

Barcode Character Sets and Data Input Rules

1. CODE128

CODE128 has 106 different printed character patterns. Each printed character can have one of three different meanings, depending on the context selector. Three different start characters tell the reader the character set used in the following encoding. Code128 includes three character sets among which character set A and B are used to encode alpha-numeric information while character set C offers double density when being used to encode numeric data. See Appendix Z.

Note: Each CODE128 barcode must start with a start character {A, {B or {C.

2. CODABAR

CODABAR has a character set of 16 letters (0, 1, 2, 3, 4, 5, 6, 7, 8, 9 -, \$, :, /, ., +) and four start/stop characters here referred as A, B, C, D. Each CODABAR barcode must start and stop with one of the four characters A, B, C and D.

Data input pattern: A123456789A , A123456789B , B123456789A

3. CODE39

CODE39 is designed to encode 26 upper case letters, 10 digits and 7 special characters.

Upper case letters:

A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z

Numbers:

0, 1, 2, 3, 4, 5, 6, 7, 8, 9

Special characters:

-, ., *, \$, /, +, %, SPACE.

Note: The asterisk (*) is only used as a start/stop character.

Do not input the asterisk when inputting the encoded data, the system will automatically add asterisks pre and after the encoded data. Data input pattern 123ABC

4. CODE93

Comparing to CODE39, CODE93 provides higher density and data security. In addition to encode 26 upper case letters, 10 digits and 7 special characters, CODE93 also defines 5 special control characters: □, \$, %, / and +. represents start/stop characters while the last four characters (value: 43, 44, 45, 46) can be combined with other characters to unambiguously represent all 128 ASCII characters.

Upper case letters:

A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z

Numbers:

0, 1, 2, 3, 4, 5, 6, 7, 8, 9

Special characters:

-, ., *, \$, /, +, %, SPACE.

Special control characters:

□, \$, %, / and +.

Note: When + is used as stop sign, it must be followed with a termination bar. It's not necessary to input the start/stop character when inputting the encoded data. Data input pattern: ABC123 .

5. ITF

Interleaved 2 of 5 (Interleaved25) is a continuous, length unfixed and self-checked numeric symbology and its character set only includes 10 digit characters: 0~9. It is called interleaved because 2 characters are encoded in a unit of 5 bars and spaces. The even position character is encoded into bars while the odd position character is encoded into spaces. Thus, interleaved 2 of 5 symbology can only encode data elements with even number length. In case of encoding data elements with odd number length, a zero "0" must be added to the most left of the data elements. A ITF barcode has the structure of a start character (bsbs: two narrow bars and by two narrow spaces), message encoded and a stop character (bbsb: one wide bar and narrow bar and one space).

Data input pattern:123456789

6. EAN13

EAN13 is a continuous, length-fixed numeric symbology (standard 13 digits numeric barcode). A EAN-13 symbol is divided into two halves, each consisting of six digits separated by a center guard bar pattern. Digits in the left half are encoded with character set A or B while those in the right half are encoded with character set C. The thirteen (13) digit is a check digit and is not encoded. Its value hide in the odd and even permutation of the digits in the left half.

Its valid character set is 10 numbers (0,1,2,3,4,5,6,7,8,9)

Date input pattern : 1234567890123 (must be 12 or 13 digits).

7. EAN8

An EAN8 number contains 8 digits which are separated into two halves by a center guard bar pattern. The four digits in the left half are encoded with character set A while the four digits in the right half are encoded with character set C.

Its valid character set is 10 numbers (0, 1,2,3,4,5,6,7,8,9).

Data input pattern 12345678 (must be 7 or 8 digits).

8. UPC-A

UPC-A is a continuous, length-fixed (12 digits) , numeric symbology and its character set is 10 numbers (0,1,2,3,4,5,6,7,8,9). It is divided into two halves by a center guard bar pattern, each consisting of 6 digits and the digits in the left half are encoded with character set A while those in the right half are encoded with character set C.

Data input pattern 123456789012 (must be 11 or 12 digits).

9. UPC-E

UPC-E is a continuous numeric symbology and a UPC-E number consists of 6 digits (3 odd characters and 3 even characters). The permutation of the odd and even characters implies the

seventh digit—check digit.

Its character set is 10 numbers (0,1,2,3,4,5,6,7,8,9).

Data input pattern 023456789012 (must be 11 or 12 digits with the first number always be zero (0).)

Appendix Z CODE128 character sets table

Character set A (ASCII value)	Character set B (ASCII value)	Character set C	Value
SPACE (20H)	SPACE (20H)	00	0
! (21H)	! (21H)	01	1
“ (22H)	“ (22H)	02	2
# (23H)	# (23H)	03	3
\$ (24H)	\$ (24H)	04	4
% (25H)	% (25H)	05	5
& (26H)	& (26H)	06	6
‘ (27H)	‘ (27H)	07	7
((28H)	((28H)	08	8
) (29H)) (29H)	09	9
* (2AH)	* (2AH)	10	10
+ (2BH)	+ (2BH)	11	11
, (2CH)	, (2CH)	12	12
- (2DH)	- (2DH)	13	13
. (2EH)	. (2EH)	14	14
/ (2FH)	/ (2FH)	15	15
0 (30H)	0 (30H)	16	16
1 (31H)	1 (31H)	17	17
2 (32H)	2 (32H)	18	18
3 (33H)	3 (33H)	19	19
4 (34H)	4 (34H)	20	20
5 (35H)	5 (35H)	21	21
6 (36H)	6 (36H)	22	22
7 (37H)	7 (37H)	23	23
8 (38H)	8 (38H)	24	24
9 (39H)	9 (39H)	25	25
: (3AH)	: (3AH)	26	26
; (3BH)	; (3BH)	27	27
< (3CH)	< (3CH)	28	28
= (3DH)	= (3DH)	29	29
> (3EH)	> (3EH)	30	30
? (3FH)	? (3FH)	31	31
@ (40H)	@ (40H)	32	32
A (41H)	A (41H)	33	33
B (42H)	B (42H)	34	34
C (43H)	C (43H)	35	35
D (44H)	D (44H)	36	36
E (45H)	E (45H)	37	37
F (46H)	F (46H)	38	38
G (47H)	G (47H)	39	39
H (48H)	H (48H)	40	40
I (49H)	I (49H)	41	41
J (4AH)	J (4AH)	42	42
K (4BH)	K (4BH)	43	43
L (4CH)	L (4CH)	44	44
M (4DH)	M (4DH)	45	45
N (4EH)	N (4EH)	46	46
O (4FH)	O (4FH)	47	47
P (50H)	P (50H)	48	48
Q (51H)	Q (51H)	49	49

R (52H)	R (52H)	50	50
S (53H)	S (53H)	51	51
T (54H)	T (54H)	52	52
U (55H)	U (55H)	53	53
V (56H)	V (56H)	54	54
W (57H)	W (57H)	55	55
X (58H)	X (58H)	56	56
Y (59H)	Y (59H)	57	57
Z (5AH)	Z (5AH)	58	58
[(5BH)	[(5BH)	59	59
\ (5CH)	\ (5CH)	60	60
] (5DH)] (5DH)	61	61
^ (5EH)	^ (5EH)	62	62
_ (5FH)	_ (5FH)	63	63
NUL (00H)	` (60H)	64	64
SOH (01H)	a (61H)	65	65
STX (02H)	b (62H)	66	66
ETX (03H)	c (63H)	67	67
EOT (04H)	d (64H)	68	68
ENQ (05H)	e (65H)	69	69
ACK (06H)	f (66H)	70	70
BEL (07H)	g (67H)	71	71
BS (08H)	h (68H)	72	72
HT (09H)	i (69H)	73	73
LF (0AH)	j (6AH)	74	74
VT (0BH)	k (6BH)	75	75
FF (0CH)	l (6CH)	76	76
CR (0DH)	m (6DH)	77	77
SO (0EH)	n (6EH)	78	78
SI (0FH)	o (6FH)	79	79
DLE (10H)	p (70H)	80	80
DC1 (11H)	q (71H)	81	81
DC2 (12H)	r (72H)	82	82
DC3 (13H)	s (73H)	83	83
DC4 (14H)	t (74H)	84	84
NAK (15H)	u (75H)	85	85
SYN (16H)	v (76H)	86	86
ETB (17H)	w (77H)	87	87
CAN (18H)	x (78H)	88	88
EM (19H)	y (79H)	89	89
SUB (1AH)	z (7AH)	90	90
ESC (1BH)	{ (7BH)	91	91
FS (1CH)	(7CH)	92	92
GS (1DH)	} (7DH)	93	93
RS (1EH)	~ (7EH)	94	94
US (1FH)	DEL (7FH)	95	95
FNC3	FNC3	96	96
FNC2	FNC2	97	97
Shift	Shift	98	98
CODE C	CODE C	99	99
CODE B	FNC4	CODE B	100
FNC4	CODE A	CODE A	101
FNC1	FNC1	FNC1	102
START CODE A	START CODE A	START CODE A	103

START CODE B	START CODE B	START CODE B	104
START CODE C	START CODE C	START CODE C	105
STOP	STOP	STOP	106