converter without having the capacitive noise and interference problems associated with output converters of the prior art, regardless of having long wires connecting the output stage to the loudspeaker of the hearing aid. This object is achieved by providing an output converter having the features according to a first aspect of the invention~~recited in claim 1~~.

According to the first aspect, there is provided a hearing aid comprising: an input transducer, an analog-to-digital converter, a digital signal processor, a three-level output modulator connected to a three-level output driver, a first voltage source, a second voltage source configured to provide a voltage level of substantially half the voltage level of the first voltage source, a common voltage node and an acoustic output transducer, wherein the output driver comprises an H-bridge output stage configured to control the connection of a first and a second terminal of the acoustic output transducer, the H-bridge being configured to connect the first voltage source to the first terminal of the acoustic output transducer and the common voltage node to the second terminal of the acoustic output transducer when the output modulator generates a first level, to connect the second voltage source to both the first and the second terminal of the acoustic output transducer when the output modulator generates a second level, and to connect the first voltage source to the second terminal of the acoustic output transducer and the common voltage node to the first terminal of the acoustic output transducer when the output modulator generates a third level.

It is also an object of the present invention to devise a method of driving an output stage for a hearing aid. This object is achieved by the method in accordance with a second aspect of the invention~~recited in claim 6~~.

According to the second aspect, there is provided a method of driving an output stage of a hearing aid, said method comprising providing a single-bit digital signal representing an audio signal to be reproduced by the hearing aid, providing a first voltage source for generating a first voltage, providing a second voltage source for generating a second voltage being substantially half the voltage of the first voltage source, providing an acoustic output transducer, converting a positive level, a negative level, and a zero level, connecting the first voltage source to a first terminal of the acoustic output transducer, and connecting a second terminal of the acoustic output transducer to ground, whenever the control signal produces a negative level, connecting the first voltage source to the second terminal of the acoustic output transducer, and connecting the first terminal of the acoustic output transducer to ground, whenever the control signal produces a positive level, and connecting the second voltage source to both the first terminal and the second terminal of the acoustic output transducer whenever the control signal produces a zero level.

The invention will now be described in further detail with respect to the drawings, where

fig. 1 is a schematic of an output stage for a hearing aid according to the prior art,

fig. 2 is a schematic of an output stage for a hearing aid according to an embodiment of the invention,

fig. 3 is a schematic illustrating a first condition in the output stage of fig. 2,

fig. 4 is a schematic illustrating a second condition in the output stage of fig. 2,

fig. 5 is a schematic illustrating a third condition in the output stage of fig. 2,

fig. 6 is a graph illustrating a typical input signal to the output stage of fig. 2, and

fig. 7 is a schematic of a hearing aid with an output stage according to an embodiment of the invention.

Fig. 1 shows a schematic of a three-state digital H-bridge output stage 1 of a hearing aid according to the prior art. The output stage 1 comprises a control input 2, a supply voltage node 3 carrying a positive voltage V_{bb}, an acoustic output transducer shown as a loudspeaker 4, a ground node 5, a delay element 6, and four controllable switches S1, S2, S3 and S4, shown as MOSFET transistor elements. The supply voltage node 3 provides electrical power to the H-bridge output stage 1, and the control input 2 is capable of delivering a bit stream for controlling the four controllable switches S1, S2,