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Information technology — Automatic identification and data capture techniques — Code 128 bar code symbology specification —

Technologies de l'information — Techniques d'identification automatique et de capture des données — Spécifications des symbologies des codes à barres, code 128

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 15417 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 31, *Automatic identification and data capture techniques*.

This second edition cancels and replaces the first edition (ISO/IEC 15417:2000), which has been technically revised.

Introduction

The technology of bar coding is based on the recognition of patterns encoded in bars and spaces of defined dimensions. There are numerous methods of encoding information in bar code form, known as symbologies. Code 128 is one such symbology. The rules defining the translation of characters into bar and space patterns, and other essential features of each symbology, are known as the symbology specification.

In the past, symbology specifications were developed and published by a number of 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 software.

Information technology — Automatic identification and data capture techniques — Code 128 bar code symbology specification

1 Scope

This International Standard specifies the requirements for the bar code symbology known as Code 128. It specifies Code 128 symbology characteristics, data character encodation, dimensions, decoding algorithms and the parameters to be defined by applications. It specifies the symbology identifier prefix strings for Code 128 symbols.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

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

ISO/IEC 15416, *Information technology — Automatic identification and data capture techniques — Bar code print quality test specification — Linear symbols*

ISO/IEC 15424, *Information technology — Automatic identification and data capture techniques — Data Carrier Identifiers (including Symbology Identifiers)*

ISO/IEC 19762-1, *Information technology — Automatic identification and data capture (AIDC) techniques — Harmonized vocabulary — Part 1: General terms relating to AIDC*

ISO/IEC 19762-2, *Information technology — Automatic identification and data capture (AIDC) techniques — Harmonized vocabulary — Part 2: Optically readable media (ORM)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 19762-1 and ISO/IEC 19762-2 apply.

4 Requirements

4.1 Symbology characteristics

The characteristics of Code 128 are as follows.

a) Encodable character set:

   1) All 128 ISO/IEC 646 characters, i.e. characters 0 to 127 inclusive, in accordance with ISO/IEC 646.

   NOTE This version consists of the G0 set of ISO/IEC 646 and the C0 set of ISO/IEC 6429 with values 28 – 31 modified to FS, GS, RS and US respectively.

   2) Characters with byte values 128 to 255 may also be encoded.

   3) 4 non-data function characters.

   4) 4 code set selection characters.

   5) 3 Start characters.

   6) 1 Stop character.

b) Code type: Continuous.

c) Elements per symbol character: 6, comprising 3 bars and 3 spaces, each of 1, 2, 3 or 4 modules in width (Stop character: 7 elements comprising 4 bars and 3 spaces).

d) Character self-checking: Yes.

e) Symbol length: Variable.

f) Bidirectionally decodable: Yes.

g) Symbol check character: One, mandatory (see A.1).

h) Data character density: 11 modules per symbol character (5,5 modules per numeric character).

i) Non-data overhead: Equivalent to 35 modules.

4.2 Symbol structure

Code 128 symbols shall comprise

a) a leading quiet zone,

b) a Start character,

c) one or more characters representing data and special characters,

d) a symbol check character,

e) a Stop character,

f) a trailing quiet zone.

Figure 1 illustrates a Code 128 symbol encoding the text “AIM”.

Figure 1 — Code 128 symbol

4.3 Character encodation

4.3.1 Symbol character structure

Each symbol character comprises six elements (three bars and three spaces arranged alternately from left to right, commencing with a bar), each of which is 1, 2, 3 or 4 modules wide, with a total width of 11 modules. The sum of the bar modules in any symbol character is always even (even parity) and that of the space modules is therefore always odd. This parity feature enables character self-checking to be carried out. The Stop character comprises an additional bar element two modules wide making its total width 13 modules.

Each symbol character is assigned a numeric value listed in Table 1. This value is used in calculating the symbol check character value. It may also be used to provide a conversion to and from ISO/IEC 646 values (see Annex D). Table 1 defines all the Code 128 character assignments. In the column headed 'Element Widths' the numeric values represent the widths of the elements in modules or multiples of the *X* dimension.

Figure 2 below illustrates Start character A.

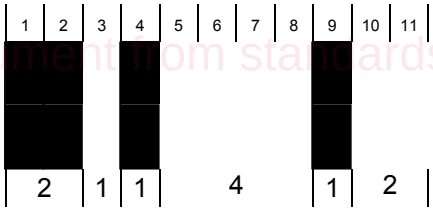

Figure 2 — Code 128 Start character A

Figure 3 below illustrates the encodation of the symbol character value 35, which represents data character ‘C’ in Code Sets A or B or the two digits ‘35’ in Code Set C.

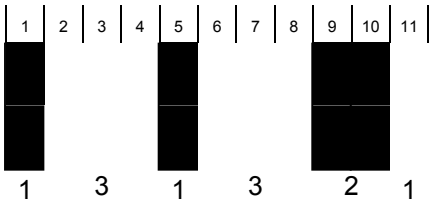

Figure 3 — Code 128 symbol character value 35