

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**Digital audio interface –  
Part 4: Professional applications**

**Interface audionumérique –  
Partie 4: Applications professionnelles**

IEC 60958-4:2003

<https://standards.iteh.ai/catalog/standards/iec/5d456655-a0f6-4d8f-949c-f4026dfe2026/iec-60958-4-2003>



**THIS PUBLICATION IS COPYRIGHT PROTECTED**  
**Copyright © 2013 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](mailto:info@iec.ch)  
[www.iec.ch](http://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](http://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It also gives information on projects, replaced and withdrawn publications.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](http://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](http://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](http://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](mailto: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](http://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](http://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](http://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](http://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](mailto:csc@iec.ch).

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



**Digital audio interface –  
Part 4: Professional applications**

**Interface audionumérique –  
Partie 4: Applications professionnelles**

<https://standards.iteh.ai/catalog/standards/iec/51456655-a0f6-4d8f-949c-f4026dfe2026/iec-60958-4-2003>

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

ICS 33.160.30

ISBN 978-2-8322-0849-6

**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
INTRODUCTION.....	5
1 Scope.....	6
2 Normative references.....	6
3 Terms and definitions.....	6
4 Interface format.....	6
4.1 General.....	6
4.2 Validity bit.....	6
5 Channel status.....	7
5.1 General.....	7
5.2 Professional linear PCM application.....	7
6 User data.....	15
6.1 General.....	15
6.2 Application.....	15
7 Implementation.....	15
7.1 General.....	15
7.2 Transmitter.....	15
7.3 Receivers.....	16
8 Electrical requirements.....	16
8.1 General.....	16
8.2 Balanced line.....	16
8.3 Unbalanced coaxial cables.....	21
Bibliography.....	22
Figure 1 – Simplified example of the configuration of the circuit (balanced).....	17
Figure 2 – Intrinsic jitter measurement filter.....	18
Figure 3 – Jitter attenuation mask (optional).....	18
Figure 4 – Eye diagram.....	19
Figure 5 – A suggested equalizing characteristic for the receiver operating at a frame rate of 48 kHz.....	19
Figure 6 – Receiver jitter tolerance template.....	20
Table 1 – Channel status data format for professional linear PCM application.....	8

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**DIGITAL AUDIO INTERFACE –****Part 4: Professional applications**

## 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.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

**This consolidated version of IEC 60958-4 consists of the second edition (2003) [documents 100/643/FDIS and 100/669/RVD] and its amendment 1 (2008) [documents 100/1330/FDIS and 100/1355/RVD]. It bears the edition number 2.1.**

**The technical content is therefore identical to the base edition and its amendment and has been prepared for user convenience. A vertical line in the margin shows where the base publication has been modified by amendment 1. Additions and deletions are displayed in red, with deletions being struck through.**

International Standard IEC 60958-4 has been prepared by IEC technical committee 100: Audio, video and multimedia systems and equipment.

The French versions of the standard and the amendment have not been voted upon.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The main changes with respect to the previous edition (1999) are listed below.

- The scope specifies the professional application of IEC 60958-1 (generalities have been removed to an introduction).
- A clause on terms and definitions has been added.
- In Table 1, expanded channel status assignments have been added and channel status definitions expanded to accommodate extended sampling frequencies, indication of alignment level and multi-channel options.
- Figure 1 and associated text has been revised to be more generalized. Three notes on cable performance factors have been added.
- The impedance specification is now dependent on maximum frame rate.
- The common-mode balance specification is now dependent on maximum frame rate
- The impedance specification is now dependent on maximum frame rate.

IEC 60958 consists of the following parts under the generic title *Digital audio interface*:

Part 1: General

Part 3: Consumer applications

Part 4: Professional applications

The committee has decided that the contents of the base publication and its amendment will remain unchanged until the stability 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,
- replaced by a revised edition, or
- amended.

**IMPORTANT – The “colour inside” logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this publication using a colour printer.**

## INTRODUCTION

The interface specified in this standard is primarily intended to carry monophonic or stereophonic programmes at a 48 kHz sampling frequency and with a resolution of up to 24 bits per sample. It may alternatively be used to carry signals sampled at other rates such as 32 kHz, 44,1 kHz, or 96 kHz. Note that conformity to this interface specification does not require equipment to utilize these rates and also that the capability of the interface to indicate other sample rates does not imply that it is recommended that equipment supports these rates. To eliminate doubt, equipment specifications should define the supported sampling frequencies.

The format is intended for use with shielded twisted-pair cables over distances of up to 100 m without transmission equalization or any special equalization at the receiver and at frame rates of up to 50 kHz. Longer cable lengths and higher frame rates may be used with cables better matched for data transmission, or with receiver equalization, or both.

In both cases, the clock references and auxiliary information are transmitted along with the audio data. Provision is also made to allow the interface to carry non-audio data.

iTech Standards  
(<https://standards.iteh.ai>)  
Document Preview

[IEC 60958-4:2003](https://standards.iteh.ai/catalog/standards/iec/51456655-a0f6-4d8f-949c-f4026dfe2026/iec-60958-4-2003)

<https://standards.iteh.ai/catalog/standards/iec/51456655-a0f6-4d8f-949c-f4026dfe2026/iec-60958-4-2003>

## DIGITAL AUDIO INTERFACE –

### Part 4: Professional applications

#### 1 Scope

This International Standard specifies the professional application of the interface for the interconnection of digital audio equipment defined in IEC 60958-1.

#### 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.

IEC 60268-12:1987, *Sound system equipment – Part 12: Application of connectors for broadcast and similar use*

IEC 60958-1, *Digital audio interface – Part 1: General*

IEC 60958-3, *Digital audio interface – Part 3: Consumer applications*

ISO/IEC 646:1991, *Information technology – ISO 7-bit coded character set for information interchange*

ITU-T Recommendation J.17:1988, *Pre-emphasis used on sound-programme circuits*

ITU-T Recommendation V.11:1996, *Electrical characteristics for balanced double-current interchange circuits operating at data signalling rates up to 10 Mbit/s*

#### 3 Terms and definitions

The terms and definitions given in IEC 60958-1 apply to this part of IEC 60958.

#### 4 Interface format

##### 4.1 General

The interface format as defined in IEC 60958-1 shall be used.

For historical reasons, preambles “B”, “M” and “W”, as defined in 4.3 of IEC 60958-1, shall, for use in professional applications, be referred to as “Z”, “X” and “Y”, respectively.

##### 4.2 Validity bit

For this standard, the validity bit shall be used to indicate whether the main data field bits in the sub-frame are suitable for conversion to an analogue audio signal using linear PCM coding.



## 5 Channel status

### 5.1 General

The channel status for each audio signal carries information associated with that audio signal; thus it is possible for different channel status data to be carried in the two sub-frames of the digital audio signal. Examples of information to be carried in the channel status are: length of audio sample words, number of audio channels, sampling frequency, sample address code, alphanumeric source and destination codes, and pre-emphasis.

Channel status information is organized in a 192-bit block, subdivided into 24 bytes, numbered 0 to 23 (see Table 1). The first bit of each block is carried in the frame with preamble “Z”.

The individual bits of a block are numbered 0 to 191.

The primary application is indicated by channel status bit 0.

For the professional applications described here, this first channel status bit equals “1”.

NOTE For consumer digital audio equipment, this first channel status bit equals “0”, and this part of IEC 60958 does not apply.

Secondary applications may be defined within the framework of these primary applications.

### 5.2 Professional linear PCM application

The specific organization of the channel status data is defined in this clause and summarized in Table 1.

The significance of byte 0, bit 0 is such that a transmission from an interface conforming to IEC 60958-3 (“consumer use”) can be identified. Also, a “professional use” transmission, defined in this part of IEC 60958, can be correctly identified by a “consumer use” receiver. Connection of a “consumer use” transmitter with a “professional use” receiver or vice versa might result in unpredictable operation. Thus, the byte definitions in this clause apply only when bit 0 = “1” and bit 1 = “0” (professional linear PCM use of the channel status block).

**Table 1 – Channel status data format for professional linear PCM application**

<b>0</b>		a = "1"	b = "0"	C			d	e	
	Bit	0	1	2	3	4	5	6	
<b>1</b>		f				g			
	Bit	8	9	10	11	12	13	14	
<b>2</b>		h			i		j		
	Bit	16	17	18	19	20	21	22	
<b>3</b>		k						n="0"	
	Bit	l						n="1"	
<b>4</b>		o		p	q		r		
	Bit	24	25	26	27	28	29	30	
<b>5</b>		o		p	q		r		
	Bit	32	33	34	35	36	37	38	
<b>6</b>		Reserved but undefined at present							
	Bit	40	41	42	43	44	45	46	
<b>7</b>		Alphanumeric channel origin data							
	Bit	48	49	50	51	52	53	54	
<b>8</b>		Alphanumeric channel origin data							
	Bit	56	57	58	59	60	61	62	
<b>9</b>		Alphanumeric channel origin data							
	Bit	64	65	66	67	68	69	70	
<b>10</b>		Alphanumeric channel origin data							
	Bit	72	73	74	75	76	77	78	
<b>11</b>		Alphanumeric channel destination data							
	bit	80	81	82	83	84	85	86	
<b>12</b>		Alphanumeric channel destination data							
	bit	88	89	90	91	92	93	94	
<b>13</b>		Alphanumeric channel destination data							
	bit	96	97	98	99	100	101	102	
<b>14</b>		Alphanumeric channel destination data							
	bit	104	105	106	107	108	109	110	
<b>15</b>		Local sample address code (32-bit binary)							
	bit	112	113	114	115	116	117	118	
<b>16</b>		Local sample address code (32-bit binary)							
	bit	120	121	122	123	124	125	126	
<b>17</b>		Local sample address code (32-bit binary)							
	bit	128	129	130	131	132	133	134	
<b>18</b>		Local sample address code (32-bit binary)							
	bit	136	137	138	139	140	141	142	
<b>19</b>		Time of day code (32-bit binary)							
	bit	144	145	146	147	148	149	150	
<b>20</b>		Time of day code (32-bit binary)							
	bit	152	153	154	155	156	157	158	
<b>21</b>		Time of day code (32-bit binary)							
	bit	160	161	162	163	164	165	166	
<b>22</b>		Time of day code (32-bit binary)							
	bit	168	169	170	171	172	173	174	
<b>23</b>		Reliability flags							
	bit	176	177	178	179	180	181	182	
		Cyclic redundancy check character							
	bit	184	185	186	187	188	189	190	
		a: use of channel status block				j: indication of alignment level			
		b: linear PCM identification				k: channel number			
		c: audio signal pre-emphasis				l: channel number			
		d: lock indication				m: multichannel mode number			
		e: sampling frequency				n: multichannel mode			
		f: channel mode				o: digital audio reference signal			
		g: user bits management				p: reserved but undefined at present			
		h: use of auxiliary sample bits				q: sampling frequency			
		i: source word length				r: sampling frequency scaling flag			

**Byte 0**

Bit 0	Use of channel status block	
State	“1”	Professional use of channel status block (note 1)
Bit 1	Linear PCM identification	
State	“0”	Audio sample word represents linear PCM samples (note 1)
	“1”	Audio sample word used for purposes other than linear PCM samples

NOTE 1 The functions of channel status bits 0 and 1 are defined in IEC 60958-1.

Bits 2 to 4	Encoded audio signal pre-emphasis.	
Bit	2 3 4	
State	“0 0 0”	Pre-emphasis not indicated. Receiver defaults to no pre-emphasis with manual override enabled.
	“1 0 0”	No pre-emphasis. Receiver manual override is disabled.
	“1 1 0”	50 µs/15 µs pre-emphasis. Receiver manual override is disabled.
	“1 1 1”	ITU-T Recommendation J.17 pre-emphasis (with 6,5 dB insertion loss at 800 Hz). Receiver manual override is disabled.
	All other states of bits 2 to 4 are reserved and shall not be used until further defined.	

Bit 5	Lock indication	
State	“0”	Default, lock condition not indicated.
	“1”	Source sampling frequency unlocked.

Bits 6 to 7	Encoded sampling frequency	
Bit	6 7	
State	“0 0”	Sampling frequency not indicated. Receiver defaults to 48 kHz and manual override or auto set is enabled.
	“0 1”	48 kHz sampling frequency. Receiver manual override or auto set is disabled.
	“1 0”	44,1 kHz sampling frequency. Receiver manual override or auto set is disabled.
	“1 1”	32 kHz sampling frequency. Receiver manual override or auto set is disabled.

NOTE 2 The indication of sampling frequency, or the use of one of the sampling frequencies that can be indicated in this byte, is not a requirement for operation of the interface. The 00 state of bits 6 to 7 may be used if the transmitter does not support the indication of sampling frequency, if the sampling frequency is unknown, or if the sample frequency is not one of those that can be indicated in this byte. In the latter case for some sampling frequencies byte 4 may be used to indicate the correct value.

NOTE 3 When bits 8 to 11 in byte 1 indicate single-channel double-sampling frequency mode, the sampling frequency of the audio signal is twice that indicated by bits 6 to 7 in byte 0.

**Byte 1**

The six modes of transmission are signalled by setting bits 8 to 11 of byte 1 of channel status.

- *Two-channel mode*: In two-channel mode, the samples from both channels are transmitted in consecutive sub-frames. Channel 1 is in sub-frame 1 and channel 2 is in sub-frame 2.
- *Stereophonic mode*: In stereophonic mode, the interface is used to transmit stereophonic signals, and the two channels are presumed to have been simultaneously sampled. The left, or "A", channel is in sub-frame 1 and the right, or "B", channel is in sub-frame 2.
- *Single-channel mode (monophonic)*: In monophonic mode, the transmitted bit rate remains at the normal two-channel rate and the audio sample word is placed in sub-frame 1. Time slots 4 to 31 of sub-frame 2 either carry the bits identical to sub-frame 1 or are set to logical "0". A receiver normally defaults to channel 1, unless manual override is provided.
- *Primary/secondary mode*: In some applications requiring two channels where one of the channels is the main or primary channel while the other is a secondary channel, the primary channel is in sub-frame 1 and the secondary channel is in sub-frame 2.
- *Multichannel mode*: The one or two channels carried on the interface are part of a larger group. Channel identification within this group is in byte 3.
- *Single-channel double-sampling frequency mode*: Sub-frames 1 and 2 carry successive samples of the same signal. The sampling frequency of the signal is double the frame repetition rate and is double the sampling frequency indicated in byte 0 (but not double the rate indicated in byte 4, if that is used). Manual override is disabled.

Bits 8 to 11	Encoded channel mode
Bit	8 9 10 11
State	"0 0 0 0" Mode not indicated. Receiver defaults to two-channel mode and manual override is enabled. "0 0 0 1" Two-channel mode. Receiver manual override is disabled. "0 0 1 0" Single-channel mode (monophonic). Receiver manual override is disabled. "0 0 1 1" Primary/secondary mode (sub-frame 1 is primary). Receiver manual override is disabled. "0 1 0 0" Stereophonic mode (sub-frame 1 is left channel). Receiver manual override is disabled. "0 1 0 1" and "0 1 1 0" Reserved for user-defined applications. "0 1 1 1" Single-channel double-sampling frequency mode – vector to byte 3 for channel identification. "1 0 0 0" Single-channel double-sampling frequency mode – stereophonic left. "1 0 0 1" Single-channel double-sampling frequency mode – stereophonic right. "1 1 1 1" Multichannel mode. Vector to byte 3. All other states of bits 8 to 11 are reserved and shall not be used until further defined.

Bits 12 to 15	Encoded user bits management	
Bit	12 13 14 15	
State	“0 0 0 0”	Default, user data format is undefined.
	“0 0 0 1”	192-bit block structure. Preamble “B” indicates the start of the block.
	“0 0 1 0”	Reserved for the AES18 standard.
	“0 0 1 1”	User-defined.
	“0 1 0 0”	User data conforms to the general user data format as defined in IEC 60958-3.
	“0 1 0 1”	Reserved for metadata as described in AES52.
	All other states of bits 12 to 15 are reserved and shall not be used until further defined.	

**Byte 2**

Bits 16 to 18	Encoded use of auxiliary sample bits	
Bit	16 17 18	
State	“0 0 0”	Maximum audio sample word length is 20 bits (default). Use of auxiliary sample bits is not defined.
	“0 0 1”	Maximum audio sample word length is 24 bits. Auxiliary sample bits are used for main audio sample data.
	“0 1 0”	Maximum audio sample word length is 20 bits. Auxiliary sample bits in this channel are used to carry a single co-ordination signal.
	“0 1 1”	Reserved for user-defined applications.
	All other states of bits 16 to 18 are reserved and shall not be used until further defined.	

Bits 19 to 21	Encoded audio sample word length of transmitted signal		
Bit	19 20 21	Audio sample word length, if maximum length is 24 bits (indicated by bits 16 to 18 above).	Audio sample word length, if maximum length is 20 bits (indicated by bits 16 to 18 above).
State	“0 0 0”	Word length not indicated (default).	Word length not indicated (default).
	“0 0 1”	23 bits	19 bits
	“0 1 0”	22 bits	18 bits
	“0 1 1”	21 bits	17 bits
	“1 0 0”	20 bits	16 bits
	“1 0 1”	24 bits	20 bits

All other states of bits 19 to 21 are reserved and shall not be used until further defined.

NOTE 4 The default state of bits 19 to 21 indicates that the number of active bits within the 20-bit or 24-bit coding range is not specified by the transmitter. The receiver should default to the maximum number of bits specified by the coding range and enable manual override or auto set.

NOTE 5 The non-default state of bits 19 to 21 indicates the number of bits within the 20-bit or 24-bit coding range which might be active. This is also an indirect expression of the number of LSBs that are certain to be inactive, which is equal to 20 or 24 minus the number corresponding to the bit state. The receiver should disable manual override and auto set for these bit states.

NOTE 6 Irrespective of the audio sample word length as indicated by any of the states of bits 19 to 21, the MSB is in time slot 27 of the transmitted sub-frame as specified in 3.2.1 of IEC 60958-1.

Bits 22 and 23	Indication of alignment level	
Bit	22 23	
State	"0 0"	Alignment level not indicated (default).
	"0 1"	Alignment level is 20 dB below maximum code (refer to SMPTE RP155).
	"1 0"	Alignment level is 18,06 dB below maximum code (refer to EBU R68).
	"1 1"	Reserved for future use.

**Byte 3**

Bit 31	Multichannel mode control bit	
State	"0"	Undefined multichannel mode (default).
	"1"	Defined multichannel modes.

The definition of the remaining bit states depends on the state of bit 31.

When bit 31 is 0:

Bits 24 to 31	Channel number							
Bit	24	25	26	27	28	29	30	31
State	X	X	X	X	X	X	X	0
	LSB						MSB	
	The channel number is the value of the byte plus one.							

When bit 31 is 1:

Bits 24 to 31	Channel number and multichannel number.							
Bit	24	25	26	27	28	29	30	31
State	X	X	X	X	Y	Y	Y	1
	LSB				MSB			

The channel number is one plus the numeric value of the bits shown by "X" taken as a binary number. The bits shown by "Y" define the multichannel mode as follows.

Bits 28 to 30	Multichannel mode number		
Bit	28 29 30		
State	"0 0 0"	Multichannel mode 0. The channel number is defined by bits 24 to 27.	
	"1 0 0"	Multichannel mode 1. The channel number is defined by bits 24 to 27.	
	"0 1 0"	Multichannel mode 2. The channel number is defined by bits 24 to 27.	
	"1 1 0"	Multichannel mode 3. The channel number is defined by bits 24 to 27.	
	"1 1 1"	User defined multichannel mode. The channel number is defined by bits 24 to 27.	

All other states of bits 28 to 30 are reserved and are not to be used until further defined.