixed to Off

[Notes]

- The printer transmits the status 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 becomes ready.
- When the parameter ($1 \leq n \leq 3$) or ($49 \leq n \leq 51$) is specified, the printer transmits one byte code.
- When the parameter ($65 \leq n \leq 67$) or ($n = 69$) is specified, the printer transmits following data string.

  (1) Header (<5F>H)

  (2) Printer information (multiple bytes)

  (3) Terminator (<00>H)

Program Example

```
PRINT #1, CHR$(&H1D);"I";CHR$(1);← Transmits printer ID
```


GS V

[Name] Feed paper to the cutting position and cut it

[Format]

①	ASCII	GS	V	***m***	
	Hex	1D	56	***m***	
	Decimal	29	86	***m***	
②	ASCII	GS	V	***m***	***n***
	Hex	1D	56	***m***	***n***
	Decimal	29	86	***m***	***n***

[Range] ① $0 \leq m \leq 2$, $48 \leq m \leq 50$
② $65 \leq m \leq 67$, $0 \leq n \leq 255$

[Default] None

[Description] Cuts a receipt.

- When DIP switch 1-7 is OFF (autocutter installed), ***m*** specifies the paper cutting operation as follows:

m	**Printer Operation Mode**	
	Standard Mode	**Taiwan Mode**
0, 48, 1, 49	Cut (one point left uncut)	Cut (one point left uncut)
2, 50	Cut (three points left uncut)	Cut (three points left uncut)
65, 66	Feed receipt paper ((8 + ***n***) × 4.23 mm), then cut (one point left uncut).	If only receipt is selected as the printing sheet, feed receipt paper to the preprint black mark position, then cut (one point left uncut). If both receipt and journal are selected as the printing sheets, journal paper is also fed to the preprint black mark position.
67	Feed receipt paper ((8 + ***n***) × 4.23 mm), then cut (three points left uncut).	If on ly receipt is selected as the printing sheet, feed receipt paper to the preprint black mark position, then cut (three points left uncut). If both receipt and journal are selected as the printing sheets, journal paper is also fed to the preprint black mark position.

- When DIP switch 1-7 is ON (manual cutter installed), ***m*** specifies the paper cutting operation as follows:

m	**Printer Operation Mode**	
	Standard Mode	**Taiwan Mode**
0, 48, 1, 49	No operation	No operation
2, 50	No operation	No operation
65, 66	Only feed receipt paper ((10 + ***n***) × 4.23 mm).	Only feed receipt paper to the preprint black mark position. If both receipt and journal are selected as the printing sheets, journal paper is also fed to the preprint black mark position.
67	Only feed receipt paper ((10 + ***n***) × 4.23 mm).	Only feed receipt paper to the preprint black mark position. If both receipt and journal are selected as the printing sheets, journal paper is also fed to the preprint black mark position.

- ***n*** specifies the paper feeding amount before cutting a paper.

[Notes]

- This command is effective only when processed at the beginning of a line.
- This command is ignored when receipt is not selected as the printing sheet by **ESC c 0**.

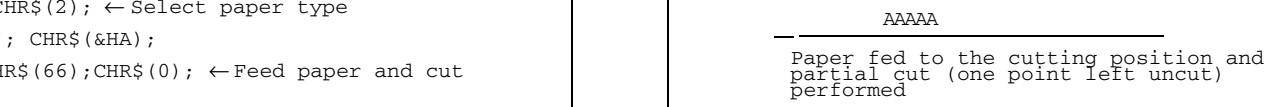
[Notes for ②]

- In Taiwan mode, parameter ***n*** has no meaning.
- For autocutter installed model, (8 × 4.23) mm is the optimal paper feed amount for cutting just under the last printed line.
- For manual cutter installed model, (10 × 4.23) mm is the optimal paper feed amount for cutting just under the last printed line.

Program Example

```
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



GS r

[Name] Transmit status

[Format]

ASCII	GS	r	***n***
Hex	1D	72	***n***
Decimal	29	114	***n***

[Range] ***n*** = 1, 2, 49, 50

[Default] None

[Description] Transmits the status specified by ***n,*** as follows:

n	**Function**
1, 49	Transmits paper sensor status
2, 50	Transmits drawer kick-out connector status

[Notes]

- The printer transmits the status 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 becomes ready.
- The status types to be transmitted are shown below:

  Paper sensor status (***n*** = 1, 49)

Bit	**Off/On**	**Hex**	**Decimal**	**Function**
0	Off	00	0	Journal paper near-end sensor: paper present
	On	01	1	Journal paper near-end sensor: paper near end
1	Off	00	0	Receipt paper near-end sensor: paper present
	On	02	2	Receipt paper near-end sensor: paper near end
2, 3	Off	00	0	Reserved
4	Off	00	0	Fixed

Bit	Off/On	Hex	Decimal	Function
5	Off	00	0	Validation sensor: paper present
	On	20	32	Validation sensor: paper not present
6	Off	00	0	Reserved
7	Off	00	0	Fixed

Drawer kick-out connector status (***n*** = 2, 50)

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
1,2,3	Off	00	0	Reserved
4	Off	00	0	Fixed
5,6	Off	00	0	Reserved
7	Off	00	0	Fixed

Program Example for all printers

```
PRINT #1, CHR$(&H1D);"r";CHR$(1); ← Transmits paper sensor status
```


DLE EOT

[Name] Real-time status transmission

[Format]

ASCII	DLE	EOT	***n***
Hex	10	04	***n***
Decimal	16	4	***n***

[Range] $1 \leq n \leq 4, 6$

[Default] None

[Description] Transmits the selected printer status specified by ***n*** in real-time, according to the following parameters:

n = 1: Transmit printer status
n = 2: Transmit offline status
n = 3: Transmit error status
n = 4: Transmit paper roll sensor status
n = 6: Transmit validation status

- ***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	Online.
	On	08	8	Offline.
4	On	10	16	Not used. Fixed to On.
5	Off	00	0	Reserved. Fixed to Off.
6	Off	00	0	No panel switch is pressed.
	On	40	64	One of panel switch is pressed.
7	Off	00	0	Not used. Fixed to Off.

Bit 6: Even if panel switch is disabled by **ESC c 5**, bit6 becomes “On” during one of panel switch is pressed.

- ***n*** = 2: Offline 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	Cover is closed.
	On	04	4	Cover is open.
3	Off	00	0	Paper is not being fed by using the FEED button.
	On	08	8	Paper is being fed by the FEED button.
4	On	10	16	Not used. Fixed to On.
5	Off	00	0	No paper end stop.
	On	20	32	Printing is being stopped due to paper end.
6	Off	00	0	No error.
	On	40	64	Error occurs.
7	Off	00	0	Not used. Fixed to Off.

- ***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 occurs.
3	Off	00	0	No autocutter error.
	On	08	8	Autocutter error occurs.
4	On	10	16	Not used. Fixed to On.
5	Off	00	0	No unrecoverable error.
	On	20	32	Unrecoverable error occurs.
6	Off	00	0	No print head temperature error.
	On	40	64	Print head temperature error occurs.
7	Off	00	0	No mark sensor error.
	On	80	128	Mark sensor error occurs.

Bit 2: This bit becomes “On” when home position detecting error or main motor lock-up error is occurs.

Bit 7: When serial interface model and 7 bit data word length selected, this bit can not be transferred to the host. Bit 7 is different from the ESC/POS Specification.

- ***n*** = 4: Paper roll 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	Off	00	0	Journal paper roll is not near end.
	On	04	4	Journal paper roll near end is detected.
3	Off	00	0	Receipt paper roll is not near end.
	On	08	8	Receipt paper roll near end is detected.
4	On	10	16	Not used. Fixed to On.
5	Off	00	0	Journal mark sensor does not detect black mark.
	On	20	32	Journal mark sensor is detecting black mark.
6	Off	00	0	Receipt mark sensor does not detect black mark.
	On	40	64	Receipt mark sensor is detecting black mark.
7	Off	00	0	Not used. Fixed to Off.

Bits 5 and 6 are different from the ESC/POS Specification.

- ***n*** = 6: Validation 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	Validation is not selected.
	On	04	4	Validation is selected.
3	Off	00	0	Not validation insertion waiting state.
	On	08	8	Within validation insertion waiting state.
4	On	10	16	Not used. Fixed to On.
5	Off	00	0	Validation sensor does not detect paper.
	On	20	32	Validation sensor is detecting paper.
6	Off	00	0	Reserved. Fixed to Off.
7	Off	00	0	Not used. Fixed to Off.

[Notes]

- The status is transmitted whenever the data sequence of <10>H <04>H <***n***> (1 ≤ ***n*** ≤ 4 or 6) is received.

  Example:
  In **ESC * *m nL nH d1...dk***, ***d1***=<10>H, ***d2***=<04>H, ***d3***=<01>H

- This command should not be used within the data sequence of another command that consists of 2 or more bytes.

  Example:
  If you attempt to transmit **ESC ! *n*** to the printer, but DTR (DSR for the host computer) goes to MARK before ***n*** is transmitted and then **DLE EOT 3** interrupts before ***n*** is received, the code <10>H for **DLE EOT 3** is processed as the code for **ESC !** <10>H.

- Even though the printer is not selected using **ESC =** (select peripheral device), this command is effective.
- The printer transmits the current status. Each status is represented by one-byte data.
- The printer transmits the status without confirming whether the host computer can receive data.
- The printer executes this command upon receiving it.

- With a serial interface model, this command is executed even when the printer is offline, the receive buffer is full, or there is an error status.
- With a parallel interface model, the printer cannot receive data when it is busy; therefore this command cannot be used under the following conditions.
  - When DIP Switch 1-6 is On: receive buffer-full.
  - When DIP Switch 1-6 is Off: receive buffer-full, offline, error status.

Program Example

```
PRINT #1, CHR$(&H10);CHR$(&H4);CHR$(2); ← Transmits offline status
```


DLE ENQ

[Name] Real-time request to printer

[Format]

ASCII	DLE	ENQ	***n***
Hex	10	05	***n***
Decimal	16	5	***n***

[Range] $1 \leq n \leq 3$

[Default] None

[Description] Responds to a request from the host specified by ***n***. The operations performed depend on the value of ***n***, as follows:

n = 1: Recover from an error and restart printing from the line where the error occurred.

n = 2: Clear the receive and print buffers and recover from an error.

n = 3: Cancel waiting for validation.

[Notes]

- The printer executes this command upon receiving this command.
- With a serial interface model, this command is executed even in the offline, receive buffer-full, or error states.
- With a parallel interface model, the printer cannot receive data when it is busy; therefore this command cannot be used under the following conditions.
  - When DIP Switch 1-6 is On: receive buffer-full.
  - When DIP Switch 1-6 is Off: receive buffer-full, offline, error states.
- This command is executed any time the data sequence <10>H<05>H<***n***> ($1 \leq n \leq 3$) is received, even if it appears as part of another command.

  <Example>
  In **ESC * *m nL nH d1 ... dk***, ***d1***=<10>H, ***d2***=<05>H, ***d3***=<1>
- This command should not be used within the data sequence of another command that consists of two or more bytes.

  <Example>
  If you attempt to transmit **ESC ! *n*** to the printer, but **DLE ENQ 3** interrupts before ***n*** is received, the code <10>H for **DLE ENQ 3** is processed as the code for **ESC !** <10>H.

- **DLE ENQ 1** restarts printing from the line where the error occurred.
  This command is available only for recoverable errors other than a print head temperature error.
- **DLE ENQ 2** enables the printer to recover from an error after clearing the data in the receive and print buffers. The printer retains the settings (from **ESC!**, **ESC R**, for example) that were in effect when the error occurred. Using **DLE ENQ 2** and **ESC @**, the printer can be completely initialized. **DLE ENQ 2** is available only for recoverable errors other than a print head temperature error.
- The printer selects both receipt and journal as the print sheet after recovering from an error by using **DLE ENQ 2**.
- **DLE ENQ 3** is available only when the printer is waiting for the insertion of validation paper and is ignored in other states. After the printer is released from the cut sheet waiting state, both receipt and journal are selected as the print sheet.
- When the cut sheet waiting state is canceled by **DEL ENQ 3**, the data in the receive and print buffers is cleared.
- **DLE ENQ 1** and **DLE ENQ 2** are enabled, even if the printer is canceled by **ESC =**.

.

Program Example

```
PRINT #1, CHR$(&H10);CHR$(&H5);CHR$(2);
```


DLE DC4

[Name] Generate pulse at real-time

[Format]

ASCII	DLE	DC4	***n***	***m***	***t***
Hex	10	14	***n***	***m***	***t***
Decimal	16	20	***n***	***m***	***t***

[Range]

n = 1
0 ≤ ***m*** ≤ 1
1 ≤ ***t*** ≤ 8

[Default] None

[Description] Outputs the pulse specified by ***t*** to connector pin ***m*** as follows:

m	**Function**
0	Drawer kick-out connector pin 2
1	Drawer kick-out connector pin 5

- The pulse ON time is [***t*** × 100] ms, and the OFF time is [***t*** × 100] ms.

[Notes]

- The printer executes this command upon receiving this command.
- This comand cannot be executed when the unrecoverable error occurs.
- With a serial interface model, this command is executed even when the printer is offline, the receive buffer is full, or there is an error status.
- With a parallel interface model, the printer cannot receive data when it is busy; therefore this command cannot be used under the following conditions.
  - When DIP Switch 1-6 is On: receive buffer-full.
  - When DIP Switch 1-6 is Off: receive buffer-full, offline, error status.
- This command is executed any time the data sequence <10>H<14>H<***n***><***m***> <0> is received, even if it appears as part of another command.

  <Example>
  In **ESC * *m nL nH d1 ... dk***, ***d1***=<10>H, ***d2***=<14>H, ***d3***=<1>,***d4***=<0>, ***d5***=<5>

- This command should not be used within the data sequence of another command that consists of two or more bytes.

  <Example>
  If you attempt to transmit **ESC ! *n*** to the printer, but **DLE DC4 105** interrupts before ***n*** is received, the code <10>H for **DLE DC4** is processed as the code for **ESC !** <10>H.
- This command is enabled even when the printer is not selected by **ESC =**.
- If the printer receives this command during outputting pulse required by **ESC p** or **DLE DC4** to the same connector pin, this command will be ignored.
- If the printer receives this command during outputting pulse required by **ESC p** or **DLE DC4** to another connector pin, this command will be queued and executed afterward.

Program Example

```
PRINT #1, CHR$(&H10);CHR$(&H14);CHR$(1)1;CHR$(0);CHR$(5);
```