BS ISO/IEC 15434:2025

BSI Standards Publication

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

Documents
Document Sharing Hub

Full document details: BS ISO/IEC 15434:2025

National foreword

This British Standard is the UK implementation of ISO/IEC 15434:2025. It supersedes BS ISO/IEC 15434:2019, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee IST/6, Data communications.

A list of organizations represented on this committee can be obtained on request to its committee manager.

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

© The British Standards Institution 2025
Published by BSI Standards Limited 2025

ISBN 978 0 539 22579 2

ICS 35.040.50

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 January 2025.

Amendments/corrigenda issued since publication

Date	Text affected

Documents
Document Sharing Hub

Full document details: BS ISO/IEC 15434:2025

International Standard

ISO/IEC 15434

Fifth edition
2025-01

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

Reference number
ISO/IEC 15434:2025(en)

© ISO/IEC 2025

Documents
Document Sharing Hub

Full document details: BS ISO/IEC 15434:2025

COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2025

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

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

Documents
Document Sharing Hub

Full document details: BS ISO/IEC 15434:2025

Contents

Page

Foreword ... **iv**
Introduction ... **v**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms and definitions ... **1**
4 Documentation notation conventions ... **1**
5 Message format ... **2**
5.1 General ... 2
5.2 Message envelope ... 3
5.2.1 General ... 3
5.2.2 Message header ... 4
5.2.3 Message trailer ... 4
5.3 Format envelope ... 4
5.3.1 General ... 4
5.3.2 Format header ... 4
5.3.3 Format trailer ... 9
5.4 Data format ... 9
5.4.1 General ... 9
5.4.2 Format “00” — Reserved ... 9
5.4.3 Format “01” — Transportation ... 9
5.4.4 Format “02” — Complete EDI message / transaction ... 12
5.4.5 Format “03” — Structured data using ASC X12 segments ... 12
5.4.6 Format “04” — Structured data using UN/EDIFACT segments ... 12
5.4.7 Format “05” — Data using GS1 application identifiers ... 12
5.4.8 Format “06” — Data using ASC MH 10 data identifiers ... 13
5.4.9 Format “07” — Free form text format ... 13
5.4.10 Format “08” — Structured data using CII syntax rules ... 13
5.4.11 Format “09” — Binary data ... 13
5.4.12 Formats “10” to “11” — Reserved ... 13
5.4.13 Format “12” — Using text element identifiers ... 14
5.4.14 Format “13” — Blocked ... 14
5.4.15 Format “14” — Data using JSON syntax ... 14
5.4.16 Format “15” — ISO/IEC 20248 verifiable data construct ... 14
5.4.17 Formats “16” to “99” — Reserved ... 14
Annex A (normative) **Subset of ISO/IEC 646 (table of hexadecimal and decimal values)** ... **15**
Annex B (informative) **Examples of ADC media encoded with ISO/IEC 15434 syntax** ... **17**
Bibliography ... **31**

© ISO/IEC 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS ISO/IEC 15434:2025

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 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 fifth edition cancels and replaces the fourth edition (ISO/IEC 15434:2019), which has been technically revised.

The main changes are as follows:

— format “14” has been assigned to data structured with JSON syntax (see 5.3.2.16 and 5.4.15);

— format “15” has been assigned to data containing an ISO/IEC 20248 verifiable data construct (see 5.3.2.17 and 5.4.16);

— Annex B has been added to provide examples of syntax used to encode data into high-capacity ADC media.

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.

© ISO/IEC 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS ISO/IEC 15434:2025

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 may be specified by industry conventions.

Users of automatic identification and data capture (AIDC) techniques benefit by being able to receive data in a standard form and by being able to provide data in a standard form. Low capacity ADC media, such as linear bar code symbologies and optical character recognition, 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 encoding 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 media, 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.

The benefits of using high-capacity ADC media come with challenges. The ability to convey both data and meaning (e.g. assuming an encoded serial number is "12345"; "12345" is the data and the understanding "12345" is a serial number is the meaning) within a single technology has been executed differently by many industries in a variety of ways. The widespread use of these different data and meaning formats has led to an additional challenge of identifying which format is being used. To address this challenge, this document assigns many of the data and meaning formats a unique two-digit number called a format indicator which identifies the data structure for the encoded data. These format indicators enable a user to employ one or more formats within a single high-capacity ADC media and accurately decode the data stream.

This document defines a syntax to indicate the message encoded in the high-capacity ADC media conforms to this document. Its defined syntax also indicates which data format or formats are being used to provide data and meaning. The purpose of the syntax is to provide a mechanism for an automated information system consuming data through high-capacity ADC media to adaptively interpret and parse the data meaningfully.

© ISO/IEC 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS ISO/IEC 15434:2025

Documents
Document Sharing Hub

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

1 Scope

This document specifies a transfer structure, syntax, coding of messages and data formats when using high-capacity automatic data capture (ADC) media.

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*

ISO/IEC 21778, *Information technology — The JSON data interchange syntax*

ISO/IEC 20248, *Information technology — Automatic identification and data capture techniques — Digital signature data structure schema*

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

ANS X12, *Electronic Data Interchange*

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

GS1 General Specifications Standard

Airlines for America, *ATA Common Support Data Dictionary (CSDD)*

3 Terms and definitions

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

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/

4 Documentation notation conventions

This document uses the following typographical conventions in message examples.

a) **BOLD**: Text that shall be entered exactly as it appears. (In this document, $^{F}_{S}$, $^{G}_{S}$, $^{U}_{S}$, $^{R}_{S}$, $^{E}o_{T}$ are used to represent non-printable characters. The ISO/IEC 646 representation of non-printable 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.

© ISO/IEC 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS ISO/IEC 15434:2025

Non-printable characters in accordance with Annex A shall be used. These come from the ISO/IEC 646 set of characters and are as follows.

— $^{R}_{S}$, where the two-letter couplet, superscript R (i.e. ^{R}) and subscript S (i.e. $_{S}$), collectively represents a single non-printable format trailer character called record separator. The character $^{R}_{S}$ is encoded as a single byte of decimal value 030 (equivalently hexadecimal value 1E).

— $^{G}_{S}$, where the two-letter couplet, superscript G (i.e. ^{G}) and subscript S (i.e. $_{S}$), collectively represents a single non-printable data element separator character called group separator. The character $^{G}_{S}$ is encoded as a single byte of decimal value 029 (equivalently hexadecimal value 1D).

— $^{F}_{S}$, where the two-letter couplet, superscript F (i.e. ^{F}) and subscript S (i.e. $_{S}$), collectively represents a single non-printable segment terminator character called field separator. The character $^{F}_{S}$ is encoded as a single byte of decimal value 028 (equivalently hexadecimal value 1C).

— $^{U}_{S}$, where the two-letter couplet, superscript U (i.e. ^{U}) and subscript S (i.e. $_{S}$), collectively represents a single non-printable sub-element separator character. The character $^{U}_{S}$ is encoded as a single byte of decimal value 031 (equivalently hexadecimal value 1F).

— $^{E}o_{T}$ where the three-letter triplet, superscript E (i.e. ^{E}), small o (same font size, lower case o) and subscript T (i.e. $_{T}$), represents a single non-printable message trailer character called end of transmission. The character $^{E}o_{T}$ is encoded as a single byte of decimal value 04 (equivalently hexadecimal value 04).

NOTE If the literal letters RS, GS, FS, US or EoT were encoded in the data string, the resultant data would be in error, and would not be in conformance with this document. In an application built according to this document, such a data string would not be decoded, parsed or interpreted correctly.

In the following ISO/IEC 15434 message example, the non-printable characters are visually displayed as shown above; **[)>**$^{R}_{S}$**06**$^{G}_{S}$**25SUN98765432187654321A2B4C6D8E**$^{R}_{S}{}^{E}o_{T}$.

Each non-printable character is encoded according to its decimal or hexadecimal value (listed above and in Annex A), not according to the value for the individual letters. When they are decoded, and visual characters are used to represent the non-printable characters, they sometimes do not appear as shown 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 agreement 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

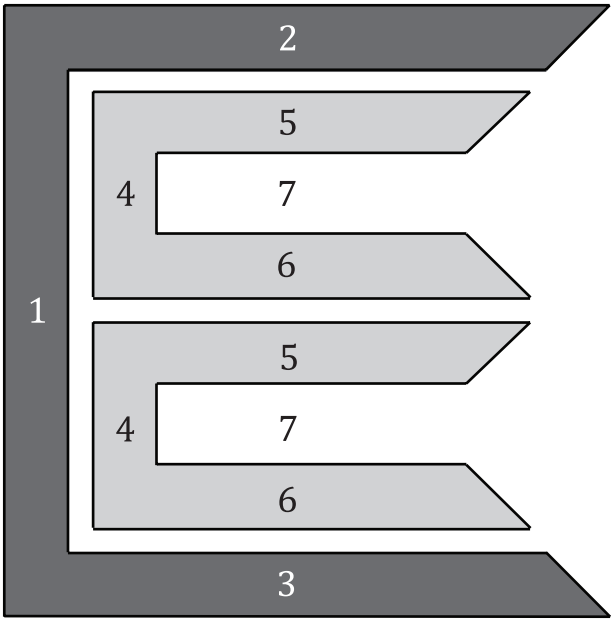
— a format header,

— data, formatted according to the rules defined for that format, and

— a format trailer (when required).

© ISO/IEC 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS ISO/IEC 15434:2025



Key

1 message envelope (see 5.2.1)
2 message header (see 5.2.2)
3 message trailer (see 5.2.3)
4 format envelope (see 5.3.1)
5 format header (see 5.3.2)
6 format trailer (see 5.3.3)
7 formatted data (see 5.4)

Figure 1 — Enveloping structure

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).

© ISO/IEC 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS ISO/IEC 15434:2025

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 decimal and hexadecimal values used for characters 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 character "$^{R}{}_{S}$" (see Annex A). The format trailer character is used throughout the message to indicate the end of a format envelope (see 5.3.3).

5.2.3 Message trailer

The message trailer identifies the end of the message within the data stream. It shall be the end of transmission 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 can 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. The format envelope 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.

An example message for each format is provided in Annex B.

5.3.2 Format header

5.3.2.1 General

A format header shall consist of:

— a format indicator (a two-digit numeric identifier which identifies the rules governing the format);

— variable header data (if any) which defines the separators used, the version, the release, and the date or control information of the applicable standards.

© ISO/IEC 2025 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS ISO/IEC 15434:2025