

Claims

1. A miniaturized medical device (1), comprising: an electronic functional device (10) for performing a function of said miniaturized medical device (1), said functional device (10) having an operational state for performing said function and a switched-off state, and a wake-up device (12) for transferring said functional device (10) from said switched-off state to said operational state, **characterized in** that the wake-up device (12) comprises an electrical detection circuit (123) configured to generate a wake-up signal (VS) for waking up said functional device (10) and a switch device (4) arranged in the electrical detection circuit (123), the switch device (4) comprising a switch member (41), a magnet device (42) attached to the switch member (41) and at least one switch contact (44A, 44B) associated with the electrical detection circuit (123), wherein the switch member (41) is excitable by a time-varying magnetic field (M) to perform an oscillating movement, wherein the switch member (41) is configured, caused by said oscillating movement, to act onto said at least one switch contact (44A, 44B) to perform a switching action of the switching device (4) in the electrical detection circuit (123) for generating the wake-up signal (VS).
2. The miniaturized medical device (1) according to claim 1, **characterized in** that the switch device (4) is a MEMS switch.
3. The miniaturized medical device (1) according to claim 1 or 2, **characterized in** that the switch member (41) forms a mechanical resonant system having a resonant frequency, wherein the switch member (41) is excitable by a time-varying magnetic field (M) to perform an oscillating movement at the resonant frequency.
4. The miniaturized medical device (1) according to one of claims 1 to 3, **characterized in** that the switch device (4) comprises a contact element (43) arranged on the switch member (41), the contact element (43) being configured, caused by said oscillating movement, to establish an electrical contact with the at least one switch contact (44A, 44B).

5. The miniaturized medical device (1) according to one of the preceding claims, **characterized in** that the magnet device (42) is a permanent magnet.
6. The miniaturized medical device (1) according to one of the preceding claims, **characterized in** that the switch device (4) comprises a substrate (40), wherein the switch member (41) is formed as a cantilever which is movable with respect to the substrate (40) upon excitation by a time-varying magnetic field (M).
7. The miniaturized medical device (1) according to one of the preceding claims, **characterized in** that the electrical detection circuit (123) comprises an energy storage element (121) for storing electrical energy, the energy storage element (121) being chargeable by said switching action of the switching device (4).
8. The miniaturized medical device (1) according to claim 7, **characterized in** that the energy storage element (21) is a capacitor.
9. The miniaturized medical device (1) according to claim 7 or 8, **characterized in** that the switch device (4) is configured, by the oscillating movement of the switch member (41), to cyclically charge the energy storage element (121).
10. The miniaturized medical device (1) according to one of claims 7 to 9, **characterized in** that the electrical detection circuit (123) comprises a comparator device (120) to assess a charging state of said energy storage element (121).
11. The miniaturized medical device (1) according to claim 10, **characterized in** that the comparator device (120) is configured to generate said wake-up signal (VS).
12. The miniaturized medical device (1) according to one of claims 7 to 11, **characterized in** that the electrical detection circuit (123) comprises a resistor (122) connected electrically in parallel to the energy storage element (121).

13. System, comprising a miniaturized medical device (1) according to one of the previous claims and an activator device (2) configured to generate said time-varying magnetic field (M).
- 5 14. The system according to claim 13, **characterized in** that the activator device (2) is configured to generate a time-varying magnetic field (M) at a resonant frequency of the switch member (41).
- 10 15. A method for operating a miniaturized medical device (1), comprising: providing an electronic functional device (10) for performing a function of said miniaturized medical device (1), said functional device (10) having an operational state for performing said function and a switched-off state; and providing a wake-up device (12) for transferring said functional device (10) from said switched-off state to said operational state, **characterized by** generating a wake-up signal (VS) for waking up
- 15 said functional device (10) using an electrical detection circuit (123) of the wake-up device (12) and a switch device (4) arranged in the electrical detection circuit (123), the switch device (4) comprising a switch member (41), a magnet device (42) attached to the switch member (41) and at least one switch contact (44A, 44B) associated with the electrical detection circuit (123); wherein the generating of the
- 20 wake-up signal (VS) includes exciting the switch member (41) by a time-varying magnetic field (M) to perform an oscillating movement, wherein the switch member (41), caused by said oscillating movement, acts onto said at least one switch contact (44A, 44B) to perform a switching action of the switching device (4) in the electrical detection circuit (123) for generating the wake-up signal (VS).