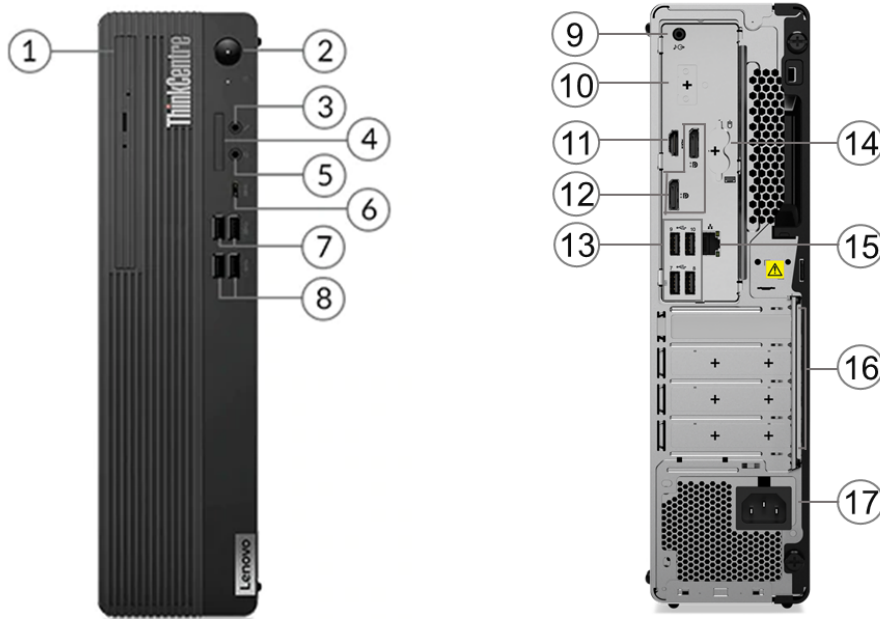


## OVERVIEW



1. Optical drive *	10. Flex IO *
2. Power button	11. HDMI 2.1 TMDs
3. Microphone jack (3.5mm)	12. 2x DisplayPort 1.4
4. Card reader *	13. 4x USB 2.0
5. Headphone / microphone combo jack (3.5mm)	14. 2x PS/2 ports (keyboard / mouse) *
6. USB-C 3.2 Gen 1	15. Ethernet (RJ-45)
7. 2x USB 3.2 Gen 1	16. Optional ports on expansion cards *
8. 2x USB 3.2 Gen 2	17. Power connector
9. Line-out (3.5mm)	

Notes:

- Items with \* are only available on selected models
- More ports are available through the optional expansion cards (not shown on the sample product above)

## PERFORMANCE

### Processor

#### Processor Family

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

#### Processor\*\*

Processor Name	Cores	Threads	Base Frequency	Max Frequency	Cache	Processor Graphics
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 <sup>[1]</sup>	12MB	Intel® UHD Graphics 730
Core i3-12300	4 (4 P-core + 0 E-core)	8	P-core 3.5GHz	P-core 4.4GHz <sup>[2]</sup>	12MB	Intel® UHD Graphics 730
Core i5-12400	6 (6 P-core + 0 E-core)	12	P-core 2.5GHz	P-core 4.4GHz <sup>[3]</sup>	18MB	Intel® UHD Graphics 730
Core i5-12400F	6 (6 P-core + 0 E-core)	12	P-core 2.5GHz	P-core 4.4GHz <sup>[4]</sup>	18MB	-
Core i5-12500	6 (6 P-core + 0 E-core)	12	P-core 3.0GHz	P-core 4.6GHz <sup>[5]</sup>	18MB	Intel® UHD Graphics 770
Core i5-12600	6 (6 P-core + 0 E-core)	12	P-core 3.3GHz	P-core 4.8GHz <sup>[6]</sup>	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 <sup>[7]</sup>	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 <sup>[8]</sup>	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 <sup>[9]</sup>	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 <sup>[10]</sup>	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
- Windows® 10 IoT Enterprise LTSC 2021
- Ubuntu Linux<sup>[1]</sup>
- 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	4096x2304@60Hz(DP), 4096x2160@60Hz[HDMI® / Flex IO(HDMI®) / Flex IO(DP)], 3840x2160@60Hz[Flex IO(USB-C®)], 2048x1536@50Hz[Flex IO(VGA)]	2x DP 1.4 HBR2, 1x HDMI® 2.1 TMDS, 1x Flex IO (VGA / DP 1.2 / HDMI® 2.1 TMDS / USB-C®)	DirectX® 12
Intel® UHD graphics 730	Integrated	Shared	4096x2304@60Hz(DP), 4096x2160@60Hz[HDMI® / Flex IO(HDMI®) / Flex IO(DP)], 3840x2160@60Hz[Flex IO(USB-C®)], 2048x1536@50Hz[Flex IO(VGA)]	2x DP 1.4 HBR2, 1x HDMI® 2.1 TMDS, 1x Flex IO (VGA / DP 1.2 / HDMI® 2.1 TMDS / USB-C®)	DirectX® 12
Intel® UHD graphics 770	Integrated	Shared	4096x2304@60Hz(DP), 4096x2160@60Hz[HDMI® / Flex IO(HDMI®) / Flex IO(DP)], 3840x2160@60Hz[Flex IO(USB-C®)], 2048x1536@50Hz[Flex IO(VGA)]	2x DP 1.4 HBR2, 1x HDMI® 2.1 TMDS, 1x Flex IO (VGA / DP 1.2 / HDMI® 2.1 TMDS / USB-C®)	DirectX® 12
Intel® Iris® Xe MAX 100	Discrete	2GB LPDDR4X	3840x2160@60Hz(DP)	2x DP 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).

## Monitor Support

### Monitor Support<sup>[1]</sup>

Supports up to 4 independent displays via onboard ports (2x DP, 1x HDMI®, and 1x optional Flex IO), more displays support via discrete graphics

## Notes:

[1] Onboard video ports are only available for the models with integrated graphics.

## Chipset

### Chipset

Intel® Q670 chipset

## Memory

### Max Memory<sup>[1]</sup>

Up to 128GB DDR4-3200

### Memory Slots

Four DDR4 DIMM 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<sup>[1][2]</sup>

Up to three drives, 1x 2.5"/3.5" HDD + 1x 2.5" HDD + 1x M.2 SSD

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

### Storage Type<sup>\*\*\*</sup>

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
M.2 2280 SSD	PCIe® NVMe®, PCIe® 4.0 x4 Performance	-	Opal 2.0
M.2 2280 SSD	PCIe® NVMe®, PCIe® 4.0 x4 Value	-	Opal 2.0

**RAID**

RAID 0/1 support for HDDs (RAID preset only available via special bid models)

**Notes:**

- [1] The max capacity of each disk type is based on the test results with current Lenovo® storage offerings.  
 [2] The max capacity of SSD/HDD is based on the test results with current Lenovo® SSD/HDD offerings.

**Removable Storage****Optical\*\***

- DVD-ROM, SATA connector, slim (9.0mm)
- DVD burner (DVD±RW), SATA connector, 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® ALC897Q-CG codec

**Speakers**

Single speaker, 1W x1

**Power Supply****Power Supply\*\***

Power	Type	Efficiency	Key Features
180W	Fixed	85%	100-240V, 50-60Hz
260W	Fixed	90%	100-240V, 50-60Hz
310W	Fixed	92%	100-240V, 50-60Hz
380W	Fixed	92%	100-240V, 50-60Hz

**DESIGN****Input Device****Keyboard\*\***

- Lenovo® Calliope Keyboard (USB connector), black
- Lenovo® Calliope Wireless Keyboard (2.4GHz via USB receiver), 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
- Lenovo® Mouse (PS/2 connector), black (only available via special bid)
- Lenovo® Fingerprint Mouse (USB connector), Windows® Hello support, black (EOL on Jan, 2023)
- No mouse

**Mechanical****Form Factor**

SFF (8.2L)

**Dimensions (WxDxH)<sup>[1]</sup>**

92.5 x 297.7 x 339.5 mm (3.6 x 11.7 x 13.4 inches)

**Weight<sup>[2]</sup>**

Around 5.3 kg (11.7 lbs)

**Case Color**

Black

**Bays<sup>[3]</sup>**

- 1x 2.5" disk bay
- 1x 3.5" disk bay
- 1x slim ODD bay

**Expansion Slots**

- One PCIe® 4.0 x16, low-profile, length ≤ 155mm, height ≤ 70mm
- Two PCIe® 3.0 x1, low-profile, length ≤ 155mm, height ≤ 70mm
- Two M.2 slots (one for WLAN, one for SSD)

**EOU**

Toolless cover, disk, optical, extension card assembly / removal

**Stand**

- Vertical stand
- No stand

**Others**

- (Optional) Dust filter
- Supports Smart Power On

**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.

[3] 2.5" HDD tray is optional, or comes with 2.5 HDD. 3.5" bay supports 2.5" / 3.5" HDD, 3.5" to 2.5 converter comes with 2nd 2.5" HDD.

## CONNECTIVITY

### Network

**Onboard Ethernet**

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

**Optional Ethernet\*\*\***

- Gigabit Ethernet, Bitland BN8E88, 1x RJ-45, PCIe® x1
- Gigabit Ethernet, Bitland RTL8168H, 1x RJ-45, PCIe® x1
- 2.5 Gigabit Ethernet, Realtek® RTL8125BGS, 1x RJ-45, PCIe® x1
- No optional Ethernet

**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® 5.1, M.2 card
- Realtek® Wi-Fi® 6 RTL8852BE, 802.11ax Dual Band 2x2 Wi-Fi® + Bluetooth® 5.3, M.2 card<sup>[1]</sup>
- Intel® Wi-Fi® 6 AX201, 802.11ax 2x2 Wi-Fi® + Bluetooth® 5.2, M.2 Card<sup>[2]</sup>
- Intel® Wi-Fi® 6E AX211, 802.11ax 2x2 Wi-Fi® + Bluetooth® 5.3, Intel® vPro® technology support, M.2 Card<sup>[3]</sup>
- No WLAN and Bluetooth®

**Notes:**

[1], [3] Bluetooth® 5.3 requires Windows® 11.

[2] Bluetooth® 5.2 requires Windows® 11.

### Ports<sup>[1]</sup>

**Front Ports**

- 1x USB-C® 3.2 Gen 1 (15W 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<sup>[2]</sup>**

- 4x USB 2.0
- 1x HDMI<sup>®</sup> 2.1 TMDS
- 2x DisplayPort<sup>™</sup> 1.4a (HBR2, DSC)
- 1x Ethernet (RJ-45)
- 1x line-out (3.5mm)

**Optional Rear Ports<sup>\*\*\*</sup>**

- 1x USB-C<sup>®</sup> 3.2 Gen 1 with DisplayPort<sup>™</sup> function and 5V@3A charging (Flex IO)
- 1x HDMI<sup>®</sup> 2.1 TMDS (Flex IO)
- 1x DP 1.2 (Flex IO)
- 1x VGA (Flex IO)
- 2x USB 3.2 Gen 1 (via 2-port USB expansion card, PCIe<sup>®</sup> x1)
- 1x parallel
- 1x serial
- 1x 2nd serial
- 4x serial (via 4-port serial expansion card, PCIe<sup>®</sup> x1)
- 2x PS/2

**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<sup>®</sup> 20Gbps / USB 3.2 Gen 2x2 (SuperSpeed USB 20Gbps): 20 Gbit/s;

USB4<sup>®</sup> 40Gbps (USB 40Gbps): 40 Gbit/s;

Thunderbolt<sup>™</sup> 3/4: 40 Gbit/s.

[2] For video ports on discrete graphics, please see graphics section.

## SECURITY & PRIVACY

### Security

**Security Chip**

Discrete TPM 2.0, TCG certified

**Physical Locks**

- (Optional) E-lock
- (Optional) Smart Cable Clip
- Kensington<sup>®</sup> Security Slot<sup>™</sup>, 3 x 7 mm
- Padlock Loop

**Chassis Intrusion Switch**

- Chassis intrusion switch
- No chassis intrusion switch

**Fingerprint Reader**

- Touch style fingerprint reader on mouse (EOL on Jan, 2023)
- No fingerprint reader

**BIOS Security**

- Administrator password
- Hard disk password
- Power-on password
- Boot sequence control
- Boot without keyboard and mouse
- Individual USB port disablement
- Self-healing BIOS (Level 2)

- Smart USB protection (allows keyboard / mouse only, blocks all storage devices)
- More BIOS security features, please visit [BIOS Simulator](#)<sup>[1]</sup>

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\*\*

- Intel® vPro® Enterprise<sup>[1]</sup>
- Intel® vPro® Essentials<sup>[2]</sup>
- Non-vPro®

Notes:

[1], [2] Intel® vPro® offers a superset of DASH's defined capabilities.

## SERVICE

### Warranty<sup>[1]</sup>

#### Base Warranty\*\*

- 1-year courier or carry-in service
- 1-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>.

## 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® cable (1.5m)
- 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<sup>[1]</sup>

#### Green Certifications

- (Optional) ENERGY STAR® 8.0
- (Optional) EPEAT™ Silver Registered<sup>[2]</sup>
- (Optional) EPEAT™ Gold Registered<sup>[3]</sup>
- ErP Lot 3
- RoHS compliant
- TCO Certified 9.0

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](https://epeat.net) for registration status by country.

### Other Certifications

#### Other Certifications

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

#### Mil-Spec Test

MIL-STD-810H military test passed (Low Pressure [Altitude], High Temperature, Low Temperature, Temperature Shock, Humidity, Sand and Dust, Vibration, Shock, Fungus, Solar Radiation, Contamination by Fluids, Salt Fog)

- 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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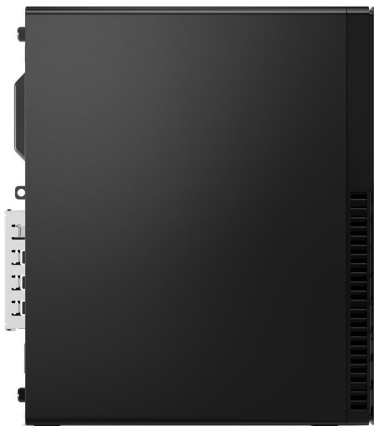
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