PERFORMANCE

**Processor**

**Processor Family**
10th Generation Intel® Core™ i5 / i7 / i9 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 i5-10400</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>
</tr>
<tr>
<td>Core i5-10400F</td>
<td>6</td>
<td>12</td>
<td>2.9GHz</td>
<td>4.3GHz</td>
<td>12MB</td>
<td>DDR4-2666</td>
<td>-</td>
</tr>
<tr>
<td>Core i7-10700</td>
<td>8</td>
<td>16</td>
<td>2.9GHz</td>
<td>4.8GHz</td>
<td>16MB</td>
<td>DDR4-2933</td>
<td>Intel UHD Graphics 630</td>
</tr>
<tr>
<td>Core i7-10700F</td>
<td>8</td>
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<td>4.8GHz</td>
<td>16MB</td>
<td>DDR4-2933</td>
<td>-</td>
</tr>
<tr>
<td>Core i7-10700K</td>
<td>8</td>
<td>16</td>
<td>3.8GHz</td>
<td>5.1GHz</td>
<td>16MB</td>
<td>DDR4-2933</td>
<td>Intel UHD Graphics 630</td>
</tr>
<tr>
<td>Core i9-10900</td>
<td>10</td>
<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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<td>Core i9-10900F</td>
<td>10</td>
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<td>20MB</td>
<td>DDR4-2933</td>
<td>-</td>
</tr>
</tbody>
</table>

**Notes:**
- Intel UHD Graphics 630 in processor is disabled

**Operating System**
- Windows® 10 Home 64
- Windows 10 Pro 64
- FreeDOS

**Graphics**

<table>
<thead>
<tr>
<th>Graphics Type</th>
<th>Type</th>
<th>Memory</th>
<th>Connector</th>
<th>Max Resolution</th>
<th>Key Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMD Radeon™ RX 5500</td>
<td>Discrete</td>
<td>4GB GDDR6</td>
<td>1x HDMI 2.0, 3x DP 1.4</td>
<td>4096x2160@60Hz(HDMI), 7680x4320@60Hz(DP)</td>
<td>DirectX 12</td>
</tr>
<tr>
<td>AMD Radeon RX 5700XT</td>
<td>Discrete</td>
<td>8GB GDDR6</td>
<td>1x HDMI 2.0, 3x DP 1.4</td>
<td>7680x4320@60Hz(DP)</td>
<td>DirectX 12</td>
</tr>
<tr>
<td>NVIDIA® GeForce GTX 1650 SUPER</td>
<td>Discrete</td>
<td>4GB GDDR6</td>
<td>1x HDMI 2.0b, 2x DP 1.4</td>
<td>7680x4320@60Hz(DP)</td>
<td>DirectX 12</td>
</tr>
<tr>
<td>NVIDIA GeForce GTX 1660 SUPER</td>
<td>Discrete</td>
<td>6GB GDDR6</td>
<td>1x DVI, 1x HDMI 2.0b, 1x DP 1.4</td>
<td>7680x4320@60Hz(DP)</td>
<td>DirectX 12</td>
</tr>
<tr>
<td>NVIDIA GeForce RTX™ 2060 CD</td>
<td>Discrete</td>
<td>6GB GDDR6</td>
<td>1x HDMI 2.0b, 3x DP 1.4</td>
<td>4096x2160@60Hz(HDMI), 7680x4320@60Hz with DSC(DP)</td>
<td>DirectX 12</td>
</tr>
<tr>
<td>NVIDIA GeForce RTX 2070 CD</td>
<td>Discrete</td>
<td>8GB GDDR6</td>
<td>1x HDMI 2.0b, 3x DP 1.4</td>
<td>7680x4320@60Hz(DP)</td>
<td>DirectX 12 VR ready</td>
</tr>
<tr>
<td>NVIDIA GeForce RTX 2070 SUPER</td>
<td>Discrete</td>
<td>8GB GDDR6</td>
<td>1x HDMI 2.0b, 1x USB Type-C Gen 2, 3x DP 1.4</td>
<td>7680x4320@60Hz(DP)</td>
<td>DirectX 12 VR ready</td>
</tr>
<tr>
<td>NVIDIA GeForce RTX 3050</td>
<td>Discrete</td>
<td>4G GDDR6</td>
<td>1x DP 1.4a, 1x HDMI 2.1, 1x DVI</td>
<td>7680x4320@60Hz(HDMI); 7680x4320@60Hz(DP)</td>
<td>DirectX 12</td>
</tr>
<tr>
<td>NVIDIA GeForce RTX 3050 Ti</td>
<td>Discrete</td>
<td>6G GDDR6</td>
<td>3x DP 1.4a, 1x HDMI 2.1</td>
<td>7680x4320@60Hz(HDMI), 7680x4320@60Hz(DP)</td>
<td>DirectX 12</td>
</tr>
<tr>
<td>NVIDIA GeForce RTX 3060</td>
<td>Discrete</td>
<td>12G GDDR6</td>
<td>3x DP 1.4a, 1x HDMI 2.1</td>
<td>7680x4320@60Hz(HDMI), 7680x4320@60Hz(DP)</td>
<td>DirectX 12</td>
</tr>
<tr>
<td>NVIDIA GeForce RTX 3070</td>
<td>Discrete</td>
<td>8G GDDR6</td>
<td>3x DP 1.4a, 1x HDMI 2.1</td>
<td>7680x4320@60Hz(HDMI); 7680x4320@60Hz(DP)</td>
<td>DirectX 12</td>
</tr>
</tbody>
</table>

**Notes:**
- Integrated graphics information and onboard video ports information are not applicable for all models without integrated graphics (for the details, please refer to processor section)
Monitor Support
Supports up to 5 independent displays via discrete graphics ports** (DP, HDMI, USB-C 3.2 Gen2, and DVI)

Notes:
• Ports may vary by the discrete graphics.

Chipset
Intel B460 chipset

Memory
Memory Type
• DDR4-2933
• DDR4-3200, Armor

Notes:
• Installed memory is actually 2933MHz or 3200MHz, but may run at 2666MHz or 2933MHz depending on the memory support capability of processor

Memory Slots
Four DDR4 UDIMM slots, dual-channel capable

Memory Protection
Non-ECC

Max Memory
Up to 128GB DDR4-2933

Notes:
• 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 2 drives, 1x 3.5” HDD + 1x M.2 SSD
• 3.5” HDD up to 2TB
• M.2 SSD up to 1TB
• Optional Intel Optane™ Memory Integrated with SSD, M.2

RAID
Not support

Storage Type

<table>
<thead>
<tr>
<th>Disk Type</th>
<th>Interface</th>
<th>RPM</th>
<th>Security</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.5” SATA HDD</td>
<td>SATA 6Gb/s</td>
<td>7.2K</td>
<td>-</td>
</tr>
<tr>
<td>M.2 2280 SSD</td>
<td>PCIe NVMe</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Intel Optane Memory with Solid State Storage, M.2 2280</td>
<td>PCIe NVMe, PCIe 3.0 x4</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Removable Storage

Optical
• DVD burner (DVD±RW), SATA 1.5Gb/s, slim (9.0mm)
• Not configured

Card Reader
Not Support

Multi-Media

Audio Chip
High Definition (HD) Audio, Realtek® ALC887 codec

Speakers
Not Support

### Power Supply

<table>
<thead>
<tr>
<th>Power</th>
<th>Type</th>
<th>Efficiency</th>
<th>Key Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>350W</td>
<td>Fixed</td>
<td>-</td>
<td>100V - 240V</td>
</tr>
<tr>
<td>400W</td>
<td>Fixed</td>
<td>-</td>
<td>100V - 240V</td>
</tr>
<tr>
<td>650W</td>
<td>Fixed</td>
<td>-</td>
<td>100V - 240V</td>
</tr>
</tbody>
</table>

### DESIGN

#### Input Device

**Keyboard**
- Lenovo Calliope Keyboard (USB connector), black
- Lenovo Keyboard (USB connector), black
- Not configured

**Mouse**
- Lenovo Calliope Mouse (USB connector), black
- Lenovo Mouse (USB connector), black
- Not configured

#### Mechanical

**Form Factor**
- Tower (28L)

**Dimensions (WxDxH)**
- 184.5mm x 455.8mm x 457mm (7.26 x 17.94 x 17.99 inches)

**Weight**
- 14 kg (30.86 lbs)

**Case Color**
- Phantom black

**Bays**
- 2x 3.5" disk bay

**Expansion Slots**
- One PCIe 3.0 x16
- One PCIe 3.0 x4
- Two PCIe 3.0 x1
- Three M.2 slots (one for WLAN, two for SSD)

**Cooling System (Fan&Cooler)**
- (Optional) Front system fan, rear system fan for airflow or liquid
- (Optional) 65W Air-Cooler, 95W Air-Cooler, 150W Air-Cooler or 150W Liquid-Cooler

**System Lighting**
- Front panel light; optional ARGB cooler light and ARGB system fan light
- Not configured

**Others**
- Carry handle
- None

### CONNECTIVITY

#### Network

**Onboard Ethernet**
- Gigabit Ethernet, 1x RJ45

**WLAN + Bluetooth™**
Ports
Front Ports
Not Support

Notes:
- 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;

Rear Ports
- 2x USB 2.0
- 2x USB 3.2 Gen 1
- 1x USB-C 3.2 Gen 1
- 1x Ethernet (RJ-45)
- 1x microphone (3.5mm)
- 1x line-in (3.5mm)
- 1x line-out (3.5mm)
- 1x power connector

Notes:
- For video ports on discrete graphics, please see graphics section

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

SECURITY & PRIVACY

Security
Security Chip
Firmware TPM 2.0 integrated in chipset

BIOS Security
- Power-on password
- Administrator password

SERVICE

Warranty
Base Warranty
- 1-year mail-in service
- 1-year depot service
- 1-year limited onsite service
- 2-year depot service
- OB

CERTIFICATIONS

Green Certifications
• ENERGY STAR® 8.0
• ErP Lot 3
• RoHS