

STANDARDISED TWO-DIMENSIONAL CODE (QR – QUICK RESPONSE)

1. The standardised two-dimensional code (QR – Quick Response) is a two-dimensional barcode based on ISO 18004, with the content of elements defined in this Annex (hereinafter: IPS QR code).

2. If payment service providers or payees decide to use the IPS QR code for downloading and use of elements of the payment order determined by the decision governing the form, content and manner of using order forms for dinar payment transactions and/or issuance of orders (hereinafter: payment order) – they shall comply with the following technical recommendations:

1) the width and height of the IPS QR code shall be from 2.5 cm to 3.3 cm on printed bills-invoices;

2) to generate the IPS QR code on printed bills-invoices, the level of error correction M (up to 15% of damage) or L (up to 7% of damage) may be used;

3) to initiate instant credit transfers by using a payment instrument at the point of sale, the level of error correction L shall be used (up to 7% of damage);

4) maximum version of the IPS QR code which may be generated is version 13 (69x69 modules up to 331 bytes, number of characters for UTF-8 may be smaller if two-byte code characters are used), while this version may even be smaller if the contents allow.

The characteristics of version 13 under paragraph 1, provision 4) hereof for which the code set UTF-8 is used are the following:

| Version | Lines x columns | Level of correction | Bits | Numerical | Alpha | Binary |
|---------|-----------------|---------------------|-------|-----------|-------|--------|
| 13 | 69x69 | L | 3,424 | 1,022 | 619 | 425 |
| | | M | 2,672 | 796 | 483 | 331 |
| | | Q | 1,952 | 580 | 352 | 241 |
| | | H | 1,440 | 427 | 259 | 177 |

3. This Section determines the presentation of elements of payment orders in the IPS QR code, explains such presentation, and gives an example of the IPS QR code which may be used in accordance with this Decision on printed bills-invoices:

| Character type | Max. number of | Tag | Description | Use of IPS QR code | | | Unalterable |
|----------------|----------------|-----|-------------|--------------------|----------------|----|-------------|
| | | | | Payment | Points of sale | E- | |

| | characters | | | of bill-invoice | Presented by payee (merchant) | Presented by payer (buyer) | commerce | |
|----------|------------|----|--|-----------------|-------------------------------|----------------------------|----------|---|
| 3a | 3 | K | Identification code | PR | PT | PK | EK | √ |
| 2n | 2 | V | Version: 01 | 01 | 01 | 01 | 01 | √ |
| 1n | 1 | C | Code set: 1. UTF-8 | 1 | 1 | 1 | 1 | √ |
| 18n | 18 | R | Number of payee's account | M | M | - | M | √ |
| 1..70ans | 70 | N | Payee's name | M | M | - | M | √ |
| 5..18an | 18 | I | Currency and amount of funds | M(p) | M | O | M | √ |
| 18n | 18 | O | Number of payer's account | - | - | M | - | √ |
| 1..70ans | 70 | P | Data on the payer | O | - | O | - | |
| 3n | 3 | SF | Payment code | M | M | - | M | |
| 1..35ans | 35 | S | Payment purpose | O | O | O(n) | O | |
| 4n | 4 | M | MCC | - | M | - | M | √ |
| 5..10an | 10 | JS | Payer's one-time code | - | - | O | - | √ |
| 5..8an | 8 | RK | Payer's reference | - | - | O | - | √ |
| 1..25an | 25 | RO | Payee's reference credit number | O | M | - | M | √ |
| 1..140an | 140 | RL | Payee's reference | O | - | - | - | |
| 19an | 19 | RP | Reference identifying transaction at the point of sale | - | M | - | M | √ |

Explanation of designations in column "Character type":

- a (alphabetical) – capital and small letters of the Latin script for the Serbian and English languages may be used;
- n (numerical) – numerical characters may be used (0 to 9);
- s (special) – special characters presented in the table at the end of this Annex may be used;
- an – a combination of alphabetical and numerical characters;
- ans – a combination of alphabetical, numerical and special characters.

When using the "an" and/or "ans" character type, payees and/or payment service providers must take into account additional explanations relating to individual elements of the IPS QR code.

Designations in columns under "Use of IPS QR code" which relate to the obligation to use a specific element of the IPS QR code have the following meanings: M – mandatory, O – optional, M(p) – mandatory (alterable), O(n) – optional (unalterable).

The payment service provider cannot change the fields marked as unalterable after scanning the IPS QR code.

The exception to this rule is the amount on printed bills-invoices, marked as M(p) – mandatory (alterable). Also, in presenting the IPS QR code by the payer (buyer), the field 'payment purpose' must not be changed by the application if already completed by the buyer, which is designated as O(n) – optional (unalterable).

Tag **K**: *identification code* marks the content of the IPS QR code and may have the following values:

- PR – for generation of the IPS QR code of the payee, including the generation of this code on the payee's printed bill-invoice;
- PT – for generation of the IPS QR code at the payee's point of sale, presented by the payee (merchant);
- PK – for generation of the IPS QR code at the payee's point of sale, presented by the payer (buyer);

– EK – for generation of the IPS QR code in e-commerce application software.

When the IPS QR code with identification code “PR” is used, this code should be marked by the designation NBS IPS QR directly above, next to or below such prepared code (hereinafter: NBS IPS QR code).

Tag **V**: *version* means the version of presentation of the IPS QR code, fixed value 01.

Tag **C**: *code set* means the code set used in presentation; fixed value 1 means the use of UTF-8 code distribution.

Tag **R**: *number of payee’s account* means the number of the current and/or other payment account of the payee in accordance with regulations, entered exclusively as a string of 18 figures, without spaces or dashes.

Tag **N**: *payee’s name* means name and surname and/or business name of the payee, as mandatory data.

Data may also include other data on the payee (e.g. address/head office address, i.e. street and number and place). Data may be entered in a single line and/or in two or three lines, where data are separated by the mark for a new line. The maximum number of characters (70 ans) includes spaces between words.

Tag **I**: *currency and amount of funds* means the RSD designation and the amount for which the decimal point must be entered, after which invalid decimal zeros need not be written (e.g. RSD1025 or RSD 1025.1.) The minimum amount of the order is RSD0.01, and the maximum amount is RSD999999999999.99. Thousand separators (,) are not used for entering amounts. It is not permitted to leave out a figure for an entire place in amount. For instance, RSD.01 is not correct; what is correct is RSD0.01. When using the NBS IPS QR code on printed bills-invoices, the payee may also show in the code the amount of 0.00 dinars (e.g. RSD0.00 or RSD0.).

Tag **O**: *payer’s account number* means the number of the current and/or other payment account of the payer in accordance with regulations, entered exclusively as a string of 18 digits, without spaces or dashes.

Tag **P**: *data on the payer* represent optional data: name and surname and/or business name of the payer, address and/or address of the payer’s head office (street and number and place or other identification data on the payer).

Data may be entered in a single line and/or in two or three lines, where data are separated with the mark for a new line. The maximum number of characters (70 ans) includes spaces between words.

Tag **SF**: *payment code* means three-digit numerical data, the first of which identifies the form of payment, and the other two the basis of payment.

Tag **S**: *payment purpose* means data about the purpose and basis for the transfer of funds.

Tag **M**: *MCC* means the merchant code category in accordance with ISO 18245. The list of permitted codes is determined by the technical documentation of the payment system where an instant credit transfer is made, based on the use of a payment instrument at the point of sale, which also contains the guidelines for transcribing these codes to the transfer order in the system.

Tag **JS**: *payer’s one-time code* means the TOTP value (*Time-based One Time Password*) – one-time code with limited validity in time, e.g. five minutes. The one-time code is generated by the payer’s payment service provider and is used to approve a payment transaction, in accordance with the framework contract and regulations.

Tag **RK**: *reference of the payer (buyer)* means the designation determined by the payer's payment service provider, which is used, as supplementary data on the payer, to approve a payment transaction in accordance with the framework contract and regulations.

Tag **RO**: *payee's reference credit number* means supplementary data for the payee, in accordance with regulations.

In case the NBS IPS QR code is generated, the first two figures in the contents of this tag represent the model number according to which the payee's reference credit number is determined (e.g. 97, 11), while if the reference number is not determined according to any model, the first two figures are zeros (00). The content of the reference credit number shall be entered in a sequence, without spaces (e.g. 0074879). A dash may only be used to separate groups of characters (e.g. 0014-1234-12). An exception to this rule is the reference credit number determined according to model 97 in accordance with regulations, where it is not allowed to use a dash when entering its contents (e.g. 9714123412).

In case of generation of the IPS QR code with identification codes "PT" and "EK", the payment service provider of the merchant (acquirer) may use this tag to generate the reference which identifies the transaction at the point of sale and which represents the unique payment identifier, also taking into account the need for correct identification of the merchant's till where it is possible to issue the payment request, for the purpose of unambiguous identification of the till during the execution of the payment transaction in the format defined by the technical documentation of the payment system where the instance credit transfer is performed based on the use of the payment instrument at the point of sale.

Tag **RL**: *payee's reference* means supplementary data for the payer/payee in free form.

Tag **RP**: *reference identifying transaction at the point of sale* means a unique payment identifier, with total length of 19 characters in the following format: [TID 8a][Year 2n][Julian day – ordinal number of days in a year 3n][Transaction number 6n]. Each part of the reference must have a defined number of characters and the leading zeros must therefore be entered. TID (terminal identification) means the unique identification code defined by the payment service provider of the merchant (acquirer) for each merchant's till where it is possible to issue the payment request, for the purpose of unambiguous identification of the till during the execution of the payment transaction.

Entry format

Each field is specified as a pair of the defined tag and content of the field. Fields are separated by the delimiter – (|), whose technical name is pipe. The last field in the content ends with the end of the entry. The delimiter cannot be a part of the field content. Tags of optional fields are not specified in the IPS QR code if they do not contain a value. For tags "N" and "P", when data are entered in two or three lines, it is necessary to take into account different operating systems and manners of making a new line.

Example of the NBS IPS QR code

| |
|---------------------------|
| Image size: 25 mm x 25 mm |
|---------------------------|

NBS IPS QR



L level of correction

K:PR|V:01|C:1|R:84500000040484987|N:JP EPS BEOGRAD|I:RSD3702,65|SF:289|S:UPLATA
 PO RAČUNU ZA EL. ENERGIJU|RO:9716322000011111111000

Table of special characters that may be used in the IPS QR code

| | | | | |
|----|---|---|---|---|
| ! | (| / | @ | } |
| " |) | : | [| ~ |
| # | * | ; |] | „ |
| \$ | + | < | ^ | ” |
| % | , | = | – | ” |
| & | - | > | ` | ' |
| ' | . | ? | { | ' |