E1991

Star Ice Pro • Star Ice • Star Ice Lite!

Installation Guide

First Edition
April 2005

English

Contents

1. Welcome!

Thank you for choosing the ASUS Star Ice! The Star Ice is an efficient CPU cooling system that supports Intel® Pentium® 4 LGA775/478-pin and AMD K8/K7 CPUs. With the latest cooling technology from ASUS, Star Ice lets you enjoy, share, and extend your game time.

2. Package contents

Check the following items in your ASUS Star Ice package. Contact your retailer if any item is damaged or missing.

Item Description	Models		
	Star Ice Pro	Star Ice	Star Ice Lite!
ASUS Star Ice CPU cooler	•	•	•
3.5” fan controller	•	•	
PCI bracket fan controller	•	•	
4-in-1 smart clip set	•	•	•
Screws and stand-offs	•	•	•
Temperature sensor	•	•	
Adhesive tape (for temperature sensor)	•	•	
Thermal grease	•	•	•
Metal underplate (H-bar) and rubber gasket	•	•	•
Installation guide and parts list	•	•	•
Additional fan and screws	•	Optional	Optional

3. Before you proceed

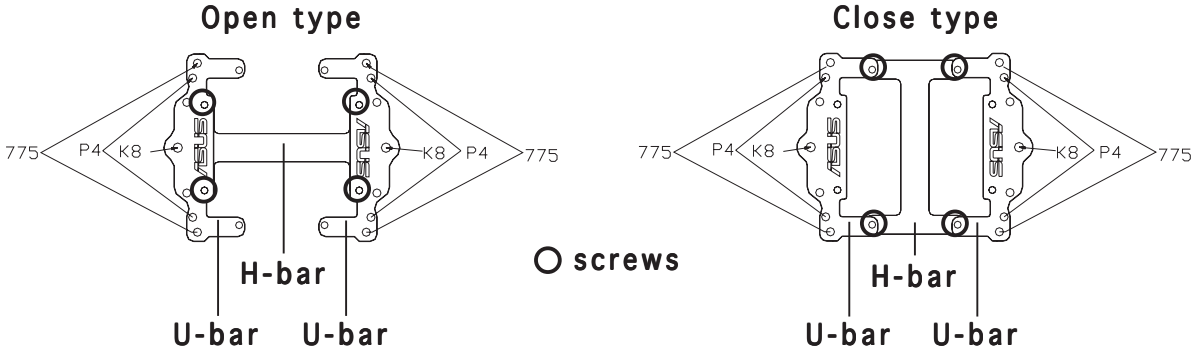
Take note of the following precautions before you install the Star Ice CPU cooler.

- Make sure to unplug the system power plug from the electrical socket before you install or remove the CPU cooler.
- Install the CPU and the memory module(s) before you install the CPU cooler.
- Remove the chassis fan or the air duct on the chassis side panel to clear the air path, if necessary.
- Install the Star Ice cooler on the motherboard before installing the motherboard to the chassis.
- Have all components ready before installing the CPU cooler.
- Keep the parts list on hand when installing the CPU cooler.

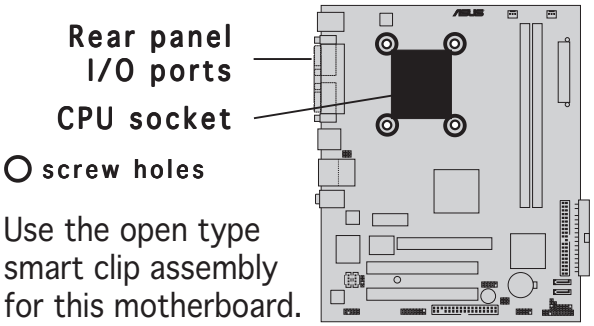
4. Installation procedures

4.1 Smart clip assembly

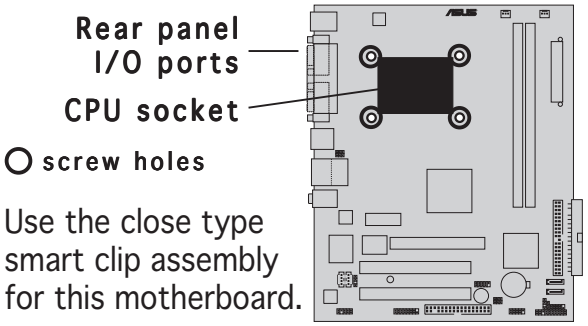
The multi-directional smart clip assembly holds the CPU cooler in place and lets you direct the airflow to the chassis rear panel air vents. The smart clip is composed of two U-bars with screw holes for Intel® Pentium® 4 LGA775/478-pin or K8 CPU, and an H-bar that connects the two U-bars. Refer to the illustration on the next page.



If you will install the CPU cooler on **Intel® Pentium® 4 (478-pin)** or **K8** processor, determine the position of the CPU socket and screw holes, then select the type of smart clip assembly to use. Refer to the P4 (478-pin) motherboard illustrations below.



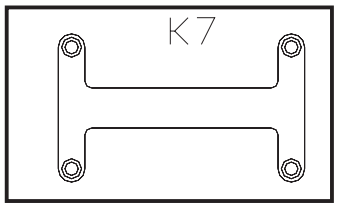
Use the open type smart clip assembly for this motherboard.



Use the close type smart clip assembly for this motherboard.

When installing on **Pentium® 4 (LGA775)** processor, we recommend that you use the **open type** smart clip assembly.

When installing on **K7** processor, use only the H-bar to hold the CPU cooler in place.



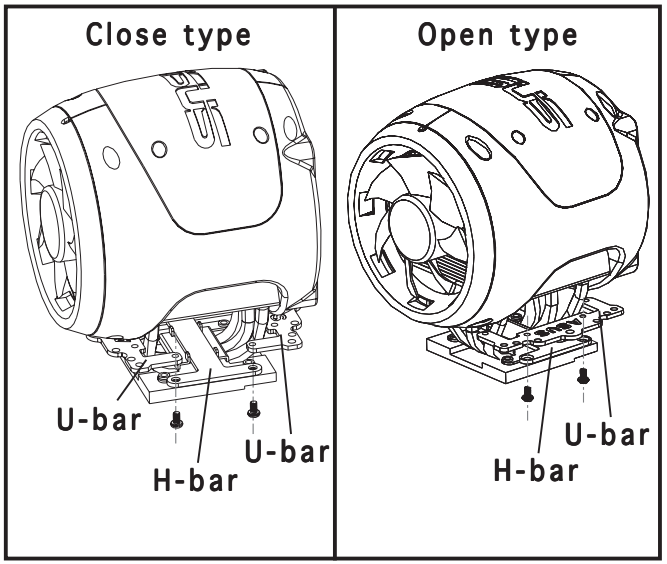
Installing the smart clip assembly

Close type

1. Insert the H-bar to the heatsink rail.
2. Fasten the U-bars on both sides of the H-bar using #1 screws (ASUS logo facing up).

Open type

1. Attach a U-bar to one end of the H-bar with two screws (#1).
2. Insert the other end of the H-bar to the heatsink rails, then attach the other U-bar with two screws (#1).



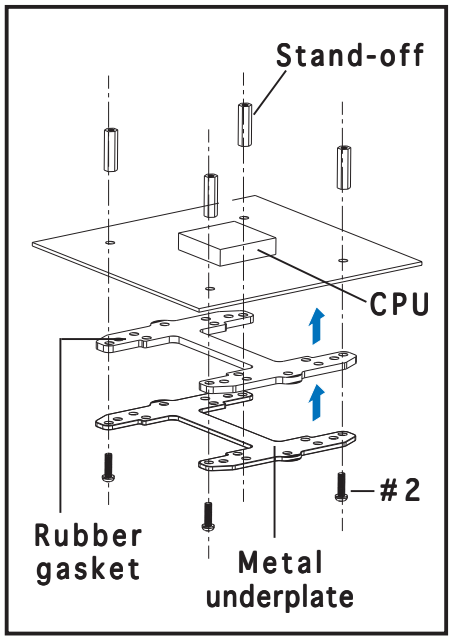
4.2 Installing on Intel® Pentium™ 4 processor in the LGA775 and 478-pin package

4.2.1 Placing the stand-offs

1. Locate the CPU socket screw holes.
2. Position the metal underplate and rubber gasket underneath the motherboard, then insert four screws (#2) to the underplate screw holes matching that of the CPU socket screw holes.

NOTE. Make sure that the insulated side of the metal underplate faces the rubber gasket.

3. When the screws protrude on the top side of the motherboard, drive in four copper stand-offs (#5) to the screws, then tighten in a diagonal sequence(two opposite corners at a time).
4. Apply the thermal grease evenly on top of the installed CPU.

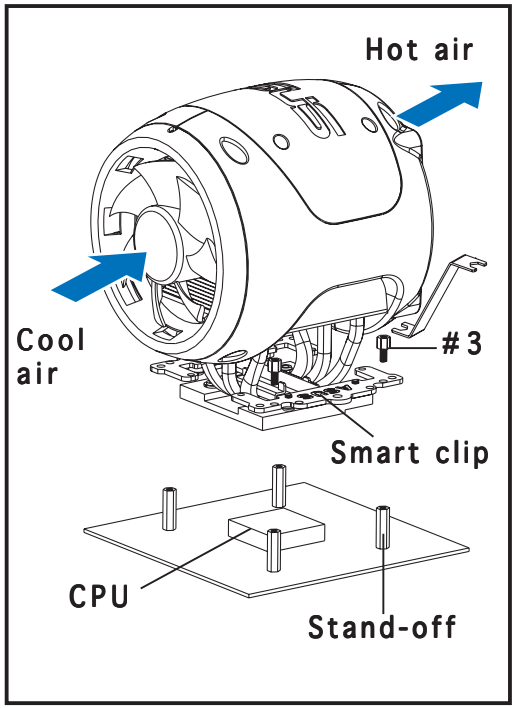


4.2.2 Installing the cooler

1. Determine the CPU socket orientation and the location of the chassis rear panel air vents.
2. Assemble the smart clip following the instructions in section 4.1.

NOTE. If you are installing on a P4 478-pin CPU, make sure that you select the correct smart clip assembly. See section 4.1 for details.

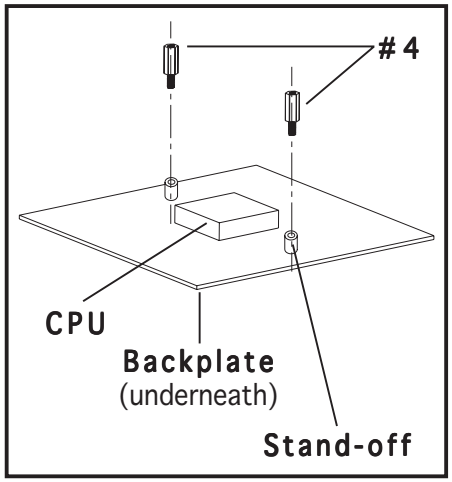
3. Place the cooler on top of the CPU. Make sure that the airflow is directed towards the chassis rear panel air vents.
4. Use a screw driver to drive in four screws (#3) to the stand-offs, then tighten the screws in a diagonal sequence (two opposite corners at a time) until the CPU cooler is firmly in place.



4.3 Installing on AMD K8 processor

4.3.1 Motherboard with backplate and retention module

1. Remove the retention module.
2. Drive in two nickel stand-off screws (#4) to the backplate stand-offs, then tighten.
3. Apply the thermal grease evenly on top of the installed CPU.

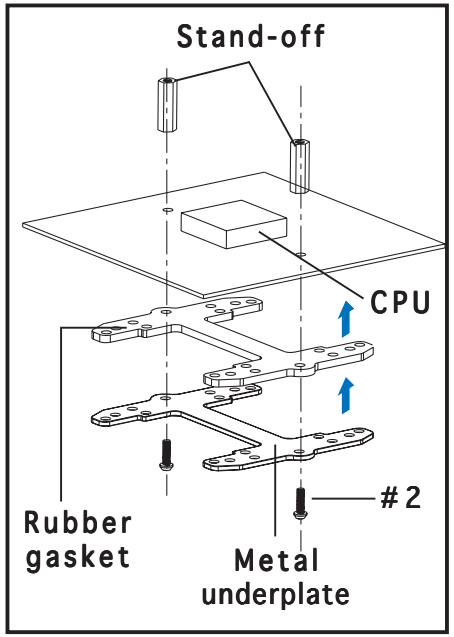


4.3.2 Motherboard without backplate and retention module

1. Locate the CPU socket screw holes.
2. Position the metal underplate and rubber gasket underneath the motherboard, then insert two screws (#2) to the underplate screw holes matching that of the CPU socket screw holes.

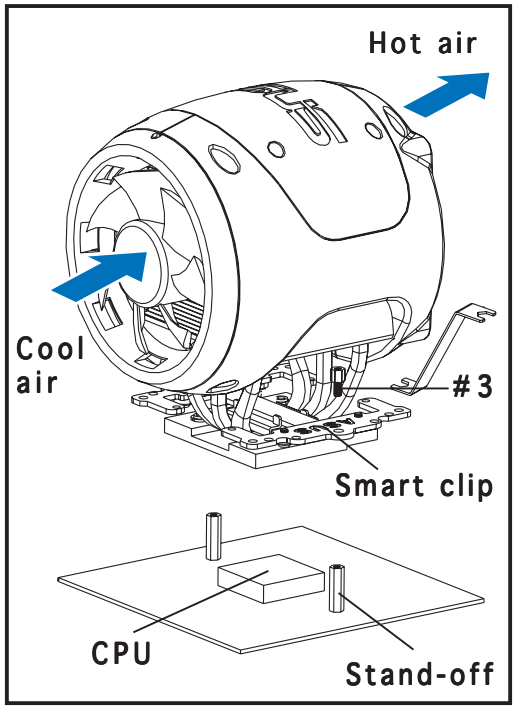
NOTE. Make sure that the insulated side of the metal underplate faces the rubber gasket.

3. When the screws protrude on the top side of the motherboard, drive in two nickel stand-offs (#7) to the screws, then tighten.
4. Apply the thermal grease evenly on top of the installed CPU.



4.3.3 Installing the cooler

1. Determine the CPU socket orientation and the location of the chassis rear panel air vents.
2. Assemble the smart clip following the instructions in section 4.1.
3. Place the cooler on top of the CPU. Make sure that the airflow is directed towards the chassis rear panel air vents.
4. Use a screw driver to drive in two screws (#3) to the stand-offs, then tighten until the CPU cooler is firmly in place.



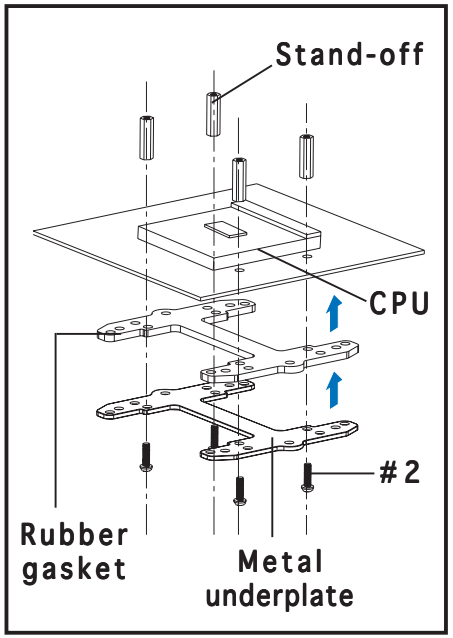
4.4 Installing on AMD K7 processor

4.4.1 Placing the stand-offs

1. Locate the CPU socket screw holes.
2. Position the metal underplate and rubber gasket underneath the motherboard, then insert four screws (#2) to the underplate screw holes matching that of the CPU socket screw holes.

NOTE. Make sure that the insulated side of the metal underplate faces the rubber gasket.

3. When the screws protrude on the top side of the motherboard, drive in four copper stand-offs (#6) to the screws, then tighten in a diagonal sequence (two opposite corners at a time).
4. Apply the thermal grease evenly on top of the installed CPU.

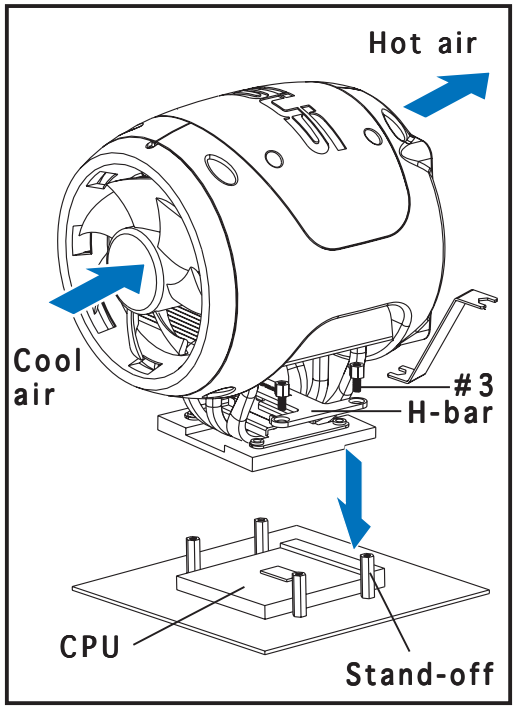


4.4.2 Installing the cooler

1. Determine the CPU socket orientation and the location of the chassis rear panel air vents.
2. Place the H-bar on the heatsink rail.
3. Place the cooler on top of the CPU. Make sure that the airflow is directed towards the chassis rear panel air vents.

NOTE. Make sure that you position the CPU cooler with the heatsink surface matching the elevated side of the CPU socket. Refer to the illustration.

4. Use a screw driver to drive in four screws (#3) to the stand-offs, then tighten in a diagonal sequence (two opposite corners at a time) until the CPU cooler is firmly in place.



5. Smart 3-in-1 fan control feature

The Star Ice Pro/Star Ice package includes an automatic CPU temperature sensor and two manual fan control solutions: 3.5” control bracket and PCI control bracket. You can install only one fan control solution at a time. For Star Ice Lite!, use the ASUS Q-Fan feature to automatically control the CPU cooler. Refer to the ASUS motherboard user guide for details on the ASUS Q-Fan feature.

IMPORTANT. Remove the jumper on the 2-pin CPU cooler cable connector before installing any of the fan controls.

5.1 Automatic control

NOTE. Install the temperature sensor before installing the CPU cooler on the CPU.

The temperature sensor allows automatic control of the CPU cooler.

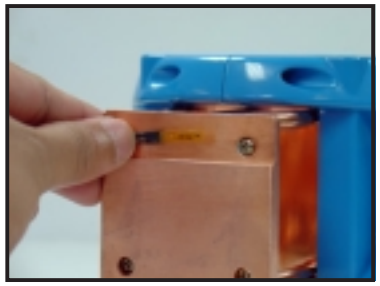
When you install the temperature sensor, the CPU cooler fan rotation automatically adjusts depending on the CPU temperature. The higher the CPU temperature, the faster the fan rotation, and vice-versa. Refer to the fan speed curve on page 18 for details.

5.1.1 Temperature sensor installation

NOTES
- Do not install the sensor between the CPU and the heatsink.
- Do not fold or cut the sensor.

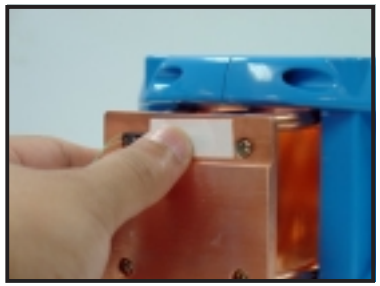
To install the temperature sensor:

1. Lay the CPU cooler on its front to expose the heatsink surface.
2. Cut the adhesive tape just enough to cover the temperature sensor.

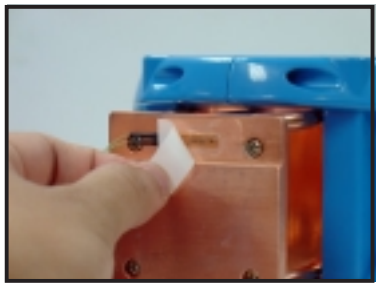


3. Peel one side (no label) of the tape, attach the sensor to the lower side of the heatsink surface, then secure it with the tape.

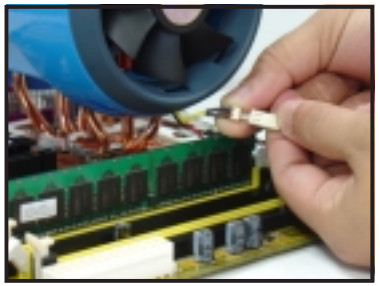
   Make sure that the tape covers the entire sensor.



3. Remove the labeled side of the adhesive tape, then install the CPU cooler on top of the CPU.

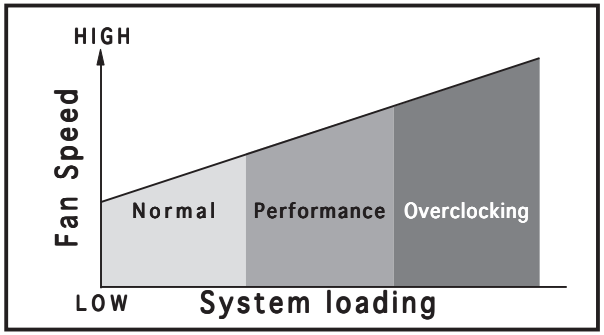


4. Connect the temperature sensor cable to the 2-pin cable connector from the CPU cooler.



5.1.2 Fan speed curve

Refer to the fan speed curve on the right when using the temperature sensor control.



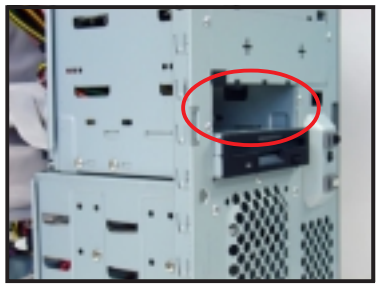
5.2 Manual controls

If you want to manually control the fan rotation, you can install either the 3.5" control bracket or the PCI control bracket solution. Both controls allow you to adjust the fan speed in just a turn of a dial. Refer to the table below for the fan speed information.

Model	Fan speed (rpm)	
	Max. (±10%)	Min. (±10%)
Star Ice Pro	3000	1000
Star Ice	4500	1500
Star Ice Lite!	n/a	n/a

5.2.1 3.5" control bracket installation

If your system has an empty 3.5" floppy disk drive bay, you can install the 3.5" control bracket and control the fan rotation from the system front panel.



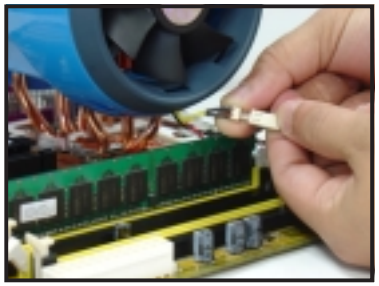
To install the 3.5" control bracket:

1. Remove the system front panel cover and the FDD bay cover following the instructions in the system documentation.

2. Insert first the bracket cable, then the control bracket to the empty bay until it fits in place.

3. Secure the bracket with two screws (two on each side of the bay).

4. Connect the bracket cable to the 2-pin cable connector from the CPU cooler.



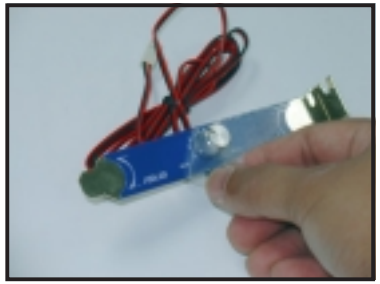
5. Remove the system front panel FDD bay cover, then re-install.

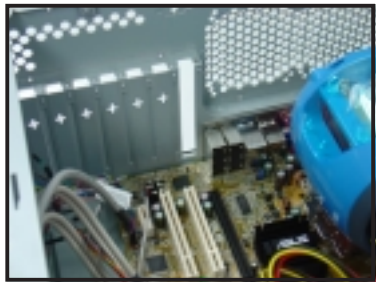
5.2.2 PCI control bracket installation

If your system rear panel has a PCI bracket space, you can install the PCI control bracket.

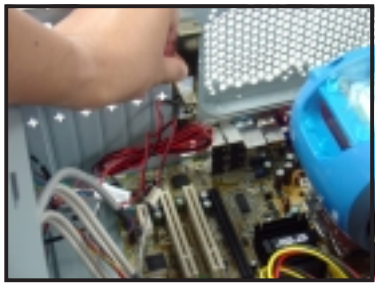
To install the PCI control bracket:

1. Remove the system cover following the instructions in the system documentation, then lay the system on its side on a flat surface.
2. Remove the PCI control bracket protective cover.
3. Remove a dummy PCI metal bracket. Keep the screw for later use.

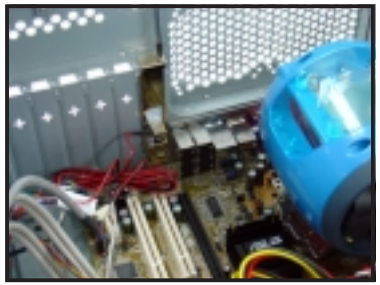




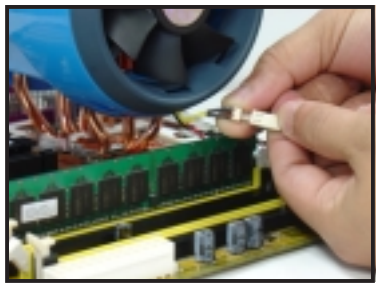
4. Align the PCI control bracket to the PCI space



5. Secure the PCI control bracket with the screw you removed earlier.



6. Connect the bracket cable to the 2-pin CPU cooler cable connector.



7. Replace the system cover. Below photo shows the installed PCI control bracket.

6. Optional installation

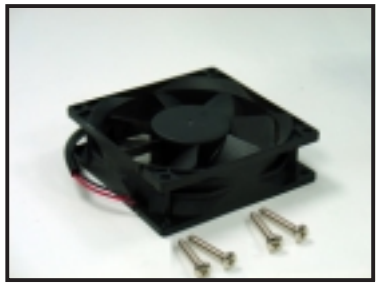
Dual fan upgrade kit

The Star Ice Pro package comes with a dual fan upgrade kit (8 cm fan and screws) to keep the CPU cooler and more efficient. For Star Ice and Star Ice Lite models, you may purchase the dual fan upgrade kit separately.

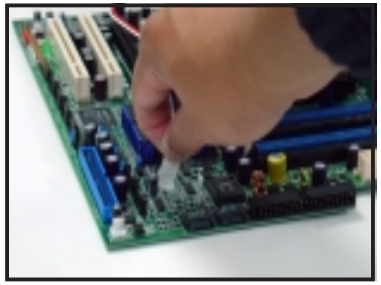
To upgrade the CPU cooler to dual fan:

1. Prepare the dual fan upgrade kit components. You will need a Philips (cross) screw driver to install.
2. Place the fan on the CPU cooler rear panel, then secure the fan with four screws.
3. Open the system cover, then install the CPU cooler on top of the CPU.

IMPORTANT. Make sure that the air flows in a single direction from the CPU cooler fan to the second fan. Refer to the illustration on the next page.



4. Connect the second fan cable to an available fan connector on the motherboard, then replace the system cover.



How dual fan upgrade works