How Do 1D and 2D Barcode Scanners Differ?

Understanding Barcode Types, Scanning Technology, and Business Applications

POS Central India — an introductory guide for business owners, retail managers, warehouse teams and IT staff.



Understanding 1D Barcode Scanning Technology



A 1D barcode scanner reads linear (one-dimensional) barcodes made of parallel lines and spaces. It measures the relative widths and spacing of the bars to decode an identifier such as UPC, EAN or Code 128. These devices are a common choice for retail checkout and straightforward inventory tasks.

Key Feature	Technology	Typical Uses
Reads linear barcodes (UPC, EAN, Code 128).	Laser or linear imaging (single-line capture).	Retail billing, product lookup, basic stock tracking.

Understanding 2D Barcode Scanning Technology



A 2D barcode scanner reads patterns arranged horizontally and vertically (e.g., QR code, Data Matrix, PDF417). These devices capture an image of the code and use image-processing to decode more complex payloads. Many 2D imagers can also read standard 1D barcodes.

Key Feature

Reads QR codes, Data Matrix, PDF417 — often 1D too.

Technology

Area-imaging (camera-based) that captures a 2D image.

Typical Uses

Mobile ticketing, digital coupons, detailed inventory tracking.

How Are 1D and 2D Barcode Scanners Different?

Comparison Factor	1D Barcode Scanner	2D Barcode Scanner
Barcode format	Linear barcodes (UPC, EAN, Code 128)	2D codes (QR, Data Matrix, PDF417); many read 1D too
Barcode structure	Parallel lines and spaces	Patterns of modules (dots/squares) in two dimensions
Scanning technology	Laser or linear imaging	Image-based area-imaging
Data capacity	Generally lower — short numeric/product codes	Generally higher — can store URLs, contact data, structured text
Typical applications	Retail billing, shelf labels, simple stock tracking	Mobile screen scanning, ticketing, logistics, traceability
Mobile screen scanning	Often limited; laser scanners may fail on screens	Supported by imaging scanners — reads screens reliably

Common Business Applications of Barcode Scanners

1D Barcode Scanner Applications

- Retail checkout counters and supermarkets
- Product identification in POS transactions
- Basic stock counts and shelf labelling
- Warehouse item labelling for fast pick/pack

2D Barcode Scanner Applications

- Mobile payments, QR-based loyalty and digital coupons
- Ticket validation (events, transport) and mobile boarding passes
- Healthcare: medication labels and sample tracking
- Warehouse & logistics: parcel tracking, serialized inventory

Important Factors When Selecting Barcode Scanning Technology

Barcode Type

Are your labels linear (1D) or 2D (QR/Data Matrix)? Choose a scanner that supports the formats you use.

Scanning Environment

Lighting, distance (handheld vs long-range), label condition and reflective surfaces affect performance.

Connectivity

Check USB, serial, Bluetooth, or wireless options for integration with POS and inventory systems.

Daily Volume & Durability

High-throughput counters need fast, rugged scanners; occasional use can opt for less expensive models.

System Compatibility

Confirm drivers, SDKs or plug-and-play support for your POS, ERP or inventory software.

Future Requirements

Plan for mobile screen reading, new barcode types, or traceability needs; 2D imagers offer more flexibility.

Tip: If you expect more mobile or digital use, such as scanning QR codes and phone tickets, choose a 2D imaging barcode scanner for greater long-term flexibility.

Understanding Common 1D Barcode Scanner Models



TVS BS-L100 PLUS USB 1D Laser Barcode Scanner

The **TVS BS-L100 PLUS USB 1D Laser Barcode Scanner** is designed for fast and accurate reading of traditional 1D barcodes. Its USB connectivity allows easy connection to computers and POS systems. With a lightweight handheld design and laser scanning technology, it is suitable for retail billing counters, product identification, and everyday inventory tasks.



Honeywell Xenon XP 1950GHD-2USB-N Barcode Scanner

The **Honeywell Xenon XP 1950GHD-2USB-N** is a corded area-imaging barcode scanner designed to read both 1D and 2D barcodes. It supports high-density barcode scanning and can capture information from printed labels in retail, inventory, and warehouse environments. Its USB connectivity allows integration with compatible computer and POS systems. It is an example of how modern imaging technology can handle different barcode formats through a single scanner.

Understanding Common 2D Barcode Scanner Models



TVS BS i201g Lite 2D Wired Barcode Scanner

The **TVS BS i201g Lite 2D Wired Barcode Scanner** is a USB-connected imaging scanner that reads both 1D and 2D barcodes, including QR Code, Data Matrix, PDF417 and Aztec. With scanning speeds of up to 250 scans per second, it is suitable for retail billing, inventory management, healthcare and warehouse operations.



Honeywell Voyager XP 1470g 2D General Duty Scanner (without stand)

The **Honeywell Voyager XP 1470g 2D General Duty Scanner (without stand)** is designed for reliable barcode reading in retail stores, supermarkets, and everyday business environments. This 2D imaging scanner supports 1D and 2D barcode scanning, including QR codes, making it suitable for applications that require quick and accurate data capture. It is a practical choice for point-of-sale counters, billing desks, inventory management, and retail operations where consistent scanning performance is important.

Understanding the Right Barcode Scanning Technology

1D and 2D barcode scanners meet different operational needs. 1D scanners are efficient for traditional retail and simple stock workflows; 2D imagers add flexibility for mobile screens, richer data and advanced tracking. Many businesses now choose 2D imaging for future-proofing while retaining 1D support.

Explore Options

POS Central India — Barcode Scanners category

Learn More

Compare device compatibility, environment needs and daily volumes before purchasing.