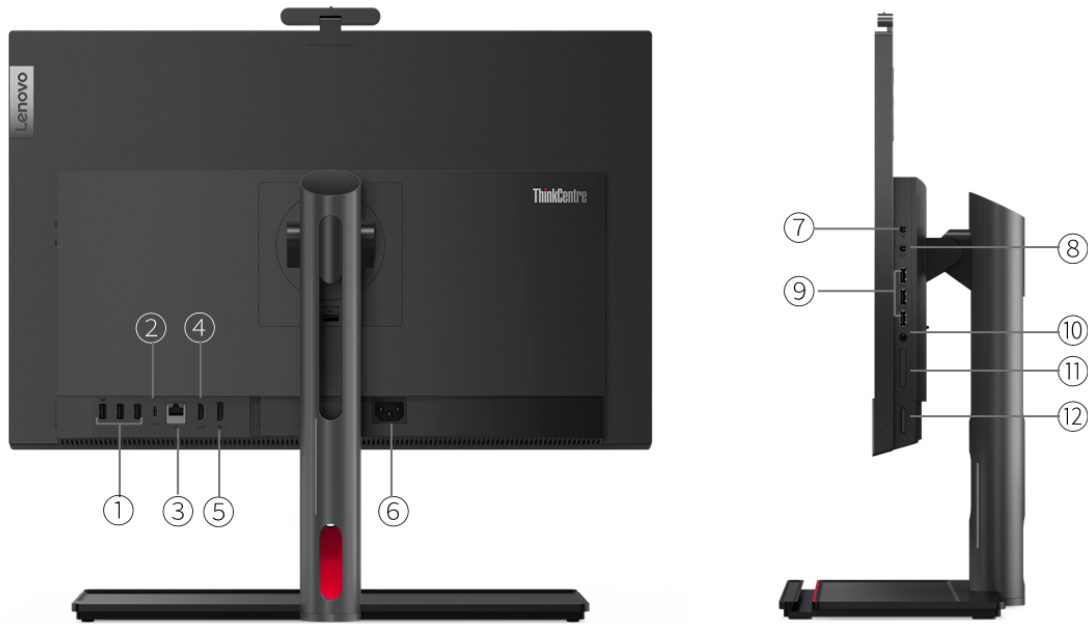


**OVERVIEW**



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<sup>[1]</sup>

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<sup>[1][2]</sup>

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<sup>\*\*\*</sup>

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 Performance	-	Opal2
M.2 2280 SSD	PCIe NVMe, PCIe 4.0 x4 Value	-	Opal2

### RAID<sup>[3]</sup>

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<sup>\*\*</sup>

- 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\*\*<sup>[1]</sup>

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<sup>[1]</sup>**

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

- 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®\*\*<sup>[1]</sup>

- 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<sup>[1]</sup>

#### Rear Ports<sup>[1][2]</sup>

- 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<sup>[1][2]</sup>**

- 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<sup>[1]</sup>**

- 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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