



The Global Language of Business

# GS1 Human Readable Interpretation (HRI) Implementation Guide

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## 1 Introduction ..... 3

The objective of this guide is to explain in simple terms how to use Human Readable Interpretation (HRI) associated with GS1 Bar Codes. There are industry rules for HRI to enable consistent packaging designs that can be distributed to multiple countries and used in the same way.

In situations where there is a need to key in data into an application/system users refer to the data as being in a human readable form. In the context of the use of data carriers such as bar codes, Human Readable Interpretation refers to the characters printed below, beside or above a data carrier such as a bar code.

### 1.1 Purpose and Scope of this Document

The purpose of this document is to provide an easy to follow guideline for the application of Human Readable Interpretation as it relates to its use with data carriers/bar codes. In the document, each HRI Rule is explained in simple terms along with examples or figures.

### 1.2 Who can use this Document?

The intended audience of the document is:

- Manufacturers
- Retail and Healthcare industry users such as retail checkout staff, nurses, warehouse staff
- Printing and Design Companies such as package designers and Bar Code Software Design Companies

### 1.3 Key Definitions

**Human Readable Interpretation (HRI):** 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 a one-to-one illustration of the encoded data. However Start, Stop, shift and function characters, as well as the Symbol Check Character, are not shown in the Human Readable Interpretation.

**Non-HRI Text:** Characters such as letters and numbers that can be read by persons and may or may not be encoded in GS1 AIDC data carriers and are not confined to a structure and format based on GS1 standards (e.g., a date code expressed in a national format that could be used to encode a date field in a GS1 AIDC data carrier, brand owner name, consumer declarations).

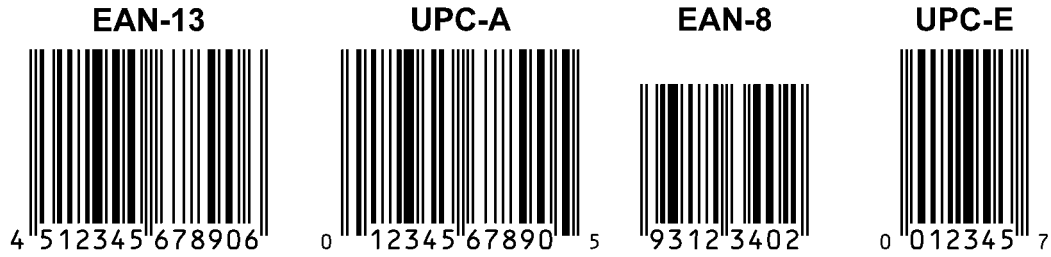
**GS1 Application Identifiers:** The field of two or more digits at the beginning of an Element String that uniquely defines its format and meaning.

## 2 GS1 Approved Data Carriers

These are the GS1 approved data carriers to which the HRI rules in this document apply.

All bar code examples below are printed at the target x-dimension from the Symbol Specification Tables from the GS1 General Specifications, Section 5

### 2.1 EAN/UPC



### 2.2 GS1 DataBar

#### 2.2.1 GS1 DataBar Omnidirectional Symbols

GS1 DataBar Omnidirectional



GS1 DataBar Stacked Omnidirectional



GS1 DataBar Expanded



GS1 DataBar Expanded Stacked



### 2.2.2 GS1 DataBar Non-Omnidirectional Symbols

#### GS1 DataBar Truncated



#### GS1 DataBar Stacked



#### GS1 DataBar Limited



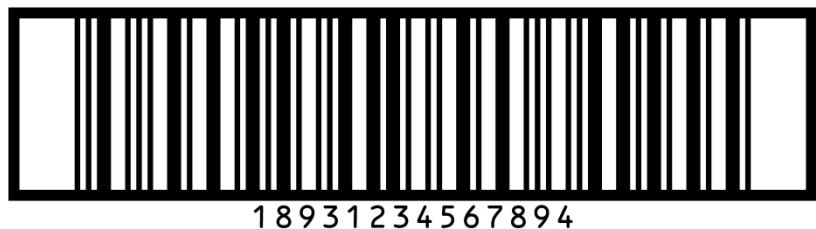
### 2.3 GS1-128

#### GS1-128



### 2.4 ITF-14

#### ITF-14



### 2.5 GS1 Composite Symbology

### GS1 Composite Symbol




## 2.6 GS1 DataMatrix

### GS1 DataMatrix



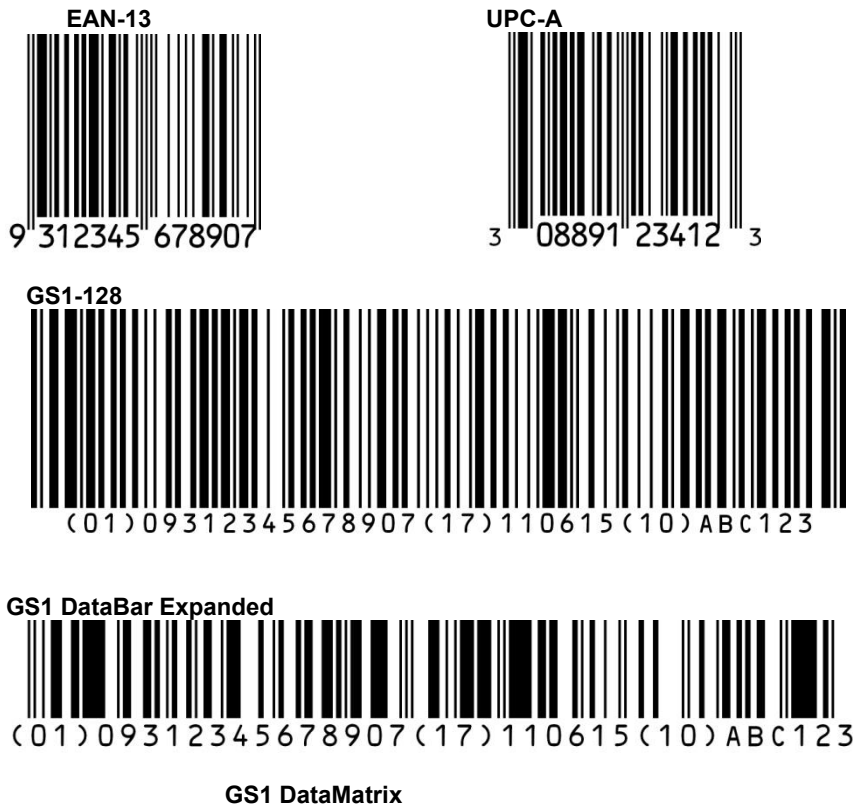
## 3 General Specification Rules

 **Note:** All the Rules stated below are from the GS1 General Specifications (Section 4). All extracted rules are italicized.

### 3.1 Where do I print the Human Readable Interpretation?

Whether a GS1 AIDC data carrier encodes a GS1 Identification Key, GS1 Key Attributes, or a combination of both, the HRI should be placed below the bar code and grouped together wherever physically possible while maintaining the HRI legibility and minimum bar code height (as specified in the appropriate Symbol Specification Table referenced by the GS1 AIDC Application Standard).

Below are examples to illustrate the rule:

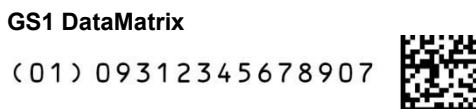
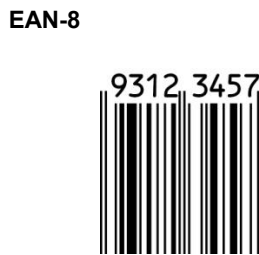






(01) 09312345678907  
 (17) 110614  
 (10) ABC123

1. In cases where the HRI must be printed above, to the left, or to the right of the symbol due to packaging or space constraints, HRI shall always be printed adjacent to (obviously associated with) the GS1 AIDC data carrier while protecting Quiet Zones.



2. If the HRI for GS1 Identification Keys and GS1 Key Attributes is split (for example GS1 Key HRI is below the bar code and GS1 Key attributes HRI is above the bar code), the preference for GS1 Key HRI placement is always below the bar code. Below are examples to illustrate the rule:

**GS1 DataBar Expanded Stacked**

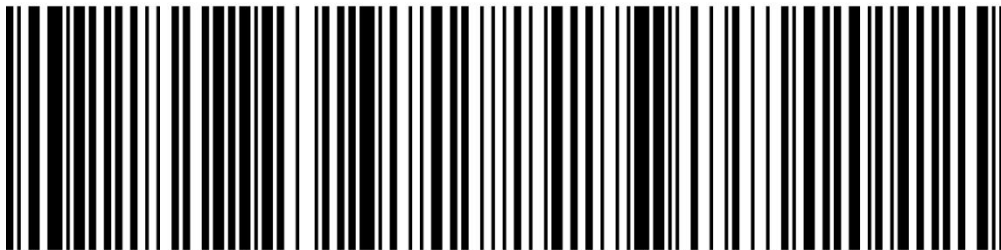
(17) 110615 (10) ABC123



(01) 09312345678907

GS1-128

(17) 110615 (10) ABC123



(01) 09312345678907

- When HRI is grouped together (for example, all HRI data is grouped below the bar code or all HRI data is grouped above the bar code), HRI shall always follow the encoding sequencing of the GS1 AIDC data carrier.



**Note:** Encoding sequencing is the order in which the data encoded in the data carrier. For example, if the order of the AIs encoded in the data carrier is 01, 17, 10, the HRI will appear in the following order (01), (17), (10).

### 3.2 What happens if the Human Readable Interpretation line is too long?

*A single data element shall not be broken into two lines of HRI, for example the data for a serial number would appear on one line of HRI.*

As an example, the AI should not appear on the first line and the remaining data appear on the next line. In this case, simply start a new line so both the AI and data are together. Below are some examples of how it should appear correctly and incorrectly.



**Correct application of the Rule 2:**



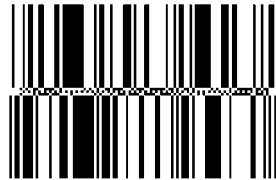
(01) 04512345678906 (17) 110831 (10) ABCD1234567890

In cases where space constraint does not permit HRI to fit on one line, it is recommended not to split the AI and its corresponding HRI data. The AI and its corresponding data should be moved to the next line. See example below:



(01) 09312345678907  
(17) 110614  
(10) ABC123

### GS1 DataBar Expanded Stacked



(01) 07614141000015 (3202) 000150



### Incorrect application of the Rule 2:

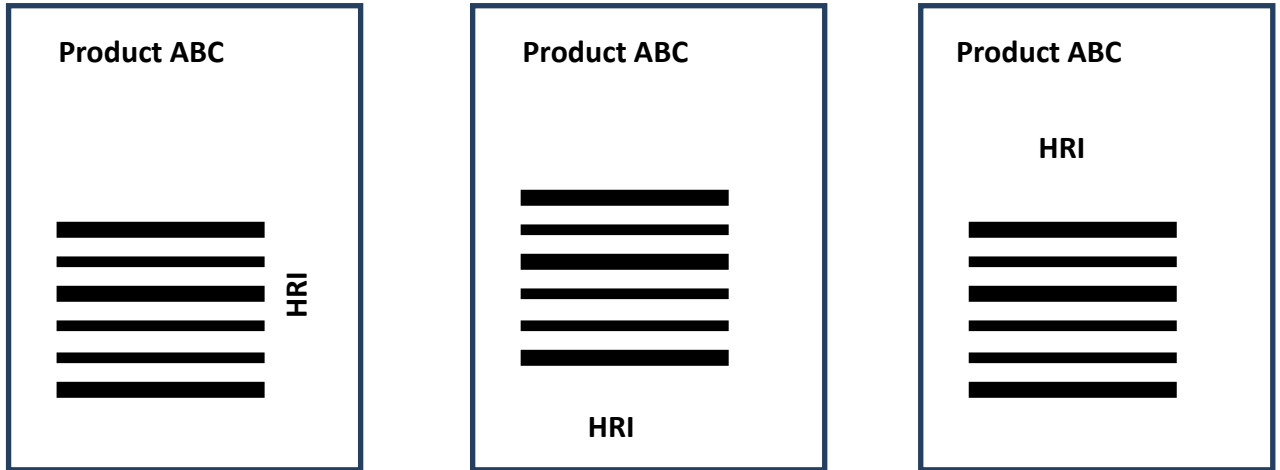
The example below demonstrates how a single data element AI (17) is incorrectly broken into two lines of HRI.



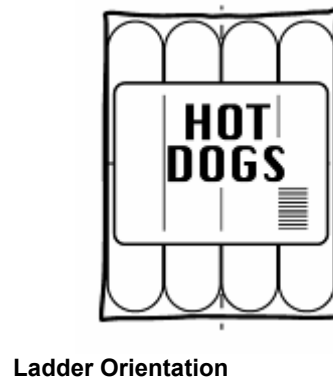
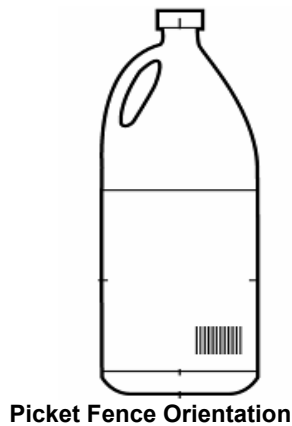
(01) 04512345678906 (17) 11  
0831 (10) ABCD1234567890

### 3.3 What happens to the placement of Human Readable Interpretation if the bar code is printed in a ladder orientation?

If the bar code is printed in ladder orientation on the product, the HRI should remain clearly associated with the bar code and may appear below, to the left, or to the right of the symbol respecting Quiet Zones.



Below illustrations show the difference between a Picket Fence and Ladder Orientation



- ✔ **Note:** There may be local variants for Non-HRI text on the label (e.g., dates, prices) which are formatted based on local practice rather than the way the data is encoded in GS1 AIDC data carriers.

### 3.4 Which font for printing the Human Readable Interpretation do I use?

A clearly legible font shall be used (e.g., OCR-B as defined in ISO 1073-2) and the character set as defined in Section 7.12 of GS1 General Specification. Reasonable alternative type fonts and character sizes are acceptable provided the interpretation is clearly legible.

Below is an example of OCR-B font:

(01) 04512345678906

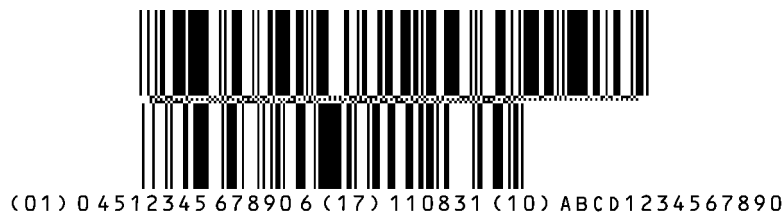
### 3.5 How do I print the Human Readable Interpretation if I use Application Identifiers?

Parentheses shall surround AIs in HRI but are not encoded in the GS1 AIDC data carrier.

GS1-128, GS1 DataBar Expanded, GS1 DataBar Expanded Stacked and GS1 DataMatrix have GS1 Application Identifiers (AIs) encoded.

- The software does not encode parentheses (brackets) around the AIs.

See example below:



- ✔ **Note:** HRI does not always match the encoded data. An example of this is the implied and printed, but not encoded (01) in GS1 DataBar Omni-directional, GS1 DataBar Stacked Omnidirectional, GS1 DataBar Stacked, GS1 DataBar Truncated and GS1 DataBar Limited.

### 3.6 What happens with special characters in the data string?

*HRI shall be limited to element strings and will not include GS1 AIDC data carrier overhead such as FNC1 characters.*

All GS1 AIDC data carriers require the use of specific technical encoding characters. These special characters allow scanning software to identify that it conforms to GS1 encoding standards and enables the correct decoding of data elements. FNC1 means Function Code 1 and is part of the character set (symbol character value 102 of the Code 128 encodation table).

The encoding schemes use Start and Stop Characters, code sets and data separators. These characters are not represented in the HRI since they are intended only for use by automated scanning software

- ✔ **Note:** For more information on FNC1 reference the GS1 General Specification Section 3.2 GS1 Application Identifiers in Numerical Order.

### 3.7 Do I always need to print the Human Readable Interpretation when identifying healthcare items?

*HRI shall appear except in rare circumstances for specific applications where there are extreme space constraints (e.g., direct part marking). If the GS1 AIDC data carrier cannot be read or scanned and the HRI does not appear on the label, package, or item, Non-HRI text should be used as backup information.*



**Note:** For Healthcare applications see Section 5 of the *GS1 General Specifications* (available from your local GS1 Member Organisation)

#### Example –Non-HRI text due to space constraint



### 3.8 Direct Part Marking of the Item

*If the required bar code and associated HRI is marked directly on the part, then both satisfy the requirements for Healthcare Primary Package marking (see *GS1 General Specifications Section 2.1.2.3*) if the bar code can be scanned and the HRI is legible through a panel in the primary packaging.*

## 4 Glossary

**Carrier:** The party that provides freight transportation services or a physical or electronic mechanism that carries business information.

**Element String:** The combination of a GS1 Application Identifier and GS1 Application Identifier Data Field.

**GS1 AIDC data carrier:** A means to represent data in a machine readable form; used to enable automatic reading of the Element Strings as specified for use by GS1.

**GS1 Application Identifiers:** The field of two or more digits at the beginning of an Element String that uniquely defines its format and meaning.

**Human Readable Interpretation (HRI):** 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 a one-to-one illustration of the encoded data. However Start, Stop, shift and function characters, as well as the Symbol Check Character, are not shown in the human readable interpretation.



**Non-HRI Text:** Characters such as letters and numbers that can be read by persons and may or may not be encoded in GS1 AIDC data carriers and are not confined to a structure and format based on GS1 standards (e.g., a date code expressed in a national format that could be used to encode a date field in a GS1 AIDC data carrier, brand owner name, consumer declarations).



## 5 Introduction