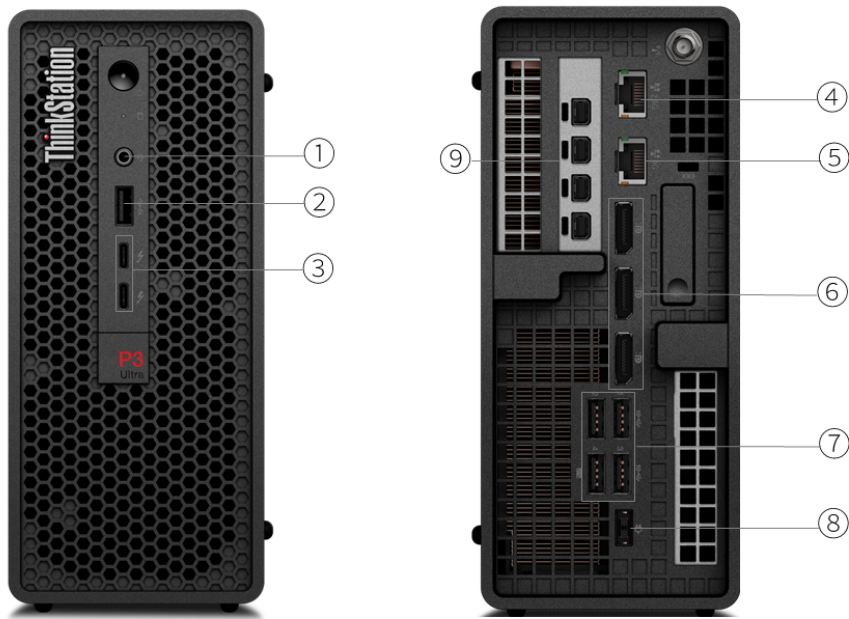


OVERVIEW



1. Headphone jack (3.5mm)	6. 3x DisplayPort
2. USB-A (USB 10Gbps)	7. 4x USB-A (USB 10Gbps)
3. 2x Thunderbolt 4	8. Power connector
4. Ethernet (2.5GbE RJ-45)	9. Optional ports on expansion cards *
5. Ethernet (GbE RJ-45)	

Notes:

- Items with * are only available on selected models

PERFORMANCE

Processor

Processor Family

Up to one 125W Intel® Core™ i5 / i7 / i9 (12th Gen) or Intel® Core™ i3 / i5 / i7 / i9 (13th and 14th Gen) processor; supports up to 24 cores; up to 6GHz

Processor**[1]

Processor Name	Cores	Threads	Base Frequency	Max Frequency	Cache	Memory Support	Processor Graphics	Intel® vPro® Eligibility
Core i5-12500	6 (6 P-core + 0 E-core)	12	P-core 3.0GHz	P-core 4.6GHz	7.5MB L2 Cache / 18MB Intel® Smart Cache	DDR5-4800	Intel® UHD Graphics 770	Intel® vPro® Enterprise
Core i7-12700	12 (8 P-core + 4 E-core)	20	P-core 2.1GHz / E-core 1.6GHz	Max Turbo up to 4.9GHz / P-core 4.8GHz / E-core 3.6GHz	12MB L2 Cache / 25MB Intel® Smart Cache	DDR5-4800	Intel® UHD Graphics 770	Intel® vPro® Enterprise
Core i9-12900	16 (8 P-core + 8 E-core)	24	P-core 2.4GHz / E-core 1.8GHz	Max Turbo up to 5.1GHz / P-core 5.0GHz / E-core 3.8GHz	14MB L2 Cache / 30MB Intel® Smart Cache	DDR5-4800	Intel® UHD Graphics 770	Intel® vPro® Enterprise
Core i3-13100	4 (4 P-core + 0 E-core)	8	P-core 3.4GHz	P-core 4.5GHz	5MB L2 Cache / 12MB Intel® Smart Cache	DDR5-4800	Intel® UHD Graphics 730	-
Core i5-13400T	10 (6 P-core + 4 E-core)	16	P-core 1.3GHz / E-core 1.0GHz	P-core 4.4GHz / E-core 3.0GHz	9.5MB L2 Cache / 20MB Intel® Smart Cache	DDR5-4800	Intel® UHD Graphics 730	-
Core i5-13600	14 (6 P-core + 8 E-core)	20	P-core 2.7GHz / E-core 2.0GHz	P-core 5.0GHz / E-core 3.7GHz	11.5MB L2 Cache / 24MB Intel® Smart Cache	DDR5-4800	Intel® UHD Graphics 770	Intel® vPro® Enterprise
Core i5-13600K	14 (6 P-core + 8 E-core)	20	P-core 3.5GHz / E-core 2.6GHz	P-core 5.1GHz / E-core 3.9GHz	20MB L2 Cache / 24MB Intel® Smart Cache	DDR5-5600	Intel® UHD Graphics 770	Intel® vPro® Enterprise
Core i7-13700	16 (8 P-core + 8 E-core)	24	P-core 2.1GHz / E-core 1.5GHz	Max Turbo up to 5.2GHz / P-core 5.1GHz / E-core 4.1GHz	24MB L2 Cache / 30MB Intel® Smart Cache	DDR5-5600	Intel® UHD Graphics 770	-
Core i7-13700K	16 (8 P-core + 8 E-core)	24	P-core 3.4GHz / E-core 2.5GHz	Max Turbo up to 5.4GHz / P-core 5.3GHz / E-core 4.2GHz	24MB L2 Cache / 30MB Intel® Smart Cache	DDR5-5600	Intel® UHD Graphics 770	-
Core i7-13700T	16 (8 P-core + 8 E-core)	24	P-core 1.4GHz / E-core 1.0GHz	Max Turbo up to 4.9GHz / P-core 4.8GHz / E-core 3.6GHz	24MB L2 Cache / 30MB Intel® Smart Cache	DDR5-5600	Intel® UHD Graphics 770	Intel® vPro® Enterprise
Core i9-13900	24 (8 P-core + 16 E-core)	32	P-core 2.0GHz / E-core 1.5GHz	Max Turbo up to 5.6GHz / P-core 5.2GHz / E-core 4.2GHz	32MB L2 Cache / 36MB Intel® Smart Cache	DDR5-5600	Intel® UHD Graphics 770	-
Core i9-13900K	24 (8 P-core + 16 E-core)	32	P-core 3.0GHz / E-core 2.2GHz	Max Turbo up to 5.8GHz / P-core 5.4GHz / E-core 4.3GHz	32MB L2 Cache / 36MB Intel® Smart Cache	DDR5-5600	Intel® UHD Graphics 770	-

Core i9-13900T	24 (8 P-core + 16 E-core)	32	P-core 1.1GHz / E-core 0.8GHz	Max Turbo up to 5.3GHz / P-core 5.1GHz / E-core 3.9GHz	32MB L2 Cache / 36MB Intel® Smart Cache	DDR5-5600	Intel® UHD Graphics 770	Intel® vPro® Enterprise
Core i3-14100	4 (4 P-core + 0 E-core)	8	P-core 3.5GHz	P-core 4.7GHz	5MB L2 Cache / 12MB Intel® Smart Cache	DDR5-4800	Intel® UHD Graphics 730	-
Core i5-14400T	10 (6 P-core + 4 E-core)	16	P-core 1.5GHz / E-core 1.1GHz	P-core 4.5GHz / E-core 3.2GHz	9.5MB L2 Cache / 20MB Intel® Smart Cache	DDR5-4800	Intel® UHD Graphics 730	-
Core i5-14600	14 (6 P-core + 8 E-core)	20	P-core 2.7GHz / E-core 2.0GHz	P-core 5.2GHz / E-core 3.9GHz	20MB L2 Cache / 24MB Intel® Smart Cache	DDR5-5600	Intel® UHD Graphics 770	Intel® vPro® Enterprise
Core i5-14600K	14 (6 P-core + 8 E-core)	20	P-core 3.5GHz / E-core 2.6GHz	P-core 5.3GHz / E-core 4.0GHz	20MB L2 Cache / 24MB Intel® Smart Cache	DDR5-5600	Intel® UHD Graphics 770	Intel® vPro® Enterprise
Core i7-14700	20 (8 P-core + 12 E-core)	28	P-core 2.1GHz / E-core 1.5GHz	Max Turbo up to 5.4GHz / P-core 5.3GHz / E-core 4.2GHz	28MB L2 Cache / 33MB Intel® Smart Cache	DDR5-5600	Intel® UHD Graphics 770	Intel® vPro® Enterprise
Core i7-14700K	20 (8 P-core + 12 E-core)	28	P-core 3.4GHz / E-core 2.5GHz	Max Turbo up to 5.6GHz / P-core 5.5GHz / E-core 4.3GHz	28MB L2 Cache / 33MB Intel® Smart Cache	DDR5-5600	Intel® UHD Graphics 770	Intel® vPro® Enterprise
Core i7-14700T	20 (8 P-core + 12 E-core)	28	P-core 1.3GHz / E-core 0.9GHz	Max Turbo up to 5.2GHz / P-core 5.0GHz / E-core 3.7GHz	28MB L2 Cache / 33MB Intel® Smart Cache	DDR5-5600	Intel® UHD Graphics 770	Intel® vPro® Enterprise
Core i9-14900	24 (8 P-core + 16 E-core)	32	P-core 2.0GHz / E-core 1.5GHz	Max Turbo up to 5.8GHz / P-core 5.4GHz / E-core 4.3GHz	32MB L2 Cache / 36MB Intel® Smart Cache	DDR5-5600	Intel® UHD Graphics 770	Intel® vPro® Enterprise
Core i9-14900K	24 (8 P-core + 16 E-core)	32	P-core 3.2GHz / E-core 2.4GHz	Max Turbo up to 6.0GHz / P-core 5.6GHz / E-core 4.4GHz	32MB L2 Cache / 36MB Intel® Smart Cache	DDR5-5600	Intel® UHD Graphics 770	Intel® vPro® Enterprise
Core i9-14900T	24 (8 P-core + 16 E-core)	32	P-core 1.1GHz / E-core 0.8GHz	Max Turbo up to 5.5GHz / P-core 5.1GHz / E-core 4.0GHz	32MB L2 Cache / 36MB Intel® Smart Cache	DDR5-5600	Intel® UHD Graphics 770	Intel® vPro® Enterprise

Processor Sockets

1x FCLGA1700

Notes:

[1] Intel® Max Turbo frequency will vary depending on application workload and the hardware and software configurations, see <http://www.intel.com/technology/turboboost/> for more information.

AI (Artificial Intelligence)

AI PC Category^[1]

AI-Ready Workstations

Notes:

[1] With scalable configurations of higher-performance CPUs and professional NVIDIA® RTX GPUs, in addition to

advantage of the same modern AI PC technology, AI-Ready workstation power the demanding AI consumption & development workflows.

Operating System

Operating System**

- Windows® 11 Pro
- Windows® 11 Home
- Windows® 11 Home Single Language
- Windows® 11 DG Windows® 10 Pro 64
- Ubuntu Linux LTS
- Red Hat Enterprise Linux 9.4 (certified only, for detailed and latest information, please visit [Red Hat Certified Hardware](#))
- No preload operating system

Graphics

Integrated Graphics**

- Intel® UHD Graphics 730
- Intel® UHD Graphics 770

Discrete Graphics Support

Supports up to one NVIDIA® RTX 4000 SFF Ada Generation

Discrete Graphics Offering

Graphics	Memory	Power	Connector	Form Factor	SLI / NVLink
NVIDIA® RTX A5500 Laptop GPU ^[1]	16GB GDDR6 with ECC	115W	4x miniDP 1.4a	MXM Card	None
NVIDIA® RTX 4000 SFF Ada Generation	20GB GDDR6 with ECC	70W	4x miniDP 1.4a	Dual slot	None
NVIDIA® RTX 2000 Ada Generation	16GB GDDR6 with ECC	70W	4x miniDP 1.4a	Dual slot	None
NVIDIA® T1000 8GB	8GB GDDR6	50W	4x miniDP 1.4	Single slot	None
NVIDIA® T400 4GB	4GB GDDR6	40W	3x miniDP 1.4	Single slot	None
NVIDIA® RTX A5000 Laptop GPU ^[2]	16GB GDDR6	115W	4x miniDP 1.4a	MXM Card	None
NVIDIA® RTX A3000 Laptop GPU ^[3]	12GB GDDR6	80W	4x miniDP 1.4a	MXM Card	None
NVIDIA® RTX A2000 12GB	12GB GDDR6	70W	4x miniDP 1.4a	Dual slot	None
NVIDIA® RTX A1000	8GB GDDR6	50W	4x miniDP 1.4a	Single slot	None
NVIDIA® RTX A400	4GB GDDR6	50W	4x miniDP 1.4a	Single slot	None

Notes:

[1], [2], [3] The cards are currently unavailable.

Monitor Support

Monitor Support

Supports up to 8 independent displays, 4 via onboard ports (3x DP and 2x Thunderbolt™, simultaneously supports 4 display) and 4 via discrete graphics.

Onboard ports support (with max simultaneous displays):

- DP supports up to 4096x2160@60Hz
- Thunderbolt™ supports up to 5120x2880@60Hz

Discrete graphics ports support (with max simultaneous displays):

- miniDP supports up to 4096x2160@120Hz (RTX A2000)

Chipset

Chipset

Intel® W680 chipset

Memory

Max Memory^[1]

Up to 192GB (4x 48GB DDR5 SODIMM)

Memory Type**^[2]

- DDR5-4800 SODIMM ECC, maximum transfer speeds of up to 4000 MT/s
- DDR5-4800 SODIMM non-ECC, maximum transfer speeds of up to 4000 MT/s

Memory Slots

Four DDR5 SODIMM slots, dual-channel capable

Memory Protection

ECC on models with ECC DIMMs and ECC capable processor

Notes:

[1] The max memory is based on the test results with current Lenovo® memory offerings.

[2] System comes with DDR5-4800 memory and will run at lower speed due to platform limitations:
4x 32GB configuration runs at 3600 MT/s;
other configurations run at 4000 MT/s.

Storage

Max Storage Support^{[1][2]}

Up to 1x 2.5" HDD or SSD + 2x M.2 SSD

- 2.5" HDD up to 1TB
- 2.5" SSD up to 7.68TB
- M.2 SSD up to 4TB each

Storage Type^{***}

Disk Type	Interface	RPM	Offering	Security
2.5" SATA HDD	SATA 6Gb/s	7.2K	1TB / 1TB FIPS	-
2.5" SATA SSD	SATA 6Gb/s	-	3.84TB / 7.68TB	Opal
M.2 2280 SSD for Onboard M.2 slots	PCIe® NVMe®, PCIe® 4.0 x4	-	256GB	Opal
M.2 2280 SSD for Onboard M.2 slots	PCIe® NVMe®, PCIe® 4.0 x4 Performance	-	256GB / 512GB / 1TB / 2TB / 4TB	Opal 2.0

Storage Controllers

Storage Controller	Type	Interface	RAID	Cache
Integrated NVMe® controller	Standard	PCIe® NVMe®	0/1	None
Integrated SATA controller	Standard	SATA 6.0Gb/s	-	None

Notes:

[1] The storage capacity supported is based on the test results with current Lenovo® storage offerings.

[2] For certain post-manufacturing storage upgrades, additional upgrade kits may be required.

Multi-Media

Audio Chip

High Definition (HD) Audio, Realtek® ALC897-Q codec

Speakers

Single speaker

Power Supply

Power Supply^{**}

Power	Type	Efficiency	Key Features
170W	Adapter	90%	100V - 240V
230W	Adapter	90%	100V - 240V
300W	Adapter	90%	100V - 240V

DESIGN

Mechanical^[1]

Form Factor

Mini-tower (3.9L)

Dimensions (WxDxH)^[2]

87 x 223 x 202 mm (3.43 x 8.78 x 7.95 inches)

Weight^[3]

3.6 kg (7.94 lbs, maximum configuration)

Bays

1x 2.5" disk bay (optional, comes with disk)

M.2 Slots

- Two M.2 PCIe® Gen 4x4 slots (for SSD)
- One M.2 slot (for WLAN)

Expansion Slots

Two PCIe® slots with one PCIe® 4.0 x16 and one PCIe® 3.0 x8.

- Slot 1: PCIe® 4.0 x16 (via MXM to PCIe® riser card), low profile, 75W, double-width
- Slot 2: PCIe® 3.0 x8 (x4 lanes), low profile, 25W

EOU

Tool-less design for side cover and memory

Notes:

[1] The actual data transfer rate of the following PCIe® interface also depends on the capabilities of the connected PCIe® device. The listed values represent theoretical maximums.

PCIe® 3.0 (x1 / x2 / x4 / x8 / x16): 1 GB/s (8 Gbps) / 2 GB/s (16 Gbps) / 4 GB/s (32 Gbps) / 8 GB/s (64 Gbps) / 16 GB/s (128 Gbps);

PCIe® 4.0 (x1 / x2 / x4 / x8 / x16): 2 GB/s (16 Gbps) / 4 GB/s (32 Gbps) / 8 GB/s (64 Gbps) / 16 GB/s (128 Gbps) / 32 GB/s (256 Gbps);

PCIe® 5.0 (x1 / x2 / x4 / x8 / x16): 4 GB/s (32 Gbps) / 8 GB/s (64 Gbps) / 16 GB/s (128 Gbps) / 32 GB/s (256 Gbps) / 64 GB/s (512 Gbps).

[2] The system dimensions may vary depending on configurations.

[3] The system weight is approximate and based on results in Lenovo® lab, which varies depending on the source of component, variance of the distribution of each component, and manufacturing process. It may not be the exact weight for each specific model.

CONNECTIVITY

Network

WLAN + Bluetooth^[1]

- Intel® Wi-Fi® 6E AX211, 802.11ax 2x2 Wi-Fi® + Bluetooth® 5.3, Intel® vPro® technology support
- No WLAN and Bluetooth®

Onboard Ethernet

Two Ethernet, 2.5GbE + GbE, Intel® Ethernet Connection I225-LM and I210-AT, 2x RJ-45, supports Wake-on-LAN

Optional Ethernet

One additional Ethernet adapter support, up to one 10GbE or four GbE additional ports

- Gigabit Ethernet, Intel® I350-T2, 2x RJ-45, PCIe® x4
- Gigabit Ethernet, Broadcom BCM5719, 4x RJ-45, PCIe® x4
- Gigabit Ethernet, Broadcom BCM5720, 2x RJ-45, PCIe® x1
- 10 Gigabit Ethernet, Intel® X710-T2L, 2x RJ-45, PCIe® x8
- 10 Gigabit Ethernet, Intel® X710-DA2, 2x SFP+, PCIe® x8

Notes:

[1] Wi-Fi® operation (including Wi-Fi® 6, Wi-Fi® 6E, Wi-Fi® 7, etc.) is subject to the regulatory requirements of each country. Bluetooth® may operate at a lower version than hardware design depending on the factors such as operating system, driver, etc.

Ports^[1]**Front Ports**

- 2x Thunderbolt™ 4

- 1x USB-A (USB 10Gbps / USB 3.2 Gen 2)
- 1x headphone / microphone combo jack (3.5mm)

Rear Ports

- 4x USB-A (USB 10Gbps / USB 3.2 Gen 2)
- 3x DisplayPort™ 1.2
- 1x Ethernet (2.5GbE RJ-45)
- 1x Ethernet (GbE RJ-45)

Optional Rear Ports

- 1x USB-C® (USB 20Gbps / USB 3.2 Gen 2x2), support data transfer, via PCIe® x4 card
- 2x USB-C® (USB 10Gbps / USB 3.2 Gen 2), support data transfer, via additional PCIe® adapter
- 2x USB-A (USB 5Gbps / USB 3.2 Gen 1), via additional PCIe® x1 adapter

Notes:

[1] The transfer speed of the ports will vary and, depending on many factors, such as the processing speed of the host device, file attributes, and other factors related to system configuration and your operating environment, will be slower than the theoretical speed.

SECURITY & PRIVACY

Security

Security Chip

Discrete TPM 2.0, TCG certified, FIPS 140-2 certified

Physical Locks

Kensington® Security Slot™, 3 x 7 mm

Chassis Intrusion Switch

Chassis intrusion switch

BIOS Security

- Administrator password
- UEFI Secure Boot
- Power-on password
- Self-healing BIOS

MANAGEABILITY

System Management

System Management^{[1][2]}

- (Optional) Aspeed AST2600 graphics / management processor, IPMI 2.0-compliant baseboard management controller (BMC)
- (Optional) Intel® vPro® Enterprise with Intel® AMT 16
- Non-vPro®

Notes:

[1] Intel® vPro® offers a superset of DASH's defined capabilities.

[2] 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® vPro® Platform](#) for details.

SERVICE

Warranty^[1]

Base Warranty**

- 1-year limited onsite service
- 2-year limited onsite service
- 3-year limited onsite service
- No base warranty

Notes:

[1] The warranty upgrades may be bundled with some models, please check the "Included upgrade" column in the specific model's configurations. For more service extensions, please go to <https://smartfind.lenovo.com/>. To learn more details of warranty policy, please access <https://support.lenovo.com/warrantylookup/warrantypolicy>.

OPERATING REQUIREMENTS

Operating Environment

Temperature

- Operating: 10°C (50°F) to 35°C (95°F)
- Storage: -40°C (-40°F) to 60°C (140°F)

Altitude

- Operating: 0 m (0 ft) to 3048 m (10,000 ft)
- Storage: 0 m (0 ft) to 12192 m (40,000 ft)

Relative Humidity

- Operating: 20% to 80%
- Storage: 10% to 90%

ENVIRONMENTAL

Sustainability

Material^[1]

- 85% PCC ABS bezel
- 95% PCC ABS wired USB keyboard/mouse top/bottom cover
- 90% PIC recycled plastic EPE cushion
- 30% OBP used in bag
- FSC certified paper in packaging

Notes:

[1] PCC: Post Consumer Content, recycled materials from customers.
PIC: Post Industry Content, recycled materials from internal factories.
EPE: Expanded Polyethylene.
OBP: Ocean Bound Plastic, reducing plastic spill into the sea.
FSC: Forest Stewardship Council.

CERTIFICATIONS

Green Certifications^[1]

Green Certifications

- (Optional) ENERGY STAR® 8.0
- (Optional) EPEAT™ Gold Registered^[2]
- RoHS compliant
- TCO Certified, generation 9

Notes:

[1] The items listed under the "Green Certifications" section may not only refer to certification but also registration or self-declaration. For ESG & regulatory compliance documents, please visit <https://compliance.lenovo.com>.
[2] EPEAT™ is registered where applicable, please visit epeat.net for registration status by country.

Other Certifications

Mil-Spec Test

MIL-STD-810H military test passed

ISV Certifications

ISV Certifications

Please visit [ISV certifications for Lenovo® Workstations](#)

- Feature with ** means that only one option listed under the feature can be configured on selected models. Please refer to the model configuration for specific information.
- Feature with *** means that one or more options listed under the feature can be configured on selected models. Please refer to the model configuration for specific information.
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