

PRODUCT INFORMATION

Intel 12th Gen CPU Contact Frame

Thermal Grizzly advertises with the slogan „High Performance Cooling Solutions“ – and in collaboration with mechatronics engineer and OC legend Roman „der8auer“ Hartung has further substantiated this claim. The Intel 12th Gen CPU Contact Frame is completely manufactured in Germany and is a mounting aid that replaces the original Integrated Loading Mechanism (ILM) of the motherboard to enable a higher cooling performance of CPU coolers through an optimized contact pressure.

It is precisely this optimized cooling performance that has been used by internationally renowned professional overclockers to set benchmark world records with Socket-1700 processors:

The overclocker „Safedisk“, who works for ASUS Taiwan in motherboard development, has overclocked an Intel Pentium Gold G7400 to 6.378 GHz under liquid nitrogen with a prototype of the Intel 12th Gen CPU Contact Frame. He was thus able to secure first place in the world rankings with 2,548 points in the Cinebench R20 benchmark.

The overclocker „Splave“ was able to achieve two world records. The OC champion involved in the development of the Contact Frame was able to overclock an Intel Core i9-12900K to 6.943 GHz with an early prototype and thus achieve 11,137 points in Cinebench R20.

With the Intel Core i9-12900KS, Splave achieved another world record thanks to the Contact Frame by overclocking the processor to 7.529 GHz. With this clock rate, the PIFAST benchmark could be completed in 7 seconds and 770 milliseconds. (LINK)

The Intel 12th Gen CPU Contact Frame in everyday use

But „normal“ PC users like gamers and content creators can also benefit from the Intel 12th Gen CPU Contact Frame. Gaming PCs can display maximum FPS (Frames per Second) longer without running into a temperature limit. The same applies to CPU-intensive applications, such as video rendering, where the processor is heavily stressed. Thanks to the better cooling, the CPUs can clock up longer and thus render videos faster.



Using an Intel 12th Gen CPU Contact Frame is not only worthwhile for high-end systems. Even in silent systems, which should run as quietly as possible, the better heat dissipation away from the CPU means that fans, for example, can operate at lower speeds and are therefore quieter.

The installation of the Contact Frame is very simple, as only the pre-assembled ILM has to be removed before the CPU and Contact Frame are installed. Required tools in the form of a T20 angle wrench are included. The outer dimensions of the Contact Frame are based on the Intel ILM, so there should be no restrictions when installing the CPU cooler. Besides tower coolers, AiOs and custom water coolers, the Contact Frame can also be used with monoblocks.

Temperature advantages with the Intel 12th Gen CPU Contact Frame

The problem with the insufficient contact pressure in Intel's LGA1700 socket is well known in the PC enthusiast community and there is, for example, a DIY solution with the „Washer-Mod“, where washers are used under the ILM. The achievable temperature improvements are not only dependent on the thickness of the washers, but also on the manufacturer (Foxconn or Lotes) of the Integrated Loading Mechanism (ILM).

The temperature advantages of using the contact frame are the same as with the washer mod and vary from CPU to CPU. They also depend on the condition of the processor as well as how often the CPU has been mounted. Without physical modification, an improvement of up to 6 degrees Celsius is possible. Detailed tests on the subject can be found at [Igor's Lab](#).

Further advantages through CPU lapping

In so-called CPU lapping, the integrated heat spreader (IHS) of the CPU is ground flat. Due to production and other influences, the IHS of a processor is usually slightly curved outwards. To increase the contact surface of the CPU cooler, the IHS is ground flat (Attention: CPU lapping voids the warranty of the processor!).

Using Thermal Grizzly's optional lapping tool, available in a timely manner, the CPU is clamped to the Contact Frame on a special acrylic fixture. This applies a similar tension to the CPU as it would in the socket. In this state, the CPU can then be ground by approximately 40-150µm. Lateral elevations at the lapping tool prevent damages at the contact frame.

Depending on the water cooler or AIO used, a further 2-6 °C temperature improvement is possible by CPU lapping.

Important: The water cooler should also be ground, since some blocks are convex.

Why Contact Frame instead of „Washer Mod“?

The uneven contact pressure along the longitudinal axis of the IHS can lead to permanent deformations on the CPU. Generally, there are strongly and less strongly bent CPUs in processors based on the Alder Lake architecture. By using the Contact Frame, this problem is circumvented.



This is because, unlike the standard ILM, the Contact Frame offers an optimized internal structure that distributes the contact pressure evenly instead of concentrating on two points along the longitudinal axis of the IHS. As a result, the CPU is pressed evenly into the socket and curvature of the IHS is avoided.

With the „washer mod“, it can also happen that some of the socket pins do not make full contact with the CPU, which can lead to problems with the RAM, for example, if too thick washers are used. The problem with the lack of contact pressure in the Washer Mod was especially criticized in the extreme overclocking community.

The problems with the fluctuating RAM clock rates in connection with the Washer Mod is also dependent on the motherboard used and also on how often the CPU has already been used. CPUs are clamped into the socket much more often during overclocking. The more often the CPU has been inserted in the stock socket, the bigger the problems with the clock rates become.

This is probably due to the fact that the processors are subjected to a lot of pressure when the ILM is closed, which causes the processor including the IHS to bend and lose contact at the edges after frequent repetition. The offset inner structure of the contact frame is designed in such a way that the contact pressure is concentrated on the corners.