

# Technical Manual

## NoiseControl<sup>®</sup> Silverado<sup>®</sup> CPU Cooler



### Mechanical Compatibility

The cooler may be used both for AMD Duron and Thunderbird in the Socket A version, as well as Intel PIII Coppermine in the Socket 370 / FCPGA. Additionally, the cooler may be used with all predecessor CPUs that use the Socket 370 or the Socket 7.

### Cooling Power

The cooler will keep all FCPGA, FCPGAII and Socket A CPUs within the manufacturer-specified operating temperatures. The prevailing air temperature within the PC may not exceed 40 °C. (The PC's exhaust air can give an indication to this. Usually PCs have an exhaust temperature that is about 10-15 °C above the ambient temperature.)

### Installation

Installation should be performed only when the mainboard is in a horizontal position. Installation is facilitated when the mainboard's chassis is removed from the PC.

#### Installation of the vibration buffer (optional)

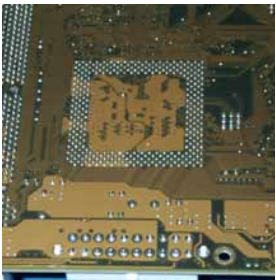
A rubber buffer may be mounted between the mainboard and the metal mainboard chassis. This buffer is not required for operation of the Silverado, but, if left out, resonating noises may result during operation of the cooler, especially in the higher RPM settings.

To install, remove all screws that attach the mainboard to the chassis. Remove the mainboard from the chassis.

Now stack enough of the small cork-rubber squares on top of each other, that the stack's height slightly exceeds that of the brass mainboard spacers. Ideally the stack will be **1 mm higher than the spacers**, but no more than 2 mm higher!



Now glue the individual squares on the underside of the mainboard, directly underneath the CPU socket.



Now put the mainboard back onto the chassis and install the mounting screws. During this, some tension will be noticeable in the area of the CPU socket. This is intended; however, **under no circumstances use excessive force!**

#### 1) Preparation of the CPU

Install your CPU in the Socket. Clean the CPU's surface. (The actual CPU is the small blue/green chip in the middle of the whole CPU, of about 12 mm size) **The CPU's surface must be a clean as possible!**

#### 2) Installation of the Planetti-Rings (required!)

You have to use four rings!!!



a) **AMD CPU** - the four rings have to be applied over the CPU's rubber pads. Simply put on top of the pads and push into place with your fingertip.

b) **Intel PIII CPU** - the four rings simply are placed on the CPU like in the picture to the right. (Arrows)



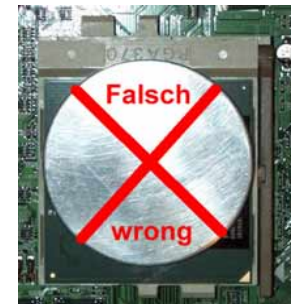
3) Using the included syringe apply a very small amount of thermal paste in the middle of the CPU. (Like a drop of water) The paste should not be spread.



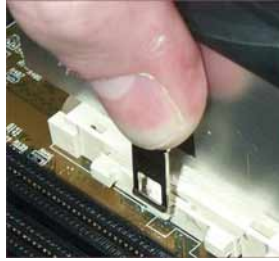
4) *Position the short side of the bracket so that it securely slips under the plastic hook of the socket. The short part of the bracket must be attached **opposite** to the wide, white plastic strip of the socket. No force may be applied at this stage!*



The silver disc must lie exactly above the CPU area. Under no circumstances the silver disc may actually touch any part of the socket!



5) Press down on the other side of the bracket. *You should feel resistance only after the cooler already touches the CPU in a parallel fashion.* Press down a little harder, up to a force of about 1.5 kilograms. The bracket should slip over the plastic hook and snap into place under the hook. Take care that the bracket actually moves over the hook and does not snag on it; if needed, you may spread the bracket a little using a screwdriver while pushing down.



6) Make sure that the cooler is mounted securely. It should sit snugly on the CPU, without any tendencies to lean to one side. It may be rotated a few degrees to and fro (as the bracket permits) to get a better feel for the quality of the connection.

While doing this, the point of rotation should lie directly over the CPU core.



## Connecting to power

The silverado may be operated at a voltage range of 6v - 12 V. We recommend the low voltages, especially the 6 Volt mode. A voltages stronger than 8V do increase the cooling performance of the Silverado, but cause increased noise.

CPU	6 Volt	8 Volt	10 Volt	12 Volt
<b>AMD</b>	1200 MHz XP1800+	all types	use for more cooling power	use for more cooling power
<b>Intel</b>	1000 MHz	all types	use for more cooling power	use for more cooling power

### 1.) Silverado with adaptor cables

For 12 Volt operation, the Silverado's fans are directly connected to the mainboard. For all other voltages, use the adaptor cables to plug between the Silverado and the mainboard connector. Use only one set of cables at a time!

### 2.) Silverado E (with **EWMS Fan Voltage Control**)

You can smooth adjust the output voltage between 6 and 12 (see Installation an Operation Manuel EWMS)

## Dismounting the Silverado

Dismounting the Silverado basically follows the steps for mounting, just in reverse. Attention: For unhooking the bracket, press down on the wide part of the bracket and simultaneously spread the bracket away from the cooler using a medium, flat bladed screwdriver. Once you see that the lower part of the bracket has cleared the socket's plastic hook, relent pressure slowly on the bracket.

## WARNING

The Silverado cooler ist not suitable for computers that have to be transported!

It is to be used only on stationary systems!

If a computer with an assembled Silverado is transported or otherwise subjected to shock and/or high accelerations, the cooler itself, the mainboard and the CPU could be damaged.

If accidentally a computer with an installed Silverado has been transported or otherwise subjected to shock, the cooler should be dismounted to check for any damage on the CPU and the CPU socket \*before\* switching on the computer. The cooler has to be remounted only after thorough cleaning and with \*new\* thermal compound.

Spacer shims that are sold elsewhere must not be used with the silverado!

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