9.2.8 GS1-128 Symbol Specifications

The GS1-128 Bar Code is used to encode a GTIN-14, a GTIN-13 or a GTIN-12, and may also encode attribute data using Application Identifiers (AIs). The GS1-128 Bar Code is intended for scanning in a General Distribution Scanning environment.

Note: When encoding a GTIN-13 or GTIN-12 in a GS1-128 Bar Code, one or two filler zero(s) respectively must be added in front of the GTIN.

The diagram below is of a GTIN-13 with a filler zero encoded in a GS1-128 Bar Code

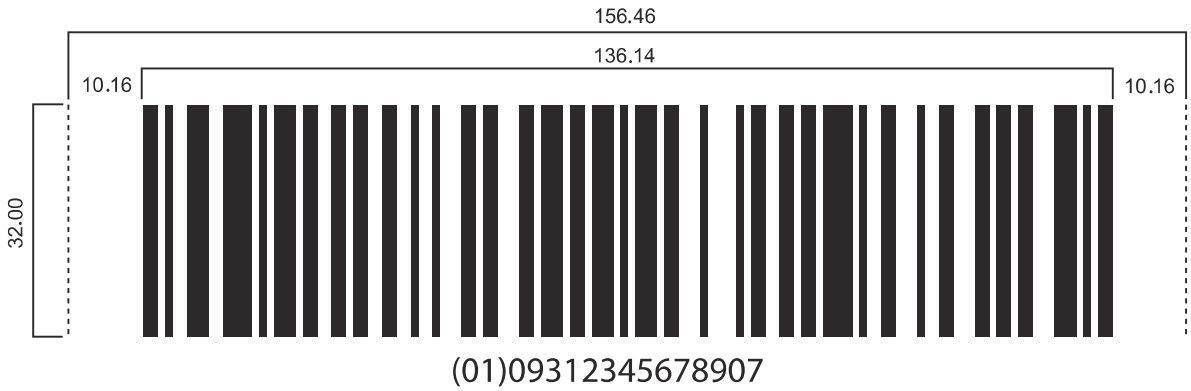

Figure 14 GS1-128 Bar Code at 100%

Concatenation

Concatenation (stringing data elements together) is an effective means for presenting multiple element strings in a single GS1-128 Bar Code and should be used to conserve label space and optimise scanning operations.

Maximum Length

The length of the GS1-128 Bar Code must never exceed 165mm in length, including the Quiet Zones.

When concatenating data strings the maximum number of characters in the GS1-128 Bar Code must not exceed 48 characters. This includes Function 1 Symbol Character (FNC1) when used as a field separator, but excludes auxiliary characters, see table below, and the Symbol Check Character (Modulo 103).

Auxiliary Characters		
Start A	Code A	Shift
Start B	Code B	Stop
Start C	Code C	FNC1
Note: When counting the number of characters in a GS1-128 Symbol the FNC1 is only included when used as a field separator		

TABLE 135 GS1-128 Auxiliary Characters

Magnification

The size of the GS1-128 Bar Code depends on:

- the X-dimension (module width) chosen
- the number of characters encoded
- the number of non-numeric characters in the data

For GS1-128 Bar Codes that are to be scanned in a General Distribution Scanning environment (automated scanning), the X-dimension range is 0.50mm to 1.02mm (magnifications between 48.7% and 100%).

For other scanning environments, the X-dimension range is 0.25mm to 1.02mm (magnifications between 25% and 100%).

For information on the size specifications for Serial Shipping Container Codes (SSCCs) and other GS1-128 Bar Code on logistics labels refer to chapter 3, section 3.5.1 Bar Code on page 66.

Mathematically, when W is width, 11 is the number of modules per symbol character, N is the number of symbol characters encoded (excluding the Start and Stop Characters and Symbol Check Character), 66 is the auxiliary characters and X is X-dimension (module width), which at 100% magnification is 1.02mm.

W = (11N + 66)X (including Quiet Zones)

Height of Bars

For scanning in a General Distribution Scanning (automated scanning) environment, the minimum bar height for a GS1-128 Bar Code is 32mm.

For all other scanning environments the bar height should be printed as high as possible. In no cases shall the bar height be less than 13mm. While 13mm is the minimum height for GS1-128 Bar Codes not being scanned in an automated scanning environment, every effort should be made to increase the bar height to as close to 32mm as possible.

Human Readable Interpretation

Print the Human Readable Interpretation either above or below the symbol bars. Make sure Application Identifiers (AIs) are clearly recognisable by placing them in brackets in the Human Readable Interpretation only.

Note: The Symbol Check Character (Modulo 103) is not part of the data, therefore do not show it in the Human Readable Interpretation.

For information on printing Human Readable Interpretation on Logistics Labels, refer to chapter 3, section 3.5.1.4 Human Readable Interpretation on page 67.

GS1-128 Bar Code Dimensions

Magnification	X-dimension	Width	Bar Height	Quiet Zones
25%	0.25	34.04	13.00	2.54
30%	0.30	40.84	13.00	3.05
35%	0.36	47.65	13.00	3.56
40%	0.41	54.46	13.00	4.06
45%	0.46	61.26	13.00	4.57
50%	0.51	68.07	32.00	5.08
55%	0.56	74.88	32.00	5.59
60%	0.61	81.68	32.00	6.10
65%	0.66	88.49	32.00	6.60
70%	0.71	95.30	32.00	7.11
75%	0.76	102.11	32.00	7.62
80%	0.81	108.91	32.00	8.13
85%	0.86	115.72	32.00	8.64
90%	0.91	122.53	32.00	9.14
95%	0.97	129.33	32.00	9.65
100%	1.02	136.14	32.00	10.16

Note: In the heading of this table, Width = Width of bar code excluding Quiet Zones,
It is recommended to always allow slightly more than the minimum required Quiet Zone to allow for any possible ink spread or registration issues.
All measurements are in millimetres.

These dimensions are only indicative of a GS1-128 Bar Code with one Application Identifier and a GTIN without any attribute data, e.g. (01)09312345678907.

TABLE 136 GS1-128 Bar Code Dimensions

9.2.9 Mixing GS1-128 Symbology with other Symbologies

When a Global Trade Item Number (GTIN) is carried in either an EAN/UPC, ITF-14 or GS1-128 Bar Code, any required additional data can be carried in a GS1-128 Symbol.