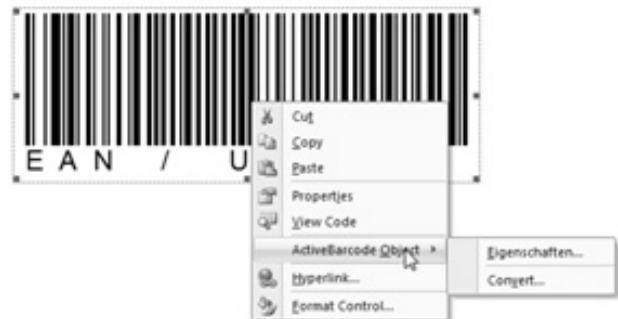




ActiveBarcode



Barcode types

<http://www.activebarcode.com/>

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ActiveBarcode

About this manual

This present documentation is a shortened version of the extensive online documentation. This document outer finally concentrates on the topic "Barcode types".

You find the complete documentation at ours homepage <http://www.activebarcode.com/>. There you find

- detailed and current information
- examples for download
- extensive step-by-step instructions
- example videos
- a detailed FAQ
- and much more










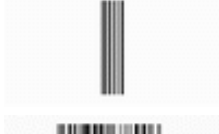
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Dokument Version 2.0.176












Barcode types



ActiveBarcode supports the following barcode types:

ActiveBarcode calculates the check digit – where available – automatically for you.

Code	Beispiel	Length	Character set	Description
Code 128		variable	ASCII (128 chars)	Modern type of barcode. Has highly compressed data. Very often used.
Code 128A		variable	Uppercase letters and control characters	Subcode of Code 128. This type is normally not used for itself. Use Code 128 or EAN 128 instead.
Code 128B		variable	Upper- and lowercase letters	Subcode of Code 128. This type is normally not used for itself. Use Code 128 or EAN 128 instead.
Code 128C		variable	numeric 0–9	Subcode of Code 128. This type is normally not used for itself. Use Code 128 or EAN 128 instead.
EAN–128, UCC–128		variable	ASCII (128 chars)	The EAN/UCC 128 is a special form of the Code 128. It's used for goods and palettes in commerce and industry. There can be coded more than one data field inside one barcode using Application Identifiers.
EAN–13		13	numeric 0–9	The EAN code is primarily used in supermarkets to identify product at the point of sales.
EAN–8		8	numeric 0–9	This is the short version of EAN–13 for extremely small products.
EAN–5		5	numeric 0–9	AddOn code. For example for books (see ISBN).
EAN–2		2	numeric 0–9	AddOn code. For example for magazines.
JAN		13	numeric 0–9	Japanese Article Numbering. It's primarily used in supermarkets to identify product at the point

Data Matrix		variable	ASCII	of sales. 2D barcode for encoding mass text or data in only one code.
PDF417		variable	ASCII	2D barcode for encoding mass text or data in only one code.
EAN-99		13	numeric 0-9	"EAN-99 is a special form of the EAN-13, which just starts with ""99"". EAN 99 is used as an in-store coupon."
EAN-Velocity		8	numeric 0-9	EAN-Velocity is a special form of the EAN-8. This code is internally used by dealers for products that have no EAN-13 or EAN-8 code from the producer.
ISBN-13		13	numeric 0-9	International Standard Book Number. ISBN standard type since 01. January 2007.
ISBN-13 Dual		13	numeric 0-9	International Standard Book Number. ISBN transitional type from 01. January 2006 to 31. December 2006.
ISBN-10		13	numeric 0-9	International Standard Book Number. ISBN standard type until 31. December 2005.
ISSN		8	numeric 0-9	International Standard Serial Number. The ISSN serves the short unmistakable identification of sequentially appearing publications, e.g., magazines.
ISMN		10	numeric 0-9	The ISMN (Internationally Standard Music Number) is used for marking printed musical publications.
EAN-14		14	numeric 0-9	The EAN 14 code is used for traded goods
DUN-14		14	numeric 0-9	Distribution Unit Number. Also have a look at EAN-14 and ITF-14.

SCC-14		14	numeric 0-9	Shipping Container Symbol. Also have a look at EAN-14 and ITF-14.
ITF-14		14	numeric 0-9	The ITF-14 barcode is used to create the Shipping Container Symbol. This code is used to mark cartons and palettes that are including goods with an EAN-13 code.
EAN-18/NVE		18	numeric 0-9	"The EAN 18/NVE is used to display the ""Nummer der Versandeinheit"" (NVE)."
SSCC-18		18	numeric 0-9	Serial Shipping Container Code. It is used throughout the supply chain as an identifier for item tracing and internal control.
UPC-A		12	numeric 0-9	The UPC A code is the standard version of the UPC code and has 12 digits. It is also called UPC 12 and is very similar to the EAN code.
UPC-E		8	numeric 0-9	This is the short version of UPC-A for extremely small products.
Code 39		variable	A-Z, 0-9, 5 special chars	Also known as Code 3 of 9. Often used type that is self checking.
Code 39 Extended		variable	ASCII (127 chars)	Also known as Code 3 of 9 Extended. Extension of Code 39.
Code 25		variable	numeric 0-9	Also known as Code 2 of 5 and Code 25 Industrial. Rather old code for industrial use.
Code 25 Interleaved		variable	numeric 0-9	Also known as Code 2 of 5 Interleaved. Industrial use.
Codabar		variable	0-9, 6 special characters	Old barcode type. Often used in medicine in the past.

Code 93		variable	A–Z, 0–9, 5 special chars	Same character set as Code 39 but more compacted code that requires less space.
Code 93 Extended		variable	ASCII (127 chars)	Same character set as Code 39 Extended but more compacted code that requires less space.
PZN		7	numeric 0–9	Pharmazentralnummer für medicine. Special form of Code 39.
Leitcode		14	numeric 0–9	The Leitcode is used by Deutschen Post/DHL.
Identcode		12	numeric 0–9	The Identcode is used by Deutschen Post/DHL.
MSI Plessey		variable	numeric 0–9	Old code typ. Was used for goods and books in the past.
PostNet		variable	numeric 0–9	This code is used to improve the speed of sorting and delivering of mail.
Royal Mail		variable	A–Z, 0–9	The Royal Mail 4 State Customer Code (RM4SCC) was created for automated mail sorting processes.

(*) This type number is the number of the barcode of the control's property *Type*.

Code-128

Valid characters: Nearly the complete ASCII character set including control characters

Length: variable (no fixed length)

Check digit: Calculated according to Modulo 103
ActiveBarcode calculates the check digit for you automatically

ActiveBarcode Type#:
Code 128 – #14 – CODECODE128
Code 128A – #11 – CODECODE128A
Code 128B – #12 – CODECODE128B
Code 128C – #13 – CODECODE128C

Example:



Description: **Code 128 Auto** can encode the complete **ASCII-character set**. This is done by switching between all 3 character sets of Code 128:

Code 128A: Includes upper case letters and control characters.

Code 128B: Includes upper and lower case letters.

Code 128C: Specially optimized for numbers.

This code uses an internal check digit that won't be displayed in the text line under the code.

EAN/UCC 128:

The EAN/UCC 128 is a special form of Code 128, mainly used for containers.

GS1-128, EAN/UCC-128, EAN-128, UCC-128

Valid characters: 01234567890

Length: variable (no fixed length)

Check digit: Calculated according to Modulo 103
ActiveBarcode calculates the check digit for you automatically

ActiveBarcode Type#: EAN/UCC-128 – #15 – CODEEAN128
EAN/UCC-128 AI – #28 – CODEEAN128AI

Example:



Description:

The *GS1-128* is a special form of the Code 128. It's used for goods and palettes in commerce and industry. The name *GS1-128* replaces the old name *EAN/UCC 128*.

There can be coded more than one data field inside one barcode. For example a food palette gets a barcode with the product number (e.g. the EAN 13 number) and additional the weight and the pull date.

To code this different data field inside one barcode the *GS1-128* or *EAN/UCC-128* codes used the international standard of **Application Identifiers (AI)**. A barcode could look like this:



The numbers inside the brackets are the Application Identifiers (AI) and the data behind are the data for this AI. The brackets are only used for the human readable line of the barcode. There are not coded! The AI "(01)" defines that the product code follows. This product code is always 14 digits long. This length is specified with the AI. This 14 data digits follow directly to the AI. After the product code of 14 digits, the next AI follows. In this example it's the pull date, specified with the AI "(15)". This one is always 6 digits long and must be specified using the mask YYMMTT. In this example the date is 31st December 2005

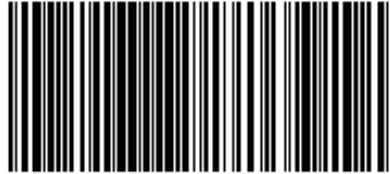
How do I create such a barcode with ActiveBarcode?

ActiveBarcode offers you a very easy form of this *GS1-128* or *EAN/UCC-128* code: The "EAN/UCC 128 AI" type. You simply enter the human readable line including the brackets: e.g. *(01)01234567890128(15)051231*. ActiveBarcode removes the brackets and codes the *EAN/UCC 128* code correct as

010123456789012815051231.

If you are using AI's that have a variable length of data, you may be forced to use the control character **FNC1** before the next AI to close the current AI. This control character "tells" the scanner that this AI is closed and a new one will follow.

Example: You want a code containing the *Number in parts* (AI #30) and the *serial number* (AI #21):



(30) 19 (21) 1 2 3 4 5 6 7 8 9 0 1 2

In this example the "number of parts" is 19 and the serial number is 123456789012. The "number of parts" can be up to 8 digits long. So we code a FNC1 after the 9 to let the scanner know, that the AI is closed here now and a new one follows. To create a FNC1 with ActiveBarcode simply enter <FNC1> into the text property as shown in this example:

(30)19<FNC1>(21)123456789012

More information about this can be found at Wikipedia:
<http://en.wikipedia.org/wiki/EAN-128>

EAN-13, GTIN

- Valid characters:** 01234567890
- Length:** 13
- Check digit:** Calculated according to Modulo 10
ActiveBarcode calculates the check digit for you automatically
- ActiveBarcode Type#:** EAN-13 – #01 – CODEEAN13
- Example:**



Description: The EAN barcode is primarily used in supermarkets to identify product at the point of sales. The products contain the EAN number or GTIN (Global Trade Item Number) to identify itself.

The standard EAN/GTIN product code has 13 digits. For smaller sized products there is a short version of the EAN/GTIN code the EAN 8

- The first 2 digits of the EAN-13 or GTIN (Global Trade Item Number) code are containing the country of the article. The country is coded with 2 numbers, e.g. the numbers 40, 41, 42 and 43 represent Germany.
- The next 5 digits code the producer of the article.
- The following 5 digits represent the article number which is given by the producer.
- The remaining last digit is the check digit. ActiveBarcode calculates this check digit for you.

Each country has a coding authority (or numbering association) which assigns codes to **manufacturers** and maintains a central database. The EAN system is under the overall direction of the International Article Numbering Association, based in Brussels, Belgium. Each country using the EAN system maintains a separate Article Numbering Association.

History:In 1977 the EAN code was used by 12 countries (all the countries of the European Community). Today, use of the EAN code has spread to all west European countries, USA, Canada, Australia and Japan. Today the EAN is called GTIN (Global Trade Item Number)

The article registration process in the supermarket has become easy and fast. There is no need to enter all data of the article using a keyboard – you just have to pass the article containing the barcode over a scanner. The scanner reads the barcode and sends the information (the barcode number) to the computer. The computer reads the record for the articles barcode number containing the price and article name. If the barcode is damaged there is also a way to enter the barcode number by hand.

Advantages of using the EAN/GTIN code:

1. It's not required to label all articles with the price. The price is stored in the database and can be accessed via the barcode number. For customers the price is only needed once where the article is stored in the supermarket.
2. It is fast and safe because there is no way to make a mistake.

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EAN-8

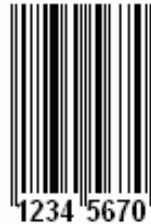
Valid characters: 01234567890

Length: 8

Check digit: Calculated according to Modulo 10
ActiveBarcode calculates the check digit for you automatically

ActiveBarcode Type#: EAN-8 – #02 – CODEEAN8

Example:



Description: EAN 8 is the short form of EAN-13. This code is only used if the article is too small for an EAN-13 code. The restrictions for this are very hard. An EAN-8 will only be granted if a EAN-13 will uses more than 25% of the front space of the article. An EAN-8 always has 8 digits:

- 3 digits prefix
- 4 digits: article identification.
- 1 check digit.

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EAN-2 Addon / EAN-5 Addon

Valid characters: 01234567890
Length: 2 bzw. 5
Check digit: none
ActiveBarcode Type#: EAN-5 – #03 – CODEEAN5
EAN-2 – #04 – CODEEAN2

Example:



Description: **EAN 5** and **EAN 2** are add-ons for EAN 13 and UPC-A.

The EAN 2 add-on is often used on newspapers and magazines. The EAN 5 add-on is often used for the price of books together with the ISBN code.

Both, the EAN 5 and the EAN 2 add-ons don't have a check digit.

The EAN 5 and EAN 2 add-on codes are only used in addition to EAN 13, EAN 8 and UPC. The EAN 5 and EAN 2 add-ons cannot be read by a scanner if they are used without these codes. Using ActiveBarcode you have to make two barcode objects – one for the main code and one for the add-on.

EAN-5 currency indicator for books in English language: The first digit of the EAN-5 is the currency indicator. If it's set to 0 or 1 the price is stated in GBP (£). 5 is US\$, 6 is Canadian \$, 3 is Australian \$ and 4 is New Zealand \$. The four following digits represent the price multiplied by 100. For example 50799 means the price for this book is US\$ 7.99. If the last four digits are 9999, it means that the price is higher (or equal to) 99.99 in the currency given.

Here are two examples:



Example: A book with ISBN and price code (£ 79.00)



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JAN

Valid characters: 01234567890

Length: 13

Check digit: Calculated according to Modulo 10
ActiveBarcode calculates the check digit for you automatically

ActiveBarcode Type#: EAN-13 – #01 – CODEEAN13

Example:



Description: JAN (Japanese Article Numbering) is another name for the EAN-13 barcode. The first two digits – the country code – must be 45 or 49 (Japan).

Use the EAN-13 barcode type to create a JAN barcode with ActiveBarcode.

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Data Matrix

- Valid characters:** full ASCII
- Length:** variable (no fixed length)
- Check digit:** Calculated according to Reed–Solomon–Error correction
ActiveBarcode calculates the check digit for you automatically
- ActiveBarcode Type#:** DataMatrix – #37 – CODEDATAMATRIX
DataMatrix Square – #42 – CODEDATAMATRIXSQUARE
DataMatrix Rectangular – #43 – CODEDATAMATRIXRECTANGULAR
DataMatrix <Symbol size>– #44 bis #73 – CODEDATAMATRIX<Symbol size>

Example:



Description: One of the best known 2D codes is the Data Matrix code and it consists of 4 main components:

- **Data area:** This area contains the data in codified form.
- **Closed limitation line:** This is the corner that is represented in normal alignment to the left and below the data area with an uninterrupted line. Based on this, the code and its alignment is recognized while scanning.
- **Open borderline:** This is the opposite corner of the "closed limitation line". These lines (above and to the right) consist of alternating black and white dots. These are used to the determination of lines and columns while scanning.
- **Quiet zone:** This area surrounds the code. This area must be at least so wide as one dot of the code.

The development of the Data Matrix code started in the 80ies. Today there are different development steps, which differ in the error correction. These are name as ECC n. ECC is "Error Checking and Correction Algorithm" and that 'n' stands for a number. Basically there are two versions: ECC 000–140 and ECC 200. The current, most certain and recommended variant is **ECC 200** (Reed–Solomon–Error correction). ActiveBarcode uses ECC 200 for the creation of the Data Matrix code. A Data Matrix code will be still readable when up to 25% of itself is covered or damaged.

A Data Matrix Code can encode up to 3116 numbers or up to 2335 characters. Different symbol sizes are used depending on the amount of data to be encoded.

In ActiveBarcode you can choose between different options for creating a DataMatrix:

- **DataMatrix (Type #37)**
In this type, ActiveBarcode always selects the best symbol size that fits for the data to encode. The symbol sizes 12x12 and 8x18 and the symbol size 20x20 and 12x36 have the same number of data they can encode. ActiveBarcode always uses the square versions of the Data Matrix Symbol in this case.

- **DataMatrix Square (Type #42)**

In this type, ActiveBarcode always selects the best square symbol size that fits for the data to encode.

- **DataMatrix Rectangular (Type #43)**

In this type, ActiveBarcode always selects the best rectangular, non square symbol size that fits for the data to encode.

- **DataMatrix <Symbol size> (Types #44 to #73)**

You select the symbol size for yourself via the type, e.g. you select the type "DataMatrix 18x18" to get a code with a symbol size of 18x18.

ActiveBarcode offers the following options/types for the DataMatrix:

value long	Code	Name
37	DataMatrix	CODEDATAMATRIX
42	DataMatrix Square	CODEDATAMATRIXSQUARE
43	DataMatrix Rectangular	CODEDATAMATRIXRECTANGULAR
44	DataMatrix 10x10	CODEDATAMATRIX10X10
45	DataMatrix 12x12	CODEDATAMATRIX12X12
46	DataMatrix 8x18	CODEDATAMATRIX8X18
47	DataMatrix 14x14	CODEDATAMATRIX14X14
48	DataMatrix 8x32	CODEDATAMATRIX8X32
49	DataMatrix 16x16	CODEDATAMATRIX16X16
50	DataMatrix 12x26	CODEDATAMATRIX12X26
51	DataMatrix 18x18	CODEDATAMATRIX18X18
52	DataMatrix 20x20	CODEDATAMATRIX20X20
53	DataMatrix 12x36	CODEDATAMATRIX12X36
54	DataMatrix 22x22	CODEDATAMATRIX22X22
55	DataMatrix 16x36	CODEDATAMATRIX16X36
56	DataMatrix 24x24	CODEDATAMATRIX24X24
57	DataMatrix 26x26	CODEDATAMATRIX26X26
58	DataMatrix 16x48	CODEDATAMATRIX16X48
59	DataMatrix 32x32	CODEDATAMATRIX32X32
60	DataMatrix 36x36	CODEDATAMATRIX36X36
61	DataMatrix 40x40	CODEDATAMATRIX40X40
62	DataMatrix 44x44	CODEDATAMATRIX44X44
63	DataMatrix 48x48	CODEDATAMATRIX48X48
64	DataMatrix 52x52	CODEDATAMATRIX52X52
65	DataMatrix 64x64	CODEDATAMATRIX64X64
66	DataMatrix 72x72	CODEDATAMATRIX72X72
67	DataMatrix 80x80	CODEDATAMATRIX80X80
68	DataMatrix 88x88	CODEDATAMATRIX88X88
69	DataMatrix 96x96	CODEDATAMATRIX96X96
70	DataMatrix 104x104	CODEDATAMATRIX104X104

71	DataMatrix 120x120	CODEDATAMATRIX120X120
72	DataMatrix 132x132	CODEDATAMATRIX132X132
73	DataMatrix 144x144	CODEDATAMATRIX144X144

A list of the DataMatrix possible symbol sizes with examples is available at our examples page.

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PDF417

Valid characters:

Length: variable (no fixed length)

Check digit: none

ActiveBarcode Type#: PDF417 – #36 – CODEPDF417

Example:



Description:

The PDF417 is a 2D barcode. It is based on stacked barcodes. The characters are coded in code words. A code word consists of 17 modules, which consist respectively of 4 strokes and 4 spaces.

The PDF417 is a very compact and flexible code with variable length. Up to 1108 bytes can be coded.

Error Correction Level:

PDF417 uses a differently strong error correction. It is used according to the code length. By use of less than 41 code words the Error Correction level 2 is used. From 41 to 160 code words ECL3 is used. From 161 to 320 code words ECL4 is used. From 321 code words ECL5 is used.



Example: PDF417 code with ECL2



Example: PDF417 code with ECL3



Example: PDF417 code with ECL4



Example: PDF417 code with ECL5

EAN-99

Valid characters: 01234567890

Length: 13

Check digit: Calculated according to Modulo 10
ActiveBarcode calculates the check digit for you automatically

ActiveBarcode Type#: EAN-13 - #16 - CODEEAN99

Example:



Description: EAN-99 is a special form of EAN-13 which just starts with "99". EAN 99 is used as an in-store coupon. These are coupons which are good only at that particular store and are actually distributed in the store in which they will be honored.

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EAN–Velocity

Valid characters: 01234567890

Length: 8

Check digit: Calculated according to Modulo 10
ActiveBarcode calculates the check digit for you automatically

ActiveBarcode Type#: EAN–8 – #02 – CODEEAN8

Example:



Description: **EAN–Velocity** is a special form of the EAN–8. It always starts with a zero. Six numbers follow and the check digit. This code is internally used by dealers for products that have no EAN–13 or EAN–8 code from the producer. Today this code is mostly unnecessary, as all producers of goods have an EAN code on their products. If you want to code a number with less than 6 digits, the left digits will be filled with a zero.

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ISBN-13 (International Standard Book Number)

Valid characters:	123456789
Length:	13
Check digit:	Calculated according to Modulo 10 ActiveBarcode calculates the check digit for you automatically
ActiveBarcode Type#:	ISBN 13 – #38 – CODEISBN13
Example:	



Description: ISBN numbers are the international order numbers for books.

You find more general information to the ISBN code on the [ISBN overview page](#).

The ISBN-13 is a sub type of the ISBN code which is used since 01/01/2007.

ISBN-13 Dual (International Standard Book Number)

Valid characters: 123456789

Length: 13

Check digit: Calculated according to Modulo 10
ActiveBarcode calculates the check digit for you automatically

ActiveBarcode Type#: ISBN 13 Dual – #39 – CODEISBN13DUAL

Example:



Description: ISBN numbers are the international order numbers for books.

You find more general information to the ISBN code on the ISBN overview page.

The ISBN-13 Dual is a sub type of the ISBN code which was used in the transition period (01.01.2006–31.12.2006) from ISBN-10 to ISBN-13.

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ISBN-10 (International Standard Book Number)

- Valid characters:** 1234567890X
- Length:** 13
- Check digit:** Calculated according to Modulo 11
ActiveBarcode calculates the check digit for you automatically
- ActiveBarcode Type#:** ISBN 10 – #00 – CODEISBN
- Example:**



- Description:** ISBN numbers are the international order numbers for books.
- You find more general information to the ISBN code on the [ISBN overview page](#).
- The ISBN-10 is a sub type of the ISBN code which was used up to the 12/31/2005.

ISSN (International Standard Serial Number)

- Valid characters:** 1234567890X
- Length:** 8
- Check digit:** Calculated according to Modulo 11
ActiveBarcode calculates the check digit for you automatically
- ActiveBarcode Type#:** ISSN – #40 – CODEISSN
- Example:**



Description: The ISSN (International Standard Serial Number) serves the short unmistakable identification of sequentially appearing publications, e.g., magazines. The ISSN is nearly similar to the ISBN for books.

The ISSN exists of 8 digits, which are split by a hyphen in two groups of 4 digits. The hyphen itself has no meaning for the code. It only serves as an optical difference to other codes. The first 7 digits display the real ISSN number. The 8th digit is the check number which is computed according to Modulo 11.

An ISSN barcode is created using the EAN–13 symbology with a special prefix. So the ISSN is a special form of the EAN–13 code.

ISMN (International Standard Music Number)

- Valid characters:** 1234567890
- Length:** 10
- Check digit:** Calculated according to Modulo 10
ActiveBarcode calculates the check digit for you automatically
- ActiveBarcode Type#:** ISMN – #41 – CODEISMN
- Example:**



Description: The ISMN (Internationally Standard Music Number) is used for marking printed musical publications. It was conceived in 1993 and today it is applied in in 48 regions and countries.

The construction of an ISMN:
An ISMN has always 10 digits. It is built up as follows:

- The ISMN begins with the Prefix M which marks the number as an ISMN. This prefix is set automatically by ActiveBarcode. You do not enter it.
- The following block marks the publishing company. This ID can be between 3 and 7 digits long.
- The product-ID follows. This ID is between 1 and 5 digits long. Both blocks of the publishing company and the product ID are always 8 digits together. When the publishers ID is 3 digits long, the product ID will always have 5 digits.
- The last place of the ISMN is the check digit. The check digit is computed according to Modulo 10. On this occasion, the prefix M is replaced with the value of 3 for the calculation of the check digit.

An ISMN barcode is created using the EAN-13 symbology with a special prefix. The ISMN prefix M will be encoded as zero. So the ISMN is a special form of the EAN-13 code.

More information on the ISMN:
The International I S M N Agency

EAN-14

Valid characters: 0123456789

Length: 14

Check digit: Calculated according to Modulo 10
ActiveBarcode calculates the check digit for you automatically

ActiveBarcode Type#: EAN-14 – #29 – CODEEAN14

Example:



Description: The *EAN 14* code is used for traded goods. The code is always 14 numeric digits long:

- The first two numbers are the Application Identifier of the EAN-128: (01). You cannot change them. They are part of the code. You must not enter them. ActiveBarcode will add them automatically.
- The first digit is the "Logistic Variant", also named as "Packaging indicator".
- The next 12 digits are representing the product number. General this the EAN-13 number without the check digit.
- The last digit is the check digit. ActiveBarcode calculates this digit automatically.

Today the EAN-14 mostly is created using the EAN-128 symbol set.

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DUN-14

Valid characters: 0123456789

Length: 14

Check digit: Calculated according to Modulo 10
ActiveBarcode calculates the check digit for you automatically

ActiveBarcode Type#: ITF-14 – #30 – CODEITF14
EAN-14 – #29 – CODEEAN14

Example:



Description:

The *DUN-14* (Distribution Unit Number) is not really a barcode type. It's a numbering system for shipping containers that uses other barcode symbology. The DUN-14 uses the ITF-14 or the EAN-14 symbol set. Modern installations always use the EAN-14 to encode the DUN-14.

A short comparison of ITF-14 with EAN-14. The number "3071234500001" is coded as EAN-14 first:



And now the same number as ITF-14:



The DUN-14 has the following data encoded:

- The first digits represents the number of units in the container: 1=6 units, 2=10 units, 3=12 units, 4=20 units, 5=24 units. The digits 6,7 and 8 are standing for other numbers of units.
- The next 12 digits are representing the product number. General this the EAN-13 number without the check digit.

- The last digit is the check digit. ActiveBarcode calculates this digit automatically.

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ITF-14 / SCC-14

Valid characters: 01234567890

Length: 14

Check digit: Calculated according to Modulo 10
ActiveBarcode calculates the check digit for you automatically

ActiveBarcode Type#: ITF-14 – #30 – CODEITF14

Example:



Description: The ITF-14 barcode is used to create the *Shipping Container Symbol*. This code is used to mark cartons and palettes that are including goods with an EAN-13 code. One digit is added in front of the EAN-13 code to mark the packing variant.

- The first digit is the "Logistic Variant", also named as "Packaging indicator".
- The next 12 digits are representing the product number. General this the EAN-13 number without the check digit.
- The last digit is the check digit. ActiveBarcode calculates this digit automatically.

The name ITF-14 is a composition of the barcode symbol used: "Interleaved 2 of 5" (Code 25 Interleaved) and the 14 digits: the length of the container symbol. ITF is an abbreviation of "Interleaved Two of Five"

The ITF-14 barcode itself can optionally have a thick solid bar all around the main code. They are called "bearer-bars". ActiveBarcode does currently no support these additional bars. They are not required for barcode recognition.

EAN-18 / NVE / SSCC-18

Valid characters: 01234567890

Length: 18

Check digit: Calculated according to Modulo 10
ActiveBarcode calculates the check digit for you automatically

ActiveBarcode Type#: EAN-18/NVE – #31 – CODEEAN18
SSCC-18 – #32 – CODESSCC18

Example:



Description: The SSCC-18 (Serial Shipping Container Code) is used throughout the supply chain as an identifier for item tracing and internal control. In Germany this code is called *EAN 18/NVE* (Nummer der Versandeinheit). It is always 18 digits long:

- The first two numbers are the Application Identifier of the EAN-128: (00). You cannot change them. They are part of the code. You must not enter them. ActiveBarcode will add them automatically.
- The first digit of the data field is the extension digit. Currently a "3" is standard.
- The next 7 digits is the company prefix.
- The following 9 digits are the serial reference number.
- The last digit is the check digit. ActiveBarcode calculates this check digit for you. You do not have to calculate this number manually.

The SSCC-18 / EAN-18 / NVE is displayed using the symbology of EAN-128. The Application Identifier (00) is added automatically and must not be entered by you.

UPC-A / UPC-E

- Valid characters:** 01234567890
- Length:** 12 bzw. 8
- Check digit:** Calculated according to Modulo 10
ActiveBarcode calculates the check digit for you automatically
- ActiveBarcode Type#:** UPC-A – #05 – CODEUPCA
UPC-E – #17 – CODEUPCE
- Example:**



Description: The **UPC A** code is the standard version of the UPC code and has 12 digits. It is also called UPC 12 and is very similar to the EAN code.

The structure of the UPC A code is as follows:

- The **first digit** of the UPC A code says what the code contains:
 - 0 – normal UPC Code
 - 1 – reserved
 - 2 – articles where the price varies by the weight: for example meat. The code is produced in the store and attached to the article.
 - 3 – National Drug Code (NDC) and National Health Related Items Code (HRI).
 - 4 – UPC Code which can be used without format limits
 - 5 – coupon
 - 6 – normal UPC Code
 - 7 – normal UPC Code
 - 8 – reserved
 - 9 – reserved
- The **next 5 digits** show the producer of the article (UPC ID number). This number is issued by the *Uniform Code Council (UUC), 7051 Corporate Way – Suite 201, Dayton, OH 45359-4292, USA*
- >The **seventh to eleventh** digits show the individual article number issued by the producer.
- The last digit is the check digit. This one is calculated by ActiveBarcode automatically.

The **UPC E** code is a short version with 8 digits, always starting with a zero. The UPC code is a numeric code which is able to display digits from **0–9**. Each character consists of two lines and two spaces.



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Code-39

Valid characters: 0123456789[Space]ABCDEFGHIJKLMNOPQRSTUVWXYZ-.\$/+%

Length: variable (no fixed length)

Check digit: Calculated according to Modulo 43
ActiveBarcode calculates the check digit for you automatically

ActiveBarcode Type#: Code 39 – #06 – CODE39 (without check digit)
Code 39 Checksum – #26 – CODE39CHECKSUM (with check digit)

Example:



Description: **Code 39** is an **alphanumeric** code. Each character is built by 9 elements (5 lines and 4 spaces) where 3 are thick and 6 are thin. This allows the self checking of code 39. Code 39 does not require a build-in check digit. The main advantage is the wider character set.

Code 39 is available with and without a check digit. This check digit is calculated according to Modulo 43. ActiveBarcode offers you both options. IF you create a code using the Text "CODE39" of type "Code 39" (#06) this barcode will be shown without a check digit:



And here is the code if you use the Type "Code 39 Checksum" (#26) with a check digit calculated according to Modulo 43:



Code 39 can be produced in different **proportions**: 2,0:1 and 3,0:1. This is the proportion between the thin and the thick lines of the code. As higher the proportion, the wider is the printed barcode with same contents, but even better is readability. ActiveBarcode always used the proportion 3,0:1.

Code 39 uses stars as a start and stop digit. These stars (*) are normally not shown in

the text line below the code. But sometimes you can find a Code 39 with the "start/stop star" in the text line; in order to create this code do not have to enter the stars: If the text line shows ***1234*** you just have to enter **1234** because the stars are a fixed part of Code 39.

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Code 39 Extended

Valid characters: 0123456789[Space]ABCDEFGHIJKLMNOPQRSTUVWXYZ!#\$%&'()*+,-./:;<=>?@[^_`
abcdefghijklmnopqrstuvwxyz{}

Length: variable (no fixed length)

Check digit: Calculated according to Modulo 43
ActiveBarcode calculates the check digit for you automatically

ActiveBarcode Type#: Code 39 Extended – #10 – CODE39E (without check digit)
Code 39 Extended Checksum– #27 – CODE39ECHECKSUM (with check digit)

Example:



Description: Code 39 Extended is an extended version of Code 39 that supports the ASCII character set. So with Code 39 Extended you can also code the **26 lower letters (a–z)** and the special characters you have on your keyboard.

The additional characters (e.g. lower case letters) are created using the existing characters of Code 39 by combining two characters each.

Code 39 Extended is also available with a check digit. This check digit is calculated according to Modulo 43. ActiveBarcode offers you both options. IF you create a code using the Text "CODE39" of type "Code 39 Extended" (#10) this barcode will be shown without a check digit:



And here is the code if you use the Type "Code 39 ExtendedChecksum" (#27) with a check digit calculated according to Modulo 43:



Code 39 Extended can be to produced in different **proportions**: 2,0:1 and 3,0:1. This is the proportion between the thin and the thick lines of the code. As higher the proportion, the wider is the printed barcode with same contents, but even better is readability. ActiveBarcode always used the proportion 3,0:1.

Code 25 Industrial / Code 25 Interleaved

Valid characters: 0123456789

Length: variable (no fixed length)

Check digit: Calculated according to Modulo 10
The check digit is optional.

ActiveBarcode Type#: Code 25 (Industrial) – #09 – CODE25
Code 25 (Industrial) Checksum – #35 – CODE25CHECKSUM
Code 25 Interleaved – #07 – CODE25I
Code 25 Interleaved Checksum – #34 – CODE25ICHECKSUM

Example:



Description: **Code 25** is a very simple numeric code which is able to display digits from **0 to 9**. The code is primary used in industry and is also known as **Code 2 of 5** or **Code 25 Industrial**. Code 25 has no built in check digit. The code is some years old and it takes up so much space that today it is not often used.

Code 25 Interleaved is a special type of Code 25 that is also a numeric code able to display digits from **0 to 9**. The code is also known as **Code 2 of 5 Interleaved**. It has no built in check digit. The advantage of Code 25 Interleaved is that the code uses self-checking and it is very compact so it does not need much space like the simple Code 25. Code 25 Interleaved is only valid if there is a even number of digits. **To display an odd number of digits you have to add a zero to the beginning** (123 becomes 0123) or you may use your own check digit.

An example for the difference of Code 25 to Code 25 Interleaved: The digits 123456 will be codes. The result as Code 25 Industrial is as follows:



And here the same digits 123456 coded as Code 25 Interleaved:



ActiveBarcode always uses the proportion 3,0:1.

Codabar

Valid characters:	01234567890-\$./+
Length:	variable (no fixed length)
Check digit:	Calculated according to Modulo 16 <small>ActiveBarcode calculates the check digit for you automatically</small>
ActiveBarcode Type#:	Codabar – #08 – CODABAR (no check digit) Codabar Checksum– #33 – CODABARCHECKSUM (Modulo 16 check digit)

Example:



Description: **Codabar** is a numeric code with some additional special characters (0..9 and - \$: / . +). There are four different start and stop signs defined. These start and stop signs are used in our software as A, B , C and D. They are only valid at the beginning and the end of the code. They can be used to transport additional information.

Thick and thin lines are generated with our software as 2:1. This is the proportion. Codabar has no built in check digit and is primarily used for medical purposes.

Code 93 / Code 93 Extended

Valid characters: 0123456789[Space]ABCDEFGHIJKLMNOPQRSTUVWXYZ-./+%
Code 39 Extended also has: !#&'()*;,;<=>?@[\\]^_`
abcdefghijklmnopqrstuvwxyz{|}~

Length: variable (no fixed length)

Check digit: Calculated according to Modulo 47
ActiveBarcode calculates the check digit for you automatically

ActiveBarcode Type#: Code 93 – #21 – CODE93
Code 93 Extended– #22 – CODE93E

Example:



Description: **Code 93** is an **alphanumeric** code similar to Code 39 and can encode 48 different characters.

The check digits according to Modulo 47 are not displayed in the plain text line.

Code 93 Extended is based on Code 93 and can encode all 128 ASCII characters. The characters represented by Code 93 are represented in Code 93 Extended as single bar code characters, but all other characters are represented by a control character plus another character. You must take this into account when estimating bar code length.



PZN

Valid characters: 01234567890

Length: 7

Check digit: Calculated according to Modulo 11
ActiveBarcode calculates the check digit for you automatically

ActiveBarcode Type#: PZN – #23 – CODEPZN

Example:



Description: **PZN** (Pharma–Zentral–Nummer) is a code for medicine identification in Germany and maybe other countries. In Germany it's issued by the Informationsstelle für Arzneispezialitäten GmbH, Beethovenstr. 51–53, Frankfurt am Main, Germany.

The PZN is based on Code39 and always has 7 digits. The last digit is a check digit. It uses the Code39–start sign "*" in combination with "-" as the start sign. The stop sign is the standard code39 stop sign "*". These start and stop signs and the characters "PZN " do not need to be entered in order to produce a PZN because they are a fixed part of the PZN. The characters "PZN" are not coded in the barcode. To get the PZN of the above example, you just have to enter **123456**.

Leitcode (Deutsche Post, DHL)

Valid characters: 01234567890

Length: 14

Check digit: Calculated according to Modulo 10
ActiveBarcode calculates the check digit for you automatically

ActiveBarcode Type#: Leitcode – #25 – CODELEITCODE

Example:



Description: The Leitcode is a numeric code using the numbers 0..9. This code is used by the Deutsche Post AG (DHL). The base of this code is Code 25 Interleaved, but with a different check digit.

Structure of the Leitcode:

1..5	ZIP code
6..8	Street's code number
9..11	House number
12..13	Product code
14	Check Digit

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Identcode (Deutsche Post, DHL)

Valid characters: 01234567890

Length: 12

Check digit: Calculated according to Modulo 10
ActiveBarcode calculates the check digit for you automatically

ActiveBarcode Type#: Identcode – #24 – CODEIDENTCODE

Example:



Description: The Identcode is a numeric code using the numbers 0..9. This code is used by the Deutsche Post AG (DHL). The base of this code is Code 25 Interleaved, but with a different check digit.

Structure of the Identcode:

- 1..2 Mail center (outgoing)
- 3..5 Customer code
- 6..11 Delivery number
- 12 Check digit

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MSI / Plessey

Valid characters: 01234567890

Length: variable (no fixed length)

Check digit: none

**ActiveBarcode
Type#:** MSI – #20 – CODEMSI

Example:



Description: The MSI Plessey barcode has been designed by the Plessey Company, England in 1971. It has been used in libraries and stores.

The code can display only the number 0–9 and has no fixed length. Today this type of code is outdated and is no longer used. Because of this most barcode scanners can not recognize this type of code.

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PostNet

Valid characters:	01234567890
Length:	variable (no fixed length)
Check digit:	Calculated according to (see description) <small>ActiveBarcode calculates the check digit for you automatically</small>
ActiveBarcode Type#:	PostNet – #18 – CODEPOSTNET
Example:	



Description: The **PostNet** (Postal Numeric Encoding Technique) is a code by the US Post Office. It encodes the zip of the addressee in a machine readable format. This improves the speed of sorting and delivering the mail.

The PostNet bar code is constructed as follows:

- Start character
- Data
- Check digit
- Stop character

The check digit is calculated as follows: First add all digits. The difference of this sum to the next multiple of 10 is the check digit.

The PostNet bar code is used mainly in 3 variants, that differ in the length of the data:

- *5 digits POSTNET bar code*: 5 digit long zip code
- *ZIP + 4 POSTNET bar codes*: 9 digit long zip code
- *DPBC POSTNET bar code (Delivery Point bar code)*: 9 digit long zip code + 2 DPBC digits

The check digit of the PostNet barcode is not displayed in the plain text line.

RoyalMail (RM4SCC)

Valid characters: 01234567890ABCDEFGHIJKLMNPOQRSTUVWXYZ

Length: variable (no fixed length)

Check digit: none

ActiveBarcode Type#: RoyalMail – #19 – CODEROYALMAIL

Example:



Description: The **Royal Mail 4 State Customer Code (RM4SCC)** was created for automated mail sorting processes. It normally codes the postcode and the house or mailbox number in a machine readable format. The contents of the code may vary in different countries.

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