
**Information technology — Automatic
identification and data capture (AIDC)
techniques — Harmonized vocabulary —**

**Part 2:
Optically readable media (ORM)**

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*Technologies de l'information — Techniques automatiques
d'identification et de saisie de données (AIDC) — Vocabulaire
harmonisé*

Partie 2: Médias lisibles optiquement (ORM)

ISO/IEC 19762-2:2008

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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 19762-2 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 19762-2:2005), which has been technically revised.

ISO/IEC 19762 consists of the following parts, under the general title *Information technology — Automatic identification and data capture (AIDC) techniques — Harmonized vocabulary*:

- *Part 1: General terms relating to AIDC*
- *Part 2: Optically readable media (ORM)*
- *Part 3: Radio frequency identification (RFID)*
- *Part 4: General terms relating to radio communications*
- *Part 5: Locating systems*

Introduction

ISO/IEC 19762 is intended to facilitate international communication in information technology, specifically in the area of automatic identification and data capture (AIDC) techniques. It provides a listing of terms and definitions used across multiple AIDC techniques.

Abbreviations used within each part of ISO/IEC 19762 and an index of all definitions used within each part of ISO/IEC 19762 are found at the end of the relevant part.

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Information technology — Automatic identification and data capture (AIDC) techniques — Harmonized vocabulary —

Part 2: Optically readable media (ORM)

1 Scope

This part of ISO/IEC 19762 provides terms and definitions unique to optically readable media (ORM) in the area of automatic identification and data capture techniques. This glossary of terms enables the communication between non-specialist users and specialists in ORM through a common understanding of basic and advanced concepts.

2 Classification of entries

The numbering system employed within ISO/IEC 19762 is in the format nn.nn.nnn, in which the first two numbers (**nn**.nn.nnn) represent the “Top Level” reflecting whether the term is related to 01 = common to all AIDC techniques, 02 = common to all optically readable media, 03 = linear bar code symbols, 04 = two-dimensional symbols, 05 = radio frequency identification, 06 = general terms relating to radio, 07 = real time locating systems, and 08 = MIIM. The second two numbers (**nn**.**nn**.nnn) represent the “Mid Level” reflecting whether the term is related to 01 = basic concepts/data, 02 = technical features, 03 = symbology, 04 = hardware, and 05 = applications. The third two or three numbers (**nn**.nn.**nnn**) represent the “Fine” reflecting a sequence of terms.

The numbering in this part of ISO/IEC 19762 employs “Top Level” numbers (**nn**.nn.nnn) of 02, 03, and 04.

3 Terms and definitions

02.01.01

optically readable medium

ORM

member of the set of automatic identification techniques such as a linear bar code, two-dimensional, mark sense, or optical character recognition (OCR) symbols, that are illuminated by a light source and examined by an optical detector that converts the received reflectance into electrical signals that are grouped in a predetermined method, recognized by the reader and converted into the corresponding computer code

02.01.02

symbology

standard means of representing data in optically machine readable form

NOTE Each symbology specification sets out its particular rules of composition or **symbol architecture**.

02.01.03

bar code symbol

combination of symbol **characters** and features required by a particular **symbology** which together form a complete scannable entity

02.01.04

symbol architecture

structure of a **bar code symbol**

NOTE See **symbolology**.

02.01.05

bar

dark **element** corresponding to a region of a **scan reflectance profile** below the global threshold

02.01.06

quiet zone

area free from interfering markings which must surround a **bar code symbol** and, in particular, precede the start character and follow the **stop character**

02.01.07

symbol character

physical representation of the codeword as a pattern of dark and light **elements**

NOTE There may be no direct one-to-one mapping between symbol character and **data character** or auxiliary character. Decoding through the compaction rules is necessary to identify the **data**.

02.01.08

coded character set

set of single **characters** that are mapped onto their byte values according to a linear bar code or **two dimensional symbology**

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02.01.09

bar code character

See **symbol character**.

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02.01.10

X dimension

specified width of the narrow **elements** in a **bar code symbol** or the specified width of a single element in a **two-dimensional symbol**

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cf. **Z dimension**

02.01.11

Y dimension

specified height of the **elements** in a linear **bar code symbol** or a **row** in a multi-row **symbolology**

cf. **bar height**

02.01.12

Z dimension

average achieved width of the narrow elements in a **bar code symbol**, equal to half the sum of the average narrow bar width and the average narrow space width in two-width symbologies, or to the quotient of the average overall **character** width divided by the number of **modules** per character in modular symbologies

02.01.13

module(1)

(linear or multi-row bar code symbology) nominal unit of measure in a **symbol character**

NOTE In certain symbologies, **element** widths may be specified as multiples of one module. Equivalent to **X dimension**.

**02.01.14
element**

(symbol character or symbol) single **bar** or space in a **bar code symbol** or a polygonal or circular single cell in a matrix symbol, which according to symbology rules form a **symbol character**

NOTE The width of individual elements may be expressed in **modules**, or in multiples of the **X dimension**.

**02.01.15
resolution**

width of the narrowest **element** capable of being read by the scanner equipment under test conditions

**02.01.16
bar height**

dimension of an individual **bar** in a linear bar code symbol or in a row of a multi-row bar code symbol measured perpendicular to the scanning direction

cf. **Y dimension**

**02.01.17
bar width**

transverse dimension of an individual **bar** in a **linear bar code symbol** or **two-dimensional symbol** measured parallel to the scanning direction

NOTE The number of possible width variations within a particular printed **symbol** depends on the **symbology** used.

**02.01.18
symbol width**

total width of a **bar code symbol** including the **quiet zones**

NOTE Also referred to as symbol length.

**02.01.19
symbol aspect ratio**

ratio of the **symbol** height to the **symbol width**

**02.01.20
bar-space sequence**

sequence which represents the **module** widths of the **elements** of a **symbol character**

**02.01.21
self-checking**

property of a **symbology** whereby a checking algorithm is applied to each **character** in the code

NOTE **Substitution errors** can then only occur if two or more separate printing **defects** occur within one character. Codes, which are not self-checking usually, have a check character added to the encoded data. Check characters can be added to self-checking symbols to further enhance data integrity.

**02.01.22
orientation pattern**

unique spatial arrangement of dark and light **modules** in a **symbology** used to detect the spatial orientation of the **symbol**

**02.01.23
shift character**

symbology character which is used to switch from one **code set** to another for a single **character**, or in the case of "double shift" or "triple shift" characters, for two or three characters, respectively, following which data encodation reverts automatically to the code set from which the shift was invoked

02.01.24

latch character

symbology character which is used to switch from one **code set** to another

NOTE The code set stays in effect until another **latch** or **shift character** is explicitly brought into use or until the end of the **symbol** is reached.

02.02.01

decode algorithm

set of rules used, in a **bar code** or **matrix symbology**, to convert the **element** pattern of a symbol to data **characters**

02.02.02

print quality

degree to which a printed optical **symbol** complies with the requirements which are specified for it, such as dimensions, **reflectance**, edge roughness, **spots**, **voids**, etc., which will affect the performance of the scanner

02.02.03

verification

verification by which a **symbol** is measured to determine its conformance with the specification for that symbol

02.02.04

verifier

device used for verification of a symbol

NOTE A verifier is used to measure and analyse quality attributes of a symbol such as symbol element width and **quiet zone** dimensions, **reflectance**, and other aspects against a standard to which the **linear bar code** and **two-dimensional symbols** should conform.

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02.02.05

background

light area between and surrounding the dark **elements** of a printed **symbol**

NOTE The background can be the **substrate** on which the symbol is printed or an **overprinting** of a suitable light colour.

02.02.06

substrate

material or medium upon which printed matter such as a **bar code symbol**, OCR characters or a coating is imposed

02.02.07

reflectance

ratio of the reflected radiant or luminous flux to the incident flux in incident radiation of given spectral composition, polarization and geometrical distribution

[IEC 50 (845) 845-04-58]

NOTE 1 Reflectance (sometimes in AIDC techniques called reflectance factor) is measured on a scale of 0 to 1, at a wavelength or bandwidth of light (spectral response) specified in the particular application specification.

NOTE 2 Barium sulphate or magnesium oxide are used as 'near perfect' reference white standards (a perfect standard of pure white would have a reflectance of 1,00 at any wavelength of light). The absence of any light in a vacuum is used as reference black standard.

NOTE 3 Samples (such as substrates, inks, etc.) are tested against the standards under similar illumination.

02.02.08**regular reflection**

reflection in accordance with the laws of geometrical optics, without diffusion

[IEC 50 (845) 845-04-45]

NOTE Also known as specular reflection.

02.02.09**diffuse reflection**

diffusion by reflection in which, on the macroscopic scale, there is no regular reflection

[IEC 50 (845) 845-04-47]

02.02.10**spectral response**

sensitivity of a scanner or other device to light of different wavelengths

02.02.11**reflectance difference**

difference between the **reflectance** of light and dark **elements** of a **bar code symbol**

02.02.12**show through**

property of a **substrate** that allows underlying markings or materials to affect the **reflectance** of the substrate

cf. **opacity**

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02.02.13**gloss**

propensity of a surface to reflect a proportion of incident light in a specular manner

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02.02.14**transmittance(1), τ**

ratio of the transmitted radiant or luminous flux to the incident flux for incident radiation of given spectral composition, polarization and geometrical distribution

Unit: 1

[IEC 50 (845) 845-04-59]

02.02.15**transmittance(2)**

(optical) density, D_τ

algorithm to base ten of the reciprocal of the transmittance

$$D_\tau = -\log_{10} \tau$$

[IEC 50 (845) 845-04-66]

NOTE τ is transmittance.

02.02.16**opacity**

property of a substance of preventing light from passing through it

NOTE **Substrate** opacity affects show-through from the reverse side of the substrate or any substance underneath it. Ink opacity determines the **show through** from the substrate.

02.02.17

scan reflectance profile

plot of the variations in **reflectance** with distance along a scan path through a **symbol** representing the analogue waveform produced by a device scanning the symbol

02.02.18

densitometer

photometer for measuring reflectance or transmittance optical density

[IEC 50 (845) 845-05-27]

NOTE 1 A densitometer measures the degree to which light is transmitted through or reflected from a material.

NOTE 2 A calibrated **photometer** compares the transmitted or reflective light with the incident light, and the result may be displayed as percentage **reflectance** or **density**.

02.02.19

photometer

instrument for measuring photometric quantities

[IEC 50 (845) 845-05-15]

NOTE In AIDC techniques, a photometer is used to measure the luminous intensity of light at specified wavelengths.

02.02.20

**print contrast signal
PCS**

measure of the relative difference between the reflectance of light and dark elements

cf. **reflectance difference**

NOTE 1 $PCS = (RL - RD)/RL$, where RL and RD are the reflectance of light and dark elements, respectively.

02.02.21

printability test

test of print quality

02.02.22

defect

lack of, or deficiency in, a characteristic essential in satisfying applicable requirements, that may affect the ability of a functional unit to perform a required function

NOTE Area of unwanted image usually referred to as **spots** or **voids**.

02.02.23

void

area of high **reflectance** in an area of a **bar code symbol** which is intended to be of low reflectance

cf. **spot**

02.02.24

speck

See **spot**.

02.02.25

spot

ink or dirt mark or other area of low **reflectance** in an area of a **symbol** which is intended to be of high reflectance

cf. **void**