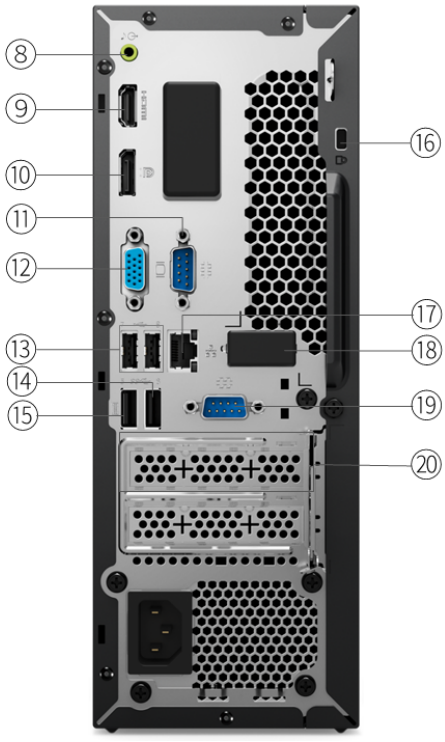
# OVERVIEW




| | |
|---|---|
| 1. Power button | 11. Serial * |
| 2. Card reader * | 12. VGA |
| 3. Microphone jack (3.5mm) | 13. 2x USB 2.0 |
| 4. Headphone / microphone combo jack (3.5mm) | 14. 1x USB 3.2 Gen 1 |
| 5. USB-C 3.2 Gen 1 (data transfer, 15W charging) | 15. 1x USB 3.2 Gen 1 (Smart Power On) |
| 6. 2x USB 3.2 Gen 1 | 16. Kensington Security Slot |
| 7. Optical drive * | 17. Ethernet (RJ-45) |
| 8. Audio line-out (3.5mm) | 18. Smart cable clip slots * |
| 9. HDMI 2.1 TMDS | 19. Serial * |
| 10. DisplayPort 1.4 | 20. Optional ports * |

Notes:
- Items with * are only available on selected models

# PERFORMANCE

## Processor

**Processor Family**

Intel® Celeron®, Intel® Pentium®, or 12th / 13th Generation Intel® Core™ i3 / i5 / i7 Processor

**Processor****

| Processor Name | Cores | Threads | Base Frequency | Max Frequency | Cache | Processor Graphics |
|---|---|---|---|---|---|---|
| Celeron® G6900 | 2 | 2 | 3.4GHz | - | 2.5MB L2 Cache / 4MB Intel® Smart Cache | Intel® UHD Graphics 710 |
| Pentium® Gold G7400 | 2 | 4 | 3.7GHz | - | 2.5MB L2 Cache / 6MB Intel® Smart Cache | Intel® UHD Graphics 710 |
| Core i3-12100 | 4 (4 P-core + 0 E-core) | 8 | P-core 3.3GHz | P-core 4.3GHz[1] | 5MB L2 Cache / 12MB Intel® Smart Cache | Intel® UHD Graphics 730 |
| Core i3-12300 | 4 (4 P-core + 0 E-core) | 8 | P-core 3.5GHz | P-core 4.4GHz[2] | 5MB L2 Cache / 12MB Intel® Smart Cache | Intel® UHD Graphics 730 |
| Core i5-12400 | 6 (6 P-core + 0 E-core) | 12 | P-core 2.5GHz | P-core 4.4GHz[3] | 7.5MB L2 Cache / 18MB Intel® Smart Cache | Intel® UHD Graphics 730 |
| Core i5-12400F | 6 (6 P-core + 0 E-core) | 12 | P-core 2.5GHz | P-core 4.4GHz | 18MB Intel® Smart Cache | - |
| Core i5-12500 | 6 (6 P-core + 0 E-core) | 12 | P-core 3.0GHz | P-core 4.6GHz[4] | 7.5MB L2 Cache / 18MB Intel® Smart Cache | Intel® UHD Graphics 770 |
| Core i5-12600 | 6 (6 P-core + 0 E-core) | 12 | P-core 3.3GHz | P-core 4.8GHz[5] | 7.5MB L2 Cache / 18MB Intel® Smart Cache | 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[6] | 12MB L2 Cache / 25MB Intel® Smart Cache | 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[7] | 12MB L2 Cache / 20MB Intel® Smart Cache | - |
| Core i3-13100 | 4 (4 P-core + 0 E-core) | 8 | P-core 3.4GHz | P-core 4.5GHz[8] | 5MB L2 Cache / 12MB Intel® Smart Cache | Intel® UHD Graphics 730 |
| Core i5-13400 | 10 (6 P-core + 4 E-core) | 16 | P-core 2.5GHz / E-core 1.8GHz | P-core 4.6GHz / E-core 3.3GHz[9] | 9.5MB L2 Cache / 20MB Intel® Smart Cache | Intel® UHD Graphics 730 |
| Core i5-13400F | 10 (6 P-core + 4 E-core) | 16 | P-core 2.5GHz / E-core 1.8GHz | P-core 4.6GHz / E-core 3.3GHz[10] | 9.5MB L2 Cache / 20MB Intel® Smart Cache | - |
| Core i5-13500 | 14 (6 P-core + 8 E-core) | 20 | P-core 2.5GHz / E-core 1.8GHz | P-core 4.8GHz / E-core 3.5GHz[11] | 11.5MB L2 Cache / 24MB Intel® Smart Cache | Intel® UHD Graphics 770 |
| 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[12] | 11.5MB L2 Cache / 24MB Intel® Smart Cache | Intel® UHD Graphics 770 |
| 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[13] | 24MB L2 Cache / 30MB Intel® Smart Cache | Intel® UHD Graphics 770 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Core i7-13700F | 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[14] | 24MB L2 Cache / 30MB Intel® Smart Cache | - |

Notes:

[1], [2], [3], [4], [5], [6], [7], [8], [9], [10], [11], [12], [13], [14] 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 |

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).

## 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

**Max 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 2280 SSD | PCIe® NVMe®, PCIe® 4.0 x4 | - | Opal |
| M.2 2280 SSD | PCIe® NVMe®, PCIe® 4.0 x4 | - | Opal 2.0 |

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 connector, 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, 80 PLUS Gold qualified |

# DESIGN

## Input Device

**Keyboard****

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

**Mouse**

- Lenovo® Calliope Mouse (USB connector), 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 (7.7 x 15.4 x 19.7 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)

**Stand**

- Vertical stand
- No stand

**Others**

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

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

**WLAN + Bluetooth®****[1]

- Realtek® Wi-Fi® 6 RTL8852BE, 802.11ax Dual Band 2x2 Wi-Fi® + Bluetooth® 5.1, M.2 card
- Intel® Wi-Fi® 6 AX201, 802.11ax 2x2 Wi-Fi® + Bluetooth® 5.1 (Bluetooth® 5.2 hardware ready), M.2 card
- Intel® Wi-Fi® 6E AX211, 802.11ax 2x2 Wi-Fi® + Bluetooth® 5.1 (Bluetooth® 5.3 hardware ready), M.2 card
- No WLAN and Bluetooth®

**Onboard Ethernet**

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

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**

- 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**

- 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
- 1x parallel
- 1x serial
- 1x 2nd serial

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.
Thunderbolt™ 5: 80 Gbit/s (bidirectional), up to 120 Gbit/s in bandwidth boost mode for video-intensive applications.

# 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**

- Hard disk password
- Power-on password
- Supervisor password
- Cover presence switch
- Individual USB port disablement
- Intel® BIOS guard
- Never crash Self-healing
- Secure wipe
- Smart USB protection (allows keyboard / mouse only, blocks all storage devices)
- More BIOS security features, please visit BIOS Simulator[1]

Notes:

[1] The BIOS simulator is just for reference. Default settings and some options may vary depending on the hardware, operating system and BIOS version.

# 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://support.lenovo.com/warrantylookup/warrantypolicy.

# 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
- 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 option listed under the feature can be configured on selected models. Please refer to the model configuration for specific information.
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