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Ersatz für
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**Informationstechnik –
Verfahren der automatischen Identifikation und Datenerfassung –
Leistungsanforderungen für digitale Bild- und Druckverarbeitung für
Strichcodes (ISO/IEC 15419:2009);
Englische Fassung EN ISO/IEC 15419:2010**

Information technology –
Automatic identification and data capture techniques –
Bar code digital imaging and printing performance testing (ISO/IEC 15419:2009);
English version EN ISO/IEC 15419:2010

Technologies de l'information –
Techniques automatiques d'identification et de capture des données –
Test de performance de la numérisation digitale et l'impression des codes à barres
(ISO/IEC 15419:2009);
Version anglaise EN ISO/IEC 15419:2010

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Nationales Vorwort

ISO /IEC 15419 wurde vom Technischen Komitee ISO/IEC/JTC 1 „Information technology“ der Internationalen Organisation für Normung (ISO) erarbeitet und als EN ISO/IEC vom Technischen Komitee CEN/TC 225 „AIDC Technologien“ übernommen, dessen Sekretariat vom NEN gehalten wird. Das zuständige deutsche Normungsgremium ist der Normenausschuss Informationstechnik und Anwendungen, Arbeitsausschuss 31 „Automatische Identifikation und Datenerfassungsverfahren“.

DIN EN ISO /IEC 15419 beschreibt, welche Konfigurationen bei der digitalen Bild- und Druckverarbeitung von Strichcodes zu berücksichtigen sind, um den von den Nutzern der Strichcode — Technologie geforderten Qualitäts- und Leistungsansprüchen gerecht zu werden. Die Norm identifiziert dazu für unterschiedliche System-Konfigurationen die zu berücksichtigen Eigenschaften und legt für diese Eigenschaften Mindestanforderungen fest. DIN EN ISO /IEC 15419 definiert dann Testverfahren zur Bewertung der Konformität eines Systems mit dieser Norm anhand seiner Eigenschaften.

Nach den geltenden DIN-Kriterien für einen möglichen Verzicht auf die deutsche Sprachfassung wurde auf eine Übersetzung weitgehend verzichtet und lediglich zur Erleichterung des Verständnisses Abschnitt 3 „Begriffe“ übersetzt. Dabei wurde die Benummerung aus ISO /IEC 15419 beibehalten. Siehe Nationaler Anhang NA.

Änderungen

Gegenüber DIN EN ISO/IEC 15419:2002-06 wurden folgende Änderungen vorgenommen:

- a) ISO/IEC 15419:2009 wurde im Vergleich zur Vorgängerausgabe ISO/IEC 15419:2001 grundlegend überarbeitet und umstrukturiert.

Frühere Ausgaben

DIN V ENV 12648: 1998-12
DIN V ENV 13066: 1999-02
DIN EN ISO/IEC 15419: 2002-06

Nationaler Anhang NA (informativ)

Begriffe

3.1

nutzbare Bildauflösung

maximale Anzahl der Bildpositionen je Einheitenlänge entlang einer geraden Linie, die durch den Strichcode-gestalter zugewiesen werden kann

ANMERKUNG 1 Ein Beispiel für Bildpositionen je Einheitenlänge ist Punkte je Millimeter.

ANMERKUNG 2 Diese Auflösung schließt weitergehendere Techniken zur höheren Auflösung aus, wie sie womöglich durch Darstellungsvorrichtungen oder Software ausgeführt werden könnten, die außerhalb der Kontrolle des Gestalters stehen.

3.2

angepasste/korrigierte Balkenbreite (en: Bar Width Compensation, BWC)

Wert der angepassten/korrigierten Balkenbreite nach Anpassung, um der zuweisbaren Bildauflösung zu entsprechen

3.3

Bitmap

elektronische Darstellung der einzelnen Pixel, die das vom Drucker auszugebende Bild bilden

3.4

Verbrauchsmaterial

Druckmedien, d. h. Materialien, die vom Anwender regelmäßig beschafft werden müssen

ANMERKUNG Beispiele für Verbrauchsmaterial sind Farbbänder, Etiketten oder Drucksubstanzen wie Toner und Tinte.

3.5

intelligenter Barcodedrucker

Druckvorrichtung, die mit der nötigen Intelligenz ausgestattet ist, um Daten in Strichcodesymbole zu konvertieren

3.6

digitale Barcode-Bilddatei

Barcode, der für ein digitalisiertes Format aufbereitet und in einem solchen gespeichert ist

3.7

digitales Barcodedesignsystem

System, das die notwendigen Software- und Hardware-Komponenten umfasst, die notwendig sind um eine Strichcodedarstellung zu erzeugen

3.8

Verzerrung

Prozess, bei dem bei einem Teil eines Werkes das Verhältnis der Höhe zur Breite modifiziert wird, um die Änderung in den Abmessungen eines Bildes auszugleichen, die verursacht wird, wenn eine flexible Reliefdruckplatte um einen Druckzylinder einer rotierenden Druckerpresse gewickelt ist

3.9

DPM

Dot per Millimeter

Einheit der Druckauflösung, insbesondere die Anzahl von individuellen Tintenpunkten, die ein Drucker oder Toner innerhalb eines linearen Abstands von einem Millimeter erzeugen kann

3.10

Universaldrukker

Drucker ohne systemeigene Verarbeitungsfähigkeit zur Umwandlung von Datenfolgen in Strichcode-darstellungen

ANMERKUNG Ein Beispiel für einen Universaldrukker ist ein Bürodrucker.

3.11

Belichter

Vorrichtung, die benutzt wird, um ein Computerbild mit einer zuweisbaren Auflösung auf einen photographischen Film oder eine Druckerplatte zu bringen

3.12

Bildtransfersystem

Mechanismus, mit dem eine Darstellung direkt oder indirekt auf eine gedruckte Substanz übertragen wird

3.13

Abrundungsfehler

Zuordnung von Bildpunkten zu Strich- oder Lückenmodulen in einer unregelmäßigen Art und Weise, d. h. die Module, die auf den angestrebten Abmessungen des Anwenders beruhen, bestehen nicht durchweg aus einer konstanten Anzahl an Punkten

English Version

Information technology - Automatic identification and data
capture techniques - Bar code digital imaging and printing
performance testing (ISO/IEC 15419:2009)

Technologies de l'information - Techniques automatiques
d'identification et de capture des données - Test de
performance de la numérisation digitale et l'impression des
codes à barres (ISO/IEC 15419:2009)

Informationstechnik - Verfahren der automatischen
Identifikation und Datenerfassung -
Leistungsanforderungen für digitale Bild- und
Druckverarbeitung für Strichcodes (ISO/IEC 15419:2009)

This European Standard was approved by CEN on 29 July 2010.

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 CEN Management Centre 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 CEN Management Centre has the same status as the official versions.

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Foreword

The text of ISO/IEC 15419:2009 has been prepared by Technical Committee ISO/IEC JTC 1 "Information technology" of the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) and has been taken over as EN ISO/IEC 15419:2010 by Technical Committee CEN/TC 225 "AIDC technologies" the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2011, and conflicting national standards shall be withdrawn at the latest by February 2011.

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

This document supersedes EN ISO/IEC 15419:2002.

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

Endorsement notice

The text of ISO/IEC 15419:2009 has been approved by CEN as a EN ISO/IEC 15419:2010 without any modification.

Introduction

Bar code technology is based on the recognition of patterns encoded in bars and spaces of defined dimensions according to rules defining the translation of characters into such patterns, known as the symbology specification.

Bar code digital imaging systems must be capable of reliably converting the information to be encoded into a bar code symbol meeting the symbology specification and application requirements if the technology is to fulfil its basic objective. Such systems comprise two major components, namely the hardware device which produces the physical image of the bar code symbol on paper, photographic film, printing plate, or other substrate, and the associated software which converts the input data into digital instructions used to drive the hardware device. Each component can take many forms and perform differing functions.

Manufacturers of bar code equipment, the producers of bar code symbols and the users of bar code technology therefore require publicly available standard test specifications for bar code digital imaging systems to ensure the accuracy and consistency of performance of these systems. This International Standard is intended to lay down general principles governing the bar code image generation function in each component, supplemented by more specific details applicable to certain major categories of software and hardware.

1 Scope

This International Standard describes the characteristics and defines categories of bar code digital imaging systems, identifies the attributes of each system which are required to be controlled, and specifies minimum requirements for those attributes. It defines test methods for assessing the conformance of those attributes with this International Standard. It is intended to be used in conjunction with International Standards which detail the methodology for assessing the quality of a bar code symbol, such as ISO/IEC 15416. This International Standard does not apply to Bar Code Masters, which are covered by ISO/IEC 15421.

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 2859-1, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

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

ISO/IEC 15420, *Information technology — Automatic identification and data capture techniques — Bar code symbology specification — EAN/UPC*

ISO/IEC 15426-1, *Information technology — Automatic identification and data capture techniques — Bar code verifier conformance specification — Part 1: Linear symbols*

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, definitions, and abbreviated terms

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

3.1
addressable imaging resolution
maximum number of image positions per unit length along a straight line that can be addressed by the bar code designer

NOTE 1 An example of image positions per unit length is dots per millimetre.

NOTE 2 This resolution would exclude further resolution enhancing techniques performed by the imaging device or software, which are beyond the control of the designer.

3.2
adjusted BWC
value of bar width compensation (BWC) after adjustment to match addressable imaging resolution

3.3
bit map
electronic representation of the individual pixels making up the image to be output by the imaging device

3.4
consumables
print media, i.e. materials that need to be supplied by the user on a regular basis

NOTE Examples of consumables include ribbons, labels or printing substrates, toner and ink.

3.5
dedicated bar code printer
printing device with the resident intelligence capable of converting data into bar code symbols

3.6
digital bar code file
bar code which is designed and stored in a digitized format

3.7
digital bar code imaging system
system which comprises the necessary software and hardware components to produce a bar code image

3.8
distortion
process by which the height to width ratio of a piece of artwork is modified to compensate for the dimensional change that is introduced to an image when a flexible relief printing plate is wrapped around the print cylinder of a rotary printing press

3.9
DPMM
dots per millimetre
measure of printing resolution, in particular the number of individual dots of ink a printer or toner can produce within a linear one-millimetre space

3.10
general purpose printer
printing device without the resident processing ability to convert data sequences into a valid bar code symbol

NOTE An example of a general purpose printer is an office printer.

3.11
imagesetter
device used to output a computer image at an addressable resolution onto a photographic film, paper or printing plate

3.12

imaging tool

mechanism that transfers an image directly or indirectly to a printed substrate

3.13

rounding errors

allocation of imaging device dots to bar or space modules in an inconsistent manner, i.e. where all of the modules based on the user's target dimensions fail to be composed of a consistent number of dots

4 Bar code design software

4.1 General requirements

The testing procedures in this section are intended to report the conditions under which software, in conjunction with a printing device, is capable of producing quality symbols. The tests performed under the reported conditions will typically be performed in a controlled setting. Ongoing verification of symbols produced in an operational setting should be performed using the methodology contained in ISO/IEC 15416. In addition, visual checks should be performed to confirm the correct formatting of the symbol in accordance with the symbology and other applicable specifications. Further guidance on equipment maintenance and supplies is found in Annex C.

4.1.1 Data input

The human-readable text and symbol characters for all symbols should, wherever possible, be generated from the same key entry input. The software should apply appropriate formatting algorithms to meet relevant application standards.

The input process should also allow for the input of relevant symbol parameters such as target X dimension or magnification factor, wide:narrow ratio, and bar height, where these are user-definable according to the symbology specification; such input shall be subject to the capabilities of the imaging or printing system, in particular the adjustment of target element dimensions as described in the subclauses of 4.2.

Check characters for encoded data shall either be calculated or verified by the software. For example, if the software prompts for the entry of only twelve digits for an EAN-13 symbol, the software shall automatically calculate the check character. Alternatively, the software might prompt for the entry of thirteen digits and indicate an error if the check character input is incorrect. The latter approach assures that valid data has been entered.

It is desirable for the input data to be displayed when the label or layout is designed, subject to the limitations of the display device, to enable the operator to validate it. Optionally, the software may also display the symbol characters encoded.

4.1.2 Quiet zones

The software should indicate, either graphically or in text, the appropriate area surrounding the symbol required for quiet zones.

NOTE In order to ensure that the minimum quiet zones are respected when printing or positioning the symbol, if for example print growth or variations in print to substrate register are expected, adjustment of the position of any graphical mark on the digital image adjacent to the quiet zone boundary, or of the position of the symbol relative to the edges of the area in which, or substrate on which, it is to be printed, may be required.

4.2 Considerations by software and imaging device categories

Refer to Annex D for a review of software categories and Annex E for a review of imaging device categories.