

Quick Reference Guide

Intel® Core™ Ultra Desktop Processors (Series 2)

Introducing Intel's First Desktop Processor for the AI PC¹⁶

NEW Next-Gen P-Core Architecture

NEW Next-Gen E-Core Architecture

NEW Xe[®] LPG Graphics Architecture¹

NEW Integrated Neural Processing Unit (NPU) 13 TOPS²

Intel® Deep Learning Boost (VNNI, DP4A)

NEW Intel® Gaussian & Neural Accelerator 3.5 AI Processing



NEW DDR5 Support (Up to 6400 MT/s)³

Up to 36 MB Shared Intel® Smart Cache L3

NEW NIST 800-88r1 Compliant Remote Platform Erase through Intel vPro® Platform^{4,5,6,7}

NEW Integrated Thunderbolt™ 4 Ports

NEW Discrete Thunderbolt™ 5 Support

NEW Thunderbolt™ Share⁸

Specifications

Intel® Core™ Ultra Desktop Processors (Series 2), K-SKUs

Processor Brand String with Number ⁷	Processor Cores (P+E) ¹⁰	Processor Threads	Intel® Smart Cache (L3, MB)	Total L2 Cache	Processor Turbo Frequency				Processor Base Frequency		Unlocked ¹³	Processor Graphics	CPU PCIe Lanes	Maximum Memory Speed (MT/s) ³	Memory Channels	Maximum Memory Capacity ³	Processor Base Power (W)	Maximum Turbo Power (W)	Reliability, Availability & Serviceability ⁶	Intel® SIPP ⁶	Intel Technologies		Boxed
					Intel® Thermal Velocity Boost Frequency (GHz) ¹¹	Intel® Turbo Boost Max Technology 3.0 Frequency (GHz) ¹¹	P-Core Max Turbo Frequency (GHz) ¹¹	E-Core Max Turbo Frequency (GHz) ¹²	P-Core Base Frequency (GHz)	E-Core Base Frequency (GHz) ¹²											Intel® vPro ^{®4,5,6,7}	Intel® ISM ^{6,7}	
Intel® Core™ Ultra 9 Processor 285K	24 (8+16)	24	36	40	Up to 5.7	Up to 5.6	Up to 5.5	Up to 4.6	3.7	3.2	Yes	Intel® Graphics	24	DDR5-6400	2	192	125	250	Yes	Yes	Yes	Yes	Yes
Intel® Core™ Ultra 7 Processor 265K	20 (8+12)	20	30	36	N/A	Up to 5.5	Up to 5.4	Up to 4.6	3.9	3.3		Intel® Graphics						250	Yes	Yes	Yes		
Intel® Core™ Ultra 7 Processor 265KF	20 (8+12)	20	30	36	N/A	Up to 5.5	Up to 5.4	Up to 4.6	3.9	3.3		N/A						250	No	No	No		
Intel® Core™ Ultra 5 Processor 245K	14 (6+8)	14	24	26	N/A	N/A	Up to 5.2	Up to 4.6	4.2	3.6		Intel® Graphics						159	Yes	Yes	Yes		
Intel® Core™ Ultra 5 Processor 245KF	14 (6+8)	14	24	26	N/A	N/A	Up to 5.2	Up to 4.6	4.2	3.6		N/A						159	No	No	No		
Socket LGA 1851																							

Specifications

Intel® Core™ Ultra Desktop Processors (Series 2), Mainstream SKUs

Processor Brand String with Number ²	Processor Cores (P+E) ¹⁰	Processor Threads	Intel® Smart Cache (L3, MB)	Total L2 Cache	Processor Turbo Frequency				Processor Base Frequency		Unlocked ¹³	Processor Graphics	CPU PCIe Lanes	Maximum Memory Speed (MT/s) ³	Memory Channels	Maximum Memory Capacity ³	Processor Base Power (W)	Maximum Turbo Power (W)	Reliability, Availability & Serviceability ⁶	Intel® SIPP ⁶	Intel Technologies		Boxed
					Intel® Thermal Velocity Boost Frequency (GHz) ¹¹	Intel® Turbo Boost Max Technology 3.0 Frequency (GHz) ¹¹	P-Core Max Turbo Frequency (GHz) ¹¹	E-Core Max Turbo Frequency (GHz) ¹²	P-Core Base Frequency (GHz)	E-Core Base Frequency (GHz) ¹²											Intel® vPro® ^{4,5,6,7}	Intel® ISM ^{6,7}	
Intel® Core™ Ultra 9 Processor 285	24 (8+16)	24	36	40	Up to 5.6	Up to 5.5	Up to 5.4	Up to 4.6	2.5	1.9	No	Intel® Graphics	24	DDR5-6400	2	192	65	182	Yes	Yes	Yes	Yes	Yes
Intel® Core™ Ultra 7 Processor 265	20 (8+12)	20	30	36	N/A	Up to 5.3	Up to 5.2	Up to 4.6	2.4	1.8		Intel® Graphics						182	Yes	Yes	Yes		Yes
Intel® Core™ Ultra 7 Processor 265F	20 (8+12)	20	30	36	N/A	Up to 5.3	Up to 5.2	Up to 4.6	2.4	1.8		N/A						182	No	No	No		Yes
Intel® Core™ Ultra 5 Processor 245	14 (6+8)	14	24	26	N/A	N/A	Up to 5.1	Up to 4.5	3.5	3.0		Intel® Graphics						121	Yes	Yes	Yes		No
Intel® Core™ Ultra 5 Processor 235	14 (6+8)	14	24	26	N/A	N/A	Up to 5	Up to 4.4	3.4	2.9		Intel® Graphics						121	Yes	Yes	Yes		Yes
Intel® Core™ Ultra 5 Processor 225	10 (6+4)	10	20	22	N/A	N/A	Up to 4.9	Up to 4.4	3.3	2.7		Intel® Graphics						121	No	No	No		Yes
Intel® Core™ Ultra 5 Processor 225F	10 (6+4)	10	20	22	N/A	N/A	Up to 4.9	Up to 4.4	3.3	2.7		N/A						121	No	No	No		Yes
Socket LGA 1851																							

Notices & Disclaimers

Performance varies by use, configuration, and other factors. Learn more at intel.com/PerformanceIndex.

Performance results are based on testing as of dates shown in configurations and may not reflect all publicly available updates. See backup for configuration details. Results that are based on systems and components as well as results that have been estimated or simulated using an Intel Reference Platform (an internal example new system), internal Intel analysis or architecture simulation or modeling are provided to you for informational purposes only. Results may vary based on future changes to any systems, components, specifications, or configurations.

No product or component can be absolutely secure. Your costs and results may vary. Intel® technologies may require enabled hardware, software, or service activation.

All versions of the Intel vPro® platform require an eligible Intel® processor, a supported operating system, Intel® LAN and/or WLAN silicon, firmware enhancements, and other hardware and software necessary to deliver the manageability use cases, security features, system performance, and stability that define the platform. See intel.com/PerformanceIndex for details.

AI features may require software purchase, subscription, or enablement by a software or platform provider, or may have specific configuration or compatibility requirements. Details at intel.com/AIPC.

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- 1. X^e LPG Graphics Architecture:** Available only on Intel® Core™ Ultra desktop processors (Series 2) that feature integrated graphics.
- 2. TOPS:** All TOPS are “up to” and approximate until final IP frequency defined, different SKUs with different frequency & power targets will have different TOPS.
- 3. Memory Support:** Maximum memory speeds are associated with 1 DIMM per Channel (IDPC) configurations. Additional DIMM loading on any channel may impact maximum memory speed. Up to DDR5-6400 MT/s IDPC CUDIMM 1Rx8, 1Rx16, 2Rx8. Maximum memory capacity is achievable with 2DPC configurations. For additional 2DPC configuration details, refer to the Arrow Lake-S and Arrow Lake-HX Processor External Design Specification (EDS), Doc ID 729037.
- 4. Intel vPro® Platform Support (1):** All versions of the Intel vPro® platform require an eligible Intel® processor, a supported operating system, Intel® LAN and/or WLAN silicon, firmware enhancements, and other hardware and software necessary to deliver the manageability use cases, security features, system performance, and stability that define the platform. See intel.com/performance-vpro for details.
- 5. Intel vPro® Platform Support (2):** Intel vPro® Enterprise with Intel® Active Management Technology (Intel® AMT).
- 6. Reliability, Availability, Serviceability / Intel vPro® / Intel® Standard Manageability (ISM):** When paired with the eligible Intel® W880 Series chipset SKU, a motherboard with supporting hardware and software, and potential service activation.
- 7. Intel vPro® / Intel® Standard Manageability:** When paired with the eligible Intel® Q880 Series chipset SKU, a motherboard with supporting hardware and software, and potential service activation.
- 8. Thunderbolt™ Share:** Thunderbolt™ Share is required to be installed on both PCs. See the release notes via intel.com for supported hardware, what is new, bug fixes, and known issues.
- 9. Processor Numbers:** Intel® processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families.
- 10. Processor Cores:** Processor cores listed first are the total number of cores in the processor. The number of Performance-cores and the number of Efficient-cores are listed in parentheses (P+E).
- 11. Boost Frequencies:** Intel® Turbo Boost Max Technology 3.0 and Intel® Thermal Velocity Boost are only available on Performance-cores.

Notices & Disclaimers

- 12. E-Core Frequencies:** Efficient-core frequencies are lower to optimize power usage. The frequency of cores and core types varies by workload, power consumption, and other factors. Visit www.intel.com/technology/turboboost for more information.
- 13. Overclocking:** Altering clock frequency or voltage may void any product warranties and reduce stability, security, performance, and life of the processor and other components. Check with system and component manufacturers for details.
- 14. Intel® Stable IT Platform Program (SIPP):** Eligible for Intel® Stable IT Platform Program (Intel® SIPP) starting with Arrow Lake-S Commercial platform availability.
- 15. Performance Hybrid Architecture:** Performance hybrid architecture combines two core microarchitectures, Performance-cores (P-cores) and Efficient-cores (E-cores), on a single processor die first introduced on 12th Gen Intel® Core™ processors. Select 12th Gen and newer Intel® Core™ processors do not have performance hybrid architecture, only P-cores or E-cores, and may have the same cache size. See ark.intel.com for SKU details, including cache size and core frequency.
16. As of October 2024, refers to Intel® Core™ Ultra 200S series processors, based on new and extensive AI capabilities and experiences, broad compatibility, software options, unique architecture, impressive performance, and other attributes that combine to deliver the best overall AI experience, including in comparison to prior generation enthusiast processor(s), as measured by:
- New NPU for low power AI focused compute
 - Strong AI performance on CPU, GPU, and NPU features, including on benchmarks such as UL Procyon® AI OpenVINO™ CPU, iGPU, and NPU subtests
 - Strong AI performance on CPU, GPU, and NPU features, including on numerous workloads across various ISVs
 - More than 35 platform TOPs for AI compute, over 3.5x the platform TOPs available in prior gen
 - Broad selection of publicly available applications & proof of concepts
 - Ongoing expansion of AI features and ISV-developed application

Performance results are based on testing as of 10/04/2024:

Intel® Core™ Ultra 9 processor 285K 24C24T; PL1=PL2=250W; Memory: G.Skill 2x16 GB 6400 MHz 32-39-39-102 DDR5; Motherboard: ASUS ROG MAXIMUS Hero Z890; BIOS: 8001; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 24H2 26100.1591; Discrete Graphics Card: Nvidia RTX 4090; Discrete Graphics Driver: 32.0.15.6094; Integrated Graphics: Intel® Graphics; Integrated Graphics Driver: 32.0.101.5866; NPU Driver: 32.0.100.2820; Power Supply: EVGA 1200P2 Supernova; Power Plan: High Performance; Resizable BAR: On; Trusted Platform Module: On; VBS: On; Defender: On

Intel® Core™ i9 processor 14900K 24C32T; PL1=PL2=253W; Memory: G.Skill 2x16 GB 5600 MHz 28-34-34-89; Motherboard: ASUS ROG MAXIMUS Hero Z790; BIOS: 2503; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 24H2 26100.1591; Discrete Graphics Card: Nvidia RTX 4090; Discrete Graphics Driver: 32.0.15.6094; Integrated Graphics: Intel® UHD Graphics 770; Integrated Graphics Driver: 32.0.101.5866; Power Supply: EVGA 1200P2 Supernova; Power Plan: High Performance; Resizable BAR: On; Trusted Platform Module: On; VBS: On; Defender: On