

# INTERNATIONAL STANDARD

**IEC**  
**61880-2**

First edition  
2002-09

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**Video systems (525/60) –  
Video and accompanied data using  
the vertical blanking interval –  
Analogue interface –**

**Part 2:  
525 progressive scan system**



Reference number  
IEC 61880-2:2002(E)

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**VIDEO SYSTEMS (525/60) –  
VIDEO AND ACCOMPANIED DATA USING THE VERTICAL  
BLANKING INTERVAL – ANALOGUE INTERFACE**

**Part 2: 525 progressive scan system**

## FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 61880-2 has been prepared by 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
100/444/CDV	100/502/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.

The committee has decided that the contents of this publication will remain unchanged until 2004. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

# **VIDEO SYSTEMS (525/60) – VIDEO AND ACCOMPANIED DATA USING THE VERTICAL BLANKING INTERVAL – ANALOGUE INTERFACE –**

## **Part 2: 525 progressive scan system**

### **1 Scope**

This part of IEC 61880 specifies the aspect ratio code and the copy control information code and the method of transfer of these codes in the vertical blanking interval of the luminance signal. It is applicable to the transfer of video related information with the video signal through the baseband analogue signal of the 525-line/60-frame progressive scan video system.

This standard is applicable to analogue video signal interfaces between digital and analogue video equipment as follows:

- digital video equipment to digital video equipment;
- digital video equipment to analogue video equipment;
- analogue video equipment to digital video equipment;
- analogue video equipment to analogue video equipment.

### **2 Definitions and abbreviations**

For the purposes of this document the following definitions and abbreviations apply.

#### **2.1**

##### **CRCC**

cyclic redundancy check code for error detection

#### **2.2**

##### **CGMS-A**

copy generation management system on analogue video interface, for use in digital video recorders and players

#### **2.3**

##### **APS**

analogue protection system, to control analogue copying from digital transmission or from digital copies of a video signal

#### **2.4**

##### **IRE**

linear scale for measuring the relative amplitude of the video signal with a reference at the blanking level, in which pure white is defined as 100 IRE and the blanking level is 0 IRE.

NOTE IRE is the abbreviation for the Institute of Radio Engineers.

### 3 Construction of identification signal

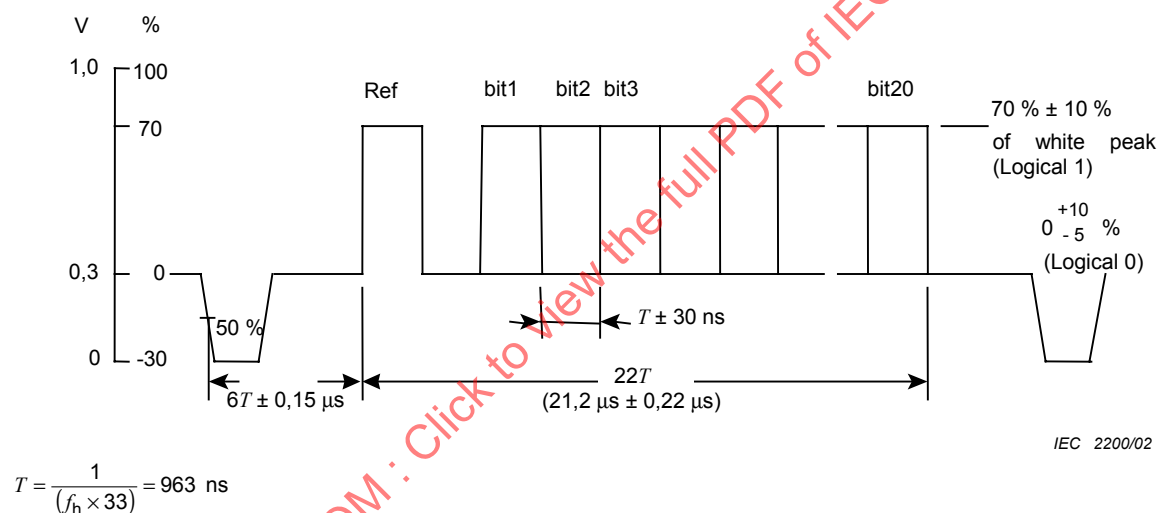
The identification signal consists of a reference signal of 70 % (70-IRE) and a 20-bit digital data signal indicated by 0 % (0-IRE) or 70 % (70-IRE) in the effective video signal period of one horizontal line. The signal waveform is shown in Figure 1. The 20-bit digital data signal is coded as an identification signal for video related information.

The identification signal is inserted in the horizontal line 41 of luminance signal (Y signal) for the 525-line/60-frame progressive scan video system. The signal inserted line is shown in Figure 2.

The clock frequency ( $f_c$ ) of the 525-line/60-frame system shall be:

$$f_c = f_h \cdot 33 = 1,0385 \text{ MHz}$$

where  $f_h = 31,468 \text{ kHz}$  (horizontal scan frequency)

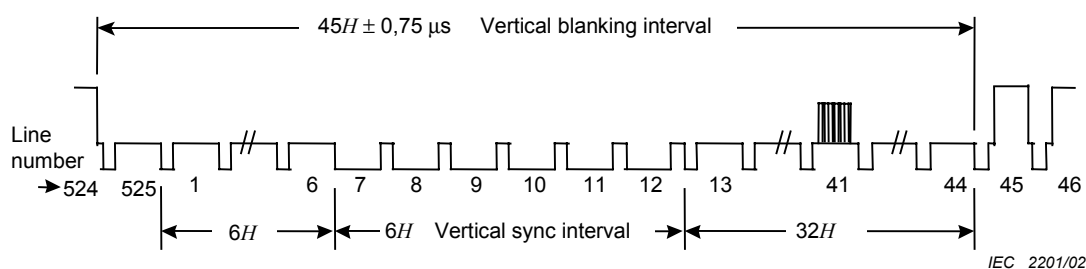


$$T = \frac{1}{(f_h \times 33)} = 963 \text{ ns}$$

NOTE The cumulative timing error for each bit number 1 to bit number 20, measured from the 50 % amplitude point of the rising edge of the reference bit, should be within 0,22 μs.

**Figure 1 – Identification signal waveform**

Logical 1 to be transmitted is represented by 70 % (70-IRE) and logical 0 to be transmitted is represented by 0 % (0-IRE) in the effective video signal.

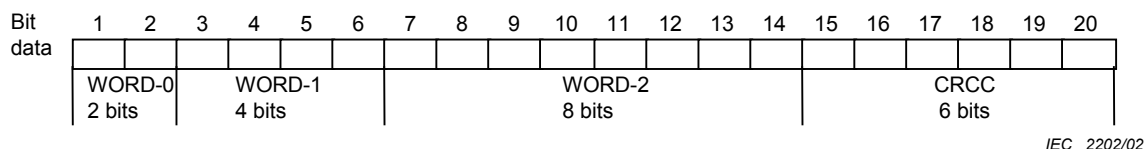


**Figure 2 – Signal inserted line in vertical blanking interval**

## 4 Bit and code assignment of the identification signal

### 4.1 General

The 20-bit digital data signal consists of WORD-0 (2 bits), WORD-1 (4 bits), WORD-2 (8 bits) and CRCC (6 bits), as illustrated in Figure 3.



**Figure 3 – Identification data format**

### 4.2 WORD-0: Identification data for the video information signal

The WORD-0 code assignments that identify the picture aspect ratio and display format are specified in Table 1.

**Table 1 – Aspect ratio and display format**

Bit number 1	Bit number 2	Applications		Remarks
		Aspect ratio	Picture display format	
0	0	4:3	Normal	See Annex A
1	0	16:9	Normal	
0	1	4:3	Letter box	
1	1	Reserved		

If the aspect ratio information is not indicated, bit assignments of WORD-0 shall be 00.

Bit assignment 11 is reserved for a future application.

### 4.3 WORD-1 and WORD-2

Code assignments for WORD-1 and WORD-2 are specified in Annex B. WORD-1 is the header code which indicates the meaning of the data in WORD-2.

Non-specified code assignments in WORD-2 shall be set to 0.

Non-specified bit combinations shall be ignored by the receiving equipment, and the receiving equipment shall interpret only the bit combinations which can be handled by the receiving equipment.

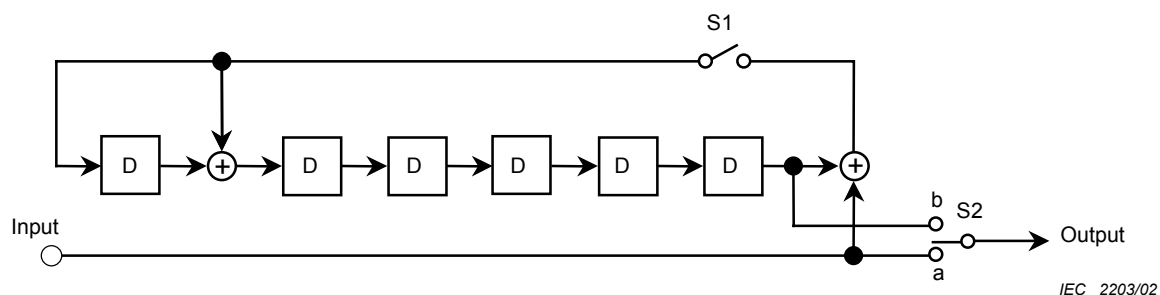
### 4.4 CRCC

CRCC is the error check code. The generator polynomial  $G(X)$  of the CRCC is as shown in the following formula (see Figure 4):

$$G(X) = X^6 + X + 1$$

Preset of CRCC in Figure 4 shall be all 1.





**Figure 4 – CRCC generator**

The CRCC is generated in successive steps as follows:

- 1) S1 is closed, and S2 is set to position a;
- 2) 14 bits data are input from the beginning;
- 3) S1 is opened, S2 set to position b, and CRCC is output from bit number 15.

## 5 Transmission frame

The same data shall be carried on every frame.

## 6 Designation

The equipment which deals with the data of this standard shall use the designation ID-2. The name of this information system is defined as VIDEO ID.

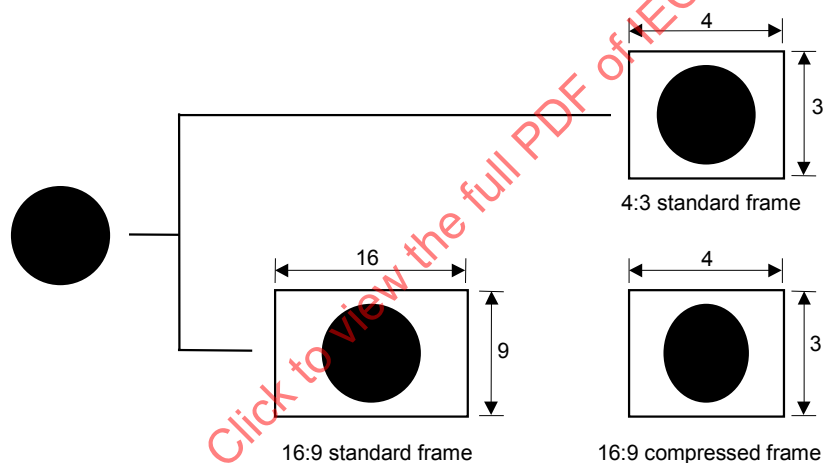
## Annex A (normative)

### Aspect ratio and picture display format

#### A.1 Aspect ratio

The meaning of aspect ratio as specified in 4.2 is as follows (see Figure A.1):

- aspect ratio 4:3 means that pictures are captured at an aspect ratio 4:3, and converted into a video signal;
- aspect ratio 16:9 means that pictures are captured at an aspect ratio of 16:9, and compressed to a ratio of 4:3. Then the compressed pictures are converted into a video signal.

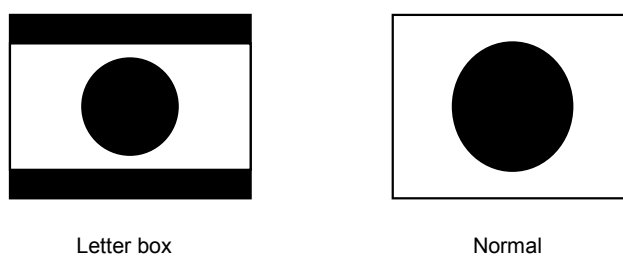


IEC 2204/02

Figure A.1 - Aspect ratio

#### A.2 Picture display format

The meaning of picture display format as specified in 4.2 is illustrated in Figure A.2.



IEC 2205/02

Figure A.2 - Picture display format

## Annex B (normative)

### Copy control information system

#### B.1 Copy control information

The copy control information signal is transmitted between video recorders and/or video players in the data of WORD- 2 when WORD-1 in the 20-bit identification data format is set to 0000 (see Table B.1).

When the code 0000 is present in WORD-1, the data of WORD-2 shall be transferred by the rate of two or more frames per 2 s.

**Table B.1 – Bit assignment of WORD-1**

Bit number of WORD-1 3 4 5 6	Application of WORD-2	Data form
0000	Copy control information	Flags (see Table B.2)

The copy control information is specified as follows:

- a) CGMS-A: copy generation management system in an analogue signal for use in video recorders and players.  
CGMS-A consists of two bits of digital information;
- b) APS trigger bits: identification bits for triggering generation of a pseudo-sync (PSP) and an inverted split colour burst element;
- c) analogue source bit: copy control information to indicate whether the source of the incoming video signal originated from an analogue pre-recorded medium

When copyright information is not to be transferred, WORD-1 shall be set to the default value 1111.

#### B.2 CGMS-A

The CGMS-A signal consists of bit number 7 and bit number 8 of WORD-2 in the 20-bit identification data format.

**Table B.2 – CGMS-A**

Bit number of WORD 2	Applications	Contents
7	Copyright	See Table B.3
8	Copy generation bit	

Bit number 7 of CGMS-A information identifies whether copyright is being asserted via CGMS-A. Bit number 8 of CGMS-A information identifies whether, in the light of the status of the bit number 7, copying of the video signal is to be permitted.

The bit assignment of bit number 7 and bit number 8 shall be as specified in Table B.3.