



SLOVENSKI STANDARD

SIST EN 61179:1999

01-april-1999

Helical-scan digital composite video cassette recording system using 19 mm magnetic tape, format D2 (NTSC, PAL, PAL-M) (IEC 61179:1993)

Helical-scan digital composite video cassette recording system using 19 mm magnetic tape, format D2 (NTSC, PAL, PAL-M)

Videokassettensystem mit Schrägspuraufzeichnung digitaler Composite-Signale auf Magnetband 19 mm, D2-Format (NTSC, PAL, PAL-M)

Système de magnétoscope numérique à chrominance composite à cassette à balayage hélicoïdal utilisant la bande magnétique de 19 mm, format D2 (NTSC, PAL, PAL-M)

<https://standards.iteh.ai/catalog/standards/sist/635e3319-16f4-41d8-b9a8-6e23c328d1d2/sist-en-61179-1999>

Ta slovenski standard je istoveten z: **EN 61179:1993**

ICS:

33.160.40 Video sistemi Video systems

SIST EN 61179:1999 en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 61179:1999

<https://standards.iteh.ai/catalog/standards/sist/635e3319-16f4-41d8-b9a8-6e23c328d1d2/sist-en-61179-1999>

UDC 621.397.43

Descriptors: Recording apparatus, digital recording, video tape recorders, chrominance, cassette for magnetic tapes, magnetic tapes, digital signals, video signals, acoustic signals, recording track, electric properties, mechanic properties, interchangeability, dimensions, recording characteristics

ENGLISH VERSION

Helical-scan digital composite video cassette recording system using 19 mm magnetic tape, format D2 (NTSC, PAL, PAL-M)
(IEC 1179:1993)

Systeme de magnéscope numérique à chrominance composite à cassette à balayage hélicoïdal utilisant la bande magnétique de 19 mm, format D2 (NTSC, PAL, PAL-M)
(CEI 1179:1993)

Videokassettsystem mit Schrägspuraufzeichnung digitaler Composite-Signale auf Magnetband 19 mm, D2-Format (NTSC, PAL, PAL-M)
(IEC 1179:1993)

SIST EN 61179:1999

This European Standard was approved by CENELEC on 1993-07-06.

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

© 1993 Copyright reserved to CENELEC members

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Ref. No. EN 61179:1993 E

SIST EN 61179:1999

[https://standards.iteh.ai/catalog/standards/sist/635e3319-16f4-41d8-b9a8-](https://standards.iteh.ai/catalog/standards/sist/635e3319-16f4-41d8-b9a8-6e23c328d1d2/sist-en-61179-1999)

[6e23c328d1d2/sist-en-61179-1999](https://standards.iteh.ai/catalog/standards/sist/635e3319-16f4-41d8-b9a8-6e23c328d1d2/sist-en-61179-1999)

FOREWORD

The text of document 60B(CO)144, as prepared by Sub-Committee 60B: Video recording, of IEC Technical Committee 60: Recording, was submitted to the IEC-CENELEC parallel vote in March 1992.

The reference document was approved by CENELEC as EN 61179 on 6 July 1993.

The following dates were fixed:

- latest date of publication of
an identical national standard (dop) 1994-07-01
- latest date of withdrawal of
conflicting national standards (dow) 1994-07-01

Annexes designated "normative" are part of the body of the standard. Annexes designated "informative" are given only for information. In this standard, annexes A, B and ZA are normative and annex C is informative.

SIST EN 61179:1999

ENDORSEMENT NOTICE

The text of the International Standard IEC 1179:1993 was approved by CENELEC as a European Standard without any modification.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 61179:1999

[https://standards.iteh.ai/catalog/standards/sist/635e3319-16f4-41d8-b9a8-](https://standards.iteh.ai/catalog/standards/sist/635e3319-16f4-41d8-b9a8-6e23c328d1d2/sist-en-61179-1999)

[6e23c328d1d2/sist-en-61179-1999](https://standards.iteh.ai/catalog/standards/sist/635e3319-16f4-41d8-b9a8-6e23c328d1d2/sist-en-61179-1999)

ANNEX ZA (normative)

OTHER INTERNATIONAL PUBLICATIONS QUOTED IN THIS STANDARD
WITH THE REFERENCES OF THE RELEVANT EUROPEAN PUBLICATIONS

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

IEC Publication -----	Date ----	Title -----	EN/HD -----	Date ----
461	1986	Time and control code for videotape recorders	HD 507 S1	1988
735	1991	Measuring methods for videotape properties	EN 60735	1991
958	1989	Digital audio interface	EN 60958	1990

Other publications quoted:

CCIR Volume X1 - Part 1 - Section 11A - Rapport 624-3:1986
Characteristics of television systems

[SIST EN 61179:1999](#)

CCITT Blue book, Volume III - Fascicle III.4 - Recommendation J.15:1988,
Lining-up and monitoring an international sound-programme connection

CCITT Blue book, Volume III - Fascicle III.6 - Recommendation J.17:1988,
Pre-emphasis used on sound-programme circuits

IEEE Standard 1952:1953, Volume measurements of electrical speech and program waves

ISO 2110 1989 Information technology - Data communication - 25-pole DTE/DCE interface connector and contact number assignments

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 61179:1999](#)

[https://standards.iteh.ai/catalog/standards/sist/635e3319-16f4-41d8-b9a8-](https://standards.iteh.ai/catalog/standards/sist/635e3319-16f4-41d8-b9a8-6e23c328d1d2/sist-en-61179-1999)

[6e23c328d1d2/sist-en-61179-1999](https://standards.iteh.ai/catalog/standards/sist/635e3319-16f4-41d8-b9a8-6e23c328d1d2/sist-en-61179-1999)

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 61179:1999

<https://standards.iteh.ai/catalog/standards/sist/635e3319-16f4-41d8-b9a8-6e23c328d1d2/sist-en-61179-1999>

**NORME
INTERNATIONALE
INTERNATIONAL
STANDARD**

**CEI
IEC**

61179

Première édition
First edition
1993-02

**Système de magnétoscope numérique
à chrominance composite à cassette
à balayage hélicoïdal utilisant la bande
magnétique de 19 mm, format D2
(NTSC, PAL, PAL-M)**

ITeH STANDARD PREVIEW
(standards.iteh.ai)

**Helical-scan digital composite video cassette
recording system using 19 mm magnetic tape,
format D2 (NTSC, PAL, PAL-M)**

© IEC 1993 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 XE
PRICE CODE

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

CONTENTS

	Page
FOREWORD	7
INTRODUCTION	9
SECTION 1: GENERAL	
Clause	
1.1 Scope	15
1.2 Normative references	15
1.3 Definitions, symbols and abbreviations	17
1.4 Environment and test conditions, reference tape and calibration tape	17
SECTION 2: VIDEOTAPE-CASSETTE	
2.1 Mechanical parameters	21
2.2 Videotape specification	75
SECTION 3: HELICAL RECORDINGS	
3.1 Tape speed	77
3.2 Record location and dimensions	77
3.3 Helical track record curvature, tolerance zones, centre lines	87
3.4 Relative positions of recorded signals	89
3.5 Gap azimuth	89
3.6 Transport and scanner	89
SECTION 4: PROGRAM TRACK DATA ARRANGEMENT	
4.1 Introduction	99
4.2 Labelling convention	99
4.3 Sector details	103
4.4 Edit gaps	117
4.5 Channel code	119
SECTION 5: VIDEO INTERFACE	
5.1 Encoding parameters	123
5.2 Parallel digital signal interface	143
5.3 Serial digital signal interface	153

SECTION 6: AUDIO INTERFACE

Clause	Page
6.1 Encoding parameters	155
6.2 Digital signal interface	155

SECTION 7: VIDEO PROCESSING

7.1 Recorded data	163
7.2 Intersector distribution	163
7.3 Intrasector shuffling	163
7.4 Sector array	173
7.5 Outer code error protection	173

SECTION 8: AUDIO PROCESSING

8.1 Introduction	179
8.2 Source coding	179
8.3 Source processing	187
8.4 Auxiliary words	193
8.5 Outer error protection	209
8.6 Inner protection and channel coding	211
8.7 Order of transmission to inner coding	211
8.8 Order of audio sectors	211

SECTION 9: LONGITUDINAL TRACKS

9.1 General	213
9.2 Relative timing	213
9.3 Control track	213
9.4 Cue record	217
9.5 Time code record	217

Annexes

A Audio levels	221
B Cross-tape track measurement technique	223
C Examples of error correcting codes	231

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HELICAL-SCAN DIGITAL COMPOSITE
VIDEO CASSETTE RECORDING SYSTEM USING
19 mm MAGNETIC TAPE, FORMAT D2
(NTSC, PAL, PAL-M)**

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a world-wide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international cooperation 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, prepared by technical committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 3) They have the form of recommendations for international use 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.

International Standard IEC 1179 has been prepared by sub-committee 60B: Video recording, of IEC technical committee 60: Recording.

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

DIS	Report on Voting
60B(CO)144	60B(CO)157

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

Annexes A, B and C form an integral part of this standard.

Annex D is for information only.

INTRODUCTION

The purpose of International Standard IEC 1179 is to define the electrical and mechanical characteristics of equipment which permits the interchangeability of 19 mm cassettes containing digitally recorded composite video programs.

The requirements given relate to 525-line composite TV signals (NTSC, PAL-M) with a frame frequency of 29,97 Hz nominal, and to 625-line composite TV signals (PAL) with a frame frequency of 25 Hz.

One video channel and four independent audio channels are recorded in a digital format. The video signal may be input or output in either analog or digital format. The audio signals may also be input or output in either analog or digital format. In addition, a cue audio signal is recorded in analog format.

Figures 1 and 2 show a block diagram of the processes involved in the recorder.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 61179:1999](https://standards.iteh.ai/catalog/standards/sist/635e3319-16f4-41d8-b9a8-6e23c328d1d2/sist-en-61179-1999)

<https://standards.iteh.ai/catalog/standards/sist/635e3319-16f4-41d8-b9a8-6e23c328d1d2/sist-en-61179-1999>

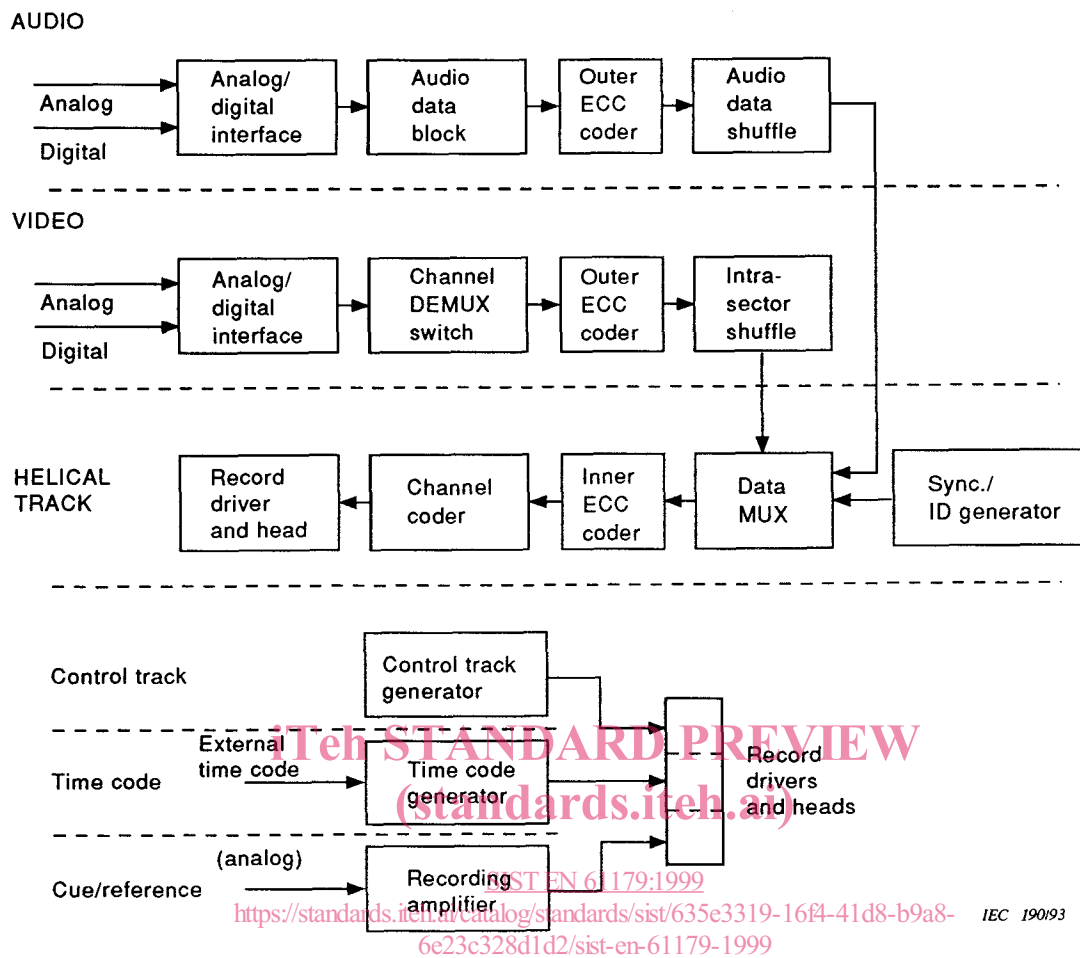


Figure 1 – Record block diagram

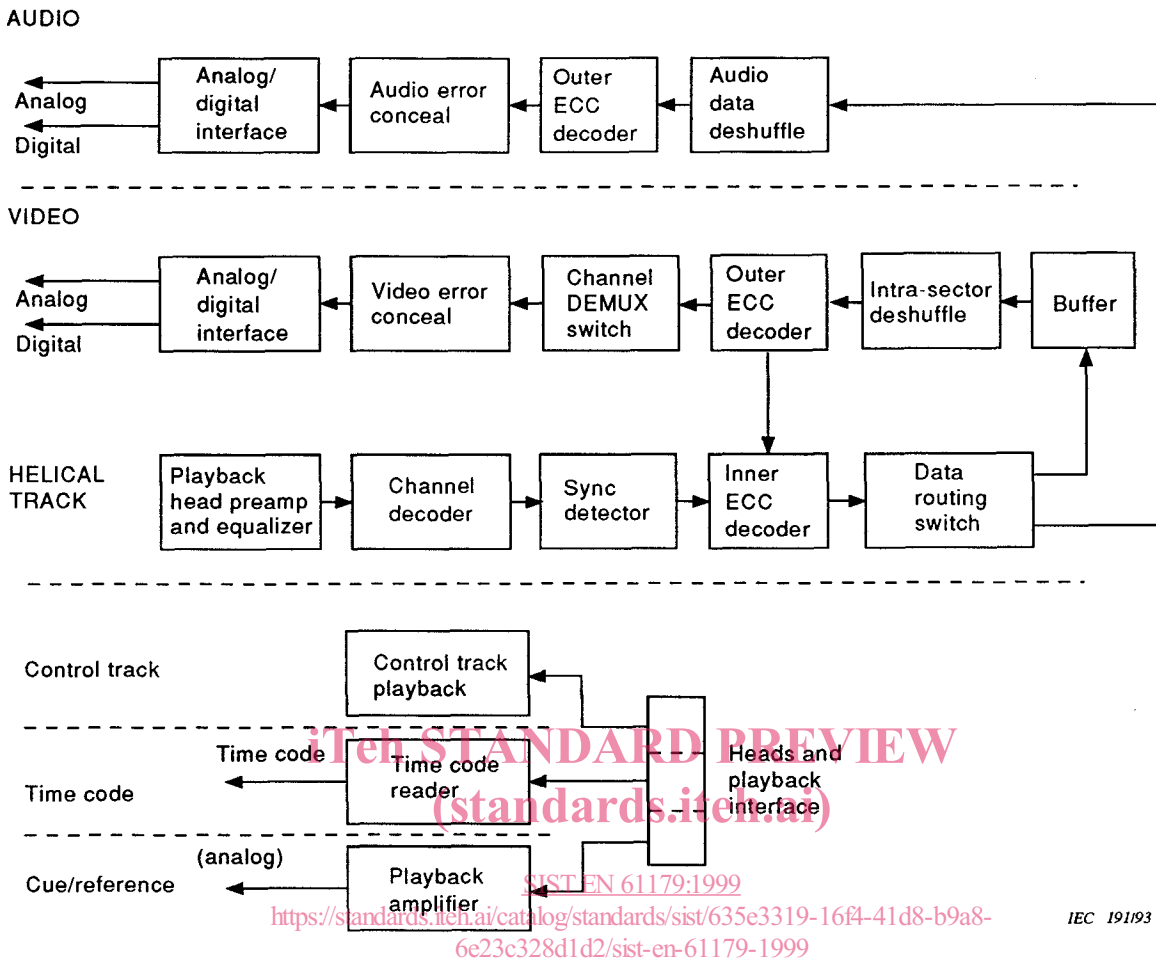


Figure 2 – Playback block diagram

**HELICAL-SCAN DIGITAL COMPOSITE
VIDEO CASSETTE RECORDING SYSTEM USING
19 mm MAGNETIC TAPE, FORMAT D2
(NTSC, PAL, PAL-M)**

SECTION 1: GENERAL

1.1 Scope

This International Standard specifies the content, format and recording method of the data blocks forming the helical records on the tape containing video, audio and associated data using the 19 mm type D-2 cassette. In addition, this standard specifies the content, format and recording method of the longitudinal record containing tracking information for the scanning head associated with the helical records.

1.2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All normative documents are subject to revision and parties to agreements based on this International Standard 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.

[https://standards.iteh.ai/catalog/standards/sist/635e3319-16f4-41d8-b9a8-](https://standards.iteh.ai/catalog/standards/sist/635e3319-16f4-41d8-b9a8-6e23c328d1d2/sist-en-61179-1999)

[6e23c328d1d2/sist-en-61179-1999](https://standards.iteh.ai/catalog/standards/sist/635e3319-16f4-41d8-b9a8-6e23c328d1d2/sist-en-61179-1999)

IEC 461: 1986, *Time and control code for videotape recorders*

IEC 735: 1991, *Measuring methods for videotape properties*

IEC 958: 1989, *Digital audio interface*

CCIR Volume X1 – Part 1 – Section 11A – Rapport 624-3: 1986 – *Characteristics of television systems*

CCITT Blue book, Volume III – Fascicle III.4 – Recommendation J.15: 1988, *Lining-up and monitoring an international sound-programme connection*

CCITT Blue book, Volume III – Fascicle III.6 – Recommendation J.17: 1988, *Pre-emphasis used on sound-programme circuits*

IEEE Standard 1952: 1953, *Volume measurements of electrical speech and program waves*

ISO 2110: 1989, *Information technology – Data communication – 25-pole DTE/DCE interface connector and contact number assignments*

1.3 Definitions, symbols and abbreviations

For the purposes of this International Standard, the following definitions apply.

1.3.1 **AES:** Audio engineering society.

1.3.2 **ECL:** Emitter coupled logic, family of digital logic integrated circuits. In this standard, ECL refers to the 10 000 series of logic integrated circuits.

1.3.3 **GF Galois field:** Mathematical field containing a finite number of elements in which algebraic operations may be performed. The number of field elements is generally written as an argument in parentheses, e.g. GF(256).

1.3.4 **LSB**

- 1) Least significant bit of a word of data.
- 2) Least significant byte of a data item consisting of two or more bytes.

1.3.5 **MSB**

- 1) Most significant bit of a word of data.
- 2) Most significant byte of a data item consisting of two or more bytes.

[SIST EN 61179:1999](https://standards.iteh.ai/catalog/standards/sist/635e3319-16f4-41d8-b9a8-025c328d1d2/sist-en-61179-1999)

1.3.6 **r.p.s.:** Revolutions per second

<https://standards.iteh.ai/catalog/standards/sist/635e3319-16f4-41d8-b9a8-025c328d1d2/sist-en-61179-1999>

1.3.7 **Sch:** Colour subcarrier to horizontal sync timing relationship.

1.4 Environment and test conditions, reference tape and calibration tape

1.4.1 *Environment and test conditions*

Tests and measurements made on the system to check the requirements of this standard shall be carried out under the following conditions:

- temperature: 20 °C ± 1 °C;
- relative humidity: 50 % ± 2 %;
- barometric pressure: 96 kPa ± 10 kPa;
- tape conditioning: not less than 24 h;
- tape tension: 0,7 N ± 0,05 N.