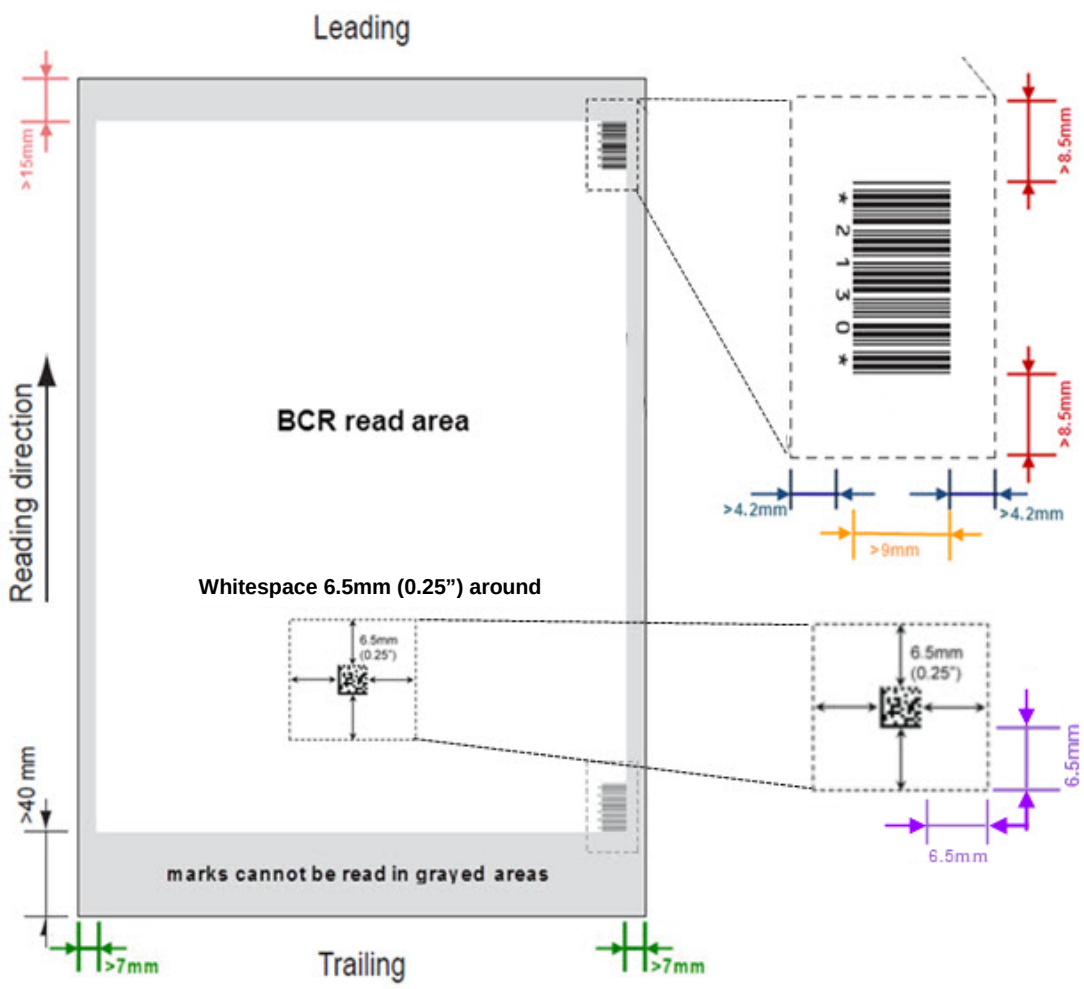
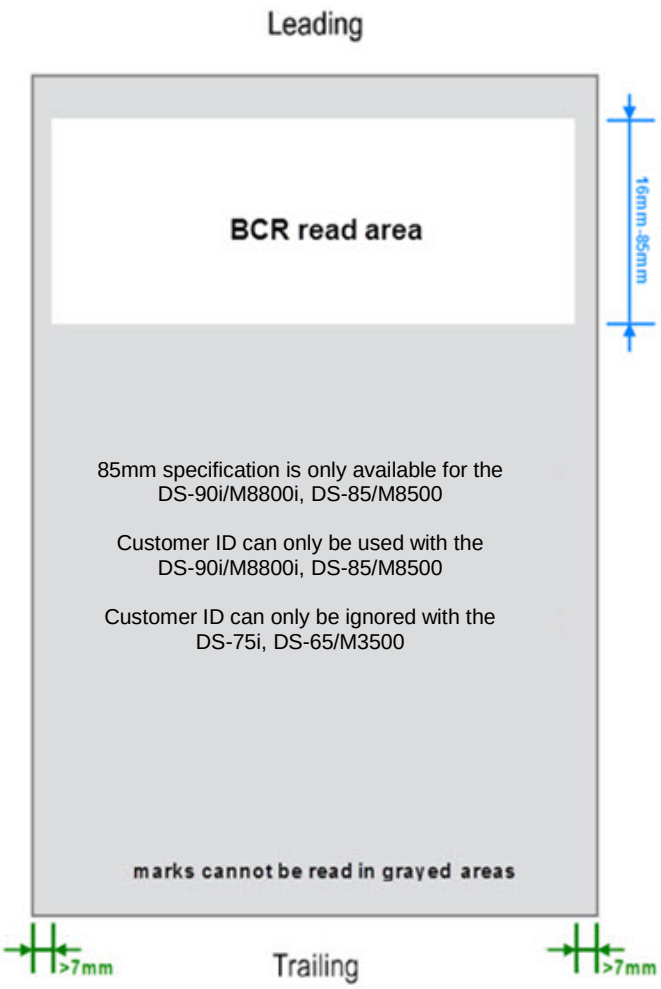
NEOPOST

BCR mark placement and specification
Quick resource guide

Standard Reading Area (Top or Bottom)



Reverse Reading Area (Top or Bottom)



Marks less than 40mm from the bottom of the page cannot be read (*30mm DS-65/M3500)

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BCR Terminology:

Scheme (Neopost, PFE, and Flex): specific character and function order
Function: Is specific action or command
Character: Can be letters or numeric digits in a scheme
Element: A series of “elements” (aka bars) that make up the 43 characters in code 39
Position: Is a specific location of an action or command in a barcode scheme
Hexadecimal (hex) bit field: Is an alphanumeric character, controls multiple actions or commands with one character
Standard Reading: The end of group command is on the last page of the set
Reverse Reading: The end of group is on the first page of the set

What is Code 39 (or Code 3of9)?

It’s a barcode symbology, that uses alpha (uppercase A-Z) and numeric (0-9) plus a few other special characters (-, ., $, /, +, %, and space). It also uses an “*” as a start and stop (so there has to be an asterisk before any information as well as after), because the nature of the code being asymmetrical the decoding software “knows” the beginning and end of the information.

Each character is made up of 9 “elements” (5 bars and 4 spaces)
3 of the “elements” are “wide” (binary “1”)
6 of the “elements” are “narrow” (binary “0”)
The ratio between wide and narrow can be between 1:2 and 1:3 (for best performance we recommend 1:2.2)

What is 2D Data Matrix?

A **Data Matrix** code is a two-dimensional barcode consisting of black and white "cells" or modules arranged in either a square or rectangular pattern, also known as a matrix. The information to be encoded can be text or numeric data. Usual data size is from a few bytes up to 1556 bytes. The length of the encoded data depends on the number of cells in the matrix. Error correction codes are often used to increase reliability: even if one or more cells are damaged so it is unreadable, the message can still be read. A Data Matrix symbol can store up to 2,335 alphanumeric characters.

Data Matrix symbols are rectangular, usually square in shape and composed of square "cells" which represent bits. Depending on the coding used, a "light" cell represents a 0 and a "dark" cell is a 1, or vice versa. Every Data Matrix is composed of two solid adjacent borders in an "L" shape (called the "finder pattern") and two other borders consisting of alternating dark and light "cells" or modules (called the "timing pattern"). Within these borders are rows and columns of cells encoding information. The finder pattern is used to locate and orient the symbol while the timing pattern provides a count of the number of rows and columns in the symbol. As more data is encoded in the symbol, the number of cells (rows and columns) increases.

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“Document Quiet Zone” (no part of any mark can be in this zone)

Standard Reading

Minimum distance from the top of the page **15mm or 0.59 inches** (see graphic above)
Minimum distance from the left and right side of the document **7mm or 0.28 inches**
Minimum distance from the trailing edge ***40mm or 0.79 inches** (DS-75i/PS75i, DS-85/M8500, DS-90i/M8800i)
Minimum distance from the trailing edge ***30mm or 1.18 inches** (DS-65/M3500)

Reverse Reading (if used)

Minimum distance from the top of the page **15mm or 0.59 inches**
Minimum distance from the left and right side of the document **7mm or 0.28 inches**
Maximum mark placement from top of the page is between **16mm – 85mm ONLY** (DS-90i/M8800i, DS-85/M8500)

Minimum code:

The minimum code is a one character function (with two asterisks):
Insert (1) / Accumulate (2).

(Example code 39)

Free area around the 1D BCR barcode

Minimal free space on both sides of the marks **4.2 mm or 0.17 inch**
Minimal free space above and below the marks **8.5 mm or 0.33 inch**

Free area around the 2D BCR barcode

Minimal free space on all sides of the marks **6.5 mm or 0.25 inch**

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Code 39 Barcode Specification

There are four essential properties of a barcode that can be influenced by the customer or by an application that puts barcodes on the paper. They are length, height, bar thickness and the ratio (1:2.2) between a narrow and a wide bar. The length of the barcode is a result of the other properties and the amount of characters put in the barcode.

Code length and height

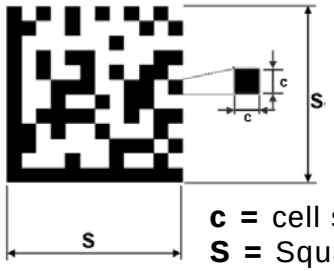
N*X
X = thickness
N = ratio

Minimum bar thickness "X" is **0.25mm or 0.01 inches**
The ratio of thick bars versus thin bars "N" is **2.2-3.0*** (DS-90i/M8800i, DS-85/M8500, DS-75i/PS75i, DS-65/M3500)
Minimum barcode height is **5mm** (DS-90i/M8800i, DS-85/M8500, DS-75i/PS75i)
Minimum barcode height is **9mm** (DS-65/M3500)
Minimum barcode length is **9.45mm** (**3 characters**)
Maximum barcode length is **188mm or 7.4 inches** (DS-90i/M8800i, DS-85/M8500)
Maximum barcode length is **87mm or 3.4 inches** (DS-65/M3500)

* **Note:** For best performance NeopostUSA recommends a minimum ratio of 2.2 or higher.

2D Data Matrix Barcode Specification

- Minimum cell size "c" is **0.35mm or 0.014 inch**
- Maximum label square size "S" is **30mm or 1.18 inches**
- Recommended print quality **600dpi**
- Maximum print drift from page to page **+/-2mm**
- Color background: White
- Minimum number of cells horizontal and vertical is **8**
- Maximum number of cells horizontal and vertical is **54**
- Maximum character is **32** the same on 1D
- Data Matrix can be read in all directions.



c = cell size
S = Square size

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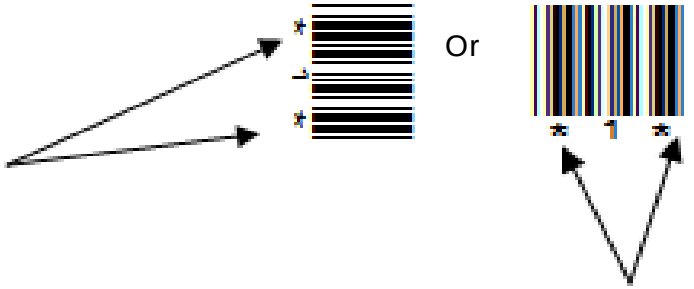
The following VERTICAL or HORIZONTAL 1D barcode fonts are supported:

DS-65/M3500, DS-75i/PS75i, DS-90i/M8800i, DS-85/M8500:

Code 39 (3 of 9)

Code128

Interleaved 2 of 5



To use Code 39 (3 of 9) the barcode MUST have an * asterisk at the beginning and end of code
To use Interleaved 2 of 5 codes the barcode must have an even amount of digits (numeric only)
To use Code 128 barcode there aren't any asterisks (*) used

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The following 2D barcode fonts are supported:

DS-65/M3500, DS-75i/PS75i, DS-85/M8500, DS-90i/M8800i:

Data Matrix

Supported encoding types for Data Matrix:

- BASE256
- C40
- TEXT
- ASCII

PDF 417

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There are two packages for barcode reading Basic, Advanced.

Basic reading package:

Basic grouping commands (functions that control the start and end of a set).

N of M
Insert / Accumulate
Customer ID (reverse read and integrity check)

Advanced reading package:

Basic grouping commands + Advance functions are for additional controls and security

N of M
Insert / Accumulate
Customer ID (reverse read and integrity check)
+
Sheet sequence
Group sequence
Selective feed 1- 8
Envelopes / seal
Exit control
Stop

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Neopost's BCR scheme

Function	Character Type	# of Characters
# of the page (N)	Digit	1 or 2
Max # in set (M)	Digit	1 or 2
Sheet Sequence	Digit	1, 2 or 3
Group Sequence	Digit	1, 2 or 3
Insert	Hex. Bit field	1
Accumulate		
Divert-Continue		
Divert-Stop		
Selective Feed 1	Hex. Bit field	1
Selective Feed 2		
Selective Feed 3		
Selective Feed 4		
Selective Feed 5	Hex. Bit field	1
Selective Feed 6		
Selective Feed 7		
Selective Feed 8		
Seal	Hex. Bit field	1
Envelope 1		
Envelope 2		
Envelope 3		
Exit Selection 1	Hex. Bit field	1
Exit Selection 2		
Exit Selection 3		
Stop		
Reserved		N/A
Customer ID	Alpha-Numeric	1 – 32

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Hex Bit Position Value and Translations

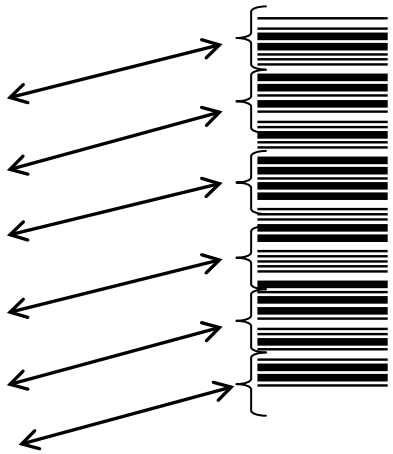
Single Character Value	Position	Function 1	Function 2	Function 3	Function 4
	0	NO	NO	NO	NO
	1	YES	NO	NO	NO
	2	NO	YES	NO	NO
	3	YES	YES	NO	NO
	4	NO	NO	YES	NO
	5	YES	NO	YES	NO
	6	NO	YES	YES	NO
	7	YES	YES	YES	NO
	8	NO	NO	NO	YES
	9	YES	NO	NO	YES
	A	NO	YES	NO	YES
	B	YES	YES	NO	YES
	C	NO	NO	YES	YES
	D	YES	NO	YES	YES
	E	NO	YES	YES	YES
	F	YES	YES	YES	YES

Coding Schemes

The specific order or position of data in the barcode, this data instructs the machine to behave according to a coding scheme.
(Barcode shown vertical just for the example)

Code 39

Position	Character	Function
*		Start of Code
1, 2	01	(N) Number of page
3, 4	03	(M) Maximum pages
5, 6	34	Sheet Sequence
7	1	Control select feed + divert
*		End of Code



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