



The Global Language of Business

# Barcode Scanning Equipment Selection Criteria:

## A guide to choosing appropriate scanning equipment

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## 1 Purpose

This document is intended to assist the individuals responsible for the selection and procurement of appropriate barcode scanning equipment for use within the supply chain. It should be noted that the selection of appropriate scanning equipment is most successful when conducted as a consultative process that includes feedback, approval and buy-in from all functional areas in your company that may use the chosen barcode scanning equipment as well as your scanning solution provider(s).

GS1 Canada has provided this document as a general guidance on what needs to be considered when selecting a barcode scanner.

## 2 Introduction

The ability to automatically capture information related to a product is essential for accuracy within the supply chain. The use of barcodes enables capturing of the timely and accurate information to be retrieved at the point of use. This information enhances supply chain processes such as product traceability.

There are various barcode types each with different capabilities and used for different business applications. In addition, various barcode scanners exist each with specific capabilities. The variety of scanning solutions could leave organizations faced with the challenge of how to select the proper equipment to meet their needs.

This document provides the necessary information to support organizations scanning equipment selection.

Areas that require immediate attention prior to choosing equipment include:

- Adopting the Global Trade Item Number (GTIN) as the product identifier for products.
- Enabling internal databases to allow for 14-digit GTINs
- Determining the types of barcodes/symbologies that will be scanned at each point of scanning. For example, do you need to scan 2D barcodes at the point of scanning?

The supply chain is comprised of products that filter through numerous touch points – many of which require data capture. As a result, organizations may have a variety of barcode scanning requirements.

For example, warehouse receiving may require a portable, hand-held scanner or a floor mounted scanner that is fixed to the docking bay. However, Point Of Sale (POS) may require different types of scanners due to different barcodes used for product identification that go through POS.

### **NOTE:**

*GS1 Canada makes no recommendations in the document regarding specific scanning manufacturers or scanning solution providers. This document is simply meant to guide the reader on what to consider when selecting scanning equipment to meet their needs.*

### 3 Selection Criteria

In the following sections, critical factors to consider when selecting the scanning equipment for your organization are outlined.

Identifying and understanding the unique requirements for each business area ensures an effective equipment selection decision is made for your organizations.

There are five common factors to consider when selecting scanning equipment:

1. End Users.
2. Environment where scanning equipment is used.
3. Ability to scan multiple symbologies (e.g., 2D barcodes or 1D barcodes).
4. Application - stationary or mobile.
5. Scanner attributes.

#### 3.1 End Users

One of the most important factors to consider before investing in equipment is end user integration. Discussions with the department(s) that will use the barcode scanning equipment may highlight additional specific factors that would impact the end user productivity and use of the scanner. Without the participation and endorsement of the end user, successful implementation could be jeopardized.

End user considerations include:

1. Ease of use
2. Weight
3. Connectivity to other systems & internet
4. Mobility
5. Reliability
6. Cleanability
7. Fluid resistant/Waterproof
8. Rechargeability/Battery life

#### 3.2 Environment

The environment in which the barcode scanning equipment is used is a critical factor in the selection process. For example, a POS environment is different than a loading dock, and it could require different equipment.

Environmental factors to consider include:

1. Exposure to/use in extreme cold
2. Exposure to/use in extreme heat
3. Subject to harsh chemicals

See [Appendix A: Barcode Scanner Selection Checklist](#) for more information.

#### 3.3 Use Considerations

The application of the barcode scanning equipment must also be considered as usability factors may be subjective. For example, warehouse receiving staff may prefer the flexibility of having

mobile scanners, but financial constraints could dictate that fixed or mounted scanning equipment is best suited to your organization to avoid losing or misplacing units.

Factors to consider for the application of the barcode scanning equipment include:

1. Offering mobile scanning equipment
2. Providing fixed or mounted scanning equipment
3. Providing motion activated scanning equipment
4. Incorporating Bluetooth technology to transmit data
5. Incorporating Wi-Fi technology to transmit data
6. Implementing keyboard emulation (transmission of data emulates manual data entry)
7. Including self-contained software in the scanning equipment
8. Durability

The application of your barcode scanning equipment will directly impact day-to-day activities and will affect all parties who use the equipment for data capture, making application considerations key factors in the selection process.

See [Appendix A: Barcode Scanner Selection Checklist for](#) more information.

### 3.4 Technical/Functional Requirements

Technical/Functional requirements refer to your barcode scanning equipment capabilities. Key factors to consider include:

1. Does the scanning equipment include software?
2. Does the manufacturer offer a loan or replacement program?
3. Can the equipment read or scan 1D (linear) and 2D barcodes?
4. Is the equipment an image-based scanner?
5. Is the equipment a linear scanner?
6. Does the scanning equipment require a power supply?
7. What is your scanning speed at POS?
8. How many items can be scanned per minute?
9. Does the equipment have an option to choose different barcodes to scan?
10. Is the equipment shielded (that is, does it emit or interfere with other electrical devices)?

See [Appendix A: Barcode Scanner Selection Checklist for](#) more information.

### 3.5 Scanning Unit Characteristics

Physical requirements of your barcode scanning equipment will be dictated by its application (i.e., the system, speed, and end function). For example, if you need to scan shipments at different loading docks, a Bluetooth connection would provide more options than a fixed cord in order to enable flexibility. Other unit attributes to consider include:

1. Does the scanning equipment have a USB connection?
2. Does the scanning equipment have a serial connection?
3. Does the scanning equipment have a PS2 keyboard connection?

## 4 Process

Your organization should perform a detailed analysis to ascertain what scanning equipment is most efficient for your unique business processes needs.

### 4.1 Receiving

Traditionally Trade items are marked with 1D (linear) barcodes such as UPC-A or EAN-13 that could encode only the GTIN – that is, no additional information in the barcode. However, as industries are transitioning to 2D barcodes such as GS1 DataMatrix and QR Code with GS1 Digital Link there is a growing demand for additional information such as batch/lot number, expiry date, best before date and/or production date.

Specifically for the receiving process, it should be noted that the ITF-14 is not capable of encoding secondary information and only the GS1-128 barcode can encode the additional information to be processed during receiving.

Although currently the scanning equipment for the pallet and case level may not require 2D (or image-based) scanners, as industries transition to 2D barcodes the need to have 2D scanners for shipping units may arise in the future.

However, during the receiving process, if there is a requirement to scan below the case level (e.g., cases opened and product repacked for distribution), it is recommended that image scanners be utilized as the levels below case may have 2D barcodes and to scan 2D barcodes you require image-based scanners.

Receiving process touch points to consider when conducting the analysis include:

1. Receiving the shipment on the receiving dock
2. Put away process
3. Inventory management

### 4.2 Point of Sale

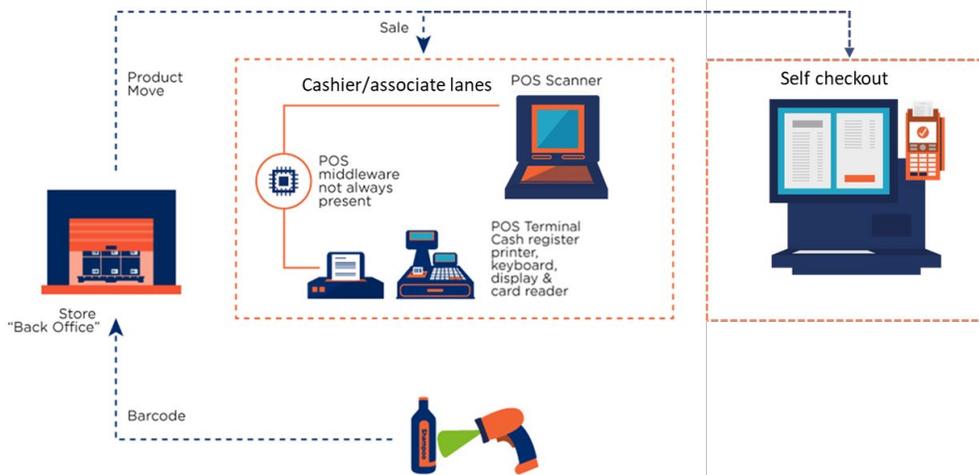
#### 4.2.1 Retail POS ecosystem

One of the most critical areas of a retailer's ecosystem is the point-of-sale (POS) area, where trade items are scanned for consumers to complete their purchase and for the retailer to record the transaction. This section outlines the key areas of a retail POS ecosystem that are impacted during the 2D barcode implementation and explains the required considerations to enable capability for 2D barcodes.

**Note:** Parts of a retailer's POS ecosystem may be found in areas where on-demand labels are generated in-store. For example, variable measure fresh foods may be available for consumers to order from a deli counter or to self-select where a barcode label is generated in-store. Similarly, online fulfilment centres may be considered as part of the retail POS ecosystem, where trade items are scanned at touchpoints related to fulfilment of consumer orders.

A POS system has several components. An example of a POS system is shown in the figure below, the Scanner must transmit the data that is encoded in the barcode in a format that the other internal systems can readily accept.

Figure 4.1 Example of in-store POS ecosystem



At minimum, retail scanning system must be able to process the Global Trade Item Number (GTIN) from the GS1 DataMatrix with GS1 element string syntax, QR Code with GS1 Digital Link URI syntax, Data Matrix with GS1 Digital Link URI syntax and all existing linear (e.g., UPC-A) barcodes.

**Note:** The global target date for retail POS systems is set for December 31, 2027. By this time, it is expected that all retail POS systems would be capable of identifying, decoding, and processing a single GTIN from any GS1-compliant linear or 2D barcode, with an audible "beep" to confirm successful transmission.

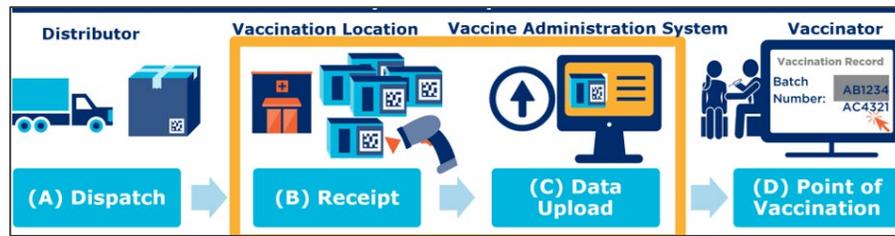
### 4.3 Point of Care (POC)

Point of Care (POC) refers to a specific location where healthcare services are provided to patients. It includes any setting where patient care occurs, such as hospitals, clinics, pharmacies, or even home care environments. The focus is on the interaction between the healthcare provider and the patient, ensuring that accurate and timely information is available at the location where decisions are made, and care is delivered.

In the context of GS1 standards, POC often involves the use of barcodes and RFID tags to track and manage medical device and pharmaceutical products, patient information, and healthcare processes. Using GS1 Standards helps in improving patient safety, ensuring the right treatment is provided at the right time, and enhancing overall efficiency in healthcare delivery.

GS1 Healthcare and its global members continue to strongly support the implementation and use of GS1 DataMatrix with Element String syntax as the only endorsed 2D barcode for encoding GS1 Keys (e.g., GTIN & GRAI) typically found on trade items in healthcare (i.e., medical devices and pharmaceutical products). In this regard, GS1 DataMatrix is the only permitted GS1 2D barcode for use with GS1 Keys when associated with healthcare products (i.e. regulated healthcare trade items).

The figure below shows an example of a POC and how the information travels from the supply chain into the patient record.



#### 4.4 Imaging Scanner Types

2D barcodes such as GS1 DataMatrix can be scanned by an imaging/optical scanner. Imaging scanners are engineered to accurately decode 1D and 2D barcodes, tailoring their performance to meet diverse application requirements such as the 2D barcode module size and the scan rate.

There are various imaging scanner types including:

- **Bi-optic scanners** which often have two imagers (i.e., cameras) and multiple mirrors, allowing them to read barcodes from different angles. Bi-optic scanners are commonly used in high-volume retail environments for fast and efficient checkout processes.
- **Presentation scanners** are designed for hands-free operation, typically used in retail or point-of-sale settings. They are often mounted or placed on a counter and the user presents the barcode to the scanner. These scanners quickly capture barcodes, making them suitable for fast-paced point-of-sale scenarios.
- **Handheld scanners** are portable devices held by the user for scanning barcodes. They are versatile and can be used in various industries, including retail, distribution, logistics and healthcare.
- **Mobile device scanners** refer to barcode scanning functionality integrated into smartphones or tablets. Modern smartphones come equipped with built-in cameras capable of scanning barcodes. Apps and software use the camera to capture and decode barcode information. This approach is common for inventory management and consumer engagement applications.

**Note:** Contact your scanning solution provider to obtain additional information about your scanners and to find what modifications need to be applied to your scanners/POS/POC system to enable you to scan applicable 2D barcodes.

##### 4.4.1 2D barcode scanning considerations

###### 4.4.1.1 POC

To make the transition to accepting 2D barcodes at POC, usually the scanner setup needs to be modified to enable scanning. Sometimes the scanner software may need to be updated. You must contact your scanning and POC solution provider to determine how you can change your scanner setup or software to be able to scan the GS1 DataMatrix with element string syntax.

###### 4.4.1.2 POS

To make the transition to accepting 2D barcodes at point-of-sale (POS), scanner software will need to be updated:

1. To process trade items that may have multiple barcodes encoded with various GS1 syntaxes, for example a GS1 DataMatrix and an EAN-13 can be on the same trade item and will have the same GTIN.
2. To identify and process various syntaxes: GS1 DataMatrix with GS1 Element String syntax, Data Matrix with GS1 Digital Link URI syntax and QR Code with GS1 Digital Link URI syntax.
3. To convert GS1 Digital Link URI syntax to GS1 element string syntax to transmit the data that is encoded in the barcode in a format that the other internal systems can readily accept.

**Note:** Not all imaging scanners will be capable of the above updates, therefore collaborating with the scanner solution provider will be essential for scanning 2D barcodes at POS.

To unlock new retail use cases beyond just GTIN, imaging scanners need additional software modes.

When there is more than one barcode with GTIN on trade items, it is essential that the POS systems will ensure:

- The system SHALL only process one set of the desired data in the final transaction.
- Scanning systems SHOULD only produce one acknowledgement (e.g., one beep) when multiple barcodes encoded with the same GTIN are scanned from the trade item.

**Important:** If the points above are not implemented, unintended POS transactions may occur.

Barcode that could be scanned at POS are:

1. EAN/UPC family of barcodes (plain syntax),
2. GS1 DataBar retail family (plain syntax or GS1 element string syntax)
3. GS1 DataMatrix (GS1 element string syntax)
4. Data Matrix with GS1 Digital Link URI syntax will require a scanning or POS software update to identify the syntax and convert to GS1 element string
5. QR Code with GS1 Digital Link URI syntax will require a scanning or POS software update to identify the syntax and convert to GS1 element string

For additional information on scanning modes review section "**7.5.2 2D in Retail scanning modes**" in the "[2D Barcodes at Retail Point-of-Sale Implementation Guideline](#)".

## 4.5 Canadian 2D requirements

In Canada the pharmacy industry and cannabis community have selected the GS1 DataMatrix as their barcode and have set specific timeline and requirements for their implementation, review the following section to learn more about these Canadian requirements.

### 4.5.1 Pharmacy Point-of-Care (POC) & Point-of-Sale (POS)

In alignment with the Global Healthcare position, the Canadian Pharmacy sector has chosen GS1 DataMatrix as their barcode. The GS1 DataMatrix will be affixed to primary and secondary packaging of pharmaceutical products that will go through POS or POC.

The shipping and logistics units that are not processed at POS or POC will continue to use GS1-128 or ITF-14 barcodes. The pharmacy industry has the option to affix an additional GS1 DataMatrix barcode on the homogenous shipping cases. If a manufacturer chooses to affix an additional GS1 DataMatrix, the GS1 DataMatrix and the GS1-128 or the ITF-14 **must carry the same GTIN**.

The information encoded in the GS1 DataMatrix are:

- Global Trade Item Number
- Expiration Date
- Lot/batch number
- Serial number (optional)

Implementation dates:

- Manufacturers: December 31, 2021, to December 31, 2023
- Distributors: December 31, 2023
- Pharmacies: December 31, 2025

For more information visit: [Pharmacy - Roadmap \(gs1ca.org\)](https://gs1ca.org/Pharmacy-Roadmap)

#### 4.5.2 Cannabis Point-of-Sale (POS)

The Canadian Cannabis community has chosen GS1 DataMatrix as their 2D barcode. This barcode will be applied to all products that go through POS. The shipping and logistics unit that do not go through POS will continue to use GS1-128 or ITF-14 barcodes.

The information encoded in the GS1 DataMatrix are:

- Global Trade Item Number
- Packaging Date
- Lot/batch number

Implementation Date:

- Licensed producers, jurisdictions, retailers and distributors: December 31, 2024

**Note:** The above-mentioned requirements are applicable to the recreational cannabis products. The Cannabis has not discussed their position on barcoding medicinal products. As a result, currently the medicinal products are out of the scope.

For more information visit: [Cannabis \(gs1ca.org\)](https://gs1ca.org/Cannabis).

## 5 Symbologies

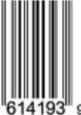
This section provides information on the GS1 standards-based barcodes that may pass through different point of scanning. These barcodes will contain the GTIN and could contain additional information such as lot/batch number and expiry date. Scanners should be able to extract the information that is encoded in these barcodes to enable various business processes.

Section 2.0 of the [GS1 General Specifications](#) – the core GS1 standards document describing how barcodes enabled by GS1 Standards and GS1 identification keys should be used, and how

to encode the information in the barcodes. This document also identifies the standards rules concerning what barcodes should be used for particular business processes.

### 5.1 Barcode symbologies

The table below displays all barcodes powered by GS1 system of standards.

The GS1 Barcodes				
EAN/UPC Family		GS1 2D Barcodes		
<p><b>UPC-A</b></p>  <p>6 14141 00003 6</p> <p><b>UPC-E</b></p>  <p>0 614193 9</p>	<p><b>EAN-13</b></p>  <p>9 521101 530001</p> <p><b>EAN-8</b></p>  <p>9525 0007</p>	<p><b>GS1 DataMatrix</b></p>  <p>(01)09521101530001 (17)210119(10)AB-123</p> <p><b>Data Matrix</b></p>  <p><a href="https://example.com/01/09526000134367">https://example.com/01/09526000134367</a></p>	<p><b>GS1 QR Code</b></p>  <p>(01)09521101530001 (17)210119(10)AB-123</p> <p><b>QR Code</b></p>  <p><a href="https://example.com/01/09526000134367">https://example.com/01/09526000134367</a></p>	<p><b>GS1 Dotcode</b></p>  <p>(235)5vBXIF%l&lt;B;7oa% (01)09521101530001 (8008)1905200114</p>
GS1 DataBar Family				
<p><b>Omnidirectional</b></p>  <p>(01) 0 9521101 53000 1</p> <p><b>Truncated</b></p>  <p>(01) 0 9521101 53000 1</p>	<p><b>Expanded</b></p>  <p>(01) 0 9521101 53000 1 (17) 210704</p> <p><b>Limited</b></p>  <p>(01) 0 9521101 53000 1</p> <p><b>Stacked</b></p>  <p>(01) 0 9521101 53000 1</p>	<p><b>Stacked Omnidirectional</b></p>  <p>(01) 0 9521101 53000 1</p> <p><b>Expanded Stacked</b></p>  <p>(01) 0 9521101 53000 1 (3103) 999999</p>		
GS1 Linear Barcodes that can be used in General Distribution and Logistics.				
<p><b>GS1-128</b></p>  <p>(01) 1 9521101 53000 8 (17) 210704 (10) AB-123</p>		<p><b>ITF-14</b></p>  <p>19521101530008</p>		
<p>Please refer to the GS1 General Specifications "Application Standards" for standardised use of the barcodes - <a href="https://www.gs1.org/standards/barcodes-epcrfid-id-keys/gs1-general-specifications">https://www.gs1.org/standards/barcodes-epcrfid-id-keys/gs1-general-specifications</a></p>				

### 5.2 Barcode Symbology Use

This section identifies the touch points that GS1 standard symbologies may pass through regarding packaging levels or products used in your business processes. Please note that products identified with the GS1 DataBar™ Stacked, truncated, limited, GS1 DataMatrix, QR Code with GS1 Digital Link and Data Matrix with GS1 Digital Link symbologies require 2D barcode scanning equipment

	EAN/UPC	ITF-14	GS1-128	GS1 DataBar*	GS1 DataMatrix	QR Code with GS1 Digital Link	Data Matrix with GS1 Digital Link
Pallet		X	X				

Case	X	X	X				
Item	X			X	X	X	X
Returnable asset			X	X	X		
Asset			X	X	X		

**Note:** The Canadian Pharmacy industry has the option to use GS1 DataMatrix at case level in addition to GS1-128.



Requires 2D Reader

\*Some DataBar symbologies require 2D readers.

## Appendix A: Barcode Scanner Selection Checklist

The barcode Scanner Selection Checklist is intended to be used to help support you in selecting barcode scanning equipment. This Checklist provides organizations with an overview of the specifications and considerations to choose a barcode scanner.

Location of Use: \_\_\_\_\_

Date Completed: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

### 1. Environmental Specifications

- Extreme Temperature**  
Range: \_\_\_\_\_  
\_\_\_\_\_
- Requires Cleaning**  
Method: \_\_\_\_\_ - \_\_\_\_\_
- Requires Sterilization**  
Method: \_\_\_\_\_ - \_\_\_\_\_
- Harsh Chemical Exposure**

### 2. Use Considerations

- Portable, self-contained battery**  
Battery Life: \_\_\_\_\_  
Spare Battery: Yes/No
- Fixed Mounted** (i.e., floor based, scanner-bed based)
- Durability**
- Wired** (i.e., USB)  
Connection Type  
\_\_\_\_\_
- Wi-Fi**
- Bluetooth**
- Motion Activated** (i.e., hands-free)
- Trigger Activated**

### 3. Functionality Requirements

- Determine range, angle & speed capabilities**
- Camera-based**
- Charge-coupled Device (CCD)-based**
- Laser-based**
- Linear codes**
  - UPC/EAN symbols (retail)
  - GS1-128 (logistic)
  - ITF (logistic)
  - GS1 DataBar™
- 2D Codes**
  - GS1 DataMatrix
  - QR Code with GS1 Digital Link
  - Data Matrix with GS1 Digital Link
  - GS1 DataBar™

### 4. Other

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Appendix B: GS1 Canada Contact

email: [info@gs1ca.org](mailto:info@gs1ca.org)  
 Phone: (416) 510-8039

## Appendix C: Additional Resources

GS1 Canada Website <https://gs1ca.org/>  
 GS1 Canada Standards page [Standards \(gs1ca.org\)](https://gs1ca.org/standards)  
 GS1 General Specifications <https://ref.gs1.org/standards/genspecs/>  
 GS1 Canada Solution Providers List <https://gs1ca.org/solution-providers/>  
 2D Barcodes at Retail Point-of-Sale Implementation Guideline  
<https://ref.gs1.org/guidelines/2d-in-retail/>

## Appendix D: Glossary

Please note that the following glossary of terms and their definitions is based on the glossary found in the GS1 General Specifications, Version 23.

Term	Definition
1D (1 Dimensional)	<p>1-dimensional (1D) barcodes, also known as linear barcodes, is made of a series of vertical lines (bars) and spaces that represent data. These barcodes are read from left to right and are typically used to encode a Global Trade Item Number (GTIN) or other standardized identification keys. Common examples of GS1 1D barcodes include:</p> <ul style="list-style-type: none"> <li>• EAN/UPC: Used for retail point-of-sale (POS) scanning.</li> <li>• GS1-128: Used for logistics and supply chain applications.</li> <li>• ITF-14: Used for packaging and distribution, particularly for carton-level identification.</li> </ul> <p>These barcodes are widely used in retail, logistics, healthcare, and other industries to ensure efficient and accurate data capture.</p>

Term	Definition
2D (2 Dimensional) barcode	<p>2-dimensional (2D) barcodes are barcodes that encode information in both the horizontal and vertical dimensions, allowing them to store more data in a smaller space compared to traditional linear (1D) barcodes. They are optically readable barcodes that are read both vertically and horizontally to capture all the encoded information.</p> <p>These 2D barcodes can include various types, such as QR codes and Data Matrix. They are designed to hold not just product identification numbers like GTINs (Global Trade Item Numbers) but also additional information such as expiration dates, batch numbers, and more.</p> <p>GS1 2D barcodes are widely used in retail, healthcare, Cannabis and other industries for their ability to store and transmit a greater amount of information in a compact form, enhancing traceability and product information management.</p>
Alphanumeric (an)	A character set that allows for alphabetic characters (letters), numeric digits (numbers), and other characters, such as punctuation marks.
Attribute	Additional information about an entity identified with a GS1 Identification Key.
Automatic Identification and Data Capture (AIDC)	A technology used to automatically capture data. AIDC technologies include barcodes, smart cards, biometrics, and RFID.
Barcode	A symbol that enables encoding of data into a machine-readable pattern of adjacent, varying width, parallel, rectangular, or square dark and light spaces.
Check Digit	The last digit of all numeric fixed-length GS1 Identification (ID) Keys is a check digit, which is required and ensures the integrity of the key. The last digit, being the check digit, is calculated using a simple algorithm based on the preceding numbers in the key.
Company Number	A component of the GS1 Company Prefix.
Data carrier	A means to represent data in a machine-readable form; used to enable automatic reading of the Element Strings.
Data character	A letter, digit, or other symbol represented in the data field(s) of an Element String.

Term	Definition
Data Matrix	A standalone, two-dimensional matrix symbology that is made up of square modules arranged within a perimeter finder pattern. The Data Matrix ISO version ECC 200 is the only version that supports GS1 System identification numbers, including Function 1 Symbol Character. Data Matrix Symbols are read by two-dimensional imaging scanners or vision systems.
Direct Part Marking	Direct part marking refers to the process of marking a symbol on an item using an intrusive or non-intrusive method.
Direct print	A process in which the printing apparatus prints the symbol by making physical contact with a substrate (e.g., flexography, ink jet, dot peening).
EAN/UPC Symbology	A family of barcodes including EAN-8, EAN-13, UPC-A and UPC-E barcodes as well as the 2-and 5-digit add-ons. See also EAN-8 barcode, EAN-13 barcode, UPC-A barcode and UPC-E barcode.
EAN-13 barcode	A barcode of the EAN/UPC symbology that encodes GTIN-13 or RCN-13.
EAN-8 barcode	A barcode of the EAN/UPC symbology that encodes GTIN-8 or RCN-8.
Element	A single bar or space of a linear barcode symbol.
Element String	The combination of a GS1 Application Identifier and GS1 Application Identifier Data Field.
Fixed length	Term used to describe a data field in an element string with an established number of characters.
Global Standards Management Process	GS1 created the Global Standards Management Process (GSMP) to support standards development activity for the GS1 System. The GSMP uses a global consensus process to develop supply chain standards that are based on business needs and user-input
Global Trade Item Number (GTIN)	The GS1 Identification Key used to identify trade items. The key comprises a GS1 Company Prefix, an item reference and check digit.
GS1 Application Identifier	The field of two or more digits at the beginning of an element string that uniquely defines its format and meaning.
GS1 Application Identifier data field	The data used in a business application defined by one GS1 Application Identifier.

Term	Definition
GS1 Company Prefix	<p>A unique string of four to twelve digits used to issue GS1 identification keys. The first digits are a valid GS1 Prefix, and the length must be at least one longer than the length of the GS1 Prefix. The GS1 Company Prefix is issued by a GS1 Member Organisation. As the GS1 Company Prefix varies in length, the issuance of a GS1 Company Prefix excludes all longer strings that start with the same digits from being issued as GS1 Company Prefixes.</p> <p>See also U.P.C Company Prefix.</p>
GS1 DataBar™ Expanded barcode	<p>A barcode that encodes any GS1 identification key plus attribute data, such as weight and “best before” date, in a linear symbol that can be scanned omnidirectionally by suitably programmed point-of-sale scanners.</p>
GS1 DataBar™ Expanded Stacked barcode	<p>A barcode that is a variation of the GS1 DataBar Expanded barcode that is stacked in multiple rows and is used when the normal symbol would be too wide for the application.</p>
GS1 DataBar™ Limited barcode	<p>A barcode that encodes a GTIN with a leading digit of zero or indicator digit of one in a linear symbol; for use on small items that will not be scanned at the point-of-sale.</p>
GS1 DataBar™ Omnidirectional barcode	<p>A barcode that encodes a GTIN. It is designed to be read by omnidirectional scanners.</p>
GS1 DataBar®	<p>A family of barcodes, including GS1 DataBar Omnidirectional; GS1 DataBar Stacked Omnidirectional; GS1 DataBar Expanded; GS1 DataBar Expanded Stacked GS1 DataBar Truncated, GS1 DataBar Limited and GS1 DataBar Stacked symbols.</p>
GS1 DataBar™ Stacked Omnidirectional barcode	<p>A barcode that is a variation of the GS1 DataBar symbology that is stacked in two rows and is used when the GS1 DataBar Omnidirectional symbol would be too wide for the application. It is designed to be read by omnidirectional checkout scanners.</p>
GS1 DataBar™ Stacked barcode	<p>A barcode that is a variation of the GS1 DataBar Truncated barcode that is stacked in two rows and is used when the GS1 DataBar Truncated barcode would be too wide for the application.</p>
GS1 DataBar™ Truncated barcode	<p>A barcode that is a truncated version of the GS1 DataBar Omnidirectional barcode. It is used when the GS1 DataBar Omnidirectional barcode would be too tall for small item marking applications. It is not intended for omnidirectional checkout scanning.</p>

Term	Definition
GS1 DataMatrix	A subset of ISO version ECC 200. It is the only version of the Data Matrix barcode that supports GS1 System identification numbers, including Function 1 Symbol Character. GS1 DataMatrix is read by image-based scanners.
GS1 Global	GS1 is a neutral, not-for-profit organisation that provides global standards for efficient business communication. The Global Office, located in Brussels (Belgium) and Ewing, NJ (USA) is the guardian, and provides an open, user-driven, forum for ongoing maintenance and development, of the GS1 standards, guidelines, and statues.
GS1 Identification Key	A unique identifier for a class of objects (e.g., a trade item) or an instance of an object (e.g., a logistic unit).
GS1 Identification Keys	A globally managed system of numbering used to identify trade items, logistic units, locations, legal entities, assets, service relationships, consignment, shipments and more.
GS1 Member Organization (GS1 MO)	A member of GS1 that is responsible for administering the GS1 system in its country (or assigned area). This task includes, but is not restricted to, ensuring user companies make correct use of the GS1 system, have access to education, training, promotion, and implementation support and have access to play an active role in GSMP.
GS1 Prefix	A unique string of two or more digits issued by GS1 Global Office and allocated to GS1 Member Organisations to issue GS1 Company Prefixes or allocated to other specific areas.
GS1 Symbologies using GS1 Application Identifiers	All GS1 endorsed barcode symbologies that can encode more than a GTIN namely GS1-128, GS1 DataMatrix, GS1 DataBar, GS1 QR Code, GS1 DotCode and GS1Composite.
GS1 System	The specifications, standards, and guidelines administered by GS1.
GS1-128 Symbology	A subset of Code 128 which uses the function that allows the encoding of element strings.
GTIN allocator	The party that warrants the trade item declarations about a trade item to which they allocate a GTIN. This is the party who is the licensee of the GTIN applied to a specific trade item.

Term	Definition
GTIN Application Format	A format for a GTIN-8, GTIN-12, or GTIN-13 used when a GTIN application requires a fixed field length, for example, when a GTIN-13 is encoded in GS1-128 Symbology using the Application Identifier (01).
GTIN-12	The 12-digit GS1 Identification Key composed of a U.P.C. Company Prefix, item reference, and check digit used to identify trade items.
GTIN-13	The 13-digit GS1 Identification Key composed of a GS1 Company Prefix, item reference, and check digit used to identify trade items.
GTIN-14	The 14-digit GS1 Identification Key composed of an Indicator digit (1-9), GS1 Company Prefix, item reference, and check digit used to identify trade items.
GTIN-8	The 8-digit GS1 Identification Key composed of a GS1-8 Prefix, item reference and check digit used to identify trade items.
Human Readable Interpretation	Characters, such as letters and numbers, which can be read by persons and are encoded in GS1 AIDC data carriers confined to a GS1 standard structure and format. The human readable interpretation is the encoded data. Start, stop, shift, and function characters, as well as the symbol check character, are not shown in the human readable interpretation.
Indicator	A digit from 1 to 9 in the leftmost position of the GTIN-14.
Interleaved 2 of 5 Symbology	Barcode symbology used for the ITF-14 barcode.
ITF Symbology	See Interleaved 2 of 5 Symbology.
ITF-14 barcode	ITF-14 (A subset of Interleaved 2-of-5) barcodes carry GTINs only on trade items that are not expected to pass through the point-of-sale.
Linear barcode	Barcode symbology using bars and spaces in one dimension.
Omnidirectional Linear barcode	A linear barcode symbology designed to be read in segments by suitably programmed laser point-of-sale (POS) scanners.

Term	Definition
Primary Packaging	<p>The first level of packaging in direct contact with the product and marked with an AIDC data carrier either on the packaging or on a label affixed to the packaging. It may consist of a single item or group of items for a single therapy such as a Kit. For packaging configurations that include a retail consumer trade item, primary packaging is a packaging level below the retail consumer trade item.</p>
Point-of-Care	<p>Point of Care (POC) is a specific location where healthcare services are provided to patients. It includes any setting where patient care occurs, such as hospitals, clinics, pharmacies, or even home care environments.</p> <p>In the context of GS1 standards, POC often involves the use of barcodes, RFID tags, and other identification systems to track and manage medical products, patient information, and healthcare processes. This helps in improving patient safety, ensuring the right treatment is provided at the right time, and enhancing overall efficiency in healthcare delivery.</p>
Point-of-Sale	<p>Point-of-Sale (POS) is a location or area where a transaction is completed, typically in a retail environment. It is the place where goods or services are purchased and paid for by the consumer. The POS is a critical point in the retail supply chain where product information, pricing, and inventory data are captured and processed.</p> <p>In GS1's context, POS systems often use GS1 barcodes or other identification technologies to scan products, track sales, manage inventory, and ensure accurate pricing. This enables efficient and accurate data capture, which is essential for inventory management, sales reporting, and customer satisfaction.</p>
Quiet Zone	<p>A clear space which precedes the start character and follows the stop character of a linear barcode or surrounds a 2D symbol.</p>
Quiet Zone Indicator	<p>A greater than (&gt;) or less than (&lt;) character, printed in the human readable field of the barcode, with the tip aligned with the outer edge of the Quiet Zone.</p>
Scanner	<p>An electronic device to read barcode and convert them into electrical signals understandable by a computer device.</p>
Serial number	<p>A code, numeric or alphanumeric, assigned to an individual instance of an entity for its lifetime. Example: a unique individual item may be identified with the combined Global Trade Item Number (GTIN) and serial number.</p>

Term	Definition
Symbol	The combination of symbol characters and features required by a particular symbology, including Quiet Zone, Start and Stop Characters, data characters, and other auxiliary patterns, which together form a complete scannable entity; an instance of a symbology and a data structure.
Symbology	A defined method of representing numeric or alphabetic characters in a barcode; a type of barcode.
Symbology element	A character or characters in a barcode used to define the integrity and processing of the symbol itself (e.g., start and stop patterns). These elements are symbology overhead and are not part of the data conveyed by the barcode.
Symbology identifier	A sequence of characters generated by the decoder (and prefixed to the decoded data transmitted by the decoder) that identifies the symbology from which the data has been decoded.
Trade item	Any item (product or service) upon which there is a need to retrieve pre-defined information and that may be priced, or ordered, or invoiced at any point in any supply chain.
U.P.C. Company Prefix	A GS1 Company Prefix starting with a zero (^0') becomes a U.P.C. Company Prefix by removing the leading zero. A U.P.C. Company Prefix is used to issue and allocate GTIN-12.
U.P.C. Prefix	A GS1 Prefix starting with a zero (^0') becomes a U.P.C. Prefix by removing the leading zero. A U.P.C. Prefix is used to issue U.P.C. Company Prefixes or allocated to other specific areas.
UPC-A barcode	A barcode of the EAN/UPC symbology that encodes GTIN-12, and RCN-12.
UPC-E barcode	A barcode of the EAN/UPC symbology representing a GTIN-12 in six explicitly encoded digits using zero-suppression.



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