



GSMP:

General Specifications Change Notification (GSCN)

The Global Language of Business

WR #	GSCN Name	Effective Date
18-346	Use of 2D at Retail POS for variable measure trade items	Feb 2019

Associated Work Request (WR) Number:

18-346

Background:

This work is to explain the use of GS1 2D barcodes for scanning variable measure fresh food trade items at retail POS.

GS1 General Specification Change:

The recommended changes are highlighted below, relative to GS1 General Specifications version 19.X.

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1 Introduction

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2.1

2.1.12 Variable measure trade items scanned at retail POS

This section describes applications for variable measure trade items that are scanned at point-of-sale. Two main applications exist:

- Variable measure fresh food trade items using a GTIN and additional attributes encoded with GS1 DataBar Expanded, GS1 Databar Expanded Stacked, GS1 DataMatrix, or GS1 QR Code. See section 2.1.12.1.
- Variable measure trade items using a Restricted Circulation Number (RCN) encoded with the EAN/UPC symbology family. See section Error! Reference source not found.

Note: GTINs SHALL be encoded with AI (01). Restricted Circulation Numbers (RCNs) SHALL NOT be encoded with AI (01) as RCNs are not GTINs.

To support new applications additional GS1 approved data carriers (encoding additional data with the GTIN) may be applied with mutual agreement between trading partners. For information on how to manage multiple barcodes see section Error! Reference source not found.

2.1.12.1 Variable measure fresh food trade items scanned at retail POS using GTIN

Application description

Like a fixed measure trade item, a variable measure trade item is an entity with predefined characteristics, such as the nature of the product or its contents. Unlike a fixed measure trade item, a variable measure trade item has one measure that varies continuously while other characteristics remain the same. In the case of fresh food trade items variable measure may be weight, length, number of items contained, or volume. There are different ways to handle the process for variable measure fresh food. For example:

- Consumer puts loose produce items into a bag and barcoded label is produced and attached by the consumer.
- Staff attaches a barcode label, produced in store to pre-packed loose produce trade item.
- At the POS, loose produce is weighed and the price is calculated.

It is in the discretion of the retailer how the price is calculated and which process is chosen.

Variable measure fresh food

Variable measure loose produce trade items are trade items which may be identified with a GTIN and additional data. The retailer decides how to handle Variable measure fresh food trade items sold at POS. Generally the individual item(s) (i.e. loose produce) are put into a bag by the customer or by staff and are scanned (if a label is generated in store) or weighed at POS to generate the price. The attributes of variable measure trade items are barcoded when the trade item is weighed or measured in store. If the variable measure trade item is weighed at POS when presented to the cashier the price is generated in the register and directly added to the other products to complete the transaction.

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Variable measure pre-packed fresh food trade items

These are Variable measure fresh foods trade items, either loose produce or cut from a bulk item, that are pre-packaged with differing weight or other variable measure using GTIN and attributes. The label put on the trade item encoding GTIN plus variable measure information and/or price is determined by the retailer.

GS1 key

Required

The allowed key formats for this application are:

- [GTIN-12](#)
- [GTIN-13](#)

Rules

All GTIN rules described in section [Error! Reference source not found.](#)
Reference human readable interpretation rules in section [Error! Reference source not found.](#)

Attributes

Required

See sections [3.6.1 and 3.6.2](#), a variable count or a trade measure (AIs 30, 31nn, 32nn, 35nn, 36nn)

Optional

- See section [Error! Reference source not found.](#) - *GS1 Application Identifiers in numerical order* for a complete list of all GS1 Application Identifiers. *For instance, the amount payable and/or best before date may also be included.*
- For more details related to GS1 Application Identifiers for fresh foods, refer to the [GS1 AIDC Fresh Foods Sold at Point-of-Sale Implementation Guide.](#)

Rules

For human readable interpretation rules see section [Error! Reference source not found.](#)

Data carrier specification

Carrier choices

- [GS1 DataBar Expanded](#)
- [GS1 DataBar Expanded Stacked](#)
- [GS1 DataMatrix](#)
- [GS1 QR Code](#)

Note: [GS1 2D barcodes are not universally scannable at retail POS. Before using GS1 DataMatrix or GS1 QR Code barcodes for this application, trading partners SHALL mutually agree to have the ability to scan and process the required data.](#)



Note: [GS1 data carriers using AIs encode a 14-digit numeric string for GTINs. When encoding GTIN-13 or GTIN-12 after AI \(01\), zero-fill with one or two zeros to the left of the GTIN.](#)

Symbol X-dimensions, minimum symbol height, and minimum symbol quality

See section [Error! Reference source not found.](#) *GS1 symbol specification table 1.*

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Symbol placement

None

Unique application processing requirements

None

2.7 Summary of applications and operative scanning environments for GS1 system symbols

The figure below provides a cross-reference for all system applications defined in section 2 and the GS1 symbol specification tables (SSTs) in section 5. The application where the barcode will be used SHALL be determined prior to locating the correct symbol specification table (SST) entry. Use the "SST(s)" column to find the SST appropriate for the application area. Because most application areas provide a reference to two symbol specification tables based on the operative scanning environment, a decision must be made between the two. See the decision tree in figure **Error! Reference source not found.**2 to determine the correct symbol specification table.

Figure 2.7-1. Areas of GS1 system application

Application	Reference	SST(s)	Carrier choices
Fixed measure trade items – general retail consumer trade items scanned in general retail at POS:	Error! Reference source not found.		
<ul style="list-style-type: none"> GTIN-12 and GTIN-13 	Error! Reference source not found.	1	UPC-A, EAN-13, GS1 DataBar Retail POS family
<ul style="list-style-type: none"> GTIN-12 carried by a UPC-E barcode 	Error! Reference source not found.	1	UPC-E
<ul style="list-style-type: none"> GTIN-8 carried by an EAN-8 barcode 	Error! Reference source not found.	1	EAN-8, GS1 DataBar Retail POS family
<ul style="list-style-type: none"> Hardcover books and paperbacks: ISBN, GTIN-13, and GTIN-12 	Error! Reference source not found.	1	EAN-13, UPC-A, UPC-E. Options: EAN/UPC 2-digit or 5-digit add-on symbols
<ul style="list-style-type: none"> Serial publications: ISSN, GTIN-13, and GTIN-12 	Error! Reference source not found.	1	EAN-13, UPC-A, UPC-E. Options: EAN/UPC 2-digit or 5-digit add-on symbols
Fixed measure trade item - fresh food trade items scanned at POS	Error! Reference source not found.	1	GS1 DataBar Omnidirectional, GS1 DataBar Stacked Omnidirectional, UPC-A, EAN-13, EAN-8
Trade Items intended for general distribution and POS	Error! Reference source not found.	3	EAN/UPC, GS1 DataBar Retail POS family
Healthcare primary packaging (non-retail trade items)	Error! Reference source not found.	6	GS1-128, GS1 DataMatrix, GS1 DataBar, EAN/UPC, ITF-14, Composite Component
Healthcare secondary packaging (regulated healthcare retail consumer trade items)	Error! Reference source not found.	8 or 10	GS1-128, GS1 DataMatrix, GS1 DataBar, EAN/UPC, ITF-14, Composite Component

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Application	Reference	SST(s)	Carrier choices
Trade items intended for general distribution scanning only	Error! Reference source not found.	2	EAN/UPC, ITF-14, GS1-128, GS1 DataBar
Trade items intended for general distribution scanning only – regulated healthcare trade items	Error! Reference source not found.	8	GS1-128, GS1 DataBar, GS1 DataMatrix, EAN/UPC, ITF-14
Trade items intended for distribution scanning in manufacturing, maintenance, repair and overhaul processes.	Error! Reference source not found.	4	GS1-128, GS1 DataMatrix, GS1 QR Code
Medical devices (non-retail trade items)	Error! Reference source not found.	7	GS1 DataMatrix
Fixed measure trade items packed in several individual pieces not scanned at POS	Error! Reference source not found.	2, 4	GS1-128, GS1 DataMatrix, GS1 QR Code
Fixed measure trade items packed in several individual pieces not scanned at POS – Healthcare	Error! Reference source not found.	8 or 10	GS1-128
Direct marking	Error! Reference source not found.	4, 7	GS1 DataMatrix, GS1 QR Code
Variable measure trade items – Packages/containers not scanned in general retail at POS	Error! Reference source not found.	2	GS1-128, GS1 DataBar Expanded, GS1 DataBar Expanded Stacked, ITF-14
Fixed measure trade items – Restricted distribution	Error! Reference source not found.		
Company internal numbering – RCN-8 Prefix 0 or 2	2.1.11.1	1	EAN-8
Company internal numbering – RCN- 13 GS1 Prefix 04 (RCN-12 U.P.C. Prefix 4)	Error! Reference source not found.	1	EAN-13, UPC-A
Company internal numbering – RCN- 12 U.P.C. Prefix 0 (LAC and RZSC)	Error! Reference source not found.	1	UPC-E
GS1 Prefixes 02, 20 to 29 - Restricted Circulation	Error! Reference source not found.	1	EAN-13 symbols
Variable measure fresh food trade items scanned at point-of-sale using GTIN	2.1.12.1	1	GS1 DataBar Expanded, GS1 DataBar Expanded Stacked, GS1 DataMatrix, GS1 QR Code
Variable measure trade items scanned at point-of-sale using Restricted Circulation Numbers	Error! Reference source not found.	1	EAN-13, UPC-A
Trade Item extended packaging (general retail trade items)	2.1.13	1 Addendum	GS1 DataMatrix, GS1 QR Code

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Application	Version	SST(s)	Carrier choices
Trade item extended packaging (regulated healthcare trade items)	2.1.13	6, 7, 8, or 10	GS1 DataMatrix only
Logistics units - individual logistic units	Error! Reference source not found.	5	GS1-128
Logistics units - multiple logistic units (GSIN, GINC)	Error! Reference source not found. Error! Reference source not found.	2.1.14	GS1-128
Assets - Global Returnable Asset Identifier (GRAI)	Error! Reference source not found.	9	GS1-128, GS1 DataMatrix, GS1 QR Code
Direct marking of GRAI	Error! Reference source not found. Error! Reference source not found.	7	GS1 DataMatrix, GS1 QR Code
Assets - Global Individual Asset Identifier (GIAI)	Error! Reference source not found.	9	GS1-128, GS1 DataMatrix, GS1 QR Code
Direct marking of GIAI	Error! Reference source not found. Error! Reference source not found.	7	GS1 DataMatrix, GS1 QR Code
Locations and parties - Identification of a physical location	Error! Reference source not found.	9	GS1-128, GS1 Data Matrix, GS1 QR Code, EPC/RFID
Service relationships	Error! Reference source not found.	11	GS1 DataBar Expanded, GS1 DataBar Expanded Stacked, GS1-128, GS1 DataMatrix, GS1 QR Code
Coupons identified using the Global Coupon Number	Error! Reference source not found.	1	GS1 DataBar Expanded, GS1 DataBar Expanded Stacked
Coupon identification for restricted geographic distribution (GS1 Prefix 99) GS1 common currency coupon identification (GS1 Prefixes 981 to 983)	Error! Reference source not found. Error! Reference source not found. Error! Reference source not found.	1	EAN-13

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Application	Source specification	SST(s)	Carrier choices
Coupon code identification for use in North America (AI 8110, 8112)	Error! Reference source not found.	(*)	GS1 DataBar Expanded, GS1 DataBar Expanded Stacked or digitally transmitted
Refund receipts	Error! Reference source not found.	1	EAN-13
Electronic serial identifier for cellular mobile telephones (CMTI): AI(8002)	Error! Reference source not found.	4	GS1-128
Payment slips	Error! Reference source not found.	4	GS1-128
Customer specific articles	Error! Reference source not found.	1	EAN-13, UPC-A, ITF-14, GS1-128
Custom trade item	Error! Reference source not found.	4	GS1-128, GS1 DataBar, GS1 DataMatrix, GS1 QR Code
Global Document Type Identifier for document control	Error! Reference source not found.	9	GS1-128, GS1 DataMatrix, GS1 QR Code
Internal applications	Error! Reference source not found.	N/A	GS1-128, GS1 DataBar Expanded, GS1 DataMatrix, GS1 QR Code
Consumer trade item production control	Error! Reference source not found.	N/A	GS1 DataBar, GS1 DataMatrix, GS1 QR Code, GS1-128, Composite Component
Component/part identification	Error! Reference source not found.	N/A	GS1-128, GS1 DataMatrix, GS1 QR Code
Global Model Number	Error! Reference source not found.	N/A	N/A

(*) See *US Coupon Application Guideline Using GS1 DataBar Expanded Symbols* for the appropriate SST.

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Note: GS1 DataBar has the capacity to carry GTIN-14, GTIN-14 is not intended for use at point-of-sale (POS) applications; therefore GS1 DataBar symbols for POS must not encode GTIN-14.



5.9.3.1 Symbol specification table 1 - Trade items scanned in general retail POS and not general distribution

Figure 5.9.3.1-1. GS1 symbol specification table 1

Primary symbol(s) specified	X-dimension mm (inches)			(**) Minimum symbol height for given X mm (inches)			Quiet Zone		Minimum quality specification
	(*) Minimum	Target	Maximum	For minimum X-dimension	For target X-dimension	For maximum X-dimension	Left	Right	
EAN-13	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	18.28 (0.720")	22.85 (0.900")	45.70 (1.800")	11X	7X	1.5/06/660
EAN-8	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	14.58 (0.574")	18.23 (0.718")	36.46 (1.435")	7X	7X	1.5/06/660
UPC-A	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	18.28 (0.720")	22.85 (0.900")	45.70 (1.800")	9X	9X	1.5/06/660
UPC-E	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	18.28 (0.720")	22.85 (0.900")	45.70 (1.800")	9X	7X	1.5/06/660
GS1 DataBar Omni-directional (****)	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	12.14 (0.478")	15.19 (0.598")	30.36 (1.195")	None	None	1.5/06/660
GS1 DataBar Stacked Omni-directional (***) (****)	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	25.10 (0.988")	31.37 (1.235")	62.70 (2.469")	None	None	1.5/06/660
GS1 DataBar Expanded	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	8.99 (0.354")	11.23 (0.442")	22.44 (0.883")	None	None	1.5/06/660
GS1 DataBar Expanded Stacked (****)	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	18.75 (0.738")	23.44 (0.923")	46.86 (1.845")	None	None	1.5/06/660
GS1 DataMatrix	<u>0.375 (0.0148")</u>	<u>0.625 (0.0246")</u>	<u>0.990 (0.0390")</u>	<u>Height is determined by X-dimension and data that is encoded</u>			<u>1X on all four sides</u>		<u>1.5/08/660</u>
GS1 QR Code	<u>0.375 (0.0148")</u>	<u>0.625 (0.0246")</u>	<u>0.990 (0.0390")</u>	<u>Height is determined by X-dimension and data that is encoded</u>			<u>4X on all four sides</u>		<u>1.5/08/660</u>

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Primary Symbol(s) Specified Plus Add-on 2 or 5	X-dimension mm (inches)			(**) Minimum symbol height for given X mm (inches)			Quiet Zone	Min separation between symbols	Max separation between symbols	Quiet Zone	Min. Quality Spec.
	(*) Minimum	Target	Maximum	For min. X-dimension	For target X-dimension	For max. X-dimension	Left	Right			
EAN-13 + 2	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	18.28 (0.720")	22.85 (0.900")	45.70 (1.800")	11X	7X	12X	5X	1.5/06/ 660
EAN-13 + 5	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	18.28 (0.720")	22.85 (0.900")	45.70 (1.800")	11X	7X	12X	5X	1.5/06/ 660
UPC-A + 2	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	18.28 (0.720")	22.85 (0.900")	45.70 (1.800")	9X	9X	12X	5X	1.5/06/ 660
UPC-A + 5	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	18.28 (0.720")	22.85 (0.900")	45.70 (1.800")	9X	9X	12X	5X	1.5/06/ 660
UPC-E + 2	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	18.28 (0.720")	22.85 (0.900")	45.70 (1.800")	9X	7X	12X	5X	1.5/06/ 660
UPC-E + 5	0.264 (0.0104")	0.330 (0.0130")	0.660 (0.0260")	18.28 (0.720")	22.85 (0.900")	45.70 (1.800")	9X	7X	12X	5X	1.5/06/ 660



- (*) These barcodes may only be printed using an X-dimension below 0.264 millimetre (0.0104 inch) under the following conditions:
- The allowance for X-dimensions between 0.249 millimetre (0.0098 inch) and 0.264 millimetre (0.0104 inch) is only applicable to on demand (e.g., thermal, laser) print processes. For all other printing processes, an X-dimension of 0.264 millimetre (0.0104 inch) is attainable and is the minimum allowable size.
 - When printing a minimum symbol with any method of printing, the area provided for printing the symbol and the required Quiet Zone SHOULD never be less than the area required for an X-dimension of 0.264 millimetre (0.0104 inch).
- (**) ■ The minimum symbol height dimensions listed for all symbologies including EAN/UPC symbols do not include the human readable interpretation.
- When printing a minimum symbol with any method of printing, the bar height SHALL never be truncated below the minimum as listed in the table above.
 - Because of the operative scanning environment for EAN/UPC symbols, there is a direct relationship between the symbol's height and width. This means the minimum symbol height listed is tied to the minimum, target, and maximum X-dimension listed. There is no maximum for the height, but if the maximum X-dimension is used, the symbol height must be equal to or greater than those listed in the Minimum Symbol Height column.
 - The minimum heights of EAN/UPC symbols do not include the extended bars: see section **Error! Reference source not found.** for dimensions of the extended bars.
 - For GS1 DataBar Expanded Stacked symbols, the table reflects the minimum symbol height for symbols that are two rows in height.
- (***) In addition to the factors above related to digital printing, one other exception is permitted; For loose produce being weighed at the point-of-sale (POS) using GS1 DataBar Stacked Omnidirectional minimum X-dimension of 0.203 millimetre (0.0080 inch) is permitted but may produce scanning performance reduction. However, for POS, this performance drop off is not noticeable when the product must be weighed at the point-of-sale. Even with a slower scanning performance to conduct the transaction, the weighing process takes longer than the scanning process. For that reason, a lower minimum X-dimension should never be used on products crossing point-of-sale which are not weighed as loose produce during the scan event.
- (****) The current symbol specification for GS1 DataBar Omnidirectional (minimum height 33X) and GS1 DataBar Stacked Omnidirectional (minimum height 69X) indicate a square aspect ratio for the symbol segments. To enhance scanning performance, in an omnidirectional scanning environment, an over square aspect ratio SHALL be used following the example of the EAN/UPC symbology specification and rigorous field test of the GS1 DataBar symbology (46X or 95X).
- (*****) For North American coupon codes using GS1 DataBar Expanded Stacked in 2 row and 3 row configurations the X-dimension may be as low as 0.0080" (0.203mm) as long as a minimum overall bar height of 1.020" (25.91mm) is maintained. X-dimensions less than 0.0100" (.254mm) might not always be feasible for all GS1 DataBar coupon barcodes due to variables, such as printing process, symbol orientation, and material. Due to the time sensitive nature of the coupon printing process, these variables should be considered during the design and barcode origination processes. Barcode verification should always be done from printing press proofs.

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✔ **Note:** See section [2.2](#) to ensure the correct symbol specification table is used.

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