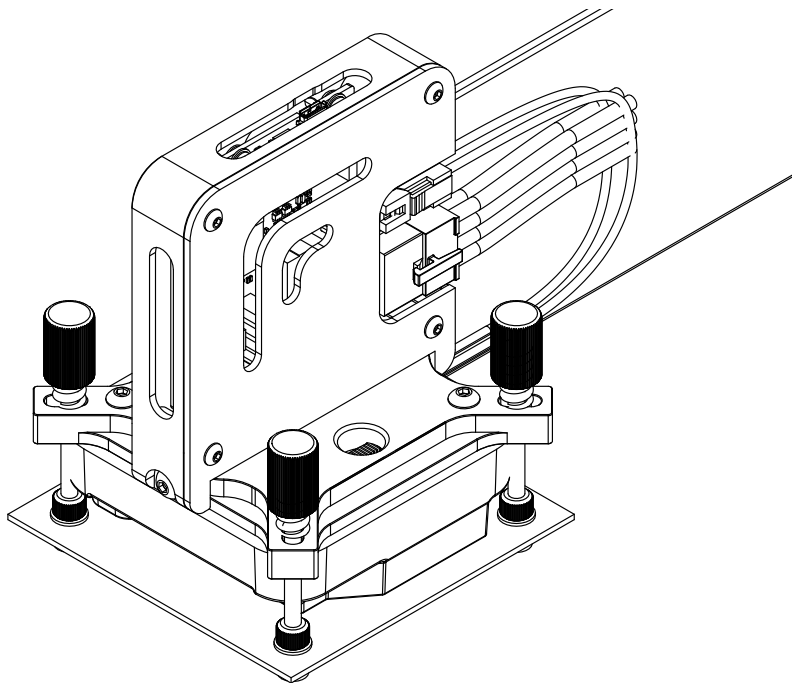


# EK-QuantumX Delta TEC

CPU WATER BLOCK



This product is intended for installation by expert users only. Please consult with a qualified technician since improper installation may result in damage to equipment. EK assumes no liability whatsoever, expressed or implied, for the use of this product, nor its installation. The following instructions are subject to change without notice. Please visit our website at **[www.ekwb.com](http://www.ekwb.com)** for updates. Before installing this product, please read important notice, disclosure, and warranty stipulation printed on the back of the box.

Before you start using this product, please follow these basic guidelines:

**Carefully read the manual before beginning with the installation process!**

**Remove your motherboard from the chassis for the safest mounting process and to prevent damaging your CPU and/or motherboard's circuit board (PCB).**

**EK Fittings require only a small amount of force to screw them firmly in place since the liquid seal is ensured with the rubber O-ring gaskets.**

**The use of quality market-proven corrosion-inhibiting coolants is always strongly recommended for any liquid cooling system.**

**Do not use pure distilled water as a cooling liquid! For best results, EK recommends the use of EK-CryoFuel Coolants.**

**If you run the product with unauthorised software the warranty is voided.**

# SYSTEM REQUIREMENTS

## CPU Requirements

The liquid cooling subsystem requires a 10th generation Intel K series CPU from the following list

- Intel® Core™ i9-10900K
- Intel® Core™ i9-10850K
- Intel® Core™ i7-10700K
- Intel® Core™ i5-10600K

## Motherboard Requirements

The following list of motherboards has been tested with this liquid cooling solution. Other boards may or may not have the clearance to install the Cryo Cooler. Certain motherboards might work, but have not been tested yet. Please contact cooling vendor for additional information.

Vendor	Model
Asus	ASUS ROG Strix Z490-e gaming
Asus	ASUS ROG Maximus XII Formula
Asus	ASUS ROG Maximus XII Hero (Wi-Fi)
Asus	ASUS ROG Maximus XII Apex
Asus	ASUS ROG Maximus XII Extreme
Gigabyte	Gigabyte Z490 Aorus Master
Gigabyte	Gigabyte Z490 Aorus Ultra
Gigabyte	Gigabyte Z490 Aorus Pro AX
Gigabyte	Gigabyte Z490-i Aorus Ultra
Gigabyte	Gigabyte Z490 Aorus Xtreme
MSI	MSI MEG Z490 ACE
MSI	MSI MEG Z490 Gaming Carbon

Vendor	Model
ASRock	ASRock Z490 Taichi
ASRock	ASRock Z490 Phantom Velocita
ASRock	ASRock Z490 Steel Leged

## Power Requirements

The system power supply should be able to have the following:

- Available 1xPCIe (8-pin) power connector directly connected to the power supply, not a Y cable adapter coming from the GPU or the motherboard or another component
- The power supply MUST have an additional 200W available power to provide to the liquid cooling subsystem after factoring in all other components in the system – it is recommended that the power supply capacity should be 750W or higher, but this depends on the GPU and other components already connected to the power supply.

## USB Ports

USB ports available in the motherboard are usually referred to as FPUUSB or front panel USB connectors. The liquid cooling solution requires connection to a USB port in the motherboard. Use the supplied cable to connect the micro USB port in the cooler to the front panel (FP-USB) connector in the mother board.

Note that different motherboards will have a single or multiple front panel USB connectors. Any available front panel USB connector will work. If you only have one port or all ports are being used, you will need to find an available port. It can also be connected to any regular USB port available using a USB-A to micro USB cable.

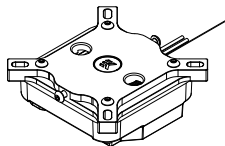
## Chassis Capabilities

The solution is designed to fit into an ATX chassis. Make sure the chassis that you use has space for the entire liquid cooling solution (pump + radiator), not just the heatsink block.

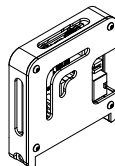
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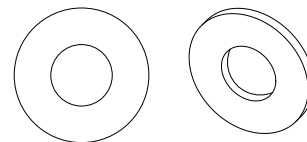
## BOX CONTENTS



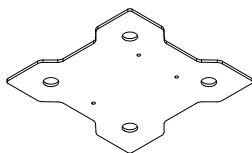
EK-QuantumX Delta TEC Water Block



EK-QuantumX Delta TEC Controller



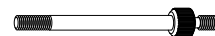
M4 PVC Washers (4 pcs)



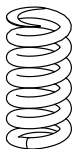
Big Backplate Sticker (1pcs)



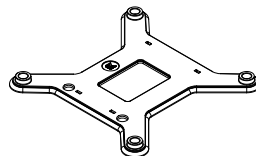
Allen Key 2.5 mm (1 pcs)



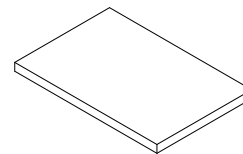
Screw (4 pcs)



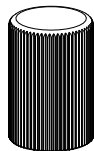
Coiled Spring (4 pcs)



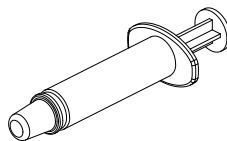
Backplate (1 pcs)



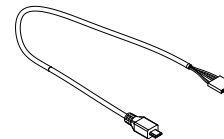
Sticker (1 pcs)



Thumb Nut (4 pcs)

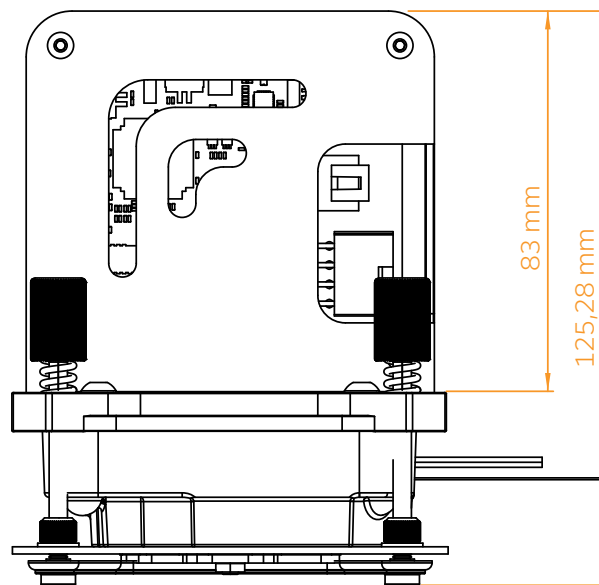
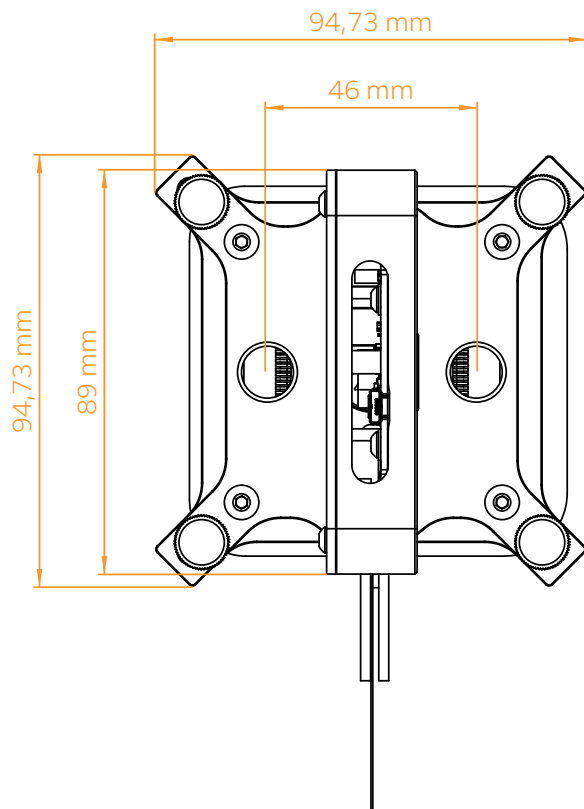


Thermal Grease (1 pcs)

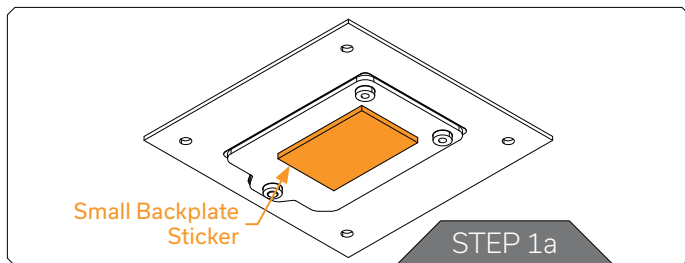


EK-Cable 5-Pin Motherboard (F) to Micro-USB (M) (1pcs)

## WATER BLOCK DIMENSIONS

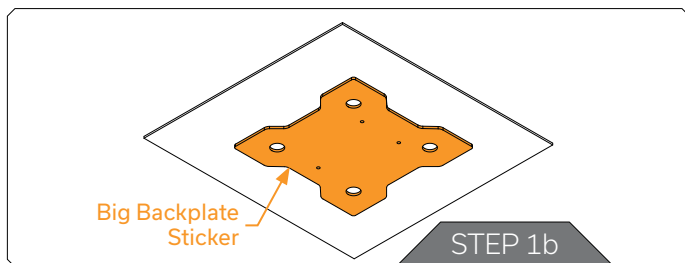


## PREPARING THE MOTHERBOARD



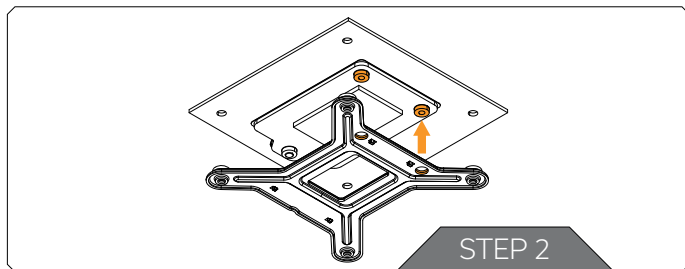
### STEP 1a

Prepare the zip bag containing the CPU mounting mechanism and screws. Find a self-adhesive EPDM sticker and stick it to the back of the CPU latch mechanism so it covers the central opening. The sticker must be present to seal the liquid cooling solution.



### STEP 1b - optional

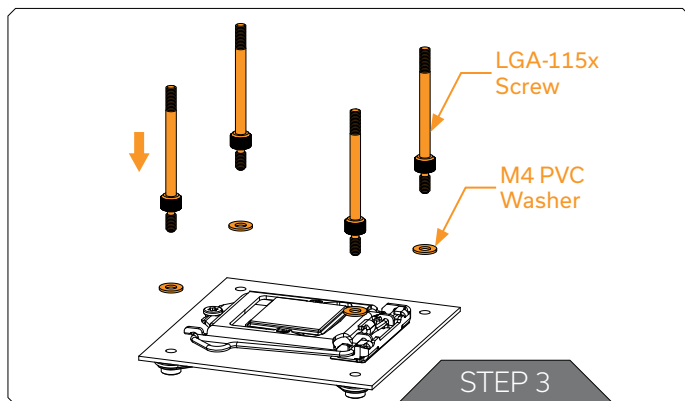
In unregulated mode of the EK-QuantumX Delta TEC, the backplate of the CPU can reach temperatures below ambient, which can lead to condensation on the backplate. Therefore, this insulation is highly recommended when the system works in unregulated mode.



### STEP 2

In unregulated mode of the EK-QuantumX Delta TEC, the backplate of the CPU can reach temperatures below ambient, which can lead to condensation on the backplate. Therefore, this insulation is highly recommended when the system works in unregulated mode.

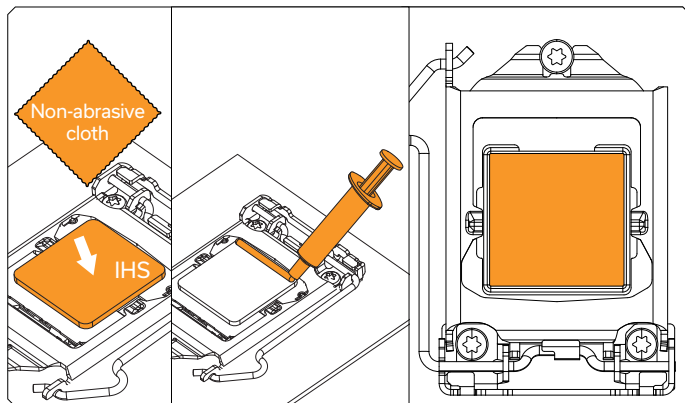
This step must be done no matter which EPDM sticker was chosen in the previous step.



### STEP 3

Install the four (4) supplied LGA-115x specific thumb screws into four (4) M4 threaded holes of the already-installed backplate. It's mandatory to place an M4 PVC washer underneath each M4 thumb screw. Tighten the screws to the backplate until you reach the end of the thread. Using tools (e.g., pliers) is not recommended.

**Do not overtighten the screws.**



## APPLYING THERMAL COMPOUND

Wipe off the remains of the original thermal compound using a nonabrasive cloth or Q-tip, as shown in the sample image.

Apply the enclosed EK-TIM Ectotherm thermal grease (thermal compound) on the CPU heat spreader – IHS – as shown in the image. The layer of the thermal compound must be thin and even in thickness over the entire surface of the IHS.

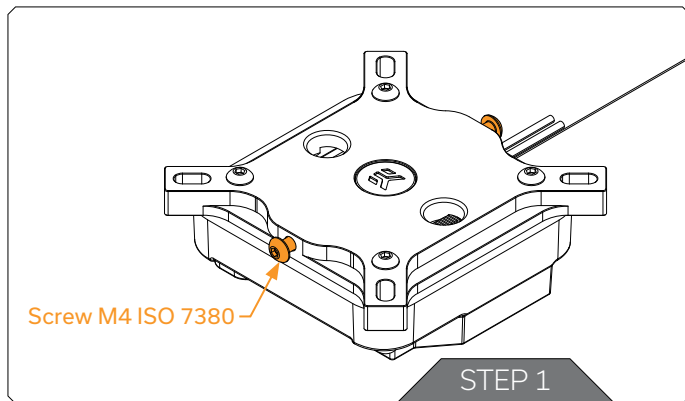
**The excessive or uneven application of thermal grease may lead to poor performance!**

### EK-TIM Ectotherm (information)

Type.....	Low viscosity
Electrical conductivity.....	No
Optimal working temperature.....	+100 to -50 °C
Thermal conductivity.....	8,5 W/mK
Density.....	3 g/cm <sup>3</sup>



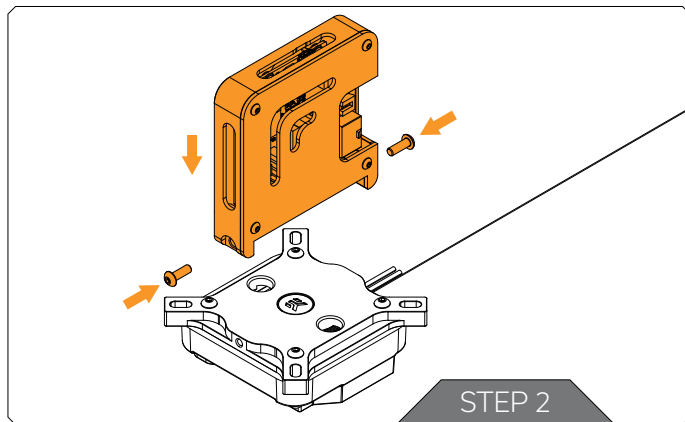
## INSTALLATION OF THE CONTROLLER BOX TO THE WATER BLOCK (OPTIONAL)



You can install the controller box somewhere else in the chassis. Please make sure that the cables for TEC plate and temperature sensor are long enough to allow to do so. EK recommends you secure the Controller box to the water block, as shown in the following Steps.

### STEP 1

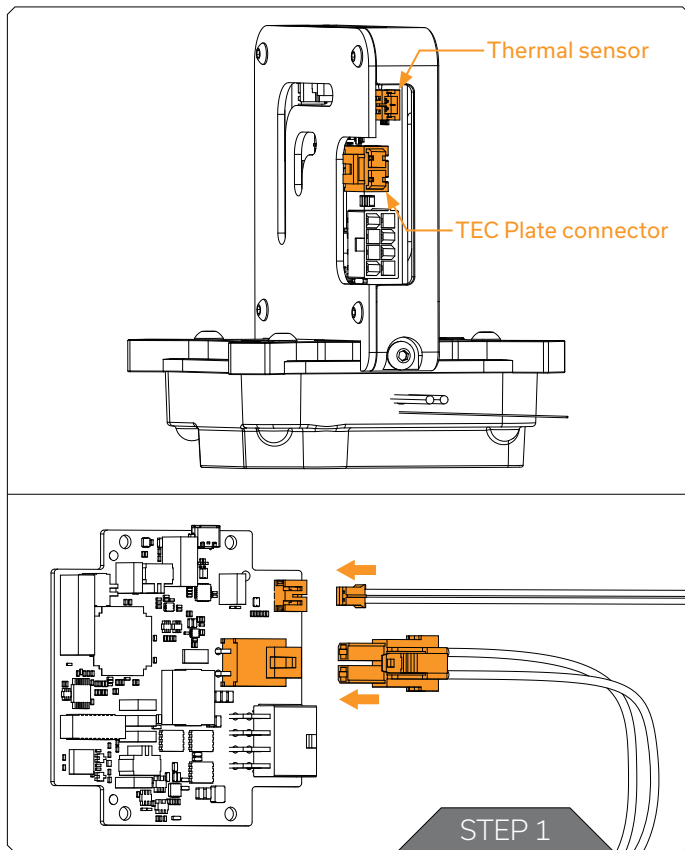
Prepare the water block and remove the two (2) round-headed black screws – M4 ISO 7380.



### STEP 2

Prepare the Controller box and align the side holes with M4 threaded holes in water block top. Secure them using the screws which were removed in step 1.

## ELECTRICAL CONNECTIONS



### STEP 1

To enable the functioning of the cooling solution, please take the two cables from the water block and connect them to connectors on the Controller box:

- Thermal sensor - 2-pin smaller white connector
- TEC plate power supply - 2-pin black connector

The connectors can be inserted in one orientation only!

Make sure not to use excessive force. It may cause permanent damage!

## CABLING AND ELECTRICAL CONNECTIONS

The liquid cooling solution includes a condensation controller that requires the following connections:

- 12V ATX power (using a 1x PCIe 8-pin GPU power cable directly from the power supply)
- 2-pin connector between the water block and the controller (factory connected)
- 2-pin sensor connector (factory connected)
- USB connection (the cooler has a micro USB port that needs to be connected to the motherboard's internal USB header or to an available USB port. The USB cable is included)

## INSTALLATION OF COOLING SOLUTION TO THE MOTHERBOARD

### STEP 1

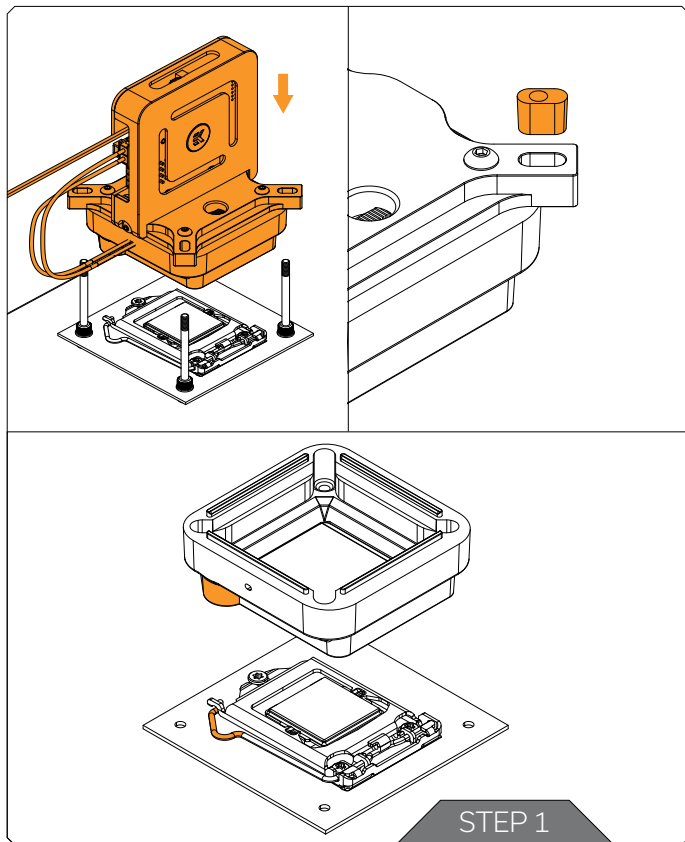
Carefully align your EK-QuantumX Delta TEC water block over pre-installed mounting mechanism with the already installed CPU. Be careful not to remove the pre-installed rubber inserts from the water block mounting holes.

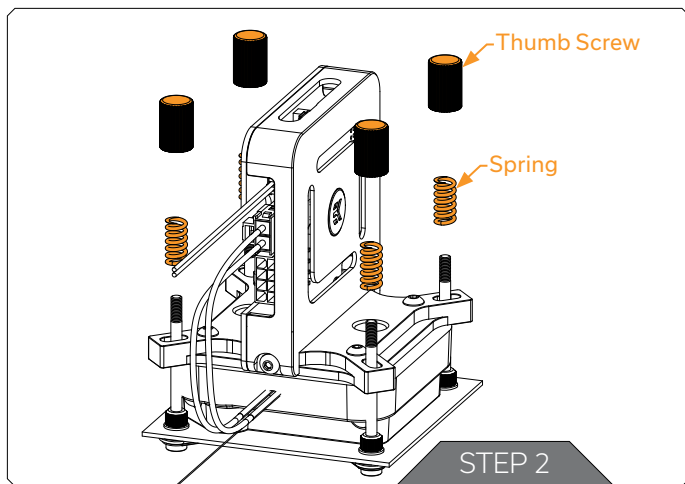
**CAUTION:** The protective sticker must be removed from the cold plate.

### IMPORTANT:

Make sure the protrusion on the insulation guard is aligned with the socket load lever. Not doing so may result in operation malfunctions or even hardware damage.

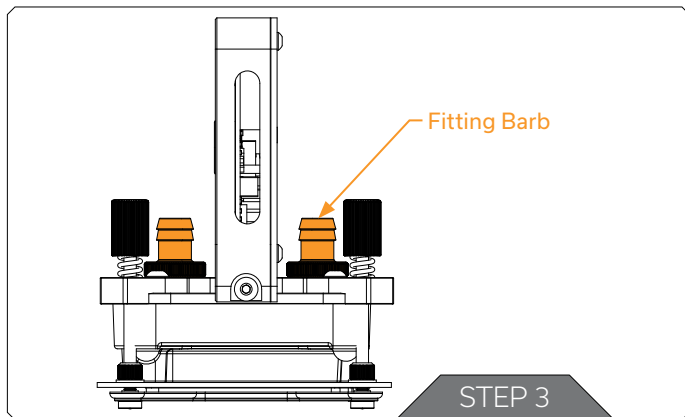
Pay attention to the shape of insulation – it shouldn't be twisted or crooked when installed.





## STEP 2

Place the enclosed compression springs and thumb nuts over each M4 thumb screw. Start fastening two thumb nuts at a time, preferably in a cross pattern, and do not tighten them fully until all of them are partially screwed in. Then - using your fingers only - screw in all four thumb nuts until you reach the end of the thread.

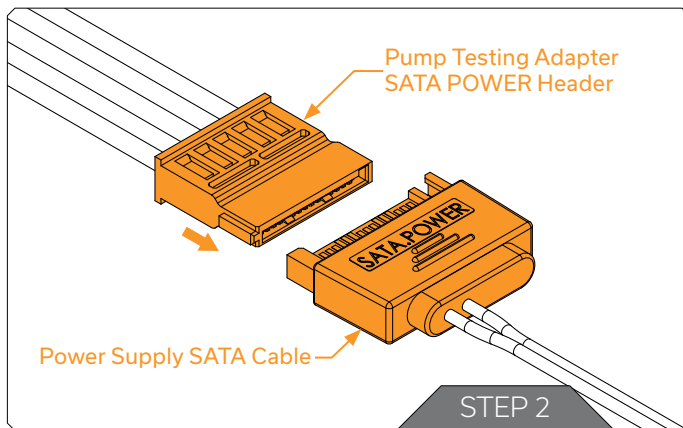
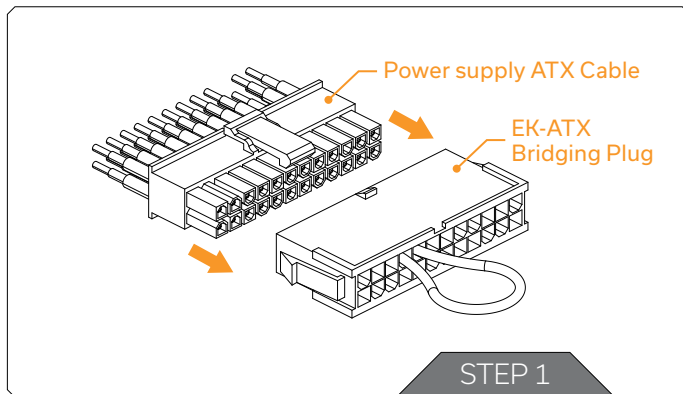


## STEP 3

Tighten the fittings in a clockwise direction until the O-ring gasket underneath is compressed.

You can use all types of EK fittings as long as they have G1/4 male thread.

## TESTING OF THE LOOP



To make sure the installation of EK components was successful, we recommend you perform a 24-hour leak test. When your loop is complete and filled with coolant, connect the pump to a PSU outside of your system. Do not connect power to any of the other components.

## RECOMMENDED FILLING AND LEAK-TESTING PROCEDURE

### STEP 1

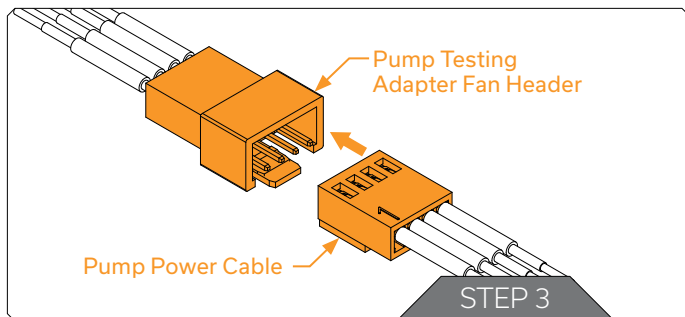
It is mandatory to do the following:

1. Disconnect all PSU power connectors (4/8-pin ESP, 24-pin ATX, PCI-express power, SATA power) in your computer.
2. Plug the EK-ATX Bridging plug (enclosed) to your 24-pin ATX PSU cable which allows jump starting your computer.
3. Connect the EK-Cable Pump Testing Adapter's SATA power header to your vacant SATA power connector on your PSU (see picture under STEP2 for explanation)

This procedure requires only the pump to be connected to the power supply (PSU). Everything else needs to be disconnected!

### STEP 2

Plug the EK-ATX Bridging plug (enclosed) to your 24-pin ATX PSU cable to jump start your computer. Connect the PSU SATA power connector to the female SATA power header from the pump testing adapter.



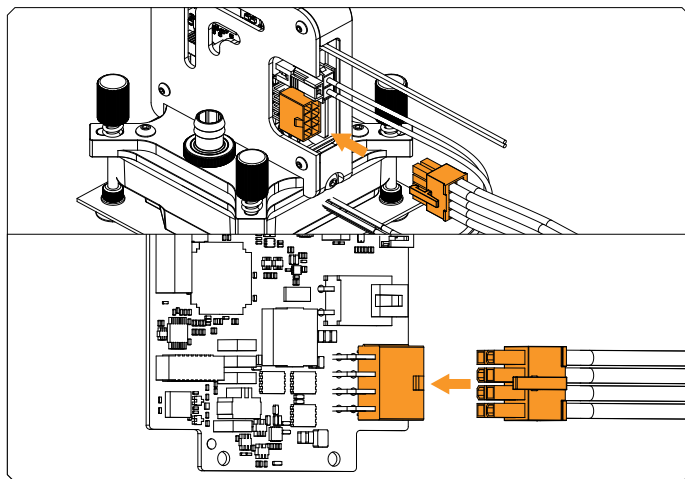
### STEP 3

It is mandatory to do the following:

1. Unplug the pump 4-pin PWM connector from the motherboard FAN header (if already installed).
2. Plug the pump 4-pin PWM connector into the male 3-pin FAN connector on enclosed EK-Cable Pump Testing Adapter (see picture under STEP3 for explanation).

Your system is now ready to be charged for the first time. Inspect all parts of the loop, and in case the coolant leaks, fix the issue and repeat the testing process. To prevent possible damage, ensure that all hardware is dry before the system is powered on.

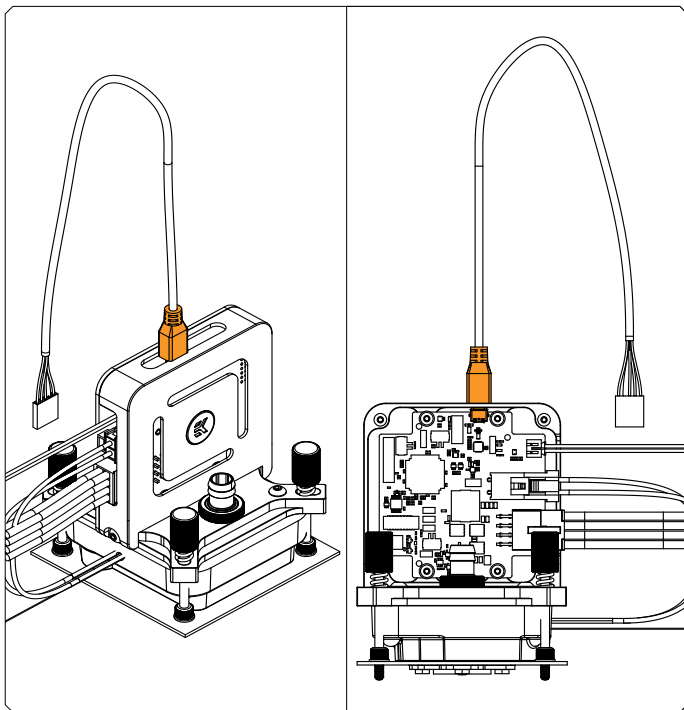
## CONNECTING THE TEC PLATE ELECTRONICS



Plug the 8-pin PCIe connector from the power supply to the connector of the EK-QuantumX Delta TEC CPU water block controller unit.

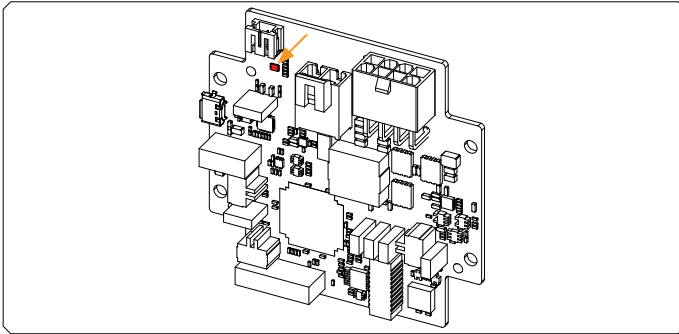
The installation of the CPU water block is now complete.

## ESTABLISHING CONNECTION BETWEEN WATER BLOCK AND MOTHERBOARD



When the water block with the controller is installed on your motherboard, the communication connection also must be established. Use the USB-A to micro USB cable, which is included in the package. Connect the micro USB to the top of the water block, as shown in the picture.

## SOFTWARE INSTALLATION



Boot the system with the cooler connected – you should see a red solid LED light coming from the cooler.

- > Display adapters
- > Firmware
- > Human Interface Devices
- > IDE ATA/ATAPI controllers
- > Keyboards
- > Mice and other pointing devices
- > Monitors
- > Network adapters
- > Portable Devices
- > Ports (COM & LPT)
  - Silicon Labs CP210x USB to UART Bridge (COM4)
- > Print queues
- > Processors
- > Software components
- > Software devices
- > Sound, video and game controllers
- > Storage controllers
- > System devices
- > Universal Serial Bus controllers

After booting the system, you will see that Windows will recognize a new USB device. Please check the device manager to check that you have the following device installed.

If the device has a yellow bang (warning) showing that the driver is not installed, please click on Update Driver and Windows 10 will try to retrieve the USB driver and install it

If that doesn't work please install the driver from the following link:

- [https://www.silabs.com/documents/public/software/CP210x\\_Universal\\_Windows\\_Driver.zip](https://www.silabs.com/documents/public/software/CP210x_Universal_Windows_Driver.zip)

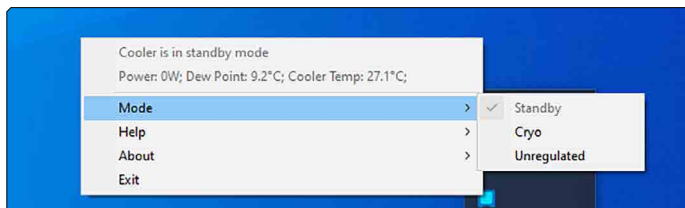
Note: if you don't see the device in Device Manager please see the troubleshooting section

Please download the latest version of the software from the link below and run the installer

- <https://downloadcenter.intel.com/download/30055/Intel-Cryo-Cooling-Technology>
- Download Intel® Cryo Cooling Technology software



## FUNCTIONAL TESTING AND VERIFICATION



If the software was installed properly you should see a yellow icon in the windows notification tray (see the image below). The mode should be "standby".

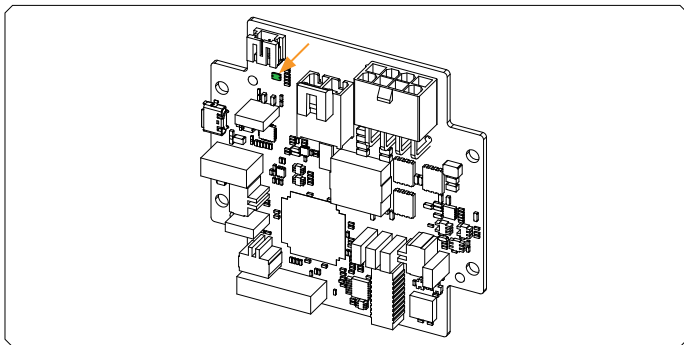
Please check the troubleshooting section if it is not present.

Click on the notification tray and select the "Cryo" mode – the icon should turn to green and there should be a green LED slow blinking on the cooler.



### WARNING!

Given that the CPU is cooled by the EK-QuantumX Delta TEC directly to achieve low temperatures, the rest of your liquid cooling loop will be under stress from the TEC plate. Do not use your CPU temperatures as a baseline for your Fan or Pump speeds! It is best to monitor the coolant temperature or set the fans and pump at a fixed speed level!




## SUPPORT AND SERVICE

In case you need assistance, please contact:


**<http://support.ekwb.com/>**

EKWB d.o.o.  
Pod lipami 18  
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## SOCIAL MEDIA

 EKWaterBlocks

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