Step-by-Step Guide for Building AM5 PC's

Overview

This guide will take you through the process of building your very own AM5 desktop PC. This guide is for both beginner PC builders and enthusiasts looking to upgrade to the new platform. AM5 is AMD's latest socket platform. The platform has 3, which is made up of 3 unique part types. These are the CPU, Ram, and Motherboard. Each of these parts must be part of the same platform, otherwise they are not compatible.

Building your own PC has many benefits. It is a cost-efficient process. With typical prebuilts, customers are paying at a markup to account for the labor that goes into making the build. Doing the labor yourself, you only pay the markup on the parts themselves. You also get complete customization when building it your way. Prebuilt AM5 advertisements use the big-ticket names to entice customers(GPU and CPU names), but almost never mention the specs of the lesser thought of parts. They do this to skimp out on performance to save money. Examples of this include 1x16gb ram stick (preventing the pc from being able to use the faster dual channel option that comes from using 2x8gb sticks) or using a cheap power supply unit with limited warranty and unsafe reliability. Building your own also gives people the edge when it comes to repairs in the future.

By the end of this guide, the reader will be able to confidently increase their hardware knowledge and building skills.

List of Parts, Tools, and Materials

A majority of this list will be filled with PC parts to obtain. There are a couple of tools that are necessary, and materials that will help.

Materials: Anti-Static Mat

The only material on this list is not necessary, but may be helpful for users worried about static electricity potentially causing harm during the build. These mats are

made of anti-static, conductive, rubber material. The mats hold in place well on tables and provide ample cushion for pc parts to prevent accidental damage when setting them down.

Tools: Phillips #1 Screwdriver (preferable magnetic), Phillips #2 Screwdriver(preferable magnetic), Thermal Paste, Screw Tray, Vise Grip, Flashlights

Both screwdrivers cover all potential screw types you will run into. The screw tray keeps your parts organized throughout the build process. The vise grip will be useful in the event a screw gets stripped and needs to be twisted out. The flashlight is a that will give you enough light to see what you're working on.

Parts: AMD Ryzen 7000+ CPU, DDR5 RAM, B650 Motherboard, SSD or HDD, Power Supply, CPU Air Cooler, PC Case, Monitor, Operating system on a USB (Windows or Linux)

Each of these parts are necessary for the build to work. If any are treated as optional, the build will be compromised.

Warnings

Builders should always ground themselves to reduce the risk of static discharge into the parts. They can be very vulnerable to this electricity, especially the motherboard. The Power Supply Unit (PSU) should be unplugged until the final step of the build. When putting parts together, never force a part to fit in. If there is enough resistance, something may be wrong, and forcing the parts together could result in an irreversible break.

Quick Start Guide

The easiest/simplest way to build is to start on the parts in the motherboard. These are the CPU, RAM, Air Cooler, and SSD. Install the CPU into the motherboard, then install the RAM to the side of it. From there you would insert the SDD (if using one), and screw it in. Next is adding the air cooler on top of the CPU. Screw the motherboard into the case. Connect all the PSU cables into the motherboard (and HDD if using one). Boot up the PC with your operating system flash drive and go through the given steps to install the OS.

Glossary

AM5 Socket: AMD's Ryzen CPUs, goes from the 7000's to the 9000+ series.

ATX/mATX: These are 2 different motherboard sizes that can be used for AM5 builds. ATX is the "regular" size board (can be used in any case size down to mid-tower. mATX is the microATX size, when can be used with micro cases. It is important to note that mATX boards can also be used in bigger case sizes as well.

BIOS: Stands for Basic Input/Output System. Different BIOS versions support different CPU types, so it is important to make sure your motherboard is using firmware that supports your CPU version.

Steps

1. Your Workspace

Figure 1: Workspace

   a. Make sure you are using a flat surface like a table. Have all your components nearby for easy access. Your motherboard should be directly in front, with the CPU side facing towards the ceiling.

2. Install the CPU

Figure 2: Initial CPU Socket

a. There is a small metal arm on the right side of the CPU. Unhook it and pull up to open the CPU tray.

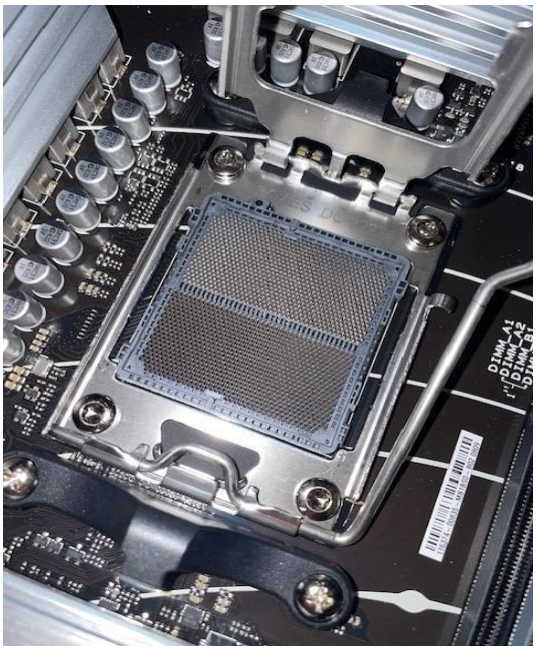

Figure 3: Open CPU Socket

b. The CPU will go into this tray gently. There is a small gold triangle in the CPU socket, as well as the CPU itself. These triangles need to be in the same corner when the CPU is placed in. Once placed inside, give the CPU a little wiggle to make sure it is seated on the pins correctly. There should be minimal movement.
c. Use the small metal arm to close the cover, pushing it down toward the board. Once you hear a click, you're done. It should look like the below image.

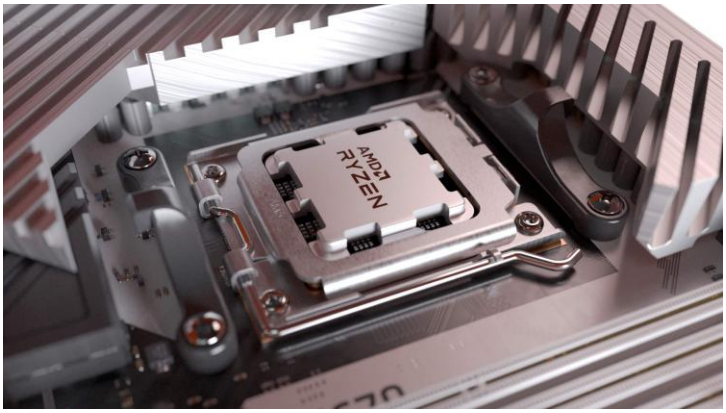

Figure 4: CPU Socket with CPU Locked In

3. Install RAM

Figure 5: Ram Stick Sockets

a. RAM goes in the slots to the right of the CPU. Make sure the latches are open. These will automatically close when the RAM is placed in the slots. IMPORTANT: If you use 2 ram sticks, place in rows 2 and 4. This will allow your PC to use dual channeling to speed up memory processing.

b. With each stick, place down into the slot with the gap in the slot matching the gap in the yellow “teeth” of the RAM stick. Again, you’ll hear a click when each stick is properly seated.

4. Install SSD

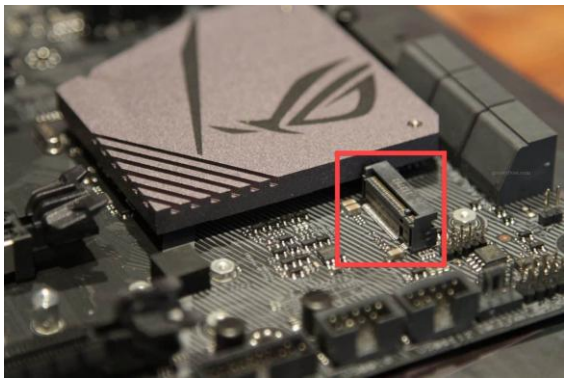

Figure 6: SSD Holder

a. SSD’s will go into an elevated slot towards the bottom of the motherboard. The SSD will be placed at angle. Similar process to the ram, match the yellow “teeth” on the SSD with the open gap in the SSD slot.
b. Once in, push the SSD flat, so that it is level with the motherboard. A small screw will need to be screwed in at the open end, using the Phillips #1 screwdriver.

5. Install CPU Cooler

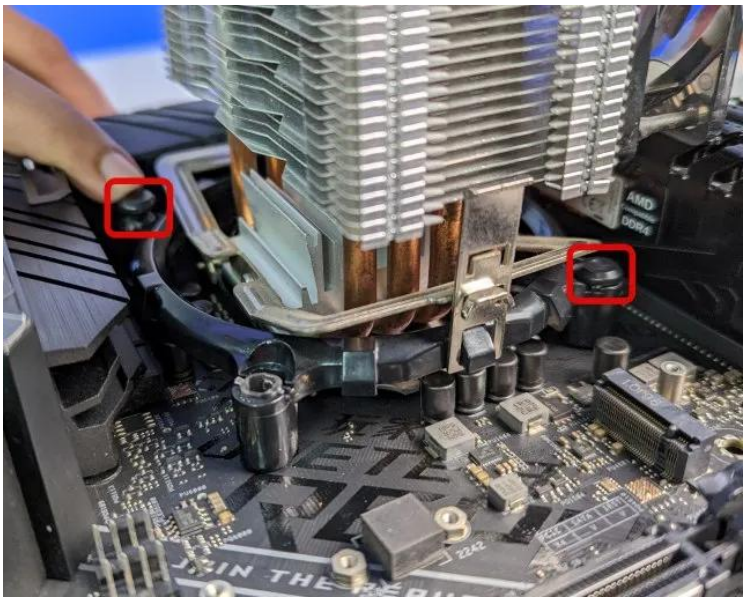

Figure 7: CPU Cooler Placement

   a. Each cooler will contain their own instructions, but this is a general overview. Using the Phillips #2 screwdriver, unscrew the black plastic brackets on the motherboard that are surrounding the CPU on 2 sides. Then screw in the metal brackets from the air cooler into the same places. Using the thermal paste, squeeze a pea sized drop on the CPU. From here, place the cooler on top of the CPU, screwing it into the metal brackets we screwed in earlier.

6. Mount the Motherboard

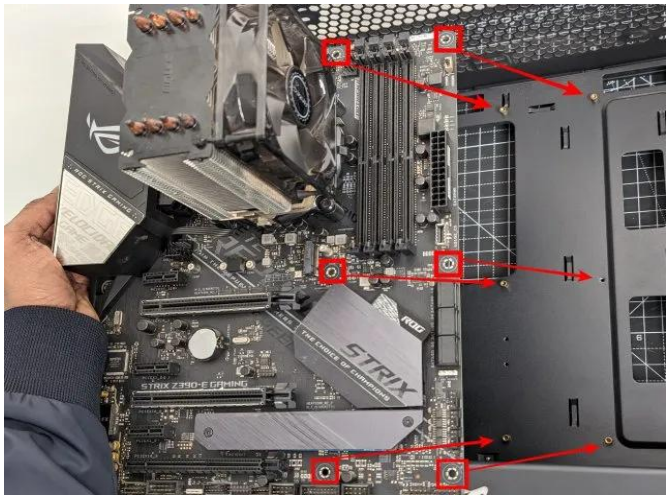

Figure 8: Motherboard With Labled Screw Holes

a. Be careful with this section. The back of the motherboard contains lanes that cannot be scratched, otherwise the board will break. Gently place the board into the back, left side of your case. The ports on the left side of the motherboard should line up with the open space in the left side of the case. The screw holes in the motherboard should also line up with the spaces in the back of the case. Use the Phillips #2 screwdriver to insert a screw into every hole that matches a spacer.

7. Install Power Supply

Figure 9: Power Supply Installation Location

a. Power supply can be inserted into the power supply compartment of the case now. Place it in the section designated by your case manual (usually on the bottom of the case). The fan component should be facing downwards if the case allows for airflow in the bottom (gap between the bottom of the case and table) or upwards otherwise.

8. Connect Power Supply Cables

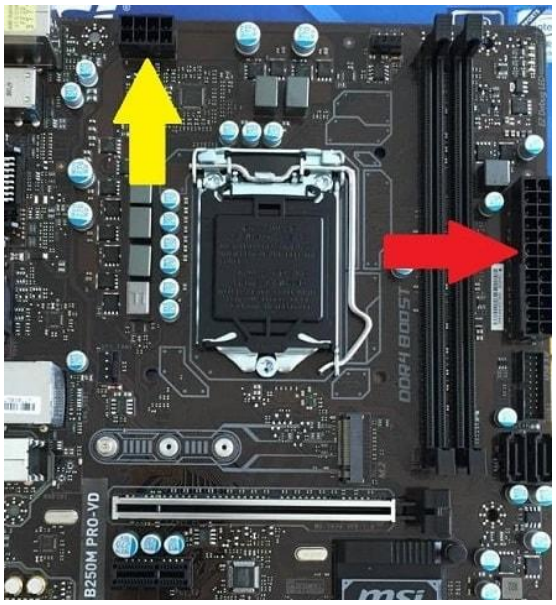

Figure 10: Power Connector Locations For Motherboard

   a. Using your motherboards manual, plug each of the associated cables into your motherboard. This will include a 24 pin power cord, fan headers and CPU header.

9. Cable Management
   a. This section is up to personal preference. Cables should be neatly tucked away, but the manner that you organize them is subjective. Zip ties are a great resource for grouping similar cables together. Some cases even come with Velcro straps in the back to keep your cables separate and neatly tucked away into the case.

10. Install the Operating System.
   a. A bootable version of your OS of choice will need to be downloaded onto a usb drive. Once completed, flip the on-switch on the power supply, plug it into an outlet, and place the USB stick in a usb slot in the motherboard (accessible from the side of the case). New builds without an operating system will automatically boot with the USB drive. If for some reason it does not, you can navigate to “Boot Options” in the BIOS menu and select your usb. Follow the step-by-step instructions from the OS drive.

Conclusion

After pressing the power button, you should see the monitor boot into the BIOS screen. If so, you made it! Congratulations on finishing your AM5 build. From here you can customize your PC to your heart's content. Some system maintenance will be necessary in the near future, such as shutting down and dusting your parts. AM5 still has new, upgraded components coming out, so this build style will last you for some time.