OVERVIEW

1. USB 3.2 Gen 1 (one Always On) | 7. USB 3.2 Gen 1
2. USB-C 3.2 Gen 2 | 8. Kensington Nano Security Slot
3. Headphone / microphone combo jack (3.5mm) | 9. Power connector
5. Smart card reader * | 11. Thunderbolt 4
6. SD Express 7.0 card reader | 12. HDMI

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

Processor

Processor Family

12th Generation HX series Intel® Core™ i5 / i7 / i9 processor, supports processors up to 16 cores; up to 5.0 GHz; up to 55W 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 i5-12600HX</td>
<td>12 (4 P-core + 8 E-core)</td>
<td>16</td>
<td>P-core 2.5GHz / E-core 1.8GHz</td>
<td>P-core 4.6GHz / E-core 3.3GHz</td>
<td>18MB</td>
<td>DDR5-4800</td>
<td>Intel UHD Graphics</td>
</tr>
<tr>
<td>Core i7-12850HX</td>
<td>16 (8 P-core + 8 E-core)</td>
<td>24</td>
<td>P-core 2.1GHz / E-core 1.5GHz</td>
<td>P-core 4.8GHz / E-core 3.4GHz</td>
<td>25MB</td>
<td>DDR5-4800</td>
<td>Intel UHD Graphics</td>
</tr>
<tr>
<td>Core i9-12950HX</td>
<td>16 (8 P-core + 8 E-core)</td>
<td>24</td>
<td>P-core 2.3GHz / E-core 1.7GHz</td>
<td>P-core 5.0GHz / E-core 3.6GHz</td>
<td>30MB</td>
<td>DDR5-4800</td>
<td>Intel UHD Graphics</td>
</tr>
<tr>
<td>Core i7-12800HX</td>
<td>16 (8 P-core + 8 E-core)</td>
<td>24</td>
<td>P-core 2.0GHz / E-core 1.5GHz</td>
<td>P-core 4.8GHz / E-core 3.4GHz</td>
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<td>30MB</td>
<td>DDR5-4800</td>
<td>Intel UHD 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)

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>NVIDIA® RTX A1000 Laptop GPU</td>
<td>Discrete</td>
<td>4GB GDDR6</td>
<td>60W</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>60W</td>
<td>Dynamic Boost 2.0, DirectX® 12</td>
</tr>
<tr>
<td>NVIDIA RTX A3000 12GB Laptop GPU</td>
<td>Discrete</td>
<td>12GB GDDR6 ECC</td>
<td>115W</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>115W</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>115W</td>
<td>Dynamic Boost 2.0, DirectX® 12</td>
</tr>
</tbody>
</table>

Monitor Support

Monitor Support
Supports up to 5 independent displays (native display and 4 external monitors via HDMI®, USB-C® and Thunderbolt™)
- HDMI supports up to 3840x2160@60Hz on integrated or Arc graphics models; 7680x4320@60Hz on NVIDIA graphics models
- USB-C supports up to 5120x3200@60Hz
- Thunderbolt supports up to 5120x3200@60Hz

Chipset

Chipset
Intel WM690 chipset

Memory

Max Memory
Up to 128GB DDR5-4800
Memory Slots
Four DDR5 SO-DIMM slots, dual-channel capable

Memory Type
- DDR5-4800 ECC
- DDR5-4800 non-ECC

Memory Protection
ECC on models with ECC DIMMs and ECC capable processor

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.
2. Installed memory is actually DDR5-4800 but runs at DDR5-4000 due to processor limitation

Storage

Storage Support
Up to two drives, 2x M.2 SSD
- M.2 2280 SSD up to 8TB, 4TB each
- RAID 0/1 support

Storage Slot
Two M.2 slots
- Two M.2 2280 PCIe® Gen 4x4 slots, support 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 4.0 x4 Value</td>
<td>-</td>
<td>256GB / 512GB / 1TB</td>
<td>Opal2</td>
</tr>
</tbody>
</table>

RAID
RAID 0/1 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.

Removable Storage
Optical
None
Card Reader
SD Express 7.0 card reader

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

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

Microphone
- Dual array microphone, far-field, Dolby Voice
- No microphone

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

Battery
Integrated Li-Polymer 94Wh battery, supports Rapid Charge (charge up to 80% in 1hr) with 230W AC adapter
**Power Adapter**

- 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”</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, 83.4% screen to body ratio, DC dimming</td>
</tr>
<tr>
<td>16.0”</td>
<td>WQXGA (2560x1600)</td>
<td>None</td>
<td>IPS</td>
<td>400 nits</td>
<td>Anti-glare</td>
<td>16:10</td>
<td>1200:1</td>
<td>100% sRGB</td>
<td>170°</td>
<td>Low Blue Light, X-Rite Pantone Factory Color Calibration, 83.4% screen to body ratio, DC dimming</td>
</tr>
<tr>
<td>16.0”</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>178°</td>
<td>Low Blue Light, X-Rite Pantone Factory Color Calibration, 83.4% screen to body ratio, DC dimming</td>
</tr>
<tr>
<td>16.0”</td>
<td>WQUXGA (3840x2400)</td>
<td>Multi-touch</td>
<td>OLED</td>
<td>400 nits</td>
<td>Anti-reflection, Anti-smudge</td>
<td>16:10</td>
<td>100,000:1</td>
<td>100% DCI-P3</td>
<td>175°</td>
<td>Low Blue Light, Dolby Vision™, DisplayHDR™ 400, X-Rite Pantone Factory Color Calibration, 83.4% 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.calrecycle.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
- No pen (with a pen garage ready, pen sold separately)
- No support
Keyboard
6-row, spill-resistant, multimedia Fn keys with Unified Communications controls, numeric keypad

Keyboard Backlight
LED backlight

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

Mechanical

Dimensions (WxDxH)
364 x 266 x 30.23 mm (14.3 x 10.5 x 1.2 inches)

Weight
Starting at 2.95 kg (6.5 lbs)

Case Color
Storm grey (top), thunder black (bottom)

Case Material
AL5052 (97.25% aluminium, 2.5% magnesium, and 0.25% chromium; Top), PPS + 50% GF (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**
• Wireless WAN upgradable to 4G (with antenna ready)
• Fibocom L860-GL-16, 4G LTE CAT16, MIMO 4x4, M.2 card, with embedded eSIM functionality
• No support

SIM Card
• Gemalto eSIM
• 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**(1)
Standard Ports
• Models with NVIDIA graphics: 1x HDMI, up to 8K/60Hz
• Models with integrated or Intel Arc graphics: 1x HDMI, up to 4K/60Hz
• 2x USB 3.2 Gen 1 (one Always On)
• 1x USB-C 3.2 Gen 2 (support data transfer, Power Delivery 3.0, and DisplayPort™ 1.4)
• 2x Thunderbolt 4 / USB4® 40Gbps (support data transfer, Power Delivery 3.0 and DisplayPort 1.4)
• 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 Smart card reader
• 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® P16 Gen 1

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

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
• 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

SERVICE

Warranty
Base Warranty**[1]
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

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 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
- TCO Certified 9.0
- RoHS compliant

Other Certifications
- MIL-STD-810H military test passed
- TÜV Rheinland® Low Blue Light

ISV Certifications
- Please visit ISV certifications for Lenovo Workstations

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