BANK BAR CODE GUIDE

Version 5.3

FINANCE
FINLAND

Contents

Version history

Version 5.1	20 October 2009	
Version 5.2	26 January 2010	Corrected version 5 test invoice
	16 March 2010	Added end date for version 2
	16 April 2012	Testing removed
Version 5.3	8 November 2012	Removed bar code symbol version 2, calculation of check digit 1, and data contents of version 2 test invoices
	21 October 2019	Changed Federation of Finnish Financial Services into Finance Finland; corrected example invoice no. 3 in section 13.2

Bank Bar Code Guide v 5.3

1   General

The version 5.3 of this guide describes versions 4, and 5 of the bar code symbol.

Version 4 is used when the payee's account number is in the international IBAN format and the reference is in the national format.

Version 5 is used when the payee's account number is in the international IBAN format and the reference is in the international (RF) reference standard format.

2   Bank Bar Code

A bar code printed out on the banks' credit transfer form in accordance with this instruction is called the Bank Bar Code.

The Bank Bar Code is a form of presenting payment transaction data, approved by Finance Finland (FFI). Finnish banks have jointly developed the Bank Bar Code in order to accelerate payments and to prevent erroneous data from being keyed in. Credit transfer forms to be used for invoicing are specified in the Credit Transfer Guidelines published by FFI. The Bank Bar Code can only be used when employing reference numbers in invoicing.

Invoices without a credit transfer part cannot be mailed to private customers or to banks' payment services or be paid in banks, but the data on the invoice should be transferred onto a credit transfer form.

The Bank Bar Code can only be printed for IBAN account numbers that begin with 'FI'.

3   Representation of data

When the same data is presented both encoded in the Bank Bar Code and in plain text on the credit transfer form, the contents of both sets of data must be consistent.

4   Liabilities

The invoicing company is always responsible for the validity of the data printed out on a credit transfer form.

5   Conditions for the use of the Bank Bar Code

The conditions for using the Bank Bar Code are always as follows:

- The credit transfer form used is the one defined by Finance Finland.
- The placing of human-readable data (plaintext) and other data on the credit transfer form comply with the guidelines.
- The structure and data contents of the Bank Bar Code comply with these guidelines.
- No other bar codes are printed on the credit transfer form.
- No other characters or symbols are printed out in the field reserved for the Bank Bar Code on the credit transfer form.

6   Elements of the Bank Bar Code

The Finnish Bar Code type is USS Code 128 (Uniform Symbology Specification Code 128), which is published by Automatic Identification Manufacturers Europe, and also specified in the international ISO/IEC 15417 standard[1].

- The code type is Code 128, Character Set C. No other code type or character set is even partially valid for the Bank Bar Code symbol. No change may be made to the character set inside the symbol, i.e. the symbol always has a fixed Start Code C which starts the encoding of the data in accordance with Code 128 Character Set C.
- The Bank Bar Code contains numeric data only.
- The Bank Bar Code symbol has a fixed number of code characters.
- The length of the Bank Bar Code must not exceed 105 mm measured from the left edge to the right edge of the bar code.
- Measured in the same manner, the length of the Bank Bar Code should not be less than 70 mm. The banks' optical reading prefers the maximum length (105 mm) to the minimum length (70 mm). The height of the Bank Bar Code should be 10.0–12.7 mm.
- There is a quiet zone of maximum 5.0 mm below the Bank Bar Code.
- For better usability, the Bank Bar Code should be horizontally centred in order to maximise the size of the quiet zones in the code.
- The quality class of the Bank Bar Code must be at least **1.5/10/670** or better when measured in accordance with the ISO/IEC 15416:2000 *Bar Code Print Quality Test Specifications for Linear Symbols*.

7   Printing out the Bank Bar Code

Invoicing companies print the Bank Bar Code out on the credit transfer form along with other payment data in accordance with the Bank Bar Code Standard.

NOTE! There is space for only one bank account number in the Bank Bar Code. If several bank account numbers are included on the credit transfer form, the invoicing company must choose which of these account numbers is encoded in the Bank Bar Code.

No other bar codes may be printed out on the credit transfer form.

8   Reading the Bank Bar Code

The Bank Bar Code can be read on barcode readers e.g. on an ATM, at a bank payment centre, with a mobile application, or with a reader connected to a PC.

If no code reader is available or the payer wants to enter information that differs from what is encoded in the Bank Bar Code, invoices with a Bank Bar Code can be paid by manually keying in the data the same way as barcode-less invoices.

The payment data read by barcode readers will be forwarded to payees in the same way as manually keyed-in data.

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[1] ISO/IEC 15417:2007 *Information technology – Automatic identification and data capture techniques – Code 128 bar code symbology specification.*

9 Symbol version 4 of the Bank Bar Code

The version 4 of the Bank Bar Code is used when the payee's bank account number is in the international IBAN format and the reference is in the national format.

The Bank Bar Code is constructed from left to right as follows:

Data	Length	Value
Quiet Zone 1		
Start Character	*)	
Version No.	1	4
The numeric part of the payee's bank account number (IBAN)	16	N
Euros	6	N
Cents	2	N
Reserve	3	000
Reference No. (national)	20	N
Due Date	6	YYMMDD
Check Digit 2	*)	
Stop Character	*)	
Quiet Zone 2		
	54	

*) Part of the Code 128 structure. The programs designed for Code 128 printing usually calculate and print these characters automatically.
N= numeric value

Contents of the data fields:

Quiet Zone 1
The empty space on the left, with a length of 20 mm. No characters may be printed or reprinted in this area.

Start Character
The character START CODE C that is part of the Code 128 structure.

Version No.
The version number is 4.

Payee's Bank Account No.
The payee's bank account is in the IBAN format without the country code FI. The value of the bank account number can never be zero. On the credit transfer form, the account number must always be in the human-readable (non-computerised, plaintext) format with the country code FI. There can be several IBAN-format payee's bank account numbers on the credit transfer form in human-readable form. The invoicing company chooses which account number is encoded in the Bank Bar Code.

Euros
Invoice total in euros, leading zero insert, reading range 000000...999999 euros. When the invoice amount exceeds 99999999 cents, the invoicer can choose either to print out the

value 00000000 in the left field for euros and cents or to leave out the bank bar code from the credit transfer form entirely. If the payer can choose the amount to be paid, the value 00000000 is printed out in the field for euros and cents.

Cents
Invoice total in cents, reading range 00...99.

Reserve
Data contents 000 (zero).

Reference Number
Reference number of the invoice (national), leading zero insert. Reference number is always required in the bank bar code. The leading zeros are not printed out on the credit transfer form in human-readable format.

Due Date
The due date of an invoice is printed out in the form YYMMDD in the bar code. The invoicer may choose to enter zeros in the due date field.

Check Digit 2 (Modulus 103)
The bank bar code always contains a check digit in accordance with the structure of Code 128, and this character immediately precedes the stop character. The check digit is calculated with the Modulus 103 algorithm on the basis of all characters (including start character but without the stop character).

Stop Character (fixed STOP)
Stop character (STOP) from the Code 128 structure.

Quiet Zone 2
Right-hand side empty area with a minimum length of 20 mm.

10 Symbol version 5 of the Bank Bar Code

The version 5 of the Bank Bar Code is used when the payee's bank account number is in the international IBAN format and the international RF reference is used.

The Bank Bar Code is constructed from left to right as follows:

Data	Length	Value
Quiet Zone 1		
Start Character	*)	
Version No.	1	5
The numeric part of the payee's bank account number (IBAN)	16	N
Euros	6	N
Cents	2	N
The numeric part of the RF reference	23	N
Due Date	6	YYMMDD
Check Digit 2	*)	
Stop Character	*)	
Quiet Zone 2		
	54	

*)   part of the Code 128 structure
     N= numeric value

The data contents that differ from symbol version 4:

Version No.
The version number is 5.

Reserve
Not in use.

RF Reference
The international reference number of the invoice without the RF code. 23 characters long. The bank bar code must always include a reference number. The additional zeros are not printed out on the credit transfer form in human-readable format.

The reference field of the Bank Bar Code is formed by removing the characters 'RF' from the beginning of the RF reference and by adding zeros after the position 2 in the character line in order to have 23 characters in total. Example:

     a national reference in the human-readable form: 9991
     in the RF, human-readable form: RF04 9991 (in which 04 is a check digit)
     in the Bank Bar Code: 04000000000000000009991

If the RF reference contains any alphabetic characters (ISO 11649) after 'RF', the Bank Bar Code will not be formed at all or the reference field will be printed with zeros. The Bank Bar Code contains numeric data only.
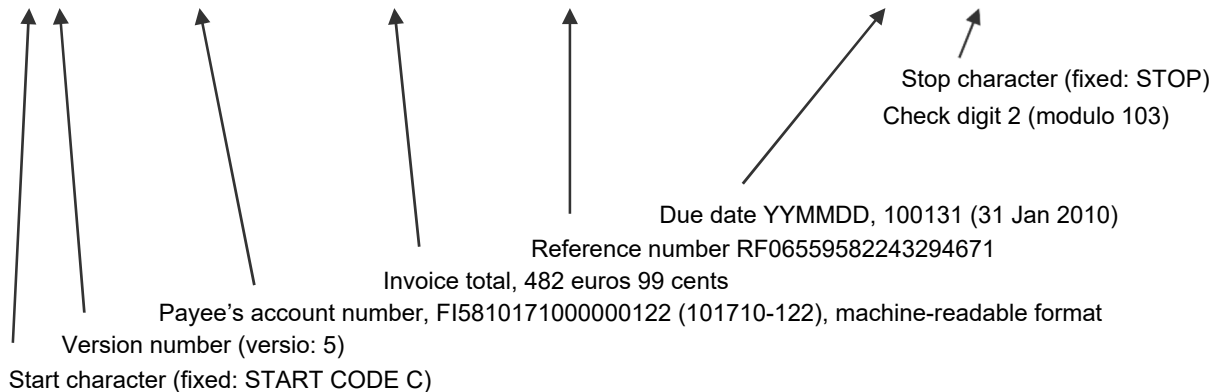
11   Human-readable text describing the contents

Human-readable content should not be printed directly above or below the barcode symbol.

12   Example of Check Digit 2 calculation for a Bank Bar Code

DATA CONTENTS OF A BANK BAR CODE
[X] 5 5810171000000122 00048299 0600000559582243294671 100131[Z][Y]

Stop character (fixed: STOP)

Check digit 2 (modulo 103)

Due date YYMMDD, 100131 (31 Jan 2010)

Reference number RF06559582243294671

Invoice total, 482 euros 99 cents

Payee's account number, FI5810171000000122 (101710-122), machine-readable format

Version number (versio: 5)

Start character (fixed: START CODE C)

Printing programs usually calculate and print the chect digit 2, start character and stop character (characters X, Y and Z) automatically.

Check digit 2 is calculated using the Modulus 103 algorithm on the basis of all characters (including start character but excluding the stop character) in the following way:

1. The Start Character is given the value 105.

2. Each symbol character (value pair) is given a coefficient. The Start Character is given the coefficient 1. The first value pair after that is given the coefficient 1, the second the coefficient 2, the third the coefficient 3, etc., up to coefficient 27. NOTE! The Start Character and the first value pair thus both get coefficient 1.

3. Every value pair is multiplied by its coefficient and the sums are added up.

4. The final sum is divided by 103.

5. The remainder in step 3 is the value for the check digit 2.

13   Other guides and instructions

- Calculating the check digit of the reference number
- Introducing the RF reference in Finland
- The structure guide for account numbers
- IBAN and BIC
- Guidelines for credit transfer forms

These guides and instructions are available at the FFI website at www.finanssiala.fi/en.

13.1 Data contents of the test invoices in version 4

INVOICE No. 1:

Account No. Sp. FI79 4405 2020 0360 82 Total: 4,883.15 Ref. number: 86851 62596 19897 Due Date: 12.06.2010
[105] 47 94 40 52 02 00 36 08 20 04 88 31 50 00 00 00 08 68 51 62 59 61 98 97 10 06 12 [40] [stop]

INVOICE No. 2:

Account No. Nordea FI58 1017 1000 0001 22 Total: 482.99 Ref. number: 55958 22432 94671 Due Date: 31.01.2012
[105] 45 81 01 71 00 00 00 12 20 00 48 29 90 00 00 00 05 59 58 22 43 29 46 71 12 01 31 [55] [stop]

INVOICE No. 3:

Account No. Op. FI02 5000 4640 0013 02 Total: 693.80 Ref. number: 69 87567 20834 35364 Due Date: 24.07.2011
[105] 40 25 00 04 64 00 01 30 20 00 69 38 00 00 00 06 98 75 67 20 83 43 53 64 11 07 24 [14] [stop]
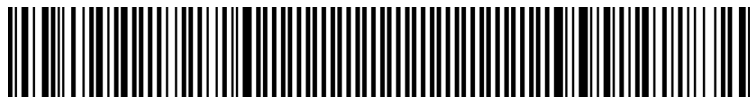
INVOICE No. 4:

Account No. ÅAB FI15 6601 0001 5306 41 Total: 7,444.54 Ref. number: 7 75847 47906 47489 Due Date: 19.12.2019
[105] 41 56 60 10 00 15 30 64 10 07 44 45 40 00 00 00 77 58 47 47 90 64 74 89 19 12 19 [63] [stop]

INVOICE No. 5:

Account No. Sampo FI16 8000 1400 0502 67 Total: 935.85 Ref. number: 78 77767 96566 28687 Due Date: None
[105] 41 68 00 01 40 00 50 26 70 00 93 58 50 00 00 07 87 77 67 96 56 62 86 87 00 00 00 [30] [stop]

INVOICE No. 6:

Account No. Handelsbanken FI73 3131 3001 0000 58 Total: 0.00   Ref. number: 8 68624 Due Date: 09.08.2013
 [105] 47 33 13 13 00 10 00 05 80 00 00 00 00 00 00 00 00 00 00 00 86 86 24 13 08 09 [68] [stop]

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INVOICE No. 7:

Account No. SEB FI83 3301 0001 1007 75 Total: 150,000.20 Ref. number: 92125 37425 25398 97737 Due Date: 25.05.2016
[105] 48 33 30 10 00 11 00 77 51 50 00 02 00 00 92 12 53 74 25 25 39 89 77 37 16 05 25 [45] [stop]

INVOICE No. 8:

Account No. Tapiola FI39 3636 3002 0924 92 Total: 1.03 Ref. number: 5907 38390 Due Date: 11.03.2023
[105] 43 93 63 63 00 20 92 49 20 00 00 10 30 00 00 00 00 00 00 05 90 73 83 90 23 03 11 [9] [stop]

INVOICE No. 9:

Account No. S-Pankki FI92 3939 0001 0033 91 Total: 0.02 Ref. number: 13 57914 Due Date: 24.12.2099
[105] 49 23 93 90 00 10 03 39 10 00 00 00 20 00 00 00 00 00 00 00 01 35 79 14 99 12 24 [30] [stop]

13.2 Data contents of the test invoices in version 5

INVOICE No. 1:

Account No. Sp. FI79 4405 2020 0360 82 Total: 4,883.15 Ref. number: RF09 8685 1625 9619 897 Due Date: 12.6.2010
[105] 57 94 40 52 02 00 36 08 20 04 88 31 50 90 00 00 08 68 51 62 59 61 98 97 10 06 12 [74] [stop]

INVOICE No. 2:

Account No. Nordea FI58 1017 1000 0001 22 Total: 482.99 Ref. number: RF06 5595 8224 3294 671 Due Date: 31.1.2010

[105] 55 81 01 71 00 00 00 12 20 00 48 29 90 60 00 00 05 59 58 22 43 29 46 71 10 01 31 [31] [stop]

INVOICE No. 3:

Account No: Op. FI02 5000 4640 0013 02 Total: 693.80 Ref. number: RF61 6987 5672 0839 Due date: 24.7.2011
[105] 50 25 00 04 64 00 01 30 20 00 69 38 06 10 00 00 00 00 69 87 56 72 08 39 11 07 24 [59] [stop]

INVOICE No. 4:

Account No. ÅAB FI15 6601 0001 5306 41 Total: 7,444.54 Ref. number: RF84 7758 4747 9064 7489 Due Date: 19.12.2019
[105] 51 56 60 10 00 15 30 64 10 07 44 45 48 40 00 00 77 58 47 47 90 64 74 89 19 12 19 [16] [stop]

INVOICE No. 5:

Account No. Sampo FI16 8000 1400 0502 67 Total: 935.85 Ref. number: RF60 7877 7679 6566 2868 7 Due Date: None
[105] 51 68 00 01 40 00 50 26 70 00 93 58 56 00 00 07 87 77 67 96 56 62 86 87 00 00 00 [15] [stop]

INVOICE No. 6:

Account No. Handelsbanken FI73 3131 3001 0000 58 Total: 0.00 Ref. number: RF10 8686 24 Due Date: 9.8.2013
 [105] 57 33 13 13 00 10 00 05 80 00 00 00 00 01 00 00 00 00 00 00 00 00 86 86 24 13 08 09 [91] [stop]

INVOICE No. 7:

Account No. SEB FI83 3301 0001 1007 75 Total: 150,000.20 Ref. number: RF71 9212 5374 2525 3989 7737 Due Date: 25.5.2016
[105] 58 33 30 10 00 11 00 77 51 50 00 02 07 10 92 12 53 74 25 25 39 89 77 37 16 05 25 [80] [stop]

INVOICE No. 8:

Account No. Tapiola FI39 3636 3002 0924 92 Total: 1.03 Ref. number: RF66 5907 3839 0 Due Date: 11.3.2023
 [105] 53 93 63 63 00 20 92 49 20 00 00 10 36 60 00 00 00 00 00 05 90 73 83 90 23 03 11 [10] [stop]

INVOICE No. 9:

Account No. S-Pankki FI92 3939 0001 0033 91 Total: 0.02 Ref. number: RF95 1357 914 Due Date: 24.12.2099
 [105] 59 23 93 90 00 10 03 39 10 00 00 00 29 50 00 00 00 00 00 00 01 35 79 14 99 12 24 [33] [stop]

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