

First edition
2018-04

AMENDMENT 1
2022-04

**Information technology — Coding-
independent code points —**

**Part 3:
Audio**

AMENDMENT 1 — Headphone support



Reference number
ISO/IEC 23091-3:2018/Amd. 1:2022(E)

© ISO/IEC 2022



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2022

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives or www.iec.ch/members_experts/refdocs).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents) or the IEC list of patent declarations received (see <https://patents.iec.ch>).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html. In the IEC, see www.iec.ch/understanding-standards.

This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

A list of all parts in the ISO/IEC 23091 series can be found on the ISO and IEC websites.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

STANDARDSISO.COM : Click to view the full PDF of ISO/IEC 23091-3:2018/Amd 1:2022

Information technology — Coding-independent code points —

Part 3: Audio

AMENDMENT 1: Headphone support

6.1

Replace Table 2 by:

Table 2 — Definition of loudspeaker index, OutputChannelPosition

Value	Loudspeaker position		Loudspeaker position according to Reference [1] (informative)	
	Abbr.	Name	Abbr.	Name
0	L	Left front	FL	Front left
1	R	Right front	FR	Front right
2	C	Centre front	FC	Front centre
3	LFE	Low frequency enhancement	LFE1	Low frequency effects-1
4	Ls	Left surround	LS	Left surround
5	Rs	Right surround	RS	Right surround
6	Lc	Left front centre	FLc	Front left centre
7	Rc	Right front centre	FRc	Front right centre
8	Lsr	Rear surround left	BL	Back left
9	Rsr	Rear surround right	BR	Back right
10	Cs	Rear centre	BC	Back centre
11	Lsd	Left surround direct	LSd	Left surround direct
12	Rsd	Right surround direct	RSd	Right surround direct
13	Lss	Left side surround	SL	Side left
14	Rss	Right side surround	SR	Side right
15	Lw	Left wide front	FLw	Front left wide
16	Rw	Right wide front	FRw	Front right wide
17	Lv	Left front vertical height	TpFL	Top front left
18	Rv	Right front vertical height	TpFR	Top front right
19	Cv	Centre front vertical height	TpFC	Top front centre
20	Lvr	Left surround vertical height rear	TpBL	Top back left
21	Rvr	Right surround vertical height rear	TpBR	Top back right
22	Cvr	Centre vertical height rear	TpBC	Top back centre

^a Audio signals associated with this loudspeaker position are intended for stereo headphone playback only. They can be unsuitable for loudspeaker playback. This loudspeaker position is applicable for binaural signals but it shall not be applied for traditional stereo signals.

Table 2 (continued)

Value	Loudspeaker position		Loudspeaker position according to Reference [1] (informative)	
	Abbr.	Name	Abbr.	Name
23	Lvss	Left vertical height side surround	TpSiL	Top side left
24	Rvss	Right vertical height side surround	TpSiR	Top side right
25	Ts	Top centre surround	TpC	Top centre
26	LFE2	Low frequency enhancement 2	LFE2	Low frequency effects-2
27	Lb	Left front vertical bottom	BtFL	Bottom front left
28	Rb	Right front vertical bottom	BtFR	Bottom front right
29	Cb	Centre front vertical bottom	BtFC	Bottom front centre
30	Lvs	Left vertical height surround	TpLS	Top left surround
31	Rvs	Right vertical height surround	TpRS	Top right surround
32		Reserved		
33		Reserved		
34		Reserved		
35		Reserved		
36	LFE3	Low frequency enhancement 3		
37	Leos	Left edge of screen		
38	Reos	Right edge of screen		
39	Hwbcsl	half-way between centre of screen and left edge of screen		
40	Hwbcar	half-way between centre of screen and right edge of screen		
41	Lbs	Left back surround		
42	Rbs	Right back surround		
43 ^a	Lear	Left ear		
44 ^a	Rear	Right ear		
45-125		Reserved		Reserved
126	Expl	Explicit position (see text)		
127		Unknown / undefined		

^a Audio signals associated with this loudspeaker position are intended for stereo headphone playback only. They can be unsuitable for loudspeaker playback. This loudspeaker position is applicable for binaural signals but it shall not be applied for traditional stereo signals.

6.2

Replace:

Range: 0 – 31

by:

Range: 0 – 63

6.2

Replace Table 3 by:

Table 3 — Channel Configuration, loudspeaker layout index, corresponding number of loudspeakers and their associated positions

Value	"Front/ Surr. LFE" notation	Loudspeaker names in loudspeaker layout	Loudspeaker abbrev.	Informative geometric position Azim., Elev. ^a		Ch. is LFE
0	—	any setup	—	—	—	—
1	1/0.0	centre front	C	0,	0	0
2	2/0.0	left front, right front	L R	30, -30,	0 0	0 0
3	3/0.0	centre front, left front, right front	C L R	0, 30, -30,	0 0 0	0 0 0
4	3/1.0	centre front, left front, right front, rear centre	C L R Cs	0, 30, -30, 180,	0 0 0 0	0 0 0 0
5	3/2.0	centre front, left front, right front, left surround, right surround	C L R Ls Rs	0, 30, -30, 110, -110,	0 0 0 0 0	0 0 0 0 0
6	3/2.1	centre front, left front, right front, left surround, right surround, LFE	C L R Ls Rs LFE	0, 30, -30, 110, -110, 0,	0 0 0 0 0 -15	0 0 0 0 0 1

^a "Nominal" positions are as found in typical layout definitions. Tolerances for the angular positions are omitted by intention as the values vary between various definitions that can be found in relevant industry standard documents. The azimuth angle is expressed in degrees; positive values rotate to the left when facing the front, i.e. counter clockwise when looking from above. The elevation angle is expressed in degrees where positive values indicate angles above the horizontal plane.

^b Audio signals associated with this channel configuration are intended for stereo headphone playback only. They can be unsuitable for loudspeaker playback. This channel configuration is applicable for binaural signals but it shall not be applied for traditional stereo signals.

Table 3 (continued)

Value	"Front/ Surr. LFE" notation	Loudspeaker names in loudspeaker layout	Loudspeaker abbrev.	Informative geometric position Azim., Elev. ^a		Ch. is LFE
7	5/2.1	centre front,	C	0,	0	0
		left front centre,	Lc	30,	0	0
		right front centre,	Rc	-30,	0	0
		left front,	L	45,	0	0
		right front,	R	-45,	0	0
		left surround,	Ls	110,	0	0
		right surround,	Rs	-110,	0	0
		LFE	LFE	0,	-15	1
8	1+1	channel1	N.A.	N.A.		0
		channel2	N.A.	N.A.		0
9	2/1.0	left front,	L	30,	0	0
		right front,	R	-30,	0	0
		rear centre	Cs	180,	0	0
10	2/2.0	left front,	L	30,	0	0
		right front,	R	-30,	0	0
		left surround,	Ls	110,	0	0
		right surround	Rs	-110,	0	0
11	3/3.1	centre front,	C	0,	0	0
		left front,	L	30,	0	0
		right front,	R	-30,	0	0
		left surround,	Ls	110,	0	0
		right surround,	Rs	-110,	0	0
		rear centre,	Cs	180,	0	0
		LFE	LFE	0,	-15	1
12	3/4.1	centre front,	C	0,	0	0
		left front,	L	30,	0	0
		right front,	R	-30,	0	0
		left surround,	Ls	110,	0	0
		right surround,	Rs	-110,	0	0
		rear surround left,	Lsr	135,	0	0
		rear surround right,	Rsr	-135,	0	0
		LFE	LFE	0,	-15	1

^a "Nominal" positions are as found in typical layout definitions. Tolerances for the angular positions are omitted by intention as the values vary between various definitions that can be found in relevant industry standard documents. The azimuth angle is expressed in degrees; positive values rotate to the left when facing the front, i.e. counter clockwise when looking from above. The elevation angle is expressed in degrees where positive values indicate angles above the horizontal plane.

^b Audio signals associated with this channel configuration are intended for stereo headphone playback only. They can be unsuitable for loudspeaker playback. This channel configuration is applicable for binaural signals but it shall not be applied for traditional stereo signals.

Table 3 (continued)

Value	"Front/ Surr. LFE" notation	Loudspeaker names in loudspeaker layout	Loudspeaker abbrev.	Informative geometric position Azim., Elev. ^a		Ch. is LFE
13	11/11.2	centre front,	C	0,	0	0
		left front centre,	Lc	30,	0	0
		right front centre,	Rc	-30,	0	0
		left front,	L	60,	0	0
		right front,	R	-60,	0	0
		left side surround,	Lss	90,	0	0
		right side surround,	Rss	-90,	0	0
		rear left surround,	Lsr	135,	0	0
		rear right surround,	Rsr	-135,	0	0
		rear centre,	Cs	180,	0	0
		left front LFE,	LFE	45,	-15	1
		right front LFE,	LFE2	-45,	-15	1
		centre front vertical height,	Cv	0,	35	0
		left front vertical height,	Lv	45,	35	0
		right front vertical height,	Rv	-45,	35	0
		left vertical height side surround,	Lvss	90,	35	0
		right vertical height side surround,	Rvss	-90,	35	0
		top centre surround,	Ts	0,	90	0
		left surround vertical height rear,	Lvr	135,	35	0
		right surround vertical height rear,	Rvr	-135,	35	0
		centre vertical height rear,	Cvr	180,	35	0
		centre front vertical bottom,	Cb	0,	-15	0
		left front vertical bottom,	Lb	45,	-15	0
		right front vertical bottom	Rb	-45,	-15	0
14	5/2.1	centre front,	C	0,	0	0
		left front,	L	30,	0	0
		right front,	R	-30,	0	0
		left surround,	Ls	110,	0	0
		right surround,	Rs	-110	0	0
		LFE,	LFE	45,	-15	1
		left front vertical height,	Lv	30,	35	0
		right front vertical height	Rv	-30,	35	0

^a "Nominal" positions are as found in typical layout definitions. Tolerances for the angular positions are omitted by intention as the values vary between various definitions that can be found in relevant industry standard documents. The azimuth angle is expressed in degrees; positive values rotate to the left when facing the front, i.e. counter clockwise when looking from above. The elevation angle is expressed in degrees where positive values indicate angles above the horizontal plane.

^b Audio signals associated with this channel configuration are intended for stereo headphone playback only. They can be unsuitable for loudspeaker playback. This channel configuration is applicable for binaural signals but it shall not be applied for traditional stereo signals.

Table 3 (continued)

Value	"Front/ Surr. LFE" notation	Loudspeaker names in loudspeaker layout	Loudspeaker abbrev.	Informative geometric position Azim., Elev. ^a		Ch. is LFE
15	5/5.2	centre front,	C	0,	0	0
		left front,	L	30,	0	0
		right front,	R	-30,	0	0
		left side surround,	Lss	90,	0	0
		right side surround,	Rss	-90,	0	0
		left surround,	Ls	135,	0	0
		right surround,	Rs	-135,	0	0
		left front vertical height,	Lv	45,	35	0
		right front vertical height,	Rv	-45,	35	0
		centre vertical height rear,	Cvr	180,	45	0
		LFE1,	LFE	45,	-15	1
		LFE2	LFE2	-45,	-15	1
16	5/4.1	centre front,	C	0,	0	0
		left front,	L	30,	0	0
		right front,	R	-30,	0	0
		left surround,	Ls	110,	0	0
		right surround,	Rs	-110,	0	0
		LFE,	LFE	0,	-15	1
		left front vertical height,	Lv	30,	30	0
		right front vertical height,	Rv	-30,	30	0
		left vertical height surround,	Lvs	110,	30	0
		right vertical height surround	Rvs	-110,	30	0
^a "Nominal" positions are as found in typical layout definitions. Tolerances for the angular positions are omitted by intention as the values vary between various definitions that can be found in relevant industry standard documents. The azimuth angle is expressed in degrees; positive values rotate to the left when facing the front, i.e. counter clockwise when looking from above. The elevation angle is expressed in degrees where positive values indicate angles above the horizontal plane.						
^b Audio signals associated with this channel configuration are intended for stereo headphone playback only. They can be unsuitable for loudspeaker playback. This channel configuration is applicable for binaural signals but it shall not be applied for traditional stereo signals.						

Table 3 (continued)

Value	"Front/ Surr. LFE" notation	Loudspeaker names in loudspeaker layout	Loudspeaker abbrev.	Informative geometric position Azim., Elev. ^a		Ch. is LFE
17	6/5.1	centre front,	C	0,	0	0
		left front,	L	30,	0	0
		right front,	R	-30,	0	0
		left surround,	Ls	110,	0	0
		right surround,	Rs	-110,	0	0
		LFE,	LFE	0,	-15	1
		left front vertical height,	Lv	30,	30	0
		right front vertical height,	Rv	-30,	30	0
		centre front vertical height,	Cv	0,	30	0
		left vertical height surround,	Lvs	110,	30	0
		right vertical height surround,	Rvs	-110,	30	0
		top centre surround	Ts	0,	90	0
18	6/7.1	centre front,	C	0,	0	0
		left front,	L	30,	0	0
		right front,	R	-30,	0	0
		left surround,	Ls	110,	0	0
		right surround,	Rs	-110,	0	0
		left back surround,	Lbs	150,	0	0
		right back surround	Rbs	-150,	0	0
		LFE,	LFE	0,	-15	1
		left front vertical height,	Lv	30,	30	0
		right front vertical height,	Rv	-30,	30	0
		centre front vertical height,	Cv	0,	30	0
		left vertical height surround,	Lvs	110,	30	0
		right vertical height surround,	Rvs	-110,	30	0
		top centre surround	Ts	0,	90	0
^a "Nominal" positions are as found in typical layout definitions. Tolerances for the angular positions are omitted by intention as the values vary between various definitions that can be found in relevant industry standard documents. The azimuth angle is expressed in degrees; positive values rotate to the left when facing the front, i.e. counter clockwise when looking from above. The elevation angle is expressed in degrees where positive values indicate angles above the horizontal plane.						
^b Audio signals associated with this channel configuration are intended for stereo headphone playback only. They can be unsuitable for loudspeaker playback. This channel configuration is applicable for binaural signals but it shall not be applied for traditional stereo signals.						

Table 3 (continued)

Value	"Front/ Surr. LFE" notation	Loudspeaker names in loudspeaker layout	Loudspeaker abbrev.	Informative geometric position Azim., Elev. ^a		Ch. is LFE
19	5/6.1	centre front, left front, right front, left side surround, right side surround, rear surround left, rear surround right, LFE, left front vertical height, right front vertical height, left surround vertical height rear, right surround vertical height rear	C L R Lss Rss Lsr Rsr LFE Lv Rv Lvr Rvr	0, 30, -30, 90, -90, 135, -135, 0, 30, -30, 135, -135,	0 0 0 0 0 0 0 -15 30 30 30 30	0 0 0 0 0 0 0 1 0 0 0 0
20	7/6.1	centre front, left edge of screen, right edge of screen, left front, right front, left side surround, right side surround, rear surround left, rear surround right, LFE, left front vertical height, right front vertical height, left vertical height surround, right vertical height surround	C Leos Reos L R Lss Rss Lsr Rsr LFE Lv Rv Lvs Rvs	0, "left eos", "right eos", 30, -30, 90, -90, 135, -135, 0, 45, -45, 110, -110,	0 0 0 0 0 0 0 0 -15 30 30 30 30	0 0 0 0 0 0 0 0 1 0 0 0 0
21 ^b	2/0.0	left ear, right ear	Lear Rear	At left ear At right ear		0 0
22-63		Reserved				

^a "Nominal" positions are as found in typical layout definitions. Tolerances for the angular positions are omitted by intention as the values vary between various definitions that can be found in relevant industry standard documents. The azimuth angle is expressed in degrees; positive values rotate to the left when facing the front, i.e. counter clockwise when looking from above. The elevation angle is expressed in degrees where positive values indicate angles above the horizontal plane.

^b Audio signals associated with this channel configuration are intended for stereo headphone playback only. They can be unsuitable for loudspeaker playback. This channel configuration is applicable for binaural signals but it shall not be applied for traditional stereo signals.