

## Extend backup memory life to more than 10 years !

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On the FT-980 backup memory battery life is about 6 months with 2000 mAh two AA alkaline batteries. Original backup current is about 140  $\mu$ A. This modification reduce the current to less than 1  $\mu$ A and extend battery life to **more than 10 years** !

In running mode TRAP is at 0 V. When power is going down, the TRAP (interrupt) goes at +5 V to give up any CMOS-RAM activity, then after a delay reset is activated to stop the CPU.

In power down, circuit gates A are supplied by the backup batteries, a current is drawn by R09 (10k) to TRAP pin of the CPU.

The principle of this modification is to supply TRAP pin with the +5 V of the CPU and apply a low level with a transistor during run mode. In power down mode the added transistor is off and Q02 too !

**Modification** : refer to service manual for schematic and instructions : pages 19; 74 and 75

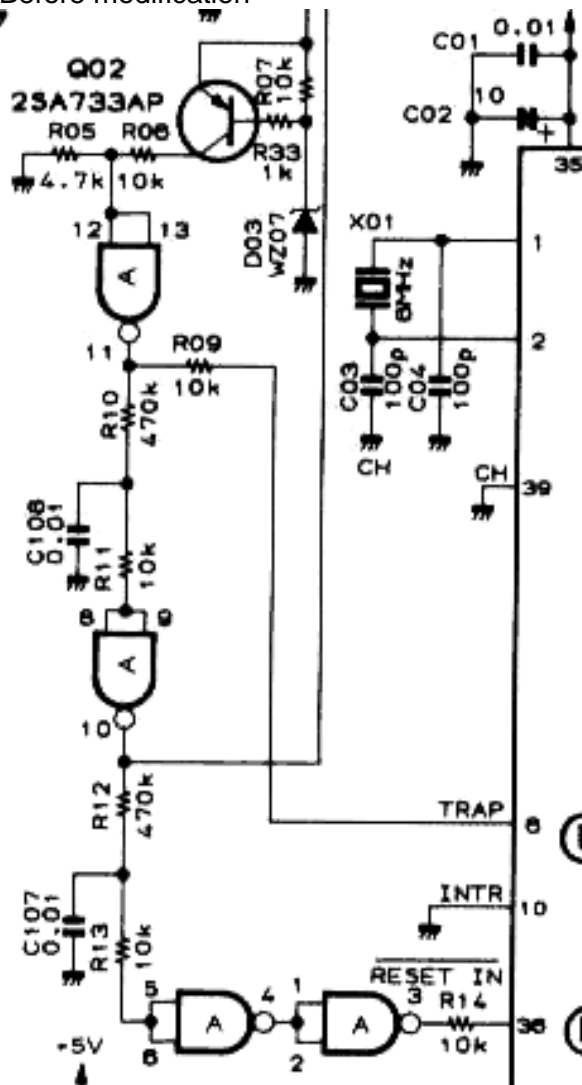
Remove covers and front panel (unscrew ATTEN shaft before). Access to CPU unit, take care of connectors numbering and position. Better take pictures and write the numbers and position on the cover shield.

- **Remove R09.** (I took the opportunity to change all tantalum and aluminum capacitors by ceramic ones)
- At back of CPU **connect this 10k between pin 6 (TRAP) and +5V pin 35**
- Add a MOSFET transistor or a NPN transistor (like 2N2222) with 10k in series on base input
- When reassembling unit in device take care when plunging connectors, avoid shifting by one pin !

Now, memory retention current is less than 1  $\mu$ A, my meter was not able to measure it.

The battery can be either alkaline or lithium (CR123, CR2032...) with a 2,2 M $\Omega$  in parallel to avoid passivation.

Before modification



After modification

