

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Video systems (625/50 progressive) – Video and accompanied data using the vertical blanking interval – Analogue interface

Systèmes vidéo (625/50 progressif) – Données vidéo et données associées utilisant l'intervalle de suppression de trame – Interface analogique



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2004 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester.

If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de la CEI ou du Comité national de la CEI du pays du demandeur.

Si vous avez des questions sur le copyright de la CEI ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de la CEI de votre pays de résidence.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

Useful links:

IEC publications search - www.iec.ch/searchpub

The advanced search enables you to find IEC publications by a variety of criteria (reference number, text, technical committee,...).

It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available on-line and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in additional languages. Also known as the International Electrotechnical Vocabulary (IEV) on-line.

Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

A propos de la CEI

La Commission Electrotechnique Internationale (CEI) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications CEI

Le contenu technique des publications de la CEI est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Liens utiles:

Recherche de publications CEI - www.iec.ch/searchpub

La recherche avancée vous permet de trouver des publications CEI en utilisant différents critères (numéro de référence, texte, comité d'études,...).

Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

Just Published CEI - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications de la CEI. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne au monde de termes électroniques et électriques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans les langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (VEI) en ligne.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: csc@iec.ch.

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Video systems (625/50 progressive) – Video and accompanied data using the vertical blanking interval – Analogue interface

Systèmes vidéo (625/50 progressif) – Données vidéo et données associées utilisant l'intervalle de suppression de trame – Interface analogique

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX

P

ICS 33.160.40

ISBN 978-2-83220-240-1

Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.

CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references	5
3 Terms, definitions, symbols and abbreviated terms.....	5
3.1 Terms and definitions	5
3.2 Symbols and abbreviated terms.....	5
4 Defined signal	6
5 Construction of identification signal	6
5.1 Position	6
5.2 Clock frequency	6
5.3 Signal amplitude.....	7
5.4 Modulation coding	7
5.5 Preamble.....	7
5.6 Data bits.....	7
6 Information content of data bits	9
6.1 Data group 1, Aspect ratio.....	9
6.2 Data group 2, Reserved	10
6.3 Data group 3, Subtitles.....	10
6.4 Data group 4, Surround sound and CGMS-A	11
Annex A (informative) Rules of operation	12
Annex B (informative) Recommendation	13
Annex C (informative) Guideline	14
Bibliography.....	15

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**VIDEO SYSTEMS (625/50 PROGRESSIVE) –
VIDEO AND ACCOMPANIED DATA USING THE VERTICAL
BLANKING INTERVAL – ANALOGUE INTERFACE**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of 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, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). 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. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.

The International Electrotechnical Commission (IEC) draws attention to the fact that it is claimed that compliance with this document may involve the use of patents.

The IEC takes no position concerning the evidence, validity and scope of this patent right.

The holder of this patent right has assured the IEC that he/she is willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with IEC. Information may be obtained from:

Sony Corporation

6-7-35 Kita-shinagawa, Shinagawa-ku, 141-0001 Tokyo, Japan

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights other than those identified above. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62375 has been prepared by IEC technical committee 100: Audio, video and multimedia systems and equipment.

This bilingual version (2012-08) corresponds to the monolingual English version, published in 2004-02.

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

CDV	Report on voting
100/689/CDV	100/754/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.

The French version of this standard has not been voted upon.

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 2006. At this date, the publication will be

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

VIDEO SYSTEMS (625/50 PROGRESSIVE) – VIDEO AND ACCOMPANIED DATA USING THE VERTICAL BLANKING INTERVAL – ANALOGUE INTERFACE

1 Scope

This International Standard specifies the method of transfer of aspect ratio information code, copy control information code and other codes in the vertical blanking interval of the luminance signal.

This International Standard is applicable to the transfer of video related information with the video signal through the baseband analogue signal of 625-line/50-frame progressive scan video system between digital and analogue video equipments.

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.

ITU-R BT.1358: *Studio parameters of 625 and 525 line progressive scan television systems*

3 Terms, definitions, symbols and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1

letterbox

picture display format to display a picture with an aspect ratio greater than the screen, in such a way that empty (black) lines are added to conform to the screen

3.1.2

full format

picture display format with full screen size conforming to its scanning format

3.1.3

CGMS-A

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

3.2 Symbols and abbreviated terms

0_h	falling sync edge
a	aspect ratio
F_S	clock frequency
LSB	Least Significant Bit
MSB	Most Significant Bit
NRZ	Non-Return-to-Zero
T_d	data bit period
T_s	sampling period

4 Defined signal

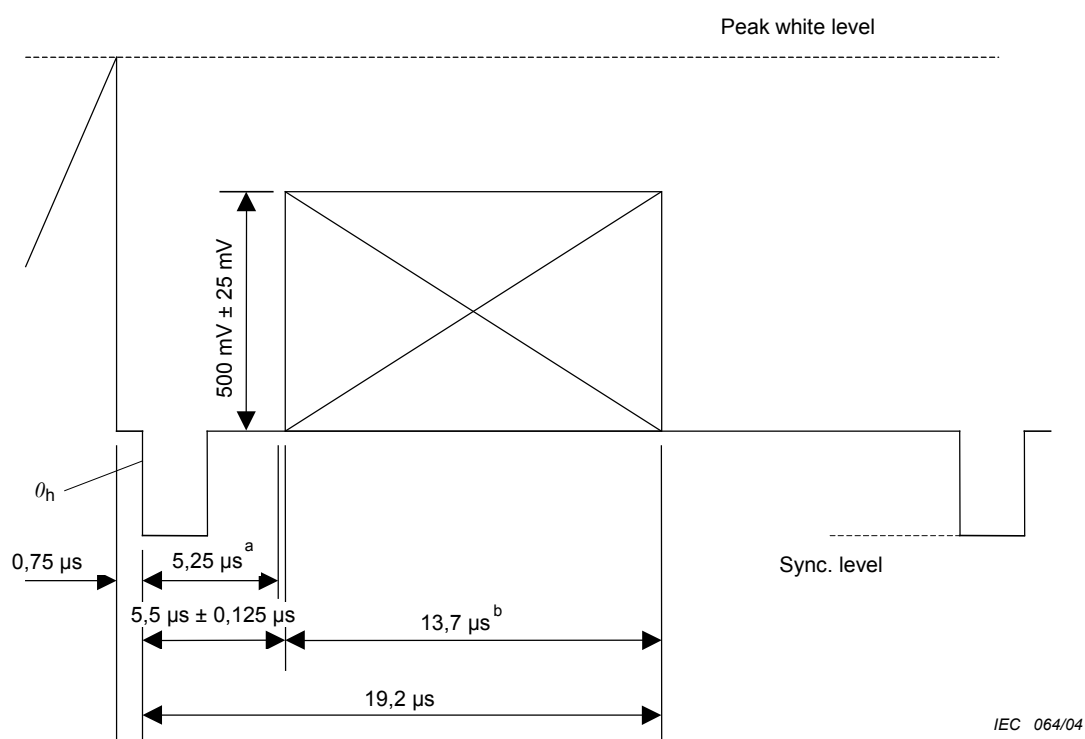
The signal defined in this standard is defined for use with systems complying with ITU-R BT.1358.

5 Construction of identification signal

5.1 Position

The identification signal bits shall be transmitted as a data burst in the first part of line 43.

The position of the beginning of the bits shall be $5,5 \mu\text{s} \pm 0,125 \mu\text{s}$ from 0_h of the horizontal sync, as indicated in Figure 1. This figure is intended to illustrate the position of the signalling bits in line 43. In each frame, line 43 shall be occupied with this identification signal.



Key

a: Period from sync to the start point of the video effective area.

b: For optimum decoder performance, it is recommended that this period be free from other signals.

Figure 1 – Position of identification signal bits in line 43

5.2 Clock frequency

The clock frequency shall be: $F_s = 10 \text{ MHz} \pm 1 \text{ kHz}$

The sampling period shall be: $T_s = 100 \text{ ns}$

5.3 Signal amplitude

The signal amplitude with respect to maximum video signal amplitude of 700 mV shall be:

$$500 \text{ mV} \pm 25 \text{ mV}$$

5.4 Modulation coding

Bi-phase coding shall be used in accordance with Figure 2.

Duration of one data bit: T_d

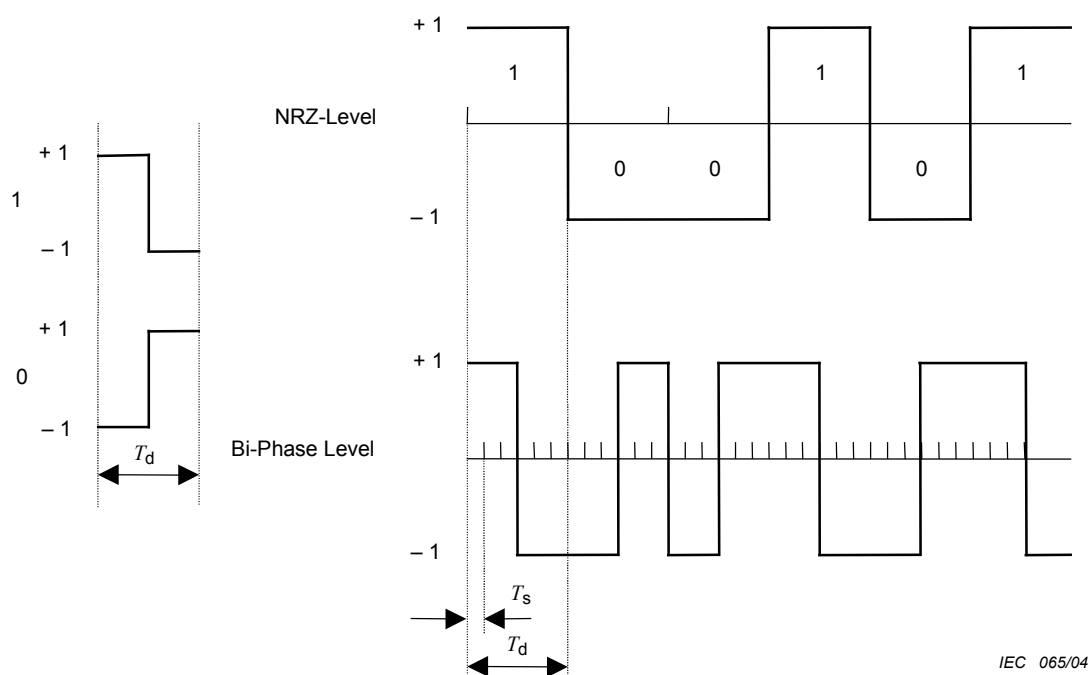


Figure 2 – Example of bi-phase-L coding

The data bits shall be inserted in bi-phase-L, in which one data bit period equals 2×3 clock periods, whereby

$$T_d = 6 T_s$$

5.5 Preamble

The preamble contains a run-in and a start code. The preamble shall be in accordance with Table 1.

5.6 Data bits

There shall be 14 bits in total. 1 out of these 14 bits shall be allocated to the error detection code. There shall be 13 data-bits available for transmission of information.

Table 1 – Identification signal bits transmission scheme

Identification signal bits transmission					
Run-in		Start code		Coding: Bi-phase modulation coding	
Insertion: line 43		Clock: 10 MHz ($T_s = 100$ ns)			
Run-in	Start code	Group 1 aspect ratio	Group 2 reserved	Group 3 subtitles	Group 4 others
29 elements based on 10 MHz	24 elements based on 10 MHz	24 elements based on 10 MHz	24 elements based on 10 MHz	18 elements based on 10 MHz	18 elements based on 10 MHz
		bit numbering 0 1 2 3 LSB MSB per info bit (note) "0" = 000 111 "1" = 111 000	bit numbering 4 5 6 7 LSB MSB per info bit (note) "0" = 000 111 "1" = 111 000	bit numbering 8 9 10 LSB MSB per info bit (note) "0" = 000 111 "1" = 111 000	bit numbering 11 12 13 LSB MSB per info bit (note) "0" = 000 111 "1" = 111 000
MSB transmitted first	MSB transmitted first	LSB transmitted first	LSB transmitted first	LSB transmitted first	LSB transmitted first
0 × 1F1C 71C7 1 1111 0001 1100 0111 0001 1100 0111 MSB LSB	0 × 1E 3C1F 0001 1110 0011 1100 0001 1111 MSB LSB	0123 bit number full format 4:3 box 14:9 centre 0100 box 14:9 top 1101 box 16:9 centre 0010 box 16:9 top 1011 box > 16:9 centre 0111 full format 4:3 (shoot and protect 14:9 centre)	b ₄ = reserved set to "0" b ₅ = reserved set to "0" b ₆ = reserved set to "0" b ₇ = reserved set to "0"	b ₈ = reserved set to "0" 9 10 bit number 0 0 no open subtitles 1 0 subtitles in active image area 0 1 subtitles out of active image area 1 1 reserved	11 bit number 0 no surround sound information 1 surround sound mode 12 bit number 0 no copyright asserted or status unknown 1 copy right asserted 13 bit number 0 copying not restricted 1 copying restricted
NOTE One information bit consists of 6 elements based on 10 MHz clock. $T_d = 6T_s$ (see 3.2 and 5.4).					

6 Information content of data bits

The 13 data bits shall be grouped in 4 groups in accordance with Table 1.

Group 1 shall contain 4 bits in which the first 3 bits carry data and the last bit shall denote the odd parity bit over the first three data bits. Group 2 shall contain 4 data bits, Group 3 shall contain 3 data bits and Group 4 shall contain 3 data bits.

The data bits shall be labelled b_0 up to and including b_2 combined with b_4 up to and including b_{13} . b_3 shall be the odd parity bit as shown in Table 1 and 2. The index also indicates the order of transmission: b_0 shall be the first transmitted bit.

6.1 Data group 1, Aspect ratio

b_0, b_1, b_2 : shall denote the aspect ratio label, the letterbox format and position according to Table 2.

b_3 : shall denote the odd parity of b_0, b_1, b_2, b_3 according to Table 2.

Table 2 – Aspect ratio label, letterbox and position code

$b_0b_1b_2$	b_3	Aspect ratio label	Full format or letterbox	Position	No. of active lines (Note 1)
0 0 0	1	4:3	full format	not applicable	576
1 0 0	0	14:9	letterbox	centre	504
0 1 0	0	14:9	letterbox	top	504
1 1 0	1	16:9	letterbox	centre	430
0 0 1	0	16:9	letterbox	top	430
1 0 1	1	> 16:9	letterbox	centre	not defined
0 1 1	1	14:9	full format (Note 2)	centre	576
1 1 1	0	16:9	full format (anamorphic)	not applicable	576

NOTE 1 The number of active lines is only an indication for the exact aspect ratio $a = 1,33$, $a = 1,57$ and $a = 1,78$.

NOTE 2 The actual transmitted aspect ratio is 4:3, but a 14:9 centre window should contain all the relevant picture content to encourage a wide screen display on a 16:9 television set.

The aspect ratio label indicates a range of possible aspect ratios. All aspect ratios falling in these ranges shall be labelled by the same code. Table 3 indicates the aspect ratio ranges.

Table 3 – Aspect ratio ranges

Aspect ratio label	Aspect ratio range	Active lines
4:3	$a \leq 1,46$	527 to 576
14:9	$1,46 < a \leq 1,66$	463 to 526
16:9	$1,66 < a \leq 1,90$	405 to 462
> 16:9	$a > 1,90$	< 405