



ISAN

INTERNATIONAL STANDARD
AUDIOVISUAL NUMBER

Affixing ISAN - ISAN specifications

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1 Introduction

An ISAN uniquely identifies an audiovisual work. In order to associate an ISAN with its corresponding work in a standard manner, an affixing method is specified.

The ISAN can be put on electronic and paper documentation (using bar codes, or the full character representation), inside databases, on DVD boxes, DVDs (or other medias), inside digital streams (MPEG, DVB, etc.), visually on video streams (2D barcodes, or watermark), on audio tracks using audio watermarking.

All these applications are explained in this guide, as well as an official, standardized way to facilitate the affixing and exchange of ISANs.

The next following chapters introduces the different affixing methods without going into technical details, in order to get an understanding of the usefulness of the ISAN affixing.

1.1 PAPER AFFIXING

The ISAN should be present during the exchange of documents related to works. For example in documentation about the production of a particular movie.

The affixing of the ISAN in the documents can take two forms:

- Human-readable ISAN representation

In this case the ISAN is written in full letters, for example:

ISAN 1234-1234-1234-1234-X-0000-0000-Y

- 2D Datamatrix bar code

The 2D Datamatrix is a two-dimensional bar code storing the ISAN (the number only – no metadata). Here is an example of 2D Datamatrix:



1.2 PHYSICAL AFFIXING

Physical affixing of ISAN directly on the media used to carry the audiovisual work, this can be done using the following methods:

- Labeling (Human-readable ISAN representation, 2D Datamatrix)
- Engraving (2D DataMatrix)

The 2D Datamatrix can be labeled, or printed on the media itself or on the media protective case when applicable.

1.3 ISAN INSIDE VIDEO STREAMS (INVISIBLE AFFIXING)

Different digital transmission formats allow the affixing of ISAN in different manners.

Using digital metadata

Digital AV formats like MPEG already have a placeholder for the ISAN. The ISAN is integrated in the digital stream.

Using watermarking

Different techniques allow the watermarking of video streams. The watermark is an invisible modification of the video data to carry a digital signature. In our case, the ISAN would watermark the video. Watermarks allow video identification. Different watermarking techniques offer various protection against image alteration.

Using fingerprinting

Fingerprinting a video consists of computing a “signature” of the video that represents the features of that video. This signature identifies a version of a work. Signature size is much larger than an ISAN and varies with video duration.

Video identification works by computing the signature of an unknown video stream (using the same algorithm) and comparing this signature with all known signatures (because signatures might vary, a signature resemblance distance is computed).

1.4 ISAN ON VIDEO PLAYBACK (VISUAL AFFIXING)



The ISAN can also be affixed visually (for example, at the end of a video production as illustrated below).

Affixing of the ISAN visually in the video stream allows the proper tracking (visually and in electronic way) of the broadcasted video programmes.

1.5 IN DATABASES

The ISAN shall figure in all databases storing work information. It can replace or be complementary to existing work/versions/assets identifiers.

2 Affixing of ISAN in documents/labels

In order to facilitate exchange of work information, the ISAN, in-development ISAN or ISAN version shall follow these guidelines when inserted in documents.

In-development ISANs should not be affixed on physical carrier of distributed AV/work until they are activated, however they can figure on internal documentation, contracts and on pre-production material.

2.1 SIMPLEST FORM: HUMAN-READABLE REPRESENTATION

The easiest approach to integrate an ISAN into a document is to write it in its human-readable form. The following forms are accepted:

ISAN HHHH-HHHH-HHHH-HHHH-X*

ISAN HHHH-HHHH-HHHH-HHHH-X-HHHH-HHHH-Y

Where:

- the whole ISAN must be written on a single line (no line-break) and uppercase
- the word "ISAN" must be present at the beginning"
- H represents an hexadecimal character [0-9; 'A'-'F']
- X,Y represent check digit characters [0-9; 'A'-'Z']
- it is recommended to use a sans-serif font (for example: Arial)

When listed under a distinctive column, the word "ISAN" can be omitted.

2.2 ADVANCED FORM: USING 2D DATAMATRIX, IN THE ISAN FORMAT

ISAN-IA provides an online tool and recommendations to generate a 2D barcode (DataMatrix) for electronic scanning of ISAN on documents.

The specifications are the following:

* Note that the ISAN representation with 16 digits is deprecated since 2006 and the 24 digit representation should be used instead. To know how to convert an ISAN 16 into an ISAN 24, contact ISAN-IA at info@isan.org

DataMatrix of 22x22 of size, holding the ISAN in the format:

ISAN HHHH-HHHH-HHHH-HHHH-X-HHHH-HHHH-Y

The online tool shall be used to generate the 2D DataMatrix. Other method for generating the 2D DataMatrix are accepted only if the DataMatrix part is altered (keeping the exact size, color, etc as online-generated version).

The document shall be printed on a printer with at least 600dpi resolution.

Here is an example of generated ISAN representation for document integration:



(actual size may vary)

The DataMatrix is resistant to 1 fax transmission at high quality settings.

The online system for generating ISAN 2D DataMatrix will soon be available online.

2.3 LABELLING

The same rules apply for ISAN labeling except that fax compatibility is not required. The following is an example if generated ISAN DataMatrix:



It should be printed on non-reflective labels with a resolution of at least 600dpi (using laser or ink printer offering such resolutions).

2.4 READING DOCUMENTS/LABELS

This section summarizes the different techniques used for the reading of 2D DataMatrix on labels or documents.

2.4.1 Handheld readers

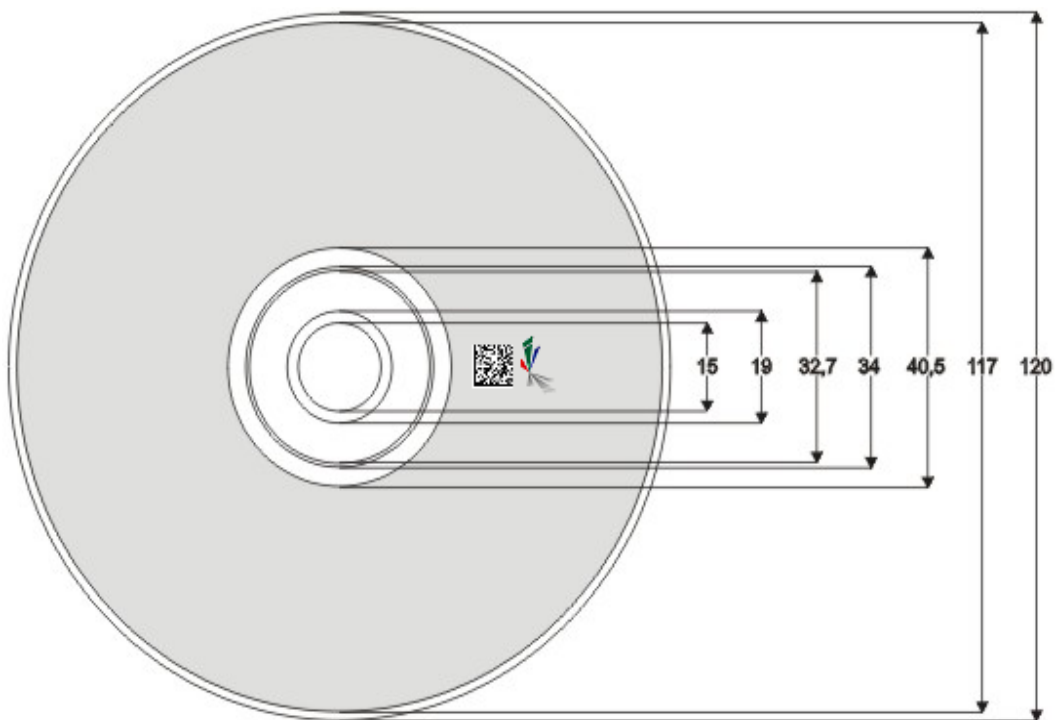
Various readers are available on the market to read the ISAN DataMatrix as well as other regular barcodes. These readers can easily be interfaced with computers or other electronic devices to facilitate the reading of ISANs in an electronic way.



We do not recommend a particular brand, as long as it is capable of reading the 0.0075in dot-size DataMatrix. However you can always consult our partner RVSI (www.rvsi.com) for further information.

3 Affixing the ISAN on DVDs or similar products

The ISAN DataMatrix can be printed on the DVD/CD surface using conventional pressing techniques. Resolution shall be at least 600dpi.



The DataMatrix shall be printed at 24.25mm from the center of the disc. This is important for standardized reading.

The ISAN logo () is optional, but cannot be altered.

4 Affixing the ISAN on video streams

4.1 INSIDE THE DIGITAL STREAM

The following digital formats will include placeholders for ISANs:

- MPEG
- ATSC
- DVB
- Windows Media Video

In order to integrate the ISAN in such stream, the encoding machines have to be upgraded to allow such integration.

4.2 AS A WATERMARK

Different techniques allow the watermarking of video streams. The watermark is an invisible modification of the video data to carry a digital signature. In our case, the ISAN would watermark the video. Watermarks allow video identification. Different watermarking techniques offer various protections against image alteration.

We are currently working with different technologies and vendors to recommend a watermarking technique, in order to establish a standardized way of adding an ISAN watermark into a video stream.

4.3 USING CREDITS DATAMATRIX

The ISAN shall be affixed on the credits portion of a Feature Film or other video productions where a credit is present in front of a black background.

The ISAN shall be affixed at the beginning of the credits section and scroll with the credits if possible, otherwise the ISAN can be at a fixed position for at least 2 seconds.

Independently of the production system used for affixing the ISAN on the credits portion of an audiovisual work, the following requirements must be respected:

- Each cell in the DataMatrix, must be at least 3x3 pixels square at the place of display, that is for example in a PAL television transmission.

- The ISAN logo shall not be altered without prior authorization from ISAN-IA. The logo can be found on the ISAN website (www.isan.org).
- The luminosity of the logo must be at least 40%.

4.4 USING FINGERPRINTING TECHNIQUES

Fingerprinting a video consists of computing a “signature” of the video that represents the features of that video. This signature identifies a version of a work. Signature size is much larger than an ISAN and varies with video duration.

Video identification works by computing the signature of an unknown video stream (using the same algorithm) and comparing this signature with all known signatures (because signatures might vary, a signature resemblance distance is computed).

As for watermarking, fingerprinting is a novel technology and we are currently comparing different technological solutions.