

The image features a central dark blue square with a thin white border, resembling a computer chip. The square is surrounded by a pattern of light blue lines and circles, mimicking a circuit board. The text is centered within the square in a bold, yellow, pixelated font. The background is a solid dark blue color.

TRAINING MANUAL

**HOW TO
BUILD
A PC**

2024

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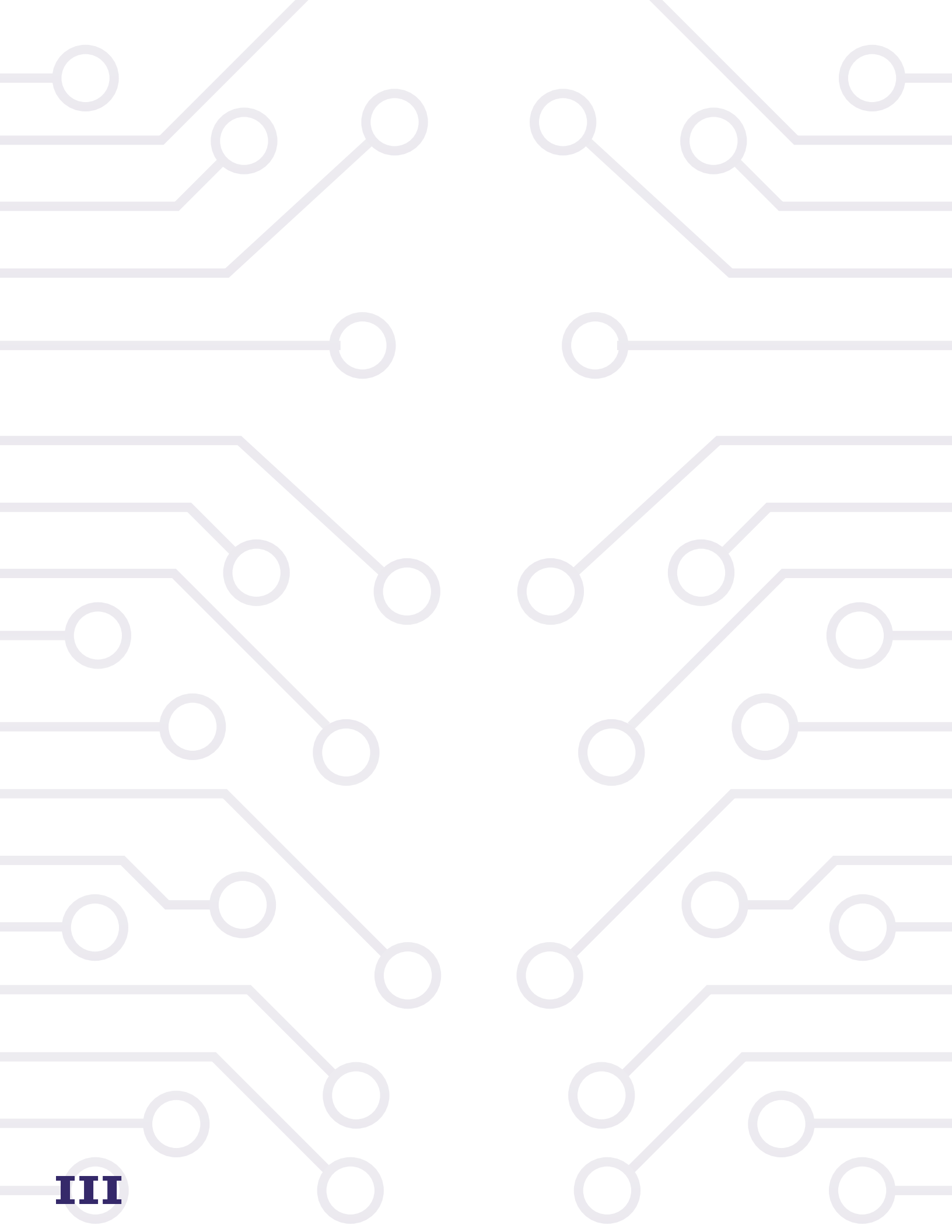
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1

**GETTING TO KNOW
YOUR PARTS**

THE PC CASE

A computer case, also known as a computer chassis, is the enclosure that contains most of the hardware of a personal computer. The case you buy sets the tone for your whole PC build. A big case allows plenty of room for drives, giant graphics cards, and maximum-size motherboards; smaller cases fit into space-constrained environments or entertainment centres. The chassis you choose is intertwined with your motherboard choice and sometimes your PC's power supply.

Every PC case lists the motherboard formats it supports. The three main layouts are ATX (a full-size, mainstream motherboard), MicroATX (a smaller variant with fewer expansion slots and other surface-area-related features), and Mini-ITX (even smaller, usually offering just a single slot for a video card). You'll see a few outliers like XL-ATX and Extended ATX (EATX), which are bigger than ATX, but first-time builders should ignore these.

Most cases that support a given motherboard format will also allow smaller ones—most ATX cases, for example, can accept MicroATX and Mini-ITX motherboards. That said, it's smart to match your case's size class with your motherboard so you're not wasting space.

MOTHERBOARD

A PC motherboard is the main circuit board in a computer that connects all of its internal components and allows them to communicate with each other. It's a vital part of a computer, and without it, the computer's components wouldn't be able to interact.

The nuances of motherboard shopping are many, but basically come down to three things:

1. You need a motherboard that works with the CPU you choose;
2. the board should be the right form factor for your case; and
3. it should have the external ports and internal expansion slots you need for what you plan to install.

On the first front, the key factors are the motherboard's socket type and its chipset (the latter is its built-in core operating silicon). These dictate which processors you can install and how you can take advantage of the overall platform. For new motherboards for a first-time builder, the relevant sockets are those that fit with the latest mainstream Intel and AMD CPUs: Intel Socket LGA 1700 and AMD's AM4 and AM5 for Intel Core and AMD Ryzen chips respectively. The newer AM5 houses the very latest Ryzen parts, but AM4 remains relevant for budget buyers given the huge range of still-available and economical Ryzen CPUs that work with it.

As noted, the motherboard's chipset dictates the CPUs it works with, the level of supporting features the board has, and where it fits in the range of boards available for a given chip.

CPU + COOLERS

A PC CPU, or Central Processing Unit, is a computer's main component that controls the flow of data and instructions to run the operating system and applications. It's also known as the "central" or "main" processor.

You choose a CPU in concert with your motherboard; one must support the other. As with motherboards, the considerations when choosing a processor are complex and tied into what you can afford and what you'll use your PC to do, as well as aspects like power consumption and cooling. The relevant CPU lines today are Intel's 11th through 13th Gen Core and AMD's Ryzen 5000 and 7000 series.

Chips tend to run hot, and you'll likely want a liquid cooling system rather than just a heatsink or fan for this processor. The K suffix indicates that the chip is overclockable, but even if you don't overclock, liquid is the way to go.

RAM AND MEMORY

RAM, or Random Access Memory, is a computer's short-term memory that stores data for quick access by the processor. Depending on the CPU and motherboard you buy, you'll need DDR4 or DDR5 memory. Intel motherboards support a technology called Extended Memory Profiles (XMP), an auto-overclocking. Look for XMP settings in common between your memory kit and the board in question.

How much memory to get depends on your usage case and your budget. Today's barest of bare minimums for a Windows desktop is 8GB, with 16GB or 32GB easily attainable at current RAM prices. For a mainstream build, you'll want a matching pair of memory modules so you can take advantage of dual-channel memory speeds.

If you have a side-windowed case, some memory modules have RGB lighting or other decorative extras. A more important thing to look for is compatibility with what's known as the QVL (qualified vendor list) for a given motherboard. Check the list of modules tested with your motherboard by the latter's manufacturer. It doesn't mean other modules won't work fine, but it's an added bit of assurance when you're purchasing.

PRO TIP

Even though it's possible, mixing and matching different speeds and brands memory is not recommended!

STORAGE

You can go a bunch of directions with your PC's storage subsystem these days, but the smart default pick with new motherboards is a solid-state boot drive (SSD) in the M.2 format supporting PCI Express data transfers.

Stick-of-gum-sized M.2 drives save space inside your chassis, reduce cable clutter, and provide access to the high-speed PCI Express (abbreviated PCIe) bus. PCI Express 4.0 drives have emerged as the high-end performance standard these days.

You can still, of course, install an old-school platter hard drive, which costs much less per gigabyte than an SSD. Chances are, however, you won't need more than 2TB of storage, so should stick with SSDs. If you need 8TB or 10TB or more of mass storage, opt for hard drives, since mainstream solid-state drives top out at 4TB and are expensive at that capacity.

POWER SUPPLY

A power supply unit (PSU) is a device that supplies power to a computer by converting mains AC power from an outlet to low-voltage DC power for the computer's internal components. PSUs are a vital part of a computer, as they ensure the computer has the power it needs to function properly.

GPU

A PC's graphics processing unit (GPU) is a piece of hardware that handles graphics-related tasks, such as rendering images, videos, and animations: Everyday tasks like word processing, spreadsheeting, and online browsing are fine with the integrated graphics built into most CPUs, but if you plan on gaming or running demanding content creation software or workstation apps, you'll need a dedicated graphics card with its own GPU (graphics processing unit). It's a complex component to shop for, but basically comes down to whether you play games, which monitor you own, and how much you can afford.

You want to weigh your target resolution based on your monitor, the latter's peak refresh rate, and the type of games you play. You'll also need to consider the space available inside your chassis; recent high-end graphics cards from Nvidia and AMD are frankly enormous, 10 inches or a foot long and two or three expansion slots wide.

AMD's Radeon and Nvidia's GeForce are the two big GPU brands, and both offer high-end cards for gameplay on monitors up to 4K resolution.

FANS

A computer fan is any fan inside, or attached to, a computer case used for active cooling. Fans are used to draw cooler air into the case from the outside, expel warm air from inside and move air across a heat sink to cool a particular component.

When it comes to fans, all you need to know is that the fan has two cables—one for RGB, one for power and control—and the controller will bundle all the RGB cables under one component roof. Four of the fans go on the chassis (three up front as intakes, one in the back as an exhaust), while the other two will replace the plain-vanilla fans on the CPU cooler's radiator. The case fans will attach to the motherboard, and the radiator fans will attach to a cable cluster included with the liquid cooler.



**CHOOSING THE RIGHT
COMPONENTS**

PCPARTPICKER, A BUILDER'S BEST FRIEND

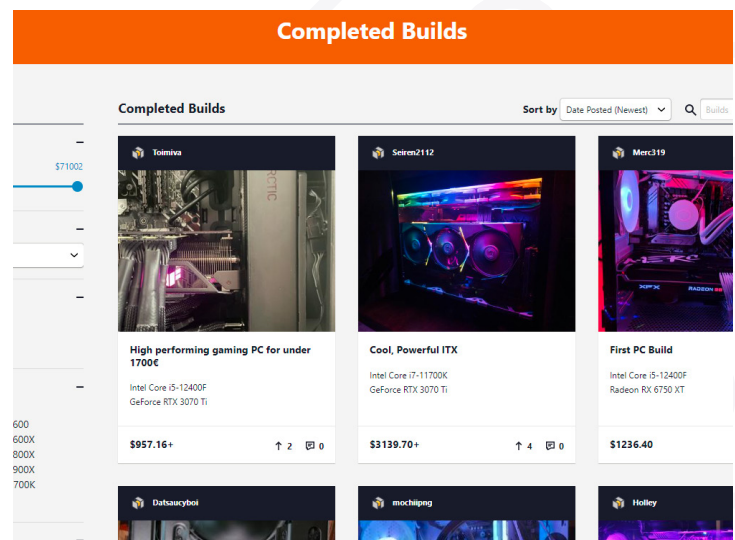
Have you decided to take the plunge and build your own PC? Maybe you're tired of the bloatware that comes on pre-built PCs. Perhaps you have a friend singing the praises of their own build. Whatever your reason, it can be hard to know where to start. That's where a resource like PCPartPicker comes in handy. Here's how to navigate the website and pick out the parts you need to build your dream PC.

MAKING YOUR LIST

If you're not sure what to put into your build, there are two places to start. Build guides are designed by the PCPartPicker team to encompass certain tiers of PC builds, from the Budget Home/Office Build of around \$500 to the Glorious Intel Gaming/Streaming Build that will cost you about \$3,000. Opening a build guide will give you a rundown of what each component in the build is and why they were selected for that particular machine.






Under Completed Builds, you can also view the builds other users have made on PCPartPicker; see the included components, a full price breakdown, and any additional notes. There are also a number of filtering options that can help you fine-tune your search for a particular build.

By signing up for an account, you can rate builds and post comments and questions. As an additional flex, users can post stats for their builds, including internal core temp and clock rate. If you think someone's build is perfect for your needs, you can add their parts list to your own build.



To create your own PC from scratch, head over to the PC Builder section.

The screenshot shows the PCPartPicker website interface. At the top, there is a dark blue header with the text "PC Builder" in white. Below the header, there are two tabs: "Overview" and "Prices By Merchant". The main content area is a table with the following columns: Component, Selection, Base, Promo, Shipping, Tax, Price, and Where. The table lists several components:

Component	Selection	Base	Promo	Shipping	Tax	Price	Where
CPU	 Intel Core i7-12700K 3.6 GHz 12-Core Processor	\$379.99	—	Prime	—	\$379.99	amazon.com Buy X
CPU Cooler	 NZXT Kraken X53 73.11 CFM Liquid CPU Cooler From parametric selection: Show	\$134.99	—	FREE	—	\$134.99	Adorama Buy X
Motherboard	 Asus ROG STRIX Z690-A GAMING WIFI D4 ATX LGA1700 Motherboard From parametric selection: Show	\$334.12	—	Prime	—	\$334.12	amazon.com Buy X
Memory	 Corsair Vengeance LPX 16 GB (2 x 8 GB) DDR4-3200 CL16 Memory From parametric selection: Show	\$68.98	—	Prime	—	\$68.98	amazon.com Buy X
	+ Add Additional Memory						
Storage	 Samsung 970 Evo Plus 1 TB M.2-2280 NVME Solid State Drive From parametric selection: Show	\$114.46	—	Prime	—	\$114.46	amazon.com Buy X
	+ Add Additional Storage						

You'll see a list of component categories; click one to view a list of products.

As you select pieces, PCPartPicker will keep track of the price and number of parts, among other things. The site will also automatically filter out components that are incompatible with choices you have already made or issue a warning when necessary.

If you need a breakdown of why certain pieces are considered incompatible, the site will explain why a piece was flagged. This is especially useful because certain pieces require special mounting adapters or screws to fit in certain cases.

Further down the PC Builder page is a diagram that will help you visualise certain specifications of your build, such as the number of PCI Express slots on your motherboard or hard drive bays on your case. Need to know if the motherboard will support a capture card or a few extra sticks of RAM? Make sure there's a slot for it here.

Motherboard Usage



MSI B450 TOMAHAWK MAX ATX AM4

CPU Sockets



CPU_1 (AM4)



AMD Ryzen 5 5600X 3.7 GHz 6-Core (CPU)

Memory Slots



RAM_1 (288-pin DIMM)



Corsair Vengeance RGB Pro 32 GB (2 x 16 GB) DDR4-3600 CL18 1/2 (RAM)



RAM_2 (288-pin DIMM)



Corsair Vengeance RGB Pro 32 GB (2 x 16 GB) DDR4-3600 CL18 2/2 (RAM)



RAM_3 (288-pin DIMM)



RAM_4 (288-pin DIMM)

* Refer to the motherboard manual to determine which specific memory slots to use.

ORDERING YOUR PARTS

You now have everything in place; you've shown off your build and your friends are jealous. It's time to buy, and PCPartPicker can direct you to the appropriate retailer. By default, the site will select the cheapest option for each component, but you can also buy everything together from whichever supplier has all the components.



LET'S GET BUILDING

1 GATHER YOUR TOOLS

Here's a list of what you'll need :

1. Screwdriver Set

- Get a set with various Phillips and flathead bits, especially small ones for M.2 SSD screws.
- Choose magnetic bits to make screw handling easier (keep them away from hard drives).
- Include a shaft extender for reaching screws blocked by tall components like CPU coolers or graphics cards.

2. Magnetic Parts Tray or Alternative

- Use a small magnetic tray to keep screws organized.
- For a budget option, use a dollar-store pill sorter.

3. Grounding Strap (Optional)

- Reduces risk of static electricity damage.
- Clip the strap to a grounded surface (e.g., plugged-in power supply chassis).
- Alternatively, touch the metal chassis of a plugged-in PSU periodically to discharge static.

4. Surface Protection

- Lay down a soft layer (towel, pad) to protect your work surface and PC case.
- Keep detached glass panels in their box with packing foam for safe storage.

5. Lighting and Magnification

- Use a book light or small clip-on light for detailed work.
- Utilize your smartphone's camera to zoom in on small motherboard details or use a magnifying glass.

WARNING

Avoid using power tools like electric screwdrivers or drills to prevent overtightening.

2 INSTALLING THE CPU - INTEL

1. Prepare the Motherboard CPU Socket

- Locate the load lever on the side of the CPU socket.
- Press and pull aside the lever to release the retention frame.
- Remove the black plastic protective cover to expose the socket (don't touch the pins).
- Identify the small arrow indicator in one corner of the socket

2. Unbox the Processor

- Open the packaging and remove the processor by its edges (avoid touching the underside).
- Locate the arrow indicator on the processor, as seen in the image, and align it with the socket arrow.

3. Insert the Processor

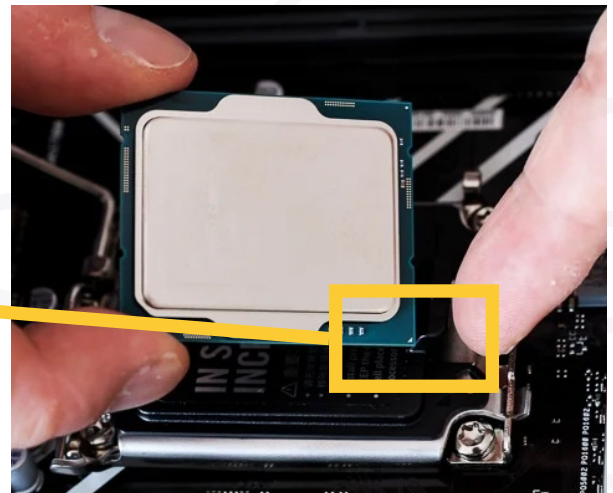
- Gently lower the CPU into the socket, ensuring the notches on the CPU align with the nibs in the socket.

4. Secure the Processor

- Wiggle the CPU gently left to right to confirm it's seated flat.
- Remove the plastic cover from the retention frame.
- Lower the retention frame back over the CPU and press the load lever into place.
- Apply steady pressure when securing the lever under its retaining hook.

5. Double-Check Alignment

- Ensure the silver heat spreader aligns perfectly within the retention frame.
- Confirm the load lever is secured.



WARNING

Don't Force Anything! If the CPU does not engage properly, the orientation or something else isn't right. Never, ever press a CPU into a socket. You'll damage the pins and end up sad, mad, and possibly broke.

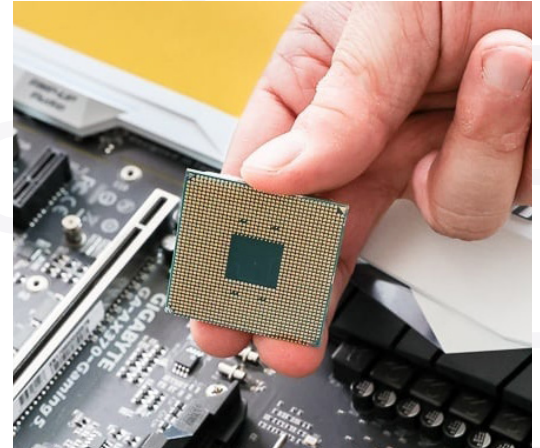
2.1 INSTALLING THE CPU - AMD

1. Socket Preparation

- Release the tension lever to lift the retention frame.
- Remove the protective cover from the socket.
- Locate the arrow indicator on the socket.

2. Handle the AMD Processor Carefully

- For AM4 chips with pins, handle only by the edges and **never place face-down**.
- Align the arrow on the CPU with the arrow on the socket.



3. Insert the Processor

- Gently lower the CPU into the socket without applying force.
- Ensure the notches and protrusions on the CPU match the socket alignment.

4. Secure the Processor

- Lower the retention frame and secure the tension lever back into place.

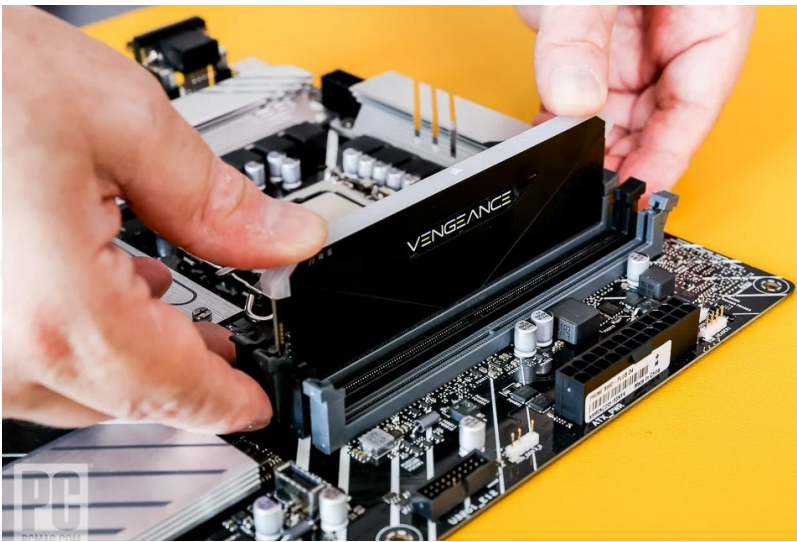
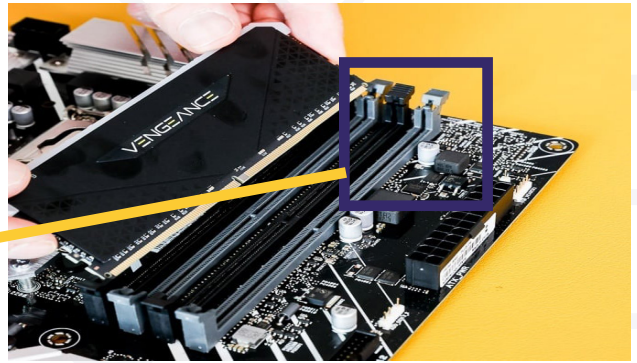
3 INSTALL THE MEMORY ON THE MOTHERBOARD

1. Review the Motherboard Manual

- Look up the recommended slot arrangement for your number of RAM modules.
- For two modules, most motherboards suggest installing in the second and fourth slots from the CPU socket (check for variations in your manual).

2. Inspect the RAM Modules

- Identify the notch on the edge of the contacts.
- Match the notch to the key inside the memory slots to ensure proper orientation.



3. Prepare the Memory Slots

- Locate the DIMM slots you'll use based on the manual.
- Push down the lever(s) on one or both ends of the slot to open it.

4. Insert the RAM Module

- Align the RAM module's notch with the slot's key.
- Lower the module into the slot parallel to the motherboard.

5. Secure the RAM Module

- Press firmly on both ends of the module with your thumbs.
- Listen for a "click" as the levers snap back into place, engaging the notches on the module ends.

6. Check the Seating

- Tug gently on the module to ensure it's securely in place.
- An improperly seated module may cause boot issues.

PRO TIP

Work in a static-free environment to protect sensitive components.



(OPTIONAL) INSTALLING AN M.2 SSD

1. Remove the Heatsink or Heat Spreader (if applicable):

- Unscrew and carefully set aside the heatsink or heat spreader from the M.2 slot.
- If a thermal pad is present on the motherboard, peel off any protective plastic film.

2. Check for a Standoff:

- Locate the standoff at the Type-2280 position (or the position matching your SSD length).
- If not present, install or reposition the standoff from the motherboard box.

3. Insert the SSD:

- Hold the SSD at a shallow angle (approximately 30–45 degrees).
- Align the notch in the SSD with the key in the M.2 slot and insert gently until it clicks.
- The SSD should remain angled under spring tension.

4. Secure the SSD:

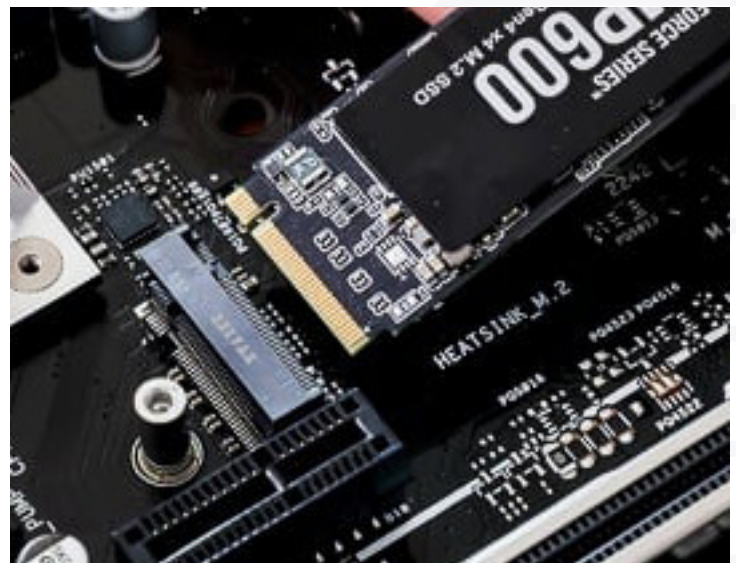
- Press down the angled SSD until it is flat against the standoff.
- Use a small Phillips screwdriver to attach the tiny screw to the standoff, securing the SSD in place.
- If your motherboard has a swiveling latch instead of a screw, rotate the latch to hold the SSD.
- Reinstall the Heatsink or Heat Spreader

5. Inspect the Thermal Pad:

- Peel off any protective plastic from the thermal pad on the heatsink or motherboard.
- Ensure the pad will make proper contact with the SSD's surface.

6. Reattach the Heatsink/Spreader:

- Place the heatsink back over the SSD and align it with the screw holes.
- Tighten the screws to secure the heatsink and SSD in place.



5 MOUNTING THE MOTHERBOARD

1. Prepare the Case

Remove both side panels of the case. If there's a glass panel, place it somewhere safe to avoid damage. Lay the case on its side with the motherboard tray facing up. Move aside any pre installed cables connected to the front panel to avoid trapping them under the motherboard during installation.



2. Check and Prepare Standoffs

- Check the case for preinstalled standoffs or holes to install them.
- Standoffs should align with the screw holes on your motherboard.
- Lay the motherboard over the tray to verify alignment.
- Install or reposition standoffs as needed, ensuring there's one for each hole on the motherboard and none where there isn't a hole.
- Use pliers or a hexagonal Phillips bit (if provided) to tighten standoffs.

3. Install the I/O Shield (if separate)

- Insert the shield from inside the case, ensuring it's right-side-up relative to the ports.
- Apply firm pressure at the corners to secure it.
- Check that the motherboard's rear ports align with the I/O shield openings.

4. Install the Motherboard

- Hold the motherboard with the ports facing the I/O shield.
- Lower it carefully into place, ensuring no cables are trapped underneath.
- Check that each screw hole on the motherboard aligns with a standoff.
- Ensure no tensioning tabs from the I/O shield are obstructing the ports.
- Start with the centermost screw (or peg) to hold the motherboard in place.
- Install screws in the corners next, then secure the remaining screws.
- Use screws provided by the case and ensure they thread into the standoffs securely.
- Confirm that the CPU socket's mounting holes are accessible for later CPU cooler installation.

6

CONNECTING THE CASE CABLES TO THE MOTHERBOARD

1. Connect Front-Panel Header Cables

- Find the front-panel header on your motherboard (often labeled FP_HEADER). Refer to the motherboard manual for its layout.

****Power Switch****: A 2-pin cable for the PC's power button.

****Reset Switch****: (Optional) Another 2-pin cable for the reset button.

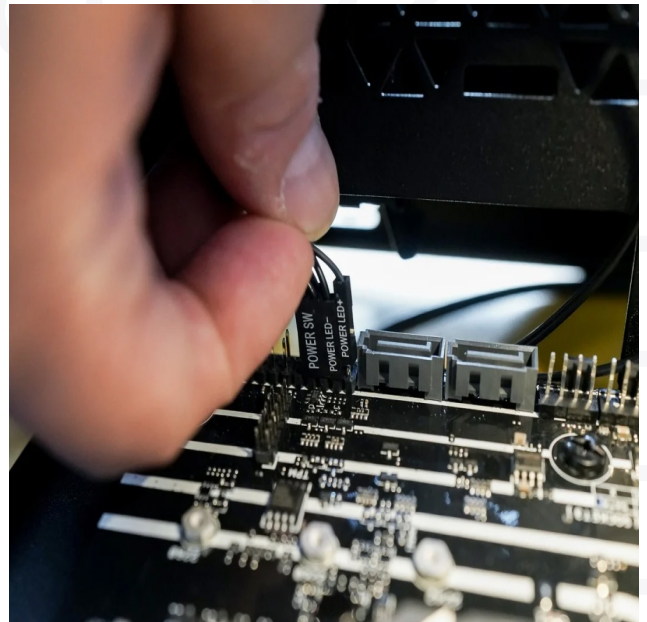
****Power LED****: May come as a single cable or two 1-pin connectors.

****Hard Drive LED****: (Optional) A 2-pin connector for the drive activity light.

- Use the motherboard manual to identify the correct pins.
- For ****switches**** (power/reset), polarity doesn't matter—connect them in either direction.
- For ****LEDs****, match the positive (+) and negative (-) markings on the cables to the pins.

2. Connect USB Cables

- Locate the 10-pin block labeled FP_USB on the motherboard.
- Route the USB 2.0 cable behind the motherboard tray to the header.
- Align the blocked pin on the connector with the missing pin on the header, and plug it in gently.
- Identify the larger 20-pin USB 3.0 cable and its corresponding header on the motherboard.
- Carefully align the keying notch and plug it in evenly to avoid bending pins.
- This cable can be stiff—route it carefully to avoid stress on the header.
- Locate the USB 3.2 header, often resembling an external USB port.
- Route the USB 3.2 cable and plug it in either direction—it's not keyed.
- You'll hear a click when it's properly seated.



3. Connect Front-Panel Audio Cable

- Look for a header labeled HD_AUDIO or FP_AUDIO on the motherboard, typically along the bottom edge.
- Match the blocked pin on the 10-pin connector to the header.
- Avoid forcing the cable into any header that doesn't match its pinout.
- If your case includes an AC '97 connector, use HD Audio if available, as AC '97 is outdated.

4. Optional: Connect Case Speaker (if included)

- Find the small drum-shaped speaker and its 2- or 4-pin header cable.
- Refer to the motherboard manual for the correct pins near the front-panel header.
- Plug it in to enable boot-up beep codes.

5. Double-Check All Connections

- Verify all cables are routed properly and securely connected.
- Ensure no loose wires could get tangled or dislodged during use.
- Double-check polarity for LEDs and proper alignment for USB headers.

WARNING

Avoid plugging cables into headers you're unsure of (e.g., TPM, COM, FireWire).

5. Attach Fans to Radiator

- Use the long screws and washers provided in the kit.
- Orient fans so the frame side touches the radiator and cables face inward for clean routing.

6. Mount the Radiator to the Case

- Secure the radiator to the case using the short screws.
- Align the screw holes (or slots) on the case with the radiator holes.
- Ensure hoses are properly routed without kinks.

7. Thermal Paste Application

- If pre-applied paste is present, it's sufficient unless you're using custom paste.
- If applying manually, use a pea-sized blob in the center of the CPU. Spread thinly for even coverage. (as seen in the image)



8. Place the Heatsink/Pump

- Remove any protective plastic from the heatsink.
- Align the heatsink or pump assembly with the mounting posts.

9. Secure the Heatsink/Pump

- Use screws from the kit to attach it to the posts.
- Tighten screws in a criss-cross pattern for even pressure.

10. Pump and Fan Connections

- Connect the pump cable to the **CPU_FAN** or **AIO_PUMP** header on the motherboard.
- Attach radiator fans to the motherboard or fan controller using 4-pin connectors.

11. RGB and USB Cables (Optional)

- Connect RGB cables to **RGB/ARGB** headers or a controller.
- If the cooler has a USB connection, plug it into a USB 2.0 header on the motherboard.

12. Cable Management

- Route cables neatly behind the motherboard tray to keep the build tidy.



INSTALL THE POWER SUPPLY

1. Prepare the PSU Cables

- Identify the required cables before mounting

24-pin main power connector: Essential for motherboard power.

CPU power connector: Usually 4-pin or 8-pin (some boards require two).

PCI Express power leads: For the graphics card, if applicable.

SATA power cables: For any SATA hard drives or devices.

2. Plug the cables into the PSU's sockets

- Match cable names to labeled sockets.

3. Mount the PSU in the Case

For backplate-mounted designs

- Remove the backplate.
- Attach it to the PSU using screws.
- Slide the PSU into the case and secure it.

Direct mounting

- Position the PSU in the case.
- Secure it with the screws provided.
- Ensure proper PSU orientation:
- The fan should face downward or toward fresh air intake.



4. Route PSU Cables

- Start with CPU power connectors
- Route the cable behind the motherboard tray to the top of the case.
- Loop it through the nearest cutout and plug it into the CPU power socket(s) on the motherboard.
- Ensure a firm connection with a “click,” and gently tug to confirm it’s secure.
- Connect the 24-pin main power cable:
- Plug it into the motherboard’s main power socket.
- Verify it clicks into place.
- Route it neatly through a nearby tray cutaway to avoid stressing the socket.
- Position PCI Express cables near the graphics card slot.
- Arrange SATA power cables close to the location of drives or SATA-powered devices.



MOUNT AND CONNECT YOUR SATA DRIVES

1. Access Drive Bays

- Identify the mounting location for your drive. Most cases have separate bays or trays for 3.5-inch and 2.5-inch drives.

2. Prepare the Tray

For 3.5-Inch Drives

- Remove a 3.5-inch tray by squeezing its tabs or releasing screws.
- Align the drive with the nibs or mounting holes in the tray. Push until it clicks securely. Some trays may require screws to secure the drive.

For 2.5-Inch Drives

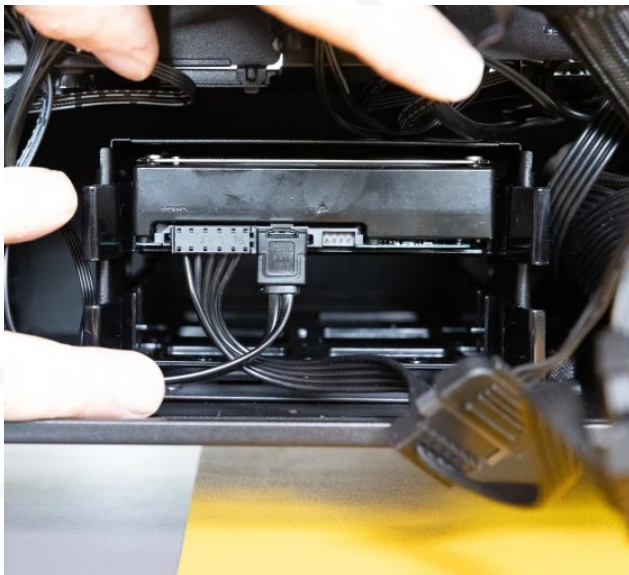
- Align the drive with the screw holes in the tray. Use screws to secure it from underneath.

3. Drive Orientation

- Ensure the **data** and **power connectors** face outward for easy access when sliding the tray back into place.

4. Slide Tray Back

- Return the tray to its slot until it clicks or secures firmly.



5. Find the SATA Power Cable

- Locate the SATA power cable from your PSU. It typically has multiple connectors along its length.

6. Attach the Power Connector

- Use the connector (usually the end or a 90-degree “elbow” one) and align the **L-shaped groove** with the port on the drive.
- Push gently until you hear a click.

7. Find a SATA Data Cable

- These are included with your motherboard. Some have a straight connector, while others have an elbow connector for reduced strain.

8. Attach the Data Cable to the Drive

- Plug one end of the SATA data cable into the drive.
- Use the elbow connector on the drive side for cleaner routing, if available.

9. Connect to the Motherboard

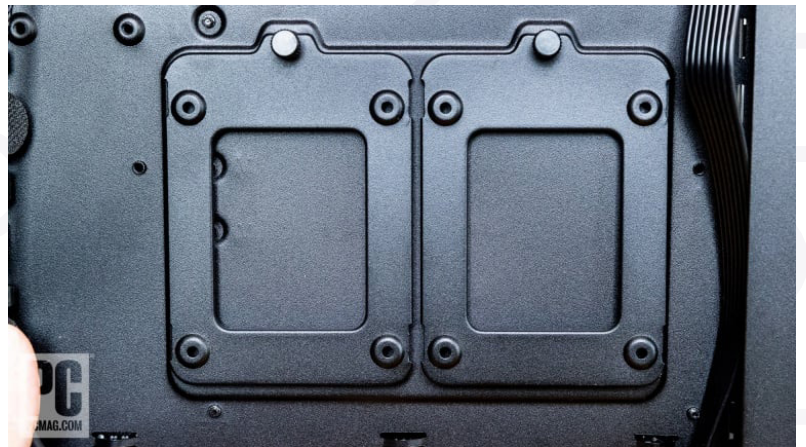
- Plug the other end of the data cable into the ****lowest-numbered SATA port**** on your motherboard (check your motherboard manual for specifics).

10. Organize and Manage Cables

- Route all power and data cables neatly through cable management cutouts in the case for a clean look and proper airflow.

11 Test and Power On

- After completing the installation, check BIOS settings to confirm the drive is recognized. If the drive is new, it may need formatting and partitioning in your operating system.



10 MOUNT AND CONNECT CASE FANS

1. Front Fans (3 RGB):

- Intake side (open fan blade side) faces the front panel.
- Secure each fan with four coarse screws.

2. Rear Exhaust Fan (1 RGB):

- Exhaust side (frame side) faces the back of the case.
- Use four coarse screws to secure the fan.

PRO TIP

Cool air enters from front and bottom.
Warm air exits through rear and top.

3. Radiator Fans (2 RGB):

- Frame side touches the radiator, pulling air from the case interior and pushing it out the top.
- Use the long screws and washers provided with the radiator for secure attachment.

4. Cable Positioning:

- Route cables neatly, ensuring fan cables are close to the case wall for a clean look.

5. Connect the Fans

- Radiator Fans: Connect to the CPU cooler's fan headers (part of its cable bundle).
- Chassis Fans:
 - Plug into CHA FAN or SYS FAN headers on the motherboard.
 - Use an available AIO FAN header if motherboard headers are limited.
 - Alternatively, consider splitters or a fan controller hub if needed.

6. RGB Cables (If included):

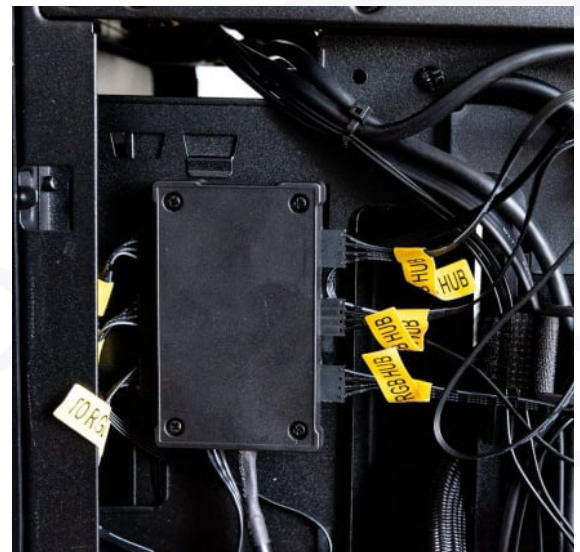
- Plug all six RGB cables into the RGB Commander module included with the fan kit.
- Position the module near the front of the case and route cables behind the side panel.

7. Test and Adjust

- Verify Fan Orientation: Ensure airflow follows the planned pattern.
- Cable Management: Route all cables through cutouts for neatness and optimal airflow.
- BIOS Configuration: Adjust fan speed settings as needed for cooling and noise optimization.

8. Optional RGB Additions

- Consider adding RGB light strips later. Most motherboards support direct RGB or ARGB connections for strips.
- Evaluate the aesthetic and airflow after fan installation before deciding.
- With six RGB fans installed and the RGB Commander set up, your system is ready to dazzle while staying cool. Now, let's move on to the graphics card installation!



11 INSTALL THE GPU

1. Prepare the PCIe Slot

- Test Fit the GPU
- Check which backplate covers need to be removed to fit the card.
- Remove the covers

2. Install the Graphics Card

- Remove the PCIe Contact Protector**:
- Take off the plastic protector from the card's PCI Express contacts.
- Gently lower the card into the PCIe slot, aligning it properly.
- The card should click into place with an audible lock.
- Screw the card into the back of the case with the screws you removed from the backplate covers.
- Ensure the card is stable and seated properly in the slot.
- Make sure the **HDMI and DisplayPort** connectors on the card are easily accessible.
- Remove any plastic plugs inside the ports.

3. Connect the PCIe Power Cable

- The power connectors will only fit in one way.
- When connected, you should hear a click to confirm they are secure.
- Test the connection by giving the cables a gentle tug to ensure they are properly seated.

4. Connect the Adapter

- Plug the 12-pin connector into the card's top edge
- The other ends of the adapter fork into two 8-pin connectors that go into the PSU power cables.

PRO TIP

Make sure to route any cables around the GPU area before installation, as the card will block access to many parts of the case once in place.

12

CABLE MANAGEMENT - TIPS

1. Check your cables

Before closing the case, take one last look at your cables, especially where the side panel will be reattached. You need to ensure that there's enough clearance for the panel to fit securely.

Use Cable Management Loops. Most cases, have loops or hoops along the back of the motherboard tray. These are perfect for anchoring cables using zip ties or twist ties to keep everything neat and out of the way.

Be mindful of potential cable bulking, especially when there are many cables to manage. Avoid excess crossover to ensure the side panel fits easily. Keep the cables relaxed and avoid putting tension on delicate connections (e.g., front panel, USB connectors).

Ensure cables aren't too tight, which could strain the connectors or reduce airflow.

- Before closing up, double-check if any cables are unattached or have become loose during the assembly process.

2. Reassemble the Case

- Slide the right-side panel back on, ensuring that cables are neatly arranged and there's no interference.
- Fasten the panel with its thumbscrews once it's in place.



- If you removed the front grille and dust filter, replace them.
- Reattach the components securely.
- If your case has a glass panel on the side, make sure the interior looks clean and the cables are neatly routed.
- Use a microfiber cloth to clean the glass on the inside before reattaching the panel.
- Carefully handle the glass panel by its edges, ensuring it snaps back into place and is secured with screws.

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GLOSSARY

B

BIOS (Basic Input/Output System): A firmware interface that initializes hardware during the boot process and provides runtime services for operating systems.

C

GPU (Graphics Processing Unit): A specialized processor designed for rendering graphics and handling tasks like gaming, video editing, and 3D rendering.

H

M.2 SSD: A compact, high-speed solid-state drive that connects directly to the motherboard via an M.2 slot.

P

RAM (Random Access Memory): Temporary storage that the CPU uses to quickly access data and run applications.

C

Cable Management: Organizing and securing cables inside a PC case to improve airflow and aesthetics.

CPU Cooler: A component designed to dissipate heat from the CPU.

H

HDD (Hard Disk Drive): A traditional storage device that uses spinning disks to store data. Slower but often larger in capacity than SSDs.

P

PCPartPicker: An online tool that helps users select compatible PC components and create a custom build list.

S

SATA (Serial ATA): An interface used to connect storage devices like HDDs, SSDs, and optical drives to the motherboard.

