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Information technology — Automatic identification and data capture techniques — Unique identification —

Part 1: Individual transport units

Technologies de l'information — Identification automatique et techniques de capture de données — Identification unique —

Partie 1: Unités de transport individuel

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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. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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).

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

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword — Supplementary information.

The committee responsible for this document is 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 15459-1:2006), which has been technically revised.

This corrected version of ISO/IEC 15459-1:2014 incorporates the following correction plus other minor editorial modifications. Clause 5.3 has been modified as follows:

"5.3 Permissible character sets in an identity

The identity shall use alphabetic, numeric and special characters from the invariant character set ISO/IEC 646, see Annex A in ISO/IEC 15459-3.

More compact data encoding may be attained by using only upper case alphabetic characters and numeric digits.

An Issuing Agency may have additional requirements on the repertoire of characters found within identities using its IAC.

Any data processing system shall be capable of processing identities using the full repertoire of characters permitted by ISO/IEC 646."

A list of all parts in the ISO/IEC 15459 series can be found on the ISO website.

Introduction

Unique identification can occur at many different levels, at item level, on the transport unit, on the returnable transport item, at grouping levels, and elsewhere. Such entities are often handled by several parties, both public and private, throughout their lifecycle. Each of these parties must be able to identify and trace such distinct entities so that reference can be made to associated information such as quality inspection data, the chemical substance contained, the batch or lot number of parts, components or raw materials, etc.

The associated information is typically held in some kind of database. The information can be accessed using EDI exchange or another appropriate access protocol, e.g. a directory access protocol.

There are considerable benefits if the identity of the entity is represented as a bar code or other AIDC (Automatic Identification and Data Capture) media and attached to or made a constituent part of that which is being uniquely identified so that

— it can be read electronically, thus minimizing errors;

— one identity can be used by all parties;

— each party can use the identity to look up its computer files to find the data associated with the entity.

All AIDC technologies have the potential to encode an identity. It is expected that application standards, using various automatic identification technologies, will be developed based upon the identity as a prime key. These application standards, which can include additional rules for which level of identification should be used, are often made available from the Issuing Agency.

The identity for individual transport units defined in this part of ISO/IEC 15459, and represented in AIDC media attached to the unit, meets the needs defined in ISO/IEC 15459-3, Common rules.

Information technology — Automatic identification and data capture techniques — Unique identification —

Part 1: Individual transport units

1 Scope

This part of ISO/IEC 15459 specifies a unique string of characters for the identification of individual transport units. The character string is intended to be represented in a bar code label or other AIDC media attached to the entity to meet management needs. To address management needs, different types of entities are recognized in the various parts of ISO/IEC 15459, which allows different requirements to be met by the identities associated with each type.

The rules for the unique identification for individual transport units, to identify physical logistical transfers, with the identity relevant for the duration of one or more items in the load being held or transported as part of that load, are defined and supported by example.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 15459-2, *Information technology — Automatic identification and data capture techniques — Unique identification — Part 2: Registration procedures*

ISO/IEC 15459-3, *Information technology — Automatic identification and data capture techniques — Unique identification — Part 3: Common rules*

ISO/IEC 19762-1, *Information technology — Automatic identification and data capture (AIDC) techniques — Harmonized vocabulary — Part 1: General terms relating to AIDC*

GS1 General Specifications, *GS1*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 19762-1 and ISO/IEC 15459-3 apply.

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

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

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

4 Qualifiers for individual transport units

Each individual transport unit shall be unambiguously identified by a qualifier and a string as defined in Clause 5 so that entities of this qualifier can be distinguished from other qualifiers, the string shall be combined with a qualifier determined by the Issuing Agency.

The qualifier component of an identity for an individual transport unit may use any data format supported by ISO/IEC 15434 or ISO/IEC 9834-1. What formats to be used are to be specified by the Issuing Agency rules. For the purpose of this standard examples are not to be exhaustive, but rather representative of the full suite of data qualifiers possible to use and relevant to this standard;

— GS1 Application Identifier **00**

  If this method is used to create the identity each unique identity issuer would select the appropriate GS1 Application Identifier, conforming to the requirements of the GS1 General Specification, to act as the qualifier of the identity.

— ASC MH 10 Data Identifiers **J**, **1J**, **2J**, **3J**, **4J**, **5J** or **6J**

  If this method is used to create the identity each unique identity issuer would select the appropriate ASC MH10 Data Identifier as required by the appropriate Issuing Agency to act as the qualifier of the identity.

— When employing an ISO/IEC compliant high capacity AIDC data carrier an additional option is the object identifiers;

  — 1 0 15459 1: for a transport unit identity defined by the IAC. This is defined independent of, and unlike the structures below, does not support mapping to GS1 Application Identifiers and ASC MH 10 Data Identifiers.

  — 1 0 15459 1 1: for a transport unit qualifier equivalent to GS1 Application Identifier **00**

  — 1 0 15459 1 2: for a transport unit qualifier equivalent to ASC MH10 Data Identifier **J**

  — 1 0 15459 1 3: for a transport unit qualifier equivalent to ASC MH10 Data Identifier **1J**

  — 1 0 15459 1 4: for a transport unit qualifier equivalent to ASC MH10 Data Identifier **2J**

  — 1 0 15459 1 5: for a transport unit qualifier equivalent to ASC MH10 Data Identifier **3J**

  — 1 0 15459 1 6: for a transport unit qualifier equivalent to ASC MH10 Data Identifier **4J**

  — 1 0 15459 1 7: for a transport unit qualifier equivalent to ASC MH10 Data Identifier **5J**

  — 1 0 15459 1 8: for a transport unit qualifier equivalent to ASC MH10 Data Identifier **6J**

5 Identity for individual transport units

5.1 General

An identity is assigned to an individual transport unit by an identity issuer. This shall be done in accordance with the rules established by an authorized Issuing Agency as defined in ISO/IEC 15459-3 and ISO/IEC 15459-2.

5.2 Maximum number of characters permissible in an identity

The identity for individual transport units shall not contain more than 50 characters.

For efficient use within various AIDC data carrier systems, it is recommended that the number of characters to be coded in a one line linear bar code symbol should not exceed 20 characters, and

number of characters should be kept as short as possible regardless of the permissible maximum of 50 characters.

5.3 Permissible character sets in an identity

The identity shall use alphabetic, numeric and special characters from the invariant character set ISO/IEC 646, see Annex A in ISO/IEC 15459-3.

More compact data encoding may be attained by using only upper case alphabetic characters and numeric digits.

An Issuing Agency may have additional requirements on the repertoire of characters found within identities using its IAC.

Any data processing system shall be capable of processing identities using the full repertoire of characters permitted by ISO/IEC 646.

6 Implementation of coding using AIDC media

All AIDC technologies have the potential to encode an identity. It is expected that application standards for entities, using various automatic identification technologies, will be developed based upon the ISO/IEC 15459 identity as a prime key. These application standards may be made available from the Issuing Agency.

Annex A
(informative)

Unique identification for transport units

NOTE The examples shown in this informative annex are illustrative of those permitted. The examples of both data and AIDC carriers used are not exhaustive.

A.1 Role of the Issuing Agency in providing application guidance for transport units

To illustrate the usage of individual identities for transport units, the hypothetical example is given using the two Issuing Agencies (IAs), recognized by the Registration Authority, GS1 and Universal Postal Union (UPU).

The construction of the string minimally includes the Issuing Agency Code (IAC), Company Identifying Number (CIN), and Identity (ID) assuming that the ID is unambiguous within the CIN. In some cases IDs are not unambiguous within the CIN but are unambiguous within a specific asset type under the control of a company. If the ID is not unambiguous within the company, the string must include a company asset type code, or similar. Thus the string established by the identity issuer cannot be the same as that established by another. Moreover, ISO/IEC 15459-2 ensures all the identities are unambiguous.

A.2 GS1 unique identification for transport units

Figure A.1 shows a GS1 string (18 characters SSCC) for transport units.

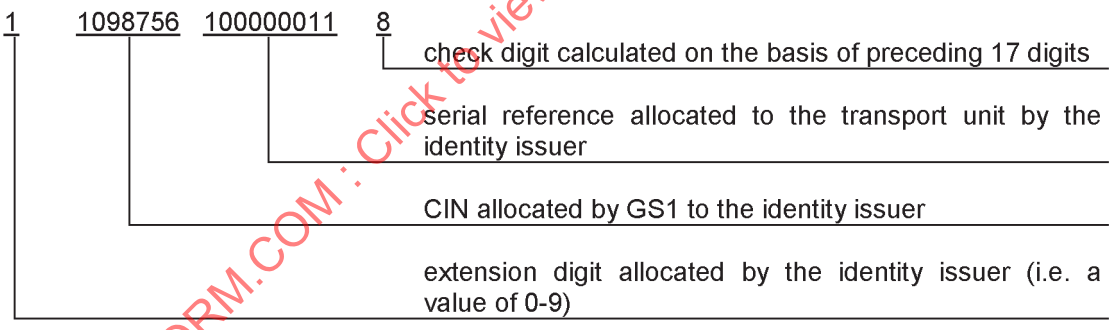

Figure A.1 — GS1 string

NOTE GS1 uses the term Company Prefix for the CIN allocated by GS1 to the unique identity issuer.

This string can be contained in a GS1-128 bar code symbol with the qualifier of GS1 Application Identifier "00". The bar code symbol data will be as in Figure B.1 and, when scanned, can be expected to pass this data (Table A.1) to a computer system:

Table A.1 — Data stream — GS1

Symbology identifier	Identity	
	Qualifier	String
]C1	00	110987561000000118

NOTE The Application Identifier "00" is not included in the string, but included in the identity. The symbology identifier is not included in the bar code but, but is provided by the reader identifying the data carrier used. In the example above, the data carrier is a GS1–128 bar code.

A.3 ASC MH10 unique identification for transport units

Figure A.2 shows an ASCH MH10 string for transport units, using the UPU as Issuing Agency (IA).

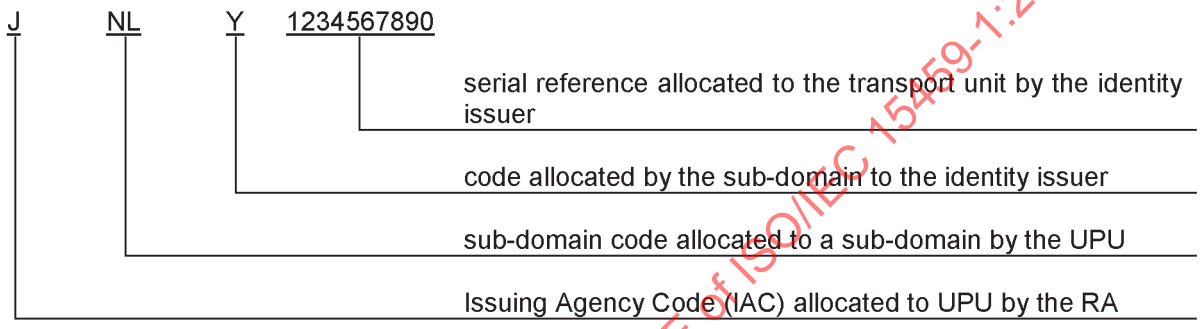

Figure A.2 — ASC MH10 string using UPU as IA

This string can be contained in a Code 128 bar code symbol with the qualifier of ASC MH10 Data Identifier "J" preceding the string. The bar code symbol data will be as in Figure B.2 and, when scanned, would be expected to pass this data to a computer system:

Table A.2 — Data stream — Data Identifier

Symbology identifier	Identity	
	Qualifier	String
]C0	J	JNLY1234567890

NOTE The Data Identifier "J" is not included in the string, but is included in the identity. The symbology identifier is not included in the bar code but, but is provided by the reader identifying the data carrier used. In the example above, the data carrier is a Code 128 bar code.

Annex B
(informative)

Examples of identities for individual transport units

NOTE The examples shown in this informative annex are illustrative of those permitted. The examples of both data and AIDC carriers used are not exhaustive.

To illustrate the usage of identities, assume that two Issuing Agencies (IAs) are recognized by the Registration Authority (RA), say GS1 and the Universal Postal Union (UPU).

The rules of GS1 require that the identity string for transport units consists of 18 numeric characters where the first character (0, 1, 2...9) is allocated by the RA, the next characters are allocated by GS1 to the issuer of the identity and the following characters assigned by the issuer of the identity. The last character is a check digit calculated on the basis of the preceding 17 digits. See Figure B.1.

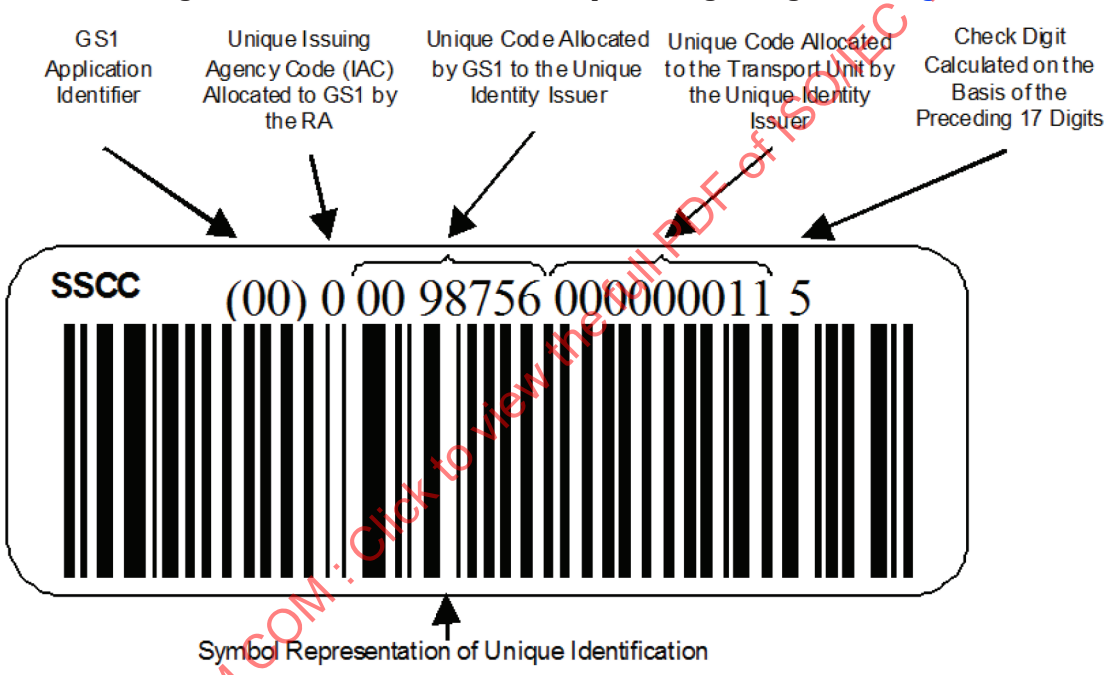

Figure B.1 — Representation of GS1 identity for transport units in a GS1-128 bar code symbol

The rules of the UPU are that the identity string consists of no more than 35 alpha-numeric characters, where the first character is the Issuing Agency Code "J" allocated by the Registration Authority to the UPU. The next characters are allocated by the UPU to create and identify a sub-domain. A number of different structures are defined in the relevant UPU Standards. One of these utilizes two-character ISO 3166 Country Codes to create sub-domains for the National Postal Administration in each country. This "Postal Administration Identity" is followed by a free format zone in which each Postal Administration may define an own structure, as long as the structure is in compliance with the framework of this Standard. See Figure B.2.

