Deutsche Post
BRIEF KOMMUNIKATION

Machine-readable franking marks

IT franking

Design, options and contents

Version 1.5.4

December 1, 2022

Table of contents

IT franking

IT franking 2005 & amendments 2016/2017and 2022

1 Introduction/background

1.1 General information

IT franking primarily aims to optimize processing work flows for customers franking large quantities of mail using their own computers.

The data matrix code gives customers the chance, for example, to improve and optimize production processes (e.g. quality assurance).

None of the figures shown in these specifications are true to scale. The matrix codes used serve as "placeholders" and do not contain the correct contents. Likewise, none of the other franking and example figures illustrated are true to size and their contents are given as examples only. All drawings and figures are provided for illustrative purposes only!

1.2 Rules and validity

The rules set out in the product brochure on IT franking ("DV-Freimachung: Ihr Vorteil mit System") are applicable. This product brochure is available to download from http://www.dv-freimachung.de.

Use of the IT franking mark is to be agreed with Deutsche Post AG and thus forms part of the "IT franking agreement".

These IT franking matrix code specifications apply in their current version until such time that a subsequent version of the IT franking data matrix code is published. The internal working title is: "Machine-readable franking impression – Part 2: IT franking (MLFVM 2)".

If this document is also translated into other languages for service providers, manufacturers, software companies, etc., the German language version will always be definitive.

1.3 Applicability of the rules in the guide on mail items suitable for automatic processing ("Automationsfähige Briefsendungen")

All existing rules on the "machine processing of mail items" remain valid and can be found in the guide on mail items suitable for automatic processing ("Automationsfähige Briefsendungen").

This brochure also sets out the rules on affixing other barcodes used by the customer to the inscription. Inserting additional barcodes must be avoided as a matter of principle. If a barcode used by a customer is printed as an exceptional case, then care must be taken that its design and measurements are not similar to those of Deutsche Post AG. In any case, this must be agreed with the relevant MAIL automation management advisor (ABB).

1.4 Certification and quality assurance

The first time IT franking is used, the inscription (address and franking mark) must be certified.

This involves checking the following:

1.   Contents of the franking mark (including data and parameters)

2.   Arrangement and readability of the elements on the inscription side:

– Address has the correct measurements and is readable

– Data matrix code has the correct measurements and is readable

– Stipulated distances are complied with

Generally speaking, the quality of the printed data matrix code should correspond to "grade A" in accordance with the quality parameters laid down in norm ISO/IEC 15415. In the event of any deviations therefrom, DPAG must conduct a practical test to determine whether the minimum quality requirements have been met.

1.5 Certification procedure for IT franking

The following procedure applies to each customer using IT franking for the first time:

Check to ensure the latest version of this document is being used for the execution/implementation. The latest version of the document is available in the download area of http://www.dv-freimachung.de.

Further information can be obtained from your regional consultant.

Implement all necessary parts of these specifications to correctly produce IT-franked mail items, and create samples ready for acceptance. To create the samples, the consultant will provide you with the test address files. Please use these addresses only. The consultant will check that all of the IT franking requirements, etc. have been complied with and ensure that the data matrix code contains the correct contents (field contents and parameters).

Once the data matrix code has been approved by the consultant, sample mail items must be created for certification. The other certification processes up to the production stage are generally coordinated by the relevant local sales contact.

Other contractual features, such as the use of Premiumadress, are also dealt with in this way.

2 Design and text elements

The DIN letter window and the information provided in it need to have a design that is suitable for printing. Given the technical limitations in the resolution of printers used in IT franking, the inscription window may be laid out in two different variants, one for printers with a resolution of 240 dpi (dots per inch, 1 inch corresponding to 25.4 mm) and another for printers with a resolution of 300 dpi. Integer multiples of these (minimum) resolutions, e.g. 480 dpi or 600 dpi, are also supported.

Other resolutions that are technically possible in principle are currently not supported.

DIN 5008:2005 governs the structure of the inscription field. It specifies four lines for the additional information/mark zone, which are to be used for the postal marks and franking as appropriate. As per the applicable norms, six lines are then left for the actual address, **to be filled in as necessary from top (line 1 of the address zone) to bottom without leaving any lines empty.**

The outer frame is determined by the envelope windows mentioned in DIN 680. The rounding recommended by the norm is not taken into account in the measurements, because this is also not specified in the norm. The filled-out inscription window (see figures) can be positioned in two ways in the envelope that fall into the definitive readable section in the window of a C6/C5 envelope for processing using enveloping machines pursuant to DIN 676. For this, a 1 mm space on the thin edge of the envelope, which is also not specified in the norm, is accepted on both sides. Furthermore, the tolerance measurements for the window as specified in the norm were not used.

Figure 1: Sample showing the layout in the window of an envelope

According to DIN 5008:2005 the sender line is part of the additional information and mark zone.

In principle, all elements that need to be machine-readable must be positioned in the readable area under all circumstances. Elements that only need to be read in plain text under certain circumstances are positioned in the peripheral areas which do not need to be readable under all circumstances. The readable area is also limited to 2 mm by a quiet zone round its outside. This is part of the conditions that are prerequisites for machine-readability.

Individual exceptions are the instructions for the Deutsche Post logo and the 26x26 data matrix code module described further below (see chapter 3).

The entire inscription is set out in such a way that the left edge of an A4 letter with text and folds, whether in form A or B, is at least 22 mm from the left edge of the page. The bottom edge of the sixth line, even if it is not printed, has a gap of 17.5 mm from the upper folded edge, regardless of whether the letter is folded according to form A or B. The bottom address line is therefore a fixed distance from the upper folded edge. When folding using an enveloping machine, the tolerance must be set sufficiently low, well under 1 mm, with operational checks to ensure correctness undertaken. Otherwise, the machine-readability of the mail items may be lost, as the address can no longer be read with certainty.

The overall positioning of the inscription including postal information is specified for DIN A4 letters in C5/C6 envelopes. The address window retains the same measurements when used with other envelopes or paper formats. Only the positioning of the window as a whole changes so that the aforementioned window readability principles remain intact as far as possible even if the letter shifts in the envelope. In no case may the font size used for the address be reduced.

Should the data matrix code slip out of the window to the extent that it can no longer be read, the mail item may be deemed to be insufficiently franked and returned.

2.1   Inscription window for 240 dpi printers

The module size of the data matrix code is 0.423 mm, which is the same size used when printing with 300 dpi printers, and corresponds to precisely four pixels with a 240 dpi printer.

2.2   Inscription window with six address lines

The measurements given (see figures 4 and 5 on the following pages) based on the aforementioned positioning requirements must be strictly observed when using six address lines. Otherwise, the mail items will not be deemed machine-readable.

For envelopes with a window larger than 45 x 90 mm, or for labels and direct printing on the inscription side, there may be more leeway in terms of font, font size and number of address lines.

The fonts permitted are Arial, Helvetica, Frutiger and Courier if all six address lines are used in a standard window. The font size must be at least 9 pt here (capital letter height 2.3 mm). A correspondingly large interlinear space must also be used.

Fonts other that those described above may also be used in the address field provided (address line 1-6; corresponds to a height of 21.2 mm) provided they meet the requirements in chapter 2 (point 2.1) of the guide on mail items suitable for automatic processing ("Automationsfähige Briefsendungen"). **Here, it is important that all components (in particular the data matrix code and the address) continue to remain visible in the readable area (net window).**

In this case, you should have your MAIL automation management advisor (ABB) check the layout.

2.3   Inscription window with fewer than six address lines

If only five address lines or fewer are generally needed, the font size and interlinear space may be enlarged accordingly. In such cases, other machine-readable fonts may also be used as per the guide on mail items suitable for automatic processing ("Automationsfähige Briefsendungen").

2.4   Extra line

Product descriptions, such as "DIALOGPOST", are printed on one line according to the information in the currently valid price and product list. Arial Bold, 7 pt, in capitals (1.8 mm font height) is used. The product descriptions are positioned in the second line of the additional information/mark zone (see figure 1, point 4).

2.5 Sender line

Sender information must be printed using Arial or Helvetica (usually 7 pt, 1.8 mm font height) and in principle may not be in bold and/or italics. **For further information on using other fonts, see the guide on mail items suitable for automatic processing ("Automationsfähige Briefsendungen") (chapters 2.1 and 2.2)**

The one-line sender information may protrude a maximum of 3 mm to the left beyond the address lines. However, it is recommended that this is flush with the address lines. When using additional mail services, however, the sender line should be flush with the item ID (for registered mail items).

2.6 Franking ID

The franking ID is shown in the window and/or address field using a group of characters in the following pattern: 2:4:4:2:4:4 and in line with the specified measurements, Arial, 7 pt (1.8 mm font height), standard.
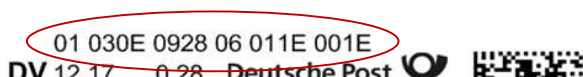
Figure 2: Franking ID

2.7 IT line and Deutsche Post logo

The IT franking method is identified using the letters "DV" ("IT") in Arial Bold, capital letters, 8 pt (2.1 mm font height). The date and charges are both printed in Arial, 7pt (1.8 mm font height).

The Deutsche Post logo is to be integrated as an image measuring 22.0 mm x 3.8 mm. Use of the Delivery font is mandatory.

The logo is available for download from the download area of http://www.dv-freimachung.de.

Example of the "Deutsche Post" logo:

 [1]

2.8 Special features for 300 dpi printers

---

[1] In all drawings, the logo is not true to scale and only serves to provide a better idea of the layout.

The measurements of the text elements are the same as those for 240 dpi printers, with the exception of the length of the one-dimensional additional mail service linear code (see chapter 4.1 Additional mail services). The module size of the data matrix code is 0.423 mm, which is the same size used when printing with 240 dpi printers, and corresponds to precisely five pixels with a 300 dpi printer.

3 Measurement drawings

The original drawing shows the inscription window using a 1:1 scale, as in the attached illustration.

To check the measurements you can obtain foil prints from the consultant.

The measurements of the text elements permit a possible deviation of +/- 1 pixels in relation to the overall dimension, which means that there are different tolerances in millimeters depending on the type of printer. This explicitly does not apply to the data matrix code, for which the pixels per module determined by the printer resolution are to be printed, e.g. four pixels for 240 dpi printers and five pixels for 300 dpi printers.
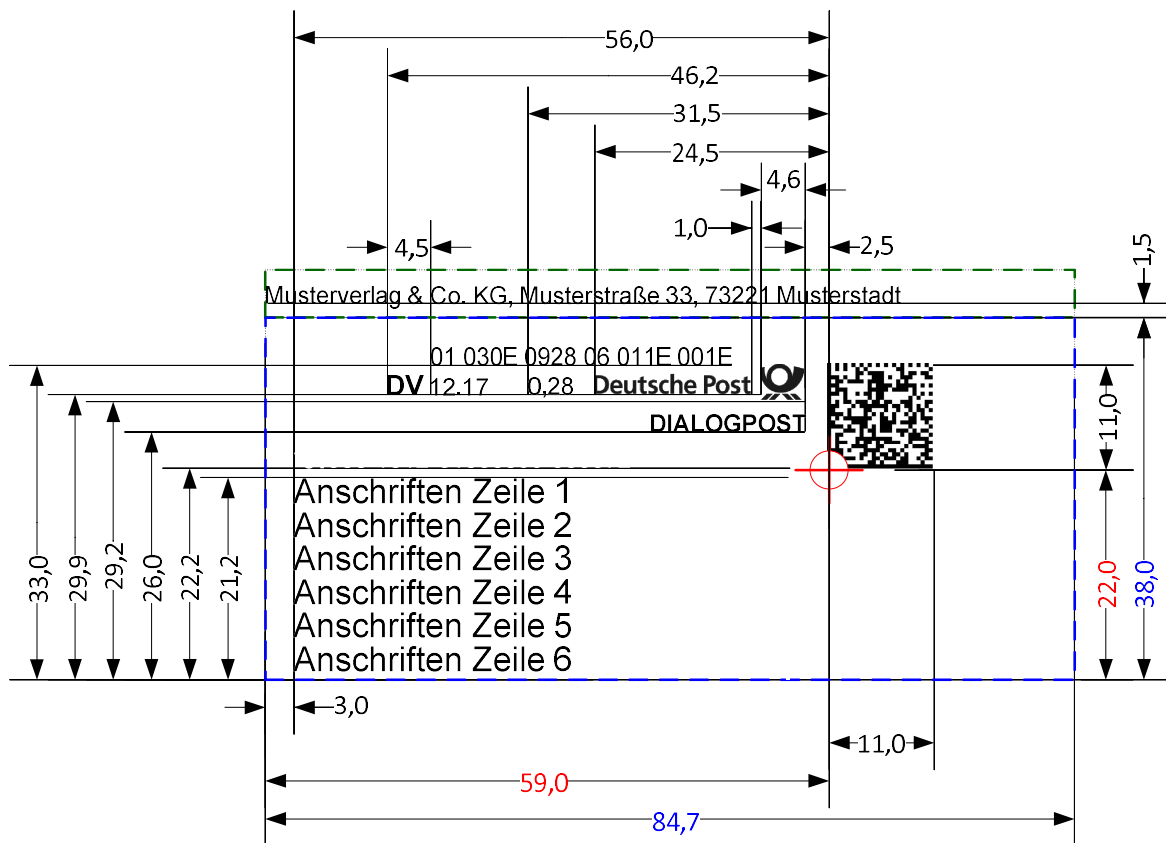

Figure 3: Scale drawing of the address window
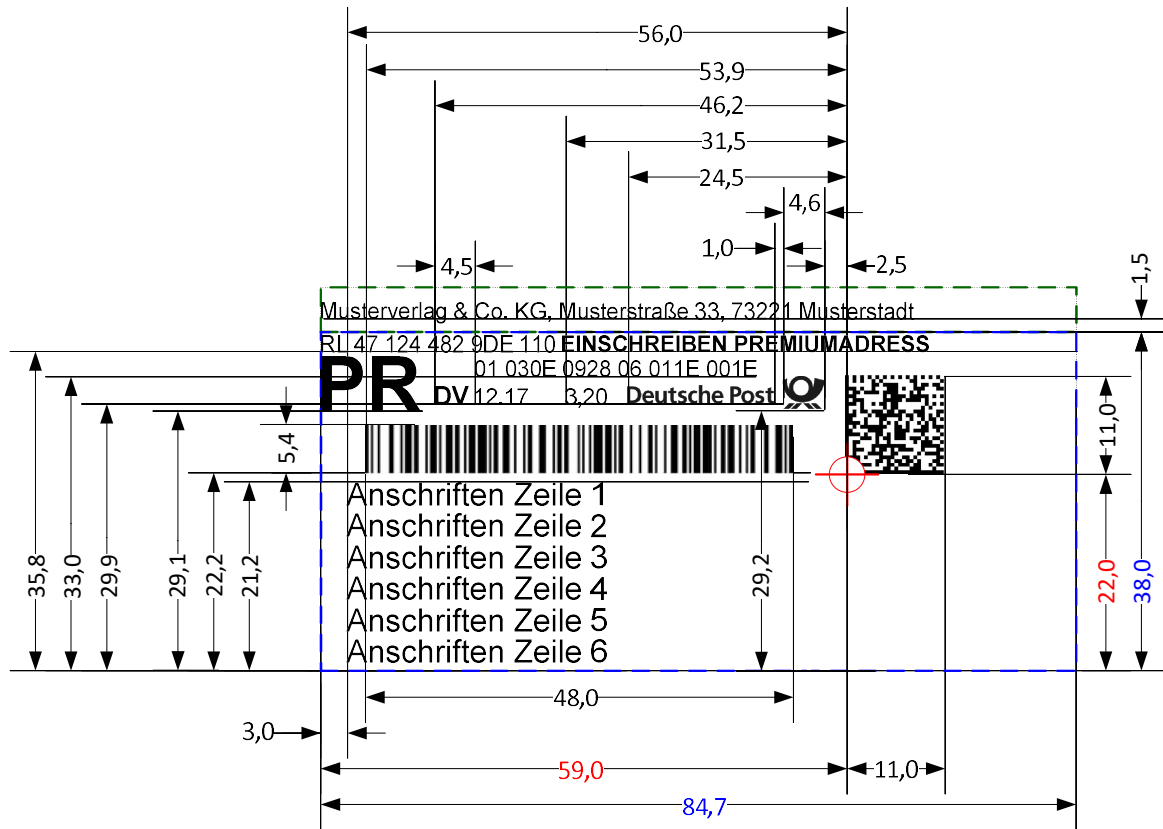
Figure 4: Scale drawing of the address window with additional mail service and Premiumadress

Figure 5: Quiet zone and net window

4 Variants and options

4.1 Additional mail services

4.1.1 Additional national mail services

The technical data and/or rules regarding structuring a linear "code 128" barcode are described in chapter 7 Additional mail service.

Figure 6: Sample data matrix code with the barcode for the registered letter additional mail service

The COD additional mail service may not be used in the window owing to the size requirements (window) of the DIN norms in force. Alternative solutions (e.g. use of envelopes with larger windows or no address lines) may be agreed with Deutsche Post on a case-by-case basis.

4.1.2 Additional international mail services

For additional international mail services, an international barcode (UPU standard layout) is used, which cannot currently be shown in the window. Alternative solutions (e.g. use of envelopes with larger windows or no address lines) may be agreed with Deutsche Post on a case-by-case basis.

4.1.3 Posting list

A posting list must be used for postings. This can be obtained in file format from the certification service (see chapter on certification) or from http://www.deutschepost.de/Einlieferungsliste-briefzusatzleistungen.

4.2 Certification for IT franking with additional mail service

See chapter on certification.

4.3 Information line in the additional information and mark zone

In the last line of the postal marks (see figure 1: "information line"), additional information required for processing may be added, using a font size of 7 pt (1.8 mm font height). This must then be placed between "*" characters (see figure 1). The characters may also be used as field separators. Other possible information includes in particular the GSA program identifier for Dialogpost and, if necessary, a customer-specific number (e.g. for manual post-processing) preceded by the field-separated job number (e.g.*36*123456789*).

ERGOLINE - Lange Büromöbel KG - Alexandrinenstr. 7/9 – 10969 Berlin

01 30E0 9280 00 1000 001D
DV 01.22   0,85 Deutsche Post

K: 123456
Schröder GmbH
Herrn Bernd Schlau
Gebäude 3A
Abteilung 3 RT/III
Postfach 1234
83334 München

Figure 7- 1 information line and 6 address lines

4.4 Information lines in the address zone

Additional information required for processing may be provided, after consultation with the MAIL automation management advisor, as one or two extra lines containing plain-text information in address line 1 and, if use of address line 1 is not sufficient, in address line 2.

Use of the information line in the additional information and mark zone takes priority over use of the information lines in the address zone.

The content must then be placed between "*" characters. The characters may also be used as field separators. Other possible information also includes the identifier of routing region bundles for Dialogpost and, if necessary, a customer-specific number (e.g. for manual post-processing) preceded by the field-separated job number (e.g.*36*123456789*). The line may be max. 7 pt (1.8 mm font height). Furthermore, this line may be used, for example, for customer-specific information in plain text if the second and third line of the additional information/mark zone are occupied by the linear barcode for an additional mail service. It is important to note that this only leaves another five (if one line is used for plain-text information) or four (if two lines are used for plain-text information) address lines available. Substitution of more address lines with lines containing plain-text information is not supported.

ERGOLINE - Lange Büromöbel KG - Alexandrinenstr. 7/9 – 10969 Berlin

01 30E0 9280 00 1000 001D
DV 01.22   0,37   Deutsche Post
DIALOGPOST

12345 FSQ_91
K: 123456

Schröder GmbH
Herrn Bernd Schlau
Abteilung 3 RT/III
Postfach 1234
83334 München

Figure 8- two information lines and five address lines

ERGOLINE - Lange Büromöbel KG - Alexandrinenstr. 7/9 – 10969 Berlin

01 30E0 9280 00 1000 001D
DV 01.22   0,37   Deutsche Post
DIALOGPOST

12345 FSQ_91
K: 123456
Ref 1234567890

Schröder GmbH
Herrn Bernd Schlau
Postfach 1234
83334 München

Figure 9- three information lines and four address lines

4.5 Premiumadress

Premiumadress may also be used in combination with an additional national mail service.

If an additional mail service and Premiumadress are used at the same time, the existing franking mark is extended so that the franking layout remains unchanged except for the layout of the identifiers for Premiumadress and registered letter.

The capital "P" for Premiumadress is placed to the left of the capital "R" for registered letter in the same font and font size. Both letters are always positioned in the same places.

The additional mail service delivery identifiers in the reading zone **may**, depending on whether the franking method uses a linear code or second delivery identifier, be sized as follows:

If **no** linear code or second additional mail service delivery identifier is present, the following size may be used:

Font: Arial

Font size: 10.9 mm (43pt)

Type size: bold, capitals

If a linear code or second additional mail service delivery identifier is present, the following size **must** be used:

Font: Arial

Font size: 6.1 mm (24pt)

Type size: bold, capitals

Figure 10: Positioning of additional mail service and Premiumadress

If Premiumadress is used without an additional mail service, the barcode of the additional mail service, the item ID, additional mail service plain text and "R" will not be used. The "P" for Premiumadress is always positioned in the same place, even if, for example, the capital "R" for the additional mail service is missing.

The font and font size are exactly the same as those used for the "R" for registered letter. All other markings are in line with the description in the currently valid product list. The image only shows incomplete examples.

Musterverlag & Co. KG, Musterstraße 33, 73221 Musterstadt

PREMIUMADRESS

P

01 030E 0928 06 011E 001E

DV 12.17   0,70   Deutsche Post

Anschriften Zeile 1
Anschriften Zeile 2
Anschriften Zeile 3
Anschriften Zeile 4
Anschriften Zeile 5
Anschriften Zeile 6

Figure 11: Positioning of PREMIUMADRESS

The Premiumadress ID is provided in the description of the data matrix code fields (see chapter 5 on contents of the matrix code: byte f24/f25)

4.6 GSA program identifier

The GSA (large letter sorting system) operator uses the GSA program identifier to select the correct sorting program. It is only relevant for Dialogpost.

4.6.1 Structure of the GSA program identifier

The structure of the GSA program identifier is as follows:
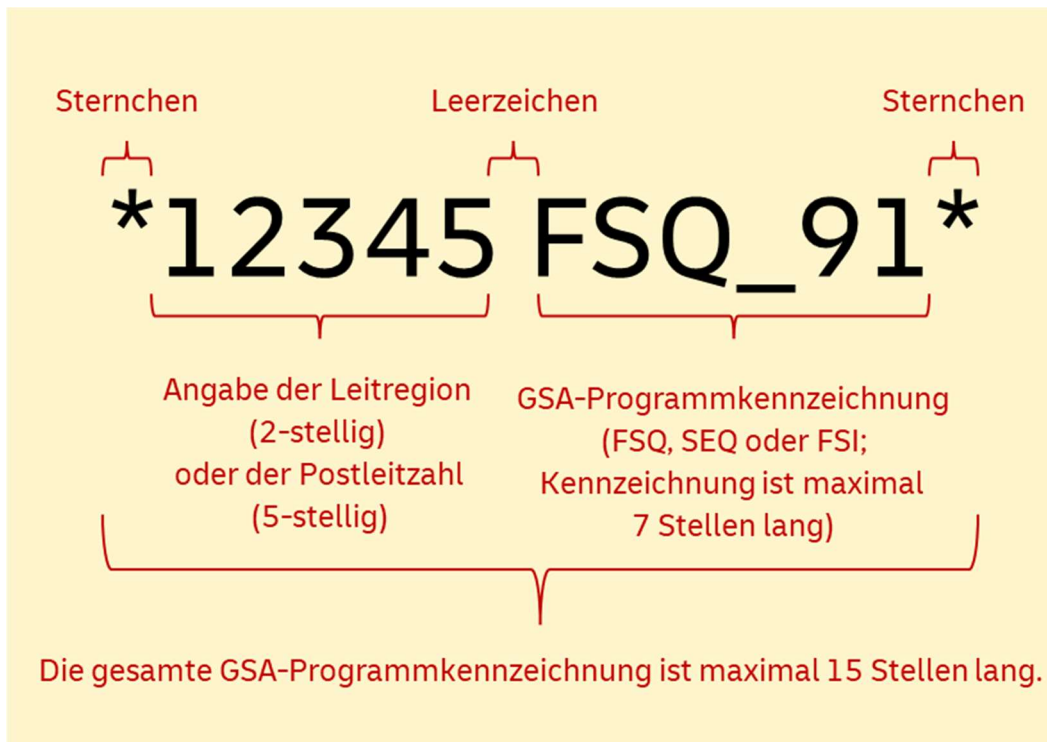
The following GSA program identifiers are possible:

1. **Routing region bundle for the program** (routing region identifier and program designation)
   Examples:
   - ***52 FSQ_92***
   - ***04 FSI_93***
   - ***56 SEQ_81***
2. **Postal code bundle** (postal code and program designation)
   Example: ***52146 FSQ_91***
3. **Routing region bundle with *remaining items** (routing region code)
   - Example: ***42***

4.6.2 Placement of the GSA program identifier

To ensure that the GSA program identifier can be read quickly and reliably, it should be placed as the first (and if possible last) element in the first information line (see chapter

4.3). The two other information lines described in chapter 4.4 are available for other customer-specific information.

The following overview again illustrates the above (without taking explicit account of the space requirements of additional mail services):

Current use of customer-specific information	Future placement of the GSA identifier	Future placement of customer-specific information	Effect on address lines
Customer does not use any customer-specific information	Placed at the start of information line 1	-	Six address lines are available
Customer uses one information line with short content (*1)	Placed at the start of information line 1	Placed in information line 2 or after the GSA identifier on information line 1	Five (if information line 2 is used) or six address lines are available
Customer uses one information line with long content (*2)	Placed at the start of information line 1	Placed in information line 2	Five address lines are available
Customer uses two information lines with short content	Placed at the start of information line 1	Contents of information line 2 concatenated or information lines 2 and 3 used.	Five (concatenation) or four address lines are available
Customer uses two information lines with long content	Placed at the start of information line 1	Placed in information lines 2 and 3	Four address lines are available

(*1): short content means that when concatenated, the elements fit into one line without touching the quiet zone of the DMC. The printing of multiple pieces of information in one information line should only be used in exceptional cases.

(*2): long content means that when concatenated, the elements do **not** fit into one line without touching the quiet zone of the DMC.

5 Contents of the data matrix code (incl.variants)

5.1 General information

For IT franking, an ECC 200 data matrix code with error correction is used. The logical size of the data matrix code (number of lines and columns) is 26 x 26 modules.

As of version 1.3 (see byte f4) the IT franking mark data matrix code contains 42 bytes (26 x 26 modules), f1 to f42, in binary coding (BASE 256).

The module size is 0.423 mm as standard.

For the first 22 bytes (f1 to f22) the matrix code fields have the same functional definition for all variants. These fields may then differ from f23 onwards depending on whether there is an additional service (e.g. Premiumadress).

Important note:
In byte f4, the IT franking V1.5.4 specifications use the content '12' hexadecimal (decimal: 18) as in the IT franking 1.3 specifications

5.2 Matrix code content V1.5

Notes on nomenclature in the following tables:

Hexadecimal values are enclosed in quotation marks, e.g., '3F.' For better legibility, these values are arranged in pairs separated by a space, e.g., '00 37'.

Byte no	Length	Meaning	Data contents	Comment
f1, f2, f3	3	Postal company (ASCII DEA)	'44 45 41'	Deutsche Post

Byte no	Length	Meaning	Data contents	Comment
f4	1	Franking type and version	**'12'**	**IT franking, version 1.5** '12' hexadecimal corresponds to 18 decimal. **(The content of bytes f4='12' remains unchanged from IT franking version 1.3)**

Byte no	Length	Meaning	Data contents	Comment
f5	1	Version products/prices	'XX'	The version of the product and price list used must be specified here.

Byte no	Length	Meaning	Data contents	Comment
f6 to f10	5	Customer number	'XX XX XX XX XX'	Example: EKP no. 5111111111 (decimal) equals '01 30 A5 5D C7' (hexadecimal). Notified by Deutsche Post AG (franking department)

Byte no	Length	Meaning	Data contents	Comment
f11, f12	2	Charge or franking value	'XX XX' in the format EEECC (decimal)	Franking value given in euros (E=pre-decimal places and C=decimal places). Example: EUR 0.85: decimal: 00085; hexadecimal: '00 55'

Byte no	Length	Meaning	Data contents	Comment
f13, f14	2	Date of posting or data processing date	'XX XX' in the format DDDYY (decimal)	If at the time of optimization the actual date of posting is not known, the date of data processing should be used. Date format: Decimal representation of the date as DDDYY whereby "DDD" represents the relevant day of the year (up to 365 or 366) and "YY" is the last two digits of the year. (Example: 04.05.2017, or the 124th day in 2017; decimal: 12417; hexadecimal: '30 81')

Byte no	Length	Meaning	Data contents	Comment
f15, f16	2	Product identifier code	'XX XX'	The current description of the product key is available in the product/price list on request. Example for product key: 00001 standard letter

Byte no	Length	Meaning	Data contents	Comment
f17, f18, f19	3	**Unique** consecutive item number	'XX XX XX'	For each posting certificate number a max. of 16,777,215 mail items.

Byte no	Length	Meaning	Data contents	Comment
f20	1	Subscription number	'XX'	The subscription number is assigned exclusively by the IT franking consultant in the franking department. For numerical subscriptions with a value range from 01 to 99, decimals are directly converted into hexadecimals. For example: subscription with 98 decimal corresponds to 62 hexadecimal. For alphanumerical subscriptions with a value range from "AA" to "FZ" without numbers: Alphanumerical subscriptions are converted into decimal subscriptions. The subscription "AA" corresponds to 100 decimal and 64 hexadecimal. The formula for calculating decimal values is:: ((byte value of the first (most significant) nibble minus 65) times 26) plus (byte value of the second (least significant) nibble minus 64) plus 99. The byte values are the decimal values of the upper case letters in the ASCII table. The total value range is from 1 to 255 decimal or from "01" to "FF" hexadecimal.

Byte no	Length	Meaning	Data contents	Comment
f21, f22	2	Posting certificate number	'XX XX'	For each customer per invoicing process (contract/subscription). The values that can be represented for the number range are 0001-65535 (decimal) or '00 01' to 'FF FF' (hexadecimal).

Byte no	Length	Meaning	Data contents	Comment
f23	1	Notification of productive data elements between bytes f24 and f42	'XX'	As bytes f24 to f25 are used flexibly for product purposes and are also available in full or in part for customer-specific data, the range and type of the data elements (see below) in this area are shown here.
			'00'	**No product-specific contents** are mentioned in bytes f24 to f25. The overall range may only be used for customer-specific data not analyzed by Deutsche Post.
			'01'	Bytes f24 to f25 are used for the productive data element "**PREMIUMADRESS**" (see below).The following bytes f26 to f42 may be used for customer-specific data and must be completed if necessary. These customer-specific data are collected as part of Premiumadress and provided to the sender as additional information in the address data record (e.g. customer number, recipient). These data are only collected to be forwarded to the sender. The data are not analyzed by Deutsche Post.

Byte no	Length	Meaning	Data contents	Comment
			'02'	Bytes f24 to f25 are used for the productive data element "**PREMIUMADRESS**" (see below). The following bytes f26 to f42 may only be used for customer-specific data not analyzed by Deutsche Post. These are not forwarded to the sender.
still f23	1	Notification of other data elements	'nX'	The notification of other data elements is agreed with the franking department.

Byte no	Length	Meaning	Data contents	Comment
f24, f25	2	PREMIUMADRESS ID	'XX XX'	The data element PREMIUMADRESS contains the hexadecimal representation of the decimal PREMIUMADRESS ID. This is generated by PREMIUMADRESS and notified to the customer. It must be used by the customer for each posted item franked. Permissible value range 1 to 999 or '00 01' to '03 E7'

Byte no	Length	Meaning	Data contents	Comment
f24 to f42	19	Customer-specific information **without** use of PREMIUMADRESS	'XX XX XX XX XX XX XX XX XX XX XX XX XX XX XX XX XX XX XX'	Any content which is not evaluated by the postal service. If no customer-specific information is to be placed in the data matrix code, then in order to comply with the size of the data matrix code, it may be necessary to fill it with blank information (e.g. hex '00').
f26 to f42	17	Customer-specific information and use of PREMIUMADRESS	'XX XX XX XX XX XX XX XX XX XX XX XX'	

			XX XX XX XX XX'	

6 Franking ID

6.1 Item ID

If it is not possible to automatically compile the matrix code which also contains the franking ID, the franking ID must be entered manually in order to incorporate the item ID (e.g. during replacement delivery services or for item tracking). To check that this manual entry is correct, a conclusive check digit is created in addition to the 19 usable characters and printed as the last character.

6.2 Elements and description of the franking ID

For a given order, the 20-character franking ID is created based on a fixed and a variable component. Fixed elements are the reference mark and the customer number (EKP). Variable elements consist of the item ID and check digit.

Character No	Length	Meaning	Data contents	Comment
1 to 2	2	Reference mark	'XX'	Unique reference criterion is the sub-scription number (issued by the franking department) – byte no f20
3 to 9	7	Customer number / EKP	'X XX XX XX'	The first eight digits of the decimal customer number of the customer (without any check digit) and conversion of the eight-digit customer number into seven hexadecimal characters (without the leading "0" (most significant nibble))
10 to 13	4	Item ID – part 1 (posting certificate number)	'XX XX'	Unique posting certificate number Reference matrix code byte no 21–22
14 to 19	6	Item ID – part 2 (consecutive item number)	'XX XX XX'	Consecutive item number within posting certificate number Reference matrix code byte no 17–19
20	1	Check digit	'X'	Check digit in addition to the preceding 19 characters of the franking ID according to the CCITT CRC procedure (CRC-4)

The franking ID is shown in the window and/or address field using a group of characters in the following pattern: 2:4:4:2:4:4 (see figures 10 and 11) and in line with the measurements stipulated.
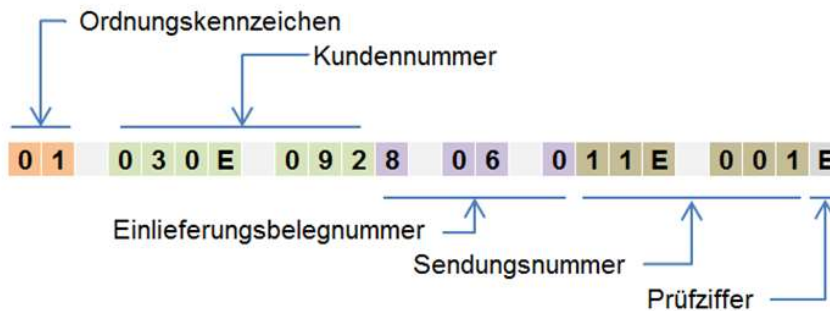

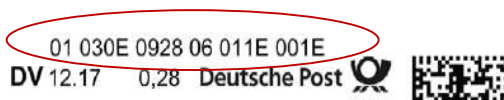Figure 12: Logical blocks of franking ID

Figure 13: Layout of franking ID above IT franking line

6.2.1 Reference mark

For IT franking the reference mark corresponds to the procedure subscription number. The reference mark is filled in according to the contents of byte 20 of the matrix code. It must be ensured that this does not conflict with the customer's other franking methods/procedures, e.g. procedure 50 (international mail items), business reply (Werbeantwort) or Premiumadress. The subscription number is generated in agreement with Deutsche Post, franking department, in order to identify certain constellations of senders and service providers.

6.2.2 Customer number

The 20-character franking ID is formed on the basis of a customer number (EKP) (in the case of IT franking, the EKP of the customer). The EKP therefore corresponds to the EKP used in the matrix code. The first eight digits of this number are incorporated into seven

hexadecimal franking ID characters. The eight-digit decimal EKP is shown as a hexadecimal value, without the leading "0" (most significant nibble).

The remaining 12 usable characters (excluding single check digit) are available to uniquely identify mail items created under this EKP for a period of 12 months or more where possible.

6.2.3   Item ID

Characters 10 to 19 are used to identify the consecutive item ID. The posting certificate number is contained in bytes 21 to 22 of the matrix code. The hexadecimal characters in the posting certificate number are printed in positions 10 to 13 of the franking ID. Bytes 17 to 19 of the matrix code contain the item number and are printed in positions 14 to 19 of the franking ID. The posting certificate number and the consecutive item number are each coded in hexadecimal form.

6.2.4   Check digit calculation

The check digit is a hexadecimal number between '0' and 'F' and is the last character of the 20-character franking ID. The check digit is determined using a CCITT cyclic redundancy check (CRC-4). When it is calculated, the characters in the 19-character usable data of the franking ID are converted into bytes according to the ASCII table. The bytes are then converted into bits. The CRC-4 calculation is applied to this bit stream and the result, which in accordance with the procedure is always a bit string with 4 bit, is converted into a hexadecimal character, which is printed as the last character.

7 Additional mail service

7.1 Linear barcode

7.1.1   Background

Use of the additional mail services registered letters and COD is intended for major mail users and customers who want to frank REGISTERED LETTERS or CODs themselves. It

gives them a quicker and easier way of preparing their mail items for dispatch than be-fore, in just one simple work step.

For these additional mail services (BZL), a black printed linear "code 128" barcode is used pursuant to DIN EN 799. The printing quality must correspond to at least quality level B pursuant to DIN EN 1635.

To print the barcode for the additional mail service, a module size of 3 pixels is recom-mended.

The "code 128" linear barcode consists, according to the specifications, of individual characters which each consist of 11 black or white modules of the same width. The width of such a "module" must correspond to a multiple of the technically possible printing resolution. If a printer is used with a resolution of 300 dpi (dots per inch), the width of the module will be 3 x 0.0847 = 0.254 mm, for example. On such a printer, the width of a normal character will thus be 11 x 0.254 mm = 2.794 mm. Only the last character in the code, the "stop" character, consists of 13 modules and thus has a width of 3.302 mm.

The characters contained in the linear barcode may be presented in three different char-acter sets, "A", "B" and "C". Character sets "A" and "B" are used to show uppercase letters, for example. With character set "C" each character can represent a two-digit numerical value (00 to 99), making it a particularly compact solution. Each barcode begins with a starting character and ends with a check code (CD) and a "stop" character. In addition, the control character "code" is used to switch between character sets.

The quiet zone at the start and end of the barcode is 5 mm long.

The additional mail service item number appears in plain text and as a barcode in the inscription (figure 6).

7.1.2 Usable content of the barcode

The barcode has the following usable content:

- **two uppercase letters**
to identify the additional mail service according to UPU
Registered letter service indicator: RA – RY (e.g. "RR")
National COD service indicator NN

- **eight digits** as a unique item ID (e.g. "34567890") **one check digit**, formed
using the eight digits (e.g. "1")

- **two uppercase letters** as a country identifier ("DE" for Germany)

- **three characters as the product code for national products (e.g. 110)**

On the basis of this usable content, the barcode contains the following charac-
ters:

Example for a national product:

"Start B"	R	R	"Code C"	34	56	78	90	"Code B"	1	D	E	1	1	0	"Check code"	"Stop"

7.1.3 Size calculation according to DIN EN 799

The measurements of the code are calculated as follows:

Structure of the code (minimum):

Starting character 11 modules (depending on the character set chosen, "Start A", "Start B" or "Start C"")
Data character 11 modules
Check code 11 modules
Stop character 11+2 modules

Types of code:

Character set A: Special characters, digits, uppercase letters
Character set B: Special characters, digits, uppercase and lowercase letters
Character set C: Digits (pairs of digits 00–99 effective from 4 characters in succession)

Module size

Minimum size: according to specifications: 0.191 mm

7.1.4 Size for 300 dpi printers

Assumed module size: 0.254 mm
The assumed size is taken as a basis for determining the barcode lengths as follows. If the resolution of the printer is different, the barcode lengths may either be slightly larger (within the limits of the layout, minimum distances, etc.) or, as is usually the case, smaller. These differences must be taken into account during barcode recognition.

Barcode length (based on 3 pixels per module):

The barcode length is based on the technical data of the printing system and the required printing quality. For the length of the barcode, the following formula applies (information in mm).

Formula: **L = 11X(C+(D/2))+2X+2Q**

where: X: module width = 0.254 mm
C: Number of data characters that do not fall under D (incl. start/stop)
D: Number of double-density coded digits in character set C
Q: Width of quiet zone = 2.54 mm
(minimum width of the quiet zone: larger value of 10X / 2.54 mm
10X = 2.54 mm, so Q = 2.54 mm)

Additional mail service item number national:

RR 34567890 1 DE 110

Check code + stop

Start B

Start C

Start B
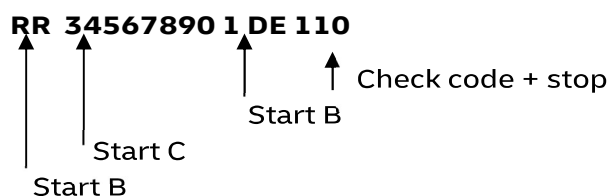
L =   11x0.254 (13 + 8/2) + 2x0.254 + 2Q
   47.5 + 2Q   Q = 2.54

The net length of the barcode (without quiet zone Q): 47.5 mm

Size for printers with other resolutions

The resulting length of the barcode varies depending on the print resolution and the number of pixels per module. With a defined number of pixels per module, the barcode gets longer as the resolution gets lower, and vice versa.

Note therefore that the hardware used for printing must (a) meet the quality level described above and (b) achieve conformity with the specified measurements of the franking mark (specifically full visibility in the inscription window).

As described in the previous chapter using the example of a 300 dpi printer, a 300 dpi printer can produce a length which meets the requirements of the franking mark at 3 pixels per module.

7.1.6 Barcode height:

Recommended height according to norms: at least **5.5** mm or 15% of the barcode length

Given the dense amount of information in the address window and the resulting lack of space, a barcode height of 5.3 mm is consistently used for national mail items.

7.2 Structure of the additional mail service item number

The additional mail service item numbers with additional check digit are structured as follows:

Shipment number:

Position 01 – 02	Combination of letters as service indicator:	RA – RY	Registered letter
		NN	COD

Position 03 – 10	consecutive numbers
Position 11	check digit according to Modulo 11, determined from position 3 to position 10
Position 12 – 13	DE (Germany)

Check digit procedure:

To improve and ensure readability, a check digit is added after the usable characters according to Modulo 11. This check digit is located in position 11 of the code's usable data and is not identical to the check digit that is automatically created at the end of code 128.

Modulo 11

Weighting factors: 8 6 4 2 3 5 9 7
Divisor: 11
Minuend: 11
Result of subtraction: 1 – 9 = check digit 1 – 9
                    10   = check digit 0
                    11   = check digit 5

Example:

Number	4	7	3	1	2	4	8	2
Weighting factor	8	6	4	2	3	5	9	7
Multiplication	32	42	12	2	6	20	72	14
Sum of multiplication	+	+	+	+	+	+	+	+ = 200

Division	200 : **11** = 18 (**11** for Modulo 11)
	18 x **11** = 198 (**11** for Modulo 11)
	200 − 198 = 2
	11 − 2 = **9** (**11** for Modulo11)
Check digit	**9**
Number with check digit	4 7 3 1 2 4 8 2 **9**

Please   *note:*
The reserved item number range is assigned when the certificate is issued.

7.3 Additional mail service plain text

Shows additional services in a single line in plain text.
The specified order must be adhered to for technical printing reasons. Bold, uppercase letters in Arial, 7 pt, must be used so that the font size is approx. 1.8 mm.

Description / product codes (national)

REGISTERED LETTER / 110
REGISTERED LETTER, DELIVERY TO ADDRESSEE ONLY (EIGENHÄNDIG) / 111
REGISTERED LETTER, ADVICE OF DELIVERY (RÜCKSCHEIN) / 112
REGISTERED LETTER, DELIVERY TO ADDRESSEE ONLY (EIGENHÄNDIG), ADVICE OF DELIVERY (RÜCKSCHEIN) / 113
REGISTERED LETTER, DELIVERY TO ADDRESSEE'S MAILBOX (EINWURF) / 200
COD / 300

8 References to additional documentation

8.1 Referenced documents

With the exception of the norms and the list of all types of franking, all documents referred to are available from the download area at http://www.dv-freimachung.de.

You are also referred to the download area at http://www.einschreiben.de, which contains brochures and technical specifications relating to registered letters.

8.2 Measurement drawings

Images in these specifications

8.3 Deutsche Post logo

Deutsche Post logo (ZIP archive)

8.4 Price and product list

Price and product list in the relevant version (ZIP archive)

8.5 DIN norms

All norms are available from Beuth-Verlag, Berlin:"www.beuth.de"

9 List of figures