

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

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ICS 33.160.40

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- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 46, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Amendments issued since publication

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English version

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

(IEC 61834-5:1998)

Enregistrement — Système de magnétoscope numérique à cassette à balayage hélicoïdal utilisant la bande magnétique de 6,35 mm, destiné au grand public
(systèmes 525-60, 625-50, 1125-60 et 1250-50)
Partie 5: Structures des jeux de caractères
(CEI 61834-5:1998)

Aufzeichnung — Videokassettensystem mit digitaler Schrägspuraufzeichnung auf Magnetband 6,35 mm für den Heimgebrauch (Systeme 525-60, 625-50, 1125-60 und 1250-50)
Teil 5: Das Schriftzeichen-Informationssystem
(IEC 61834-5:1998)

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Foreword

The text of document 100B/167/FDIS, future edition 1 of IEC 61834-5, prepared by SC 100B, Recording, 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 61834-5 on 1998-10-01.

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Annexes designated “normative” are part of the body of the standard.

In this standard, Annex ZA is normative.

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61834-5:1998 was approved by CENELEC as a European Standard without any modification.

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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.

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

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.

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.

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.

6.5 Active position

The active position is the character space where the next character will be displayed. After one character is displayed, the active position moves forward automatically by one character space. If the active position moves beyond the edge of the display area, the active position shall be moved at the opposite edge of the displaying area in the next row.

7 Coding

This character information system adopts an 8-bit coded system and code extension techniques which basically conform to ISO/IEC 2022. Actual character set tables are described in CONTROL TEXT HEADER pack (pack header = 08h).

7.1 The structure of the 8-bit code

The 8-bit coded table is divided into four areas as shown in Figure 15.

CO (control-set 0) and C1 (control-set 1) are the areas for control codes. GL (graphic-set left) and GR (graphic-set right) are the areas for graphic character codes. Coding and decoding shall be carried out using this code table.

7.2 Control codes

Control codes are distributed to C0, C1 and GL.

Control codes in C0 area

C0 has 32 control codes with 14 codes already defined as shown in Figure 15. The main purpose of C0 control codes are screen controls and code extensions which are explained in Table 5. Figure 16 shows the actions of each code for the active position control.

LS0, LS1, SS2, SS3 are described in 7.3 and Table 8.

Control codes in C1 area

C1 has 32 control codes with 21 codes already defined as shown in Figure 15. The main purpose of C1 control codes are colour controls and character size changes which are explained in Table 6.

POL, FLC, CDC, RPC, STL, SPL, HLC and CSI are additional functions. These are not necessary for all consumer digital VCRs, which can display the character information to answer these additional functions.

Control codes in GL area

The 20h code in the GL area is basically a SP (space) code which fills the character space with the designated background colour. The 7Fh code in the GL area is basically a DEL (delete) code which fills the character space with the designated foreground colour.

Both 20h and 7Fh codes are sometimes defined for other characters.

Restrictions for using control codes

There are several control codes which shall not be used in certain display modes.

For the horizontal scroll mode: APB, APF, APD, APU, APR, PAPF, APS, SZX 41h, SZX 45h, FLC, CDC

For the vertical scroll mode: APB, APS, SZX 41h, SZX 45h, FLC, CDC

For the simple mode: APB, APF, APD, APU, APR, PAPF, APS, SZX, RPC

7.3 Code extension techniques

Code extension method using escape sequence

Certain languages possess many kinds of characters. Therefore, it is necessary for such languages to extend the character codes within the 8-bit coded table. Figure 17 shows the code extension method which sets the required character sets to GL or GR areas. To designate or invoke character sets, escape sequences are used. Table 7 shows the designation codes and Table 8 shows the invocation codes. Final bytes are the same as TEXT CODE in TEXT HEADER pack.

In Table 7, the codes concerning DRCS (dynamically redefinable character sets) are explained in 7.4. In Table 8, LS0, LS1, SS2 and SS3 are already defined in the C0 area of Figure 15. Other symbols adopt the escape sequence. Locking shift means that a character set is invoked to the character code table until other locking shift is done. Single shift is described later.

OPN-change codes

Some character information may use other languages for only one word. For instance, a person's name may be required to be written in Japanese in English sentences. Changing the OPN in TEXT HEADER pack is the normal technique. But it needs one pack more than for a new TEXT HEADER pack. For the benefit of saving bytes and time, OPN-change codes whose final byte is from 30h to 3Fh are prepared. Table 9 shows the escape sequences of the OPN-change codes.

Temporary change of one character

Certain character information may use other languages for only one character. For instance, in English sentences, a person's name may include umlaut characters. SS2, SS3 codes are prepared for this purpose as shown in Figure 17. In Table 8, single shift means that only one character which is following this code is invoked to the GL area temporarily. This setting is invalid after using this code and one following character code. The next character code is based on the original character code table which is used before setting SS2 or SS3 codes.

Automatic setting

TEXT CODEs in TEXT HEADER pack set some character sets automatically to G0, G1, G2, G3, GL and GR areas.

For example, TEXT CODE = 5Fh sets Japanese character sets automatically as below.

G0: Japanese two-byte set	(TEXT CODE = 4Bh)
G1: Japanese version roman set	(TEXT CODE = 4Ah)
G2: Hiragana set	(TEXT CODE = 4Ch)
G3: Katakana set	(TEXT CODE = 4Dh)
GL: Japanese two-byte set	(TEXT CODE = 4Bh)
GR: Hiragana set	(TEXT CODE = 4Ch)

This means that the character information starts to use Japanese two-byte set and Hiragana set.

Details are described in CONTROL TEXT HEADER pack in part 4.

Code extension method using direct load

For a two-byte coded character set, such as a Japanese two-byte set and a Korean two-byte set, the DCS (downloaded character set) method is prepared. DCS data is loaded to the character coded table directly, not using the escape sequence. More details are described in 7.5.

7.4 Coding of DRCS data

DRCS data are stored in a text unit whose TEXT TYPE in TEXT HEADER pack is equal to 0Ch for one-byte coded font or 0Dh for the two-byte coded font and consist of TRM (transmission mode), LPS (logical pixel structure), CC1 (character code 1), CC2 (character code 2) and PDs (pattern data). It is not necessary for all consumer digital VCRs which can display the character information to answer the DRCS. Table 10 shows the final byte for DRCS. There are 16 sets for DRCS available. DRCS set number 0 is used for the two-byte coded character set and others are used for one-byte coded character set.

For using the DRCS, the following sequence shall be used:

- a) Store the required DRCS data using some text units.
- b) Store the designation code in Table 7.
- c) Store the invocation code in Table 8.
- d) Use the DRCS.

The data structure is shown in Figure 18. In this case, OPN and TEXT CODE in TEXT HEADER pack are all "1" which is indicative of no information. One DRCS data shall be stored in one text unit. For three DRCS data, they need three text units.

TRM (transmission mode)

- 00h: Nothing done to other DRCS sets.
- 01h: The data of all DRCS sets shall be cleared before defining DRCS pattern data.
- 02h: The data of the DRCS set which is going to be redefined shall be cleared before setting the new DRCS pattern data.
- FFh: No information.
- Others: Reserved.

LPS (logical pixel structure)

A logical pixel is an imaginary dot which defines the pattern data. Therefore, the logical pixel structure does not always correspond to the actual displayed dotted pattern. It depends on the displaying capability of each consumer digital VCR. For instance, a logical pixel may be displayed by 1, 2 or 2×2 pixels or displayed using decimation.

There are two types of LPS as shown in Table 11. Type 0 is mainly considered for the 525-60 system. Actually 73h, 78h and 6Bh of LPS have contents in conformity with Japanese teletext. Type 1 is mainly considered for the 625-50 system and its contents are basically in conformity with the UK teletext.

CC1 (character code 1)

For one-byte coded DRCS, CC1 designates the DRCS set number from 1 to 15 as shown in Table 10. For two-byte coded DRCS, CC1 designates the first byte of the character code and the DRCS set number is 0 implicitly.

CC2 (character code 2)

For one-byte coded DRCS, CC2 designates the character code from 20h to 7Fh. For two-byte coded DRCS, CC2 designates the second byte of the character code.

PD (pattern data)

For type 0, eight logical pixels of a character are loaded from each PD at one time. Each PD's location of the entire pattern is shown in Figure 19 ~ Figure 23. LPS codes of 73h, 78h and 6Bh are used, respectively, for the standard size, the half-width size and DJCS (downloaded Japanese character set) in conformity with Japanese teletext.

For type 1, six logical pixels of a character are loaded from each PD at one time. In each PD, the least significant six bits are valid and the most significant two bits are always 11b. Each PD's location of the entire pattern is shown in Figure 24 ~ Figure 26. LPS codes of 31h, 30h and 32h are used, respectively, for ideographic, alphanumeric and alphanumeric character in conformity with UK teletext.

The logical pixels defined as "1" shall be displayed in foreground colour and the logical pixels defined as "0" shall be displayed in background colour.

7.5 Coding of DCS data

Some languages have a lot of character sets. For instance, the Japanese two-byte set consists of level 1 of the Kanji set (2 965 sets), the non-Kanji set (524 sets) and an additional set for Japanese teletext (173 sets). Level 1 of the Kanji character set is sufficient to express most of the kanji applications. However, for Japanese names for example, it may need some characters of level 2 of the Kanji set (3 388 sets) to express it. In this character information system, level 2 of the Kanji set is optional. The DCS method designed is to display such characters.

DCS data are stored in a text unit whose TEXT TYPE in TEXT HEADER pack is equal to 0Dh for two-byte coded font and consists of similar DRCS data. The difference between DRCS data and DCS data is the TEXT CODE and TRM. While the TEXT CODE for DRCS is equal to FFh, the TEXT CODE for DCS is equal to the two-byte set codes. TRM code for DCS is equal to FFh which is indicative of no information. These are not necessary for all consumer digital VCRs which can display the character information to store or load the DCS data.

For storing the DCS data, the following sequence shall be used.

- a) Store character information data which includes some optional codes,
- b) Store required DCS data for optional codes using some text units.

For displaying optional codes, there are certain patterns.

- a) If a consumer digital VCR has a code ROM for optional characters such as level 2 of the Kanji set, there is no need to load the DCS data because it can display these optional characters.
- b) Even if a consumer digital VCR does not have a code ROM for optional characters, it can display these optional characters by loading the DCS data.
- c) If a consumer digital VCR does not have the capability of displaying the optional characters and the loading character information has some optional character codes, it depends on the VCR as to how these optional characters shall be displayed.

The data format is shown in Figure 27. In the TEXT HEADER pack, the OPN is equal to 111b and the TEXT TYPE is equal to 0Dh which means two-byte font data. One DCS data shall be stored in one text unit. For three DCS data, they need three text units.

Figure 28 shows an example of a character information using DCS data. The character "𐤮" belongs to the character set for level 2 of the Kanji set which is the option for the Japanese two-byte set. In this case, the DCS data for the character "𐤮" stored after the text unit in which this character is used.