

This is a preview of "DS/ISO/IEC 39794-6:2...". [Click here to purchase the full version from the ANSI store.](#)

# Informationsteknologi – Udvidelige udvekslingsformater til biometriske data – Del 6: Irisbilleddata

Information technology – Extensible biometric data interchange formats – Part 6: Iris image data

**DANSK STANDARD**  
Danish Standards Association

Göteborg Plads 1  
DK-2150 Nordhavn

Tel: +45 39 96 61 01  
[dansk.standard@ds.dk](mailto:dansk.standard@ds.dk)  
[www.ds.dk](http://www.ds.dk)

This is a preview of "DS/ISO/IEC 39794-6:2...". [Click here to purchase the full version from the ANSI store.](#)

DS projekt: M340911

ICS: 35.240.15

**Første del af denne publikations betegnelse er:**

**DS/ISO/IEC, hvilket betyder, at det er en international standard, der har status som dansk standard.**

**Denne publikations overensstemmelse er:**

**IDT med: ISO/IEC 39794-6:2021**

**DS-publikationen er på engelsk.**

---

### **DS-publikationstyper**

Dansk Standard udgiver forskellige publikationstyper.

Typen på denne publikation fremgår af forsiden.

Der kan være tale om:

#### **Dansk standard**

- standard, der er udarbejdet på nationalt niveau, eller som er baseret på et andet lands nationale standard, eller
- standard, der er udarbejdet på internationalt og/eller europæisk niveau, og som har fået status som dansk standard

#### **DS-information**

- publikation, der er udarbejdet på nationalt niveau, og som ikke har opnået status som standard, eller
- publikation, der er udarbejdet på internationalt og/eller europæisk niveau, og som ikke har fået status som standard, fx en teknisk rapport, eller
- europæisk præstandard

#### **DS-håndbog**

- samling af standarder, eventuelt suppleret med informativt materiale

#### **DS-hæfte**

- publikation med informativt materiale

Til disse publikationstyper kan endvidere udgives

- tillæg og rettelsesblade

### **DS-publikationsform**

Publikationstyperne udgives i forskellig form som henholdsvis

- fuldttekstpublikation (publikationen er trykt i sin helhed)
- godkendelsesblad (publikationen leveres i kopi med et trykt DS-omslag)
- elektronisk (publikationen leveres på et elektronisk medie)

### **DS-betegnelse**

Alle DS-publikationers betegnelse begynder med DS efterfulgt af et eller flere præfikser og et nr., fx **DS 383**, **DS/EN 5414** osv. Hvis der efter nr. er angivet et **A** eller **Cor**, betyder det, enten at det er et **tillæg** eller et **rettelsesblad** til hovedstandard, eller at det er indført i hovedstandard.

DS-betegnelse angives på forsiden.

### **Overensstemmelse med anden publikation:**

Overensstemmelse kan enten være IDT, EQV, NEQ eller MOD

- **IDT:** Når publikationen er identisk med en given publikation.
- **EQV:** Når publikationen teknisk er i overensstemmelse med en given publikation, men præsentationen er ændret.
- **NEQ:** Når publikationen teknisk eller præsentationsmæssigt ikke er i overensstemmelse med en given standard, men udarbejdet på baggrund af denne.
- **MOD:** Når publikationen er modificeret i forhold til en given publikation.

This is a preview of "DS/ISO/IEC 39794-6:2...". [Click here to purchase the full version from the ANSI store.](#)

First edition  
2021-03-10

---

---

# Information technology — Extensible biometric data interchange formats —

## Part 6: Iris image data

*Technologies de l'information — Formats d'échange de données  
biométriques extensibles —*

*Partie 6: Données d'image de l'iris*

---

---

Reference number  
ISO/IEC 39794-6:2021(E)



© ISO/IEC 2021

This is a preview of "DS/ISO/IEC 39794-6:2...". [Click here to purchase the full version from the ANSI store.](#)



## **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](mailto:copyright@iso.org)  
[www.iso.org](http://www.iso.org)

This is a preview of "DS/ISO/IEC 39794-6:2...". Click here to purchase the full version from the ANSI store.

# Contents

Page

<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>2</b>
<b>3 Terms and definitions</b> .....	<b>2</b>
<b>4 Symbols and abbreviated terms</b> .....	<b>3</b>
<b>5 Conformance</b> .....	<b>4</b>
<b>6 Iris image content specification</b> .....	<b>4</b>
6.1 General .....	4
6.2 Uncropped iris image .....	5
6.3 VGA iris image .....	6
6.4 Cropped iris image .....	6
6.5 Cropped and masked iris image .....	7
6.5.1 General .....	7
6.5.2 Masking of the sclera .....	7
6.5.3 Masking of the eyelids .....	7
6.5.4 Mask transition blurring .....	8
<b>7 Abstract data elements</b> .....	<b>9</b>
7.1 Purpose and overall structure .....	9
7.2 Version block .....	11
7.3 Representation block .....	11
7.3.1 General .....	11
7.3.2 Eye label .....	11
7.3.3 Iris image kind .....	11
7.3.4 Bit depth .....	11
7.3.5 Image data format .....	12
7.3.6 Horizontal orientation .....	13
7.3.7 Vertical orientation .....	13
7.3.8 Compression history .....	13
7.3.9 Capture date/time block .....	14
7.3.10 Iris image data .....	14
7.3.11 Range .....	14
7.3.12 Capture device block .....	14
7.3.13 Quality blocks .....	15
7.3.14 Roll angle block .....	15
7.3.15 Localization block .....	16
7.3.16 PAD data block .....	17
<b>8 Encoding</b> .....	<b>17</b>
8.1 Tagged binary encoding .....	17
8.2 XML encoding .....	17
<b>9 Registered BDB format identifiers</b> .....	<b>17</b>
<b>Annex A (normative) Formal specifications</b> .....	<b>19</b>
<b>Annex B (informative) Encoding examples</b> .....	<b>26</b>
<b>Annex C (normative) Conformance testing methodology</b> .....	<b>27</b>
<b>Annex D (informative) Iris image capture</b> .....	<b>33</b>
<b>Bibliography</b> .....	<b>37</b>

This is a preview of "DS/ISO/IEC 39794-6:2...". Click here to purchase the full version from the ANSI store.

## 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.

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](http://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](http://www.iso.org/patents)) or the IEC list of patent declarations received (see [patents.iec.ch](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](http://www.iso.org/iso/foreword.html).

This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 37, *Biometrics*.

A list of all parts in the [ISO/IEC 39794 series](#) can be found on the ISO 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](http://www.iso.org/members.html).

This is a preview of "DS/ISO/IEC 39794-6:2...". [Click here to purchase the full version from the ANSI store.](#)

## Introduction

The purpose of this document is to define an International Standard for the exchange of iris image extensible information. This document contains a specific definition of iris image record attribute data elements, record's tagged binary and XML encoding extensible formats for storing and transmitting the iris image and certain attribute data elements, and conformance criteria.

Currently, the exchange of iris information between equipment from different vendors can be achieved using images of the eye. While some applications can successfully operate with full size uncompressed rectilinear images, there are others for which this is expensive in terms of storage and bandwidth. This document therefore also defines compact representations.

Biometric data interchange formats enable the interoperability of different biometric systems. The first generation of biometric data interchange formats was published between 2005 and 2007 in the first edition of the [ISO/IEC 19794 series](#). From 2011 onwards, the second generation of biometric data interchange formats has been published in the second edition of the established parts and the first edition of some new parts of [ISO/IEC 19794](#). In the second generation of biometric data interchange formats, new useful data elements such as those related to biometric sample quality have been added, the header data structures have been harmonized across all parts of the [ISO/IEC 19794 series](#), and an XML encoding has been added in addition to the binary encoding.

In anticipation of the future need for additional data elements and in order to avoid future compatibility issues, ISO/IEC JTC 1/SC 37 has developed the [ISO/IEC 39794 series](#) as a third generation of biometric data interchange formats, defining extensible biometric data interchange formats capable of including future extensions in a defined way. Extensible specifications in ASN.1 (Abstract Syntax Notation One) and the Distinguished Encoding Rules of ASN.1 form the basis for encoding biometric data in binary tag-length-value formats. XML schema definitions form the basis for encoding biometric data in XML (Extensible Markup Language).

[Annex A](#) specifies the ASN.1 schema and XML schema of the formal structure description to which tagged binary encoded and XML encoded iris image extensible records are to conform (respectively).

[Annex B](#) provides sample iris image extensible record encodings. [Annex C](#) includes normative assertions for testing conformance of iris image extensible records. Finally, [Annex D](#) gives recommendations on iris image capture.

This is a preview of "DS/ISO/IEC 39794-6:2...". [Click here to purchase the full version from the ANSI store.](#)



This is a preview of "DS/ISO/IEC 39794-6:2...". [Click here to purchase the full version from the ANSI store.](#)

# Information technology — Extensible biometric data interchange formats —

## Part 6: Iris image data

### 1 Scope

This document specifies:

- generic extensible data interchange formats for the representation of iris image data: a tagged binary data format based on an extensible specification in ASN.1 and a textual data format based on an XML schema definition that are both capable of holding the same information,
- examples of data record contents,
- application specific requirements, recommendations, and best practices in data acquisition, and
- conformance test assertions and conformance test procedures applicable to this document.

The iris image information is stored as:

- an array of intensity values optionally compressed with [ISO/IEC 15948](#) or [ISO/IEC 15444-1](#), or
- an array of intensity values optionally compressed with [ISO/IEC 15948](#) or [ISO/IEC 15444-1](#) that can be cropped around the iris, with the iris at the centre, and which can incorporate region-of-interest masking of non-iris regions.

This document also specifies elements of conformance testing methodology, test assertions, and test procedures, as applicable to this document.

It establishes:

- test assertions pertaining to the structure of the iris image data format, as specified in [Clauses 6, 7, 8 and 9](#) of this document,
- test assertions pertaining to internal consistency by checking the types of values that may be contained within each field, and
- semantic test assertions.

The conformance testing methodology specified in this document does not establish:

- tests of other characteristics of biometric products or other types of testing of biometric products (e.g. acceptance, performance, robustness, security), or
- tests of conformance of systems that do not produce data records conforming to the requirements of this document.

This document does not establish:

- requirements on the optical specifications of cameras, or
- requirements on photometric properties of iris images, or
- requirements on enrolment processes, workflow and use of iris equipment.

This is a preview of "DS/ISO/IEC 39794-6:2...". [Click here to purchase the full version from the ANSI store.](#)

## 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 2382-37](#), *Information technology — Vocabulary — Part 37: Biometrics*

[ISO/IEC 8824-1](#), *Information technology — Abstract Syntax Notation One (ASN.1): Specification of basic notation — Part 1*

[ISO/IEC 8825-1](#), *Information technology — ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER) — Part 1*

[ISO/IEC 15444-1](#), *Information technology — JPEG 2000 image coding system — Part 1: Core coding system*

[ISO/IEC 15948](#), *Information technology — Computer graphics and image processing — Portable Network Graphics (PNG): Functional specification*

[ISO/IEC 39794-1](#), *Information technology — Extensible biometric data interchange formats — Part 1: Framework*

W3C Recommendation, *XML Schema Part 1: Structures Second Edition*, 28 October 2004, <http://www.w3.org/TR/xmlschema-1/>

W3C Recommendation, *XML Schema Part 2: Datatypes Second Edition*, 28 October 2004, <http://www.w3.org/TR/xmlschema-2/>