

OVERVIEW



| | |
|-------------------------------------------------------------|-----------------------------------------------|
| 1. 3x USB 3.2 Gen 1 | 7. Microphone mute button |
| 2. USB-C 3.2 Gen 2 (support data transfer and 15W charging) | 8. PC / monitor mode switch |
| 3. Ethernet (RJ-45) | 9. 3x USB 3.2 Gen 2 |
| 4. HDMI (HDMI in 1.4 / HDMI out 2.1 TMDS combo port) | 10. Headphone / microphone combo jack (3.5mm) |
| 5. DisplayPort 1.4 | 11. Card reader * |
| 6. Power connector | 12. Power button |

Notes:

- Ports with * are only available on selected models

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 | 12MB | DDR4-3200 | Intel UHD Graphics 730 |
| Core i3-12300 | 4 (4 P-core + 0 E-core) | 8 | P-core 3.5GHz | P-core 4.4GHz | 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 | 18MB | DDR4-3200 | Intel UHD Graphics 730 |
| Core i5-12500 | 6 (6 P-core + 0 E-core) | 12 | P-core 3.0GHz | P-core 4.6GHz | 18MB | DDR4-3200 | Intel UHD Graphics 770 |
| Core i5-12600 | 6 (6 P-core + 0 E-core) | 12 | P-core 3.3GHz | P-core 4.8GHz | 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 | P-core 4.8GHz / E-core 3.6GHz | 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 | P-core 5.0GHz / E-core 3.8GHz | 30MB | DDR4-3200 | Intel UHD Graphics 770 |

Operating System

Operating System**

- Windows® 11 Pro 64
- Windows 11 Home 64
- Windows 11 DG Windows 10 Pro 64
- No operating system

Graphics

Graphics***[1]

| Graphics | Type | Memory | Connector | Max Resolution | Key Features | Remark |
|------------------------|------------|-----------|------------------------------|------------------------------------------|--------------|--------|
| Intel UHD graphics 710 | Integrated | Shared | 1x HDMI® 2.1 TMDS, 1x DP 1.4 | 4096x2160@60Hz(HDMI), 5120x2160@60Hz(DP) | DirectX® 12 | - |
| Intel UHD graphics 730 | Integrated | Shared | 1x HDMI 2.1 TMDS, 1x DP 1.4 | 4096x2160@60Hz(HDMI), 5120x2160@60Hz(DP) | DirectX 12 | - |
| Intel UHD graphics 770 | Integrated | Shared | 1x HDMI 2.1 TMDS, 1x DP 1.4 | 4096x2160@60Hz(HDMI), 5120x2160@60Hz(DP) | DirectX 12 | - |
| NVIDIA® GeForce MX550 | Discrete | 2GB GDDR6 | 1x HDMI 2.1 TMDS, 1x DP 1.4 | 4096x2160@60Hz(HDMI), 5120x2160@60Hz(DP) | DirectX 12 | - |

Notes:

1. The information of integrated graphics are not applicable for the models without integrated graphics (for the details, please refer to processor section)

Monitor Support

Monitor Support

Supports up to 3 independent displays via native display and 2 external monitor; supports external monitors via DisplayPort™ and HDMI; work as standalone monitor via HDMI (HDMI in / out combo)

Chipset

Chipset

Intel Q670 Chipset

Memory

Max Memory^[1]

Up to 64GB DDR4-3200

Memory Slots

Two DDR4 SO-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. The system may support more memory as the technology develops.

Storage

Storage Support^{[1][2]}

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

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

Storage Type^{***}

| Disk Type | Interface | RPM | Security |
|---------------|------------------------------------|------|----------|
| 2.5" SATA HDD | SATA 6Gb/s | 5.4K | - |
| 2.5" SATA HDD | SATA 6Gb/s | 7.2K | - |
| M.2 2280 SSD | PCIe® NVMe®, PCIe 3.0 x4 | - | Opal2 |
| M.2 2280 SSD | PCIe NVMe, PCIe 4.0 x4 Value | - | Opal2 |
| M.2 2280 SSD | PCIe NVMe, PCIe 4.0 x4 Performance | - | Opal2 |

RAID^[3]

RAID 0/1 support for HDDs

Notes:

1. The storage capacity supported is based on the test results with current Lenovo storage offerings. The system may support larger storage as the technology develops.
2. 2nd 2.5" HDD occupies ODD bay, and needs ODD to HDD bracket kit (optional, come with 2nd 2.5" HDD)
3. RAID is not preset by default, user can config RAID 0/1 according to the demand.

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® ALC256-NL codec

Speakers

Stereo speakers, 3W x2, Dolby® Atmos®

ThinkCentre M90a Gen 3

Microphone

- Dual array microphone
- No microphone

Camera**

- 5.0-megapixel, with ThinkShutter (physical switch on/off), $\pm 20^\circ$ view angle adjustable
- 5.0-megapixel, IR & RGB hybrid, with ThinkShutter (physical switch on/off), $\pm 20^\circ$ view angle adjustable, Windows Hello support
- No camera

Power Supply

Power Supply**

| Power | Type | Efficiency | Key Features |
|-------|-------|------------|----------------------|
| 180W | Fixed | 90% | 100V - 240V, 50-60Hz |
| 230W | Fixed | 92% | 100V - 240V, 50-60Hz |

DESIGN

Display

Display**[1]

| Size | Resolution | Touch | Type | Brightness | Surface | Aspect Ratio | Contrast Ratio | Color Gamut | Viewing Angle | Key Features |
|-------|-----------------|-------------|------|------------|------------|--------------|----------------|-------------|-------------------------------------------------------|-------------------------------------------------|
| 23.8" | FHD (1920x1080) | None | IPS | 250 nits | Anti-glare | 16:9 | 1000:1 | 72% NTSC | horizontal: $\pm 89^\circ$, vertical: $\pm 89^\circ$ | Borderless design, low blue light, flicker free |
| 23.8" | FHD (1920x1080) | Multi-touch | IPS | 250 nits | Anti-glare | 16:9 | 1000:1 | 72% NTSC | horizontal: $\pm 89^\circ$, vertical: $\pm 89^\circ$ | Borderless design, low blue light, flicker free |

Touchscreen

- Advanced In-cell Touch (AIT), supports 10-point touch
- Non-touch

Notes:

1. California Electronic Waste Recycling Fee

In California, per state law, Lenovo charges an electronic waste recycling fee on this covered device at the time of sale of the product. For more information, go to <https://www.calrecycle.ca.gov/Electronics/Consumer>

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 Fingerprint Mouse (USB connector), Windows Hello support, black
- No mouse

Mechanical

Buttons

- Power button
- Microphone mute button
- Monitor / PC mode switch button

Form Factor

AIO (23.8 inches)

Dimensions (WxDxH)

| Models | Dimensions |
|-----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Models (with full function monitor stand, with camera) | Lowest in vertical mode: 539.6 x 217.31 x 394.65 mm (21.24 x 8.56 x 15.54 inches) Highest in vertical mode: 539.6 x 217.31 x 503.66 mm (21.24 x 8.56 x 19.83 inches) |
| Models (with full function monitor stand, without camera) | Lowest in vertical mode: 539.6 x 217.31 x 374.15 mm (21.24 x 8.56 x 14.73 inches) Highest in vertical mode: 539.6 x 217.31 x 483.16 mm (21.24 x 8.56 x 19.02 inches) |
| Models (with UltraFlex V stand, with camera) | Lowest in vertical mode: 539.6 x 216.32 x 387.63 mm (21.24 x 8.52 x 15.26 inches) Highest in vertical mode: 539.6 x 216.32 x 472 mm (21.24 x 8.52 x 18.58 inches) |
| Models (with UltraFlex V stand, without camera) | Lowest in vertical mode: 539.6 x 216.32 x 367.13 mm (21.24 x 8.52 x 14.45 inches) Highest in vertical mode: 539.6 x 216.32 x 451.5 mm (21.24 x 8.52 x 17.78 inches) |

Packaging Dimensions (WxDxH)

- With Full Function Monitor Stand: 660 x 238 x 575 mm (25.98 x 9.37 x 22.64 inches)
- With UltraFlex V Stand: 660 x 238 x 545 mm (25.98 x 9.37 x 21.46 inches)

Weight^[1]

| Models | Weight |
|------------------------------------------------------------------|-----------------------------|
| Models (with full function monitor stand, with ODD, with camera) | Around 8.235 kg (18.15 lbs) |
| Models (with UltraFlex V stand, with ODD, with camera) | Around 8.742 kg (19.27 lbs) |

Packaging Weight

- With Full Function Monitor Stand: 2.084 kg (4.59 lbs), packaging only
- With UltraFlex V Stand: 2.0658 kg (4.55 lbs), packaging only

Case Color

Black

Bays^[2]

- 2x 2.5" disk bay (2nd 2.5" HDD occupies ODD bay)
- 1x slim ODD bay

Expansion Slots

Two M.2 slots (one for WLAN, one for SSD)

EOU

Toolless cover, stand, motherboard shielding, HDD, and memory assembly / removal

Stand**

- UltraFlex V stand, supports -5° to +70° tilt, up to 70°±2° lift (up to 174.02mm lift in flat mode / up to 84.37mm lift in vertical mode)
- Full function monitor stand, supports -5° to +20° tilt, left & right 45° swivel, 90° pivot, up to 110mm lift
- No stand

Mounting

Supports VESA mount 100mm

Others

- (Optional) Conference Call Base, 3W x4 Harman speakers, 4 digital microphones array with AI noise suppression, Physical button for Teams, USB-C® connector
- (Optional) Smart Human Presence Detection based on Radar Sensor
- Supports Smart Power On

Notes:

1. Weight may vary by configuration.
2. 2nd 2.5" HDD needs ODD to HDD bracket kit (optional, come 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

No optional Ethernet

WLAN + Bluetooth®**^[1]

- AMD RZ616, Wi-Fi® 6E, 802.11ax Dual Band 2x2 Wi-Fi + Bluetooth 5.2, M.2 Card
- Mediatek Wi-Fi 6 MT7921, 802.11ax 2x2 Wi-Fi + Bluetooth 5.2, M.2 Card
- Realtek Wi-Fi 6 RTL8852AE, 802.11ax 2x2 Wi-Fi + Bluetooth 5.2, M.2 card
- Intel Wi-Fi 6 AX201, 802.11ax 2x2 Wi-Fi + Bluetooth 5.1, M.2 Card
- Intel Wi-Fi 6E AX211, 802.11ax 2x2 Wi-Fi + Bluetooth 5.2, Intel vPro technology support, M.2 Card
- No WLAN and Bluetooth

Notes:

1. Bluetooth 5.2 is hardware ready but may run at a lower version due to OS limitation

Ports^[1]

Rear Ports^{[1][2]}

- 3x USB 3.2 Gen 1
- 1x USB-C 3.2 Gen 2 (support data transfer and 15W charging)
- 1x HDMI (HDMI in 1.4 / HDMI out 2.1 TMDS combo port)
- 1x DisplayPort 1.4
- 1x Ethernet (RJ-45)

Optional Rear Ports

1x serial

Right Ports

- 3x USB 3.2 Gen 2
- 1x headphone / microphone combo jack (3.5mm)

Optional Right Ports

1x card reader

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;
USB 3.2 Gen 2x2 (SuperSpeed USB 20Gbps): 20 Gbit/s;
Thunderbolt™ 3/4: 40 Gbit/s
2. For video ports on discrete graphics, please see graphics section

Monitor Cable

Monitor Cable**

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

SECURITY & PRIVACY

Security

Security Chip

Discrete TPM 2.0, TCG certified

Physical Locks

Kensington® Security Slot, 3 x 7 mm

Chassis Intrusion Switch

- Chassis intrusion switch
- No chassis intrusion switch

Fingerprint Reader

- Touch style fingerprint reader on mouse
- No fingerprint reader

Other Security

(Optional) ThinkShutter camera cover

BIOS Security

- Administrator password
- Power-on password
- Hard disk password
- Boot sequence control
- Boot without keyboard and mouse
- Self-healing BIOS
- Smart USB protection (allows keyboard / mouse only, blocks all storage devices)
- Individual USB port disablement

MANAGEABILITY

System Management

System Management^{[1][2]}

- Intel vPro Enterprise
- Non-vPro

Notes:

1. Intel vPro offers a superset of DASH's defined capabilities.
2. Intel vPro offers a superset of DASH's defined capabilities.

SERVICE

Warranty

Base Warranty^[1]

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

Notes:

1. More information 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: -20°C (-4°F) to 60°C (140°F)

Humidity

Operating: 20% to 80%

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

Green Certifications

- (Optional) EPEAT™ Gold
- (Optional) ENERGY STAR® 8.0
- ErP Lot 3
- TCO Certified 9.0
- TCO edge
- RoHS compliant

Other Certifications

Other Certifications

- TÜV Rheinland® Flicker Free
- TÜV Rheinland Low Blue Light
- (Optional) TÜV Rheinland Ultra Low Noise
- UL Anti-dust

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 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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