## OVERVIEW

1. Optical drive *
2. Microphone mute button
3. USB-C 3.2 Gen 1
4. 2x USB 3.2 Gen 2
5. Headphone / microphone combo jack (3.5mm)
6. Power button
7. Card reader *
8. DisplayPort
9. Power connector
10. Serial *
11. Ethernet (RJ-45)
12. 4x USB 3.2 Gen 1
13. Kensington Security Slot

Notes:
- Ports with * are only available on selected models
PERFORMANCE

Processor

Processor Family
Intel® Celeron®, Intel Pentium®, or 10th Generation Intel Core™ i3 / i5 / i7 / i9 Processor

<table>
<thead>
<tr>
<th>Processor Name</th>
<th>Cores</th>
<th>Threads</th>
<th>Base Frequency</th>
<th>Max Frequency</th>
<th>Cache</th>
<th>Memory Support</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Celeron G5900</td>
<td>2</td>
<td>2</td>
<td>3.4GHz</td>
<td>-</td>
<td>2MB</td>
<td>DDR4-2666</td>
<td>Intel UHD Graphics 610</td>
</tr>
<tr>
<td>Celeron G5905</td>
<td>2</td>
<td>2</td>
<td>3.5GHz</td>
<td>-</td>
<td>4MB</td>
<td>DDR4-2666</td>
<td>Intel UHD Graphics 610</td>
</tr>
<tr>
<td>Celeron G5920</td>
<td>2</td>
<td>2</td>
<td>3.5GHz</td>
<td>-</td>
<td>2MB</td>
<td>DDR4-2666</td>
<td>Intel UHD Graphics 610</td>
</tr>
<tr>
<td>Celeron G5925</td>
<td>2</td>
<td>2</td>
<td>3.6GHz</td>
<td>-</td>
<td>4MB</td>
<td>DDR4-2666</td>
<td>Intel UHD Graphics 610</td>
</tr>
<tr>
<td>Pentium Gold G6400</td>
<td>2</td>
<td>4</td>
<td>4.0GHz</td>
<td>-</td>
<td>4MB</td>
<td>DDR4-2666</td>
<td>Intel UHD Graphics 610</td>
</tr>
<tr>
<td>Pentium Gold G6500</td>
<td>2</td>
<td>4</td>
<td>4.1GHz</td>
<td>-</td>
<td>4MB</td>
<td>DDR4-2666</td>
<td>Intel UHD Graphics 630</td>
</tr>
<tr>
<td>Pentium Gold G6600</td>
<td>2</td>
<td>4</td>
<td>4.2GHz</td>
<td>-</td>
<td>4MB</td>
<td>DDR4-2666</td>
<td>Intel UHD Graphics 630</td>
</tr>
<tr>
<td>Core i3-10100</td>
<td>4</td>
<td>8</td>
<td>3.6GHz</td>
<td>4.3GHz</td>
<td>6MB</td>
<td>DDR4-2666</td>
<td>Intel UHD Graphics 630</td>
</tr>
<tr>
<td>Core i3-10300</td>
<td>4</td>
<td>8</td>
<td>3.7GHz</td>
<td>4.4GHz</td>
<td>8MB</td>
<td>DDR4-2666</td>
<td>Intel UHD Graphics 630</td>
</tr>
<tr>
<td>Core i3-10320</td>
<td>4</td>
<td>8</td>
<td>3.8GHz</td>
<td>4.6GHz</td>
<td>8MB</td>
<td>DDR4-2666</td>
<td>Intel UHD Graphics 630</td>
</tr>
<tr>
<td>Core i5-10400</td>
<td>6</td>
<td>12</td>
<td>2.9GHz</td>
<td>4.3GHz</td>
<td>12MB</td>
<td>DDR4-2666</td>
<td>Intel UHD Graphics 630</td>
</tr>
<tr>
<td>Core i5-10500</td>
<td>6</td>
<td>12</td>
<td>3.1GHz</td>
<td>4.5GHz</td>
<td>12MB</td>
<td>DDR4-2666</td>
<td>Intel UHD Graphics 630</td>
</tr>
<tr>
<td>Core i5-10600</td>
<td>6</td>
<td>12</td>
<td>3.3GHz</td>
<td>4.8GHz</td>
<td>12MB</td>
<td>DDR4-2666</td>
<td>Intel UHD Graphics 630</td>
</tr>
<tr>
<td>Core i7-10700</td>
<td>8</td>
<td>16</td>
<td>2.9GHz</td>
<td>4.8GHz</td>
<td>16MB</td>
<td>DDR4-2933</td>
<td>Intel UHD Graphics 630</td>
</tr>
<tr>
<td>Core i9-10900</td>
<td>10</td>
<td>20</td>
<td>2.8GHz</td>
<td>5.2GHz</td>
<td>20MB</td>
<td>DDR4-2933</td>
<td>Intel UHD Graphics 630</td>
</tr>
</tbody>
</table>

Operating System

Operating System**
- Windows® 10 Pro 64
- Windows 10 Home 64
- Windows 10 IoT Enterprise
- Ubuntu Linux
- No operating system

Graphics

Graphics**[1]

<table>
<thead>
<tr>
<th>Graphics</th>
<th>Type</th>
<th>Memory</th>
<th>Connector</th>
<th>Max Resolution</th>
<th>Key Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel UHD graphics 630</td>
<td>Integrated</td>
<td>Shared 1x DP 1.2</td>
<td>4096x2304@60Hz(DP)</td>
<td>DirectX® 12</td>
<td></td>
</tr>
<tr>
<td>Intel UHD graphics 610</td>
<td>Integrated</td>
<td>Shared 1x DP 1.2</td>
<td>4096x2304@60Hz(DP)</td>
<td>DirectX 12</td>
<td></td>
</tr>
<tr>
<td>AMD Radeon™ 625</td>
<td>Discrete</td>
<td>2GB GDDR5 1x DP 1.2</td>
<td>4096x2304@60Hz(DP)</td>
<td>DirectX 12</td>
<td></td>
</tr>
</tbody>
</table>

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 2 independent displays via native display and 1 external monitor; supports external monitor via DisplayPort™

Chipset

Chipset
Intel Q470 chipset
Memory
Max Memory
Up to 64GB DDR4-2933
Memory Slots
Two DDR4 DIMM slots, dual-channel capable
Memory Type
- DDR4-2666
- DDR4-2933

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
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
- Optional Intel Optane™ Memory, M.2

Storage Type
<table>
<thead>
<tr>
<th>Disk Type</th>
<th>Interface</th>
<th>RPM</th>
<th>Security</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5&quot; SATA HDD</td>
<td>SATA 6Gb/s</td>
<td>5.4K</td>
<td></td>
</tr>
<tr>
<td>2.5&quot; SATA HDD</td>
<td>SATA 6Gb/s</td>
<td>7.2K</td>
<td></td>
</tr>
<tr>
<td>M.2 2242 SSD</td>
<td>PCIe NVMe, PCIe 3.0 x2</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>M.2 2280 SSD</td>
<td>PCIe NVMe, PCIe 3.0 x4</td>
<td>-</td>
<td>Opal</td>
</tr>
<tr>
<td>Intel Optane Memory M10</td>
<td>PCIe NVMe, PCIe 3.0 x2</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

RAID
RAID 0/1 support for HDDs

Notes:
1. RAID is not preset by default, user can config RAID 0/1 according to the demand

Removable Storage
Optical
- DVD-ROM, SATA 1.5Gb/s, slim (9.0mm)
- DVD burner (DVD±RW), SATA 1.5Gb/s, slim (9.0mm)
- None

Card Reader
- 3-in-1 card reader
- No card reader

Multi-Media
Audio Chip
High Definition (HD) Audio, Realtek® ALC233 codec

Speakers
Stereo speakers, 3W x2

Microphone
Dual array microphone

Camera
- 1080p, with ThinkShutter (physical switch on/off)
- IR & 1080p, with ThinkShutter (physical switch on/off), Windows Hello support
**Power Supply**

<table>
<thead>
<tr>
<th>Power Type</th>
<th>Efficiency</th>
<th>Key Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>150W Adapter</td>
<td>89%</td>
<td>Autosensing</td>
</tr>
<tr>
<td>170W Adapter</td>
<td>89%</td>
<td>Autosensing</td>
</tr>
</tbody>
</table>

**DESIGN**

**Display**

<table>
<thead>
<tr>
<th>Size</th>
<th>Resolution</th>
<th>Touch Type</th>
<th>Brightness</th>
<th>Surface</th>
<th>Aspect Ratio</th>
<th>Contrast Ratio</th>
<th>Color Gamut</th>
<th>Viewing Angle</th>
<th>Key Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>23.8&quot;</td>
<td>FHD (1920x1080)</td>
<td>None</td>
<td>250 nits</td>
<td>Anti-glare</td>
<td>16:9</td>
<td>1000:1</td>
<td>-</td>
<td>horizontal: +/- 89°, vertical: +/- 89°</td>
<td>Borderless design, support low blue light mode</td>
</tr>
<tr>
<td>23.8&quot;</td>
<td>FHD (1920x1080)</td>
<td>None</td>
<td>350 nits</td>
<td>Anti-glare</td>
<td>16:9</td>
<td>1000:1</td>
<td>-</td>
<td>horizontal: +/- 89°, vertical: +/- 89°</td>
<td>Borderless design, support low blue light mode, PrivacyGuard</td>
</tr>
<tr>
<td>23.8&quot;</td>
<td>FHD (1920x1080)</td>
<td>Multi-touch</td>
<td>250 nits</td>
<td>Anti-glare</td>
<td>16:9</td>
<td>1000:1</td>
<td>-</td>
<td>horizontal: +/- 89°, vertical: +/- 89°</td>
<td>Borderless design, support low blue light mode</td>
</tr>
</tbody>
</table>

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

**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
- PrivacyGuard on/off button (PrivacyGuard model only)
- Microphone mute button

**Form Factor**
- AIO (23.8 inches)
- Dimensions (WxDxH)
### ThinkCentre M90a - November 24 2021

#### Models and Dimensions

<table>
<thead>
<tr>
<th>Models</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Models (with full function monitor stand, with ODD, with PrivacyGuard, with camera)</td>
<td>541 x 200 x 414.2-494.2 mm (21.3 x 7.9 x 16.3-19.5 inches)</td>
</tr>
<tr>
<td>Models (with full function monitor stand, with ODD, without PrivacyGuard, with camera)</td>
<td>541 x 200 x 414.2-494.2 mm (21.3 x 7.9 x 16.3-19.5 inches)</td>
</tr>
<tr>
<td>Models (with full function monitor stand, without ODD, with PrivacyGuard, with camera)</td>
<td>541 x 200 x 414.2-494.2 mm (21.3 x 7.9 x 16.3-19.5 inches)</td>
</tr>
<tr>
<td>Models (with full function monitor stand, without ODD, without PrivacyGuard, with camera)</td>
<td>541 x 200 x 414.2-494.2 mm (21.3 x 7.9 x 16.3-19.5 inches)</td>
</tr>
</tbody>
</table>
| Models (with UltraFlex IV stand, with ODD, without PrivacyGuard, with camera) | Lowest in flat mode: 541 x 312.8 x 227.4 mm (21.3 x 12.3 x 9.0 inches)  
Highest in vertical mode: 541 x 232.7 x 467.7 mm (21.3 x 9.2 x 18.4 inches) |
| Models (with UltraFlex IV stand, without ODD, without PrivacyGuard, with camera) | Lowest in flat mode: 541 x 312.8 x 227.4 mm (21.3 x 12.3 x 9.0 inches)  
Highest in vertical mode: 541 x 232.7 x 467.7 mm (21.3 x 9.2 x 18.4 inches) |
| Models (without stand, with ODD, with PrivacyGuard, with camera) | 541 x 61.3 x 340.5 mm (21.3 x 2.4 x 13.4 inches) |
| Models (without stand, with ODD, without PrivacyGuard, with camera) | 541 x 57.8 x 340.5 mm (21.3 x 2.3 x 13.4 inches) |
| Models (without stand, without ODD, with PrivacyGuard, with camera) | 541 x 49.5 x 340.5 mm (21.3 x 1.9 x 13.4 inches) |
| Models (without stand, without ODD, without PrivacyGuard, with camera) | 541 x 46 x 340.5 mm (21.3 x 1.8 x 13.4 inches) |

#### Weight

<table>
<thead>
<tr>
<th>Models</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Models (with full function monitor stand, with ODD, with PrivacyGuard, with camera)</td>
<td>8.71 kg (19.2 lbs)</td>
</tr>
<tr>
<td>Models (with full function monitor stand, with ODD, without PrivacyGuard, with camera)</td>
<td>7.84 kg (17.3 lbs)</td>
</tr>
<tr>
<td>Models (with full function monitor stand, without ODD, with PrivacyGuard, with camera)</td>
<td>8.39 kg (18.5 lbs)</td>
</tr>
<tr>
<td>Models (with full function monitor stand, without ODD, without PrivacyGuard, with camera)</td>
<td>7.51 kg (16.6 lbs)</td>
</tr>
<tr>
<td>Models (with UltraFlex IV stand, with ODD, without PrivacyGuard, with camera)</td>
<td>8.58 kg (18.9 lbs)</td>
</tr>
<tr>
<td>Models (with UltraFlex IV stand, without ODD, without PrivacyGuard, with camera)</td>
<td>8.26 kg (18.2 lbs)</td>
</tr>
<tr>
<td>Models (without stand, with ODD, with PrivacyGuard, with camera)</td>
<td>6.45 kg (14.2 lbs)</td>
</tr>
<tr>
<td>Models (without stand, with ODD, without PrivacyGuard, with camera)</td>
<td>5.57 kg (12.3 lbs)</td>
</tr>
<tr>
<td>Models (without stand, without ODD, with PrivacyGuard, with camera)</td>
<td>6.13 kg (13.5 lbs)</td>
</tr>
<tr>
<td>Models (without stand, without ODD, without PrivacyGuard, with camera)</td>
<td>5.25 kg (11.6 lbs)</td>
</tr>
</tbody>
</table>

#### Case Color
- Black

#### Bays
- 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 and stand assembly / removal

#### Stand
- Full function monitor stand, supports -5° to +30° tilt, up to 80mm lift
- UltraFlex IV stand, supports -5° to +70° tilt, up to 164mm lift (flat mode) / up to 115mm lift (vertical mode)
- No stand

#### Mounting
Supports VESA mount 100mm

CONNECTIVITY

Network

Onboard Ethernet
Gigabit Ethernet, Intel Ethernet Connection I219-LM, 1x RJ45, supports Wake-on-LAN

Optional Ethernet
No optional Ethernet

WLAN + Bluetooth®

- Realtek RTL8822CE, 802.11ac Dual Band 2x2 Wi-Fi® + Bluetooth 5.0, M.2 card
- Intel Wireless-AC 9560, 802.11ac Dual Band 2x2 Wi-Fi + Bluetooth 5.0, M.2 card
- Intel Wi-Fi 6 AX201, 802.11ax 2x2 Wi-Fi + Bluetooth 5.1, Intel vPro technology support, M.2 Card
- No WLAN and Bluetooth

Notes:
1. This system does not support Power Over Ethernet (PoE). If the system is used in a PoE environment, then a Network Isolator is required to prevent possible damage to the system, PoE equipment, or both.

Ports

Rear Ports
- 4x USB 3.2 Gen 1 (one supports Smart Power On)
- 1x DisplayPort
- 1x Ethernet (RJ-45)

Optional Rear Ports
1x serial

Right Ports
- 2x USB 3.2 Gen 2
- 1x USB-C 3.2 Gen 1 (5V/3A charging)
- 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: 40 Gbit/s;
FireWire 400: 400 Mbit/s;
FireWire 800: 800 Mbit/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® 1.4 dongle
- DP to VGA dongle
- No monitor cable

SECURITY & PRIVACY

Security

Security Chip
Discrete TPM 2.0, TCG certified

**Physical Locks**
- Kensington® Security Slot

**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**
- Intel vPro with Intel AMT 14.0
- None

Notes:
1. Require choosing a vPro-support Wi-Fi adapter to enable vPro function through wireless connection

**SERVICE**

**Warranty**

**Base Warranty**
- 1-year depot service
- 1-year limited onsite service
- 3-year limited onsite service
- No base 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: -15.2 m (-50 ft) to 3048 m (10,000 ft)
- Storage: -15.2 m (-50 ft) to 12192 m (40,000 ft)

**CERTIFICATIONS**
Green Certifications

Green Certifications\(^{[1]}\)

- EPEAT\(^{TM}\) Silver
- ENERGY STAR\(^{®}\) 8.0
- ErP Lot 3
- TCO Certified 8.0
- TCO edge
- RoHS compliant

Notes:

1. Energy Star 8.0 and EPEAT are only available for MT 11CD/11CE, TCO 8.0 and TCO Edge are not for the models with PrivacyGaurd.

Other Certifications

Other Certifications

- TÜV Rheinland\(^{®}\) Eye Comfort Certification
- TÜV Rheinland Low Blue Light
- (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)

- 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.

- Lenovo reserves the right to change specifications or other product information without notice. Lenovo is not responsible for photographic or typographical errors. LENOVO PROVIDES THIS PUBLICATION “AS IS,” WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some jurisdictions do not allow disclaimer of express or implied warranties in certain transactions, therefore this disclaimer may not apply to you.

- The specifications on this page may not be available in all regions, and may be changed or updated without notice.