DETAILED DESCRIPTION

The present disclosure will be described below in detail with reference to drawings and embodiments.

The audio signal adapter device of the present disclosure may be an audio cable, an audio adapter cable, an audio adapter et.al.

FIRST EMBODIMENT

Fig. 1 is a schematic diagram of an audio signal adapter device according to a first embodiment of the present disclosure. As shown in Fig. 1, the audio signal adapter device comprises a loudspeaker interface, a boosting unit (such as a boosting transformer shown in Fig. 1), a rectifying unit, a filtering unit, a power supply output pin (such as a VCC pin shown in Fig. 1) and an audio signal output pin.

The loudspeaker interface connected with an audio signal sending equipment (such as a mobile phone) is configured to receive an audio signal ~~output~~ from the audio signal sending equipment.

The loudspeaker interface may be a low-resistance voice coil type of loudspeaker interface (such as a headphone interface), comprising: an audio signal input pin (such as an AUDIO pin shown in Fig.1), and a ground pin (such as a GND pin shown in Fig. 1).

Furthermore, the loudspeaker interface may comprise a MIC pin configured to ~~output~~ a signal to the audio signal sending equipment connected with the MIC pin.

The audio signal input pin of the loudspeaker interface connected with one pin of a primary coil of the boosting transformer is configured to receive the audio signal sent by the audio signal sending equipment (such as the mobile phone) and to output the audio signal to the one pin of the primary coil. The ground pin of the loudspeaker interface is grounded.

Alternatively, in order to reduce a power consumption of the audio signal sending equipment, a resistor R2 (not shown in Fig. 1) may be connected in series between the audio signal input pin and the boosting transformer.

The boosting transformer comprises the primary coil and a secondary coil, and is configured to raise an input voltage (commonly about 1V) at an input end (the primary coil) to an output voltage (for example, larger than or equal to 5V) at an output end (the secondary coil).

WHAT IS CLAIMED IS:

1. An audio signal adapter device, comprising: an input port, an output port, and a signal amplifier, wherein

the input port is a headphone interface, and comprises a first audio signal input pin configured to receive an audio signal sent by an audio signal sending equipment and to output the audio signal to an input end of the signal amplifier;

the output port comprises an audio signal output pin; and

the signal amplifier is connected with the first audio signal input pin, an output end of the signal amplifier is connected with the audio signal output pin for outputting an amplified audio signal.

2. The audio signal adapter device according to claim 1, wherein the input port further comprises a MIC pin configured to output a signal to the audio signal sending equipment connected with the MIC pin.

3. The audio signal adapter device according to claim 1, further comprising: a boosting unit, a rectifying unit and a filtering unit, wherein

the boosting unit is configured to boost the audio signal input from an input end of the boosting unit, and to output a boosted audio signal to an input end of the rectifying unit via an output end of the boosting unit;

the rectifying unit is configured to rectify the boosted audio signal input from the input end of the rectifying unit to obtain a level, and to output the level to an input end of the filtering unit via an output end of the rectifying unit; and

the filtering unit is configured to filter the level input from the input end of the filtering unit to obtain a direct current level, and to output the direct current level to a power supply output pin of the output port via an output end of the filtering unit.

4. The audio signal adapter device according to claim 3, wherein

the boosting unit is a boosting transformer, comprising a primary coil and a secondary coil;

one pin of the primary coil is used as the input end of the boosting unit and connected with the first audio signal input pin, and the other pin of the primary coil is grounded; and

at least one output pin of the secondary coil is used as the output end of the boosting unit and connected with the input end of the rectifying unit, and a tap of the secondary coil is grounded.

5. The audio signal adapter device according to claim 3, wherein the rectifying unit comprises at least one diode, an anode of the at least one diode is connected with the input end of the rectifying unit, and a cathode of the at least one diode is connected with the output end of the rectifying unit.

6. The audio signal adapter device according to claim 4, wherein

the secondary coil of the boosting transformer comprises two output pins;

the input end of the rectifying unit comprises two input pins;

the two output pins of the secondary coil are connected with the two input pins of the rectifying unit respectively; and

the rectifying unit comprises two diodes, and anodes of the two diodes are connected with the two input pins of the rectifying unit respectively.

7. The audio signal adapter device according to claim 3, wherein

the filtering unit comprises a capacitor;

one end of the capacitor is connected with the input or output end of the filtering unit; and

the input end of the filtering unit is connected with the output end of the filtering unit.

8. The audio signal adapter device according to claim 1, wherein the first audio signal input pin comprises a left-channel pin and/or a right-channel pin.

9. The audio signal adapter device according to claim 2, wherein the first audio signal input pin comprises a left-channel pin and/or a right-channel pin.

10. The audio signal adapter device according to claim 3, wherein the first audio signal input pin comprises a left-channel pin and/or a right-channel pin.

11. The audio signal adapter device according to claim 4, wherein the first audio signal input pin comprises a left-channel pin and/or a right-channel pin.

12. The audio signal adapter device according to claim 5, wherein the first audio signal input pin comprises a left-channel pin and/or a right-channel pin.

13. The audio signal adapter device according to claim 6, wherein the first audio signal input pin comprises a left-channel pin and/or a right-channel pin.

14. The audio signal adapter device according to claim 7, wherein the first audio signal input pin comprises a left-channel pin and/or a right-channel pin.

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FIRST EMBODIMENT

Fig. 1 is a schematic diagram of an audio signal adapter device according to a first embodiment of the present disclosure. As shown in Fig. 1, the audio signal adapter device comprises a loudspeaker interface, a boosting unit (such as a boosting transformer shown in Fig. 1), a rectifying unit, a filtering unit, a power supply output pin (such as a VCC pin shown in Fig. 1) and an audio signal output pin.

The loudspeaker interface connected with an audio signal sending equipment (such as a mobile phone) is configured to receive an audio signal output from the audio signal sending equipment.

The loudspeaker interface may be a low-resistance voice coil type of loudspeaker interface (such as a headphone interface), comprising: an audio signal input pin (such as an AUDIO pin shown in Fig.1), and a ground pin (such as a GND pin shown in Fig. 1).

Furthermore, the loudspeaker interface may comprise a MIC pin configured to send a signal to the audio signal sending equipment connected with the MIC pin.

The audio signal input pin of the loudspeaker interface connected with one pin of a primary coil of the boosting transformer is configured to receive the audio signal sent by the audio signal sending equipment (such as the mobile phone) and to output the audio signal to the one pin of the primary coil. The ground pin of the loudspeaker interface is grounded.

Alternatively, in order to reduce a power consumption of the audio signal sending equipment, a resistor R2 (not shown in Fig. 1) may be connected in series between the audio signal input pin and the boosting transformer.

The boosting transformer comprises the primary coil and a secondary coil, and is configured to raise an input voltage (commonly about 1V) at an input end (the primary coil) to an output voltage (for example, larger than or equal to 5V) at an output end (the secondary coil).

WHAT IS CLAIMED IS:

1. An audio signal adapter device, comprising: an input port, an output port, and a signal amplifier, wherein

the input port is a headphone interface, and comprises a first audio signal input pin configured to receive an audio signal sent by an audio signal sending equipment and to output the audio signal to an input end of the signal amplifier;

the output port comprises an audio signal output pin; and

the signal amplifier is connected with the first audio signal input pin, an output end of the signal amplifier is connected with the audio signal output pin for outputting an amplified audio signal, wherein

the signal amplifier comprises a resistor and a triode, one end of the resistor is connected with the input end of the signal amplifier, the other end of the resistor is connected with a base of the triode, a collector of the triode is connected with the output end of the signal amplifier, and an emitter of the triode is grounded;

the first audio signal input pin comprises a left-channel pin or a right-channel pin.

2. The audio signal adapter device according to claim 1, wherein the input port further comprises a MIC pin configured to output a signal to the audio signal sending equipment connected with the MIC pin.

3. The audio signal adapter device according to claim 1, further comprising: a boosting unit, a rectifying unit and a filtering unit, wherein

the boosting unit is configured to boost the audio signal input from an input end of the boosting unit, and to output a boosted audio signal to an input end of the rectifying unit via an output end of the boosting unit;

the rectifying unit is configured to rectify the boosted audio signal input from the input end of the rectifying unit to obtain a level, and to output the level to an input end of the filtering unit via an output end of the rectifying unit; and

the filtering unit is configured to filter the level input from the input end of the filtering unit to obtain a direct current level, and to output the direct current level to a power supply output pin of the output port via an output end of the filtering unit.

4. The audio signal adapter device according to claim 3, wherein

the boosting unit is a boosting transformer, comprising a primary coil and a secondary coil;

one pin of the primary coil is used as the input end of the boosting unit and connected with the first audio signal input pin, and the other pin of the primary coil is grounded; and

at least one output pin of the secondary coil is used as the output end of the boosting unit and connected with the input end of the rectifying unit, and a tap of the secondary coil is grounded.

5. The audio signal adapter device according to claim 3, wherein the rectifying unit comprises at least one diode, an anode of the at least one diode is connected with the input end of the rectifying unit, and a cathode of the at least one diode is connected with the output end of the rectifying unit.

6. The audio signal adapter device according to claim 4, wherein

the secondary coil of the boosting transformer comprises two output pins;

the input end of the rectifying unit comprises two input pins;

the two output pins of the secondary coil are connected with the two input pins of the rectifying unit respectively; and

the rectifying unit comprises two diodes, and anodes of the two diodes are connected with the two input pins of the rectifying unit respectively.

7. The audio signal adapter device according to claim 3, wherein

the filtering unit comprises a capacitor;

one end of the capacitor is connected with the input or output end of the filtering unit; and

the input end of the filtering unit is connected with the output end of the filtering unit.

8. The audio signal adapter device according to claim 2, wherein the first audio signal input pin comprises a left-channel pin and/or a right-channel pin.

9. The audio signal adapter device according to claim 3, wherein the first audio signal input pin comprises a left-channel pin and/or a right-channel pin.

10. The audio signal adapter device according to claim 4, wherein the first audio signal input pin comprises a left-channel pin and/or a right-channel pin.

11. The audio signal adapter device according to claim 5, wherein the first audio signal input pin comprises a left-channel pin and/or a right-channel pin.

12. The audio signal adapter device according to claim 6, wherein the first audio signal input pin comprises a left-channel pin and/or a right-channel pin.

13. The audio signal adapter device according to claim 7, wherein the first audio signal input pin comprises a left-channel pin and/or a right-channel pin.