Bar Code Glossary

Accuracy
The determination of whether any element width or inter-character gap width (if applicable) differs from its nominal width by more than the printing tolerance.

ADC
Automated Data Collection or Automated Data Capture – refers to all technologies that automate the process of data collection without the use of a keyboard, including bar code, magnetic stripe, (OCR) optical card reader, voice recognition, smart card, or (RFID) radio frequency identification. ADC provides a quick, accurate, and cost-effective way to collect and enter data.

Adhesive
(1) A substance (cement, glue, gum) capable of holding materials together by surface contact.

(2) The portion of a pressure sensitive label which allows the label to cling to its intended surface.

AIAG
Automotive Industry Action Group – a trade association responsible for creating automotive industry standards pertaining to bar code symbology and common label formats.

AIM
Automatic Identification Manufacturers, Inc. – a U.S. trade association headquartered in Pittsburgh, PA who represent the manufacturers of automatic identification systems.

Alignment
In an automatic identification system (Auto ID), the relative position and orientation of a scanner to the symbol.

Alphanumeric
A character set consisting of letters, numbers, and usually other characters such as special symbols.

ANSI
American National Standards Institute – a non-governmental organization responsible for the development of voluntary bar code quality standards. Bar code printing standards and the readability of bar code symbols are determined and classified into grades from A to F, to provide an overall symbol quality test.

Aperture
The opening on an optical system (scanner) that establishes the field of view.

Application
The particular use the label, tag, or ticket will serve once the barcode, text, or graphic image is applied.

Application Temperature
The temperature at the time the label is applied.

Backcoating
Used on a thermal transfer ribbon to prevent the ribbon from sticking to the printhead and to the substrate (media/label material). It also protects the printhead from excessive heat, static, and abrasion.

Background
The spaces, quiet zones, and areas surrounding a printed symbol.

Bar
The darker element of a printed bar code symbol.

Bar Code
A bar code is a piece of Automatic Identification Technology (Auto ID) that stores real time data. It is a series of vertical bars or a graphical bar pattern which can, (depending on the width and pattern) encode numbers and letters in a format which can easily be retrieved and interpreted by a bar code reader.

Bar Code Character
A single group of bars and stripes that represents a specific quantity (often one) of numbers, letters, punctuation marks, or other symbols. This is the smallest subset of a bar code symbol that contains data.

Bar Code Density
The number of characters that can be represented in a linear unit of measure. This number is often expressed in characters per inch or cpi.

1234ABC

Bar Height/Length
The bar dimension perpendicular to the bar width. Also called bar height. Scanning is performed in an axis perpendicular to the bar length.

Bar Width

The thickness of a bar measured from the edge closest to the symbol start character to the trailing edge of the same bar.

Bi-Directional
Bar code symbology capable of being read successfully independent of scanning direction.

Binary
A numbering system that uses only 1's and 0's.

Bit
An abbreviation for binary digit. A single element (0 or 1) in a binary number.

Bitmapped Font
Refers to the inherent character and font sets found within a thermal printer and their respective ability to be adjusted and "shrunk to fit". Bitmapped fonts are commonly available in limited point sizes, for example 6, 8, 10, 12, 14, and 18 point, whose edges can become distorted or rough with manipulation outside the prescribed point size ranges.

Character
(1) A single group of bars and spaces that represents a specific number (usually one) of numbers, letters, punctuation marks, or other symbols.
(2) A graphic shape representing a letter, numeral, or symbol.
(3) A letter, digit, or other symbol that is used as part of the organization, control, or representation of data.

Character Alignment
The vertical or horizontal position of characters with respect to a given set of reference lines.

Character Density
Within a linear bar code symbol, the number of data characters per unit length (typically per inch). For a discrete symbology, the character width must include the intercharacter gap.

Character Font
Refers to the range and variety of data characters available within a given thermal printer model, for example 7 Bitmapped fonts type A,B,C,D,E,F and 1 Scaleable font.

Character Set
(1)A range of data characters (alpha, numeric, and/or punctuation) that can be encoded into any given symbology.
(2) Refers to the international characters and graphic symbols available

within a given thermal printer model, for example IBM® Code Page 850.

Check Character/Digit
A mechanically calculated number included within a string of data whose value is used for the purpose of performing a mathematical check to ensure that the bar code message is scanned and read correctly.

CISC Processor
Complex Instruction Set Computer Processor – the x86 and Pentium families use CISC processors that process complex instructions requiring less instructions per operation resulting in faster performance. However, the performance efficiency of a RISC processor can sometimes be affected by the software installed in the machine as newer, more complex software versions contain more instructions that the processor needs to process.

Codabar
A barcode symbology that uses four bars and three spaces to represent the numbers 0 through 9 and a set of special characters.

Code 11
A barcode symbology developed by Intermec. It uses 11 characters: 0 through 9 and -.

Code 128
Code 128 is an alphanumeric bar code specifically designed to reduce the amount of space the bar code occupies. Each printed character can have one of three different meanings, depending on which of three different character sets are employed. Code 128 can be recognized as the labeling standard for UCC/EAN 128, used as product identification for container and pallet levels of retail markets.

123 123 123 123

Code 16K
This symbol is a stack of from 2 to 16 rows.

Code 39
Code 39 is the most commonly used bar code. It can encode both numbers and letters, which is ideal for most industrial and non-retail applications. The Automotive industry uses Code 39 as its standard for shipping container labels. If you are just beginning a bar code application of your own, we recommend using Code 39.

* 1 2 3 1 2 3 1 2 3 1 2 3 *

Code 49
Introduced in 1987 by the Intermec Corporation as a multi-row, continuous, variable length symbology. Code 49 was the first stacked (two dimensional) barcode to receive widespread interest.

Code 93
Code 93 is the complementary version of Code 39 and allows labels to be approximately 30 percent shorter than Code 39.

0349193906UA0

Concatenation
The ability of a reading system to join together that data from multiple symbologies and interpret the information in a single message.

Continuous Bar Code
The end of each character in the bar code message marks the beginning of the next character; there are no intercharacter gaps to separate the characters in the bar code message, for example Interleaved 2 of 5 code.

Continuous Media
Label, ticket, or tag stock media that does not contain any notches, gaps, or holes between each label. The label length must be specified in the label program.

123 123 123 123

Contrast
The difference in reflectance between the black and white (or bar and space) areas of a symbol.

Data Communications Equipment
(DCE) Devices designed to manipulate transmitted data, for example a modem.

Data Terminal Equipment
(DTE) A digital device such as a display terminal, data entry terminal, or

printer which may be used to view or enter data. This device has a different communication connector pinout than DCE (see DCE).

Decoder
In a bar code reading system, the electronic package that receives signals from the scanner, performs the algorithm to interpret the signals into meaningful data, and provides the interface to other devices.

Density
See Character Density for details.

Depth of Field
The distance between the maximum and minimum plane in which a code reader is capable of reading symbols of a specified "X" dimension.

Diffuse Reflection
The component of reflected light that emanates in all directions from the reflecting surface.

Direct Thermal Print
(DT) Direct thermal printing is an old technology originally designed for low cost copiers and fax machines. It has since been transformed into a highly successful technology for bar coding. The thermal printhead is typically a long linear array of tiny resistive heating elements (100-300/inch) arranged perpendicular to the paper flow. Each thermal printhead element locally heats an area on the chemically coated paper directly under the print element. This induces a chemical reaction which causes a dot to form in that area. The image is formed by building it from dot rows as the media passes underneath the active edge of the printhead. Direct thermal printing is an excellent choice for many bar code labeling applications. DT printers provide simplicity and environmental economy (recyclable materials are also available). Direct thermal printers are simple to operate compared to most other print technologies—with no ribbons or toners to replenish—label loading is a very simple procedure. Enables batch or single label print capability with virtually no waste.


Discrete Bar Code
Each character of the bar code message stands alone, separated by intercharacter gaps, and can be read independently from the others.

Dot Matrix Printing
A print technology that employs several needles which are evenly spaced

across a moveable horizontal shuttle which oscillates back and forth as the paper advances. Dot matrix printers print a bar code by creating overlapping adjacent dots to produce approximations of a straight edge line. Prints low to medium density bar codes that may not meet certain end-user guidelines. The dot size on the matrix printer limits the narrow element size and density of the bar code. Continuous ribbon re-use on dot matrix printers requires continuous monitoring of ribbon condition to ensure adequate bar code contrast. Ribbon ink that has become exhausted can produce an image that is inadequate for scanning. Ink saturated ribbon can result in paper "bleed" which can cause image distortion. Dot matrix printers are modified line printers that are most frequently used for printing batches of large labels with low density bar codes. Printing of single, individualized labels results in significant waste. The design of the matrix printer's print carriage, sitting far below the media, also does not enable one to adequately maximize one's label space.
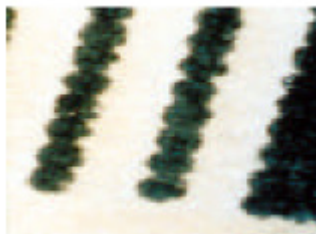
DPI
Dots per inch (refer to Resolution)

DRAM
Dynamic Random Access Memory – is one type of chip used in Random Access Memory. It stores information as an electrical charge. Because this charge dissipates over time, the computing device must periodically run a "refresh cycle" on the chips to recharge them—hence "dynamic". As it is a type of RAM, it will lose its information when the device into which it is installed is turned off. Typically, the time required to access information with a DRAM scheme is greater than with SRAM. SRAM chips cannot be substituted for DRAM chips; the machine (e.g. printer) must have been designed to use SRAM.

E3
Element Energy Equalizer (E3) – Zebra's sophisticated method of ensuring that the correct amount of heat is delivered to each part of a printhead at all print speeds in order to optimize the quality of the bar codes that are produced.

EAN
The European Article Number is the European version of the UPC (Universal Product Code) bar code of retail food packaging that enables

this linear bar code to be used internationally. Like the U.S. equivalent UPC code, there are two different types of EAN codes, EAN-8 and EAN-13.

EAN-13
EAN-13 has 13 characters or symbols. It is very much like the UPC code and has the 13th character as a means of identifying in what country the product will be used.

1 234123 412344 >

EAN-8
EAN-8 has a left-hand guard pattern, four odd parity digits, a center guard pattern, four even parity digits, and a right hand guard pattern with a total of eight symbols.

< 1231 2313 >

EBCDIC
Extended Binary Coded Decimal Interchange Code was developed by IBM, and is used extensively in systems featuring IBM processors. Each character is represented by a six bit structure with the capability of generating 64 combinations.

Edge Roughness
Irregularities in the printing of bar code elements, resulting in a non-uniform edge and edge errors.

EDI
Electronic Data Interchange - a method by which data is electronically transmitted from one point to another.

EDP
Electronic Data Processing - the act of processing information electronically.

EIA
Electronic Industries Association – a trade association.

Electrostatic
A method of printing that utilizes a special electrostatic paper or charged drum, both of which attract toner to the charged area.

Element
A single bar or space in a bar code symbol.

EPROM
The abbreviation for erasable programmable Read Only Memory – (See ROM).

ERP
Enterprise Resource Planning – a term used to describe a new wave of integration system software capabilities designed to link a company's respective operations—including human resources, financials, manufacturing, and distribution—with their customers and suppliers.

Face Material
See Facestock.

Facestock
The part of the substrate (media) where printing occurs.

FACT
Federation of Automated Coding Technology – a bureau of AIM consisting of organizations that use and promote automatic identification among their members.

First Read Rate (FRR)
The ratio of the number of successful reads on the first scanning attempt to the number of attempts. Commonly expressed as a percentage and abbreviated as FRR.

Fixed Ratio
The ratio between the width of the bars in the code is a fixed standard and cannot be changed.

Flash Memory
Read/Writeable RAM (a.k.a. Non-Volatile RAM)
This is a type of Random Access Memory chip that does not lose its contents when its power is turned off; however, it can be intentionally written to, read from, and intentionally erased. It is a type of RAM and, hence, interacts with the computer or processor as described under "RAM" except that it does not lose its contents when power is removed. The advantage of flash is best understood by example:

A program or set of data could be stored into a computer or other machine at the place where the product is built. Of course, since flash won't lose its contents even when it's receiving no power, the product could be kept on the shelf with its memory loaded for a period of time before it's put into service. While the product is in use, its flash chips cannot be accidentally reprogrammed, so the data or program that was stored in the product remains safely intact. At some point in the future, however, if the

manufacturer of the product decided that there was a need to alter the data or the program, this could be done. The manufacturer would send to its customers a computer file containing the updated information. Along with the revised data or program would be a program for the product to use to erase the old data or program and read in the new information.

Flexographic Printing
The process whereby a pre-printed label, tag or ticket is printed by using a raised image plate surface to transfer wet ink to a printing substrate.

Flood Coat
A thin coating of ink applied to the top of printing screen by the flood bard or, in manual operations, by the squeegee prior to printing the stroke.

Foil
A cloth or plastic tape coated with several layers of material, one of which is inklike, that produces the visible marks on a substrate. Used on formed font impact, dot matrix, thermal transfer, and hot stamp printers. Also called a ribbon.

Gloss
Characteristic of the surface which causes it to reflect light at a given angle.

Guard Bars
Bars that are at both ends and center of a UPC and EAN symbol, that provide reference points for scanning. Guard bars are similar in function to start and stop characters.

Hand-Held Scanner
A hand-held scanning device used as a contact bar code reader or OCR (optical code) reader.

Heat Resistance
The property of a material which inhibits the occurrence of physical or chemical changes caused by exposure to high temperatures.

HIBCC
Health Industry Business Communications Council – a trade association responsible for the symbology and label format used by the healthcare industry.

High Density
This bar code type has narrow spaces and bars with an "X" dimension that is less than 7.5 mils.

Holding Power
The ability to withstand stress, as in holding rigid label materials on smaller diameter cylindrical objects or in holding weight.

Horizontal Bar Code
A bar code or symbol presented in such a manner that its overall length dimension is parallel to the horizon. The bars are presented in an array that looks like a picket fence.

Human-Readable
The interpretation of bar code data, often printed immediately below the bar code in a readable format to humans.

IEEE
Institute of Electrical & Electronic Engineers – a trade association.

Impact Printing
Impact Printing, or dot matrix, is any printing system where a micro-processor-controlled hammer impacts against a ribbon and a substrate (label media).

Industry Standards
Created to encourage consistency across specific industries. Some of the more common standards are from the Automotive Industry Action Group (AIAG), Electronic Industry Association (EIA), the Health Care Industry Bar Code (HCIB), and the UCC Retail Pallet Format.

Ink Jet Printing
Common direct marking process and a favorite on high speed production lines. Ink droplets are selectively deflected between a moving product and an ink return channel. Ink jet printing is frequently used for coding products and cartons with human readable data and lot codes at very high speed and for case coding of cartons with bar codes. Bar codes on corrugated boxes are intentionally made large so that dot placement accuracy becomes less critical, thus using more ink and creating questionable print quality and usefulness for bar coding.

Ink Layer
The bottom layer of a thermal ribbon which is composed of waxes, resins, or a combination of both.

Interlabel Gap

The space, notch, or hole between labels used by the media sensor on the printer to determine the label length and top of form.

Interleaved 2-of-5
Interleaved 2-of-5 is a linear symbology that is most often used for encoding large amounts of information in a small area. Characters are paired together using bars to represent the first character and spaces to represent the second. Interleaved 2-of-5 bar code applications are prevalent in the electronics and manufacturing areas.

Inventory Control
Applications where bar coding and other forms of AIDC are used to add or delete items from inventory with 100% accuracy.

IPS
Inches per second (refer to Print Speed).

IrDa
Infrared Data Association
(1) A trade association.
(2) A scanning technology that utilizes electromagnetic radiation wavelengths longer than those of visible light and shorter than those of microwaves.

J
No terms beginning with this letter are listed in this glossary.

K
No terms beginning with this letter are listed in this glossary.

Label Thickness
Denotes the ideal range of media/substrate thickness designed to promote optimum print quality and printer performance.

Label, Pressure Sensitive
A pressure-sensitive label product is a die-cut part that has been converted through the production equipment using the type of pressure-sensitive material that has a protective backing. The end product is produced in the form of rolls, sheets, fanfold, or by other techniques that produce like products which have been slit or cut from the converted roll.

Label, Transparent
A pressure-sensitive label whose face material, adhesive, and protective coatings transmit light so that objects can be seen through it.

Ladder Orientation
A bar code symbol positioned vertically with horizontal bars and spaces.

Laminate
To apply one layer of material over another.

Laser Printing
The laser printer works much like a photocopier, projecting controlled streams of ions onto the surface of a print drum resulting in a charged image. The charged image then selectively attracts toner particles, transferring the image onto the paper substrate (media) by means of pressure. The pressure from the printhead and drum then fuse the image to the paper, creating the image. A laser printed label is only as durable as a photocopy of paper. Laser printers commonly cannot produce chemical- or water-resistant labels. Laser printer labeling adhesives must be carefully selected to ensure stability under the heat and pressure of the fuser.

Laser printers are not well suited for industrial labeling applications or individual product labeling applications. Compatible toners for thermal printing applications are often times lacking. Cost of toner is significant for bar code printing—15-30% black for bar code print versus 5% black for word processing print; 6 times the cost for bar coding using laser when compared to direct thermal or thermal transfer!

Laser Scanner
An optical bar code reading device using a low-energy laser light beam as its source of illumination.

Light Pen
A hand-held pen-like contact reader which the user must sweep across the bar code symbol in order to read the code. Also referred to as a wand.

Linear Bar Code / Symbology

A complete bar code message is expressed in a single line of bars—also commonly referred to as a 1-Dimensional bar code.

Liner
The component of a label used to protect the adhesive and to keep it from sticking to objects before the label is used. It readily separates from the label immediately before the label is applied to the substrate. Also referred to as release liner, backing paper, or release paper.

LOGMARS
A Department of Defense (DoD) project on LOGistics applications of Marking and Reading Symbols resulted in the production of a new standard (MIL-STD-1189A) that led to the development of Code 39 as the established bar code symbology to be used by all DoD vendors.

Low Density
This bar code type has bars and spaces that are wide and far apart with an "X" dimension greater than 20 mils. This type of bar code is used for scanning bar codes from further distances.

Machine-Readable
A general term used for printed material that can be directly transferred to a data processing system.

Manufacturer's ID
In the UPC code, the 6-digit number applied by the UCC to uniquely identify a manufacturer or company selling products under its own name. Also, the first 6 digits of the 12-digit UPC.

Matrix Symbols
Appear as a checker board. They are most likely square in shape, and contain some form of "finder pattern" which distinguishes them from other symbols. The finder pattern provides a decoding reference for scanners.

Maxicode
An example of a company which uses the Maxicode bar code is United Parcel Service (UPS). The next time you receive a package from UPS, look for a very small square with a pattern of dots and a small bulls eye in the center. UPS uses these bar codes as a way to sort their packages for a specific destination.
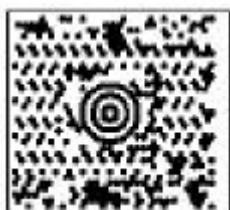
Media
(1) The term which refers to the label, tag, and/or ticket and its respective ribbon combination.
(2) The surface on which a bar code symbol is printed. Also, interchangeably, referred to as substrate.

Media Roll Capacity
Refers to the maximum/minimum media roll diameter that a thermal printer can accommodate, for example 5.0" O.D. (Outer Diameter) and 1.0" I.D. (Inner Diameter).

Memory
Zebra thermal printers contain a variety of memory options, including RAM, ROM, DRAM, SRAM, and Flash. For detailed descriptions of each memory option, refer to each herein by abbreviated name.

Mil
The narrowest nominal width unit of measure in a bar code.

Misread
A condition that occurs when the data output of a reader does not agree with the data encoded in the bar code symbol.

Module
The narrowest nominal width unit of measure in a bar code symbol.

Moving Beam Bar Code Reader
A scanning device where scanning motion is achieved by mechanically or electronically moving the optical geometry.

MSI
Barcode symbology made up of 4 bars and 4 spaces representing the characters 0 through 9.

NIST
The National Institute of Electrical & Electronics Engineers – a trade association.

Nominal
The exact or ideal intended value for a specified parameter. Tolerances are specified as positive or negative values from this specified value.

Non-Contact Reader
Bar code readers which do not require physical contact with the printed symbol.

Non-Continuous Media
Label, tag, or ticket which contains either a gap, notch, or hole between each label.

Non-Read
The absence of data at the scanner output after an attempted scan due to no code, defective code, scanner failure, or operator error.

Null Modem Connector
A device which connects to the serial output of a print cable and switches pins 2 and 3, transmitted data signal, and received data signal.

Numeric
A character set that includes only numbers

OCR-A
An abbreviation commonly applied to the character set contained in ANSI Standard X3.17-1981. A stylized font choice used for traditional OCR printing.

ODETTE
The European equivalent of AIAG. See AIAG for further details.

Omnidirectional
Bar codes which can be read in any orientation in relation to the scanner.

On-Demand
A term used to describe when labels are printed immediately when the customer needs them and are ready for use, versus being sent off-site for printing.

One-Dimensional Bar Code
A complete bar code message is expressed in a single line of bars. Also commonly referred to as a linear barcode.

Operating Temperature
Denotes the prescribed temperature range for the safe operation of a thermal printer.

Orientation
The alignment of a bar code symbol with respect to horizontal. Two possible orientations are horizontal and vertical bars and spaces (picket fence formation), and vertical with horizontal bars and stripes (ladder formation).

Overhead

The fixed number of characters required for start, stop, and checking in a given bar code symbol—a symbol requiring a start and stop character and two check characters contains four characters of overhead. To encode three characters with the overhead listed, seven characters are required to print.

Parallel Interface
A link between data processing devices on which the data moves over multiple wires and more quickly than serial interface. Imagine transmitting all 8 letters in a word at the same time over each wire. In parallel interface, the 8 bits (a byte) are received and then processed simultaneously. A common parallel interface option is Centronics® (36 pin) parallel.

Parity Character
An optional character which may be included in the bar code message to minimize the misreading of the message.

PDF417
A popular two-dimensional bar code that allows thousands of characters to be stored in its data format of multi-stacks. Some states use this type of bar code for driver's license information. Healthcare facilities may also use the PDF417 for patient records because of the amount of data it can store.

Pen-Scanner
A pen-like device used to read bar codes. It can be connected either by wire to a device or be self-contained. Requires direct contact with the symbol.

Permanency
A measure of an adhesive's ultimate holding power or bond strength. A permanent adhesive will develop a bond that makes label removal difficult or impossible without distorting the facestock.

Permanent Adhesive
An adhesive characterized by relatively high ultimate adhesion, but which can be removed. The degree of force used overcomes its bonding ability.

Picket Fence Orientation
A bar code symbol positioned horizontally with vertical bars and spaces.

Piggyback Label

A pressure-sensitive label which allows for dual usage. The construction consists of facestock, adhesive, and liner.

Pitch
Refers to the rotation of a bar code symbol about an axis parallel to the direction of the bars.

Plessey Code
A pulse-width modulated bar code commonly used for shelf marking in grocery stores.

Point of Sale (POS)
Refers to bar code related retail applications occurring at the point of sale.

Polyester
A strong film having good resistance to moisture, solvents, oils, and many other chemicals. Usually transparent, although available with metalized finish. Often used in the creation of Zebra media.

Polyethylene
A tough, sturdy plastic film having very good, low temperature characteristics. Often used in the creation of Zebra media.

Polypropylene
Similar to polyethylene but stronger, with a higher temperature resistance. Often used in the creation of Zebra media.

Postnet Code
A height modulated, numeric symbology developed by the U.S. Postal Service. This linear symbology that uses 5 bars and 4 spaces to encode each digit is unique in that the bars are of different heights to accommodate the fast printing process required by the post office as well as its resistance to smearing.
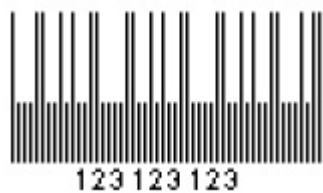
Pre-Printed Symbol
A symbol that is printed in advance of application either on a label or on the article to be identified.

Pressure Sensitive Label
A pressure sensitive label product is a die-cut part that has been converted through the production equipment using the type of pressure sensitive material that has a protective backing. The end product is produced in the form of rolls, sheets, fanfold, or by other techniques that produce like products which have been slit or cut from the converted roll.

Print Length
Refers to the minimum and maximum label length a printer can print with standard or added memory capacity.

Print Method
Denotes the print technology used to print a label – commonly direct thermal or thermal transfer variety.

Print Quality
The measure of compliance of a bar code symbol to the requirements of dimensional tolerance, edge roughness, spots, voids, reflectance, PCS, quiet zone, and encodation.

Print Speed
The speed at which the label moves through the printhead, measured in inches per second (ips).

Print Width
Denotes the printhead width and the corresponding maximum label width on which a thermal printer can optimally print.

Product ID
In the UPC code, the 5-digit number assigned by a manufacturer to every consumer unit in its product catalog. The Product ID is different for every standard package (consumer unit) of the same product.

QR Code
A two-dimensional bar code developed for use in Japan that permits the encoding of binary, Kanji, JIS, and alphanumeric information.

Quality Control
Applications that use automatic identification to make sure the right material is in stock so it can be delivered for the right cost to the right user at the right time.

Quiet Zone
Bar code message overhead, which is an area to the left and to the right of the bar code symbol and is free of printing. This area provides the scanning device time to adjust to the measurements of each bar code in the message.

Start Code   Stop Code

Quiet Zone   "X" Dimension   Quiet Zone
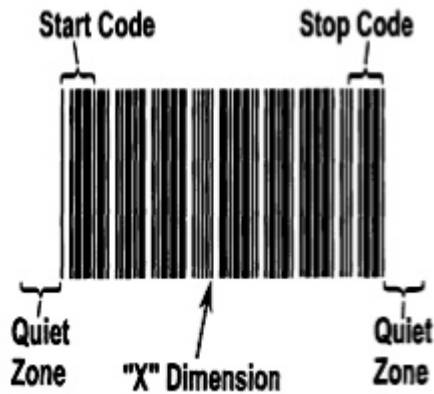
RAM
Random Access Memory - A machine's main working memory. Program instructions and data are stored here. Each location in memory has a unique address, so the computer can access the information in any location at any time it's required (i.e. "randomly"). RAM can be erased, written to, read from, and rewritten. It is erased when a computing device is turned off.

Reflectance
The ratio of the amount of light of a specified wavelength or series of wavelengths reflected from a test surface, to the amount of light reflected from a barium oxide or magnesium oxide standard.

Registration
Variation from label to label, of the position of what is printed onto the label as measured from the edges of the label.

Release Liner (Backing)
The portion of the pressure sensitive label which supports and holds the facestock and adhesive until application to the intended surface is needed.

Removable Adhesive
An adhesive characterized by relatively high cohesion strength and low ultimate adhesion. It can be removed easily from most substrate surfaces. Some adhesive transfer could take place, depending on the affinity of the adhesive to the surface.

Residue
Adhesive left on a substrate when a decal is removed.

Resolution
The narrowest element dimension that can be distinguished by a particular reading device or printed with a particular device or method. Generally the higher the resolution the better the resultant print quality. Measured in dots

per inch (dpi).

Ribbon
A cloth or plastic tape coated with several layers of material, one of which is ink-like, that produces the visible marks on the substrate. Used on formed font impact, dot matrix, thermal transfer, and hot stamp printers. Also called foil.

RISC Processor
Reduced Instruction Set Computer Processor - reducing the number of instructions that a CPU supports will reduce the complexity of the chip, thus enhancing performance. However, the time it takes to fetch, decode, and execute the instruction may take longer than executing more code on a CISC processor. Examples of the RISC processors are the Hitachi SH1 and SH2. Also, the PowerPC uses RISC architecture.

ROM
Read Only Memory - Permanent memory, which can only be read, not written to nor erased. Typically programmed by the manufacturer carrying the software/instructions that a computer or similar device needs in order to get started every time it's turned on. ROM does not lose its contents when the device it's installed in is turned off.

Scaleable Fonts
Refers to the inherent character and font sets found within a thermal printer and their respective ability to be adjusted and "shrunk to fit". Scaleable fonts are also commonly referred to as smooth fonts as their point sizes can be adjusted to any desired custom size evenly and proportionally, without the advent of visible rough edges.

Scan Spot
The size of the projection of light from a scanning device which "reads" the bar code message.

Scanner
A device used to read a bar code symbol. It optically converts optical information into electrical signals.

Self-Checking
A bar code is considered self-checking if a single printing defect will not cause a character to be transposed into another valid character in the same symbology.

SER
Substitution Error Rate, or the rate of occurrence of incorrect characters from an automatic identification system.

Serial Interface
A link between data processing devices on which all the data moves over one wire, one bit at a time. Think of it as transmitting words one letter at a time until a total of 8 letters or bytes (8 bits) are received. The byte is then processed, but in a slower fashion than parallel. Common serial interface communications are RS232 C, RS422, and RS485 (9 or 25 Pin).

Service Temperature
The temperature range that a pressure sensitive label will withstand after a 72-hour residence time on the substrate. The range is expressed in degrees Fahrenheit and/or degrees Celsius.

Shelf Life
The period of time during which a product can be stored under specified conditions and still remain suitable for use.

Show-Through
The generally undesirable property of a substrate that permits underlying markings to be seen.

Skew
Rotation of a bar code symbol about an axis parallel to the symbol's length.

Smudge Resistance
The resistance of a printed surface to smearing.

Solvent
A dissolving, thinning, or reducing agent. Specifically, a solvent is a liquid that dissolves another substance.

Source Marking
The process of labeling an item with a bar code at the point of its initial production.

Space
The lighter element of a bar code usually formed by the background between the bars.

Space Width
The thickness of a space measured from the edge closest to the symbol's start character to the trailing edge of the same space.

Spectral Response
The variation in sensitivity of a reading device to the light of different wavelengths.

Specular Reflection
The mirror-like reflection of light from a surface.

Speed/Throughput
Used interchangeably to refer to a rate of motion or printer performance calculated in ips or inches per second. The higher the ips, the greater the printer's performance rating.

Spot
The undesirable presence of ink or dirt in a space.

SRAM
Static Random Access Memory is a type of memory chip used in Random Access Memory that can take advantage of a particular method of working with certain main processors. In brief, a certain spot in RAM is first accessed. Then each address after that first address is accessed in order, up to a specific point. Because the computer doesn't have to "figure out" each sequential address to access, a large block of memory can be accessed in less time than is required with DRAM. Again, you can't just substitute SRAM chips for DRAM chips; a machine must have been designed to use SRAM. As it is a type of RAM, it will lose its information when the device into which it is installed is turned off.

Stacked Code Symbols
See Two-Dimensional Bar Code.

Standard
A set of rules, specifications, instructions, and directions on how to use a bar code or other automatic identification system to your advantage and profit. Usually issued by an organization, such as LOGMARS, HIBCC, UPC, etc.

Start Character
A unique character to the left of the bar code which allows for bidirectionality. In a vertical bar code, the start character is at the top.

Stop Character
A unique character to the right of the bar code which allows for bidirectionality. In a vertical bar code, the stop character is at the bottom.

Storage Temperature
Denotes the prescribed temperature range for the safe storage of a thermal printer.

Substitution Error
A misencodation, misread, or human key entry error where incorrect information is substituted for a character that was to be entered.

Substrate
The surface on which a bar code symbol is printed. Also, interchangeably, referred to as media.

Symbology
The language used in bar code technology (e.g. UPC, Code 39, etc).

Synthetic Substrate
Man-made materials which have been created for specific applications.

Tag Stock
Substrate which contains only the facestock and has a hole from which to be hung.

Tamperproof Label
A pressure-sensitive material that cannot be removed intact, thus making reuse of the label impossible.

Telepen
A continuous bar code which encodes the full ASCII character set.

Thermal Transfer Print
Thermal transfer printers use the same basic technology as direct thermal printers, but with the elimination of chemically-coated media in favor of a non-sensitized face stock and a special inked ribbon. A durable polyester ribbon film coated with a dry thermal transfer ink is placed between the thermal printhead and label. The thermal printhead is used to melt the ink onto the label surface, where it cools and anchors to the media surface. The polyester ribbon is then peeled away, leaving behind a stable, passive image. Consistent/sharp edge bar code print capability—with durable long-life and archival image stability. Clean, quiet, compact operation Batch or individual label print capability. Low cost/low maintenance compared to comparable technologies. Maximum readability and IR scannability. High contrast text, graphic, and bar code print capability. Durable for operation of joint office/industrial applications.

Throughput
Refers to the average length of label stock that a printer can process and print in a given amount of time. Throughput differs from print speed in that throughput includes the label transmission, formatting, and printing times. Due to these factors, a 12 ips machine may have lower throughput than a 10 ips printer.

Ticket
Substrate which contains only the facestock and contains no hole punches.

Tilt
Rotation of a bar code symbol about an axis perpendicular to the substrate.

Transparent Label
A pressure sensitive label whose face material, adhesive, and protective coatings transmit light so that objects can be seen through it.

Two-Dimensional Bar Code
Two-Dimensional Bar Codes are special rectangular codes which 'stack' information in a manner allowing for more information storage in a smaller amount of space. These are also referred to as 'Stacked' Bar Codes or 'Matrix' Bar Codes. A standard bar code is limited to 20 to 25 characters.

UCC
Uniform Code Council - formerly the Uniform Product Code Council. The organization that administers the UPC and other retail standards.

UPC Code
Universal Product Code is the standard bar code symbol for retail food packages in the United States. This code was modified and adapted by Europe for international identification of food packages in the form of EAN.

UPC-A
UPC-A is the most common bar code used in retail today. It is a numeric, fixed ratio bar code with 12 characters.

UPC-E
A UPC symbol encoding six digits of data in an arrangement that occupies less area than a UPC-A symbol. Also called "zero suppressed" symbol because a 10-digit UPC-A code can be compressed to a six digit UPC-E format by suppressing redundant zeros

Variable Length Code

A code whose number of encoded characters can be within a range, as opposed to a code with a fixed number of encoded characters.

Verifier
A device that makes measurements of the bars, spaces, quiet zones, and optical characteristics of a symbol to determine if the symbol meets the requirements of a specification or standard.

Vertical Bar Code
A code pattern presented in such an orientation that the axis of the symbol from start to stop is perpendicular to the horizon. The individual bars are in an array that appears as rungs of a ladder.

Void
The undesirable absence of ink in a printed bar.

Wand/Wand Scanner
A handheld scanning device used as a contact bar code or OCR reader.

X Dimension
The "X"-dimension is the narrowest bar or space in the bar code. This bar or space is measured in millimeters (mil=1/1000 of an inch). The "X"-dimension defines the density of a linear symbology. Depending on what the "X"-dimension of a bar code is, the bar code will be called either high density or low density.

Y
No terms beginning with this letter are listed in this glossary.

Z Dimension
The achieved width of the narrow elements, calculated as the average of the narrow bar width and the average narrow space width.

Zebra
(1) A horse-like African mammal marked with light and dark stripes.
(2) A thermal print technology company intent on providing innovative

labeling solutions and quality products of renowned reliability to its customers.

ZPL/ZPL II
Zebra Programming Language is the universal language/code of all Zebra bar code printers. ZPL is an ASCII based format that enables label generation to occur by way of an instructional blueprint defining label length, field origin, field data, and other related information. ZPL enables labels with any combination of text, barcode, or graphics to be created.