

Summary

- Hex 2.0 electronic controls are optimized for efficiency performance, with two stages of active cooling
- HEX 2.0 App allows for not only customization of LED color, but allows user to customize performance profile suitable for use case and environment

Introduction

As a PC enthusiast, builder or gamer the goal is to extract the most performance from the PC with a touch of personal style. The ability to tweak and customize for your needs and applications is why most decide to build their own PC in the first place. Overclocking the CPU to improve performance is a widely known tact and cooling those overclocked processors is a job that typically falls to all-in-one liquid coolers or large air coolers. The HEX 2.0 by Phononic is a new CPU cooler that gives you all the performance of a liquid cooler in a small form factor while also giving you the ability to customize for your specific applications through its electronic controls.

Design Description

The performance of the HEX 2.0 is achieved with the use of active heat pumping technology in the form of thermoelectric coolers (or Peltier coolers) embedded in the base of the heatsink. Since thermoelectric coolers need electricity to pump heat - like a mini air conditioner for your CPU- Phononic has designed sophisticated control electronics to optimize power usage, remove any danger of condensing water on the cold surface and give the user a chance to customize the look and performance. First, the control method is straightforward. The HEX 2.0 has incorporated temperature sensors that tell the onboard microcontroller when the temperature of the baseplate is rising – i.e. when the CPU is under load. The HEX 2.0 then turns on power to the thermoelectric heat pump in 2 stages. The first stage uses about 15 Watts of power and if the temperature increases further (meaning more load on the CPU), a second stage that applies 35 Watts of power is turned on.

The optional USB interface and HEX 2.0 Dashboard (shown in Figure 1) app allow for greater customization of the cooler, including a selection of cooling profiles. These profiles change the temperatures where these stages of power are applied. So, in *Insane* mode, the power is turned on at lower temperature while in *High Ambient* mode, the power is applied at higher temperatures compared. The *Standard* mode is how the unit is shipped and is based on testing of the units for general use.

An important point to consider is the possibility of condensing water on the CPU cooler if the thermoelectric heat pump forced the temperature too low. In the case of the HEX 2.0, this is avoided with the use of these electronic controls which will turn off the thermoelectric heat pump when the heat sink temperature approaches typical room temperatures of 25C. However, this is why using the optional USB connection and Dashboard application are important – it gives you

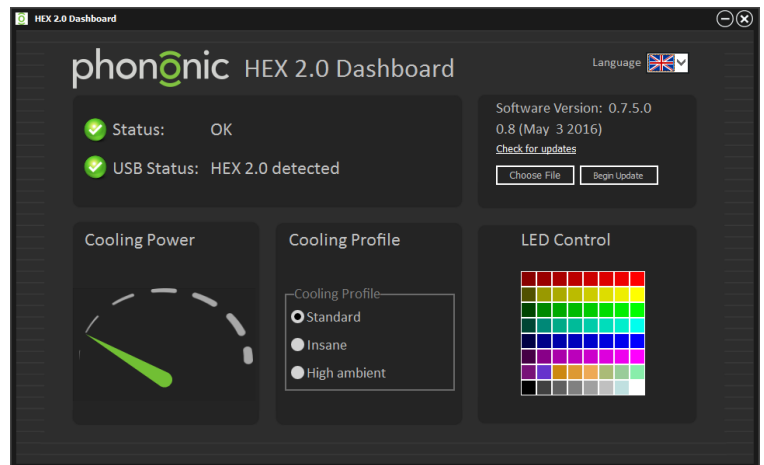


Figure 1 – HEX 2.0 Dashboard application lets you select the Cooling Profile, change LED color, get and update new control firmware and monitor the cooling power

the ability to select the right Cooling Profile for your environment. *High Ambient* mode is a recommended if you are in a room with no air-conditioning or high humidity.

Of course, the HEX 2.0 dashboard also gives you the ability to change the LED color (or turn it off) as well as check for firmware and dashboard updates from the Phononic website. And in the end, this is what you were aiming for all along – a high performance system, with new technology and controls that allow you to customize your PC for how you run it.

Conclusion

We look forward to learning from you too. Since the Hex 2.0 has firmware that is upgradeable in just a few simple steps, your feedback will inform future firmware updates to enable greater control over cooling power and LED customization. So, please give us your feedback and we will work with you to give more options for your HEX 2.0.