

# HERON 4MB RAM Upgrade Installation manual



## *Introduction*

**Heron 4MB** is a RAM upgrade for Atari ST. It features **16MB of memory**, however due to hardware limitation of **original MMU** (Memory Management Unit) **only 4MB is visible** to the computer. **With new RemakeMMU (in development) 10MB (Mega ST) or 14MB will be available.**

## *Compatibility*

The expansion is compatible with all Atari ST models: ST / STM / STF / STFM and Mega ST.

## *Which version of Heron to choose?*

The simplest installation is provided by main Heron PCB along with an adapter replacing anti-kickback resistors on the motherboard. **Due to the fact that Atari has manufactured ST for many years and in various factories, there are lots of different revisions of the motherboards.**

Each revision has its own **specific marking**, for example:



**You need to read out the revision marking from your motherboard before purchasing the Heron expansion.**

At the moment there are available (or will be available in the future) adapters for the following motherboard revisions:

- C070789-001 rev.F
- C070523-001 REV.D
- C070859-001 rev. 2.0 (adapter in development)
- C103414-001 (adapter in development)

If you own a motherboard in a version that is not on the above list, you can install Heron by connecting one of the available adapters using wiring loom (instead of soldering the adapter into the motherboard) or by using an universal adapter, which requires desoldering of the existing MMU socket.





## ***Detailed installation***

**Open the computer case and remove motherboard, strip it out from metal shielding.**



**If you are lucky, Shifter chip will be socketed. If Shifter chip is soldered into the motherboard, you will need to desolder it and solder a new socket (precision one is recommended).**



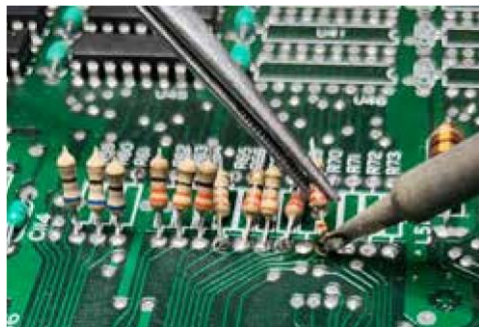
**Remove Shifter...**



**...and install main Heron PCB in its place. Make sure that it is oriented properly – the notch is clearly marked on the PCB and it must be matching notch in the socket. Insert Shifter into the empty socket on top of expansion, again checking orientation.**



**Remove existing anti-kickback resistors. You can desolder them altogether, but the simpler and safer for the motherboard is to cut their connections from old RAM chips side. After cutting, remove any remains of the resistors.**



**Clean the holes from the old solder.**

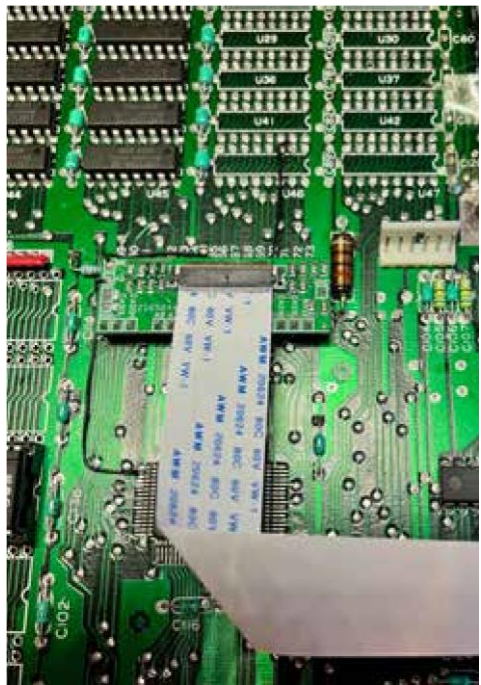
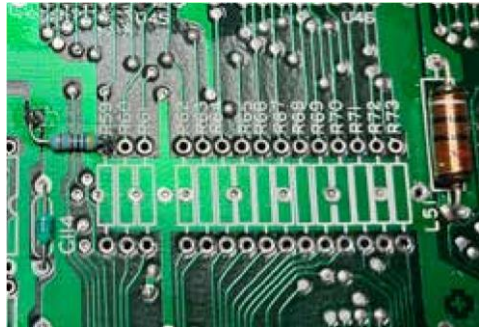
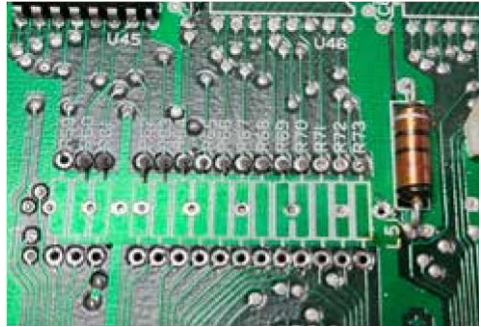


The end effect should be similar to that on the photo. You may also remove remains of the resistor legs, but this is not required.

Next step is to cut RAS0 and RAS1 signals from MMU to disconnect RAM on the motherboard. At this example RAS0 is present at the top leg of R59 and RAS1 is at top leg of R73. These signals might be at different locations on different motherboard revision. Please refer to the schematic.

Solder one of the 4k7 resistors between RAS0 and +5V and second one to RAS1 and +5V if there is 1MB of RAM present.

Insert the Heron's secondary PCB into the holes previously populated with resistors and solder all pins. Make two connections to it with the wires for pads marked WE and A9. WE signal is available at pin 3 of any old RAM chip or at the MMU pin 23 (PLCC) or pin 19 (SMT). A9 signal is also available at MMU - pin 64 (PLCC) or pin 66 (SMT).



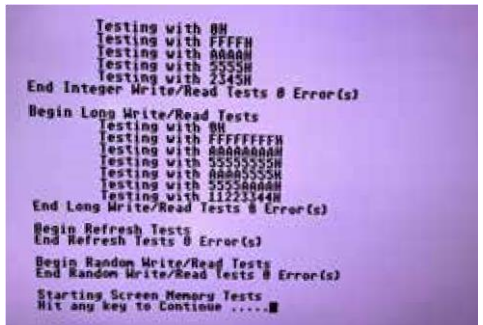
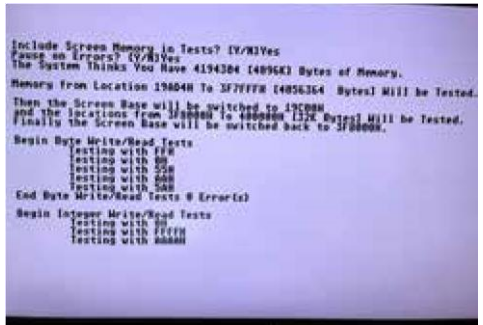
You can protect all wiring with hot glue or lacquer coating.



Connect the ZIF cable between both PCBs and you are done!



Testing, testing, 1, 2, 3...



Enjoy!

