



**SLOVENSKI STANDARD**  
**SIST HD 507 S1:1999**

**01-julij-1999**

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**Time and control code for video tape recorders (IEC 60461:1986)**

Time and control code for video tape recorders

Zeit- und Steuercode für Videobandgeräte

Code temporel de commande pour les magnétoscopes

**Ta slovenski standard je istoveten z: HD 507 S1:1988**

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## TIME AND CONTROL CODE FOR VIDEO TAPE RECORDERS

Code temporel de commande pour  
 Les magnétoscopes

Zeit- und Steuercode für  
 Videobandgeräte

BODY OF THE HD**iTeh STANDARD PREVIEW**

The Harmonization Document consists of: [standards.iteh.ai](https://standards.iteh.ai)

- IEC 461 (1986) ed 2; IEC/SC 60B, not appended

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## TIME AND CONTROL CODE FOR VIDEO TAPE RECORDERS

## 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.

## PREFACE

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

This second edition replaces the first edition of IEC Publication 461 issued in 1974.

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

Six Months' Rule	Reports on Voting	Two Months' Procedure	Report on Voting
60B(CO)55 60B(CO)62	60B(CO)60 60B(CO)68	60B(CO)61	60B(CO)67

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

*The following publications are quoted in this standard:*

- ISO Standard 646 (1983): Information Processing — ISO 7-bit Coded Character Set for Information Interchange.  
 ISO Standard 2022 (1982): Information Processing — ISO 7-bit and 8-bit Coded Character Sets — Code Extension Techniques.

## TIME AND CONTROL CODE FOR VIDEO TAPE RECORDERS

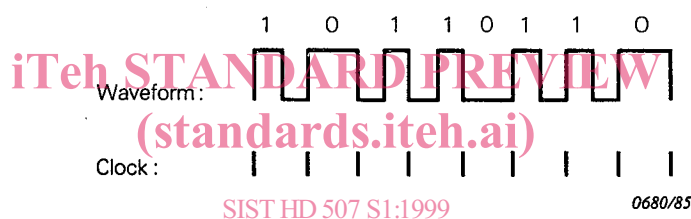
### CHAPTER I: LONGITUDINAL TIME CODE (LTC)

#### 1. Scope

This chapter specifies a digital code format and modulation method to be used for timing and control purposes of television-tape machines and/or associated separate audio recorders. The encoded signal shall be recorded on the cue track or on an auxiliary longitudinal track.

#### 2. Modulation method

The modulation method shall be such that a transition occurs at the beginning of every bit period. In the case of a "zero" there is no second transition within the bit period. In the case of a "one" there is a second transition, a half-bit period after the start of the bit. This method is also known as "Bi-Phase Mark" (see Figure 1).



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 FIG. 1. — Modulation system "Bi-Phase Mark".

#### 3. Code format

- 3.1 A unique code word shall be associated with each television frame.
- 3.2 Each code word shall consist of 80 bits numbered from 0 to 79, inclusive.
- 3.3 The bits shall be assigned as shown in Figure 2a (625/50), page 11 and Figure 2b (525/60) and as described hereinafter:

	625/50	525/60
0-3	Units of frames	Units of frames
4-7	First binary group	First binary group
8-9	Tens of frames	Tens of frames
10	Unassigned address bit	Drop frame flag bit
11	Colour-lock flag bit	Colour-lock flag bit
12-15	Binary group No. 2	Binary group No. 2
16-19	Units of seconds	Units of seconds
20-23	Binary group No. 3	Binary group No. 3
24-26	Tens of seconds	Tens of seconds
27	Binary group flag bit	Bi-phase mark phase-correction bit
28-31	Binary group No. 4	Binary group No. 4
32-35	Units of minutes	Units of minutes
36-39	Binary group No. 5	Binary group No. 5
40-42	Tens of minutes	Tens of minutes



43	Binary group flag bit	Binary group flag bit
44-47	Binary group No. 6	Binary group No. 6
48-51	Units of hours	Units of hours
52-55	Binary group No. 7	Binary group No. 7
58	Unassigned bit	Unassigned bit
59	Bi-phase mark phase correction bit	Binary group flag bit
60-63	Binary group No. 8	Binary group No. 8
64-79	Synchronizing word	Synchronizing word
64-65	Fixed zero	Fixed zero
66-77	Fixed one	Fixed one
78	Fixed zero	Fixed zero
79	Fixed one	Fixed one

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3.3.1 625/50 systems

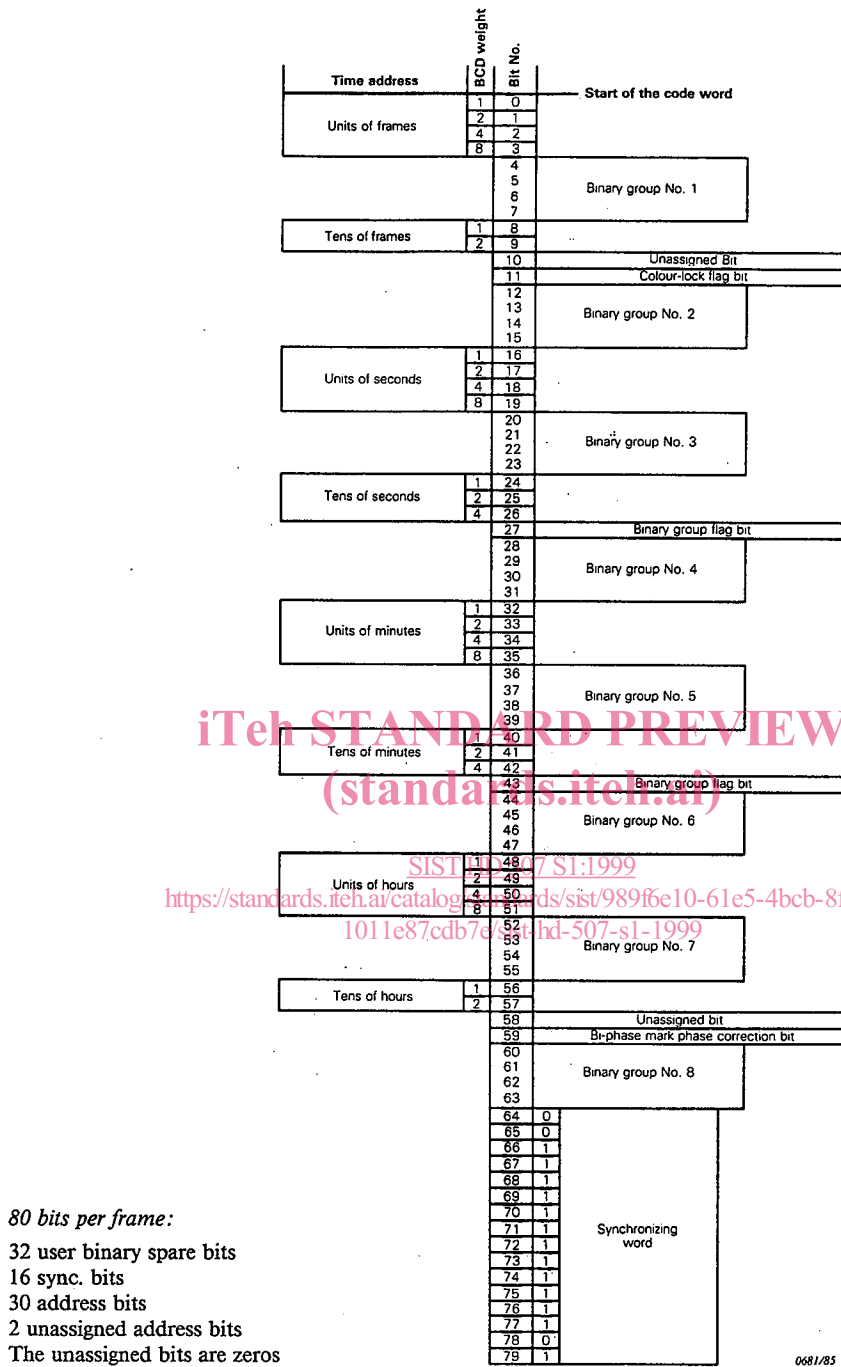


FIG. 2a. — Constitution of the code word (longitudinal code).

3.3.2 525/60 systems

Time address	BCD weight	Bit No.	
	1	0	Start of the code word
Units of frames	2	1	
	4	2	
	8	3	
		4	
		5	Binary group No. 1
		6	
		7	
		8	
Tens of frames	1	8	
	2	9	
		10	Drop frame flag bit
		11	Colour-lock flag bit
		12	Binary group No. 2
		13	
		14	
		15	
Units of seconds	1	16	
	2	17	
	4	18	
	8	19	
		20	Binary group No. 3
		21	
		22	
		23	
Tens of seconds	1	24	
	2	25	
	4	26	
		27	Bi-phase mark phase-correction bit
		28	Binary group No. 4
		29	
		30	
		31	
Units of minutes	1	32	
	2	33	
	4	34	
	8	35	
		36	Binary group No. 5
		37	
		38	
		39	
Tens of minutes	1	40	
	2	41	
	4	42	
		43	Binary group flag bit
		44	Binary group No. 6
		45	
		46	
		47	
Units of hours	1	48	
	2	49	
	4	50	
	8	51	
		52	Binary group No. 7
		53	
		54	
		55	
Tens of hours	1	56	
	2	57	
		58	Unassigned bit
		59	Binary group flag bit
		60	Binary group No. 8
		61	
		62	
		63	
		64	Synchronizing word
		65	
		66	
		67	
		68	
		69	
		70	
		71	
		72	
		73	
		74	
		75	
		76	
		77	
		78	
		79	

80 bits per frame:  
 32 user binary spare bits  
 16 sync. bits  
 31 address bits  
 1 unassigned address bit  
 The unassigned address bit is zero

0682/85

Fig. 2b. — Constitution of the code word (longitudinal code).

### 3.4 Boundaries of the code word

The code word shall start at the clock edge before the first bit (bit zero). The bits shall be evenly spaced in such a way that the code word period shall coincide with the period of one television frame. The bit rate shall be 80 times the frame rate (per second) of the television system used.

### 3.5 Use of binary groups 625/50 (525/60)

The binary groups are intended for the storage of supplementary data by the users. The 32 bits within the eight binary groups may be assigned in any way without restrictions if the character set used for the data insertion is not specified and the binary group flag bits Nos. 27 and 43 both are zero (525/60 systems: bit positions 43 and 59).

If an eight-bit character set conforming to ISO Standard 646\* and ISO Standard 2022\*\* is signalled by the binary group flag bits Nos. 27 and 43 (525/60 systems: bit positions 43 and 59) the characters should be inserted in accordance with Figure 3, page 15. The information carried by the user bits is not subjected to any regulation.

At present, the following truth-table applies:

	Bit No. 27 (43)	Bit No. 43 (59)
Character set not specified	0	0
Eight-bit character set conforming to ISO Standards 646 and 2022	1	0
Unassigned	0	1
Unassigned	1	1

The unassigned states of the truth-table cannot be used and their assignment is reserved for the IEC. If it becomes clear that no use is to be expected for them, it is possible that bit No. 43 (59) can again become unassigned and thus available for other applications, while still retaining bit No. 27 (43) to signal the presence of eight-bit ISO characters.

It should be noted that, in each time code word, some user bits will be decoded before bits Nos. 27 (43) and 43 (59) are encountered. The data in these earlier user-bit locations must not be lost.

If the time code is locked to the four-field sequence in NTSC or the eight-field sequence in PAL, as defined in Sub-clause 5.2, bit No. 11 shall be set to "1".

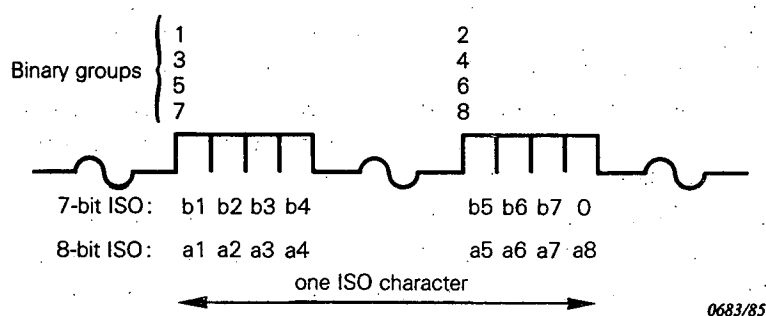


FIG. 3. — Use of binary groups of the time-and-control code to describe the ISO character coded with 7 or 8 bits.

\* ISO Standard 646: Information Processing—ISO 7-Bit Coded Character Set for Information Interchange.

\*\* ISO Standard 2022: Information Processing—ISO 7-Bit and 8-Bit Coded Character Sets—Code Extension Techniques.