



SLOVENSKI STANDARD
SIST EN 60856:1999

01-april-1999

Pre-recorded optical reflective videodisk system "Laser vision" 50 Hz/625 lines – PAL (IEC 60856:1986)

Pre-recorded optical reflective videodisk system Laser vision 50 Hz/625 lines - PAL

System für bespielte, optisch reflektierende Videoplaten Laser-Vision 50 Hz/625 Zeilen - PAL

iTeh STANDARD PREVIEW

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Système de vidéodisque optique réfléchissant préenregistré Laser vision 50 Hz/625 lignes - PAL

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ICS:

33.160.40 Video sistemi Video systems

SIST EN 60856:1999 **en**

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EUROPEAN STANDARD

EN 60856

NORME EUROPEENNE

EUROPÄISCHE NORM

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Descriptors: Optical recording, video recording, video disc, video disc reproducing equipment, laser, test conditions, characteristics, requirements

ENGLISH VERSION

Pre-recorded optical reflective videodisk system
 "Laser vision" 50 Hz/625 lines - PAL
 (IEC 856:1986)

Système de vidéodisque optique
 réfléchissant préenregistré
 "Laser vision" 50 Hz/625 lignes
 PAL
 (CEI 856:1986)

System für bespielte, optisch
 reflektierende Videoplatten
 "Laser-Vision" 50 Hz/625 Zeilen
 PAL
 (IEC 856:1986)

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SIST EN 60856:1999

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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

At the request of the 71st Technical Board of CENELEC HD 514 S1:1989 (IEC 856:1986) was submitted to the CENELEC voting procedure for conversion into a European Standard.

The text of the International Standard was approved by CENELEC as EN 60856 on 9 December 1992.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1993-12-01
- latest date of withdrawal of conflicting national standards (dow) -

ENDORSEMENT NOTICE

The text of the International Standard IEC 856:1986 was approved by CENELEC as a European Standard without any modification.

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NORME
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STANDARD

CEI
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60856

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First edition
1986-10

**Systeme de vidéodisque optique réfléchissant
préenregistré
«Laser vision» 50 Hz/625 lignes – PAL**

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“Laser vision” 50 Hz/625 lines – PAL**
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**PRE-RECORDED OPTICAL REFLECTIVE
VIDEODISK SYSTEM****“Laser vision” 50 Hz/625 lines — PAL**

FOREWORD

- 1) The formal decisions or agreements of the I E C 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 I E C expresses the wish that all National Committees should adopt the text of the I E C recommendation for their national rules in so far as national conditions will permit. Any divergence between the I E C recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

PREFACE

This standard has been prepared by Sub-Committee 60B: Video Recording, of I E C Technical Committee No. 60: Recording.

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

Six Months' Rule	Report on Voting
60B(CO)64	60B(CO)72

Further information can be found in the Report on Voting indicated in the table above.

PRE-RECORDED OPTICAL REFLECTIVE VIDEODISK SYSTEM

“Laser vision” 50 Hz/625 lines — PAL

INTRODUCTION

The optical videodisk system functions as follows:

The information carrier is a disk structure consisting of a transparent substrate, of which one surface contains the information covered with a reflective coating.

Two such substrates are assembled, information surface against information surface to form an optical videodisk. One of these two substrates might also be a “blank”, characterized by the absence of information, but in all other mechanical aspects conform to this standard.

The information on the disk is stored in a spiral track starting at the inside at a fixed diameter and moving to the outside.

The information is read out by a beam of light which passes through the transparent substrate and is reflected by the information on the encoded surface. The reflected beam is modulated by the information on the encoded surface.

Within the system two disk formats exist: the CAV disk and the CLV disk. CAV stands for Constant Angular Velocity and CLV for Constant Linear Velocity.

In the CAV format each revolution corresponds to one complete recorded video frame. Consequently during readout the disk will rotate at constant angular velocity. A disk thus recorded makes possible features such as still pictures, slow motion, etc.

In the CLV format the velocity of the information track relative to the readout beam is constant. Therefore the angular velocity decreases as the readout beam proceeds along the spiral track to the outside. A disk recorded in this way yields a longer playing time. Features such as still pictures, however, are not possible.

SECTION ONE — GENERAL

1. Scope

This standard applies to pre-recorded optical reflective videodisks compatible with 50 Hz/625 lines CCIR monochrome and colour coding PAL systems, and defines those parameters that effect the interchangeability of the disks, excluding limitations of the programming material and source.

2. Object

To serve as a reference for manufacturers intending to make disks or players compatible with the optical system described herein.

3. 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 elsewhere in this standard:

Ambient temperature: 15 °C to 35 °C

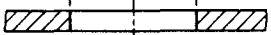
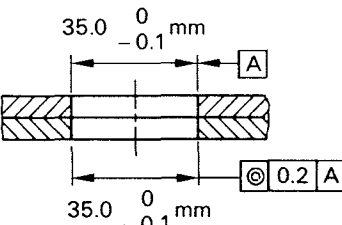
Relative humidity: 45% to 75%

Air pressure: 86 kPa to 106 kPa

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

SECTION TWO — DISK PARAMETERS

4. Mechanical parameters

Characteristics to be specified	Requirements	Method of measurement and/or conditions
4.1 Thickness in the programme area:		
4.1.1 Thickness of protective transparent layer, (A), Figure 1, page 31	See Figure 1a	
4.1.2 Thickness of double disk (B), Figure 1	min. = 2.2 mm, see Figure 1a max. = 2.8 mm	
4.2 Outer radius of disk (C), Figure 1	150 ± 0.5 mm 100 ± 0.5 mm	To be measured at 20 ± 1 °C and 48% to 52% relative humidity
— 12-in version		
— 8-in version		
4.3 Centre hole (D), Figure 1		To be measured with a maximum and a minimum plug gauge at 20 ± 1 °C and 48% to 52% relative humidity
4.3.1 Diameter of centre hole	35.0 ⁰ _{-0.1} mm 	
4.3.2 Diameter of centre hole for disk assembled from two single disks	35.0 ⁰ _{-0.1} mm 	
4.3.3 Shape of edges of centre hole	Edges shall be free from burrs	
4.4 Label (E), Figure 1		
4.4.1 Inside diameter of label (F), Figure 1	min. = 35 mm max. = 38 mm	
4.4.2 Outside diameter of label (G), Figure 1	min. = 86 mm max. = 100 mm	
4.4.3 Thickness of label (H), Figure 1	Such that thickness of disk in clamping area (Subclause 4.5.3) is within specification	

(Table continued on page 11)

Characteristics to be specified	Requirements	Method of measurement and/or conditions
4.4.4 Position of label	Should not overlap centre hole	
4.5 Clamping area (I), Figure 1, page 31		
4.5.1 Inside radius of clamping area	20.5 mm	
4.5.2 Outside radius of clamping area	41.5 mm	
4.5.3 Thickness of disk in clamping area including labels (J), Figure 1	min. = 2.2 mm max. = 2.9 mm	
4.6 Sense of rotation of disk seen from read side	Anticlockwise	
4.7 Rotation speed	Never to exceed one revolution per TV frame	
4.7.1 Angular velocity for CAV format	1 rotation/TV frame	
4.7.2 Linear velocity for CLV format	Between 8.4 m/s and 9.5 m/s	See Figure 20, page 53
4.7.3 Angular acceleration for CLV format	Maximum of -0.32 rad/s^2	See Figure 20
4.8 Maximum unbalance	1.5 N	Measured at 1 rotation/TV frame
4.9 Position of lead-in tracks	The space between starting radius of lead-in tracks and starting radius of programme area must be filled with lead-in tracks	
4.10 Starting radius lead-in tracks (K), Figure 1	$\leq 53.5 \text{ mm}$	
4.11 Starting radius programme area (L), Figure 1	$\geq 55 \text{ mm}$	
4.11.1 Minimum number of programme tracks	30	
4.12 Maximum radius programme area (M), Figure 1 — 12-in version — 8-in version	145 mm 96 mm	
4.13 Position of lead-out tracks (N), Figure 1	The lead-out tracks follow directly after the end of the programme	

(Table continued on page 13)

Characteristics to be specified	Requirements	Method of measurement and/or conditions
4.14 Minimum size of lead-out area		
4.14.1 For CAV disks	2 mm	
4.14.2 For CLV disks	2 mm	
4.15 Track pitch anywhere between any two adjacent tracks	min. 1.4 μm max. 2 μm	
4.16 Vertical deviation of programme tracks during rotation at playback speed		Record supported in clamping area over a diameter of 80 mm and measured with the optical stylus (see Sub-clause 11.1)
4.16.1 Maximum distance (P) from reference plane to any point of tracks (see Figure 2, page 33)	+0.9 mm -1.2 mm	
4.16.2 Maximum vertical acceleration	100 m/s^2 for $f < 1.1$ kHz	See Figure 2
4.16.3 Maximum vertical deviation	± 2 μm for $f > 1.1$ kHz	See Figure 2
4.16.4 Maximum vertical velocity	0.18 m/s	See Figure 2
4.17 Maximum static deflection of disk (Q), Figure 3, page 33	-2.5 mm; +1.5 mm SIST EN 60856:1999	Record supported in clamping area over a diameter of 80 mm and measured at outside diameter with reference to hub plane
4.18 Radial deviation of programme tracks during rotation at playback speed (see Figure 4, page 33)		Record supported in clamping area over a diameter of 80 mm and measured with the optical stylus (see Sub-clause 11.1)
4.18.1 Maximum deviation (ΔV) during one revolution (see Figure 4)	160 μm	
4.18.2 Maximum radial deviation	± 0.1 μm for $f > 2.2$ kHz	
4.18.3 Maximum radial acceleration	20 m/s^2 for $f < 2.2$ kHz	

(Table continued on page 15)

Characteristics to be specified	Requirements		Method of measurement and/or conditions
	CAV	CLV	
4.19 Tangential deviation of programme tracks at nominal velocity			Record supported in clamping area over a diameter of 80 mm and measured with the optical stylus (see Sub-clause 11.1)
4.19.1 Maximum time base error at:			
radius 55 mm	12 μ s peak-to-peak (pp) at 25 Hz roll-off with 12 dB/octave	12 μ s peak-to-peak (pp) at 25 Hz roll-off with 12 dB/octave	
radius 145 mm	4.6 μ s peak-to-peak (pp) at 25 Hz roll-off with 12 dB/octave	12 μ s peak-to-peak (pp) at 9 Hz roll-off with 12 dB/octave	
4.19.2 Shift between two adjacent tracks	± 25 ns	not applicable	
4.20 Mass	(in 10^{-3} kg)		
4.20.1 Minimum	70		
8-in version			
12-in version	70		
4.20.2 Maximum	280		
8-in version			
12-in version	280		
4.21 Mass moment of inertia	(in 10^{-3} kg m ²)		
4.21.1 Minimum	0.36		
8-in version			
12-in version	0.36		
4.21.2 Maximum	3.2		
8-in version			
12-in version	3.2		
5. Optical requirements			$\lambda = 6\,328 \text{ \AA}$ (HeNe laser in air) and a numerical aperture = 0.40 ± 0.01
5.1 Refractive index	See Figure 1a, page 31		
5.2 Birefringence of transparent disk (double pass)	20° max.		
5.3 Reflectivity	$\geq 70\%$		Double pass through transparent substrate in unmodulated area. Includes transmission losses in the substrate

(Table continued on page 17)