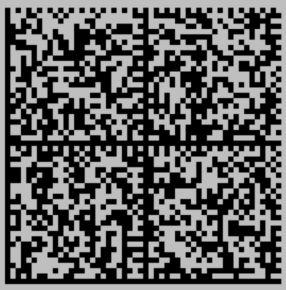
PSTricks

pst-barcode

A PSTricks package for drawing barcodes; v.0.19

August 23, 2022



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Contents

The `pstricks` related package provides (essentially) one macro for printing barcodes. The type of the code is defined by a parameter and passed to postscript.

1 Introduction

The `pstricks` package provides (essentially) one macro for printing barcodes. The type of the code is defined by a parameter and passed to postscript. To install the package put the three files in a place, where TeX will search for the files:

name	*meaning*	*target dir*
`pst-barcode.tex`	LaTeX style file – wrapper	`$LOCALTEXMF/tex/generic/pstricks/`
`pst-barcode.sty`	TeX file – PS interface	`$LOCALTEXMF/tex/latex/pstricks/`
`pst-barcode.pro`	PostScript file	`$LOCALTEXMF/dvips/pstricks/`
`pst-barcode-doc.tex`	documentation source	`$LOCALTEXMF/doc/pstricks/`
`pst-barcode-doc.bib`	bibliography source	`$LOCALTEXMF/doc/pstricks/`
`pst-barcode-doc.pdf`	documentation	`$LOCALTEXMF/doc/pstricks/`

There is only one macro `\psbarcode` with the usual PSTricks syntax

`\psbarcode` `[Options]` {*text or filename*}{*PS options*}{*barcode type*}

Important is the fact, that the barcode is printed in a TeX box of zero dimension. If you want to save some space in your text, use the `pspicture` environment or the `\makebox` macro.

2 The options

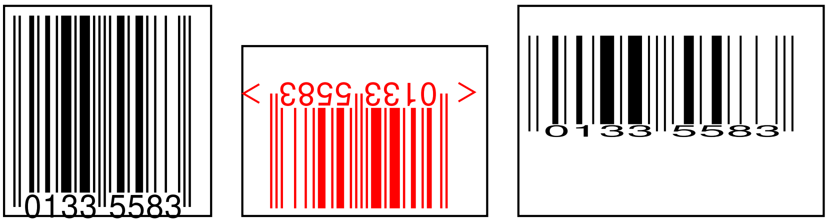
2.1 The TeX options

name	*default*	*remarks*
`transx`	0	horizontal shift
`transy`	0	vertical shift
`scalex`	1	horizontal scaling
`scaley`	1	vertical scaling
`rotate`	0	rotating angle in degrees
`file`	false	load an external file for the text

2.2 The PostScript options

name	*default*	*remarks*
`height`	1	dimension is inch
`textsize`	10	dimension is pt
`textpos`	-2	dimension is pt; it is the shift for additional code text
`inkspread`	0.15	dimension is pt
`showborder`	–	-
`borderwidth`	0.5	dimension in pt
`borderleft`	10	dimension in pt
`borderright`	10	dimension in pt
`bordertop`	1	dimension in pt
`borderbottom`	1	dimension in pt
`borderwidth`	0.5	dimension in pt
`width`	–	dimension in inch
`font`	/Helvetica	must be a PostScript font
`includetext`	–	enable human readable text
`includecheck`	–	enable check digit
`includecheckintext`	–	check digit visible in text
`parse`	–	parse variable field für decimal values, like ^032 for space, and convert them to ASCII

2.3 Examples for the TeX options



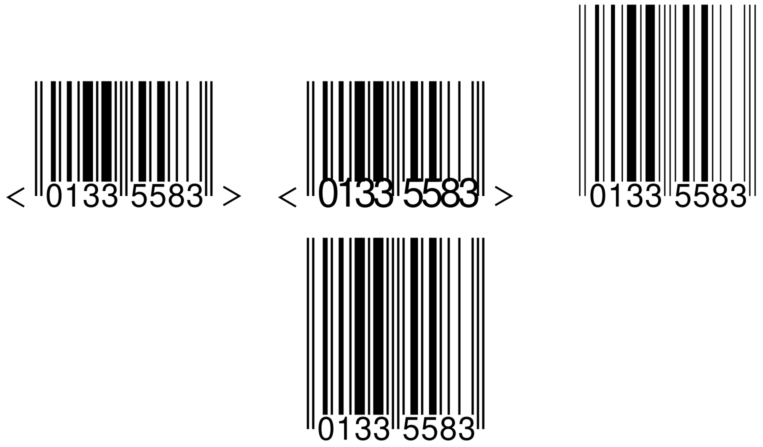
```
\psframebox{\begin{pspicture}(2.5,1in)
\psbarcode{01335583}{includetext}{ean8}
\end{pspicture}}\quad
\psframebox{\begin{pspicture}(-2.6,-1.5)(0.4,0.2in)
\psbarcode[rotate=180,linecolor=red]{01335583}{includetext guardwhitespace height=0.6}{ean8}
\end{pspicture}}\quad
\psframebox{\begin{pspicture}(3.8,1in)
\psbarcode[scalex=1.5,scaley=0.5,transy=1]{01335583}{includetext inkspread=0.5}{ean8}
\end{pspicture}}
```

```
\begin{pspicture}(2in,2in)
  \psbarcode[file]{demo.tex}{}{qrcode}
\end{pspicture}
```

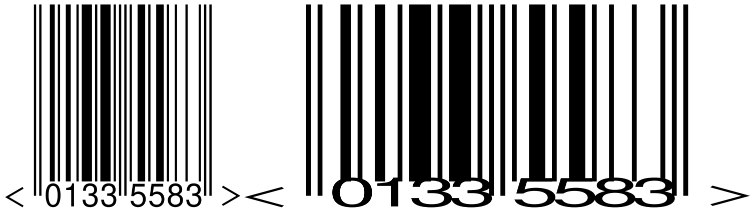
The contents of the external file `demo.tex`:

```
\documentclass{article}
\usepackage{pst-barcode,fancyvrb}
\begin{document}
\VerbatimInput{\jobname.tex}% test

\begin{pspicture}(2in,2in)
  \psbarcode[file]{\jobname.tex}{}{qrcode}
\end{pspicture}
\end{document}
```

2.4 Examples for the PostScript options



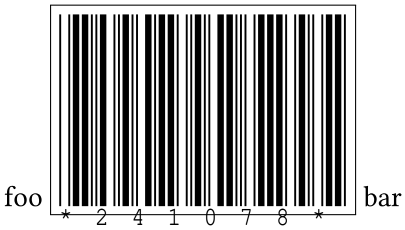
```
\begin{pspicture}(3.5,1.2in)
\psbarcode{01335583}{includetext guardwhitespace height=0.6}{ean8}
\end{pspicture}
\begin{pspicture}(3.5,1.2in)
\psbarcode{01335583}{textsize=15 includetext guardwhitespace height=0.6}{ean8}
\end{pspicture}
\begin{pspicture}(3.5,1.2in)
\psbarcode{01335583}{includetext inkspread=0.5}{ean8}
\end{pspicture}
\begin{pspicture}(3.5,1.2in)
\psbarcode{01335583}{includetext textpos=0}{ean8}
\end{pspicture}
```



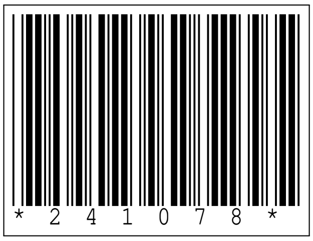
```
\begin{pspicture}(3.5,1.2in)
\psbarcode{01335583}{includetext guardwhitespace}{ean8}
\end{pspicture}
\begin{pspicture}(3.5,1.2in)
\psbarcode{01335583}{textsize=15 includetext guardwhitespace width=2}{ean8}
\end{pspicture}
```

3 Usage

By default the barcode has a width and a height of zero. Using the `\parbox` macro or the `pspicture` environment can reserve the needed space for the barcode. The `\fbox` in the following examples is used only for demonstration.



```
foo
\fbox{%
  \parbox[b][1in]{1.5in}{\psbarcode{241078}{
       includetext width=1.5 height=1}{code
       39}}}
bar
```

foo  bar

```
foo
\fbox{%
\begin{pspicture}(0,-8pt)(1.5in,1in)
  \psbarcode{241078}{includetext width=1.5
       height=1}{code39}
\end{pspicture}}
bar
```

4 Available Codes

- EAN-13 (EAN, UCC-13, JAN, JAN-13, EAN-13+2, EAN-13+5, EAN-99),
- EAN-8 (UCC-8, JAN-8, EAN-8+2, EAN-8+5, EAN-Velocity),
- UPC-A (UPC, UCC-12, UPC-A+2, UPC-A+5),
- UPC-E (UPC-E0, UPC-E1, UPC-E+2, UPC-E+5),
- ISBN (ISBN-13, ISBN-10, Bookland EAN-13),
- ISMN,
- ISSN,
- EAN-5 & EAN-2 (EAN/UPC add-ons),
- GS1 DataBar Omnidirectional (RSS-14),
- GS1 DataBar Stacked (RSS-14 Stacked),
- GS1 DataBar Stacked Omnidirectional (RSS-14 Stacked Omnidirectional),
- GS1 DataBar Truncated (RSS-14 Truncated),
- GS1 DataBar Limited (RSS Limited),
- GS1 DataBar Expanded (RSS Expanded),
- GS1 DataBar Expanded Stacked (RSS Expanded Stacked),
- GS1-128 (UCC/EAN-128, EAN-128, UCC-128),
- SSCC-18 (EAN-18, NVE),
- EAN-14 (UCC-14),
- ITF-14 (UPC SCS),
- QR Code (Quick Response Code),
- Micro QR Code,
- GS1 QR Code,
- Data Matrix (Data Matrix ECC 200, Data Matrix Rectangular Extension),
- GS1 DataMatrix,
- Aztec Code (Compact Aztec Code),
- Aztec Runes,
- PDF417,
- Compact PDF417 (Truncated PDF417),
- MicroPDF417,
- Han Xin Code (Chinese Sensible),
- MaxiCode (UPS Code, Code 6),
- Codablock F,
- Code 16K (USS-16K),
- Code 49 (USS-49),
- Code One (Code 1, Code 1S),
- USPS POSTNET,
- USPS PLANET,
- USPS Intelligent Mail (USPS OneCode),
- USPS FIM,
- Royal Mail (RM4SCC, CBC),
- Royal TNT Post (KIX),

- Japan Post,
- Australia Post,
- Deutsche Post Identcode (DHL Identcode),
- Deutsche Post Leitcode (DHL Leitcode),
- Pharmacode (Pharmaceutical Binary Code),
- Two-track Pharmacode (Two-track Pharmaceutical Binary Code),
- Italian-Pharmacode (Code 32, IMH),
- PZN (Pharmazentralnummer, PZN-8, PZN-7),
- Code 39 (Code 3 of 9, LOGMARS, Alpha39, USD-3, USD-2, USS-39),
- Code 39 Extended (Code 39 Full ASCII),
- Code 93 (USD-7, USS-93),
- Code 93 Extended (Code 93 Full ASCII),
- Code 128 (Code 128A, Code 128B, Code 128C, USD-6, USS-128),
- Code 25 (Code 2 of 5, Industrial 2 of 5),
- IATA-2 of 5,
- Datalogic 2 of 5,
- Matrix 2 of 5,
- COOP 2 of 5,
- Interleaved 2 of 5 (ITF, Code 2 of 5 Interleaved, USD-1, USS-Interleaved 2 of 5),
- Code 11 (USD-8),
- Codabar (Rationalized Codabar, Ames Code, NW-7, USD-4, USS-Codabar, Monarch, Code 2 of 7),
- Plessey (Anker Code),
- MSI Plessey (MSI, MSI Modified Plessey),
- Telepen (Telepen Alpha, Telepen Full ASCII),
- Telepen Numeric,
- Channel Code,
- PosiCode (PosiCode A, PosiCode B),
- BC412 (BC412 SEMI, BC412 IBM),
- GS1 Composite Symbols (EAN-13 Composite, EAN-8 Composite, UPC-A Composite, UPC-E Composite, GS1 DataBar Omnidirectional Composite,
- GS1 DataBar Stacked Composite, GS1 DataBar Stacked Omni Composite, GS1 DataBar Truncated Composite,
- GS1 DataBar Limited Composite, GS1 DataBar Expanded Composite, GS1 DataBar Expanded Stacked Composite,
- GS1-128 Composite),
- HIBC barcodes (HIBC Code 39, HIBC Code 128, HIBC Data Matrix, HIBC PDF417, HIBC MicroPDF417, HIBC QR Code, HIBC Codablock F)

5 Symbology Reference

5.1 Point of Sale

5.1.1 EAN-13

EAN-13 is an extension of the UPC-A barcode symbology that usually carries a GTIN-13. It was designed by the International Article Numbering Association in 1976 for identification of retail goods at point of sale outside of the US.

Also known as: EAN, UCC-13, European Article Number, International Article Number, JAN, JAN-13, IAN, WPC, SAAN, UCCET, ABAC, BCCI, ICA, MANA, KANC, ANA, ANC.

Variants:

- EAN-13+2 is an extension of EAN-13 that includes a two-digit add-on.
- EAN-13+5 is an extension of EAN-13 that includes a five-digit add-on.
- EAN-99 is a special form of EAN-13 starting with `99` that is used as an in-store coupon.
- EAN-8 is a barcode symbology derived from EAN-13 that is designed for small packaging. It uses a distinct numbering system based on GTIN-8.
- ISBN is a variant of EAN-13 used to identify books.
- ISMN is a variant of EAN-13 used to identify printed music.
- ISSN is a variant of EAN-13 used to identify periodicals.
- EAN-13 Composite is a variant of EAN-13 that should be used when a CC-A or CC-B GS1 Composite 2D component is required.

Standards: ISO/IEC 15420, BS EN 797, GS1 General Specifications.

Data and Options

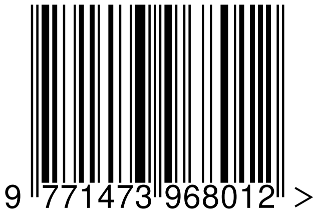
- The data field for a EAN-13 may contain twelve or thirteen digits, optionally followed by a space then two or five digits if an EAN-2 or EAN-5 add-on is required.
- If twelve digits of primary data are supplied then the check digit is calculated automatically. Otherwise the provided check digit will be verified.
- The **includetext** option should normally be supplied.
- The **guardwhitespace** option enables the display of whitespace guard marks.

Examples

Identical symbols, input provided with and without a check digit:

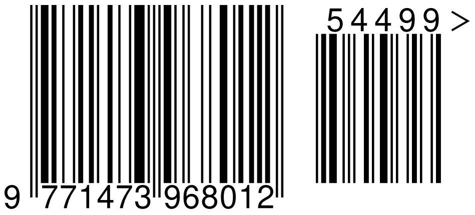
```
Data:    9771473968012
Options: includetext guardwhitespace
Encoder: ean13
```

```
Data:    977147396801
Options: includetext guardwhitespace
Encoder: ean13
```



A symbol that includes a five-digit add-on:

```
Data:    9771473968012 54499
Options: includetext guardwhitespace
Encoder: ean13
```



5.1.2 EAN-8

EAN-8 is derived from the EAN-13 barcode symbology and is designed for small packaging. It usually carries a GTIN-8.

Also known as: UCC-8, JAN-8.

Variants:

- EAN-8+2 is an extension of EAN-8 that includes a two-digit add-on.
- EAN-8+5 is an extension of EAN-8 that includes a five-digit add-on.
- EAN-Velocity is a special form of EAN-8 starting with `0` that is used for in-store coupons.
- EAN-13 is a longer variant of EAN-8 which has a distinct number system based on GTIN-13.
- EAN-8 Composite is a variant of EAN-8 that should be used when a CC-A or CC-B GS1 composite 2D component is required.

Standards: ISO/IEC 15420, BS EN 797, GS1 General Specifications.

Data and Options

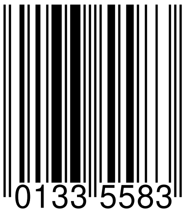
- The data field takes either seven or eight digits, optionally followed by a space then two or five digits if an EAN-2 or EAN-5 add-on is required.
- If seven digits of primary data are supplied then the check digit is calculated automatically. Otherwise the provided check digit will be verified.
- The **includetext** option should normally be supplied.
- The **guardwhitespace** option enables the display of whitespace guard marks.

Examples

Identical symbols, input provided with and without a check digit:

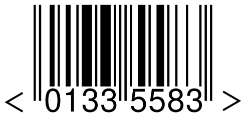
```
Data:    01335583
Options: includetext
Encoder: ean8
```

```
Data:    0133558
Options: includetext
Encoder: ean8
```



Truncated with whitespace guards:

```
Data:    01335583
Options: includetext height=0.5 guardwhitespace
Encoder: ean8
```



5.1.3 UPC-A

The **UPC-A** barcode symbology is used for identification of retail goods at point of sale inside of the US. It usually carries a GTIN-12.

Also known as: UPC, UCC-12, Universal Product Code.

Variants:

- UPC-A+2 is an extension of UPC-A that includes a two-digit add-on.
- UPC-A+5 is an extension of UPC-A that includes a five-digit add-on.
- UPC-E is a barcode symbology derived from UPC-A that is designed for small packaging.
- UPC-A Composite is a variant of UPC-A that should be used when a CC-A or CC-B GS1 composite 2D component is required.
- A UPC-A symbol can be converted to an EAN-13 symbol by prefixing the GTIN-12 with 0 to make the equivalent GTIN-13.

Standards: ISO/IEC 15420, BS EN 797, GS1 General Specifications.

Data and Options

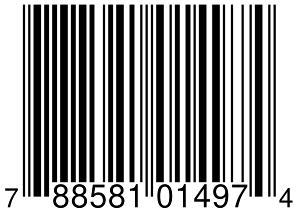
- The data field for a UPC-A may contain eleven or twelve digits, optionally followed by a space then two or five digits if an EAN-2 or EAN-5 add-on is required.
- Alternatively, the data field may contain seven or eight digits of a UPC-E to produce the equivalent UPC-A symbol.
- If eleven digits of primary data are supplied then the check digit is calculated automatically. Otherwise the provided check digit will be verified.
- The **includetext** option should normally be supplied.

Examples

Identical symbols, input provided with and without a check digit:

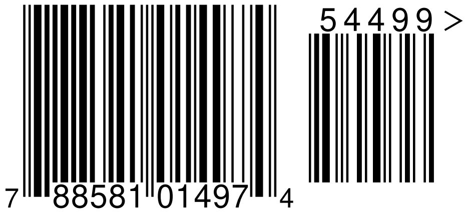
```
Data:    788581014974
Options: includetext
Encoder: upca
```

```
Data:    78858101497
Options: includetext
Encoder: upca
```



A symbol that includes a five-digit add-on:

```
Data:    788581014974 54499
Options: includetext guardwhitespace
Encoder: upca
```



5.1.4 UPC-E

UPC-E is a compacted form of the UPC-A barcode symbology that usually carries a GTIN-12 with a number system of *0* or *1* that has been zero compressed.

Variants:

- UPC-E0 is a UPC-E with a number system of *0*.
- UPC-E1 is a UPC-E with a number system of *1*.
- UPC-E+2 is an extension of UPC-E that includes a two-digit add-on.
- UPC-E+5 is an extension of UPC-E that includes a five-digit add-on.
- UPC-A is the full size form of UPC-E.
- UPC-E Composite is a variant of UPC-E that should be used when a CC-A or CC-B GS1 Composite 2D component is required.

Standards: ISO/IEC 15420, BS EN 797, GS1 General Specifications.

Data and Options

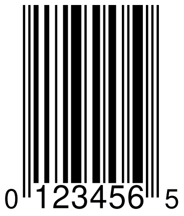
- The data field takes either seven or eight digits, optionally followed by a space then two or five digits if an EAN-2 or EAN-5 add-on is required.
- Alternatively, the data field may contain eleven or twelve digits of a UPC-A to produce the equivalent UPC-E symbol, provided that the input can be zero suppressed.
- If seven digits of primary data are supplied then the check digit is calculated automatically. Otherwise the provided check digit will be verified.
- The **includetext** option should normally be supplied.

Examples

Identical symbols, input provided with and without a check digit:

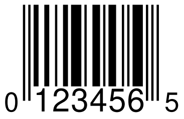
```
Data:    01234565
Options: includetext
Encoder: upce
```

```
Data:    0123456
Options: includetext
Encoder: upce
```



A truncated symbol:

```
Data:    01234565
Options: includetext height=0.5
Encoder: upce
```



5.1.5 ISBN

An **ISBN** barcode is a variant of EAN-13 that is used to identify books.

Also known as: ISBN-13, International Standard Book Number, Bookland EAN-13.

Variants:

- ISBN-10 is a legacy format that was depreciated for public use after 1st January 2007.

Standards: ISO 2108, ISO/IEC 15420, BS EN 797, GS1 General Specifications.

Data and Options

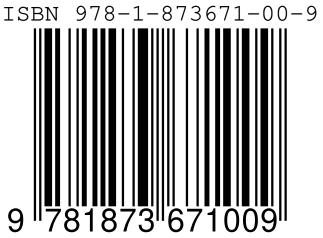
- The data should contain twelve or thirteen digits separated appropriately by dash characters -.
- The data can also be provided in legacy ISBN-10 format as nine or ten digits separated appropriately by dash characters -. This will be automatically upgraded to the ISBN-13 format.
- If the last digit of the primary data is not given then the ISBN check digit is calculated automatically, otherwise it will be verified.
- The primary data can optionally be followed by a space then two or five digits if an EAN-2 or EAN-5 add-on is required.
- The **includetext** option should normally be supplied.
- The **guardwhitespace** option enables the display of whitespace guard marks.
- The following options are also relevant to this barcode symbology:
  - **isbntextfont**: PostScript font name for text above symbol
  - **isbntextsize**: Font size for the text above symbol, in points
  - **isbntextxoffset**: Horizontal position of ISBN text, in points
  - **isbntextyoffset**: Vertical position of ISBN text, in points
- *Deprecated.* The **legacy** option prevents ISBN-10 input from being upgraded to ISBN-13 and will result in a symbol that is obsolete and should not be used at point of sale.

Example ISBN

Identical symbols, input provided with and without an ISBN check digit:

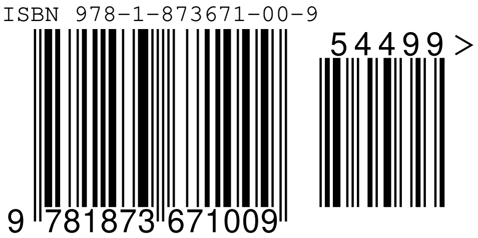
```
Data:    978-1-873671-00-9
Options: includetext
Encoder: isbn
```

```
Data:    978-1-873671-00
Options: includetext
Encoder: isbn
```



An ISBN with a five-digit add-on:

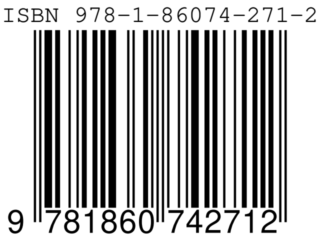
```
Data:    978-1-873671-00-9 54499
Options: includetext guardwhitespace
Encoder: isbn
```



The following ISBN-10 input will be automatically upgraded to a valid ISBN-13 symbol:

```
Data:    1-86074-271-2
Options: includetext
Encoder: isbn
```

```
Data:    1-86074-271
Options: includetext
Encoder: isbn
```



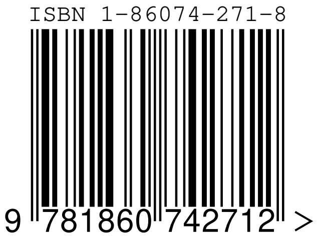
Example ISBN-10

Note that ISBN-10 is legacy format not for use at P.O.S.

The following will generate an obsolete ISBN-10 symbol:

```
Data:    1-86074-271-8
Options: legacy includetext guardwhitespace
Encoder: isbn
```

```
Data:    1-86074-271
Options: legacy includetext guardwhitespace
Encoder: isbn
```



5.1.6 ISMN

An **ISMN** barcode is a variant of EAN-13 with a prefix *979* that is used to identify printed music.

Also known as: International Standard Music Number, ISMN-13.

Variants:

- ISMN-10 is a legacy format that was depreciated for public use.

Standards: ISO 10957, ISO/IEC 15420, BS EN 797, GS1 General Specifications.

Data and Options

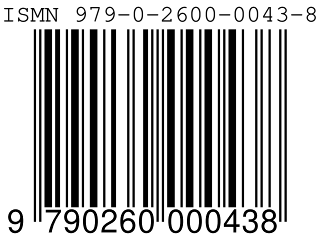
- The data should contain twelve or thirteen digits separated appropriately by dash characters -.
- The data can also be provided in legacy ISMN-10 format start *M-* then eight or nine digits separated appropriately by dash characters -. This will be automatically upgraded to the ISMN-13 format.
- If the last digit of the primary data is not given then the ISMN check digit is calculated automatically, otherwise it will be verified.
- The primary data can optionally be followed by a space then two or five digits if an EAN-2 or EAN-5 add-on is required.
- The **includetext** option should normally be supplied.
- The **guardwhitespace** option enables the display of whitespace guard marks.
- The following options are also relevant to this barcode symbology:
  - **ismntextfont**: PostScript font name for text above symbol
  - **ismntextsize**: Font size for the text above symbol, in points
  - **ismntextxoffset**: Horizontal position of ISMN text, in points
  - **ismntextyoffset**: Vertical position of ISMN text, in points
- *Deprecated.* The **legacy** option prevents ISMN-10 input from being upgraded to ISMN-13 and will result in a symbol that is obsolete and should not be used at point of sale.

Example ISMN

Identical symbols, input provided with and without an ISMN check digit:

```
Data:    979-0-2600-0043-8
Options: includetext
Encoder: ismn
```

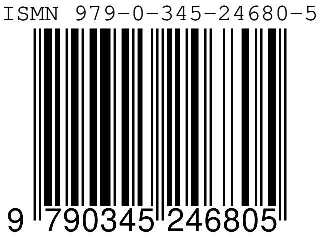
```
Data:    979-0-2600-0043
Options: includetext
Encoder: ismn
```



The following ISMN-10 input will be automatically upgraded to a valid ISMN-13 symbol:

```
Data:    M-345-24680-5
Options: includetext
Encoder: ismn
```

```
Data:    M-345-24680
Options: includetext
Encoder: ismn
```



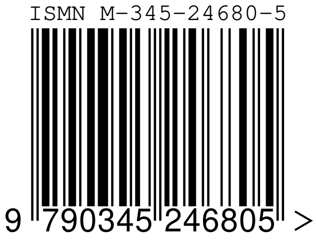
Example ISMN-10

Note that ISMN-10 is a legacy format not for use at P.O.S.

The following will generate an obsolete ISMN-10 symbol:

```
Data:    M-345-24680-5
Options: legacy includetext guardwhitespace
Encoder: ismn
```

```
Data:    M-345-24680
Options: legacy includetext guardwhitespace
Encoder: ismn
```



5.1.7 ISSN

An **ISSN** barcode is an EAN-13 with prefix *977* used to identify periodicals.

Also known as: International Standard Serial Number.

Standards: ISO 3297, ISO/IEC 15420, BS EN 797, GS1 General Specifications.

Data and Options

- The data should contain the seven or eight digits ISSN separated by a dash characters -, followed by a two-digit sequence variant, optionally followed by two or five digits if a two-digit add-on or five-digit add-on is required.
- If the last digit of the ISSN data is not given then the ISSN check digit is calculated automatically, otherwise it will be verified.
- The **includetext** option should normally be supplied.
- The **guardwhitespace** option enables the display of whitespace guard marks.
- The following options are also relevant to this barcode symbology:
  - **issntextfont**: PostScript font name for text above symbol
  - **issntextsize**: Font size for the text above symbol, in points
  - **issntextxoffset**: Horizontal position of ISSN text, in points
  - **issntextyoffset**: Vertical position of ISSN text, in points

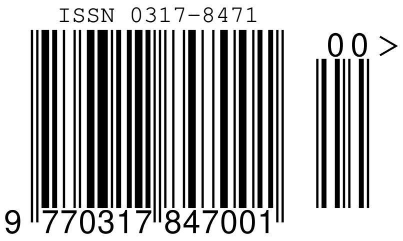
A sequence variant is a two-digit number that usually starts at zero and is incremented whenever the recommended retail price is amended, where applicable.

Example

Identical symbols, input provided with and without an ISSN check digit and having sequence number *00*:

```
Data:    0317-8471 00
Options: includetext guardwhitespace
Encoder: issn
```

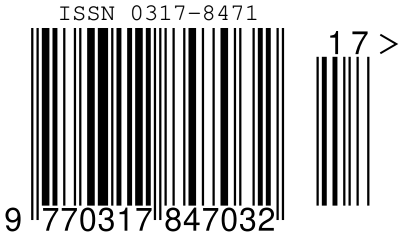
```
Data:    0317-847 00
Options: includetext guardwhitespace
Encoder: issn
```



An ISSN with sequence number *03* and a two-digit add-on representing issue number *17*:

```
Data:    0317-8471 03 17
Options: includetext guardwhitespace
Encoder: issn
```

```
Data:    0317-847 03 17
Options: includetext guardwhitespace
Encoder: issn
```



5.2 Two-Dimensional

5.2.1 Aztec Code

Aztec Code is a 2D matrix-style barcode symbology. It can encode full 256-character extended-ASCII.

Variants:

- Aztec Runes are a set of small barcode symbols that are used for special applications.

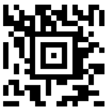
Standards: ISO/IEC 24778, ANSI/AIM BC13 - ISS Aztec Code.

Data and Options

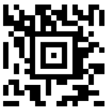
- The data field can contain any extended ASCII data. The default interpretation of data by readers is in accordance with ISO/IEC 8859-1. When supported by the receiver characters from other code pages can be encoded using Extended Channel Interpretation (ECI).
- When the **parse** option is specified, any instances of `^NNN` in the data field are replaced with their equivalent ASCII value, useful for specifying unprintable characters.
- When the **parsefnc** option is specified, non-data function characters can be specified by escape sequences:
  - `^FNC1`: FNC1
  - `^ECI000000` to `^ECI999999`: ECI indicators
- The **eclevel** option is used to specify the percentage of error correction to be applied when expanding the data, by default `23`.
- The **ecaddchars** option is used to specify how many additional error correction characters to apply the data once expanded by the eclevel percentage, by default `3`.
- The **layers** option is used to specify a particular number of layers in which to encode the data, between `1` and `32`. By default the encoder will create a symbol with be minimal number of layers to encode the given data.
- The **format** option is used to select between `format=full` and `format=compact` symbol types. By default the encoder will choose the most appropriate format to create a symbol of minimal size.
- The **readerinit** option denotes that the symbol is used for programming the barcode reader.
- The **raw** option denotes that the data field is providing the input as a pre-encoded bitstream suitable for direct low-level encoding.
- *Deprecated: Use Aztec Runes instead.* The **format** option can also be used to create Aztec Code ”runes”, using `format=rune`. In this case the rune symbol number should be given in the data field.

Examples

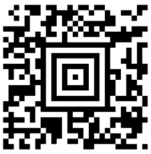
```
Data:    This is Aztec Code
Options:
Encoder: azteccode
```



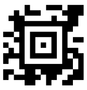
```
Data:    This is ^065ztec Code
Options: parse eclevel=50 ecaddchars=0
Encoder: azteccode
```



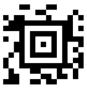
```
Data:    ABC123
Options: layers=3 format=full
Encoder: azteccode
```



```
Data:    ABC123
Options: format=compact
Encoder: azteccode
```



```
Data:    00100111001000000101001101111000010100111100101000000110
Options: raw
Encoder: azteccode
```



5.2.2 Aztec Runes

Aztec Runes are a set of small barcode symbols that are used for special applications.

Variants:

Aztec Code is a 2D matrix-style barcode symbology that can encode full 256 character extended-ASCII.

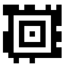
Standards: ISO/IEC 24778, ANSI/AIM BC13 - ISS Aztec Code.

Data and Options

- The data field contains the rune number `0` to 255.

Examples

```
Data:    25
Options:
Encoder: aztecrune
```



5.2.3 Data Matrix

The **Data Matrix** symbology is 2D matrix-style barcode that can encode full 256 character extended-ASCII.

Also known as: Data Matrix ECC 200, DataMatrix.

Variants:

- Data Matrix Rectangular is a variant of Data Matrix that uses rectangular symbols.
- Data Matrix Rectangular Extension is a variant of Data Matrix Rectangular that provides a greater range of symbol dimensions.
- GS1 DataMatrix is a variant of Data Matrix that should be used when encoding data that is in GS1 Application Identifier standard format.
- GS1 Digital Link Data Matrix is a variant of Data Matrix that should be used when encoding a GS1 Digital Link URI.
- HIBC Data Matrix is a variant of Data Matrix that should be used when encoding HIBC formatted data.
- Royal Mail Mailmark is a variant of Data Matrix that is used by the Royal Mail postal service on letters and other small mailpieces.

Standards: ISO/IEC 16022, ANSI/AIM BC11 - ISS Data Matrix.

Data and Options

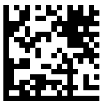
- The data field can contain any extended ASCII data. The default interpretation of data by readers is in accordance with ISO/IEC 8859-1. When supported by the receiver characters from other code pages can be encoded using Extended Channel Interpretation (ECI).
- When the **parse** option is specified, any instances of `^NNN` in the data field are replaced with their equivalent ASCII value. This is useful for specifying unprintable characters.
- When the **parsefnc** option is specified, non-data function characters can be specified by escape sequences:
  - `^FNC1`: FNC1. *Recommendation: Use GS1 DataMatrix for encoding GS1 AI syntax data.*
  - `^PROG`: PROG - Reader programming
  - `^ECI000000` to `^ECI999999`: ECI indicators
- Whenever the data field contains suitable input, the encoder will compress ISO/IEC 15434 structured data (internally using the 05 Macro and 06 Macro codewords.)

- When the **dotty** option is specified the modules are rendered as dots rather than squares. The dot radius can be adjusted using the **inkspread** option.
- The **columns** and **rows** options are used to specify the size of the symbol.
- The **version** option can also be used to specify the symbol size, as `version=RxC`. Valid options are *10x10*, *12x12*, *14x14*, *16x16*, *18x18*, *20x20*, *22x22*, *24x24*, *26x26*, *32x32*, *36x36*, *40x40*, *44x44*, *48x48*, *52x52*, *64x64*, *72x72*, *80x80*, *88x88*, *96x96*, *104x104*, *120x120*, *132x132*, *144x144*
- If **columns**, **rows** and **version** are unspecified the encoder will default to creating a symbol of the specified **format** that is the minimum size to represent the given data.
- The **raw** option denotes that the data field is providing the input as pre-encoded codewords in `^NNN` format, suitable for direct low-level encoding.
- *Deprecated*: The **format** option is used to specify the shape of the symbol, either:
  - `square` (default)
  - `rectangle`: Use Data Matrix Rectangular for rectangular symbols.
- *Deprecated: Use Data Matrix Rectangular Extension.* The **dmre** option enables Data Matrix Rectangular Extension symbols based on the ISO/IEC standard, which increases the number of rectangular symbol sizes available.
- *Deprecated: Use Data Matrix Rectangular Extension with dimdmre option.* The **dindmre** option enables Data Matrix Rectangular Extension symbols based on the obsolete DIN standard.
- *Deprecated: For internal use.* The **mailmark** option signifies the requirement to use Mailmark-specific encoding.

Examples

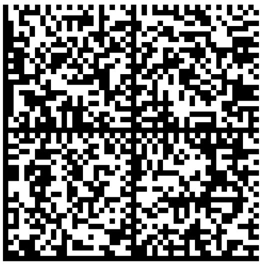
Identical symbols, automatically sized, the latter showing use of the parse option:

```
Data:    This is Data Matrix
Options:
Encoder: datamatrix

Data:    This is ^068ata Matrix
Options: parse
Encoder: datamatrix
```



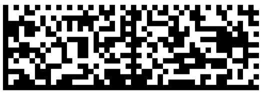
Identical symbols with a fixed size:

```
Data:    Fixed size
Options: version=48x48
Encoder: datamatrix

Data:    Fixed size
Options: rows=48 columns=48
Encoder: datamatrix
```



A rectangular symbol with a fixed size:

```
Data:    Rectangular
Options: format=rectangle version=16x48
Encoder: datamatrix
```



An advanced use containing ”hidden data” in the padding codewords as used by some non-standard, ”high-security” applications. The technique works by filling the symbol using raw codewords formed from the standard data immediately followed by the non-standard padding data beginning with `^129`:

```
Data:    ^066^067^068^142^052^129^161^056^206^101^251^147
Options: version=16x16 raw
Encoder: datamatrix
```

5.2.4 Data Matrix Rectangular

The **Data Matrix Rectangular** symbology is a rectangular variant of Data Matrix.

Variants:

- Data Matrix is the standard square variant of the symbology.
- Data Matrix Rectangular Extension is a variant of Data Matrix Rectangular that provides a greater range of symbol dimensions.

Standards: ISO/IEC 16022, ANSI/AIM BC11 - ISS Data Matrix.

Data and Options

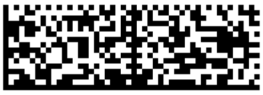
- The data field can contain any extended ASCII data. The default interpretation of data by readers is in accordance with ISO/IEC 8859-1. When supported by the receiver characters from other code pages can be encoded using Extended Channel Interpretation (ECI).
- When the **parse** option is specified, any instances of `^NNN` in the data field are replaced with their equivalent ASCII value. This is useful for specifying unprintable characters.
- When the **parsefnc** option is specified, non-data function characters can be specified by escape sequences:
  - `^FNC1`: FNC1. *Recommendation: Use GS1 DataMatrix for encoding GS1 AI syntax data.*
  - `^PROG`: PROG - Reader programming
  - `^ECI000000` to `^ECI999999`: ECI indicators

- Whenever the data field contains suitable input, the encoder will compress ISO/IEC 15434 structured data (internally using the 05 Macro and 06 Macro codewords.)
- When the **dotty** option is specified the modules are rendered as dots rather than squares. The dot radius can be adjusted using the **inkspread** option.
- *Deprecated: Use Data Matrix Rectangular Extension.* The **dmre** option enables Data Matrix Rectangular Extension symbols based on the ISO/IEC standard, which increases the number of rectangular symbol sizes available.
- *Deprecated: Standard is obsolete. Use Data Matrix Rectangular Extension with the dindmre option.* The **dindmre** option enables Data Matrix Rectangular Extension symbols based on the obsolete DIN standard.
- The **columns** and **rows** options are used to specify the size of the symbol.
- The **version** option can also be used to specify the symbol size, as `version=RxC`. Valid options are *8x18*, *8x32*, *12x26*, *12x36*, *16x36*, *16x48*.
- If **columns**, **rows** and **version** are unspecified the encoder will default to creating a symbol that is the minimum size to represent the given data.
- The **raw** option denotes that the data field is providing the input as pre-encoded codewords in `^NNN` format, suitable for direct low-level encoding.

Examples

A rectangular symbol with a fixed size:

```
Data:    Rectangular
Options: version=16x48
Encoder: datamatrixrectangular
```



5.2.5 Data Matrix Rectangular Extension

The **Data Matrix Rectangular Extension** symbology is an enhancement to Data Matrix Rectangular that provides a greater range of symbol dimensions.

Also known as: DMRE.

Variants:

- Data Matrix is the standard square variant of the symbology.
- Data Matrix Rectangular is the original rectangular variant of Data Matrix that provides a limited range of symbol dimensions.

Standards: ISO/IEC 21471.

Data and Options

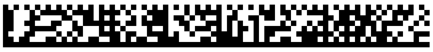
- The data field can contain any extended ASCII data. The default interpretation of data by readers is in accordance with ISO/IEC 8859-1. When supported by the receiver characters from other code pages can be encoded using Extended Channel Interpretation (ECI).

- When the **parse** option is specified, any instances of `^NNN` in the data field are replaced with their equivalent ASCII value. This is useful for specifying unprintable characters.
- When the **parsefnc** option is specified, non-data function characters can be specified by escape sequences:
  - `^FNC1`: FNC1
  - `^PROG`: PROG - Reader programming
  - `^ECI000000` to `^ECI999999`: ECI indicators
- Whenever the data field contains suitable input, the encoder will compress ISO/IEC 15434 structured data (internally using the 05 Macro and 06 Macro codewords.)
- When the **dotty** option is specified the modules are rendered as dots rather than squares. The dot radius can be adjusted using the **inkspread** option.
- The **columns** and **rows** options are used to specify the size of the symbol.
- The **version** option can also be used to specify the symbol size, as `version=RxC`. Valid options are *8x18*, *8x32*, *8x48*, *8x64*, *8x80*, *8x96*, *8x120*, *8x144*, *12x26*, *12x36*, *12x64*, *12x88*, *16x36*, *16x48*, *16x64*, *20x36*, *20x44*, *20x64*, *22x48*, *24x48*, *24x64*, *26x40*, *26x48*, *26x64*.
- If **columns**, **rows** and **version** are unspecified the encoder will default to creating a symbol that is the minimum size to represent the given data.
- The **raw** option denotes that the data field is providing the input as pre-encoded codewords in `^NNN` format, suitable for direct low-level encoding.
- *Deprecated: Standard is obsolete.* The **dindmre** option select Data Matrix Rectangular Extension symbols whose dimensions are based on the obsolete DIN standard, rather than the current ISO standard.
  - With `dindmre` the valid version **options** are *8x18*, *8x32*, *8x48*, *8x64*, *12x26*, *12x36*, *12x64*, *16x36*, *16x48*, *16x64*, *24x32*, *24x36*, *24x48*, *24x64*, *26x32*, *26x40*, *26x48*, *26x64*.

Examples

A DMRE symbol with a fixed size:

```
Data:    1234
Options: version=8x80
Encoder: datamatrixrectangularextension
```



5.2.6 Han Xin Code

The **Han Xin Code** symbology is a 2D matrix-style barcode symbology that can encode full 256 character extended-ASCII.

Also known as: Chinese Sensible.

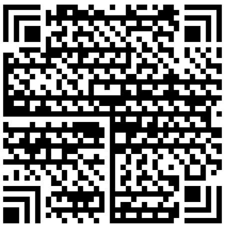
Standards: GB/T 21049-2007.

Data and Options

- The data field can contain any extended ASCII data. The default interpretation of data by readers is in accordance with ISO/IEC 8859-1.
- When the **parse** option is specified, any instances of `^NNN` in the data field are replaced with their equivalent ASCII value, useful for specifying unprintable characters.
- The **eclevel** option is used to specify the error correction level:
  - `eclevel=L1` - Lowest
  - `eclevel=L2`
  - `eclevel=L3`
  - `eclevel=L4` - Highest
- The **version** option is used to specify the size of the symbol, 1 to 84.
- If unspecified the encoder will select the version of the symbol that is the minimum size to represent the given data at the selected error correction level.

Examples

```
Data:    Han Xin Code
Options: version=10 eclevel=L4
Encoder: hanxin
```



5.2.7 MicroPDF417

The **MicroPDF417** barcode symbology is 2D stacked-linear barcode based on PDF417 that can encode full 256 character extended-ASCII.

Variants:

- PDF417 is a larger variant of the MicroPDF417 barcode.
- HIBC MicroPDF417 is a variant of MicroPDF417 that should be used when encoding HIBC formatted data.

Standards: ISO/IEC 24728, AIM ISS - MicroPDF417.

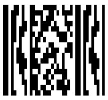
Data and Options

- The data field can contain any extended ASCII data. The default interpretation of data by readers is in accordance with ISO/IEC 8859-1. When supported by the receiver characters from other code pages can be encoded using Extended Channel Interpretation (ECI).
- When the **parse** option is specified, any instances of `^NNN` in the data field are replaced with their equivalent ASCII value, useful for specifying unprintable characters.

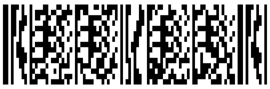
- When the **parsefnc** option is specified, non-data function characters can be specified by escape sequences:
  - `^ECI000000` to `^ECI811799`: ECI indicators
- The **columns** and **rows** options are used to specify the size of the symbol. Valid values are:
  - *1x11*, *1x14*, *1x17*, *1x20*, *1x24*, *1x28*, *2x8*, *2x11*, *2x14*, *2x17*, *2x20*, *2x23*, *2x26*, *3x6*, *3x8*, *3x10*, *3x12*, *3x15*, *3x20*, *3x26*, *3x32*, *3x38*, *3x44*, *4x4*, *4x6*, *4x8*, *4x10*, *4x12*, *4x15*, *4x20*, *4x26*, *4x32*, *4x38*, *4x44*
- If the **columns** and **rows** are unspecified the encoder will default to creating a symbol that is the minimum size to represent the given data.
- The **rowmult** option is used to specify how tall each bar is, with respect to the minimum module width. The default is 3.
- The **raw** option denotes that the data field is providing the input as a pre-encoded codewords in `^NNN` format, suitable for direct low-level encoding.
- *Deprecated: Internal use.* The **cca** option identifies this symbol as a *CC-A* 2D component of a GS1 Composite symbol.
  - Special size rules apply when the **cca** option is given, in which case the **columns** and **rows** options that are used to specify the size of the symbol must be one of:
    * *2x5*, *2x6*, *2x7*, *2x8*, *2x9*, *2x10*, *2x12*, *3x4*, *3x5*, *3x6*, *3x7*, *3x8*, *4x3*, *4x4*, *4x5*, *4x6*, *4x7*
- *Deprecated: Internal use.* The **ccb** option identifies this symbol as a *CC-B* 2D component of a GS1 Composite symbol.

Examples

```
Data:    MicroPDF417
Options:
Encoder: micropdf417
```



```
Data:    MicroP^068F417
Options: parse rows=15 columns=4
Encoder: micropdf417
```



5.2.8 PDF417

The **PDF417** barcode symbology is 2D stacked-linear barcode that can encode full 256 character extended-ASCII.

Variants:

- Compact PDF417 is a shortened form of the PDF417 barcode that is used in applications where the space for the symbol is restricted.
- MicroPDF417 is a smaller variant of the PDF417 barcode.
- HIBC PDF417 is a variant of PDF417 that should be used when encoding HIBC formatted data.

Standards: ISO/IEC 15438, DD ENV 12925, AIM USS - PDF417.

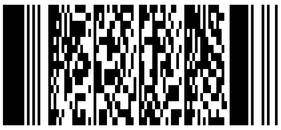
Data and Options

- The data field can contain any extended ASCII data. The default interpretation of data by readers is in accordance with ISO/IEC 8859-1. When supported by the receiver characters from other code pages can be encoded using Extended Channel Interpretation (ECI).
- When the **parse** option is specified, any instances of `^NNN` in the data field are replaced with their equivalent ASCII value, useful for specifying unprintable characters.
- When the **parsefnc** option is specified, non-data function characters can be specified by escape sequences:
  - `^ECI000000` to `^ECI811799`: ECI indicators.
- The **eclevel** option is used to specify the error correction level, from 1 to 5. The default is to choose a standard level of error correction that is determined by the encoded data length.
- The **columns** option specifies the number of columns (or groups of bars) in the output symbol, from 1 to 30.
- The **rows** option specifies the minimum number of rows in the symbol, from 3 to 90.
- If **rows** is unspecified the encoder will select a number that creates a symbol that is the minimum size to represent the given data.
- The **rowmult** option is used to specify how tall each bar is, with respect to the minimum module width. The default is 3.
- The **raw** option denotes that the data field is providing the input as a pre-encoded codewords in `^NNN` format, suitable for direct low-level encoding.
- *Deprecated: Use Compact PDF417 instead. The* ***compact*** *option is used to create a compact/truncated PDF417 symbol that has fewer bars per row that a standard symbol and hence is more narrow.*
- *Deprecated: Internal use.* The **ccc** option identifies this symbol as a *CC-C* 2D component of a GS1 Composite symbol.

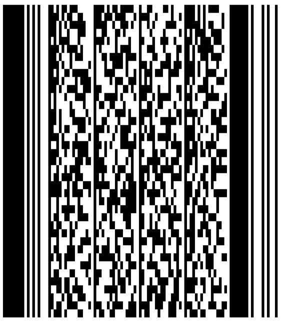
Examples

```
Data:    PDF417
Options:
Encoder: pdf417
```

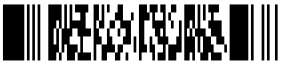
```
Data:    P^068F417
Options: parse columns=2 rows=15
Encoder: pdf417
```



```
Data:    Strong error correction
Options: columns=2 eclevel=5
Encoder: pdf417
```



```
Data:    ^453^178^121^239
Options: raw columns=2
Encoder: pdf417
```



5.2.9 Compact PDF417

Compact PDF417 is a shortened form of the PDF417 barcode that is used in applications where the space for the symbol is restricted.

Also known as: Truncated PDF417

Variants:

- PDF417 is the larger, more popular variant.
- MicroPDF417 is a smaller variant of the PDF417 barcode.
- HIBC PDF417 is a variant of PDF417 that should be used when encoding HIBC formatted data.

Standards: ISO/IEC 15438, DD ENV 12925, AIM USS - PDF417.

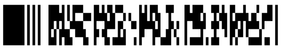
Data and Options

- The data field can contain any extended ASCII data. The default interpretation of data by readers is in accordance with ISO/IEC 8859-1. When supported by the receiver characters from other code pages can be encoded using Extended Channel Interpretation (ECI).
- When the **parse** option is specified, any instances of `^NNN` in the data field are replaced with their equivalent ASCII value, useful for specifying unprintable characters.

- When the **parsefnc** option is specified, non-data function characters can be specified by escape sequences:
  - `^ECI000000` to `^ECI811799`: ECI indicators
- The **eclevel** option is used to specify the error correction level, from 1 to 5. The default is to choose a standard level of error correction that is determined by the encoded data length.
- The **columns** option specifies the number of columns (or groups of bars) in the output symbol, from 1 to 30.
- The **rows** option specifies the minimum number of rows in the symbol, from 3 to 90.
- If **rows** is unspecified the encoder will select a number that creates a symbol that is the minimum size to represent the given data.
- The **rowmult** option is used to specify how tall each bar is, with respect to the minimum module width. The default is 3.
- The **raw** option denotes that the data field is providing the input as a pre-encoded codewords in `^NNN` format, suitable for direct low-level encoding.

Examples

```
Data:    A truncated PDF417
Options: columns=4
Encoder: pdf417compact
```



5.2.10 QR Code

The **QR Code** symbology is a 2D matrix-style barcode symbology that can encode full 256 character extended-ASCII.

Also known as: Quick Response Code.

Variants:

- Micro QR Code is a small QR Code that is used in applications that require a small symbol space.
- GS1 QR Code is a variant of Data Matrix that should be used when encoding data that is in GS1 Application Identifier standard format.
- GS1 Digital Link QR Code is a variant of Data Matrix that should be used when encoding a GS1 Digital Link URI.
- HIBC QR Code is a variant of QR Code that should be used when encoding HIBC formatted data.
- Swiss QR Code is a variant of the QR Code for use with the QR-bill application supporting Swiss payments.

Standards: ISO/IEC 18004, JIS X 0510, ITS - QR Code, AIM ISS - QR Code.

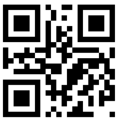
Data and Options

- The data field can contain any extended ASCII data. The default interpretation of data by readers is in accordance with ISO/IEC 8859-1. When supported by the receiver characters from other code pages can be encoded using Extended Channel Interpretation (ECI).
- When the **parse** option is specified, any instances of `^NNN` in the data field are replaced with their equivalent ASCII value, useful for specifying unprintable characters.
- When the **parsefnc** option is specified, non-data function characters can be specified by escape sequences:
  - `^FNC1`: FNC1. *Recommendation: Use GS1 QR Code for encoding GS1 AI syntax data.*
  - `^ECI000000` to `^ECI999999`: ECI indicators
- The **eclevel** option is used to specify the error correction level:
  - `eclevel=L` - Low
  - `eclevel=M` - Medium (default)
  - `eclevel=Q` - Quality
  - `eclevel=H` - High
- The **version** option is used to specify the size of the symbol, 1 to 40.
- If unspecified the encoder will select the version of the symbol that is the minimum size to represent the given data at the selected error correction level.
- *Deprecated*: The **format** option is used to specify the symbol type, either:
  - `full` (default)
  - `micro`: Use Micro QR Code for Micro QR Code symbols.
  - `rmqr`: The standard is still in draft.

Examples

```
Data:    QR Code
Options:
Encoder: qrcode
```

```
Data:    QR ^067ode
Options: parse
Encoder: qrcode
```



```
Data:    QR CODE 1234
Options: version=10 eclevel=Q
Encoder: qrcode
```

5.2.11 Micro QR Code

The **Micro QR Code** symbology is a smaller variant of QR Code that is used in applications that require a small symbol space.

Also known as: Micro Quick Response Code.

Variants:

- QR Code is the more popular, larger variant.

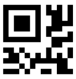
Standards: ISO/IEC 18004, JIS X 0510, ITS - QR Code, AIM ISS - QR Code.

Data and Options

- The data field can contain any extended ASCII data. The default interpretation of data by readers is in accordance with ISO/IEC 8859-1.
- An appropriate size will be selected to work around the following restrictions:
  - An M1 symbol is only compatible with numeric data.
  - An M2 symbol is only compatible with alphanumeric data.
- When the **parse** option is specified, any instances of `^NNN` in the data field are replaced with their equivalent ASCII value, useful for specifying unprintable characters.
- The **version** option is used to specify the size of the symbol, either `version=M1`, `version=M2`, `version=M3` or `version=M4`.
- The **eclevel** option is used to specify the error correction level:
  - `eclevel=L` - Low (default)
  - `eclevel=M` - Medium; Not compatible with M1 symbols
  - `eclevel=Q` - Quality; Only compatible with M4 symbols
- If unspecified the encoder will select the version of the symbol that is the minimum size to represent the given data at the selected error correction level.

Examples

```
Data:    01234567
Options:
Encoder: microqrcode
```



5.2.12 Swiss QR Code

Swiss QR Code is a variant of the QR Code barcode symbology for use with the QR-bill application supporting Swiss payments.

Standards: Swiss Implementation Guidelines QR-bill, ISO/IEC 18004, ITS - QR Code

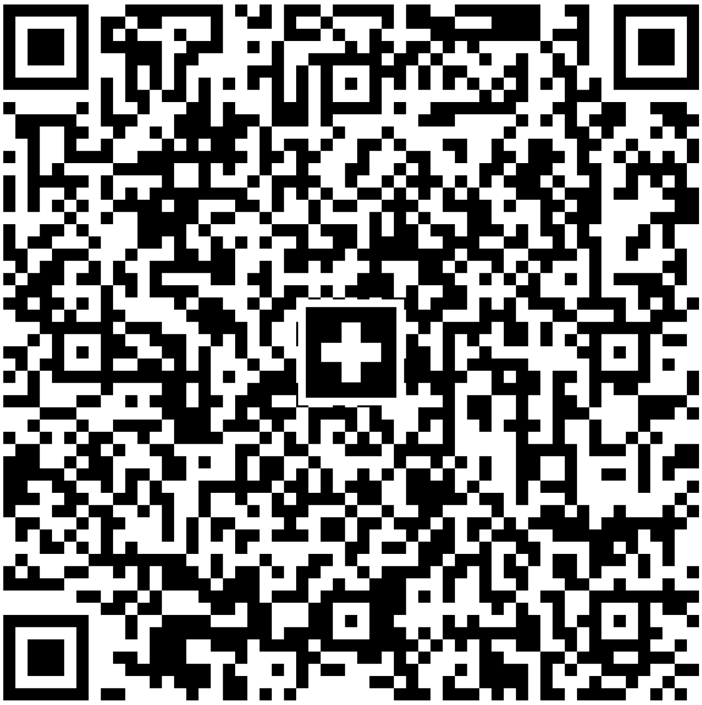
Data and Options

- The data field input is provided in the format described in the Swiss Implementation Guidelines QR-bill document.
- The **version** option is used to specify the size of the symbol, 5 to 25. This is not typically specified.
- If the **version** is unspecified the encoder will default to creating a symbol that is the minimum size to represent the given data at the selected error correction level.

Note: Swiss QR Code specifies that the image shall be 46mm x 46mm (excluding quiet zone), irrespective of QR Code version, and is overlayed with a fixed 7mm x 7mm Swiss Cross pattern. The Swiss Cross pitch bears no relation to the module width of the QR symbol, so we must assume that the application provides sufficient resolution throughout the print process that defects produced by issues such as pixel grazing are insignificant. Therefore, unlike most other encoders, we do not pick a fixed module width to assist with grid fitting but rather ensure that the image is scaled to a fixed size, per the specification.

Example

```
Data:
         SPC
         0200
         1
         CH5800791123000889012
         S
         Robert Schneider AG
         Rue du Lac
         1268
         2501
         Biel
         CH







         199.95
         CHF
         K
         Pia-Maria Rutschmann-Schnyder
         Grosse Marktgasse 28
         9400 Rorschach
         CH
         SCOR
         RF18539007547034

         EPD
Options:
Encoder: swissqrcode
```



5.3 One-Dimensional

5.3.1 Code 128

Code 128 is an arbitrarily long, high-density barcode symbology that can be used to encode full 256 character extended-ASCII.

Also known as: USD-6, USS-128, Code 128A, Code 128B, Code 128C.

Variants:

- GS1-128 is a variant of Code 128 that should be used when encoding data that is in GS1 Application Identifier standard format.
- HIBC Code 128 is a variant of Code 128 that should be used when encoding HIBC formatted data.

Standards: ISO/IEC 15417, ANSI/AIM BC4 - ISS Code 128, BS EN 799.

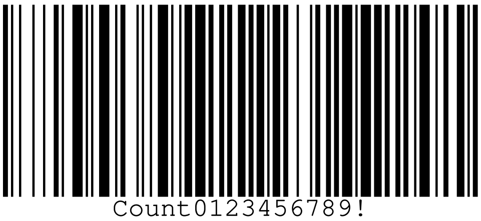
Data and Options

- The data field input can consist of any extended ASCII data. The default interpretation of data by readers is in accordance with ISO/IEC 8859-1.
- The mandatory check digit is calculated automatically.
- When the **parse** option is specified, any instances of `^NNN` in the data field are replaced with their equivalent ASCII or extended-ASCII value, useful for specifying unprintable characters, e.g. `^029` for *GS*, `^209` for *Ñ*, etc.

- *FNC4* function characters will be inserted automatically to allow the encoding of extended ASCII characters.
- When the **parsefnc** option is specified, non-data function characters can be specified by escape sequences:
  - `^FNC1`: FNC1. *Recommendation: Use GS1-128 for encoding GS1 AI syntax data.*
  - `^FNC2`: FNC2
  - `^FNC3`: FNC3
- The **raw** option denotes that the data field is providing the input as pre-encoded codewords in `^NNN` format, suitable for direct low-level encoding.
- *Deprecated: For internal use.* When the **parsefnc** option is specified, the special pseudo characters `^LNKA` and `^LNKC` at the end of the symbol indicate that a GS1-128 symbol includes a *CC-A/B* or *CC-C* GS1 composite 2D component.

Example

```
Data:    Count0123456789!
Options: includetext
Encoder: code128
```



5.3.2 Code 39

The **Code 39** barcode symbology is discrete, variable length and self-checking.

Also known as: Code 3 of 9, LOGMARS, Alpha39, USD-3, USS-39.

Variants:

- Code 39 Extended is a variant of Code 39 that can be used to encode full 128 character ASCII with the use of shift character combinations.
- HIBC Code39 is a variant of Code 39 that should be used when encoding HIBC formatted data.
- AIM USD-2 is a subset of Code 39 containing the characters A-Z, 0-9, *space*, - and ..

Standards: ISO/IEC 16388, ANSI/AIM BC1 - USS Code 39, BS EN 800, MIL STD 1189.

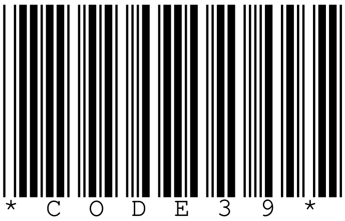
Data and Options

- The data field can hold any of the following:
  - Numbers 0-9
  - Capital letters A-Z
  - Symbols `-.$/+%*` and *space*
- The **includecheck** option calculates the check digit.

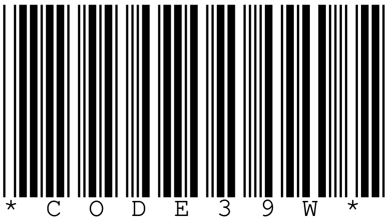
- The **includecheckintext** option makes the calculated checksum appear in the human readable text.
- The **hidestars** option suppresses the asterisks in the human readable text.

Examples

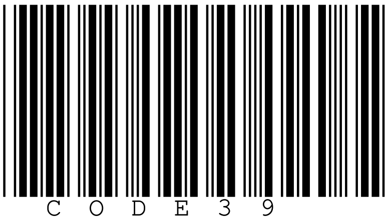
```
Data:    CODE39
Options: includetext
Encoder: code39
```



```
Data:    CODE39
Options: includecheck includetext includecheckintext
Encoder: code39
```



```
Data:    CODE39
Options: hidestars includecheck includetext
Encoder: code39
```



5.3.3 Code 39 Extended

The **Code 39 Extended** barcode symbology is discrete, variable length and self-checking. It is based on Code 39 but can encode full 128 character ASCII by using shift combinations.

Also known as: Code 39 Full ASCII.

Variants:

- Code 39 is a simpler variant of Code 39 Extended.

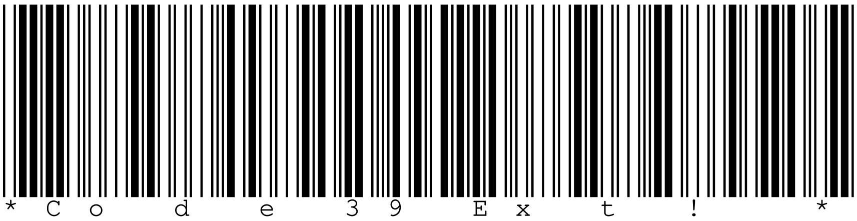
Standards: ISO/IEC 16388, ANSI/AIM BC1 - USS Code 39, BS EN 800.

Data and Options

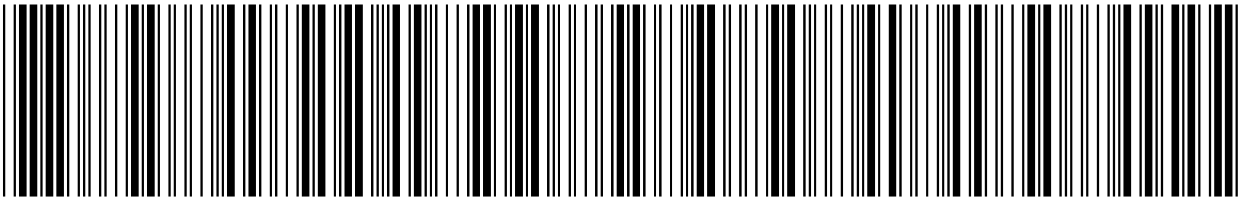
- The data field can consist of any ASCII data.
- When the **parse** option is specified, any instances of `^NNN` in the data field are replaced with their equivalent ASCII value, useful for specifying unprintable characters, e.g. `^029` for *GS*, etc.
- The **includecheck** option calculates the check digit.
- The **includecheckintext** causes the calculated check digit to appear in the human readable text.
- The **hidestars** option suppresses the asterisks in the human readable text.

Examples

```
Data:    Code39 Ext!
Options: includetext includecheck
Encoder: code39ext
```



```
Data:    Code39^029Extended
Options: parse includecheck
Encoder: code39ext
```



5.3.4 Code 93

Code 93 is a continuous, variable length, self-checking barcode symbology.

Also known as: USD-7, USS-93.

Variants:

- Code 93 Extended is a variant of Code 93 that can be used to encode full 128 character ASCII with the use of special shift character combinations.

Standards: ANSI/AIM BC5 - USS Code 93, ITS 93i.

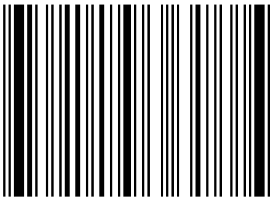
Data and Options

- The data field can hold any of the following:
  - Numbers 0-9
  - Capital letters A-Z
  - Symbols `-.$/+%*` and *space*
- The **includecheck** option calculates the two check digits.

- *Deprecated: For internal use.* The **parsefnc** option allows the special shift characters to be supplied as escape sequences:
  - `^SFT$`: ($)
  - `^SFT%`: (%)
  - `^SFT/`: (/)
  - `^SFT+`: (+)

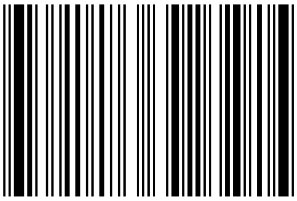
Examples

```
Data:    CODE93
Options: includecheck
Encoder: code93
```



Code 93 including a special shift combination `(/)A` representing *!*:

```
Data:    CODE93^SFT/A
Options: parsefnc includecheck
Encoder: code93
```



5.3.5 Code 93 Extended

The **Code 93 Extended** barcode symbology is continuous, variable length and self-checking. It is based on Code 93 but can encode full 128 character ASCII using four additional shift characters: *($) (%) (/) (+)*

Also known as: Code 93 Full ASCII.

Variants:

- Code 93 is a simpler variant of the Code 93 Extended barcode symbology.

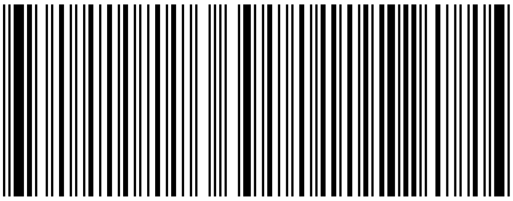
Standards: ANSI/AIM BC5 - USS Code 93, ITS 93i.

Data and Options

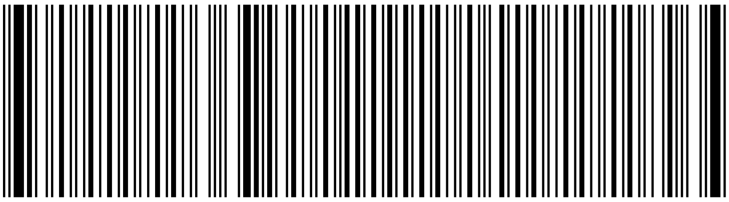
- The data field can consist of any ASCII data.
- When the **parse** option is specified, any instances of `^NNN` in the data field are replaced with their equivalent ASCII value, useful for specifying unprintable characters, e.g. `^029` for *GS*, etc.
- The **includecheck** option calculates the two check digits.

Examples

```
Data:    Code93Ext!
Options: includecheck
Encoder: code93ext
```



```
Data:    Code93^029Extended
Options: parse includecheck
Encoder: code93ext
```



5.3.6 Interleaved 2 of 5

Interleaved 2 of 5 is a high-density numeric barcode symbology.

Also known as: ITF, Code 2 of 5 Interleaved, USD-1, USS-Interleaved 2 of 5.

Variants:

- ITF-14 is a variant of Interleaved 2 of 5 that should be used when encoding a fourteen-digit GTIN.

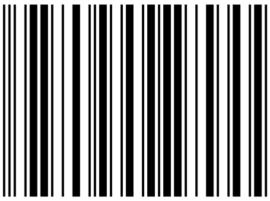
Standards: ISO/IEC 16390, ANSI/AIM BC2 - USS Interleaved 2 of 5, BS EN 801.

Data and Options

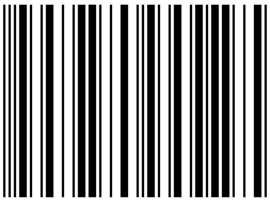
- The data can consist of any number of digits.
- If the length of the symbol including the possible check digit would be odd then the data is prefixed by *0*.
- The **includecheck** option calculates the check digit.
- The **includecheckintext** option makes the calculated checksum appear in the human readable text.

Examples

```
Data:    0123456789
Options:
Encoder: interleaved2of5
```



```
Data:    2401234567
Options: includecheck includetext includecheckintext
Encoder: interleaved2of5
```



5.4 Supply Chain

5.4.1 EAN-14

EAN-14 is an implementation of the GS1-128 barcode symbology with *AI (01)* that is used to encode a lone GTIN-14.

Also known as: UCC-14.

Standards: ISO/IEC 15417, ANSI/AIM BC4-1999 ISS, BS EN 799, GS1 General Specifications.

Data and Options

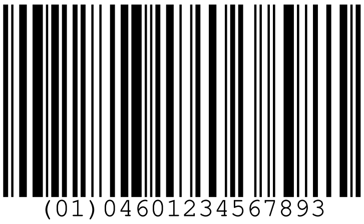
- The data field input must be a solitary *AI (01)* with thirteen or fourteen digits of a GTIN, i.e. `(01)...`.
- Arbitrary spacing may be placed between the digits to format the human readable text without interfering with the encoded data.
- If thirteen digits of primary data are supplied then the check digit is calculated automatically. Otherwise the provided check digit will be verified.

Examples

Identical symbols, input provided with and without a check digit:

```
Data:    (01)04601234567893
Options: includetext
Encoder: ean14
```

```
Data:    (01)0460123456789
Options: includetext
Encoder: ean14
```



5.4.2 ITF-14

ITF-14 is an implementation of the Interleaved 2 of 5 barcode symbology that is typically used to encode a GTIN-14, GTIN-13 or GTIN-12.

Also known as: UPC Shipping Container Symbol, SCS, UPC Case Code.

Standards: ISO/IEC 16390, ANSI/AIM BC2-1995 USS, BS EN 801, GS1 General Specifications.

Data and Options

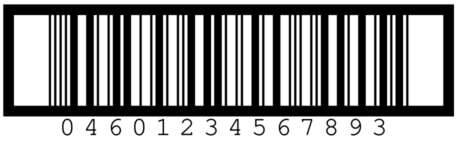
- The data consists of either thirteen or fourteen digits.
- Arbitrary spacing may be placed between the digits to format the human readable text without interfering with the encoded data.
- If thirteen digits are supplied then the check digit is calculated automatically. Otherwise the provided check digit will be verified.

Examples

Identical symbols, input provided with and without a check digit:

```
Data:    04601234567893
Options: includetext
Encoder: itf14
```

```
Data:    0460123456789
Options: includetext
Encoder: itf14
```



5.4.3 SSCC-18

SSCC-18 is an implementation of the GS1-128 barcode symbology with *AI (00)* that is typically used to encode an eighteen-digit shipping container serial number.

Also known as: EAN-18, NVE.

Standards: ISO/IEC 15417, ANSI/AIM BC4-1999 ISS, BS EN 799, GS1 General Specifications.

Data and Options

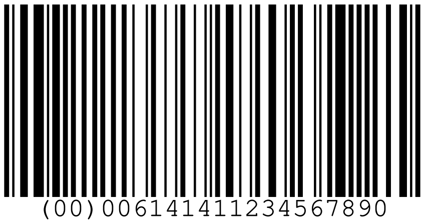
- The data field input must be a solitary *AI (00)* with seventeen or eighteen digits of a Serial Shipping Container Code, i.e. `(00)....`
- Arbitrary spacing may be placed between the digits to format the human readable text without interfering with the encoded data.
- If seventeen digits of primary data are supplied then the check digit is calculated automatically. Otherwise the provided check digit will be verified.

Example

Identical symbols, input provided with and without a check digit:

```
Data:    (00)006141411234567890
Options: includetext
Encoder: sscc18
```

```
Data:    (00)00614141123456789
Options: includetext
Encoder: sscc18
```



5.4.4 GS1 DataMatrix

GS1 DataMatrix is an implementation of the Data Matrix (ECC 200) barcode symbology with GS1 formatted data.

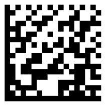
Standards: ISO/IEC 16022, ANSI/AIM BC11 ISS, GS1 General Specifications.

Data and Options

- The data field input is provided in GS1 Application Identifier standard format starting with the mandatory *(01)* Application Identifier.
- Note that it is not necessary to specify *FNC1* characters since the encoder will insert these automatically where necessary.
- *Deprecated.* The **dontlint** option disables GS1 Application Identifier syntax validation allowing images to be generated for input that does not comply with GS1 standards.
- The **format** option is used to specify the shape of the symbol, either `square` (default) or `rectangle`.
- The **columns** and **rows** options are used to specify the size of the symbol.
- The **version** option can also be used to specify the symbol size, as `version=RxC`. Valid options are:
  - With `format=square`: *10x10*, *12x12*, *14x14*, *16x16*, *18x18*, *20x20*, *22x22*, *24x24*, *26x26*, *32x32*, *36x36*, *40x40*, *44x44*, *48x48*, *52x52*, *64x64*, *72x72*, *80x80*, *88x88*, *96x96*, *104x104*, *120x120*, *132x132*, *144x144*
  - With `format=rectangle`: *8x18*, *8x32*, *12x26*, *12x36*, *16x36*, *16x48*
- If **columns**, **rows** and **version** are unspecified the encoder will default to creating a symbol of the specified **format** that is the minimum size to represent the given data.

Example

```
Data:    (01)95012345678903(3103)000123
Options:
Encoder: gs1datamatrix
```



5.4.5 GS1 QR Code

GS1 QR Code is an implementation of the QR Code barcode symbology with GS1 formatted data.

Standards: ISO/IEC 18004, ITS - QR Code, GS1 General Specifications.

Data and Options

- The data field input is provided in GS1 Application Identifier standard format starting with the mandatory *(01)* and *(8200)* Application Identifiers.
- Note that it is not necessary to specify *FNC1* characters since the encoder will insert these automatically where necessary.
- *Deprecated.* The **dontlint** option disables GS1 Application Identifier syntax validation allowing images to be generated for input that does not comply with GS1 standards.
- The **eclevel** option is used to specify the error correction level:
  - `eclevel=L` - Low
  - `eclevel=M` - Medium (default)
  - `eclevel=Q` - Quality
  - `eclevel=H` - High
- The **version** option is used to specify the size of the symbol, 1 to 40.
- If the **version** is unspecified the encoder will default to creating a symbol that is the minimum size to represent the given data at the selected error correction level.

Example

```
Data:    (01)03453120000011(8200)http://www.abc.net
Options:
Encoder: gs1qrcode
```

```
Data:    (01)03453120000011(8200)http://abc.net(10)XYZ(410)9501101020917
Options:
Encoder: gs1qrcode
```

5.4.6 GS1 Digital Link DataMatrix

GS1 Digital Link DataMatrix is an implementation of the Data Matrix (ECC 200) barcode symbology containing a GS1 Digital Link URI.

Standards: ISO/IEC 16022, ANSI/AIM BC11 ISS, GS1 Digital Link Standard: URI Syntax.

Data and Options

- The data field input is provided as a GS1 Digital Link URI.
- *Deprecated.* The **dontlint** option disables GS1 Application Identifier syntax validation allowing images to be generated for input that does not comply with GS1 standards.
- The **format** option is used to specify the shape of the symbol, either `square` (default) or `rectangle`.
- The **columns** and **rows** options are used to specify the size of the symbol.
- The **version** option can also be used to specify the symbol size, as `version=RxC`. Valid options are:
  - With `format=square`: *10x10*, *12x12*, *14x14*, *16x16*, *18x18*, *20x20*, *22x22*, *24x24*, *26x26*, *32x32*, *36x36*, *40x40*, *44x44*, *48x48*, *52x52*, *64x64*, *72x72*, *80x80*, *88x88*, *96x96*, *104x104*, *120x120*, *132x132*, *144x144*
  - With `format=rectangle`: *8x18*, *8x32*, *12x26*, *12x36*, *16x36*, *16x48*
- If **columns**, **rows** and **version** are unspecified the encoder will default to creating a symbol of the specified **format** that is the minimum size to represent the given data.

Example

```
Data:    https://id.gs1.org/01/12312312312333/22/ABC%2d123?99=XYZ%2f987#test
Options:
Encoder: gs1dldatamatrix
```

5.4.7 GS1 QR Digital Link Code

GS1 Digital Link QR Code is an implementation of the QR Code barcode symbology containing a GS1 Digital Link URI.

Standards: ISO/IEC 18004, ITS - QR Code, GS1 Digital Link Standard: URI Syntax.

Data and Options

- The data field input is provided as a GS1 Digital Link URI.
- *Deprecated.* The **dontlint** option disables GS1 Application Identifier syntax validation allowing images to be generated for input that does not comply with GS1 standards.
- The **eclevel** option is used to specify the error correction level:
  - `eclevel=L` - Low
  - `eclevel=M` - Medium (default)
  - `eclevel=Q` - Quality
  - `eclevel=H` - High
- The **version** option is used to specify the size of the symbol, 1 to 40.
- If the **version** is unspecified the encoder will default to creating a symbol that is the minimum size to represent the given data at the selected error correction level.

Example

```
Data:    https://id.gs1.org/01/12312312312333/22/ABC%2d123?99=XYZ%2f987#test
Options:
Encoder: gs1dlqrcode
```

5.4.8 GS1-128

GS1-128 is an implementation of the Code 128 barcode symbology which carries GS1 formatted data, including a GTIN-14.

Also known as: UCC/EAN-128, EAN-128, UCC-128.

Variants:

- GS1-128 Composite is a variant of GS1-128 that should be used when a CC-A, CC-B or CC-C GS1 composite 2D component is required.
- EAN-14 is a variant of GS1-128 that should be used when encoding a lone fourteen-digit GTIN.
- SSCC-18 is a variant of GS1-128 that should be used when encoding a lone eighteen-digit SSCC.

Standards: ISO/IEC 15417, ANSI/AIM BC4-1999 ISS, BS EN 799, GS1 General Specifications.

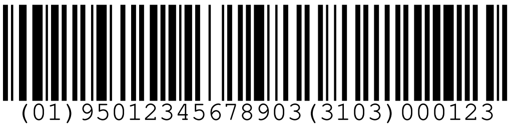
Data and Options

- The data field input is provided in GS1 Application Identifier standard format.
- Note that it is not necessary to specify *FNC1* characters since the encoder will insert these automatically where necessary.
- *Deprecated.* The **dontlint** option disables GS1 Application Identifier syntax validation allowing images to be generated for input that does not comply with GS1 standards.
- *Deprecated: For internal use.* The **linkagea** option specifies that the symbol includes a *CC-A* or *CC-B* GS1 composite 2D component.
- *Deprecated: For internal use.* The **linkagec** option specifies that the symbol includes a *CC-C* GS1 composite 2D component.

Examples

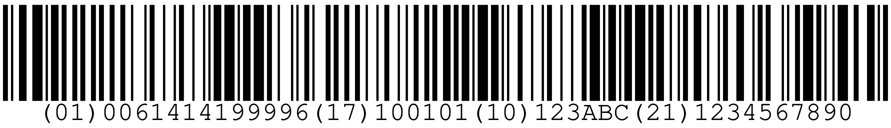
GTIN *95012345678903*; Weight *0.123kg*:

```
Data:    (01)95012345678903(3103)000123
Options: includetext
Encoder: gs1-128
```



GTIN *0061414199996*; Expiration date *1st Jan 2010*; Batch *123ABC*; Serial *1234567890*:

```
Data:    (01)0061414199996(17)100101(10)123ABC(21)1234567890
Options: includetext
Encoder: gs1-128
```



5.4.9 GS1 DotCode

GS1 DotCode is an implementation of the DotCode barcode symbology with GS1 formatted data.

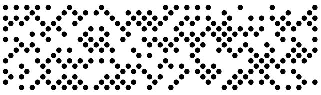
Standards: AIM - ISS DotCode, GS1 General Specifications.

Data and Options

- The data field input is provided in GS1 Application Identifier standard format.
- Note that it is not necessary to specify *FNC1* characters since the encoder will insert these automatically where necessary.
- *Deprecated.* The **dontlint** option disables GS1 Application Identifier syntax validation allowing images to be generated for input that does not comply with GS1 standards.
- The **ratio** is used to specify the aspect ratio of the symbol. The default is 1.5.
- The **columns** and **rows** options are used to specify the size of the symbol. When these are not specified a symbol is generated that maintains the selected aspect ratio.
- *Deprecated: Use only if performance is a concern.* The **fast** option is used to enable the optional high-speed symbol masking algorithm.

Examples

```
Data:    (235)5vBZIF%!<B;?oa%(01)01234567890128(8008)19052001
Options: rows=16
Encoder: gs1dotcode
```



5.5 GS1 DataBar Family

5.5.1 GS1 DataBar Omnidirectional

GS1 DataBar Omnidirectional is a fixed-length, linear barcode symbology that can be used to encode a GTIN-14 for use at point of sale.

Also known as: RSS-14

Variants:

- GS1 DataBar Stacked Omnidirectional is a variant of GS1 DataBar Omnidirectional for use where a taller, narrower symbol is required.
- GS1 DataBar Omnidirectional Composite is a variant of GS1 DataBar Omnidirectional that should be used when a CC-A or CC-B GS1 composite 2D component is required.

Standards: ISO/IEC 24724, ITS Reduced Space Symbology (RSS), AIM ISS - Reduced Space Symbology (RSS), GS1 General Specifications.

Data and Options

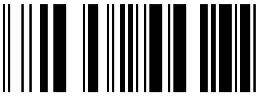
- The data field input is must be a solitary *AI (01)* with thirteen or fourteen digits of a GTIN, i.e. `(01)....`
- If thirteen digits of *AI (01)* data are supplied then the check digit is calculated automatically, otherwise the provided check digit will be verified.
- *Deprecated: For internal use.* The **linkage** option signifies the presence of a GS1 composite 2D component.

Examples

Identical symbols, input provided with and without a check digit:

```
Data:    (01)24012345678905
Options:
Encoder: databaromni
```

```
Data:    (01)2401234567890
Options:
Encoder: databaromni
```



5.5.2 GS1 DataBar Stacked Omnidirectional

GS1 DataBar Stacked Omnidirectional is a fixed-length, stacked linear barcode symbology that can be used to encode a GTIN-14 for use a point of sale.

Also known as: RSS-14 Stacked Omnidirectional.

Variants:

- GS1 DataBar Omnidirectional is a variant of GS1 DataBar Stacked Omnidirectional for use where a shorter, wider symbol is required.
- GS1 DataBar Stacked Omnidirectional Composite is a variant of GS1 DataBar Stacked Omnidirectional that should be used when a CC-A or CC-B GS1 composite 2D component is required.

Standards: ISO/IEC 24724, ITS Reduced Space Symbology (RSS), AIM ISS - Reduced Space Symbology (RSS), GS1 General Specifications.

Data and Options

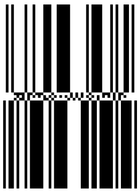
- The data field input must be a solitary *AI (01)* with thirteen or fourteen digits of a GTIN, i.e. `(01)....`
- If thirteen digits of *AI (01)* data are supplied then the check digit is calculated automatically, otherwise the provided check digit will be verified.
- *Deprecated: For internal use.* The **linkage** option signifies the presence of a GS1 composite 2D component.

Examples

Identical symbols, input provided with and without a check digit:

```
Data:    (01)24012345678905
Options:
Encoder: databarstackedomni
```

```
Data:    (01)2401234567890
Options:
Encoder: databarstackedomni
```



5.5.3 GS1 DataBar Expanded

GS1 DataBar Expanded is a variable-length, linear barcode symbology that can be used to encode a GTIN-14 alongside a number of other application identifiers for use at point of sale.

Also known as: RSS Expanded.

Variants:

- GS1 DataBar Expanded Stacked is a variant of GS1 DataBar Expanded for use where a taller, narrower symbol is required.
- GS1 DataBar Expanded Composite is a variant of GS1 DataBar Expanded that should be used when a CC-A or CC-B GS1 composite 2D component is required.
- GS1 North American Coupon Code is an applicaiton of GS1 DataBar Expanded for use with a paperless coupon system.

Standards: ISO/IEC 24724, ITS Reduced Space Symbology (RSS), AIM ISS - Reduced Space Symbology (RSS), GS1 General Specifications.

Data and Options

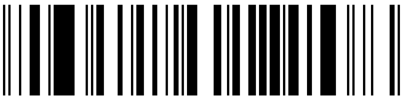
- The data field input is provided in GS1 Application Identifier standard format.
- Note that it is not necessary to specify *FNC1* characters since the encoder will insert these automatically where necessary.
- *Deprecated.* The **dontlint** option disables GS1 Application Identifier syntax validation allowing images to be generated for input that does not comply with GS1 standards.
- If the data contains a number of application identifiers matching any of the specifications below then they should be provided in this given order for maximum encoding efficiency:
  - `(01)9...(3103)...`
  - `(01)9...(3202)...`
  - `(01)9...(3203)...`
  - `(01)9...(310x/320x)...(11/13/15/17)...`

  - `(01)9...(310x/320x)...`
  - `(01)9...(392x)...`
  - `(01)9...(393x)...`
  - `(01)...`

- *Deprecated: For internal use.* The **linkage** option signifies the presence of a GS1 composite 2D component.

Examples

```
Data:    (01)95012345678903(3103)000123
Options:
Encoder: databarexpanded
```



5.5.4 GS1 DataBar Expanded Stacked

GS1 DataBar Expanded Stacked is a variable-length, stacked-linear barcode symbology that can be used to encode a GTIN-14 alongside a number of other application identifiers for use at point of sale.

Also known as: RSS Expanded Stacked.

Variants:

- GS1 DataBar Expanded is a variant of GS1 DataBar Expanded Stacked for use where a shorter, wider symbol is required.
- GS1 DataBar Expanded Stacked Composite is a variant of GS1 DataBar Expanded Stacked that should be used when a CC-A or CC-B GS1 composite 2D component is required.
- GS1 North American Coupon Code is an applicaiton of GS1 DataBar Expanded for use with a paperless coupon system.

Standards: ISO/IEC 24724, ITS Reduced Space Symbology (RSS), AIM ISS - Reduced Space Symbology (RSS), GS1 General Specifications.

Data and Options

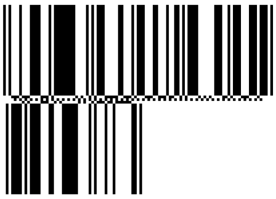
- The data field input is provided in GS1 Application Identifier standard format.
- Note that it is not necessary to specify *FNC1* characters since the encoder will insert these automatically where necessary.
- *Deprecated.* The **dontlint** option disables GS1 Application Identifier syntax validation allowing images to be generated for input that does not comply with GS1 standards.
- If the data contains a number of application identifiers matching any of the specifications below then they should be provided in this given order for maximum encoding efficiency:
  - `(01)9...(3103)...`
  - `(01)9...(3202)...`
  - `(01)9...(3203)...`
  - `(01)9...(310x/320x)...(11/13/15/17)...`

  - `(01)9...(310x/320x)...`
  - `(01)9...(392x)...`
  - `(01)9...(393x)...`
  - `(01)...`

- The **segments** option is used to specify the maximum number of segments per row which must be an even number. The default is *4*.
- *Deprecated: For internal use.* The **linkage** option signifies the presence of a GS1 composite 2D component.

Examples

```
Data:    (01)95012345678903(3103)000123
Options: segments=4
Encoder: databarexpandedstacked
```



5.5.5 GS1 DataBar Truncated

GS1 DataBar Truncated is a fixed-length, linear barcode symbology that can be used to encode a GTIN-14 for in-house applications.

Also known as: RSS-14 Truncated.

Variants:

- GS1 DataBar Stacked is a variant of GS1 DataBar Truncated for use where a taller, narrower symbol is required.
- GS1 DataBar Truncated Composite is a variant of GS1 DataBar Truncated that should be used when a CC-A or CC-B GS1 composite 2D component is required.

Standards: ISO/IEC 24724, ITS Reduced Space Symbology (RSS), AIM ISS - Reduced Space Symbology (RSS), GS1 General Specifications.

Data and Options

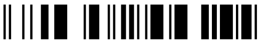
- The data field input must be a solitary *AI (01)* with 13 or 14 digits of a GTIN, i.e. `(01)....`
- If thirteen digits of *AI (01)* data are supplied then the check digit is calculated automatically, otherwise the provided check digit will be verified.
- *Deprecated: For internal use.* The **linkage** option signifies the presence of a GS1 composite 2D component.

Examples

Identical symbols, input provided with and without a check digit:

```
Data:    (01)24012345678905
Options:
Encoder: databartruncated
```

```
Data:    (01)2401234567890
Options:
Encoder: databartruncated
```



5.5.6 GS1 DataBar Stacked

GS1 DataBar Stacked is a fixed-length, stacked linear barcode symbology that can be used to encode a GTIN-14 for in-house applications.

Also known as: RSS-14 Stacked.

Variants:

- GS1 DataBar Truncated is a variant of GS1 DataBar Stacked for use where a shorter, wider symbol is required.
- GS1 DataBar Stacked Composite is a variant of GS1 DataBar Stacked that should be used when a CC-A or CC-B GS1 composite 2D component is required.

Standards: ISO/IEC 24724, ITS Reduced Space Symbology (RSS), AIM ISS - Reduced Space Symbology (RSS), GS1 General Specifications.

Data and Options

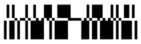
- The data field input must be a solitary *AI (01)* with thirteen or fourteen digits of a GTIN, i.e. `(01)....`
- If thirteen digits of *AI (01)* data are supplied then the check digit is calculated automatically, otherwise the provided check digit will be verified.
- *Deprecated: For internal use.* The **linkage** option signifies the presence of a GS1 composite 2D component.

Examples

Identical symbols, input provided with and without a check digit:

```
Data:    (01)24012345678905
Options:
Encoder: databarstacked
```

```
Data:    (01)2401234567890
Options:
Encoder: databarstacked
```



5.5.7 GS1 DataBar Limited

GS1 DataBar Limited is fixed-length, linear barcode symbology that can be used to encode a GTIN-14 beginning with *0* or *1* for in-house applications.

Also known as: RSS Limited.

Variants:

- GS1 DataBar Limited Composite is a variant of GS1 DataBar Limited that should be used when a CC-A or CC-B GS1 composite 2D component is required.

Standards: ISO/IEC 24724, ITS Reduced Space Symbology (RSS), AIM ISS - Reduced Space Symbology (RSS), GS1 General Specifications.

Data and Options

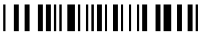
- The data field input must be a solitary *AI (01)* with thirteen or fourteen digits of a GTIN starting with *0* or *1*, i.e. `(01)0...` or `(01)1...`.
- If thirteen digits of *AI (01)* data are supplied then the check digit is calculated automatically, otherwise the provided check digit will be verified.
- *Deprecated: For internal use.* The **linkage** option signifies the presence of a GS1 composite 2D component.

Examples

Identical symbols, input provided with and without a check digit:

```
Data:    (01)15012345678907
Options:
Encoder: databarlimited
```

```
Data:    (01)1501234567890
Options:
Encoder: databarlimited
```



5.5.8 GS1 North American Coupon Code

GS1 North American Coupon Code is an implementation of the GS1 DataBar Expanded barcode symbology with AI (8110) that is used as a paperless coupon system at point of sale.

Also known as: GS1 DataBar Coupon, U.S. Coupon Code.

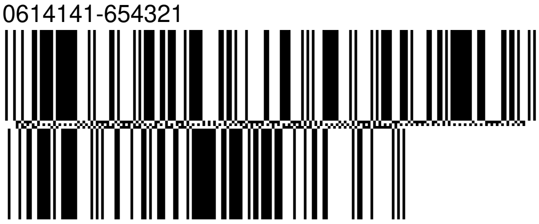
Standards: North American Coupon Application Guideline Using GS1 DataBar Expanded Symbols, ISO/IEC 24724, GS1 General Specifications.

Data and Options

- The data field input is provided in GS1 Application Identifier standard format and must be a solitary AI (8110).
- The **segments** option is used to specify the maximum number of segments per row which must be an even number. The default is *4*.

Examples

```
Data:    (8110)106141416543213500110000310123196000
Options: includetext segments=8
Encoder: gs1northamericancoupon
```



5.6 Postal Symbols

5.6.1 Australia Post 4 State Customer Code

The **Australia Post 4 State Customer Code** is a barcode used by the Australian Postal Service to encode the data on letter mail.

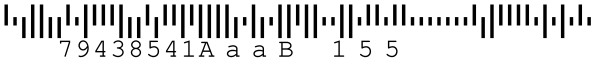
Data and Options

- The first two characters of the data field are digits used to specify the manditory FCC type of the symbols, either `11`, `45`, `59` or `67`.
- The next eight characters are digits that specify the manditory DPID.
- The number of remaining characters varies according to the given FCC code and these specify the contents of the customer information field in one of two alphabets:
  - The **custinfoenc** option should be supplied as `custinfoenc=numeric` if the customer information field is to be encoded using the numeric alphabet which can contain the digits 0-9.
  - Otherwise the customer information field is encoded using the default character encoding, `custinfoenc=character`, which permits any of the following characters:
    - Upper case letters `A-Z`
    - Lower case letters `a-z`
    - Digits `0-9`
    - Symbols `space` and `#`

Examples

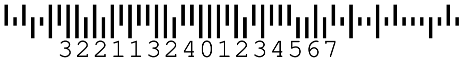
FCC 62 symbol with character customer data:

```
Data:    6279438541AaaB 155
Options: custinfoenc=character
Encoder: auspost
```



FCC 59 symbol with numeric customer data:

```
Data:    5932211324012345670
Options: custinfoenc=numeric
Encoder: auspost
```



5.6.2 Deutsche Post Identcode

Deutsche Post Identcode is an implementation of the Interleaved 2 of 5 barcode symbology that is used by German Post for mail routing.

Also known as: DHL Identcode.

Data and Options

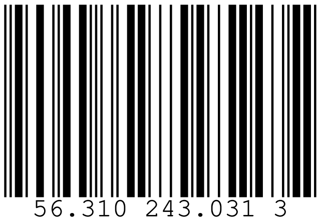
- The data consists of a consecutive string of eleven or twelve digits consisting of:
  - Two-digit primary distribution centre identifier
  - Three-digit customer identifier
  - Six-digit mail piece identifier
  - One-digit check digit (may be omitted)
- If eleven digits are supplied then the check digit is calculated automatically. Otherwise the provided check digit will be verified.

Example

Identical symbols, input provided with an without a check digit:

```
Data:    563102430313
Options: includetext
Encoder: identcode
```

```
Data:    56310243031
Options: includetext
Encoder: identcode
```



5.6.3 Deutsche Post Leitcode

The **Deutsche Post Leitcode** barcode symbology is an implementation of the Interleaved 2 of 5 barcode that is used by German Post for mail routing.

Also known as: DHL Leitcode.

Data and Options

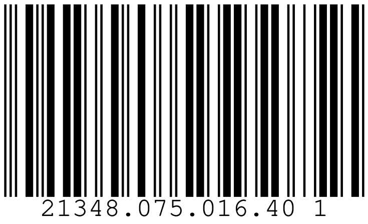
- The data consists of a consecutive string of thirteen or fourteen digits consisting of:
  - Five-digit postal code
  - Three-digit street identifier
  - Three-digit house number
  - Two-digit product code
  - One-digit check digit (may be omitted)
- If thirteen digits are supplied then the check digit is calculated automatically. Otherwise the provided check digit will be verified.

Examples

Identical symbols, input provided with and without a check digit:

```
Data:    21348075016401
Options: includetext
Encoder: leitcode
```

```
Data:    2134807501640
Options: includetext
Encoder: leitcode
```



5.6.4 Japan Post 4 State Barcode

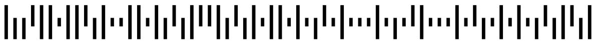
The **Japan Post 4 state barcode** symbology is used by the Japan Post service to encode the delivery point identifier on letter mail.

Data and Options

- The data may contain any of the following characters:
  - Capital letters `A-Z`
  - Digits `0-9`
  - Hyphen `-`

Example

```
Data:    6540123789-A-K-Z
Options:
Encoder: japanpost
```



5.6.5 MaxiCode

The **MaxiCode** barcode symbology is a 2D barcode based on a hexagonal matrix surrounding a bulls eye pattern. It can encode a structured carrier message and full 256 character extended-ASCII.

Also known as: UPS Code, Code 6, Dense Code.

Standards: ISO/IEC 16023, ANSI/AIM BC10 - ISS MaxiCode.

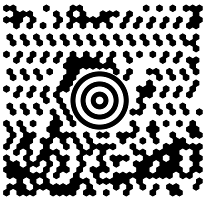
Data and Options

- The **mode** option is used to specify how the data is structured in the symbol:
  - `mode=2` - Formatted data containing a Structured Carrier Message with a numeric (US domestic) postal code.
  - `mode=3` - Formatted data containing a Structured Carrier Message with an alphanumeric (international) postal code.
  - `mode=4` - Unstructured extended ASCII data using standard error correction.
  - `mode=5` - Unstructured extended ASCII data using enhanced error correction.
  - `mode=6` - Barcode reader programming.
- If **mode** is unspecified the encoder will default to selecting `mode=5` if the encoded length of the input data permits enhanced error correction, otherwise it will select `mode=4` which provides standard error correction.
- The default interpretation of data by readers is in accordance with ISO/IEC 8859-1. When supported by the receiver characters from other code pages can be encoded using Extended Channel Interpretation (ECI).
- When the **parse** option is specified, any instances of `^NNN` in the data field are replaced with their equivalent ASCII value, useful for specifying unprintable characters.
- When the **parsefnc** option is specified, non-data function characters can be specified by escape sequences:
  - `^ECI000000` to `^ECI999999`: ECI indicators

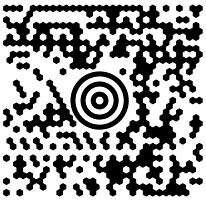
- If mode=4, mode=5 or mode=6 the data field may contain any extended ASCII data.
- If mode=2 or mode=3 the data field must begin with a properly structured carrier message, followed by any extended ASCII data.
- The structured carrier message contains a postal code, three-digit class of service and a three-digit ISO country code separated by *GS* (ASCII 29) characters. It is formatted in the data field as follows: [postal code]^029[country code]^029[service class]^029. If mode=2 the postcode must be numeric, whilst if mode=3 the postcode may contain up to six digits, upper case letters and spaces.
- Alternatively, messages may begin with the special application field identifier [)>{RS}01{GS}yy where {RS} represents ASCII value 30, {GS} represents ASCII value 29 and yy is a two-digit year. In parse mode this is represented as [)>^03001^0299. If mode=2 or mode=3 this must be immediately followed by the structured carrier message.

Examples

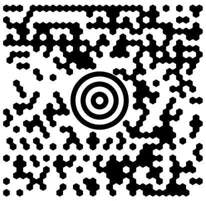
```
Data:    This is MaxiCode
Options:
Encoder: maxicode

Data:    This is Maxi^067ode
Options: parse
Encoder: maxicode
```



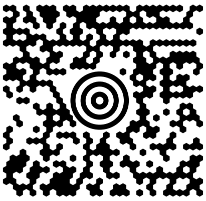
```
Data:    152382802^029840^029001^0291Z00004951^029UPSN^02906X610^029159^0291234567^0291/1^02
Options: mode=2 parse
Encoder: maxicode
```



```
Data:    ABC123^029840^029001^0291Z00004951^029UPSN^02906X610^029159^0291234567^0291/1^029^0
Options: mode=3 parse
Encoder: maxicode
```



```
Data:    [\)>^03001^02996152382802^029840^029001^0291Z00004951^029UPSN^02906X610^029159^0291234567^0291/1^029^029Y
Options: mode=2 parse
Encoder: maxicode
```



5.6.6 Royal Mail 4 State Customer Code

The **Royal Mail 4 State Customer Code** is a barcode symbology used by the British Postal Service to encode the postcode and delivery point identifier on letter mail.

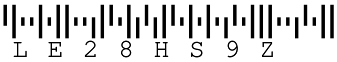
Also known as: RM4SCC, CBC, BPO 4 State Code

Data and Options

- The data may contain any of the following characters from the postcode and DPID:
  - Capital letters A-Z
  - Digits 0-9
- The maditory checksum digit is calculated automatically and must not be included in the data field

Example

```
Data:    LE28HS9Z
Options: includetext
Encoder: royalmail
```



5.6.7 Royal Mail Mailmark

Royal Mail Mailmark is an implementation of the Data Matrix (ECC 200) barcode symbology for application within the Royal Mail postal system.

Standards: Royal Mail Mailmark Barcode Definition Document

Data and Options

- The data field input consists of 45 characters of Mailmark structured data (including required space padding) followed by variable-length, free-formatted customer data.
- Note: Due to the fixed-length field format of the message data it is important to carefully preserve spaces in the data field.
- The mandatory **type** option is used to specify the size of the symbol, either `7`, `9` or `29`.

Example

```
Data:    JGB 012100123412345678AB19XY1A 0             www.xyz.com
Options: type=29
Encoder: mailmark
```

5.6.8 Royal TNT Post 4 state barcode

The **Royal TNT Post 4 state barcode** symbology is used by the Dutch Postal Service to encode the delivery point identifier on letter mail.

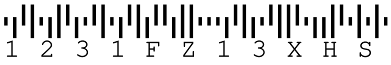
Also known as: KIX, Klant IndeX.

Data and Options

- The data may contain any of the following characters from the DPID:
  - Capital letters `A-Z`
  - Digits `0-9`

Example

```
Data:    1231FZ13XHS
Options: includetext
Encoder: kix
```



5.6.9 USPS Intelligent Mail

The **USPS Intelligent Mail** barcode is used by the US Postal service to encode the delivery and sender information on letter mail.

Also known as: USPS OneCode.

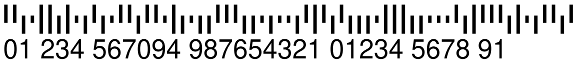
Standards: USPS-STD-11.

Data and Options

- The data contains 31 digits representing the following:
  - Barcode Identifier - two digits
  - Service Type Identifier - three digits
  - Mailer ID, Sequence Number - either six then nine digits respectively or nine then six digits respectively
  - Delivery Point ZIP Code - eleven digits
- The mandatory checksum digit is calculated automatically and must not be included in the data field.

Example

```
Data:    0123456709498765432101234567891
Options: includetext
Encoder: onecode
```



5.6.10 USPS POSTNET

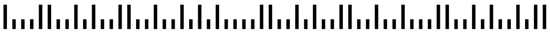
The **USPS POSTNET** barcode symbology is used by the US Postal service to encode the ZIP code information on letter mail.

Data and Options

- The data field contains the digits from the ZIP code, without dashes.
- The mandatory checksum is calculated automatically and must not be included in the data field.

Example

```
Data:    12345123412
Options:
Encoder: postnet
```



5.6.11 USPS PLANET

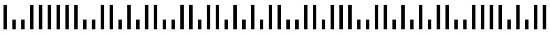
The **USPS PLANET** barcode symbology is used by the US Postal service to encode the ZIP code information on letter mail.

Data and Options

- The data field contains eleven or thirteen digits, without dashes.
- The mandatory checksum is calculated automatically and must not be included in the data field.

Example

```
Data:   01234567890
Options:
Encoder: planet
```



5.6.12 USPS FIM Symbols

The **USPS FIM** encoder is used to generate static predefined barcode symbols.

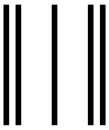
Data and Options

- The data field accepts one of the following values:
  - `fima` - US Postal Service FIM-A symbol
  - `fimb` - US Postal Service FIM-B symbol
  - `fimc` - US Postal Service FIM-C symbol
  - `fimd` - US Postal Service FIM-D symbol

Examples

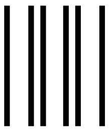
A USPS FIM A symbol:

```
Data:    fima
Options:
Encoder: symbol
```



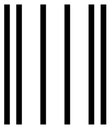
A USPS FIM B symbol:

```
Data:    fimb
Options:
Encoder: symbol
```



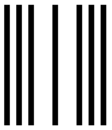
A USPS FIM C symbol:

```
Data:    fimc
Options:
Encoder: symbol
```



A USPS FIM D symbol:

```
Data:    fimd
Options:
Encoder: symbol
```



5.7 Pharmaceutical Symbols

5.7.1 Italian Pharmacode

Italian Pharmacode is a discrete, fixed length, self-checking barcode symbology used for pharmaceutical products in Italy.

Also known as: Code 32, IMH, Radix 32.

Data and Options

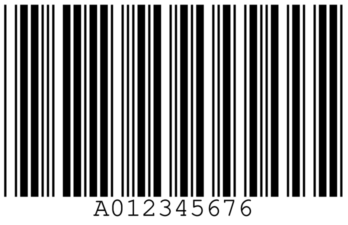
- The data field must contain either eight or nine digits from the code. The leading *A* which is provided in some applications must be omitted.
- The mandatory check digit is calculated automatically if it is not provided, otherwise the provided check digit is verified.

Examples

Identical symbols, input provided with and without a check digit:

```
Data:    012345676
Options: includetext
Encoder: code32
```

```
Data:    01234567
Options: includetext
Encoder: code32
```



5.7.2 Pharmacode

Pharmacode is a binary barcode symbology that is used by the Pharmaceutical industry.

Also known as: Pharmaceutical Binary Code. Laetus Code.

Variants:

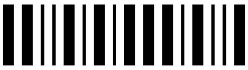
- Two-track Pharmacode is a variant of the Pharmacode barcode.

Data and Options

- The data field must contain a number between `3` and `131070` inclusive.
- The **nwidth**, **wwidth** and **swidth** options can be used to specify a custom width (in points) for the narrow bars, wide bars and inter-bar spaces respectively.

Example

```
Data:    117480
Options:
Encoder: pharmacode
```



5.7.3 Two-Track Pharmacode

Two-Track Pharmacode is a binary barcode symbology used by the Pharmaceutical industry.

Also known as: Two-track Pharmaceutical Binary Code, Two-track Laetus Code.

Variants:

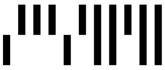
- Pharmacode is a variant of the Two-track Pharmacode barcode.

Data and Options

- The data field must contain a number between `4` and `64570080` inclusive.

Example

```
Data:    117480
Options:
Encoder: pharmacode2
```



5.7.4 PZN

PZN is a discrete, fixed length, self-checking barcode symbology used for pharmaceutical products in Germany.

Also known as: Pharmazentralnummer.

Variants:

- PZN7 is the seven-digit format.
- PZN8 is the eight-digit format.

Data and Options

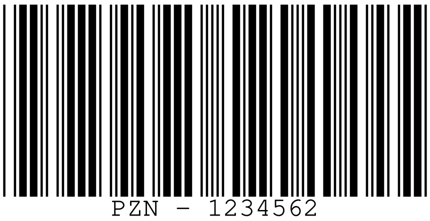
- For the default PZN7 encoding, the data field must contain six digits or seven digits.
- The **pzn8** option specifies that a PZN8 symbol is required, in which case the data field must contain seven digits or eight digits.
- The mandatory check digit is calculated automatically if not provided, otherwise the provided check digit is verified.
- Note: by definition, not all six-digit or seven-digit number sequences are valid inputs.

Examples

Identical PZN7 symbols, input provided with and without a check digit:

```
Data:    1234562
Options: includetext
Encoder: pzn
```

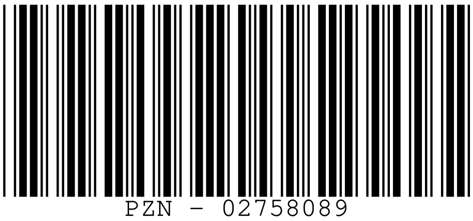
```
Data:    123456
Options: includetext
Encoder: pzn
```



Identical PZN8 symbols, input provided with and without a check digit:

```
Data:    0275808
Options: pzn8 includetext
Encoder: pzn
```

```
Data:    02758089
Options: pzn8 includetext
Encoder: pzn
```



5.8 HIBC Symbols

HIBC barcodes use a number of general symbologies as carrier symbols for data structured according to the LIC and PAS structured data definitions.

Variants:

- HIBC Code 39 is a variant of Code 39.

- HIBC Code 128 is a variant of Code 128.
- HIBC PDF417 is a variant of PDF417.
- HIBC MicroPDF417 is a variant of MicroPDF417.
- HIBC QR Code is a variant of QR Code.
- HIBC Data Matrix is a variant of Data Matrix.
- HIBC Codablock F is a variant of Codablock F.

Standards: ANSI/HIBC Provider Applications Standard, ANSI/HIBC Supplier Labelling Standard, ANSI/HIBC Positive Identification for Patient Safety, ANSI/HIBC Syntax Standard.

Data and Options

- The data should be pre-encoded to describe the intended barcode content.
- The HIBC + character is prefixed automatically.
- The mandatory HIBC check character is automatically appended to the input.

5.8.1 HIBC Code 39

```
Data:    A123BJC5D6E71
Options: includetext
Encoder: hibccode39
```

+A123BJC5D6E71G

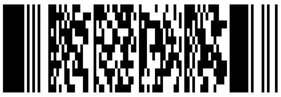
5.8.2 HIBC Code 128

```
Data:    A123BJC5D6E71
Options: includetext
Encoder: hibccode128
```

+A123BJC5D6E71G

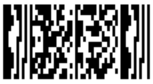
5.8.3 HIBC PDF417

```
Data:    A123BJC5D6E71
Options:
Encoder: hibcpdf417
```



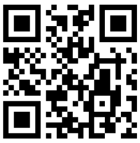
5.8.4 HIBC MicroPDF417

```
Data:    A123BJC5D6E71
Options:
Encoder: hibcmicropdf417
```



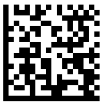
5.8.5 HIBC QR Code

```
Data:    A123BJC5D6E71
Options:
Encoder: hibcqrcode
```



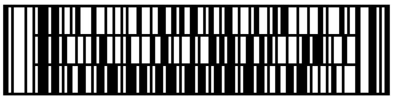
5.8.6 HIBC Data Matrix

```
Data:    A123BJC5D6E71
Options:
Encoder: hibcdatamatrix
```



5.8.7 HIBC Codablock F

```
Data:    A123BJC5D6E71
Options:
Encoder: hibccodablockf
```



5.9 Less-used Symbols

5.9.1 BC412

The **BC412** barcode symbology is single width, variable length barcode that is used for silicon wafer identification by the semiconductor manufacturing industry.

Also known as: BC412 SEMI, BC412 IBM.

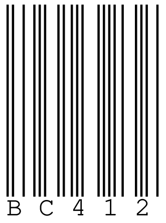
Data and Options

- The data field can hold any of the following:
  - Numbers 0-9
  - Capital letters A-Z, excluding O
- The **includestartstop** option enables the display of start and stop bars.

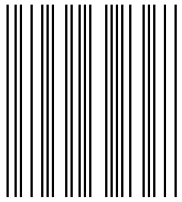
- The **includecheck** option calculates the check character.
- The **includecheckintext** option makes the calculated checksum appear in the human readable text.
- The **semi** option enables conformance to the SEMI standard by enabling start and stop bars as well as a check character.
- The **inkspread** option can be used to adjust the width of the bars.

Examples

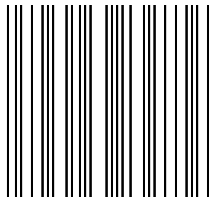
```
Data:    BC412
Options: includecheck
Encoder: bc412
```



```
Data:    BC412
Options: includestartstop
Encoder: bc412
```



```
Data:    BC412
Options: semi
Encoder: bc412
```



5.9.2 Channel Code

Channel Code is a linear, continuous, self-checking, bidirectional barcode symbology that encodes between two and seven digits in a short space.

Standards: ANSI/AIM BC12 - USS Channel Code.

Data and Options

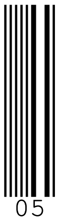
- The data field can hold zero prefixed values from any of the following ranges:
  - Channel 3: `00-26`
  - Channel 4: `000-292`
  - Channel 5: `0000-3493`

  - Channel 6: `00000-44072`
  - Channel 7: `000000-576688`
  - Channel 8: `0000000-7742862`
- The channel is determined to be one more than the number of digits given in the data field.
- The **shortfinder** option generates a symbol with a shortened finder pattern.
- The **includecheck** option appends an optional check bar suffix.

Examples

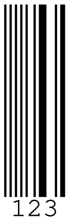
A channel 3 symbol holding the value five:

```
Data:    05
Options: includetext
Encoder: channelcode
```



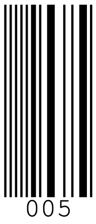
A channel 4 symbol holding the value 123:

```
Data:    123
Options: includetext
Encoder: channelcode
```



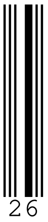
A channel 4 symbol holding the value five including optional check bars:

```
Data:    005
Options: includetext includecheck
Encoder: channelcode
```



A channel 3 symbol holding the value 26 with a shorteded finder pattern:

```
Data:    26
Options: shortfinder includetext
Encoder: channelcode
```



5.9.3 Codabar

Codabar is a linear, discrete, self-checking, bidirectional barcode symbology that can encode digits, six symbols and four delimiter characters. It is primarily used by libraries and blood banks, photo labs and FedEx airbills.

Also known as: Rationalized Codabar, Ames Code, NW-7, USD-4, USS-Codabar, ABC Codabar, Monarch, Code 2 of 7.

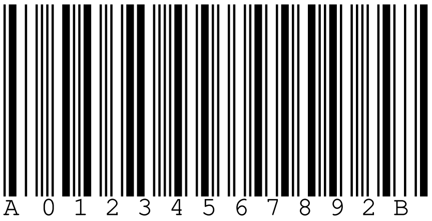
Standards: ANSI/AIM BC3 - USS Codabar, BS EN 798.

Data and Options

- The data field must start and stop with one of the following delimiters
  - `ABCD`
  - `TNE*` (with the *altstartstop* option)
- The data field can otherwise hold any of the following
  - Digits 0-9
  - Symbols `-$:/.+`
- The **altstartstop** option specifies that the alternative set of delimiter characters is in use.
- The **includecheck** option calculates the check digit.
- The **includecheckintext** option makes the calculated check characters appear in the human readable text.

Example

```
Data:    A0123456789B
Options: includecheck includetext includecheckintext
Encoder: rationalizedCodabar
```



5.9.4 Codablock F

The **Codablock F** barcode symbology is 2D stacked-linear barcode that consists of a number of stacked Code 128 symbols. It can encode full 256 character extended-ASCII.

Variants:

- HIBC Codablock F is a variant of Codablock F that should be used when encoding HIBC formatted data.

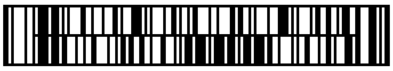
Standards: USS Codablock F.

Data and Options

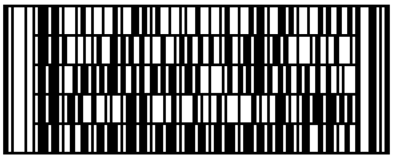
- The data field can consist of any extended-ASCII data. The default interpretation of data by readers is in accordance with ISO/IEC 8859-1.
- *FNC4* function characters will be inserted automatically to allow the encoding of extended ASCII characters.
- When the **parse** option is specified, any instances of `^NNN` in the data field are replaced with their equivalent ASCII value, useful for specifying unprintable characters.
- When the **parsefnc** option is specified, non-data function characters can be specified by escape sequences:
  - `^FNC1`: FNC1
  - `^FNC2`: FNC2
  - `^FNC3`: FNC3
  - `^ECI000000` to `^ECI999999`: ECI indicators
- The **columns** option specifies the number of columns in the symbol, default 8.
- The **rows** option specifies the number of rows in the symbol, between 2 and 44.
- If **rows** is unspecified the encoder will default to the smallest number of rows that can hold the given data.
- The **raw** option denotes that the data field is providing the input as a pre-encoded codewords in `^NNN` format, suitable for direct low-level encoding.
- The **rowheight** option specifies the height of the bars in each row in points. The default is 10.
- The **sepheight** option specifies the height of the separator bars enclosing the rows in points. The default is 1.

Examples

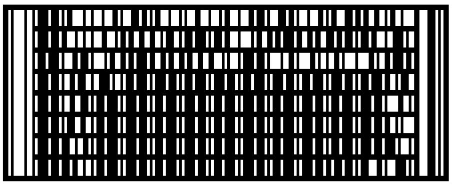
```
Data:    Codablock F
Options:
Encoder: codablockf
```



```
Data:    CODABLOCK F 34567890123456789010040digit
Options: columns=8 rows=5
Encoder: codablockf
```



```
Data:    Short bars, fat seperators
Options: columns=10 rows=8 rowheight=6 sepheight=2
Encoder: codablockf
```



5.9.5 Code 11

Code 11 is a linear, discrete, non-self-checking, bidirectional, numeric barcode symbology that is primarily used for labelling telecommunication equipment.

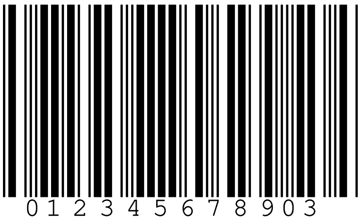
Also known as: USD-8.

Data and Options

- The data consists of digits and the dash character -.
- The **includecheck** option calculates the check digits.
- For less than 10 data digits a single check digit is used.
- For 10 or more data digits two check digits are used.

Example

```
Data:    0123456789
Options: includecheck includetext includecheckintext
Encoder: code11
```



5.9.6 Code 16K

The **Code 16K** barcode symbology is 2D stacked-linear barcode that can encode full 256 character extended-ASCII with the use of the *FNC4* shift character.

Also known as: USS-16K

Standards: ANSI/AIM BC7 - USS Code 16K, BS EN 12323.

Data and Options

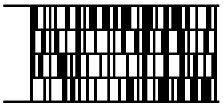
- The data field can consist of any extended ASCII data. The default interpretation of data by readers is in accordance with ISO/IEC 8859-1.
- *FNC4* function characters will be inserted automatically to allow the encoding of extended ASCII characters.
- When the **parse** option is specified, any instances of `^NNN` in the data field are replaced with their equivalent ASCII value, useful for specifying unprintable characters.
- When the **parsefnc** option is specified, non-data function characters can be specified by escape sequences:
  - `^FNC1`: FNC1
  - `^FNC2`: FNC2

  - `^FNC3`: FNC3

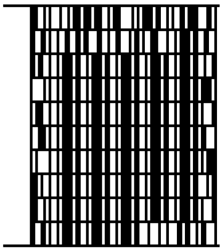
- The **mode** option specifies the mode for the symbol. It is usual to leave this unspecified in which case the most appropriate mode that results in the shortest symbol is automatically selected based in the input data.
  - `mode=0` - Starting code set A
  - `mode=1` - Starting code set B
  - `mode=2` - Starting code set C
  - `mode=3` - Starting code set B with implied *FNC1*
  - `mode=4` - Starting code set C with implied *FNC1*
  - `mode=5` - Starting code set C with implied *Shift B*
  - `mode=6` - Starting code set C with implied *Double Shift B*
- The **pos** option specifies this symbol to be part of multi-part structured data. For example `pos=25` specifies this to be the second symbol in a group of five symbols.
- The **rows** option specifies the number of rows in the symbol, between two and sixteen.
- If **rows** is unspecified the encoder will default to the smallest number of rows that can hold the given data.
- The **raw** option denotes that the data field is providing the input as a pre-encoded codewords in `^NNN` format, suitable for direct low-level encoding.
- The **rowheight** option specifies the height of the bars in each row in points. The default is 10.
- The **sepheight** option specifies the height of the separator bars enclosing the rows in points. The default is 1.

Examples

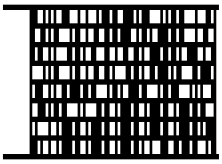
```
Data:    Abcd-1234567890-wxyZ
Options:
Encoder: code16k
```



```
Data:    Code 16K
Options: rows=10
Encoder: code16k
```



```
Data:    Short bars, fat seperators
Options: rows=8 rowheight=5 sepheight=2
Encoder: code16k
```



5.9.7 Code 25

Code 2 of 5 is a simple low density numeric barcode symbology.

Also known as: Code 25, Industrial 2 of 5, Standard 2 of 5

Variants:

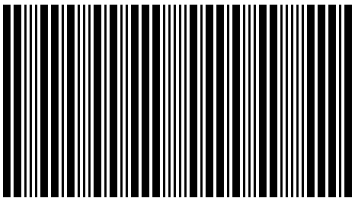
- IATA 2 of 5, Computer Identics 2 of 5.
- Datalogic 2 of 5.
- Matrix 2 of 5.
- COOP 2 of 5.

Data and Options

- The data consists of any number of digits.
- The **includecheck** option calculates the check digit.
- *Deprecated*: The **version** option determines which variant to use:
  - `version=industrial` (default) - Industrial 2 of 5.
  - `version=iata` - *Deprecated: Use IATA 2 of 5*
  - `version=datalogic` - *Deprecated: Use Datalogic 2 of 5*
  - `version=matrix` - *Deprecated: Use Matrix 2 of 5*
  - `version=coop` - *Deprecated: Use COOP 2 of 5*

Examples

```
Data:    01234567
Options:
Encoder: code2of5
```



5.9.8 DotCode

The **DotCode** symbology is 2D matrix-style barcode that can encode full 256 character extended-ASCII.

Also known as: Ribbon Code

Variants:

- GS1 DotCode is a variant of DotCode that should be used when encoding data that is in GS1 Application Identifier standard format.

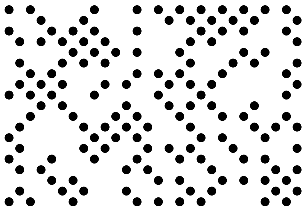
Standards: AIM - ISS DotCode.

Data and Options

- The data field can contain any extended ASCII data. The default interpretation of data by readers is in accordance with ISO/IEC 8859-1.
- When the **parse** option is specified, any instances of `^NNN` in the data field are replaced with their equivalent ASCII value. This is useful for specifying unprintable characters.
- When the **parsefnc** option is specified, non-data function characters can be specified by escape sequences:
  - `^FNC1`: FNC1. *Recommendation: Use GS1 DotCode for encoding GS1 AI syntax data.*
  - `^FNC2`: FNC2
  - `^FNC3`: FNC3
- The **ratio** is used to specify the aspect ratio of the symbol. The default is 1.5.
- The **columns** and **rows** options are used to specify the size of the symbol. When these are not specified a symbol is generated that maintains the selected aspect ratio.
- *Deprecated: Use only if performance is a concern.* The **fast** option is used to enable the optional high-speed symbol masking algorithm.

Examples

```
Data:    This is DotCode
Options: inkspread=0.16
Encoder: dotcode
```



5.9.9 Ultracode

The **Ultracode** symbology is a colour, 2D matrix-style barcode symbology that can encode full 256 character extended-ASCII.

Standards: AIM ISS - Ultracode.

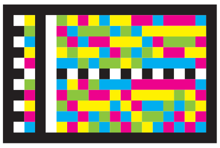
Data and Options

- The data field can contain any extended ASCII data. The default interpretation of data by readers is in accordance with ISO/IEC 8859-1.
- When the **parse** option is specified, any instances of `^NNN` in the data field are replaced with their equivalent ASCII value, useful for specifying unprintable characters.
- When the **parsefnc** option is specified, non-data function characters can be specified by escape sequences:
  - `^FNC1`: FNC1
  - `^FNC3`: FNC3

- The **eclevel** option is used to specify the error correction level:
  - `eclevel=EC0` - Error detection only
  - `eclevel=EC1` - Low
  - `eclevel=EC2` - Medium (default)
  - `eclevel=EC3`
  - `eclevel=EC4`
  - `eclevel=EC5` - Highest

Examples

```
Data:    Nice colours!
Options: eclevel=EC3
Encoder: ultracode
```



5.9.10 IATA 2 of 5

IATA 2 of 5 is a variant of the Code 2 of 5 barcode symbology.

Also known as: Computer Identics 2 of 5.

Variants:

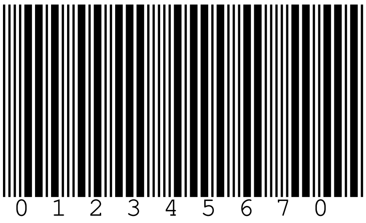
- Industrial 2 of 5, Standard 2 of 5.
- Datalogic 2 of 5.
- Matrix 2 of 5.
- COOP 2 of 5.

Data and Options

- The data consists of any number of digits.
- The **includecheck** option calculates the check digit.

Examples

```
Data:    01234567
Options: includetext includecheck includecheckintext
Encoder: iata2of5
```



5.9.11 Matrix 2 of 5

Matrix 2 of 5 is a variant of the Code 2 of 5 barcode symbology.

Variants:

- Industrial 2 of 5, Standard 2 of 5.
- IATA 2 of 5, Computer Identics 2 of 5.
- Datalogic 2 of 5.
- COOP 2 of 5.

Data and Options

- The data consists of any number of digits.
- The **includecheck** option calculates the check digit.

5.9.12 Datalogic 2 of 5

Datalogic 2 of 5 is a variant of the Code 2 of 5 barcode symbology.

Variants:

- Industrial 2 of 5, Standard 2 of 5.
- IATA 2 of 5, Computer Identics 2 of 5.
- Matrix 2 of 5.
- COOP 2 of 5.

Data and Options

- The data consists of any number of digits.
- The **includecheck** option calculates the check digit.

5.9.13 COOP 2 of 5

COOP 2 of 5 is a variant of the Code 2 of 5 barcode symbology.

Variants:

- Industrial 2 of 5, Standard 2 of 5.
- IATA 2 of 5, Computer Identics 2 of 5.
- Datalogic 2 of 5.
- Matrix 2 of 5.

Data and Options

- The data consists of any number of digits.
- The **includecheck** option calculates the check digit.

5.9.14 Code 49

The **Code 49** barcode symbology is 2D stacked-linear barcode that can encode 128 character ASCII.

Also known as: USS-49.

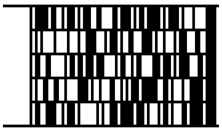
Standards: ANSI/AIM BC6 - USS Code 49.

Data and Options

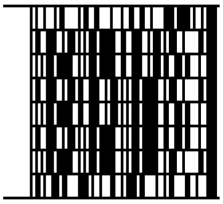
- The input can consist of any ASCII data.
- When the **parse** option is specified, any instances of `^NNN` in the data field are replaced with their equivalent ASCII value, useful for specifying unprintable characters.
- When the **parsefnc** option is specified, non-data function characters can be specified by escape sequences:
  - `^FNC1`: FNC1
  - `^FNC2`: FNC2
  - `^FNC3`: FNC3
- The **mode** option specifies the mode for the symbol. It is usual to leave this unspecified in which case the most appropriate mode that results in the shortest symbol is automatically selected based in the input data.
  - `mode=0` - regular alphanumeric mode
  - `mode=1` - append mode
  - `mode=2` - numeric mode
  - `mode=3` - group alphanumeric mode
  - `mode=4` - alphanumeric mode starting shift 1
  - `mode=5` - alphanumeric mode starting shift 2
  - `mode=6` - reserved
- The **pos** option specifies this symbol to be part of multi-part structured data, i.e. selecting `mode=3`. For example `pos=25` specifies this to be the second symbol in a group of five symbols.
- The **rows** option specifies the number of rows in the symbol, between *2* and *8*.
- If **rows** is unspecified the encoder will default to the smallest number of rows that can hold the given data.
- The **rowheight** option specifies the height of the bars in each row in points. The default is *10*.
- The **sepheight** option specifies the height of the separator bars enclosing the rows in points. The default is *1*.

Examples

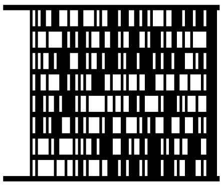
```
Data:    MULTIPLE ROWS IN CODE 49
Options:
Encoder: code49
```



```
Data:    CODE 49
Options: rows=8
Encoder: code49
```



```
Data:    Short bars, fat seperators
Options: rows=8 rowheight=6 sepheight=2
Encoder: code49
```



5.9.15 Code One

Code One was the earliest public domain 2D matrix-style barcode. It is used by the health care and recycling industry and can encode full 256 character extended-ASCII.

Also known as: Code 1, Code 1S.

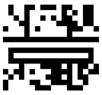
Standards: AIM USS - Code One.

Data and Options

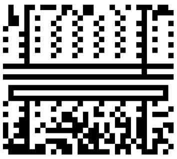
- The data field can consist of any ASCII data for *standard* and *T-type* symbols. The default interpretation of data by readers is in accordance with ISO/IEC 8859-1. When supported by the receiver characters from other code pages can be encoded using Extended Channel Interpretation (ECI).
- Note: *S-type* symbols are special in that they represent a numeric value so may only contain digits.
- When the **parse** option is specified, any instances of `^NNN` in the data field are replaced with their equivalent ASCII value, useful for specifying unprintable characters, e.g. `^029` for *GS*, etc.
- When the **parsefnc** option is specified, non-data function characters can be specified by escape sequences:
  - `^FNC1`: FNC1
  - `^FNC3`: FNC3
  - `^ECI000000` to `^ECI999999`: ECI indicators
- The **version** option is used to specify the size and type of the symbol:
  - `A`, `B`, `C`, `D`, `E`, `F`, `G`, `H` - for standard format symbols (default automatic selection)
  - `version=T-16`, `version=T-32`, `version=T-48` - *T-type* symbols
  - `version=S-10`, `version=S-20`, `version=S-30` - *S-type* symbols

Examples

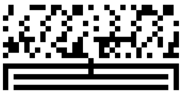
```
Data:    Code One
Options:
Encoder: codeone
```



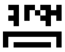
```
Data:    Code One
Options: version=C
Encoder: codeone
```



```
Data:    Code One
Options: version=T-32
Encoder: codeone
```



```
Data:    406990
Options: version=S-10
Encoder: codeone
```



5.9.16 MSI Plessey

MSI Plessey is a continuous, non-self-checking, arbitrary length, numeric barcode symbology.

Also known as: MSI, MSI Modified Plessey.

Variants:

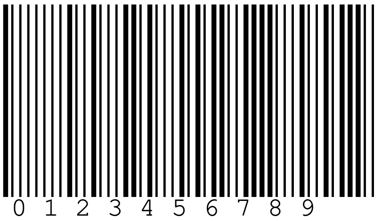
- Plessey (UK) is the original barcode upon which MSI Modified Plessey was based.

Data and Options

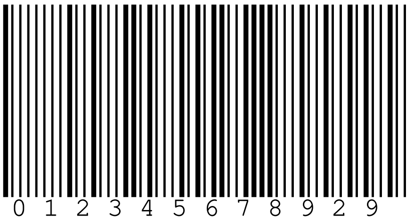
- The data can consist of any number of digits.
- The **includecheck** option calculates the check digit or check digits.
- The **includecheckintext** option makes the calculated check characters appear in the human readable text.
- The **checktype** option is used to specify the type of checksum, either:
  - `checktype=mod10` (default)
  - `checktype=mod1010`
  - `checktype=mod11`
  - `checktype=ncrmod11`
  - `checktype=mod1110`
  - `checktype=ncrmod1110`
- The **badmod11** option allows a `checktype=mod11` checksum value of 10 to be encoded with a pair of check digits *10*. Normally in `checktype=mod11`, any input whose checksum evaluates to *10* is considered invalid having no correct representation.

Examples

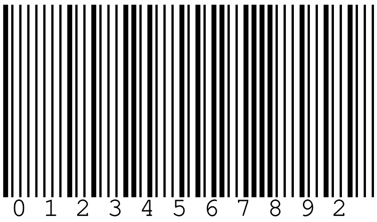
```
Data:    0123456789
Options: includecheck includetext
Encoder: msi
```



```
Data:    0123456789
Options: includecheck checktype=mod1110 includetext includecheckintext
Encoder: msi
```



```
Data:    0123456785
Options: includecheck checktype=mod11 badmod11 includetext includecheckintext
Encoder: msi
```



5.9.17 Plessey

Plessey is a continuous, arbitrary length barcode symbology for encoding hexadecimal data.

Also known as: Anker Code.

Variants:

- MSI Modified Plessey is a variant of the Plessey (UK) barcode developed by the MSI Data Corporation.

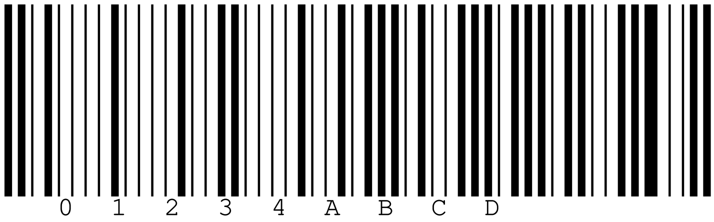
Data and Options

- The data can contain any of the following:
  - Numbers `0-9`
  - Capital letters `A-F`
- Two manditory check characters implementing a CRC check are automatically included.
- The **includecheckintext** option makes the calculated check characters appear in the human readable text.
- The **unidirectional** option generates a unidirectional Plessey symbol.

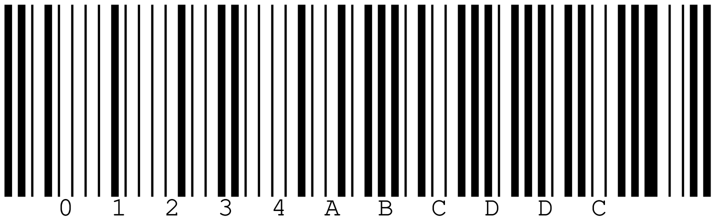
Examples

Equivalent symbols, the latter displaying the two mandatory check characters:

```
Data:    01234ABCD
Options: includetext
Encoder: plessey
```

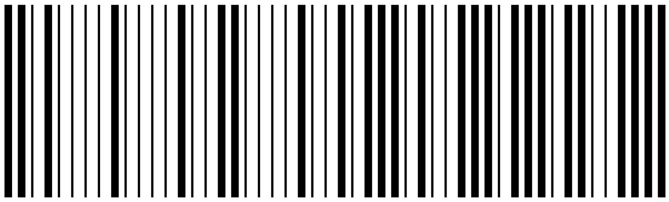


```
Data:    01234ABCD
Options: includetext includecheckintext
Encoder: plessey
```



A unidirectional symbol:

```
Data:    01234ABCD
Options: unidirectional
Encoder: plessey
```



5.9.18 PosiCode

PosiCode is a continuous, variable length, non-self-checking, bidirectional barcode symbology that is designed for use within printing processes where it is difficult to precisely control the width of a bar.

Standards: ITS PosiCode.

Data and Options

- The data field can hold the following:
  - For *standard* symbols: Any extended ASCII data. The default interpretation of data by readers is in accordance with ISO/IEC 8859-1.
    - *FNC4* function characters will be inserted automatically to allow the encoding of extended ASCII characters.
  - For *limited* symbols: letters `A-Z`, digits `0-9`, symbols `-` and `.`

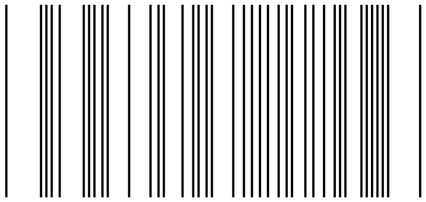
- The **version** option is used to specify the variant of the symbol, either:
  - `version=a` (default)
  - `version=b`
  - `version=limiteda`
  - `version=limitedb`
- When the **parse** option is specified, any instances of `^NNN` in the data field are replaced with their equivalent ASCII value, useful for specifying unprintable characters, e.g. `^029` for *GS*, etc.
- When the **parsefnc** option is specified, non-data function characters can be specified by escape sequences:
  - `^FNC1`: FNC1
  - `^FNC2`: FNC2
  - `^FNC3`: FNC3
- The **inkspread** option can be used to adjust the width of the bars.

Example PosiCode

Equivalent ways to generate a PosiCode A symbol:

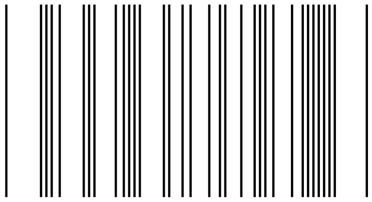
```
Data:    Abc123
Options:
Encoder: posicode
```

```
Data:    Abc123
Options: version=a
Encoder: posicode
```



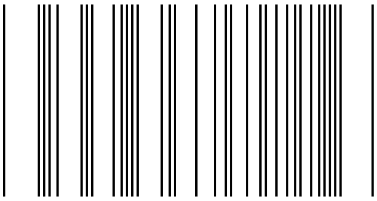
PosiCode A including a *GS* (ASCII 29) character:

```
Data:    AB^029CD
Options: parse
Encoder: posicode
```



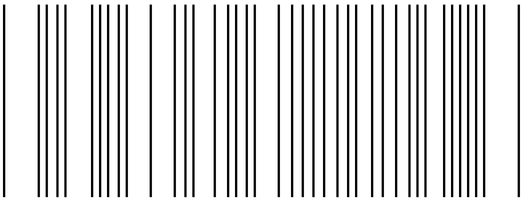
PosiCode A including an *FNC2* special character:

```
Data:    AB^FNC2CD
Options: parsefnc
Encoder: posicode
```



PosiCode B symbol with widened bars:

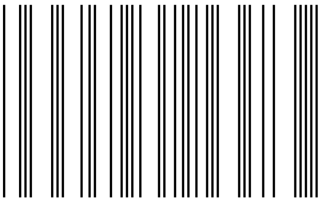
```
Data:    Abc123
Options: version=b inkspread=-1
Encoder: posicode
```



Example Limited PosiCode

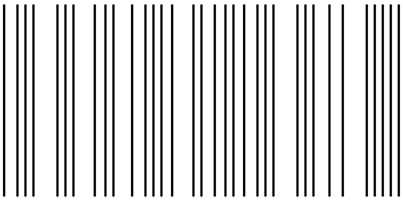
Limited PosiCode A with narrowed bars:

```
Data:    ABC-12.3
Options: version=limiteda
Encoder: posicode
```



Limited PosiCode B:

```
Data:    ABC-12.3
Options: version=limitedb
Encoder: posicode
```



5.9.19 Telepen

Telepen is an arbitrary length barcode symbology for encoding all 128 ASCII characters without the need for shift characters.

Also known as: Telepen Alpha, Telepen Full ASCII.

Variants:

- Telepen Numeric.

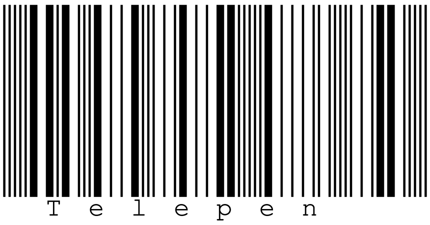
Standards: USS Telepen.

Data and Options

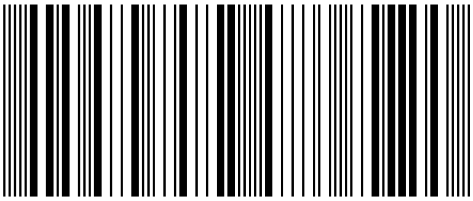
- The data can contain any standard ASCII data, values 0-127.
- When the **parse** option is specified, any instances of `^NNN` in the data field are replaced with their equivalent ASCII value, useful for specifying unprintable characters.
- The mandatory check digit is automatically included.
- *Deprecated: Use Telepen Numeric instead. When the* ***numeric*** *option is given, the data is read as either pairs of digits or* `0X`*,* `1X`*, etc. The singular values* `^000` *to* `^016` *can also be encoded using the* parse *option.*

Examples

```
Data:    Telepen
Options: includetext
Encoder: telepen
```



```
Data:    Telepen^013
Options: parse
Encoder: telepen
```



5.9.20 Telepen Numeric

Telepen Numeric is a variant of the Telepen symbology for efficient encoding of numeric data.

Variants:

- Telepen Alpha.

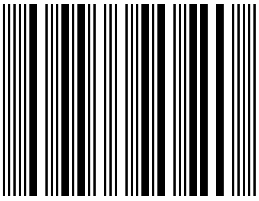
Standards: USS Telepen.

Data and Options

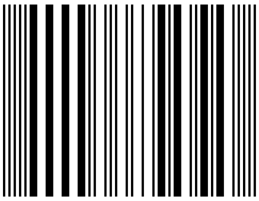
- The data is provided as either pairs of digits or `0X`, `1X`, etc. The singular values `^000` to `^016` can also be encoded using the *parse* option.
- When the **parse** option is specified, any instances of `^NNN` in the data field are replaced with their equivalent ASCII value, useful for specifying unprintable characters.
- The mandatory check digit is automatically included.

Examples

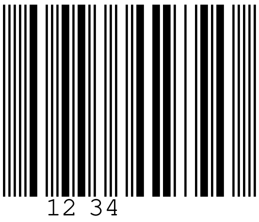
```
Data:    123456
Options:
Encoder: telepennumeric
```



```
Data:    1X345X
Options:
Encoder: telepennumeric
```



```
Data:    1234^005
Options: parse includetext
Encoder: telepennumeric
```



5.10 GS1 Composite Symbols

GS1 Composite barcode symbologies consist of a primary component beneath a 2D component (variations of MicroPDF417 and PDF417) used to encode supplementary GS1 formatted data.

Variants:

- EAN-13 Composite is a variant of EAN-13.
- EAN-8 Composite is a variant of EAN-8.
- UPC-A Composite is a variant of UPC-A.
- UPC-E Composite is a variant of UPC-E.
- GS1 DataBar Omnidirectional Composite is a variant of GS1 DataBar Omnidirectional.
- GS1 DataBar Stacked Omnidirectional Composite is a variant of GS1 DataBar Stacked Omnidirectional.
- GS1 DataBar Expanded Composite is a variant of GS1 DataBar Expanded.

- GS1 DataBar Expanded Stacked Composite is a variant of GS1 DataBar Expanded Stacked.
- GS1 DataBar Truncated Composite is a variant of GS1 DataBar Truncated.
- GS1 DataBar Stacked Composite is a variant of GS1 DataBar Stacked.
- GS1 DataBar Limited Composite is a variant of GS1 DataBar Limited.
- GS1-128 Composite is a variant of GS1-128.

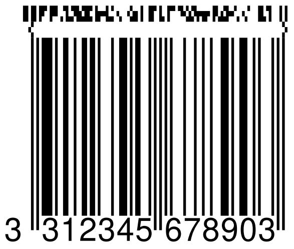
Standards: ISO/IEC 24723, ITS EAN.UCC Composite Symbology, AIM ISS - EAN.UCC Composite Symbology, GS1 General Specifications.

Data and Options

- The data field consists of a primary and secondary component separated by a pipe | character.
- The data for the primary component (preceding the pipe) is entered in a format identical to the corresponding non-composite barcode symbology.
- The data for the 2D component (following the pipe) is entered in GS1 Application Identifier standard format.
- Note that it is not necessary to specify *FNC1* characters since the encoder will insert these automatically where necessary.
- *Deprecated.* The **dontlint** option disables GS1 Application Identifier syntax validation allowing images to be generated for input that does not comply with GS1 standards.
- For maximum efficiency, if the data for the 2D component contains a number of application identifiers matching any of the specifications below then they should be provided in this given order:
  - `(11)...(10)...`
  - `(17)...(10)...`
  - `(90){0-3 digits not starting 0}{upper alpha}...`
- *Deprecated: Default is best unless your application dictates otherwise.* The **ccversion** option is used to select a specific 2D component:
  - `ccversion=a` - CC-A
  - `ccversion=b` - CC-B
  - `ccversion=c` - CC-C (GS1-128 Composite only)
  - If **ccversion** is not specified a CC-A component will be selected if the data will fit, otherwise a CC-B component will be used. In the case of GS1-128 Composite a CC-C component will be used if the data does not fit within either a CC-A or CC-B component.

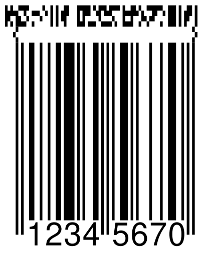
5.10.1 EAN-13 Composite

```
Data:    331234567890|(99)1234-abcd
Options: includetext guardwhitespace
Encoder: ean13composite
```



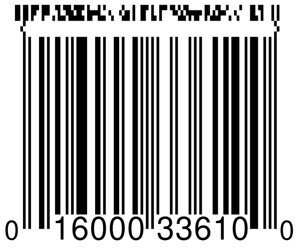
5.10.2 EAN-8 Composite

```
Data:    12345670|(21)A12345678
Options: includetext guardwhitespace
Encoder: ean8composite
```



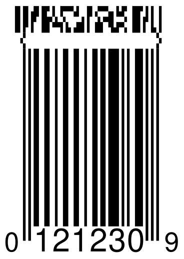
5.10.3 UPC-A Composite

```
Data:    01600033610|(99)1234-abcd
Options: includetext
Encoder: upcacomposite
```



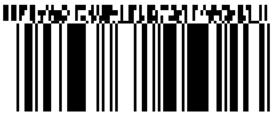
5.10.4 UPC-E Composite

```
Data:    0121230|(15)021231
Options: includetext
Encoder: upcecomposite
```



5.10.5 GS1 DataBar Omnidirectional Composite

```
Data:    (01)03612345678904|(11)990102
Options:
Encoder: databaromnicomposite
```



5.10.6 GS1 DataBar Stacked Omnidirectional Composite

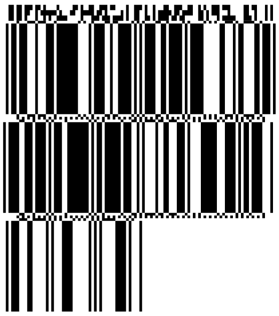
```
Data:    (01)03612345678904|(11)990102
Options:
Encoder: databarstackedomnicomposite
```

5.10.7 GS1 DataBar Expanded Composite

```
Data:    (01)93712345678904(3103)001234|(91)1A2B3C4D5E
Options:
Encoder: databarexpandedcomposite
```

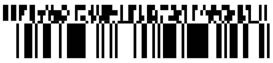
5.10.8 GS1 DataBar Expanded Stacked Composite

```
Data:    (01)00012345678905(10)ABCDEF|(21)12345678
Options: segments=4
Encoder: databarexpandedstackedcomposite
```



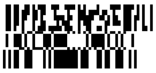
5.10.9 GS1 DataBar Truncated Composite

```
Data:    (01)03612345678904|(11)990102
Options:
Encoder: databartruncatedcomposite
```



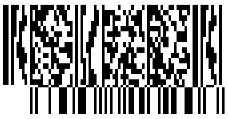
5.10.10 GS1 DataBar Stacked Composite

```
Data:    (01)03412345678900|(17)010200
Options:
Encoder: databarstackedcomposite
```



5.10.11 GS1 DataBar Limited Composite

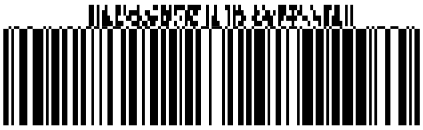
```
Data:    (01)03512345678907|(21)abcdefghijklmnopqrstuv
Options:
Encoder: databarlimitedcomposite
```



5.10.12 GS1-128 Composite

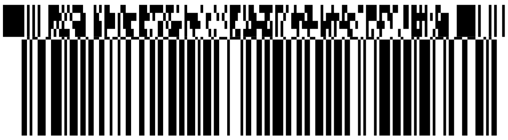
GS1-128 Composite with a CC-A 2D component:

```
Data:    (01)03212345678906|(21)A1B2C3D4E5F6G7H8
Options:
Encoder: gs1-128composite
```



GS1-128 Composite with a CC-C 2D component:

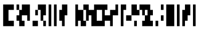
```
Data:    (00)030123456789012340|(02)13012345678909(37)24(10)1234567ABCDEFG
Options: ccversion=c
Encoder: gs1-128composite
```



5.10.13 CC-A

Isolated CC-A 2D component:

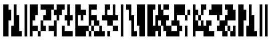
```
Data:    (01)95012345678903
Options: ccversion=a cccolumns=3
Encoder: gs1-cc
```



5.10.14 CC-B

Isolated CC-B 2D component:

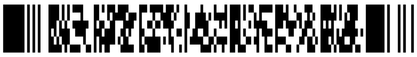
```
Data:    (01)95012345678903(3103)000123
Options: ccversion=b cccolumns=4
Encoder: gs1-cc
```



5.10.15 CC-C

Isolated CC-C 2D component:

```
Data:    (02)13012345678909(37)24(10)1234567ABCDEFG
Options: ccversion=c cccolumns=5
Encoder: gs1-cc
```



5.11 Raw Symbols

5.11.1 DAFT

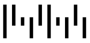
DAFT is an encoder for directly specifying the descender, ascender, full-height, trackerbar succession for a custom 4 state barcode symbol.

Data and Options

- The data field contains a sequence of the characters `D`, `A`, `F` or `T` to denote the descender, ascender, full-height and tracker bars of a custom 4 state symbol.

Example

```
Data:    FATDAFTDAD
Options:
Encoder: daft
```



5.11.2 Flattermarken

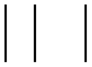
Flattermarken are identification marks used in book production that facilitate the proper arrangement of bound sections by a book binder.

Data and Options

- The data field can holding any sequence of digits corresponds to a 9 module width with the following meaning:
  - 1-9: a single mark exists in the corresponding module position
  - 0: unmarked sequence of modules
- The **inkspread** option can be used to adjust the width of the bars.
- If greater fidelity is required then the raw encoder should be used instead.

Example

```
Data:    1304
Options: inkspread=-1
Encoder: flattermarken
```



5.11.3 Raw

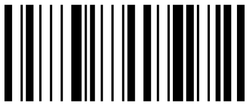
The **raw** encoder is used for directly specifying the space/bar succession of a custom barcode symbol.

Data and Options

- The data field contains an alternating sequence of widths (1 to 9) for the bars and spaces of a custom symbol.

Example

```
Data:    331132131313411122131311333213114131131221323
Options: height=0.5
Encoder: raw
```



5.12 Partial Symbols

5.12.1 EAN-2

EAN-2 is the two-digit add-on code that accompanies a EAN or UPC type barcode symbol such as an ISBN or ISSN.

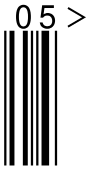
Also known as: Two-Digit Add-On, Two-Digit Supplement, UPC-2

Data and Options

- The data field must contain two digits.
- The **includetext** option should normally be supplied.

Example

```
Data:    05
Options: includetext guardwhitespace
Encoder: ean2
```



5.12.2 EAN-5

EAN-5 is the five-digit add-on code that accompanies an EAN or UPC type barcode symbol such as an ISBN or ISSN.

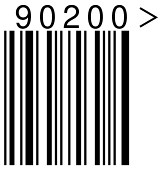
Also known as: Five-Digit Add-On, Five-Digit Supplement, UPC-5

Data and Options

- The data field must contain five digits.
- The **includetext** option should normally be supplied.

Example

```
Data:    90200
Options: includetext guardwhitespace
Encoder: ean5
```



5.13 GS1 Application Identifier Standard Format

Certain barcode symbologies (including GS1-128, GS1 DataBar Expanded, GS1 DataMatrix, GS1 QR Code and GS1 Composite Symbols) represent standardized GS1 data and require that their data field is provided in GS1 Application Identifier standard format, consisting of a concatenated string of *AIs* along with their corresponding values.

The AIs are a set of approximately one hundred two-, three- or four-digit prefixes written within parentheses that represent physical attributes and business information, e.g.

- *(00)* is an eighteen-digit SSCC.
- *(01)* is a fourteen-digit GTIN.
- *(403)* is a variable-length routing code.

The following input represents GTIN *0061414199996*; Expiration Date *1 January 2010*; Batch *123ABC*; Serial *1234567890*:

```
(01)0061414199996(17)100101(10)123ABC(21)1234567890
```

Encoders for barcode symbologies that expect data in GS1 Application Identifier standard format will take care of parsing the input and inserting any necessary *FNC1* characters to delimit variable length fields.

Note: Instances of parentheses, `(` and `)`, within Application Identifier values in the input must be escaped using the `parse` option as `^040` and `^041`, respectively.

GS1 Application Identifier Linting

The input is checked against the structural rules for the GS1 Application Identifiers, as described in this article, unless the **dontlint** option is given. The Application Identifier definitions are provided in the GS1 General Specifications.

6 Options Reference

6.1 Check Digits

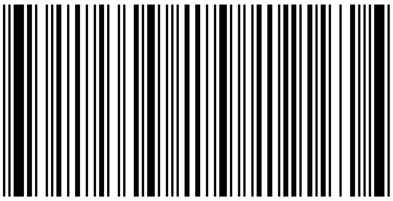
6.1.1 includecheck

Generate check digit(s) for symbologies where the use of check digits is optional.

Example

Calculate the optional check characters of this Code 93 symbol:

```
Data:    CHECK ME OUT
Options: includecheck
Encoder: code93
```



6.1.2 includecheckintext

Show the calculated check digit in the human readable text.

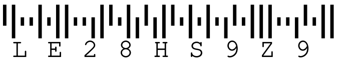
Notes

- For barcode symbologies where the check digit is not mandatory, this option must be used in combination with **includecheck**.
- If any part of the checksum does not have a printable representation then that part is not displayed.

Example

Display the check digit of this Royal Mail barcode:

```
Data:    LE28HS9Z
Options: includetext includecheckintext
Encoder: royalmail
```



6.2 Input Processing

6.2.1 parse

In supporting barcode symbologies, when the *parse* option is specified, any instances of `^NNN` in the data field are replaced with their equivalent ASCII value, useful for specifying unprintable characters.

Additionally, control character names can be used to specify equivalent ASCII values, as follows:

Sequence	ASCII value
^NUL	0
^SOH	1
^STX	2
^ETX	3
^EOT	4
^ENQ	5
^ACK	6
^BEL	7
^BS	8
^TAB	9
^LF	10
^VT	11
^FF	12
^CR	13
^DLE	16
^DC1	17
^DC2	18
^DC3	19
^DC4	20
^NAK	21
^SYN	22
^ETB	23
^CAN	24
^EM	25
^SUB	26
^ESC	27
^FS	28
^GS	29
^RS	30
^US	31

ASCII control characters `SO` and `SI` cannot be encoded by name (since `SO` would prefix clash with `SOH`).

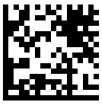
Note: When this option is enabled, literal instances of ”^” in the data should be escaped as `^094` to avoid replacement if the subsequent data characters represent a valid substitution. For example, literal ”^123” in the input data can be escaped as `^094123`, literal ”^RS” in the data can be escaped as `^094RS`, and literal ”^ABC” in the data cam be escaped as `^094ABC` (in case `^ABC` becomes a valid substitution in the future).

Example

Equivalent symbols:

```
Data:    This is Data Matrix
Options:
Encoder: datamatrix

Data:    This is ^068ata Matrix
```

```
Options: parse
Encoder: datamatrix
```



6.2.2 parsefnc

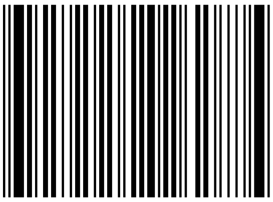
In supporting barcode symbologies, when the **parsefnc** option is specified, non-data function characters can be specified by escaped combinations such as `^FNC1`, `^FNC4`, `^SFT/` and `^ECI000003`.

Note: When this option is enabled, literal instances of `^` in the input data can be escaped as `^^`.

Example

Manually-composed Code 93 Extended demonstrating use of the special shift combination `(/)A` to represent *!*:

```
Data:    TERRY^SFT/A
Options: parsefnc includecheck
Encoder: code93
```



6.3 Symbol Dimensions

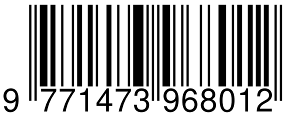
6.3.1 height

Height of longest bar, in inches.

Example

A 1/2 inch tall EAN-13:

```
Data:    977147396801
Options: includetext height=0.5
Encoder: ean13
```



6.3.2 width

Stretch the symbol to precisely this width, in inches.

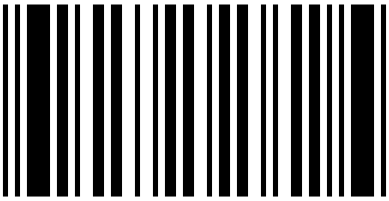
Notes

- This parameter literally stretches the symbol and text to the desired width which will may distort the human readable text.
- For information about resizing symbols read the article on resizing symbols.

Example

A 2 inch wide Code 93 symbol:

```
Data:    TERRY
Options: width=2
Encoder: code93
```



6.4 Element Properties

These are options that allow you to compensate for print gain or print loss resulting from the properties of the printing process or substrate.

6.4.1 inkspread

For linear barcodes, the amount by which to reduce the bar widths to compensate for inkspread, in points.

For matrix barcodes, the amount by which the reduce the width and height of dark modules to compensate for inkspread, in points.

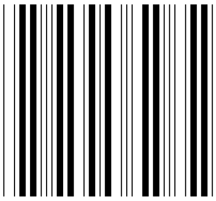
Notes

- Negative values will increase the bar width.

Example

Code 39 for a printer with very runny ink:

```
Data:    TEZ
Options: inkspread=0.6
Encoder: code39
```



6.4.2 inkspreadh

For matrix barcodes, the amount by which the reduce the width of dark modules to compensate for inkspread, in points.

Note: inkspreadh is most useful for stacked-linear type barcodes such as PDF417 and Codablock F.

6.4.3 inkspreadv

For matrix barcodes, the amount by which the reduce the height of dark modules to compensate for inkspread, in points.

6.4.4 dotty

For matrix barcodes, render the modules as dots rather than squares. The dot radius can be adjusted using the **inkspread** option.

6.5 Text Properties

6.5.1 includetext

Show human readable text for data in symbol.

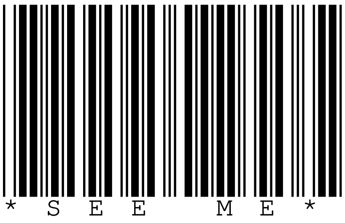
Notes

- If a character in the data does not have a printable representation then it is not displayed

Example

Display the text encoded in this Code 39 symbol:

```
Data:    SEE ME
Options: includetext
Encoder: code39
```



6.5.2 textfont

The PostScript font name for text.

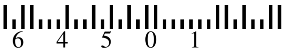
Notes

- The font name must be the literal name of a PostScript font that is available to the system.
- This option should be used in combination with the **includetext** option.
- The PostScript font name for a font file can be determined with the following command from the fontconfig library:
  - `fc-scan --format "%{postscriptname}\n" /usr/share/fonts/truetype/somefont.ttf`

Example

Customise the human readable text of this USPS POSTNET symbol

```
Data:    64501
Options: includetext textfont=Times-Roman textsize=9
Encoder: postnet
```



6.5.3 textsize

The font size of the text in points.

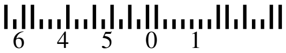
Note

- This option should be used in combination with the **includetext** option.

Example

Customise the human readable text of this USPS POSTNET symbol

```
Data:    64501
Options: includetext textfont=Times-Roman textsize=9
Encoder: postnet
```



6.5.4 textgaps

The inter-character spacing of the text.

Note

- This option should be used in combination with the **textxalign** option.

6.5.5 alttext

Specify text to display other than what is provided in the data field.

Note

- This option should be used in combination with the includetext option.

6.6 Text Positioning

6.6.1 textxalign

The **textxalign** option is used to specify where to horizontally position the text.

- `textxalign=offleft`
- `textxalign=left`
- `textxalign=center`
- `textxalign=right`
- `textxalign=offright`
- `textxalign=justify`

6.6.2 textyalign

The **textyalign** option is used to specify where to vertically position the text.

- `textyalign=below`
- `textyalign=center`
- `textyalign=above`

6.6.3 textxoffset

The horizontal position of the text in points relative to the default position.

6.6.4 textyoffset

The vertical position of the text in points relative to the default position.

Notes

- By default (in the absence of **textxalign** or **textyalign**), each character of text is placed immediately below the corresponding modules where this is possible.
- Where there isn't such a direct relationship then the default is to position the text centrally beneath the symbol.

6.7 Border Properties

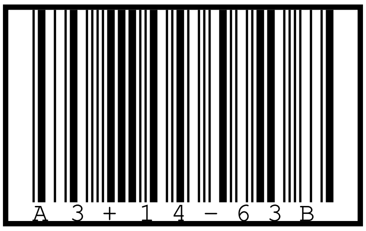
6.7.1 showborder

Display a border around the symbol.

Example

Display a customised border around this Codabar symbol:

```
Data:    A3+14-63B
Options: includetext showborder borderwidth=2 borderbottom=8
Encoder: rationalizedCodabar
```



6.7.2 borderwidth

Width of the border, in points.

6.7.3 borderleft

Gap between the left edge of the border and the symbol, in points.

6.7.4 borderright

Gap between the right edge of the border and the symbol, in points.

6.7.5 bordertop

Gap between the top edge of the border and the symbol, in points.

6.7.6 borderbottom

Gap between the bottom edge of the border and the symbol, in points.

6.8 Symbol Colors

6.8.1 barcolor

Color of the bars or dark modules, either as a hex `RRGGBB` value or a hex `CCMMYYKK` value.

6.8.2 backgroundcolor

Color of the light background or light modules, either as a hex RRGGBB value or a hex CCMMYYKK value.

6.8.3 bordercolor

Color of the border, either as a hex RRGGBB value or a hex CCMMYYKK value.

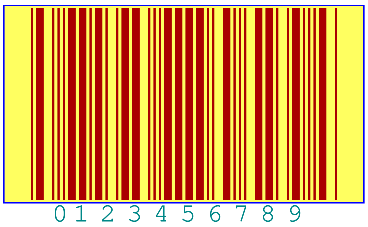
6.8.4 textcolor

Color of the respective component, either as a hex RRGGBB value or a hex CCMMYYKK value.

Examples

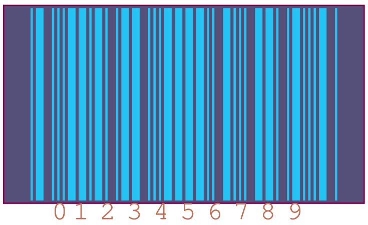
Colorized Code 11 symbol using the RGB colour space:

```
Data:    0123456789
Options: includetext barcolor=AA0000 textcolor=008888 backgroundcolor=FFFF60 showborder bord
Encoder: code11
```



Colorized Code 11 symbol using the CMYK colour space:

```
Data:    0123456789
Options: includetext barcolor=AA000000 textcolor=00888844 backgroundcolor=CCCC6000 showborde
Encoder: code11
```



6.9 EAN-UPC Add Ons

6.9.1 addontextfont

The font name of the add on text.

Notes

- The font name must be the literal name of a PostScript available font.
- These options must be used in combination with the **includetext** option.

6.9.2 addontextsize

The size of the add on text, in points

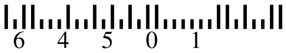
Notes

- These options must be used in combination with the **includetext** option.

Example

Customise the human readable text of this USPS POSTNET symbol

```
Data:    64501
Options: includetext textfont=Times-Roman textsize=9
Encoder: postnet
```



6.9.3 addontextxoffset

Overrides the default horizontal positioning of the add on text.

6.9.4 addontextyoffset

Overrides the default vertical positioning of the add on text.

6.10 EAN-UPC Guards

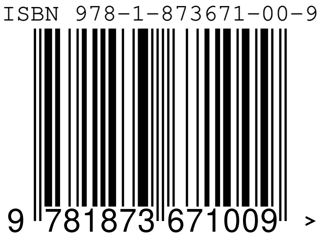
6.10.1 guardwhitespace

Display whitespace guards.

Example

ISBN-13 with tiny whitespace guard:

```
Data:    978-1-873671-00
Options: includetext guardwhitespace guardwidth=3 guardheight=3
Encoder: isbn
```



6.10.2 guardwidth

Width of the whitespace guards, in points.

6.10.3 guardheight

Height of the whitespace guards, in points.

6.10.4 guardleftpos

Override the default horizontal position of the left whitespace guard.

6.10.5 guardrightpos

Override the default horizontal position of the right whitespace guard.

6.10.6 guardleftypos

Override the default vertical position of the left whitespace guard.

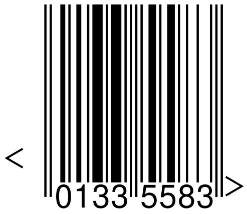
6.10.7 guardrightypos

Override the default vertical position of the right whitespace guard.

Example

EAN-8 with very mangled whitespace guards:

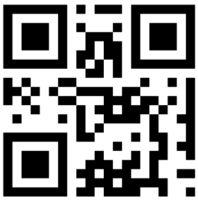
```
Data:    01335583
Options: includetext guardwhitespace guardleftpos=14 guardrightpos=7 guardleftypos=15 guardr
Encoder: ean8
```



7 QR code in the margin

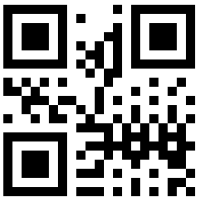
The marginnotes are placed with the help of the macro of the same name `\marginnote`, which itself needs package `narginnote`. It is loaded by default if the macro doesn't exists.

```
\QR[1]<barcode>{http://mirror.ctan.org/help/Catalogue/bytopic.html\#barcode}
\blindtext

{\psset{fontstyle=\scriptsize\ttfamily}%
  \QR[1]{http://mirror.ctan.org/help/Catalogue/bytopic.html\#barcode}%
}
\blindtext

\QR{http://mirror.ctan.org/usergrps/dante/dtk/doc/beispiel.pdf}
\blindtext
\QR<Beispiel>{http://mirror.ctan.org/usergrps/dante/dtk/doc/beispiel.pdf}
\blindtext

\QR{http://de.wikipedia.org/wiki/QR-Code}
\blindtext
```



barcode

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.



bytopic.html#barcode

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language. Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

`beispiel.pdf`

Beispiel

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

`QR-Code`

8 List of all optional arguments for pst-barcode

Key	Type	Default
fontstyle	ordinary	\small
transx	ordinary	0
transy	ordinary	0
scalex	ordinary	1
scaley	ordinary	1
rotate	ordinary	0
file	boolean	true

References

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[5] Nikolai G. Kollock. *PostScript richtig eingesetzt: vom Konzept zum praktischen Einsatz.* Vaterstetten: IWT, 1989.

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[12] Timothy Van Zandt. *multido.tex - a loop macro, that supports fixed-point addition.* 1997. URL: /macros/generic/multido.tex.

[13] Timothy Van Zandt and Denis Girou. "Inside PSTricks". In: *TUGboat* 15 (Sept. 1994), pp. 239–246.