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**ISO/IEC 23091-3**

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**AMENDMENT 1**
**2022-04**

# Information technology — Coding-independent code points —

## Part 3: **Audio**

## AMENDMENT 1: Headphone support



Reference number
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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*.

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# 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 | Hwbcal | 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 — ChannelConfiguration, 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, | L | 30, | 0 | 0 |
| | | right front | R | −30, | 0 | 0 |
| 3 | 3/0.0 | centre front, | C | 0, | 0 | 0 |
| | | left front, | L | 30, | 0 | 0 |
| | | right front | R | −30, | 0 | 0 |
| 4 | 3/1.0 | centre front, | C | 0, | 0 | 0 |
| | | left front, | L | 30, | 0 | 0 |
| | | right front, | R | −30, | 0 | 0 |
| | | rear centre | Cs | 180, | 0 | 0 |
| 5 | 3/2.0 | 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 |
| 6 | 3/2.1 | 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 | 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 |
|---|---|---|---|---|---|---|
| 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, | 35 | 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, | 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 |
| | | rear surround left, | Lsr | 135, | 0 | 0 |
| | | rear surround right, | Rsr | −135, | 0 | 0 |
| | | LFE, | LFE | 0, | −15 | 1 |
| | | left front vertical height, | Lv | 30, | 30 | 0 |
| | | right front vertical height, | Rv | −30, | 30 | 0 |
| | | left surround vertical height rear, | Lvr | 135, | 30 | 0 |
| | | right surround vertical height rear | Rvr | −135, | 30 | 0 |
| 20 | 7/6.1 | centre front, | C | 0, | 0 | 0 |
| | | left edge of screen, | Leos | "left eos", | 0 | 0 |
| | | right edge of screen, | Reos | "right eos", | 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 |
| | | rear surround left, | Lsr | 135, | 0 | 0 |
| | | rear surround right, | Rsr | −135, | 0 | 0 |
| | | LFE, | LFE | 0, | −15 | 1 |
| | | left front vertical height, | Lv | 45, | 30 | 0 |
| | | right front vertical height, | Rv | −45, | 30 | 0 |
| | | left vertical height surround, | Lvs | 110, | 30 | 0 |
| | | right vertical height surround | Rvs | −110, | 30 | 0 |
| 21[b] | 2/0.0 | left ear, | Lear | At left ear | | 0 |
| | | right ear | Rear | At right ear | | 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.