

ICS 03.240

English version

**Postal services - Automated processing of mail items - Address
block locator**

Services postaux - Traitement automatique des envois
postaux - Localisateur d'adresse postale

Postalische Dienstleistungen - Automatische Verarbeitung
von Sendungen - Erkennung des Adressblocks

This Technical Specification (CEN/TS) was approved by CEN on 3 February 2003 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

	page
Foreword.....	3
Introduction	4
1 Scope	7
2 Normative references	8
3 Terms and definitions.....	8
4 Symbols and abbreviations	10
5 Address block locator without information encodation	10
5.1 General.....	10
5.2 Size and layout.....	11
5.3 Placement	11
5.4 Print quality	12
6 Information-based address block locators	12
6.1 General.....	12
6.2 String of characters	12
6.3 Address block locators based on bar codes	13
6.4 Address block locators based on two-dimensional symbols	15
6.5 Information content	16
Annex A (informative) Possible algorithm for locating ABLs based on concentric squares.....	19
Annex B (informative) Possible algorithm for locating ABLs based on character strings.....	29
Bibliography	41

Foreword

This document (CEN/TS 14567:2004) has been prepared by Technical Committee CEN/TC 331, "Postal services", the secretariat of which is held by NEN.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

Annexes A and B are informative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this CEN Technical Specification: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

The reliability, speed and cost of mail processing and delivery are the most important aspects of the Quality of Service which is requested by postal service users. Postal operators' performance in these respects is highly dependent upon the level of automation achieved in the mail sorting process.

The automatic reading of addresses is one of the techniques which help to speed up and reduce the costs of mail sorting. The first step in address reading is the determination of the location of the address block. Address block location is the process by which an address reading machine automatically locates one or more potential address blocks within the electronic image of a postal item before trying to read them.

The reliability and ease of address block location directly affects the performance and cost of address reading systems. However, address block location may be difficult, especially when addresses are not placed in a pre-specified location and / or when they are printed on, or surrounded by, noisy backgrounds. Noise may be made of text, pictures, logos, drawings, textures, and all sorts of patterns that can be mistaken for the relevant address block. This difficulty is particularly obvious for plastic-wrapped items for which the address is printed on a label which is affixed on a background (see Figure 1).

To overcome the difficulty posed by noisy backgrounds, address reading machines need to be able to filter out non address material in electronic images of postal items. Cost/performance trade-offs generally lead to address reading machines which are not able to reliably locate addresses in all situations.

Noise is also detrimental to video-coding operations because it takes longer for human operators to find the address is in a cluttered display (ball-trap effect) than it would take for an address appearing over a homogeneous background. Modern video-coding systems may therefore also be equipped with address block location modules in order to facilitate the task of human operators and to fit more than one address onto a single display.

Multi-Line Optical Character Recognition (MLOCR) and video-coding systems are designed to locate address blocks through their typical features, such as their location relative to the borders of the postal item, their alignment and the number and syntax of lines. However, these features are not sufficient to achieve reliable location of address blocks on all items.

One possible approach to resolution of this problem is to impose constraints on the physical placement of addresses on postal items and on the appearance of the non-address zones of the item. However, this approach is limited in practice because mailers require a considerable degree of freedom in the location of addresses and on the visual appearance of postal items.

Address Block Locators (ABLs) provide an alternative solution. An address block locator is a specific feature or mark, added to an item, which can be easily and reliably detected by image processing software and which is unlikely to occur on an item, other than in association with an address block. Since an ABL can be easily detected, placing one in the vicinity of an address block makes it possible to locate the block whatever its position and background. The use of ABLs, particularly on items with a busy background, may improve automation system performance, thereby allowing constraints on address presentation and position to be relaxed.

The European Committee for Standardization (CEN) draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent concerning ABL. CEN takes no position concerning the evidence, validity and scope of this patent right. The French Post Office states that the ABL standard is in part covered by a patent called «*Marque de repérage et procédé de localisation d'une information par ajout de cette marque*», laid down in France the 10/03/1995 for LA POSTE, number 9502827, published the 13/09/1996, number 2 731 535 and delivered the 25/04/1997.

The French Post Office commits itself to grant any user of the ABL standard, a license for using this patent in the countries where the patent has been laid down. To date, the French Post Office has the right to grant a license in France only. This license will be negotiated in reasonable conditions.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights other than those identified above. CEN shall not be held responsible for identifying any or all such patent rights.

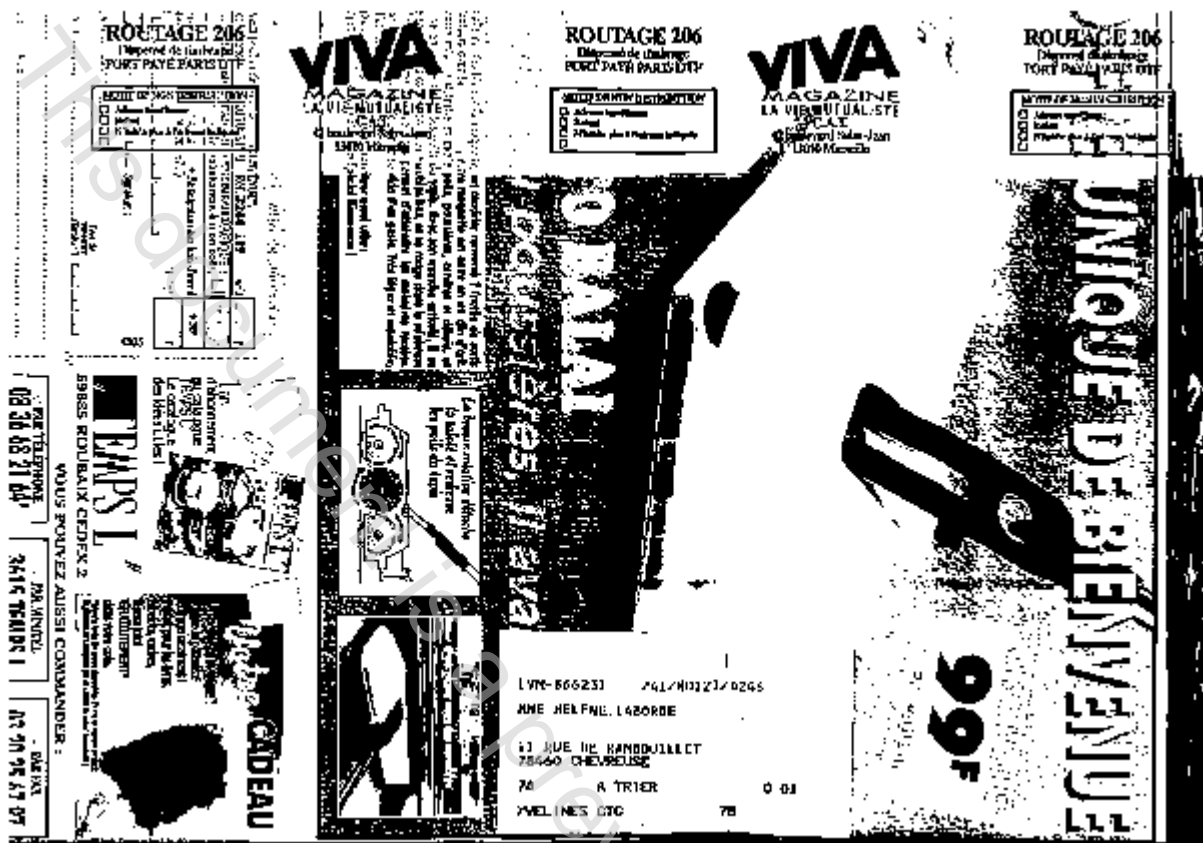


Figure 1 — A typical image of an address label stuck over a cluttered background

To support reliable, low cost, location of address blocks in a manner which is acceptable to mailers, ABLs should:

- be easily printable, using normally available equipment, by mail producers: in many cases address block locators will have to be printed at the same time as the address. To limit costs and simplify operations, printing should require no special or additional equipment beyond that already used for address printing;
- be pre-printable: for addresses printed on labels, it should be possible to use labels on which an ABL has been pre-printed. The ABL then assists in locating the label, which in turn carries the address;
- allow relaxation of constraints on address presentation: machine readability of addresses imposes a number of constraints on address presentation. Some of these constraints (e.g. fixing the address location on the postal item face) are designed so that addresses can be located more easily. By easing address block location, ABLs allow relaxation of such constraints on address presentation. For example, when using an address block locator, it could be possible to place the address in any location on the postal item;
- have minimal negative impact on the aesthetic appearance of postal items;
- be small in size: for reasons of costs and, above all, of aesthetics and saving space, ABLs should be as small as possible;
- preferably be usable for information encoding: since ABLs necessarily use some space on the postal item, that space can desirably also be utilised for encoding information (identifiers, routing codes, proof of payment, non delivery instructions, etc.) which may be useful to the mailer, the postal operator and/or the recipient;
- give some freedom to mailers, enabling them to choose the most convenient locator (and information content) for any given situation. This implies that there should be not just one ABL, but a small set of consistent and compatibly designed ABLs;

- not be subject to risk of improper use: ABL specifications should be easy for non specialists to understand, easy to implement without special equipment, and should guarantee proper use in most cases;
- be distinctive: ABLs should have characteristics which make it unlikely that they will occur other than in association with an address block and which make them different from marks defined by other standards or for other purposes. The finding of an ABL should be a reliable indication that an address block is nearby;
- be easily and reliably locatable, by image processing software, using tractable algorithms: it would in principle be possible to design image processing software that would be able to locate almost any type of ABL. However, to contain costs, it is important that detection systems can be based on simple algorithms which do not require excessive computing power. Moreover, if an ABL is present, there should be a high probability (95 % to 99 %) of its being detected. Similarly, there should be a low probability (maximum 5 %) of the detection system falsely detecting an ABL where no ABL has been printed;
- together with the algorithms used to locate them in images, be in the public domain: ABLs should be based on patterns that have not been patented and that can be printed by mailers and used by postal operators and their equipment suppliers without having to pay any fee;
- be robust to skew: addresses are often skewed, particularly on flats, and it would be unrealistic to require mailers to eliminate skew in the addresses they print. Also, mail sorting systems do not perfectly register items, so an address may appear skewed to the image capture device, even when it is perfectly aligned on the item. ABLs should therefore be detectable even when they are skewed within some acceptable limits;
- support detection of address orientation: skewed addresses, especially addresses printed on labels, should remain readable. For this, the orientation of the address must be determined and compensated for. It is therefore desirable that ABLs support an easy computation of (probable) address skew;
- be compatible with other marks: postal items may have other marks (e.g. for encoding of proof of payment data, for encoding sender or addressee information, post code boxes, facing marks, etc.) in addition to an ABL. There should be no conflict between address block locators and such other marks.

These requirements can best be met by a standard (range of) address block locators. This standard specifies such a range of ABLs. It is structured under two main headings:

5. *Address block locator without information encodation*: specifies the characteristics of an address block locator in the form of a special printed symbol;
6. *Information-based address block locators*: specifies the characteristics of address block locators in the form of information-containing character strings, linear bar codes and two-dimensional symbols.

Annex A provides a possible algorithm for locating ABLs based on concentric squares; *annex B* provides one for locating ABLs based on character strings. Both annexes are informative.

1 Scope

This Technical Specification defines a set of physical marks called Address Block Locators (ABLs). ABLs are marks, printed in the vicinity of addresses on postal items, that are intended to facilitate automatic recognition of address location and processing of the addresses on mail sorting and video-coding equipment.

The Technical Specification describes two families of ABLs which may be printed on all types of postal items, including letters, flats and parcels.

In the first family, address block locators take the form of pictograms which bear no other information than being a landmark for the address block. One such pictogram is defined herein for use in association with the delivery address block. It may be printed at the same time as the address or pre-printed on an envelope, an insert, or a label, with the address being printed, on the same physical support, at a later stage.

The second family covers address block locators which contain an encoded specification of the address block type and location and which can also be used for encoding other data, not directly related to address block location. Such data may include addressee or postal item identifiers, routing data, non-delivery instructions, a return address and references or other data which are relevant for either the mailer or the addressee. It may also include address checking data which may be used to verify correct interpretation of the printed address by the OCR system. In this family, three types of ABL are defined: one based on a pattern of alphanumeric characters; one on a linear bar code and one based on two-dimensional symbologies. These locators can be applied to the delivery address block and to forwarding or return address blocks. They will normally be printed within the same process as the address itself.

The Technical Specification is intended to be used by:

- mailers, during the production of mail;
- MLOCR and video-coding systems manufacturers, in the design of their systems;
- postal operators, in the specification of requirements for mail presentation and for the acquisition of mail processing systems.

Adherence to the Technical Specification is voluntary. However:

- mailers should be aware that adoption of those aspects of the Technical Specification which are supported by their postal operator(s) should result in faster, more reliable, processing of their postal items, particularly where the addresses on these are printed on, or surrounded by, busy backgrounds;
- suppliers should be aware that support for the Technical Specification should enhance the performance of their systems, increasing their attractiveness to postal operators;
- postal operators should be aware that adoption of the Technical Specification, and promotion of its use by mailers, should result in faster, more reliable and more efficient processing and a reduction in video-coding volumes.

The set of marks defined as ABLs in this Technical Specification is not intended to be exhaustive. In particular, individual postal operators may develop systems which use other marks, including facing marks and digital postage marks, to facilitate address block location. Where this is the case, it is recommended that such other marks be supported in addition to, rather than instead of, the ABLs defined herein.

2 Normative references

This Technical Specification incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this Technical Specification only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 13619:2002, *Postal services - Mail item processing - Optical characteristics for processing letters*.

EN ISO/IEC 15416, *Information technology - Automatic identification and data capture techniques - Bar code print quality test specification - Linear symbols (ISO/IEC 15416:2000)*.

prEN ISO/IEC 15417, *Information technology - Automatic identification and data capture techniques - Bar code symbology specification - Code 128 (ISO/IEC 15417:2000)*.

prEN ISO/IEC 15418 ¹, *Information technology - EAN/UCC Application Identifiers and Fact Data Identifiers and Maintenance (ISO/IEC 15418:1999)*.

prEN ISO/IEC 15434, *Information technology - Transfer syntax for high capacity ADC media (ISO/IEC 15434:1999)*.

EN ISO/IEC 16022, *Information technology - International symbology specification - Data matrix (ISO/IEC 16022:2000)*.

ISO/IEC 15438, *Information technology -- Automatic identification and data capture techniques -- Bar code symbology specifications -- PDF417*.

3 Terms and definitions

For the purposes of this Technical Specification, the terms and definitions given in the documents referred to in normative references and in the Bibliography and the following apply.

NOTE The glossary in these guidelines is provided for readability. There is an ongoing effort to unify the glossary for all postal related CEN and UPU standards. The glossary in these guidelines will be replaced by the unified CEN/UPU glossary when available.

3.1 autodiscrimination

distinctive feature of certain symbologies which allows discrimination between them

3.2 bar code aspect

ratio of height to length of a bar code

3.3 code 128

bar code symbology defined in prEN ISO/IEC 15417

3.4 data element separator

special character used to separate multiple data constructs in prEN ISO/IEC 15434 formats which use prEN ISO/IEC 15418 data identifiers to specify the content and structure of individual data constructs

¹ prEN ISO/IEC 15418 relies on and cannot be used without reference to ANSI MH10.8.2 (see Bibliography).