

Installation Manual for NoiseMagic P4 Heatsink Systems

NMT2-P4/85W-N/2GM
NMT2-P4/80W-N/2GML
NMT2-P4/75W-N/2GL
NMTV-P4/70W-Verax



Description

General

All heatsinks described in this manual are for use on Intel Pentium 4 processors only. The coolers utilize a common aluminium heat-sink as their basis. They differ in the fans and in the temperature electronics, thereby providing different levels of cooling and quietness. A range of fans from the manufacturers Papst and Verax are available.

Temperature Control

All NM-P4 coolers are equipped with a temperature controlled fan speed, which measures the temperature of the air going into the cooler. This results in a fan speed regulation that varies only little with the temporary CPU load, but makes the coolers self-adapting to almost any environment and situation.

The maximum speed of the fan will only be attained at air temperatures of 40° C (Verax) / 50 °C (Papst) inside the computer. Typical systems will show a system temperature between 30 and 40 °C, thereby having the cooler's fans run at 40 to 60% of their nominal speed.

This means that improved ventilation of the computer as well as lower ambient temperatures will help the cooler to run more slowly and silently.

With the Papst versions of the cooler, the fan will spin at maximum RPMs for 2 seconds after either being switched on, or after a restart from the BIOS suspend mode. This behavior is intentional and secures the fan's startup and helps to avoid dust accumulations in the cooler due to low RPM operation.

RPM monitoring

All NM-P4 coolers supply an ATX conforming RPM signal. The Verax version reports actual RPM multiplied by 8; in some BIOS or monitoring software a divisor may be adjusted to show the actual RPM.

The Papst versions report the actual RPM count. Due to the low speed of the large fans some mainboards will report an error. In this case, we recommend to connect the cooler to an alternate plug on the mainboard, usually labeled "Chassis Fan", to avoid this error. If this connection type is chosen, the RPM monitoring of the connector labeled "CPU Fan" must be set to "Ignore".

Processor Specifications

Cooler Type	Maximum Heat Load	Intel P4 Operating Frequency
NMT2-P4/85W-N/2GM	85 Watts	>= 2400 MHz
NMT2-P4/80W-N/2GML	80 Watts	>= 2400 MHz
NMT2-P4/75W-N/2GL	75 Watts	<= 2200 MHz
NMTV-P4/70W-Verax	70 Watts	siehe VERAX Datenblatt

Parts List

- heat sink assembly (Aluminium heat sink with decoupled DC fan)
- retention module (black plastic frame)
- syringe with thermal compound
- rubber band for easier installation
- manual

Removal of old cooler

Unfortunately, no general instructions can be given, as the mounting methods of the various available coolers are all different. However, **make sure never to use brute force!**

A lot of current coolers use fashionable "phase-change" thermal compounds, which are solid when cold, and turn viscous or liquid when heated. If such a thermal compound is used in the old cooler, the cooler cannot be removed when it is cold. (Ambient temperature) Such coolers must be gently heated using a hair dryer until they may be removed without force. Usually, a temperature of about 50 °C must be attained - as a rule of thumb, this is a temperature that is just bearable to the touch. If a hair dryer is used, it is practically impossible to overheat the CPU or any part of the mainboard. However, never use a hot-air-gun as such devices may produce heat in excess of several hundred degrees celsius.

Removal of old retention module (mounting frame)

If the old retention module is not absolutely identical to the one supplied with NM-P4 series cooler (Type: **FOXCONN** / Intel), the old retention module must be removed!

Most modules are attached to the mainboard either using screws or plastic rivets through the four holes in the mainboard surrounding the CPU. With plastic rivets, push the spreader pin out from below using a small screwdriver. After removal of the spreader pin the module / plastic rivet can be pulled out of the mainboard.

Installation of the cooler

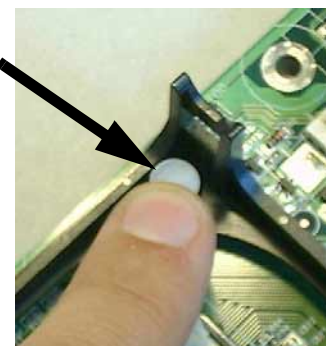
To install the cooler, the mainboard should sit on a flat surface in front of you. **It must not be installed in a computer casing or on a mainboard tray, as during the mounting procedure the mainboard needs to flex slightly.** We recommend to place the mainboard onto the original foam packaging, or onto a soft towel. Never use any form of plastic sheets or foils as they may cause static discharges!

If the processor is not new, it's surface must be thoroughly cleaned. Removal of old thermal compound and other dirt is best accomplished using alcohol. Never use paint thinner!



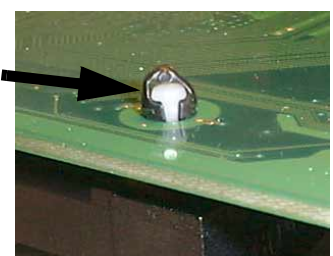
Now install the supplied FOXCONN retention module. Completely remove the white spreader pins. Insert the plastic rivets of the module through the 4 holes of the mainboard surrounding the CPU socket.

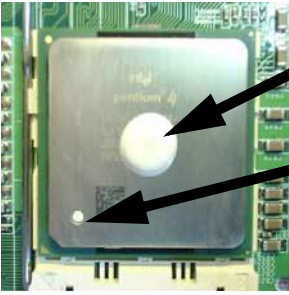
One by one, press the white pins into the rivets from the top. This may require considerable pressure. Therefore, it is recommended that you counter the pressure by supporting the mainboard from the bottom side with the other hand. If any one pin is really hard to insert, check that the actual rivet has been completely inserted into the mainboard.



Excessive friction of the pins may be reduced if you slightly moisten the pins, maybe with a tiny amount of soap. It is imperative

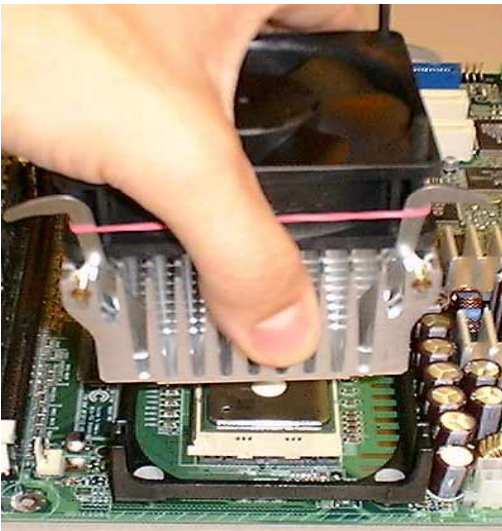
that the white pins are pushed all the way into the black frame until their heads sit flush on the black plastic. Otherwise the cooler will be tilted and cannot make good contact with the actual CPU.





Clean the bottom side of the heatsink, as well. Both the CPU surface and the contact area of the heatsink must be clean and free of dust or lint. Apply a tiny blob of the supplied thermal compound onto the exact centre of the CPU. The amount of compound applied should be the equivalent of 3, maximum 4 drops of water. **Do not, repeat do not, spread the compound over the CPU** as this invariably leads to air being trapped between cooler and CPU, thereby jeopardizing the cooling capabilities of the system. Also fill in the tiny hole in the CPU with thermal compound and wipe away the excess, so that the hole is filled flush with compound.

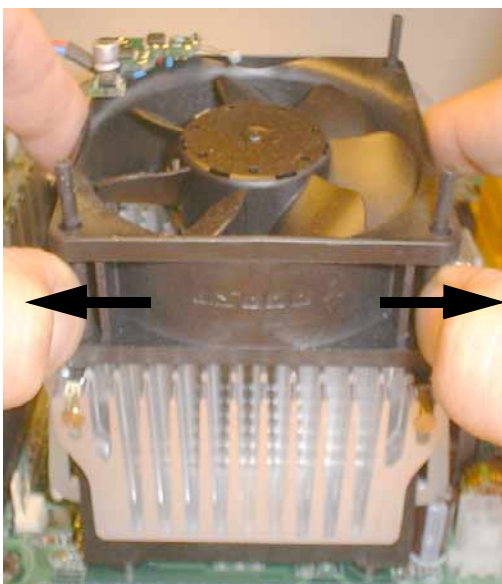
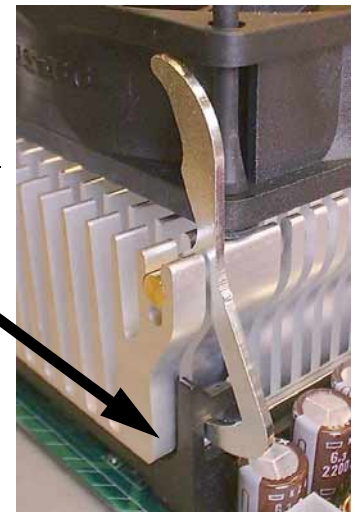
Warming the syringe in your hand for 2-3 minutes may improve the thermal contact. You may also warm the CPU using your thumb.



Now remove the rubber band from the cooler and rotate the 4 hooks upwards into their mounting position. Use the rubber like in the left picture to prevent the hooks from tilting back down.

Insert the cooler carefully into the black retention frame and press down slightly, until the cooler sits snugly inside the frame. Check for correct fit from all four sides!

Remove the rubber band and rotate all 4 hooks downwards. Don't lock any of the hooks yet into the final position! Just insert the tips of the hooks into the slot in the plastic frame as well as into the corresponding slot in the actual heat sink. At this point of the procedure, no force should be applied!



Now the hooks will be locked down in pairs. This works best if you use your thumbs on the levers, and press your index fingers against the aluminium heat sink for support. Make sure that the hooks slide into both the plastic and aluminium slots. A pressure of up to 2 kilograms is required for this step.

During locking, the mainboard will flex about 1-2 millimetres between the retention module's rivets. This is so by design from Intel, and will work correctly only if the mainboard is not yet fixed to a casing or mainboard tray!

After all 4 hooks have been locked down, allow the assembly to rest for 10 to 20 minutes. This gives the thermal compound some time to spread out smoothly and distribute the pressure of the cooler, before that pressure is further increased during installation of the mainboard onto a mainboard tray or the computer casing.



Connect the cooler's cable to the corresponding plug on the mainboard. With the Papst versions, use the connector labeled "Chassis Fan", with the Verax version the one labeled "CPU Fan".

Now you may continue assembly of your system, installing the mainboard into the casing and connecting all required cabling.

On the first startup of the system make sure to check correct operation of the cooler/fan assembly visually! Further check the CPU temperature in the BIOS screen of your system. (During system boot, press repeatedly the "del" key, until the BIOS main menu appears. Temperature information usually is listed under either "Power Management" or "System Health" menu entries.)

You may also check for the temperature of the heatsink with your fingers - it must get warm or even hot to the touch. If it remains cold, but the BIOS shows a high CPU temperature, this indicates a problem with heat transfer from the CPU to the heat sink. In that case, shut down the computer, remove the cooler and check the bottom of it. The CPU should have left a perfect print in the thermal compound. In the print area, the compound should have been squeezed almost transparent thin, uniformly over the whole square area, and it should not contain any visible bubbles. If the imprint shows a multitude of fern-like ridges and/or cracks, that is a good sign as it indicates an airtight, uniform seal.



If the imprint does not look what it should like, check all steps of the installation procedure for errors.

Namely:

- is the retention module flush and snug with the mainboard?
- have all spreader pins been inserted completely?
- does the cooler sit snugly in the frame? (not sitting atop some other part of the mainboard like a condenser)
- have all 4 hooks been locked down correctly?
- has the right amount of compound being used? (Neither too much, nor too little?)



We hope that your NoiseMagic cooler will serve you long and silently. If there ever is a problem with your cooler, please contact us or your local dealer. Thank you for choosing NoiseMagic.

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