OVERVIEW

1. Power connector
2. Thunderbolt 4
3. Thunderbolt 4
4. HDMI
5. Headphone (3.5mm)
6. SD Express 7.0 card reader
7. Nano-SIM card slot *
8. USB 3.2 Gen 1
9. USB 3.2 Gen 1 (Always On)
10. Kensington Nano Security Slot

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

Processor

**Processor Family**
12th Generation H series Intel® Core™ i7 / i9 processor, supports processors up to 14 cores; up to 5.0 GHz; up to 45W TDP

<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>Core i7-12700H</td>
<td>14 (6 P-core + 8 E-core)</td>
<td>20</td>
<td>P-core 2.3GHz / E-core 1.7GHz</td>
<td>P-core 4.7GHz / E-core 3.5GHz</td>
<td>24MB</td>
<td>DDR5-4800</td>
<td>Intel Iris® Xe Graphics</td>
</tr>
<tr>
<td>Core i7-12800H</td>
<td>14 (6 P-core + 8 E-core)</td>
<td>20</td>
<td>P-core 2.4GHz / E-core 1.8GHz</td>
<td>P-core 4.8GHz / E-core 3.7GHz</td>
<td>24MB</td>
<td>DDR5-4800</td>
<td>Intel Iris Xe Graphics</td>
</tr>
<tr>
<td>Core i9-12900H</td>
<td>14 (6 P-core + 8 E-core)</td>
<td>20</td>
<td>P-core 2.5GHz / E-core 1.8GHz</td>
<td>P-core 5.0GHz / E-core 3.8GHz</td>
<td>24MB</td>
<td>DDR5-4800</td>
<td>Intel Iris Xe Graphics</td>
</tr>
</tbody>
</table>

Notes:
1. Intel Iris Xe Graphics capability requires system to be configured with dual-channel memory. On the system with single-channel memory, Intel Iris Xe Graphics will function as Intel UHD Graphics.

Operating System

**Operating System**
- Windows® 11 Pro 64
- Windows 11 Home 64
- Windows 11 Home 64 Single Language
- Windows 11 DG Windows 10 Pro 64
- Fedora Linux
- Ubuntu Linux LTS
- Red Hat Enterprise Linux 8.6 (certified only, available in late 2022, for detailed and latest information, please visit Red Hat Certified Hardware)
- No operating system

**Graphics**

<table>
<thead>
<tr>
<th>Graphics</th>
<th>Type</th>
<th>Memory</th>
<th>TGP</th>
<th>Key Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel Iris Xe Graphics</td>
<td>Integrated</td>
<td>Shared</td>
<td>TDP</td>
<td>DirectX® 12.1</td>
</tr>
<tr>
<td>NVIDIA® GeForce RTX™ 3070 Ti Laptop GPU</td>
<td>Discrete</td>
<td>8GB GDDR6</td>
<td>80W</td>
<td>Resizable BAR, Dynamic Boost 2.0, VR ready, DirectX 12</td>
</tr>
<tr>
<td>NVIDIA GeForce RTX 3080 Ti Laptop GPU</td>
<td>Discrete</td>
<td>16GB GDDR6</td>
<td>80W</td>
<td>Resizable BAR, Dynamic Boost 2.0, VR ready, DirectX 12</td>
</tr>
<tr>
<td>NVIDIA RTX A1000 Laptop GPU</td>
<td>Discrete</td>
<td>4GB GDDR6</td>
<td>35W</td>
<td>Dynamic Boost 2.0, DirectX 12</td>
</tr>
<tr>
<td>NVIDIA RTX A2000 8GB Laptop GPU</td>
<td>Discrete</td>
<td>8GB GDDR6</td>
<td>35W</td>
<td>Dynamic Boost 2.0, DirectX 12</td>
</tr>
<tr>
<td>NVIDIA RTX A3000 12 GB Laptop GPU</td>
<td>Discrete</td>
<td>12GB GDDR6 ECC</td>
<td>80W</td>
<td>Dynamic Boost 2.0, DirectX 12</td>
</tr>
<tr>
<td>NVIDIA RTX A4500 Laptop GPU</td>
<td>Discrete</td>
<td>16GB GDDR6 ECC</td>
<td>80W</td>
<td>Dynamic Boost 2.0, DirectX 12</td>
</tr>
<tr>
<td>NVIDIA RTX A5500 Laptop GPU</td>
<td>Discrete</td>
<td>16GB GDDR6 ECC</td>
<td>80W</td>
<td>Dynamic Boost 2.0, DirectX 12</td>
</tr>
</tbody>
</table>

Notes:
1. Intel Iris Xe Graphics capability requires system to be configured with dual-channel memory. On the system with single-channel memory, Intel Iris Xe Graphics will function as Intel UHD graphics.
Monitor Support

Monitor Support
Supports up to 4 independent displays (native display and 3 external monitors via HDMI® and Thunderbolt™):
• HDMI supports up to 3840x2160@60Hz on Intel Iris Xe models; 7680x4320@60Hz on discrete NVIDIA graphics models
• Thunderbolt supports up to 5120x3200@60Hz

Chipset

Chipset
Intel SoC (System on Chip) platform

Memory

Max Memory[1]
Up to 64GB DDR5-4800

Memory Slots
Two DDR5 SO-DIMM slots, dual-channel capable

Memory Type
DDR5-4800 non-ECC

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[2]
• Models with integrated graphics or NVIDIA RTX A1000/A2000: up to two drives, 2x M.2 SSD
  • M.2 2280 SSD up to 8TB, 4TB each
  • RAID 0/1 support
• Models with NVIDIA GeForce/RTX A3000/A4500/A5500: one drive, up to 4TB M.2 2280 SSD

Storage Slot
• Models with Intel integrated graphics or NVIDIA RTX A1000/A2000: two M.2 2280 PCIe® 4.0 x4 slots
• Models with NVIDIA GeForce/RTX A3000/A4500/A5500: one M.2 2280 PCIe 4.0 x4 slot

Storage Type[2]

<table>
<thead>
<tr>
<th>Disk Type</th>
<th>Interface</th>
<th>RPM</th>
<th>Offering</th>
<th>Security</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.2 2280 SSD</td>
<td>PCIe NVMe®, PCIe 4.0 x4 Performance</td>
<td>-</td>
<td>512GB / 1TB / 2TB / 4TB</td>
<td>Opal2</td>
</tr>
<tr>
<td>M.2 2280 SSD</td>
<td>PCIe NVMe, PCIe x4</td>
<td>-</td>
<td>256GB / 512GB / 1TB</td>
<td>Opal2</td>
</tr>
</tbody>
</table>

RAID
• RAID 0/1 support (for models with integrated graphics or NVIDIA RTX A1000/A2000)
• No support

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. PCIe x4 SSD may be PCIe 3.0 x4 or PCIe 4.0 x4 as substitution.

Removable Storage

Card Reader
SD Express 7.0 card reader

Multi-Media

Audio Chip
High Definition (HD) Audio, Realtek® ALC3306 codec

Speakers
Stereo speakers, 2W x2, optimized with Dolby® Atmos®

Microphone
Dual array microphone, far-field, Dolby Voice

**Camera**
- FHD 1080p, with privacy shutter, fixed focus
- IR & FHD 1080p hybrid, with privacy shutter, fixed focus
- No camera

**Battery**
Integrated Li-Polymer 90Wh battery, supports Rapid Charge (charge up to 80% in 1hr)

**Power Adapter**

- 135W slim tip (3-pin) AC adapter, 100-240V, 50-60Hz
- 170W slim tip (3-pin) AC adapter, 100-240V, 50-60Hz
- 230W slim tip (3-pin) AC adapter, 100-240V, 50-60Hz

Notes:
1. AC adapter offerings depend on the country.

### DESIGN

**Display**

<table>
<thead>
<tr>
<th>Size</th>
<th>Resolution</th>
<th>Touch</th>
<th>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>16.0&quot;</td>
<td>WUXGA (1920x1200)</td>
<td>None</td>
<td>IPS</td>
<td>300 nits</td>
<td>Anti-glare</td>
<td>16:10</td>
<td>1200:1</td>
<td>100% sRGB</td>
<td>178º</td>
<td>Low Blue Light, X-Rite® Pantone® Factory Color Calibration, 86.42% screen to body ratio, DC dimming</td>
</tr>
<tr>
<td>16.0&quot;</td>
<td>WQXGA (2560x1600)</td>
<td>None</td>
<td>IPS</td>
<td>500 nits</td>
<td>Anti-glare</td>
<td>16:10</td>
<td>1200:1</td>
<td>100% sRGB</td>
<td>178º</td>
<td>X-Rite Pantone Factory Color Calibration, 165Hz, Low blue light, 86.42% screen to body ratio, DC dimming</td>
</tr>
<tr>
<td>16.0&quot;</td>
<td>WQUXGA (3840x2400)</td>
<td>None</td>
<td>IPS</td>
<td>600 nits</td>
<td>Anti-glare</td>
<td>16:10</td>
<td>1500:1</td>
<td>100% Adobe® RGB</td>
<td>170º</td>
<td>X-Rite Pantone Factory Color Calibration, Low blue light, Dolby Vision™, DisplayHDR™ 400, 86.08% screen to body ratio, DC dimming</td>
</tr>
<tr>
<td>16.0&quot;</td>
<td>WQUXGA (3840x2400)</td>
<td>Multi-touch</td>
<td>IPS</td>
<td>600 nits</td>
<td>Anti-reflection, Anti-smudge</td>
<td>16:10</td>
<td>1500:1</td>
<td>100% Adobe® RGB</td>
<td>170º</td>
<td>X-Rite Pantone Factory Color Calibration, Low blue light, Dolby Vision, DisplayHDR 400, 86.08% screen to body ratio, DC dimming</td>
</tr>
</tbody>
</table>

**Color Calibration**
X-Rite Pantone factory color calibration

**Touchscreen**
- OGM multi-touch, 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.cairecycle.ca.gov/Electronics/Consumer

**Input Device**

**Pen**
- Lenovo Precision Pen 2 with built-in rechargeable battery, 4096 levels of pressure sensitivity, tilt detection, supports WGP, AES 2.0 and MPP 2.0 protocols. For more information, please read [Lenovo Precision Pen 2](#).
- No pen (pen sold separately)
- No support (non-touch display doesn't support pen input)

**Keyboard**
- 6-row, spill-resistant, multimedia Fn keys with Unified Communications controls

**Keyboard Backlight**
- LED backlight

**UltraNav™**
- 3-button TrackPoint® pointing device and glass surface multi-touch touchpad, 67.6 x 115 mm (2.66 x 4.53 inches)

**Mechanical**

**Dimensions (WxDxH)**

<table>
<thead>
<tr>
<th>Models</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Touch models</td>
<td>359.5 x 253.8 x 18.2 mm (14.15 x 9.99 x 0.72 inches)</td>
</tr>
<tr>
<td>Non-touch models</td>
<td>359.5 x 253.8 x 17.7 mm (14.15 x 9.99 x 0.7 inches)</td>
</tr>
</tbody>
</table>

**Weight**

<table>
<thead>
<tr>
<th>Models</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-touch models</td>
<td>1.81 kg (3.99 lbs)</td>
</tr>
<tr>
<td>Touch models</td>
<td>1.86 kg (4.1 lbs)</td>
</tr>
</tbody>
</table>

**Case Color**
- Black
- 37-degree twill CF weave

**Case Material**
- CFRP / GFRP (top), Aluminium (bottom)
- CFRP / GFRP hybrid (top), Aluminium (bottom)

**Notes:**
- 1. The system dimensions and weight vary depending on configurations.

**CONNECTIVITY**

**Network**

**Ethernet**
- No onboard Ethernet

**WLAN + Bluetooth®**
- Intel Wi-Fi® 6E AX211, 802.11ax 2x2 Wi-Fi + Bluetooth 5.1

**WWAN**
- Fabcom FM350-GL 5G NR module, M.2 Card, with embedded eSIM functionality
- No support

**SIM Card**
- No SIM card inbox

**NFC**
- Near Field Communication
- No support
Notes:
1. Ethernet support via optional docking or Lenovo USB-C® to Ethernet Adapter
2. Bluetooth 5.2 is hardware ready but may run at a lower version due to OS limitation

Ports
Standard Ports
- Models with NVIDIA graphics: 1x HDMI, up to 8K/60Hz
- Models with integrated graphics: 1x HDMI, up to 4K/60Hz
- 2x USB 3.2 Gen 1 (one Always On)
- 2x Thunderbolt 4 / USB4® 40Gbps (support data transfer, Power Delivery 3.0 and DisplayPort™ 1.4)
- 1x Headphone / microphone combo jack (3.5mm)
- 1x Power connector
- 1x SD Express 7.0 card reader

Optional Ports
1x Nano-SIM card slot (WWAN support models)

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

Docking

Monitor Cable

Security
Security Chip
Discrete TPM 2.0, TCG certified

Physical Locks
Kensington® Nano Security Slot™, 2.5 x 6 mm

Smart Card Reader
No smart card reader

Fingerprint Reader
Touch style fingerprint reader on power button, match-on-chip

BIOS Security
- Power-on password
- Supervisor password
- NVMe password
- Self-healing BIOS

Other Security
- (Optional) Camera privacy shutter
- (Optional) IR camera for Windows Hello

MANAGEABILITY
**System Management**

- Intel vPro Enterprise
- Non-vPro

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**Notes:**

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

**SERVICE**

**Warranty**

**Base Warranty**

- 1-year courier or carry-in service
- 1-year courier or carry-in with 2-year system board service (Korea only)
- 1-year limited onsite service
- 3-year (1-yr battery) courier or carry-in service
- 3-year (1-yr battery) limited onsite service
- No base warranty

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**Notes:**

1. More information of warranty policy, please access [https://pcsupport.lenovo.com/warranty](https://pcsupport.lenovo.com/warranty)

**ENVIRONMENTAL**

**Sustainability**

**Material**

- Low-temperature solder
- 90% recycled and/or sustainable packaging

**Operating Environment**

**Temperature**

- Operating: 5°C (41°F) to 35°C (95°F)
- Storage and transportation in original shipping packaging: -20°C (-4°F) to 60°C (140°F)
- Storage without package: 5°C (41°F) to 43°C (109°F)

**Humidity**

- Operating: 8% to 95% at wet-bulb temperature 23°C (73°F)
- Storage and transportation: 5% to 95% at wet-bulb temperature 27°C (81°F)

**Altitude**

- Maximum altitude (without pressurization): 3048 m (10,000 ft)

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**Notes:**

1. When you charge the battery, its temperature must be no lower than 10°C (50°F).

**ACCESSORIES**

**Bundled Accessories**

- Lenovo USB-C to Ethernet Adapter (1Gbps)
- Lenovo USB-C to Ethernet Adapter (2.5Gbps)
- None

**CERTIFICATIONS**

**Green Certifications**
Green Certifications
• EPEAT™ Gold
• ENERGY STAR® 8.0
• RoHS compliant

Other Certifications
Mil-Spec Test
MIL-STD-810H military test passed

Other Certifications
TÜV Rheinland® Low Blue Light

ISV Certifications
Please visit ISV certifications for Lenovo Workstations

• Feature with ** means that only one offering listed under the feature is configured on selected models.

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