

# INTERNATIONAL STANDARD

**IEC**  
**62071-3**

First edition  
2005-10

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**Helical-scan compressed digital video  
cassette system using 6,35 mm  
magnetic tape – Format D-7 –**

**Part 3:  
Data stream format**

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## Helical-scan compressed digital video cassette system using 6,35 mm magnetic tape – Format D-7 –

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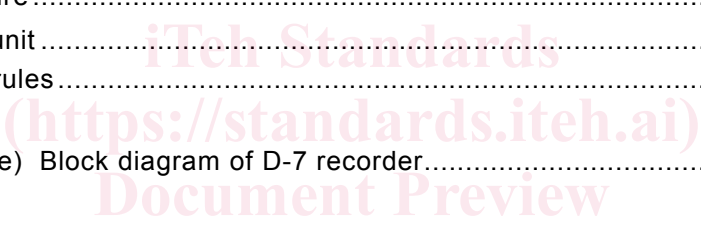
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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HELICAL-SCAN COMPRESSED DIGITAL VIDEO CASSETTE SYSTEM  
USING 6,35 mm MAGNETIC TAPE – FORMAT D-7 –**
**Part 3: Data stream format**

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International Standard IEC 62041-3 has been prepared by technical area 6: Higher data rate storage media, data structures and equipment of IEC technical committee 100: Audio, video and multimedia systems and equipment.

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

CDV	Report on voting
100/902/CDV	100/986/RVC

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 2.

IEC 62071 consists of the following parts, under the general title *Helical-scan compressed digital video cassette system using 6,35 mm magnetic tape – Format D-7*:

Part 1: VTR specifications

Part 2: Compression format

Part 3: Data stream format

This part 3 describes the specifications for transmission of DV-based compressed video and audio data stream over 270Mb/s and 360 Mb/s serial digital interface.

Part 1 describes the VTR specifications which are tape, magnetization, helical recording, modulation method and basic system data for video compressed data.

Part 2 describes the specifications for encoding process and data format for 525i and 625i systems.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed;
- withdrawn;
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# HELICAL-SCAN COMPRESSED DIGITAL VIDEO CASSETTE SYSTEM USING 6,35 mm MAGNETIC TAPE – FORMAT D-7

## Part 3: Data stream format

### 1 Scope

This part of IEC 62071 defines the format of the data stream for the synchronous exchange of DV-based audio, data, and compressed video (whose data structure is defined in SMPTE 314M) over the interface defined in SMPTE 305M. It covers the transmission of audio, subcode data and compressed video packets associated with DV-based 25 and 50 Mb/s data structures including faster-than-real-time transmission for 525/60 SDTI and 625/50 SDTI systems.

This standard does not include the data stream of a DV-compressed structure as defined in SMPTE 322M.

Space within SMPTE 305M not used by a data stream conforming to this standard may be used for the transmission of data other than those representing DV-based audio, data and compressed video.

In this standard, the 60 Hz system refers to the field frequency 59,94 Hz system and the 50 Hz system refers to the field frequency 50,0 Hz system.

### 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

SMPTE 305M: 2005, *Television – Serial Data Transport Interface*

SMPTE 314M: 1999, *Television – Data Structure for DV-Based Audio, Data and Compressed Video – 25 and 50 Mb/s*

SMPTE 322M: 2004, *Television – Format for Transmission of DV Compressed Video, Audio and Data Over a Serial Data Transport Interface*

### 3 Abbreviations and acronyms

DIF:	Digital interface
DVF:	DIF valid flag
ECC:	Error correction code
FF:	Field/frame frequency flag
FSNF:	Frame sequence number flag
SDI:	Serial digital interface
SDTI:	Serial data transport interface
ST:	Signal type
STVF:	Signal type of video frame
TRF:	Transmission rate flag
TT:	Transmission type

## 4 Identification within the serial data transport interface (SDTI)

### 4.1 SDTI header packet data

The header packet data words of the serial data transport interface (SDTI) associated with this data stream format shall conform to SMPTE 305M. When the SDTI interface is transporting a data stream conforming to this standard, the block type word within the SDTI header packet shall have the value 173<sub>h</sub> for transported data contained in fixed-size blocks when ECC (error correction code) is used and the value

233<sub>h</sub> when ECC is not used.

### 4.2 Payload

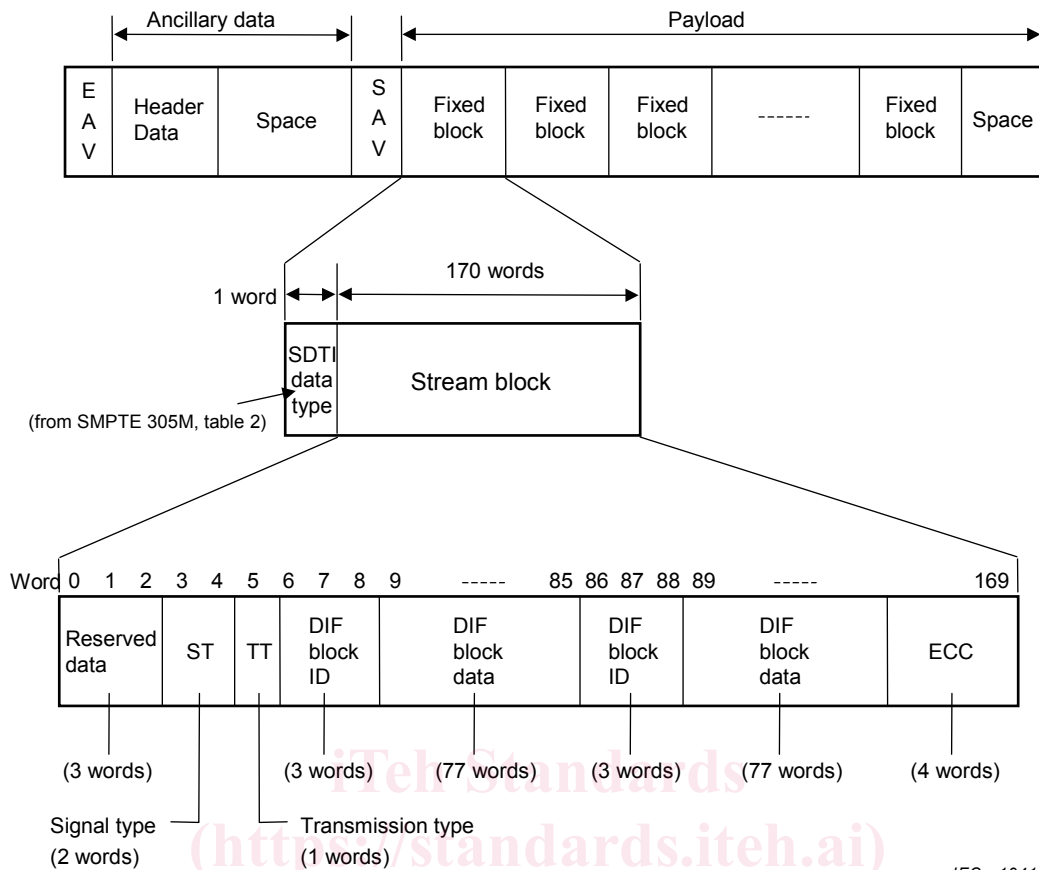
The payload is composed of consecutive fixed-size blocks (see Figure 1). The SDTI data type word shall identify the data type of this payload with the value 221<sub>h</sub>.

## 5 Stream block format

The stream block format is shown in Figure 1. The length of each stream block is 170 words, including a secondary header, two DIF (digital interface) block IDs, two DIF block data (of stream data) and an ECC block. The secondary header contains reserved data words, signal type words, and a transmission type word. The complete word structure of the stream block for a compressed video data stream is defined below:

Reserved data	: 3 words
Signal type	: 2 words
Transmission type	: 1 word
DIF block ID	: 3 words
DIF block data	: 77 words
DIF block ID	: 3 words
DIF block data	: 77 words
ECC	: 4 words





IEC 1941/05

Figure 1 – Stream block format

5.1 Reserved data words

The reserved data words shall consist of 3 words and be positioned at the start of the stream block. The default value for the reserved data is 200<sub>h</sub>.

5.2 Signal type words

The signal type word (ST) mapping is shown in Figure 2. The signal type words shall consist of two words. The first word of ST (word 3) includes the specific type of video frame ID (STVF ID). The second word of ST (word 4) includes the field/frame frequency flag (FF), the DIF structure format, the DIF valid flag (DVF), the frame sequence number flag (FSNF), the transmission rate flag (TRF) and reserved bits.

	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0
Word 3	$\overline{EP}$	EP		Reserved				STVF ID		
Word 4	$\overline{EP}$	EP	FF	DIF structure		Res	DVF	FSNF	TRF	

IEC 1942/05

Figure 2 – Signal type (ST) word mapping

Word 3 of ST

The STVF ID shows information mainly related to pictures that have been 3:2 pull-down converted from 480 line/ 29,98 frame rate progressive pictures.

In the 525/60 SDTI system, the following applies:

Bits B7 through B3 are reserved bits and shall be set to 00000<sub>b</sub> as default values.

Bits B2 through B0 indicate the specific type of video frame ID which shows the type of the converted picture with the following values:

B2	B1	B0	Original	Converted
0	0	0	: 480i / 29,97	-> No change
0	0	1	: 480p / 29,97	-> Segmented frame (see note)
0	1	0	: 480p / 23,98	-> No field sequence ID (3:2 pull down)
0	1	1	: 480p / 23,98	-> A frame (3:2 pull down)
1	0	0	: 480p / 23,98	-> B frame (3:2 pull down)
1	0	1	: 480p / 23,98	-> C frame (3:2 pull down)
1	1	0	: 480p / 23,98	-> D frame (3:2 pull down)
1	1	1	: 480p / 23,98	-> E frame (3:2 pull down)

NOTE Odd lines of 480p/29,97 are mapped to the first field and even lines of 480p/29,97 are mapped to the second field.

In the 625/50 SDTI system, the following applies:

All values of bits B7 through B0 are set to 00<sub>h</sub> as default values.

Bit B8 of word 3 is equal to the even parity of B7 through B0.

Bit B9 of word 3 is equal to the complement of B8.

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Word 4 of ST

Bit B7 indicates the field frequency of serial digital interface (SDI) with the following values:

B7	
0	: 60 Hz (59,94 Hz)
1	: 50 Hz

Bits B6 through B4 indicate the DIF structure with the following values:

B6	B5	B4	
0	0	0	: Reserved
0	0	1	: Reserved
0	1	0	: Reserved
0	1	1	: 25 Mb/s structure
1	0	0	: Reserved
1	0	1	: 50 Mb/s structure
1	1	0	: Reserved
1	1	1	: Reserved

Bit B3 is reserved bit and shall be set to 0<sub>b</sub> as default value.