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**Information technology — Data  
protocol for radio frequency  
identification (RFID) for item  
management —**

**Part 3:  
RFID data constructs**

*Technologies de l'information — Protocole de données relatif à  
l'identification par radiofréquence (RFID) pour la gestion d'objets —  
Partie 3: Constructions de données RFID*





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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](http://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](http://www.iso.org/patents)) or the IEC list of patent declarations received (see <http://patents.iec.ch>).

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](http://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 first edition of ISO/IEC 15961-3, together with ISO/IEC 15961-1, ISO/IEC 15961-2 and ISO/IEC 15961-4, cancels and replaces ISO/IEC 15961:2004, which has been technically revised.

A list of all parts in the ISO/IEC 15961 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](http://www.iso.org/members.html).

## Introduction

The technology of radio frequency identification (RFID) is based on non-contact electronic communication across an air interface. The structure of the bits stored on the memory of the RFID tag is invisible and accessible between the RFID tag and the interrogator only by the use of the appropriate air interface protocol, as specified in the appropriate part of ISO/IEC 18000. The transfer of data between the application and the interrogator in open systems requires data to be presented in a consistent manner on any RFID tag that is part of that open system. Application commands from the application and responses from the interrogator also require being processed in a standard way. This is not only to allow equipment to be interoperable, but in the special case of the data carrier, for the data to be encoded on the RFID tag in one system implementation for it to be read at a later time in a completely different and unknown system implementation. The data bits stored on each RFID tag must be formatted in such a way as to be reliably read at the point of use if the RFID tag is to fulfil its basic objective.

Manufacturers of RFID equipment (interrogators, RFID tags, etc.) and the users of RFID technology require a standard-based data protocol for RFID for item management. ISO/IEC 15961 and ISO/IEC 15962 specify this data protocol, which is independent of any of the air interface standards defined in ISO/IEC 18000. As such, the data protocol is a consistent component in the RFID system that may independently evolve to include additional air interface protocols. The International Standards that comprise the data protocol are as follows:

- ISO/IEC 15961-1, which defines the transfer of data to and from the application, supported by appropriate application commands and responses;
- ISO/IEC 15961-2, which defines the registration procedure of RFID data constructs to ensure that the data protocol supports new applications, in a relatively straightforward manner, as they adopt RFID technology. This can be achieved by the Registration Authority publishing regular updates of RFID data constructs that have been assigned, and as a means of incorporating these updates into the processes of ISO/IEC 15961-1;
- this document (ISO/IEC 15961-3), which defines the data constructs and the rules that govern their use;
- ISO/IEC 15961-4, which defines the transfer of data associated with sensors and batteries to and from the application, supported by appropriate application commands and responses;
- ISO/IEC 15962, which specifies the overall process and the methodologies developed to format the application data into a structure to store on the RFID tag.



# Information technology — Data protocol for radio frequency identification (RFID) for item management —

## Part 3: RFID data constructs

### 1 Scope

This document specifies rules and code structures associated with the data constructs for RFID for item management. In particular, it:

- defines the application family identifier (AFI), including the range of code values that are available to use for RFID for item management;
- defines the data format, including the range of code values that are available to use for RFID for item management;
- describes the Object Identifier structure used for RFID for item management;
- specifies the function of the Object Identifier for the Unique Item Identifier (UII);
- specifies the function of the Object Identifier for other item attendant data.

**NOTE** Conventionally in International Standards, long numbers are separated by a space character as a “thousands separator”. This convention has not been followed in this document because the arcs of an Object Identifier are defined by a space separator (according to ISO/IEC 8824 and ISO/IEC 8825). As the correct representation of these arcs is vital to this document, all numeric values have no space separators except to denote a node between two arcs of an Object Identifier. For additional clarity, Object Identifiers are presented in **bold text**.

### 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 9834-1, *Information technology — Procedures for the operation of object identifier registration authorities: General procedures and top arcs of the international object identifier tree — Part 1*

ISO/IEC 15961-2<sup>1)</sup>, *Information technology — Radio frequency identification (RFID) for item management: Data protocol — Part 2: Registration of RFID data constructs*

ISO/IEC 15962, *Information technology — Radio frequency identification (RFID) for item management — Data protocol: data encoding rules and logical memory functions*

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