

# PC Building Process Technical Manual



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The purpose of this manual is to guide readers in the steps and processes of assembling a desktop PC. Allowing you to tailor the specifications to your exact needs, while also giving you a better understanding of how the hardware components work together. This guide will walk you through the process of building a PC, covering everything from selecting the right components to the final setup. This manual is the first point of contact for anyone experiencing a technically related task they don't know how to complete without outside help.

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Building a personal computer from the beginning may seem like a daunting challenge, but it is a very fun and incredibly rewarding experience. It allows you to tailor the specifications to your exact needs while giving you a deeper understanding of how hardware components work together. This guide will walk you through the process of building a PC, covering everything from selecting the right components to the final setup.

## **Necessary Supplies for Building a PC**

1. CPU (Central Processing Unit): This is the brain of your computer where most calculations take place.
2. Motherboard: A motherboard is the main circuit board in a computer that allows communication between necessary electronic components.
3. RAM (Random Access Memory): RAM is your system's short-term data storage; it stores the information your computer is actively using so that it can be accessed quickly.
4. Graphics Card: Essential for rendering images, video, and animations, particularly important for gaming and/or professional graphic design.
5. Storage (SSD/HDD) (Solid State Drive/Hard Disk Drive): You will need at least one storage drive for your operating system, applications, and personal files.
6. Power Supply Unit (PSU): This converts mains alternating current to low-voltage regulated direct current power for the internal components of your computer.
7. Case: The case stores all the components and comes in various sizes and styles.

8. Cooling System: Fans and/or a liquid cooling system to ensure your components stay at an optimal temperature.
9. Operating System Software: Windows, Linux, or MacOS.

## **Assembly Order**

### Prepare Build Area:

1. Ensure you have a clean, static-free workspace (using an anti-static mat is recommended).
2. Gather tools and components.

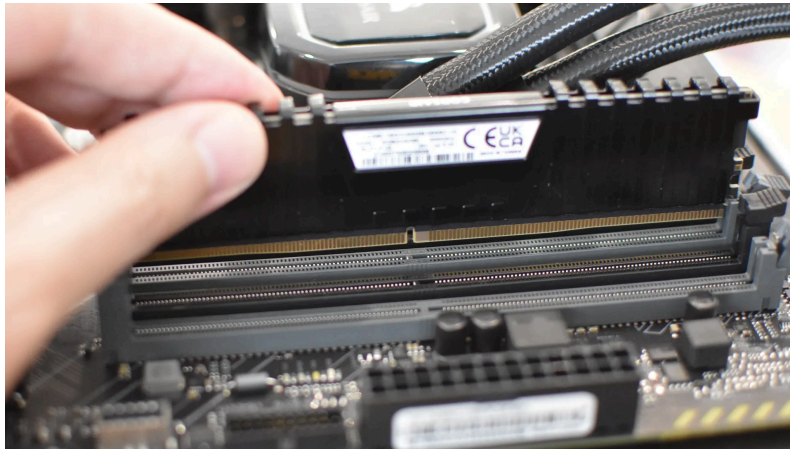
### Install the CPU:

1. Open the CPU socket on your motherboard.
2. Align the CPU with the socket (look for the matching corner pin) and gently place it inside.
3. Lock the CPU into place.



### Install RAM:

1. Open the RAM slots on your motherboard.
2. Align the RAM sticks with the slots and press firmly until they click into place.



### Case Preparation:

1. Remove the side panels of your case.
2. Install standoffs for the motherboard.



### Install the Motherboard:

1. Carefully place the motherboard in the case, aligning it with the standoffs.
2. Screw the motherboard onto the standoffs.



### Install the Power Supply:

1. Place the PSU in its designated spot.
2. Connect the power cables to the motherboard and other components.



#### Install Storage Drives:

1. Screw your SSDs or HDDs into the drive bays.
2. Connect them to the motherboard with SATA cables.



#### Install the Graphics Card:



1. Insert the graphics card into the appropriate PCIe slot on the motherboard.
2. Screw it into place and connect any necessary power cables.

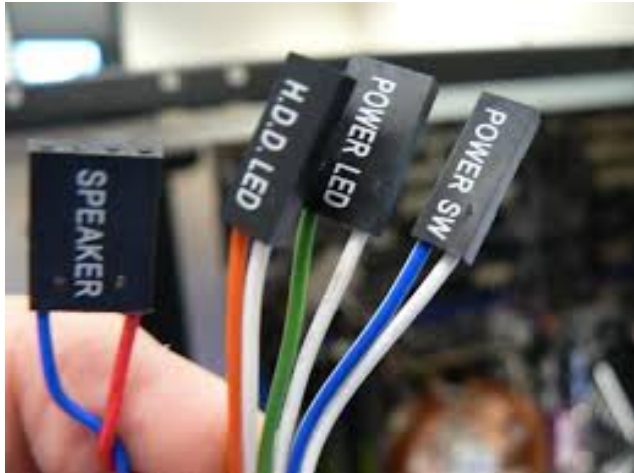


#### Install Cooling System:

1. Thermal Paste: Apply a pea-sized amount of thermal paste to the CPU before mounting the cooler for optimal heat dissipation.
2. If using fans, screw them into the designated spots in your case.
3. For liquid cooling, mount the radiator and attach the pump to the CPU.

#### Connecting the Cables:

1. Motherboard Power: Connect the 24-pin cable to the motherboard to provide power.
2. CPU Power: Connect the 8-pin or 4-pin cable to the motherboard to power the CPU.
3. SATA Devices: Connect SATA power and data cables to your storage drives.
4. Fans and RGB: Connect any fans or RGB lighting strips to their respective headers on the motherboard or via a controller.
5. Graphics Card: Ensure the graphics card is connected to the power supply with the required PCI-E cables.

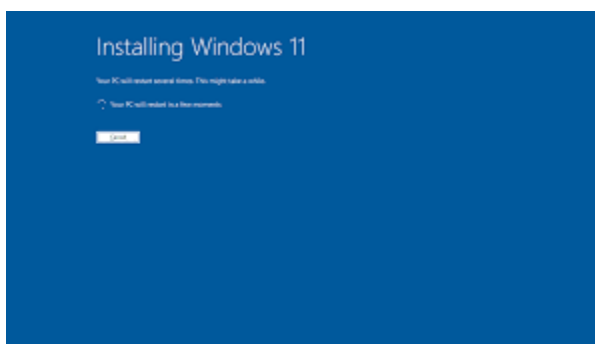


### Final Setup:

1. Attach side panels of the case.
2. Connect your computer to a monitor, keyboard, and mouse.

### Install Operating System:

Turn on the computer and install the operating system from a USB drive or CD.



### Tips and Cautions

1. Static Electricity: Always ground yourself before touching any of your components to prevent static electricity from damaging them.
2. Component Handling: Handle all components by the edges to avoid damage.
3. Cable Management: Organize cables neatly to improve airflow and aesthetics inside your case.

## **Appendix**

### Appendix

#### A1. Recommended Tools for Building a PC

Screwdriver Set: Essential for installing components.

Anti-Static Wrist Strap: To prevent static electricity from damaging the PC components.

Thermal Paste: For application between the CPU and its cooler.

Cable Ties: To help manage and organize cables within the case.

## A2. Additional Resources

[Manufacturer's websites]: For downloading the latest drivers and firmware.

[LinusTechTips YouTube tutorials]: For step-by-step visual guides and troubleshooting.

[Online forums and communities]: Such as Reddit's r/buildapc, which provides advice and feedback from other builders.

PcPartPicker.com