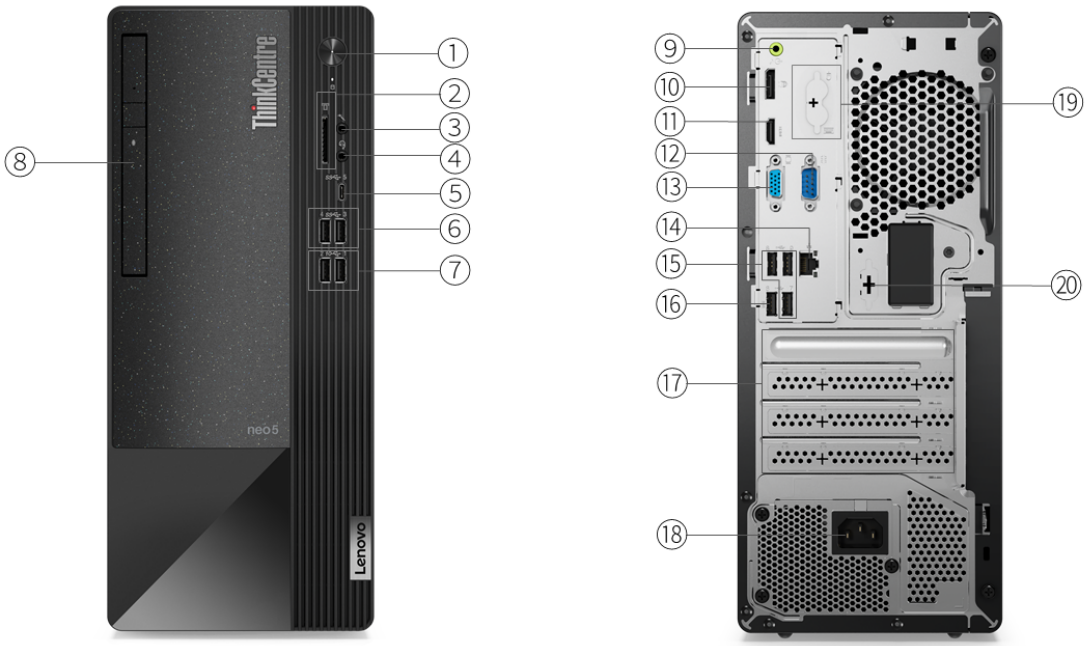
# OVERVIEW




| | |
|---|---|
| 1. Power button | 11. HDMI 1.4b |
| 2. Card reader * | 12. Serial |
| 3. Microphone (3.5mm) | 13. VGA |
| 4. Headphone / microphone combo jack (3.5mm) | 14. Ethernet (RJ-45) |
| 5. 1x USB-C 3.2 Gen 1 | 15. 3x USB 2.0 |
| 6. 2x USB 3.2 Gen 1 | 16. 1x USB 2.0 (with smart power-on feature) |
| 7. 2x USB 3.2 Gen 2 | 17. Optional ports on expansion cards * |
| 8. Optical drive * | 18. Power connector |
| 9. Headphone (3.5mm) | 19. 2x PS/2 ports (keyboard / mouse) * |
| 10. DisplayPort 1.4 | 20. serial * |

Notes:

- Items with * are only available on selected models
- Onboard video ports are only available for the models with integrated graphics

# PERFORMANCE

## Processor

**Processor Family**

Intel® Celeron®, Intel Pentium®, or 12th Generation Intel Core™ i3 / i5 / i7 / i9 Processor

**Processor****

| Processor Name | Cores | Threads | Base Frequency | Max Frequency | Cache | Memory Support | Processor Graphics |
|---|---|---|---|---|---|---|---|
| Celeron G6900 | 2 | 2 | 3.4GHz | - | 4MB | DDR4-3200 | Intel UHD Graphics 710 |
| Pentium Gold G7400 | 2 | 4 | 3.7GHz | - | 6MB | DDR4-3200 | Intel UHD Graphics 710 |
| Core i3-12100 | 4 (4 P-core + 0 E-core) | 8 | P-core 3.3GHz | P-core 4.3GHz[1] | 12MB | DDR4-3200 | Intel UHD Graphics 730 |
| Core i5-12400 | 6 (6 P-core + 0 E-core) | 12 | P-core 2.5GHz | P-core 4.4GHz[2] | 18MB | DDR4-3200 | Intel UHD Graphics 730 |
| Core i5-12400F | 6 (6 P-core + 0 E-core) | 12 | P-core 2.5GHz | P-core 4.4GHz[3] | 18MB | DDR4-3200 | - |
| Core i5-12500 | 6 (6 P-core + 0 E-core) | 12 | P-core 3.0GHz | P-core 4.6GHz[4] | 18MB | DDR4-3200 | Intel UHD Graphics 770 |
| 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[5] | 25MB | DDR4-3200 | Intel UHD Graphics 770 |
| 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[6] | 30MB | DDR4-3200 | Intel UHD Graphics 770 |

Notes:

[1], [2], [3], [4], [5], [6] 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.

## Operating System

**Operating System****

- Ubuntu Linux[1]
- Windows® 11 DG Windows 10 Pro 64
- Windows 11 Home
- Windows 11 Home Single Language
- Windows 11 Pro
- No operating system

Notes:

[1] Some features may not be supported on the system with Linux preload, including but not limited to Intel RST RAID, Human Presence Detection, etc.

## Graphics

**Graphics***[1]

| Graphics | Type | Memory | Connector | Max Resolution | Key Features |
|---|---|---|---|---|---|
| Intel UHD graphics 710 | Integrated | Shared | 1x HDMI® 1.4b, 1x VGA, 1x DP 1.4 | 3840x2160@24Hz(HDMI), 1920x1200@60Hz(VGA), 4096x2304@60Hz(DP) | DirectX® 12 |
| Intel UHD graphics 730 | Integrated | Shared | 1x HDMI 1.4b, 1x VGA, 1x DP 1.4 | 3840x2160@24Hz(HDMI), 1920x1200@60Hz(VGA), 4096x2304@60Hz(DP) | DirectX 12 |
| Intel UHD | Integrated | Shared | 1x HDMI 1.4b, 1x | 3840x2160@24Hz(HDMI), | DirectX 12 |

| | | | | | |
|---|---|---|---|---|---|
| graphics 770 | | | VGA, 1x DP 1.4 | 1920x1200@60Hz(VGA), 4096x2304@60Hz(DP) | |
| Intel Iris® Xe MAX 100 Graphics[2] | Discrete | 2GB LPDDR4X | 1x VGA, 1x HDMI 1.4 | 3840x2160@30Hz(HDMI), 1920x1080@60Hz(VGA) | DirectX 12, OpenGL 4.6 |
| AMD Radeon™ RX 6400[3] | Discrete | 4GB GDDR6 | 1x HDMI 2.1 FRL, 1x DP 1.4a | 7680x4320@60Hz(HDMI), 7680x4320@60Hz(DP) | DirectX 12, OpenGL 4.6 |
| AMD Radeon RX 6500XT[4] | Discrete | 4GB GDDR6 | 1x HDMI 2.1, 1x DP 1.4 | 7680x4320@60Hz(HDMI), 7680x4320@60Hz(DP) | DirectX 12, OpenGL 4.6 |
| NVIDIA® GeForce RTX™ 3050[5] | Discrete | 8GB GDDR6 | 1x HDMI 2.1 FRL, 3x DP 1.4a | 7680x4320@60Hz(HDMI), 7680x4320@120Hz(DP) | DirectX 12, OpenGL 4.6 |

Notes:

[1] The information of integrated graphics are not applicable for the models with processor which has no integrated graphics inside (for the details, please refer to processor section).

[2], [3], [4], [5] The onboard video ports VGA, HDMI and DisplayPort™ are disabled on the models with discrete graphics.

## Monitor Support

**Monitor Support**

Supports up to 3 independent displays via (HDMI, DP and VGA)

## Chipset

**Chipset**

Intel B660 chipset

## Memory

**Max Memory**[1]

Up to 64GB DDR4-3200

**Memory Slots**

Two DDR4 UDIMM slots, dual-channel capable

**Memory Type**

DDR4-3200

Notes:

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

## Storage

**Storage Support**[1]

Up to two drives, 1x 3.5″ HDD + 1x M.2 SSD
• 3.5″ HDD up to 2TB
• M.2 SSD up to 1TB

**Storage Type*****

| Disk Type | Interface | RPM | Security |
|---|---|---|---|
| 3.5″ SATA HDD | SATA 6Gb/s | 7.2K | - |
| M.2 2242 SSD | PCIe® NVMe®, PCIe 3.0 x4 | - | - |
| M.2 2280 SSD | PCIe NVMe, PCIe 3.0 x4 | - | - |
| M.2 2280 SSD | PCIe NVMe, PCIe 3.0 x4 | - | Opal 2.0 |
| M.2 2280 SSD | PCIe NVMe, PCIe 4.0 x4 | - | Opal 2.0 |

**RAID**

No support

Notes:

[1] The max capacity of each disk type is based on the test results with current Lenovo storage offerings.

## Removable Storage

**Optical****

- DVD-ROM, SATA 1.5Gb/s, slim (9.0mm)
- DVD burner (DVD±RW), SATA 1.5Gb/s, slim (9.0mm)
- None

**Card Reader**

- 3-in-1 card reader (SD, SDHC, SDXC)
- No card reader

## Multi-Media

**Audio Chip**

High Definition (HD) Audio, Realtek® ALC222-CG codec

**Speakers**

- No speakers
- Single speaker, 2W x1

## Power Supply

**Power Supply****

| Power | Type | Efficiency |
|---|---|---|
| 180W | Fixed | 85% |
| 260W | Fixed | 90% |
| 310W | Fixed | 92% |
| 380W | Fixed | 92% |

# DESIGN

## Input Device

**Keyboard****

- Euterpe Wireless Keyboard, grey
- Lenovo Calliope Keyboard (USB connector), black
- Lenovo Traditional Keyboard (USB connector), black
- No keyboard

**Mouse****

- Lenovo Calliope Mouse (USB connector), black
- Euterpe Wireless Mouse, grey
- No mouse

## Mechanical

**Form Factor**

Tower (13.6L)

**Dimensions (WxDxH)**[1]

145 x 294 x 340 mm (5.71 x 11.57 x 13.39 inches)

**Packaging Dimensions (WxDxH)**

245 x 395 x 530 mm (9.65 x 15.55 x 20.87 inches)

**Weight**[2]

Around 5.5 kg (12.1 lbs)

**Packaging Weight**

Around 7.5 kg (16.53 lbs)

**Case Color**

Black (chassis), grey (bezel)

**Bays**

- 1x 3.5″ disk bay

- 1x slim ODD bay

**Expansion Slots**

- One PCIe 4.0 x16, full-height, half-length
- Two PCIe 3.0 x1, full-height, half-length
- (Optional) M.2 Bracket. For installing M.2 devices, M.2 bracket kit is needed. The kit is optional, or comes with pre-configured M.2 SSD or M.2 Wifi models
- Two M.2 slots (one for WLAN, one for SSD)

**EOU**

- (Optional) toolless chassis open (toolless chassis screw required) and toolless M.2 SSD, HDD, memory assembly / removal
- No support

**Cooling System (Fan & Cooler)*****

- (Optional) 1x rear fan
- (Optional) 1x front system fan
- (Optional) 1x Photocatalyst System Fan

**Others**

(Optional) Smart Cable (USB-A to USB-C®)

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Notes:

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

[2] 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

**Onboard Ethernet**

Gigabit Ethernet, Intel Ethernet Connection I219-V, 1x RJ-45, supports Wake-on-LAN

**Optional Ethernet**

No optional Ethernet

**WLAN + Bluetooth®****

- Realtek RTL8822CE, 802.11ac Dual Band 2x2 Wi-Fi® + Bluetooth 5.0, M.2 card
- Intel Wireless-AC 9560, 802.11ac Dual Band 2x2 Wi-Fi + Bluetooth 5.0, Intel vPro® technology support, M.2 card
- Realtek Wi-Fi 6 RTL8852BE, 802.11ax Dual Band 2x2 Wi-Fi + Bluetooth 5.1, M.2 card[1]
- Intel Wi-Fi 6 AX201, 802.11ax 2x2 Wi-Fi + Bluetooth 5.1, M.2 Card[2]
- No WLAN and Bluetooth

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Notes:

[1], [2] Bluetooth 5.2 is hardware ready but may run at a lower version due to OS limitations.

## Ports[1]

**Front Ports**

- 1x USB-C 3.2 Gen 1 (support data transfer and 5V@3A charging)
- 2x USB 3.2 Gen 1
- 2x USB 3.2 Gen 2
- 1x headphone / microphone combo jack (3.5mm)
- 1x microphone (3.5mm)

**Optional Front Ports**

1x card reader

**Rear Ports**[2][3]

- 4x USB 2.0
- 1x HDMI 1.4b
- 1x DisplayPort 1.4
- 1x VGA
- 1x Ethernet (RJ-45)
- 1x headphone (3.5mm)

- 1x serial (9-pin)

**Optional Rear Ports**[***]

- 1x parallel
- 1x serial
- 2x PS/2
- None

Notes:

[1] The transfer speed of following 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 theoretical speed.
USB 2.0: 480 Mbit/s;
USB 3.2 Gen 1 (SuperSpeed USB 5Gbps, formerly USB 3.0 / USB 3.1 Gen 1): 5 Gbit/s;
USB 3.2 Gen 2 (SuperSpeed USB 10Gbps, formerly USB 3.1 Gen 2): 10 Gbit/s;
USB4® 20Gbps / USB 3.2 Gen 2x2 (SuperSpeed USB 20Gbps): 20 Gbit/s;
USB4 40Gbps (USB 40Gbps): 40 Gbit/s;
Thunderbolt™ 3/4: 40 Gbit/s.
[2] For video ports on discrete graphics, please see graphics section.
[3] The onboard video ports VGA, HDMI and DisplayPort are disabled on the models with discrete graphics.

## Monitor Cable

**Monitor Cable**[***]

- HDMI to DVI dongle
- DP to DVI-D dongle
- No monitor cable

# SECURITY & PRIVACY

## Security

**Security Chip**

Discrete TPM 2.0, TCG certified

**Physical Locks**

- (Optional) Smart Cable Clip
- Kensington® Security Slot™, 3 x 7 mm
- Padlock Loop

**Chassis Intrusion Switch**

- Chassis intrusion switch
- No chassis intrusion switch

**Fingerprint Reader**

No fingerprint reader

**BIOS Security**

- Administrator password
- Power-on password
- Hard disk password
- Cover presence switch
- Smart USB protection (allows keyboard / mouse only, blocks all storage devices)
- Individual USB port disablement

# MANAGEABILITY

## System Management

**System Management**

Non-vPro

# SERVICE

## Warranty[1]

**Base Warranty****

- 1-year courier or carry-in service
- 1-year limited onsite service

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://pcsupport.lenovo.com/warranty.

# ENVIRONMENTAL

## Operating Environment

**Temperature**

- Operating: 5°C (41°F) to 35°C (95°F)
- Storage: -40°C (-40°F) to 60°C (140°F)

**Humidity**

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

**Altitude**

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

# CERTIFICATIONS

## Green Certifications[1]

**Green Certifications**

- (Optional) ENERGY STAR® 8.0
- (Optional) EPEAT™ Gold Registered[2]
- (Optional) EPEAT Silver Registered[3]
- REACH
- RoHS compliant
- TCO Certified
- WEEE

Notes:

[1] The items listed under the "Green Certifications" section may not only refer to certification but also registration or self-declaration.

[2], [3] EPEAT is registered where applicable, please see https://www.epeat.net for registration status by country.

## Other Certifications

**Other Certifications**

TÜV Rheinland® Ultra Low Noise

- Feature with ** means that only one offering listed under the feature is configured on selected models.
- Feature with *** means that one or more offerings listed under the feature could be configured on selected models.
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