

Useful modifications on Morphy Richards Digital radio Model 27024



The first all mode- digital radio for AM, DRM, VHF- FM und DAB (Band III and L) is available on the market. And this with an acceptable pricing of approx. 200,- EUR !

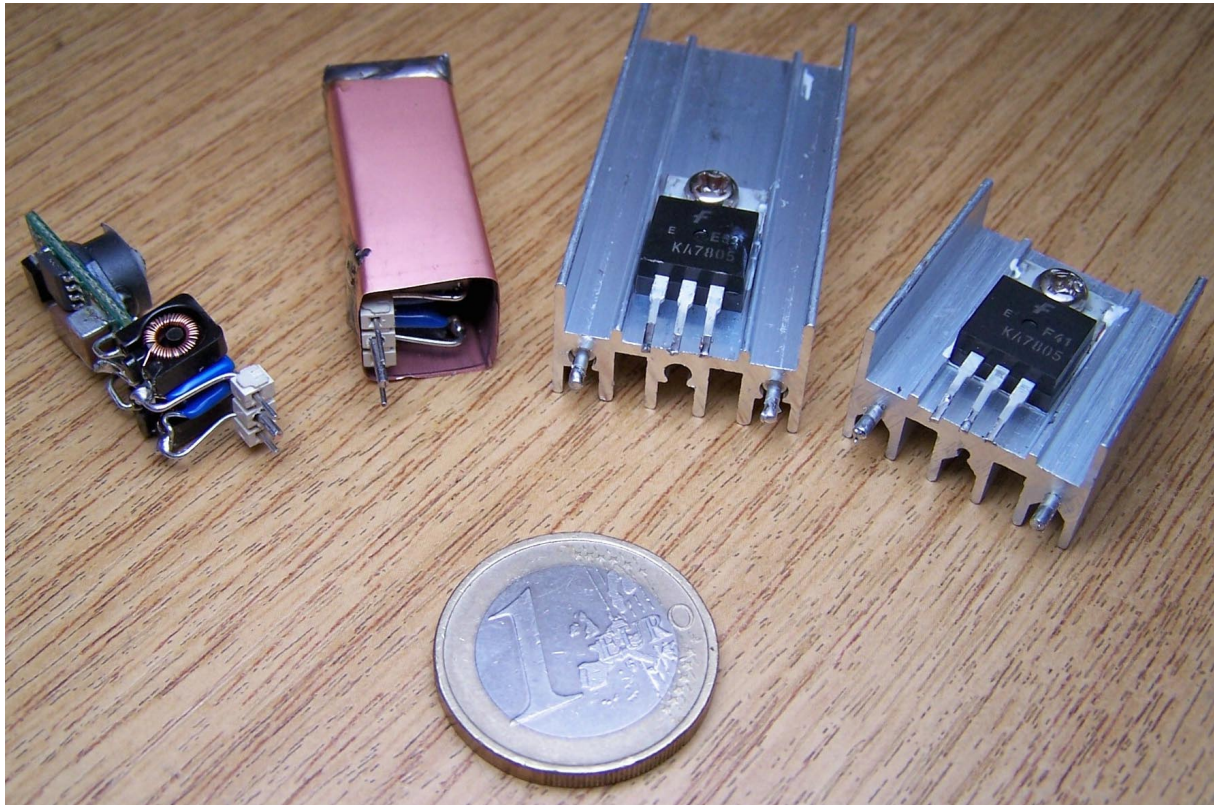
But unfortunately without battery supply operation and with a much too short telescope antenna for SW receiving. The current consumption of approx. 0,7A inhibits an useful battery life time because the place for battery inside case is limited. So it was checked, if it is possible to reduce the current consumption. This is possible, in fact drastic. The replacement of the both analogue voltage controllers 7805 (picture 1 right) by carefully shielded and at in- and output filtered switching controller units with an efficiency of approx. 95% (picture 1 left) reduces the current consumption from approx. 0,7A to approx. 0,42A. And this without any changing of device specs against the original part placement.

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Picture 1: switching controllers (left) replaces analogue controllers (right)

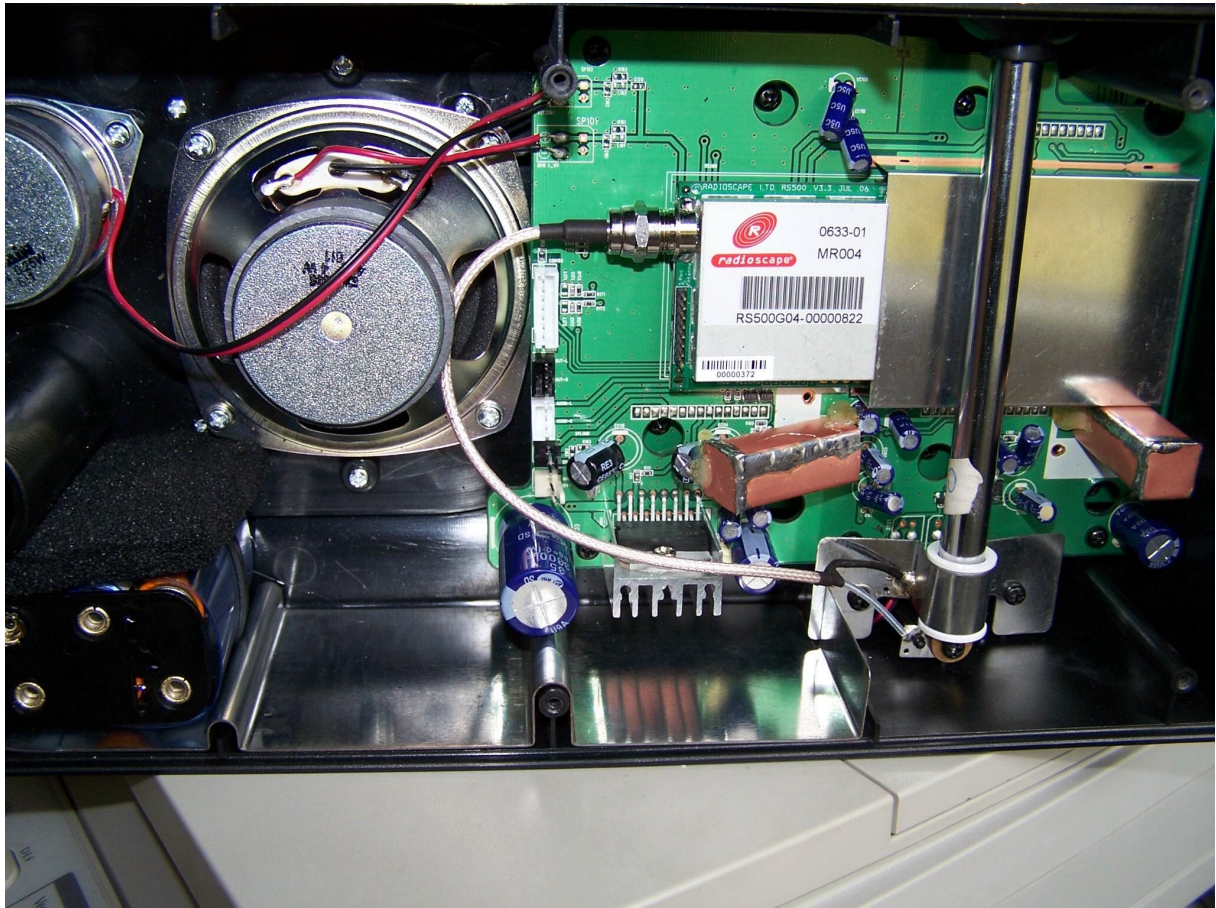
So a battery life time until 7 hours (by use of 8 pieces 3000mAh AA- cells) becomes possible. A additional 3 position switch switches between mains supply, battery supply and off. In off position it is possible to charge the battery inside via a schottky diode for decoupling from supply connector. It is needed a separate NiMh- charger for this. The original power supply, that is not stabilized, reaches more than 14V DC. This is too much and danger of overcharging the battery occurs. If the display illumination could be switched off, like described in the manual, also in receiving mode, the battery life time could be increased further. It is to hope, that a later software version will clear this problem.

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Picture 2 switching controller and battery adapter inserted

The original antenna with a length of only 60cm have a measured free air capacity of approx. 12pF. When the antenna is slide in 6pF remains (coaxial cable and low ground spacing above the board). Due to the fact, that the antenna input of the RS500 module is a wide band input, the effective antenna voltage is divided by factor 2 (capacitive voltage divider). This is the same like one half of operating antenna length (only 30cm) appears. This is relay poor for SW operation. So the original antenna was replaced by a telescope antenna of 135cm length with identical diameter. The sliding out to full antenna length can increase the SW sensitivity approx.10dB against original antenna if needed.

Also an additional ground connector placed at the connector plate helps to increase the sensitivity and the S/N by connecting with ground conductors (some meters wire, heating system and so on).

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Picture 3: expanded connector plate

From January 2006 we will offer an modification kit, that includes

- 2 pcs. Switching controller 5V 0,5A shielded and filtered, dimensions 12x12x31mm
- 1 pcs. Telescope antenna 135cm length
- 1 pcs. Battery adapter for 8 pc. NiMh cells size AA
- 1 pcs. Connector clip for battery adapter including 2A Micro fuse
- 1 pcs. Switch (3-positions)
- 1 pcs. Ground connector
- 1 pcs. Schottky diode
- 1 pcs. Automatic Plug Charger NiMh 9,6V
- 1 pcs. Instruction for modification

We will also carry out the modification work for customer devices.

Respect, in result of the modification the producer warranty will be lost.

But weight the advantage of mobile battery operation against this disadvantage.

Preorders wanted, this increases the delivery time.

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