## OVERVIEW

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<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>HDMI 2.1 / 2.0</td>
</tr>
<tr>
<td>2.</td>
<td>USB 3.2 Gen 1 (Always On)</td>
</tr>
<tr>
<td>3.</td>
<td>Nano-SIM card slot *</td>
</tr>
<tr>
<td>4.</td>
<td>Headphone / microphone combo jack (3.5mm)</td>
</tr>
<tr>
<td>5.</td>
<td>Smart card reader *</td>
</tr>
<tr>
<td>6.</td>
<td>SD card reader</td>
</tr>
<tr>
<td>7.</td>
<td>USB 3.2 Gen 1</td>
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<tr>
<td>8.</td>
<td>Kensington Security Slot</td>
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<tr>
<td>9.</td>
<td>2.5GbE (RJ-45)</td>
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<tr>
<td>10.</td>
<td>Power connector</td>
</tr>
<tr>
<td>11.</td>
<td>2x Thunderbolt 4</td>
</tr>
<tr>
<td>12.</td>
<td>USB-C 3.2 Gen 2</td>
</tr>
</tbody>
</table>

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

Processor

Processor Family
11th Generation Intel® Core™ i5 / i7 / i9 or Intel Xeon® 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>Core i5-11500H</td>
<td>6</td>
<td>12</td>
<td>2.9GHz</td>
<td>4.6GHz</td>
<td>12MB</td>
<td>DDR4-3200</td>
<td>Intel UHD Graphics</td>
</tr>
<tr>
<td>Core i7-11800H</td>
<td>8</td>
<td>16</td>
<td>2.3GHz</td>
<td>4.6GHz</td>
<td>24MB</td>
<td>DDR4-3200</td>
<td>Intel UHD Graphics</td>
</tr>
<tr>
<td>Core i7-11850H</td>
<td>8</td>
<td>16</td>
<td>2.5GHz</td>
<td>4.8GHz</td>
<td>24MB</td>
<td>DDR4-3200</td>
<td>Intel UHD Graphics</td>
</tr>
<tr>
<td>Core i9-11950H</td>
<td>8</td>
<td>16</td>
<td>2.6GHz</td>
<td>5.0GHz</td>
<td>24MB</td>
<td>DDR4-3200</td>
<td>Intel UHD Graphics</td>
</tr>
<tr>
<td>Xeon W-11855M</td>
<td>6</td>
<td>12</td>
<td>3.2GHz</td>
<td>4.9GHz</td>
<td>18MB</td>
<td>DDR4-3200</td>
<td>Intel UHD Graphics</td>
</tr>
<tr>
<td>Xeon W-11955M</td>
<td>8</td>
<td>16</td>
<td>2.6GHz</td>
<td>5.0GHz</td>
<td>24MB</td>
<td>DDR4-3200</td>
<td>Intel UHD Graphics</td>
</tr>
</tbody>
</table>

Operating System

Operating System**
- Windows® 10 Pro 64
- Windows 10 Pro 64 for Workstations
- Windows 10 Home 64
- Windows 11 Pro 64
- Windows 11 Pro 64 for Workstations
- Windows 11 Home 64
- Windows 11 DG Windows 10 Pro 64
- Windows 11 DG Windows 10 Pro 64 for Workstations
- Fedora Linux
- Ubuntu Linux LTS
- No operating system

Graphics

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® T1200 Laptop GPU</td>
<td>Discrete</td>
<td>4GB GDDR6</td>
<td>60W</td>
<td>DirectX® 12</td>
</tr>
<tr>
<td>NVIDIA RTX A2000 Laptop GPU</td>
<td>Discrete</td>
<td>4GB GDDR6</td>
<td>60W</td>
<td>DirectX 12</td>
</tr>
<tr>
<td>NVIDIA RTX A3000 Laptop GPU</td>
<td>Discrete</td>
<td>6GB GDDR6</td>
<td>90W</td>
<td>DirectX 12</td>
</tr>
<tr>
<td>NVIDIA RTX A4000 Laptop GPU</td>
<td>Discrete</td>
<td>8GB GDDR6</td>
<td>90W</td>
<td>DirectX 12</td>
</tr>
<tr>
<td>NVIDIA RTX A5000 Laptop GPU</td>
<td>Discrete</td>
<td>16GB GDDR6</td>
<td>90W</td>
<td>DirectX 12</td>
</tr>
</tbody>
</table>

Monitor Support

Monitor Support
Supports up to 5 independent displays via native display and 4 external monitors, hybrid mode only; supports external monitors via HDMI® (up to 4K@60Hz on NVIDIA T1200 / 8K@60Hz on other discrete graphics), USB-C (up to 5120x3200@60Hz) or Thunderbolt™ (up to 5120x3200@60Hz)

Chipset

Chipset
Intel WM590 chipset

Memory

Max Memory**(i)
Up to 128GB DDR4-3200

Memory Slots
Four DDR4 SO-DIMM slots, dual-channel capable
**Memory Type**
- DDR4-3200 ECC
- DDR4-3200 non-ECC

**Memory Protection**
ECC on models with ECC DIMMs and Xeon 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.

**Storage**

**Storage Support**
Up to three drives, 3x M.2 SSD
- M.2 2280 SSD up to 2TB

**Storage Slot**
Three M.2 slots
- Two M.2 2280 PCIe Gen 3x4 slots, supports M.2 2280 SSD
- One M.2 2280 PCIe Gen 4x4 slot, 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 x4</td>
<td>-</td>
<td>256GB / 512GB / 1TB</td>
<td>Opal2</td>
</tr>
<tr>
<td>M.2 2280 SSD</td>
<td>PCIe NVMe, PCIe 4.0 x4 Performance</td>
<td>-</td>
<td>512GB / 1TB / 2TB</td>
<td>Opal2</td>
</tr>
</tbody>
</table>

**RAID**
RAID 0/1 support on two M.2 PCIe Gen 3x4 slots

**Notes:**
1. M.2 PCIe Gen 4 SSD in a M.2 PCIe Gen 3 slot runs at PCIe Gen 3 speeds
2. Opal capability is not available in RAID mode

**Removable Storage**

**Optical**
None

**Card Reader**
SD card reader

**Multi-Media**

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

**Speakers**
Stereo speakers, Dolby® Atmos®

**Microphone**
- Dual array microphone, near-field
- No microphone

**Camera**
- 720p, with privacy shutter, fixed focus
- IR & 720p hybrid, with privacy shutter, fixed focus
- No camera

**Battery**

**Battery**
Integrated Li-Polymer 94Wh battery, supports Rapid Charge (charge up to 80% in 1hr)

**Max Battery Life**
MobileMark® 2018: 9 hr
JEITA 2.0: 11.5 hr
Notes:
1. All battery life claims are approximate maximum and based on results using the MobileMark 2014, MobileMark 2018, JEITA 2.0, continuous 1080p video playback (with 150nits brightness and default volume level) or Google Power Load Test (PLT) battery-life benchmark tests. Actual battery life will vary and depends on many factors such as product configuration and usage, software use, wireless functionality, power management settings, and screen brightness. The maximum capacity of the battery will decrease with time and use.

Power Adapter

**Power Adapter**
- 170W slim tip (3-pin) AC adapter
- 230W slim tip (3-pin) AC adapter

**DESIGN**

**Display**

**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>15.6”</td>
<td>FHD (1920x1080)</td>
<td>None</td>
<td>IPS</td>
<td>300 nits</td>
<td>Anti-glare</td>
<td>16:9</td>
<td>700:1</td>
<td>100% sRGB</td>
<td>170°</td>
<td>-</td>
</tr>
<tr>
<td>15.6”</td>
<td>FHD (1920x1080)</td>
<td>None</td>
<td>IPS</td>
<td>500 nits</td>
<td>Anti-glare</td>
<td>16:9</td>
<td>1200:1</td>
<td>100% sRGB</td>
<td>170°</td>
<td>Dolby Vision™</td>
</tr>
<tr>
<td>15.6”</td>
<td>UHD (3840x2160)</td>
<td>None</td>
<td>IPS</td>
<td>600 nits</td>
<td>Anti-glare</td>
<td>16:9</td>
<td>1200:1</td>
<td>100% Adobe® RGB</td>
<td>170°</td>
<td>Dolby Vision, HDR 400</td>
</tr>
<tr>
<td>15.6”</td>
<td>UHD (3840x2160)</td>
<td>Multi-touch</td>
<td>OLED</td>
<td>SDR 400nit, HDR 500nit (peak)</td>
<td>Anti-reflection Anti-smudge</td>
<td>16:9</td>
<td>100000:1</td>
<td>100% DCI-P3</td>
<td>170°</td>
<td>Dolby Vision, HDR 500 True Black</td>
</tr>
</tbody>
</table>

**Color Calibration**
- X-Rite® Pantone® factory color calibration (UHD display)
- No color calibration

**Touchscreen**
- On-cell 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.carecycle.ca.gov/Electronics/Consumer
2. For non-OLED display, HDR is only supported under hybrid mode

**Input Device**

**Pen**
- Lenovo Pen Pro
- 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, numeric keypad

**Keyboard Backlight**
- LED backlight

**UltraNav™**
- 3-button TrackPoint® pointing device and Mylar® surface multi-touch touchpad
### Mechanical

#### Dimensions (WxDxH)

<table>
<thead>
<tr>
<th>Models</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Touch models</td>
<td>375.4 x 252.3 x 25.25-32.2 mm (14.24 x 9.67 x 0.99-1.27 inches)</td>
</tr>
<tr>
<td>Non-touch models</td>
<td>375.4 x 252.3 x 24.5-31.45 mm (14.24 x 9.67 x 0.96-1.24 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>2.87 kg (6.32 lbs)</td>
</tr>
<tr>
<td>Touch models</td>
<td>3.07 kg (6.75 lbs)</td>
</tr>
</tbody>
</table>

#### Case Color

Black

#### Case Material

PPS / 50% GF (top), PA / 50% GF (bottom)

### NOTES

1. The system weight varies depending on configurations

### CONNECTIVITY

#### Network

**Onboard Ethernet**

- 2.5GbE, Intel Ethernet Connection I225-LM (vPro models), supports Wake-on-LAN
- 2.5GbE, Intel Ethernet Connection I225-V (non-vPro models), supports Wake-on-LAN

**WLAN + Bluetooth®**

- Intel Wi-Fi® 6E AX210, 802.11ax 2x2 Wi-Fi + Bluetooth 5.2
- No WLAN and Bluetooth

**WWAN**

- Wireless WAN upgradable to 4G
- Integrated Mobile Broadband 4G LTE, Quectel EM160R, MIMO 4x4, M.2 card, with embedded eSIM functionality
- No support

**SIM Card**

No SIM card inbox

**NFC**

No support

### NOTES

1. WiFi 6 full features might be limited by country level restrictions
2. 6GHz Wi-Fi 6E operation is dependent on the support of the operating system, routers/APs/Gateways that support Wi-Fi 6E, and the regional regulatory certifications & spectrum allocation
3. Bluetooth 5.2 is supported with driver version 22.30 and later

### Ports

#### Standard Ports

- 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 1.4a)
- 1x SD card reader
- 1x Ethernet (2.5GbE RJ-45)
- 1x Headphone / microphone combo jack (3.5mm)

#### Optional Ports

- 1x Nano-SIM card slot (WWAN model)
- 1x HDMI 2.0 (model with NVIDIA T1200 graphics)
• 1x HDMI 2.1 (model with NVIDIA RTX graphics)
• 1x Smart 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

Monitor Cable

Monitor Cable***
• Lenovo HDMI to VGA Monitor Adapter
• Lenovo USB-C to DisplayPort Adapter
• 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
• Disabled (in some regions)

Physical Locks
Kensington® Security Slot (3 x 7 mm)

Smart Card Reader
• Smart card reader
• No smart card reader

Fingerprint Reader
Touch style fingerprint reader on palm rest, match-on-chip

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

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

MANAGEABILITY

System Management

System Management
• Intel vPro Technology, DASH
• None

SERVICE

Warranty

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

ENVIRONMENTAL

Operating Environment

Temperature\(^{[1]}\)

- 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

ISV Certifications

- Please visit www.thinkworkstations.com/isv-certifications/

- 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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