AS ISO/IEC 15962—2006

Australian Standard®

Information technology—Radio frequency identification (RFID) for item management—Data protocol: data encoding rules and logical memory functions

This Australian Standard® was prepared by Committee IT-034, Automatic Identification and Data Capture Techniques. It was approved on behalf of the Council of Standards Australia on 15 November 2006.
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The following are represented on Committee IT-034:

- Australian Custom Service
- Australian Data Capture Association
- Australian Electrical and Electronic Manufacturers Association
- Australian Retailers Association
- Australian Veterinary Association
- Department of Communications, Information Technology and the Arts
- Department of Defence
- Department of Primary Industries, Vic
- RFID Association of Australia
- The University of Adelaide
- GS1

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Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard, through their representation on the Committee and through public comment period.

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PREFACE

This Standard was prepared by the Standards Australia Committee IT-034, Automatic Identification and Data Capture Techniques.

The objective of this Standard is to provide the overall process and the methodologies developed to format the application data into a structure to store on an RF tag and to define the encoded structure of RF object identifiers and specify formatting rules for data.

This Standard is identical with, and has been reproduced from ISO/IEC 15962:2004 *Information technology—Radio frequency identification (RFID) for item management—Data protocol: data encoding rules and logical memory functions*.

As this Standard is reproduced from an international standard, the following applies:

(a) Its number appears on the cover and title page while the international standard number appears only on the cover.

(b) In the source text 'this International Standard' should read 'this Australian Standard'.

(c) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

Reference to International Standard		*Australian Standard*	
ISO		AS ISO/IEC	
15961	Information technology—Radio frequency identification (RFID) for item management—Data protocol: application interface	15961	Information technology—Radio frequency identification (RFID) for item management—Data protocol: application interface
18000	Information technology—Radio frequency identification for item management	18000	Information technology—Radio frequency identification for item management
19762	Information technology—Automatic identification and data capture (AIDC) techniques—Harmonized vocabulary	19762	Information technology—Automatic identification and data capture (AIDC) techniques—Harmonized vocabulary –
19762-1	Part 1: General terms relating to AIDC	19762.1	Part 1: General terms relating to AIDC
19762-3	Part 3: Radio frequency identification (RFID)	19762.3	Part 3: Radio frequency identification (RFID)

Only international references that have been adopted as Australian or Australian/New Zealand Standards have been listed.

The terms 'normative' and 'informative' are used to define the application of the annex to which they apply. A normative annex is an integral part of a standard, whereas an informative annex is only for information and guidance.

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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 RF tag is invisible and accessible between the RF tag and the interrogator only by the use of the appropriate air interface protocol, as specified in the different ISO/IEC 18000 parts. The transfer of data between the application and the interrogator in open systems requires data to be presented in a consistent manner on any RF tag that is part of that open system. Functional 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 data carrier, for the data to be encoded on the RF tag in one systems implementation for it to be read at a later time in a completely different and unknown systems implementation. The data bits stored on each RF tag must be formatted in such a way as to be reliably read at the point of use if the RF tag is to fulfil its basic objective. The integrity of this is achieved through the use of a data protocol as specified in ISO/IEC 15961 and this International Standard.

Manufacturers of radio frequency identification equipment (interrogators, RF tags, etc) and the users of RFID technology require a publicly available data protocol for RFID for item management. ISO/IEC 15961 and this International Standard specify this data protocol, which is independent of any of the air interface standards defined in the various parts of 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 transfer of data to and from the application, supported by appropriate commands is the subject of the companion standard: ISO/IEC 15961. This International standard specifies the overall process and the methodologies developed to format the application data into a structure to store on the RF tag.

AUSTRALIAN STANDARD

Information technology — Radio frequency identification (RFID) for item management — Data protocol: data encoding rules and logical memory functions

1 Scope

The data protocol used to exchange information in an RFID system for item management is specified in ISO/IEC 15961 and in this International Standard. Both International Standards are required for a complete understanding of the data protocol in its entirety; but each focuses on one particular interface:

- ISO/IEC 15961 addresses the interface with the application system.
- This International Standard deals with the processing of data and its presentation to the RF tag, and the initial processing of data captured from the RF tag.

This International Standard focuses on encoding the transfer syntax, as defined in ISO/IEC 15961 according to the application commands defined in that International Standard. The encodation is in a Logical Memory as a software analogue of the physical memory of the RF tag being addressed by the interrogator.

This International Standard

- defines the encoded structure of object identifiers;
- specifies the data compaction rules that apply to the encoded data;
- specifies a Precursor for encoding syntax features efficiently;
- specifies formatting rules for the data, e.g. depending on whether a directory is used or not;
- defines how application commands, e.g. to lock data, are transferred to the Tag Driver;
- defines other communication to the application.

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 International Standard, 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 International Standard, all numeric values have no space separators except to denote a node between two arcs of an object identifier.