# OVERVIEW

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<td>Power connector</td>
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<td>Thunderbolt 4</td>
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<td>3</td>
<td>Thunderbolt 4</td>
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<td>HDMI</td>
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<td>Headphone (3.5mm)</td>
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<td>SD Express 7.0 card reader</td>
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<td>USB 3.2 Gen 1</td>
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<td>10</td>
<td>Kensington Nano Security Slot</td>
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</table>

**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>

Operating System

Operating System
- Windows® 11 Pro 64
- Windows 11 Home 64
- Windows 11 DG Windows 10 Pro 64
- Fedora Linux
- Ubuntu Linux
- Red Hat Enterprise Linux (certified only)
- No operating system

Graphics

<table>
<thead>
<tr>
<th>Graphics 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>Share CPU 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>
</tr>
<tr>
<td>NVIDIA GeForce RTX 3080 Ti Laptop GPU</td>
<td>Discrete</td>
<td>16GB GDDR6</td>
<td>80W</td>
</tr>
<tr>
<td>NVIDIA RTX A1000 Laptop GPU</td>
<td>Discrete</td>
<td>4GB GDDR6</td>
<td>35W</td>
</tr>
<tr>
<td>NVIDIA RTX A2000 8GB Laptop GPU</td>
<td>Discrete</td>
<td>8GB GDDR6</td>
<td>35W</td>
</tr>
<tr>
<td>NVIDIA RTX A3000 12 GB Laptop GPU</td>
<td>Discrete</td>
<td>12GB GDDR6 ECC</td>
<td>80W</td>
</tr>
<tr>
<td>NVIDIA RTX A4500 Laptop GPU</td>
<td>Discrete</td>
<td>16GB GDDR6 ECC</td>
<td>80W</td>
</tr>
<tr>
<td>NVIDIA RTX A5500 Laptop GPU</td>
<td>Discrete</td>
<td>16GB GDDR6 ECC</td>
<td>80W</td>
</tr>
</tbody>
</table>

Notes:
1. Intel Iris Xe Graphics requires dual-channel memory. On models with single-channel memory, Intel Iris Xe Graphics will function as Intel UHD graphics.
2. Vapor Chamber cooling is available only with NV RTX A3000 /A4500 / A5500 and GeForce RTX 3070 / 3080 GPUs.

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

**Intel SoC (System on Chip) platform**

Memory

**Max Memory**

- 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**

- Models with Intel Iris Xe 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 NVIDIA GeForce/RTX A3000/A4500/A5500: one M.2 2280 PCIe® Gen 4x4 slot, supports M.2 2280 SSD
- Models with Intel Iris Xe or NVIDIA RTX A1000/A2000: two M.2 2280 PCIe Gen 4x4 slots, supports M.2 2280 SSD

**Storage Type**

<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 Intel Iris Xe 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
Power Adapter**[1]
- 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>View 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>178°</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>178°</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>170°</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>170°</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.callrecycle.ca.gov/Electronics/Consumer
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
- 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

Onboard Ethernet
- Ethernet support via optional Lenovo USB-C to Ethernet Adapter
- USB-C to GbE RJ-45 Dongle
- USB-C to 2.5GbE RJ-45 Dongle

WLAN + Bluetooth
- Intel Wi-Fi® 6E AX211, 802.11ax 2x2 Wi-Fi + Bluetooth 5.2

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

SIM Card
- No SIM card inbox

NFC
- Near Field Communication
- No support

Notes:
1. 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 GbE RJ-45, via USB-C to RJ-45 dongle
- 1x 2.5GbE RJ-45, via USB-C to RJ-45 dongle
- 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

Docking
Various docking solutions supported via Thunderbolt or USB-C.
For more compatible docking solutions, please visit [Docking for ThinkPad® P1 Gen 5](#)

Monitor Cable

Monitor Cable
- (Optional) Lenovo USB-C to DisplayPort Adapter
- (Optional) Lenovo HDMI to VGA Monitor Adapter
- (Optional) Lenovo USB-C to VGA Adapter
- No monitor cable

SECURITY & PRIVACY

Security

Security Chip**
- Discrete TPM 2.0, TCG certified
- Firmware TPM 2.0 integrated in chipset

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
System Management
• Intel vPro Enterprise
• Non-vPro

Notes:
1. Intel vPro offers a superset of DASH’s defined capabilities.

SERVICE
Warranty
Base Warranty
• 1-year depot service
• 1-year depot with 2-year system board service (Korea only)
• 1-year limited onsite service
• 3-year (1-yr battery) depot service
• 3-year (1-yr battery) limited onsite service
• No base warranty

Notes:
1. More information of warranty policy, please access 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)

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

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

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

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TÜV Rheinland® Low Blue Light

**ISV Certifications**

Please visit ISV certifications for Lenovo Workstations

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