



# QUICK REFERENCE GUIDE 2017 CONSUMER PLATFORM FOR DESKTOPS



## PERFORMANCE

- World's fastest 8 core and 6 core desktop CPUs.<sup>1,2</sup>
- World's most power efficient 8 core and 6 core desktop CPUs.<sup>3,4</sup>
- Future Ready: Up to 8 unlocked cores/16 threads, high bandwidth DDR4 memory, ultra-fast connectivity, and the software tools you need to get the most from it.
- Better system performance and offers more threads and cores at every price point.<sup>5,6,7</sup>

## GAMING

- Push your AAA games to the limits with a CPU optimized for all high-end graphics.
- Lightning-fast responsiveness for the smoothest VR and ultra-high resolution experiences.<sup>8</sup>
- Dominate gaming today and tomorrow with professional level performance.<sup>8</sup>

## PRODUCTIVITY

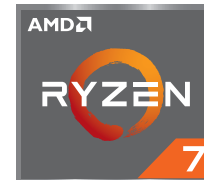
- Get server-like multitasking so you can stream, edit, create and browse stream simultaneously with ease
- True AI technology that adapts to you and anticipates your needs.
- Work, play and browse faster with lightning-fast startup speeds



## WORLD'S FASTEST AND LOWEST POWER 6 CORE DESKTOP CPU<sup>2,4</sup>

With up to 6 cores and 12 processing threads, AMD Ryzen 5 processors redefine the entry point for serious Prosumers, while delivering world-class game performance.








- Get incredibly smooth gaming performance above 120 FPS at max detail settings in many modern game titles with Ryzen 5 1600X.<sup>9</sup>
- AMD Ryzen 5 1600X and 1500X processors can beat competing Intel Core i5 models' average frame rate performance in 1080p gaming.<sup>10</sup>
- AMD Ryzen 5 1600X delivers almost 90% more performance compared to Intel's Core i5 7600K at about the same price.<sup>6,7</sup>
- AMD Ryzen 5 1600X and 1500X processors are superior to competing Intel Core i5 processors in multi-threaded performance as represented by Cinebench R15, POVRay, 7-Zip, and Handbrake.<sup>11</sup>



## WORLD'S FASTEST AND LOWEST POWER 8 CORE DESKTOP CPU<sup>1,3</sup>

With 8 cores and 16 processing threads, AMD Ryzen 7 delivers some of the highest application, multi-tasking, and game performance you can get on a desktop PC, for the most demanding power users.

- Get up to 66% more CPU performance over the Intel Core i7-7700K.<sup>5</sup>
- Get up to 153% more CPU performance over the AMD FX-8370<sup>12</sup>
- Edit videos and render 3D images in Handbrake and Blender up to 25% faster than the Intel i7-7700K<sup>13</sup>
- Refine and perfect images up to 10% faster than Intel i7-7700K in Adobe® Photoshop<sup>®13</sup>
- Streaming to Twitch: Ryzen 7 1700 dropped less than 1% video frames while gaming, the Intel i7-7700K dropped up to 18%.<sup>14</sup>

	CORES/ THREADS	CPU MAX SPEED	CACHE (L2+L3)	TDP	PRECISION BOOST	EXTENDED FREQUENCY RANGE	NEURAL NET PREDICTION	SMART PREFETCH	PURE POWER	COMPARE TO
 Ryzen 7 1800X	8/16	4.0 GHz	20 MB	95	●	●	●	●	●	Intel i7-6900k
 Ryzen 7 1700X	8/16	3.8 GHz	20 MB	95	●	●	●	●	●	Intel i7-6800k
 Ryzen 7 1700	8/16	3.7 GHz	20 MB	65	●	●	●	●	●	Intel i7-7700k
 Ryzen 5 1600X	6/12	4.0 GHz	19 MB	95	●	●	●	●	●	Core i5-7600K
 Ryzen 5 1600	6/12	3.6 GHz	19 MB	65	●	●	●	●	●	Core i5-7600
 Ryzen 5 1500X	4/8	3.7 GHz	19 MB	65	●	●	●	●	●	Core i5-7500
 Ryzen 5 1400	4/8	3.4 GHz	10 MB	65	●	●	●	●	●	Core i5-7400

AMD SENSEMI TECHNOLOGY IS CLEVER MACHINE INTELLIGENCE IN YOUR AMD RYZEN™ PROCESSOR—A SERIES OF SMART “SENSES” THAT WORK TOGETHER TO LEARN ABOUT YOUR APPLICATIONS AND TUNE PERFORMANCE FASTER THAN THE BLINK OF AN EYE.



Adjusts clockspeed on the fly without pausing work, to optimize performance to the demands of your game or app.



When paired with a premium cooling solution, get extra performance boosts that are fully automated with no user input required.



Increased efficiency from a true AI that evaluates current application and predicts the next steps before they are needed.



Learns how your applications access their own data and prepares it in advance to enable peak performance.



Optimizes power draw for any workload to minimize power consumption, reduce system heat, and decrease noise.

1. Testing by AMD Performance labs as of February 10, 2017. PC manufacturers may vary configurations yielding different results. Cinebench R15 nT is used to simulate multi-threaded CPU performance; the AMD Ryzen™ 7 1800X scored 1601.43, while the Intel Core i7-6900K Extreme scored 1473.79 for a benchmark score comparison of 1601.43/1473.79 = 1.09x or 9% more. RZN-9. System Configurations: AMD Ryzen™ 7 1800X: Myrtle AM4, Ryzen™ 7 1800X processor, with NVIDIA TITAN X (Pascal) 12GB graphics adapter, 16GB (2 x 8GB) DDR4-2400 RAM, Windows 10 RS2operating system, Graphics driver 21.21.13.7633 :: 12/11/2016. RZN-9
2. Testing by AMD Performance labs as of March 27, 2017 on the following systems: Socket AM4: Ryzen™ 5 1600X processor (6c12t), Asrock Fatalty AB350 GAMING K4, NVIDIA GTX 1080 6GB graphics adapter, 16GB (2x8GB) DDR4-2400 RAM, Samsung 850 PRO 512GB SSD, Windows 10 RS2 operating system, Graphics driver 378.78. Socket 2011: Core-i7 6800K processor (6c12t), STRIX X99 GAMING, NVIDIA GTX 1080 6 GB graphics adapter,16GB (2x8GB) DDR4-2400 RAM, Samsung 850 PRO 512GB SSD, Windows 10 RS2 operating system, Graphics driver 378.78. Cinebench R15 nT and the CPU-Z multi-threaded benchmark are used to simulate multi-threaded CPU performance. The AMD Ryzen™ 5 1600X scored 1250 in Cinebench nT, while the Intel Core i7-6850K scored 1180 in Cinebench nT. The AMD Ryzen™ 5 1600X scored 14507 in the CPU-Z multi-thread benchmark, while the Intel Core i7-6850K scored 11584 in the CPU-Z multi-thread benchmark. PC manufacturers may vary configurations yielding different results. RZN-23
3. Power efficiency of consumer client desktop 8-core processors based on Cinebench R15 nT score divided by wall power watts during testing. Scores: 1410 (AMD Ryzen 7 1700) vs. 1473 (Core i7-6900K). System config: AMD Reference Motherboard (1800X) and ASUS STRIX X99 Gaming (6900K), 16GB DDR4-2400, NVIDIA Titan X (Pascal), graphics driver 21.21.13.7633, Windows 10 x64 RS1. Measured system wall power during testing: 115W (1700) vs. 142W (6900K). Power efficiency: 1410/115=12.26 points per watt (1700) vs. 1473/142W=10.37 points per watt (6900K). Result: AMD Ryzen 7 1700 offers 18.22% more performance per watt. RZN-10. Socket AM4: Ryzen™ 7 1700 processor, with NVIDIA GTX 1070 6 GB graphics adapter 16GB (2 x 8GB) DDR4-2400 RAM, Windows 10 RS2operating system, Graphics driver 21.21.13.7633 :: 12/11/2016. RZN-10
4. Specifications as of March 23, 2017. The AMD Ryzen 5 1600 has a thermal design power (TDP) of 65 Watts. The Intel Core i7-6850K, Intel's lowest-power 6-core processor, has a thermal design power (TDP) of 140 Watts. RZN-24
5. Testing by AMD Performance labs. PC manufacturers may vary configurations yielding different results. Cinebench R15 nT is used to simulate multi-threaded CPU performance; the AMD Ryzen™ 7 1800X scored 1601.43, while the Intel Core i7-7700K scored 966.66 for a benchmark score comparison of 1601.43/966.66 = 1.66x or 66% more. RZN-4. AMD Ryzen™ 7 1800X: Myrtle AM4, Ryzen™ 7 1800X processor, with NVIDIA TITAN X (Pascal) 12GB graphics adapter, 16GB (2 x 8GB) DDR4-2400 RAM, Windows 10 RS2operating system, Graphics driver 21.21.13.7633 :: 12/11/2016. Core i7-7700K: 2270 SLI, Core i7-7700K processor, with NVIDIA GeForce GTX 1070 8GB graphics adapter, 16GB (2 x 8GB) DDR4-2400 RAM, Windows 10 RS2operating system, Graphics driver 21.21.13.7633 :: 12/11/2016. RZN-4
6. The Core i5-7600K (4c/4t, \$240 on Newegg.com as of March 3/2017) achieved a score of 662.7 in the Cinebench multi-thread test; a score of 179.5 in the Cinebench single-threaded test. The Ryzen 5 1600X (6c/12t, \$249 SEP) achieved a score of 1239.1 in the Cinebench multi-thread test; a score of 161.2 in the Cinebench single-threaded test. PC manufacturers may vary configurations yielding different results. RZN-25. Testing by AMD Performance labs as of March 23, 2017 on the following systems: Socket AM4: Ryzen™ 5 1600X processor (6c12t), Fatalty AB350 GAMING K4, NVIDIA GeForce GTX 1080 graphics adapter, 16GB (2x8GB) DDR4-2933 RAM, Samsung 850 PRO 512GB SSD, Windows 10 RS2 operating system, Graphics driver 21.21.13.7878. Socket 1151: Core i5-7600K processor (4c4t), B250 GAMING M3, NVIDIA GeForce GTX 1080 graphics adapter, 16GB (2 x 8GB) DDR4-2400 RAM, Samsung 850 PRO 512GB SSD, Windows 10 RS2 operating system, Graphics driver 21.21.13.7878. RZN-25
7. AMD and Intel pricing pulled from shop.amd.com and arkintel.com as of 4/19/17.
8. Game performance is controlled by factors including (but not limited to) graphics card performance, network performance, I/O performance, monitor resolution, detail settings and game engine optimization.
9. All Games run at 1080p, highest graphic detail settings. Average frame rates are as follows: The Ryzen 5 1600X (6c/12t) achieved 148 FPS in Star Wars Battlefront; 157 FPS in F1 2017; 148 FPS in Battlefield 1; and 147 in Doom. RZN-27. Testing by AMD Performance labs as of March 3, 2017 on the following system: Socket AM4: Ryzen™ 5 1600X processor (6c12t), AX370 Gaming 5 motherboard (F3F), NVIDIA GeForce GTX 1080 graphics adapter, 16GB (2 x 8GB) DDR4-2933 RAM, Samsung 850 PRO 512GB SSD, Windows 10 RS2 operating system, Graphics driver 21.21.13.7878. RZN-27
10. The Core i5-7600K (4c/8t, \$240 on Newegg.com as of March 3/2017) achieved 27.6 FPS in the Ashes of the Singularity CPU benchmark; 64.7 FPS in the Civilization VI benchmark; 83.9 FPS in the Mafia 3 benchmark; and 157.5 in the F1 2016 benchmark. The Ryzen 5 1600X (6c/12t, \$249 SEP) achieved 31.6 FPS in the Ashes of the Singularity CPU benchmark; 70 FPS in the Civilization VI benchmark; 86.4 FPS in the Mafia 3 benchmark; and 166.6 in the F1 2016 benchmark. The Core i5-7500 (4c/8t, \$205 on Newegg.com as of March 3/2017) achieved 24.8 FPS in the Ashes of the Singularity CPU benchmark; 60.7 FPS in the Civilization VI benchmark; 81.1 FPS in the Mafia 3 benchmark; and 144.3 in the F1 2016 benchmark. The Ryzen 5 1500X (4c/8t, \$189 SEP) achieved 26.2 FPS in the Ashes of the Singularity CPU benchmark; 65 FPS in the Civilization VI benchmark; 79.9 FPS in the Mafia 3 benchmark; and 148.9 in the F1 2016 benchmark. PC manufacturers may vary configurations yielding different results. RZN-26. Testing by AMD Performance labs as of March 23, 2017 on the following systems: Socket AM4: Ryzen™ 5 1600X processor (6c12t), Ryzen™ 5 1500X processor (4c8t), Fatalty AB350 GAMING K4, NVIDIA GeForce GTX 1080 graphics adapter, 16GB (2 x 8GB) DDR4-2933 RAM, Samsung 850 PRO 512GB SSD, Windows 10 RS2 operating system, Graphics driver 21.21.13.7878. Socket 1151: B250 GAMING M3, Core i5-7600K processor (4c4t), Core i5-7500 processor (4c4t), with NVIDIA GeForce GTX 1080 graphics adapter, 16GB (2 x 8GB) DDR4-2400 RAM, Samsung 850 PRO 512GB SSD, Windows 10 RS2operating system, Graphics driver 21.21.13.7878. RZN-26
11. The Core i5-7600K (4c/4t, \$240 on Newegg.com as of March 3/2017) achieved a score of 662.7 in the Cinebench multi-thread test; a score of 179.5 in the Cinebench single-threaded test; a score of 1657.5 in the PoVRay nT test; a rating of 18043.5 MIPS in 7-Zip benchmark; and completed the handbrake 1080p h264 45Mbps to 1080 AppleTV3 test in 580 seconds. The Ryzen 5 1600X (6c/12t, \$249 SEP) achieved a score of 1239.1 in the Cinebench multi-thread test; a score of 161.2 in the Cinebench single-threaded test; a score of 2582.7 in the PoVRay nT test; a rating of 31814.7 MIPS in 7-Zip benchmark; and completed the handbrake 1080p h264 45Mbps to 1080 AppleTV3 test in 344 seconds. The Core i5-7500 (4c/8t, \$205 on Newegg.com as of March 3/2017) achieved a score of 596.6 in the Cinebench multi-thread test; a score of 161.9 in the Cinebench single-threaded test; a score of 1492.5 in the PoVRay nT test; a rating of 16280 MIPS in 7-Zip benchmark; and completed the handbrake 1080p h264 45Mbps to 1080 AppleTV3 test in 642 seconds. The Ryzen 5 1500X (4c/8t, \$189 SEP) achieved a score of 814.2 in the Cinebench multi-thread test; a score of 155.1 in the Cinebench single-threaded test; a score of 1692.7 in the PoVRay nT test; a rating of 22366.25 MIPS in 7-Zip benchmark; and completed the handbrake 1080p h264 45Mbps to 1080 AppleTV3 test in 529 seconds. PC manufacturers may vary configurations yielding different results. RZN-25. Testing by AMD Performance labs as of March 23, 2017 on the following systems: Socket AM4: Ryzen™ 5 1600X processor (6c12t), Ryzen™ 5 1500X processor (4c8t), Fatalty AB350 GAMING K4, NVIDIA GeForce GTX 1080 graphics adapter, 16GB (2x8GB) DDR4-2933 RAM, Samsung 850 PRO 512GB SSD, Windows 10 RS2 operating system, Graphics driver 21.21.13.7878. Socket 1151: Core i5-7600K processor (4c4t), Core i5-7500 processor (4c4t), B250 GAMING M3, NVIDIA GeForce GTX 1080 graphics adapter, 16GB (2 x 8GB) DDR4-2400 RAM, Samsung 850 PRO 512GB SSD, Windows 10 RS2 operating system, Graphics driver 21.21.13.7878. RZN-25
12. Testing by AMD Performance labs. PC manufacturers may vary configurations yielding different results. Cinebench R15 nT is used to simulate multi-threaded CPU performance; the AMD Ryzen™ 7 1800X scored 1601.43, while the AMD FX™ 8370 scored 632.72 for a benchmark score comparison of 1601.43/632.72 = 1.53x or 153% more. RZN-5. AMD Ryzen™ 7 1800X: Myrtle AM4, Ryzen™ 7 1800X processor, with NVIDIA TITAN X (Pascal) 12GB graphics adapter, 16GB (2 x 8GB) DDR4-2400 RAM, Windows 10 RS2operating system, Graphics driver 21.21.13.7633 :: 12/11/2016 AMD FX™ 8370: MSI MS-7893, FX 8370 with NVIDIA GeForce GTX 960, 2x4096 DDR3-1866 RAM, Radeon™ R7, Graphics driver 10.18.13.6822 2016-05-18. RZN-5
13. Testing by AMD Performance labs. PC manufacturers may vary configurations yielding different results. PoVRay nTScores: 2954.4 (AMD Ryzen 7 1700) vs. 2082.7 (Core i7-7700K), resulting in a 42% advantage for the Ryzen 7 1700. Blender render time: 53 min 45 sec (AMD Ryzen 7 1700) vs. 77 minutes 20 sec (Core i7-7700K), resulting in a 26% advantage for the Ryzen 7 1700. Photoshop CC2017 smart sharpen filter render time: 10.5 sec (AMD Ryzen 7 1700) vs. 11.7 sec (Core i7-7700K), resulting in a 10% advantage for the Ryzen 7 1700. Premiere CC2017 render time: 2 mins 33 sec (AMD Ryzen 7 1700) vs. 2 mins 56 sec (Core i7-7700K), resulting in a 15% advantage for the Ryzen 7 1700. Handbrake render time: 4 mins 2 sec (AMD Ryzen 7 1700) vs. 5 mins 37 sec (Core i7-7700K), resulting in a 26% advantage for the Ryzen 7 1700 RZN-18. Socket AM4: Ryzen™ 7 1700 processor, with NVIDIA GTX 1070 6 GB graphics adapter 16GB (2 x 8GB) DDR4-2400 RAM, Windows 10 RS2operating system, Graphics driver 21.21.13.7633 :: 12/11/2016. Socket 1151: 2270 SLI, Core i7-7700K processor, with NVIDIA GeForce GTX 1070 8GB graphics adapter, 16GB (2 x 8GB) DDR4-2400 RAM, Windows 10 RS2operating system, Graphics driver 21.21.13.7633 :: 12/11/2016. RZN-18
14. Tested using DOTA™ 2 as of February 14, 2017. OBS Target Settings: 1920x1080 source resolution, 1920x1080 broadcast resolution, 60 FPS broadcast frame rate, 3500Kbps VBR target bitrate, x264 encoder. "Encode Failure Rate" defined as percentage of video frames dropped by x264 encoder due to "CPU too slow" errors. Dropped frame count: 0/23000 (AMD), 4177/23000 (Intel). RZN-16. AMD Reference Motherboard (AMD) and AMD Ryzen™ 7 1800X, ASUS X99 STRIX motherboard and Core i7-6900K, 16GB DDR4-2400, GeForce Titan X, NVIDIA driver 21.21.13.7633, Windows 10 x64 RS1RZN-16