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

Technologies de l'information — Techniques d'identification et captage automatique des données — Syntaxe pour supports de CAD à haute capacité

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Contents

Page

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 15434 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 31, *Automatic identification and data capture techniques*.

This third edition cancels and replaces the second edition (ISO/IEC 15434:2005), which has been technically revised.

Introduction

This International Standard 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. This International Standard does not define the internal data storage format for specific high-capacity ADC media. This International Standard 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 International Standard 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.

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

1 Scope

This International Standard 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 International Standard include

— data which may be used in the shipping, receiving and inventory of transport units;

— data which may be contained within supporting documentation, in paper or electronic form, related to unit loads or transport packages;

— data which may be used in the sortation and tracking of transport units.

This International Standard describes the ISO 646 syntax for automatic data capture.

This International Standard is not the controlling specification for data structures (e.g. CII) referenced in this International Standard.

This International Standard does not supersede or replace any applicable safety or regulatory marking or labelling requirements. This International Standard is to be applied in addition to any other mandated labelling requirements.

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/IEC 646, *Information technology — ISO 7-bit coded character set for information interchange*

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

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

ANS MH10.8.3, *ASC MH 10 Syntax for high capacity ADC media*

ANS X12, *Electronic Data Interchange*

CII Syntax Rule (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, definitions and documentation notation conventions

3.1 Terms and definitions

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

3.2 Documentation notation conventions

This International Standard uses the following typographical conventions in message examples.

a) **BOLD, ALL CAPITALS** — Text that must be entered exactly as it appears. (In this International Standard, $^{F}_{S}$, $^{G}_{S}$, $^{U}_{S}$, $^{R}_{S}$, $^{E}_{OT}$ are used to represent non-printable special characters. The ISO 646 representation of special characters used in this International Standard can be found in Annex A.)

b) *italic, lower case* — Variable Parameters. The user must supply an appropriate value. In some cases default values are recommended in this International Standard.

4 Message format

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 are one or more Format Envelopes that contain the data (see Figure 1). Multiple formats in a single message should only be employed with bi-lateral 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).

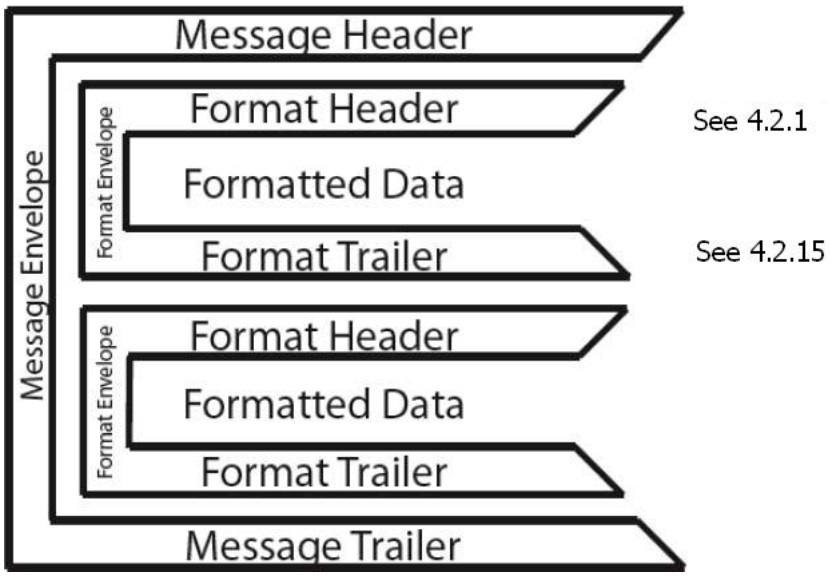

Figure 1 — Enveloping Structure

Note: Annex A shows the decimal and hexadecimal values of ASCII characters used in this International Standard.

4.1 Message Envelope

The Message Envelope defines the start and end of the data contained within the data stream, and provides the following functions:

- indication that the message contained within this media is formatted in compliance with the rules of this International Standard;
- 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).

4.1.1 Message Header

The Message Header consists of two parts:

- the three character Compliance Indicator, and
- the Format Trailer Character.

The complete Message Header[1)] is: **[ )>RS**

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1) An artificial “space” character has been added between the “[” and “)” characters so as to not be misinterpreted as the alphabetic character “D”.

4.1.1.1 Compliance Indicator

The Compliance Indicator shall be the first three characters in the Message Header. The Compliance Indicator shall be **[)>** (left bracket, right parenthesis, and greater than). See Annex A for a table of ASCII decimal and hexadecimal values used in this International Standard.

4.1.1.2 Format Trailer Character

The Format Trailer Character shall be the fourth character in the Message Header. The Format Trailer Character 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 4.2.15).

4.1.2 Message Trailer

The Message Trailer identifies the end of the message within the data stream. The Message Trailer shall be the End Of Transaction character, "$^{E}O_{T}$" (see Annex A). The Message Trailer character shall not be used elsewhere in the message except in Format "09" (binary data) where the "$^{E}O_{T}$" 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).

4.2 Format Envelope

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.

4.2.1 Format Header

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.

Table 1 — Format header table showing associated separators

Format Indicator	Variable Header Data	Format Trailer	Format Description
00			Reserved for future use
01	$^{G}_{S}$*vv*	$^{R}_{S}$	Transportation
02			Complete EDI message / transaction
03	*vvvrrr*$^{F}_{S}$$^{G}_{S}$$^{U}_{S}$	$^{R}_{S}$	Structured data using ANSI ASC X12 Segments
04	*vvvrrr*$^{F}_{S}$$^{G}_{S}$$^{U}_{S}$	$^{R}_{S}$	Structured data using UN/EDIFACT Segments
05	$^{G}_{S}$	$^{R}_{S}$	Data using GS1 Application Identifiers
06	$^{G}_{S}$	$^{R}_{S}$	Data using ASC MH 10 Data Identifiers[2)]
07		$^{R}_{S}$	Free form text
08	*vvvvrrnn*		Structured data using CII Syntax Rules
09	$^{G}_{S}$ *ttt...t* $^{G}_{S}$ *ccc...c* $^{G}_{S}$ *nnn...n* $^{G}_{S}$	$^{R}_{S}$	Binary data (file type) (compression technique) (number of bytes)
10-11			Reserved for future use
12	$^{G}_{S}$	$^{R}_{S}$	Structured data following Text Element Identifier rules
12-99			Reserved for future use

Note 1: *vv* represents the two-digit version of Format "01" being used

Note 2: $^{R}_{S}$ represents the Format Trailer character (see 4.2.15).

Note 3: $^{F}_{S}$ represents the Segment Terminator (see 4.2.1.1.1).

Note 4: $^{G}_{S}$ represents the Data Element Separator (see 4.2.1.1.2).

Note 5: $^{U}_{S}$ represents the Sub-Element Separator (see 4.2.1.1.3).

Note 6: vvvrrr represents the three digit Version (vvv) followed by the three digit Release (rrr) (see 4.2.5).

Note 7: *vvvvrrnn* represents the four digit Version (vvvv) followed by the two digit Release (rr) followed by the two digit Edition indicator (nn) (see 4.2.10).

Note 8: *ttt...t* represents the file type name (see 4.2.11).

Note 9: *ccc...c* represents the compression technique name (see 4.2.11).

Note 10: *nnn...n* represents the number of bytes (see 4.2.11).

2) Previously known as FACT Data Identifiers.