True 4k Gaming PC (2026) - Classic LTT Build Guide

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SUMMARY

This video outlines the construction of a budget-friendly 4K gaming PC, emphasizing the selection of components that deliver high performance without excessive spending. The build features Intel's Core Ultra 250 KF Plus CPU, an ASRock B860M ProA motherboard, and an Asus Prime GeForce RTX 5070 Ti GPU, all aimed at achieving optimal gaming experiences at 4K resolution.

- *Intel's Core Ultra 250 KF Plus CPU is highlighted for its performance and value, especially with six powerful cores and twelve efficient cores.*
- *The ASRock B860M ProA motherboard offers solid features at a reasonable price, including high-speed USB and ample storage options.*
- *A 1TB Patriot P300 NVMe drive is chosen for storage, balancing cost and capacity for modern gaming requirements.*
- *The build utilizes 32GB of Corsair Vengeance DDR5 RAM, with the option to upgrade later if needed.*
- *The Thermalright Assassin X120 cooler is selected for efficient CPU cooling without breaking the budget.*
- *The Asus Prime GeForce RTX 5070 Ti GPU is noted for its high performance, albeit at a steep price point.*
- *The total build cost is approximately $1974, providing a capable 4K gaming experience.*
- *Performance tests show solid frame rates in demanding games like Cyberpunk 2077 and Forza Horizon 6, demonstrating the system's capabilities.*

This is a 4K gaming PC, at least according to Valve. But by that logic, anything with a 4K HDMI port is a 4K gaming machine, depending on the games you run. But that's not what you and I mean when we say 4K gaming PC. And today's build powered by CSIC is for real 4K gaming, but without spending any more money than we absolutely have to. So, with that in mind, let's dive right in with a choice that is going to blow the mind of anyone who didn't notice that Intel quietly snuck into the lead for bang for the buck gaming. I mean, I wouldn't blame you for missing it. Their Core Ultra 200 series first landed on the market like a wet dog fart, somehow offering worse performance in gaming than their predecessors. But the similarly named Core Ultra 200 Plus series doubles in the details. It's a lot more than a midcycle refresh. And the 250 KF plus makes a strong argument for itself with six powerful PC cores that'll boost to up to 5.3 GHz for our games and then another 12 ecores to handle everything else. Intel did recently increase pricing on the Plus series, allegedly due to strong demand, but we can counter some of that by choosing the F variant, which doesn't have integrated graphics. Now, it's worth noting that if you want to squeeze the most performance out of every penny, you can drop your CPU selection down to AMD's Ryzen 5 5600X.

The chip itself is not a bargain, but AM4 motherboards and DDR4 are. And once you ramp up the resolution,

CPU bottlenecks are less of a concern. But still, guys, we'd be talking about a nearly 6-year-old chip in a 10-year-old socket. And I personally feel that the 250 KF Plus is worth the extra scratch, especially because it's not that much extra for the platform overall. At $110, ASRock's B860M ProA feels like kind of a return to sanity in motherboard pricing. You won't get much in the way of extras or frills, but it features solid power delivery, high-speed USB and 2 and a half gig networking, and ample M.2 storage expansion slots. Though, at current pricing, I think we'll probably just populate one of them. But that's getting ahead of ourselves. Let's get our work surface set up. It is always a good idea to use an ESD safe mat or at the very least an ESD strap to keep our components safe from static discharge. The motherboard box makes a convenient platform to work on while we're getting our core components assembled. Let's start with our CPU.

Open up the CPU socket cover by pushing down the arm and pulling a little bit away from the socket. Then you can lift up the retention mechanism, being careful, of course, not to touch any of the delicate pins inside. There's a couple of different ways to landmark the orientation of your CPU. One is with the little triangle that's on both the corner of the CPU as well as on the socket cover, and the other is with these little notches right here.

Carefully place the CPU. No pressure should be required here. And then after installing it, I like to give it a little tiny wiggle to make sure that it's seated properly. Now we lower down the cover. Lower down the arm and secure it. The socket cover should pop off. If it doesn't, just grab it. And I like to store this inside my motherboard box in case I ever need to send it back to the manufacturer later. Now, for our storage drive, we chose the Patriot P300 NVME. It is nothing special. It has no DRAM cache.

It's PCIe Gen 3, but for under 150 bucks, we were able to get a terabyte of storage. And now that some games are starting to list NVME storage as a requirement, this gives us enough space for at least a few of those games in addition to our operating system. You can drop down to 512 gigs here, but it's worth noting that the savings to capacity calculation is really not pretty. Because this isn't a PCIe Gen 5 drive, we're going to place it in one of the slower slots, leaving our faster slot right under the CPU socket for a future upgrade. Like when we installed our CPU, there's a little notch in the NVME connector that lines up with the key on the motherboard slot. Just slide it in at about a 25 to 30° angle. Then press it down and secure your NVME drive in place using the included little plastic clip. If you're following along at home with a different motherboard, it's worth noting that these mechanisms do vary a little bit. Some use different plastic clips. Others are held in place by the heat sink cover over top and others use these convenient teeny tiny little screws that will immediately get lost in high pile carpet.

Speaking of RAM, we speced our system with a 32 gig kit of Corsair Vengeance DDR56000 CL36. It didn't arrive in time for our shoot today, so we're using this similarly speced GSkill kit in its place. If $400 plus dollars is too rich for your blood up front, a nice thing about going Intel, by the way, is their memory controller tends to play a little bit nicer with four sticks. So going for 16 gigs today and then upgrading later could be a good option for you. This is also one of the areas where my previous recommendation to maybe drop down to AM4 to save some money could pay off big. 32 gigs of DDR4 is only about $200 at the moment. Installing RAM, regardless of which way you go, is pretty much the same across the board. You got to follow two laws. The first is Sherrod's law, and that is that probably the labels will face inward toward the CPU socket where you are less

likely to see them.

The second is if you don't want performance that's poor, install your RAM in slots two and four, counting from the CPU socket. Neither of these are always true. And if you want to double check, you'll want to consult your motherboard's manual for the recommended configs for your RAM. To install it, all we've got to do now that we know where to put it and how to orient it is place our thumbs firmly on both sides of the stick and push down until it clicks.

Takes a little bit more pressure than novice users are necessarily comfortable putting on it, but don't force it. Now, there's just one more piece before we install this in our case. Our CPU is going to need some cooling, and we've already spent close to half of our budget. So, let's not overthink this and go with the Thermalite Assassin X120 refined SE. It's just $17.90 and should have no problem handling our 250 KF. Now, our CPU uses the LGA1 1851 socket, and this cooler has been around for long enough that you might end up with a version that doesn't mention compatibility with that socket. Luckily for us, Intel kept the same specs between their LGA700 socket and the newer 1851, so we can just follow the directions to mount LGA700.

This back plate has little sliders. Adjust those to the 1700 position. Then it goes on the back of the motherboard like so, poking just a little bit through the retention holes here. Then we take our team blue spacers from the cooler accessories. Then we grab our Intel screws, which look remarkably similar to the AMD screws. You'll want to look at the manual to see what I mean, but the thread on the AMD screws is a little fatter than the Intel ones.

Then grab these two brackets, which will end up basically framing your CPU once they're installed. These should only fit one way. Next, if our cooler doesn't have thermal paste pre-applied, we add a little kind of cooked grain of brown rice sized dollop to the middle of the CPU. Then, screw the cooler onto the mounting brackets, just starting both sides before torquing them down. Attach the fan and plug it into the CPU fan power connector here at the top edge of the board. While we're at it, if you like shiny lights, you can go ahead and plug in your addressable RGB header as well. Like the CPU fan, it only goes in one way. Don't force it. Now it's time to tuck these wires away and then get everything installed in a case. I haven't actually seen the Gambas Athena M4M case before, but it's 60 bucks at the moment, has decent reviews, and it has plenty of room despite its small size for a beefy graphics card.

The first thing we're going to do once we have our accessories and packing materials out of the way is pop off all of our panels. That's going to make it a lot easier to build in. I like stashing my panels back in the original box. That way they're far less likely to, you know, be dropped. >> Next, we're going to make sure that all of the motherboard standoffs are mounted in the correct places to line up with the mounting holes on our motherboard.

The easiest way to do that is to count them first, then put the motherboard down on top of them and count through the holes, making sure that you can see a standoff through each hole. If you have any extras, there's a very good chance that they will scratch the traces on the back of the board. damaging or killing it. With that out

of the way, it's time to remember, just in the nick of time, to install our IO shield in the big rectangular opening at the back of the case. Just line it up and then press down on each of the four corners. Then do it again cuz it probably didn't work on all of them the first time. Now you can gently put your motherboard into place at about a 30° angle. First lining up the rear IO, then placing the board down against the standoffs. Make sure that you don't scrape it around.

Now is a great time to inspect the rear IO and make sure that none of the little tabs on the IO shield ended up inside the ports. That'll be about a 15 to 20 minute job to fix later if you don't catch it. Now, with all of that good, you can secure the motherboard in place with the correct screws. And then it's time to get to wiring. This is one of the trickiest parts of building a PC for new builders. Pretty much any case, Here we go.

is going to have kind of a bundle of wires and connectors coming from wherever the front IO is. This one right here is for your front panel audio and connects to the audio header that's usually on the bottom left corner of the motherboard. This one and this one are for your case's front USB ports. The big wide one is for your USB 3 type A. And then this little sometimes a ribbon cable one is for your front USB type C. Usually, these connectors are either along the right hand edge or along the bottom edge of the motherboard. Next, it's time to plug in the front panel buttons. If you're lucky, your power button, your reset, and their corresponding LEDs will all be molded into a single connector that will have the same pin out as your motherboard. If you're a little less lucky, you'll end up with a situation like this where the system has a power and a reset button, but doesn't appear to actually have a lead for the reset button. We just have a little power switch button. And then we have an LED switch button. Oh, it's not a reset button. It turns the lights on and off.

It goes to this fan and RGB controller hub in the back of the case here. Anyway, for the power button, the polarity doesn't matter. So, you just go ahead and put it on these two power pins right here. And then for that hub, we're going to go ahead and plug in one of the RGB leads as well as a fan lead that is going to give it a PWM signal so that all of the fans plugged into the hub will run at the same speed. We'll deal with the SATA power connection later once we put in our power supply. Now, we're at a step that's going to be a little unusual in this case, pun intended, our power supply.

CSIC sponsored this video and sent over their Focus GXV4 ATX3 2024 850 W 80 Plus Gold. Word salad aside, what's not to like about it? It's fully modular with a quiet 135mm fan and has industryleading reliability that's backed up with a 10-year warranty. So, your power supply is going to live about as long as the average Golden Retriever. All that for just $109.99. LTT Labs ran the 750 W version through our full test suite and found that it performs just like CIC says it does. So, you can check that out at the link in the video description as well as the link to this product. Now, before we put it into our case, let's get out the appropriate cables for our build here.

It's much easier to connect these to the power supply now while it's outside the case than once we've put it in here and then have to deal with this cable covering shroud. We will need our 24 pin for our motherboard, an 8 pin for the CPU. Let's throw in the four pin for the CPU as well, and we will need an PCIe power cable for our GPU. As for that hub in the back, we're going to grab a SATA cable to plug that into. All of these use the if it fits

I sits method of validation. And with everything plugged into the power supply, we slip it in a little bit like so. With the fan facing toward the side panel, tighten up the four screws at the top. Then we need to plug in the pass through power cable and flip the switch to the I or on position on the power supply. Now, not that it really matters as much in this case, but some small form factor cases, it can be really hard to get at that switch again after the fact. Our motherboard cables route through the nearest cable management holes. We're going to leave our GPU connector here. We'll plug that in shortly. And our SATA cable plugs in here with all the excess tucking in behind this cute little door, which we can secure with a screw. To wrap this step up, again, pun intended, we'll use these little loops on the back of the motherboard tray to strap down all of our cables. But we're not going to do that just yet because first, it's time for the PCIe dea resistance of our build, our GPU. We went with the Asus Prime GeForce RTX 5070 Ti 16 gig. And I hate it.

To be clear, I don't hate the GPU. I just hate that for $900, this isn't even the overclocked version. Not that the 45 MHz really matters. I mean, the cooler is the same and we can overclock at 1% if we really want to. It's just that I remember when $900 bought you a top-of-the-line GPU or even two of them in SLI. But maybe there's a solution we're not seeing. I mean, if creating my own head cannon made me happier about Star Wars, maybe it'll work here.

This is the top-of-the-line GPU. This is the top-of-the-line GPU. I I mean, jokes aside, it does perform really well, as you guys are about to see. And with it as our centerpiece, our whole build came in at $1974. So, we're talking 4K gaming for just under 2,000 Freedom Bucks. We just need to pop out these two PCIe slot covers at the back of the case to make room. Then we line up our GPU with the PCIe 16X slot and give it a gentle push into place. There may be an audible click, but there might not be. Don't force anything. You can always just check this clip at the back of the slot to see if it's engaged. Then do a quick double check by the PCI bracket to ensure that the fingers are sliding in between the motherboard and the back of the case. If everything looks good, it's time to securely plug in our 12volt 2x6 PCIe power connector. Make sure that the little latch engages and then we can tidy up those excess cables.

Now, let's just get this plugged in. Wired networking required. We did not choose a motherboard with Wi-Fi. And wish me luck. Nice. Not a bad looking little build, right? This is actually for how small this thing is, I am freaking really liking it. We get nice fresh air coming across both our GPU and our CPU. Just about the whole back of this thing.

Top and other side are all mesh. Let's see how she holds up. Oh, I will need a mouse pad. Oh, I will also need a wardrobe change. And I'll use both of those opportunities to show off cool new stuff from ltdstore.com. This is our map of Siberia desk pad. It's freaking awesome and is full of little inside jokes and puns. And this one is our fast, fresh, and fiber optic hoodie. I just want to make sure XMPP is enabled so we're getting the most out of our memory. If we're going to spend the damn money, I want the performance. And right out of the gate, what a great experience. We're looking at anywhere from around 50 to 60 FPS on average with lows that admittedly are dipping quite a bit lower. But on a game that is meant to be enjoyed on a console, this is a more than adequate frame rate. And the best part, check this out, guys. This is absolutely freaking cranked with no upscaling. So, if I was to switch over to DLSS, even at the quality setting, okay, now we're talking, average FPS

around 80. And DLSS quality these days is it's pretty darn good.

Cyberpunk 2077 might be getting a little bit on the older side now, but is still extremely demanding at high settings, and that is exactly what we are running it at. I'm talking ray tracing ultra everything set to high. Yes, we're using a little bit of resolution upscaling, but no, we are not using any frame gen in order to get a nice solid 60 to 70 fps average. And maybe more importantly, really consistent frame times with them sitting around 50 fps on the minimums.

This is a very smooth gaming experience. And just like with Expedition 33, I could absolutely tune things down a little bit more if I wanted like 100 plus FPS. Got to say, my head cannon is working out great here. Who cares if the 5080 and the 5090 exist? This is offering up a great gaming experience, but how about we try something a little newer? Fortza Horizon 6. Damn, that looks good and smooth. over 100 FPS average and we're dipping down to like I think I saw as low as like 70 but that's not happening very often. This is freaking great. Okay, we are using a little bit of upscaling here quality but I think we can go further.

Maybe ultra with ray tracing. Let's give it a shot. Oh man, does that ever look more realistic though. That is a I have seen some differences between classic illumination and ray traced illumination before. That was a pretty noticeable one. And we're still getting like 77 FPS minimum. More than enough for a racing game. I already mentioned the system's like very reasonable in terms of noise, too. I'm right at the back of it. So, this is the worst case scenario here. Hold on. I'm going to let the game render. Being around at the front where the window sits in between me and the noise making components.

Can you even catch it on my mic? That's great. You know, just for fun, let's see how many FPS we can get in something really light. What is this? 400 FPS. Let's go. In conclusion, are things a little tough right now? Yeah, they are. But you can still build a buttkicking 4K gaming machine that can rip up any AAA game on the market for under two grand. And whether you're looking at something like that or something more entry level, our sponsor CIC has the power supply for you. And they'll back it for longer than your system is likely to stay useful.

>> >> If you guys enjoyed this video, why not check out one of our past build guides, like the last guide you'll ever need. It's a really helpful video if the system you're putting together doesn't happen to be using these exact components. It gives you a lot of the principles for how to select parts and how to assemble just about