

**ZALMAN**  
COOL INNOVATIONS

Ultra Quiet CPU Cooler

# CNPS10X *Extreme*

Sales Guide

May, 2009

## 1. Summary



- ✓ Powerful Cooling Performance
- ✓ PWM Fan with Auto/Manual Control
- ✓ Ultra Quiet 120mm Blue LED Fan
- ✓ Black-Pearl Nickel Plating
- ✓ High Performance  
Super Thermal Grease ZM-STG2
- ✓ Versatile Compatibility

## 2. Features



### ✓ **Powerful Cooling Performance**

Optimally designed aluminum fins disperse heat away from the CPU via 5 heatpipes, while the high capacity 120mm fan quickly cools the heatsink for stable operation of high performance CPUs.

※ **Fast & effective cooling for up to a maximum of 340W of heat.**



### ✓ **PWM Fan with Auto/Manual Control**

Includes PWM Mate, the world's first RPM controllable PWM fan speed controller, with the options of 3-Speed Auto or Manual Control Modes.

※ PWM Mate can be installed on the case's exterior by connecting with the included Extension Cable.

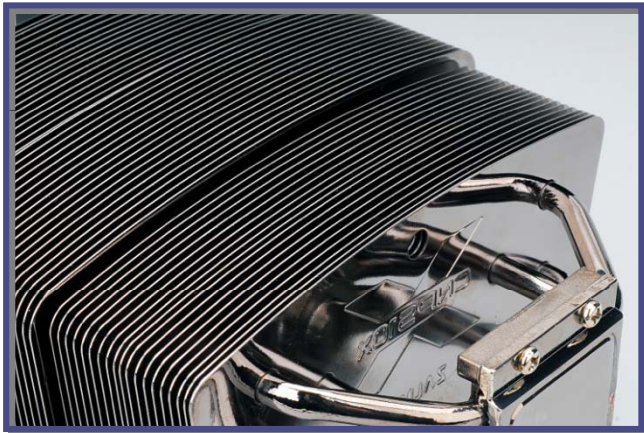
## 2. Features



### ✓ Ultra Quiet 120mm Blue LED Fan

Switching noise eliminated 120mm fan incorporated for ultra quiet operation and Blue LEDs for cool aesthetics.

※ 'Switching noise' is the high frequency harmonic noise that can result from voltage regulation.



### ✓ Black-Pearl Nickel Plating

The entire heatsink of CNPS10X is "Black-Pearl" Nickel Plated for long-term corrosion resistance, while the deep "Black-Pearl" tone along with the high intensity Blue LEDs reinforce its powerful aesthetics.

## 2. Features



### ✓ High Performance Super Thermal Grease ZM-STG2

The included all new high performance thermal grease ZM-STG2 maximizes heat transfer from the CPU to the base of CNPS10X Extreme for intensified cooling performance.



### ✓ Versatile Compatibility

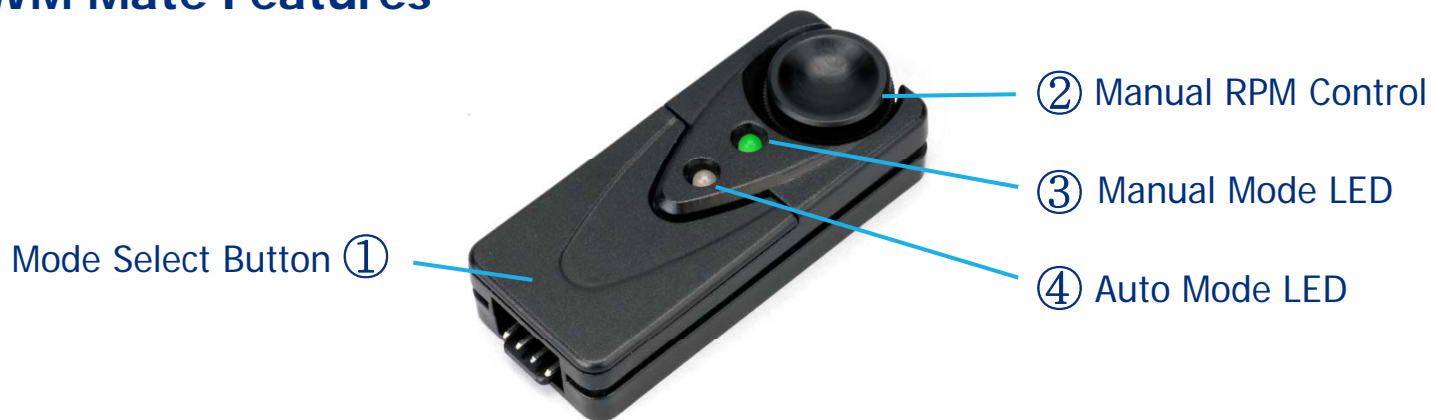
CNPS10X Extreme accommodates a broad range of sockets.

Intel LGA1156 / 1366 / 775

AMD AM3 / AM2+ / AM2 / 754 / 939 / 940



## 2. 1. PWM Mate Features

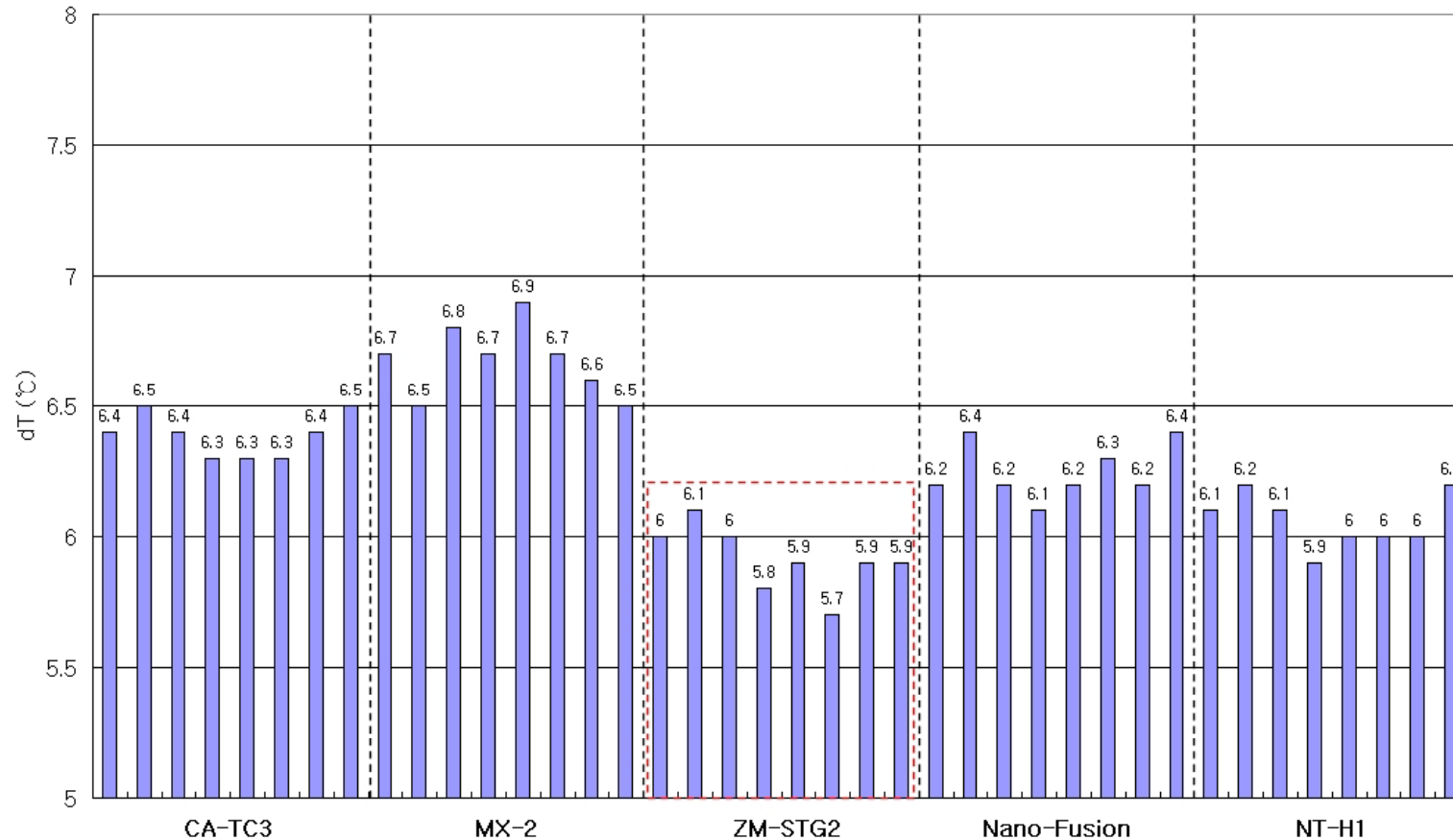


Mode	Mode Select Button (①)	LED Color	Fan Speed	Manual RPM Control (②)
Auto - Low	Default Setting / (4th Press)	Blue	1000 - 1500RPM	OFF
Auto - Mid	3rd Press	Purple	1000 - 1950RPM	
Auto - High	2nd Press	Red	1000 - 2150RPM	
Manual	1st Press	Green	1000 - 2150RPM (User Defined)	ON

- ✓ **Patent Pending World's first PWM fan controller**
- ✓ Enables user to select among 4 Control Modes
- ✓ Default mode is Auto – Low, and when power is turned OFF the latest set mode is saved
- ✓ Extension Cable included for installing on the system's exterior or other preferred location

## 2. 2. High Performance Super Thermal Grease ZM-STG2

### ✓ Thermal Compound Performance Comparison



※ Eight performance tests on 5 thermal compounds showing ZM-STG2 with the most consistent high performance.

### 3. Product Specifications

Specifications	CNPS10X Extreme
Dimensions	135(L) X 100(W) X 160(H)mm
Weight	920g
Materials	Fins: Aluminum / Base, Heatpipe: Copper
Dissipation Area	8544cm <sup>2</sup>
Heatpipes	5 x U-shaped heatpipes
Fan	PWM 120mm Blue LED Fan
Fan RPM	1000 - 2150 ±10%
Noise	20 - 39dBA
Fan Bearing	2 Ball-Bearing
Nominal Fan Voltage	12V
Supported CPU Sockets	Intel Socket LGA1156 / 1366 / 775 AMD Socket AM3 / AM2+ / AM2 / 939 / 940
Thermal Compound	ZM-STG2
<b>PWM Fan Control (PWM Mate)</b>	<b>PWM Fan Auto/Manual Controller</b> - PWM Duty Cycle 25~100% ±5% - Connector Type 4-Pin
List Price	





## 4. Components

### Common Components



CNPS10X Extreme & PWM Mate



Thermal Grease (ZM-STG2)



Double-Sided Tape



Extension Cable

### Intel socket 1156/775 Components



1156/775 Clip



1156/775 Clip Support



1156/775  
Fixing Guide & Fixing Pin

### Intel socket 1366 Components



1366 Clip



1366 Clip Support



1366  
Fixing Pin & Washer

### AMD socket AM3/AM2+/AM2 754/939/940 Components



AMD Clip

## 5. Product Specifications Comparison

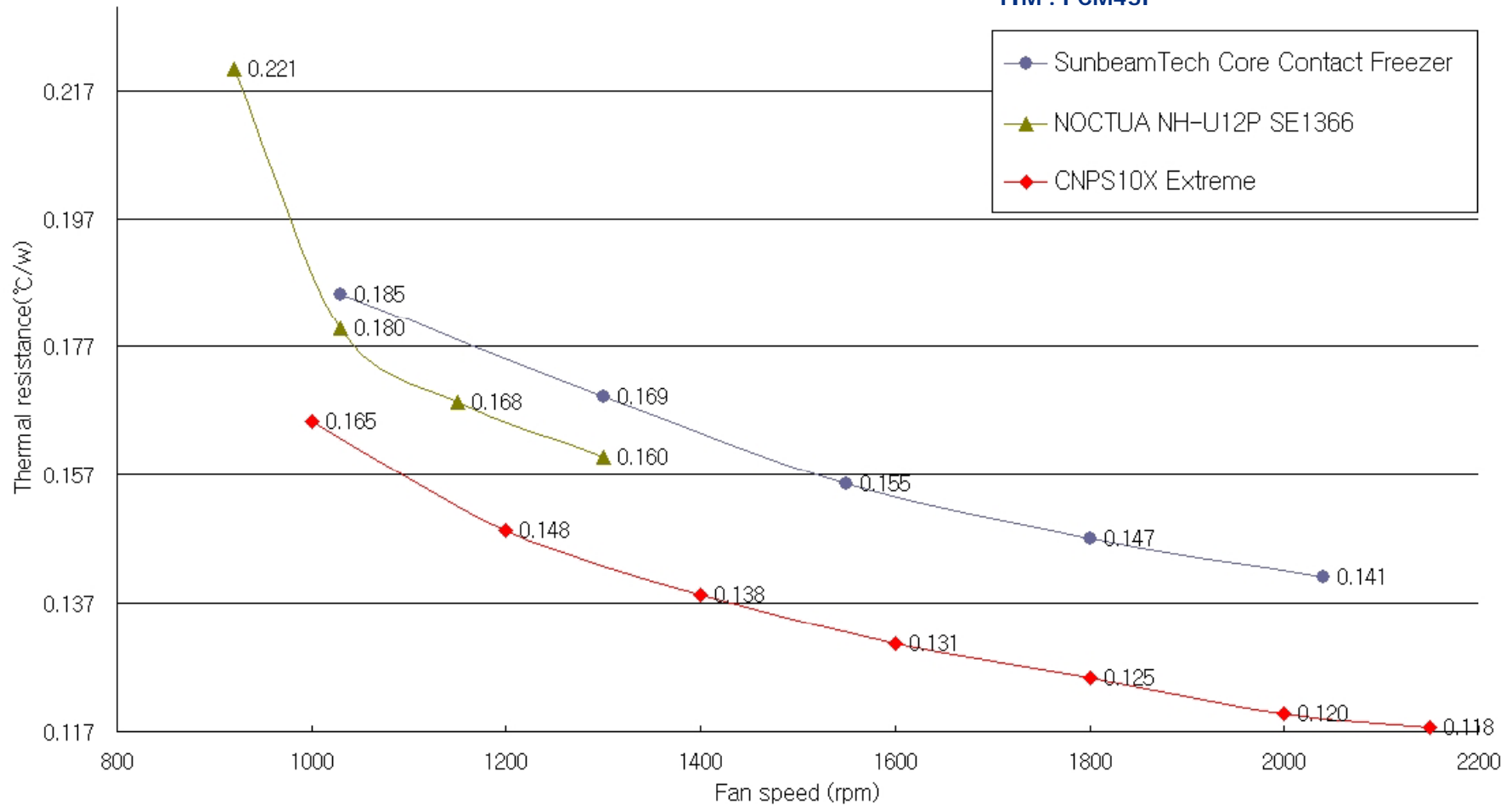
Specifications	Zalman CNPS10X Premium	NOCTUA NH-U12P SE1366	Sunbeam Tech Core Contact Freezer
Dimensions	135(L) X 100(W) X 160(H)mm	126(L) X 95(W) X 158(H)mm	125(L) X 104(W) X 155(H)mm
Weight	920g	940g	740g
Materials	Fins: Aluminum / Base, Heatpipe : Copper	Fins: Aluminum / Base : Copper	Fins: Aluminum
Dissipation Area	8,544cm <sup>2</sup>	5,000cm <sup>2</sup>	-
Heatpipes	5 x U-shaped heatpipes	5 x U-shaped Heatpipes	4 x U-shaped Heatpipes
Fan	PWM 120mm Blue LED Fan	120mm Fan	120mm Fan
Fan RPM	1000 – 2150 ±10%	900 - 1300 ±10%	1000 - 2000 ±10%
Fan Bearing	2 Ball-Bearing	SSO	MFDB
Nominal Fan Voltage	12V	12V	12V
CPU Sockets Supported	Intel LGA1156 / 1366 / 775 AMD AM3 / AM2+ / AM2 / 939 / 940	Intel LGA1366	Intel LGA775 AMD AM2+ / AM2 / 939 / 940
Thermal Compound	ZM-STG2	NT-H1	TX-2
PWM Fan Controller	PWM Fan Auto/Manual Controller - PWM Duty Cycle 25 - 100% ±5% - Connector Type: 4-Pin	-	-
List Price			

## 6. Product Performance Comparison

**[Test Condition]**

Heat Block : Dummy Heater (130W Load)

TIM : PCM45F



## 7. Q&A

✓ **During CPU over-clocking, what is the maximum CPU wattage that CNPS10X Extreme can manage?**

CNPS10X Extreme, with its powerful cooling performance, can effectively cool 340 watts of heat for stable operation of over-clocked high performance CPU's.

✓ **What is PWM Mate?**

PWM Mate is the world's first RPM controllable PWM(Pulse Width Modulation) fan speed controller. PWM Mate provides options of Manual or Auto Control Modes. The Auto Control Mode offers 3 fan speed(RPM) settings( Low, Mid, High).

※ Patent Pending

Title: Fan Speed Control Device, Application No.: 09-2251

✓ **What are the Minimum/Maximum values for Fan RPM and Noise Level?**

**[PWM Mate Auto Mode]**

- Auto - Low Mode: 1000-1500RPM / 20-28dBA
- Auto - Mid Mode: 1000-1950RPM / 20-35dBA
- Auto - High Mode: 1000-2150RPM / 20-39dBA

**[PWM Mate Manual Mode]**

- 1000-2150RPM / 20-39dBA

## 7. Q&A

### ✓ What is the lifespan of the Fan Bearings?

CNPS10X Extreme incorporates 2 ball-bearings and has a lifespan of over 50,000 hours. Electrical noise has been removed with the removal of 'switching noise'.

※ 'Switching noise', the high frequency harmonic noise that can result from voltage regulation, is often the cause of auditory discomfort and even headaches.

### ✓ What CPUs are supported?

Intel socket LGA1156 / 1366 / 775 based all single, dual, and quad core CPUs

AMD socket AM3 / AM2+ / AM2 / 754 / 939 / 940 based all single, dual, and quad core CPUs.

### ✓ What size cases can be used?

'Mid Tower' or larger cases that when laid on its side measure at least 170mm in height\*.

(\* This height of course is the width of the case when placed properly in a standing position)

※ Dimensions of **CNPS10X Extreme**: 135(L) x 100(W) x **160(H)**mm

※ To use cases with an 'air guide', the air guide must be removed.



## 7. Q&A

✓ **What is the difference between the included ZM-STG2 and the ZM-STG1 thermal greases?**

The newly developed ZM-STG2 is provided in a syringe type applicator without dilution for maximum heat transfer performance and can be used approximately 3 times. ZM-STG1 is available in a brush applicator with a compound to diluting agent ratio of 7:3 for application convenience.

✓ **How much thermal grease should be applied for installation of CNPS10X Extreme?**

The amount of thermal grease to be applied depends on the degree of flatness of the top of the CPU assembly (more specifically the flatness of the top of the IHS which is the metallic cover placed over the CPU's PCB). Generally, if the top of the CPU is uneven or not flat, more thermal grease should be applied than on a CPU that has an IHS with an even & flat top surface. For most situations, application of approximately 1/3 of the initially provided amount of thermal grease will be sufficient for the CNPS10X Extreme.

✓ **After long term use, will the heatsink show signs of corrosion?**

The CNPS10X Extreme's entire heatsink is 'Black Pearl' nickel plated. Therefore, its powerful aesthetic quality will be maintained without corrosion even after long term use.

## 7. Q&A

✓ **Please address cautionary notices regarding CNPS10X Extreme installation.**

Removing the motherboard from the case before installation of CNPS10X Extreme is recommended. Particularly, if an air guide is attached to the case, the air guide must be removed before installing CNPS10X Extreme. To prevent possible minor injuries during installation, please wear gloves if possible while handling the heatsink. Do not ingest the thermal grease. If there is any problem with the product, please notify the retailer.

✓ **Can the CNPS10X Extreme be installed on AMD Socket 754/939 motherboards?**

Yes, but most/if not all AMD Socket 754/939 motherboards do not support PWM 4-pin connectors, making it necessary to utilize the available 3 pins. The white wire and the 2 black wires adjacent to the white wire must be connected to the 3 pins. If all 3 black wires are connected, the fan will not function.

✓ **If the PWM control function is not working, what needs to be done?**

The PWM control function can be activated or deactivated in the motherboard's BIOS settings. After installing the cooler, please activate the PWM control function in the BIOS settings, and refer to the motherboard's manual or contact its manufacturer for more detailed information.

## 7. Q&A

✓ **What is an effective method for wiping off thermal compound from the top(IHS) of the CPU?**

A dry cloth with a bit of alcohol or acetone is effective. Please be cautious to prevent alcohol or acetone from contacting the motherboard.

✓ **The cooler is heavier than the stock cooler. Could there be problems if the computer is transported?**

The CNPS10X Extreme is approximately 920g and is heavier than stock coolers. Please remove the cooler from the motherboard if the computer is to be transported, to prevent damages due to external impact, and reinstall after transportation.

✓ **The CPU cooler's base is smaller than the CPU. Will this affect performance?**

The CPU's core is smaller than the CPU cooler's base, and the IHS(Integrated Heat Spreader\*) which covers the surface of the CPU is in place to protect the core. The CPU cooler's base is larger than the CPU's core, so it has no negative effect on performance.

\* IHS(Integrated Heat Spreader)

The metal cover on top of the CPU, protects the core physically, spreads/dissipates heat, blocks electromagnetic waves, and is made of copper with nickel plating.

## 7. Q&A

✓ **How long is the PWM Mate's Extension Cable, and how should the PWM Mate be placed externally?**

The Extension Cable is 80cm(31.5 inches). The Extension Cable can be taken out of the case through the back side and connected to the PWM Mate which can be attached to the desired location on the case using the Double-Sided Tape.

✓ **If the PWM Mate malfunctions, will the fan still function?**

This will depend on the situation, but in general, even if the PWM Mate's output is malfunctioning, the fan will still function according to the motherboard's control.

✓ **Is it easy to detach the PWM Mate from the cooler?**

The PWM Mate can be easily detached or reattached through its sliding mechanism.

✓ **What is the maximum air flow capacity of the 120mm fan?**

87CFM(cubic feet per minute) at 2,150RPM.

✓ **If the cooler were to be installed with the airflow directed towards the PSU, would this cause any problems?**

It would not cause any serious problems, but it is recommended that the cooler be installed with the airflow directed towards the case's rear side to facilitate optimal airflow within the case.

## 7. Q&A

### ✓ How can the fan be replaced if it breaks down?

Unscrew the 4 screws on the fan's housing. Pull the lower end of the fan's housing slightly forward, beyond the slightly protruding guide, then gently pull the fan housing down. To install a functioning fan, follow the steps in reverse order. It may be necessary to use a screw driver or pen to guide the fan's power connector onto the 4-pin header on the cooler.

### ✓ What is the thermal resistance?

The CNPS10X Extreme's thermal resistance is 0.118°C/W.

\* Note: this thermal resistance value was obtained through tests performed on a 'dummy heater' and may be different on different testing equipment and in different environments).

### ✓ Wouldn't the motherboard warp due to the weight of the cooler? If the motherboard warps, would that cause any problems?

If the cooler is properly installed as indicated in the User's Manual, any warping of the motherboard caused by the tension of the cooler's clip will be within a safe range for stable operation.

### ✓ Where can I find motherboard compatibility information?

Motherboard compatibility information can be found in Zalman's website. In general, motherboards with the following CPU sockets are compatible.

Intel Socket 1156 / 1366 / 775

AMD Socket AM3 / AM2+ / AM2 / 754 / 939 / 940



## 7. Q&A

- ✓ **When the cooler is installed, should the fan be facing the case's front side or the back side?**

The cooler should be installed so the airflow is directed towards the case's back side.

- ✓ **Can the color of the fan's LED be changed to Red or Green?**

The LED Color cannot be changed.

- ✓ **If the cooler is to be reinstalled, is it a good to first remove the old thermal compound and apply fresh thermal compound?**

The heat transfer performance of thermal compounds may degrade over time. Please wipe off the previously used thermal compound and apply a fresh layer of thermal compound.

***Thank You***