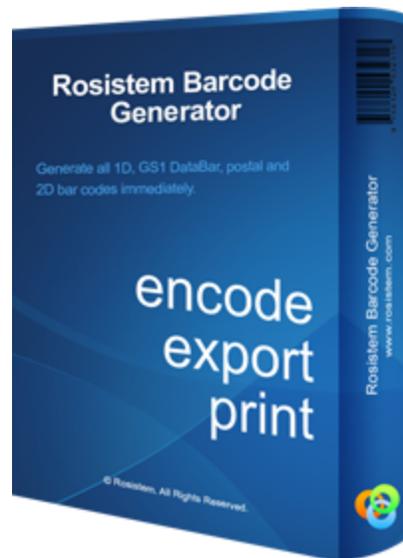


# ITG Barcode Generator





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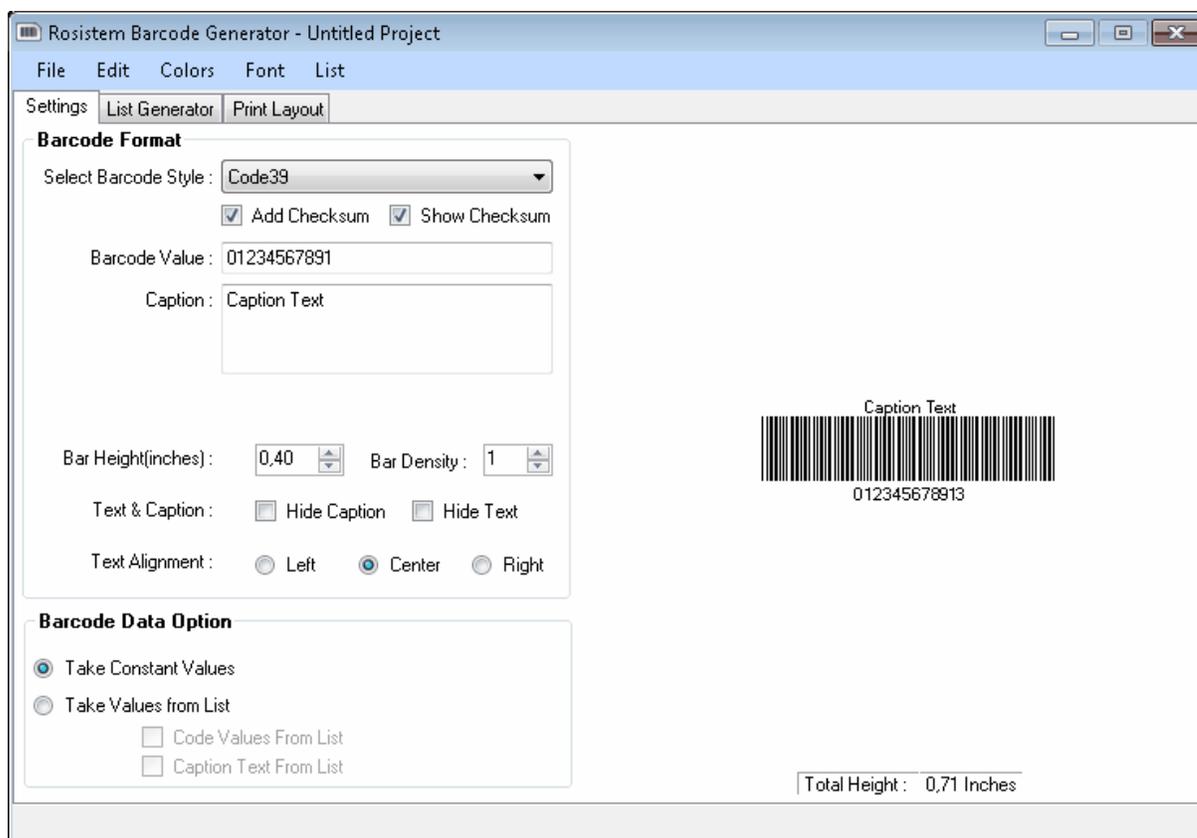
# 1 Introduction

## 1.1 Key Features

Rosistem Barcode Generator is specially designed software to create and prints barcodes. The barcodes can be manipulated in as far size and truncation are concerned, and always in accordance to strict industry standards. The codes that have already been created can be printed.

Rosistem Barcode Generator is an integrated tool that provides you a single platform to create, print and save number of high quality distinctive barcodes for various industries through few steps in very short time. With Rosistem Barcode Generator you can develop barcode by using anyone from supported barcodes which are easily printable by using ordinary, thermal or barcode printers.

In addition, Rosistem Barcode Generator can produce barcodes having varying sizes, shapes, colors and texts (simple, alpha numeric or symbols) for specific templates including labels (Aone, Avery etc), asset tags, ribbons, coupons etc and best setting adjustments available which can easily manipulate before print by instant preview feature. You can also import information for applying values to generate business level professional barcodes. Instead of apply same settings and formatting each time you can save and export barcodes with properties and settings for reuse and time saving.



Rosistem Barcode Generator will print barcode labels in any Windows compatible printer. This manual assumes that you are familiarized with the Windows operating system.

If it is necessary to create multiple barcodes encoding different data you can use Rosistem

Barcode Label Designer.

## 1.2 System Requirements

The minimum system requirements for the Rosistem Barcode Generator are:

1. A Pentium 200 MHz CPU
2. 64M of system memory
3. 10M of free hard disk space
4. A plug and play monitor with of 800 x 600 resolution and 256 colors
5. A Windows compatible printer
6. Windows operation system that supports the Microsoft .NET Framework 2.0
7. Microsoft .NET Framework 2.0

## 1.3 Installing

The Rosistem Barcode Generator is built to run on any operating system that supports the Microsoft .NET Framework 2.0 or greater.

1. Download and unzip the package to a folder on your hard drive.
2. Run RosistemBarcodeGeneratorSetupXXXX.exe (XXXX - current version)
3. If you receive a message that you must first install the Microsoft .NET Framework, do so and run RosistemBarcodeGeneratorXXXX.exe again.

## 1.4 What can you do

Rosistem Barcode Generator can create and print customized barcode by implementing any font from supported barcodes with provision to create or import data for barcodes. With Rosistem Barcode Generator you can also save and export barcodes as high resolution images.

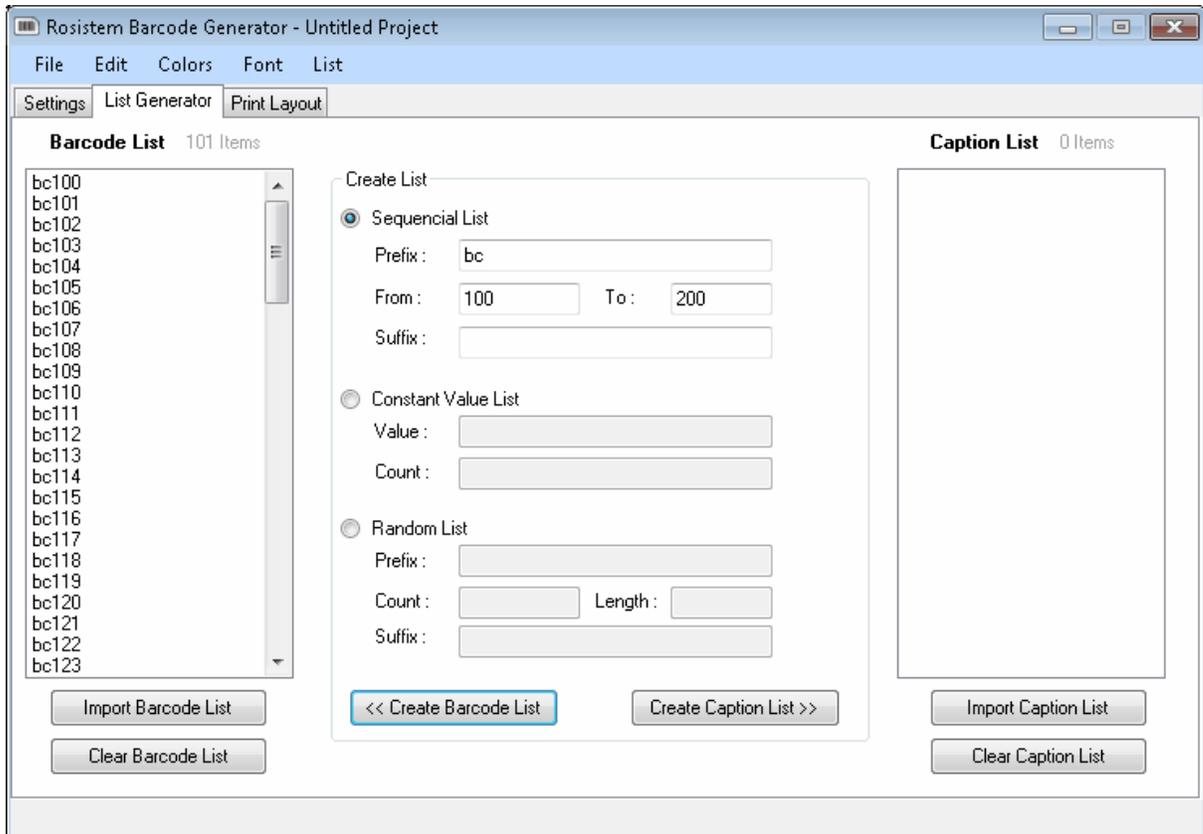
- Create and print barcodes in your pattern by using Code 39, Code 128, EAN 13, EAN 128, GS1, ISBN, UPC A, UPC E and many more.
- Generates Constant barcodes as well as List of sequential barcodes.
- Import values from Text and CSV files to create barcodes.
- Apply specific Colors in bars and background to generate customized barcodes.
- Print barcode with various Predefined Label Products including Avery, APLI, Aone, Ace, Compu Label, Zweckform and all others by using ordinary or barcode printer.
- Save barcodes as high resolution images in any format like JPG, BMP, PNG, GIF, TIFF, WMF, EMF, EXIF, Icon etc.
- You can also Copy To Clipboard barcode in different applications such as Ms-Word, Ms-Excel, Photoshop, Corel Draw and others.

## 2 How to Generate Barcode Labels

### 2.1 Generate List

With Rosistem Barcode Generator You Can Generate two Types of List:

#### Barcode List



#### 1) Sequential List

1. Go to the **List Generator Tab** and select the first radio button **sequential list**.
2. Enter the range of sequential list as '**From & To**' (like 0 – 1000, 0001 -1000).
3. Click on button **Create Barcode List**.

#### 2) Constant Value List

1. Go to the **List Generator Tab** and select the second radio button **Random list**.
2. Enter the value of constant list item as **Value** ( Value of constant item in the list) and count of them as **Count**(Total no. of barcodes in the list) .
3. Click on button **Create Barcode List**.

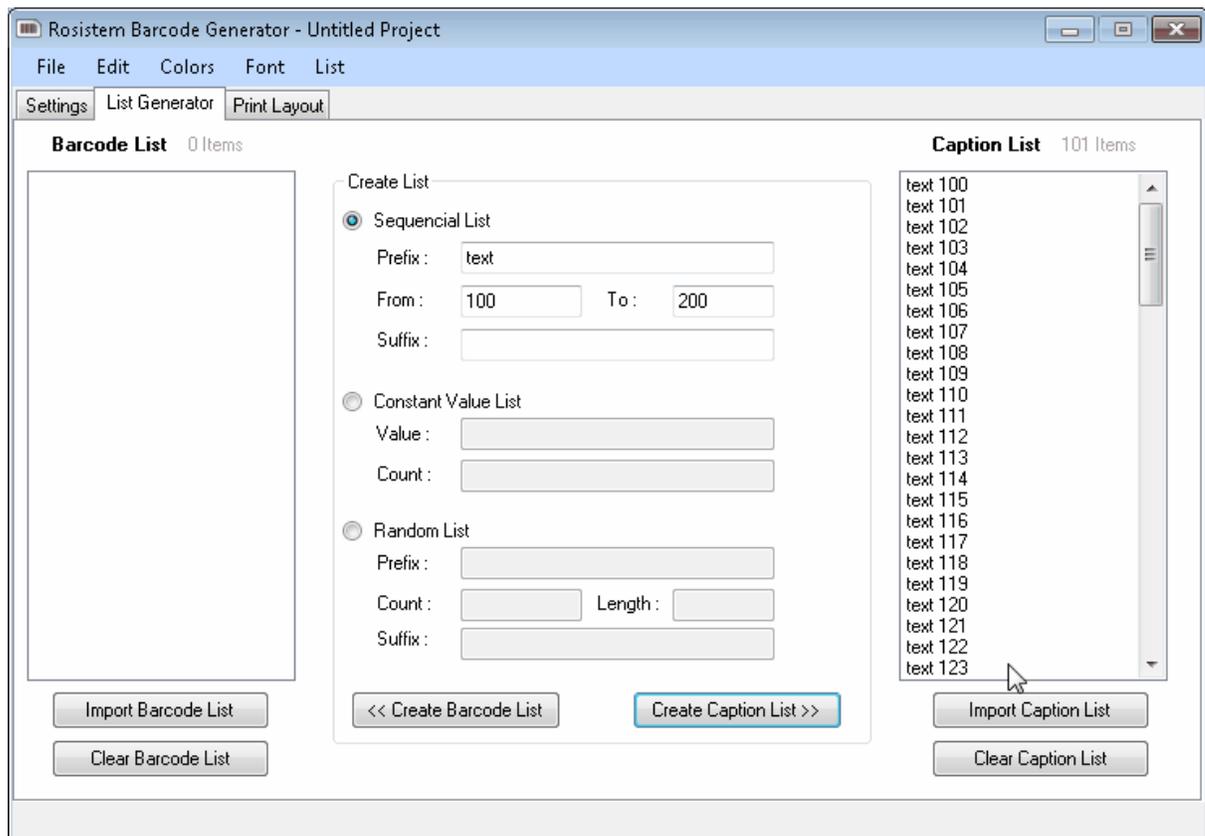
### 3) Random List

4. Go to the **List Generator Tab** and select the second radio button **Random list**.
5. Enter the range of random list as **Count**(Total no. of barcodes in the list) and **Length** (Length of barcode Value – total characters).
6. Click on button **Create Barcode List**.

### 3) Import Barcode List

1. Go to the **List Generator Tab**.
2. Click on the **Import Barcode List** button.

### Caption List



### 1) Sequential List

1. Go to the **List Generator Tab** and select the first radio button **sequential list**.
2. If you need numerical caption, enter the range of sequential list as '**From & To**' (like 0 – 1000, 0001 - 1000).

3. Add **Prefix** and **Suffix**, you can add them with the Barcode Caption as per your requirement.
4. Click on button **Create Caption List**.

### 2) Constant Value List

7. Go to the **List Generator Tab** and select the second radio button **Random list**.
8. Enter the value of constant list item as **Value** ( Value of constant item in the list) and count of them as **Count**(Total no. of barcodes in the list) .
9. Click on button **Create Caption List**.

### 3) Random List

1. Go to the **List Generator Tab** and select the second radio button **Random list**.
2. If you need numerical caption, enter the range of random list as **Count**(Total no. of barcodes in the list) and **Length** (Length of barcode Value – total characters).
3. Add **Prefix** and **Suffix**, you can add them with the Barcode Caption as per your requirement.
4. Click on button **Create Caption List**.

### 3) Import Caption List

1. Go to the **List Generator Tab**.
2. Click on the **Import Caption List** button.
3. If you want to have More than one values in caption than create a text or a CSV file where Separate the values by Comma (,) and import the List

## 2.2 Formatting Barcode

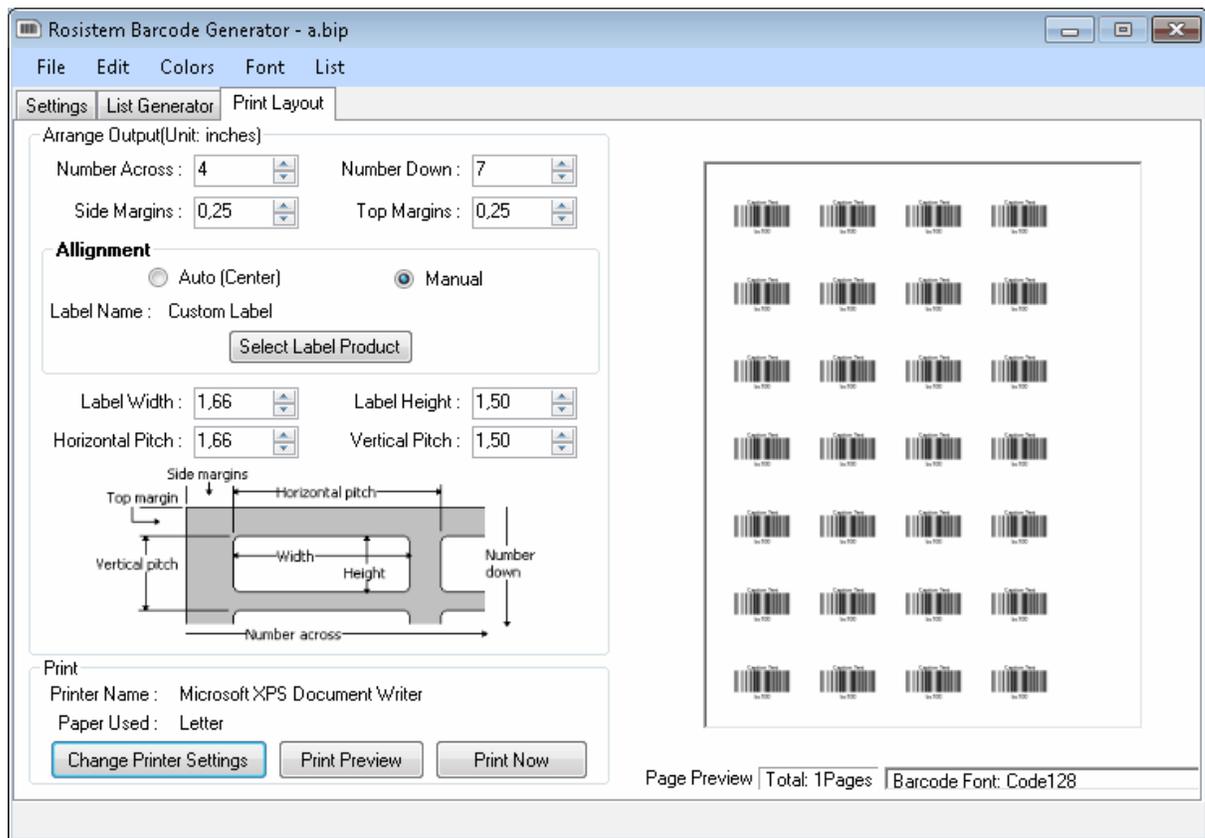
Barcode Labels Can also be formatted

- 1) Barcode Caption Color Could be changed Using Caption Color Option In Menu.
- 2) Barcode Color Could be changed Using Barcode Color Option In Menu.
- 3) Barcode Background Color Could be changed Using Background Option In Menu.
- 4) Barcode Text Font Could be changed Using Caption Font Option In Menu.

## 3 Printing Barcodes

### 3.1 Printing

**Printing Settings can be set in Print Tab**



**Number Down** : Number Of Rows in a page

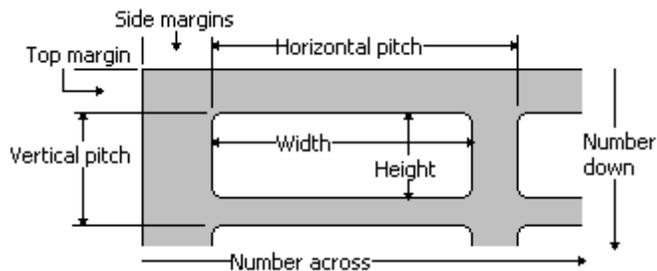
**Number Across** : Number Of Columns

**Horizontal Pitch** : Gap Between Two Barcode start point side by side

**Vertical Pitch** : Gap Between Two Barcodes start point vertically

**Width** : Width of Label used

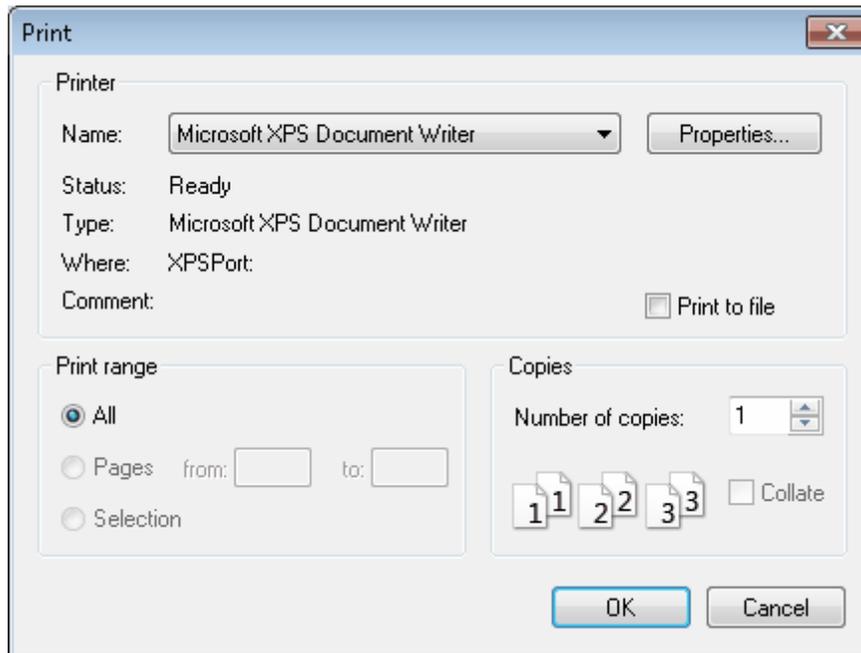
**Height**: Height of Label used



## 3.2 Changing Printer Settings

### Step 1

In Print Tab Click on Change Printer Settings Button.



### Step 2

Select Printer Type.

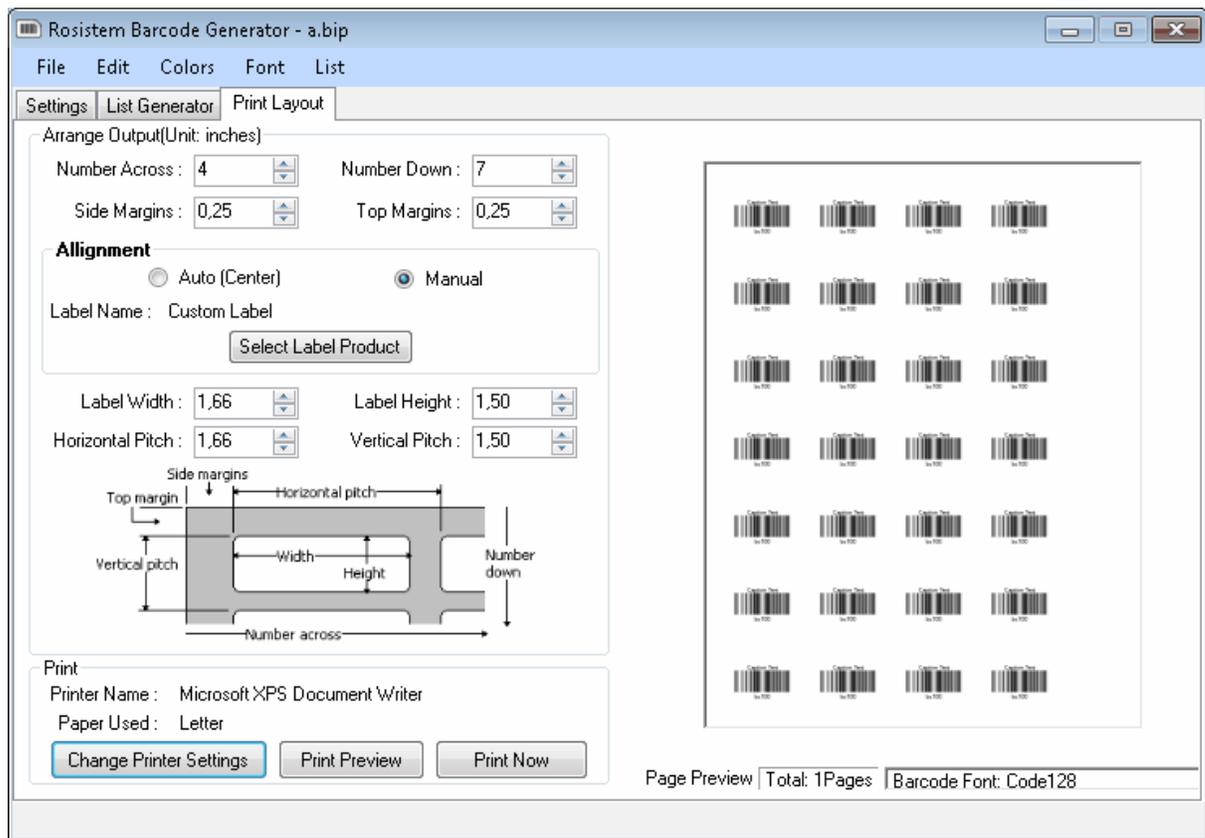
### Step 3

Select Paper Type to be used.

## 4 Selecting Label Type

To Select a label Type follow the following steps:

1. Go to "**Print layout**" tab.
2. Select **Manual** Allignment option.



3. Click on "**Select Label Product**" button.

**Select Label**

Label Products : A-One

Product Number : A-ONE 28171

Details New Label OK Cancel

**Label Details:**

Top Margins : 79	Label Width : 355
Side Margins : 65	Label Height : 167
Horizontal Pitch : 365	Number Across : 2
Vertical Pitch : 167	Number Down : 6
Page Width : 827	Page Height : 1169

Paper Used : A4

4. Now in the Label Product dialog first select the Label Product Vendor name.

5. Now in the Product Number select the product that you want to print with(You can also see the details of those Labels) and then click OK

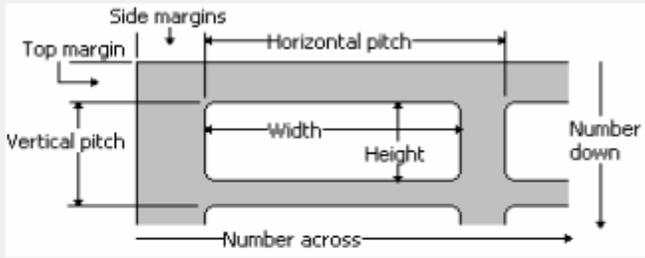
Label Details

Arrange Output(Unit: inches)

Number Across :	2	Number Down :	6
Side Margins :	65,00	Top Margins :	79,00
Label Width :	355,00	Label Height :	167,00
Horizontal Pitch :	365,00	Vertical Pitch :	167,00

Paper Name : A4

Paper Width :	827,00	Paper Height :	1169,00
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Label Name : A-ONE 28171 (A-One)

Close

## 4.1 Label Types Supported

Rosistem Barcode Generator supports all major label Product templates such as:

- Aone
- APLI
- Ace Label
- Avery A4/A5
- Avery US Letter
- Avery Zweckform
- C-line Products Inc

- Compu Label
- Formtec
- Herlitz PBS AG
- Herma
- Hisago
- INETA, S.A.
- KOKUYO
- Lorenz Bell
- MACtac Starliner Labels
- May+Spies
- Office Depot
- Planet
- Printec
- Sigel GmbH
- TANEX
- Tico
- Tower
- Unistat

If you have some suggestion for more types of label products we will be glad to know them.

## 5 Symbologies

### 5.1 Codabar

Within Codabar, the start and stop characters are A, B, C or D letters. These letters may be used like application identifiers to identify the type of data being encoded.

<b>Start Character</b>	The start character for the Codabar symbology
<b>Stop Character</b>	The stop character for the Codabar symbology

This Symbology is also known as ABC Codabar, CodaBar, USD-4, NW-7, Code 2 of 7, Monarch, Code-

27, Ames code, Rationalized Codabar, 2 of 7 Code, ANSI/AIM Codabar, Uniform Symbology Specification Codabar, USS Codabar.

### Overview

Codabar was developed in 1972 by Pitney Bowes, Inc. It is a discrete, self-checking symbology that may encode 16 different characters, plus an additional four start/stop characters. This symbology is used by U.S. blood banks, photo labs, and on FedEx air bills. Since Codabar is self-checking, there is no established check digit. This symbology starts and finishes with one of four possible characters A, B, C, or D.



Sample of a Codabar Barcode

### How to create Codabar barcodes

In order to get a Codabar barcode image, please follow these steps:

1. Set the *Symbology* property to *Codabar*
2. Set the *Calculate Check Digit* property to *False*
3. Set the *Start Character* and *Stop Character* properties
4. Setting up dimensions and quiet zones
5. Set the *Data To Encode In Barcode* property with the value to encode.

Codabar utilizes A, B, C, or D characters as Start & Stop symbols and they are shown in the human readable text of a barcode image. You can rid of those characters from the human readable text by setting up the *DisplayStartStopChar* property to *False*

### Example of Codabar barcode images

*Data To Encode In Barcode* property = 2030405060, *Start Character* property = B and *Stop Character* property = D will produce the following barcode image:



## 5.2 Code 128

<b>Subset</b>	Character subsets for the Code 128 Symbology. Valid values are: Auto, A, B or C.
<b>Apply Tilde</b>	Determines if data after the tilde character should be interpreted as an ASCII code. Used only for Code128 Auto.

This Symbology is also known as ANSI/AIM 128, ANSI/AIM Code 128, USS Code 128, Uniform Symbology Specification Code 128, Code 128 Code Set A, Code 128 Code Set B, Code 128 Code Set C, Code 128A, Code 128B, Code 128C.

### Overview

Code 128 is a linear bar code symbology capable of encoding the full 128-character ASCII character set and extended character sets. This Symbology includes a checksum digit for verification, and the barcode may also be verified character-by-character verifying the parity of each data byte. It has been widely implemented in many applications where a relatively large amount of data must be encoded in a relatively small amount of space.

### Code 128 Code Sets

1. Code Set A (or Chars Set A) includes all of the standard upper case U.S. alphanumeric keyboard characters and punctuation characters together with the control characters, (i.e. characters with ASCII values from 0 to 95 inclusive), and seven special characters.
2. Code Set B (or Chars Set B) includes all of the standard upper case alphanumeric keyboard characters and punctuation characters together with the lower case alphabetic characters (i.e. characters with ASCII values from 32 to 127 inclusive), and seven special characters.
3. Code Set C (or Chars Set C) includes the set of 100 digit pairs from 00 to 99 inclusive, as well as three special characters. This allows numeric data to be encoded as two data digits per symbol character, at effectively twice the density of standard data.

### Code 128 Special characters

The last seven characters of Code Sets A and B (character values 96 - 102) and the last three characters of Code Set C (character values 100 - 102) are special non-data characters with no ASCII character equivalents, which have particular significance to the bar code reading device.



ABCD 12345 abcd

Sample of a Code 128 Barcode

### How to create Code 128 barcodes

In order to get a Code 128 barcode image, please follow these steps:

1. Set the *Symbology* property to *Code 128*
2. Set the *Subset* property to one of the following values depending on your needs:
  - a. *Auto*: automatically switch between code sets to encode the ASCII values.
  - b. *A*: use the Char Set A which only supports ASCII values from 0 to 95
  - c. *B*: will use the Char Set B which only supports ASCII values from 32 to 127
  - d. *C*: will use the Char Set C which only supports pairs of digits
3. Setting up dimensions and quiet zones.
4. Set the *Data To Encode In Barcode* property with the value to encode.

Rosistem Barcode Image Generator will automatically generate and append the checksum value. In this

*Symbology* the checksum won't appear in the human readable text.

#### Example of a Code 128 barcode images

*Data To Encode In Barcode* property = ABCD 12345 abcd and *Subset* property = Auto will produce the following barcode image:



ABCD 12345 abcd

*Data To Encode In Barcode* property = ABCD 12345 and *Subset* property = A will produce the following barcode image:



ABCD 12345

*Data To Encode In Barcode* property = 12345 abcd and *Subset* property = B will produce the following barcode image:



12345 abcd

*Data To Encode In Barcode* property = 001122334455 abcd and *Subset* property = C will produce the following barcode image:



001122334455

### 5.3 Postnet

<b>Height Short Bar</b>	The height of the short bars
<b>Height Tall Bar</b>	A string representing the height of the tall bars
<b>Spacing</b>	The spacing between the bars

This Symbology is also known as USPS POSTNET Barcode, USPS POSTal Numeric Encoding Technique Barcode, Delivery Point Barcode (DPBC), Postnet 3 of 5.

## Overview

The POSTNET (POSTal Numeric Encoding Technique) barcode was developed by the US Postal Service to encode ZIP Code information on letter mail for rapid and reliable sorting by BCSs. The POSTNET barcode can represent a five-digit ZIP Code (32 bars), a nine-digit ZIP+4 code (52 bars), or an eleven-digit delivery point code (62 bars). The Delivery Point Barcode (DPBC) is formed by adding 10 bars to an existing ZIP+4 barcode. The 10 bars represent two additional digits (normally the last two digits of the street address, post office box, rural route number, or highway contract route number).

The POSTNET barcode is always printed in a format that begins and ends with a frame bar (full or tall bar). To ensure POSTNET accuracy during mail processing, a correction character a.k.a. Checksum (five bars) must be included immediately before the rightmost frame bar of all POSTNET barcodes.

## How to create POSTNET barcodes

In order to get an POSTNET barcode image, please follow these steps:

1. Set the *Symbology* property to *POSTNET*
2. Setting up dimensions and quiet zones
3. Set the *Data To Encode In Barcode* property with a value with the following structure:
  - a. For five-digit ZIP Code (32 bars): specify the 5 digits only
  - b. For nine-digit ZIP+4 code (52 bars): specify the 9 digits only
  - c. For eleven-digit delivery point code (62 bars): specify the 11 digits only

Rosistem Barcode Image Generator will automatically generate and append the checksum value. In this *Symbology* the checksum won't appear in the human readable text.

## Example of a POSTNET barcode images

Example of a POSTNET barcode for a nine-digit ZIP+4 code 20260-9900. The checksum is not specified and is automatically calculated.

*Data To Encode In Barcode* property = 202609900 will produce the following barcode image:



## 5.4 Planet

<b>Height Short Bar</b>	The height of the short bars
<b>Height Tall Bar</b>	A string representing the height of the tall bars
<b>Spacing</b>	The spacing between the bars

This Symbology is also known as USPS PLANET Barcode, USPS Confirm Service Barcode.

## Overview

USPS Confirm service allows mailers to uniquely identify and track mail by placing an additional barcode, known as a PLANET Code, on the front of letter and flat mailpieces. The PLANET Code is a 12 -or 14- digit barcode - a "two-state" barcode similar in structure to the POSTNET Code address barcode used by mail processing equipment to sort the mail.

PLANET Codes consist of a series of tall and short bars. PLANET Code digit Symbology is the inverse of POSTNET Code digit Symbology; each POSTNET Code digit uses a combination of two tall and three short bars; each PLANET Code digit uses three tall and two short bars. PLANET Codes must begin and end with one long "framing bar".

All PLANET Codes include a check-sum digit or correction character. This digit must always be the single-digit number (i.e., 0–9) which, when added to the sum of the other digits in the barcode, results in a whole number that is a multiple of 10.

Depending on the type of Confirm mail, mailers must choose the appropriate PLANET Code format:

1. Destination Confirm to track outgoing mailings. PLANET Codes can be used to identify mail sent to customers
2. Origin Confirm to track incoming mail. PLANET Codes can be used to identify reply mail that customers send back

#### **Destination Confirm PLANET Code Format**

The Destination Confirm PLANET Code consists of the following elements:

1. The first 2 digits represent the service (Destination Confirm) and the class/shape of the mail.
2. The next 5 digits identify the subscriber (assigned by the Postal Service)
3. The next 4 or 6 digits are available to the mailer to use for their own identification purposes (e.g., mailings, clients, etc.)
4. The 12th or 14th digit is a check-sum digit that helps the Postal Service to detect errors

#### **Origin Confirm PLANET Code Format**

The Origin Confirm PLANET Code consists of the following elements:

1. The first 2 digits represent the service (i.e., Origin Confirm) and the class/shape of the mail. Origin Confirm Service Type IDs are listed below
2. The next 9 or 11 digits are available to the subscriber to help identify the customer (i.e., mailer of reply mailpiece) or the reply mailpiece itself
3. The 12th or 14th digit is a check-sum digit that helps the Postal Service to detect errors

#### **How to create PLANET barcodes**

In order to get an USPS PLANET barcode image, please follow these steps:

1. Set the *Symbology* property to *PLANET*
2. Setting up dimensions and quiet zones
3. Set the *Data To Encode In Barcode* property with a value with the following structure

Rosistem Barcode Image Generator will automatically generate and append the checksum value. In this *Symbology* the checksum won't appear in the human readable text.

#### **Example of a PLANET barcode images**

##### **1. Destination Confirm PLANET Code Example**

Example of a PLANET Code for a First-Class Mail (40) letter containing a Subscriber ID of 12345 and utilizing numbers 235636 to identify the mailing.

*Data To Encode In Barcode* property = 4012345235636 will produce the following barcode image:



## 2. Origin Confirm PLANET Code Example

Example of a PLANET Code for a First-Class Mail (50) letter which identifies a customer with number 201-4023-5635.

*Data To Encode In Barcode* property = 5020140235635 will produce the following barcode image:



## 5.5 UPC A

This Symbology is also known as Universal Product Code version A, UPC-A Supplement 5/Five-digit Add-On, UPC-A Supplement 2/Two-digit Add-On, UPC-A+5, UPC-A+2, UPC Code, UPC Symbol, GTIN-12, GS1-12, UCC-12.

### Overview

UPC-A is used for marking products which are sold at retail in the USA. The barcode identifies the manufacturer and specific product so point-of-sale cash register systems can automatically look up the price. The UPC-A Code and the assignment of manufacturer ID numbers is controlled in the U.S.A. by the Uniform Code Council (UCC).



Sample of a UPC-A Barcode

The value to encode by UPC-A has the following structure:

1. 1 digit for Number System (0: regular UPC codes, 1: reserved, 2: random weight items marked at the store, 3: National Drug Code and National Health Related Items code, 4: no format restrictions, for in-store use on non-food items, 5: for use on coupons, 6: reserved, 7: regular UPC codes, 8: reserved, 9: reserved)
2. 5 digits for Manufacturer (Company) Code or prefix. This number is assigned by the Uniform Code Council (UCC)
3. 5 digits for Product Code which is assigned by the manufacturer
4. 1 digit for checksum

### Add-On or Supplement code

The Add-On Symbols were designed to encode information supplementary to that in the main bar code symbol on periodicals and paperback books. The Add-On can be composed of 2 or 5 digits only.



Sample of an UPC-A Two-Digit Add-On Barcode

### How to create UPC-A barcodes

In order to get an UPC-A barcode image, please follow these steps:

1. Set the *Symbology* property to *UPC A*
2. Setting up dimensions and quiet zones
3. Set the *Data To Encode In Barcode* property with a value with the following structure:
  - a. 1 digit for Number System
  - b. 5 digits for Manufacturer (Company) Code or prefix. This number is assigned by the Uniform Code Council (UCC)
  - c. 5 digits for Product Code which is assigned by the manufacturer
  - d. 1 digit for check digit ONLY (the check digit is automatically calculated)
4. Append to *Data To Encode In Barcode* 2 or 5 digits to create UPC A Supplement

### Example of a UPC-A barcode images

*Data To Encode In Barcode* property = 01234567890 will produce the following barcode image:



*Data To Encode In Barcode* property = 0123456789003 or *Data To Encode In Barcode* property = 01234567890503 will produce the following barcode image:



## 5.6 UPC E

<b>Use encoder</b>	<b>second</b>	Determines which UPC-E system should be used when encoding with the UPC-E symbology
--------------------	---------------	---

This Symbology is also known as Universal Product Code version E, UPC-E Supplement 5/Five-digit Add-On, UPC-E Supplement 2/Two-digit Add-On, UPC-E+5, UPC-E+2, UPC-E0, E0, UPC-E1, E1, GTIN-12 with lead "0", GS1-12, UCC-12.

### Overview

UPC-E is a variation of UPC-A which allows for a more compact barcode by eliminating "extra" zeros. Since the resulting UPC-E barcode is about half the size as an UPC-A barcode, UPC-E is generally used on products with very small packaging where a full UPC-A barcode couldn't reasonably fit. A UPC-E

barcode represents 6 digits with an implied number system 0. However, a Number System 1 can be used as well.



Sample of a UPC-E Barcode

The value to encode by UPC-E has the following structure and it's the same as for UPC-A:

1. 1 digit for Number System (0: regular UPC codes, 1: reserved, 2: random weight items marked at the store, 3: National Drug Code and National Health Related Items code, 4: no format restrictions, for in-store use on non-food items, 5: for use on coupons, 6: reserved, 7: regular UPC codes, 8: reserved, 9: reserved)
2. 5 digits for Manufacturer (Company) Code or prefix. This number is assigned by the Uniform Code Council (UCC)
3. 5 digits for Product Code which is assigned by the manufacturer
4. 1 digit for checksum

#### Add-On or Supplement code

The Add-On Symbols were designed to encode information supplementary to that in the main bar code symbol on periodicals and paperback books. The Add-On can be composed of 2 or 5 digits only.



Sample of an UPC-E Two-Digit Add-On Barcode

How to create UPC-E barcodes

In order to get an UPC-E barcode image, please follow these steps:

1. Set the *Symbology* property to *UPC E*
2. Change the Number System if needed by checking *Use UPC E System 1* to use UPC-E System 1 encoding type
3. Setting up dimensions and quiet zones
4. Set the *Data To Encode In Barcode* property with a value with the following structure:
  - a. 1 digit for Number System
  - b. 5 digits for Manufacturer (Company) Code or prefix. This number is assigned by the Uniform Code Council (UCC)
  - c. 5 digits for Product Code which is assigned by the manufacturer
5. Append to *Data To Encode In Barcode* 2 or 5 digits to create UPC E Supplement

#### Example of a UPC-E barcode images

*Data To Encode In Barcode* property = 01234567890 will produce the following barcode image:



*Data To Encode In Barcode* property = 0123456789003 or *Data To Encode In Barcode* property = 01234567890503 will produce the following barcode image:



## 5.7 EAN 13

This Symbology is also known as European Article Number 13, EAN-13 Supplement 5/Five-digit Add-On, EAN-13 Supplement 2/Two-digit Add-On, EAN-13+5, EAN-13+2, EAN13, EAN13+5, EAN13+2, UPC-13, GTIN-13, GS1-13, EAN/UCC-13.

### Overview

EAN-13, based upon the UPC-A standard, was implemented by the International Article Numbering Association (EAN) in Europe. EAN-13 is a superset of UPC-A. This means that any software or hardware capable of reading an EAN-13 symbol will automatically be able to read an UPC-A symbol. The only difference between EAN-13 and UPC-A is that the number system code in UPC-A is a single digit from 0 through 9 whereas an EAN-13 number system code consists of two digits ranging from 00 through 99, which is essentially a country code.



Sample of an EAN-13 Barcode

The value to encode by EAN-13 has the following structure:

1. 2 or 3 digits for Number System or Country Code
2. 5 or 4 digits for Manufacturer (Company) Code or prefix
3. 5 digits for Product Code
4. 1 digit for checksum

Each country has a numbering authority which assigns manufacturer codes to companies within its jurisdiction.

### Add-On or Supplement code

The Add-On Symbols were designed to encode information supplementary to that in the main bar code symbol on periodicals and paperback books. The Add-On can be composed of 2 or 5 digits only.



### How to create EAN-13 barcodes

In order to get an EAN-13 barcode image, please follow these steps:

1. Set the *Symbology* property to *EAN-13*
2. Setting up dimensions and quiet zones
3. Set the *Code* property with a value with the following structure
  - a. 2 or 3 digits for Number System or Country Code
  - b. 5 or 4 digits for Manufacturer (Company) Code or prefix
  - c. 5 digits for Product Code
  - d. 1 digit for Check-Sum
4. Append to *Data To Encode In Barcode* 2 or 5 digits to create EAN-13 Supplement

### Example of a EAN-13 barcode images

*Data To Encode In Barcode* property = 501234567890 will produce the following barcode image:



*Data To Encode In Barcode* property = 50123456789012345 or *Data To Encode In Barcode* property = 501234567890012345 will produce the following barcode image:



## 5.8 EAN 8

This Symbology is also known as European Article Number 8, EAN-8 Supplement 5/Five-digit Add-On, EAN-8 Supplement 2/Two-digit Add-On, EAN-8+5, EAN-8+2, EAN8, EAN8+5, EAN13+2, UPC-8, GTIN-8, GS1-8, EAN/UCC-8.

### Overview

EAN-8 is the EAN equivalent of UPC-E in the sense that it provides a "short" barcode for small packages. The primary purpose of the EAN-8 code is to use as little space as possible. EAN-8 is encoded using the three EAN-13 character sets and also has a check digit that is calculated in the same way as EAN-13. The data digits in an EAN-8 symbol identify a particular product and manufacturer. Since a limited number of EAN-8 codes are available in each country, they are issued only for products with insufficient space for a normal EAN-13 symbol. For example, a 2-digit country code permits a total of only 100,000 item numbers.



Sample of an EAN-8 Barcode

The value to encode by EAN-8 has the following structure:

1. 2 or 3 digits for Number System or Country Code
2. 5 or 4 digits for Product Code
3. 1 digit for checksum

Each country has a numbering authority which assigns manufacturer codes to companies within its jurisdiction.

### Add-On or Supplement code

The Add-On Symbols were designed to encode information supplementary to that in the main bar code symbol on periodicals and paperback books. The Add-On can be composed of 2 or 5 digits only



Sample of an EAN-8 Two-Digit Add-On Barcode

### How to create EAN-8 barcodes

In order to get an EAN-8 barcode image, please follow these steps:

1. Set the *Symbology* property to *EAN 8*
2. Setting up dimensions and quiet zones
3. Set the *Data To Encode* property with a value with the following structure:
  - a. 2 or 3 digits for Number System or Country Code
  - b. 5 or 4 digits for Product Code
4. Append to *Data To Encode In Barcode* 2 or 5 digits to create EAN-8 Supplement

### Example of a EAN-8 barcode images

*Data To Encode In Barcode* property = 2012345 will produce the following barcode image:



*Data To Encode In Barcode* property = 201234578 or *Data To Encode In Barcode* property = 2012345178 will produce the following barcode image:



## 5.9 Code 11

This Symbology is also known as Code11, USD-8, USD8

### Overview

Code 11 was developed as a high-density numeric-only symbology. The symbology is discrete and is able to encode the numbers 0 through 9, the dash symbol (-), and start/stop characters.

It is used primarily in labeling telecommunications equipment.

Code 11 is not terribly secure in that printing imperfections can quite easily convert one character into another valid character. Data integrity is obtained by using one, or sometimes two, check characters.



Sample of a Code 11 Barcode

### How to create Code 11 barcodes

1. Set the *Symbology* property to *Code 11*
2. Set the *Calculate Check Digit* sum property to *True*
3. Setting up dimensions
4. Set the *Data To Encode In Barcode* property with the value to encode. It can be numbers 0 through 9 and the dash symbol (-)

### Example of Code 11 barcode images

*Data To Encode In Barcode* property = 12345-67890 will produce the following barcode image:



## 5.10 Code 39

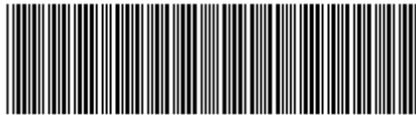
This Symbology is also known as ANSI/AIM Code 39, ANSI/AIM Code 39, Uniform Symbology Specification Code 39, USS Code 39, USS 39, Code 3/9, Code 3 of 9, USD-3, LOGMARS, Alpha39.

### Overview

Code 39, the first alpha-numeric symbology to be developed, is still widely used-especially in non-retail

environments. It is suitable for encoding general purpose alphanumeric data. Code 39 is a discrete, variable-length symbology. It is self-checking in that a single print defect cannot transpose one character into another valid character. It is the standard barcode used by the United States Department of Defense, and is also used by the Health Industry Bar Code Council (HIBCC).

The Standard Mode can encode uppercase letters (A through Z), digits (0 through 9) and a handful of special characters like the \*, -, \$, %, (Space), ., /, and +



ABC 123456789

Sample of a Code 39 Barcode

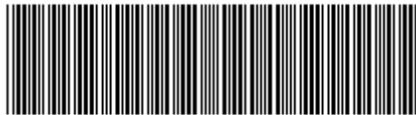
### How to create Code 39 barcodes

In order to get a Code 39 barcode image, please follow these steps:

1. Set the *Symbology* property to *Code 39*
2. Setting up dimensions and quiet zones
3. Set the *Data To Encode In Barcode* property with the value to encode.

### Example of Code 39 barcode images

*Data To Encode In Barcode* property = ABC 123456789 will produce the following barcode image:



ABC 123456789

## 5.11 Code 39 Extended

This Symbology is also known as Code 39 Full ASCII.

### Overview

Code 39, the first alpha-numeric symbology to be developed, is still widely used-especially in non-retail environments. It is suitable for encoding general purpose alphanumeric data. Code 39 is a discrete, variable-length symbology. It is self-checking in that a single print defect cannot transpose one character into another valid character. It is the standard barcode used by the United States Department of Defense, and is also used by the Health Industry Bar Code Council (HIBCC).

The Full ASCII Mode or Extended Version can encode all 128 ASCII characters.



(abc) 123456789

Sample of a Code 39 Extended Barcode

### How to create Code 39 Extended barcodes

In order to get a Code 39 Extended barcode image, please follow these steps:

1. Set the *Symbology* property to *Code 39 Extended*
2. Setting up dimensions and quiet zones
3. Set the *Data To Encode In Barcode* property with the value to encode.

### Example of Code 39 Extended barcode images

*Data To Encode In Barcode* property = (abc) 123456789 will produce the following barcode image:



(abc) 123456789

## 5.12 Code 93

This Symbology is also known as ANSI/AIM Code 93, ANSI/AIM Code 93, Uniform Symbology Specification Code 93, USS Code 93, USS 93, Code 9/3, USS-93, USD-3.

### Overview

Code 93 was designed to complement and improve upon Code 39. Code 93 is similar in that it, like Code 39, can represent the full ASCII character set by using combinations of 2 characters. It differs in that Code 93 is a continuous, variable-length symbology and produces denser code. Code 93 offers higher information density for alphanumeric data than either Code 39 or Code 128.

The Standard Mode can encode uppercase letters (A through Z), digits (0 through 9) and a handful of special characters like the \*, -, \$, %, (Space), ., /, and +



ABC 123456789

Sample of a Code 93 Barcode

### How to create Code 93 barcodes

In order to get a Code 93 barcode image, please follow these steps:

1. Set the *Symbology* property to *Code 93*
2. Setting up dimensions and quiet zones
3. Set the *Data To Encode In Barcode* property with the value to encode.

#### Example of Code 93 barcode images

*Data To Encode In Barcode* property = ABC 123456789 will produce the following barcode image:



ABC 123456789

### 5.13 Code 93 Extended

This Symbology is also known as Code 93 Full ASCII.

#### Overview

Code 93 was designed to complement and improve upon Code 39. Code 93 is similar in that it, like Code 39, can represent the full ASCII character set by using combinations of 2 characters. It differs in that Code 93 is a continuous, variable-length symbology and produces denser code. Code 93 offers higher information density for alphanumeric data than either Code 39 or Code 128.

The Full ASCII Mode or Extended Version can encode all 128 ASCII characters.



(abc) 123456789

Sample of a Code 93 Extended Barcode

#### How to create Code 93 Extended barcodes

In order to get a Code 93 Extended barcode image, please follow these steps:

1. Set the *Symbology* property to *Code 93 Extended*
2. Setting up dimensions and quiet zones
3. Set the *Data To Encode In Barcode* property with the value to encode.

#### Example of Code 93 Extended barcode images

*Data To Encode In Barcode* property = (abc) 123456789 will produce the following barcode image:



(abc) 123456789

## 5.14 Industrial 2 of 5

This Symbology is also known as 2 of 5 Industrial, 2/5 Industrial, 2 of 5 Standard, Standard 2 of 5, 2/5 Standard, Code 2/5, 2 of 5, C 2 of 5.

### Overview

Industrial or Standard 2 of 5 is a low-density numeric symbology that has been with us since the 1960s. It has been used in the photo finishing and warehouse sorting industries, as well as sequentially numbering airline tickets. A more efficient implement of Industrial 2 of 5 is the Interleaved 2 of 5 symbology.



Sample of a Industrial 2 of 5 Barcode

### How to create Industrial 2 of 5 barcodes

In order to get a Industrial 2 of 5 barcode image, please follow these steps:

1. Set the *Symbology* property to Industrial 2 of 5
2. Setting up dimensions and quiet zones
3. Set the *Data To Encode In Barcode* property with the value to encode.

### Example of Industrial 2of 5 barcode images

*Data To Encode In Barcode* property = 123456789 will produce the following barcode image:



## 5.15 Interleaved 2 of 5

This Symbology is also known as ANSI/AIM ITF 25, ANSI/AIM I-2/5, Uniform Symbology Specification ITF, USS ITF 2/5, ITF, I-2/5, 2 of 5 Interleaved, 2/5 Interleaved.

### Overview

Interleaved 2 of 5 is a higher-density numeric symbology based upon the Industrial 2 of 5 symbology. It is suitable for encoding general purpose all-numeric data and is used primarily in the distribution and warehouse industry. Interleaved 2 of 5 is essentially identical to Industrial 2 of 5 except for the fact that Interleaved 2 of 5 encodes information in both the bars and spaces while Standard 2 of 5 only encodes information in the bars. However, the encoding scheme is the same for both in terms of their use of wide and narrow elements for each element.



Sample of a Interleaved 2 of 5 Barcode

### How to create Interleaved 2 of 5 barcodes

In order to get a Interleaved 2 of 5 barcode image, please follow these steps:

1. Set the *Symbology* property to Interleaved 2 of 5
2. Setting up dimensions and quiet zones
3. Set the *Data To Encode In Barcode* property with the value to encode.

### Example of Interleaved 2of 5 barcode images

*Data To Encode In Barcode* property = 123456789 will produce the following barcode image:



## 5.16 Matrix 2 of 5

This Symbology is also known as 2 of 5 Matrix, 2/5 Matrix.

### Overview

Matrix 2/5 is a linear barcode symbology which encodes numeric values only with an optional check digit.



Sample of a Matrix 2 of 5 Barcode

### How to create Matrix 2 of 5 barcodes

In order to get a Matrix 2 of 5 barcode image, please follow these steps:

1. Set the *Symbology* property to Matrix 2 of 5
2. Setting up dimensions and quiet zones
3. Set the *Data To Encode In Barcode* property with the value to encode.

### Example of Matrix 2of 5 barcode images

*Data To Encode In Barcode* property = 123456789 will produce the following barcode image:



## 5.17 MSI Plessey

This Symbology is also known as MSI/Plessey, Modified Plessey.

### Overview

MSI was developed by the MSI Data Corporation, based on the original Plessey Code. MSI, also known as Modified Plessey, is used primarily to mark retail shelves for inventory control. MSI is a continuous, non-self-checking symbology. While the length of an MSI barcode can be of any length, a given application usually implements a fixed-length code.



Sample of a MSI Barcode

### How to create MSI barcodes

In order to get a MSI barcode image, please follow these steps:

1. Set the *Symbology* property to MSI
2. Setting up dimensions and quiet zones
3. Set the *Data To Encode In Barcode* property with the value to encode.

### Example of MSI barcode images

*Data To Encode In Barcode* property = 123456789 will produce the following barcode image:



## 5.18 Telepen

Also known as Telepen Barcode, Telepen Numeric, Telepen Full ASCII, SB Electronic Systems Barcode.

### Overview

Telepen can be used to represent the full range of ASCII characters. This covers the standard set of printable characters including numbers, capital and lower-case letters and punctuation marks as well as the complete set of non-printable control characters such as carriage-return, line-feed, horizontal tab, etc. Telepen can also be used to represent numeric data in double-density mode, where an ASCII character is re-interpreted as a pair of numeric characters. There is nothing in the barcode to distinguish between the 2 modes, and the interpretation of the data as ASCII or numeric is set only by the configuration of the reading device. Telepen systems have been implemented in many countries and very widely in the UK. Most Universities and other academic libraries use Telepen, as do many public libraries. Other users include the motor industry, Ministry of Defense and innumerable well-known organizations for many different applications.



ABC12345

Sample of a Telepen Barcode

### How to create Telepen barcodes

In order to get a Telepen barcode image, please follow these steps:

1. Set the *Symbology* property to Telepen
2. Setting up dimensions and quiet zones
3. Set the *Data To Encode In Barcode* property with the value to encode.

### Example of Telepen barcode images

*Data To Encode In Barcode* property = ABC12345 will produce the following barcode image:



ABC12345

## 6 Support

### 6.1 Barcodes History

In 1932 an ambitious project was conducted by a small group of students headed by Wallace Flint at the Harvard University Graduate School of Business Administration. The project proposed that customers select desired merchandise from a catalog by removing corresponding punched cards from the catalog. These punched cards were then handed to a checker who placed the cards into a reader. The system then pulled the merchandise automatically from the storeroom and delivered it to the checkout counter. A complete customer bill was produced and inventory records were updated.

Modern bar code began in 1948. Bernard Silver, a graduate student at Drexel Institute of Technology in Philadelphia, overheard the president of a local food chain asking one of the deans to undertake research to develop a system to automatically read product information during checkout. Silver told his friend Norman Joseph Woodland about the food chain president's request. Woodland was a

twenty seven year old graduate student and teacher at Drexel. The problem fascinated Woodland and he began to work on the problem.

Woodland's first idea used patterns of ink that would glow under ultraviolet light. Woodland and Silver built a device which worked, but the system had problems with ink instability and it was expensive to print the patterns. Woodland was still convinced they had a workable idea. Woodland took some stock market earnings, quit his teaching job at Drexel, and moved to his grandfather's Florida apartment to have more time to work on the problem.

On October 20, 1949, Woodland and Silver filed a patent application titled "Classifying Apparatus and Method." The inventors described their invention as relating "to the art of article classification...through the medium of identifying patterns".

Most bar code histories state that the Woodland and Silver bar code was a "bull's eye" symbol, a symbol made up of a series of concentric circles. While Woodland and Silver did describe such a symbol, the basic symbology was described as a straight line pattern quite similar to present day 1D bar code.

The symbology was made up of a pattern of four white lines on a dark background. The first line was a datum line and the positions of the remaining three lines were fixed with respect to the first line. The information was coded by the presence or absence of one or more of the lines. This allowed 7 different classifications of articles. However, the inventors noted that if more lines were added, more classifications could be coded. With 10 lines, 1023 classifications could be coded.

The Woodland and Silver patent application was issued October 7, 1952 as US Patent 2,612,994.

In 1962 Silver died at age thirty-eight before having seen the commercial use of bar code. Woodland was awarded the 1992 National Medal of Technology by President Bush. Neither men made much money on the idea that started a billion dollar business

Bar code was not commercialized until 1966. The National Association of Food Chains (NAFC) put out a call to equipment manufacturers for systems that would speed the checkout process. In 1967 RCA installed one of the first scanning systems at a Kroger store in Cincinnati. The product codes were represented by "bull's-eye barcodes", a set of concentric circular bars and spaces of varying widths. These barcodes were not pre-printed on the item's packaging, but were labels that were put on the items by Kroger employees. But there was problems with the RCA/Kroger code. It was recognized that the industry would have to agree on a standard coding scheme open to all equipment manufacturers to use and adopted by all food producers and dealers.

In 1969, the NAFC asked Logicon, Inc. to develop a proposal for an industry-wide bar code system. The result was Parts 1 and 2 of the Universal Grocery Products Identification Code (UGPIC) in the summer of 1970. Based on the recommendations of the Logicon report, the U.S. Supermarket Ad Hoc Committee on a Uniform Grocery Product Code was formed. Three years later, the Committee recommended the adoption of the UPC symbol set still used in the USA today. It was submitted by IBM and developed by George Laurer, whose work was an outgrowth of the idea of Woodland and Silver. Woodland was an employee at the time of IBM.

In June 1974, one of the first UPC scanner, made by NCR Corp. (which was then called National Cash Register Co), was installed at Marsh's supermarket in Troy, Ohio. On June 26, 1974, the first product with a bar code was scanned at a check-out counter. It was a 10-pack of Wrigley's Juicy Fruit chewing gum. The pack of gum wasn't specially designated to be the first scanned product. It just happened to be the first item lifted from the cart by a shopper whose name is long since lost to history.

Today, the pack of gum is on display at the Smithsonian Institution's National Museum of American History.

The first attempted at an industrial application of automatic identification was begun in the late 1950's by the Association of American Railroad. In 1967, the Association adopted an optical bar code. Car labeling and scanner installation began on October 10, 1967. It took seven years before 95% of the fleet was labeled. For many reasons, the system simply did not work and was abandoned in the late 1970's.

The event that really got bar code into industrial applications occurred September 1, 1981 when the United States Department of Defense adopted the use of Code 39 for marking all products sold to the United States military.

#### **External Links**

[www.barcode.ro](http://www.barcode.ro)

## **6.2 Reading and Verifying Barcodes**

Most barcode scanners can read common linear symbologies such as Code 39, Code 128, Code 93, EAN, UPC and Codabar if it is enabled in the scanner. One of the most common methods of reading or verifying barcodes is by use of the hand held barcode scanner. Most hand held scanners receive their power from the USB port, so no external power supply is required. When a barcode is scanned in, the data is sent to the PC as if it had been typed by the keyboard. If you have a RS232 hand held scanner.

Requirements for the checking and verification of bar codes vary depending on how the bar codes you have printed are going to be used. If you are printing bar codes purely for internal use and there will be no requirement for anybody outside your company or organization to read them ("closed" systems) then just checking that the bar code encodes the correct characters and that these can be correctly read by your chosen reading equipment may well be perfectly adequate.

However, if you are producing bar codes that will be used by third parties, maybe on a variety of potentially unknown readers and scanners ("open" systems), then you may need to go a stage further. This is particularly the case in the retail environment where some larger store chains sometimes impose penalties on suppliers if they supply goods with unreadable codes. Here the requirement is to verify that the bar code has been printed in line with the "rules" of the symbology you are using and that the print quality meets specifications.

Verification is a more complex process than simple checking and requires special equipment capable of scanning your bar code and analyzing the compliance of the code in line with the rules of the symbology. Usually it is necessary to purchase a specific bar code "verifier" to do this job. Verifiers can usually provide lots of very technical information about a bar code (e.g. contrast ratio rating, wide/narrow bar ratio etc). Normally the verifier will summaries all these technical measurements to inform the user if the code is within or outside the acceptable ranges of tolerance for the symbology concerned. Sometimes this is further summarized to a simple "good" or "bad".

Checking and verifying printed bar codes are not the same thing and it is important to understand the differences. The process of checking with a given reader does not necessarily mean that the bar code is correctly printed and readable by all scanners operating within acceptable tolerance ranges. However, the additional cost of validation may be prohibitive for some and, if you are confident that you are using a good quality printing source, simple checking may be adequate. You must however

be prepared that one day someone will complain "we cannot read your bar codes". Responding that they work OK with your reader is not the same as having properly verified them!

Once you have a bar code in hand, you must read it and process the information. Reading bar codes requires three basic decisions. You must decide on the input device, the decoder, and the interface. The input device reads the bar code and transmits the data to the decoder, which converts the data to ASCII characters. The interface is the connection between the decoder and the computer.

Input devices (wands, CCDs, badge scanners, and lasers) are the direct contact between the user and the bar code. No other choice you make will have a greater impact on the usability of the system. Naturally, there are several choices, in a range of prices. In general, you will get better service from more expensive devices, but this is not automatically so. The choice of input device is controlled by these factors:

Volume: Some input devices are inherently more usable and reliable than others. If you have a low-volume application, any input device will probably work well for you. A high-volume operation will generally be better off with a high-grade input device. High-grade input devices are fast and reliable.

Bar Code Quality: One of the advantages of high-grade input devices is their ability to read low-quality bar codes. In applications where bar codes are of poor quality to start with or are likely to be damaged, use of high-quality input devices can save time and reduce errors.

To select an input device, you must take all of these factors into consideration. Once you have made a tentative decision, you should test the system in as many real-world conditions as you can simulate.

Get the input device a little dirty, damage the bar codes, print them with a slightly worn ribbon or cartridge, test it with an untrained employee, and try to anticipate other problems that may happen during normal operation. This way you can make sure you have made the right choice. The most common input devices are:

Wands: These are the most inexpensive input devices available (\$140 to \$180). They work well for low-volume scanning but have some disadvantages. They require a relatively flat surface, a fairly high quality bar code, and some skill on the part of the person operating it. However, in applications where someone must scan one bar code on a sheet full of bar codes, these are a good choice.

CCD (Charge-Coupled Device) Readers: These are the next step up from wands (\$400 to \$600). A CCD has a read head the same width as the bar code (2 to 4 inches). The user sets the head of the reader on the bar code, and a series of LEDs scan the bar code and read it. This requires less skill than the wand, and it will work with most low-quality bar codes. They still require a relatively flat surface, and the CCD must be within 1/4" (.5 cm) of the bar code to read it. The surface can be slightly curved in the direction of the bars, but no more than about the curve of a 1-liter bottle.

Laser Scanners: These are the best type of input device and are therefore the most expensive (\$400 to \$1,300). They will work with curved or uneven surfaces and will read most very low quality bar codes. They will also read over a much greater distance than wands or CCDs, usually 5" to 27" (12 to 65 cm). Laser scanners come in general-purpose and heavy-duty versions.

Fixed-Mount Laser Scanners: These systems use laser readers that are fixed in place, and the bar codes are brought to the scanners. The most common example is the scanners in used in grocery stores. Another example is a conveyor controller that reads the labels on boxes or packages as they move down a line. These are used in the airline industry to process baggage, in warehousing to control conveyors or other devices, and in many types of manufacturing.

Slot Scanners: Slot scanners are used for time-and-attendance, security, and other systems. Each scanner has a slot that you slide bar-coded cards through. These scanners look much like the credit card readers you see in retail settings, but they read bar codes instead of magnetic coding.

Combination Scanners: You can frequently mix two different types of input devices. For example, you can attach a slot scanner and a laser scanner to a decoder to allow users to enter information either way.

#### **External Links**

[www.barcode.ro](http://www.barcode.ro)

## **6.3 Support**

Please check our website [www.rosistem.com](http://www.rosistem.com) for any questions on Rosistem Barcode Generator.

If your query is not solved there then send email to [support@rosistem.com](mailto:support@rosistem.com) and let us help you.

## **7 How To Order**

Rosistem Barcode Generator versions are sold on the Internet Secure Online Ordering

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## 9 Glossary

**Bar Height** – Bar Height is the vertical height of the bars in barcode label.

**Bearer Bar** – Bearer bar are the horizontal and vertical lines which are printed in contact with the top and bottom of the barcode.

**Bitmap** – Bitmap is the type of image format used to store digital images.

**Density** – Density is the width between barcode bars.

**Cells** – Cells define the number of labels to print.

**Character Grouping** – Character Grouping allows to group barcode values in specific sets.

**Checksum** – Checksum is a value used to check the integrity of barcode value.

**Data Set Series** – Data Set Series feature allows to generate the multiple copies of labels with different barcode and text value in Barcode Designing View.

**DPI** – DPI (Dots Per Inch) specifies the resolution of output devices such as scanner and printer.

**Image DPI** – Image DPI determines resolution the image is drawn to, which creates a more accurate barcode.

**Orientation** – Orientation is the position or alignment of object relative to some specific directions.

**Print Profiles** – Print Profiles has the specific page properties (Page Size and Page Margin) to print the labels.

**Resolution Independent Metafile** – Resolution Independent Metafile is a high resolution image file format to save the barcode label.

**Message Append** - Message appended across multiple symbols if number of symbols is greater than 1.

**Number Of Symbols** - Number of symbols used to invoke message append across symbols.

**Reader Initialization** - Reader initialization adds the reader initialization symbol to the barcode for older scanners, which require it.

**Composite Data** - Composite Data value is a special 2D Composite Component symbol printed above the linear barcode.

**Encoding Mode** - Encoding Mode is mode of compaction to encode data in the symbol.

**Preferred Format** - Preferred Format determines the smallest size of the symbol.

**Country Code** - Country Code is alphabetic or numeric geographical codes developed to represent countries and dependent areas used in data processing and communications.

**Service Class** - Service Class is a code assigned by the carrier.

**Zip Code** - Zip code is code of letters that identifies the individual post office or metropolitan area delivery station associated with an address.

**Version** - Version is configuration or number of modules (combination of black and white dots).

**Error Correction Level** - An error-correction mechanism is built in each symbol so that the symbol can still be decoded even if it is damaged.

**Print Intensity** - Print Intensity is intensity or darkness of the character.

**Character Spacing** - Character Spacing is spacing between the characters.

**PDF Columns** - Number of Columns in the PDF barcode.

**PDF Rows** - Number of Rows in the PDF barcode.

**PDF X to Y Ratio** - Ratio of width to height of modules in PDF barcode.

**PDF EC Level** - An error-correction mechanism is built in each symbol so that the symbol can still be decoded even if it is damaged in PDF barcode.

**PDF Mode** - Mode used to encode data in the PDF barcode.

**Truncated PDF417** - A truncated PDF417 symbol uses less area than the normal PDF417 barcode. By selecting this option, the right hand side of the symbol is removed or truncated. This option should be used primarily in a clean environment, since it is more susceptible to damage.

**MacroPDF Enable** - A boolean indicating that the barcode is part of a MacroPDF417 sequence.

**MacroPDF File ID** - Macro PDF File ID is a file ID to the MacroPDF barcode.  
(Each barcode in the MacroPDF sequence must have the same file ID assigned to it)

**MacroPDF Segment Index** - MacroPDF Segment Index is unique segment index to the MacroPDF barcode.

(The index number of this MacroPDF barcode in relation to the set. Each barcode in the MacroPDF sequence must have a unique segment index, starting at zero and incrementing thereafter by 1)

**Macro PDF Last Segment** - Macro PDF Last Segment is a boolean indicating the final barcode in the MacroPDF sequence.

**Expanded Stacked Segments** - Expanded Stacked Segments is the number of segments chosen may produce 2 or more rows in Databar Expanded Font.