

# Barcode Reference Guide



## Overview

This reference guide provides information for barcode printing that uses control commands sent directly to a Brother printing device.

### **Applicable Brother printing devices:**

Brother's HL, MFC and DCP models which are equipped with HP LaserJet (PCL) emulation mode.

If your Brother printing device supports HP LaserJet emulation mode, you can print barcodes in HP LaserJet emulation mode, Epson FX-850 emulation mode and IBM proprinter FX emulation mode.

Available emulation modes depend on the model number of your printing device. To determine what emulation mode is supported, see the specification section of that particular printing device's User's Guide.

## Print barcodes or expanded characters

<b>Code</b>	ESC i
<b>Dec</b>	27 105
<b>Hex</b>	1B 69

**Format:** ESC i n ... n \

Creates barcodes or expanded characters according to the segment of parameters 'n ... n'. For more information about parameters, see the following Definition of Parameters. This command must end with the '\ ' code (5CH).

## Definition of parameters

This barcode command can have the following parameters in the parameter segment (n ... n). As parameters are effective within the single command syntax ESC i n ... n \, they do not apply in the barcode commands. If certain parameters are not given, they take the preset settings. The last parameter must be the barcode data start ('b' or 'B') or the expanded character data start ('l' or 'L'). Other parameters can be given in any sequence. Each parameter can start with a lower-case or upper-case character, for example, 't0' or 'T0', 's3' or 'S3' and so one.

## Barcode mode

n = 't0' or 'T0'	CODE 39 (default)
n = 't1' or 'T1'	Interleaved 2 of 5
n = 't3' or 'T3'	FIM (US-Post Net)
n = 't4' or 'T4'	Post Net (US-Post Net)
n = 't5' or 'T5'	EAN 8, EAN 13, or UPC A
n = 't6' or 'T6'	UPC E
n = 't9' or 'T9'	Codabar
n = 't12' or 'T12'	Code 128 set A
n = 't13' or 'T13'	Code 128 set B
n = 't14' or 'T14'	Code 128 set C
n = 't130' or 'T130'	ISBN (EAN)
n = 't131' or 'T131'	ISBN (UPC-E)
n = 't132' or 'T132'	EAN 128 set A
n = 't133' or 'T133'	EAN 128 set B
n = 't134' or 'T134'	EAN 128 set C

This parameter selects the barcode mode as shown above. When n is 't5' or 'T5' the barcode mode (EAN 8, EAN 13, or UPC A) varies according to the number of characters in the data.

## Barcode, expanded character, line block drawing and box drawing

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n = 's0' or 'S0'	3: 1 (default)
n = 's1' or 'S1'	2: 1
n = 's3' or 'S3'	2.5: 1

This parameter chooses the barcode style as above. When the EAN 8, EAN 13, UPC-A, Code 128 or EAN 128 barcode mode is chosen, this barcode style parameter is ignored.

### Expanded Character

'S'

0 = White

1 = Black

2 = Vertical stripes

3 = Horizontal stripes

4 = Cross hatch

For example 'S' n1 n2

n1 = Background fill pattern

n2 = Foreground fill pattern

If 'S' is followed by only one parameter, the parameter is a foreground fill pattern.

### Line block drawing & box drawing

'S'

1 = Black

2 = Vertical stripes

3 = Horizontal stripes

4 = Cross hatch

## Barcode

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n = 'mnnn' or 'Mnnn' (nnn = 0 ~ 32767)

This parameter shows the barcode width. The unit of 'nnn' is a percentage.

## Barcode human readable line ON or OFF

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n = 'r0' or 'R0	Human readable line OFF
n = 'r1' or 'R1	Human readable line ON
Preset:	Human readable line ON
	(1) 'T5' or 't5'
	(2) 'T6' or 't6'
	(3) 'T130' or 't130'
	(4) 'T131' or 't131'
Preset:	Human readable line OFF
	All others

This parameter shows whether the machine prints the human readable line below the barcode. Human readable characters are always printed with OCR-B font of 10 pitch and all the current character style enhancements are masked. The default setting is determined by the barcode mode selected by 't' or 'T'.

## Quiet zone

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n = 'onnn' or 'Onnn' (nnn = 0 ~ 32767)

Quiet zone is the space on both sides of the barcodes. Its width can be shown using the units that are set by the 'u' or 'U' parameter. (For the description of 'u' or 'U' parameter, see the next section.) The default setting of the quiet-zone width is 1 inch.

## Barcode, expanded character unit, line block drawing and box drawing

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n = 'u0' or 'U0'	mm (preset)
n = 'u1' or 'U1'	1/10
n = 'u2' or 'U2'	1/100
n = 'u3' or 'U3'	1/12
n = 'u4' or 'U4'	1/120
n = 'u5' or 'U5'	1/10 mm
n = 'u6' or 'U6'	1/300
n = 'u7' or 'U7'	1/720

This parameter shows the measurement units of X-axis offset, Y-axis offset, and barcode height.

## Barcode, expanded character, line block drawing and box drawing offset in X-axis

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n = 'xnnn' or 'Xnnn'

This parameter shows the offset from the left margin in the 'u'- or 'U'-specified unit.

## Barcode & expanded character offset in Y-axis

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n = 'ynnn' or 'Ynnn'

This parameter shows the downward offset from the current print position in the 'u'- or 'U'-specified unit.

## Barcode, expanded character, line block drawing and box drawing height

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n = 'hnnn', 'Hnnn', 'dnnn', or 'Dnnn'

- 1 EAN13, EAN8, UPC-A, ISBN (EAN13, EAN8, UPC-A), ISBN (UPC-E): 22 mm
- 2 UPC-E: 18 mm
- 3 Others: 12 mm

Expanded characters → 2.2 mm (preset)

Line block drawing and box drawing → 1 dot

This parameter shows the height of barcodes or expanded characters as shown above. It can start with 'h', 'H', 'd', or 'D'. The height of barcodes is shown in the 'u'- or 'U'-specified unit. The default setting of the barcode height (12 mm, 18 mm or 22 mm) is determined by the barcode mode selected by 't' or 'T'.

## Expanded character width, line block drawing and box drawing

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n = 'wnnn' or 'Wnnn'

Expanded character → 1.2 mm

Line block drawing and box drawing → 1 dot

This parameter shows the width of expanded characters as shown above.

## Expanded character rotation

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n = 'a0' or 'A0'	'Upright (preset)
n = 'a1' or 'A1'	'Rotated 90 degrees
n = 'a2' or 'A2'	'Upside down, rotated 180 degrees
n = 'a3' or 'A3'	'Rotated 270 degrees

## Barcode data start

n = 'b' or 'B'

Data that follows 'b' or 'B' is read in as barcode data. barcode data must end with the '\ ' code (5CH), which also ends this command. The acceptable barcode data is determined by the barcode mode selected by 't' or 'T'.

- When CODE 39 is chosen with the parameter 't0' or 'T0'

Forty three characters '0' to '9', 'A' to 'Z', '-', '.', ' (space)', '\$', '/', '+', and '%' can be accepted as barcode data. Other characters will cause a data error. The number of characters for barcodes is not limited. The barcode data automatically starts and ends with an asterisk '\*' (start character and stop character). If the received data has an asterisk '\*' at the beginning or end, the asterisk is regarded as a start character or stop character.

- When Interleaved 2 of 5 is selected with the parameter 't1' or 'T1':

Ten numerical characters '0' to '9' can be accepted as barcode data. Other characters cause a data error. The number of characters for barcodes is not limited. This mode of barcodes needs even characters. If the barcode data has odd characters, '0' is automatically added to the end of the barcode data.

- When FIM (US-Post Net) is selected with the parameter 't3' or 'T3'

Characters 'A' to 'D' are valid and one digit of data can be printed. Upper-case and lower-case alphabet characters can be accepted.

- When Post Net (US-Post Net) is selected with the parameter 't4' or 'T4'

Numbers '0' to '9' can be data and it must end with a check digit. '?' can be used instead of the check digit.

- When EAN 8, EAN 13, or UPC A is selected with the parameter 't5' or 'T5'

Ten numbers '0' to '9' can be accepted as barcode data. The number of characters for barcodes is limited as follows:

EAN 8: Total 8 digits (7 digits + 1 check digit)

EAN 13: Total 13 digits (12 digits + 1 check digit)

UPC A: Total 12 digits (11 digits + 1 check digit)

A number of characters other than those stated above will cause a data error that results in the barcode data being printed as normal print data. If the check digit is not correct, the machine decides the correct check digit automatically so that the correct barcode data will be printed. When EAN13 is selected, adding '+' and a two-digit or five-digit number after the data can create an add-on code.

- When UPC-E is selected with the parameter 't6' or 'T6':

The numbers '0' to '9' can be accepted as barcode data.

Eight digits<sup>1 2</sup> (standard format) The first character must be '0' and the data must end with a check digit.

Total eight digits = '0' plus 6 digits plus 1 check digit.

Six digits<sup>2</sup> The first character and the last check digit are removed from the eight digit data.

<sup>1</sup> '?' can be used instead of a check digit.

<sup>2</sup> Adding '+' and two-digit or five-digit number after the data creates an add-on code.

- When Codebar is chosen with the parameter 't9' or 'T9'  
Characters '0' to '9', '-', '.', '\$', '/', '+', ':' can be printed. Characters 'A' to 'D' can be printed as a start-stop code, which can be upper case or lower case. If there is no start-stop code, errors will happen. A check digit cannot be added and using '?' causes errors.
- When Code 128 Set A, Set B, or Set C is selected with the parameter 't12' or 'T12', 't13' or 'T13', or 't14' or 'T14'  
Code 128 sets A, B and C can be individually selected. Set A shows characters Hex 00 to 5F. Set B includes characters Hex 20 to 7F. Set C includes the pairs 00 to 99. Switching is allowed between the code sets by sending %A, %B, or %C. FNC 1, 2, 3, and 4 are produced with %1, %2, %3, and %4. The SHIFT code, %S, allows temporary switching (for one character only) from set A to set B and vice versa. The '%' character can be encoded by sending it twice.
- When ISBN (EAN) is selected with the parameter 't130' or 'T130'  
The same rules apply as for 't5' or 'T5'.
- When ISBN (UPC-E) is selected with the parameter 't131' or 'T131':  
The same rules apply as for 't6' or 'T6'.
- When EAN 128 set A, set B or set C is selected with the parameter 't132' or 'T132', 't133' or 'T133' or 't134' or 'T134'  
The same rules apply as for 't12' or 'T12', 't13' or 'T13', or 't14' or 'T14'.

## Box drawing

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ESC i ... E (or e)

'E' or 'e' is a terminator.

## Line block drawing

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ESC i ... V (or v)

'V' or 'v' is a terminator.

## Expanded character data start

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n = 'l' or 'L'

Data that follows 'l' or 'L' is read as expanded character data (or labeling data). Expanded character data must end with the '\ ' code (5CH), which also ends this command.



**Table of Code(EAN) 128 set C**

Code(EAN) 128 set C describes an original command. The correspondence table is as follows.

No.	Code 128 Set C	Input command	Hex	No.	Code 128 Set C	Input command	Hex
0	00	NUL	0x00	52	52	4	0x34
1	01	SOH	0x01	53	53	5	0x35
2	02	STX	0x02	54	54	6	0x36
3	03	ETX	0x03	55	55	7	0x37
4	04	EOT	0x04	56	56	8	0x38
5	05	ENQ	0x05	57	57	9	0x39
6	06	ACK	0x06	58	58	:	0x3a
7	07	BEL	0x07	59	59	;	0x3b
8	08	BS	0x08	60	60	<	0x3c
9	09	HT	0x09	61	61	=	0x3d
10	10	LF	0x0a	62	62	>	0x3e
11	11	VT	0x0b	63	63	?	0x3f
12	12	NP	0x0c	64	64	@	0x40
13	13	CR	0x0d	65	65	A	0x41
14	14	SO	0x0e	66	66	B	0x42
15	15	SI	0x0f	67	67	C	0x43
16	16	DLE	0x10	68	68	D	0x44
17	17	DC1	0x11	69	69	E	0x45
18	18	DC2	0x12	70	70	F	0x46
19	19	DC3	0x13	71	71	G	0x47
20	20	DC4	0x14	72	72	H	0x48
21	21	NAK	0x15	73	73	I	0x49
22	22	SYN	0x16	74	74	J	0x4a
23	23	ETB	0x17	75	75	K	0x4b
24	24	CAN	0x18	76	76	L	0x4c
25	25	EM	0x19	77	77	M	0x4d
26	26	SUB	0x1a	78	78	N	0x4e
27	27	ESC	0x1b	79	79	O	0x4f
28	28	FS	0x1c	80	80	P	0x50
29	29	GS	0x1d	81	81	Q	0x51
30	30	RS	0x1e	82	82	R	0x52
31	31	US	0x1f	83	83	S	0x53
32	32	SP	0x20	84	84	T	0x54
33	33	!	0x21	85	85	U	0x55
34	34	"	0x22	86	86	V	0x56
35	35	#	0x23	87	87	W	0x57
36	36	\$	0x24	88	88	X	0x58
37	37	%	0x25	89	89	Y	0x59
38	38	&	0x26	90	90	Z	0x5a
39	39	'	0x27	91	91	[	0x5b
40	40	(	0x28	92	92	\\	0x5c5c
41	41	)	0x29	93	93	]	0x5d
42	42	*	0x2a	94	94	^	0x5e
43	43	+	0x2b	95	95	_	0x5f
44	44	,	0x2c	96	96	`	0x60
45	45	-	0x2d	97	97	a	0x61
46	46	.	0x2e	98	98	b	0x62
47	47	/	0x2f	99	99	c	0x63
48	48	0	0x30	100	Set B	d	0x64
49	49	1	0x31	101	Set A	e	0x65
50	50	2	0x32	102	FNC 1	f	0x66
51	51	3	0x33				