

Bar coding — Symbology specifications — “Code 16K”

The European Standard EN 12323:1998 has the status of a
British Standard

ICS 35.040

NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW

BSI
Documents



Document Sharing Hub

National foreword

This British Standard is the English language version of EN 12323:1998.
The UK participation in its preparation was entrusted to Technical Committee IST/34, Bar coding, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

Users of the standard are advised that, at the time of publication, equipment capable of scanning and decoding the symbology specified in this standard is not widely available.

A list of organizations represented on this committee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 15 and a back cover.

This British Standard, having been prepared under the direction of the DISC Board, was published under the authority of the Standards Board and comes into effect on 15 June 1998

© BSI 1998

ISBN 0 580 29213 4

Amendments issued since publication

Amd. No.	Date	Text affected

ICS 35.040

Descriptors: Data processing, character recognition, optical recognition, graphic characters, alphanumeric character sets, bar codes, definitions, symbols, characteristics, dimensions, dimensional tolerances, algorithms

English version

Bar Coding — Symbology specifications — “Code 16K”

Code à barres — Spécifications des symbologies — Strichcodierung — Symbologiespezifikationen —
“Code 16K” “Code 16K”

This European Standard was approved by CEN on 10 November 1997.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

© 1998 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 225, Bar coding, the Secretariat of which is held by NNI.

This document shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 1998, and conflicting national standards shall be withdrawn at the latest by August 1998.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Switzerland and the United Kingdom.

Organizations contributing to the development of the standard include:

- AIM Europe (Automatic Identification Manufacturers).

Contents

	Page
Foreword	2
Introduction	3
1 Scope	3
2 Normative references	3
3 Definitions	3
4 Requirements	3
4.1 Symbology characteristics	3
4.2 Symbol structure	4
4.3 Character assignments	5
4.4 Transmitted data	8
4.5 Dimensions and tolerances	8
4.6 Reference decode algorithm	9
4.7 User-defined application parameters	10
Annex A (normative) Symbol check characters	11
Annex B (normative) Special considerations relating to the use of Function Code 1 (FNC1)	12
Annex C (normative) Using two or more “Code 16K” symbols to distribute longer data messages	12
Annex D (normative) Transmitted data	13
Annex E (normative) Symbology identifiers	14
Annex F (informative) Use of mode, code and shift characters to minimize symbol size	14
Annex G (informative) Relationship of symbol character value to ASCII value	15
Annex H (informative) Guidelines for the use of “Code 16K”	15

Introduction

The technology of bar coding is based on the recognition of patterns encoded in bars and spaces of defined dimensions. There are a number of methods of encoding information in bar code form, known as symbologies, and the rules defining the translation of characters into bar and space patterns and other essential features are known as the symbology specifications. "Code 16K" is one such symbology. Previously, symbology specifications have been developed and published by a number of different private organizations, resulting in certain instances in conflicting requirements for certain symbologies. Manufacturers of bar code equipment and users of bar code technology require publicly available standard symbology specifications to which they can refer when developing equipment and application standards.

1 Scope

This European Standard:

- specifies the requirements for the multi row bar code symbology known as "Code 16K";
- specifies "Code 16K" symbology characteristics, data character encodation, dimensions, tolerances, decoding algorithms and user-defined application parameters;
- describes a subset of "Code 16K" assigned to EAN International.

2 Normative references

This European Standard 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 below. For dated references, subsequent amendments to or revisions of any of the publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 796, *Bar coding — Symbology identifiers*.

EN 841, *Bar coding — Symbology specifications — Format description*.

EN 1571, *Bar coding — Data identifiers*.

prEN 1556, *Bar coding — Terminology*.

EN 1635, *Bar coding — Test specifications for bar code symbols*.

ISO 646:1991, *Information technology — ISO 7-bit coded character set for information interchange*.

ISO 8859-1:1987, *Information processing 8-bit single byte coded graphic character sets — Part 1: Latin alphabet No. 1*.

General EAN Specifications, Brussels: EAN International, 1994.

3 Definitions

For the purposes of this standard the definitions of prEN 1556 and the following apply.

3.1

guard bar

additional bar used to separate the trailing space of a start character from the leading space of the first symbol character in a row

NOTE This definition is specific to "Code 16K", to be consistent with previously published specifications for the symbology.

3.2

mode character

symbol character in the first position after the start character in the first row of a symbol, used to define the initial code set and any implied special characters

3.3

separator bar

horizontal bar separating two rows of a symbol or abutting the top or bottom of the first or last row respectively

4 Requirements

4.1 Symbology characteristics

The characteristics of "Code 16K" are:

a) encodable character set:

- 1) all 128 ASCII characters, i.e. ASCII characters 0 – 127 inclusive, in accordance with ISO 646;

NOTE 1 Code set C permits two numeric data digits to be expressed in one symbol character. See 4.3.3.3.

NOTE 2 Characters with ASCII values 128 – 255 in accordance with ISO 8859-1 may also be encoded. See 4.3.4.3d).

- 2) four non data function characters;
- 3) three code set selection characters;
- 4) seven shift characters;
- 5) eight start characters;
- 6) eight stop characters;
- 7) one pad character;

b) code type: continuous, multi row;

c) elements per symbol character: six, comprising three spaces and three bars, each of one, two, three or four modules in width;

d) character self-checking: yes;

e) row self-checking: yes;

f) symbol width: 81X inclusive of minimum quiet zones;

g) symbol height: variable (two to 16 rows);

h) bidirectional decoding: yes;

i) number of symbol check characters: two, mandatory (see annex A);

j) symbol character density: 11 modules per symbol character representing data (equivalent to 5,5 modules per data character in code set C);

k) representative data capacity: two row symbol: seven ASCII characters, 14 numeric characters;

l) maximum data capacity 16 row symbol: 77 ASCII characters, 154 numeric characters;

m) non-data overhead:

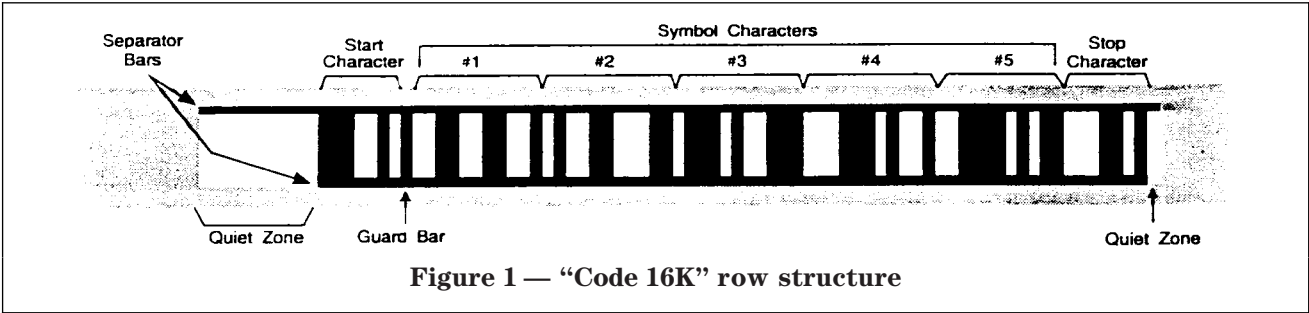
per row: 15 modules;

per symbol: 33 modules minimum, 81 modules maximum.



Documents

Document Sharing Hub



4.2 Symbol structure

Each “Code 16K” symbol consists of two to 16 rows. Each row shall comprise:

- a) leading quiet zone;
- b) start character;
- c) 1X guard bar (where X is the nominal width of a narrow bar or space);
- d) five symbol characters;
- e) one stop character;
- f) trailing quiet zone.

Figure 1 illustrates the row structure. Rows shall be separated from each other by a horizontal separator bar. The top and bottom of the symbol shall also have separator bars which shall extend to the ends of the quiet zones.

Figure 2 shows the structure of a full 16-row symbol. The symbol characters are ordered from the leftmost character of the first (top) row, through each row left to right to the rightmost character in the last (bottom) row. The first symbol character is the “mode” character S. The last two characters are the check characters C1 and C2. The remaining symbol characters encode the data for the symbol.

Figure 3 illustrates a complete symbol encoding the data “ab0123456789” in “Code 16K”.

