

# GS1 DIY Self-Learning Materials

# GS1 Standards & Keys for Logistics and Inventory Management

# GS1 Malaysia Berhad



# Preface

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- This DIY Self Learning Material will provide insights into:
  - The barcodes used for **logistics and inventory management**
  - **Application Identifiers (AI)**
  - **Function One Key (FNC1)**
  - **Serial Shipping Container Code (SSCC)**
  - **GS1 Logistic Label**

# Different Types of GS1 Barcode Symbols

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GS1-128

Barcode symbol for **traceability** of inventory and logistical use. Contains additional production information such as batch/lot, expiry date, etc.



GS1 2D DataMatrix

2D Barcode, can store a lot of information in a small space. Only readable via camera-based scanners. The default barcode symbol for **Healthcare traceability** use. Similar to QR Code in use.



GS1 QR Code

2D Barcode, can store a lot of information in a small space. Only readable via camera-based scanners. Similar to Datamatrix in use, but is more efficient at encoding **logograms** such as Chinese, Japanese, Korean, etc.

# GS1 QR Code & GS1 Data Matrix Comparison

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- The **Data Matrix** was first developed in 1989 by I.D. Matrix.
- The **QR Code** was first developed in 1994 by Denso Wave.
- Both codes encode large amounts of data into a small area and employ error detection and error correction.
- The QR Code is slightly more efficient in encoding Japanese Kanji characters, but otherwise neither code has a practical advantage over the other.
- As the Data Matrix has been around longer, it has been adopted for use in the **Healthcare Industry** as the ***preferred data carrier*** for all pharmaceutical and medical device products.
- Both codes are considered GS1 2D Barcodes when they are encoded in accordance to GS1 specifications and guidelines, eg. the inclusion of the Function Key One (**FNC1**) ASCII code as a group separator, or the inclusion of the GS1 unique identifiers such as **GTIN**.



# GS1 Application Identifiers

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An element string that carries dynamic or “production” data that, in conjunction with the GS1 Key, provides additional information about the item identified at the point of acquisition.



# GS1 Application Identifier (AI)

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## AIs are used for :

**Item identification** - Identification number (GTIN) of a trade item

## Traceability numbers

- Batch number
- Lot Number
- Serial Number

## Dates

- Use By Date
- Production Date
- Expiry Date

There are over  
100 GS1 AIs

Scan for the full  
list



# GS1 Function One / <FNC1> Key

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- A GS1 Malaysia barcode must contain functions that identify it as using GS1 standards.
- A **FNC1 key** is used to **show that a barcode is following GS1 standards** and as a **group separator**.
- A group separator is used to **tell a barcode scanner** when a group of variable data **finishes**, and when the next one **starts**.

# GS1 Function One / <FNC1> Key

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- All production data that can be encoded into a GS1 barcode is separated into 2 types; fixed length and non-fixed length.
- Fixed length = non-variable data, e.g.
  - **All Dates**; i.e. **expiry date**, **sell-by date**; are 6 digits in length
  - **GTIN** is always 14 digits in length
- Non-fixed length = variable data, e.g.
  - **Batch / Lot Number**, can be of any length up, to a maximum of 20
  - **Serial Number**, can be of any length, up to a maximum of 20



# Logistics Unit

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- Items of any composition
- Established for transport and/or storage
- Tracked and traced through the supply chain
- Logistic units are individually identified with the **Serial Shipping Container Code (SSCC)**.
- Millions of products in many configurations and packaging types.

Possible types of logistic units :

- ✓ A carton
- ✓ A pallet
- ✓ A group of shrink-wrapped units
- ✓ A cargo container

# Serial Shipping Container Code (SSCC)

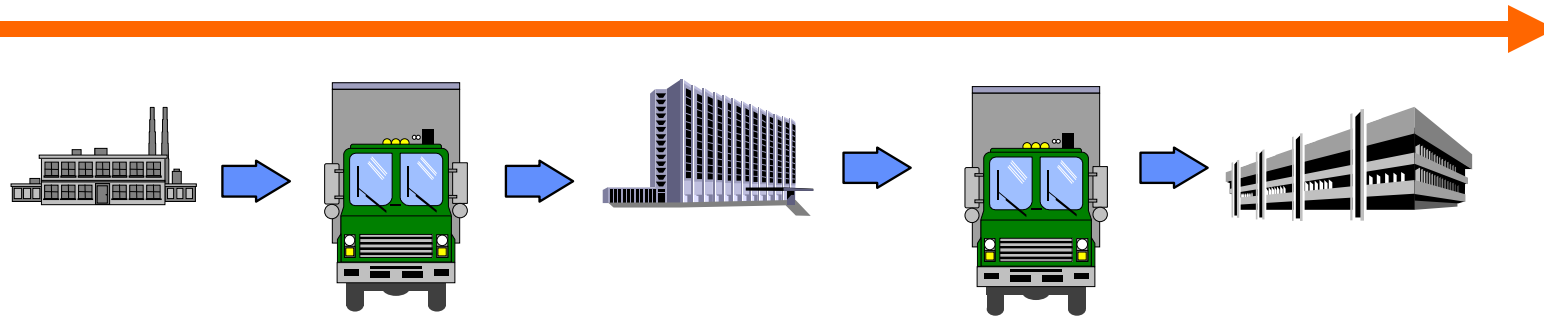
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- The Serial Shipping Container Code is a standard for the individual identification of logistic units.
- The SSCC can be used by all parties in the supply chain as a reference number to the relevant information held in computer files.
- It is identified by the Application Identifier (AI) '00'.
- It is most commonly represented with the GS1-128 symbol.
- It is a mandatory field on the GS1 Logistic Label.
- The SSCC individually identifies the logistic unit to which it is applied for the lifetime of that unit (it can be re-used after 1 year).

# SSCC: An Entity Identifier

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Supplier    Transporter    Distributor    Transporter    Customer



All stakeholders in a supply chain can use SSCC to keep track of their products as it moves

# GS1 Logistics Label

- A voluntary standard for the numbering and barcoding of logistic units.
- Provides clear and concise information about the logistic unit to which the label is fixed, in both machine and human readable form.



GS1 LOGISTICS LABEL

SSCC :

2 541234 0089765002 4

COUNT :

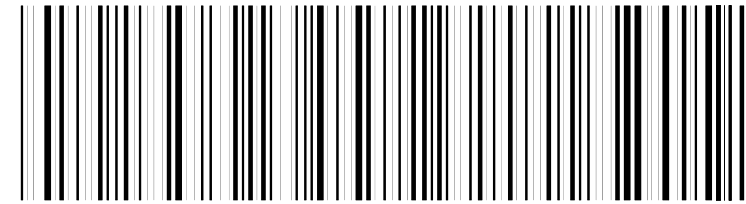
64

CONTENT :

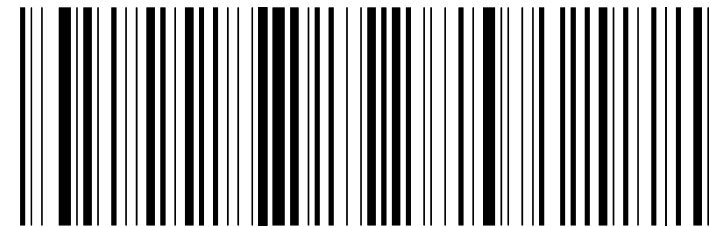
0541234 5678908

BATCH :

879654



( 0 2 ) 0 5 4 1 2 3 4 5 6 7 8 9 0 8 ( 3 7 ) 6 4 ( 1 0 ) 8 7 9 6 5 4







( 0 0 ) 2 5 4 1 2 3 4 0 0 8 9 7 6 5 0 0 2 4

Want to learn more?

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to find out more!

# GS1 MALAYSIA CAPACITY BUILDING FREE BRIEFINGS

<b>(1)</b> <b>Fulfilling Market &amp; Regulatory Guidelines Using GS1 Standards</b>	<b>(2)</b> <b>GS1 2D Standards and VbG &amp; GACSS Fulfil Sustainability &amp; Circularity</b>	<b>(3)</b> <b>GS1 Malaysia 2D Repository Platform</b>	<b>(4)</b> <b>The Impact of GS1 Global Location Numbers (GLN) on Business, Social, Regulation &amp; Customer</b>
<ul style="list-style-type: none"><li>• Understand why GS1 Standards &amp; Keys is widely recognised and accepted</li><li>• Learn why GS1 Standards &amp; Keys protects product identity integrity and improves the Customer Buying Experience.</li></ul>	<ul style="list-style-type: none"><li>• Learn how GS1 supports the growing Green movement's calls for sustainability &amp; circularity through GS1's for greater product visibility, traceability, and authentication.</li></ul>	<ul style="list-style-type: none"><li>• Experience how 2D track &amp; trace works with the GS1 Malaysia 2D Repository Platform!</li><li>• An intermediary repository before the future National Pharmaceutical Track &amp; Trace system.</li></ul>	<ul style="list-style-type: none"><li>• Supporting compliance to EU directives such as EUDR, ESPR, CEAP, etc. on Sustainability and Circularity using GS1 unique identification (GLN)</li><li>• Fulfil Digital Product Passport (DPP) requirements</li></ul>
<p>3.00pm to 4.00pm (Every Monday &amp; Wednesday) Zoom Link: <a href="https://us06web.zoom.us/j/89614519211">https://us06web.zoom.us/j/89614519211</a></p>	<p>11.00am to 11.45am (Every Thursday) Zoom Link: <a href="https://us06web.zoom.us/j/89770665451">https://us06web.zoom.us/j/89770665451</a></p>	<p>3.00pm to 4.00pm (Every Tuesday) Zoom Link: <a href="https://us06web.zoom.us/j/82513900764">https://us06web.zoom.us/j/82513900764</a></p>	<p>11.00am to 11.45am (Every Friday) Zoom Link: <a href="https://us06web.zoom.us/j/86884634932">https://us06web.zoom.us/j/86884634932</a></p>
			

\* GS1 Malaysia reserves the right to adjust the sessions based on availability & minimum attendance.

# GS1 Industry Focus Forums

GS1 MALAYSIA PREMIUM TRAINING SCHEDULE		
	Topic	Date & Time
<b>GS1 Standards &amp; Keys, Services &amp; Platforms</b> <ul style="list-style-type: none"> <li>Session slots must be confirmed 3 days in advance</li> <li>Booking achieved by making payment of the training fees</li> </ul>	<b>Industry Focus Forums (Chargeable)</b>	
	<b>Topic 1</b>	<b>Topic 2</b>
	Supply Chain Optimisation and Regulatory Fulfilment using Global Location Number (GLN) and GS1 Services	Meeting Global Healthcare and UDI Guidelines using GS1 Standards
	<ul style="list-style-type: none"> <li>Comply with <b>Retail Merchandising Principles</b></li> <li>Fulfil <b>Global Regulatory Compliance</b></li> <li>Track &amp; Trace using GS1 Traceability guidelines and 2D Datamatrix.</li> </ul>	<ul style="list-style-type: none"> <li>Achieve compliance with international and country-specific directives on Healthcare Products, such as <b>US FDA GUDID, EU EUDAMED, China NMPA, UAE BrandSync, etc.</b></li> </ul>
	<b>In-House Training and Business Consultation (Chargeable)</b>	
	<ul style="list-style-type: none"> <li>Training is tailored to company's requirements</li> <li>Can be conducted at company's premises of choice or via Zoom</li> <li>Full day session includes quiz activity</li> <li>Training Fees is dependent on number of attendees</li> <li>Travelling charges will be incorporated into the training fees</li> </ul>	
		2 hours per session, by appointment only  1 topic per session  <b>Session Fees:</b> 1-3 pax: RM 500.00  4-6 pax: RM 800.00  7-10 pax: RM 1,500.00  Half day or Full day, by appointment only  

Write to  
[gs1malaysia@gs1my.org](mailto:gs1malaysia@gs1my.org) to  
 book your session!

# In-House Business Consultation

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Need a special tailor-made **In-House Business Consultation** session? GS1 Malaysia can provide advisory support for you to meet your specific needs.

Each session can be **half-day** or **full day**.



Scan here for the  
Fee Structure:





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- ***FREE for Active GS1 Members Only***

- ***Session conducted physically at FMM Branches and via Zoom***

***For further details, contact us at:  
gs1malaysia@gs1my.org***

# Official GS1 Communications Channels

## Official GS1 Malaysia WhatsApp

**+6014-3933 228**

(Membership, Services & Support)

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(Membership, Services & Support)

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## Official GS1 Malaysia Website

[www.gs1my.org](http://www.gs1my.org)