INTERNATIONAL STANDARD

ISO 28560-1

Third edition
2023-06

Information and documentation — RFID in libraries —

Part 1: Data elements and general guidelines for implementation

Information et documentation — RFID dans les bibliothèques —

Partie 1: Éléments de données et lignes directrices générales pour la mise en oeuvre

Reference number
ISO 28560-1:2023(E)

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Published in Switzerland

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Foreword

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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 ISO 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).

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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 Technical Committee ISO/TC 46, *Information and documentation*, Subcommittee SC 4, *Technical interoperability*.

This third edition cancels and replaces the second edition (ISO 28560-1:2014), of which it constitutes a minor revision.

The changes are as follows:

— a few updates have been applied and definitions of DSFID values have been entrusted to the other parts of the ISO 28560 series.

A list of all parts in the ISO 28560 series can be found on the ISO web site.

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

Libraries are implementing radio frequency identification (RFID) as item identification to replace bar codes. RFID streamlines applications like user self-service, security, and materials handling. This standard data model for encoding information on RFID tags increases the cost-effectiveness of the technology within libraries, particularly through greater interoperability of RFID tags and equipment, and enhance support for resource sharing between libraries.

This document deals with data elements and provides general guidelines for implementation. Other parts of the ISO 28560 series describe encodings and choice of frequency.

Communication between the RFID reader and the library system (or other applications) is handled by, for example, SIP-2[12] and NCIP[13].

This document provides essential standards-based information about RFID in libraries. Ongoing advice needs to be provided because of the evolving nature of RFID technology and the opportunities to migrate between different types of legacy system and encoding rules of this document.

Information and documentation — RFID in libraries —

Part 1:
Data elements and general guidelines for implementation

1 Scope

This document specifies a model for the use of radio frequency identification (RFID) tags for items appropriate for the needs of all types of libraries, including national, academic, public, corporate, special, and school.

It provides the framework to ensure interoperability between libraries that exchange library items with RFID tags, the freedom of the library to acquire or renew equipment or library items from different vendors, and interoperability of a single RFID application from the vendor's perspective.

This document specifies a set of data elements and general guidelines for implementation, to meet the needs for:

— circulation of library items;

— acquisition of library items;

— interlibrary loan processes;

— data requirements of publishers, printers, and other suppliers of library items;

— inventory and stock checking of items.

This document gives guidelines for item security, profiles, privacy, implementation, migration, label design, and location of the RFID label. It specifies the data model, system data elements, and user data elements to be used in conjunction with ISO 28560-2, ISO 28560-3, and any future parts of the ISO 28560 series.

A source of additional information about implementation issues is provided in Annex A.

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 15511, *Information and documentation — International standard identifier for libraries and related organizations (ISIL)*

ISO/IEC 15961-3, *Information technology —Radio frequency identification (RFID) for item management — Part 3: RFID data constructs*

ISO 28560-2, *Information and documentation — RFID in libraries — Part 2: Encoding of RFID data elements based on rules from ISO/IEC 15962*

ISO 28560-3, *Information and documentation — RFID in libraries — Part 3: Fixed length encoding*

3 Terms and definitions

For the purposes of this document, the following terms and definitions 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/

3.1
distributor
wholesaler that purchases products from manufacturers and sells them to retailers or other wholesalers

Note 1 to entry: In the context of this document, a distributor is a wholesaler that purchases library materials such as books or audiovisual materials from publishers and sells them to libraries or retailers.

3.2
interlibrary loan
ILL
service where a library borrows an *item* (3.3) from another library

3.3
item
unit tracked in a library system

Note 1 to entry: An item, which can be a *set* (3.7), can be loanable or non-circulating, but is always loaned in its entirety.

3.4
jobber
specialized *distributor* (3.1) of library *items* (3.3) that provides services such as the attachment of labelling and electronic information to items to make them ready for immediate shelving upon arrival at the destination library

3.5
library management system
enterprise resource planning system for a library, used to track items owned, items loaned, orders made, bills paid, and patrons

Note 1 to entry: In some countries, this is known as an integrated library system.

3.6
part
individual physical entity included in an *item* (3.3)

Note 1 to entry: A part can be a library material or a container for the library materials in a *set* (3.7).

3.7
set
item (3.3) consisting of a number of parts, all identified by the same item identifier and loaned in one transaction as a unit

3.8
supply chain
series of entities, typically beginning with a publisher and ending with a library, through which library materials flow as they are acquired by that library

4 User data elements

4.1 Overview of user data elements

Libraries can choose which data elements they want to store on the tag. It is unlikely that a library places all the listed data elements on the tag. A number of data elements are reserved for local use. They should be ignored where the processing institution is not the owner of the item (as in ILL).

Table 1 lists the user data elements that are defined in this document.

Table 1 — User data elements

N[a]	Name of the data element[b]	Description[c]	Ref[d]	ISO 8459 mapping[e]	Status[f]	Relationship[g]
1	Primary item identifier	Unique identification of an item at least inside the library	4.2.1	Piece identifier	Mandatory for circulated items	None
2	Content parameter	Specifies the structure of the tag data	4.2.2	None	Can be mandatory as specified in other parts of ISO 28560	None
3	Owner institution (ISIL)	The ISIL code for the institution that owns the item	4.2.3	Party identifier; Participant's function	Strongly recommended to create interoperability	Elements 3 and 23 are mutually exclusive
4	Set information	Number of parts in item and ordinal part number	4.2.4	Number of volumes; Component	Optional	None
5	Type of usage	Additional qualifying information about the item or part of a set	4.2.5	None	Optional	None
6	Shelf location	Code for location of the item	4.2.6	Copy shelf locator	Optional	None
7	ONIX media format	ONIX media descriptor	4.2.7	Record content type	Optional	Data elements 7, 8, and 19 should be consistent
8	MARC media format	MARC 21 category of material descriptor	4.2.8	Record content type	Optional	Data elements 7, 8, and 19 should be consistent
9	Supplier identifier	Code for identification of supplier of the item	4.2.9	Party identifier; Participant's function	Optional	None
10	Order number	Number meaningful to the library and to the supplier of the item	4.2.10	Request identifier	Optional	None
11	ILL borrowing institution (ISIL)	ISIL code for the institution borrowing the item	4.2.11	Party identifier; Participant's function	Optional	Data elements 11 and 25 are mutually exclusive
12	ILL borrowing transaction number	Number identifying an interlibrary loan transaction	4.2.12	None	Optional	None
13	GS1 product identifier	GTIN-13 code of GS1	4.2.13	Resource identifier code	Optional	Data elements 13 and 18 should be consistent
14	Alternative unique item identifier	Possibly encoding in new tag architectures	4.2.14	None	Reserved for future use	
15	Local data A	Any locally defined purpose	4.2.15	None	Optional	None

[a] This column specifies the data element number (*N*), i.e. the number identifying the data element.

[b] This column specifies the data element name (name of data element), i.e. the name identifying the data element.

[c] This column specifies the data element description, i.e. a brief description about the purpose of the data element.

[d] This column contains a reference to the subclause where the data element is described.

[e] This column contains the mapping to the corresponding data elements in ISO 8459. The mapping is for information.

[f] This column classifies the data elements into categories (status).

[g] This column specifies possible relationships to other data elements (relationship).

Table 1 *(continued)*

N[a]	Name of the data element[b]	Description[c]	Ref[d]	ISO 8459 mapping[e]	Status[f]	Relationship[g]
16	Local data B	Any locally defined purpose	4.2.16	None	Optional	None
17	Title	The title/titles of the library item	4.2.17	Title	Optional	None
18	Product identifier local	Product identifier not based on GTIN-13	4.2.18	Resource identifier code	Optional	Data elements 13 and 18 should be consistent
19	Media format (other)	Media descriptor other than ONIX or MARC	4.2.19	Record content type	Optional	Data elements 7, 8, and 19 should be consistent
20	Supply chain stage	The stage of the supply chain in which the item currently resides	4.2.20	None	Optional	None
21	Supplier invoice number	Invoice number meaningful to the library and to the supplier of the item	4.2.21	Invoice identifier	Optional	None
22	Alternative item identifier	Optional identifier for an item	4.2.22	Piece identifier	Optional	None
23	Alternative owner institution	Code for the library institution other than ISIL	4.2.23	Party identifier; Participant's function	Optional	Data elements 3 and 23 are mutually exclusive
24	Subsidiary of an owner institution	Internal code defined within a library institution	4.2.24	Party identifier; Participant's function	Optional	None
25	Alternative ILL borrowing institution	Code for the ILL borrowing institution other than ISIL	4.2.25	Party identifier; Participant's function	Optional	Data elements 11 and 25 are mutually exclusive
26	Local data C	Any locally defined purpose	4.2.26	None	Optional	None
27	Not defined		4.2.27		Reserved for future use	
28	Not defined		4.2.28		Reserved for future use	
29	Not defined		4.2.29		Reserved for future use	
30	Not defined		4.2.30		Reserved for future use	
31	Not defined		4.2.31		Reserved for future use	

[a] This column specifies the data element number (*N*), i.e. the number identifying the data element.

[b] This column specifies the data element name (name of data element), i.e. the name identifying the data element.

[c] This column specifies the data element description, i.e. a brief description about the purpose of the data element.

[d] This column contains a reference to the subclause where the data element is described.

[e] This column contains the mapping to the corresponding data elements in ISO 8459. The mapping is for information.

[f] This column classifies the data elements into categories (status).

[g] This column specifies possible relationships to other data elements (relationship).

4.2 Use of user data elements

4.2.1 Primary item identifier

The library's unique identification of an item shall be used as the primary item identifier. This data element is required for circulation. It can be absent in the acquisition process.

The primary item identifier can be, but need not be, equivalent to the (former) bar code. It can be decided at a local or national level if the identifier should be unique outside the library and how this is to be achieved.

Annex B illustrates how the primary item identifier can be combined with other data to achieve increasing levels of uniqueness, ultimately global uniqueness.

4.2.2 Content parameter

The content parameter data element specifies the structure of the tag data. The parameter can have different forms for the various possible encoding methodologies specified in other parts of the ISO 28560 series.

4.2.3 Owner institution (ISIL)

The owner institution (ISIL) data element is used for the ISIL code for the institution that owns the item.

The ISIL code shall be as defined in ISO 15511.

The list of ISIL agencies that are responsible for the issuing process of ISIL codes can be found at http://biblstandard.dk/isil/.

In exceptional cases, the ISIL code, or parts of the ISIL code, can be stored in data element 23 (alternative owner institution).

4.2.4 Set information

4.2.4.1 General

If the set information data element is encoded, it shall consist of two components, which are

a) the “number of parts in item”, followed by

b) the “ordinal part number”,

as specified in 4.2.4.2 and 4.2.4.3. These two component parameters are used to identify various permutations relating to sets.

A single part item is the default case. A system reading a tag that does not contain the set information data element can assume that the item has only a single part.

4.2.4.2 Numbers of parts in item

For sets with only a single part, the “numbers of parts in item” component shall take the value “1”.

For sets with more than a single part, the “numbers of parts in item” component shall take a value in the range 0 to 255, where a positive number indicates the total number of parts in the set, and 0 that the total number is not known.

4.2.4.3 Ordinal part number

For sets with only a single part, the “ordinal part number” component shall take the value “1”.

For sets with more than a single part, the “ordinal part number” component shall take a value in the range 0 to 255, under one of the following two conditions.

— If all parts in the set carry an RFID tag, a positive ordinal part number corresponding to the placement of the part in the set shall be assigned to each part.

— If only some of the parts in the set carry an RFID tag, the first part shall be assigned the ordinal part number 0, and the following parts an ordinal part number corresponding to the placement of the part in the set. As a consequence, no part shall be assigned the ordinal part number 1.

4.2.4.4 Examples

EXAMPLE 1 A set with three parts, all with their own RFID tags:

— Number of this part = 1 (first RFID tag): code = 31

— Number of this part = 2 (second RFID tag): code = 32

— Number of this part = 3 (third RFID tag): code = 33

EXAMPLE 2 A set consisting of a single part with one RFID tag:

— Number of this part = 1: code = 11 (if present)

EXAMPLE 3 A set consists of 12 parts, and this is the fourth part:

— Number of this part = 4 (fourth RFID tag): code = 1204

EXAMPLE 4 A set having four parts but one part does not carry an RFID tag:

— Number of this part = 1 (first RFID tag): code = 40

— Number of this part = 2 (second RFID tag): code = 42

— Number of this part = 3 (third RFID tag): code = 43

— Number of this part = 4 (no RFID tag)

NOTE 1 The “0” of the first part serves two functions:

a) it indicates that not all parts have an RFID tag;

b) it indicates that this is the first part.

EXAMPLE 5 A set having an unknown number of parts or increasing in number of parts over time.

— Number of this part = 1 (first RFID tag): code = 01

— Number of this part = 2 (second RFID tag): code = 02

— Number of this part = 3 (third RFID tag): code = 03

— Number of this part = 4 (fourth RFID tag): code = 04

NOTE 2 The initial “0” indicates that the number of parts is not fixed.

4.2.5 Type of usage

4.2.5.1 General

The type of usage data element provides additional qualifying information about the item or part of a set, for example, the type of material and its use within the library. As synergies between RFID-enabled devices become more common, this data element can be set dynamically by one RFID device for the benefit of another. Individual parts of a set can have different values for the type of usage data element. If this data element is encoded, it shall use the values specified in Annex C.