



BSI Standards Publication

Cards and security devices for personal identification — Communication between contactless readers and fare media used in public transport

Part 1: Implementation requirements for ISO/IEC 14443 (all parts)

National foreword

This Published Document is the UK implementation of ISO/IEC TS 24192-1:2021.

The UK participation in its preparation was entrusted to Technical Committee IST/17, Cards and security devices for personal identification.

A list of organizations represented on this committee can be obtained on request to its committee manager.

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

This publication is not to be regarded as a British Standard.

© The British Standards Institution 2021
Published by BSI Standards Limited 2021

ISBN 978 0 55 05568 9

ICS 03.220.20; 35.240.15; 35.240.60

Compliance with a Published Document cannot confer immunity from legal obligations.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 May 2021.

Amendments/corrigenda issued since publication

Date	Text affected
------	---------------

**Cards and security devices
for personal identification —
Communication between contactless
readers and fare media used in
public transport —**

**Part 1:
Implementation requirements for
ISO/IEC 14443 (all parts)**

*Cartes et dispositifs de sécurité pour l'identification personnelle —
Communication entre terminaux et objets sans contact utilisés en
transport public —*

*Partie 1. Exigences d'implémentation pour l'ISO/IEC 14443 (toutes
les parties)*



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2021, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

	Page
Foreword.....	v
Introduction.....	vi
1 Scope.....	1
2 Normative references.....	1
3 Terms and definitions.....	1
4 Symbols and abbreviations.....	2
5 Conformance.....	3
6 Dual conformance of PT devices to ISO/IEC TS 24192 (all parts) and EMV Contactless Interface Specification.....	3
7 Interoperability of PT devices and NFC mobile devices.....	3
7.1 Description of the “concept for interoperability”.....	3
7.2 References for implementation and test of NFC mobile devices.....	4
7.3 Limitations.....	4
8 Requirements and recommendations applicable to PT readers.....	5
8.1 General.....	5
8.1.1 Overview.....	5
8.1.2 IFM reader.....	5
8.1.3 Common reader.....	6
8.2 General requirements.....	7
8.3 Requirements on polling and recognizing contactless objects.....	8
8.4 Performance recommendations.....	8
9 Requirements and recommendations applicable to PT objects.....	9
9.1 General.....	9
9.2 Requirements.....	9
9.3 Performance recommendations.....	9
10 Implementation characteristics.....	9
10.1 General.....	9
10.2 ICS for PT readers - PCD.....	10
10.2.1 General.....	10
10.2.2 PCD general technical characteristics.....	10
10.2.3 PCD supported options.....	10
10.2.4 PCD test parameters.....	11
10.3 ICS for PT objects - PICC.....	12
10.3.1 General.....	12
10.3.2 PICC general technical characteristics.....	12
10.3.3 PICC supported options.....	12
10.3.4 PICC test parameters.....	14
11 Test conditions for PT reader and PT objects.....	14
11.1 General.....	14
11.2 Temperature.....	14
11.3 Test conditions for PT readers.....	15
11.3.1 General.....	15
11.3.2 Initial positions template.....	15
11.3.3 Test positions.....	16
11.3.4 Test mode.....	24
11.4 Test conditions for PT objects.....	24
11.4.1 Test positions.....	24
11.4.2 Test application.....	26
Annex A (informative) Examples of polling sequences and scenarios.....	27

Annex B (informative) Loopback interface for PT reader testing	29
Bibliography	30

Currently in preview, click buy full version

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, 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 ISO documents 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 or www.iec.ch/members_experts/refdocs).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO 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) 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. In the IEC, see www.iec.ch/understanding-standards.

This document was prepared by Technical Committee ISO/IEC JTC 1, *Information technology, Information technology*, Subcommittee SC 17, *Cards and security services for personal identification*.

A list of all parts in the ISO/IEC TS 24192 series can be found on the ISO and IEC 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 and www.iec.ch/national-committees.

Introduction

This document defines the requirements related to the use of ISO/IEC 14443 (all parts) to ensure interoperability between fare management system terminals and multiple-form-factor contactless fare media (smartcards, e-tickets, mobile phones, USB keys, tablets, etc.).

These implementation requirements are not designed to repeat or duplicate the referenced specifications, essentially ISO/IEC 14443 (all parts) and ISO/IEC 10373-6, but to complement those specifications with public transport specific considerations.

Currently in preview, click buy full version.

Cards and security devices for personal identification — Communication between contactless readers and fare media used in public transport —

Part 1: Implementation requirements for ISO/IEC 14443 (all parts)

1 Scope

This document defines the technical requirements to be met by contactless public transport (PT) devices in order to be able to interface together using the ISO/IEC 14443 (all parts) contactless communications protocol.

This document applies to PT devices:

- PT readers which are contactless fare management system terminals acting as a PCD contactless reader based on ISO/IEC 14443 (all parts);
- PT objects which are contactless fare media acting as a PICC contactless object based on ISO/IEC 14443 (all parts).

This document addresses interoperability of consumer-market NFC mobile devices, compliant to NFC Forum specifications, with above mentioned PT devices, aligns with ISO/IEC 14443 (all parts) and does not seek to limit compliance for PT readers with FMV Contactless Interface Specification.

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/TS 24192-2, *Cards and security devices for personal identification — Communication between contactless readers and fare media used in public transport — Part 2: Test plan for ISO/IEC 14443 (all parts)*

ISO/IEC 10373-6, *Cards and security devices for personal identification — Test methods — Part 6: Contactless proximity objects*

ISO/IEC 14443 (all parts), *Cards and security devices for personal identification — Contactless proximity objects*

ISO/IEC 1693-2, *Cards and security devices for personal identification — Contactless vicinity objects — Part 2: Air interface and initialization*

ISO/IEC 18092, *Information technology — Telecommunications and information exchange between systems — Near Field Communication — Interface and Protocol (NFCIP-1)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 14443-1, ISO/IEC 14443-2, ISO/IEC 14443-3, ISO/IEC 14443-4, ISO/IEC 10373-6 and the following apply.