

# **SLOVENSKI STANDARD**

## **SIST EN 61595-1:1999**

**01-april-1999**

---

**Multichannel digital audio tape recorder (DATR), reel-to-reel system, for professional use -- Part 1: Format A (IEC 61595-1:1997)**

Multichannel digital audio tape recorder (DATR), reel-to-reel system, for professional use  
-- Part 1: Format A

Digitales Mehrkanal-Tonbandgerät (DATR), Spulensystem für Studioanwendungen -- Teil  
1: Format A

Système d'enregistrement à bande audionumérique multivoie (DATR), bobine à bobine,  
à usage professionnel -- Partie 1: Format A

**Ta slovenski standard je istoveten z: EN 61595-1:1997**

---

**ICS:**

33.160.30

Avdio sistemi

Audio systems

**SIST EN 61595-1:1999**

**en**

## **iTeh STANDARD PREVIEW** **(standards.iteh.ai)**

SIST EN 61595-1:1999

<https://standards.iteh.ai/catalog/standards/sist/4f463b51-1c58-4b43-8f23-f9060bd014df/sist-en-61595-1-1999>

Descriptors: Sound recording, digital recording, magnetic tapes, recording tracks, codification, mechanical properties, electrical properties, recording characteristics, interchangeability

English version

**Multichannel digital audio tape recorder (DATR),  
reel-to-reel system, for professional use  
Part 1: Format A  
(IEC 61595-1:1997)**

Système d'enregistrement à bande  
audionumérique multivoie (DATR),  
bobine à bobine, à usage professionnel  
Partie 1: Format A  
(CEI 61595-1:1997)

Digitales Mehrkanal-Tonbandgerät  
(DATR), Spulensystem für  
Studioanwendungen  
Teil 1: Format A  
(IEC 61595-1:1997)

This European Standard was approved by CENELEC on 1997-07-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

## CENELEC

European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

## Foreword

The text of document 100B/48/FDIS, future edition 1 of IEC 61595-1, prepared by SC 100B, Recording, of IEC TC 100, Audio, video and multimedia systems and equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61595-1 on 1997-07-01.

The following dates were fixed:

- latest date by which the EN has to be implemented  
at national level by publication of an identical  
national standard or by endorsement (dop) 1998-04-01
- latest date by which the national standards conflicting  
with the EN have to be withdrawn (dow) 1998-04-01

Annexes designated "normative" are part of the body of the standard.  
Annexes designated "informative" are given for information only.  
In this standard, annex ZA is normative and annex A is informative.  
Annex ZA has been added by CENELEC.

---

## Endorsement notice

The text of the International Standard IEC 61595-1:1997 was approved by CENELEC as a European Standard without any modification.

In the official version, for annex A, Bibliography, the following notes have to be added for the standards indicated:

IEC 60094	NOTE: Harmonized as EN 60094 and HD 311 series (not modified).
IEC 60268-12	NOTE: Harmonized, together with its amendment 1:1991, as EN 60268-12:1995 (not modified).
IEC 60958	NOTE: Harmonized as EN 60958:1990 (not modified).
IEC 61120-1	NOTE: Harmonized as EN 61120-1:1993 (not modified).
IEC 61120-2	NOTE: Harmonized as EN 61120-2:1993 (not modified).
IEC 61120-3	NOTE: Harmonized as EN 61120-3:1993 (not modified).
IEC 61120-5	NOTE: Harmonized as EN 61120-5:1995 (not modified).

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE: When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60461	1986	Time and control code for video tape recorders	HD 507 S1	1988
IEC 61120-4	1992	Digital audio tape recorder reel-to-reel system, using 6,3 mm magnetic tape, for professional use Part 4: Magnetic tape properties: definitions and methods of measurement	EN 61120-4	1992
ITU-T V.41	1988	Code-independent error-control system	-	-

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

## **iTeh STANDARD PREVIEW** **(standards.iteh.ai)**

SIST EN 61595-1:1999

<https://standards.iteh.ai/catalog/standards/sist/4f463b51-1c58-4b43-8f23-f9060bd014df/sist-en-61595-1-1999>

NORME  
INTERNATIONALE  
INTERNATIONAL  
STANDARD

CEI  
IEC

61595-1

Première édition  
First edition  
1997-05

**Système d'enregistrement à bande  
audionumérique multivoie (DATR),  
bobine à bobine, à usage professionnel –**

**Partie 1:  
Format A**

iteh STANDARD PREVIEW  
(standards.iteh.ai)

**Multichannel digital audio tape recorder (DATR),  
reel-to-reel system, for professional use –**

**Part 1:  
Format A**

© IEC 1997 Droits de reproduction réservés — Copyright - all rights reserved

Aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'éditeur.

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Electrotechnical Commission  
Telefax: +41 22 919 0300

3, rue de Varembé Geneva, Switzerland  
e-mail: inmail@iec.ch IEC web site <http://www.iec.ch>



Commission Electrotechnique Internationale  
International Electrotechnical Commission  
Международная Электротехническая Комиссия

CODE PRIX  
PRICE CODE

U

Pour prix, voir catalogue en vigueur  
For price, see current catalogue

## CONTENTS

	Page
FOREWORD .....	7
Clause	
1 Scope .....	9
2 Normative references .....	9
3 Definitions .....	9
3.1 Data flow of a digital audio tape recorder .....	9
4 Digital encoding .....	13
4.1 Sampling frequency .....	13
4.2 Sampling timing .....	13
4.3 Quantization .....	13
5 Tape speed .....	13
6 Tape width and number of digital audio channels .....	13
7 Tape winding .....	15
8 Reel and hub .....	15
9 Allocation and dimension of magnetic tracks .....	15
10 Assignment of magnetic tracks .....	15
11 Emphasis .....	25
12 Main track recording .....	25
12.1 Recording modulation method .....	25
12.2 Signal block structure .....	27
12.2.1 The word format .....	27
12.2.2 The frame and block structure .....	27
12.2.3 Synchronization pattern .....	29
12.3 Signal word distribution to tracks .....	29
12.4 Error protection method .....	31
12.4.1 The error correction code .....	33
12.4.2 Interleave sequence .....	37
12.5 Recording and reproducing characteristics .....	53
12.5.1 Reference tape .....	53
13 Subtrack recording .....	53
13.1 Auxiliary channels .....	53
13.1.1 Time code channel (time code track) .....	53
13.1.2 Auxiliary data channel (auxiliary data track) .....	53
13.1.3 Auxiliary analogue channels (cue audio-1 track and cue audio-2 track) ..	53
13.2 Alignment of digital audio signals and subtrack signals .....	53
13.2.1 Alignment of cue audio-1 and cue audio-2 track signals .....	53
13.2.2 Alignment of time code track signals .....	53
Annex A – Bibliography .....	55



## Tables

Page

1	Tape width and number of digital audio channels .....	15
2	Track assignment.....	15
3	4/6M conversion table .....	27
4	Track interleave (20 main tracks with 12,7 mm tape width) .....	45
5	Track interleave (40 main tracks with 12,7 mm tape width) .....	47
6	Track interleave (40 main tracks with 25,4 mm tape width) .....	49
7	Track interleave (80 main tracks with 25,4 mm tape width) .....	51

## Figures

1	Recording channels of a DATR (digital audio tape recorder) .....	11
2	Data flow of the main audio channels of a DATR (digital audio tape recorder) .....	11
3	Reproducing channels of a DATR (digital audio tape recorder) .....	13
4	Track pattern for DATR on magnetic tape (24 tracks with 12,7 mm tape width) .....	17
5	Track pattern for DATR on magnetic tape (47 tracks with 12,7 mm tape width) .....	19
6	Track pattern for DATR on magnetic tape (45 tracks with 25,4 mm tape width) .....	21
7	Track pattern for DATR on magnetic tape (89 tracks with 25,4 mm tape width) .....	23
8	Emphasis characteristics.....	25
9	Frame and block structure.....	29
10	Synchronization pattern.....	29
11	Signal word distribution to tracks.....	31
12	Symbol and word structure.....	35
13	Example of input data $V_1$ .....	37
14	Main-frame interleave (tape speed I).....	39
15	Main-frame interleave (tape speed II).....	41
16	Code interleave.....	43

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**MULTICHANNEL DIGITAL AUDIO TAPE RECORDER (DATR),  
REEL-TO-REEL SYSTEM, FOR PROFESSIONAL USE –****Part 1: Format A**

## FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61595-1 has been prepared by subcommittee 100B: Recording, of IEC technical committee 100: Audio, video and multimedia systems and equipment.

The text of this standard is based on the following documents:

FDIS	Report on voting
100B/48/FDIS	100B/63/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

IEC 61595 consists of the following parts, under the general title: Multichannel digital audio tape recorder (DATR), reel-to-reel system, for professional use:

- Part 1: Format A
- Part 2: Format B
- Part 3: 24 bit operation for 16 bit media

Annex A is for information only.

# MULTICHANNEL DIGITAL AUDIO TAPE RECORDER (DATR), REEL-TO-REEL SYSTEM, FOR PROFESSIONAL USE –

## Part 1: Format A

### 1 Scope

This part of IEC 61595 applies to 8 to 64 channel digital audio recording on 12,7 mm or 25,4 mm wide tape (hereafter called tape), with stationary heads, for professional use. It defines the mechanical and electrical characteristics necessary to ensure the interchangeability of programmes, recorded as digital audio signals on magnetic tape in professional industries.

### 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 61595. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 61595 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60461: 1986, *Time and control code for video tape recorders*

IEC 61120-4: 1992, *Digital audio tape recorder reel-to-reel system, using 6,3 mm magnetic tape, for professional use – Part 4: Magnetic tape properties: definitions and methods of measurement*

<https://standards.iteh.ai/catalog/standards/sist/4f463b51-1c58-4b43-8f23-f9060bd014df/sist-en-61595-1-1999>

ITU-T V.41: 1988, *Code-independent error-control system*

### 3 Definitions

For the purpose of this part of IEC 61595, the following definitions apply.

#### 3.1 Data flow of a digital audio tape recorder

Figure 1 shows, within a block diagram, the main data flow of a DATR (digital audio tape recorder).

Figure 2 shows the recording channels of a DATR.

Figure 3 shows the reproducing channels of a DATR.

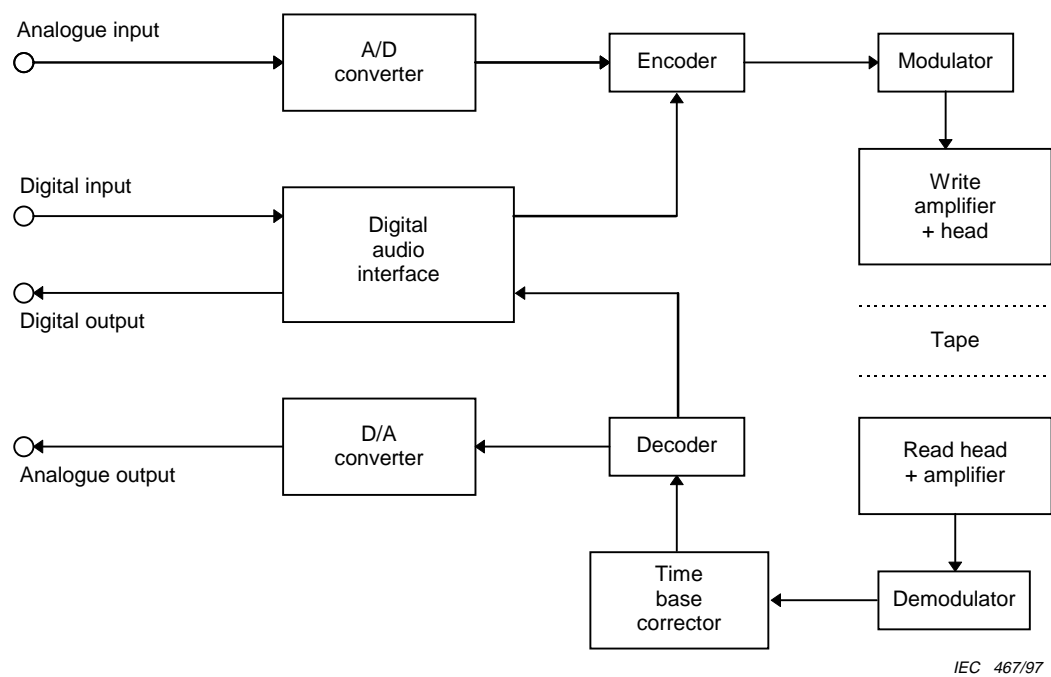


Figure 1 – Recording channels of a DATR (digital audio tape recorder)

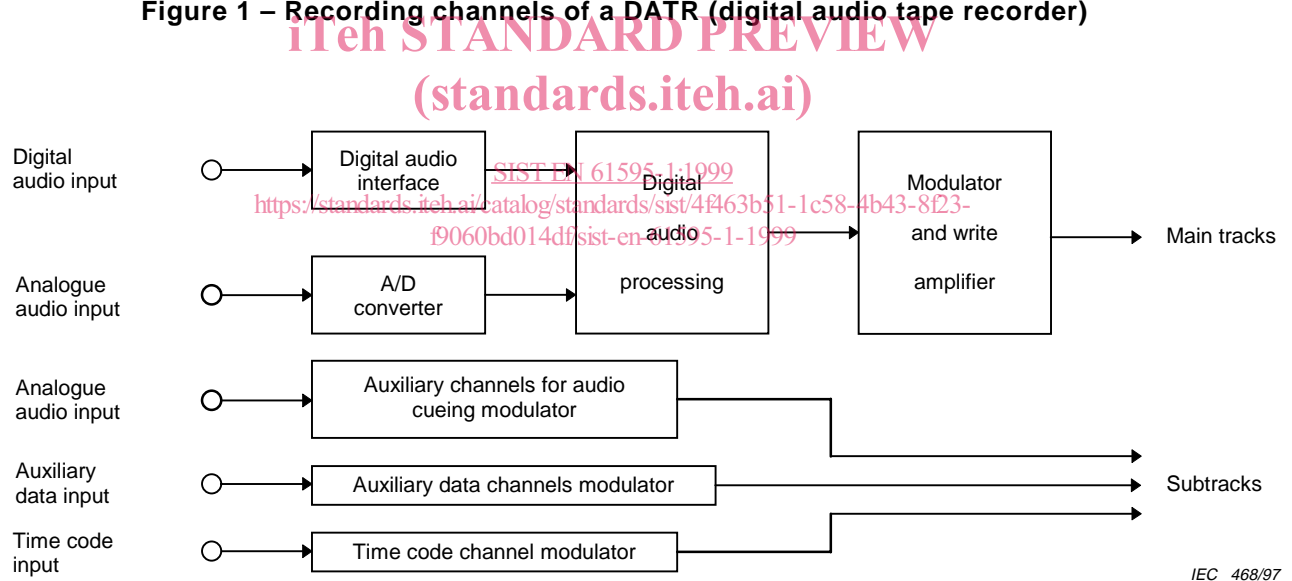


Figure 2 – Data flow of the main audio channels of a DATR (digital audio tape recorder)