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Versions
Version 5.1 Approved 20 October 2009
Version 5.2 26 January 2010: corrected test invoices version 5
16 April 2012: bank bar code testing removed
Version 5.38 November 2012: removed bar code symbol version 2, calculation of check digit 1, and
data contents of version 2 test invoices
Bank Bar code Guide version 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 and it is approved by the Federation of Finnish Financial Services. 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 Guidelines for the credit transfer forms published by the Federation of Finnish Financial Services. 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 subject matter of both sets data should be consistent.

4 Liabilities
An 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 to be used is defined by the Federation of Finnish Financial Services.
- The placing of non-computerised data (readable text) and other data on the credit transfer form should comply with the guidelines.
- The structure and data contents of the Bank Bar Code to be used should comply with this standard.
- No other bar codes may be printed on the credit transfer form.
- No other characters or symbols may be 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.

- The code type is Code 128, Character Set C. None of the other code types or character sets are valid, even partly, for the Bank Bar Code symbol. No change may be made to the character set inside the symbol, i.e. the symbol has always 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 is 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 with an ATM barcode reader, at a bank payment centre, with a mobile application, or with a reader connected to a PC.

Invoices with a Bank Bar Code can still be paid by manually keying in the data at an ATM as before, if no code reader is available or if the payer wants to enter information that differs from what is encoded in the Bank Bar Code.

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

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:
<table>
<thead>
<tr>
<th>Data</th>
<th>Length</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiet Zone 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Start Character *)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Version No.</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>The numeric part of the payee’s bank account number (IBAN)</td>
<td>16</td>
<td>N</td>
</tr>
<tr>
<td>Euros</td>
<td>6</td>
<td>N</td>
</tr>
<tr>
<td>Cents</td>
<td>2</td>
<td>N</td>
</tr>
<tr>
<td>Reserve</td>
<td>3</td>
<td>000</td>
</tr>
<tr>
<td>Reference No. (national)</td>
<td>20</td>
<td>N</td>
</tr>
<tr>
<td>Due Date</td>
<td>6</td>
<td>YYMMDD</td>
</tr>
<tr>
<td>Check Digit 2 *)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stop Character *)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quiet Zone 2</td>
<td></td>
<td>54</td>
</tr>
</tbody>
</table>

*) 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 non-computerised (plaintext) form with the country code FI. There can be several IBAN-format payee’s bank account numbers on the credit transfer form in non-computerised, 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 not print out the bank bar code on the credit transfer form at all. 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 a bank bar code. The leading zeros are not printed out on the credit transfer form in non-computerised form.

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 the 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
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:

<table>
<thead>
<tr>
<th>Data</th>
<th>Length</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiet Zone 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Start Character</td>
<td>*)</td>
<td></td>
</tr>
<tr>
<td>Version No.</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>The numeric part of the payee’s bank account number (IBAN)</td>
<td>16</td>
<td>N</td>
</tr>
<tr>
<td>Euros</td>
<td>6</td>
<td>N</td>
</tr>
<tr>
<td>Cents</td>
<td>2</td>
<td>N</td>
</tr>
<tr>
<td>The numeric part of the RF reference</td>
<td>23</td>
<td>N</td>
</tr>
<tr>
<td>Due Date</td>
<td>6</td>
<td>YYMMDD</td>
</tr>
<tr>
<td>Check Digit 2</td>
<td>*)</td>
<td></td>
</tr>
<tr>
<td>Stop Character</td>
<td>*)</td>
<td></td>
</tr>
<tr>
<td>Quiet Zone 2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*) 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 non-computerised (readable) form.

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 non-computerised form: 9991
- in the RF, non-computerised 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 Non-computerised text that describes the content
Non-computerised, readable content of the information will not be printed above or below the barcode symbol.

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

DATA CONTENTS OF BANK BAR CODE
[X] 5 5810171000000122 00048299 06000000559582243294671 100131[Z][Y]

Stop character (fixed: STOP)
Check Digit 2 (Modulus 103)
DuedDate yymmdd (e.g. 100131: 31 Jan 2010)
Reference number RF06559582243294671
Invoice total: 482 euros 99 cents
Payee’s account number, FI5810171000000122 (101710-122), computerised format
Version number (version: 5)
Start character (fixed: START CODE C)

Printing programs usually calculate and print the check 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 Federation of Finnish Financial Services website at www.fkl.fi..

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  Reference 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 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  Reference 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  Reference 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. ÁAB FI15 6601 0001 5306 41 Total: 7,444.54  Reference 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  Reference 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 [30] [stop]
INVOICE No. 6:
Account No. Handelsbanken FI73 3131 3001 0000 58 Total: 0.00 Reference number: 8 68624 Due Date: 09.08.2013

INVOICE No. 7:
Account No. SEB FI83 3301 0001 1007 75 Total: 150.000.20 Reference number: 92125 37425 25398 97737 Due Date: 25.05.2016

INVOICE No. 8:
Account No. Tapiola FI39 3636 3002 0924 92 Total: 1.03 Reference number: 5907 38390 Due Date: 11.03.2023

INVOICE No. 9:
Account No. S-Pankki FI92 3939 0001 0033 91 Total: 0.02 Reference number: 13 57914 Due Date: 24.12.2099

13.2 Data contents of the test invoices in version 5

INVOICE No. 1:
Account No. Sp. FI79 4405 2020 0360 82 Total: 4883,15 Reference number: RF09 8685 1625 9619 897 Due Date: 12.6.2010
INVOICE No. 9:

Account No. S-Pankki FI92 3939 0001 0033 91 Total: 0.02 Reference 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 98 12 24 [33] [stop]