H04S

Stereophonic systems (information storage on discs or tapes G11B; broadcast systems for the distribution of stereophonic information H04H20/88; multiplex systems in general H04J)

Definition statement

This subclass/group covers:

Signal processing or circuitry for stereophonic sound reproduction, using loudspeakers or headphones, or for stereophonic sound capturing.

References relevant to classification in this subclass

This subclass/group does not cover:

Speech or audio signal analysis-synthesis techniques for redundancy reduction, e.g. in vocoders ; Coding or decoding of speech or audio signals, e.g. for compression or expansion, source-filter models or psychoacoustic analysis	G10L 19/00
Multi-channel audio coding and decoding using interchannel correlation to reduce redundancies	G10L 19/00M

Informative references

Attention is drawn to the following places, which may be of interest for search:

Information storage on discs or tapes	G11B
Low frequency amplifiers, e.g. audio preamplifiers	H03F 3/181
Power amplifiers using a combination of several semiconductor amplifiers	H03F 3/211
Combinations of amplifiers using coupling networks with distributed constants	H03F 3/602
Combinations of amplifiers, e.g. multi-channel amplifiers for	H03F 3/68

stereophonics	
Remote control of amplification, tone, or bandwidth	H03G 1/02
Gain control	H03G 3/00
Tone control and equalizers	H03G 5/00
Compression or expansion	H03G 7/00
Combination of types of control	H03G 9/00
Broadcast systems for the distribution of stereophonic information	H04H 20/88
Multiplex systems in general	H04J
Stereophonic arrangements of loudspeakers, microphones or headphones	H04R 5/00
Sound processing hardware for games using an electronically generated display having two or more dimensions	A63F 2300/209

Special rules of classification within this subclass

Classification of invention information and additional information is obligatory.

Further detail not provided for in any of the main groups is provided for in the subgroups of Indexing Code groups H04S 2400/00 and H04S 2420/00. Classification is obligatory.

Indexing Code symbols of the type H04S4xx should be used to classify information relevant for the invention, although it need not be invention information.

Indexing Code groups H04S 2400/00 and H04S 2420/00 should not be used for classification.

H04S 1/00

Two-channel systems (H04S5/00, H04S7/00 take precedence)

Definition statement

This subclass/group covers:

Non-adaptive circuits, i.e. manually adjustable or static, signal processing, e.g. for enhancing the sound image or the spatial distribution, or for sound capture in two-channel systems.

References relevant to classification in this group

This subclass/group does not cover:

Pseudo-stereophonic systems	H04S 5/00
Indicating arrangements of stereophonic systems; Control arrangements, e.g. balance control of stereophonic systems	H04S 7/00

Special rules of classification within this group

Multi-channel, i.e. more than two input channels, sound reproduction with two speakers wherein the multi-channel information is substantially preserved is not to be classified under H04S 1/00 but under H04S 3/00, H04S 5/00 or H04S 7/00 using the Indexing Code H04S 2400/01.

Further detail is covered by the subgroups of Indexing Code group H04S 2400/00 and H04S 2420/00. Classification is obligatory.

H04S 1/002

[N: Non-adaptive circuits, e.g. manually adjustable or static, for enhancing the sound image or the spatial distribution (control circuits for electronic adaptation of the sound field H04S7/30)]

Definition statement

This subclass/group covers:

Electronic sound processing for enhancing the sound image or the spatial distribution, wherein the processing itself is independent on the input signal or its properties.

See for example: WO2005009078

References relevant to classification in this subgroup

This subclass/group does not cover:

Control circuits for electronic adaptation of the sound field, i.e. electronic sound processing automatically adaptable in dependence of the input signal or some of its properties, e.g. by using an adaptive circuit or a look-up table, for changing the sound field, e.g. the spatial distribution	H04S 7/30

H04S 1/007

[N: in which the audio signals are in digital form (data reduction aspects thereof based on psychoacoustics G10L19/02)]

References relevant to classification in this subgroup

This subclass/group does not cover:

Data reduction aspects of digital stereo signals based on psychoacoustics	G10L 19/02

H04S 3/00

Systems employing more than two channels, e.g. quadraphonic (H04S5/00, H04S7/00 take precedence)

Definition statement

This subclass/group covers:

Non-adaptive circuits, i.e. manually adjustable or static, for signal processing, e.g. enhancing the sound image or the spatial distribution, of for sound capture in multi-channel systems.

References relevant to classification in this group

This subclass/group does not cover:

Pseudo-stereophonic systems	H04S 5/00
Indicating arrangements of stereophonic systems; Control arrangements, e.g. balance control of stereophonic systems	H04S 7/00

Special rules of classification within this group

Further detail is covered by the subgroups of Indexing Code groups H04R 2203/00, H04S 2400/00 and H04S 2420/00. Classification is obligatory.

H04S 3/002

[N: Non-adaptive circuits, e.g. manually adjustable or static, for enhancing the sound image or the spatial distribution (control circuits for electronic adaptation of the sound field H04S7/30)]

Definition statement

This subclass/group covers:

Electronic sound processing for enhancing the sound image or the spatial distribution, wherein the processing itself is independent on the input signal or its properties.

See for example: US5740253

References relevant to classification in this subgroup

This subclass/group does not cover:

Control circuits for electronic adaptation of the sound field, i.e. electronic sound processing automatically adaptable in dependence of the input signal or some of its properties, e.g. by using an adaptive circuit or a look-up table, for changing the sound field, e.g. the spatial distribution	H04S 7/30

H04S 3/006

[N: in which a plurality of audio signals are transformed in a combination of audio signals and modulated signals, e.g. CD-4 systems (for broadcasting H04H20/88, H04B1/1646)]

Informative references

Attention is drawn to the following places, which may be of interest for search:

For broadcasting	H04B 1/1646 ,H04H 20/89

H04S 3/008

[N: in which the audio signals are in digital form, i.e. employing more than two discrete digital channels, e.g. Dolby Digital, Digital Theatre Systems (DTS) (data reduction aspects thereof based on psychoacoustics G10L19/02)]

Definition statement

This subclass/group covers:
See for example: US2002159611

References relevant to classification in this subgroup

This subclass/group does not cover:

Data reduction aspects of digital stereo signals based on psychoacoustics	G10L 19/02

Informative references

Attention is drawn to the following places, which may be of interest for search:

Reduction of bandwidth of signals in transmission systems using psychoacoustic properties of the ear, e.g. masking effect.	H04B 1/665

H04S 3/02

of the matrix type, i.e. in which input signals are combined algebraically, e.g. after having been phase shifted with respect to each other

Definition statement

This subclass/group covers:
E.g. Dolby Surround, Pro-Logic, incl. AC-1

See for example: US5771295

H04S 5/00

Pseudo-stereo systems, e.g. in which additional channel signals are derived from monophonic signals by means of phase shifting, time delay or reverberation (arrangements for producing a reverberation or echo sound G10K15/08)

Definition statement

This subclass/group covers:

Systems wherein additional channels are generated from the existing channels to improve the spatial sound reproduction, e.g. wave field synthesis or virtual surround sound, or the spatial sound capture, e.g. 4-channel ambisonic capture to 7.1-channel

Informative references

Attention is drawn to the following places, which may be of interest for search:

Arrangements for producing a reverberation or echo sound	G10K 15/08

Special rules of classification within this group

Further detail is covered by the subgroups of Indexing Code group H04S 2400/00 and H04S 2420/00. Classification is obligatory.

H04S 5/005

[N: of the pseudo five- or more-channel type, e.g. virtual surround]

Definition statement

This subclass/group covers:
See for example: US5295189

H04S 7/00

Indicating arrangements; Control arrangements, e.g. balance control

Definition statement

This subclass/group covers:

Sound field processing, i.e. electronic adaptation of the sound field e.g. automatic set-up, adaptation with respect to listener position, frequency adjustment, reverberation adaptation, sound object positioning.

Indicating of the sound field.

References relevant to classification in this group

This subclass/group does not cover:

Non-adaptive circuits, i.e. manually adjustable or static, for signal processing, e.g. enhancing the sound image or the spatial distribution, of for sound capture in stereophonic systems	H04S 1/00, H04S 3/00

Informative references

Attention is drawn to the following places, which may be of interest for search:

Arrangements for producing a reverberation or an echo sound	G10K 15/08
Tone control circuits in amplifiers per se	H03G 5/00
Circuits for coupling gramophone pick-up, recorder output, or microphone to receiver, e.g. for Hi-Fi systems or audio/video combinations by remote control	H04B 1/202
Circuits for correcting the frequency response of transducers	H04R 3/04
Adaptation of reverberation in public address systems	H04R 27/00
Monitoring or testing arrangements for transducers, loudspeakers, microphones or public address systems; Visual indication of acoustic signal levels	H04R 29/00

Further detail is covered by the subgroups of Indexing Code groups H04R 2203/00, H04S 2400/00 and H04S 2420/00. Classification is obligatory.

Groups H04S 7/30 to H04S 7/40 do not correspond to former or current IPC groups. The concordance ECLA : IPC for these groups is as follows: H04S 7/30-H04S 7/40 : H04S 7/00

H04S 7/30

[N: Control circuits for electronic adaptation of the sound field (non-adaptive circuits, i.e. manually adjustable or static, for enhancing the sound image or the spatial distribution H04S1/002, H04S3/002)]

Definition statement

This subclass/group covers:

Electronic sound processing automatically adaptable in dependence of the input signal or some of its properties, e.g. by using an adaptive circuit or a look-up table, for changing the sound field, e.g. the spatial distribution.

See for example: EP1473971

References relevant to classification in this subgroup

This subclass/group does not cover:

Telephonic conference arrangements	H04M 3/56
Video conference systems	H04N 7/15
Non-adaptive circuits, i.e. manually adjustable or static, for enhancing the sound image or the spatial distribution	H04S 1/002, H04S 3/002

H04S 7/301

[N: Automatic calibration of stereophonic sound system, e.g. with test microphone]

Definition statement

This subclass/group covers:
See for example: US5666424 and US2002159611

Informative references

Attention is drawn to the following places, which may be of interest for search:

Automatic gain control	H03G 3/20
Automatic tone control or bandwidth control in amplifiers	H03G 5/16

H04S 7/302

[N: Electronic adaptation of stereophonic sound system to listener position or orientation (H04S7/301 takes precedence)]

Definition statement

This subclass/group covers:
See for example: WO0241664, US6108430 and EP1482763

References relevant to classification in this group

This subclass/group does not cover:

Automatic calibration of stereophonic sound system, e.g. with test microphone	H04S 7/301

H04S 7/303

[N: Tracking of listener position or orientation]

Informative references

Attention is drawn to the following places, which may be of interest for search:

Head tracking input arrangements for transferring data to be processed into a form capable of being handled by the computer	G06F 3/012

H04S 7/305

[N: Electronic adaptation of stereophonic audio signals to

reverberation of the listening space (H04S7/301 takes precedence; arrangements for producing a reverberation or echo sound G10K15/08; for public address systems H04R27/00, H04R29/00)]

Definition statement

This subclass/group covers:
See for example: EP1341399 (room) and EP1482763 (vehicle)

References relevant to classification in this group

This subclass/group does not cover:

Automatic calibration of stereophonic sound system, e.g. with test microphone	H04S 7/301

Informative references

Attention is drawn to the following places, which may be of interest for search:

Measuring reverberation time, i.e. room acoustic measurements	G01H 7/00
Arrangements for producing a reverberation or echo sound	G10K 15/08
For public address systems	T04R 27/007

H04S 7/307

[N: Frequency adjustment, e.g. tone control (H04S7/301 takes precedence; circuits for correcting the frequency response of transducers H04R3/04 ; tone control circuits in amplifiers per se H03G5/00)]

Definition statement

This subclass/group covers:
See for example: US5325435.

References relevant to classification in this group

This subclass/group does not cover:

Automatic calibration of stereophonic sound system, e.g. with test microphone	H04S 7/301

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tone control in general	H03G 5/00
Circuits for correcting the frequency response of transducers	H04R 3/04

H04S 7/308

[N: Electronic adaptation dependent on speaker or headphone connection]

Definition statement

This subclass/group covers:
See for example: WO2006033058

H04S 7/40

Visual indication of stereophonic sound image

Definition statement

This subclass/group covers:
See for example: WO2006033058 and US2004264704

Informative references

Attention is drawn to the following places, which may be of interest for search:

Indicating measured values	G01D 7/00
Arrangements for displaying electric variables or waveforms	G01R 13/00
Visual indication of individual signal levels	H04R 29/008

H04R 2203/12

Beamforming aspects for stereophonic sound reproduction with loudspeaker arrays

Definition statement

This subclass/group covers:

See for example: US2004151325 (see e.g. Figs.8 and 23, paragraphs [0175], [0176], [0235] and [0236]).

H04R 2499/13

Acoustic transducers or sound field adaptation in vehicles

Informative references

Attention is drawn to the following places, which may be of interest for search:

Mounting of acoustic transducers in vehicles	B60R 11/0217
Automatic control of amplifiers dependent upon ambient noise level or sound level	H03G 3/24, H03G 3/32

See for example: US6389147 and EP1482763

Glossary of terms

In this subclass/group, the following terms (or expressions) are used with the meaning indicated:

Stereophonic system	two- or more channel system, e.g. quadraphonic, ambisonic or similar systems
Multi-channel system	three- or more channel system

H04S 2400/01

Multi-channel, i.e. more than two input channels, sound

reproduction with two speakers wherein the multi-channel information is substantially preserved

Special rules of classification within this group

NOT to be given for H04S 1/00 since no multi-channel sound information is present according to H04S 1/00. See for example: US6470087, US5912976

H04S 2400/03

Aspects of down-mixing multi-channel audio to configurations with lower numbers of playback channels, e.g. 7.1 -> 5.1 (H04S2400/01 takes precedence)

References relevant to classification in this group

This subclass/group does not cover:

Multi-channel, i.e. more than two input channels, sound reproduction with two speakers wherein the multi-channel information is substantially preserved	H04S 2400/01

See for example: US2008049943 (e.g. paragraphs [0098] - [0099] and Figs.6A and 6B).

H04S 2400/05

Generation or adaptation of centre channel in multi-channel audio systems

Informative references

Attention is drawn to the following places, which may be of interest for search:

Generation of additional channels in pseudo stereo system per se	H04S 5/00

Adaptation of sound field per se	H04S 7/30

See for example: EP0526136

H04S 2400/07

Generation or adaptation of the Low Frequency Effect [LFE] channel, e.g. distribution or signal processing

Definition statement

This subclass/group covers:

See for example: EP0854660 (Figs.1-3; distribution, and Figs.5 and 6; signal processing).

H04S 2400/09

Electronic reduction of distortion of stereophonic sound systems

Informative references

Attention is drawn to the following places, which may be of interest for search:

Reduction of non-linear distortion in audio amplifiers	H03F 1/3264

See for example: US6519344

H04S 2400/11

Positioning of individual sound objects, e.g. moving airplane, within a sound field (H04S2420/13 takes precedence)

Informative references

Attention is drawn to the following places, which may be of interest for search:

Positioning of sound field itself, e.g. balance and fading	H04S 7/302
Aspects of volume control, not necessarily automatic, in two- and multi-channel sound systems	H04S 2400/13

See for example: US6519344

Glossary of terms

In this subclass/group, the following terms (or expressions) are used with the meaning indicated:

Sound object	audio object, i.e. acoustic representation of a sound producing entity in a sound field
Sound source	real or virtual loudspeaker

Synonyms and Keywords

In patent documents the expressions/words "virtual sound sources", "virtual sound objects" and "virtual loudspeakers" are often used as synonyms.

H04S 2400/13

Aspects of volume control, not necessarily automatic, in stereophonic sound systems

Informative references

Attention is drawn to the following places, which may be of interest for search:

Control of amplification per se	H03G

See for example: US2004213421 and DE4202609

H04S 2400/15

Aspects of sound capture and related signal processing for recording or reproduction

Informative references

Attention is drawn to the following places, which may be of interest for search:

Spatial or contructional arrangements of microphones	H04R 5/027

See for example: US2005141728 (Figs. 3, 5 and 6) and US2006206221 (Figs.1 and 3)

Special rules of classification within this group

Documents only relating to spatial or construction arrangements of microphones should not receive this Indexing Code group

H04S 2420/01

Enhancing the perception of the sound image or of the spatial distribution using head related transfer functions [HRTF's] or equivalents thereof, e.g. interaural time difference [ITD] or interaural level difference [ILD]

Definition statement

This subclass/group covers:
See for example: US6466913, US6243476 and DE102004035046

H04S 2420/03

Application of parametric coding in stereophonic audio systems

Informative references

Attention is drawn to the following places, which may be of interest for search:

Parametric coding as such	G10L 19/00M

See for example: WO2005094125

H04S 2420/05

Application of the precedence or Haas effect, i.e. the effect of first wavefront, in order to improve sound-source localisation

Definition statement

This subclass/group covers:
See for example: EP1771039

H04S 2420/07

Synergistic effects of band splitting and subband processing

Special rules of classification within this group

The mere band splitting or presence of a filter bank (e.g. FFT, FIR, ...) should not be classified in this Indexing Code group

H04S 2420/11

Application of ambisonics in stereophonic audio systems

Definition statement

This subclass/group covers:
See for example: US3997725 and US5757927

H04S 2420/13

Application of wave-field synthesis in stereophonic audio systems

Definition statement

This subclass/group covers:
See for example: WO2004103022

Glossary of terms

In this subclass/group, the following terms (or expressions) are used with the meaning indicated:

Control systems	encompasses adaptive systems