



**SLOVENSKI STANDARD**  
**SIST EN 61106:1999**

**01-april-1999**

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**Videodisks - Methods of measurements for parameters (IEC 61106:1993)**

Videodisks - Methods of measurements for parameters

Videoplatten - Meßverfahren der Eigenschaften

Vidéodisques - Méthodes de mesure des paramètres

**Ta slovenski standard je istoveten z: EN 61106:1993**

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**ICS:**

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EUROPEAN STANDARD

EN 61106

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ENGLISH VERSION

Videodisks - Methods of measurements for  
parameters  
(IEC 1106:1993)

Vidéodisques - Méthodes de  
mesure des paramètres  
(CEI 1106:1993)

Videoplatten  
Meßverfahren der Eigenschaften  
(CEI 1106:1993)

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This European Standard was approved by CENELEC on 1993-07-06.  
CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations  
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CENELEC

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

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#### FOREWORD

The text of document 60B(CO)134, as prepared by Sub-Committee 60B: Video recording, of IEC Technical Committee 60: Recording, was submitted to the IEC-CENELEC parallel vote in August 1991.

The reference document was approved by CENELEC as EN 61106 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. In this standard, annexes A, B, C, D, E, F, G, H, J, K, L, M, N, P, Q, R, S, T, U and ZA are normative.

#### ENDORSEMENT NOTICE

The text of the International Standard IEC 1106:1993 was approved by CENELEC as a European Standard without any modification.

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ANHANG ZA (normativ)

ANDERE IN DIESER NORM ZITIERTE INTERNATIONALE PUBLIKATIONEN  
MIT DEN VERWEISUNGEN DER ENTSPRECHENDEN EUROPÄISCHEN PUBLIKATIONEN

Wenn die internationale Publikation durch gemeinsame Abänderungen von CENELEC geändert wurde, durch (mod) angegeben, gelten die entsprechenden EN/HD.

IEC- Publikation	Datum	Titel	EN/HD	Datum
844	1988	Pre-recorded capacitance grooveless videodisc system 50 Hz/625 lines - PAL, on Type VHD	-	-
845	1988	Pre-recorded capacitance grooveless videodisc system 60 Hz/525 lined - NTSC, on Type VHD	-	-
856	1986	Pre-recorded optical reflective videodisk system - "Laser vision" 50 Hz/625 lines - PAL	EN 60856	1993
857	1986	Pre-recorded optical reflective videodisk system. "Laser vision" 60 Hz/525 lines - M/NTSC	-	-

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des paramètres

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## VIDEODISKS – METHODS OF MEASUREMENT FOR PARAMETERS

## 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.

This International Standard IEC 1106 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)134	60B(CO)147A

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

## INTRODUCTION

Two videodisk systems are covered by the IEC publications quoted in clause 2. In order to play back these two types of videodisks it is necessary to use an optical pick-up device for the optical system and a capacitance pick-up device for the capacitance system. These videodisks are characterized by mechanical, electrical and optical parameters for which measuring methods are unknown.

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## VIDEODISKS – METHODS OF MEASUREMENT FOR PARAMETERS

### 1 Scope

This International Standard collects the different typical parameters for videodisks described in IEC 844, 845, 856 and 857 and proposes a method of measurement for each.

Some of these parameters can be measured by well known methods existing in every laboratory, whilst other parameters need specific equipment described in the annexes.

### 2 Normative references

The following standards 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 standards 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 standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 844: 1988, *Pre-recorded capacitance grooveless videodisk system. 50 Hz/625 lines – PAL, on Type VHD*

IEC 845: 1988, *Pre-recorded capacitance grooveless videodisk system. 60 Hz/525 lines – NTSC, on Type VHD*

IEC 856: 1986, *Pre-recorded optical reflective videodisk system. «Laser vision» 50 Hz/625 lines – PAL*

IEC 857: 1986, *Pre-recorded optical reflective videodisk system. «Laser vision» 60 Hz/525 lines – M/NTSC*

### 3 List of parameters and their applications

	Applies to	Classification (note 2)
<b>3.1 Mechanical parameters</b>		
3.1.1	Thickness of protective transparent layer	LV, (note 1) (3)
3.1.2	Thickness of disk areas	LV, VHD (1)
3.1.3	Outer radius of disk	LV, VHD (1)
3.1.4	Diameter of center hole	LV, VHD (1)
3.1.5	Concentricity of disk assembled from two single disks	LV (1)
3.1.6	Inside diameter of label	LV (1)
3.1.7	Outside diameter of label	LV (1)

	Applies to	Classification (note 2)
3.1.8	Rotation speed	
3.1.8.1	Angular velocity of CAV* disk	LV, VHD (3)
3.1.8.2	Linear velocity of CLV** disk	LV (3)
3.1.8.3	Angular acceleration for CLV disk	LV (3)
3.1.9	Mass of the disk	LV (1)
3.1.10	Maximum unbalance force	LV, VHD (1)
3.1.11	Starting radius lead-in tracks	LV, VHD (1)
3.1.12	Starting radius programme area	LV, VHD (1)
3.1.13	End radius programme area and starting position of lead-out tracks	LV, VHD (1)
3.1.14	Minimum number of programme tracks	LV (1)
3.1.15	Length of lead-out tracks	LV (1)
3.1.16	Inner radius programme end signal area	VHD (1)
3.1.17	Track pitch	LV, VHD (3)
3.1.18	Width and depth of information track	VHD (3)
3.1.19	Width and depth of pilot signal track	VHD (3)
3.1.20	Vertical deviation of programme tracks during playback	
3.1.20.1	Maximum distance from reference plane	LV, VHD (3)
3.1.20.2	Maximum vertical acceleration	LV, VHD (3)
3.1.20.3	Maximum vertical deviation	LV, VHD (3)
3.1.20.4	Maximum velocity	LV (3)
3.1.21	Maximum static deflection of disk	LV, VHD (1)
3.1.22	Radial deviation of programme tracks during playback	LV, VHD (1)
3.1.22.1	Maximum deviation during one revolution	LV, VHD (3)
3.1.22.2	Maximum radial deviation	LV, VHD (3)
3.1.22.3	Maximum radial acceleration	LV, VHD (3)
3.1.23	Tangential deviation of programme tracks	
3.1.23.1	Maximum time base error	LV, VHD (3)
3.1.23.2	Shift between two adjacent tracks	LV, VHD (3)
3.1.24	Disk case	VHD (1)

\* Constant Angular Velocity.

\*\* Constant Linear Velocity.

Note 2, see page 13.

	Applies to	Classification (note 2)
3.2	Disk material parameters	
3.2.1	Refractive index	LV (1)
3.2.2	Birefringence of transparent disk	LV (3)
3.2.3	Reflectivity	LV (1)
3.2.4	Surface resistivity	VHD (2)
3.3	Recorded parameters	
3.3.1	Audio subcarrier amplitude and EFM (note 3) amplitude	LV, VHD (1)
3.3.2	Audio subcarrier frequencies, channels 1 and 2	LV, VHD (1)
3.3.3	Audio subcarrier frequency maximum deviation	LV, VHD (1)
3.3.4	Video signal standards (visual check), color burst, VIRS (note 3), ITS (note 3), address signals	LV, VHD (1)
3.3.5	Maximum video level	LV, VHD (1)
3.3.6	Blanking level frequency	LV, VHD (1)
3.3.7	Main carrier deviation	LV, VHD (1)
3.3.8	Pilot frequency	VHD (1)
3.3.9	Pre-emphasis audio and video	
3.3.9.1	Pre-emphasis audio	LV, VHD (1)
3.3.9.2	Pre-emphasis video	LV, VHD (1)
3.3.10	Digital data encoding format correctness	LV, VHD (1)
3.4	Operation signals	
3.4.1	Radial signal	
3.4.1.1	Radial modulation index	LV (3)
3.4.1.2	Radial reflection index	LV (3)
3.4.1.3	Radial signal to error ratio	LV (3)
3.4.2	Push-pull tracking signal	
3.4.2.1	Magnitude	LV (3)
3.4.2.2	Noise	LV (3)
3.4.3	Tangential signal	
3.4.3.1	Drop outs	LV, VHD (3)
3.4.3.2	Signal to noise ratio	LV (3)
3.4.4	High frequency modulation index	LV (3)

## NOTES

- 1 LV Laser vision
- 2 (1) Parameters which can be measured by conventional techniques.  
(2) Parameters for which specific methods exist with an IEC definition.  
(3) Parameters of videodisk technology which need specific attention.
- 3 EFM Eight to Fourteen Modulation.  
VIRS Vertical Interval Reference Signal.  
ITS International Test Signal.

#### 4 Standard atmospheric conditions for testing

Measurements and mechanical checks shall be carried out at any combination of temperature, humidity and air pressure within the following limits unless otherwise specified for certain parameters in IEC 844, 845, 856 and 857:

Ambient temperature:	15 °C to 35 °C;
Relative humidity:	45 % to 75 %;
Air pressure:	86 kPa to 106 kPa.

Samples shall be conditioned in the testing environment for 24 h before testing.

Table 1 – Measuring items

Parameters		LV	VHD
<b>3.1 Mechanical parameters</b>			
3.1.1	Thickness of protective transparent layer	Annex A	—
3.1.2	Thickness of disk areas	A disk may be measured with sufficient accuracy by means of general measuring instruments such as a dial gauge, thickness gauge, caliper, and plug gauge	
3.1.3	Outer radius of disk		
3.1.4	Diameter of centre hole	SIST EN 61106:1999 standards.iteh.ai/catalog/standards/sist/e20d23af-3957-4859-9e3b-4d72023632b7/sist-en-61106-1999	
3.1.5	Concentricity of disk assembled from two single disks		
3.1.6	Inside diameter of label	—	
3.1.7	Outside diameter of label	—	
3.1.8	Rotation speed	—	
3.1.8.1	Angular velocity of CAV disk	Annex B	
3.1.8.2	Linear velocity of CLV disk	—	
3.1.8.3	Angular acceleration for CLV disk	Conventional method	—
3.1.9	Mass of the disk	A disk shall be measured on a dynamic balancing machine with a specified rotation speed	
3.1.10	Maximum unbalance force		
3.1.11	Starting radius lead-in tracks	Annex C	
3.1.12	Starting radius programme area		
3.1.13	End radius programme area and starting position of lead-out tracks	—	
3.1.14	Minimum number of programme tracks		
3.1.15	Length of lead-out tracks	—	
3.1.16	Inner radius programme end signal	—	Annex C

Table 1 (continued)

Parameters		LV	VHD
3.1.17	Track pitch	Optical microscope (measure mean track pitch)	
3.1.18	Width and depth of information track	—	Annex D
3.1.19	Width and depth of pilot signal track		
3.1.20	Vertical deviation of programme tracks during playback		
3.1.20.1	Maximum distance from reference plane	Annex F	Annex E
3.1.20.2	Maximum vertical acceleration		
3.1.20.3	Maximum vertical deviation		
3.1.20.4	Maximum velocity	—	
3.1.21	Maximum static deflection of disk	Mechanical method	
3.1.22	Radial deviation of programme tracks during playback		
3.1.22.1	Maximum deviation during one revolution	Annex H	Annex G
3.1.22.2	Maximum radial deviation		
3.1.22.3	Maximum radial acceleration		
3.1.23	Tangential deviation of programme tracks	Annex K	Annex J
3.1.23.1	Maximum time base error	Special test disk will be required for this measurement. Conventional disk under consideration.	
3.1.23.2	Shift between two adjacent tracks		
3.1.24	Disk case	—	Conventional method
<b>3.2 Disk material parameters</b>			
3.2.1	Refractive index	Conventional method	—
3.2.2	Birefringence of transparent disk	Annex L	—
3.2.3	Reflectivity	Conventional method	—
3.2.4	Surface resistivity	—	IEC 93