GS1 Bahrain
Getting Started Manual 2020
GS1 Barcode Numbering and Symbol Marking
MISSION STATEMENT

The purpose of GS1 Bahrain is to take a leading role in establishing, developing and promoting a worldwide, multi-sector system for the identification of goods, services and locations, as well as for related communications, based on business-led standards as agreed by GS1 head quarters.

GS1 Bahrain’s primary objective is to enhance inter-company logistics, increase trade efficiencies and add value for the partners involved, as well as for customers.

RULES GOVERNING USE OF THE EAN-UCC NUMBERING SYSTEM

Any use of the GS1 Numbering System after termination of membership for whatever reason is strictly forbidden; continued use renders the ex member liable for any damages which might be suffered by GS1 Bahrain or any of its members.

GS1 Global Trade Item Numbers (GTINs) may only be allocated for proper use of the member. Any other use of such numbers is a breach of the Rules, which can lead to termination of membership by GS1 Bahrain.

The transfer of GS1 Global Trade Item Numbers by a member to third parties is strictly forbidden. Any such breach of the Rules can lead to termination of membership by GS1 Bahrain. This is a one year membership induction subject to approval.
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EAN•UCC NUMBERING AND SYMBOL MARKING

(BARCODING)

INTRODUCTION

This brochure describes the key steps involved in barcoding your products. Its aim is to assist you by providing a quick and simple explanation of the basic procedures to be followed, now that you have obtained a bank of EAN•UCC product numbers (GTINs – Global Trade Item Numbers).

For more detailed information, please refer to the EAN•UCC Global User Manual which provides a comprehensive overview of EAN•UCC numbering and symbology guidelines.

THE EAN•UCC SYSTEM

GS1 and its Member Organization Offices around the world coordinate the EAN•UCC system. Products bar coded with numbers issued by GS1 Bahrain can be exported to any other GS1 country in the world. There are presently over 106 GS1 Member Organisations spread throughout the world, with over 1000,000 companies as registered members.

For exports to the USA and Canada see page 13.

HOW THE EAN•UCC SYSTEM WORKS

The key to the EAN•UCC numbering system is that each different product is given a separate unique number by the source manufacturer, or supplier that owns the brand name.

This number is then incorporated in the form of a bar code symbol, ideally within the design or artwork of the packaging concerned.

The number is notified to the customer (Retailer/Cash & Carry) and is entered into their scanning systems together with the item description and selling price.

When the product is scanned, the scanner converts the bar code symbol back into the number and sends this to the scanning computer. The computer records the item as being sold and sends the item description and selling price back to the cash register, where it is printed on the consumer’s till slip.
EAN/UCC SYMBOLS AND NUMBER STRUCTURES

The EAN/UCC-13 number consists of 13 digits and is structured according to the size of the number bank requested, as follows:

**EAN-13 Symbol for Consumer Unit**

![EAN-13 Symbol](image)

10-Digit Company Prefix (1 00 Item Numbers)
For special cases and non commercial registration holders

For a 10-digit Company Prefix (1 00 Item Numbers) the structure will be as follows:

- 3 digit PREFIX (608) - Allocated by GS1 to GS1 Bahrain.
- 7 digit COMPANY PREFIX - Allocated sequentially by GS1 Bahrain to manufacturers.
- 2 digit ITEM REFERENCE - Number allocated by manufacturer to each product uniquely.
- 1 digit CHECK DIGIT - Calculated to a standard algorithm.

The 3-digit Prefix + the 6-digit Manufacturer Number = the Company Prefix

<table>
<thead>
<tr>
<th>COMPANY PREFIX</th>
<th>ITEM REF.</th>
<th>CHECK</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPP</td>
<td>MMMMMM</td>
<td>I I</td>
</tr>
</tbody>
</table>

In the above example, the number bank ranges from PPPMMMMMM000C to PPPMMMMMM999C.
9-Digit Company Prefix (1 000 Item Numbers)
For Commercial Registration Companies

For a 9-digit Company Prefix (1 000 Item Numbers) the structure will be as follows:

3 digit PREFIX (608) - Allocated by GS1 to GS1 Bahrain.
6 digit COMPANY PREFIX - Allocated sequentially by GS1 Bahrain to manufacturers.
3 digit ITEM REFERENCE - Number allocated by manufacturer to each product uniquely.
1 digit CHECK DIGIT - Calculated to a standard algorithm.

The 3-digit Prefix + the 6-digit Manufacturer Number = the Company Prefix

<table>
<thead>
<tr>
<th>COMPANY PREFIX.</th>
<th>ITEM REF.</th>
<th>CHECK</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPP</td>
<td>MMMMMM</td>
<td>111</td>
</tr>
</tbody>
</table>

In the above example, the number bank ranges from PPPMMMMMM000C to PPPMMMMMM999C.

Barcode Numbers appearing are for demonstration purposes only
8-Digit Company Prefix (10 000 Item Numbers)

For an 8-digit Company Prefix (10 000 Item Numbers) the structure will be as follows:

3 digit PREFIX - Allocated by GS1 to GS1 Bahrain.
5 digit COMPANY PREFIX - Allocated sequentially by GS1 Bahrain to manufacturers.
4 digit ITEM REFERENCE - Number allocated by manufacturer to each product uniquely.
1 digit CHECK DIGIT - Calculated to a standard algorithm.

The 3-digit Prefix + the 5-digit Manufacturer Number = the Company Prefix

<table>
<thead>
<tr>
<th>COMPANY PREFIX</th>
<th>ITEM REF.</th>
<th>CHECK</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPP</td>
<td>MMMMM</td>
<td>11111</td>
</tr>
</tbody>
</table>

In the above example, the number bank ranges from PPPMMMMM0000C to PPPMMMMM9999C.

7-Digit Company Prefix (100 000 Item Numbers)

For a 7-digit Company Prefix (100 000 Item Numbers) the structure will be as follows:

3 digit PREFIX - Allocated by GS1 to GS1 Bahrain.
4 digit MANUFACTURER NUMBER - Allocated sequentially by GS1 Bahrain to manufacturers.
5 digit ITEM REFERENCE - Number allocated by manufacturer to each product uniquely.
1 digit CHECK DIGIT - Calculated to a standard algorithm.

The 3-digit Prefix + the 4-digit Manufacturer Number = the Company Prefix

<table>
<thead>
<tr>
<th>COMPANY PREFIX</th>
<th>ITEM REF.</th>
<th>CHECK</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPP</td>
<td>MMMM</td>
<td>1111</td>
</tr>
</tbody>
</table>

In the above example, the number bank ranges from PPPMMMMM00000C to PPPMMMMM99999C.
The EAN/UCC-8 number consists of 8 digits and is structured as follows:

**EAN-8 Symbol for Consumer Units**

![EAN-8 Symbol](image)

Where

- 608 = Prefix allocated by GS1 to GS1 Bahrain
- 1234 = Number allocated by GS1 Bahrain to each product
- 6 = Check digit

**GLOBAL LOCATION NUMBERING**

The EAN•UCC Global Location Number provides for the unique and unambiguous identification of physical, functional or legal entities.

Each company or organisation holding an EAN•UCC Company Prefix may assign EAN•UCC Global Location Numbers to its own locations. Each different address and each function that needs to be distinguished must be allocated a separate number.

Most members will, initially, only need to identify a legal entity, i.e. their company, with a GLN.

While a GLN can be any one of the 13-digit numbers from the number bank, the following procedure is recommended wherever possible when assigning this number.

In Bahrain, members can have Company prefixes of 7 digits, giving them a bank of 100 000 numbers; 8 digits with a bank of 10 000 numbers or 9 digits with a bank of 1 000 numbers.

In the following example a 9-digit prefix (608123456) is used with a capacity of 1 000 numbers.

Use the first number in the number bank if it has not already been assigned to a product. This number would end in all zeros, i.e. 608123456000C. Remember that C represents the check digit.

Should the first number already be in use, assign the last number of the number bank as the GLN. This number will end in all nines, i.e. 608123456999C.

If the first and the last number of the number bank have already been used then any number from the number bank can be used.

This same methodology can be used for 7 and 8-digit company prefixes.
It is the responsibility of a company using GLNs to keep business partners informed of all the numbers it has issued and the corresponding details.

GETTING STARTED - CONSUMER UNIT NUMBERING

ALLOCATING PRODUCT NUMBERS (GTINs – Global Trade Item Numbers)

New Products
The first step is to allocate a separate EAN/UCC-13 number to each different consumer unit. Separate numbers are required for each different size, shape, colour, flavour, variant etc. Separate numbers are also required for each different multi-pack containing a quantity of individually bar coded consumer units.

General merchandise items, such as garments and fashion articles, are allocated separate numbers at SKU (Stock Keeping Unit) level.

Products should be numbered sequentially.

Promotional Variants
Separate unique numbers ARE required for the following promotional variants:

- Where the variant is sold to consumers at a different price from the standard unit.
- Where the variant differs in size, weight or volume from the standard unit
  Examples: Free quantity, Free gift attached
- Where two or more products are banded together
- Where a price reduction is stated on the pack

Separate unique numbers ARE NOT required for the following promotional variants:

- Where a free gift is provided inside the pack
- Where pack contains a “send for” or “competition” offer
- Where pack contains a different recipe
When To Change An Existing Product Number

Minor product changes or improvements do not require a separate EAN•UCC number to be allocated.

A separate EAN•UCC number must be allocated if the modified product is described on the **Customer Order** differently in any way to the description of the original product.

For example, if the product was described on the customer order as:

**JEMAY SOAP POWDER 250g**

and the modification to the product results in it being described on the customer order as:

**NEW JEMAY SOAP POWDER 250g**

it will require a different EAN•UCC number.

Variable Weight Products Price-Marked For Customers

If you supply variable weight products and are called upon to price-mark and bar code them by your customer, you must apply to the secretariat for a bank of variable weight numbers at no charge, under either prefix 28 or 29.

Full details on how these numbers are to be used will be provided with your bank of variable weight numbers.

Variable weight products not price-marked by the supplier for the customer cannot be bar coded with fixed weight numbers, as each item will have a different extended selling price.

CHECK DIGIT CALCULATION

The last digit is a computer check digit to make sure the barcode is correctly generated. The Check digit is calculated by a modul-10 algorithm from all the other digits in the number prefix by the following steps:

1. Start with the digit on the right of the number (excluding the check digit) sum all the alternate digits value reading from right to left.
2. Multiply the result of STEP 1 by 3
3. Sum all the remaining digits values
4. Add the result of STEP 2 to the result of STEP 3.
5. The check digit is the smallest number, which when added to the result of STEP 4, produces a multiple of 10.

Example: to calculate the check digit for the EAN-13 number 501234576421

A. \( 1 + 4 + 7 + 4 + 2 + 0 = 18 \)
B. \( 18 \times 3 = 54 \)
C. \( 5 + 1 + 3 + 5 + 6 + 2 = 22 \)
D. \( 54 + 22 = 76 \)
E. \( 76 + C = 80 \)
F. \( C = 4 \) The complete number would be: 501234764214

If you have a large quantity of numbers, it would be advisable to use a check digit calculator. This can be found on the GS1 web site at: http://www.gs1.org.

From the Home Page, the check digit calculator can be found at the sub section: GS1 TOOLS: Check Digit Calculator http://www.gs1.org/productssolutions/barcodes/support/check_digit_calculator.html
NOTIFY YOUR CUSTOMERS

Once your products are bar coded, you must notify all your customers of the numbers you have allocated to your products. The Product Data Form (PDF) which is enclosed, is to be used for this purpose.

Remember that new numbers, or changes to existing numbers, must be notified to all your customers immediately. Customers need to know these numbers as soon as possible, so that they can have them entered on their scanning systems prior to the products being received at their stores.

KEEP ACCURATE RECORDS

You should keep accurate records of all the numbers that have been allocated to your products. GS1 Bahrain does not need to be notified of numbers allocated, only your customers.

ADHESIVE BAR CODED LABELS

Try to avoid the use of adhesive labels to bar code your products. Retailers are reluctant to accept these labels on products, as they can be peeled off by unscrupulous consumers and placed on more expensive items. If unavoidable, or where used to bar code multi-packs, the following guidelines apply:

- The bar code symbol must be printed within EAN-UCC specifications
- The label must contain a full description of the product, including pack configuration:
  
  example:

  6 x 25ml Packs Fruit Juice
  Orange Flavour

  6 080001250752

- The description is to appear above the bar code symbol.
- Use adhesive which is strong enough to prevent the label from being removed in a reusable form, or from coming off in refrigerated storage units.
LOCATING THE BAR CODE SYMBOL ON THE PRODUCT

The productivity of cashiers in scanning stores is greatly improved when bar code symbols are consistently located on packs with similar shapes.

General Rules

- Locate close to natural base in lower right quadrant
- Locate on panel opposite to Promotional panel
- Locate on side panel, if there are two Promotional panels
- Locate within 15cm from left edge of a wide panel
- Locate on level surface: avoid joins, seams, overlaps and corners

Flexible Packages

If the package shape is irregular, place the bar code on the flattest surface of the back panel, where there will be the least distortion after the contents are inserted.

Bottles

Bar codes should be placed on the body of the bottle, not around the neck.

Cylindrical Containers

The bar code should always be positioned in “ladder fashion” on a cylindrical container. If positioned “picket fence” it will appear distorted to the scanner.

Paper Bags With Crease

If crease on the side panel cannot be avoided – symbol must be positioned with bars at right angles to crease.
Multi-Packs

The bar code must be located on a side panel. Only if this is not physically possible, may the bar code be located on the top panel – never on the bottom of the pack.

If the pack is oblong, the bar code should be located on one of the longer side panels.

As multi-packs are frequently constructed from transparent film, the bar code on the internal product could be scanned in mistake for the multi-pack bar code. Try to avoid this "show through" problem as follows:

- With "lipped tray", locate bar code "ladder fashion" on internal product close to its base. Lip of tray will then obscure bar code of internal product.
- If feasible, position internal product with bar code facing inwards.
- Have film printed with obscuring patterns, which render the internal bar code unreadable.
- If bar code on internal product is positioned "ladder fashion", then position bar code on the multi-pack "picket fence", or vice versa. This reduces the incidence of the internal bar code being scanned by mistake in Cash & Carry Stores.
- Locate the bar code on the multi-pack as far from the bar code on the internal product as possible.

TRUNCATION

The height of the bars in relation to the width of the symbol was designed to provide omni-directional scanning with a first time scan rate of 100%.

If the height of the bars is reduced out of proportion to the width of the symbol, the first time scanning rate is reduced; therefore truncation of bars is not acceptable.

Truncation is only acceptable as a last resort, where the alternative is not to print a symbol at all.
SALE OF BRAND NAME

The existing bar codes are to remain on the products until the product is discontinued, or a change in artwork or packaging design necessitates a new number being allocated to the product.

Only at this stage is the original number returned to the control of the previous company.

Remember to advise your customers of the change of supplier for the products concerned.

COUPONS

Promotional coupons are bar coded in terms of a special numbering structure under prefix 99. If you intend to issue coupons, please contact the secretariat for further details.

DISCONTINUED PRODUCT NUMBERS

When a product has been discontinued, its number cannot be reused for another product for a period of 4 years, from date of last supply. However, it is recommended never to re-use numbers as this may cause problems for retailers using Data Warehousing systems.

EXPORTS TO USA AND CANADA - UPC NUMBER BANK

If you intend to export any of your products to the USA or Canada, you will need to number these products with a UPC-A bar code.

Although the EAN-UCC system is now global, the early scanning systems installed in the USA and Canada provided for a maximum of 12 digits only. Consequently, products bar coded with EAN/UCC-13 numbers are not acceptable to scanning systems in these countries.

On the other hand, products that are bar coded with UPC-A and UPC-E bar codes are quite acceptable in scanning stores in this, and in all other countries worldwide.

Please contact the secretariat if you wish to make an application for a bank of UCC-12 numbers.
EAN/UCC-8 SHORT NUMBERS

Applications

EAN/UCC-8 short numbers are directly assigned by GS1 Bahrain to products where there is insufficient space for a full size EAN-13 symbol.

Applications for EAN/UCC-8 short numbers must be accompanied by:

a) Written justification why short number is required
b) A list of the products concerned
c) A sample of each product
d) A remittance fee of ( ) per number. If not allocated, fee will be refunded.

The application form enclosed, or copy thereof, must be used for each application.

Allocation Criteria

The total printable surface of the container, not just the label, must be less than 80 square cm.

If cylindrical container, diameter must be less than 30mm

Exceptions

Exceptions to the allocation criteria are only made when the EAN-8 symbol will provide for improved scanning over that of the EAN-13 symbol.

Limited Retention of EAN/UCC-8 Short Numbers

EAN/UCC-8 short numbers remain the property of GS1 Bahrain and are to be returned upon a product being discontinued, or where a packaging design change necessitates the allocation of a different number.

Arbitration

GS1 Bahrain will be the final arbiter in the allocation of EAN/UCC-8 short numbers.
SIZE OF EAN-13 AND EAN-8 SYMBOLS

General

Included in the width dimensions provided below are clear margins to the left and right of both symbols. These margins are essential for scanners and include no tolerance for reduction at all. It will be noted that light margin indicators in the form of < and > signs are printed with the EAN-13 and EAN-8 symbols. These point to the outer edges of the respective clear margins and provide a visual indication that clear margins have not been encroached.

EAN-13 and EAN-8 symbols may be printed within a range of 80% to 200% of the dimensions reflected below.

The minimum size is determined solely by the quality of the printing process used. It is strongly recommended that symbols are never printed below 90%. This recommendation is based upon sound practical experience.

EAN-13 Symbol Dimensions at 100% Magnification (mm)

EAN-8 Symbol Dimensions at 100% Magnification (mm)
PRINTING THE BAR CODE SYMBOL

Suitable Colour Combinations

Scanners read the bar code symbols by recognising the pattern of dark and light bars. The spaces between the dark bars are light bars and are just as important as the dark bars. A background colour is commonly used for the light bars.

As laser scanners use a red beam, they see colours differently from the naked eye. Care should therefore be taken to ensure that the correct colour combinations are used to print the dark and light bars.

Ideally, black should be used for the dark bars and white for the light bars, as this combination provides the best contrast.

If this combination is not available, then any combination of the following colours will generally provide an acceptable contrast:

<table>
<thead>
<tr>
<th>Dark Bars</th>
<th>Light Bars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dark Green</td>
<td>Red</td>
</tr>
<tr>
<td>Dark Blue</td>
<td>Orange</td>
</tr>
<tr>
<td>Dark Brown</td>
<td>Yellow</td>
</tr>
</tbody>
</table>


Common problems and solutions

- High gloss ink (silver, gold, etc) - if used as a background colour may give a reading similar to that of a dark colour due to the diffusion of the light. The best solution is to print the background block using an ink which provides a suitable light contrast.

- Clear substrate - a transparent material such as glass or clear plastic cannot be used as a background - a solid, light colour must be overprinted as a base or background for the dark bars.

CAUTION: Certain plastic materials are milky-coloured and give an initial impression of being suitable as a background colour, whereas they are in fact transparent and not suitable. The printer should conduct tests on these materials, and if in any doubt, print a solid light background colour on which the dark bars are printed.

Responsibilities

Once you have allocated numbers to your products, these numbers must then be incorporated within the artwork of your package design so that they are included when the packaging is printed.

You will need to liaise with both the artwork designer and the printer.

The printer will provide details on the minimum space to be provided by the artwork designer.
You must ensure that the artwork designer locates the bar code symbol within the artwork according to EAN•UCC guidelines.

You must decide on colours that will be acceptable for printing the dark and light bars, in consultation with both the artwork designer and the printer.

The printer will be responsible for ordering film masters (positives or negatives of the bar code symbol) according to the specifications of the printing process to be used.

You should ensure that the printer has used the right bar code numbers on your products. It is suggested that you sign-off a proof of the artwork prior to printing.

OUTER CASE NUMBERING AND SYMBOL MARKING

INTRODUCTION

A different number structure and ITF (Interleaved Two of Five) symbology is used to bar code outer cases. The EAN/UPC symbols used to bar code consumer units can be scanned at the checkouts and at goods receiving, in both retail and cash & carry stores. The ITF-14 symbol CANNOT be scanned at retail checkouts, only at goods receiving and at the checkouts in cash & carry stores. It is therefore important to understand the difference between a consumer unit and an outer case, as a consumer unit must never be symbol marked with an ITF-14 symbol.

The simplest definition of an outer case is to state that it will NEVER pass through the checkout of a retail store.

N.B. For purposes of numbering convenience, film or shrink-wrapped Cash & Carry Packs, are classified as consumer units and are numbered and bar coded as such.

NUMBER STRUCTURE

An EAN/UCC-14 standard numbering structure is used to number outer cases.

The structure is as follows:

L X X X X X X X X X X C

Where

L = Indicator with range of 1 to 8.
X = EAN•UCC number of Consumer Unit packed in PREVIOUS level, excluding its check digit.
C = Recalculated check digit over previous 13 digits.

Examples:

a) Consumer Unit Number 6 0 0 1 2 3 4 5 6 7 8 9 C packed 24 per outer case:
The outer case number would be: 1600123456789C

b) The same consumer unit is also packed 48 per outer case:

The outer case number would be: 2600123456789C

The following are examples where the first level outer case is itself packed into an outer case or pallet. It will be noted that the number of the consumer unit at the previous level within the outer case, is followed through within the outer case number in higher levels. It is the number of the multi-pack that is used within the outer case numbers, not the single consumer unit number packed within the multi-pack.
SIZE OF ITF-14 SYMBOLS

General

ITF symbols are to be printed at 100% of the dimensions reflected below, when printed directly onto corrugated board, and within a range of 50% to 100% when printed onto labels or a good quality substrate.

Dimensions at 100% Magnification (mm)

Bearer Bars

The inclusion of a bearer bar which surrounds the ITF symbol, is required:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>To equalise the pressure of printing plates over the surface of the substrate.</td>
<td></td>
</tr>
<tr>
<td>To prevent misreads when the scanner beam enters or exits a symbol without passing through the start or stop bars.</td>
<td></td>
</tr>
</tbody>
</table>

The above example shows how the bearer bars should abut the top and bottom of the bars of the symbol, with the human readable digits beneath the bearer bar.
The following example shows the placement and width of bearer bars when ITF symbols are printed onto labels:

![Barcode Example](image)

It should be noted that the width of each bearer bar need be only twice the width of a narrow element. The bearer bars in this instance are not required to completely surround the symbol, only at the top and bottom of the symbol. The bearer bars do not need to extend into the clear margin.

**LOCATING THE ITF SYMBOL ON OUTER CASE**

Two labels (or printed symbols) should be fixed to adjacent sides; a short side and the long side to the right (in warehouse applications this enables consistent turning to ensure a label is visible). The minimum is of course one label on any side, but not on the base.

The lowest edge of the symbol should be located 32 mm from the lower edge of the base of the case and including Quiet Zones, the symbol should be at least 19 mm from the vertical edges.
EAN•UCC APPLICATION IDENTIFIERS

INTRODUCTION

The EAN•UCC system, as explained in this document and in the EAN•UCC Global User Manual is a non-significant numbering system. It is used to identify the units being traded and not to classify or carry information about them. Fixed information about the goods is entered by the users into their product files and retrieved by reference to the EAN•UCC product number.

However some information varies from time to time for one type of item. This variable information often cannot be entered into computer files and retrieved by reference to the EAN•UCC product number. It is this kind of information - such as date codes, batch numbers and serial numbers - that many companies want to encode as a supplement to the identity given in the EAN•UCC product number.

Application Identifiers (AIs) are standardised within the EAN•UCC system for two principal reasons:

- To ensure that supplementary data used by one company does not disrupt, or in any way interfere with, the standard EAN•UCC product numbers and EAN/UPC bar codes, nor with AIs used by any other company in the trading chain.

- To provide the potential for supplementary information to be used by any other companies in the trading chain if they choose.

Application Identifiers are not to be used as an alternative to changing the EAN•UCC number of a product when the product is changed significantly or when significant variants of the product are supplied.

Full details covering the use of Application Identifiers and UCC/EAN-128 symbology are contained in the EAN•UCC Global User Manual.