Barcode Design Compass

GETTING LOST IN YOUR BARCODE DESIGN? LET US HELP YOU FIND THE WAY

Barcode Density

Density is the number of data characters that can be encoding in a lineal unit of measure. Barcode density if often expressed in characters per inch. High density = smaller narrow bar/ratio, low density = larger narrow bar/ratio.

BARCODE X DIMENSIONS (NARROW BARS)

Thermal transfer / inkjet (300 PPI)

NUMBER OF PIXELS	200 PPI	300 PPI	600 PPI
1	.005"	.0033"	.0017"
2	.010"	.0067"	.0033"
3	.015"	.0100"	.0050"
4	.020"	.0133"	.0067"
5	.025"	.0167"	.0083"
6	.030"	.0200"	.0100"
7	.035"	.0233"	.0117"
8	.040"	.0267"	.0133"
9	.045"	.0300"	.0150"
10	.050"	.0333"	.0167"

BARCODE X DIMENSIONS (NARROW BARS)

812 PPI = Digitek / 800 PPI = Memjet

NUMBER OF PIXELS	812 PPI	800 PPI
5	.00616″	.00625″
6	.00739″	.00750″
7	.00862″	.00875″
8	.00985″	.01000″
9	.01108″	.01125″
10	.01232″	.01250″
11	.01355″	.01375″
12	.01478″	.01500″
13	.01601″	.01625″
14	.01724″	.0175″

Interleaved 2 of 5 (I2of5)

Character set: Even pairs of numbers only

Best if printed with bearer bars (as shown) to prevent mis-reads or short-reads.

Symbol length = (P(4N + 6) + 6 + N)X + 20X

P = number of character pairs)

X = X dimension (narrow bar)

N = Wide to narrow ratio

Code 3 of 9 (Code 39)

Character set: Uppercase Alphanumeric

Seven special characters: . - space / + $ %

one start/stop character: *

Full ASCII available in Code39 full ascii, uses special encoding.

Symbol length = I (1 + C) + (C + 2)(6X + 3NX) + 20X

I = Intercharacter gap (usually the same as X)

C = number of characters

X = X dimension (narrow bar)

N = Wide to narrow ratio

Rationalized Codabar

Character set: Numeric digit

6 special characters: - $: / . +

4 start/stop characters: A B C D

Symbol length = (2N + 5)C + (N-1)(W+2) + I(C-1) + 20X

I = Intercharacter gap (usually the same as X)

C = number of normal characters

W = number of wide characters (:/.+)

X = X dimension (narrow bar)

N = Wide to narrow ratio

Code 128

SUBSET B

SUBSET C

Character set:

Subset A: Full uppercase alphanumeric keyboard plus control and special characters

Subset B: Full upper and lower case alphanumeric keyboard plus special characters

Subset C: Numeric pairs plus switch and function characters.

Symbol length = ((5.5D + 11C + 35)X) + 20X

D = number of subset C numbers

C = number of subset A/B characters + function or switch characters

X = X dimension (narrow bar)

Quick Response Code (QR code)

ENCODING 140+ CHARACTERS

ENCODING 6 CHARACTERS

Character set: Full and extended ASCII characters as well as several other character types including KANJI (korean, chinese, japanese).

Symbol length & height = (V*4+17)*X + 8X

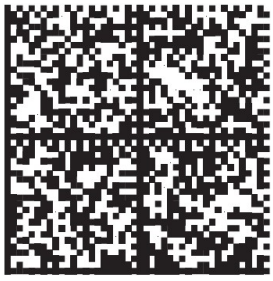
L = barcode length

H = barcode height

V = barcode version (determines number of characters in combination with EC level)

X = narrow element or narrow bar

Datamatrix



ENCODING 140+ CHARACTERS

ENCODING 6 CHARACTERS

Character set:

All ASCII characters

All ISO characters

All EBCDIC characters

Symbol length & height = G*X + 2X

L = barcode length

H = barcode height

G = grid size

N = narrow element or narrow ratio

Definitions

Character set: Range of data characters that can be encoded into a given symbology.

Density: How many characters can be encoded in a lineal inch (cpi).

Element: Any bar or space.

"X" dimension: Width of narrow element,also know as narrow bar.

Ratio: Relationship between wide element widths and narrow element widths (e.g. 3:1).

Mil: One thousandth of an inch (0.0075"= seven-and-a-half mils).

Check character: Character included within a string of data whose value is derived

Quiet zone: from a mathematical check to ensure the accuracy of the data. The clear area immediately preceding the first bar and following the last bar of a bar code symbol; minimum width dictated by specification for that symbology or scanning device.

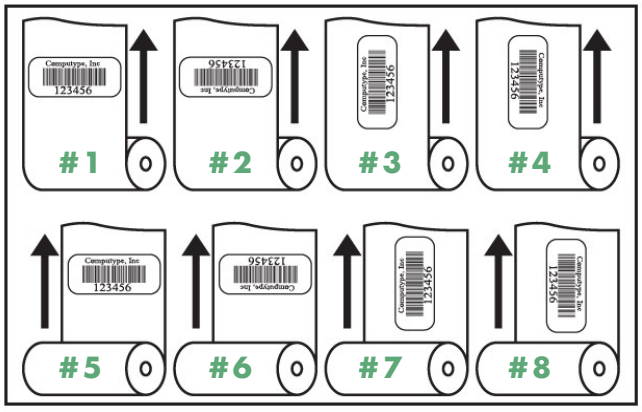
Step-ladder: The bars in the code look like the rungs of a ladder leaning up against a house.

Picket fence: The bars in the code look like the vertical pickets in a fence.

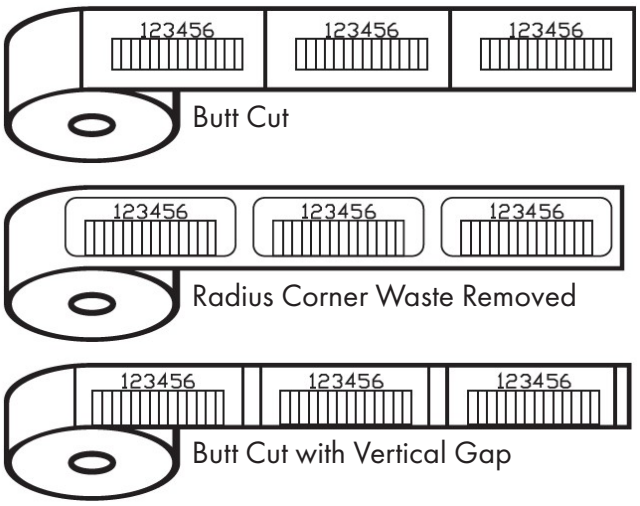
WEL: Wide edge leading, wide dimension of label leads.

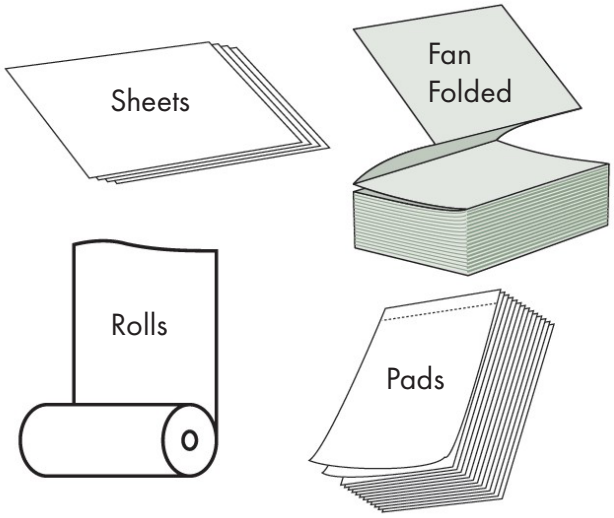
NEL: Narrow edge leading, narrow dimension of label leads.

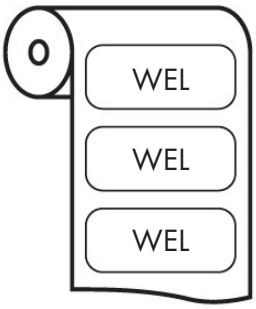
Resolution: Pixels or elements per inch, dots per inch (DPI, 300, 600).



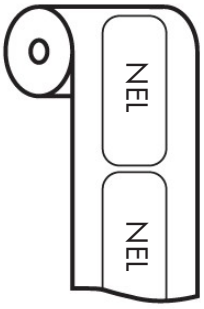
Specifying Label Form








Picket Fence




Step Ladder

Determining Label Size

- Symbol length =
  - Message length +
  - Total quiet zone =
    - 10 x Narrow bar +
    - Label die cut tolerance*

*all elements on label must remain a minimum distance from all label edges.

FORMIDABLE LAB ENVIRONMENT,
MEET FORMING A PARTNERSHIP THAT MAKES THE GRADE.

From printers to scanners to label replication systems, Computype can equip and provide solutions for you no matter the challenges of your lab environment. Over the past twenty years, we've put our labels and adhesives through endless tests to prove they can keep up with lab demands of your laboratory.

WE'D LOVE TO HEAR FROM YOU.

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