

one or more conducting electrodes and at least one grounding electrode separate from the one or more conducting electrodes, wherein the grounding electrode is positioned so as to be touched by a second body member distinct from each of the at least one body member to be stimulated;

wherein the capacitive coupling and electrical input are dimensioned to produce an electrosensory sensation; and

whereby the electrosensory sensation is produced independently of any mechanical vibration of the one or more conducting electrodes or insulators.

2. The apparatus according to claim 1, wherein at least one of the one or more conducting electrodes is positioned such that the at least one body member to be stimulated most likely to be affected is part of a human hand.

3. The apparatus according to claim 1, wherein the apparatus comprises one conducting electrode for each spatially distinct area of the at least one body member to be stimulated.

4. The apparatus according to claim 1, wherein the apparatus comprises one conducting electrode for each of several spatially distinct areas of the at least one body member to be stimulated.

5. The apparatus according to claim 1, wherein the apparatus comprises means for conveying information via the electrosensory sensation by modulating the electrical input according to said information.

6. The apparatus according to claim 1, further comprising an enclosure which contains the high-voltage source which is common to all the several conducting electrodes and wherein the enclosure also contains means for conveying the electrical input to zero or more of the several conducting electrodes simultaneously, under control of a common controller.

7. The apparatus according to claim 6, wherein the apparatus is part of an input/output peripheral device connectable to a data processing equipment.

8. The apparatus according to claim 1, further comprising a surface arranged so as to be touched or approached by the body member to be stimulated, wherein the surface has at least one touch-sensitive area, each touch-sensitive area having a predetermined position;

wherein the apparatus comprises or is operatively connectable to means for assigning at least one function to the least one touch-sensitive area; and

wherein the apparatus further comprises means for varying the intensity of the electrosensory stimulus spatially and/or temporally based on a detected touching or approaching of the at least one touch-sensitive area by the body member to be stimulated;

whereby the interface device is able to produce a feedback to a user via the body member to be stimulated.

9. The apparatus according to claim 8, wherein said means for varying the intensity of the electrosensory stimulus spatially and/or temporally comprises means for varying the intensity of the electrosensory stimulus temporally.

10. The apparatus according to claim 9, wherein:

said means for assigning at least one function are operable to dynamically change the at least one function assigned to the least one touch-sensitive area; and

the apparatus is operable to vary the feedback based on the function assigned to the least one touch-sensitive area.

11. The apparatus according to claim 1, wherein the electrical input also comprises a high-frequency component having a frequency which is higher than the frequency of the low-frequency component and lower than 500 kHz.

12. The apparatus according to claim 1, comprising means for modulating the high-frequency component by the low-frequency component.

13. The apparatus according to claim 1, wherein the electrical input to the one or more conducting electrodes has a peak-to-peak voltage of 750 to 100,000 Volts.

14. The apparatus according to claim 1, wherein the insulator has a thickness between 0.1 mm and 50 mm.

15. The apparatus according to claim 1, wherein at least one insulator comprises a first layer and a second layer such that the first layer is closer to the conducting electrode than the second layer, and wherein the second layer has a lower surface conductivity than the first layer.

16. A method for causing an electrosensory sensation to at least one body member to be stimulated, the method comprising:

providing one or more conducting electrodes, each conducting electrode being provided with an insulator wherein, when the at least one body member to be stimulated is proximate to the conducting electrode, the insulator prevents flow of direct current from the conducting electrode to the body member to be stimulated and a capacitive coupling over the insulator is formed between the conducting electrode and the body member to be stimulated;

providing a high-voltage source for applying an electrical input to the one or more conducting electrodes, wherein the electrical input comprises a low-frequency component in a frequency range between 10 Hz and 1000 Hz;

providing a grounding connection between a reference voltage of the high-voltage source other than the electrical input to the one or more conducting electrodes and at least one grounding electrode separate from the one or more conducting electrodes, wherein the grounding electrode is positioned so as to be touched by a second body member distinct from each of the at least one body member to be stimulated;

wherein the capacitive coupling and electrical input are dimensioned to produce an electrosensory sensation; and

whereby the electrosensory sensation is produced independently of any mechanical vibration of the one or more conducting electrodes or insulators.

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