## OVERVIEW

<table>
<thead>
<tr>
<th>Port</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Power button</td>
<td></td>
</tr>
<tr>
<td>2. Optical drive *</td>
<td></td>
</tr>
<tr>
<td>3. Card reader</td>
<td></td>
</tr>
<tr>
<td>4. Microphone (3.5mm)</td>
<td></td>
</tr>
<tr>
<td>5. Headphone / microphone combo jack (3.5mm)</td>
<td></td>
</tr>
<tr>
<td>6. USB-C 3.2 Gen 1</td>
<td></td>
</tr>
<tr>
<td>7. 2x USB 3.2 Gen 1</td>
<td></td>
</tr>
<tr>
<td>8. 2x USB 3.2 Gen 2</td>
<td></td>
</tr>
<tr>
<td>9. Serial</td>
<td></td>
</tr>
<tr>
<td>10. Line-out (3.5mm)</td>
<td></td>
</tr>
<tr>
<td>11. 2x DisplayPort</td>
<td></td>
</tr>
<tr>
<td>12. 2x PS/2 ports (keyboard / mouse) *</td>
<td></td>
</tr>
<tr>
<td>13. Video port (DisplayPort, HDMI, or USB-C) *</td>
<td></td>
</tr>
<tr>
<td>14. Ethernet (RJ-45)</td>
<td></td>
</tr>
<tr>
<td>15. 2x USB 2.0</td>
<td></td>
</tr>
<tr>
<td>16. 2x USB 3.2 Gen 1</td>
<td></td>
</tr>
<tr>
<td>17. Optional ports on expansion cards *</td>
<td></td>
</tr>
</tbody>
</table>

Notes:

- Ports with * are only available on selected models
PERFORMANCE

Processor

Processor Family
Up to one Intel® Core™ i3 / i5 / i7 / i9 or Intel Xeon® Processor

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 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>
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<tr>
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<td>4.6GHz</td>
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<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>
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<tr>
<td>Core i5-10500</td>
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<td>12</td>
<td>3.1GHz</td>
<td>4.5GHz</td>
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<td>DDR4-2666</td>
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<tr>
<td>Core i5-10600</td>
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<td>12</td>
<td>3.3GHz</td>
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<td>12MB</td>
<td>DDR4-2666</td>
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<tr>
<td>Core i5-10600K</td>
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<td>4.8GHz</td>
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<td>DDR4-2666</td>
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<tr>
<td>Core i7-10700</td>
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<td>5.1GHz</td>
<td>16MB</td>
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<tr>
<td>Core i7-10700K</td>
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<td>16</td>
<td>3.8GHz</td>
<td>5.1GHz</td>
<td>16MB</td>
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<td>Intel UHD Graphics 630</td>
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<tr>
<td>Core i9-10900</td>
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<td>20</td>
<td>2.8GHz</td>
<td>5.2GHz</td>
<td>20MB</td>
<td>DDR4-2933</td>
<td>Intel UHD Graphics 630</td>
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<tr>
<td>Core i9-10900K</td>
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<td>5.3GHz</td>
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<td>DDR4-2933</td>
<td>Intel UHD Graphics 630</td>
</tr>
<tr>
<td>Xeon W-1250</td>
<td>6</td>
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<td>Xeon W-1250P</td>
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<td>5.0GHz</td>
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<tr>
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<td>5.1GHz</td>
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<tr>
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<td>5.2GHz</td>
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<td>Intel UHD Graphics P630</td>
</tr>
<tr>
<td>Xeon W-1290P</td>
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<td>20</td>
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<td>20MB</td>
<td>DDR4-2933</td>
<td>Intel UHD Graphics P630</td>
</tr>
</tbody>
</table>

Processor Sockets
1x FCLGA1200

Operating System

Operating System**

- 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
- Windows 10 Pro 64
- Windows 10 Pro 64 for Workstations
- Ubuntu Linux LTS
- No operating system

Graphics

Integrated Graphics**

- Intel UHD Graphics 630
- Intel UHD Graphics P630

Discrete Graphics Support

Supports up to one NVIDIA® Quadro® RTX 5000 or two NVIDIA RTX A2000, 500W PSU is needed

Discrete Graphics Offering**(1)

<table>
<thead>
<tr>
<th>Graphics</th>
<th>Memory</th>
<th>Power</th>
<th>Connector</th>
<th>SLI / NVlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quadro P400</td>
<td>2GB GDDR5</td>
<td>30W</td>
<td>3x miniDP 1.4</td>
<td>None</td>
</tr>
<tr>
<td>Quadro P620</td>
<td>2GB GDDR5</td>
<td>40W</td>
<td>4x miniDP 1.4</td>
<td>None</td>
</tr>
<tr>
<td>Model</td>
<td>Memory Type</td>
<td>Power</td>
<td>HDMI/DP Support</td>
<td>None</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------------</td>
<td>-------</td>
<td>-----------------</td>
<td>------</td>
</tr>
<tr>
<td>Quadro P1000</td>
<td>4GB GDDR5</td>
<td>50W</td>
<td>4x miniDP 1.4</td>
<td>None</td>
</tr>
<tr>
<td>Quadro P2000</td>
<td>5GB GDDR5</td>
<td>75W</td>
<td>4x DP</td>
<td>None</td>
</tr>
<tr>
<td>Quadro P2200</td>
<td>5GB GDDR5</td>
<td>75W</td>
<td>4x DP 1.4</td>
<td>None</td>
</tr>
<tr>
<td>NVIDIA T400</td>
<td>2GB GDDR6</td>
<td>40W</td>
<td>3x miniDP 1.4</td>
<td>None</td>
</tr>
<tr>
<td>NVIDIA T400</td>
<td>4GB GDDR6</td>
<td>40W</td>
<td>3x miniDP 1.4</td>
<td>None</td>
</tr>
<tr>
<td>NVIDIA T600</td>
<td>4GB GDDR6</td>
<td>40W</td>
<td>4x miniDP 1.4</td>
<td>None</td>
</tr>
<tr>
<td>NVIDIA T1000</td>
<td>4GB GDDR6</td>
<td>50W</td>
<td>4x miniDP 1.4</td>
<td>None</td>
</tr>
<tr>
<td>NVIDIA T1000</td>
<td>8GB GDDR6</td>
<td>50W</td>
<td>4x miniDP 1.4</td>
<td>None</td>
</tr>
<tr>
<td>Quadro RTX 4000</td>
<td>8GB GDDR6</td>
<td>160W</td>
<td>3x DP 1.4, 1x VirtualLink</td>
<td>None</td>
</tr>
<tr>
<td>Quadro RTX 5000</td>
<td>16GB GDDR6</td>
<td>265W</td>
<td>4x DP 1.4, 1x VirtualLink</td>
<td>None</td>
</tr>
<tr>
<td>NVIDIA RTX A2000</td>
<td>6GB GDDR6</td>
<td>70W</td>
<td>4x miniDP 1.4a</td>
<td>None</td>
</tr>
<tr>
<td>NVIDIA RTX A2000</td>
<td>12GB GDDR6</td>
<td>70W</td>
<td>4x miniDP 1.4a</td>
<td>None</td>
</tr>
</tbody>
</table>

Notes:
1. NVIDIA Quadro RTX 5000 supports manufacture configure only, none standalone option is available.

**Monitor Support**

Supports multiple displays via onboard video ports and discrete graphics, the number of maximum monitors supported depends on the graphic card in use.

**Chipset**

Chipset
Intel W480 chipset

**Memory**

Max Memory**
Up to 128GB DDR4-2933

Memory Type**
- DDR4-2933 UDIMM ECC
- DDR4-2933 UDIMM non-ECC

Memory Slots
Four DDR4 UDIMM slots, dual-channel capable

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 Support**

Up to 2x 3.5” SATA HDD / 4x 2.5” SATA HDD / SSD + 4x M.2 PCIe® SSD
- 3.5” HDD up to 4TB each
- 2.5” SATA HDD up to 1TB each
- 2.5” SATA SSD up to 1TB each
- M.2 PCIe SSD up to 2TB each
- Optional Intel Optane™ Memory

Storage Type**

<table>
<thead>
<tr>
<th>Disk Type</th>
<th>Interface</th>
<th>RPM</th>
<th>Offering</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5” SATA SSD</td>
<td>SATA 6Gb/s</td>
<td>-</td>
<td>512GB / 1TB</td>
</tr>
<tr>
<td>2.5” SATA HDD</td>
<td>SATA 6Gb/s</td>
<td>7.2K</td>
<td>1TB FIPS</td>
</tr>
</tbody>
</table>
### Storage Controllers

<table>
<thead>
<tr>
<th>Storage Controller</th>
<th>Type</th>
<th>Interface</th>
<th>RAID</th>
<th>Cache</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onboard Intel RSTe SATA RAID</td>
<td>Standard</td>
<td>SATA 6.0Gb/s</td>
<td>0/1/10/5</td>
<td>None</td>
</tr>
<tr>
<td>Onboard Intel RST PCIe RAID</td>
<td>Standard</td>
<td>PCIe NVMe</td>
<td>0/1</td>
<td>None</td>
</tr>
</tbody>
</table>

### Removable Storage

**Optical Support**
- Optional one 9.0mm optical drive, DVD-ROM, DVD±RW, and Blu-ray

**Card Reader**
- SD card reader
- No card reader

### Multi-Media

**Audio Chip**
- High Definition (HD) Audio, Realtek® ALC623 codec

### Power Supply

**Power Supply**

<table>
<thead>
<tr>
<th>Power</th>
<th>Type</th>
<th>Efficiency</th>
<th>Key Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>300W</td>
<td>Fixed</td>
<td>90%</td>
<td>100V - 240V, 80 PLUS Gold qualified</td>
</tr>
<tr>
<td>500W</td>
<td>Fixed</td>
<td>92%</td>
<td>100V - 240V, 80 PLUS Platinum qualified</td>
</tr>
</tbody>
</table>

### DESIGN

**Mechanical**

**Form Factor**
- Tower (17L)

**Dimensions (WxDxH)**
- 170 x 315.35 x 376 mm (6.7 x 12.4 x 14.8 inches)

**Weight**
- 9.38 kg (20.68 lbs, maximum configuration)

**Bays**
- 1x 3.5” disk bay (standard)
- 2x 2.5” disk bay (optional, comes with disk or optional upgrade kit)
- 1x 3.5” disk bay (optional, via flex bay)

**M.2 Slots**
- Up to 4x M.2 SSD:
  - 2 via onboard slots
  - 2 via Single M.2 to PCIe adapter

**Expansion Slots**
- One PCIe 3.0 x1
- One PCIe 3.0 x16 (x4 lanes)
- One PCIe 3.0 x16

**Expansion Slots Offering**
- Slot 1: PCIe 3.0 x16, full height, full length, links to CPU
- Slot 2: PCIe 3.0 x1, full height, full length, links to PCH
- Slot 3: PCIe 3.0 x16 (negotiable link width x4), full height, full length, links to PCH

### CONNECTIVITY
**Network**

**Onboard Ethernet**
Gigabit Ethernet, Intel Ethernet Connection I219-LM, 1x RJ-45, supports Wake-on-LAN

**Optional Ethernet**
Additional Ethernet options via PCIe adapter

**WLAN + Bluetooth**
- Mediatek Wi-Fi® 6 MT7921, 802.11ax 2x2 Wi-Fi + Bluetooth 5.2, M.2 Card
- Intel Wi-Fi 6 AX201, 802.11ax 2x2 Wi-Fi + Bluetooth 5.1, M.2 Card
- No WLAN and Bluetooth

**Ports**

**Front Ports**
- 2x USB 3.2 Gen 1
- 2x USB 3.2 Gen 2
- 1x USB-C 3.2 Gen 1
- 1x headphone / microphone combo jack (3.5mm)
- 1x microphone (3.5mm)

**Rear Ports**
- 2x USB 2.0
- 2x USB 3.2 Gen 1
- 2x DisplayPort™
- 1x serial (9-pin)
- 1x Ethernet (RJ-45)
- 1x line-out (3.5mm)

**Optional Rear Ports**
- 2x USB 2.0
- 2x USB 3.2 Gen 1 (via 2-port USB expansion card, PCIe x1)
- 2x USB-C 3.2 Gen 2 (via 2-port USB-C expansion card)
- 1x Thunderbolt™
- 1x video (DisplayPort, HDMI®, or USB-C)
- 1x serial
- 4x serial (via 4-port serial expansion card, PCIe x1)
- 1x parallel
- 2x PS/2

**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;
   - FireWire 400: 400 Mbit/s;
   - FireWire 800: 800 Mbit/s
2. For video ports on discrete graphics, please see graphics section

**SECURITY & PRIVACY**

**Security**

**Security Chip**
Discrete TPM 2.0, TCG certified

**Physical Locks**
- (Optional) Cable lock
- (Optional) E-lock
- Kensington® Security Slot
- Padlock Loop

**Chassis Intrusion Switch**
Chassis intrusion switch
• No chassis intrusion switch

BIOS Security
• Administrator password
• Power-on password

MANAGEABILITY

System Management

System Management*[^2]
• Intel vPro with Intel AMT 14.0 (vPro-enable processor and WiFi needed)
• Standard Manageability

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

Diagnostic

Lenovo UEFI Bootable Diagnostics

SERVICE

Warranty

Base Warranty*[^1]
• 1-year limited onsite service
• 2-year limited onsite service
• 3-year limited onsite service with 9x5 NBD (for most models)

Notes:
1. More information of warranty policy, please access https://pcsupport.lenovo.com/warranty

ENVIRONMENTAL

Operating Environment

Temperature
• Operating: 10°C (50°F) to 35°C (95°F)
• Storage: -40°C (-40°F) to 60°C (140°F)

Altitude
• Operating: 0 m (0 ft) to 3048 m (10,000 ft)
• Storage: 0 m (0 ft) to 12192 m (40,000 ft)

Humidity
• Operating: 20% to 80%
• Storage: 10% to 90%

CERTIFICATIONS

Green Certifications

Green Certifications
• (Optional) EPEAT™ Gold
• (Optional) EPEAT Silver
• ENERGY STAR® 8.0
• RoHS compliant

ISV Certifications
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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