
**Identification cards — Optical
memory cards — Holographic
recording method —**

**Part 1:
Physical characteristics**

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*Cartes d'identification — Cartes à mémoire optique — Méthode
d'enregistrement holographique —
Partie 1: Caractéristiques physiques*

ISO/IEC 11695-1:2015

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Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Holographic Memory Cards — Physical Characteristics	3
4.1 Dimensions.....	3
4.1.1 Card height and width.....	3
4.1.2 Card thickness.....	3
4.1.3 Card corners.....	3
4.1.4 Card edges.....	3
4.2 Construction.....	3
4.2.1 Card construction.....	3
4.2.2 Cross-section at accessible optical area.....	3
4.3 Physical characteristics.....	3
4.3.1 Protective layer(s).....	3
4.3.2 Storage layer.....	4
4.3.3 Reflective layer.....	4
4.3.4 Substrate layer.....	4
4.3.5 Additions.....	4
4.3.6 Bending stiffness.....	5
4.3.7 Card warpage.....	5
4.3.8 X-rays.....	5
4.3.9 Toxicity.....	5
4.3.10 Ultraviolet light.....	5
4.3.11 Light transmittance.....	5
4.3.12 Bending properties.....	5
4.3.13 Resistance to chemicals.....	5
4.3.14 Atmospheric requirements.....	5
4.3.15 Durability.....	5
4.3.16 Dimensional stability and warpage with temperature and humidity.....	5
4.3.17 Default test environment and conditioning.....	5
Annex A (informative) Holographic Data Storage	6
Bibliography	10

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 meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: [Foreword – Supplementary information](#).

The committee responsible for this document is ISO/IEC JTC 1, *Information technology*, Subcommittee SC 17, *Cards and personal identification*.

This second edition cancels and replaces the first edition (ISO/IEC 11695-1:2008), which has been technically revised.

ISO/IEC 11695 consists of the following parts, under the general title *Identification cards — Optical memory cards — Holographic Recording Method*:

- *Part 1: Physical characteristics*
- *Part 2: Dimensions and location of the accessible optical area*
- *Part 3: Optical properties and characteristics*
- *Part 4: Logical data structures*

Introduction

This part of ISO/IEC 11695 is one of a series of International Standards defining the parameters for optical holographic memory cards and the use of such cards for the storage and interchange of digital data.

These International Standards recognize the existence of different methods for recording and reading Information on optical memory cards, the characteristics of which are specific to the recording method employed. In general, these different recording methods will not be compatible with each other. Therefore, the Standards are structured to accommodate the inclusion of existing and future recording methods in a consistent manner.

This part of ISO/IEC 11695 is specific to optical memory cards using the holographic recording method. Characteristics which apply to other specific recording methods are found in separate Standards documents.

This part of ISO/IEC 11695 defines the physical characteristics and the extent of compliance with, addition to, and/or deviation from the relevant base document, ISO/IEC 11693-1.

The International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC) draw attention to the fact that it is claimed that compliance with this document may involve the use of patents.

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Identification cards — Optical memory cards — Holographic recording method —

Part 1: Physical characteristics

1 Scope

This part of ISO/IEC 11695 defines the physical characteristics of optical memory cards using the holographic recording method.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 7816-1, *Identification cards — Integrated circuit cards — Part 1: Cards with contacts — Physical characteristics*

ISO/IEC 10373-1, *Identification cards — Test methods — Part 1: General characteristics*

ISO/IEC 11695-2, *Identification cards — Optical memory cards — Holographic recording method — Part 2: Dimensions and location of accessible optical area*

ISO/IEC 11695-3, *Identification cards — Optical memory cards — Holographic recording method — Part 3: Optical properties and characteristics*

ISO/IEC 11695-4, *Identification cards — Optical memory cards — Holographic recording method — Part 4: Logical data structures*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 11695-2, ISO/IEC 11695-3 and the following apply.

3.1

holographic recording method

writing and/or pre-formatting of digital data on the holographic memory card in the form of holograms

3.2

hologram

microscopic structure which can be written by optical energy into an accessible optical area causing diffraction of a read-out beam of certain wavelength by illumination

Note 1 to entry: A hologram is the representation of a two-dimensional code of digital data on the holographic memory card.

3.3

amplitude hologram

type of hologram which modulates the amplitude of a read-out beam in the read-out process

3.4

phase hologram

type of hologram which modulates the phase of a read-out beam in the read-out process

3.5

thick hologram

hologram in which the thickness is n times the wavelength of the writing/reading beam where $n > 10$

3.6

thin hologram

hologram characterized by the thickness of the recording medium containing the hologram, whereby the hologram has the same order as the wavelength of the writing/reading beam

3.7

holographic memory card

card containing an accessible optical area to which holograms can be written using external optical energy

3.8

accessible optical area

partition of the holographic memory card which is available to be accessed by the read and/or write beam of the holographic read-out and/or recording system used

3.9

storage layer

specific layer of the holographic memory card, located between the protective layer and the reflective layer, which contains specific materials to permit writing and/or reading back holographic recorded data by optical means

3.10

protective layer

transparent layer of material within the holographic memory card which is placed on top of the storage layer and able to provide protection against scratches, humidity and damage caused by environmental influence

3.11

reflective layer

layer of material within the holographic memory card placed between substrate layer and storage layer to reflect the writing and reading beam so that the holographic memory card can be read-out in reflection mode

3.12

substrate layer

layer of material of an holographic memory card providing a flat and smooth surface for both the reflective and storage layers attaching the storage medium to the card body, when the substrate layer is not the card body

3.13

polarization

property of electromagnetic waves, such as light, that describes the direction of the transverse electric field

Note 1 to entry: More generally, the polarization of a transverse wave describes the direction of oscillation in the plane perpendicular to the direction of travel.

3.14

birefringence

decomposition of a ray of light into two rays (the ordinary ray and the extraordinary ray) when it passes through certain types of material, depending on the polarization of the light

Note 1 to entry: This effect occurs when the structure of the material is anisotropic.

4 Holographic Memory Cards — Physical Characteristics

4.1 Dimensions

4.1.1 Card height and width

ISO/IEC 7810 applies.

4.1.2 Card thickness

ISO/IEC 7810 applies.

4.1.3 Card corners

ISO/IEC 7810 applies.

4.1.4 Card edges

ISO/IEC 7810 applies.

4.2 Construction

4.2.1 Card construction

ISO/IEC 7810 applies.

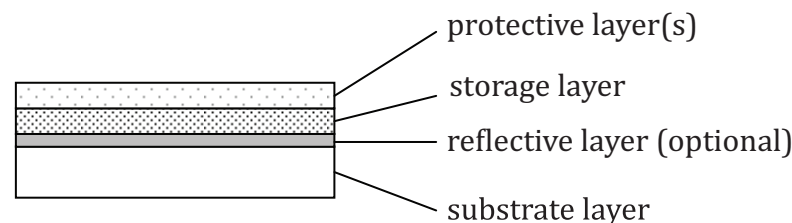
4.2.2 Cross-section at accessible optical area

See [Figure 1](#).

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The holographic memory card contains an accessible optical area which is laminated, bonded, or inserted into the card body.

The accessible optical area is composed of different layers: a substrate layer, a reflective layer, a storage layer and one or more protective layers to protect the sub-layers from damage e.g. by surface damage, humidity and other environmental influence.



NOTE Drawing not to scale.

Figure 1 — Section of a holographic memory card at the accessible optical area

4.3 Physical characteristics

4.3.1 Protective layer(s)

There are one or multiple protective layers to protect the sub-layers (storage layer, reflective layer) from surface damage, humidity and other environmental influence.

The protective layer has to be transparent for the writing and reading beam.