

INTERNATIONAL STANDARD

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1998-08

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 5:
The character information system**

Enregistrement –

*Système d'enregistrement grand public à vidéocassette
à défilement hélicoïdal pour bande magnétique de 6,35 mm
(systèmes 525-60, 625-50, 1125-60 et 1250-50) –*

Partie 5:

Structures des jeux de caractères



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*Partie 5:
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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 5: The character information system

FOREWORD

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International Standard IEC 61834-5 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/167/FDIS	100B/179/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:

- Part 1: General specifications;
- Part 2: SD format for 525-60 and 625-50 systems;
- Part 3: HD format for 1125-60 and 1250-50 systems;
- Part 4: The pack header table and the contents;
- Part 5: The character information system.

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

Part 1 describes the common specifications for the helical-scan digital video cassette recording system using 6,35 mm magnetic tape.

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

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 the 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.

A bilingual version of this standard may be issued at a later date.

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 5: The character information system

1 General

1.1 Scope

This part of IEC 61834 specifies the character information system which is applicable to the whole recording system of the helical-scan digital video cassette using 6,35 mm magnetic tape. This system provides the method of recording characters in many languages and moreover provides easy operation for users.

1.2 Normative reference

The following standard contains provisions which, through reference in this text, constitutes provisions of this part of IEC 61834. At the time of publication, the edition indicated was 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 edition of the standard listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

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

1.3 Definitions, symbols and abbreviations

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

DCS:	Downloaded character set
DJCS:	Downloaded Japanese character set
DRCS:	Dynamically redefinable character set
LPS:	Logical pixel structure
OPN:	Option number
PD:	Pattern data
TRM:	Transmission mode

2 Data structure of the character information system

Character information data are recorded in the optional area of AAUX, VAUX, Subcode and MIC in the form of the pack structure. Figure 1 shows the character information system.

Data structure of the full mode:

Topic = topic unit 1
 Topic unit = topic header + position data $\times m$ + page unit $\times n$
 Page unit = page header + text unit group = page header + text unit $\times k$
 Text unit = text header + text data

where

$m = 1$ for TOC topic,

$m = 0$ for other topics

$n = 1, 2, 3, \dots$

$k = 1, 2, 3, \dots$

$l = 1, 2, 3, \dots$

Data structure of the simple mode:

Text unit group = text unit $\times j$
 Text unit = text header + text data

where

$j = 1, 2, 3, \dots$

2.1 Topic

The full mode consists of many topics which are selected by a producer. Each topic has only one topic unit.

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2.2 Topic unit

Each kind of topic unit has different contents. Each topic unit except for a TOC topic consists of a topic header and some page units. For the TOC topic, there is position data between the topic header and page unit 1.

2.3 Page unit

Each page unit consists of a page header and a text unit group. A text unit group has several text units. There are four display modes per a page which is described in table 2. Therefore, the maximum amount of character data in a page unit is limited to the number of characters which can be displayed at one time.

2.4 Topic header, page header

For both the topic and page header, the TOPIC/PAGE HEADER pack in the CONTROL group (pack header = 07h) shall be used. The first two bytes in the four-byte pack data of the TOPIC/PAGE HEADER pack are the topic header part and the latter two bytes are the page header part.

In the topic header part, there is a TOPIC TAG. A topic whose TOPIC TAG = 01h is a TOC topic which requires position data. In the page header part, there is a PU No. (page unit number) as shown in figure 2. For a TOC topic, the PU No. shall be increased one by one from 00h, and from 01h for other topics. The details of the TOPIC/PAGE HEADER pack are explained in part 4.

Figure 2a shows a topic unit for a TOC. The first TOPIC/PAGE HEADER pack refers to the topic header. Its TOPIC TAG is 01h and its PU No. is 00h. Subsequent data are position data which indicate the start positions of the title, chapter, part and so on which are selected by a producer.

The subsequent TOPIC/PAGE HEADER pack is the page header. Its TOPIC TAG is 01h and PU No. is 01h. The first two bytes in the four-byte pack data of TOPIC/PAGE HEADER packs within a topic have the same contents for the benefit of verification. Subsequent data is the text unit group which includes text data to display.

Figure 2b shows a topic unit which is not a TOC and does not require a position data. Therefore, the first TOPIC/PAGE HEADER pack consists of the topic header and the first page header. Its TOPIC TAG is not 01h and its PU No. is 01h.

Figure 2c shows a page unit and a text unit group. A page unit consists of a page header and a text unit group which has several text units.

2.5 Text unit and text data iTeh Standards

A text unit consists of a text header and text data.

For tape, text data is formed by a TEXT HEADER pack and TEXT packs which adopt a fixed length pack structure as shown in figure 2c. For the MIC, text data includes a TEXT HEADER pack which adopts a variable length pack structure as shown in figure 3.

Text data shall be stored in text units as character codes.

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3 Packs for the character information system

Some packs are prepared to provide character information.

3.1 TOPIC/PAGE HEADER pack

This is defined in the CONTROL group and the pack header is 07h.

3.2 TEXT HEADER packs and TEXT packs

There are eight kinds of TEXT HEADER packs and nine kinds of TEXT packs as shown in figure 3 and table 1. Each TEXT HEADER pack shall be used with the TEXT pack of the same group, when text data is recorded on tape.

Since each group has its own TEXT HEADER pack and TEXT pack, the type of written text data is obvious. For instance, the title text, chapter text and part text may exist in the same VAUX optional area in the same video frame for pre-recorded tape. The most significant four bits of the pack header can separate the text data to be displayed from text data cited above. Furthermore, each TEXT HEADER pack has its own TEXT TYPE which consists of four bits and defines its text type such as name, memo, station and so on.

The last byte (PC4) of the CONTROL TEXT HEADER pack has two types.

For the menu topic, PC4 includes 3 bits for the AREA No. and 5 bits for the TOPIC TAG. The menu topic defines the relationship between a topic and a TOPIC TAG. For other use, PC4 shall be FFh.

Unused bytes in a TEXT pack shall be filled with 00h which means NUL data as shown in table 5.

The details of TEXT HEADER packs are described in part 4.

TEXT TYPE

The TEXT TYPE in each TEXT HEADER pack indicates the type of text data as shown in part 4.

If the TEXT TYPE is neither "Font" nor "Graphic", text data is recognized as character codes. The data format of "Font" is described in 7.4 and 7.5. The data format of "Graphic" is to be defined.

TEXT CODE and OPN

The TEXT CODE in each TEXT HEADER pack determines the character set. The OPN in each TEXT HEADER pack is the same as the option number of UK teletext and is valid for TEXT CODE = 52h~5Dh or 68h~70h which are the same character sets as that of the UK teletext (EBU SPB492 – December 1992). The OPN together with the TEXT CODE, define the language-specific characters. When a TEXT CODE is not 52h~5Dh or 68h~70h, OPN shall be 111b.

More details of TEXT CODEs and OPN are described in the CONTROL TEXT HEADER pack in part 4.

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3.3 Packs for positioning data

There are several packs for positioning data as shown in table 1. Each shaded pack whose lower pack header is 0101b, 1011b or 1111b has its own absolute track number. For instance, CHAPTER START pack has the ABSOLUTE TRACK No. of its chapter start position.

When certain applications want to display the start position using time data such as hours, minutes, seconds and frames, other shaded packs whose lower pack header is 0100b, 1010b or 1110b shall be used with its positioning packs which include the ABSOLUTE TRACK No. In this case, the positioning pack including the ABSOLUTE TRACK No. shall be recoded first.

PR START POINT packs are used in MIC only and do not concern the character information system.

Position data in TOC topic of the full mode

The positioning data for title, chapter, part and programme consist of the START pack and the END pack of the same group. It is not permitted to record a START pack or an END pack only and record each pair of positioning packs separately in a TOC topic. Figure 4 shows an example of the position data in a TOC topic of the full mode. An example of the recording order of each positioning pack is shown in figure 4.

TITLE START pack

TITLE START pack is used to find the real start point of a title. For pre-recorded tape, there may exist advertising film or a colour-bar test chart to adjust the monitor TV's signal level, therefore the absolute track number of the real start point of a title may not be 0. If a TITLE START pack is recorded in the TOC topic, users will be able to skip this area easily and see the title directly. For user's tape, it is not necessary to record the TITLE START pack because the first recording always starts from absolute track number = 0.

3.4 TEXT flag

This flag is included in TAG, TITLE START, CHAPTER START, PART START, PROGRAMME START, AAUX START, VAUX START, CAMERA PRESET and TIMER ACT DATE packs and indicates whether text information concerning the pack exists in the optional area where the pack is recorded or not.

For MIC, it is possible to record text information about a title without recording the TITLE START pack. Figure 5 shows an example where a TITLE TEXT HEADER pack exists with no reference to the TEXT flag.

4 Full mode

4.1 Main topics and optional topics

Main topics

Main topics consist of a menu topic and a TOC (table of contents) topic. The TOPIC TAG number is "0" for the menu and "1" for the TOC. The menu topic is used to define the TOPIC TAG numbers of all optional topics and to display the contents of each topic. The TOC topic is used to display the table of contents and to choose a programme. These two main topics shall be recorded in the full mode.

Optional topics

Optional topics are selected by a producer. The TOPIC TAG number of optional topics shall be assigned from 2 up to 1Fh.

TEXT TYPE

The TEXT TYPE in the TEXT HEADER pack shall be Fh which is indicative of no information, when text data is neither "Font" nor "Graphic". Since the menu can indicate what kind of text data are recorded, there is no need to set the TEXT TYPE explicitly.

Other packs

The full mode may use any or all optional areas of AAUX, VAUX and Subcode. Any other packs which are not concerned with character information may be recorded in the optional areas with packs for the full mode.

4.2 Menu topic

The menu topic is the most important part of the full mode. First is the definition of the relationship between each topic and TOPIC TAG in the TOPIC/PAGE HEADER pack. Second is the definition of the recorded area of each topic in the CONTROL TEXT HEADER pack. Third is the presentation of all topics in the cassette tape. Fourth is the selection of a language which a user can understand. The last is the selection of a topic which a user wants to see.

When a user wants to see the character information, the menu which is written in the main language shall be displayed first. If a user cannot understand the language, the VCR should display the next language. Selecting a topic means that the user understands the language. Figure 6 shows an example of a menu topic data in English, Japanese and German.

4.3 TOC topic

Figure 7 shows an example of a pre-recorded tape. In this case, a colour-bar test chart is recorded before the real start point of the title whose absolute track number is 87103.

A display image in the high-density mode of the TOC is shown in figure 8. High-density mode is described in 6.4.

Character data concerned with the TOC topic shall be placed in the same order as the position data. As shown in figure 7, the end point of a part may not correspond with the start point of the next part. If advertising film exists between chapters, a similar situation can arise. Therefore, it is necessary to record a pair of position data which consist of a START pack and an END pack. Figure 9 shows the actual TOC topic data of figure 7 and figure 8. In this example, position data have packs which are only concerned with absolute track number.

5 Simple mode

The upper layer of the simple mode is a text unit group as shown in figure 1. A text unit group shall be recorded without separation in each optional area of tape within a video frame and the optional area of MIC. Figure 10 shows an example of pre-recorded tape. In this case, the text unit group of AAUX consists of a memo about AAUX in Japanese and English and that of VAUX consists of the title name and an outline of the title in Japanese and English. The contents of the text unit can be understood by TEXT TYPE in the TEXT HEADER pack. Figure 11 shows an example of the user's tape which includes five items.

The difference between the full mode and the simple mode is that the full mode has a menu, a TOC and a display format, but the simple mode has no information corresponding to them. If there is no menu, users cannot know what kind of text data are recorded not whether they even exist in the simple mode. The way of displaying characters depends on each digital VCR in the simple mode.

6 Presentation

6.1 Displaying area

In the full mode, the displaying area to present the character information is defined by the unit screen. The unit screen is assumed to be the physical displaying area as shown in figure 12, and the coordinate is represented as (X, Y) , where X is the abscissa, and Y is the ordinate. Both values of X and Y are changed from "0" to "1". The size of the unit screen is flexible, but the whole displaying area shall be displayed. In the simple mode, displaying area is not standardized.

6.2 Display mode

In the full mode, there are three kinds of display mode: no scroll mode, vertical scroll mode and horizontal scroll mode. These are selected by the SCRL and HV flag in the TOPIC/PAGE HEADER pack as described in table 2. It is not necessary for all consumer digital VCRs which can display the character information to answer the vertical and horizontal scroll modes.

The display area for no scroll mode and vertical scroll mode is shown in figure 12. In horizontal scroll mode, the displaying area is only the bottom row. There are several control codes which cannot be used in each mode. Details are described in 7.2.

In the simple mode, the display mode is not standardized.

Vertical scroll mode

The first character commences at the primary position of the display area. When the display area is full of characters and more characters need to be displayed, the vertical scroll occurs. When the last character is displayed, the scrolling is stopped. If consecutive page units are written in the vertical scroll mode, there will be no interval lines between two page units.

Horizontal scroll mode

The first character commences at the edge, which is on the opposite side to the primary position of the display area of the bottom row. When the bottom row is full of characters and more characters are to be displayed, the horizontal scroll occurs. When the last character is displayed, the scrolling is stopped. If consecutive page units are written in the horizontal scroll mode, there will be no interval character between two page units.

6.3 Character space

The character space is the rectangular area in which one character is displayed. A character is made up from a number of pixels. The size of the character space shall be determined by display format and character size. The reference point for displaying is the top left corner of the character space. The character space is expressed in fractional ratios to the unit screen.

6.4 Display format and character size

Table 3 shows the display format. There are two types of display density. One is standard density, the other is high density. These display areas are expressed in fractional ratios of the unit screen.

The standard density is suitable for displaying ideographic characters such as Chinese characters whose codes consist of two bytes. The high density is suitable for alphanumeric characters whose code consists of one byte. Because ideographic characters are normally more complex than alphanumeric characters, they can be displayed in only the standard character size of the standard density.

There are five character sizes for the standard density and four character sizes for the high density. These character sizes are determined on the basis of the unit screen. In the high density mode, half width characters are not available. The details are shown in table 4.