

Name	AMD Ryzen™ 9 9950X
Family	Ryzen
Series	Ryzen 9000 Series
Form Factor	Desktops, Boxed Processor
Market Segment	Enthusiast Desktop
AMD PRO Technologies	No
Regional Availability	Global
Former Codename	Granite Ridge AM5
Processor Architecture	Zen 5
# of CPU Cores	16
Multithreading (SMT)	Yes
# of Threads	32
Max. Boost Clock ⓘ	Up to 5.7 GHz
Base Clock ⓘ	4.3 GHz
L1 Cache	1280 KB
L2 Cache	16 MB
L3 Cache	64 MB
Default TDP	170W
Processor Technology for CPU Cores	TSMC 4nm FinFET
Processor Technology for I/O Die	TSMC 6nm FinFET
Package Die Count	3
Unlocked for Overclocking ⓘ	Yes
AMD EXPO™ Memory Overclocking Technology	Yes
Precision Boost Overdrive	Yes
Curve Optimizer Voltage Offsets	Yes
AMD Ryzen™ Master Support	Yes
CPU Socket	AM5

Supporting Chipsets	A620 , X670E , X670 , B650E , B650 , X870E , X870 , B840 , B850
CPU Boost Technology	Precision Boost 2
Instruction Set	x86-64
Supported Extensions	AES , AMD-V , AVX , AVX2 , AVX512 , FMA3 , MMX-plus , SHA , SSE , SSE2 , SSE3 , SSE4.1 , SSE4.2 , SSE4A , SSSE3 , x86-64
Thermal Solution (PIB)	Not Included
Recommended Cooler	Liquid cooler recommended for optimal performance
Max. Operating Temperature (Tjmax)	95°C
Launch Date	08/15/2024
*OS Support	Windows 11 - 64-Bit Edition , Windows 10 - 64-Bit Edition , RHEL x86 64-Bit , Ubuntu x86 64-Bit

Connectivity

Native USB 3.2 Gen 2 (10Gbps)	4
Native USB 2.0 (480Mbps)	1
PCI Express® Version	PCIe® 5.0
Native PCIe® Lanes (Total/ Usable)	28 , 24
Additional Usable PCIe Lanes from Motherboard	X870E 8x Gen4 X870 4x Gen4 X670E 12x Gen4 X670 12x Gen4 B650E 8x Gen4 B650 8x Gen4
NVMe Support	Boot , RAID0 , RAID1 , RAID5 , RAID10
System Memory Type	DDR5
Memory Channels	2
Max. Memory	192 GB

System Memory Subtype	UDIMM
Max Memory Speed	2x1R DDR5-5600 2x2R DDR5-5600 4x1R DDR5-3600 4x2R DDR5-3600
ECC Support	Yes (Requires mobo support)

Graphics Capabilities

Graphics Model	AMD Radeon™ Graphics
Graphics Core Count	2
Graphics Frequency	2200 MHz
USB Type-C® DisplayPort™ Alternate Mode	Yes

Product IDs

Product ID Boxed	100-100001277WOF
Product ID Tray	100-000001277

Key Features

Supported Technologies	AMD EXPO™ Technology , AMD Ryzen™ Technologies
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