

OVERVIEW



1. 3x USB-A (USB 5Gbps)	8. Microphone mute button
2. USB-C (USB 10Gbps), with 15W charging	9. PC / monitor mode switch
3. Ethernet (RJ-45)	10. 3x USB-A (USB 10Gbps)
4. HDMI (HDMI in 1.4 / HDMI out 2.1 TMDS combo)	11. Card reader *
5. DisplayPort 1.4	12. Headphone / microphone combo jack (3.5mm)
6. Serial *	13. Power button
7. Power connector	

Notes:

• Items with * are only available on selected models



PERFORMANCE

Processor

Processor Family

13th / 14th Generation Intel® Core™ i3 / i5 / i7 Processor

Processor**

			I	I	
Cores	Threads	Base Frequency Max Frequency		Cache	Processor Graphics
4 (4 P-core + 0 E-core)	8	P-core 3.4GHz	P-core 4.5GHz	12MB	Intel® UHD Graphics 730
10 (6 P-core + 4 E-core)	16	P-core 2.5GHz / E-core 1.8GHz	P-core 4.6GHz / E-core 3.3GHz	20MB	Intel® UHD Graphics 730
14 (6 P-core + 8 E-core)	20	P-core 2.5GHz / E-core 1.8GHz	P-core 4.8GHz / E-core 3.5GHz	24MB	Intel® UHD Graphics 770
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	30MB	Intel® UHD Graphics 770
4 (4 P-core + 0 E-core)	8	P-core 3.5GHz	P-core 4.7GHz	5MB L2 Cache / 12MB Intel® Smart Cache	Intel® UHD Graphics 730
10 (6 P-core + 4 E-core)	16	P-core 2.5GHz / E-core 1.8GHz	P-core 4.7GHz / E-core 3.5GHz	9.5MB L2 Cache / 20MB Intel® Smart Cache	Intel® UHD Graphics 730
14 (6 P-core + 8 E-core)	20	P-core 2.6GHz / E-core 1.9GHz	P-core 5.0GHz / E-core 3.7GHz	11.5MB L2 Cache / 24MB Intel® Smart Cache	Intel® UHD Graphics 770
20 (8 P-core + 12 E-core)	28	P-core 2.1GHz / E-core 1.5GHz	Max Turbo up to 5.4GHz / P-core 5.3GHz / E-core 4.2GHz	28MB L2 Cache / 33MB Intel® Smart Cache	Intel® UHD Graphics 770
	4 (4 P-core + 0 E-core) 10 (6 P-core + 4 E-core) 14 (6 P-core + 8 E-core) 16 (8 P-core + 8 E-core) 4 (4 P-core + 0 E-core) 10 (6 P-core + 4 E-core) 14 (6 P-core + 8 E-core) 20 (8 P-core	4 (4 P-core + 0 E-core) 8 10 (6 P-core + 4 E-core) 16 14 (6 P-core + 8 E-core) 20 16 (8 P-core + 8 E-core) 24 4 (4 P-core + 0 E-core) 8 10 (6 P-core + 4 E-core) 16 14 (6 P-core + 8 E-core) 20 20 (8 P-core 28	4 (4 P-core + 0 E-core) 8 P-core 3.4GHz 10 (6 P-core + 4 E-core) 16 P-core 2.5GHz / E-core 1.8GHz 14 (6 P-core + 8 E-core) 20 P-core 2.5GHz / E-core 1.8GHz 16 (8 P-core + 8 E-core) 24 P-core 2.1GHz / E-core 1.5GHz 4 (4 P-core + 0 E-core) 8 P-core 3.5GHz 10 (6 P-core + 4 E-core) 16 P-core 2.5GHz / E-core 1.8GHz 14 (6 P-core + 8 E-core) 20 P-core 2.6GHz / E-core 1.9GHz 20 (8 P-core 2.8 P-core 2.1GHz / E-core 1.9GHz	4 (4 P-core + 0 E-core) 8 P-core 3.4GHz P-core 4.5GHz 10 (6 P-core + 4 E-core) 16 P-core 2.5GHz / E-core 1.8GHz P-core 4.6GHz / E-core 3.3GHz 14 (6 P-core + 8 E-core) 20 P-core 2.5GHz / E-core 1.8GHz P-core 4.8GHz / E-core 3.5GHz 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 4 (4 P-core + 0 E-core) 8 P-core 3.5GHz P-core 4.7GHz 10 (6 P-core + 4 E-core) 16 P-core 2.5GHz / E-core 3.5GHz P-core 4.7GHz / E-core 3.5GHz 14 (6 P-core + 8 E-core) 20 P-core 2.6GHz / E-core 3.7GHz P-core 5.0GHz / E-core 3.7GHz 20 (8 P-core + 12 E-core) 28 P-core 2.1GHz / E-core 5.3GHz / P-core 5.3GHz / E-core 5.3GHz / E-core	4 (4 P-core + 0 E-core) 8 P-core 3.4GHz P-core 4.5GHz 12MB 10 (6 P-core + 4 E-core) 16 P-core 2.5GHz / E-core 4.6GHz / E-core 3.3GHz 20MB 14 (6 P-core + 8 E-core) 20 P-core 2.5GHz / E-core 4.8GHz / E-core 3.5GHz 24MB 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 30MB 4 (4 P-core + 8 E-core) 8 P-core 3.5GHz P-core 4.7GHz 5MB L2 Cache / 12MB Intel® Smart Cache 10 (6 P-core + 4 E-core) 16 P-core 2.5GHz / E-core 4.7GHz / E-core 3.5GHz P-core 4.7GHz / E-core 20MB Intel® Smart Cache 14 (6 P-core + 8 E-core) 20 P-core 2.6GHz / E-core 5.0GHz / E-core 3.7GHz P-core 5.0GHz / E-core 24MB Intel® Smart Cache 20 (8 P-core + 8 E-core) 28 P-core 2.1GHz / E-core 5.3GHz / E-core 3.3GHz / E-core 3.3MB Intel® Smart Cache

Operating System

Operating System**

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

Graphics

Graphics**

Graphics	Туре	Memory	Max Resolution	Connector	Key Features
Intel® UHD graphics 730	Integrated	Shared	4096x2160@60Hz(HDMI®), 4096x2160@60Hz(DP)	1x HDMI [®] 2.1 TMDS, 1x DP 1.4	DirectX® 12
Intel® UHD graphics 770	Integrated	Shared	4096x2160@60Hz(HDMI®), 4096x2160@60Hz(DP)	1x HDMI® 2.1 TMDS, 1x DP 1.4	DirectX® 12
NVIDIA® GeForce MX570A	Discrete	4GB GDDR6	4096x2160@60Hz(HDMI®), 4096x2160@60Hz(DP)	1x HDMI® 2.1 TMDS, 1x DP 1.4	DirectX® 12

Monitor Support

Monitor Support

Supports up to 3 independent displays via native display and 2 external monitors; 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]

- Models with Core i3/i5: Up to 64GB DDR5-4800
- Models with Core i7: Up to 64GB DDR5-5200

Memory Slots

Two DDR5 SO-DIMM slots, dual-channel capable

Memory Type**

- DDR5-4800^[2]
- DDR5-5200^[3]
- DDR5-5600

Memory Protection

Non-ECC

Notes:

- [1] The max memory is based on the test results with current Lenovo® memory offerings.
- [2] Installed memory is actually DDR5-5600 but may run as DDR5-4800 depending on the memory support capability of Intel®
- [3] Installed memory is actually DDR5-5600 but may run as DDR5-5200 depending on the memory support capability of Intel®.

Storage

Max Storage Support[1]

- Models with Intel® UHD graphics:
 - Up to two drives, 2x M.2 SSD
 - M.2 SSD up to 2TB each
- Models with NVIDIA® GeForce MX570A:
 - Up to one drives, 1x M.2 SSD
 - M.2 SSD up to 2TB each

Storage Type

Disk Type	Interface	Security
M.2 2280 SSD	PCle® NVMe®, PCle® 4.0 x4	Opal 2.0

RAID

RAID 0/1 support for M.2 SSDs (RAID preset only available via special bid models) $^{\text{[2]}}$

Notes:

- [1] The max capacity of each disk type is based on the test results with current Lenovo® storage offerings.
- [2] Only available for models with integrated graphics

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® ALC233NL-VB2-CG codec

Speakers

Stereo speakers, 3W x2, Dolby Atmos®



Microphone

- Dual-microphone array
- · No microphone

Camera**

- 5.0-megapixel, IR + RGB hybrid, with ThinkShutter (physical switch on/off), ±20° view angle adjustable, Windows® Hello support
- 5.0-megapixel, IR + RGB hybrid, with ThinkShutter (physical switch on/off) and Human Presence Detection (Radar Sensor), ±20° view angle adjustable, Windows® Hello support
- 5.0-megapixel, with ThinkShutter (physical switch on/off)
- · No camera

Power Supply

Power Supply**

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

DESIGN

Display

Display**[1]

	Size	Resolution	Touch	Туре	Brightness	Surface	Aspect Ratio	Contrast Ratio	Color Gamut	Refresh Rate	Viewing Angle (L/R/U/D)	Key Features
2	23.8"	FHD (1920x1080)	Multi- touch	IPS	250nits	Anti- glare	16:9	1000:1	72% NTSC	60Hz	89° / 89° 89° / 89° /	14ms response Time, borderless design, TÜV Rheinland® Low Blue Light (Sotware Solution), TÜV Rheinland® Flicker Free
2	23.8"	FHD (1920x1080)	Non- touch	IPS	250nits	Anti- glare	16:9	1300:1	99% sRGB	60Hz	89° / 89° /	14ms response Time, borderless design, TÜV Rheinland® Low Blue Light (Hardware Solution), TÜV Rheinland® Flicker Free, Eyesafe® Certified 2.0

Touchscreen

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

Notes:

[1] IPS (in-plane switching) technology may refer to IPS, PLS, ADS, AHVA, AAS.

Input Device

Keyboard**

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



Mouse**

- Lenovo® Calliope Mouse (USB connector), black
- Wireless EOS Mouse, black
- No mouse

Mechanical

Buttons

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

Form Factor

AIO (23.8 inches)

Dimensions (WxDxH)[1]

Models	Dimensions			
Models (with UltraFlex V stand, with camera)	Lowest in flat mode: 539.6 x 344.19 x 227.54 mm (21.24 x 13.55 x 8.96 inches) Highest in vertical mode: 539.6 x 252.60 x 472.00 mm (21.24 x 9.94 x 18.58 inches)			
Models (with UltraFlex V stand, without camera)	Lowest in flat mode: 539.6 x 341.42 x 219.50 mm (21.24 x 13.44 x 8.64 inches) Highest in vertical mode: 539.6 x 252.60 x 451.51 mm (21.24 x 9.94 x 17.78 inches)			
Models (with full function monitor stand, with camera)	539.6 x 217.31 x 393.66-501.85 mm (21.24 x 8.56 x 15.50-19.76 inches)			
Models (with full function monitor stand, without camera)	539.6 x 217.31 x 374.15-483.16 mm (21.24 x 8.56 x 14.73-19.02 inches)			
Models (with tilt only stand, with camera)	539.6 x 213.38 x 453.39 mm (21.24 x 8.40 x 17.85 inches)			
Models (with tilt only stand, without camera)	539.6 x 213.38 x 434.39 mm (21.24 x 8.40 x 17.10 inches)			
Models (without stand, with camera)	539.6 x 49.6 x 371 mm (21.24 x 1.95 x 14.61 inches)			
Models (without stand, without camera)	539.6 x 49.6 x 352 mm (21.24 x 1.95 x 13.86 inches)			

Packaging Dimensions (WxDxH)**

- Models (with UltraFlex V stand): 690 x 545 x 238 mm (27.17 x 21.46 x 9.37 inches)
- Models (with full function monitor stand): 660 x 575 x 228 mm (25.98 x 22.64 x 8.98 inches)
- Models (with tilt only stand): 660 x 550 x 216 mm (25.98 x 21.65 x 8.50 inches)

Weight^[2]

Models	Weight
Models (with UltraFlex V stand)	Around 7.83 kg (17.3 lbs)
Models (with full function monitor stand)	Around 8.13 kg (17.9 lbs)
Models (with tilt only stand)	Around 7.61 kg (16.8 lbs)
Models (without stand)	Around 5.53 kg (12.2 lbs)

Packaging Weight

- Models (with UltraFlex V stand): 2.94 kg (6.5 lbs), packaging only
- Models (with full function monitor stand): 2.96 kg (6.5 lbs), packaging only
- Models (with tilt only stand): 2.73 kg (6.0 lbs), packaging only

Case Color

Black

Bays

- 1x 2.5" disk bay (optional, only available via special bid)
- 1x slim ODD bay

Expansion Slots

- Models with Intel® UHD graphics: Three M.2 slots (one for WLAN, two for SSD)
- Models with NVIDIA® GeForce MX570A: Two M.2 slots (one for WLAN, one for SSD)



EOU

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

Stand**

- UltraFlex V stand, supports -5° to +70° tilt, up to 70°±2° lift (up to 179.96mm 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
- Tilt only stand, supports -5° to +20° tilt
- No stand

Mounting

Supports VESA mount 100mm

Others

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.

CONNECTIVITY

Network

WLAN + Bluetooth®**

- Realtek® Wi-Fi® 6 RTL8852BE, 802,11ax Dual Band 2x2 Wi-Fi® + Bluetooth® 5.3, M.2 card^[1]
- Intel® Wi-Fi® 6 AX201, 802.11ax 2x2 Wi-Fi® + Bluetooth® 5.2, M.2 card[2]
- Intel® Wi-Fi® 6E AX211, 802.11ax 2x2 Wi-Fi® + Bluetooth® 5.3, Intel® vPro® technology support, M.2 card[3]
- No WLAN and Bluetooth®

Onboard Ethernet

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

Optional Ethernet

No optional Ethernet

Notes:

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

[2] Bluetooth® 5.2 requires Windows® 11.

Ports[®]

Rear Ports

- 1x USB-C® (USB 10Gbps / USB 3.2 Gen 2), with data transfer and 15W charging
- 3x USB-A (USB 5Gbps / USB 3.2 Gen 1)
- 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-A (USB 10Gbps / 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;

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, FIPS 140-2 certified

Physical Locks

Kensington® Security Slot™, 3 x 7 mm

Chassis Intrusion Switch

- · Chassis intrusion switch
- · No chassis intrusion switch

Fingerprint Reader

No fingerprint reader

Other Security

- (Optional) Smart Human Presence Detection (Camera with Radar Sensor)
- ThinkShutter camera cover (camera models)

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
- 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[1]

- Intel® vPro® Enterprise
- Non-vPro®

Notes:

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

SERVICE

Warranty^[1]

Base Warranty**

- 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® donale
- DP to VGA dongle
- HDMI® to DVI dongle
- HDMI® to VGA dongle
- None

OPERATING REQUIREMENTS

Operating Environment

Temperature

Operating: 5°C (41°F) to 35°C (95°F)
Storage: -20°C (-4°F) to 60°C (140°F)

Relative 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)

ENVIRONMENTAL

Sustainability

Material

65% PCC ABS bezel
95% PCC ABS wired USB keyboard/mouse top/bottom cover
90% PIC recycled plastic EPE cushion
30% OBP used in bag
FSC certified paper in packaging

CERTIFICATIONS

Green Certifications

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

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.

Other Certifications

ThinkCentre M90a Gen 5



Other Certifications

- Eyesafe® Certified 2.0
- (Optional) TÜV Rheinland® Low Blue Light (Hardware Solution)
- (Optional) TÜV Rheinland® Low Blue Light (Software Solution)
- (Optional) TÜV Rheinland® Ultra Low Noise
- TÜV Rheinland® Flicker Free
- 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 option listed under the feature can be configured on selected models.

 Please refer to the model configuration for specific information.
- Feature with *** means that one or more options listed under the feature can be configured on selected models. Please refer to the model configuration for specific information.
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