
**Information technology — Automatic
identification and data capture
techniques — Syntax for high-capacity
ADC media**

*Technologies de l'information — Techniques automatiques
d'identification et de capture des données — Syntaxe pour supports
de CAD à haute capacité*

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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.

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 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents) or the IEC list of patent declarations received (see <http://patents.iec.ch>).

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.

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

This fourth edition cancels and replaces the third edition (ISO/IEC 15434:2006), which has been technically revised.

The main changes compared to the previous edition are as follows:

- "Document notation conventions" have been moved to a new [Clause 4](#);
- "Human readable representation" has been inserted ([Clause 6](#)).

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.

Introduction

This document defines the manner in which data is transferred to high-capacity automatic data capture (ADC) media from a supplier's information system and the manner in which data is transferred to the recipient's information system. It does not define the internal data storage format for specific high-capacity ADC media. This document does not specify the application of data structures provided by a specific data syntax format. The application of the data structure is specified by industry conventions.

Users of ADC technologies benefit by being able to receive data in a standard form and by being able to provide data in a standard form. Static ADC technologies such as bar code symbologies, magnetic stripe, optical character recognition, surface acoustical wave (SAW) and Weigand effect typically encode a single field of data. Most applications of these technologies involve the encoding of a single field of data by the supplier of the medium and the subsequent decoding of the data field by the recipient. Encoding single fields of data permits the supplier to perform the encodation from a single field within the supplier's information system. Decoding single fields of data permits the recipient to input this data into a single field in the recipient's information system, in lieu of key entry.

High-capacity ADC technologies, such as two-dimensional symbols, RFID transponders, contact memories and smart cards, encode multiple fields of data. These multiple fields are usually parsed by the recipient's information system and then mapped to specific fields of data in the recipient's information system. This document defines the syntax for high-capacity ADC media, so as to enable ADC users to utilize a single mapping utility, regardless of which high-capacity ADC medium is employed.

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Information technology — Automatic identification and data capture techniques — Syntax for high-capacity ADC media

1 Scope

This document specifies a transfer structure, syntax, and coding of messages and data formats when using high-capacity ADC media between trading partners (specifically between suppliers and recipients) and, where applicable, in support of carrier applications, such as bills of lading, and carrier sortation and tracking.

The data encoded according to this document include:

- data which can be used in the shipping, receiving and inventory of transport units;
- data which can be contained within supporting documentation, in paper or electronic form, related to unit loads or transport packages;
- data which can be used in the sortation and tracking of transport units.

This document describes the ISO/IEC 646 characters used for automatic data capture; it is not the controlling specification for data structures (e.g. CII) referenced in this International Standard.

This document does not supersede or replace any applicable safety or other marking or labelling requirements. It is intended to be applied in addition to any other mandated labelling requirements.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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, *Information technology — ISO 7-bit coded character set for information interchange*

ISO/IEC 19762, *Information technology — Automatic identification and data capture (AIDC) techniques — Harmonized vocabulary*

ANS MH10.8.2, *ASC MH 10 Data Identifiers and Application Identifiers*

ANS X12, *Electronic Data Interchange*

SYNTAX RULE CII (Vers 3.00), CII Syntax Rule Specifications (3.00) (Electronic Data Interchange — Japan)

GS1 General Specification. GS1

ATA Common Support Data Dictionary (CSDD), Air Transport Association

3 Terms and definitions

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

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

4 Documentation notation conventions

This document uses the following typographical conventions in message examples.

- a) **BOLD, ALL CAPITALS** Text that shall be entered exactly as it appears. (In this document, F_S , G_S , U_S , R_S , E_{OT} are used to represent non-printable special characters. The ISO/IEC 646 representation of special characters that shall be used and is used in this document can be found in [Annex A](#).)
- b) *italic, lower case* Variable parameters. The user shall supply an appropriate value. In some cases, default values are recommended in this document.

5 Message format

5.1 General

This clause defines how data shall be transferred from a high capacity ADC media reading device to the user's application software.

To allow multiple data formats to be contained within a data stream, a two-level structure of enveloping is employed. The outermost layer of the message is a message envelope that defines the beginning and end of the message. Within the message envelope, there is one or more format envelopes that contain the data (see [Figure 1](#)). Multiple formats in a single message should only be employed with bilateral agreements of the trading partners.

The message envelope shall consist of

- a message header,
- one or more format envelope(s), and
- a message trailer (when required).

Each format envelope within the message envelope shall consist of

- a format header,
- data, formatted according to the rules defined for that format, and
- a format trailer (when required).

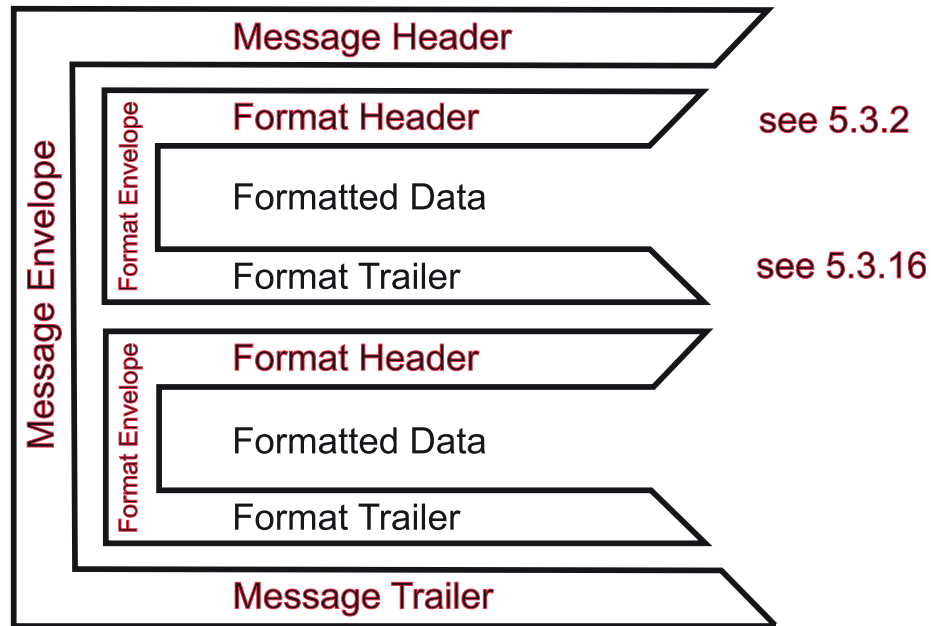


Figure 1 — Enveloping structure

NOTE [Annex A](#) shows the decimal and hexadecimal values of ASCII characters used in this document.

5.2 Message envelope

5.2.1 General

The message envelope defines the start and end of the data contained within the data stream and provides the following functions:

- indicates that the message contained within this media is formatted in conformance with the rules of this document;
- indicates the character which has been defined to separate formats within this message;
- provides a unique character to indicate the end of the message.

The structure within a data stream is as follows:

a Message, containing one or more formats;

a Format, containing one or more segments;

a Segment, containing one or more data elements;

a Data element (field), potentially containing one or more sub-elements (sub-fields).

5.2.2 Message header

5.2.2.1 General

The message header consists of two parts:

- the three-character conformance indicator, and
- the format trailer character.

The complete message header is: $[\]>R_S$

5.2.2.2 Conformance indicator

The conformance indicator shall be the first three characters in the message header. It shall be $[\]>$ (left bracket, right parenthesis and greater than). See [Annex A](#) for a table of ASCII decimal and hexadecimal values used in this document.

5.2.2.3 Format trailer character

The format trailer character shall be the fourth character in the message header. It shall be the non-printable ASCII character “ R_S ” (see [Annex A](#)). The format trailer character is used throughout the message to indicate the end of a data format envelope (see [5.3.16](#)).

5.2.3 Message trailer

The message trailer identifies the end of the message within the data stream. It shall be the end of transaction character, “ E_{OT} ” (see [Annex A](#)). The message trailer character shall not be used elsewhere in the message except in format “09” (binary data) where the “ E_{OT} ” character may appear.

The message trailer shall **not** be used with formats “02” (complete EDI message / transaction) and “08” (structured data using CII syntax rules).

5.3 Format envelope

5.3.1 General

The format envelope defines the start and end of data in a given format and provides the following functions:

- identifies the data format used within the envelope;
- defines the character(s) used to separate the segments, data elements (fields) and sub-elements (sub-fields) within this data format;
- indicates any applicable date, release or control information.

5.3.2 Format header

5.3.2.1 General

A format header shall consist of two parts:

- a format indicator (a two-digit numeric identifier which identifies the rules governing the format);
- variable data (if any) which defines the separators used and version and release, date or control information of the applicable standards.

[Table 1](#) lists the format indicators and variable data associated with the format header.