BS ISO/IEC 15693-1:2018

BSI Standards Publication

Cards and security devices for personal identification — Contactless vicinity objects

Part 1: Physical characteristics

National foreword

This British Standard is the UK implementation of ISO/IEC 15693-1:2018. It supersedes BS ISO/IEC 15693-1:2010, which is withdrawn.

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 secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Published by BSI Standards Limited 2018

ISBN 978 0 580 93622 7

ICS 35.240.15

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 July 2018.

Amendments/corrigenda issued since publication

Date	Text affected

BS ISO/IEC 15693-1:2018

INTERNATIONAL STANDARD

ISO/IEC 15693-1

Third edition
2018-07-01

Cards and security devices for personal identification — Contactless vicinity objects —

Part 1: Physical characteristics

Cartes et dispositifs de sécurité pour l'identification personnelle — Objets sans contact de voisinage —

Partie 1: Caractéristiques physiques

Reference number
ISO/IEC 15693-1:2018(E)

COPYRIGHT PROTECTED DOCUMENT

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 ..... **iv**
Introduction ..... **v**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
4 Physical characteristics **2**
4.1 General 2
4.2 Antenna 2
4.3 Alternating magnetic field 2
4.4 Additional information 2
Annex A (informative) **Surface quality for printing** **3**
Annex B (informative) **Hole slot** **4**
Bibliography **5**

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. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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).

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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

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

This third edition cancels and replaces the second edition (ISO/IEC 15693-1:2010), which has been technically revised.

The main changes from the previous edition are:

— It incorporates changes to subclauses 3.2, 3.3 and 3.5 to bring the vicinity card into line with the proximity card;

— Annex B has been amended to remove the mandated positions of access control card slot holes.

A list of all the parts in the ISO 15693 series can be found on the ISO website.

Introduction

Contactless card standards encompass a variety of types as embodied in the ISO/IEC 10536 series (close-coupled cards), the ISO/IEC 14443 series (proximity cards) and the ISO/IEC 15693 series (vicinity cards). These device types are intended, respectively, for operation when very near, nearby and at a longer distance from associated coupling devices.

The ISO/IEC 15693 series defines the technology-specific requirements for identification cards conforming to ISO/IEC 7810 and thin flexible cards conforming to ISO/IEC 15457-1, and the use of such cards to facilitate international interchange. However, it also recognizes that the technology offers the possibility that vicinity objects be provided in forms other than that of the International Standard card formats. Furthermore, it does not preclude the incorporation of other standard technologies on the card, such as those referenced in the Bibliography.

The ISO/IEC 15693 series accommodates the operation of vicinity cards in the presence of other contactless cards conforming to the ISO/IEC 10536 series and the ISO/IEC 14443 series.

This document does not preclude the application to the vicinity card (VICC) of other existing card technology standards, such as those listed in the Bibliography.

This page deliberately left blank

INTERNATIONAL STANDARD **ISO/IEC 15693-1:2018(E)**

Cards and security devices for personal identification — Contactless vicinity objects —

Part 1: Physical characteristics

1 Scope

This document defines the physical characteristics of vicinity cards (VICCs). It is intended to be used in conjunction with other parts of the ISO/IEC 15693 series.

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 7810, *Identification cards — Physical characteristics*

ISO/IEC 15457-1, *Identification cards — Thin flexible cards — Part 1: Physical characteristics*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 7810, ISO/IEC 15457-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1
integrated circuit
IC
electronic component designed to perform processing and/or memory functions

3.2
contactless
achievement of signal exchange with the card without the use of galvanic elements

Note 1 to entry: Power may be supplied to the card without galvanic elements or with a battery. (i.e. the absence of an ohmic path from the external interfacing equipment to the integrated circuit contained within the card).

3.3
contactless integrated circuit card
ID-1 card type into which integrated circuit(s) and coupling means have been placed and in which communication to such integrated circuit(s) is done by inductive coupling in the vicinity of a coupling device

3.4
operate as intended
operate in the manner described by the manufacturer's specification in accordance with ISO/IEC 15693

3.5
vicinity integrated circuit card
VICC
contactless integrated circuit card or other object with which communication and typically power transfer is done by inductive coupling in the vicinity of a coupling device

4 Physical characteristics

4.1 General

The VICC may be in the form of a card in conformance with ISO/IEC 7810 or ISO/IEC 15457-1, or an object of any other dimension.

4.2 Antenna

If the VICC dimensions are in conformance with ISO/IEC 7810 or ISO/IEC 15457-1, the dimensions of the VICC antenna shall not exceed 86 mm × 54 mm × 3 mm in order to maximize interoperability.

NOTE This antenna size restriction stems from the fact that the radio frequency power and signal interface defined in ISO/IEC 15693-2 and its test methods in ISO/IEC 10373-7 are based on ID-1 cards. The test methods can give unreliable results with antennas larger than that defined above.

4.3 Alternating magnetic field

The VICC, whichever form the VICC has according to 4.1, shall continue to operate as intended after continuous exposure to a magnetic field of an average level of 10 A/m rms at 13,56 MHz. The averaging time is 30 seconds and the maximum level of the magnetic field is limited to 12 A/m rms.

4.4 Additional information

Surface quality for printing is discussed in Annex A.

When a hole or slot is implemented refer to Annex B.

Annex A
(informative)

Surface quality for printing

Where there is a requirement to customize the VICC after the manufacturing process by overprinting, care should be taken to ensure the areas used for printing are of sufficient quality appropriate to the printing technique or printer used.

Annex B
(informative)

Hole slot

Where there is a requirement to add a slot or hole to the card body, care should be taken to ensure that the slot or hole does not interfere with the IC or the inductive coupling element.

Bibliography

[1] ISO/IEC 7811 (all parts), *Identification cards — Recording technique*

[2] ISO/IEC 7812 (all parts), *Identification cards — Identification of issuers*

[3] ISO/IEC 7813, *Information technology — Identification cards — Financial transaction cards*

[4] ISO/IEC 7816 (all parts), *Identification cards — Integrated circuit cards*

[5] ISO/IEC 10373-7, *Identification cards — Test methods — Part 7: Vicinity cards*

[6] ISO/IEC 10536 (all parts), *Identification cards — Contactless integrated circuit(s) cards — Close-coupled cards*

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

[8] ISO/IEC 15457 (all parts), *Identification cards — Thin flexible cards*

[9] ISO/IEC 15693-2, *Cards and security devices for personal identification — Contactless vicinity objects*

NOTE Restrictions might apply to embossing of VICCs (see ISO/IEC 7811-1).

British Standards Institution (BSI)

BSI is the national body responsible for preparing British Standards and other standards-related publications, information and services.

BSI is incorporated by Royal Charter. British Standards and other standardization products are published by BSI Standards Limited.

About us

We bring together business, industry, government, consumers, innovators and others to shape their combined experience and expertise into standards -based solutions.

The knowledge embodied in our standards has been carefully assembled in a dependable format and refined through our open consultation process. Organizations of all sizes and across all sectors choose standards to help them achieve their goals.

Information on standards

We can provide you with the knowledge that your organization needs to succeed. Find out more about British Standards by visiting our website at bsigroup.com/standards or contacting our Customer Services team or Knowledge Centre.

Buying standards

You can buy and download PDF versions of BSI publications, including British and adopted European and international standards, through our website at bsigroup.com/shop, where hard copies can also be purchased.

If you need international and foreign standards from other Standards Development Organizations, hard copies can be ordered from our Customer Services team.

Copyright in BSI publications

All the content in BSI publications, including British Standards, is the property of and copyrighted by BSI or some person or entity that owns copyright in the information used (such as the international standardization bodies) and has formally licensed such information to BSI for commercial publication and use.

Save for the provisions below, you may not transfer, share or disseminate any portion of the standard to any other person. You may not adapt, distribute, commercially exploit, or publicly display the standard or any portion thereof in any manner whatsoever without BSI's prior written consent.

Storing and using standards

Standards purchased in soft copy format:

- A British Standard purchased in soft copy format is licensed to a sole named user for personal or internal company use only.
- The standard may be stored on more than 1 device provided that it is accessible by the sole named user only and that only 1 copy is accessed at any one time.
- A single paper copy may be printed for personal or internal company use only.
- Standards purchased in hard copy format:
- A British Standard purchased in hard copy format is for personal or internal company use only.
- It may not be further reproduced – in any format – to create an additional copy. This includes scanning of the document.

If you need more than 1 copy of the document, or if you wish to share the document on an internal network, you can save money by choosing a subscription product (see 'Subscriptions').

Reproducing extracts

For permission to reproduce content from BSI publications contact the BSI Copyright & Licensing team.

Subscriptions

Our range of subscription services are designed to make using standards easier for you. For further information on our subscription products go to bsigroup.com/subscriptions.

With **British Standards Online (BSOL)** you'll have instant access to over 55,000 British and adopted European and international standards from your desktop. It's available 24/7 and is refreshed daily so you'll always be up to date.

You can keep in touch with standards developments and receive substantial discounts on the purchase price of standards, both in single copy and subscription format, by becoming a **BSI Subscribing Member**.

PLUS is an updating service exclusive to BSI Subscribing Members. You will automatically receive the latest hard copy of your standards when they're revised or replaced.

To find out more about becoming a BSI Subscribing Member and the benefits of membership, please visit bsigroup.com/shop.

With a **Multi-User Network Licence (MUNL)** you are able to host standards publications on your intranet. Licences can cover as few or as many users as you wish. With updates supplied as soon as they're available, you can be sure your documentation is current. For further information, email subscriptions@bsigroup.com.

Revisions

Our British Standards and other publications are updated by amendment or revision.

We continually improve the quality of our products and services to benefit your business. If you find an inaccuracy or ambiguity within a British Standard or other BSI publication please inform the Knowledge Centre.

Useful Contacts

Customer Services
Tel: +44 345 086 9001
Email (orders): orders@bsigroup.com
Email (enquiries): cservices@bsigroup.com

Subscriptions
Tel: +44 345 086 9001
Email: subscriptions@bsigroup.com

Knowledge Centre
Tel: +44 20 8996 7004
Email: knowledgecentre@bsigroup.com

Copyright & Licensing
Tel: +44 20 8996 7070
Email: copyright@bsigroup.com

BSI Group Headquarters

389 Chiswick High Road London W4 4AL UK

bsi.