
Helical-scan video tape cassette system using 12,65 mm (0,5 in) magnetic tape - Type M2 (IEC 61118:1993)

Helical-scan video tape cassette system using 12,65 mm (0,5 in) magnetic tape - Type M2

Videoband-Kassettensystem mit Schrägspuraufzeichnung auf Magnetband 12,65 mm (0,5 in) - Typ M2

Système de magnétoscope à cassette à balayage hélicoïdal utilisant la bande magnétique de 12,65 mm (0,5 in) de type M2

<https://standards.iteh.ai/catalog/standards/sist/9a7542c6-1537-45c4-8782-4239752d7ea4/sist-en-61118-1999>

Ta slovenski standard je istoveten z: EN 61118:1993

ICS:

33.160.40

Video sistemi

Video systems

SIST EN 61118:1999**en**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 61118:1999

<https://standards.iteh.ai/catalog/standards/sist/9a7542c6-1537-45c4-8782-4239752d7ea4/sist-en-61118-1999>

UDC 621.397.454

Descriptors: Magnetic recording, video recording, audio recording, recording apparatus, video tape recorders, magnetic tapes cassettes, dimensions, recording characteristics, interchangeability

ENGLISH VERSION

Helical-scan video tape cassette using 12,65 mm
(0,5 in) magnetic tape - Type M2
(IEC 1118:1993)

Système de magnétoscope à
cassette à balayage hélicoïdal
utilisant la bande magnétique de
12,65 mm (0,5 in) de type M2
(CEI 1118:1993)

Videoband-Kassettensystem mit
Schrägschraufzeichnung auf
Magnetband 12,65 mm (0,5 in)
Typ M2
(IEC 1118:1993)

SIST EN 61118:1999

This European Standard was approved by CENELEC on 1993-09-22.
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 60B(CO)135, as prepared by Sub-Committee 60B: Video recording, of IEC Technical Committee 60: Recording, was submitted to the IEC-CENELEC parallel vote in May 1992.

The reference document was approved by CENELEC as EN 61118 on 22 September 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, annex A is informative and annex ZA is normative.

SIST EN 61118:1999

ENDORSEMENT NOTICE

The text of the International Standard IEC 1118:1993 was approved by CENELEC as a European Standard without any modification.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ANNEX ZA (normative)

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

NOTE : 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
-----	----	-----	-----	----
94-1	1981	Magnetic tape sound recording and reproducing systems - Part 1: General conditions and requirements	EN 60094-1	1993
461	1986	Time and control code for video tape recorders	HD 507 S1	1988

SIST EN 61118:1999

Other publication:

EBU R-50:1989 - Conservation of the polarity of audio signals in radio and television production installations

iTeh STANDARD PREVIEW
(standards.iteh.ai)

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 61118:1999

<https://standards.iteh.ai/catalog/standards/sist/9a7542c6-1537-45c4-8782-4239752d7ea4/sist-en-61118-1999>

NORME
INTERNATIONALE
INTERNATIONAL
STANDARD

CEI
IEC
1118

Première édition
First edition
1993-07

**Système de magnétoscope à cassette
à balayage hélicoïdal utilisant
la bande magnétique de 12,65 mm (0,5 in)
de type M2**

iTeh STANDARD PREVIEW

**Helical-scan video tape cassette
system using 12,65 mm (0,5 in)
magnetic tape — Type M2**

<https://standards.iteh.ai/catalog/standards/sist/9a7542c6-1537-45c4-8782-4239752d7ea4/sist-en-61118-1999>

© CEI 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.

Bureau Central de la Commission Electrotechnique Internationale 3, rue de Varembe Genève, Suisse



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

CODE PRIX
PRICE CODE

XC

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

CONTENTS

	Page
FOREWORD	9
SECTION 1: GENERAL	
Clause	
1.1 Scope	11
1.2 Normative references	11
1.3 Environment and test conditions	11
1.3.1 Environment	11
1.3.2 Reference tape	13
1.3.3 Calibration tape	13
SECTION 2: VIDEO TAPE CASSETTE	
2.1 Mechanical parameters	15
2.1.1 Cassette type	15
2.1.2 Dimensions of cassettes	15
2.1.3 Cassette dimension datum system	15
2.1.4 Window and label-pasting faces	15
2.1.5 Identification holes	17
2.1.6 Dimensions of reels	19
2.1.7 Tape windings	19
2.1.8 Unlocking of lid	19
2.1.9 Opening of lid	19
2.1.10 Releasing of reel brake	19
2.1.11 Automatic stop	19
SECTION 3: VIDEO CASSETTE RECORDERS	
3.1 Definitions	19
3.1.1 Scanner	19
3.1.2 Drum	19
3.1.3 Upper drum	19
3.1.4 Lower drum	21
3.1.5 Effective drum diameter	21
3.1.6 Helix angle	21
3.1.7 Track angle	21
3.2 Drum diameter and structure	21
3.2.1 Actual upper drum diameter	21
3.2.2 Actual lower drum diameter	21
3.2.3 Upper drum section	21
3.3 Scanner pole tips	21
3.3.1 Pole tip projection	21
3.3.2 Pole tips	23
3.3.3 Chordal distance between luminance and chrominance pole tips	23

Clause		Page
3.3.4	Axial distance between luminance and chrominance pole tips	23
3.3.5	Channel identification	23
3.4	Helix angle	23
3.5	Dimensions and locations of records	23
3.5.1	Test environment	23
3.5.2	Tape speed	25
3.5.3	Record locations and dimensions	25
3.5.4	Video record curvature	25
3.5.5	Gap azimuth	25
3.6	Recording characteristics	25

SECTION 4: TAPE CHARACTERISTICS

4.1	Dimensions of video tape	29
4.1.1	Magnetic tape thickness	29
4.1.2	Magnetic tape width	29
4.2	Magnetic tape properties	29
4.2.1	Type of magnetic tape	29
4.2.2	Magnetic orientation	29
4.2.3	Coercivity	29
4.3	Leader tape and trailer tape	29
4.3.1	Automatic stop	29
4.3.2	Dimensions of leader and trailer tape	29
4.3.3	Splicing	29

SECTION 5: RECORDING CHARACTERISTICS

5.1	Video signal recording	31
5.1.1	Luminance channel	31
5.1.2	Chrominance channel	37
5.1.3	Y-C timing	43
5.1.4	Vertical interval subcarrier (VISC)	43
5.2	Longitudinal audio signal recording	45
5.2.1	Recording method	45
5.2.2	Recording/Reproducing reference levels	45
5.2.3	Frequency characteristics	45
5.2.4	Track usage (common audio mode)	47
5.2.5	Program audio head phasing	49
5.2.6	Recording polarity	49
5.3	FM audio signal recording (optional)	49
5.3.1	Recording/Reproducing reference levels	49
5.3.2	Noise reduction	49
5.3.3	Pre-emphasis	51
5.3.4	Frequency modulation	51
5.3.5	Recording head current	51
5.3.6	Recording polarity	51

Clause	Page
5.4 Time and control code signal recording	51
5.4.1 Time and control code	51
5.4.2 Recording track	51
5.4.3 Recording method	53
5.4.4 Recording level	53
5.5 Tracking control signal recording	53
5.5.1 Recording track	53
5.5.2 Recording waveform and level	53
5.5.3 Polarity of remanent magnetization	53
5.5.4 Timing and period	53
5.5.5 Colour framing information	53
5.5.6 Magnetization level	53
5.5.7 Rise time	53
5.6 PCM audio recording (PCM audio mode)	55
5.6.1 Source coding	55
5.6.2 Signal processing	57
Figures	75
Annex A – Reference tape	169

ITeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 61118:1999

<https://standards.iteh.ai/catalog/standards/sist/9a7542c6-1537-45c4-8782-4239752d7ea4/sist-en-61118-1999>

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HELICAL-SCAN VIDEO TAPE CASSETTE SYSTEM
USING 12,65 mm (0,5 in) MAGNETIC TAPE –
TYPE M2**

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 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.

SIST EN 61118:1999

<https://standards.iteh.ai/catalog/standards/sist/9a7542c6-1537-45c4-8782->

International Standard IEC 1118 has been prepared by IEC 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)135	60B(CO)162

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

HELICAL-SCAN VIDEO TAPE CASSETTE SYSTEM USING 12,65 mm (0,5 in) MAGNETIC TAPE – TYPE M2

SECTION 1: GENERAL

1.1 Scope

This International Standard is applicable to magnetic video recording using 12,65 mm (0,5 in) tape cassettes on helical-scan video tape recorders and defines the basic M2 format video cassette system.

This standard also specifies two different audio recording modes:

- 1) common audio mode and
- 2) pulse code modulation audio mode.

PCM audio mode has a limited interchangeability. FM audio recording shown in this standard is optional.

The object of this International Standard is to define dimensions and other characteristics of equipment which are necessary to ensure the interchangeability of recorded cassettes. The requirements given relate to 525 line-60 field and 625 line-50 field systems.

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.

IEC 94-1: 1981, *Magnetic tape sound recording and reproducing systems - Part 1: General conditions and requirements*.

IEC 461: 1986, *Time and control code for video tape recorders*.

EBU R-50: 1989, *Conservation of the polarity of audio signals in radio and television production installations*.

1.3 Environment and test conditions

1.3.1 Environment

Tests and measurements made on the system to check the requirements of this International Standard shall be made under the following conditions unless otherwise specified:

Temperature (drum diameter):	20 °C ± 0,5 °C
Temperature (all other tests):	20 °C ± 1 °C
Relative humidity:	50% ± 2 %
Barometric pressure:	86 kPa to 106 kPa
Conditioning before testing:	24 h

1.3.2 *Reference tape*

Blank tape to be used for reference recordings may be purchased from the manufacturers listed in annex A. Electromagnetic compatibility parameters and their specifications shall be specified by the manufacturer and controlled accordingly.

Electromagnetic compatibility parameters and their specifications are indicated in annex A.

1.3.3 *Calibration tape*

Calibration tapes satisfying the following requirements will be available for purchase from manufacturers of video tape recorders and players in accordance with this format specification.

1.3.3.1 *Record locations and dimensions*

In principle, 50 % reduction in the tolerances shown in table 1 shall be applied to calibration tapes to be used for the purpose of calibrating the mechanical accuracy of recorders or players in accordance with this format specification. If necessary, the record locations and dimensions may be specially modified for some calibration tapes in order to avoid certain calibration errors or to facilitate certain calibration work.

1.3.3.2 *Calibration signals*

Two classes of signals shall be recorded on the calibration tapes:

- a) A series of conventional analogue component test signals for video tape recorders.

<i>Video</i>	<i>Audio</i>
- Colour bars	- 1 kHz - 0 VU
- Multi-burst	- 15 kHz - 0 VU
- Bowtie	- 20 or 40 Hz - 10 VU
- Pulse and bar	- 1 kHz - 10 VU
	- 7,5 kHz - 10 VU
	- 10 kHz - 10 VU
	- 15 kHz - 10 VU
<i>AFM</i>	
- 1 kHz, 70 kHz deviation.	

- b) Special test signals developed by each manufacturer for product alignment. These signals are not universally applicable to the products from each manufacturer and are not specified in this International Standard.

SECTION 2: VIDEO TAPE CASSETTE

2.1 Mechanical parameters

2.1.1 *Cassette type*

There are two cassette types, characterized by the outside dimensions shown below:

- large cassette: 106 mm x 188 mm x 25 mm
- small cassette: 87 mm x 130 mm x 25 mm

2.1.2 *Dimensions of cassettes*

The dimensions permitting the interchangeability of cassettes shall be in accordance with figures 1 to 5 and figures 7 to 11.

2.1.3 *Cassette dimension datum system*

2.1.3.1 *Datum holes*

These shall be holes serving for the reference when loading a cassette into the video tape recorder, and shall also be the reference for the cassette dimensions (see figures 2, 4, 8 and 10).

2.1.3.2 *Datum plane Z*

This shall be a plane containing three datum positions A, B and C on the bottom of the cassette (see figures 4 and 10).

2.1.3.3 *Datum plane X*

Large cassette: This shall be a plane orthogonal to datum plane Z and containing the centre lines of datum holes A and B (see figures 2 and 4).

Small cassette: This shall be a plane parallel to the long side face of the cassette orthogonal to datum plane Z and containing the centre line of datum hole A (see figures 8 and 10).

2.1.3.4 *Datum plane Y*

This shall be the plane orthogonal to both datum planes X and Z and containing the centre line of datum hole A (see figures 2, 4, 8 and 10).

2.1.4 *Window and label-pasting faces*

Large cassettes shall conform to figure 1.

Small cassettes shall conform to figure 7.

2.1.5 Identification holes

Various holes shall be provided for identifying cassette conditions (see figures 2 and 8). Each hole may be set in the closed state or the open state.

Closed state: The hole depth shall be 0 mm to 0,25 mm; be able to withstand the normal load of 0,5 N

Open state: The hole diameter shall be $3^{+0,3}_{-0,1}$ mm; The hole depth shall be 5 mm or more.

2.1.5.1 Erasure prevention identification hole

Large cassettes shall be defined by figure 2.

Small cassettes shall be defined by figure 8.

The erasure prevention identification hole shall be coupled to the erasure prevention mechanism shown in figure 1 and 7 and may be changed between the closed state and the open state. Each state shall be defined as follows:

Identification hole closed: Ready to record.

Identification hole open: Not ready to record.

2.1.5.2 Tape type identification hole

Large cassettes shall be defined by figure 2.

Small cassettes shall be defined by figure 8.

The closed state of the identification hole shall be defined as follows:

Identification hole closed: Metal tape.

(Coercive force: approximately 120×10^3 A/m).

2.1.5.3 Tape thickness identification hole

Large cassettes shall be defined by figure 2.

Small cassettes shall be defined by figure 8.

The closed state of the identification hole shall be defined as follows:

Identification hole closed: Tape total thickness is $13,5 \mu\text{m} \pm 0,5 \mu\text{m}$.

2.1.5.4 Extra identification holes

These holes are provided for future usage. The positions of these holes shall be as shown below:

Large cassettes shall be as defined in figure 2 (five holes).

Small cassettes shall be as defined in figure 8 (two holes).