

Claims

- [Claim 1] A wired and wireless earset using an ear-insertion-type microphone, the earset comprising:
- a first earphone portion containing a first speaker and configured to be able to be inserted into a first external auditory canal of a user;
 - a second earphone portion containing a second microphone that receives user's voice signals provided from an external auditory canal of a user and configured to be able to be inserted into a second external auditory canal of a user; and
 - a main body connected with the first earphone portion and the second earphone portion.
- [Claim 2] The earset of claim 1,
- wherein, if the main body is connected with an external device wirelessly, the main body comprises:
- a signal transceiving portion configured to transceive signals with an external device; and
 - a control portion configured to transmit voice signals inputted from the second microphone via the signal transceiving portion into the external device and output the voice signals received from the external device via the signal transceiving portion into the first speaker.
- [Claim 3] The earset of claim 1,
- wherein, if the main body is connected with an external device with wire, the main body comprises:
- a control portion configured to transmit voice signals inputted from the second microphone into the external device and output the voice signals received from the external device into the first speaker.
- [Claim 4] The earset of claim 2 or claim 3,
- wherein the control portion further contains a function of transmitting user's voice signals received from the second microphone into a voice recognition device via the signal transceiving portion.

[Claim 5] The earset of claim 2 or claim 3,
wherein the main body further contains a third microphone configured to receive voice signals provided from a user's mouth; and
a microphone switch configured to select either the second microphone or the third microphone,
wherein the microphone switch selects either the second microphone or the third microphone in accordance with a level of noise signals.

[Claim 6] The earset of claim 1,
wherein the main body contains a voice recognition sensor or a motion recognition sensor,
and the switch operates manually or automatically in accordance with an output signal of the voice recognition sensor or the motion recognition sensor.

[Claim 7] A wired and wireless earset using an ear-insertion-type microphone, the earset comprising:
a first earphone portion containing a first speaker that outputs sound signals or voice signals provided from an external device and a first microphone that receives user's voice signals provided via a user's external auditory canal and configured to be able to be inserted into an external auditory canal of a user;
a second earphone portion containing a second speaker that outputs sound signals or voice signals provided from an external device and configured to be able to be inserted into a second external auditory canal of a user; and
a main body connected with the first earphone portion and the second earphone portion and configured to be able to set up a calling mode or a playing mode.

[Claim 8] The earset of claim 7,
wherein the earset further contains a switch that sets up a calling mode or a playing mode, a speaker output adjusting circuit that adjusts an output of a first speaker and/or a second speaker, and a mode setting portion that contains a call button user-controllable in a calling mode.

- [Claim 9] The earset of claim 7 or claim 8,
wherein the earset further contains a speaker matching circuit separately equipped at the first speaker and/or the second speaker, a microphone matching circuit equipped at the first microphone, and dummy resistors recognized as the first microphone.
- [Claim 10] The earset of claim 7,
wherein a setting of the calling mode or the playing mode is performed by at least one of the following: a manual control of a user, voice recognition of a user, motion sensors or installed application.
- [Claim 11] The earset of claim 7,
where a setting of the calling mode or the playing mode is either set up by a user through the main portion in advance or set up by the control portion through analyzing the output sound from the first speaker or the second speaker automatically.
- [Claim 12] The earset of claim 7,
wherein, if the main portion sets up the calling mode or the playing mode by analyzing the sound outputted from the first speaker or the second speaker, the control portion sets up a calling mode if it analyzes the sound outputted from the first speaker or the second speaker only includes human voices, and the control portion sets up a playing mode if it analyzes the sound outputted from the first speaker or the second speaker includes music.
- [Claim 13] The earset of claim 7,
wherein, if the external device is a mobile telecommunication terminal, the earset is set up as a calling mode automatically if the control portion detects signals for a calling status of the mobile telecommunication terminal, and the earset is set up as a playing mode automatically if the control portion detects signals for playing

a song of the mobile telecommunication terminal.

- [Claim 14] The earset of claim 7,
wherein, if the external device is a mobile telecommunication terminal, a setting of the calling mode or the playing mode is performed by the control portion through receiving control signals of an application run on the mobile telecommunication terminal.
- [Claim 15] A wired and wireless earset using an ear-insertion-type microphone, the earset comprising:
a first earphone portion containing a first speaker that outputs sound signals or voice signals provided from an external device and a first microphone that receives voice signals provided from an external auditory canal of a user and configured to be able to be inserted into an external auditory canal of a user;
a second earphone portion containing a second speaker that outputs sound signals or voice signals provided from an external device; and
a main body connected with the first earphone portion and the second earphone portion, where the earset comprises a noisy mode and a normal mode.
- [Claim 16] The earset of claim 15,
wherein the main body contains a second microphone in its externality, and the earset further comprising:
a switch with a noisy mode and a normal mode that operates a first microphone in a noisy mode and operates a second microphone in its externality in a normal mode, and a mode setting portion containing a speaker adjusting circuit that adjusts an output of the first speaker and/or the second speaker in a noisy mode.
- [Claim 17] The earset of claim 15 or claim 16,
wherein the earset further contains a speaker matching circuit separately equipped at the first speaker and/or the second speaker and a microphone matching circuit equipped at the first microphone.

- [Claim 18] The earset of claim 15,
wherein the earset is operated through at least one of the following: a manual control of a user, voice recognition of a user, motion sensors or installed applications.
- [Claim 19] The earset of claim 15,
wherein a setting of the noisy mode or a normal mode is either set up by a user through the control portion in advance or set up automatically by the control portion through analyzing the sound outputted from the first speaker or the second speaker.
- [Claim 20] The earset of claim 15,
wherein, if the control portion sets up the noisy mode or the normal mode by analyzing the sound outputted from the first speaker or the second speaker, the control portion sets up a normal mode if it analyzes the sound outputted from the first speaker or the second speaker only contains human voices, and the control portion sets up a noisy mode if it analyzes the sound outputted from the first speaker or the second speaker contains external noise.
- [Claim 21] The earset of claim 15,
wherein, if the external device is a mobile telecommunication terminal, the control portion sets up the noisy mode or the normal mode by receiving control signals from applications run on the mobile telecommunication terminal.
- [Claim 22] The earset of claim 15,
wherein the main body further contains a second microphone configured to receive voice signals provided from a user's mouth and a switch configured to select either the first microphone or the second microphone,
wherein the switch selects either the first microphone or the second microphone in accordance with a level of noise of the surroundings.

- [Claim 23] A wired and wireless earset using an ear-insertion-type microphone, the earset comprising:
a first earphone portion containing a first speaker that outputs sound signals or voice signals provided from an external device and a first microphone that receives user's voice signals provided via a user's external auditory canal and configured to be able to be inserted into a first external auditory canal of a user;
a second earphone portion containing a second speaker that outputs sound signals or voice signals provided from an external device and configured to be able to be inserted into a second external auditory canal of a user; and
a main body connected with the first earphone portion and the second earphone portion and, at the same time, wire or wireless connected with an external device.
- [Claim 24] The earset of claim 23,
wherein, in order to reduce echoing that occurs since an output of the first speaker is delivered as an input of the first microphone, at least one of the output of the first speaker or reception of a first microphone is adjusted.
- [Claim 25] The earset of claim 23,
wherein the earset further contains a switch that sets up a calling mode or a playing mode, a speaker output adjusting circuit that adjusts an output of the first speaker and/or the second speaker, a user-controllable call button, and a mode setting portion containing dummy resistors recognized as the first microphone in a playing mode.
- [Claim 26] The earset of claim 25,
wherein, if a user pushes a call button, in order for the control portion to operate as a calling mode, the first speaker does not output sound.
- [Claim 27] The earset of claim 25,
wherein the control portion controls the first speaker not to output sound in a calling mode and controls the first speaker to output sound in a playing mode, or

the control portion controls the first speaker not to output sound while making a voice inputted into the first microphone and controls the first speaker to output sound while making no voice inputted into the first microphone.

[Claim 28] The earset of claim 27,
wherein a setting of the calling mode or the playing mode is performed at least one of the following: a manual control of a user, voice recognition of a user, motion sensors or installed application.

[Claim 29] The earset of claim 27,
wherein a setting of the calling mode or the playing mode is performed by a user through the control portion in advance is by the control portion automatically through analyzing the sound outputted from the first speaker or the second speaker.

[Claim 30] The earset of claim 29,
wherein, if the control portion sets up the calling mode or the playing mode by analyzing the sound outputted from the first speaker or the second speaker, the control portion sets up a calling mode if it analyzes the sound outputted from the first speaker or the second speaker only contains human voices, and the control portion sets up a playing mode if it analyzes the sound outputted from the first speaker or the second speaker contains external noise.

[Claim 31] The earset of claim 27,
wherein, if the external device is a mobile telecommunication terminal, the earset is set up as a calling mode automatically if the control portion detects signals for a calling status of the mobile telecommunication terminal, and the earset is set up as a playing mode automatically if the control portion detects signals for playing a song of the mobile telecommunication terminal.

[Claim 32] The earset of claim 27,

wherein, if the external device is a mobile telecommunication terminal, a setting of the calling mode or the playing mode is performed by the control portion through receiving control signals of an application run on the mobile telecommunication terminal.

[Claim 33] The earset of claim 23,
wherein the earset further contains a switch with a noisy mode and a normal mode that operates a first microphone in a noisy mode and operates a third microphone in its externality in a normal mode, and a mode setting portion containing a speaker adjusting circuit that adjusts an output of the first speaker and/or the second speaker in a noisy mode.

[Claim 34] A wired and wireless earset using an ear-insertion-type microphone, the earset comprising:
a first earphone portion containing a first speaker outputting sound signals or voice signals provided from an external device and a first microphone that receives voice signals provided from an external auditory canal of a user and configured to be able to be inserted into a first external auditory canal of a user;
a second earphone portion containing a second speaker that outputs sound signals or voice signals provided from an external device and configured to be able to be inserted into a second external auditory canal of a user; and
a main body containing a third microphone configured to receive voice signals provided from a user's mouth and a microphone switch configured to select at least one of the first microphone, second microphone or third microphone and connected with the first earphone portion and the second earphone portion.

[Claim 35] The earset of claim 34,
wherein the second earphone portion further contains a second speaker that outputs sound signals or voice signals provided from external devices.

[Claim 36] The earset of claim 34 or claim 35,

wherein the earset, in order to reduce echoing that occurs since an output of the first speaker is delivered as an input of the first microphone, contains an output adjusting circuit that adjusts an output of the first speaker and/or the second speaker.

[Claim 37] The earset of claim 34 or claim 35,
wherein the earset, in order to reduce echoing that occurs since an output of the first speaker is delivered as an input of the first microphone, adjusts reception of the first microphone and/or the second microphone.

[Claim 38] The earset of claim 35,
wherein the earset further contains an echo offset means that reduces an echo factor included among the inputted signals from the first microphone and/or the second microphone.

[Claim 39] The earset of claim 38,
wherein the echo offset means contains a filtering portion that receives and filters sound or voice signals provided from external devices into a first speaker or a second speaker, a phase inversion portion that reverses the phase of sound or voice signals filtered and outputted from the filtering portion, and a signal synthesizing portion that synthesizes sound or voice signals outputted through phase inversion from the phase inversion portion with sound or voice signals inputted from a first microphone and/or a second microphone.

[Claim 40] A wired and wireless earset using an ear-insertion-type microphone, the earset comprising:
a first earphone portion containing a first speaker that outputs sound signals or voice signals provided from an external device and a first microphone that receives voice signals provided from an external auditory canal of a user and configured to be able to be inserted into an external auditory canal of a user;
a signal transceiving portion connected with the first earphone portion and

configured to transceive signals with external devices; and
a main body containing a control portion configured to transmit the voice signals inputted from the first microphone and output the sound signals received from the external device via the signal transceiving portion into the first speaker, wherein the earset is worn only on one ear of a user.

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1. A wired and wireless earset using an ear-insertion-type microphone, the wired and wireless earset comprising:

a first earphone portion containing a first speaker and a first microphone and configured to be inserted into a ear of a user;

a second earphone portion containing a second speaker and configured to be inserted into a ear of a user;

a main body wire connected with the first earphone portion and the second earphone portion;

a signal transceiving portion comprised in the main body configured to transceive sound signals with an external device;

a control portion comprised in the main body configured to transmit voice signals inputted from the first microphone via the signal transceiving portion into the external device and output music signals received from the external device via the signal transceiving portion into the first speaker and the second speaker; and

a mode setting portion comprised in the main body,

wherein a calling mode or a playing mode is controlled by the control portion or the mode setting portion.

2. A wired and wireless earset using an ear-insertion-type microphone, the wired and wireless earset comprising:

a first earphone portion containing a first speaker and a first microphone and configured to be inserted into a ear of a user;

a second earphone portion containing a second speaker and configured to be inserted into a ear of a user;

a main body wire connected with the first earphone portion and the second earphone portion;

a signal transceiving portion comprised in the main body configured to transceive sound signals with an external device;

a control portion comprised in the main body configured to transmit voice signals inputted from the first microphone via the signal transceiving portion into the external device and output music signals received from the external device via the signal transceiving portion into the first speaker and the second speaker; and

a mode setting portion comprised in the main body,
wherein a calling mode or a playing mode is controlled by the control portion or the mode setting portion.

3. The wired and wireless earset of claim 1 or claim 2,

wherein the control portion or the mode setting portion controls the first speaker not to output sound and controls the first microphone to input voice in a calling mode, and

wherein the control portion or the mode setting portion controls the first speaker to output sound and controls the first microphone not to input voice in a playing mode.

4. The wired and wireless earset of claim 1 or claim 2,

wherein, if a user pushes a call button comprised in the earset or a mobile communication device, the control portion or the mode setting portion operates as a calling mode and controls the first speaker not to output sound.

5. The wired and wireless earset of claim 3,

wherein the control portion or the mode setting portion set the calling mode or the playing mode using one or more of voice recognition or the user, motion sensor comprised in a headset or a mobile communication device and an application installed on the mobile communication device.

6. The wired and wireless earset of claim 3,

wherein a setting of the calling mode or the playing mode is either set up by a user through the control portion in advance or set up by the control portion through analyzing the output sound from the first speaker or the second speaker automatically.

7. The wired and wireless earset of claim 6,

wherein, if the control portion sets up the calling mode or the playing mode by analyzing the sound outputted from the first speaker or the second speaker, the control portion sets up a calling mode if it analyzes the sound outputted from the first speaker or the second speaker only includes human voices, and the control portion sets up a playing mode if it analyzes the sound outputted from the first speaker or the second speaker includes music.

8. The wired and wireless earset of claim 3,

wherein, if the external device is a mobile telecommunication terminal, the earset is set up as a calling mode automatically if the control portion detects signals for a calling status of the mobile telecommunication terminal, and the earset is set up as a playing mode automatically if the control portion detects signals for playing a song of the mobile telecommunication terminal.

9. The wired and wireless earset of claim 3,

wherein, if the external device is a mobile telecommunication terminal, a setting of the calling mode or the playing mode is performed by the control portion through receiving control signals of an application run on the mobile telecommunication terminal.