

# Installation Guide for Processors

We explain you the installation of processors (CPUs) in simple steps.

**Hint:** If you search general information on the functional principle and choosing of CPUs, you can find it at the end of our description of the purchased product.

## 1. Before Installation

When installing or changing computer components it is important to ground oneself first because computer components can be damaged irreparably by electrostatic energy. Just touch a non-painted part of a heater, a water faucet or water conduit or a similar grounded piece of metal. After that you should begin the installation without friction at or with clothing, a chair or the floor. Artificial fibers charge themselves particularly heavily and quickly. You should avoid contact with such materials during the installation.

First shut down your computer and disconnect it from the energy grid.

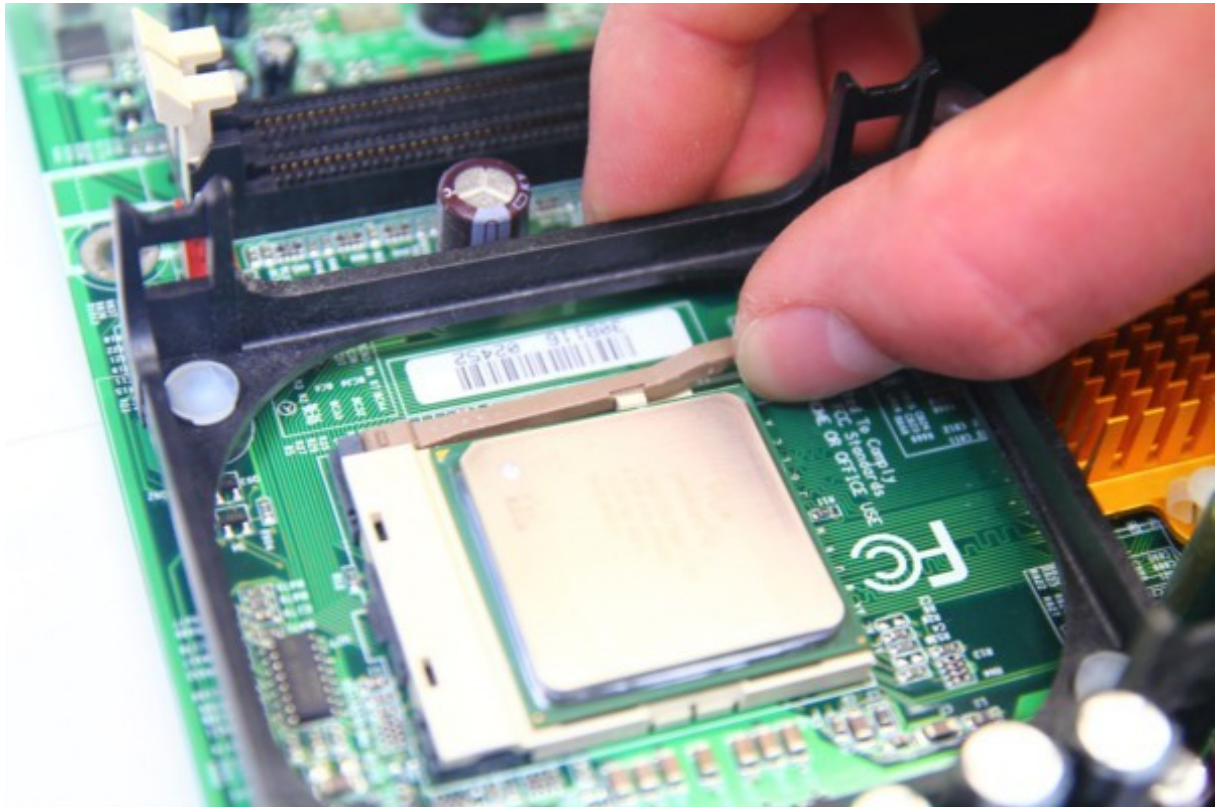
**Important:** Disconnect the main power plug prior to opening the computer!

## 2. Removing the old CPU

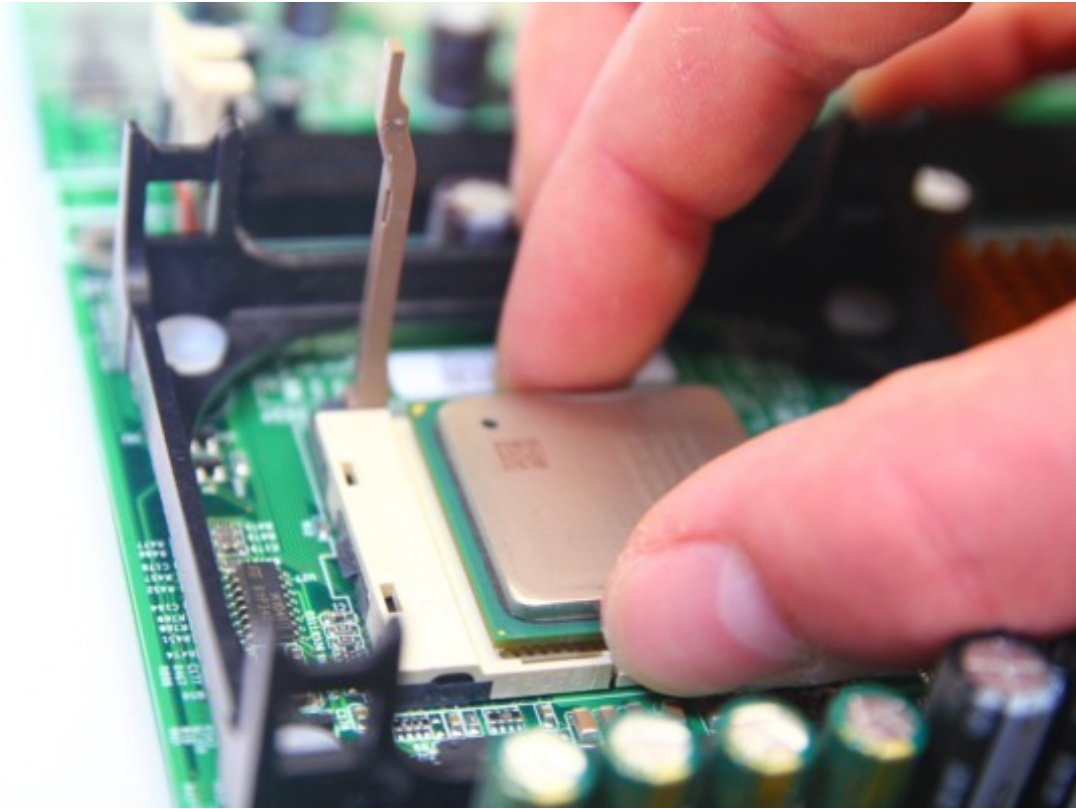
If you want to exchange an existing processor, you have to remove the one already installed first. Therefore the cooler has to be removed previously. Because the cooler is different for any socket, unfortunately it is not possible for us to list all types and attachments.

The exact label of the CPU socket is noted in the manual of your system respectively your motherboard. You can determine the attachment system of the cooler by that label. Unplug the connector of the fan from the motherboard prior to removing the cooler.

After the cooler is removed you see the processor in the socket. On one side of the socket there is a lever. This lever locks the processor in the socket and has to be put upwards for removing the processor. Normally this lever is minimally locked laterally in a detent which has to be unlocked prior of moving the lever upwards. Pull the lever carefully a little bit sideways and then move it upwards. The lever is not movable sideways! The sideways movement is minimal.



When the lever is set upwards, you can remove the processor from the socket. At some sockets (e.g. Intel socket 775) there is a metal plate above the CPU for protecting the socket which can also be turned up.



**Hint:** Proceed with care. Especially CPUs which have pins at the bottom are very sensitive. As far as possible avoid touching the processor at the pins. Also take care that no parts break off from the processor by rough handling. Especially processors with unprotected cores ( so called DIEs, mostly laptop CPUs or older models) are very sensitive. If pins are bent they can be repaired **carefully** with a small screwdriver, a needle or the like. When doing this be extremely careful.

### 3. Installing the new CPU

For installing a new CPU do the following:

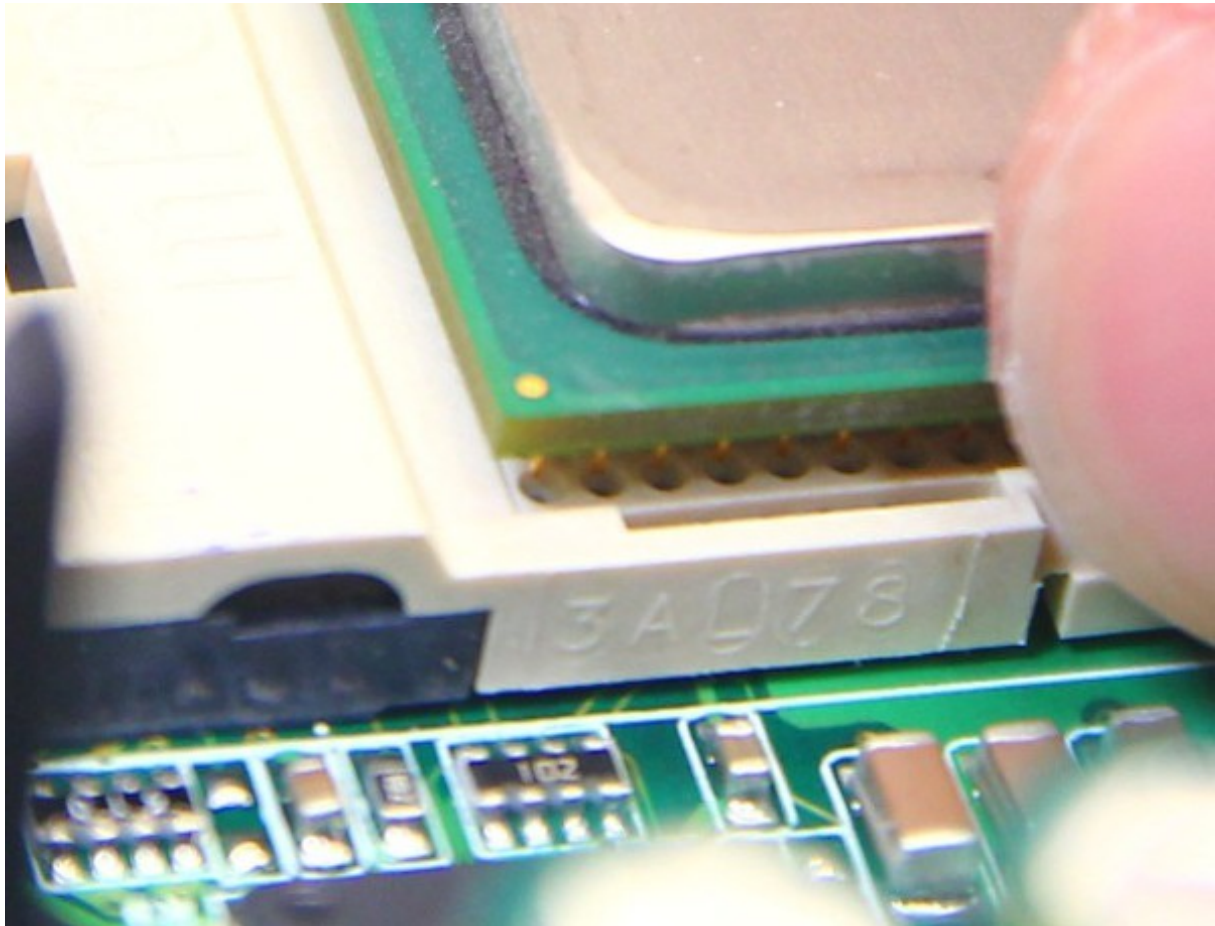
Assure that the lever and the maybe existing metal plate are set upwards and the socket is clean and dust-free.

The CPU is marked on one corner with a (golden) triangle. The socket also has a mark on one corner. It is important that the marked corner of the CPU is placed on the marked corner of the socket.



**Important:** A CPU only fits in the socket in this position!

Processors with pins only slide in the socket in this position. Processors with small contact plates mostly have notches who also only fit in the corresponding separators of the socket in one position.



**Important:** Under no circumstances try installing a processor whose marks and / or notches and separators do not match! In this case you have the wrong CPU or are installing it wrong way round.

When in the right position, the CPU slides easily into the socket. It is possible that it is necessary to exert a little bit pressure to insert the processor fully into the socket.  
If your socket has a metal plate, turn it down now. Push the lever of the CPU socket down and lock it again.

## 4. Applying the thermal grease

Prior to the installation of the cooler there must be thermal grease applied.

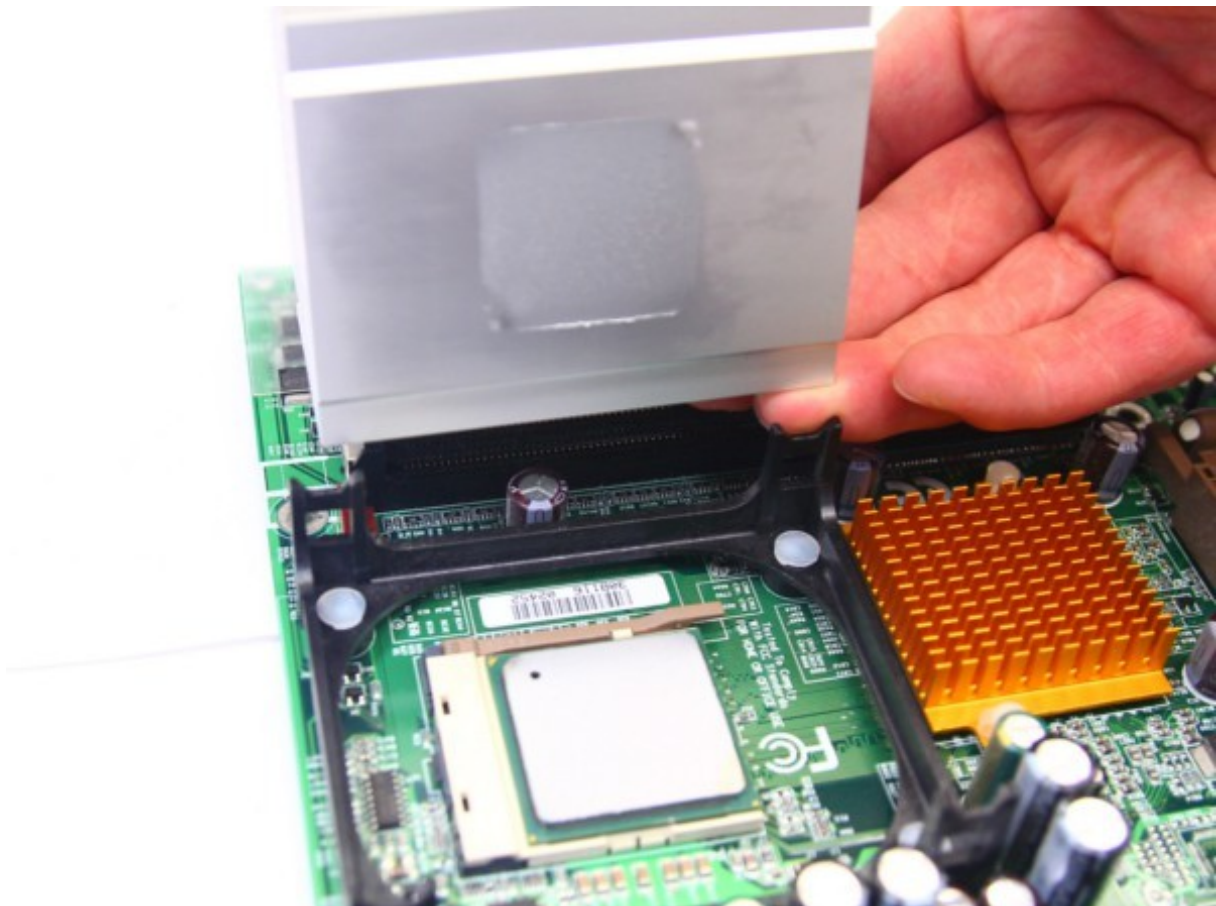
**Hint:** Thermal grease closes smallest gaps between the CPU and the cooler so that the produced heat can be optimally derived. Usage is necessary because a processor can get irreparably damaged respectively destroyed by too much heat generation. Thermal grease is available in the the specialized trade (also favorable in our online shop) in different qualities.

**Important:** Do not use too much thermal grease. The thermal grease just has to close little surface irregularities and so improve the thermal conductivity. If there is too much thermal grease applied, the thermal conductivity even gets worse. If thermal grease is applied to the bottom of the CPU, the socket or the transistors on the top of some types of processors, this can lead to short circuits and irreparable damages. Therefore always use thermal grease very sparingly.

For applying the thermal grease, the surface of the CPU and the contact area of the cooler have to be clean and free from dust and fat. Simplest cleaned are CPU surface (the so called heat spreader) and the contact area with a soft, fuzz-free cloth and an appropriate cleaning agent. Best with isopropyl alcohol (available in any pharmacy). Alternatively there are special cleaning agents.



Depending on the type of the processor it is either useful to apply a small blob of thermal grease (which will be spread by contact with the cooler) in the middle of the contact area or to apply a thin layer of thermal grease (e.g. with a fuzz-free Q-tip, a credit card or a piece of cling film on one finger) on the whole contact area.



Important is only that at the end there is a thin layer of thermal grease on the whole area which has contact to the cooler (and only on this area).



## 5. Installing the cooler

Now you put the cooler carefully on the CPU and attach it. Because the attachment systems are different for each socket, going into this in detail would take us too far afield.

If you are unsure on how the cooler is attached, you can find guides on the different sockets in the Internet.

Connect the fan of the cooler back to the power supply to the motherboard. The plug is normally located near the CPU socket and labeled CPU FAN (or just FAN)



## 6. Check

Do not close the computer yet. Connect and start the computer.

**Important:** Under no circumstances reach into the computer while it is running! If the fan is not working, turn the computer off first and then solve the problem while it is turned off and the main power plug is not plugged in.

In this step you check if the fan of the cooler is working. If the fan is not working, turn your computer off immediately! You can do this with the switch of the power supply or if your power supply does not have a switch by simply pulling the plug. It is important that the fan of the cooler works correctly, because a CPU overheats very quickly without active cooling.

Last you check, if the processor is working with the right speed and if he does not get to hot. Both you can check in the BIOS (“Basic Input Output System” - Firmware for configuring the hardware). You call up the BIOS by pressing a certain key when the computer is starting. Which one it is is displayed normally. In the majority of cases it is either the “Del” - key or the “F2” - key. In the BIOS you can get information about the CPU and configure the settings under the specific menu.

**Important:** If you configure the BIOS settings you should be sure what you are doing. By wrong BIOS settings, hardware of your computer can get damaged! When in doubt, consult an expert.

The CPU temperature must not exceed the T-Case temperature (maximal temperature) specified for the particular CPU by the manufacturer (and specified in our product description and findable in the Internet).

If the temperature is considerably lower than the T-Case temperature and the speed is matching the specification, then the CPU is installed correctly.

When the CPU and the fan work properly, turn of your computer and close the PC case.

## Troubleshooting

**Problem 1 – wrong clock rate:** If the CPU is identified correctly, but is working with the wrong clock rate, you can correct this in the BIOS. If this brings no success, in rare cases it could be possible that there is a compatibility problem (especially with laptops). In this case often the only thing that helps is a intensive search engine research.

**Problem 2 – temperature exceeds T-Case temperature:** If the temperature exceeds the T-Case, turn off your computer immediately. Probably the cooling does not work properly. Please check again if the CPU fan is working and if the cooler completely has contact with the CPU surface. If the temperature is to high despite a proper cooling, probably the cooling is designed to weak for the new CPU (which mostly generates more heat when having more power). This is often the case when exchanging laptop CPUs for example. Therefore compare the “max TDP” - specification of the manufacturer for both CPUs. It states the generated heat given in watt. It can be possible, that you need to purchase a new, more powerful cooler additional to your new CPU in specialized trade (also available in our online shop).

**Problem 3 – Computer does not start or gives an error sound:** In this case the CPU is either not installed correctly, is not compatible or faulty. Please search the Internet, consult the manual of your system (or our guide in the description of the purchased product) if the CPU is compatible with your motherboard. Especially with multi-core processors it is possible that the motherboard does not support them. If the CPU is not working despite it is compatible, you should repeat the installation procedure and check the pins and the slot for damages and impurities which can have effect on the contact.

### Final Hints:

All statements made refer to socket CPUs. There are older types which are installed into a slot. Please research information on those in the Internet if required. In addition there is to mention, that older motherboards are configured with jumpers, what means that in most cases the jumpers have to be reset when the CPU is changed. Newer motherboards are configured completely jumperless in the BIOS. Consult the manual of your motherboard regarding this.

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