Installation Manual for **EK-TIM Indigo Extreme™**

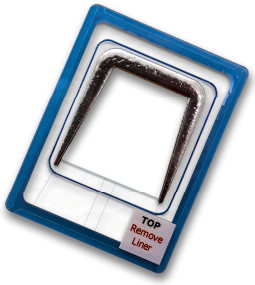
This product is intended for installation only by expert users. Please consult with a qualified technician for installation. Improper installation may result in damage to your equipment. EK Water Blocks assumes no liability whatsoever, expressed or implied, for the use of these products, nor their installation. The following instructions are subject to change without notice. Please visit our web site at www.ekwaterblocks.com for updates. Before installation of this product please read important notice, disclosure and warranty conditions printed on the back of the box or our home page.

STEP 1: QUICK OVERVIEW:

STEP 1.1: EK-TIM Indigo Xtreme:

Engineered Thermal Interface for Socket 2011-3
(Haswell-E Core™ i7 processors)

EK-TIM Indigo Xtreme™ is an Engineered Thermal Interface (ETI) that fits neatly between a CPU lid and water block or heat sink to keep CPUs cooler. Unlike greases, metallic thermal interface pads or liquid metal alloys, EK-TIM Indigo Xtreme is a self-contained and sealed structure, deploying a Phase Change Metallic Alloy (PCMA) which reflows and fills surface defects on the CPU lid and water block/cooler. The resultant interfacial layer is void-free and robust, with low thermal contact and bulk resistance.



Important: Unlike most thermal interface products, the EK-TIM Indigo Xtreme form-factor is optimized for each application.

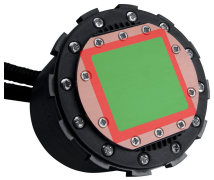
Attempting to use EK-TIM Indigo Xtreme with CPUs or coolers other than those supported may result in degraded performance or interfacial failure.

STEP 1.2: Compatibility List:

Supported Hardware:
Supported CPUs: Intel Socket 2011-3 (Core™ i7)

Supported Water block/Cooler Types:
In general, water blocks/coolers that contact entire surface of CPU lid are compatible with Indigo Xtreme.
All EKWB CPU series water blocks are supported!

Unsupported Cooler Types:
Note: The Haswell-E CPU lid is significantly larger than all other Intel CPU lids.
Cooler surfaces that do not contact entire CPU lid surface, contain heat pipe channels on the mounting base, or sealed coolers with exposed bolts contacting the CPU lid are incompatible with Indigo Xtreme.



Prior to installation, see the Cooler Compatibility Application Note found on the Documentation page at: indigo-xtreme.com.

STEP 1.3: ETI Kit Contents:

The EK-TIM Indigo Xtreme ETI is offered as part of an Engineered Thermal Interface Kit. This kit includes several cleanroom-grade surface cleaning products for (2) complete installations.

The ETI kit includes:
- EK-TIM Indigo Xtreme ETIs (2 installations)
- Cleanroom-grade dry wiper cloths
- Cotton cleaning swabs
- Indigo Xtreme Clean™ (sample size)
- Pair of powder-free nitrile gloves
- Detailed Installation Guide

Check the condition of the ETI kit before installation.

STEP 2: INSTALLATION PROCEDURE:

STEP 2.1: Pre-Installation Notes:

Read entire instructions before beginning installation. Computer operating system and temperature monitoring utilities (such as SpeedFan™ and Prime95™) must be installed prior to use; clock frequency and voltage must be set back to default. Do Not Disable the Thermal Control feature that protects your CPU from overheating.

See the applicable Application Note (www.indigo-xtreme.com) with installation tips and recommendations for your specific water block or cooler. Contact EKWB Support if you have any questions.

STEP 2.2: Thermal Interface Compound (grease/paste) Removal:

Using a supplied dry wiper cloth, apply pressure to thoroughly remove any existing interface grease from the CPU lid and water block/cooler. Clean with fresh areas of the wiper cloth until no visible grease residue is detected on the wiper.

If removing metal pad or liquid metal TIM residue, refer to manufacturer's specific cleaning methods.

STEP 2.3: Put on Gloves:

Prior to the final degreasing step, the supplied powder-free nitrile gloves should be worn to prevent any finger oils or contaminants from contacting the CPU lid, water block/cooler, and ETI surfaces and to prevent skin contact with Indigo Xtreme Clean™.

Stray grease compound can be mitigated as gloves are applied immediately following the Thermal Interface Compound Removal step.

STEP 2.4: Degrease CPU lid and Water Block/Cooler Surfaces:
Saturate a dry wiper cloth with Indigo Xtreme Clean™; use ~1/2 trial size bottle per ETI installation; thoroughly wipe the CPU lid; repeat with the water block/cooler interfacial surfaces. Continue to wipe each surface with fresh areas of the wiper until no visible residue is detected on the wiper. Wipe all surfaces of any visible lint, fibers, or particulates.

Install the CPU into the motherboard socket. Refer to motherboard or CPU installation instructions. The ETI can only be applied after correct installation of the CPU.

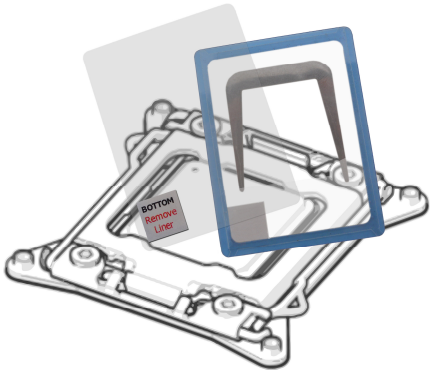
Be prepared to wipe the CPU lid and water block/cooler surfaces immediately upon saturating each dry wiper cloth as the Xtreme Clean™ solvent will quickly evaporate. When finished, seal the used wiper in the ETI kit clear bag. New CPUs or coolers must be degreased as well. Use only the supplied Indigo Xtreme Clean™ for the degreasing step.

Use the Xtreme Clean™ solvent in a well-ventilated area. Avoid contact with plastics (such as keyboards, computer cases, cooling fans, some water block housings, coolant tube fittings, cables, etc.). Also, avoid contact with coolant tubing, gaskets, etc.

STEP 2.5: Indigo Xtreme Handling:
The EK-TIM Indigo Xtreme ETI may be handled on the blue surfaces only within a lint-free environment.

Do not remove the clear Top and Bottom liners prior to the specific installation step. Do not bend, flex or puncture any portion of the ETI. Keep all chemical agents (Indigo Xtreme Clean™, etc.) away from the ETI.

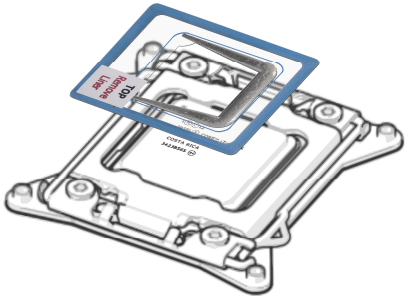
STEP 2.6: Bottom Side Liner Removal:
Remove the "Bottom" side rectangular clear liner by slowly peeling the liner, beginning from the corner with the white BOTTOM" label. Hold the ETI on the blue edges (to prevent any wrinkling or warping). **Do not** remove the "Top" liner at this step.



Do not touch the exposed adhesive area after removal of the clear liner. Once the liner has been removed, proceed immediately to Step 2.7: Alignment and Placement.

STEP 2.7: Alignment and Placement:

Orientation and alignment of the ETI to the CPU lid and socket is critical. Orient the ETI such that the "Bottom" side is facing the CPU lid. Note that the orientation of the Haswell-E ETI differs from other EK-TIM Indigo Xtreme models (see the image below).

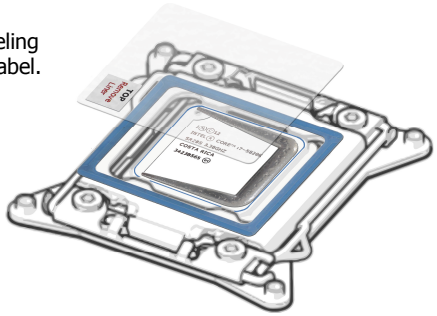


Hold the ETI on the blue edges (with both hands). Ensure that the ETI is oriented with CPU lid/socket as shown. Center the narrow, blue alignment ring to the CPU lid top surface before making contact. Carefully lower the ETI onto the CPU lid surface. With moderate, downward finger pressure, completely press down all ETI surfaces onto the CPU lid by following the blue alignment ring (small red arrows). Additionally, thoroughly press down the area surrounding the vent and adhesive region to the CPU lid (large red arrows).

It is critical that the narrow blue alignment ring is completely on the CPU lid and all blue ring surfaces are thoroughly pressed down.

STEP 2.8: Top Side Liner Removal:

Remove the "Top" side rectangular clear liner by slowly peeling the liner, beginning from the corner with the white "TOP" label.



Do not touch any of the clear surfaces after removal of the clear liner. Once the liner has been removed, proceed immediately to Step 2.9: Heat Sink/Block Mounting.

STEP 2.9: Water Block/Cooler Mounting:

It is imperative that the water block/cooler is aligned correctly before it makes contact with the ETI. Some factory sealed coolers may require a specific orientation to avoid exposed bolts from contacting the CPU lid. Avoid any twisting on the ETI as the block is bolted/clamped down. Apply a uniform pressure to the water block/cooler (while clamping) to prevent it from shifting.

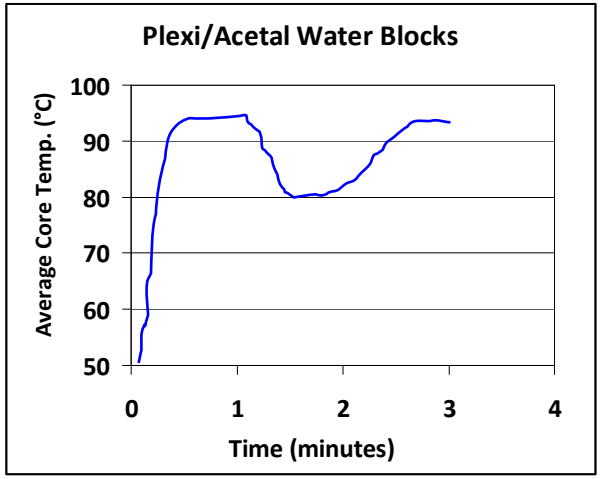
Bolt mounted Water Blocks/Coolers: Initially turn each thumb nut to engage the bolt threading and mark the starting position of each nut. Turn all thumb nuts the full recommended revolutions. Application Notes (indigo-xtreme.com) provide tightening and orientation recommendations for specific blocks/coolers. The EK Supremacy block requires only (4) full revolutions; do not bottom out the thumb nuts.

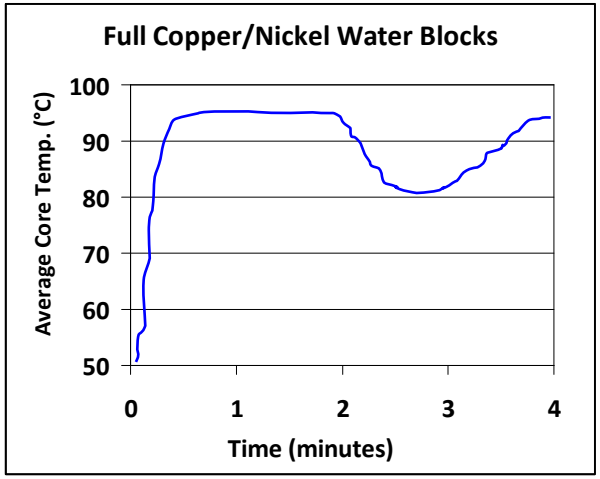
STEP 3: ETI REFLOW PROCEDURE:

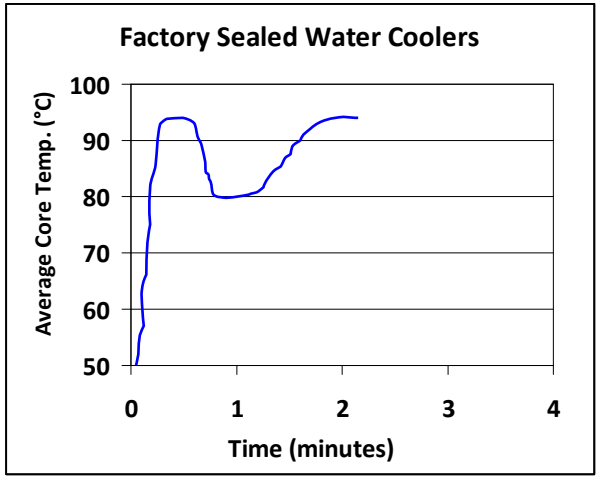
Follow the reflow steps below for your water block or cooler type; the motherboard must be in a horizontal position for proper reflow.

As part of installation, the EK-TIM Indigo Xteme ETI must first be heated with the CPU running under load in order to reflow (melt) the PCMA alloy. Failure to perform the exact reflow procedure may result in unacceptable thermal performance. A video demonstration of ETI reflow can be found at the EKWB product page: http://www.ekwb.com.

Step	Plexi/Acetal Water Blocks	Full Copper/Nickel Water Blocks	Factory Sealed Water Coolers
3.1	Connect up any water block liquid lines and turn on pump.	Connect up any water block liquid lines and turn on pump.	Turn on the liquid pump.
3.2	Boot the computer into Windows (stock freq. and voltage).	Boot the computer into Windows (stock freq. and voltage).	Boot the computer into Windows (stock freq. and voltage).
3.3	Open SpeedFan™, select the "Charts" tab, and check all core boxes to track the core temperatures during reflow.	Open SpeedFan™, select the "Charts" tab, and check all core boxes to track the core temperatures during reflow.	Open SpeedFan™, select the "Charts" tab, and check all core boxes to track the core temperatures during reflow.
3.4	Open Prime 95™ or equivalent burn program and run a "Torture Test" for (8) threads.	Open Prime 95™ or equivalent burn program and run a "Torture Test" for (8) threads.	Open Prime 95™ or equivalent burn program and run a "Torture Test" for (8) threads.
3.5	Immediately following the launch of Prime 95™, disconnect the water pump.	Immediately following the launch of Prime 95™, disconnect the water pump.	Immediately following the launch of Prime 95™, disconnect the water pump.
3.6	Follow the average core temperature profile (with SpeedFan™ in chart mode) illustrated in the chart below.	Follow the average core temperature profile (with SpeedFan™ in chart mode) illustrated in the chart below.	Follow the average core temperature profile (with SpeedFan™ in chart mode) illustrated in the chart below.
3.7	The Temperature Dip at ~1-1.5 minutes will indicate reflow.	The Temperature Dip at ~1-2.5 minutes will indicate reflow.	The Temperature Dip at ~30-45 seconds will indicate reflow.
3.8	Following the Dip and rise back to ~95°C, shut down the PC.	Following the Dip and rise back to ~95°C, shut down the PC.	Following the Dip and rise back to ~95°C, shut down the PC.
3.9	Allow PC and water block to cool for at least 45 minutes before booting and connecting fans/water pumps.	Allow PC and water block to cool for at least 45 minutes before booting and connecting fans/water pumps.	Allow PC and water cooler to cool for at least 30 minutes before booting and connecting fans/liquid pump.







Intel multi-core CPUs have built-in protection (Adaptive Thermal Monitor) that prevents the CPU from exceeding maximum core temperatures, thereby preventing damage to the CPU.

Avoid any bumping or excessive pressure on the water block/cooler and keep the computer in the horizontal position while cooling down. If the average core temperature does not follow a similar temperature profile as seen in the previous graphics, then improper reflow may have occurred. Proceed to "Removal" and re-install a new ETI.

STEP 4: REMOVAL OF EK-TIM INDIGO XTREME:

To disassemble, release the clamping force from the water block/cooler. The ETI may then be removed (intact) by first slowly peeling each corner. The ETI is designed to adhesively capture excess alloy (from differences of CPU lid/heat sink interfacial roughness and planarity) on their surfaces. Any residual adhesive on the CPU or heat sink/water block may be removed with Xtreme Clean, acetone, or xylene and a clean wiper or cotton cleaning swab. Residual alloy is best removed by wetting a swab with Xtreme Clean and gentling rotating the swab to loosen and collect the alloy particles.

EK-TIM Indigo Xtreme is a single-use interface product and any removal of the heat sink (pre/post-reflow) will require a new ETI. All interface material and adhesive residue must be removed and the CPU and heat sink re-cleaned (with the surface cleaning supplies included in the ETI kit only) prior to the re-installation of a new ETI.

REFERENCES:

Burn-in/Torture Testing Program: Prime95™: http://www.mersenne.org/freesoft

Temperature monitor: Although, numerous temperature monitoring programs exist, SpeedFan™ provides the real-time charting/graphing mode necessary for reflow: http://www.almico.com/speedfan.php

The Material Safety Data Sheet (MSDS) for Indigo Xtreme Clean™ can be found at: http://www.ekwaterblocks.com/shop/EK-IM/MSDS_Indigo.pdf

Contact us for more information about this or other EK-TIM Indigo Xtreme applications at: http://www.ekwb.com

Store EK-TIM Indigo Xtreme at room temperature conditions of 22°C (72°F) and 50% R.H., preferably in the original sealed enclosure and plastic bag.

DISCLAIMER:

EKWB d.o.o. and Enerdyne Solutions are not responsible for any damages due to external causes, including but not limited to, improper use, accident, neglect, alteration, repair, improper installation, improper testing, or damages caused by overclocking.

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