Machine-readable franking impressions

IT Franking

Design, variants and contents

Version 1.5.3

01.07.2022

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- IT Franking 2005 & Adaptations 2016/2017/2022

1 Introduction/background

1.1 General information

1.2 The focus of IT franking

The focus of IT franking is to optimise procedures at customers' places of business for the franking of large volumes of items using customers' IT systems

Among other things, the matrix code offers customers the possibility to improve and optimise production processes (e.g. quality assurance).

All illustrations shown here in the specification are not to scale. The matrix codes used serve as "placeholders" and are not filled with the correct contents. Similarly, all other elements of the franking illustrations and model illustrations shown here are not to scale and the content is offered only by way of example. All drawings and figures are included solely for illustration purposes.

1.3 Regulations and validity

The regulations on IT franking set out in the product brochure 'IT franking: The advantages of a systematic approach' [*DV-Freimachung: Ihr Vorteil mit System*] are applicable. You can obtain this product brochure from your IT franking consultant at Deutsche Post.

Use of the IT franking impression is to be agreed with Deutsche Post and thereby becomes a component of the 'Agreement on IT Franking' [*Vereinbarung zur DV-Freimachung*].

This specification on the IT franking matrix code is valid from the situation as at the time of specification until the release of a successor version of the IT franking data matrix code. The internal working title is 'Machine-readable franking impressions Part 2 IT franking (MLFVM 2)' [*Maschinenlesbarer Frankiervermerk Teil 2 DV-Freimachung (MLFVM)*].

1.4 Delimitation from the regulations for 'machine processing of letter mail items'

All existing regulations on the automated processing of letter mail items will remain valid and are contained in the brochure 'Machinable mail items' [*Automationsfähige Briefsendungen*].

The application of further barcodes used by the customer in the delivery address is also covered there. Applying additional barcodes is to be avoided as a rule. If, by way of an exception, a barcode used by the customer is to be applied, care must be taken to ensure that this does not resemble the Deutsche Post barcode in terms of design and dimensions. Agreement with the Deutsche Post mail automation representative (ABB) is necessary on this point in every case.

1.5 Certification and quality assurance

Certification of the mailing design/address layout and of the franking mark is required for initial use of IT franking.

Checks are made on:

1.   Contents of the franking mark (incl. data/parameterisation)

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

        – Correct dimensioning and legibility of the address

        – Correct dimensioning and legibility of the data matrix code

        – Compliance with the specified spacings

The quality of the printed data matrix code should fundamentally be Grade A, following the quality parameters specified in standard ISO/IEC 15415. In the case of deviations from this, Deutsche Post will need to perform a practice-related test to check whether the minimum quality necessary is being attained.

1.6 Expiry of certification for IT franking

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

1. Check on whether the current version of this document is being used for realisation/implementation. The document is available for download in the current version as amended, at http://www.deutschepost.de/dv-freimachung. Additional information can be obtained from your regional Deutsche Post consultant.

2. You are required to implement all necessary elements of this specification for correct production of IT-franked mail items and to produce acceptance-ready samples. To create the samples, your Deutsche Post IT consultant will make test address files available to you. Please use only these addresses. The IT franking consultant checks all requirements and other matters pertaining to IT franking and the accuracy of the content of the data matrix code (field assignment and parameterisation).

3. Following approval of the data matrix code by the IT franking consultant, sample mail items must be created for certification. As a rule, the further certification processes through to production readiness are coordinated by the local Deutsche Post sales contact.

4. Further contractual specificities such as the use of Premiumadress are regulated in the same manner.

2 Design and text elements

The design of the window for a DIN letter and the large amount of information contained in the window require a design typically used for printing. Due to the technical limitations in the resolution of the printers used in IT franking, two different variants of the address window are available: one for printers with a resolution of 240 dpi (dots per inch, 1 inch is equivalent to 25.4 mm) and another for printers with a resolution of 300 dpi. Integer multiples of the above-mentioned (minimum) resolution, e.g., 480 dpi or 600 dpi, are also supported.

Although technically possible, other resolutions are not supported at this time.

The authoritative document for how the address field is laid out is DIN 5008:2005. The three lines specified there for the additional and information zone must be used accordingly for postal indications and franking. This leaves six lines, in compliance with the standard, for the actual address: **They must be filled from top to bottom, starting with Line 1 of the address zone and without any empty lines, as required.**

The outside frame is defined by the window for envelopes specified in DIN 680. The rounded corners suggested in the standard (though without any dimensions specified) have not been taken into account in the dimensioning. The completed address window (see illustrations) can slip into both of the extreme positions which the guaranteed readable section of the window of a C6/C5 envelope in accordance with *DIN 676* can assume for processing with mail inserting systems. A thickness of 1 mm on both sides has been assumed for the thin edge of the envelope, although this is not specified in the standard. The tolerance dimensions for the window indicated in the standard have been dispensed with.

Illustration 1: Example of the arrangement in an envelope window

The fundamental rule is that all elements that need to be machine-readable must be arranged in the readable area under all circumstances. Elements only needing to be read in plain text under certain circumstances are arranged in the boundary areas which are not always readable. The legible area is further limited by a surrounding quiet zone of 2 mm. This is part of the requirements for machine readability.

The only exceptions are the positioning of the Deutsche Post logo and the 26x26 data matrix code modules (see section 3) described below.

The entire address is arranged in such a way that the left edge of a DIN A4 letter printed and folded as per Form A or B maintains a gap of at least 22 mm from the left-hand edge of the sheet. Even if it is not printed, the lower edge of the sixth line maintains a gap of 17.5 mm from the upper folded edge, regardless of whether the letter is folded as per Form A or Form B. The lowest line of the address therefore is at a fixed distance from the upper folded edge. Folding on the mail inserting system is to be set with a sufficiently low tolerance of well under 1 mm and operationally guaranteed. If this is not the case, the mail items may no longer be machinable, since assured legibility of the address is no longer certain.

The entire positioning of the address, including postal information, has been specified for DIN A4 letters in a C5/C6 envelope. The address window and all of its dimensions remain the same for other envelopes and paper formats. Only the positioning of the window itself changes, such that the basic principles of legibility in the window outlined above are maintained as far as possible despite the displacement of the mail document. The size of the font in the address should never be made smaller.

If the data matrix code (DMC) should slip so far out of the window that it is no longer readable, there is the risk that the mail item is considered to be inadequately franked and returned.

2.1   Address window for 240-dpi printers

The module size of the data matrix code, at 0.423 mm, is precisely the same size as when printed on a 300-dpi printer, and is exactly 4 pixels on a 240-dpi printer.

2.2   Address window with six address lines

Taking the spatial conditions described above into account, the dimensioning specified (see Illustration 4/Illustration 5 on the following pages) must be maintained without fail when using six address lines. If this is not the case, the mail items are deemed to be not machine-readable/machinable.

For envelopes with a window bigger than 45 x 90 mm, or labels and direct printing onto the address side, it is possible that there may be greater scope for arrangements regarding fonts, sizes and the number of address lines.

The permitted fonts are restricted to Arial, Helvetica, Frutiger and Courier, if all six address lines are used with a standard window. The minimum font size in such cases is 9 points (font height 2.3 mm). Adequate line spacing is to be ensured.

Previously-certified fonts can also be used in the intended address field (Address lines 1-6; corresponds to 21.2 mm in height). **It is important in that case that all components (particularly the data matrix code, the address, etc.) continue to remain visible in the readable area (clear window).**

Further certifications would then not be necessary, although you should have the layout checked by your ABB (Berater für Automationsmanagement/Consultant Automation Management).

2.3   Address window with less than six address lines

If as a rule only five or fewer address lines are required, the font size and the line spacing can be increased accordingly. In this case other machine-readable fonts can be used, in accordance with the brochure 'Machinable Mail Items'.

2.4   Additional line

Product names such as 'Dialogpost' are printed on a single line, in accordance with the instructions in the applicable price and product list as amended. The font Arial Bold versal 7 pt (font height 1,8 mm) is to be used. The product names are placed in the second line of the additional and information zone (see illustration 1, Punkt 4).

2.5 Sender line

The name of the sender must be printed using Arial or Helvetica (normally font size 7 pt, font height 1.8 mm) and should normally not be in bold and/or italics. **Additional information on using other fonts can be found in the brochure 'Machinable mail items' (see Sections 2.1 and 2.2)**

The sender line may project a maximum 3 mm to the left beyond the address lines. However, it is recommended to set it flush with the address lines. When using additional services, the sender line should be flush with the item ID (for registered items).

2.6 Franking ID

The franking ID is shown in the window or in the address field in the form of various characters which are combined as follows (2:4:4:2:4:4) and in accordance with the specified dimensioning (font Arial, 7 pt (font size 1.8 mm), standard.

Illustration 2: Illustration of the franking ID

2.7 IT-Line and Deutsche Post logo

The identification of the franking type IT franking is done with the letters "DV" in the font Arial Bold versal 8 pt (font height 2.1 mm). Date and product price are respectively in the font Arial 7pt (letter height 1,8 mm).

The entire logo is to be incorporated as a graphic in the size 22,0 mm x 3,8 mm. Usage of the font "Delivery" is mandatory.

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

Example of the logo[1]:

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[1] In all drawings, the logo is not shown to scale and serves only for orientation

2.8 Special aspects for 300-dpi printers

The dimensional information for the text elements corresponds to that for the 240-dpi printer, apart from the length of the one-dimensional additional services linear code (see Section 4.1Additional services).

The module size of the data matrix code, at 0.423 mm, is precisely the same size as when printed on a 240-dpi printer, and is exactly 5 pixels on a 300-dpi printer.

3 Dimensional illustrations

The dimensional illustrations shown (samples, Illustrations 3 and 4) can be obtained from your Deutsche Post IT franking consultant as a PDF file or foil print. In the master drawing the address window is shown at 1:1 scale, as indicated in the illustration in‐cluded.

For reasons of clarity, only two variants are shown below. Further drawings are made available as required.

The indications of the dimensions of text elements permit a possible deviation of +/- 1 pixel, in relation to the respective total dimension and, depending on the printer type, that means a variation in tolerance (measured in millimetres). This expressly does not apply to the data matrix code, where the specified pixels per module are to be printed as determined by the printer resolution, e.g., 4 pixels for 240-dpi printing or 5 pixels for 300-dpi printing.
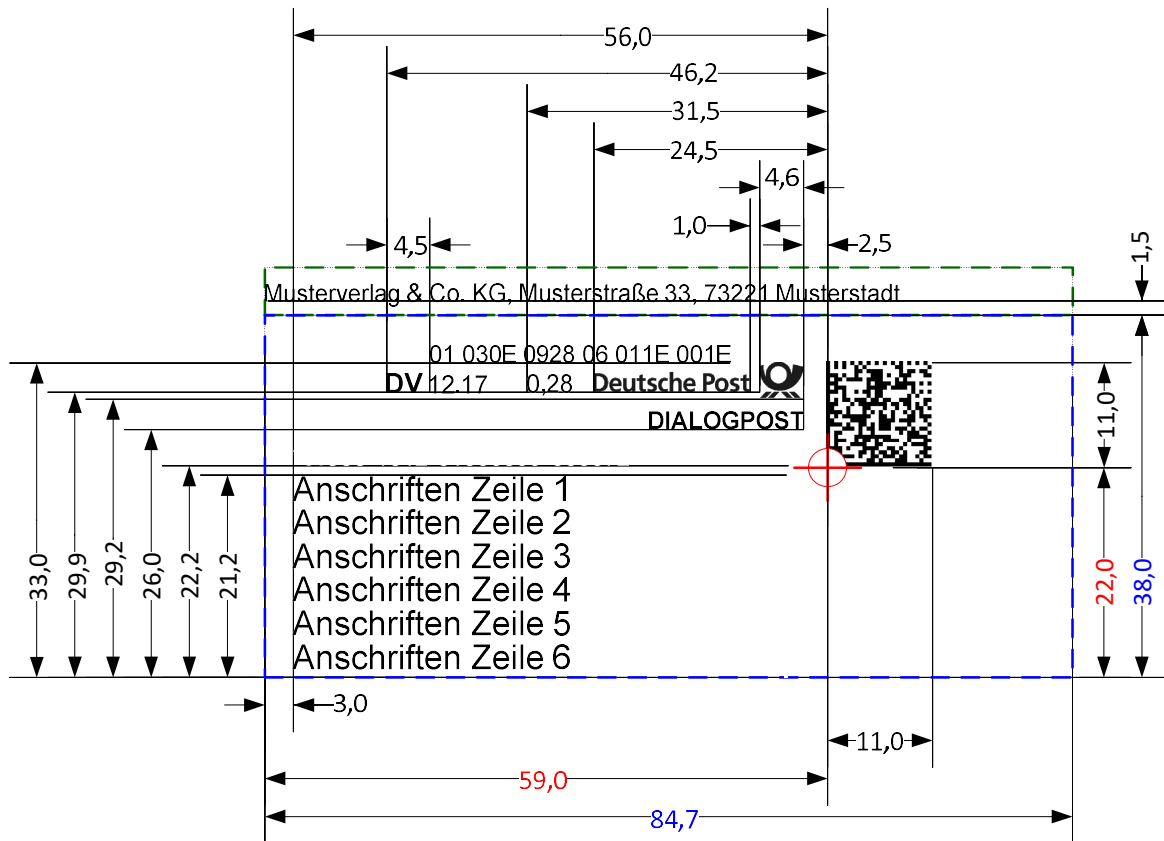
Illustration 3: Dimensioned drawing of address window

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

Musterverlag & Co. KG, Musterstraße 33, 73221 Musterstadt

01 030E 0928 06 011E 001E
DV 12.17   0,28   **Deutsche Post**
DIALOGPOST

Deutsche Post ✕
BRIEF KOMMUNIKATION

Illustration 4: Dimensioned drawing of address window with additional service and PREMIUMADRESS

Illustration 5: Quiet zone and clear window

4 Variants and options

4.1 Additional services

4.1.1 Additional services, national

The technical data or regulations for structuring a linear barcode of the Code 128 type are described in Section 7 Additional service .

Illustration 6: Sample data matrix code with barcode for the additional service 'Registered items'

The cash-on-delivery additional service cannot be displayed in the window due to the size specifications (viewing window) provided in the applicable DIN standards. One-off solutions (e.g., using envelopes with a larger window or eliminating address lines) can be arranged with Deutsche Post.
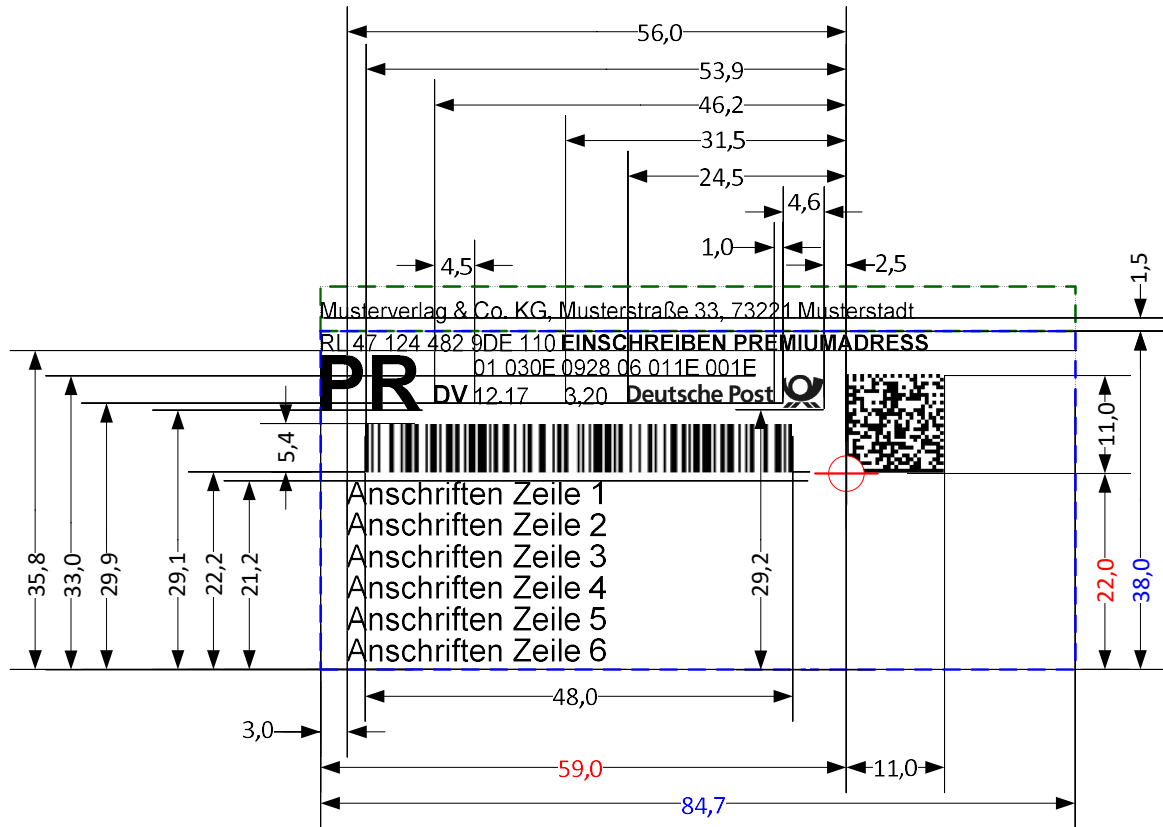
4.1.2 Additional services, international

An international barcode (UPU standard layout) is used for 'additional services, international'; these additional services cannot currently be displayed in the window. One-off solutions (e.g., using envelopes with a larger window or eliminating address lines) can be arranged with Deutsche Post.

4.1.3 Certificate of posting

A suitable posting certificate is to be used for posting such items. You can obtain this in a file format from the certification department (see Certification section).

4.2 Certification of IT franking with additional service

See Certification section.

4.3 Line with plain text information (additional and information zone)

Additional details necessary for processing may be provided in the last postal indications line (see Illustration 1: Information zone). A 7 pt font size (font height 1.8 mm) is to be used for these details. They are then to be enclosed by a "*" symbol (see Illustration 1).

The symbol may also be used as a field separator. Possible additional information includes identifiers for routing region bundles of Dialogpost items in particular and, where applicable, customer-specific numbering (e.g., for manual post-processing) with a pre-placed, field-separated job number (example: *36*123456789*). Empty fields are then shown with the adjoining "*", e.g., **123456789*.

4.4 Line with plain text information (address zone)

Additional information necessary for processing may be indicated in address line 1, where necessary, following discussion with Deutsche Post's mail automation representative (ABB). This is to be enclosed by a "*" symbol.

The symbol may also be used as a field separator. Possible additional information includes identifiers for routing region bundles of Dialogpost items in particular and, where applicable, customer-specific numbering (e.g., for manual post-processing) with a pre-placed, field-separated job number (example: *36*123456789*). The line may be shown in a max. font size of 7 pt (font height 1.8 mm). In addition, customer-specific information can be shown here in plain text, for example, if the second and third line of the additional and information zone is filled with the linear barcode for additional services. Please note that afterwards only five address lines are available.

Illustration 7: Sample with additional information line

4.5 Premiumadress

Premiumadress can be used in combination with a national additional service (BZL).

If there is simultaneous use of an additional service and Premiumadress, the existing franking mark is extended so that the franking layout remains unchanged apart from the arrangement of the codes for Premiumadress and registered items. The upper case letter 'P' for Premiumadress is placed on the left alongside the upper case letter 'R' for registered items, in the same font and size. Both letters are always positioned in the same place.

The size of the BZL delivery indicator in the reading zone can, depending on whether a linear code or a second delivery indicator is used, take the following sizes:

If there is no linear code or second BZL delivery indicator, the following size can be used::

    Font: Arial
    Font height: 10.9 mm (43pt)
    Font size: bold, versal

If there is a linear code or second BZL delivery indicator, the following size can be used:

    Font: Arial
    Font height: 6.1 mm (24pt)
    Font size: bold, versal

Illustration8: Positioning additional services and Premiumadress

If Premiumadress is used without an additional service, the barcode for the additional service is not used, and there is no item ID, no plain text for the additional service and no 'R'. The 'P' for Premiumadress is still positioned in the same place, even if the upper case letter 'R' for the additional service is not included, for example.

Font and font size for the letter 'P' precisely match the font and font size of the 'R' for registered items. Any other indications must be taken from the applicable product list, as amended. Only incomplete examples are shown in the graphic.

Illustration 9: Positioning of PREMIUMADRESS

The Premiumadress ID is shown in the description of the data matrix code fields (see Section 5. Contents of the data matrix code: byte f24/f25)

5 Contents of the data matrix code (including variants)

5.1 General information

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

From Version 1.3 (cf. byte f4), the data matrix code of the IT franking impression contains 42 bytes (f1 to f42) (26x26 modules) in binary coding (BASE 256).

The module size is 0.423 mm as standard.

In the first 22 bytes (f1 to f22), the technical definition of the matrix code fields is the same for all variants. Possible variances in field content may arise from f23, depending on the additional service (e.g., Premiumadress)

Important note:
Specification IT Franking V1.5 uses the content '12' in hexadecimal (decimal: 18) in byte f4, unchanged from Specification IT Franking 1.3

5.2   Matrix code content V1.5

Notes on nomenclature in the following tables:

Hexadecimal values are enclosed within inverted commas, e.g., '3F'. For ease of reada-bility, the values are always arranged separated in pairs by an empty space, e.g., '00 37'.

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

Byte no.	Length	Meaning	Data content	Comment
f4	1	Franking type and version	**'12'**	**IT Franking, Version 1.5** '12' hexadecimal corresponds to 18 decimal. **(The content of byte f4='12' was adapted unchanged from IT Frank-ing Version 1.3)**

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

Byte no.	Length	Meaning	Data content	Comment
f6 to f10	5	Customer number	'XX XX XX XX XX'	Example: EKP no. 5111111111 (dec-imal) results in '01 30 A5 5D C7' (hexadecimal). Is advised by Deutsche Post Franking Department.

Byte no.	Length	Meaning	Data content	Comment
f11, f12	2	Charge or franking value	'XX XX' in format EEECC (decimal)	Display of the franking value in euros (€) (E=digits before and C=digits after decimal point). Example: €0.70: decimal: 00070; hexadecimal: '00 46'

Byte no.	Length	Meaning	Data content	Comment
f13, f14	2	Date of posting or date of electronic processing	'XX XX' in format DDDYY (decimal)	If the actual posting date is not known at the time of optimization, the date of electronic processing is to be used. Date format: Decimal display of the year in the DDDYY format, where DDD denotes the number of the day in the year (up to 365 or 366) and YY stands for the last two digits in the year. (Example: 4 May 2017, i.e., 124th day in the year 2017; decimal: 12417; hexadecimal: '30 81')

Byte no.	Length	Meaning	Data content	Comment
f15, f16	2	Product key	'XX XX'	The current description of the product key can be obtained from the product/price list upon request. Example of product key: 00001 *Standardbrief* (standard letter)

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

Byte no.	Length	Meaning	Data content	Comment
f20	1	Subscription number	'XX'	The subscription number will be issued by the expert consultant IT-Freimachung at Deutsche Post's Franking Department. With numeric subscription, value range 01 to 99: decimal converted directly to hexadecimal, e.g., decimal subscription 98 corresponds to hexadecimal 62. With alphanumeric subscription, value range AA to FZ without digits: The alphanumeric subscription is recalculated as a decimal subscription. The alphanumeric subscription AA represents 100 in decimal and 64 in hexadecimal terms. The formula for calculating the decimal value is: ((Byte of the first (higher-value) nibble minus 65) multiplied with 26) plus (byte of the second (low-value) nibble minus 64) plus 99. The byte is the decimal values of capital letters in the ASCII table. The entire range of values extends from 1 to 255 decimal or from"01" to "FF" hexadecimal.

Byte no.	Length	Meaning	Data content	Comment
f21, f22	2	Posting certificate number	'XX XX'	For each customer per billing procedure (contract/subscription). In the number range 0001-9999 (decimal) or '00 01' to '27 0F' (hexadecimal).

Byte no.	Length	Meaning	Data content	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 fully or partially available for customer-specific data, the scope (see below) and type of the data elements in this range are shown here.
			'00'	In the range of byte f24 to byte f25, **no product-specific content** is provided. The entire range can be used exclusively for customer-specific data that is not evaluated by Deutsche Post.
			'01'	Bytes f24 to f25 are used for the productive data element **PREMIUMADRESS**, see below. The subsequent bytes f26 to f42 can be used for customer-specific data and are to be filled as necessary. This customer-specific data is recorded within the framework of Premiumadress and provided for the sender as additional information in the address dataset (e.g. recipient customer number). Documentation serves solely for forwarding to the sender. There is no evaluation of the data by Deutsche Post.
			'02'	Bytes f24 to f25 are used for the productive data element **PREMIUMADRESS**, see below. The subsequent bytes f26 to f42 can be used for customer-specific data that is not evaluated by Deutsche Post. The data is not forwarded to the sender.
still f23	1	Notification of further data elements	'nX'	Notification of further data elements is agreed with the Deutsche Post Franking Department.

Byte no.	Length	Meaning	Data content	Comment
f24, f25	2	PREMIUMADRESS ID	'XX XX'	The PREMIUMADRESS data element contains the hexadecimal representation of the decimal PREMIUMADRESS ID. This is issued by PREMIUMADRESS and advised to the customer. It must be set for each posting by the customer when franking. Permitted number range 1-999 (decimal) or '00 01' to '03 E7' (hexadecimal).

Byte no.	Length	Meaning	Data content	Comment
f24 to f42	19	Customer-specific information **without** PREMIUMADRESS	'XX XX XX XX XX XX XX XX XX XX XX XX XX XX XX XX XX XX XX'	Any contents not evaluated by Deutsche Post. If no customer-specific information needs to be entered into the data matrix code, then to comply with the data matrix code size it may be necessary to fill it with dummy 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 automatic recording of the matrix code (which also includes the franking ID data) is not possible, then manual entry of the franking ID is required in order to determine the item ID (e.g., for claims in delivery operations or for item tracking). To check correct manual entry, a final check digit is formed using the 19 useable characters and printed as the last character.

6.2 Elements and illustration of the franking ID

For an order, the 20-digit franking ID comprises a fixed and a variable part. Fixed elements are the administrative code and the customer number (EKP). Variable elements comprise an item ID and the check digit.

Character no.	Length	Meaning	Data content	Comment
1 to 2	2	Administrative code	'XX'	Unique administrative criterion (to be issued by the Franking Department) byte No. f20
3 to 9	7	Customer number / EKP	'X XX XX XX'	The first eight decimal digits of the debtor's customer number (check digit omitted) and conversion of the 8-digit customer number into a 7-character hexadecimal code (with the leading 0 removed (higher-value nibble)
10 to 13	4	Item ID - Part 1 (posting certificate number)	'XX XX'	Unique posting certificate number Reference matrix code byte Nos. 21 - 22
14 to 19	6	Item ID - Part 2 (consecutive item number)	'XX XX XX'	Consecutive item number within the posting certificate number Reference matrix code Byte Nos. 17 – 19
20	1	Check digit	'X'	Check digit derived from the preceding 19 characters of the franking ID using the CRC process, Type CCITT (CRC-4)

The franking ID is shown in the window or in the address field in the form of various characters which are combined as follows (2:4:4:2:4:4) (see Illustrations 10 and 11) and in accordance with the specified dimensioning.
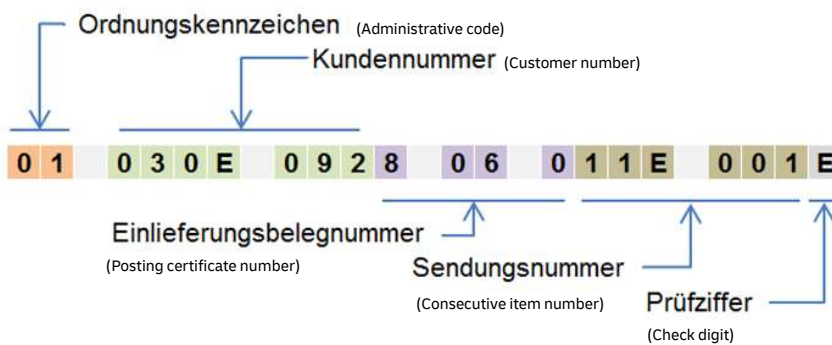

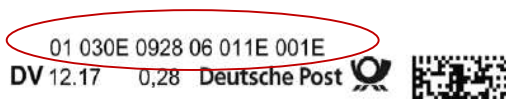Illustration 10: logical blocks of the Franking ID

Illustration 11: Franking ID arrangement using IT franking line

6.2.1 Administrative code

With IT franking, the administrative code is the same as the subscription number for the procedure. The administrative code is equal to the content of byte 20 of the matrix code. It must be ensured that there are no resulting conflicts with other franking types/procedures of the customer, e.g., Procedure 50 (International letter mail items), business replies or Premiumadress. The subscription number is issued in consultation with Deutsche Post's Franking Department, for identifying particular arrangements of senders and service providers.

6.2.2 Customer number

The 20-digit franking ID is formed on the basis of a customer number (EKP) which for IT franking is the debtor's EKP. The EKP thus matches the EKP used in the matrix code. The first eight digits of this number are included in seven hexadecimal characters of the franking ID. For this, the 8-digit decimal EKP is shown as a hexadecimal value, with the leading 0 being omitted (higher-value nibble).

The remaining 12 useable places (without the single-place check digit) are available in order to label items created under this EKP number clearly over a period of twelve or more months.

6.2.3 Item ID

Characters 10 to 19 are used to indicate the consecutive item ID. Bytes 21 to 22 of the matrix code contain the posting certificate number. The hexadecimal characters of the posting certificate number are printed in position 10 to 13 of the franking ID. Bytes 17 to 19 of the matrix code contain the item number and are printed in position 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 Calculating the check digit

A hexadecimal character between '0' and 'F' is indicated as a check digit, the last character in the 20-place franking ID. The check digit is calculated using the Cyclic Redundancy Check (CRC), CCITT Type (CRC-4). For this calculation, the characters of the 19-place payload data of the franking ID in the sequence are converted into bytes, in accordance with the ASCII table. The bytes are subsequently converted into bits. The CRC-4 calculation is applied to this bit stream. The result which, according to this process, is always a bit sequence with 4 bits is converted into a hexadecimal character for display in the franking ID and then printed as the final character.

7 Additional service

7.1 Linear barcode

7.1.1 Background

Use of additional services such as registered items [*Einschreiben*] and cash on delivery [*Nachnahme*] is intended for large-scale senders and customers wishing to create large volumes of REGISTERED ITEMs or CASH-ON-DELIVERY franked mail themselves. You can now get your mail items ready for shipment faster and more easily than previously, in just a single workflow process.

A Code 128 type linear barcode printed in black and complying with DIN EN 799 is used for these additional services. The print quality must comply as a minimum with quality level C of DIN EN 1635.

The printing of the barcode for the additional service should be performed with a module width of three pixels.

In accordance with the specification, the Code 128 type linear barcode consists of individual characters each of which is composed of eleven black or white modules with a constant width. The width of such a module must be selected such that it corresponds to a multiple of the print resolution which is technically feasible. When using a printer with a resolution of 300 dpi (dots per inch), the width of a module could be 3 x 0.0847 = 0.254 mm. Thus on such a printer the width of a normal character calculates as 11 x 0.254 mm = 2.794 mm. Only the last character in the code – known as the 'stop' character – consists of 13 modules and therefore has a width of 3.302 mm.

The characters in the linear barcode can be presented in the three different character sets A, B and C. Character sets A and B are used to display upper case letters, for example. Each type C character can represent double-digit numeric values (00 to 99) in a particularly compact way. Every barcode starts with a start character. It is concluded 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.

7.1.2 Payload content of the barcode

The following payload content is shown in the barcode:

- **Two upper-case letters**
to identify the additional service in accordance with the UPU
Service indicator registered item: RA – RY (e.g., RR)
Service indicator cash-on-delivery, national   NN

- **Eight digits** for unique item labelling   (e.g., 34567890)

- **One check digit**, formed from the eight digits   (e.g., 1)

- **Two upper-case letters** as a country code   (DE for Germany)

- **Three numbers for the Product code for national products (f.e. 110)**

Based on this payload content, the character content of the barcode is formed as follows:

Example of a domestic 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 Determination of size in accordance with DIN EN 799

The dimensions of the code are calculated as follows:

Code layout (minimum):

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

Code types:

Character set A:	Special characters, figures, upper case letters
Character set B:	Special characters, figures, upper and lower case letters
Character set C:	Figures (number pairs 00 – 99, meaningful from 4 characters in sequence)

Module size

Minimum size: as per specification: 0.191 mm

7.1.4   Size with 300 dpi printer

Assumed module size: 0.254 mm
The assumed size is used in the subsequent calculation of barcode lengths. With other print resolutions, barcode lengths may be either marginally longer (subject to the scope of the layout, minimum spacings, etc.) or, more usually, shorter. These variations are to be taken into account for barcode recognition.
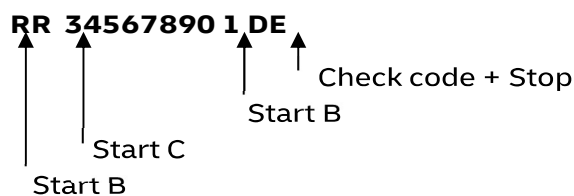
Barcode length:

The barcode length is determined by the technical data of the printing system and the required print quality. The following formula applies to the length of the barcode (figures 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 come under D (incl. start/stop)
D: Number of digits set in double-density character set C
Q: Width of the light area = 2.54 mm
(Minimum width of light area: the greater of 10X / 2.54 mm
As 10X = 2.54 mm, Q is therefore = 2.54 mm)

Item identifier, national:

RR 34567890 1 DE

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 barcode length (excluding light area Q) is 47.5 mm

7.1.5   Size with other resolution printers

Depending on the printing resolution and the number of pixels per module the length of the resulting barcode varies. Given a fixed number of pixels per module, the length of the barcode enlarges the lower the printing resolution is and vice versa.

Therefore ist has to be considered, that the hardware used for printing on one hand meets the quality requirements (s.a.) and on the other hand adapts to the size requirements (the barcode must completely fit into the address window).

As stated in the previous chapter, a 300dpi printer printing 3 pixel per module can meet these requirements.

7.1.6   Barcode height:

Recommended height according to standards: min. *5.5* mm or 15% of barcode length

Due to the density of information in the address window and the resulting shortage of space, a barcode height of 5.3 mm is used consistently for domestic items.

7.2 Item ID layout

The item ID with an additional check digit is structured as shown below:

Item number:

Place 01 – 02   Letter combination for service indicator: RA – RY   registered item
                                                                 NN   Cash-on-delivery

Place 03 – 10   Consecutive number
Place 11   Check digit as per Modulo 11, determined using place 3 to place 10
Place 12 – 13   DE (Germany)

Check digit method:

To increase reading security, a check digit according to Modulo 11 is used in addition to the useable characters. This check digit fills place 11 in the code's payload data and is not the same as the check digit which is formed automatically at the end of Code 128.

Modulo 11

Weighting factors: 8 6 4 2 3 5 9 7
Divisor: 11
Minuend: 11
Subtraction result: 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	
Multiplication total	+	+	+	+	+	+	+	+	= 200

Division   200 : **11** = 18   (**11** with Modulo 11)

18 x **11** = 198   (**11** with Modulo 11)

200 – 198 = 2

11 – 2 = **9**   (**11** with Modulo 11)

Check digit   **9**

Number with check digit   4 7 3 1 2 4 8 2 **9**

Note:
The corresponding valid item numbers are assigned with the issue of the certificate.

7.3 Additional service - plain text

Single-line presentation of additional services in plain text.
The sequence of the terms used is necessary for technical printing reasons. Arial font 7pt, bold in capital letter (versal) is to be used, in italics and upper case, achieving a font size of approx. 1,8 mm.

Description/Product ID

REGISTERED ITEM / 110
REGISTERED ITEM FOR DELIVERY TO ADDRESSEE ONLY / 111
REGISTERED ITEM WITH ADVICE OF DELIVERY / 112
REGISTERED ITEM FOR DELIVERY TO ADDRESSEE ONLY, WITH ADVICE OF DELIVERY / 113
REGISTERED ITEM DELIVERED TO THE ADDRESSEE'S MAILBOX / 200
COD (CASH ON DELIVERY) / 300

8 Reference to supplementary documentation

With the exception of the standards and the directory of all franking types, all documents referenced here can be obtained from your Deutsche Post IT franking consultant.

8.1 Dimensional illustrations

Images of this specification

8.2 Deutsche Post logo

Image: DP_Schwarz.eps

8.3 Price/Product list

In the current version as amended

8.4 DIN standards

All standards are available from Beuth-Verlag, Berlin; www.beuth.de'

9 List of illustrations