DRAFT International Standard

ISO/IEC DIS 15963-1

Information technology — Radio frequency identification for item management —

Part 1: Unique identification for RF tags numbering systems

Technologies de l'information — Identification par radiofréquence pour la gestion des objets —

Partie 1: Systèmes numériques pour l'identification unique des tags RF

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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).

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

This second edition of ISO/IEC 15963-1, replaces ISO/IEC 15963-1:2020 edition one, which has been technically revised.

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

— Introduce longer IC manufacturer codes in alignment with ISO/IEC 7816-6:2023

A list of all parts in the ISO/IEC 15963 series can be found on the ISO website.

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.

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Introduction

ISO/IEC 15963 (all parts) is one of a series of International Standards and Technical Reports developed by ISO/IEC JTC 1/SC 31 for the identification of items (Item Management) using radio frequency identification (RFID) technology.

This document describes numbering systems for the unique identification of RF tags.

It is intended for use in conjunction with other International Standards developed by SC 31 for "RFID for item management" and “Real time locating systems”, such as ISO/IEC 18000 (all parts) and ISO/IEC 24730 (all parts).

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Information technology — Radio frequency identification for item management —

Part 1:
Unique identification for RF tags numbering systems

1 Scope

This document describes numbering systems that are available for the identification of RF tags and assigns various allocation classes to various agencies that issue manufacturer codes.

The unique ID can be used:

— for the traceability of the integrated circuit itself for quality control in its manufacturing process;

— for the traceability of the RF tag during its manufacturing process and along its lifetime;

— for the completion of the reading in a multi-antenna configuration;

— by the anti-collision mechanism to inventory multiple tags in the reader's field of view; and

— for the traceability of the item to which the RF tag is attached.

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 7816-6:2023, *Identification cards — Integrated circuit cards — Part 6: Interindustry data elements for interchange*

ISO/IEC 7816-6:2023/DAmd 1, *Identification cards — Integrated circuit cards — Part 6: Interindustry data elements for interchange — Amendment 1: Data elements for quantum safe cryptography*

ISO 14816:2005, *Road transport and traffic telematics — Automatic vehicle and equipment identification — Numbering and data structure*

ISO/IEC 15963-1:2020, *Information technology — Radio frequency identification for item management — Part 1: Unique identification for RF tags numbering systems*

ISO/IEC 18000-3, *Information technology — Radio frequency identification for item management — Part 3: Parameters for air interface communications at 13,56 MHz*

ISO/IEC DIS 18000-63, *Information technology — Radio frequency identification for item management — Part 63: Parameters for RAIN air interface communications at 860 MHz to 930 MHz Type C*

ISO/IEC 19762:2025, *Information technology — Automatic identification and data capture (AIDC) techniques — Vocabulary*

ISO/IEC 24730-1:2014, *Information technology — Real-time locating systems (RTLS) — Part 1: Application programming interface (API)*

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GS1 EPC Gen2, GS1 EPC® Radio-Frequency Identity Generation-2 UHF RFID Standard, Specification for RFID Air Interface Protocol for Communications at 860 MHz – 930 MHz

GS1 General Specifications Standard, The foundational GS1 standard that defines how identification keys, data attributes and barcodes must be used in business applications. Release 25.0, Ratified, Jan 25

GS1 TDS, GS1 EPC Tag Data Standard (TDS)

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 19762:2025 and the following 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/

3.1
RF tag unique identifier
number that uniquely identifies an RF tag

3.2
RF tag issuer
company or organization that allocates the RF tags to the items they identify

3.3
IC manufacturer
company that manufactures the RF tag integrated circuit

3.4
RF tag manufacturer
company that manufactures the RF tag in a ready-to-use configuration

3.5
allocation class
8-bit value used to classify companies or organizations allowed to allocate unique tag identification

3.6
IC manufacturer registration number
number allocated to *IC manufacturers* (3.3)

Note 1 to entry: This number is allocated according to ISO/IEC 7816-6:2023.

3.7
RF tag issuer registration number
number allocated to *RF tag issuers* (3.2)

Note 1 to entry: This number is allocated according to ISO 6346:2022 [1] , ISO 14816:2005, GS1.

3.8
chip ID
CID
DEPRECATED: unique identifier (UID)
unique permanent ID of the integrated circuit in an RF tag

Note 1 to entry: See tag ID, unique item identifier and object identifier in ISO/IEC 19762:2025.

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3.9
mask designer identifier
MDID
identification of *IC manufacturer* (3.3) in TID memory bank of GS1 EPC Gen2 /ISO/IEC DIS 18000-63 tags, allocated by GS1 upon request

4 Abbreviated terms

AC	Allocation class
AI	Application identifier
ANS	American National Standard
ANSI	American National Standards Institute
ASC	Accredited Standards Committee
CID	Chip identifier
EPC	Electronic Product Code
ID	Identifier
INCITS	InterNational Committee for Information Technology Standards
LSB	Least significant bit
MDID	Mask designer identifier
MSB	Most significant bit
OID	Object identifier
RFU	Reserved for future use
RTLS	Real-time locating system
TDS	GS1 EPC tag data standard
TID	Unique tag identifier
UII	Unique item identifier

5 Unique identifiers

There are several types of identifiers associated with an RF tag. The most basic form is a chip ID (CID), which is assigned by the integrated circuit (IC) manufacturer to a specific semiconductor device at the time of manufacture in a manner that prevents it from being changed. Multiple semiconductor devices may be associated with a single RF tag, though one IC per tag is common. In such a case, the RF tag (TID) may simply assume the CID as its identity or it may assume an identifier distinct from the IC. In many cases, and as a recommendation of this document, the TID is assigned at the time of RF tag manufacture in a manner that prevents the TID from being changed.

The RF tag is then attached to some item. In some implementations, the TID can then become the unique item identifier (UII). In others, such as ISO/IEC 18000-63 and ISO/IEC 18000-3 Mode 3, the UII is held in a separate part of memory and is written subsequent to being attached or associated with a specific item. The UII may either be locked or available for reprogramming.

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