



# INTERNATIONAL BANK ACCOUNT NUMBER

## IBAN | Specifications and validation procedures

This is a technical document that details the specifications of the international identifier for payment accounts, the International Bank Account Number (IBAN), focusing on the specific case of the Portuguese IBAN and in particular its structure and validation procedures.<sup>1</sup>

## Technical specifications of the IBAN

### Generic structure of the IBAN

The IBAN is composed of a national Basic Bank Account Number (BBAN),<sup>2</sup> preceded by a two-letter country code and two check digits, involving up to 34 contiguous alphanumeric characters. In print format, the IBAN is represented in groups of four alphanumeric characters separated by spaces. ISO standard 13616 specifies that the IBAN in electronic format must comprise a maximum of 34 alphanumeric characters without spaces.

### Examples

Country	Electronic format	Print format
Portugal	PT50123443211234567890172	PT50 1234 4321 1234 5678 9017 2
United Kingdom	GB29NWBK60161331926819	GB29 NWBK 6016 1331 9268 19
Spain	ES9121000418450200051332	ES91 2100 0418 4502 0005 1332
France	FR1420041010050500013M02606	FR14 2004 1010 0505 0001 3M02 606

1. It is solely up to the PSP (payment service provider) to create and assign the BBAN and thereby the IBANs for its clients' payment accounts.

2. Each national BBAN may contain up to 30 alphanumeric characters and its length must be fixed in each country (in the case of Portugal the BBAN has 21 digits). The structure of the Portuguese BBAN must also include a bank identifier in a fixed position, assigned by Banco de Portugal, which uniquely identifies the PSP servicing that account.

## Structure of the IBAN in Portugal

As specified by ISO 13616, the IBAN for payment accounts domiciled in Portugal comprises the Portuguese BBAN - commonly known as the NIB (*Número de Identificação Bancária* - Banking Identification Number), preceded by the country code ('PT') and two check digits (in Portugal's case, these digits are always '50').

Thus, in Portugal the IBAN comprises 25 alphanumeric characters, which are structured as below.

### International Bank Account Number (IBAN)

PPYYBBBBLLLLCCCCCCCCCXX						
	Subfield	Which identifies	Length	Type	Positions	
IBAN	P	Country code	2	Alphabetical	1-2	
	Y	IBAN check digits	2	Numerical	3-4	
	NIB	B	Bank identifier	4	Numerical	5-8
		L	PSP reference number	4	Numerical	9-12
		C	Account number	11	Numerical	13-23
		X	NIB check digits	2	Numerical	24-25
<b>Total</b>			25	Alphanumeric		

### Country code

The IBAN's country code is defined under ISO 3166 (ISO 3166-1 alpha-2 code). Based on this standard, the two first positions of the Portuguese IBAN contain the letters 'PT'.

### IBAN check digits

The IBAN's two check digits are calculated according to ISO / IEC 7064:2003, based on the MOD 97-10 algorithm. For the Portuguese IBAN, the check digits are always '50'.

### Structure of the NIB

- Bank identifier

This is the code assigned by Banco de Portugal, which uniquely identifies the PSP servicing that account.<sup>3</sup>

- PSP reference number

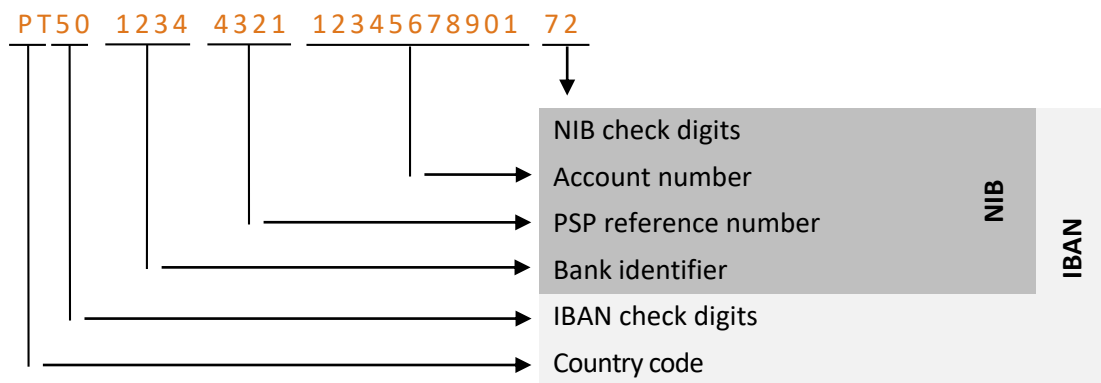
This is a reference number managed by the PSP that may be used to identify the type of payment account, the branch where this is domiciled or any other kind of classification.

3. Banco de Portugal provides a list of bank identifiers on its website for the entities that provide payment services in Portugal. The file "Lista IBAN" identifies the valid IBAN bank code and the respective bank identifier (available in .xls format). See <https://www.bportugal.pt/en/entidades-autorizadas>.

- Account number  
This is the internal (intrabank) identifier which the PSP allocates to its client's payment account.
- NIB check digits  
The NIB's two check digits are calculated according to ISO / IEC 7064:2003, based on the MOD 97-10 algorithm.

### Example

The following example shows the form, structure and content of an IBAN for a Portuguese payment account.



## Validation procedures

### Validation procedures for the IBAN

IBAN validation is a process designed to minimise errors in the processing of payment orders, thereby increasing efficiency and safety in payments.

The IBAN for a Portuguese payment account (print format) comprises 25 alphanumeric characters in the following structure:

IBAN **PT50 BBBB LLLL CCCC CCCC CCCX X**

N

Where:

- PT** | Corresponds to the international country code (alphabetical characters), in accordance with ISO 3166.
- 50** | Relates to the IBAN's two check digits calculated according to ISO / IEC 7064:2003, based on the MOD 97-10 algorithm.
- N** | Identifies the NIB (comprised of 21 digits).

The validation procedure for the IBAN applies irrespective of the country where the payment account is held, and must be carried out in four steps.

For a Portuguese IBAN:

1st step	If the IBAN is in print format, it must be converted to electronic format, deleting all the characters that are not alphabetical or numerical (spaces for example). Also the prefix 'IBAN' must be discarded, if present.
	PT50BBBLLLLCCCCCCCCCCCXX
2nd step	Move the first four characters of the IBAN to the right-hand side. These relate to the country code and the check digits.
	BBBLLLLCCCCCCCCCCCXXPT50
3rd step	Convert the alphabetical characters of the country code to their respective numerical values, using the Conversion table (see page 6). For example: "PT"="2529".
	BBBLLLLCCCCCCCCCCCXX252950
4th step	Apply MOD 97-10 (ISO / IEC 7064:2003), which involves finding the remainder when the value obtained from the third step is divided by 97.
	Find the remainder from this division: BBBLLLLCCCCCCCCCCCXX252950 ÷ 97
Result	If the remainder from this division equals 1, the IBAN is deemed <b>valid</b> .

Note that the IBAN validation procedure only ensures that a given IBAN is valid. This does not mean that the BBAN assigned to it is also valid or that it even exists, as it may for example relate to a non-existent or closed account.

### Example

Below is a practical application of the procedure for validating an IBAN for a given Portuguese payment account (print format).

IBAN PT50 0001 0000 1234 5678 9019 4	
<b>1st step</b>	Delete all the characters that are not alphanumeric (in this case, as in all Portuguese IBANs, delete the spaces) and the prefix 'IBAN'.  PT50000100001234567890194
<b>2nd step</b>	Move the IBAN's first four characters to the right-hand side (that is, take 'PT50' to the right).  000100001234567890194PT50
<b>3rd step</b>	Convert the alphabetical characters to their respective numerical values, using the Conversion table (see page 6). Convert 'PT' to its respective numerical values '2529'.  000100001234567890194252950
<b>4th step<sup>4</sup></b>	Find the remainder from the division of the value obtained in the third step by 97.  The remainder of $000100001234567890194252950 \div 97 = 1$
<b>Result</b>	As the remainder from the division carried out in the fourth step equals 1, the IBAN in this example is deemed <b>valid</b> .

### Validation procedures for the NIB

It is possible that a correctly validated IBAN presents a BBAN that is invalid under the standards defined in that country. To make sure that the entire IBAN is valid, the BBAN may also be checked.

In Portugal, since NIBs are issued using the same algorithm as the IBAN, to ensure a NIB is valid, the same validation procedures described for the IBAN should be applied to the NIB's 21 digits.

4. Due to the size of the IBAN, some computer software does not have sufficient capacity to calculate the remainder from the division by 97 as defined in the fourth step. In this case an alternative method consists of making consecutive calculations of the remainders from the divisions of 9 digits by 97. So in the fourth step we would have:

1. The remainder from the division of 000100001 by 97 = 9 1
2. The remainder from the division of 9 1 2345678 by 97 = 5 3
3. The remainder from the division of 5 3 9019425 by 97 = 2 8
4. The remainder from the division of 2 8 2950 by 97 = 1

**Example**

NIB 1234 4321 1234 5678 9017 2

**1st step**

Delete all the characters that are not numerical (in this case, delete the spaces) and the prefix 'NIB', if present.

123443211234567890172

**2nd step**

Divide the result obtained in the previous step by 97

The remainder of  $123443211234567890172 \div 97 = 1$

**Result**

As the remainder from the division carried out in the second step equals 1, the NIB in this example is deemed **valid**.

**Conversion table**

The following conversion table should be used to transform the IBAN's alphabetical characters into their respective numerical values.

A = 10	G = 16	M = 22	S = 28	Y = 34
B = 11	H = 17	N = 23	T = 29	Z = 35
C = 12	I = 18	O = 24	U = 30	
D = 13	J = 19	P = 25	V = 31	
E = 14	K = 20	Q = 26	W = 32	
F = 15	L = 21	R = 27	X = 33	