

Australian Standard™

**Identification cards—Contactless
integrated circuit(s) cards—
Proximity cards**

Part 4: Transmission protocol

This Australian Standard was prepared by Committee IT-012, Information Systems, Security and Information Technology. It was approved on behalf of the Council of Standards Australia on 4 March 2003 and published on 31 March 2003.

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Part 4: Transmission protocol

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PREFACE

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee IT-012, Information Systems, Security and Information Technology. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian, rather than an Australian/New Zealand Standard.

It is identical with, and has been reproduced from ISO/IEC 14443-4:2001, *Identification cards—Contactless integrated circuit(s) cards—Proximity cards, Part 4: Transmission protocol*.

The objective of this Standard is to specify a half-duplex block transmission protocol featuring the special needs of a contactless environment and to define the activation and deactivation sequence of the protocol.

This Standard is Part 4 of AS/NZS 14443, *Identification cards—Contactless integrated circuit(s) cards—Proximity cards*, which is published in parts as follows:

Part 1: Physical characteristics

Part 2: Radio frequency power and signal interface

Part 3: Initialization and anticollision

Part 4: Transmission protocol (this Standard)

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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- (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 part of ISO/IEC 14443’ 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/IEC		AS	
14443	Identification cards—Contactless integrated circuit(s) cards—Proximity cards	14443	Identification cards—Contactless integrated circuit(s) cards—Proximity cards
14443-2	Part 2: Radio frequency power and signal interface	14443.2	Part 2: Radio frequency power and signal interface
14443-3	Part 3: Initialization and anticollision	14443.3	Part 3: Initialization and anticollision

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AUSTRALIAN STANDARD

Identification cards — Contactless integrated circuit(s) cards — Proximity cards — Part 4: Transmission protocol

1 Scope

This part of ISO/IEC 14443 specifies a half-duplex block transmission protocol featuring the special needs of a contactless environment and defines the activation and deactivation sequence of the protocol.

This part of ISO/IEC 14443 is intended to be used in conjunction with other parts of ISO/IEC 14443 and is applicable to proximity cards of Type A and Type B.

2 Normative references

The following normative documents contain provisions, which, through reference in this text, constitute provisions of this part of ISO/IEC 14443. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO/IEC 14443 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO/IEC 7816-3, *Information technology – Identification cards – Integrated circuit(s) cards with contacts – Part 3: Electronic signals and transmission protocols.*

ISO/IEC 7816-4, *Information technology – Identification cards – Integrated circuit(s) cards with contacts – Part 4: Interindustry commands for interchange.*

ISO/IEC 7816-5, *Identification cards – Integrated circuit(s) cards with contacts – Part 5: Numbering system and registration procedure for application identifiers.*

ISO/IEC 14443-2, *Identification cards – Contactless integrated circuit(s) cards – Proximity cards – Part 2: Radio frequency power and signal interface.*

ISO/IEC 14443-3, *Identification cards – Contactless integrated circuit(s) cards – Proximity cards – Part 3: Initialization and anticollision.*

3 Terms and definitions

For the purposes of this part of ISO/IEC 14443, the following terms and definitions apply.

3.1

bit duration

one elementary time unit (etu), calculated by the following formula:

$$1 \text{ etu} = 128 / (D \times f_c)$$

The initial value of the divisor D is 1, giving the initial etu as follows:

$$1 \text{ etu} = 128 / f_c$$

Where f_c is the carrier frequency as defined in ISO/IEC 14443-2.