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“A very good publication”

“Short and to the point

**This is the first pages of the book to receive the full ebook it will contain the following:**

## **Barcoding Quickstart Book Summary**

You do not have to be a computer expert to learn from the Barcoding QuickStart book. There is no technical jargon. It is a book written for people who want to become more familiar with how barcoding works, what choices and different technologies are available, and steps to implementing bar-coding in your company. The book will save you time because it is straight and to the point, yet it contains all of the information you need to get started.

### **Contents of Barcoding QuickStart:**

**Introduction to Barcoding** - This chapter will give you an overview of barcoding, and how bar-coding works. It will explain what barcoding symbologies are, how they are used and why there are so many different symbologies used. You will see an example of a bar-coded shipping label.

**Barcode Scanners** - You will learn how bar-code scanners communicate with your computer. The different options available (keyboard Wedge, Batch and Radio Frequency). The book will help you choose the right barcode scanner for your application. You will also learn about the bar code scanning technologies available.

**Barcode Printers** - You will learn the different options available to print barcode labels and some of the latest technological breakthroughs. This will help you choose the right bar-code printer solution for your particular application.

**Barcoding Applications** - This will explain different uses of bar-coding and some of the trends. It includes barcode applications in the retail industry and 2D barcoding.

**Cost Justifying Your Barcoding System** - Now that you know how to make the right choice for bar-coding equipment, you may have to justify the cost of a new barcoding system. This chapter provides you with all of the steps you will need to justify the savings for your bar-coding system for inventory management.

**How to Get Started** - Five steps for getting started with barcoding in your company.

**Resources** - Resources on the internet and publications to help you become more familiar with bar-coding.

# **Barcoding QUICKSTART**

**By Phyllis Davis Minik**

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# **Introduction to Barcoding**

**Overview**

**Symbologies**

## Overview

Is it bar code, bar-code or barcode? Some spell checkers want you to use "bar-code", others "bar code", but in this book I will be using "barcode". If you look around you will see it spelled all three ways.

Anyone that has ever been shopping has seen barcodes being used. Figure 1 shows how barcoding works. First the manufacturer prints and applies the barcode labels. When the retail shop receives the inventory from the manufacturer they input the product information into their computer. When a customer purchases the product the barcode is scanned at the register and the price and description of the product comes up on the retailers' computer. This allows the retail store to track their inventory. As you can see there are three steps in barcoding; printing the label, scanning the label and a computer interface. Figure 1 shows the flow of a typical barcoding application. The interface of the barcode to your application software determines the success or failure of your project. It is the most difficult part of a barcoding project.

### How do barcodes work?

Barcodes consist of alternating patterns of light and dark representing encoded information. Barcode symbols are converted back into the original string of text when they are scanned. A barcode is a series of narrow bars and wide bars. Each barcode symbology has its own pattern of narrow and wide bars to represent each character. Some barcode symbologies use a check digit to increase scanning accuracy. The check digit works like this: the barcode data characters are added up and then divided to arrive at a number and the check digit is printed at the end of the barcode. As the item is scanned the checksum is calculated and compared to the checksum read from the barcode. The scanned barcode will be discarded if the calculations do not match.

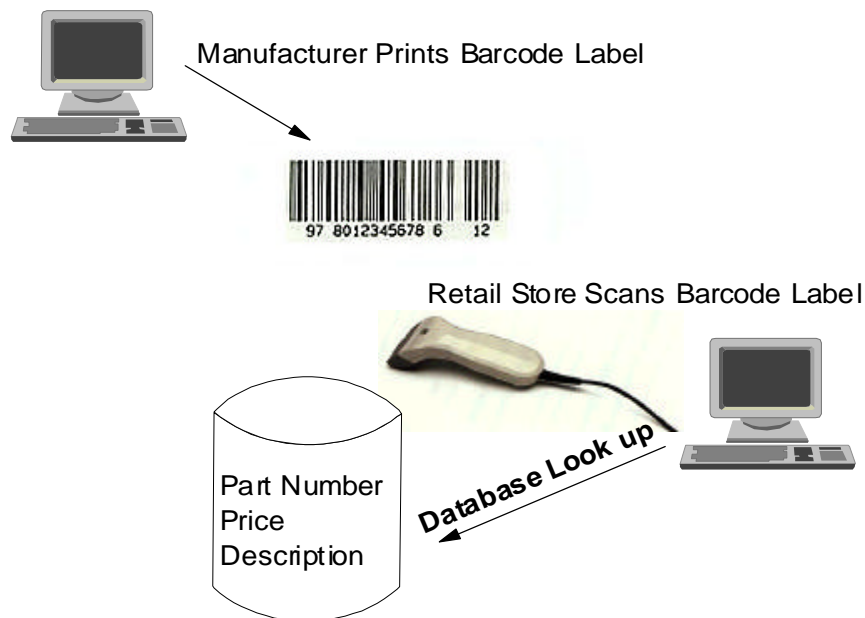


Figure 1

# Symbologies

## Linear Symbologies

Bar codes are an efficient way of carrying information in a machine readable format. There are many different barcode formats used. The Barcode formats are referred to as symbologies. Each symbology has different capabilities: some are numeric only, some accept any characters, some accept only certain characters. Each symbology has a different size limitation. Listed below are the most commonly used bar code symbologies:

UPC, EAN: Product codes

Code 39: Manufacturing, automotive, military

Code 128: Container codes

Codabar: airbills, libraries



Most linear barcodes are used to index the data to a database which contains the needed information about the labeled product (description, price...). The UPC code in figure 2 is an example that uses this method. You have probably seen this work at the grocery store check out when the cashier scans in the item you are purchasing. The barcode only contains product and manufacturing number information on the label. The price and product description is maintained in a database on a computer.



Sometimes multiple linear bar codes can be used to encode a complete data file on a label. An example of this is a shipping label. Typically the shipping label is made up of part number, quantity, serial number or supplier barcoded on the outside of a box. Figure 2 is an example of a shipping label.



## 2D Symbologies

There are also two dimensional (2D) barcodes. An example of one is displayed on the right. 2D barcodes are used for special applications where standard linear symbologies do not provide a solution. Like the linear symbologies 2D codes have a variety of formats but the most popular one is called PDF417. The main benefit of a 2D barcode is its capacity. It can hold 1108 bytes or 1850 ASCII Characters or 2710 numeric digits. Another advantage of the 2D code is it has a more robust error correction system. Most damaged 2D labels can be read. All of the data on the shipping label in figure 2 could have been encoded in the PDF417 symbol.



You are probably wondering why there are so many different symbologies. This is probably the most common question about barcoding. There are two different groups that set standards for barcodes. The Federation of Automated Coding Technologies (FACT) sets the standards for CODE 39 and code 128. Uniform Code Council/International Article Number Association (UCC/EAN) sets the standards for the UPC code and UCC 128 shipping labels.

# *Sample Shipping Label*





PART NO. (P) <b>4337489</b> 		
QUANTITY (Q) <b>1500</b> 	DATE MFG. <b>06/24/90</b>	
	CHANGE LETTER <b>A</b>	
SUPPLIER (U) <b>35324</b> 		
SERIAL (S) <b>102342349</b> 		
ZEBRA TECHNOLOGIES 333 CORPORATE WOODS PKWY, VERNON HILLS, IL 60061		

Figure 2

# **Scanners**

## **Connecting to your computer**

**Keyboard Wedge**

**Batch terminals**

**Radio Frequency**

## **Scanning Device Technology**

**CCD**

**Laser**



## Connecting to your Computer

There are several different barcoding technologies available depending on your computer. There are three that are discussed in this book: wedge scanners, batch scanners and Radio Frequency scanners.

### Wedge Scanners

Using a keyboard wedge is the easiest way to enter barcodes into your computer. The keyboard wedge is a box or cable which is attached to a scanning device (wand, laser or CCD scanner). To install a wedge is very simple. First unplug the keyboard from the PC and plug it into the keyboard wedge. The cable coming from the keyboard wedge plugs into the computer where the keyboard was plugged in. Anything being typed at the keyboard is unaffected by the keyboard wedge, anything scanned with the scanning device is entered as if it were typed at the keyboard. Figure 3 displays a keyboard wedge scanner.

If you have a network with many terminals attached to a main server here are the choices:

- **Keyboard Wedge.** This may not always work since terminals have specific keyboard scan codes. Sometimes a wedge will work with one model, but not another.
- **Terminal Wedge.** If you are using a serial connection between the terminal and the host this would be a good solution. To install this type of wedge, unplug the serial line running from the host to the terminal and plug it into the wedge. Take the cable from the wedge and plug it into where the host cable was attached. When you scan in the information it goes to the host and the terminal.



Figure 3

## **Products and Services Provided by Advanced EDI & Barcoding Corp:**

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