

Australian Standard<sup>®</sup>

**Information technology—Radio  
frequency identification (RFID) for item  
management—Data protocol:  
application interface**

**STANDARDS**  
Australia



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.

This Standard was published on 27 December 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
- 

This Standard was issued in draft form for comment as DR 06535.

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 received.

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**Information technology—Radio  
frequency identification (RFID) for item  
management—Data protocol:  
application interface**

First published as AS ISO/IEC 15961—2006.

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Published by Standards Australia, GPO Box 476, Sydney, NSW 2001, Australia

ISBN 0 7337 7932 8

## 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 guidelines on how data shall be presented as objects during the interface between a RFID item management application and the data protocol processor.

This Standard is identical with, and has been reproduced from ISO/IEC 15961:2004 *Information technology—Radio frequency identification (RFID) for item management—Data protocol: application interface*.

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:

<i>Reference to International Standard</i>	<i>Australian Standard</i>
ISO	AS ISO/IEC
15962 Information technology—Radio frequency identification (RFID) for item management—Data protocol: data encoding rules and logical memory functions	15962 Information technology—Radio frequency identification (RFID) for item management—Data protocol: data encoding rules and logical memory functions
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 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 RF 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 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 this International Standard and ISO/IEC 15962.

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. This International Standard 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 transfer of data to and from the application, supported by appropriate application commands is the subject of this International Standard. The companion International Standard, ISO/IEC 15962, specifies the overall process and the methodologies developed to format the application data into a structure to store on the RF tag.

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## AUSTRALIAN STANDARD

**Information technology — Radio frequency identification (RFID) for item management — Data protocol: application interface****1 Scope**

The data protocol used to exchange information in an RFID system for item management is specified in this International Standard and in ISO/IEC 15962. Both International Standards are required for a complete understanding of the data protocol in its entirety; but each focuses on one particular interface:

- This International Standard addresses the information interface with the application system.
- ISO/IEC 15962 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 the interface between the application and the data protocol processor, and includes the specification of the transfer syntax and definition of application commands and responses. It allows data and commands to be specified in a standardised way, independent of the particular air interface of ISO/IEC 18000.

This International Standard

- provides guidelines on how data shall be presented as objects;
- defines the structure of object identifiers, based on ISO/IEC 9834-1;
- specifies the commands that are supported for transferring data between the application and the RF tag;
- specifies the responses that are supported for transferring data between the RF tag and the application;
- provides a formal description of all the processes using ASN.1, as specified in ISO/IEC 8824-1;
- specifies the transfer syntax, based on the Basic Encoding Rules of ISO/IEC 8825-1, for data to be transferred from and to the application.

It is expected that this International Standard will be used as a reference to develop software appropriate for particular applications, or for particular RF equipment.

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 delimited 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.