
Magnetic tape sound recording and reproducing systems -- Part 3: Methods of measuring the characteristics of recording and reproducing equipment for sound on magnetic tape (IEC 60094-3:1979 + A1:1980 + A2:1988)

Magnetic tape sound recording and reproducing systems -- Part 3: Methods of measuring the characteristics of recording and reproducing equipment for sound on magnetic tape

Systeme für Tonaufzeichnung und -wiedergabe auf Magnetband -- Teil 3: Meßverfahren zur Bestimmung der Eigenschaften von Aufnahme- und Wiedergabegeräten

Systèmes d'enregistrement et de lecture du son sur bandes magnétiques -- Partie 3: Méthodes de mesure des caractéristiques des matériels d'enregistrement et de lecture du son sur bandes magnétiques

Ta slovenski standard je istoveten z: EN 60094-3:1996

ICS:

33.160.30 Avdio sistemi Audio systems

SIST EN 60094-3:1999 **en**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 60094-3:1999

<https://standards.iteh.ai/catalog/standards/sist/8831c7c4-a6a6-4805-a3ab-128beeca1bf7/sist-en-60094-3-1999>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 60094-3

April 1996

UDC 681.846.7:620.1:621.317.7.08
ICS 33.160.30

Supersedes HD 311.3 S2:1989

Descriptors: Sound system equipment, sound recording and reproduction, magnetic tape, characteristic, measurement, test condition

English version

**Magnetic tape sound recording and reproducing systems
Part 3: Methods of measuring the characteristics of recording
and reproducing equipment for sound on magnetic tape
(IEC 94-3:1979 + A1:1980 + A2:1988)**

Systèmes d'enregistrement et de lecture
du son sur bandes magnétiques
Partie 3: Méthodes de mesure des
caractéristiques des matériels
d'enregistrement et de lecture du son
sur bandes magnétiques
(CEI 94-3:1979 + A1:1980 +
A2:1988)

Systeme für Tonaufzeichnung
und -wiedergabe auf Magnetband
Teil 3: Meßverfahren zur Bestimmung
der Eigenschaften von Aufnahme- und
Wiedergabegeräten
(IEC 94-3:1979 + A1:1980 +
A2:1988)

<https://standards.itec.ai/catalog/standards/sist/8851c7c4-a0a6-4805-a3ab-128beeca1bf7/sist-en-60094-3-1999>

This European Standard was approved by CENELEC on 1993-12-08. 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

Page 2
EN 60094-3:1995

Foreword

The text of the International Standard IEC 94-3:1979 + A1:1980 + A2:1988, prepared by SC 60A (transformed into SC 100B, Recording, of IEC TC 100, Audio, video and multimedia systems and equipment), was approved by CENELEC as HD 311.3 S2:1989 on 1989-08-01.

As a consequence of the IEC-CENELEC Agreement, this Harmonization Document was submitted to the formal vote for conversion into a European Standard and was approved by CENELEC as EN 60094-3 on 1993-12-08.

The following date was 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) 1996-12-01

Annexes designated "normative" are part of the body of the standard.

In this standard, annex ZA is normative.

Annex ZA has been added by CENELEC.

ITEH STANDARD PREVIEW

(standards.iteh.ai)

Endorsement notice

SIST EN 60094-3:1999

The text of the International Standard IEC 94-3:1979 + A1:1980 + A2:1988 was approved by CENELEC as a European Standard without any modification.

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 38	1975 ¹⁾	IEC standard voltages	-	-
IEC 65 (mod)	1976	Safety requirements for mains operated electronic and related apparatus for household and similar general use	HD 195 S4 ²⁾	1985
IEC 263	1975	Scales and sizes for plotting frequency characteristics and polar diagrams	-	-
IEC 268-1	1968 ³⁾	Sound system equipment Part 1: General	-	-
IEC 268-3	1969 ⁴⁾	Part 3: Sound system amplifiers	-	-
IEC 268-15	1978 ⁵⁾	Part 15: Preferred matching values for the interconnection of sound system components	-	-
IEC 386	1972	Method of measurement of speed fluctuations in sound recording and reproducing equipment	-	-
IEC 651	1979	Sound level meters	EN 60651	1994

1) IEC 38:1975 is superseded by IEC 38:1983, mod. - which is harmonized as HD 472 S1:1989.

2) HD 195 S4 is superseded by EN 60065:1993, which is based on IEC 65:1985, mod.

3) IEC 268-1:1985 + A1:1988 are harmonized as HD 483.1 S2:1989.

4) IEC 268-3:1988 + A1:1990 + A2:1991 are harmonized as HD 483.3 S2:1992.

5) IEC 268-15:1987 + A1:1989 + A2:1990 + A3:1991 are harmonized as HD 483.15 S4:1992.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 60094-3:1999

<https://standards.iteh.ai/catalog/standards/sist/8831c7c4-a6a6-4805-a3ab-128beeca1bf7/sist-en-60094-3-1999>

**NORME
INTERNATIONALE
INTERNATIONAL
STANDARD**

**CEI
IEC
94-3**

Première édition
First edition
1979

**Systèmes d'enregistrement et de lecture du son
sur bandes magnétiques**

Troisième partie:

Méthodes de mesure des caractéristiques des
matériels d'enregistrement et de lecture du son
sur bandes magnétiques

iTeh STANDARD PREVIEW
(standardsite.com)

SIST EN 60094-3:1999

<https://standards.iteh.ai/en/standards/60094-3-1999>
128bceca1bf7/sist-en-60094-3-1999

**Magnetic tape sound recording and
reproducing systems**

Part 3:

Methods of measuring the characteristics of
recording and reproducing equipment for
sound on magnetic tape

© CEI 1979 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

T

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

CONTENTS

	Page
FOREWORD	5
PREFACE	5
SECTION ONE — INTRODUCTION	
Clause	
1. Scope	9
2. Object	9
SECTION TWO — GENERAL NOTES ON MEASUREMENTS	
3. Information to be supplied by manufacturer of equipment.	9
4. Identification	9
5. Technical description	11
6. Mechanical characteristics.	11
7. Electrical characteristics.	13
8. Rated conditions.	13
9. Performance claims	17
SECTION THREE — PRECAUTIONS TO BE TAKEN DURING MEASUREMENTS	
10. Conditions of measurement	23
SECTION FOUR — METHODS OF MEASUREMENT	
11. Measurement of mechanical parameters.	25
12. Measurement of electrical parameters.	33

SIST EN 60094-3:1999
<https://standards.iteh.ai/catalog/standards/sist/8831c7c4-a6a6-4805-a3ab->
 (standards.iteh.ai)

INTERNATIONAL ELECTROTECHNICAL COMMISSION

MAGNETIC TAPE SOUND RECORDING AND REPRODUCING SYSTEMS

Part 3: Methods of measuring the characteristics of recording and reproducing equipment for sound on magnetic tape

FOREWORD

- 1) 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.
- 2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
- 3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

PREFACE

This standard has been prepared by Sub-Committee 60A, Sound Recording, of IEC Technical Committee No. 60, Recording.

A first draft was discussed at the meeting held in Paris in 1975. As a result of this meeting, a draft, Document 60A(Central Office)43, was submitted to the National Committees for approval under the Six Months' Rule in July 1976.

Amendments, Document 60A(Central Office)47, were submitted to the National Committees for approval under the Two Months' Procedure in September 1977.

The following countries voted explicitly in favour of publication:

	Document 60A(Central Office)43	Document 60A(Central Office)47
Australia	×	×
Austria	×	
Belgium	×	×
Canada	×	×
Denmark	×	×
Egypt	×	×
Finland	×	
France		×
Germany	×	×
Hungary		×
Italy		×
Japan	×	×
Netherlands	×	×
Portugal		×
Romania	×	×
South Africa (Republic of)	×	×

	Document 60A(Central Office)43	Document 60A(Central Office)47
Spain	×	×
Sweden	×	×
Switzerland	×	×
Turkey	×	×
Union of Soviet Socialist Republics	×	×
United Kingdom	×	×
United States of America	×	×

IEC Publication 94 and its supplements are under revision. The new IEC Publication 94 will be issued in several parts, of which this Part 3 is one.

It will have the following parts:

Part 1: General conditions and requirements

General; electrical requirements for the magnetic tape recording and reproducing systems; mechanical requirements for the magnetic tape; tape identification; programme identification (based on IEC Publication 94 [1968], Third edition).

Part 2: Calibration tapes

Minimum requirements for calibration tape for making adjustments and comparative assessments of the reproducing performance (First edition 1975).

Part 3: Methods of measuring the characteristics of recording and reproducing equipment for sound on magnetic tape (object of this standard)

Part 4: Mechanical magnetic tape properties

Characteristics to be specified and relevant methods of measurement. Equipment to be used to determine the mechanical properties of magnetic tapes (in preparation).

Part 5: Electrical magnetic tape properties

Characteristics to be specified, methods of measurement and equipment to be used for the determination of the electrical properties of magnetic tape for analogue sound recording and reproduction (in preparation).

Part 6: Reel-to-reel systems

Mechanical requirements and dimensions, including reels, hubs and relevant track allocations (in preparation).

Part 7: Cassette for commercial tape records and domestic use

Mechanical requirements and dimensions, including track allocation (in preparation, based on IEC Publication 94A, First edition 1972).

Part 8: Eight-track magnetic tape cartridge for commercial tape records and domestic use

Mechanical requirements and dimensions, including track allocation (in preparation, based on IEC Publication 94B, First edition 1974).

Part 9: Magnetic tape cartridge for professional use

Mechanical requirements and dimensions, including track allocation (in preparation).

Other IEC publications quoted in this standard:

Publications Nos. 38:	IEC Standard Voltages.
65:	Safety Requirements for Mains Operated Electronic and Related Apparatus for Household and Similar General Use.
263:	Scales and Sizes for Plotting Frequency Characteristics and Polar Diagrams.
268-1:	Sound System Equipment, Part 1: General.
268-3:	Part 3: Sound System Amplifiers.
268-15:	Part 15: Preferred Matching Values for the Interconnection of Sound System Components.
386:	Method of Measurement of Speed Fluctuations in Sound Recording and Reproducing Equipment.
651:	Sound Level Meters.

MAGNETIC TAPE SOUND RECORDING AND REPRODUCING SYSTEMS

Part 3: Methods of measuring the characteristics of recording and reproducing equipment for sound on magnetic tape

SECTION ONE — INTRODUCTION

1. Scope

This standard applies to recording and reproducing equipment for sound on magnetic tape (reel-to-reel, cassette and cartridge) for both professional and domestic applications, and will be referred to as “equipment” throughout this standard.

This standard does not apply to special purpose equipment such as high speed duplicators, artificial reverberation recorders or dictation machines not employing the reel-to-reel, cassette or cartridge principle. This standard excludes all aspects of safety, which are to be found in IEC Publication 65, Safety Requirements for Mains Operated Electronic and Related Apparatus for Household and Similar General Use. It also excludes magnetic tape properties, which are to be found in IEC Publications 94-4 and 94-5 (in preparation).

iTeh STANDARD PREVIEW
(standards.iteh.ai)

2. Object

The object of this standard is to list and define parameters affecting the performance of recording and reproducing equipment for sound on magnetic tape, and to establish conditions and agreed methods of measurement of these parameters.

SECTION TWO — GENERAL NOTES ON MEASUREMENTS

3. Information to be supplied by manufacturer of equipment

The information required is listed in this section. It falls into two distinct categories:

- mandatory information to be clearly shown on the equipment, indicated by an “A” on the right-hand side of the page;
- optional information to be given separately, e.g. in an instruction manual relating to and supplied with the equipment.

It is essential that mandatory information outside the scope of this standard (e.g. aspects of safety — IEC Publication 65) shall also be given in the correct location.

4. Identification

Name of manufacturer or supplier	A
Country of manufacture	
Model or type number (variants, if any, to be stated)	A

5. Technical description

All parameters in this clause are subject to verification only. For the purpose of this clause, an “adjustable” control shall be deemed to be one that is readily accessible to the user when the equipment is in its intended use. Its adjustment shall necessitate neither relocation of the equipment nor the dismantling of any of its parts.

6. Mechanical characteristics

6.1 *Space and support requirements during operation of equipment*

<i>Characteristics</i>	<i>Units</i>
Minimum height	mm
Minimum width	mm
Minimum depth	mm
Operating position	horizontal, vertical or other
Total mass	kg

6.2 *Tape carrier and tape*

	<i>Units</i>
Type of tape carrier (e.g. cassette, cartridge or reel-to-reel)	
Type of reel (e.g. Type II)	
Maximum reel diameter without overhang	mm
Maximum reel diameter with overhang	mm
Tape width	mm

<https://standards.iteh.ai/catalog/standards/sist/8831c7c4-a6a6-4805-a3ab-128beeca1bf7/sist-en-60094-3-1999>

6.3 *Tape transport system*

	<i>Unit</i>
Rated speed(s)	cm/s A

Note. — On multispeed equipment, the speeds may be marked with the first two digits of the rated speed, e.g. the rated speed of 9.53 cm/s may be shown as “9.5”. For single-speed cassette and cartridge equipment, the speed need not be marked on the equipment but shall be stated in the instruction manual.

Adjustable tape speed on:

- Record/reproduce.
- Fast forward.
- Rewind.

Adjustable tape tension:

- Between capstans.
- On supply reel.
- On take-up reel.

Number of motors.

Type of capstan (e.g. single or multiple capstan).

Reversible tape drive (record/reproduce).

Type of capstan drive motor(s).