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

Part 2: Optically readable media (ORM)

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

Partie 2: Médias lisibles optiquement (ORM)

Reference number
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Foreword

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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.

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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*

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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

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02.01.04
symbol architecture
structure of a **bar code symbol**

NOTE See **symbology**.

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**

02.01.09
bar code character
See **symbol character**.

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**

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 **symbology**

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**.

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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

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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.

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.

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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**

02.02.13
gloss
propensity of a surface to reflect a proportion of incident light in a specular manner

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.

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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**

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02.02.26
reference decode algorithm
decode **algorithm** quoted in a **symbology** specification as the basis for the **reference threshold's decodability** values

02.02.27
reference threshold
boundary point used by a **reference decode algorithm** to make a decision as to the measurement of an **element** or combination of elements

02.02.28
decodability
measurement of relations from combinations of **bars** and spaces together or alone according the **reference decode algorithm**

NOTE The value gives a measurement of how well a **bar code symbol** can be **decoded**.

02.04.01
scan(1), noun
single pass of a scanning beam over a symbol or a portion of a symbol

02.04.02
scan(1), verb
systematically examine **data**

02.04.03
scan(2), noun
single image capture with an image capture device

02.04.04
scanner
optical device that converts optical information (e.g. a printed **bar code** or **two dimensional symbol**) into electrical signals for subsequent decoding and transmission to a computer

02.04.05
bar code reader
device used to capture the data encoded in a **bar code symbol**, consisting of two parts:

a) the scanner, an input device which sends signals proportional to the reflectivity of each successive **element** of the **symbol** to the **decoder**;

b) the decoder, which examines the signals from the scanner and translates them into recognizable or computer-compatible data

NOTE The decoder itself is sometimes erroneously called a reader.

02.04.06
read rate
percentage representing the number of good **reads** per 100 attempts to read a particular **symbol**

02.04.07
contact scanner
particular type of scanner in which the scanning action takes place with the scanner in actual or near contact with the **symbol**

EXAMPLES **wand**, light pen

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02.04.08
wand
pen-shaped object that includes a graphics tablet's stylus but most commonly refers to the scanning mechanism used with many bar code **readers**

02.04.09
aperture
effective opening in an optical system that establishes the field of view

02.04.10
effective aperture
apparent field of view of a scanner or similar device determined by the smaller of the spot size and the physical aperture of the scanner for reception of reflected light

02.04.11
single line (beam) scanner
scanner in which the light beam traverses a single path, giving a one-dimensional field of view

02.04.12
slot reader
bar code reader which requires that the bar-code material be drawn through a slot into which a near-contact bar code reader is built

NOTE The device requires that the **bar code symbol** be in a fixed location relative to the edge of a thin **substrate**.

02.04.13
charge-coupled device
CCD
electronic light-sensitive component used in a linear or two-dimensional array as the light-collecting **element** in certain types of **bar code reader**

02.04.14
helium neon laser
type of **laser** commonly used in **bar code** scanners that emits visible coherent red light at a wavelength of 632,8 nm

02.04.15
moving beam scanner
scanning device in which the scanning beam is swept by mechanical or electronic means

02.04.16
fixed beam scanner
scanning device in which the beam of light is emitted in a fixed direction, relying on movement of the **bar code symbol** relative to the beam to achieve the scanning action

02.04.17
raster scanner
moving beam scanner which emits several parallel scanning beams

02.04.18
raster
projection of a **laser** beam to create multiple, nearly parallel, scan lines instead of a single line

cf. **bar code reader**

02.04.19
oscillating mirror scanner
single beam scanner with an additional mirror oscillating in a plane at right angles to the scanner beam and causing, for example, a horizontal field of view to be swept up and down vertically

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02.04.20
omnidirectional scanner
scanner capable of reading **symbols** whatever their orientation in a plane parallel or near parallel to the exit window of the scanner

NOTE A **flat-bed scanner** is an example of an omnidirectional scanner.

02.04.21
flat-bed scanner
omnidirectional scanner in which the scanning beam(s) are directed upwards through a window or slot(s) and over which the **bar code symbol** is passed

02.04.22
reading angle
one of the three angles characterizing the angular rotation of a symbol in an axis relative to a scan line

NOTE Reading angles are called tilt, skew and pitch.

02.04.23
orientation
machine-readable medium alignment with respect to the **reader** expressed in three-dimensional angular terms, with **range** of variation expressed in terms of skew, pitch and roll (tilt)

02.04.24
tilt
reading angle, characterizing the rotation of a bar code symbol about an axis perpendicular to the substrate

cf. **pitch, skew**

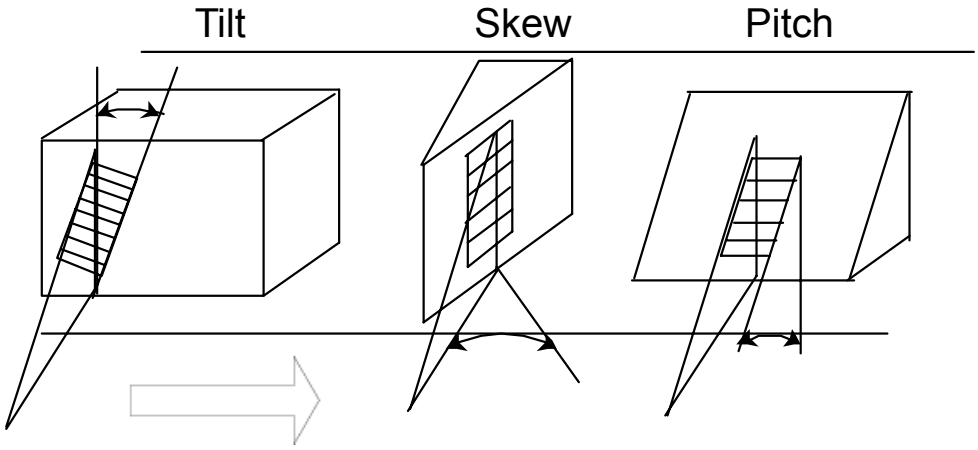


Figure 1 — Tilt, skew and pitch

02.04.25
skew
reading angle characterizing the rotation of a **bar code symbol** about an axis parallel to the **symbol width**

cf. **pitch**, **tilt**

02.04.26
pitch
reading angle characterizing the rotation of a **bar code symbol** about an axis parallel to the **bar height**

cf. **skew**, **tilt**

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02.04.27
optical throw
distance from the face of a scanning device to the beginning of the **depth of field**, for a **symbol** of given characteristics

cf. **depth of field**, **range**, and **reading distance**

02.04.28
scanning window
entire area in front of the exit window of a non-contact scanner in which **symbols** can be read

NOTE Also known as effective reading zone.

02.04.29
reading distance
distance (or range of distances) from the exit window of a scanner at which the scanner can reliably **read** a **symbol**

NOTE The minimum reading distance is equal to the **optical throw** and the maximum reading distance is equal to the **range** of the scanner.

cf. **depth of field**, **optical throw**, **range**

02.04.30
depth of field(1)
range between the minimum and maximum distances from the **sensor** at which the focused image is acceptably shaped

02.04.31
depth of field(2)
range of distances over which a scanner can reliably **read** a **symbol** of given characteristics, which is equal to the range of the scanner minus its **optical throw**

cf. **optical throw**, **range**, **reading distance**

02.04.32
field of view
FoV
length of bar code that can be read in one **scan**

NOTE For wand scanners and others where the scanner beam has to be manually moved across the symbol, field of view is a function of the operator's ability to scan smoothly.

02.04.33
auto discrimination
ability of a **bar code reader** to distinguish automatically between two or more **symbologies**

02.04.34
label printing machine
device for producing **bar code** labels directly from data

02.04.35
laser engraver
device which uses concentrated heat from a **laser** beam to engrave graphic images directly on to an item to be marked

02.04.36
overprinting
printing on to pre-printed material

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02.04.37
pixel
smallest element of a display surface that can be independently assigned attributes such as colour and intensity

NOTE Synonymous with picture element.

03.01.01
linear bar code symbol
graphic representation of data in the form of a combination of symbol characters and features required by a particular symbology, which together form a single-row complete scannable entity

NOTE Features include **quiet zones**, start and **stop characters**, **data characters**, check characters and other auxiliary patterns.

03.01.02
stop character/pattern
auxiliary character, which indicates the end (right hand side) of a **bar code symbol**

03.01.03
overhead
part of a **bar code symbol** (consisting of the auxiliary characters and **symbol check characters)** required in addition to the symbol **characters** encoding data to give the **symbol** a valid structure

03.01.04
auxiliary character/pattern
non-data **character**

EXAMPLES Start character, **stop character**, centre pattern, **delineator** pattern, **latch character** mode indicator, **shift character** code subset change characters, and function characters

NOTE Adapted from ISO/IEC 2382-4.

03.01.05
redundancy
characteristic whereby **information** is repeated to increase the probability of its being read or communicated successfully

NOTE In a bar code symbol, the height of the bars provides vertical redundancy by enabling multiple **scan** paths to exist through the symbol, only one of which is necessary in theory for a complete decode.

03.01.06
vertical redundancy
property of a **bar code symbol** whereby there exist multiple possible scan paths as a result of the **symbol** being significantly higher than the height of a single scan line

03.01.07
wide:narrow ratio
ratio of the widths of wider **elements** in a **symbol** to those of narrow elements

03.01.08
intercharacter gap
space between the last **bar** of one symbol **character** and the first bar of the next in a discrete **bar code** symbology

03.01.09
two-width symbology
bar code symbology in which symbol **characters** consist only of narrow and wide **elements**, the widths of which are in a constant ratio to each other

cf. **modular symbology**

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03.01.10
binary symbology
See **two-width symbology**

03.01.11
modular symbology
bar code **symbology** in which symbol **characters** are composed of **elements**, the nominal widths of which are integer multiples of the **X dimension** or **module** width

cf. **module**, **(n,k) symbology**

03.01.12
continuous code
symbology in which there is no **intercharacter gap**, i.e. the final **element** of one **symbol character** abuts the first element of the next symbol character and all the elements carry data

cf. **discrete code**

03.01.13
discrete code
symbology in which the spaces between symbol **characters** (**intercharacter gaps**) do not contain information as each **character** begins and ends with a **bar**

cf. **continuous code**

03.01.14
omnidirectional
in all directions

NOTE Used to refer to symbols that can be scanned in any orientation with an appropriate scanner, or to such a scanner.

03.02.01
substitution error
character that is wrongly **decoded** when a bar code **symbol** is read

cf. **misread**

03.02.02
symbol check character
symbol **character** calculated from the other symbol characters in a bar code **symbol** in accordance with an algorithm defined in the **symbology** specification and used to check that the **bar code** has been correctly composed and read

NOTE The symbol check character does not form part of the data encoded in the **symbol**.

03.02.03
modulo
type of **algorithm** used to calculate the check character for certain bar code symbols, the result thereof being the remainder of the division of two integer numbers

NOTE Usually used in the form Modulo-10, Modulo-103, etc.

03.02.04
guard pattern
auxiliary pattern of **bars** and spaces corresponding to start or **stop patterns** in other symbologies, or serving to separate the two halves of a **symbol**

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03.02.05
ladder orientation
position of a **bar code symbol** in which the axis of the bars is horizontal in order to enable a vertical scanning beam to traverse the complete **symbol**

cf. **picket fence orientation**

03.02.06
picket fence orientation
position of a **bar code symbol** in which the axis of the **bars** is vertical in order to enable a horizontal scanning beam to traverse the complete **symbol**

cf. **ladder orientation**

03.02.07
odd parity
characteristic of the encodation of a symbol **character** whereby the **character** contains an odd number of dark **modules**

03.02.08
even parity
characteristic of the encodation of a symbol **character** whereby the **character** contains an even number of dark **modules**

03.02.09
variable parity encodation
process of encoding additional information in a series of symbol **characters** by using particular combinations of **odd** and **even parity characters** to implicitly encode digits or for checking purposes

03.02.10
fixed parity
characteristic of a **bar code symbol** or a defined section of a **symbol** whereby every symbol **character** has the same **parity**, either even or odd

03.02.11
bearer bar
bar abutting the tops and bottoms of the bars in a **bar code symbol**, or a frame surrounding the entire **symbol,** intended to equalize the pressure exerted by the printing plate over the entire surface of the symbol and/or to prevent a short scan by the **bar code reader**

03.02.12
short read
reading of an apparently valid shorter **symbol** within a longer one, of the same or different symbologies

03.02.13
truncation
providing a **symbol** with normal width but reduced height

03.02.14
bar code density
number of **characters** that can be represented in a **bar code symbol** per unit of measure

NOTE 1 Usually expressed as **characters per inch** or per centimetre for **linear bar codes** and per square inch or per square centimetre for multi-row symbologies.

NOTE 2 The width of the narrowest **bar** or space, the **wide:narrow ratio**, the number of bars and spaces per character and the width of the intercharacter gap, if any, are the controlling factors.

cf. **symbol character**

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03.02.15
characters per inch
CPI
measure of **bar code density**

03.02.16
symbol density
See **bar code density**.

03.02.17
zero-suppression
process of removing zeroes from specified positions in a GTIN-12 in order to encode it in UPC-E format

03.02.18
film master
bar code master on film

03.02.19
bar code master
original film or other image of a **linear bar code symbol** or **two-dimensional symbol** produced to close to tolerances and intended for reproduction by conventional printing processes

03.02.20
corner marks
marks which indicate the four corners of a **bar code symbol** including the light margins on a **bar code master**

NOTE Corner marks are not normally printed.

03.02.21
bar width adjustment
BWA
amount of decrease in **bar width reduction** or increase in **bar width increase** by which the **bars** of a **bar code master** are adjusted to compensate for **gain** or loss of bar width, respectively, during reprographic and printing processes

03.02.22
bar width compensation
BWC
extent by which the widths of a bar in a bar code master or in a digital bar code file are reduced/increased in order to correct for expected print or image gain/loss

03.02.23
bar width gain/loss
For quality assurance, see **bar width adjustment**.

03.02.24
bar width increase
For quality assurance, see **bar width adjustment**.

03.02.25
bar width reduction
For quality assurance, see **bar width adjustment**.

03.02.26
printability gauge
series of specially calibrated marks printed on to a **substrate** to assess or monitor the quality of printing

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03.02.27
magnification factor
constant multiplier applied to the nominal dimensions of a **bar code symbol** to obtain the actual dimensions at which it must be produced

03.02.28
integrated artwork
artwork in which the **bar code symbol** and the other graphics are generated together by electronic means

03.02.29
add-on symbol
symbol used to encode information supplementary to that in the main symbol

03.02.30
delineator
auxiliary pattern used to separate **characters** within an **add-on symbol**

04.02.01
two-dimensional symbol(1)
code representing data in machine-readable form by a collection of polygonal or circular cells in a regular pattern which are read optically by scanning

04.02.02
two-dimensional symbol(2)
2D symbol
optically readable symbol that must be examined both vertically and horizontally to read the entire message.

NOTE Two-dimensional symbols may be one of two types: matrix symbols and multi-row symbols. Two-dimensional symbols have error detection and may include error correction features.

04.02.03
fixed pattern
unique, non-data portions of a two-dimensional symbology including finder patterns, timing, navigation and other static components

04.02.04
matrix symbology
collection of polygonal or circular **elements** in a regular pattern to represent data for retrieval by a vision scanning system

04.02.05
dot code
subset of matrix symbologies in which individual **modules** are surrounded by clear space which has no information content

04.02.06
module(2)
matrix symbology symbol
〈**matrix symbology**〉 single cell or element used to encode one bit of the codeword

04.02.07
alignment pattern
fixed reference pattern in defined positions in a matrix **symbology**, which enables the decode software to resynchronize the coordinate mapping of the image **modules** in the event of moderate amounts of distortion of the image

04.02.08
finder pattern
unique pattern in a **symbology** used to locate **symbols** conforming to the symbology rules within a field of view

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04.02.09
multi-row symbology
bar code symbology in which the **symbol** consists of two or more vertically adjacent **rows** of symbol **characters**

04.02.10
row
lateral set of components in a **multi-row symbology**, comprising a start pattern a number of symbol **characters**, and a **stop pattern**

04.02.11
column
horizontal symbol **character** position in a **row** of a **multi-row symbology**

04.02.12
stacked symbology
See **multi-row symbology**.

04.02.13
(n,k) symbology
class of **bar code** symbologies in which each symbol **character** is n **modules** in width and is composed of k **bar** and space pairs

04.02.14
composite symbol
linear symbol and two-dimensional symbol combination where the **linear symbol** can be read by itself or where the linear symbol and **2D symbol** are read as a single data message

04.02.15
compaction mode
name given to one of three data compaction algorithms in PDF417 (Text, Numeric and Byte) , which efficiently map 8-bit data bytes into PDF417 codewords

04.02.16
structured append
linking together in a predetermined sequence of the **data** contained in two or more symbols, enabling the data to be handled as a single **message**

04.02.17
data region
part of a symbol used to data code words as opposed to other symbol overhead

04.02.18
data codeword
codeword which **encodes** data according to one of the compaction schemes of a **symbology**

04.02.19
error correction codeword
codeword in a **symbol** which **encodes** a value derived from the error correction codeword algorithm to enable decode errors to be detected and depending on the **error correction level** to be corrected

04.02.20
error correction level
degree of error correction capability in a **symbology**, where this is not fixed but subject to some user choice

04.02.21
erasure
type of error represented by a physically missing **character**, or a symbol character which has failed to be **decoded**, as opposed to a substitution **error** or misdecode

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04.02.22
pad character
See **filler character** in ISO/IEC 19762-1.

04.02.23
pad codeword
codeword that is inserted to extend a codeword sequence, to achieve a desired symbol structure, or to fill the capacity of a symbol

04.02.24
direct part marking
DPM
generic term referring to methods of applying a permanent mark directly onto the surface of an item

04.02.25
intrusive marking
subtractive marking
direct marking method designed to alter a surface to form a human or machine-readable mark

04.02.26
non-intrusive marking
additive marking
direct marking method designed to add material to a surface to form a human- or machine-readable mark

04.02.27
permanent marking
intrusive or non-intrusive markings that are designed to remain legible for at least the normal service life of an item

cf. **concatenation** in ISO/IEC 19762-1

4 Abbreviations

ECI	extended channel interpretation
DPM	direct part marking
BWA	bar width adjustment
BWC	bar width compensation
CPI	characters per inch
PCS	print contrast signal
ORM	optically readable medium
FoV	field of view

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