**To build a PC\ 万字长文装机指南**

**The last guide you’ll ever need**

*Illustrated by Sam，All rights reserved*

Editor‘s Note: This process really isn’t as hard as it seems. You need to spend a good amount of time researching and learning, but once you have your components picked out, actually assembling everything is really easy. I know this whole thing can seem daunting, but I promise you that if I can do it, you can do it.

Ps: Important information will be explained in Chinese.

**1/Basics:**

**Specific Components**

Power Supply (PSU, aka电源)

- Most critical component- never spend out on your PSU

- A bad PSU can damage other components

**SSD (Solid State Drive)**

- Not \*required\*, but highly recommended

- Massive speed improvement over HDDs (faster boot/load times)

**Sound Card / DAC（带解码的主板纯诈骗）**

- Most users don't need one

- Modern motherboards have decent built-in audio

- Only necessary for audiophiles/professionals

**Hardware Review Databases**

- AnandTech.com (in-depth technical reviews)

- GamersNexus.net (excellent testing methodology)

- TechPowerUp.com (great for GPU/PSU databases)

**Important Do's and Don'ts**

**DO:**

- Use ONLY the cables that came with your PSU

- Install motherboard standoffs (prevents shorts)

- Handle components by the edges (avoid touching circuits)

**DON'T:**

- Mix PSU cables between units (will fry components)

- Build on carpet/wear socks (static electricity risk)

- Force connectors (if it doesn't fit easily, check orientation)

**Pro Tips**

- Search before asking - Most beginner questions already have answers online

- Take your time - Rushing leads to mistakes

- Cable management matters - Good airflow = better temps

**Other FAQs**

**Q：Do I need liquid cooling?**

- For most users: No - air cooling is simpler and cheaper

- AIO (All-in-One) liquid coolers: Slightly better performance for high-end CPUs

- Custom loops（分体水冷）: Expensive hobby projects, not practical for most（Translation：想折磨自己的可以试一下）

**Q: Is the stock CPU cooler good enough?**

- Yes, unless you're overclocking or want quieter operation

**Q: How much thermal paste?**

- Pea-sized drop in center is perfect - more isn't better

**2/Internal Components:**

**Central Processing Unit (CPU)**

- The computer's brain

- Two main brands: AMD and Intel (0.4% are Nvidia)，Others? Impossible.

- CPU choice affects motherboard compatibility

- Key:

\* Cores: More cores = more parallel processing

\* Threads: Helps feed data to cores

\* Clock speed: Measured in GHz (higher is faster)

\* Socket: Must match motherboard

IMPORTANT Editor’s Note:

**//**关于华强北和小红书高性价比配置使用的E3/E5/X3430等“洋垃圾”CPU：

很明显，这些和正规军i3，i5这些长的不太一样，选购的时候需谨慎。

“洋垃圾”通常指国外淘汰的服务器/工作站CPU（如Intel Xeon E3/E5/E7），通过二手市场流入国内。它们的特点是：

* **核心多、线程多**（适合多任务）
* **价格便宜**（远低于同核心数的消费级CPU）
* **单核性能较弱**
* **依赖特殊主板**（如X79/X99等，多为山寨板）

如果你是纯小白，建议从 E3+B75 这种相对稳定的组合开始玩，E3用普通内存，省钱，再考虑E5多核平台。

**不适合玩MC这类吃单核的游戏，跑分高但游戏性能差。卖家吹再多核心也没用，单核性能被新i3吊打。**

**另外，Ex xxxx（如E5 2666 v3） 的“v”代表代数，性能差距大：**

**- v2（或更低）配X79主板**

**- v2以上配X99主板**

**注意：只能用RECC服务器内存（普通内存不兼容），X99主板很贵，慎选。//**

**Motherboard**

- Connects all components

- Form factors: ATX (standard), Micro-ATX, Mini-ITX

- Must match CPU socket type

- Contains:

\* PCIe slots (for GPUs/add-on cards)

\* RAM slots

\* Various connectors (USB, SATA, etc.)

**Memory (RAM)**

- Temporary fast storage for active programs

- Current standards: DDR3 DDR4 and DDR5 (not compatible)

- Important specs:

\* Capacity (8GB, 16GB, 32GB, etc.)

\* Speed (MHz)

\* Latency (CL - lower is better)

**Storage Drives**

1. HDD (Hard Disk Drive):

- High capacity, affordable

- Slower mechanical drives (5400/7200 RPM)

- SATA connection

2. SSD (Solid State Drive):

- Much faster (no moving parts)

- Types:

\* 2.5" SATA

\* M.2 (faster PCIe/NVMe models)

\* PCIe add-in cards

**Graphics Card (GPU)**

- Handles video output and 3D processing

- Two main brands: NVIDIA and AMD

- Key specs:

\* VRAM (video memory)

\* Core clock speed

\* Cooling solution (fans/liquid)

- Must fit in case and have proper power

**Power Supply (PSU)**

- Converts AC to DC power

- Wattage must meet system needs

- Types:

\* Non-modular (fixed cables)

\* Semi-modular (some removable)

\* Fully modular (all cables removable)

- 80+ ratings indicate efficiency

**Case**

- Houses all components

- Must match motherboard size

- Important features:

\* Airflow (fan placements)

\* Cable management

\* Drive bays

\* GPU/CPU cooler clearance

**Peripherals(下游设备)**

- Input devices:

\* Mice (DPI sensitivity, search online)

\* Keyboards (mechanical/membrane)

**Data Cables**

These are the cables responsible for transferring data from the hard drives and the optical drive to the motherboard. These are mainly SATA cables, flat and L-shaped. PATA, also know as IDE, is a defunct standard still supported by some motherboards and generally found in older hard drives and optical drives. Newer m.2 SSDs do not require external cables, so if your new build is all m.2, you may not need any of these to begin with.

**Important Notes:**

1. Always check compatibility between parts

2. More expensive ≠ better performance

3. Balance your budget across components

4. Consider future upgrade paths

5. Proper cooling is essential for performance

**3/CPU and Motherboard Guide:**

\*With support from reddit u/Bonzey2416 in this chapter

**What is a CPU?**

The CPU (**C**entral **P**rocessing **U**nit), also known as the Processor is the brain of your PC. The CPU performs all the calculations that makes programs run. Different programs benefit from different aspects of a CPU, some scaling well with multiple cores and threads, others with clock speed. A major beginner's mistake is to compare CPUs solely by their clock speeds and/or number of cores. **DO NOT DO THIS** as differences in CPU architecture (Raptor Lake, Zen4, etc) and process node greatly affect performance in ways not solely expressed by clock speeds or core count.

**Brands**

**AMD**

* 如果有人向你推荐例如Athlon 300GE拿来打游戏，奸商无疑
* AMD 的A系和Athlon系列用的都是拖拉机或推土机（原名叫Bulldozer 和 Kaveri 20价格，不是外号）著名评论家[shyp15[](https://tieba.baidu.com/home/main/?id=tb.1.9c246117._5qzRyG9g0sMf7fuGBDEpw&fr=frs)](https://tieba.baidu.com/home/main/?id=tb.1.9c246117._5qzRyG9g0sMf7fuGBDEpw&fr=frs)评论道： “***速龙和A系列CPU当年可是超频界的"平民战神"，靠着不锁倍频和钎焊散热的设计，在垃圾佬圈子里杀疯了。早期FX-8350轻松超到5GHz起步，甚至有狠人用液氮把推土机架构的FX-8150干到8.4GHz，创下吉尼斯世界纪录！ 可惜超频再猛也救不了"多核低能"的硬伤，推土机架构的模块化设计让实际性能拉胯，跑分虚高游戏扑街。现在二手市场50包邮的A10-7850K还能一战，但电费比U贵系列真不是开玩笑。总结：超频一时爽，日用火葬场，传家宝专业户****！*”
* **AMD Ryzen**: AMD's Mainstream consumer CPUs and APUs, these are the bread and butter of the AMD lineup, and cover a wide variety of needs in the consumer space.

**Intel**

Intel has a wide array of CPUs for the budge(Celeron, core I3), enthusiast(core I5,7,9) and professional(Xeon Gold/silver) markets. There are many types of products in Intel's product stack, but here is a brief overview of some relevant parts:

* **Intel Celeron Series**: Office only
* **Intel Processor Series**: Formerly called Intel Pentium, these are the lowest-end CPUs than can be recommended for a general desktop application. Older CPUs are still branded as "Intel Pentium", but this branding is now sunset.
* **Intel Core Series**: Intel's mainstream consumer desktop parts. These are likely the parts you will be looking at for a custom-built PC. They range from Core 3 products at the low end, to Core Ultra 9 products at the flagship. Previous branding used "Core i" nomenclature, but this is now sunset.
* **Intel Xeon**: the E and XG/XS series which has mentioned previously.

**CPU Selection**

There is no hard-set rule for which CPU, brand, or series is the best. CPU selection depends on a variety of factors.

**Use case(priorities):**

* Game: Level3 (L3) Cache
* Office: single core performance
* Benchmark: Number of cores, Hypertreading?

**Performance**

The performance of a given CPU depends completely on what CPU it is. Some people have the misconception that there is a magical number or specification that you can look at to determine the performance of a processor. There isn't.

**Number of cores**

* The number of cores of a processor determine how many threads, or calculations it can perform at once. Think of games: There could be one thread driving the game itself.
* Hyper-threading or SMT (Simultaneous Multi-threading) technology will double the threads a single core can perform at once, which can raise performance in parallel workloads (like multiplayer games). It also enables software to run with less cores than originally needed. It is not a doubling of the speed of the processor, but rather a way to more efficiently queue up instructions.

**Clock Speed**

* Never use clock speed to compare processors from different architectures.
* CPUs will have a base clock, the speed at which the CPU always runs, and the Boost clock, the theoretical max the CPU can run up to as needed. Better motherboards will, in theory, allow for better boosting, as will better coolers.
* You can also increase the clock speed of a CPU [by overclocking](https://www.reddit.com/r/buildapc/wiki/after#wiki_overclocking.2Fstability).
* Any problems relate to the performance, search “CPU性能天梯图”

**The Motherboard**

Now you have a rough idea on what CPU you'd like to get you need to decide on a motherboard to pair it with. If the CPU is the brain then the motherboard is the nervous system that connects everything together.

**Intel**

Notice: Normally the motherboard support all cpus which have their socket match, but there’s an exeption.H61 boards(LGA 1155 for legacy intel core cpu or E3) have two types, one supports 22nm or above, another supports 22nm or below.

For further reference, ask me or google.

**AMD**

AMD uses Socket AM4 / AM5 for their mainstream parts, FM2, FM2b (AKA FM2+) to support old APUs (eg. A8-7500).

**Form Factor**

The form factor is the size of the motherboard. Larger boards can support more features but require larger cases. There are four mainstream form factors: mITX, mATX, ATX and EATX, although other form factors such as STX (Ultra small form factor) and XL-ATX do exist.

**M.2 Slots**

M.2 is a compact implementation of PCI-Express for use with small devices, such as SSDs. Modern motherboards use M.2-2280 form factor SSDs as the most popular choice, superseding SATA SSDs as the default choice among modern builders.

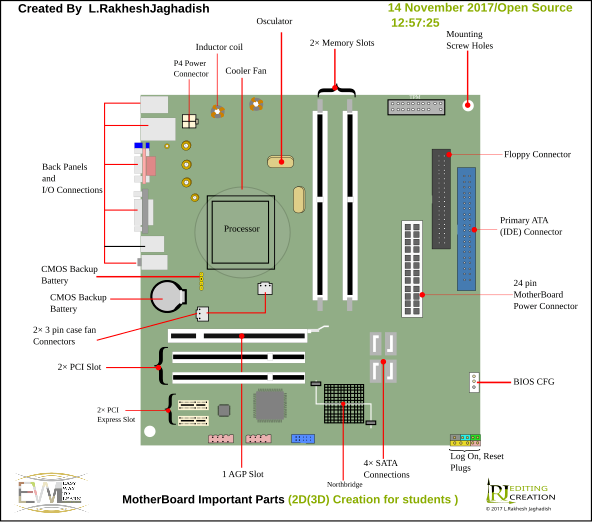
**Input/Output**

The Input/Output, abbreviated to I/O, section of your motherboard contains several ports for devices ranging from USB's to video cables.

**Editor’s NOTE WARNING** If you are using a discrete GPU then you need to plug your chosen video cable into the **GPU** and not the motherboard, as that would have you running through the inferior integrated graphics.

**Power Delivery**

<https://pc-builds.com/>

To calculate the power draw of your system

**4/CPU-Board Conservation law:**

“板U守恒定律”是图吧大佬们在二手市场观察到的一个经验规律：**对于性能较强的二手CPU，如果CPU本身很便宜，那么与之兼容的主板往往价格昂贵，反之亦然，从而使得CPU和主板的组合总成本大致稳定，与性能水平相匹配。**

用公式来表示大概是这样的(理想方程)

Pc​ + Pm ​= k ⋅ Perf

**其中：**

Pc​：CPU 的价格（单位：元）。

Pm​：主板的价格（单位：元）。

Perf：CPU 的性能指标（例如，以 CPU-Z 跑分或其他基准测试分数表示）

k：表示“性价比系数”（单位：元/分），代表每单位性能的平均成本，受市场供需、平台新旧等因素影响。

T：总成本

**k在理想状态下保持0.05不变**

**5/实战-900元捡垃圾生存指南**

——如何在垃圾堆里淘出能用的电脑？

**5.1 预算分配：900元怎么花最划算？**

- CPU+主板（50%预算）：450元左右，优先保证稳定性和性能下限

- 推荐组合：E3-1230v2 + B75主板（约400元）

- 极限压价：E5-2667v2 + X79寨板（约450元，但风险高）

- 显卡（30%预算）：270元左右，二手矿卡/网吧拆机卡

- 安全选项：GTX 950（约200元，功耗低，翻新少）

- 性能选项：RX 570 4G（约300元，但需确认非矿渣）

- 内存+SSD（15%预算）：135元左右

- 8GB DDR3（50元）+ 240GB SATA SSD（85元）

- 电源+机箱（5%预算）：45元

- 电源底线：二手品牌电源（如航嘉/长城 300W，约40元）

- 机箱：鞋盒/废纸箱（0元）或二手办公机箱（5元）

⚠️ 警告：若某件硬件价格低得离谱（如“i7级Xeon 10核 100元”），100%是坑！

**5.2 必避深坑：华强北经典骗术大全**

**1. “i7级”洋垃圾**

- 奸商话术：“i7级性能！10核20线程！只要199！”

- 真相：可能是Xeon E5-2678v3（实际单核性能被i3-10100吊打）

**2. 翻新显卡**

- 识别技巧：

- 金手指磨损严重？→ 矿卡

- 散热器螺丝有拆痕？→ 可能换过硅脂掩盖故障

- 高危型号：RX 580 2048SP（矿卡重灾区）

**3. 山寨电源**

- 致命特征：

- 重量轻得像空壳（省掉了PFC电路）

- 重的很：灌了水泥

- 标称“500W”但卖50元（真500W二手至少100元）

- 安全牌：只买有80Plus白牌/铜牌的二手电源

**5.3 性能预期：900元能玩什么游戏？**

配置示例 CPU+GPU组合 1080P画质帧数 适用场景

保守派 E3-1230v2 + GTX 950 LOL全高100帧 / GTA5低画质40帧 网游+老单机

冒险派 E5-2667v2 + RX 570 CS2中画质80帧 / 原神低画质50帧 轻度3A

翻车派 X3430 + GTX 650 只能玩CF/DNF 电子垃圾

**pc-builds.com** 可以预估游戏帧数

**5.4 捡垃圾口诀（背诵可保命）**

🔹 “CPU看单核，显卡看功耗，主板看供电，电源看重量”

🔹 “便宜U配贵板，贵U配垃圾板，总有一款坑死你”

🔹 “老板说‘随便测’的时候，一定要跑FurMark (甜甜圈烤机15分钟，边玩手机边留意花屏/闪屏故障)

**任何配件当面点亮再付钱！！！**

**8/其他核心件捡漏技巧**

——SSD、内存、电源的极限压价方案

8.1 固态硬盘（SSD）：如何避开黑片/白片陷阱？

型号/类型 容量 价格区间 颗粒类型 寿命风险 推荐指数

三星PM981 256GB 80-120元 原厂TLC 低 ★★★★★

金士顿A400 240GB 60-90元 白片TLC 中 ★★★☆☆

杂牌无标SSD 256GB 40-60元 QLC 极高 **手慢无**

**Marks：硬盘是跑分中最能拉分的，如果主板支持NVME，可以加钱升级**

🔍 **鉴别技巧：**

- 软件检测：用CrystalDiskInfo看“通电次数”和“写入量”

- 写入量＞20TB的二手SSD慎买（寿命折损严重）

- 物理拆解（如果卖家允许）：

- 无品牌标识的主控+打磨过的颗粒？→ 小作坊SSD

**捡漏策略：**

- 优先拆机盘

- 避开所有“全新未拆封杂牌SSD”（99%是翻新货）

**8.2 内存条：服务器拆机条能不能用？**

**⚠️ 血泪教训：**

- 部分山寨X79主板对RECC内存挑颗粒（三星/海力士不兼容）

- 解决方案：买主板时让卖家送一条测试用的RECC内存

**8.3 机箱：0元解决方案**

别听鞋盒装机就很爽，实际上要散热性能还得是机箱

- 办公机箱流派：5元收废品站戴尔/联想机箱

- 裸奔流派：直接挂墙上，但小心猫狗/熊孩子（主板背面别接触金属，演讲厅的桌子就别想了，路边一块硬纸板还行）

**X/华强北生存手册：垃圾佬的终极防骗指南**

——从验机话术到维权套路，教你用魔法打败魔法

**X.1 当面验机必做五项测试**

1. CPU-Z+GPU-Z双验证

- 核对型号是否与卖家描述一致（尤其注意ES版CPU/QXL显卡马甲）

2. FurMark显卡压力测试

- 10分钟烤机，温度＞90℃或出现花屏→ 矿卡晚期

3. 硬盘健康度检测

- CrystalDiskInfo查看"05/C4"项（数值＞100直接砍价50%）

💡 话术技巧（测试不对）：

**「做生意唔係咁做㗎！」**

X.2 经典骗局拆解：如何反杀奸商？

**锻炼卡，测试卡：矿卡**

**电源上面写AX550，看12v正输出，多少瓦就是实际输出**

**\* 时间法则：**

**- 工作日上午去（商家闲，容易砍价）**

**- 下雨天去（人少，卖家心态崩）**

**Appendix 1**

PC-Building Glossary:

1080P: See FHD.

10-Series: A generation of Nvidia graphics cards released in 2016. Some 10-series cards include the 1050, 1060, 1070, and 1080.

1440P: See QHD.

20-Series: A generation of Nvidia graphics cards released in 2018. Some 20-series cards include the 2060, 2070, and 2080.

2160P: See UHD.

3000-Series: AMD’s CPU generation released in 2019. Some 3000-series CPUs include the 3100, 3500, and 3600.

30-Series: Nvidia’s most recent generation of graphics cards, released in 2020. Some 30-series cards include the 3060, 3070, 3080, and 3090.

4K: See UHD.

5000-Series: Refers to AMD’s most recent generation of CPUs or its generation of graphics cards released in 2019. Some 5000-series CPUs include the 5600X, 5800X, 5900X, and 5950X. Some 5000-series graphics cards include the RX 5300, 5500, 5600, and 5700.

6000-Series: Refers to AMD’s most recent generation of graphics cards, released in 2020. Some 6000-series GPUs include the 6700 XT, 6800 XT, and 6900 XT.

AIB: Add-in-Board. Typically refers to a graphics card that is made by a third-party manufacturer such as Gigabyte, EVGA, or MSI, rather than Nvidia. AIBs of the same model (i.e. a Gigabyte and EVGA RTX 3070) have the same GPU chip and VRAM capacity, so performance is typically very similar. The primary differences are in aesthetics, cooling, and out-of-the-box frequency (which can be changed via overclocking).

AIO: All-in one; refers to an all-in-one liquid CPU cooler. “AIO” is usually used to refer to a liquid CPU cooler that’s ready to be installed out-of-the-box. Can also refer to an all-in-one desktop, a pre-assembled PC.

Air Cooler: Air CPU coolers typically use a heatsink with fans to transfer hot air away from the CPU, as opposed to using liquid.

AMD: Advanced Micro Devices. One of the two leading brands in processor (CPU) and graphics card development. Makes Ryzen CPUs and Radeon graphics cards.

Ezoic

Aspect Ratio: The ratio of horizontal pixels to vertical pixels in a screen. 16:9 is considered the standard aspect ratio.

ASRock: Hardware manufacturer best known for their motherboards and graphics cards.

ASUS: Hardware manufacturer best known for their monitors, graphics cards, and motherboards.

ATX: Stands for Advanced Technology Extended. Typically refers to a common motherboard or power supply form-factor. ATX motherboards are generally considered full-sized. Also refers to the 24-pin power supply cable, (called an “ATX Cable”). ATX power supplies are also considered full-size, as opposed to the smaller SFX power supply.

BeQuiet!: Hardware manufacturer best known for their high-TDP low-noise CPU coolers and low-noise power supplies.

BIOS: Basic Input/Output System. Most simplistically, the screen your computer boots to when no operating system is installed. BIOS is still accessible when booting the computer regardless of whether or not an OS is installed. BIOS is important for troubleshooting and adjusting certain hardware settings like XMP; it’s essentially the preinstalled internal operating system of the motherboard.

Boot Drive: The drive that the operating system is installed on. The boot drive is typically an SSD, since this allows much faster boot (or startup) speeds.

Bottleneck: A situation in which one component is vastly better than another, creating a condition where one component cannot perform to its maximum capacity. The two components in question are typically the CPU and GPU, although other components can also create a bottleneck.

Case: See Tower.

Ezoic

Case Fan: A fan that screws into the side of the case. Case fans help ventilate hot air from the case, keeping the inside cool and keeping component temperatures from getting too high.

Chassis: See Case.

Chip: The tiny component made of silicon that enables nearly all electronics to function. CPUs and GPUs are types of chips.

Chipset: A motherboard’s firmware, which determines its compatibility with other components. Chipset most importantly determines CPU compatibility, but also affects other components.

CLC: Closed Loop Cooler. See AIO.

Clock Speed: The speed at which a component runs, usually measured in MHz or GHz.

CMOS: Complementary Metal-Oxide Semiconductor. The memory built into the motherboard that stores BIOS settings.

Consumer: Refers primarily to storage drives, but can apply to other components. Consumer drives are designed for personal use, and are far cheaper than enterprise drives. They are adequate for almost anyone, as the only real downside as compared to enterprise drives is lower sustained speeds.

Cooler: A device designed to keep temperatures of a component low. CPU coolers are most common, although graphics card coolers also exist.

Core: A core is technically a processor, but modern CPUs are made up of multiple cores. More cores corresponds to higher computing power, so a higher-end processor will have more cores than its lower-end counterpart.

Corsair: One of the biggest component and peripherals manufacturers. Best known for their RAM, power supplies, cases, keyboards, and more.

CPU: Central Processing Unit. This is the processor that controls your computer and runs most of the computations. It interacts with the other components, controlling what they do.

DDR: Double Data Rate. Refers to a specific type of RAM which is almost universally used. DDR4 is currently the fastest mainstream DDR, with DDR5 slated to release soon.

Dedicated Graphics: See Discrete Graphics

DIMM: Dual Inline Memory Module. Refers to a RAM stick.

DIMM Slot: The slots in a motherboard that house the RAM.

Discrete Graphics: Refers to using a GPU that is separate from the processor. Graphics cards are sometimes referred to as “discrete graphics cards.”

DisplayPort: A common interface for connecting the PC and monitor. DisplayPort supports higher refresh rates than HDMI, and is often used in conjunction with higher-end gaming rigs.

DLSS: Dynamic Learning Super Sampling. A Nvidia technology which uses AI to create images which appear higher-resolution than they actually are. Allows games to run at much higher framerates without losing significant picture quality. DLSS is only included with RTX cards.

DP: See DisplayPort.

EATX: Extended ATX. A less-common motherboard form-factor that is even larger than standard ATX.

Enterprise: Refers primarily to storage drives. Enterprise drives are industry-grade, created primarily for datacenters, and can sustain high read/write speeds for extremely long periods of time.

EVGA: Popular component manufacturer, best known for their power supplies and graphics cards.

Fan Curve: Refers to the graphical curve created when charting clock speed vs. fan’s percentage of maximum speed. The faster a component (CPU or GPU) runs, the faster the fans spin in order to compensate for extra heat produced.

FHD: Full HD. Refers to a monitor with a 1920 x 1080 resolution.

Flash: To update a computer’s BIOS to the latest version.

Form-Factor: The shape/form/size of a component. Shapes and sizes vary between different components, especially motherboards and storage drives. For example, motherboards come in many different form-factors (sizes) such as ATX, Micro-ATX, and Mini-ITX.

FPS: Frames Per Second. Refers to the count of individual frames outputted by a PC in the span of a second. Higher FPS results in a smoother picture, as long as the refresh rate is greater than or equal to FPS.

Free-Sync: Open-source variable refresh rate technology, typically used with AMD graphics cards (Nvidia GPUs typically use G-Sync). Allows a monitor’s refresh rate to change in response to a PC’s FPS output.

GeForce: Nvidia’s brand of graphics cards For example, the GeForce RTX 3080 is a high-end graphics card.

GHz: Gigahertz. 1 GHz is equivalent to 1,000,000,000 (a billion) Hz, so a CPU running at 1GHz is running a billion cycles per second. Usually refers to CPU clock speeds, which currently tend to be between 2.5 and 6 GHz.

Gigabyte: Hardware manufacturer best known for their graphics cards, power supplies, and motherboards.

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GPU: Graphics Processing Unit. The GPU is the chip that produces the picture on-screen. Can be included in a CPU (integrated graphics) or in a graphics card (discrete graphics). Many people simply refer to graphics cards as “GPUs” even though it technically refers to the chip inside them.

Graphics Card: A component of the computer that contains the GPU chip and produces the on-screen image. Graphics cards are not necessary, but they enable a computer to run games at higher framerates than integrated graphics.

G.Skill: Component manufacturer best known as one of the most popular suppliers of RAM, specifically the “Ripjaws” line.

G-Sync: Nvidia’s variable refresh rate technology. Allows a monitor’s refresh rate to change in response to a PC’s FPS output.

GTX: Nvidia’s older line of graphics cards, which includes most recently the 10 and 16-series of GPUs and doesn’t include ray-tracing technology. For example, the GTX 1660 Ti is a popular mid-range graphics card.

HDD: Hard Disk Drive. This type of storage drive is the oldest technology, and thus the cheapest. Hard drives (as they’re commonly known) can store a large amount of information, but have slower read and write speeds which makes them less ideal for data transfer.

HDMI: High Definition Multimedia Interface. One of the most common interfaces for connecting the PC and monitor.

Heatsink: A component that helps cool another component by dissipating the heat from its surface. Some parts that frequently come with heatsinks include RAM modules, CPUs, NVMe drives, and more.

Hz: Hertz. A unit of frequency, most commonly used to describe monitor refresh rates. One hertz is equivalent to one refresh per second.

Integrated Graphics: Graphics built into a CPU. A processor with integrated graphics can produce an image on-screen without a discrete graphics card.

Intel: One of the two leading CPU-manufacturing brands. Also one of the big three chip manufacturers. Best known for their “Core” CPUs, they have also recently begun developing graphics cards.

ITX: Information Technology Extended. The smallest mainstream motherboard form-factor. Mini-ITX motherboards typically cost the most since they’re able to fit in very small cases.

I/O Shield: Input/Output Shield. A metal plate that comes with the motherboard, with openings that match the motherboard’s ports. Clips into the side of the case and covers the motherboard, giving it a cleaner look.

M.2: A form-factor for storage drives that is shaped similar to a stick of gum. Most common dimensions are 22mm x 80mm, often shortened to “M.2 2280.”

mATX: Micro-ATX. A form-factor of motherboard that is smaller than a full-sized ATX board. These are typically the cheapest form-factor. They most frequently come with one PCIe slot and 2 RAM slots, although some come with more.

MHz: Megahertz. 1 MHz is equivalent to 1,000,000 (a million) Hz, so a GPU running at 1MHz is running a million cycles per second. Usually used to refer to RAM and graphics card clock speeds.

Micro-ATX: See mATX.

Mini-ITX: See ITX.

Mobo: See Motherboard.

Monitor: The screen that a PC is usually connected to.

Motherboard: The board which all components connect to, either indirectly or directly. Distributes power to components and allows them to interact with each other.

MSI: Component manufacturer known best for their graphics cards, motherboards, and power supplies.

Newegg: Popular vendor of PC components.

Noctua: A manufacturer of premium air coolers, known for their impressive cooling ability and low noise.

Nvidia: One of the two primary graphics card manufacturers. Makes GeForce “GTX” and “RTX” lines of graphics cards.

NVMe: Non-Volatile Memory Express. This is a type of storage drive that is the fastest currently available. NVMe drives are a type of SSD.

NZXT: Component manufacturer best known for their cases.

OC: See Overclock.

ODD: See Optical Disc Drive.

Optical Disc Drive: Optical Disc Drive. These can be installed in a computer and allow it to read discs such as CDs or DVDs.

OS: Operating System. This is the software that’s installed on your computer when you first set it up. It provides a GUI (graphical user interface) which lets you manage files and settings more easily. Popular OS’s include Windows, MacOS, and Linux.

Overclock: The act of increasing the speed at which a component runs in order to improve its performance. The most common components to overclock are CPUs, graphics cards, and RAM. Overclocking causes your hardware to run at higher temperatures, so it’s often a balance of finding the best performance while staying in a safe temperature range.

PCB: Printed Circuit Board. The base material that many components including RAM, storage drives, motherboards, graphics cards, and CPUs are made of. Chips are typically mounted on PCB.

PCIe: Peripheral Component Interconnect Express. Most commonly used to refer to a common slot type in the motherboard. Motherboards frequently come with PCIe x1, x4, x8, and x16 slots (x1 is the smallest and x16 is the largest). The number refers to the amount of PCIe lanes, so a “PCIe x16” slot uses 16 PCIe lanes. CPUs have a certain number of lanes they can support, which varies between models.

Peripherals: Components that are not a part of your PC but are used in conjunction with it. Common types of peripherals include keyboards, mice, monitors, headsets, and microphones.

Phanteks: Hardware manufacturer best known for their CPU air coolers, cases, and case fans.

PNY: Component manufacturer best known for their graphics cards and NVMe drives.

Prebuilt: A computer that’s assembled prior to sale and is bought as one unit, as opposed to buying separate components and building a computer.

PSU: Power Supply Unit. Often shortened to “Power Supply,” the PSU provides electricity to all components. Typically the PSU has cables that plug into the ATX motherboard slot, CPU motherboard slot, graphics cards, and any SATA storage drives.

PWM: Pulse Width Modulation. A technology some fans are equipped with, which allows them to spin faster in response to higher component temperatures.

QHD: Quad HD. Refers to a monitor with a resolution of 2560 x 1440. Also referred to as 1440p.

RAM: Random Access Memory. Often simplified to “memory”, RAM holds temporary data and enables your CPU to interact with other components quickly.

Ray-Tracing: Technology that allows for incredibly realistic reactive graphics by simulating the effects of light on objects.

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Refresh Rate: How many times a monitor refreshes the image on-screen per second. Measured in hz, a higher refresh rate allows for a smoother experience. Common refresh rates are 60hz, 75hz, 120hz, 144hz, 165hz, 240hz, and 360hz.

Resolution: The dimensions of a monitor’s screen, in terms of pixels. Higher resolution indicates higher image quality. Common resolutions include 1080p, 1440p, and 2160p (also known as 4K). The numbers refer to the vertical pixel count, for example most 1080p monitors are 1920 x 1080 pixels.

RMA: Return Merchandise Authorization. The first part of the process of returning a (typically) defective component, often used as a categorical way to say “return.”

RTX: Nvidia’s most recent line of graphics cards, which includes the 20 and 30-series of GPUs and features ray-tracing technology. For example, the RTX 3080 is a popular graphics card.

RX: AMD’s most recent line of graphics cards, which includes the 5000 and 6000 series most recently. For example, the RX 6800XT is a popular AMD card.

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Samsung: One of the big three chip manufacturers. Aside from this, they’re especially well-known for their NVMe storage drives.

SATA: Serial Advanced Technology Attachment. SATA is a commonly used port in hard drives and SSDs. A SATA cable plugs into the SATA port in a drive on one end, and the motherboard’s SATA port on the other.

SFF: Small Form Factor. Refers to smaller PCs or components which generally use ITX motherboards and SFX power supplies.

SFX: Denotes a smaller form-factor power supply, as opposed to ATX (full-sized).

SODIMM: Small Outline Dual Inline Memory Module. Smaller version of DIMM, most frequently used in laptops.

Socket Type: The specific socket that a motherboard features, which determines CPU compatibility. Both CPUs and motherboards have a socket type, and they have to be the same in order to be compatible. Intel socket types typically begin with “LGA” such as “LGA1200,” while AMD sockets generally begin with “AM,” such as “AM4.”

SSD: Solid State Drive. This is a form of storage that is much faster than an HDD. These are more expensive per gigabyte than hard drives as a result, and are often used as Boot Drives.

Stock Cooler: The CPU cooler that comes with the processor. These are typically less powerful than aftermarket CPU coolers, but they only come with lower-wattage CPUs that don’t need as much cooling.

Super: Suffix tacked on to the end of some Nvidia graphics card names. Similar to Ti, Super indicates higher performance than its non-Super counterpart. For example, the GTX 1660 Super is more powerful than the GTX 1660.

TBW: Terabytes Written. An estimate of the amount of terabytes a storage drive can write before it dies. For example, a 1TB drive with a TBW of 600 should be able to overwrite itself at least 600 times.

TDP: Thermal Design Power. An estimate of the maximum amount of heat a component will produce or, for coolers, the maximum amount of heat they can dissipate. Measured in Watts.

Team Blue: Nickname for Intel. People who prefer Intel CPUs over AMD refer to themselves as “Team Blue.”

Team Green: Nickname for Nvidia. People who prefer Nvidia GPUs over AMD refer to themselves as “Team Green.”

Team Red: Nickname for AMD. People who prefer AMD GPUs or CPUs over Nvidia/Intel refer to themselves as “Team Red.”

Thermal Paste: A gray paste that’s applied between the CPU and the CPU cooler, which is essential for creating optimal contact and heat transfer.

Thermal Throttling: A phenomenon in which a component intentionally reduces its clock speed to protect itself from overheating. Most commonly occurs with insufficiently-cooled CPUs and graphics cards.

Thread: Most of the time CPU cores are split into two or more “threads.” These threads are logical cores, meaning that the computer recognizes each thread as a separate entity even though each thread may be part of the same physical core. Threads further divide a single core into two (or sometimes more) separate entities, which allows for higher performance in certain applications. Currently the standard is two threads per core so, for example, an 8-core processor will usually have 16 threads.

Ti: Suffix tacked on to some Nvidia graphics card names. Indicates higher performance than its non-Ti counterpart. For example, the RTX 3060 Ti is more powerful than the RTX 3060.

TKL: Tenkeyless. Refers to a keyboard that doesn’t include a number pad, and thus has a smaller form factor.

Tower: Another term for the case. The tower holds all components and determines the appearance of your computer.

TSMC: Taiwan Semiconductor Manufacturing Company. One of the big three chip manufacturers.

U.2: Type of storage drive connection used almost exclusively for enterprise SSDs. U.2 SSDs have the fastest transfer rates overall but are extremely expensive.

UEFI: Unified Extensible Firmware Interface. UEFI is similar to BIOS in that it’s the first program to run upon booting.

UHD: Ultra HD. Refers to a monitor with a resolution of 3840 x 2160. Also known as 4K since it has approximately 4,000 pixels horizontally, or 2160p which refers to the vertical pixel count.

Ultrawide: Refers to a monitor with a higher-than-standard aspect ratio. Most typically, ultrawide monitors have a 21:9 aspect ratio, as compared to the standard ratio of 16:9.

Undervolt: Reduce the amount of power delivered to a component to reduce operating temperatures. Most commonly done to CPUs and GPUs.

USB: Universal Serial Bus. Extremely common connection type; most keyboards, mice, headsets, and other peripherals utilize USB. There are three generations of USB, each with a higher bandwidth (speed).

VRM: Voltage Regulator Module. A built-in part of the motherboard that controls the voltage sent to the CPU at any given time, allowing a steady supply of power without sending too much at any given time. VRMs are essential to the function of a computer.

WiFi: Wireless Fidelity. Wireless network which allows users to connect through the Internet. Most PCs require an adapter of some sort to connect to WiFi, unless the motherboard has built-in wireless capabilities.

XMP: Extreme Memory Profile. Refers to a technology that allows you to easily increase your RAM speeds. XMP is usually turned on in the BIOS.