SLOVENSKI STANDARD

SIST EN 60461:2005

januar 2005

Časovni in krmilni kod za videorekorderje (IEC 60461:2001)

(istoveten EN 60461:2001)

Time and control code for video tape recorders (IEC 60461:2001)

ICS 33.160.40

Referenčna številka
SIST EN 60461:2005(en)

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60461

May 2001

ICS 33.160.40;33.170

Supersedes HD 507 S1:1988

English version

Time and control code for video tape recorders
(IEC 60461:2001)

Code temporel de commande pour les magnétoscopes
(CEI 60461:2001)

Zeit- und Steuercode für Videobandgeräte
(IEC 60461:2001)

This European Standard was approved by CENELEC on 2001-04-01. 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, Czech Republic, 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 100B/280/FDIS, future edition 3 of IEC 60461, prepared by SC 100B, Audio, video and multimedia information storage systems, of IEC TC 100, Audio, video and multimedia systems and equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60461 on 2001-04-01.

This European Standard supersedes HD 507 S1:1998.

The following dates were 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) 2002-01-01

– latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2004-04-01

Annexes designated "normative" are part of the body of the standard.
Annexes designated "informative" are given for information only.
In this standard, annex ZA is normative and annex A is informative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60461:2001 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.

Publication	Year	Title	EN/HD	Year
ISO/IEC 646	1991	Information technology - ISO 7-bit coded character set for information interchange	-	-
ISO/IEC 2022	1994	Information technology - Character code structure and extension techniques	-	-
SMPTE 170M	1999	Television - Composite Analog Video Signal - NTSC for Studio Applications	-	-
SMPTE 240M	1995	Television - Signal Parameters - 1125-Line High-Definition Production Systems	-	-
SMPTE 258M	1993	Television - Transfer of Edit Decision Lists	-	-
SMPTE 262M	1995	Television, Audio and Film - Binary Groups of Time and Control Codes - Storage and Transmission of Data	-	-
SMPTE 309M		Television - Transmission of Date and Time Zone Information in Binary Groups of Time and Control Code	-	-
SMPTE RP 162	1996	Location of Vertical Interval Time Code	-	-
ITU-R BT.470-6	1994	Conventional Television Systems	-	-

NORME INTERNATIONALE

INTERNATIONAL STANDARD

CEI
IEC
60461

Troisième édition
Third edition
2001-02

Code temporel de commande pour les magnétoscopes

Time and control code for video tape recorders

International Electrotechnical Commission 3, rue de Varembé Geneva, Switzerland
Telefax: +41 22 919 0300 e-mail: inmail@iec.ch IEC web site http://www.iec.ch

Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

CODE PRIX
PRICE CODE V

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

TIME AND CONTROL CODE FOR VIDEO TAPE RECORDERS

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 co-operation 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 express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.

3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, 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.

5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.

6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60461 has been prepared by subcommittee 100B: Audio, video and multimedia information storage systems, of IEC technical committee 100: Audio, video and multimedia systems and equipment.

This third edition cancels and replaces the second edition published in 1986, of which it constitutes a technical revision.

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

FDIS	Report on voting
100B/280/FDIS	100B/286/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.

Annex A is for information only.

The committee has decided that the contents of this publication will remain unchanged until 2006-01. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

TIME AND CONTROL CODE FOR VIDEO TAPE RECORDERS

1 Scope

This International Standard specifies a digital time and control code for use in television, film, and accompanying audio systems operating at 30, 25, and 24 frames per second.

Clauses 4, 5, and 6 specify the manner in which time is represented in frame-based systems. Clause 7 describes the structure of the time address and control bits of the code, and sets guidelines for storage of user data in the code. Clause 8 specifies the modulation method and interface characteristics of a linear time code (LTC) source. Clause 9 specifies the modulation method for inserting the code into the vertical interval of a television signal. Clause 10 summarizes the relationship between the two forms of time and control code.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, 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. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO/IEC 646:1991, *Information technology – ISO 7-bit coded character set for information interchange*

ISO/IEC 2022:1994, *Information technology – Character code structure and extension techniques*

SMPTE 170M:1999, *Television – Composite Analog Video Signal – NTSC for Studio Applications*

SMPTE 240M:1995, *Television – Signal Parameters – 1125-Line High-Definition Production Systems*

SMPTE 258M:1993, *Television – Transfer of Edit Decision Lists*

SMPTE 262M:1995, *Television, Audio and Film – Binary Groups of Time and Control Codes – Storage and Transmission of Data*

SMPTE 309M: *Television – Transmission of Date and Time Zone Information in Binary Groups of Time and Control Code*

SMPTE RP 164:1996, *Location of Vertical Interval Time Code*

ITU-R BT.470-6:1994, *Conventional Television Systems*

3 Definitions

For the purpose of this International Standard, the following definitions apply:

3.1
linear time code (LTC)
linear time code modulation system (previously referred to as the longitudinal track application of time and control code)

3.2
vertical interval time code (VITC)
modulation system used to insert the time code signal in the vertical blanking interval of a television signal

3.3
source
any device which generates a time and control code signal, or regenerates a time and control code signal from a recorded medium or transmission channel

An original source refers specifically to the device which is generating the time and control code signal.

3.4
binary coded decimal (BCD) system
means for encoding decimal numbers as groups of binary bits. Each decimal digit (0-9) is represented by a unique four-bit code. The four bits are weighted with the digit's decimal weight multiplied by successive powers of two

NOTE For example, the bit weights for a "units" digit would be 1×2^0, 1×2^1, 1×2^2, and 1×2^3, while the bit weights for a "tens" digit would be 10×2^0, 10×2^1, 10×2^2, and 10×2^3.

4 Time representation in 30-frame systems

4.1 Definitions of real time and NTSC time

4.1.1 In a system running at a frame rate of 30 frames per second, exactly one second of real time elapses during the scanning of 30 frames. An example of such a system is an 1125/60 high-definition system.

4.1.2 In an NTSC television system running at a vertical field rate of 60/1,001 fields per second (≈ 59,94 Hz), one second of NTSC time elapses during the scanning of 60 television fields or 30 television frames. Because of the difference in vertical scanning rates, the relationship between real time and NTSC time is:

1 s NTSC time = 1,001 s REAL time

4.2 Time address of a frame

Each frame shall be identified by a unique and complete address consisting of an hour, minute, second, and frame number. Refer to SMPTE 258M for standard formats used to display frame-based time.

The hours, minutes, and seconds follow the ascending progression of a 24-hour clock beginning with 0 hours, 0 minutes, and 0 seconds to 23 hours, 59 minutes, and 59 seconds. The frames shall be numbered successively according to the counting mode (drop frame or non-drop frame) as described below: