

Bigwater®
←780 e P/N: CL-W0169
3U Bay Drives Liquid Cooling System



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COOL ALL YOUR LIFE

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You, the buyer, agree to this warranty and its term set within its expressed and implied limited warranty. This limited warranty gives you specific legal rights, and you may also have other right that varies from jurisdiction to jurisdiction.

CAUTION

Before installing Thermaltake Bigwater 780e Liquid Cooling System, we strongly suggest you to read the manual thoroughly and make sure all components are included in the package. Please do follow the installation guide step-by-step.

Improper installation may cause serious damage to the system as well as to the water cooling unit. Thermaltake will not responsible for any damages due to incorrect installation and incorrect usage of this product.

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Chapter 1. Product Introduction

1.1 Specification



P/N	CL-W0169	
3U Bay Drives	Dimension	249.5mm(L) X 149mm(W) X 128mm(H)
	Weight	1.74(kg)
Application	CPU	AMD AM2 / AM2+
		AMD K8
		Intel LGA775
		Intel P4
Pump	Dimension	75(L) x 70(W) x 75(H) mm
	Bearing	Ceramic bearing
	Maximum Capacity	500 L/ hr
	Rated Voltage	DC 12V
	Input current	600 mA(MAX)
	Connector	4 pin
	Noise	10 ~16 dBA
	Life time	80000 hr (MTBF)
	Connector	4-Pin PWM function
	Radiator	Dimension
Material		Aluminum
Tube Design		Aluminum_Dimple
Fin Design		Aluminum_Louvered
Tubing & Hoes Clip		For 9.5mm ID (3/8") tubing
Fan	Fan Dimension	120(L) x 120(w) x 25(H) mm
	Fan Speed	800~2500 RPM(PWM)
	Rated Voltage	12V
	Noise	10 ~20 dB
	Life Expectancy	30,000 hr
	Connector	4-Pin PWM function
Liquid Tank	Dimension	130.2 (L) x 107.2(W) x 51.5(H) mm
	Capacity	530 c.c

Water Block	Material	All copper designed
	Dimension	58mm(L) X 58mm(W) X 35mm(H)
	Tubing & Hoes Clip	For 9.5mm ID (3/8") tubing
	Weight	318(g)

Tube	Dimensions	9.5mm ID(3/8") tube
	Material	Green UV
Coolant	Capacity	1000 c.c
	Major Material Ingredient	Propylene Glycol

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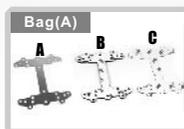
1.2 Components check



main unit



All copper water block

UV sensitive 1000 cc
Coolant x 1
Refill BottleWater tube
Transparent UV tube (3/8")

Bag(A)

Clips for :

- Intel LGA 775 & P4 478
- AMD AM2+ / AM2 & K8

- A - Metal H-type clip
- B - Cushion
- C - Insulator



Bag(B)

- D - 50mm screws x4
- E - Thumb nuts x4
- F - White washers x4
- G - Thermal compound
- H - 38mm screws x4
- I - Stand offs x4
- J - Red washers x4



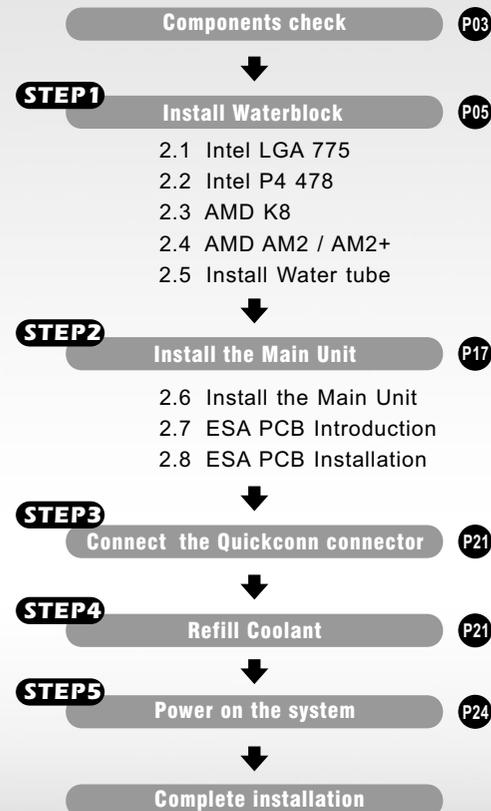
Bag(C)

- K - Quickconn Connector X2
- L - Hose clips(for tube) x4
- M - 5mm screws x 10

Chapter2 Liquid Cooling Installation

2.1 Liquid Cooling Installation steps

We strongly suggest the following installation procedures. Failure to comply may result in leaks and damaged components.



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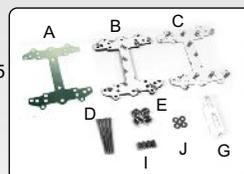
STEP 1 >> Install waterblock

2.1 Intel LGA 775 - Secure Waterblock onto CPU

2.1.1 Install the Clip on Motherboard

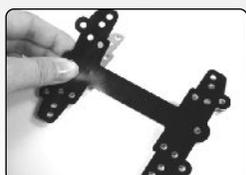


Intel LGA 775
Motherboard



Components for
LGA 775:

- A-Metal H-type clip
- B-Cushion
- C-Insulator
- D-50mm screws
- E-Thumb nuts
- G-Thermal compound
- I-Stand offs
- J-Red washers



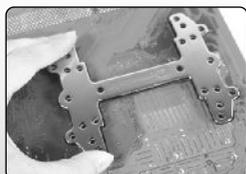
Tear off the tape on the
back of the insulator (C)
and place it on the metal
H-type clip(A).



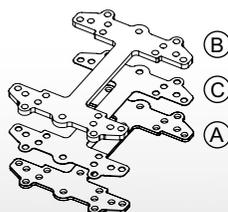
Note: Placing the cushion onto the
motherboard with the adhesive will
prevent you from removing the cushion
in the future. If you are planning to remove
the cushion for future use, please don't
remove the protective tape.



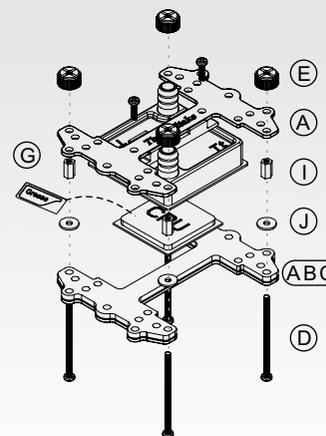
Combine the insulator(C) and
the cushion (B) using the
adhesive. Stick the metal H-type
clip(A) with the insulators (BC).
Tear off the protective layer to
adhere it onto the motherboard.



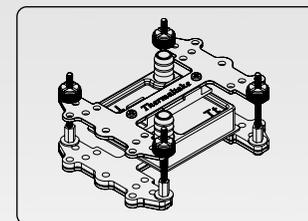
Attach H-type clips(including
ABC)on the back side of
motherboard.



Exploded View



Completed View



- 1.Insert the screws (D) through the clip(ABC)
into the four holes on the Motherboard.
- 2.Put the washers (J) along the screws to prevent
the electric current.
- 3.Put the stand offs (I) along the screws to fix the
screws on the motherboard.
- 4.Apply a thin layer of thermal compound(G)
onto the processor.
- 5.Place waterblock on the processor through the
screws and fix it by thumb nuts(E).

Note:

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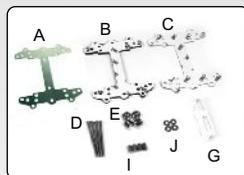


2.2 Intel P4 Socket 478 - Secure Waterblock onto CPU

2.2.1 Install the Clip on Motherboard

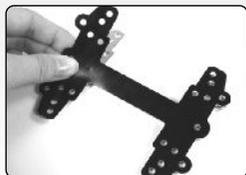


Intel P4 478
Motherboard



Components for
P4 478 :

- A-Metal H-type clip
- B-Cushion
- C-Insulator
- D-50mm screws
- E-Thumb nuts
- G-Thermal compound
- I -Stand offs
- J -Red washers



Tear off the tape on the back of the insulator (C) and place it on the metal H-type clip(A).



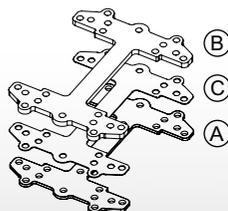
Note: Placing the cushion onto the motherboard with the adhesive will prevent you from removing the cushion in the future. If you are planning to remove the cushion for future use, please don't remove the protective tape.



Combine the insulator(C) and the cushion (B) using the adhesive. Stick the metal H-type clip(A) with the insulators (BC). Tear off the protective layer to adhere it onto the motherboard.



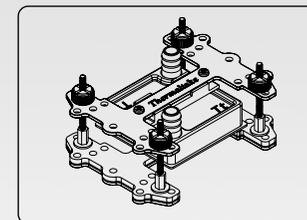
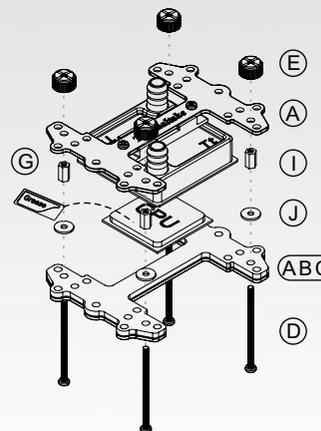
Attach H-type clips(including ABC)on the back side of motherboard.



2.2.2 Install Waterblock on Motherboard

Exploded View

Completed View



- 1.Insert the screws (D) through the clip(ABC) into the four holes on the Motherboard.
- 2.Put the washers (J) along the screws to prevent the electric current.
- 3.Put the stand offs (I) along the screws to fix the screws on the motherboard.
- 4.Apply a thin layer of thermal compound(G) onto the processor.
- 5.Place waterblock on the processor through the screws and fix it by thumb nuts(E).

Note:

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2.3 AMD K8 Socket 754 / 939 / 940 - Secure Waterblock onto CPU

2.3.1 Standard installation - Install waterblock by motherboard back plate

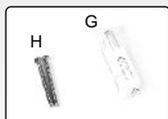
2.3.1.1 Check The Back Plate



AMD K8
Motherboard



Remove the retention
frame from motherboard.



Components for
AMD K8:
G-Thermal compound
H-38mm screws

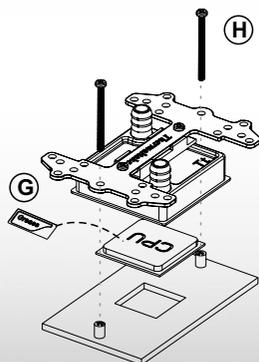


Check Your Back Plate!

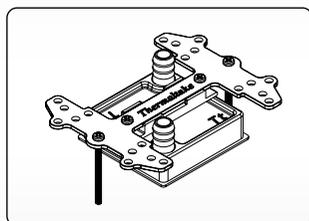
- A. If the back plate does have threaded standoffs, please continue with standard installation 2.3.1.
B. If the back plate does NOT have threaded standoffs, please continue with 2.3.2.

2.3.1.2 Install Waterblock on Motherboard

Exploded View



Completed View

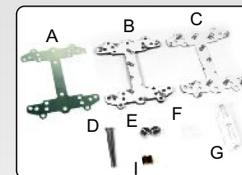
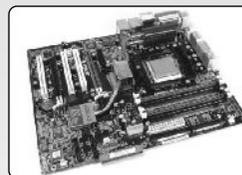


1. Apply a thin layer of thermal compound(G) onto the processor.
2. Place waterblock on the processor.
3. Secure the waterblock on the motherboard by using screws(H).

2.3.2 Install waterblock by clips included in package

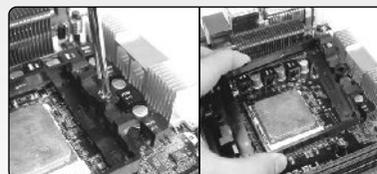
2.3.2.1 Install the Clip on Motherboard

AMD K8 Motherboard

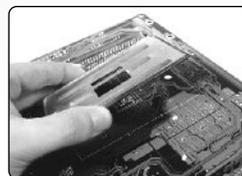


Components for
AMD K8:

- A-Metal H-type clip
- B-Cushion
- C-Insulator
- D-50mm screws
- E-Thumb nuts
- F-White washers
- G-Thermal compound
- I-Stand offs

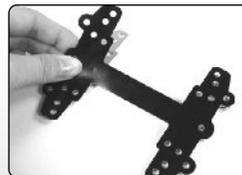


Remove the retention
module from the motherboard.



Remove the back plate on
back side of motherboard.

Tear off the tape on the back of
the insulator (C) and place it on
the metal H-type clip(A).



Note: Placing the cushion onto
the motherboard with the
adhesive will prevent you from
removing the cushion in the
future. If you are planning to
remove the cushion for future
use, please don't remove the
protective tape.

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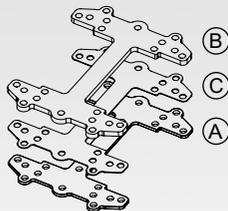




Combine the insulator(C) and the cushion (B) using the adhesive. Stick the metal H-type clip(A) with the insulators (BC). Tear off the protective layer to adhere it onto the motherboard.

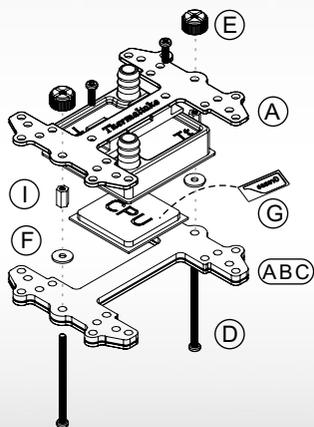


Attach H-type clips(including ABC)on the back side of motherboard.

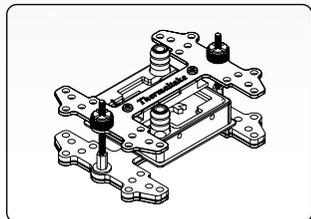


2.3.2.2 Install Waterblock on Motherboard

Exploded View



Completed View



- 1.Insert the screws (D) through the clip(ABC) into the two holes on the Motherboard.
- 2.Put the washers (F) along the screws to prevent the electric current.
- 3.Put the stand offs (I) along the screws to fix the screws on the motherboard.
- 4.Apply a thin layer of thermal compound(G) onto the processor.
- 5.Place waterblock on the processor through the screws and fix it by thumb nuts(E).

2.4 Secure Waterblock onto CPU (AMD Socket AM2 / AM2+)

2.4.1 Standard installation - Install waterblock by motherboard back plate

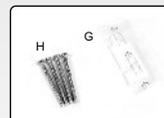
2.4.1.1 Check The Back Plate



AMD AM2 Motherboard



Remove the retention frame from motherboard.



Components for AMD AM2/AM2+:
G-Thermal compound
H-38mm screws

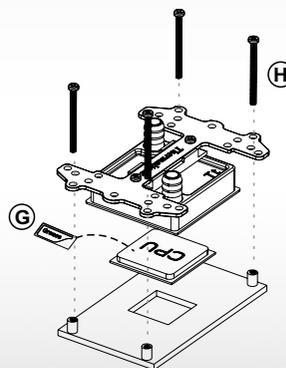


Check Your Back Plate!

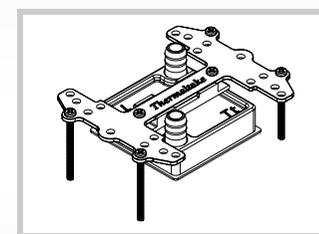
- A. If the back plate does have threaded standoffs, please continue with standard installation 2.4.1.
- B. If the back plate does NOT have threaded standoffs, please continue with 2.4.2.

2.4.1.2 Install Waterblock on Motherboard

Exploded View



Completed View



- 1.Apply a thin layer of thermal compound(G)onto the processor.
- 2.Place waterblock on the processor.
- 3.Secure the waterblock on the motherboard by using screws(H).

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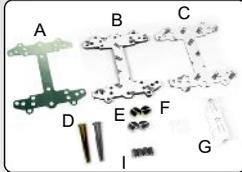
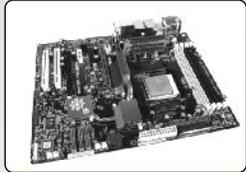
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2.4.2 Install waterblock by clips included in package

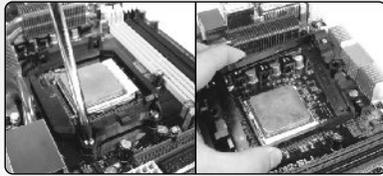
2.4.2.1 Install the Clip on Motherboard

AMD AM2 Motherboard



Components for AMD AM2/AM2+ :

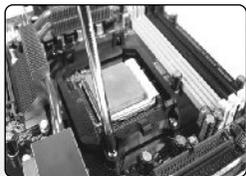
- A-Metal H-type clip
- B-Cushion
- C-Insulator
- D-50mm screws
- E-Thumb nuts
- F-White washers
- G-Thermal compound
- I-Stand offs



Remove the retention module from the motherboard.



Remove the back plate on back side of motherboard.



Tear off the tape on the back of the insulator (C) and place it on the metal H-type clip(A).



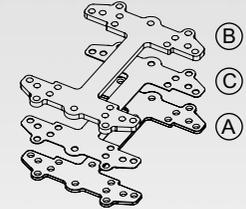
Note: Placing the cushion onto the motherboard with the adhesive will prevent you from removing the cushion in the future. If you are planning to remove the cushion for future use, please don't remove the protective tape.



Combine the insulator(C) and the cushion (B) using the adhesive. Stick the metal H-type clip(A) with the insulators (BC). Tear off the protective layer to adhere it onto the motherboard.

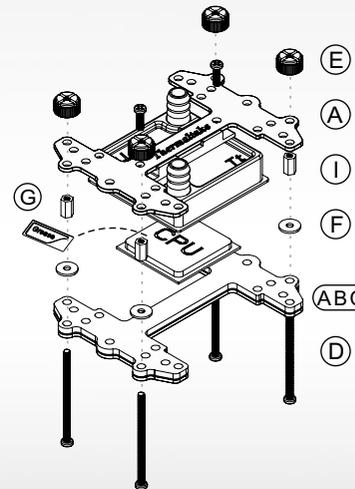


Attach H-type clips(including ABC)on the back side of motherboard.

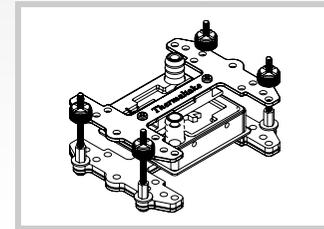


2.4.2.2 Install Waterblock on Motherboard

Exploded View



Completed View



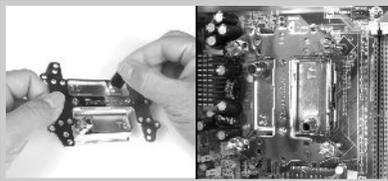
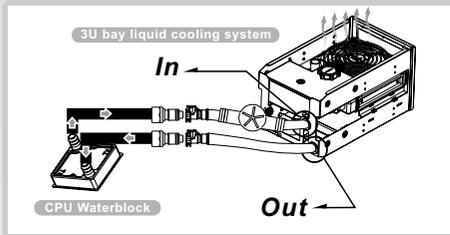
- 1.Insert the screws (D) through the clip(ABC) into the four holes on the motherboard.
- 2.Put the washers (F) along the screws to prevent the electric current.
- 3.Put the stand offs (I) along the screws to fix the screws on the motherboard.
- 4.Apply a thin layer of thermal compound(G) onto the processor.
- 5.Place waterblock on the processor through the screws and fix it by thumb nuts(E).

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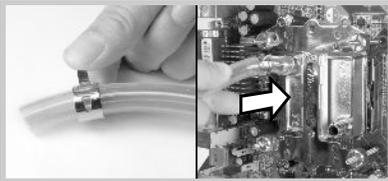
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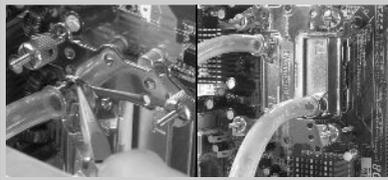
2.5 Install Water tube



Remove black rubber caps from the waterblock.



Insert the hose clip through the tube. Connect the tube with the waterblock.

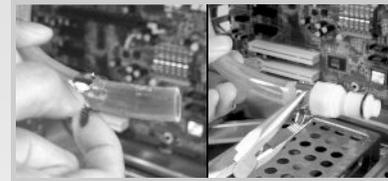


Use pliers to tighten the hose clips. Repeat the steps for the other side.

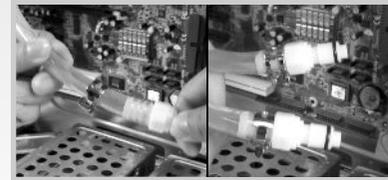


First determine the length required for tubing from waterblock to the main unit. Then cut the tubing accordingly.

Install Quickconn Connector



Insert the hose clips and male quick connector through the tube.



Use pliers to tighten the hose clips. Repeat the steps for the other side.

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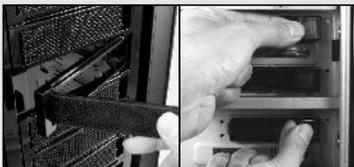
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STEP2 >> Install the Main Unit

2.6 Install the Main Unit

Bigwater 780e is highly recommended to be installed in the top 3 drive bays of Thermaltake Xaser VI and Armor Plus Chassis.



Remove the drive bay cover from the selection position.
(The following diagrams are the Thermaltake Armor plus case.)



Pull the right-hand side of the lever to remove the 5.25" device.



Note:
If you use other cases, please install the Bigwater 780e follow original 5.25" device installation.
You can also secure the Bigwater 780e by screws(M).

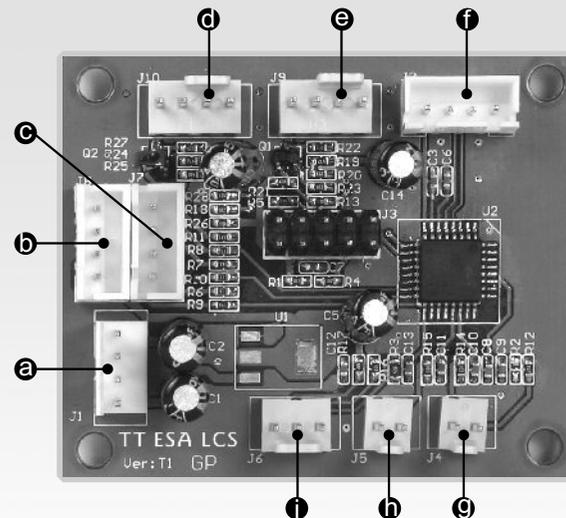


Insert the Bigwater 780e into 5.25 drive bay.



Installation complete.

2.7 ESA PCB Introduction



- Power connector : Connect the 4-pin power connector .
- Case LED :Connect to ESA Watercooling LED connector marked in Figure 1(P19).
It is not necessary to connect to chassis if you are not using Thermaltake ESA-compliant chassis system.
- LED : Connect LED connector
- PWM pump : Connect to PWM pump.
- PWM fan : Connect to PWM fan.
- USB connector : Connect to USB connector on the motherboard.
- Water Temp sensor(1) : Connect to Flow TX (Inlet) temperature sensor.
- Water Temp sensor(2) : Connect to Flow TX (Outlet) temperature sensor.
- Water Level sensor : Connect to Water Level sensor on the tank .

Bigwater 780e

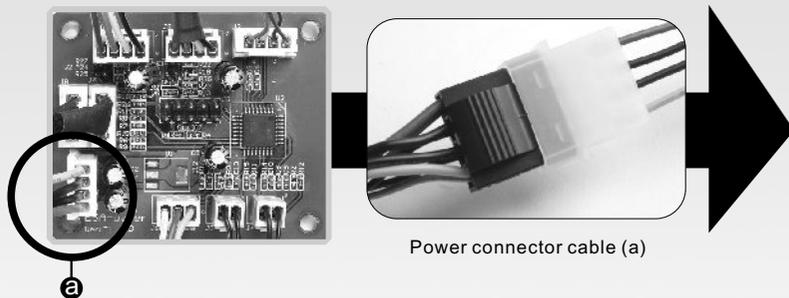
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2.8 ESA PCB Installation

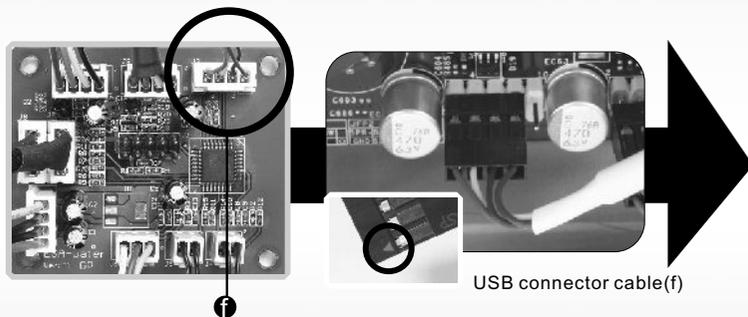
Please following installation procedure.

Step 1: Connect the 4-pin power connector of BigWater 780e to power supply.

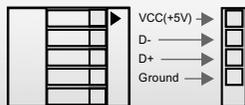


Power connector cable (a)

Step 2: Connect to USB connector on the motherboard.



USB connector cable(f)



Signal	Pin
VCC(+5V)	1(Red wire)
D-	2
D+	3
Ground	4

Please note that the pins of VCC & GND must be connected correctly or it may cause some damage.

Step 3: Connect LED cable from the ESA chassis if you are using this Watercooling with Tt ESA chassis as well.

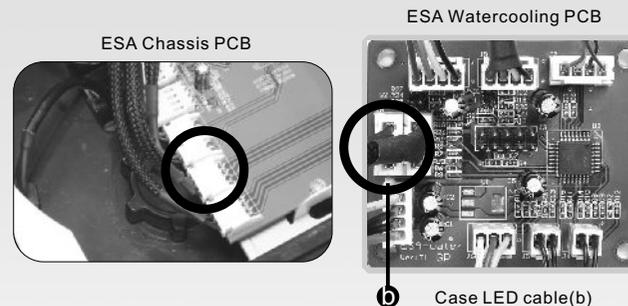


Figure 1

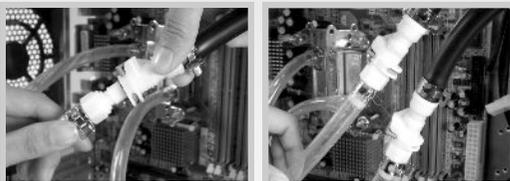
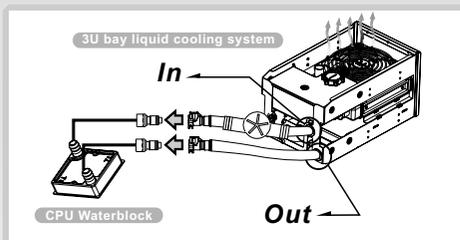
There are two LED connectors on the ESA chassis PCB for Tt ESA watercooling and Tt ESA power supply. Please connect the ESA Watercooling status LED cable to the correct connector for ESA Bigwater 780e. For more detail information, please refer to your Thermaltake ESA chassis user manual.

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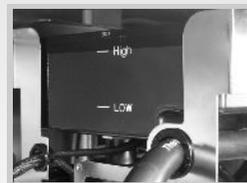
STEP3 >> Connect the Quickconn connector



Connect the Quickconn connector.



Turn on the PC power switch.



Liquid level will decrease when you power on the system, please keep filling coolant until the tank is filled up.

STEP4 >> Refill Coolant



Open the cap of liquid tank.



Fill the tank up with coolant.
(The following diagrams are the Thermaltake Armor plus case.)



Note:

If you use other chassis, the coolant should be refilled from the side panel.



Please make sure liquid is flowing continuously and smoothly within the tube.



Close the cap of liquid tank.

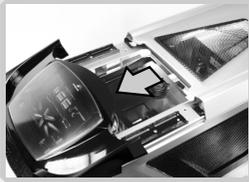
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Turn off the PC power switch.



Close the cover of chassis.



Adjust the fan speed.
(800~2500 RPM)



Note:

1. If bubbles are forming within the tubing, you may tap the tubing gently to remove them until all are gone.
2. After installation is completed, please ensure there are no bent tubings.

STEP5 >> Power on the system



Turn on the PC power switch.



Installation complete.

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Chapter 3. Thermaltake ESA Watercooling Software User Guide

Note:

The latest ESA software can be downloading on nvidia.com and will be shipped with motherboards.

ESA devices provides real-time monitor and control of Thermaltake PC Chassis · Thermaltake Power Supply and Thermaltake Water-cooling devices.

System Requirement:

- Supported Operating Systems
 - Microsoft Windows XP (32-bit & 64-bit)
 - Microsoft Windows Vista™
- Supported Motherboards:
 - NVIDIA nTune supports all nForce 680 Platform as well as nForce 780 Platform motherboards.

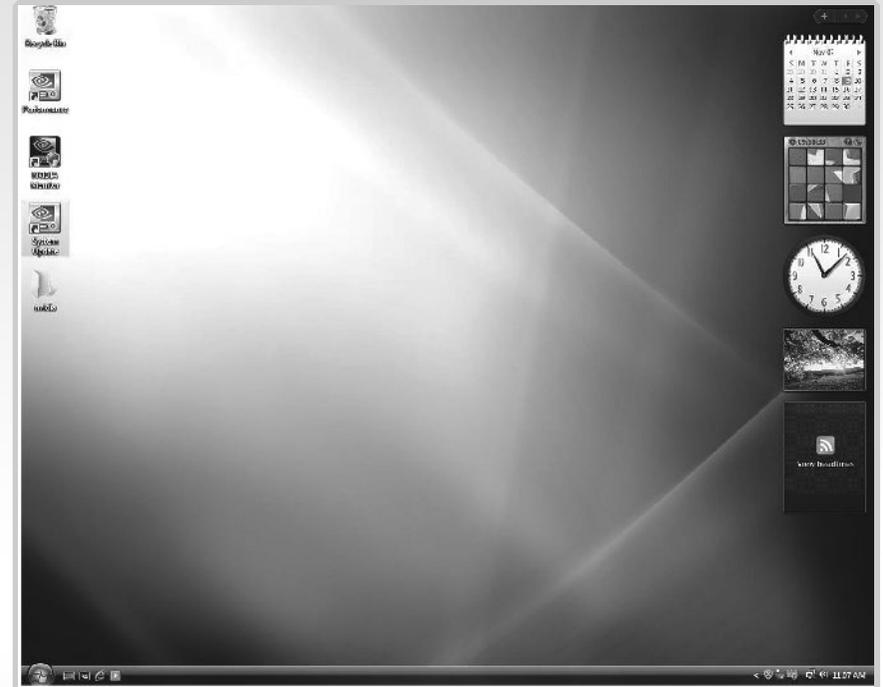
Installing NVIDIA ESA softwares

- Before you begin, please make sure your hardware meets the “System Requirements” .
- Uninstall any previous versions of NVIDIA NV Monitor / Performance / System update before installing the latest version

Installation Instructions

- 1.Download the zip file, then unzip to a temporary folder.
- 2.Double-click Setup from your temporary folder. The InstallShield Wizard starts, and directs you through the rest of the installation process.
- 3.At the Welcome window, click Next.
- 4.Read the license agreement, then click Yes if you agree to the terms.
- 5.At the choose destination location window, browse to locate the folder where you want to NVIDIA files installed, or just use the default location and click Next.
- 6.At the InstallShield Wizard Complete window, you can choose to create Desktop shortcuts and Quick Launch shortcuts items, click Finish. .

After install the NV Monitor, Performance and System update, you can see three icons on the desktop of Windows system.



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3.1 System Update

Caution!!

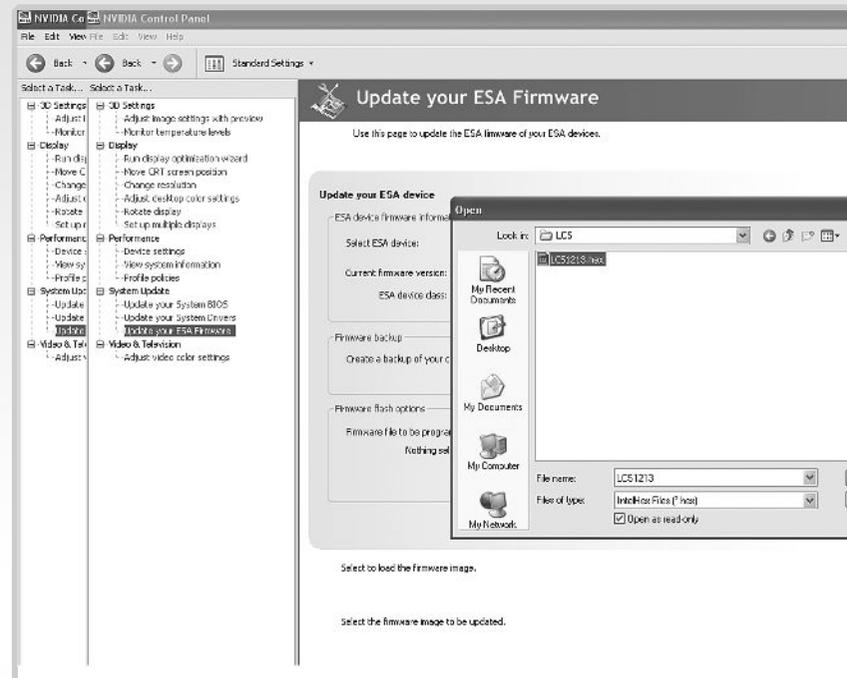
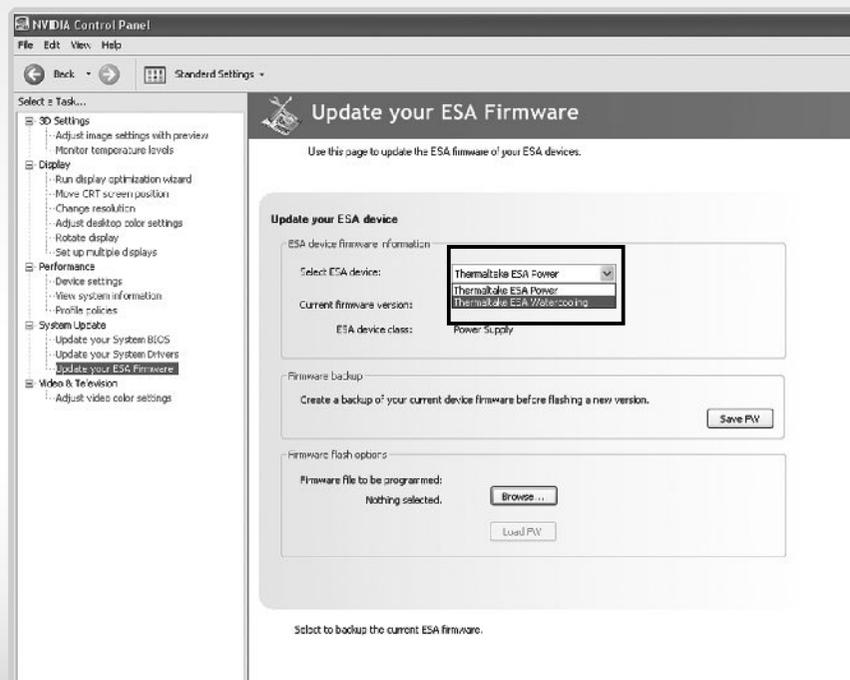
All the latest ESA firmware posted at Thermaltake Website is for products sold and packaged by Thermaltake. Updating the ESA firmware only if you have problems and you are sure that the new firmware revision will solve your problems. Careless updating may result to more problems with the Thermaltake ESA Chassis, Thermaltake ESA Water Cooler and Thermaltake ESA Power Supply!

For the latest information, please visit www.thermaltake.com

Please make sure your Thermaltake ESA devices with latest firmware.

Step1:

You need to choose Thermaltake ESA Watercooling.

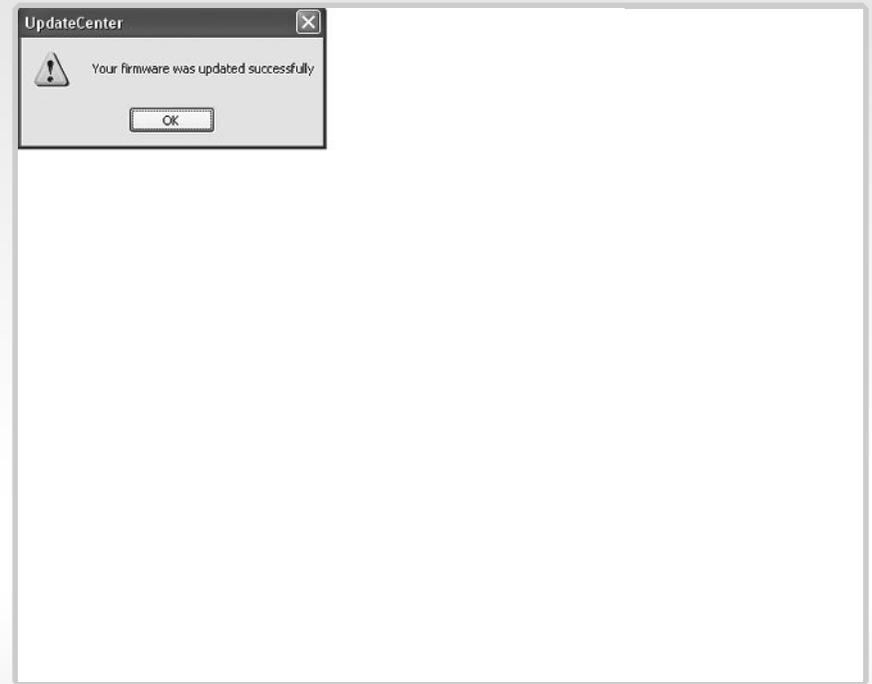
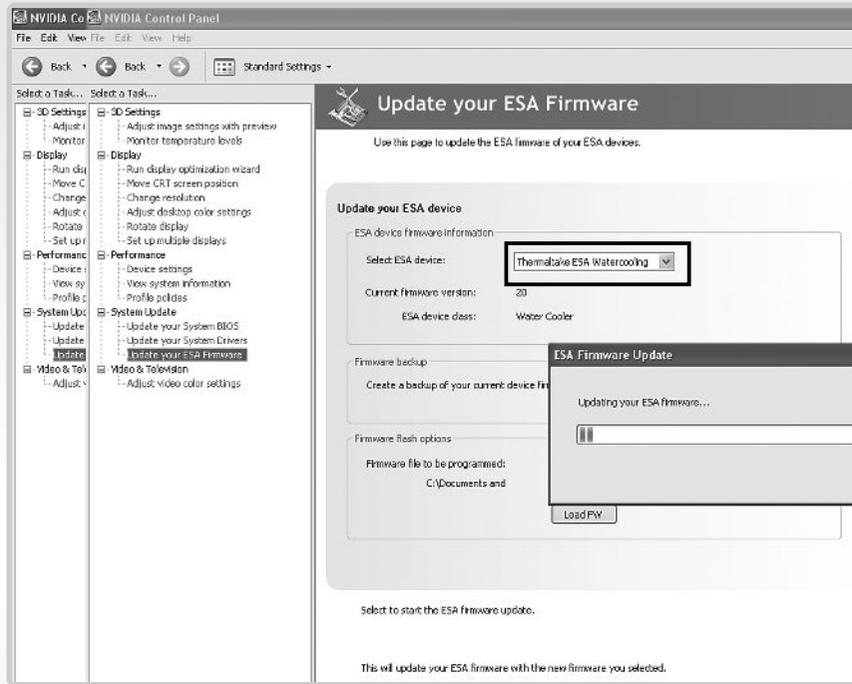


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Step 2:
You need to browse the folder where you put the ESA Watercooling firmware (for example) file and then open it.

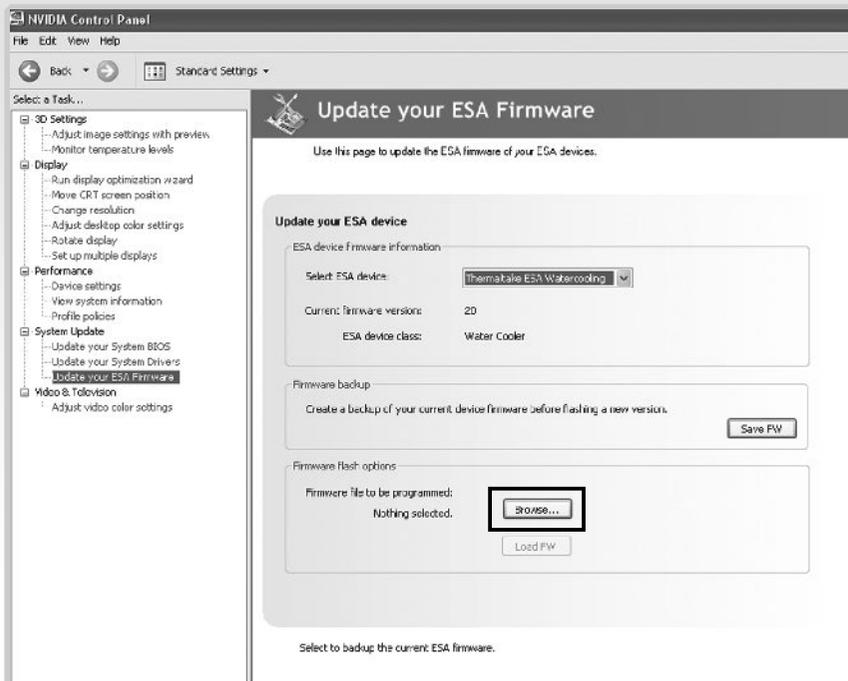


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Step 3: Click the load FW button to load firmware.



Step 4: After finished the firmware update, please click the OK bottom.

3.2 NVIDIA nTune Performance Application

After selecting the performance icon, the user must select “Accept End User License Agreement” link and agree to begin using nTune.

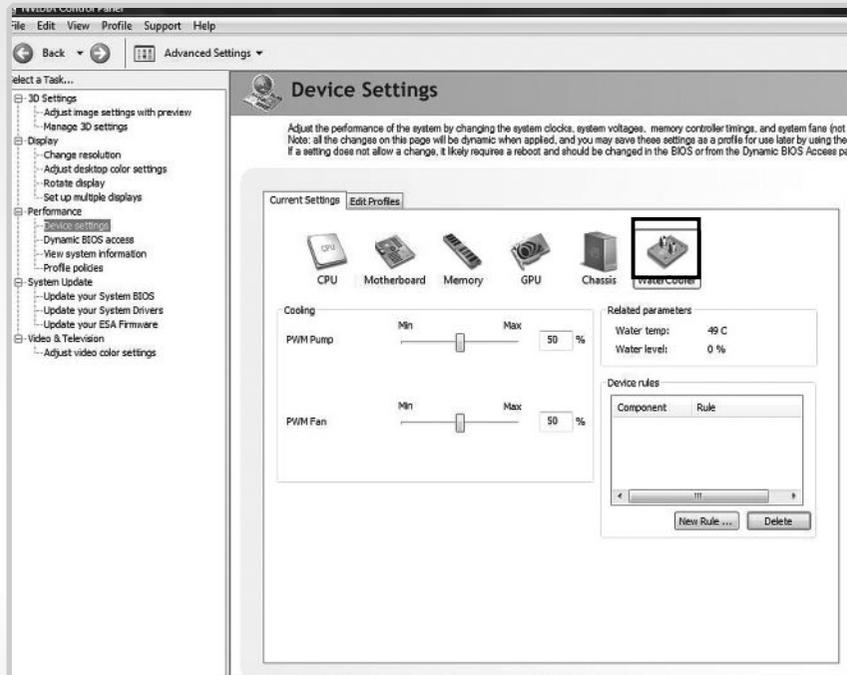


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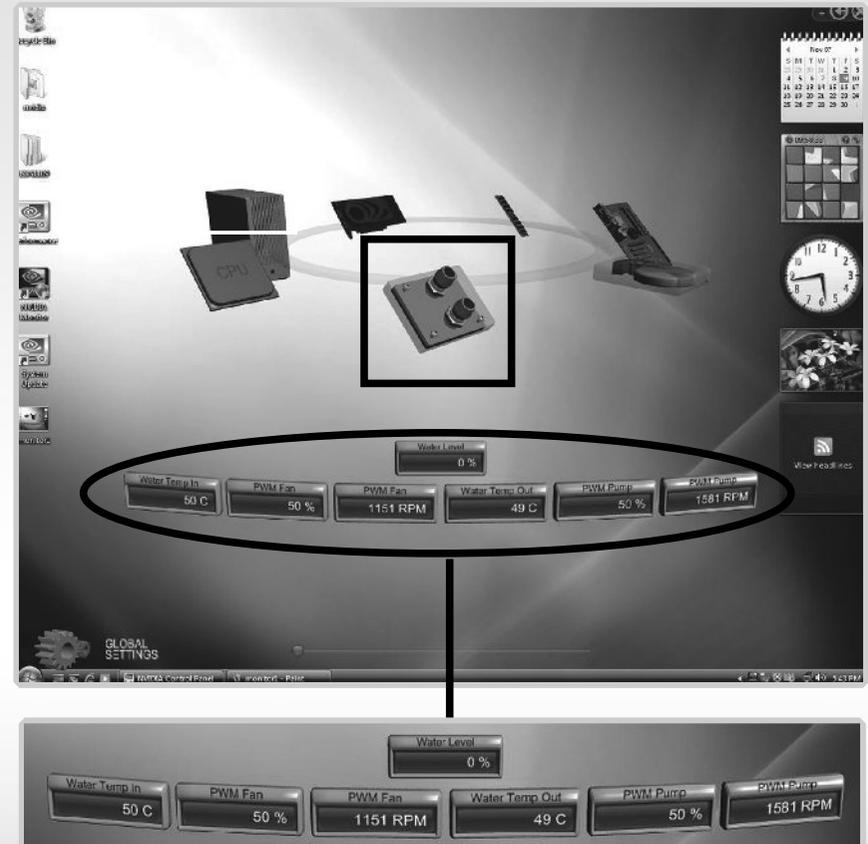
In the NVIDIA Control Panel under performance item, you can use Device settings to choose or Watercooler (Figure1). At each device's setting, you are able to adjust PWM & PWM Fan speed in percentage. All the adjustment will display in NVIDIA Monitor.



(Figure1)

3.3 NVIDIA Monitor

Once you implement the NVIDIA Monitor software, you are able to select which components that you want to check its status. For the Thermaltake ESA watercooling, you will see seven icons with different function. Users are able to monitor Water Level, Water Temperature in / Temperature out.



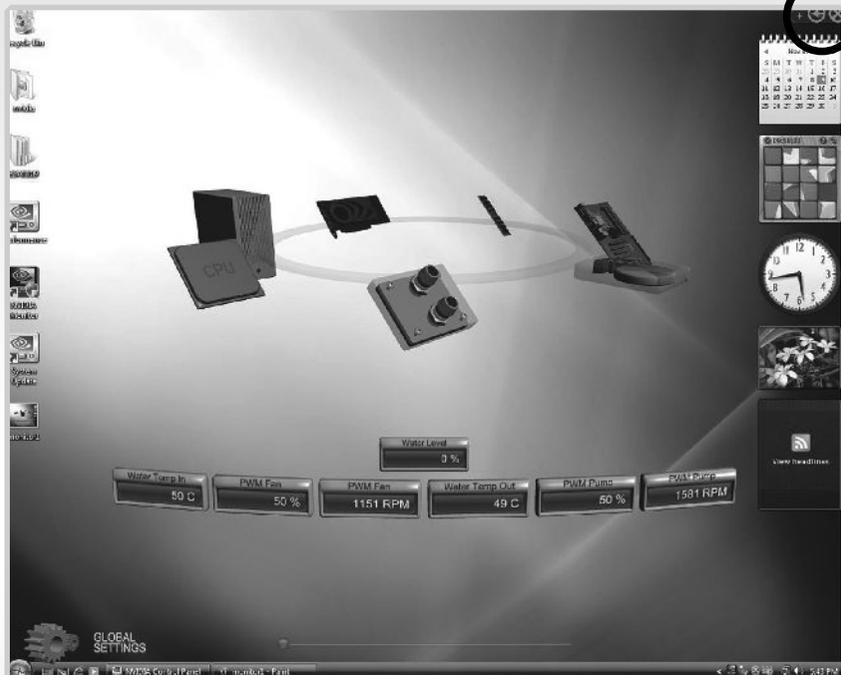
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3.4 Switch between NVIDIA Monitor & NVIDIA Performance software

While you are using NVIDIA Monitor software, you may click the arrow to shrink it and adjust any value in NVIDIA Performance as you wish.



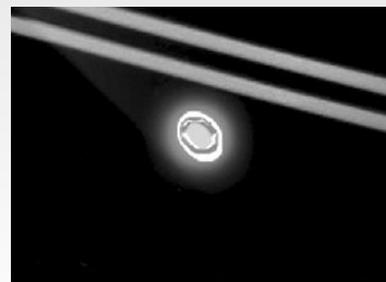
Once you finish the adjustment in NVIDIA Performance, you can double click the NVIDIA Monitor icon on tool bar or type **Ctrl + ALT + C** and see the change in NVIDIA Monitor.

Caution!!

All the latest ESA firmware posted at Thermaltake Website is for products sold and packaged by Thermaltake. Updating the ESA firmware only if you have problems and you are sure that the new firmware revision will solve your problems. Careless updating may result to more problems with the Thermaltake ESA Chassis, Thermaltake ESA Water Cooler and Thermaltake ESA Power Supply!

For the latest information, please visit www.thermaltake.com

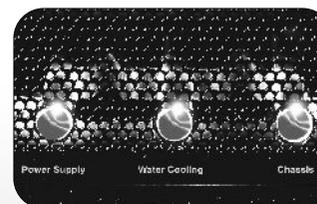
3.5 Water cooling LED Indication



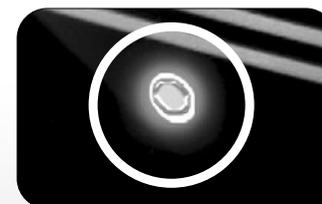
- **Green Light: Good**
- **Orange Light: Warning**
- **Red Light: Fail**

ESA Bigwater 780e install with Thermaltake ESA chassis

ESA Chassis LED



ESA Watercooling LED



Note:

If you are using chassis from other brands, the operation status of BigWater 780e can also be monitored from the LED at the front.

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Chapter 4 Other

4.1 Armor Plus ESA Series (optional)



Armor Plus

Vh6001 Series

- **Optimized design for both liquid cooling and air cooling system**
- **Sliding hood with toolbox on top. (Upgradable to LCS.)**
- **10 PCI slots design for quad-graphic card configuration**
- **Tool free design for 5.25" device and PCI slot.**
- **Sliding motherboard tray**
- **Independent thermal management for CPU, VGA & HDD.**
- **Cable management system for better cable routing and internal air flow**
- **Evolutionary adjustable PSU supporting bridge**
- **MicroATX, ATX, Extend-ATX supported**

4.2 Toughpower ESA power supply series (optional)

The Thermaltake ESA Power Supply series specification supports NVIDIA ESA Technology. It also meets latest Intel & AMD dual & Quad core processors and NVIDIA & AMD high performance graphic cards; it offers plenty of functions, which mainly include:

1. ESA power supply is capable for temperature sensing, current sensing, voltage sensing, and status LED support.
2. ESA power supply will also report operating conditions so that users can monitor and control temperature, current, and voltage regulation.
3. Automatic Fan Speed Control: All ESA power supplies can detect the inside heat and automatically adjust the fan speed to provide adequate airflow.
4. Ultra Silent: Ball bearing fans with high reliability 140mm cooling fan and super low acoustic noise under all load condition.
5. Modularized Cable Management: To eliminate clutter and improve airflow inside the case.

The functions can assure all Thermaltake ESA Power Supply meets the balance in noise control and heat exhausted. All power supply provides complete protection function as follow:

1. Over power protection.
2. Short circuit protection on all output.
3. Over voltage protection / Under voltage protection.
4. Over current protection.
5. Over temperature protection.

Besides, Thermaltake enables the quality assurance of all ESA power supply: 100% Hi-POT and ATE Function Test, 100% Burn-In and AC Input cycled on/off under high temperature condition. Furthermore, it has been approved by UL, CUL, TUV, CB, FCC, CE, and BSMI.

There are three main products line of Thermaltake PSU which divided into Toughpower, Purepower (include Purepower RX) and TR2 (include TR2 RX) series. Please refer to http://www.thermaltake.com/product/Power/power_index.asp



Toughpower 850W

P/N:W0178

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4.3 Liquid Cooling Q&A

Q: How often do I have to refill the system?

A: Depending on the usage or surrounding environment, we strongly recommend checking the water level once a month to ensure optimal performance. If the liquid level is below the low level, please follow the installation steps(P.21) to refill the coolant.

Q: How do I uninstall the liquid cooling system?

A: There are no special instruction when un-installing. Please refer to installation and reverse the procedures.

Q: Can I add another liquid cooling upgrade kits on my liquid cooling system?

A: Yes, there are numerous upgrades available for all different components in PC. Please visit www.thermaltake.com for more information.

Q: How do I know if the pump is working?

A: Place your hand on the pump. If the pump is operating, the pump should vibrate gently.

Q: I'm running low on coolant. What's happening and what can I do?

A: The Performance Coolant included with main unit contains water based material so it is subject to natural evaporation. It is normal for the coolant to decrease depending on the usage or surrounding environment. For best performance, we highly recommend replacing the coolant every 6 month.

4.4 Schedule Maintenance

Performing scheduled check up for the liquid cooling system will ensure optimal cooling performance!

Pump



.Ensure pump is working proper

Water Tank



Check for water level within the water tank. If the liquid level is below the low level, please follow the installation steps on manual to refill the coolant. (we strongly recommend checking the water level once a month)

Note: It is recommended that coolant to be replace once every 6 months. Depending on the workload of the system, coolant may need to be refilled more often.

Fan Assembly



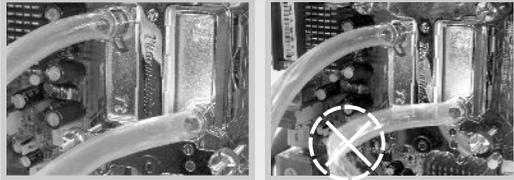
.Check if LED is working properly .\n
 ʔ. Make sure fan controller is working properly.\n
 ʔ. Make sure fan is operating properly without abnormal noise.

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Tubing



Tubing within the system must not be bent. Replace tubing if necessary.

Tubing Connections



Make sure each connection is tightly secured and that there are no sign of leakage.

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