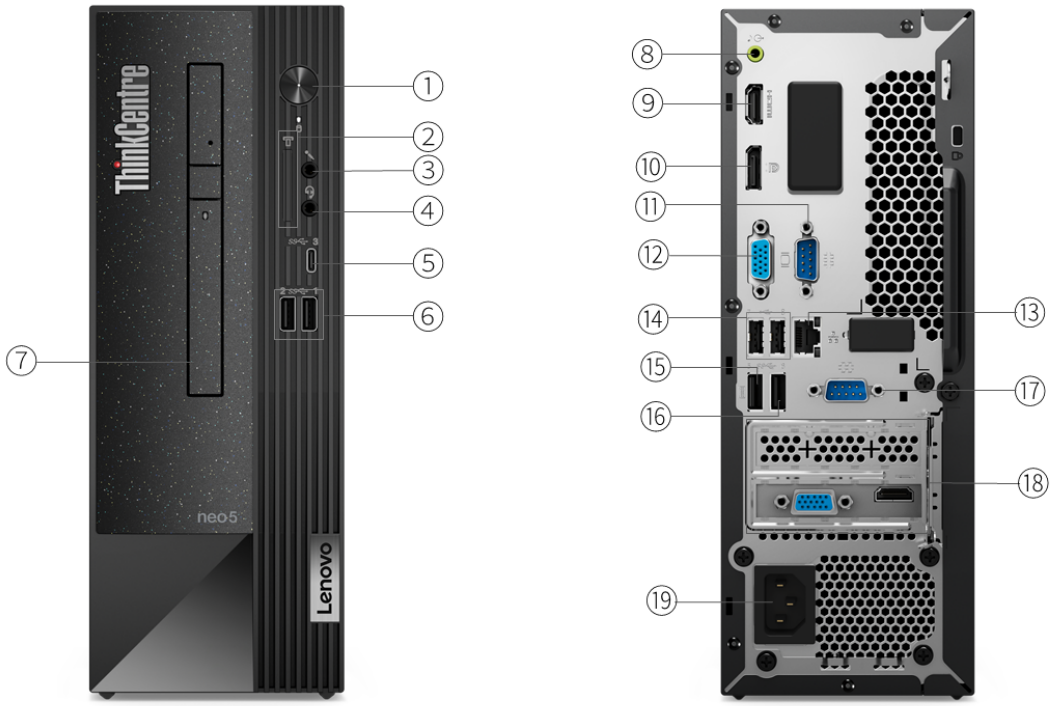
# OVERVIEW




| | |
|---|---|
| 1. Power button | 11. Serial * |
| 2. Card reader * | 12. VGA |
| 3. Microphone (3.5mm) | 13. Ethernet (RJ-45) |
| 4. Headphone / microphone combo jack (3.5mm) | 14. 2x USB 2.0 |
| 5. USB-C 3.2 Gen 1 (support data transfer and 5V@3A charging) | 15. USB 3.2 Gen 1 (with Smart Power On feature) |
| 6. 2x USB 3.2 Gen 1 | 16. USB 3.2 Gen 1 |
| 7. Optical drive * | 17. Serial * |
| 8. Line-out (3.5mm) | 18. Optional ports on expansion cards * |
| 9. HDMI | 19. Power connector |
| 10. DisplayPort 1.4 | |

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 | Processor Graphics |
|---|---|---|---|---|---|---|
| Celeron® G6900 | 2 | 2 | 3.4GHz | - | 4MB | Intel® UHD Graphics 710 |
| Pentium® Gold G7400 | 2 | 4 | 3.7GHz | - | 6MB | 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 | Intel® UHD Graphics 730 |
| Core i3-12300 | 4 (4 P-core + 0 E-core) | 8 | P-core 3.5GHz | P-core 4.4GHz[2] | 12MB | Intel® UHD Graphics 730 |
| Core i5-12400 | 6 (6 P-core + 0 E-core) | 12 | P-core 2.5GHz | P-core 4.4GHz[3] | 18MB | Intel® UHD Graphics 730 |
| Core i5-12400F | 6 (6 P-core + 0 E-core) | 12 | P-core 2.5GHz | P-core 4.4GHz[4] | 18MB | - |
| Core i5-12500 | 6 (6 P-core + 0 E-core) | 12 | P-core 3.0GHz | P-core 4.6GHz[5] | 18MB | Intel® UHD Graphics 770 |
| Core i5-12600 | 6 (6 P-core + 0 E-core) | 12 | P-core 3.3GHz | P-core 4.8GHz[6] | 18MB | 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[7] | 25MB | Intel® UHD Graphics 770 |
| Core i7-12700F | 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[8] | 25MB | - |
| 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[9] | 30MB | Intel® UHD Graphics 770 |
| Core i9-12900F | 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[10] | 30MB | - |

Notes:

[1], [2], [3], [4], [5], [6], [7], [8], [9], [10] 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****

- Windows® 11 Pro
- Windows® 11 Home
- Windows® 11 Home Single Language
- Windows® 11 DG Windows® 10 Pro 64
- Ubuntu Linux[1]
- No preload 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 | Max Resolution | Connector | Key Features |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| Intel® UHD graphics 710 | Integrated | Shared | 3840×2160@60Hz(HDMI®), 1920x1200@60Hz(VGA), 4096x2304@60Hz(DP) | 1x HDMI® 2.1 TMDS, 1x VGA, 1x DP 1.4 HBR2 | DirectX® 12 |
| Intel® UHD graphics 730 | Integrated | Shared | 3840×2160@60Hz(HDMI®), 1920x1200@60Hz(VGA), 4096x2304@60Hz(DP) | 1x HDMI® 2.1 TMDS, 1x VGA, 1x DP 1.4 HBR2 | DirectX® 12 |
| Intel® UHD graphics 770 | Integrated | Shared | 3840×2160@60Hz(HDMI®), 1920x1200@60Hz(VGA), 4096x2304@60Hz(DP) | 1x HDMI® 2.1 TMDS, 1x VGA, 1x DP 1.4 HBR2 | DirectX® 12 |
| Intel® Iris® Xe MAX 100 Graphics[2] | Discrete | 2GB LPDDR4X | 3840x2160@30Hz(HDMI®), 1920x1080@60Hz(VGA) | 1x VGA, 1x HDMI® 1.4 | 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] Onboard video ports are only available for the models with integrated graphics.

## Monitor Support

**Monitor Support**

Supports up to 3 independent displays via (HDMI®, DP and VGA), more displays support via discrete graphics

## 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 2.5″/3.5″ HDD + 1x M.2 SSD
• 2.5″ HDD up to 1TB
• 3.5″ HDD up to 2TB
• M.2 SSD up to 1TB

**Storage Type*****

| Disk Type | Interface | RPM | Security |
|---|---|---|---|
| 2.5″ SATA HDD | SATA 6Gb/s | 7.2K | - |
| 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 | - | 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**

- 7-in-1 card reader (SD, SDHC, SDXC, MMC, MS, MS-Pro, XD)
- No card reader

## Multi-Media

**Audio Chip**

High Definition (HD) Audio, Realtek® ALC623-CG codec

**Speakers**

- No speakers
- Single speaker, 1W x1

## Power Supply

**Power Supply****

| Power | Type | Efficiency | Key Features |
|---|---|---|---|
| 180W | Fixed | 85% | Autosensing |
| 260W | Fixed | 90% | Autosensing |

# DESIGN

## Input Device

**Keyboard****

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

**Mouse****

- Lenovo® Calliope Mouse (USB connector), black
- Lenovo® Calliope Wireless Mouse (2.4GHz via USB receiver), black
- No mouse

## Mechanical

**Form Factor**

SFF (7.4L)

**Dimensions (WxDxH)[1]**

100 x 308 x 274.8 mm (3.9 x 12.1 x 10.8 inches)

**Packaging Dimensions (WxDxH)**

195 x 390 x 500 mm (7.67 x 15.35 x 19.69 inches)

**Weight[2]**

Around 4.5 kg (9.9 lbs)

**Packaging Weight**

Around 6.35 kg (14 lbs)

**Case Color**

Raven black

**Bays**

- 1x 2.5″/3.5″ disk bay
- 1x slim ODD bay

**Expansion Slots**

- One PCIe® 4.0 x16, low-profie (length < 167.65mm, height < 68.90mm)
- One PCIe® 3.0 x1, low-profie (length < 167.65mm, height < 68.90mm)
- Two M.2 slots (one for WLAN, one for SSD)

**EOU**

No support

**Stand**

- Vertical stand
- No stand

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, Realtek® RTL8111HN, 1x RJ-45, supports Wake-on-LAN

**WLAN + Bluetooth®****

- Realtek® RTL8822CE, Wi-Fi® 5, 802.11ac Dual Band 2x2 Wi-Fi® + Bluetooth® 5.0, M.2 card
- Intel® Wireless-AC 9560, Wi-Fi® 5, 802.11ac Dual Band 2x2 Wi-Fi® + Bluetooth® 5.0, Intel® vPro® technology support, M.2 card
- Realtek® Wi-Fi® 6 RTL8852AE, 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®

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
- 1x headphone / microphone combo jack (3.5mm)
- 1x microphone (3.5mm)

**Optional Front Ports**

1x card reader

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

- 2x USB 2.0
- 2x USB 3.2 Gen 1 (one supports Smart Power On)
- 1x HDMI® 2.1 TMDS
- 1x DisplayPort™ 1.4
- 1x VGA
- 1x Ethernet (RJ-45)
- 1x line-out (3.5mm)

**Optional Rear Ports****

- 2x USB 2.0 (via 2-port adapter)
- 1x parallel
- 1x serial
- 1x 2nd serial
- 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] Onboard video ports are only available for the models with integrated graphics.

# 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

- Supervisor password
- Power-on password
- Hard disk password
- Cover presence switch
- Intel® BIOS guard
- Secure Wipe
- Smart USB protection (allows keyboard / mouse only, blocks all storage devices)

# MANAGEABILITY

## System Management

### System Management

Non-vPro®

# SERVICE

## Warranty[1]

### Base Warranty**

- 1-year courier or carry-in service
- 1-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://pcsupport.lenovo.com/warranty.

# ACCESSORIES

## Bundled Accessories

**Bundled Accessories**

- DP to DVI dongle
- DP to Dual DP dongle
- DP to HDMI® dongle
- DP to VGA dongle
- HDMI® to HDMI® dongle
- HDMI® to VGA dongle
- Smart Cable (USB-A to USB-C®)
- None

# OPERATING REQUIREMENTS

## Operating Environment

**Temperature**

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

**Relative 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™ Silver Registered[2]
- (Optional) EPEAT™ Gold Registered[3]
- ErP Lot 3
- RoHS compliant
- TCO Certified

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], [3] EPEAT™ is registered where applicable, please visit epeat.net for registration status by country.

## Other Certifications

**Other Certifications**

- (Optional) TÜV Rheinland® Low Noise
- (Optional) 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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