

# BARCODE TECHNOLOGY



Great Eastern Impex Pvt. Ltd.  
India

## **Barcode: Introduction**

Barcode, in its simplest form, is a set of bars and spaces representing alphabet or numeric data for identification of a particular product, service or a process.

Barcode technology is the best-known and most widely used method of Automatic Identification. Automatic identification or "Auto ID" encompasses the automatic recognition and recording of data, most commonly through the printing and reading of information encoded in barcodes thereby eliminating risk of human error.

Early applications of bar code scanning, which included retail point-of-sale, item tracking and inventory control, have been expanded to include more advanced applications such as time and attendance, work-in-process, quality control, sorting, order entry, document tracking, shipping and receiving, and controlling access to secure areas.

Barcodes have been instrumental in revolutionizing, and significantly increasing efficiency and productivity across the entire supply chain from manufacturers to distributors to retailers worldwide. The packet of Wrigley's chewing gum was the first-ever product to be barcoded and scanned at Marsh's supermarket in Troy, Ohio in the year 1974. It now resides in the Smithsonian Museum, alongside other objects of distinction.

## **Barcode Technology: How it works?**

Barcodes are typically made up of a prefix that identifies the company (or manufacturer) and a suffix that identifies the product (or SKU).

GS1 (formerly, EAN) is the world's most widely adopted supply chain standard for goods, services, assets & location identification since 1977. Over 1 million companies of all sizes use GS1 standards to execute more than 5 billion transactions a day

A Barcode system, typically, consists of three components:

- **Origin**: You must have a source of barcodes. These can be printed on source or on-demand using thermal barcode printer, and software.
- **Reader**: A reader (scanner or a data terminal) is used to read, and decode barcodes. A reader can be either hand-held or portable or mounted as a fixed device.
- **Computer System**: Finally, a barcode system is usually a part of larger system or application software for collecting and managing information.



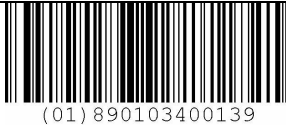
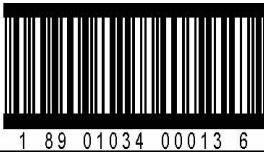

Thousands of retail stores around the world, and a rapidly increasing number in India use bar codes to collect information at the checkout.

*Let's look at the system and how it works:*

On its packaging each product carries a barcode which uniquely identifies it and distinguishes it from all others in a shopping basket. At the checkout, an automatic scanner reads each barcode. The barcode is decoded to reveal the Article number it represents. This number is passed to a computer, which matches it against a file and retrieves the price to be charged along with a description of the product. Both price, and description are then printed on a receipt.

Retailer for the first time can record the identity of every item sold. They can re-order more quickly, reduce their stocks and have financial and marketing information at their fingertips with unbelievable speed, accuracy, and detail.

**Barcode: Common Symbolologies and Usage**

<i>Barcode Symbology</i>	<i>Example</i>	<i>Use</i>
<p><b>EAN-13</b>, for retail products.</p> <p><b>GS1 DataBar (RSS)</b>, for small- size retail products</p>	 	<p>➤ RETAIL</p>
<p><b>GS1-128</b>, for logistics information</p> <p><b>ITF-14</b>, for printing on difficult surfaces</p>	 	<p>➤ TRADE</p> <p>➤ LOGISTICS</p>
<p><b>GS1 DataMatrix</b>, 2D symbology for healthcare</p>		<p>➤ HEALTHCARE</p>

**Barcode: Applications**

Common applications that are widely in use today:

<u>Industry Segment</u>	<u>Applications</u>
<ul style="list-style-type: none"> <li>▪ Manufacturing</li> <li>▪ Warehousing</li> <li>▪ Distribution</li> <li>▪ Personnel ID</li> </ul>	<p>Identifying products, managing work-in- process</p> <p>Controlling inventory, Dispatch automation</p> <p>Tracking consignments, Shipping &amp; receiving</p> <p>Accurate time &amp; attendance, Maintaining security</p>
<ul style="list-style-type: none"> <li>▪ Retail</li> <li>▪ Office</li> <li>▪ Finance &amp; Accounts</li> <li>▪ Transportation</li> </ul>	<p>Speeding checkouts, and Re-ordering</p> <p>Recording transactions, File management</p> <p>Speeding document processing, Asset Management</p> <p>Controlling vehicle access, Track &amp; Trace</p>
<ul style="list-style-type: none"> <li>▪ Leisure</li> <li>▪ Health</li> <li>▪ Travel</li> <li>▪ Libraries</li> </ul>	<p>Ensuring security and ease of access</p> <p>Administering correct dosage &amp; treatment, patient identification</p> <p>Efficient ticketing &amp; control, Ensuring safety and speedier check-in</p> <p>Logging borrowers and books, Managing inventory</p>

## **Barcode: Benefits**

Barcodes allow for rapid, simple and accurate reading and transmission of data for items that need to be tracked or managed. The emergence of Auto ID systems, including bar codes and the related printers, scanners, decoders and software has significantly increased the speed, efficiency, and accuracy of data collection and entry.

*Manual Approach to Data Capture*

vs.

*AIDC Approach to Data Capture*

Slow  
Prone to Mistakes  
Inefficient

Fast  
Accurate  
Efficient

## **The Business Case for Barcode Technology:**

1. **FAST**, effective handling of item-related data and identification. A bar code scanner typically can record data 5 to 7 times as fast as a skilled typist
2. **ACCURATE** transfer of data. Keyboard data entry creates an average of 1 error in 300 keystrokes. Bar code data entry has an error rate of about 1 in 3 million (10,000 times better accuracy).
3. **COST EFFECTIVE** solutions and fast return on investment where effectively applied. Average ROI for barcode systems are as low as 6 months, besides contributing significantly towards cost savings due to better processes and management.
4. **EFFICIENT** as effective usage of technology yields significant improvements in efficiency, productivity, profitability and competitive advantage for businesses
5. **BETTER DECISION MAKING** by providing a technological platform for effective integration with other communications and information management technology. Improved management, and as a result better decision-making due to automated data collection technology could be the best benefit of a bar code system.
6. **SIGNIFICANT OPPORTUNITIES** for item-based process improvement and innovation in virtually every sector of industry, commerce and services where items and data have to be managed.

## **About Great Eastern Impex Pvt. Ltd.**

*Great Eastern Impex Pvt. Ltd.* is a leading provider of innovative identification and tracking solutions to every segment of the supply chain from manufacturing to distribution to retailers. The company, est. in 1983, is a pioneer and market leader in the field of:

- Barcode solutions (Barcode Printers, Mobile Computers, Scanners, Software, & Supplies)
- Labeling systems (Print & apply labelers, Handheld Labelers & Self-adhesive Labels)

The company has state-of-the-art *label manufacturing* operations (ISO 9001:2000 certified) at *Gurgaon*, strategically located regional offices at *New Delhi, Mumbai, Bangalore, Chennai, Hyderabad, Kolkata, and Ludhiana* and nation-wide network of dealers and value added resellers for service & support.

To find out more on how barcode technology can add value to your business operations, please contact:

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