

# INTERNATIONAL STANDARD

# IEC 61834-2

First edition  
1998-08

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**Recording –  
Helical-scan digital video cassette recording  
system using 6,35 mm magnetic tape for  
consumer use  
(525-60, 625-50, 1125-60 and 1250-50 systems) –**

**Part 2:  
SD format for 525-60 and 625-50 systems**

Document Preview

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International Electrotechnical Commission  
Международная Электротехническая Комиссия

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**RECORDING – HELICAL-SCAN DIGITAL VIDEO CASSETTE RECORDING  
SYSTEM USING 6,35 mm MAGNETIC TAPE FOR CONSUMER USE  
(525-60, 625-50, 1125-60 and 1250-50 systems) –**

**Part 2: SD format for 525-60 and 625-50 systems**

## FOREWORD

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International Standard IEC 61834-2 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.

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

FDIS	Report on voting
100B/168/FDIS	100B/180/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.

IEC 61834 consists of the following parts, under the general title *Recording – Helical-scan digital video cassette recording system using 6,35 mm magnetic tape for consumer use (525-60, 625-50, 1225-60 and 1250-50 systems)*

- Part 1:1998, General specifications
- Part 2: SD format for 525-60 and 625-50 systems
- Part 3: HD format for 1125-60 and 1250-50 systems <sup>1)</sup>
- Part 4: The pack header table and the contents
- Part 5: The character information system

<sup>1)</sup> To be published.

This part 2 describes the specifications for 525-60 and 625-50 systems which are not included in part 1.

Part 1 describes the common specifications which are cassettes, helical recordings, modulation method, magnetization and basic system data.

Part 3 describes the specifications for 1125-60 and 1250-50 systems which are not included in part 1 and part 2.

Part 4 describes the pack header table and the contents of packs which are applicable to the whole recording system of helical-scan digital video cassette.

Part 5 describes the character information system which is applicable to the whole recording system of helical-scan digital video cassette.

For manufacturing SD digital video cassette recording systems, part 1, part 2, part 4 and part 5 are referred to.

For manufacturing HD digital video cassette recording systems, part 1, part 2, part 3, part 4 and part 5 are referred to.

Annexes A and B form an integral part of this standard.

Annexes C and D are for information only.

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# RECORDING – HELICAL-SCAN DIGITAL VIDEO CASSETTE RECORDING SYSTEM USING 6,35 mm MAGNETIC TAPE FOR CONSUMER USE (525-60, 625-50, 1125-60 and 1250-50 systems) –

## Part 2: SD format for 525-60 and 625-50 systems

### 1 General

#### 1.1 Scope

This part of IEC 61834 specifies the content, format and recording method of the data blocks forming the helical records on the tape containing audio, video, and system data. It describes the specifications for the 525-line system with a frame frequency of 29,97 Hz (hereinafter referred to as 525-60 system) and 625-line system with a frame frequency of 25,00 Hz (hereinafter referred to as 625-50 system) which are not included in part 1. One video channel and two independent audio channels are recorded in the digital format. Each of these channels is designed to be capable of independent editing. The video channel records and reproduces a component television signal in 525-60 and 625-50 systems.

In this part, the data structure of a track is defined by APT = 000b which consists of four areas as described in 4.3.2 in part 1 and AP1 = AP2 = AP3 = 000b.

#### 1.2 Normative references

The following normative documents 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 normative documents 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 normative documents listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

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

IEC 60735:1991, *Measuring methods for video tape properties*

IEC 60958:1989, *Digital audio interface*

ITU-R Recommendation BT601-5:1995, *Studio encoding parameters of digital television for standard 4:3 and wide screen 16:9 aspect ratios*

ITU-R Report 624-4:1990, *Characteristics of television systems*

#### 1.3 Definitions, symbols and abbreviations

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

AAUX: Audio auxiliary data.

BCH code: Bose-Chaudhuri-Hocquenghem code which is one of the error correction codes.

CGMS: Copy generation management system.

DCT: Discrete cosine transform.

EOB: End of block.

NABTS: North American broadcasting teletext specifications.

OETM events: Optional events except text and maker's optional events.

TOC: Table of contents.

VAUX: Video auxiliary data.

VLC: Variable length coding.

#### 1.4 Environment and test conditions

Tests and measurements made on the system to check the requirements of this standard shall be carried out under the following conditions.

- Temperature: 20 °C ± 1 °C;
- Relative humidity: (50 ± 2) %;
- Barometric pressure: from 86 kPa to 106 kPa;
- Tape conditioning: not less than 24 h.

#### 1.5 Reference tape

Blank tape to be used for calibration recordings may be purchased from the manufacturers given in annex C.

#### 1.6 Calibration tape

Manufacturers of video tape recorders designed for this format specification may sell calibration tapes meeting the following requirements.

##### 1.6.1 Record locations and dimensions

Tolerances shown in table 3 in part 1, tables 1 and 2 in part 2 should be reduced by 50 %.

##### 1.6.2 Calibration signals

Test signals should be recorded on the calibration tapes:

- Video: 100 % colour bars;
- Audio: 1 kHz tone at –20 dB below full level.

##### 1.6.3 Purchase

The calibration tape may be purchased from the manufacturers given in annex C.

## 2 Helical recordings

### 2.1 Record location and dimensions

Record location and dimensions for continuous recording shall be as specified in figure 1. Each value is described in table 3 of part 1. For recording, helical tracks shall be contained within the tolerance specified in table 3 of part 1.

Each sector location from the start of the SSA shall be as specified in figure 2 and table 1 (525-60 system) or table 2 (625-50 system). The physical tape pattern shall be specified by the centre line of each track.

### 2.1.1 The effective area upper edge

The effective area upper edge ( $H_0$ ) is specified by the intersection of the ending line of the subcode postamble and the centre line of the track.

### 2.1.2 Record and playback guarantee

Every recorder or player shall record or play back the track data from the beginning of the ITI preamble to the end of the subcode sync blocks with interchangeability.

### 2.1.3 Overwrite margin (OM)

When whole sectors (ITI, audio, video, subcode) are overwritten, the overwrite margin (OM) shall be recorded concatenations of run pattern A and run pattern B as described in 5.5 of part 1 in order to erase the old subcode data. In an insert editing mode using the SSA, it is not necessary to record the overwrite margin. For the areas which are outside the guaranteed heights described in 3.2.3 of part 1, there is no need to record or play back the areas, as they have no effective data.

### 2.1.4 Switching margin for recording amplifiers

To avoid erasing the information in the optional tracks, the recording amplifier shall be switched to less than or equal to 0,245 mm along the track length before the ITI preamble and 0,133 mm after the overwrite margin. In an insert editing, the recording amplifier shall be switched to less than or equal to 0,102 mm along the track length before and after the recording sector.

### 2.1.5 Scanner example

Scanner dimensions in table 3 are one possible configuration. Other mechanical configurations are permitted, if the same footprint of recorded information is produced on tape.

## 3 Programme track data arrangement

### 3.1 Introduction

Each television frame is recorded on 10 tracks for the 525-60 system and 12 tracks for the 625-50 system.

The helical tracks are recorded with video, audio and system data. These data are arranged in four sectors such as ITI, audio, video and subcode sectors per track. An edit gap between sectors, accommodates timing errors during editing. The ITI sector is already explained in clause 6 of part 1. Figure 3 shows the arrangement of a track for the 525-60 system and figure 4 shows the arrangement of a track for the 625-50 system.

Each track is numbered from the beginning track of the television frame in order. A track which has track number  $i$  ( $i = 0$  to 9 for the 525-60 system or  $i = 0$  to 11 for the 625-50 system) is referred to as track  $i$ .

Placement of F0, F1 and F2 tracks is shown in figure 5 for the 525-60 system, and figure 6 for the 625-50 system. In the 525-60 system, there are two types of track 1, which are track F1 or track F2, and two types of pilot frame which are defined as follows: