International Standard

ISO/IEC 19762

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

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

Second edition
2025-04

Reference number
ISO/IEC 19762:2025(en)

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword ..... **iv**
Introduction ..... **v**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
3.1 Terms related to general concepts 1
3.1.1 Basic general concepts 1
3.1.2 General concepts for technical features 11
3.1.3 General concepts for symbology 16
3.1.4 General concepts for hardware 18
3.1.5 General concepts for applications 21
3.2 Terms related to optically readable media 26
3.2.1 Basic concepts for optically readable media 26
3.2.2 Technical feature concepts for optically readable media 28
3.2.3 Concepts for optically readable media hardware 31
3.3 Terms related to linear bar code symbols 36
3.3.1 Basic concepts for linear bar code symbols 36
3.3.2 Technical feature concepts for linear bar code symbols 37
3.4 Terms related to two-dimensional symbols 39
3.5 Terms related to radio frequency identification 42
3.5.1 Basic concepts for radio frequency identification 42
3.5.2 Technical feature concepts for radio frequency identification 44
3.5.3 Concepts for radio frequency identification hardware 51
3.5.4 Concepts for radio frequency identification application 53
3.6 Terms related to radio 57
3.6.1 Basic concepts for radio 57
3.6.2 Technical feature concepts for radio 73
3.7 Terms related to locating systems 74
3.7.1 Basic concepts for locating systems 74
3.7.2 Technical feature concepts for locating systems 75
3.8 Terms related to mobile item identification and management 78
3.9 Terms related to sensors 82
Bibliography **86**
Index **89**

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (www.iso.org/directives or www.iec.ch/members_experts/refdocs).

ISO and IEC draw attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO and IEC take no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO and IEC had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents and https://patents.iec.ch. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html. In the IEC, see www.iec.ch/understanding-standards.

This document 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 of ISO/IEC 19762:2016, which has been technically revised.

The main changes are as follows:

— French, Russian, Germany and Korean terms have been deleted;

— outdated terms have been deleted;

— the sources in terminological entries have been updated;

— the abbreviated terms have been updated and moved to Annex A.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

Introduction

This document is intended to facilitate international communication in information technology, specifically in the area of automatic identification and data capture (AIDC) techniques by defining terms used across multiple AIDC techniques.

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

1 Scope

This document defines general terms used in automatic identification and data capture (AIDC) on which are based further specialized sections in various technical fields, as well as the essential terms to be used by non-specialist users in communication with specialists in AIDC.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1 Terms related to general concepts

3.1.1 Basic general concepts

3.1.1.1
bit
binary digit
either of the digits 0 or 1 when used in the binary numeration system

3.1.1.2
information bit
bit (3.1.1.1) used for the representation of user data, rather than for control purposes

3.1.1.3
least significant bit
LSB
<representation of data> *bit* (3.1.1.1) position having the smallest weight used in positional notation

3.1.1.4
most significant bit
MSB
<representation of data> *bit* (3.1.1.1) position having the largest weight used in positional notation

3.1.1.5
byte
string that consists of a number of *bits* (3.1.1.1), treated as a unit, and usually representing a character or a part of a character

Note 1 to entry: The number of bits in a byte is fixed for a given data processing system.

Note 2 to entry: The number of bits in a byte is usually 8.

Note 3 to entry: A byte is often eight logical data bits, but can include error detection or correction bits.

Note 4 to entry: 8 bits of data designated b1 to b8, from the *most significant bit* (MSB, b8) (3.1.1.4) to the *least significant bit* (LSB, b1) (3.1.1.3).

3.1.1.6
hexadecimal,noun
Hex
representative data to base 16, using the numbers 0 to 9 and the letters A to F

Note 1 to entry: Used as a convenient short hand notation for representing 16 and 32 bit memory addresses.

Note 2 to entry: A popular method of representing hexadecimal is in the form 0xNN, where NN is the hexadecimal value.

EXAMPLE The number 10 is represented in hexadecimal as 'A'.

3.1.1.7
hexadecimal,adj.
characterized by a selection choice, or condition that has sixteen possible different values or states

3.1.1.8
character
member of a set of elements used by agreement, for the organization, representation or control of information

Note 1 to entry: Characters can be letters, digits, punctuation marks or other symbols and, by extension, function controls such as space shift, carriage return or line feed contained in a message.

[SOURCE: IEC 60050-702:1992, 702-05-10]

3.1.1.9
data character
character (3.1.1.8) which represents meaningful information

Note 1 to entry: Data characters may be numeric digits, alphabetic characters, punctuation marks or control characters.

3.1.1.10
character set
finite set of characters that is complete for a given purpose

Note 1 to entry: The international reference version of the character set is ISO/IEC 10646.

3.1.1.11
code
collection of rules that maps the elements of a first set onto the elements of a second set

Note 1 to entry: The elements of either set may be characters or character strings.

Note 2 to entry: The first set is called coded set and the second set is called code set.

Note 3 to entry: Each element of the code set may be related to more than one element of the coded set but the reverse is not true.

3.1.1.12
code element
code value
result of applying a code to an element of a coded set

EXAMPLE "CDG" representing Paris Charles-de-Gaulle in the code for three-letter representation of airport names; the hexadecimal number 0041 representing "Latin capital letter A" in ISO/IEC 10646.

3.1.1.13
coded character set
coded set whose elements are single *characters* (3.1.1.8)

EXAMPLE The characters of an alphabet when they are mapped onto a set of 7-bit strings.

3.1.1.14
coded set
set of elements that is mapped onto another set according to a code

Note 1 to entry: The characters of an alphabet when they are mapped onto a set of 7-bit strings.

3.1.1.15
numeric
denoting a character set that includes only numbers

3.1.1.16
alphanumeric
pertaining to data that consist of both letters and digits, and that can contain other characters (e.g. punctuation marks)

3.1.1.17
digital
pertaining to data that consist of digits as well as to processes and functional units that use those data

Note 1 to entry: Digital data is presented in a binary form rather than a continuously varying analogue form.

Note 2 to entry: In the context of integrated artwork, it is produced by a number of discrete dots rather than a continuous image.

3.1.1.18
word
character string or bit string treated as a unit for a given purpose

Note 1 to entry: The length of a computer word is defined by the computer architecture, while the words in text processing are delimited by special characters or control characters.

Note 2 to entry: A bit string representing a word usually comprises 8, 16 or 32 bits (as used in computers).

3.1.1.19
read,verb
<automatic identification and data capture> obtain data from an input device, from a storage device, or from a data medium

3.1.1.20
read,noun
<automatic identification and data capture> process of retrieving data from some *data carrier* (3.1.1.59) and, as appropriate, the contention and *error control* (3.1.2.30) management, and *channel* (3.6.1.49) and *source decoding* (3.6.1.52) required to recover and communicate the data entered at source

3.1.1.21
write,verb
send data to an output device, a data storage device or a data medium

3.1.1.22
encode,verb
convert data by the use of a code in such a manner that returning to the original form is possible

3.1.1.23
decode,verb
restore data from a coded representation to the original form

[SOURCE: IEC 60050-702:1992, 702-05-14]

3.1.1.24
decoding
process of restoring data from a coded representation to the original form

[SOURCE: IEC 60050-702:1992, 702-05-15]

3.1.1.25
incorrect read
misread
condition that exists when the data retrieved by the reader or *interrogator* (3.5.3.8) is different from the corresponding data within the *data carrier* (3.1.1.59)

3.1.1.26
data coding
baseband data bit representation, or mapping of logical data bits to physical signals

3.1.1.27
data compaction
mechanism or *algorithm* (3.1.1.54) to process the original data so that it is represented efficiently in as few code words as possible

3.1.1.28
data field
defined area of memory assigned to a particular item or items of data

3.1.1.29
message(1)
<systematic transmission> unit of information transmitted from a source to a destination

3.1.1.30
message(2)
<information theory and communication theory> ordered sequence of characters intended to convey information

3.1.1.31
record
<organization of data> set of data elements treated as a unit

3.1.1.32
file
named set of records treated as a unit

Note 1 to entry: Files are stored within a computer, portable data terminal or information management system.

3.1.1.33
tag
<hypermedia> language element in a mark-up language used for structuring data text or objects

EXAMPLE Start-tags, end-tags.

3.1.1.34
semantics
means by which the purpose of a field of data is identified

EXAMPLE The semantic examples used in automatic data capture include:

— ISO/IEC 15418/ANS MH10 Data Identifiers [MH10 is an acronym assigned to the Accredited Standards Committee (ASC – a committee that has been accredited under the procedures of the American National Standards Institute) for the Material Handling Industry whose scope is to facilitate freight movement within transportation and distribution systems for transport-packages and unit-loads, including their dimensions, definitions, terminology, coding, labelling and performance criteria; and to represent

the United States interests within the scope of ISO/TC 122. Contact: MHI, 8720 Red Oak Blvd., Suite 201|Charlotte, NC 28217, Phone: (704) 676-1190, https://www.mhi.org/],

— GS1 Application Identifiers (GS1 is a worldwide coding management organization for identification numbers, encompassing the associations previously known as EAN International and Uniform Code Council. The GS1 System is maintained through a network of national and pluri-national agencies known as Member Organizations.),

— X12/EDIFACT/CII EDI Data Element Qualifiers.

3.1.1.35
syntax
way in which data is put together to form messages, including rules governing the use of appropriate identifiers, delimiters, separator character(s) and other non-data characters within the message

Note 1 to entry: Syntax is the equivalent to grammar in spoken language.

EXAMPLE The syntactic examples used in *automaticdata capture* (3.1.1.40) include ISO/IEC 15434.

3.1.1.36
automatic identification and data capture
AIDC
automatic identification of items, collecting data about them, and entering that data directly into computer systems, eliminating manual entry

Note 1 to entry: Automatic identification and automatic data capture is carried out by means of bar codes, which can be linear or two-dimensional symbols, *radio frequency identification* (3.5.1.1) and *real time locating systems* (3.7.1.1) tags/*chips* (3.6.1.111).

[SOURCE: ISO 18530:2021, 3.2, modified — "methods or technologies for" has been deleted from the definition and Note 1 to entry has been replaced.]

3.1.1.37
data capture
deliberate action that results in the registration of a record into a record keeping system

[SOURCE: ISO 18530:2021, 3.3]

3.1.1.38
automatic identification system
system for achieving accurate and unambiguous identification of a data bearing label, tag, *transponder* (3.6.2.4) or a natural/prescribed feature, the data or feature being interrogated by means of a system appropriate source

[SOURCE: ISO 21007-1:2005, 2.7]

3.1.1.39
automatic data capture media
ADC media
data carrier (3.1.1.59) that permits the direct transfer of information to a data processing system via machine reading, without operator intervention

Note 1 to entry: Bar code, radio frequency identification, optical character recognition and *real time locating systems* (3.7.1.1) are technologies of machine reading. The data is usually contained in pre-defined locations (fields) within a data stream. This data can be interpreted by a computer program.

3.1.1.40
automatic data capture
ADC
means for automatic *data capture* (3.1.1.37)

Note 1 to entry: Automatic data capture is the set of means for creating, gathering, storing and retrieving item identities and attributes.

3.1.1.41
human-readable information
text that appears with and is associated with *automatic data capture media* (3.1.1.39) and is intended to be conveyed to a person

Note 1 to entry: Human-readable information appears typically on a label (e.g. bar code, *two-dimensional symbol* (3.4.1), radio frequency tag).

Note 2 to entry: There are four types of human-readable information:

— *human-readable interpretation* (3.1.1.42),

— *human translation* (3.1.1.43),

— *data area titles* (3.1.1.44),

— *free text* (3.1.1.45) and data.

3.1.1.42
human-readable interpretation
linear bar code or *two-dimensional symbol* (3.4.1) information provided adjacent to a linear bar code, representing the encoded data within a symbol

3.1.1.43
human translation
human-readable information provided within proximity of the *automatic data capture media* (3.1.1.39), representing portions of the information encoded and data field descriptions not encoded in the symbols

3.1.1.44
data area title
data areas comprised of information in machine-readable or human-readable form

Note 1 to entry: Data areas are identified with the corresponding data area title in human-readable text that can be prefixed, if relevant, by the appropriate identifier.

3.1.1.45
free text
human-readable information other than what is encoded in the *automatic data capture media* (3.1.1.39)

Note 1 to entry: This information can be needed by one or more users of the label.

EXAMPLE Product description.

3.1.1.46
human-readable character
representation of a *bar code* (3.2.1.4), *data character* (3.1.1.9) or *data check character* (3.1.2.32) in a standard eye-readable alphabet or numerals, as distinct from its machine-readable representation

3.1.1.47
electronic data interchange
EDI
exchange of data and documents between computer systems according to standard rules

3.1.1.48
item(1)
<management> smallest identifiable entity within an application

3.1.1.49
item(2)
data item
<data> element of a set of data

EXAMPLE A file can consist of a number of items such as records, which, in turn, can consist of other items.

3.1.1.50
item(3)
<identification> single physical entity or a defined collection of entities having a distinct existence

3.1.1.51
unique item identifier
UII
identification mechanism that uniquely identifies a specific entity (e.g. a product, transport unit, returnable asset) during its life within a particular domain and scope of a code system

Note 1 to entry: When used with a given data protocol, the particular object identifier that defines the unique item identifier relies on the fact that each instance of its object is unique and unambiguous with all other related objects.

Note 2 to entry: As the object is unique, its use in the radio frequency tag confers uniqueness to the radio frequency tag itself.

Note 3 to entry: ISO/IEC 18000-63 and ISO/IEC 18000-3, mode 3. The unique item identifier can be found in Memory Bank "01" (MB01) beginning a memory location 0x20.

3.1.1.52
license plate concept
concept where the fixed code contained in an *automatic data capture media* (3.1.1.39) is used as a pointer into a database

Note 1 to entry: The license plate concept is similar to the way in which the police can determine the name, address, etc., of a person, from a car number plate.

3.1.1.53
font
set of characters of a specific style and size of graphic type

Note 1 to entry: In text processing, font is a set of characters of the same size and style; for example, 9-point Helvetica.

Note 2 to entry: The term font is also used analogously to refer to the set of bar code symbol characters for a *symbology* (3.2.1.3) in on-demand printing equipment.

3.1.1.54
algorithm

finite ordered set of well-defined rules for the solution of a problem

3.1.1.55
programmer
<computer programming> person who designs, writes and tests programs

3.1.1.56
programming
designing, writing, modifying and testing of programs

3.1.1.57
tolerance
maximum permissible deviation of a system parameter value, caused by any system or environmental influence or impact

Note 1 to entry: Tolerances are specified for a number of radio frequency parameters, including carrier frequencies, sub-carriers, bit clocks and symbol clocks.

3.1.1.58
nominal
value at which a system is designed to assure optimal operation

3.1.1.59
data carrier
device or medium used to store data as a relay mechanism in an *automatic identification and data capture* (3.1.1.36) system

EXAMPLE Bar code, optical character recognition character string, radio frequency tag.

3.1.1.60
leading zero
<digital encoding> zero in a more significant digit place than the digit place of the most significant nonzero digit of a numeral

3.1.1.61
leading zero
<character representation> one or more zeros at the leading left of a numeric character string

3.1.1.62
zero-suppression
elimination of non-significant zeros from a numeral

Note 1 to entry: It can also be considered a function that allows the process by which unwanted zeros are omitted from the printed or displayed result of a calculation.

3.1.1.63
distortion
unwarranted change in the form or intelligibility of a signal

Note 1 to entry: The distortion exhibits a noise-like effect that can be quantified as the ratio of the magnitude of the distortion component to the magnitude of the undistorted signal, usually expressed as a percentage.

Note 2 to entry: Distortion is caused by undesired changes in the features of an image or waveform.

3.1.1.64
filler character
pad character
character inserted to extend an item of data to achieve a desired length

3.1.1.65
ID. filter
identification filter
software facility that compares a newly read identification (ID) with those within a database or set, with a view to establishing a match

3.1.1.66
nominal range
range at which a system can assure reliable operation, considering the normal variability of the environment in which it is used

3.1.1.67
query
electronic request of information from one or more sources

Note 1 to entry: A request to extract data directly or to derive them from a database, based on specified conditions.

Note 2 to entry: A request to a reservation system for availability of a seat on a specific flight is an example of a query, as well as an electronic request of information from one or more sources.

3.1.1.68
readability
ability to retrieve data under specified conditions