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<td>ThinkPad T490s Platform Specifications</td>
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<td>ThinkPad T495</td>
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<td>ThinkPad T590 Platform Specifications</td>
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<td>Legal Information</td>
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Summary of Changes

This section describes the technical changes made in this edition.
This edition might also include minor corrections and editorial changes which are not identified.

June 5, 2019 - Version 543

Additions in this update

► New product(s)
  ThinkPad L490 announced June 2019
  ThinkPad L590 announced June 2019
  ThinkPad T495 announced May 2019
  ThinkPad T495s announced June 2019
  ThinkPad X395 announced June 2019

► Others
  None

Withdrawals in this update

► Withdrawn product(s)
  None
### Processor

<table>
<thead>
<tr>
<th>Processor</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Burst Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
<th>Graphics</th>
<th>Chipset</th>
<th>Memory</th>
</tr>
</thead>
<tbody>
<tr>
<td>m3-7Y30</td>
<td>2</td>
<td>4</td>
<td>1.0 GHz</td>
<td>2.6 GHz</td>
<td>4 MB</td>
<td>LPDDR3-1866</td>
<td>Intel HD Graphics 615</td>
<td>Intel HD Graphics 615, Intel UHD Graphics 600 or 605 in processor, supports external digital monitor via HDMI or USB Type-C; supports dual independent display; Max resolution: 3840x2160@60Hz (USB Type-C); 4096x2160@30Hz (HDMI)</td>
<td>Intel SoC (System on Chip) platform</td>
<td></td>
</tr>
<tr>
<td>i5-7Y54</td>
<td>4</td>
<td></td>
<td>1.2 GHz</td>
<td>3.2 GHz</td>
<td>4 MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 600</td>
<td>Intel UHD Graphics 600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Celeron N4100</td>
<td>4</td>
<td></td>
<td>1.1 GHz</td>
<td>2.4 GHz</td>
<td>4 MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 600</td>
<td>Intel UHD Graphics 600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pentium Silver N5000</td>
<td>4</td>
<td></td>
<td>1.1 GHz</td>
<td>2.7 GHz</td>
<td>4 MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 600</td>
<td>Intel UHD Graphics 600</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Chipset

- **Intel HD Graphics 615**
- **Intel UHD Graphics 600**

### Display

**Some:** 11.6" (295mm) HD (1366x768), anti-glare, LED backlight, 250 nits, 16:9 aspect ratio, 400:1 or 500:1 contrast ratio

**Some:** 11.6" (295mm) HD (1366x768), anti-glare, LED backlight, IPS, multi-touch, 250 nits, 16:9 aspect ratio, 800:1 contrast ratio, 170° viewing angle

Capacitive-type multi-touch, supports 10-finger gesture (HD IPS only)

### Storage

- eMMC flash memory on board or M.2 SSD / PCIe NVMe, PCIe 3.0 x 2, 16Gb/s

### Optane™ memory

- None

### Ethernet

- Realtek RTL8111GUS Gigabit Network Connection

### WLAN + Bluetooth™

**One of the following, configurable by model:**

- Intel Wireless-AC 9260, Wi-Fi 2x2 802.11ac + Bluetooth 5.0, M.2 card
- Intel Wireless-AC 9560, Wi-Fi 2x2 802.11ac + Bluetooth 5.0, M.2 card (US only)

### Preload

- Windows® 10 Home 64 or Windows 10 Pro 64**

### Limited warranty

- **One of the following, configurable by model:**
  - 1-year depot repair service
  - 3-year/1-yr battery depot repair service

### Mil-Spec test

- MIL-STD-810G military certification

### Environment

- EPEAT™ Silver; ENERGY STAR® 6.1; RoHS-compliant

---

**Dimensions**

- WxDxH: 11.81" x 8.27" x 0.86"; 300mm x 210mm x 21.9mm

**Weight**

- Starting at 2.99 lb (1.36 kg)

**Case**

- **Case color:** Black  
- **Case material:** Display cover: PC/ABS+GF; Bottom: PC/ABS plastic

**Media reader**

- MicroSD card reader

**Ports**

- Two USB 3.1 Gen 1, one USB 3.1 Type-C Gen 1 (with the power of Power Delivery and DisplayPort), HDMI 1.4b, Ethernet (RJ-45), headphone / microphone combo jack, microSD card reader, security keyhole

* Depending on many factors, actual data transfer speed may be lower than theoretical speed

**Chipset**

- Intel SoC (System on Chip) platform

**Memory**

- 4GB or 8GB / 1866MHz LPDDR3 or 2400MHz DDR4 / soldered to systemboard, no sockets

**Battery**

- Integrated Li-ion 42Wh battery

**Max battery life**

- **MobileMark® 2014:** 13.9 hr

* Battery life varies significantly with settings, usage, & other factors

**AC adapter**

- 45W or 65W slim tip AC adapter

**Security**

- **Security chip:** Discrete TPM 2.0, TCG Certified
- **Security chip vPro:** None
- **Fingerprint reader:** None
- **NFC:** None

**Audio support**

- HD Audio, Realtek® ALC3287 codec, stereo speakers, 2W x 2, Dolby® Audio™, monaural digital microphone, combo audio/microphone jack

**Keyboard**

- 6-row, spill-resistant, multimedia Fn keys

**Touchpad**

- Buttonless Mylar surface touchpad below keyboard, multi-touch

**Camera**

- HD720p camera, fixed focus

**Preload**

- Windows® 10 Home 64 or Windows 10 Pro 64

**Limited warranty**

- **One of the following, configurable by model:**
  - 1-year depot repair service
  - 3-year/1-yr battery depot repair service

**Mil-Spec test**

- MIL-STD-810G military certification

**Environment**

- EPEAT™ Silver; ENERGY STAR® 6.1; RoHS-compliant
Processor AMD PRO A-Series APUs

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRO A10-8730B</td>
<td>4</td>
<td>4</td>
<td>2.4 GHz</td>
<td>3.3 GHz</td>
<td>2MB</td>
<td>DDR4-1866</td>
<td>AMD Radeon R5 Graphics</td>
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<tr>
<td>PRO A12-8830B</td>
<td>4</td>
<td>4</td>
<td>2.5 GHz</td>
<td>3.4 GHz</td>
<td>2MB</td>
<td>DDR4-1866</td>
<td>AMD Radeon R7 Graphics</td>
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<tr>
<td>PRO A10-9700B</td>
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<td>4</td>
<td>2.5 GHz</td>
<td>3.4 GHz</td>
<td>2MB</td>
<td>DDR4-1866</td>
<td>AMD Radeon R5 Graphics</td>
</tr>
<tr>
<td>PRO A12-9800B</td>
<td>4</td>
<td>4</td>
<td>2.7 GHz</td>
<td>3.6 GHz</td>
<td>2MB</td>
<td>DDR4-1866</td>
<td>AMD Radeon R7 Graphics</td>
</tr>
</tbody>
</table>

*Windows 7 is only supported by PRO A10-8730B and PRO A12-8830B

Graphics AMD Radeon R5 or R7 Graphics in processor only; supports external digital monitor via HDMI or USB Type-C; supports three independent displays; Max resolution: 4096x2160@60Hz (US Type-C); 4096x2160@30Hz (HDMI)

Chipset AMD SoC (System on Chip) platform
Memory 16GB max / 1866MHz DDR4, one DDR4 SO-DIMM socket
Display Some: 12.5" (317.5mm) HD (1366x768), anti-glare, LED backlight, 220 nits, 16:9 aspect ratio, 500:1 contrast ratio
Some: 12.5" (317.5mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 300 nits, 16:9 aspect ratio, 700:1 contrast ratio, 170° viewing angle
Multi-touch (opt) On-cell touch, supports 10-finger gesture (FHD only, US only)
Storage System has one HDD slot or one M.2 slot exclusively for storage
Some: HDD / SATA 6.0Gb/s, 2.5" wide, 7mm high, Active Protection System™
Some: SSD / SATA 6.0Gb/s, 2.5" wide, 7mm high (e.g. xxxGB SSD)
Some: M.2 SSD / PCIe NVMe, PCIe 3.0 x 2, 16Gb/s
Optical None

Ethernet Realtek® RTL8111EPV Gigabit Ethernet connection
WLAN Realtek RTL8822BE, Wi-Fi 2x2 802.11ac + BT4.1, M.2 card
Bluetooth™ Bluetooth 4.1 wireless, integrated in Wi-Fi + Bluetooth combo adapter
WWAN (optional) One of the following, configurable by model:
• Wireless WAN upgradable
• Integrated Mobile Broadband 4G LTE-A, Qualcomm® Snapdragon™ X7 LTE-A (Sierra Wireless EM7455)
* For non-WWAN model, it means the model is NOT WWAN upgradable
SIM card (opt) Micro-SIM card slot, opt Verizon LTE (US) SIM card

Dimensions Weight

<table>
<thead>
<tr>
<th>Models</th>
<th>No + 3-cell</th>
<th>3-cell + 3-cell</th>
<th>3 + 6-cell</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>2.79 lb / 1.27 kg</td>
<td>2.98 lb / 1.36 kg</td>
<td>3.33 lb / 1.52 kg</td>
</tr>
</tbody>
</table>

Case color Glass-Fiber Reinforced Plastic
Case material Black

Camera (optional) HD720p resolution, fixed focus
Audio support HD Audio, Realtek ALC3268 codec / stereo speakers, 1.5W x 2 / dual array microphone, combo audio/microphone jack

Security
• Power-on password, hard disk password, supervisor password, security keyhole
• dTPM 1.2: discrete TPM 1.2, TCG Certified
• dTPM 2.0: discrete TPM 2.0, TCG Certified
Fingerprint reader Optional: Touch style match on chip fingerprint reader on the palm rest

NFC

Internal battery Optional: Integrated Li-ion or Li-Polymer 3-cell (23Wh)

External battery Li-ion 3-cell (23Wh) or 6-cell (48Wh)

Max battery life Models | 3-cell | 3-cell + 3-cell | 3-cell + 6-cell |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No + 3-cell</td>
<td>5.05 hr</td>
<td>10.1 hr</td>
<td>15.6 hr</td>
</tr>
</tbody>
</table>

AC adapter
• *Battery life varies significantly with settings, usage, & other factors

Preload Windows® 7 Professional 64 preinstalled or through downgrade rights in Windows 10 Pro 64
• Lenovo Solution Center
• Lenovo PowerEngage
• ThinkVantage System Update
• Adobe® Reader
• Microsoft® Office preloaded; purchase a product key to activate
• McAfee® LiveSafe® (30-day trial)

Limited warranty One of the following, configurable by model:
• 1-year depot repair service
• 3-year/1-year battery depot repair service
• 3-year/1-year battery limited onsite service

Environmental MIL-STD-810G military certification

Note: The specifications above may not be available in all regions.

Lenovo April 2019
## ThinkPad A285 Platform Specifications

### Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ryzen 3 PRO 2300U</td>
<td>4</td>
<td>4</td>
<td>2.0 GHz</td>
<td>3.4 GHz</td>
<td>2MB L2 / 4MB L3</td>
<td>DDR4-2400</td>
<td>Radeon Vega 6 Graphics</td>
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<tr>
<td>Ryzen 5 PRO 2500U</td>
<td>8</td>
<td>8</td>
<td>2.0 GHz</td>
<td>3.6 GHz</td>
<td>2MB L2 / 4MB L3</td>
<td>DDR4-2400</td>
<td>Radeon Vega 8 Graphics</td>
</tr>
<tr>
<td>Ryzen 7 PRO 2700U</td>
<td>8</td>
<td>8</td>
<td>2.2 GHz</td>
<td>3.8 GHz</td>
<td>2MB L2 / 4MB L3</td>
<td>DDR4-2400</td>
<td>Radeon Vega 10 Graphics</td>
</tr>
</tbody>
</table>

### Graphics

- AMD Radeon Vega 6, Vega 8, or Vega 10 Graphics in processor only;
- supports external digital monitor via HDMI or USB Type-C;
- supports four independent displays;
- Max resolution: 5120x2880@60Hz (USB Type-C); 4096x2160@60Hz (DVI)

### Chipset

- AMD SoC (System on Chip) platform
- 8GB or 16GB / 2400MHz DDR4, soldered to systemboard, no sockets

### Display

- 12.5" (317.5mm) HD (1366x768), anti-glare, LED backlight, 220 nits, 16:9 aspect ratio, 400:1 contrast ratio
- 12.5" (317.5mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 300 nits, 16:9 aspect ratio, 800:1 contrast ratio, 170° viewing angle

### Storage

- M.2 SSD / SATA 6.0Gb/s
- M.2 SSD / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s

### Case material

- Carbon Fiber (FHD non-touch model) or PPS (HD & FHD multi-touch model)
- Bottom: Magnesium-Aluminum

### Dimensions

- WxDxH (HD & FHD multi-touch): 12.11" x 8.26" x 0.79"; 307.7mm x 209.8mm x 19.4mm
- WxDxH (FHD non-touch): 12.1" x 8.26" x 0.70"; 307.7mm x 209.8mm x 19.8mm
- FHD non-touch model: 2.48 lb / 1.13 kg
- HD non-touch model: 2.78 lb / 1.26 kg
- FHD multi-touch model: 2.79 lb / 1.27 kg

### Weight

- HD non-touch model: 2.49 lb / 1.13 kg
- HD non-touch model: 2.78 lb / 1.26 kg
- FHD multi-touch model: 2.79 lb / 1.27 kg

### Case color

- Black

### Optical

- HD Audio, Realtek ALC3287 codec / dual array microphone, headphone / microphone combo jack
- 6-row, spill-resistant, multimedia Fn keys, optional LED backlight

### Security

- Power-on password, hard disk password, supervisor password, security keyhole
- Disk encryption
- Discrete TPM 2.0, TCG Certified

### Media reader

- MicroSD card reader, in the combo slot with nano-SIM card
- One USB 3.1 Gen 1 (Always On), one USB 3.1 Gen 2, two USB 3.1 Type-C Gen 2 (with the function of Power Delivery and DisplayPort)

### WWAN

- Integrated Mobile Broadband 4G LTE-A
- Realtek R TL8822BE, Wi-Fi 2x2 802.11ac + Bluetooth 4.2, M.2 card
- Bluetooth 4.2 wireless, integrated in Wi-Fi + Bluetooth combo adapter
- Optional: Verizon LTE (US) SIM card

### Battery

- Integrated Li-ion 48Wh battery, supports Rapid Charge (charge up to 80% in 1hr)
- 3-year/1-yr battery limited onsite service
- 3-year/1-yr battery depot repair service
- 1-year depot repair service

### Network

- Wi-Fi 802.11ac + Bluetooth 5.1, Intel XMM™ 9909, M.2 card
- Optional: Lenovo USB-C to DisplayPort Adapter

### Note:

The specifications above may not be available in all regions.

Lenovo
April 2019
<table>
<thead>
<tr>
<th>Processor AMD PRO A-Series APUs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Processor Number</strong></td>
</tr>
<tr>
<td>PRO A10-8730B</td>
</tr>
<tr>
<td>PRO A12-8830B</td>
</tr>
<tr>
<td>PRO A10-9700B</td>
</tr>
<tr>
<td>PRO A12-9800B</td>
</tr>
</tbody>
</table>

* Windows 7 is only supported by PRO A10-8730B and PRO A12-8830B

**Graphics**
- AMD Radeon R5 or R7 Graphics in processor only;
- supports external digital monitor via HDMI or USB Type-C;
- supports three independent displays;
- max resolution: 4096x2160@60Hz (USB Type-C); 2560x1440@60Hz (HDMI)

**Chipset**
- AMD SoC (System on Chip) platform

**Memory**
- 32GB max / 1866MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets

**Display**
- **Some:** 14.0" (355mm) HD (1366x768), anti-glare, LED backlight, 220 nits, 16:9 aspect ratio, 350:1 contrast ratio
- **Some:** 14.0" (355mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 250 nits, 16:9 aspect ratio, 700:1 contrast ratio, 170° viewing angle

**Screen resolution**
- **Some:** 250 nits, 16:9 aspect ratio, 350:1 contrast ratio, 170° viewing angle
- **Some:** 220 nits, 16:9 aspect ratio, 350:1 contrast ratio, 170° viewing angle

**Multi-touch (opt)**
- On-cell touch, supports 10-finger gesture (FHD only, US only)

**Storage**
- System has one HDD slot or one M.2 2280 slot exclusively for storage
- **Some:** SSD / SATA 6.0Gb/s, 2.5" wide, 7mm high, Active Protection System™
- **Some:** SSD / SATA 6.0Gb/s, 2.5" wide, 7mm high (e.g. xxxGB SSD)
- **Some:** M.2 SSD / PCIe NVMe, PCIe 3.0 x 2, 16Gb/s

**Optical**
- None

**Ethernet**
- Realtek® RTL8111E/PV Gigabit Ethernet connection

**WLAN**
- Realtek RTL8822BE, Wi-Fi 2x2 802.11ac + BT 4.1, M.2 card
- Bluetooth 4.1 wireless, integrated in Wi-Fi + Bluetooth combo adapter

**WWAN (optional)**
- Wireless WAN upgradable
- Integrated Mobile Broadband 4G LTE-A, Qualcomm® Snapdragon™ X7 LTE-A (Sierra Wireless EM7455)
- * For non-WWAN model, it means the model is NOT WWAN upgradable

**SIM card (optional)**
- Small Micro-SIM card slot, opt Verizon LTE (US) SIM card

**Dimensions**
- WxDxH: 13.25" x 9.15" x 0.79"; 336.6mm x 232.5mm x 19.95mm
- **Models:** 3-cell or 3 + 3-cell 6-cell or 3 + 6-cell
- **Magnesium:** 3.49 lb / 1.58 kg 3.92 lb / 1.78 kg
- **PPS:** 3.63 lb / 1.65 kg 4.35 lb / 1.85 kg

**Case color**
- Black

**Case material**
- Display cover: Magnesium Hybrid or PPS (Magnesium Hybrid for US only);
- Bottom: Glass-Fiber Reinforced Plastic

**Smart card reader**
- Integrated Smart card reader

**Media reader**
- 4-in-1 reader (MMC, SD, SDHC, SDXC), supports SD 3.0, UHS-I
- Three USB 3.1 Gen 1 (USB 3.0, one Always On), USB 3.1 Type-C Gen 2 (with the function of Power Delivery and DisplayPort), HDMI 1.4b, Ethernet (RJ-45), Dock connector

**Ports**
- * Depending on many factors, actual data transfer speed may be lower than theoretical speed
- Optional: Lenovo USB-C to VGA Adapter

**Monitor cable**
- * TrackPoint® pointing device and buttonless Mylar surface multi-touch touchpad

**Audio support**
- HD Audio, Realtek ALC3268 codec / stereo speakers, 2W x 2 / dual array microphone, combo audio/microphone jack

**Camera (optional)**
- HD720p resolution, fixed focus

**Security chip**
- Power-on password, hard disk password, supervisor password, security keyhole
- dTPM 1.2: discrete TPM 1.2, TCG Certified
- dTPM 2.0: discrete TPM 2.0, TCG Certified

**Fingerprint reader**
- Touch style match on chip fingerprint reader on the keyboard bezel

**Internal battery**
- Optional: Integrated Li-Polymer 3-cell (24Wh)

**External battery**
- Li-Polymer 3-cell (24Wh) or Li-ion 6-cell (48Wh)

**Max battery life**
- **Models:** 3-cell 3 + 3-cell 6-cell 48Wh 3 + 6-cell 48Wh
- **Max battery life:** 5.13 hr 10.26 hr 10.26 hr 15.4 hr

**Printed Circuit board**
- • Adobe
- • ThinkVantage System Update
- • Lenovo PowerEngage
- • Lenovo Solution Center
- • Microsoft Office preloaded;
- • McAfee
- • Lenovo Companion
- • Lenovo Setting
- • Lenovo Office preload;
- • purchase a product key to activate

**AC adapter**
- 45W or 65W slim tip AC adapter, 45W or 65W USB Type-C AC adapter

**Preload**
- * Windows 7 Professional 64 preinstalled through downgrade rights in Windows 10 Pro 64
- * Lenovo Solution Center
- * Lenovo PowerEngage
- * ThinkVantage Product Recovery
- * ThinkVantage System Update
- * Adobe® Reader
- * Microsoft Office preload;
- * purchase a product key to activate

**Limited warranty**
- One of the following, configurable by model:
  - 1-year depot repair service
  - 3-year/1-year battery depot repair service
  - 3-year/1-year battery limited onsite service

**Mi-Spec test**
- MIL-STD-810G military certification

**Environmental**
- EPEAT® Gold (US only); ENERGY STAR® 6.1; RoHS-compliant

Note: The specifications above may not be available in all regions.
### ThinkPad A485 Platform Specifications

<table>
<thead>
<tr>
<th>Processor</th>
<th>AMD Ryzen™ PRO Mobile Processors with Radeon™ Vega Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number</strong></td>
<td><strong>Processor</strong></td>
</tr>
<tr>
<td>Ryzen 3</td>
<td>2300U</td>
</tr>
<tr>
<td>Ryzen 5</td>
<td>2500U</td>
</tr>
<tr>
<td>Ryzen 7</td>
<td>2700U</td>
</tr>
<tr>
<td>** Core**</td>
<td><strong>Threads</strong></td>
</tr>
<tr>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>** Frequency**</td>
<td><strong>Max Turbo</strong> Frequency</td>
</tr>
<tr>
<td>2.0 GHz</td>
<td>3.4 GHz</td>
</tr>
<tr>
<td>2.8 GHz</td>
<td>3.6 GHz</td>
</tr>
<tr>
<td>2.2 GHz</td>
<td>3.8 GHz</td>
</tr>
</tbody>
</table>

### Graphics
- AMD Radeon Vega 6, Vega 8, or Vega 10 Graphics in processor only;
- supports four independent displays;
- Max resolution: 5120 x 2880 @ 60Hz (USB Type-C); 4096 x 2304 @ 60Hz (HDMI)

### Chipset
- AMD SoC (System on Chip) platform
- 32GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets

### Display
- Some: 14.0" (355mm) HD (1366x768), anti-glare, LED backlight, 220 nits, 16:9 aspect ratio, 400:1 contrast ratio
- Some: 14.0" (355mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 250 nits, 16:9 aspect ratio, 700:1 contrast ratio, 170° viewing angle
- On-cell touch, supports 10-finger gesture (FHD only)

### Storage
- System has one HDD slot or one M.2 2280 slot exclusively for storage
- Some: SSD / SATA 6.0Gb/s, 2.5" wide, 7mm high, Active Protection System™
- Some: M.2 SSD / PCIe NVMe, PCIe 3.0 x 4
- Some: 128GB M.2 SSD / PCIe NVMe, PCIe 3.0 x 2
- Installed M.2 SSD is PCIe 3.0 x 4 but run at PCIe 3.0 x 2 due to M.2 SSD adapter limitation

### Optical
- Realtek® RTL8111GUL Gigabit Ethernet connection
- Realtek® RTL8822BE, Wi-Fi 2x2 802.11ac + Bluetooth 4.1, M.2 card
- Bluetooth 4.1 wireless, integrated in Wi-Fi + Bluetooth combo adapter
- Intel XMM 7360 (Fibocom L850-GL), M.2 card
- For non-WWAN model, it means the model is NOT WWAN upgradable
- Nano-SIM card slot, optional Verizon LTE (US) SIM card

### Audio
- Realtek® ALC3287 codec / Premium Audio
- Optional: Touch style match on chip fingerprint reader on the keyboard bezel
- Stereo speakers, 2W x 2, Dolby Audio

### Security
- Power-on password, hard disk password, supervisor password, security keyhole
- Discrete TPM 2.0, TCG Certified
- DASH Management
- IR camera and HD720p camera, fixed focus

### Camera
- One of the following, configurable by model:
- 6-row, spill-resistant, multimedia Fn keys, optional LED backlight
- TrackPoint® pointing device and buttonless Mylar surface multi-touch touchpad

### Keyboard
- 6-row, spill-resistant, multimedia Fn keys, optional LED backlight
- 4-in-1 reader (MMC, SD, SDHC, SDXC), supports SD 3.0, UHS-I
- One USB 3.1 Gen 1 (Always On), one USB 3.1 Gen 2
- Two USB 3.1 Type-C Gen 2 (with the function of Power Delivery and DisplayPort), HD 2.0, Ethernet (RJ-45), nano-SIM card slot (WWAN models), headphone / microphone combo jack, optional smart card reader, 4-in-1 media reader (MMC, SD, SDHC, SDXC), side docking connector, security keyhole
- Depending on many factors, actual data transfer speed may be lower than theoretical speed

### Monitor cable (optional)
- HDMI to VGA: Lenovo HDMI to VGA Monitor Adapter
- USB-C to DP: Lenovo USB-C to DisplayPort Adapter

### Bundled Accy (optional)
- Lenovo AC adapter
- Lenovo MobileMark® 2014
- Lenovo Monitor cable

### Display port
- Integrated Li-ion 24Wh battery and external Li-ion 24Wh, 48Wh, or 72Wh battery

### NFC
- Integrated Li-ion 24Wh battery and external Li-ion 24Wh, 48Wh, or 72Wh battery

### AC adapter
- 45W or 65W USB Type-C AC adapter

### Preload
- Windows® 10 Home 64 or Windows 10 Pro 64

### Limited warranty
- One of the following, configurable by model:
- 1-year depot repair service
- 3-year/1-yr battery depot repair service
- 3-year/1-yr battery limited onsite service

### Mil-Spec test
- MIL-STD-810G military certification
- EPEAT® Gold (US only); ENERGY STAR® 6.1; RoHS-compliant

### Note
- The specifications above may not be available in all regions.

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Lenovo
May 2019
### ThinkPad E480 Platform Specifications

#### Processor
- **7th Generation Intel® Core™ i3 / i5 Processor**
  - (i3-7130U is NOT available in US and EMEA) or
  - Processor 7th Generation Intel® Core® i3 / i5 Processor
  - Intel HD Graphics 620

<table>
<thead>
<tr>
<th>Processor</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i3-7020U</td>
<td>2</td>
<td>4</td>
<td>2.3 GHz</td>
<td>-</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 620</td>
</tr>
<tr>
<td>i3-7130U</td>
<td>2</td>
<td>4</td>
<td>2.7 GHz</td>
<td>-</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 620</td>
</tr>
<tr>
<td>i5-7200U</td>
<td>2</td>
<td>4</td>
<td>2.5 GHz</td>
<td>3.1 GHz</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 620</td>
</tr>
</tbody>
</table>

- **8th Generation Intel Core® i3 / i5 / i7 Processor**
  - Processor 7th Generation Intel® Core® i3 / i5 Processor
  - Intel UHD Graphics 620

<table>
<thead>
<tr>
<th>Processor</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i3-8130U</td>
<td>2</td>
<td>4</td>
<td>2.2 GHz</td>
<td>3.4 GHz</td>
<td>4MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i5-8250U</td>
<td>4</td>
<td>8</td>
<td>1.6 GHz</td>
<td>3.4 GHz</td>
<td>6MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i7-8550U</td>
<td>4</td>
<td>8</td>
<td>1.8 GHz</td>
<td>4.0 GHz</td>
<td>8MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
</tbody>
</table>

#### Graphics
- Intel HD Graphics 620 or Intel UHD Graphics 620 in processor only or
- Intel HD Graphics 620 or Intel UHD Graphics 620 in processor and
- AMD Radeon RX 550 Graphics, 2GB DDR5 memory;
- supports external digital monitor via HDMI or USB Type-C;
- supports dual independent display;
- Max resolution: 1920x1080 (HDMI) @60Hz

#### Chipset
- Intel SoC (System on Chip) platform
- 32GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets
- System clocks down for processors with lower memory controller

#### Memory
- 32GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets
- 2GB maximum / 2133MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets

#### Display
- Some: 14.0” (355mm) HD (1366x768), anti-glare, LED backlight, 220 nits, 16:9 aspect ratio, 400:1 contrast ratio
- Some: 14.0” (355mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 250 nits, 16:9 aspect ratio, 400:1 contrast ratio

#### Multi-touch
- None

#### Storage
- Up to 2 drives (one M.2 SSD and one HDD)
- Some: HDD / SATA 6.0Gb/s, 2.5” wide, removable, upgradable, Active Protection System™
- Some: M.2 SSD / PCIe NVMe

#### Optane™ memory
- Optional: Intel Optane memory, PCIe NVMe, M.2 3.0 x 2

#### Optical
- None

#### Ethernet
- Gigabit Ethernet Connection, Realtek® 88111GUS

#### WLAN + Bluetooth™
- One of the following, configurable by model:
  - Realtek® RTL8821CE, Wi-Fi 1x1 802.11ac + Bluetooth 4.1, M.2 card
  - Realtek RTL8822BE, Wi-Fi 2x2 802.11ac + Bluetooth 4.1, M.2 card
  - Intel Dual Band Wireless-AC 3165s, 1x1, Wi-Fi + Bluetooth 4.1, M.2 Card

#### WWAN
- SIM card None
- None

#### Weight
- **i3-7020U**: 1.29 kg / 2.86 lbs
- **i3-7130U**: 1.29 kg / 2.86 lbs
- **i5-7200U**: 1.75 kg / 3.87 lbs

#### Case material
- Black or silver

#### Case color
- Black or silver

#### Display cover
- Aluminum or PC/ABS plastic

#### Camera
- HD720p camera, fixed focus
- HD Audio, Conexant® CX11852 codec / stereo speakers, 1.5W x 2, Dolby® Advanced Audio / dual array microphone, headphone / microphone combo jack

#### Keyboard
- 6-row, spill-resistant, multimedia F keys, optional LED backlight
- TrackPoint® pointing device and buttonless Mylar surface multi-touch touchpad

#### Security
- Power-on password, hard disk password, supervisor password, security keyhole
- Security chip (opt) Firmware TPM 2.0 integrated in chipset or discrete TPM 2.0 TCG Certified
- Security chip (opt) None
- Fingerprint reader None
- Touch style fingerprint reader on the palm rest

#### Battery
- Integrated Li-ion 45Wh battery, supports Rapid Charge (charge up to 80% in 1hr)
- Max battery life MobileMark® 2014: 13.51 hr
- *Battery life varies significantly with settings, usage, & other factors

#### AC adapter
- 45W or 65W USB Type-C AC adapter

#### Preload (optional)
- Windows® 10 Home 64 or Windows 10 Pro 64

#### Limitations
- 1-year depot repair service
- Limited warranty

#### Environment
- EPEAT™ Gold (US only); ENERGY STAR® 6.1; RoHS-compliant

#### EPEAT®
- MIL-STD-810G military certification

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**Note:** The specifications above may not be available in all regions.
### ThinkPad E485 Platform Specifications

**Product Specifications Reference (PSREF)**

**Note:** The specifications above may not be available in all regions.

<table>
<thead>
<tr>
<th>Processor</th>
<th>AMD Ryzen® Mobile Processors with Radeon® Vega Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td># of Cores</td>
</tr>
<tr>
<td>Ryzen 3 2200U</td>
<td>2</td>
</tr>
<tr>
<td>Ryzen 5 2500U</td>
<td>4</td>
</tr>
<tr>
<td>Ryzen 7 2700U</td>
<td>4</td>
</tr>
</tbody>
</table>

**Graphics**

AMD Radeon Vega 3, Vega 8, or RX Vega 10 Graphics in processor; supports external digital monitor via HDMI or USB Type-C; supports dual independent display; Max resolution: 1920x1080 (HDMI)@60Hz

| Chipset | AMD SoC (System on Chip) platform |
| Memory | 32GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets |

**Display**

Some: 14.0" (355mm) HD (1366x768), anti-glare, LED backlight, 220 nits, 16:9 aspect ratio, 400:1 contrast ratio

Some: 14.0" (355mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 250 nits, 16:9 aspect ratio, 400:1 contrast ratio

**Multi-touch**

None

**Storage**

Up to 2 drives (one M.2 SSD and one HDD)

Some: HDD / SATA 6.0Gb/s, 2.5" wide, removable, upgradable, Active Protection System™

Some: M.2 SSD / PCIe NVMe

**Optical**

None

**Ethernet**

Gigabit Ethernet Connection, Realtek RTL8111GUS

**WLAN + Bluetooth™**

One of the following, configurable by model:
- Qualcomm QCNFA435, Wi-Fi 1x1 802.11ac + Bluetooth 4.1, M.2 card
- Realtek® RTL8821CE, Wi-Fi 1x1 802.11ac + Bluetooth 4.1, M.2 card
- Realtek RTL8822BE, Wi-Fi 2x2 802.11ac + Bluetooth 4.1, M.2 card

**WWAN**

None

**SIM card**

None

**Dimensions**

Aluminum (WxDxH): 12.96” x 9.53” x 0.78”; 329mm x 242mm x 19.9mm

PC/ABS (WxDxH): 12.96” x 9.53” x 0.86”; 329mm x 242mm x 21.9mm

Starting at 3.87 lb / 1.75kg

**Weight**

**Case color**

Black

**Case material**

Display cover: Aluminum or PC/ABS plastic;
Bottom: PC/ABS plastic

**Smart card reader**

None

**Media reader**

MicroSD card reader

**Ports**

One USB 2.0, two USB 3.1 Gen 1 (one Always On), one USB 3.1 Type-C Gen 2 (with the function of Power Delivery and DisplayPort), HDMI 1.4b, Ethernet (RJ-45), headphone / microphone combo jack, microSD card reader, security keyhole

* Depending on many factors, actual data transfer speed may be lower than theoretical speed

**Camera**

HD720p camera, fixed focus

**Audio support**

HD Audio, Conexant® CX11852 codec / stereo speakers, 1.5W x 2, Dolby® Advanced Audio / dual array microphone, headphone / microphone combo jack

**Keyboard**

6-row, spill-resistant, multimedia Fn keys

TrackPoint® pointing device and buttonless Mylar surface multi-touch touchpad

**Security chip**

Power-on password, hard disk password, supervisor password, security keyhole

Fingerprint reader

None

NFC

None

Battery

Integrated Li-ion 45Wh battery, supports Rapid Charge (charge up to 80% in 1hr) with 65W USB Type-C AC adapter

Max battery life

MobileMark® 2014: 9.37 hr

* Battery life varies significantly with settings, usage, & other factors

AC adapter

45W or 65W USB Type-C AC adapter

Preload (optional) Windows® 10 Home 64 or Windows 10 Pro 64

Limited warranty

1-year depot repair service

**Environment**

EPEAT™ Gold (US only); ENERGY STAR® 6.1; RoHS-compliant

Lenovo

April 2019
## Product Specifications Reference (PSREF)

### ThinkPad E490 Platform Specifications

#### Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i3-8145U</td>
<td>2</td>
<td>4</td>
<td>2.1 GHz</td>
<td>3.9 GHz</td>
<td>4MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i5-8265U</td>
<td>4</td>
<td>8</td>
<td>1.6 GHz</td>
<td>3.9 GHz</td>
<td>6MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i7-8565U</td>
<td>4</td>
<td>8</td>
<td>1.8 GHz</td>
<td>4.6 GHz</td>
<td>8MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
</tbody>
</table>

#### Graphics

- Intel UHD Graphics 620 in processor only
- Intel UHD Graphics 620 in processor and
  - AMD Radeon RX 550X Graphics, 2GB DDR5 memory
  - supports external digital monitor via HDMI or USB Type-C
  - supports dual independent display
- Max resolution: 4096x2304@60Hz (USB Type-C); 4096x2160@24Hz (HDMI)

#### Memory

- 32GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets
- Installed memory is actually 2666MHz but run at 2400MHz due to Intel limitation

#### Display

- 14.0" FHD (1920x1080) Anti-glare IPS 250 nits 16:9 600:1 170° Non-touch
- 14.0" HD (1366x768) Anti-glare TN 220 nits 16:9 400:1 90° Non-touch

#### Chipset

Intel SoC (System on Chip) platform

#### Storage

- Up to two drives (one M.2 SSD and one HDD)
  - M.2 2280 SSD / SATA 6.0Gb/s, 2.5" wide, 7mm high, Active Protection System™
  - M.2 2280 SSD / PCIe NVMe, PCIe 3.0 x 2
  - M.2 2242 SSD / PCIe NVMe, PCIe 3.0 x 2

#### Optane™ memory

Optional: Intel Optane memory,PCIe NVMe, PCIe 3.0 x 2

#### Optical

None

#### Ethernet

Gigabit Ethernet Connection, Realtek 8111GUS

#### WLAN + Bluetooth™

One of the following, configurable by model:
- Realtek® RTL8822BE, Wi-Fi 2x2 802.11ac + Bluetooth 4.2, M.2 card
- Intel Wireless-AC 9260, Wi-Fi 2x2 802.11ac + Bluetooth 5.0, M.2 card

#### WWAN

None

#### SIM card

None

#### Security

- Power-on password, hard disk password, supervisor password, security keyhole
- Security chip: Integrated model: discrete TPM 2.0, TCG Certified
  - Discrete model: firmware TPM 2.0 integrated in chipset

#### System Mgt

None

#### Fingerprint reader

Optional: Touch style fingerprint reader on the palm rest

#### Battery

Integrated Li-ion 45Wh battery, supports Rapid Charge (charge up to 80% in 1hr)
- Max battery life: MobileMark® 2014: 13 hr
- AC adapter: 45W or 65W USB Type-C AC adapter

#### Preload (optional)

Windows® 10 Home 64 or Windows 10 Pro 64

#### Limited warranty

1-year depot repair service

#### Mil-Spec test

MIL-STD-810G military certification

#### Environment

EPEAT™ Bronze; ENERGY STAR® 7.0; RoHS-compliant

Note: The specifications above may not be available in all regions.

Lenovo
May 2019
### ThinkPad E490s Platform Specifications

#### Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i5-8265U</td>
<td>4</td>
<td>8</td>
<td>1.6 GHz</td>
<td>3.9 GHz</td>
<td>6MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i7-8565U</td>
<td>1.8 GHz</td>
<td>8</td>
<td>4.5 GHz</td>
<td>Intel UHD Graphics 620</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Graphics

Intel UHD Graphics 620 in processor only or Intel UHD Graphics 620 in processor and AMD Radeon RX 540X Graphics, 2GB DDR5 memory; supports external digital monitor via HDMI or USB Type-C; supports three independent display.

Max resolution: 4096x2304@60Hz (USB Type-C); 4096x2160@24Hz (HDMI)

#### Chipset

Intel SoC (System on Chip) platform

* Installed memory is actually 2666MHz but run at 2400MHz due to Intel limitation

#### Memory

32GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets

* Installed memory is actually 2666MHz but run at 2400MHz due to Intel limitation

#### Display

<table>
<thead>
<tr>
<th>Size / Resolution</th>
<th>Surface Type</th>
<th>Brightness</th>
<th>Aspect Ratio</th>
<th>Contrast Ratio</th>
<th>Viewing Angle</th>
<th>Multi-touch</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.0&quot; FHD (1920x1080)</td>
<td>Anti-glare TN</td>
<td>220 nits</td>
<td>16:9</td>
<td>400:1</td>
<td>90°</td>
<td>Non-touch</td>
</tr>
<tr>
<td>14.0&quot; FHD (1920x1080)</td>
<td>Anti-glare IPS</td>
<td>250 nits</td>
<td>16:9</td>
<td>600:1</td>
<td>170°</td>
<td>Non-touch</td>
</tr>
</tbody>
</table>

#### Storage

One of the following, configurable by model:

- M.2 2280 SSD / SATA 6.0Gb/s
- M.2 2242 SSD / PCIe NVMe, PCIe 3.0 x 2

#### Optane™ memory

None

#### Ethernet

Gigabit Ethernet Connection, Realtek R8111GUS

#### WLAN + Bluetooth™

One of the following, configurable by model:

- Realtek® RTL8822BE, Wi-Fi 2x2 802.11ac + Bluetooth 4.2, M.2 card
- Intel Wireless-AC 9260, Wi-Fi 2x2 802.11ac + Bluetooth 5.0, M.2 card

#### WWAN

None

#### Security

Integrated model: discrete TPM 2.0, TCG Certified

Discrete model: firmware TPM 2.0 integrated in chipset

#### Camera

HD720p camera, fixed focus

#### Audio support

HD Audio, Conexant CX11880 codec / stereo speakers, 2W x 2, Dolby® Audio™ Premium / dual array microphone, headphone / microphone combo jack

#### Keyboard

6-row, spill-resistant, multimedia Fn keys, optional LED backlight

#### Multi-touch

UltraNav™ pointing device and buttonless Mylar surface multi-touch touchpad

#### Security chip

Power-on password, hard disk password, supervisor password, security keyhole

#### System Mgt

Integrated model: discrete TPM 2.0, TCG Certified

Discrete model: firmware TPM 2.0 integrated in chipset

#### Battery

Integrated Li-ion 42Wh battery, supports Rapid Charge (charge up to 80% in 1hr) with 65W USB Type-C AC adapter

Max battery life of MobileMark® 2014: 11.5 hr

#### Preload (optional)

Windows® 10 Home 64 or Windows 10 Pro 64

#### Limited warranty

1-year depot repair service

#### Note:
The specifications above may not be available in all regions.

### Lenovo

May 2019
### ThinkPad E495 Platform Specifications

#### Processor AMD Ryzen™ Mobile Processors with Radeon™ Vega Graphics

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Controller</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ryzen 3 3200U</td>
<td>2</td>
<td>4</td>
<td>2.6 GHz</td>
<td>3.5 GHz</td>
<td>1MB L2/L3</td>
<td>DDR4-2400</td>
<td>Radeon Vega 3 Graphics</td>
</tr>
<tr>
<td>Ryzen 5 3500U</td>
<td>4</td>
<td>8</td>
<td>2.1 GHz</td>
<td>3.7 GHz</td>
<td>2MB L2/L3</td>
<td>DDR4-2400</td>
<td>Radeon RX Vega 8 Graphics</td>
</tr>
<tr>
<td>Ryzen 7 3700U</td>
<td>4</td>
<td>8</td>
<td>2.3 GHz</td>
<td>4.0 GHz</td>
<td>2MB L2/L3</td>
<td>DDR4-2400</td>
<td>Radeon RX Vega 10 Graphics</td>
</tr>
</tbody>
</table>

#### Graphics
- AMD Radeon Vega 3, Vega 8, or RX Vega 10 Graphics in processor;
- supports external digital monitor via HDMI or USB Type-C;
- supports dual independent display;
- Max resolution: 3840x2160@60Hz (USB Type-C); 3840x2160@30Hz (HDMI)

#### Chipset
- AMD SoC (System on Chip) platform
- 32GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets
- *Installed memory is actually 2666MHz but run at 2400MHz due to AMD limitation*

#### Memory
- 32GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets
- *Installed memory is actually 2666MHz but run at 2400MHz due to AMD limitation*

#### Display
- Size / Resolution: 14.0" HD (1366x768) Anti-glare TN 220 nits 16:9 400:1 90° Non-touch
- 14.0" FHD (1920x1080) Anti-glare IPS 250 nits 16:9 600:1 170° Non-touch

#### Optical
- None

#### Storage
- Up to two drives (one M.2 SSD and one HDD)
- • HDD / SATA 6.0Gb/s, 2.5" wide, 7mm high, Active Protection System™
- • M.2 2242 SSD / PCIe NVMe, PCIe 3.0 x 2 or PCIe 3.0 x 4
- None

#### Ethernet
- Gigabit Ethernet Connection, Realtek R8111GUS

#### WWAN
- None

#### WLAN + Bluetooth™
- One of the following, configurable by model:
  - Realtek® RTL8822BE, Wi-Fi 2x2 802.11ac + Bluetooth 4.2, M.2 card
  - Intel Wireless-AC 9260, Wi-Fi 2x2 802.11ac + Bluetooth 5.0, M.2 card

#### WWAN SIM card
- None

#### Security
- Security chip: Discrete TPM 2.0, TCG Certified
- Fingerprint reader: None
- NFC: None
- Battery: Integrated Li-ion 45Wh battery, supports Rapid Charge (charge up to 80% in 1hr) with 65W USB Type-C AC adapter
- Max battery life: *Battery life varies significantly with settings, usage, & other factors* MobileMark® 2014: 11 hr
- AC adapter: 45W or 65W USB Type-C AC adapter
- Preload (optional) Windows® 10 Home 64 or Windows 10 Pro 64

#### Audio support
- HD Audio, Conexant® CX11880 codec / stereo speakers, 1.5W x 2, Dolby® Advanced Audio / dual array microphone, headphone / microphone combo jack

#### Camera
- HD720p camera, fixed focus

#### UltraNav™
- 6-row, spill-resistant, multimedia Fn keys
- TrackPoint® pointing device and buttonless Mylar surface multi-touch touchpad

#### Keyboard
- 6-row, spill-resistant, multimedia Fn keys
- TrackPoint® pointing device and buttonless Mylar surface multi-touch touchpad

#### Security
- Fingerprint reader: None
- Battery: Integrated Li-ion 45Wh battery, supports Rapid Charge (charge up to 80% in 1hr)
- Max battery life: *Battery life varies significantly with settings, usage, & other factors* MobileMark® 2014: 11 hr
- AC adapter: 45W or 65W USB Type-C AC adapter
- Preload (optional) Windows® 10 Home 64 or Windows 10 Pro 64

#### WWAN SIM card
- None

#### Bundled Accy
- None

#### Limited warranty
- 1-year depot repair service

#### Mil-Spec test
- None

#### Environment
- EPEAT™ Bronze; ENERGY STAR® 7.0; RoHS-compliant

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*Note: The specifications above may not be available in all regions.*

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*Lenovo April 2019*
ThinkPad E580 Platform Specifications

**Processor**

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i3-7020U</td>
<td>2</td>
<td>4</td>
<td>2.3 GHz</td>
<td>-</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 620</td>
</tr>
<tr>
<td>i3-7130U</td>
<td>2</td>
<td>4</td>
<td>2.7 GHz</td>
<td>-</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 620</td>
</tr>
<tr>
<td>i5-7260U</td>
<td>4</td>
<td>8</td>
<td>1.6 GHz</td>
<td>3.3 GHz</td>
<td>8MB</td>
<td>DDR4-2040</td>
<td>Intel UHD Graphics 620</td>
</tr>
</tbody>
</table>

* i3-7130U is NOT available in US and EMEA

**Graphics**

- Intel HD Graphics 620 or Intel UHD Graphics 620 in processor only or Intel HD Graphics 620 or Intel UHD Graphics 620 in processor and Intel UHD Graphics 620 in processor and AMD Radeon RX 550 Graphics, 2GB DDR5 memory; supports external digital monitor via HDMI or USB Type-C;
- supports dual independent display;
- Max resolution: 1920x1080 (HDMI)@60Hz

**Chipset**

- Intel SoC (System on Chip) platform
- 32GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets
- * System clocks down for processors with lower memory controller

**Display**

- **Some:** 15.6" (396mm) HD (1366x768), anti-glare, LED backlight, 220 nits, 16:9 aspect ratio, 400:1 contrast ratio
- **Some:** 15.6" (396mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 250 nits, 16:9 aspect ratio

**Multi-touch**

- None

**Storage**

- Up to 2 drives (one M.2 SSD and one HDD)
- **Some:** HDD / SATA 6.0Gb/s, 2.5" wide, removable, upgradable, Active Protection System™
- **Some:** M.2 SSD / PCIe NVMe

**Optane™ memory**

- Optional: Intel Optane memory, PCIe NVMe, PCIe 3.0 x 2

**Optical**

- None

**Ethernet**

- Gigabit Ethernet Connection, Realtek R8111GUS

**WLAN + Bluetooth™**

- One of the following, configurable by model:
  - Realtek® RTL8821CE, Wi-Fi 1x1 802.11ac + Bluetooth 4.1, M.2 card
  - Realtek® RTL8822BE, Wi-Fi 2x2 802.11ac + Bluetooth 4.1, M.2 card
  - Intel® Dual Band Wireless-AC 3165, 1x1, Wi-Fi + Bluetooth 4.1, M.2 Card
  - Intel 3165ac card supports BT4.2 but is limited to BT4.1 by Windows OS

**WWAN**

- SIM card: None
- **Dimensions:** WxDxH: 14.53" x 9.92" x 0.78"; 369mm x 252mm x 19.95mm
- **Weight:** Starting at 4.7 lb / 2.1kg
- **Case material:** Display cover: Aluminum; Bottom: PC/ABS plastic
- **Smart card reader:** None
- **Media reader:** MicroSD card reader
- **Ports:** One USB 2.0, two USB 3.1 Gen 1 (one Always On), one USB 3.1 Type-C Gen 2 (with the function of Power Delivery and DisplayPort), HDMI 1.4b, Ethernet (RJ-45), headphone / microphone combo jack, microSD card reader, security keyhole
- * Depending on many factors, actual data transfer speed may be lower than theoretical speed
- **Camera:** HD720p camera, fixed focus
- **Audio support:** HD Audio, Conexant® CX11852 codec / stereo speakers, 2W x 2, Dolby® Advanced Audio / dual array microphone, headphone / microphone combo jack
- **Keyboard:** 6-row, spill-resistant, multimedia Fn keys, numeric keypad, optional LED backlight
- **Security chip (opt):** vPro
- **Security:** Power-on password, hard disk password, supervisor password, security keyhole
- **Firmware TPM 2.0 integrated in chipset or discrete TPM 2.0 TCG Certified:** None
- **Fingerprint reader:** Optional: Touch style fingerprint reader on the palm rest
- **Battery:** Integrated Li-ion 45Wh battery, supports Rapid Charge (charge up to 80% in 1hr) with 65W USB Type-C AC adapter
- **Max battery life:** MobileMark® 2014: 12.23 hr
- **AC adapter:** 45W or 65W USB Type-C AC adapter

**Note:** The specifications above may not be available in all regions.

Lenovo
April 2019
### ThinkPad E585 Platform Specifications

#### Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Controller</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ryzen 3 2200U</td>
<td>2</td>
<td>4</td>
<td>2.5 GHz</td>
<td>3.4 GHz</td>
<td>1MB L2 / 4MB L3</td>
<td>DDR4-2400</td>
<td>Radeon Vega 3 Graphics</td>
</tr>
<tr>
<td>Ryzen 5 2500U</td>
<td>4</td>
<td>8</td>
<td>2.0 GHz</td>
<td>3.6 GHz</td>
<td>2MB L2 / 4MB L3</td>
<td>DDR4-2400</td>
<td>Radeon Vega 8 Graphics</td>
</tr>
<tr>
<td>Ryzen 7 2700U</td>
<td>4</td>
<td>8</td>
<td>2.2 GHz</td>
<td>3.8 GHz</td>
<td>2MB L2 / 4MB L3</td>
<td>DDR4-2400</td>
<td>Radeon RX Vega 10 Graphics</td>
</tr>
</tbody>
</table>

**Graphics**

- AMD Radeon Vega 3, Vega 8, or RX Vega 10 Graphics in processor only
- Supports external digital monitor via HDMI or USB Type-C
- Supports dual independent display
- Max resolution: 1920x1080 (HDMI) @ 60Hz

#### Chipset

**Memory**

- AMD SoC (System on Chip) platform
- 32GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets

#### Display

**Display**

- Some: 15.6" (396mm) HD (1366x768), anti-glare, LED backlight, 220 nits, 16:9 aspect ratio, 400:1 contrast ratio (NOT available in EMEA)
- Some: 15.6" (396mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 250 nits, 16:9 aspect ratio, 600:1 contrast ratio

**Multi-touch**

- None

#### Storage

**Up to 2 drives (one M.2 SSD and one HDD)**

- Some: HDD / SATA 6.0 Gb/s, 2.5" wide, removable, upgradable, Active Protection System™
- Some: M.2 SSD / PCIe NVMe
- None

#### Optical

**Ethernet**

- Gigabit Ethernet Connection, Realtek RTL8111GUS

#### WLAN + Bluetooth™

- One of the following, configurable by model:
  - Qualcomm QCNFA435, Wi-Fi 1x1 802.11ac + Bluetooth 4.1, M.2 card
  - Realtek® RTL8821CE, Wi-Fi 1x1 802.11ac + Bluetooth 4.1, M.2 card
  - Realtek® RTL8822BE, Wi-Fi 2x2 802.11ac + Bluetooth 4.1, M.2 card

#### WWAN SIM card

- None

### Dimensions

- **WxDxH:** 14.53" x 9.92" x 0.79"; 369mm x 252mm x 19.95mm

### Weight

- Starting at 4.7 lb / 2.1kg

### Case color

- Black

### Case material

- Display cover: Aluminum; Bottom: PC/ABS plastic

### Security

- Security chip: Discrete TPM 2.0, TCG Certified
- Security keyhole
- Fingerprint reader: None
- NFC: None

### Battery

- Integrated Li-ion 45Wh battery, supports Rapid Charge (charge up to 80% in 1hr) with 65W USB Type-C AC adapter
- MobileMark® 2014: 8.63 hr
- Max battery life
  - *Battery life varies significantly with settings, usage, & other factors*
- AC adapter: 45W or 65W USB Type-C AC adapter

### Preload (optional)

- Windows® 10 Home 64 or Windows 10 Pro 64

### Limited warranty

- 1-year depot repair service

### Mil-Spec test

- None

### Environment

- EPEAT™ Gold (US only); ENERGY STAR® 6.1; RoHS-compliant

Note: The specifications above may not be available in all regions.
## ThinkPad E590 Platform Specifications

### Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i3-8145U</td>
<td>2</td>
<td>4</td>
<td>2.1 GHz</td>
<td>3.9 GHz</td>
<td>4MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i5-8265U</td>
<td>4</td>
<td>8</td>
<td>1.6 GHz</td>
<td>3.9 GHz</td>
<td>6MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i7-8565U</td>
<td>4</td>
<td>8</td>
<td>1.8 GHz</td>
<td>4.6 GHz</td>
<td>8MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
</tbody>
</table>

### Graphics

- Intel UHD Graphics 620 in processor only or
- Intel UHD Graphics 620 in processor and
- AMD Radeon RX 550X Graphics, 2GB DDR5 memory;
- supports external digital monitor via HDMI or USB Type-C;
- supports dual independent display;
- Max resolution: 4096x2304@60Hz (USB Type-C); 4096x2160@24Hz (HDMI)

### Chipset

- Intel SoC (System on Chip) platform
- 32GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets

### Display

- Size / Resolution: 15.6" HD (1366x768) Anti-glare TN 220 nits 16:9 400:1 90° Non-touch
- Size / Resolution: 15.6" FHD (1920x1080) Anti-glare IPS 250 nits 16:9 600:1 170° Non-touch

### Storage

- Up to two drives (one M.2 SSD and one HDD)
- M.2 2280 SSD / SATA 6.0Gb/s, 25.4 mm high, Active Protection System™
- M.2 2224 SSD / PCIe NVMe, PCIe 3.0 x 2

### Optane™ memory

- Optional: Intel Optane memory, PCIe NVMe, PCIe 3.0 x 2

### Ethernet

- Gigabit Ethernet Connection, Realtek R8111GUS

### WLAN + Bluetooth™

- One of the following, configurable by model:
  - Realtek® RTL8822BE, Wi-Fi 2x2 802.11ac + Bluetooth 4.2, M.2 card
  - Intel Wireless-AC 9260, Wi-Fi 2x2 802.11ac + Bluetooth 5.0, M.2 card

### WWAN

- None

### Dimensions

- Weight: Starting at 4.68 lb / 2.12 kg
- 14.53" x 9.94" x 0.78"; 369mm x 252.5mm x 19.9mm

### Smart card reader

- None

### Camera

- HD720p camera, fixed focus

### Audio support

- HD Audio, Conexant CX11880 codec / stereo speakers, 2W x 2, Dolby® Advanced Audio / dual array microphone, headphone / microphone combo jack

### Security chip

- Integrated model: discrete TPM 2.0, TCG Certified
- Discrete model: firmware TPM 2.0 integrated in chipset

### Security

- Power-on password, hard disk password, supervisor password, security keyhole
- Integrated model:
  - discrete TPM 2.0, TCG Certified
  - firmware TPM 2.0 integrated in chipset
- Discrete model:
  - None

### Battery

- Integrated Li-ion 45Wh battery, supports Rapid Charge (charge up to 80% in 1hr) with 65W USB Type-C AC adapter
- MobileMark® 2014: 11 hr

### AC adapter

- 45W or 65W USB Type-C AC adapter

### Preload (optional)

- Windows® 10 Home 64 or Windows 10 Pro 64

### Limited warranty

- 1-year depot repair service

Note: The specifications above may not be available in all regions.

Lenovo
May 2019
### ThinkPad E595 Platform Specifications

#### Processor
<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Controller</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ryzen 3 3200U</td>
<td>2</td>
<td>4</td>
<td>2.6 GHz</td>
<td>3.5 GHz</td>
<td>1MB L2 / 4MB L3 DDR4-2400</td>
<td>Radeon Vega 3 Graphics</td>
<td></td>
</tr>
<tr>
<td>Ryzen 5 3500U</td>
<td>4</td>
<td>8</td>
<td>2.1 GHz</td>
<td>3.7 GHz</td>
<td>2MB L2 / 4MB L3 DDR4-2400</td>
<td>Radeon Vega 8 Graphics</td>
<td></td>
</tr>
<tr>
<td>Ryzen 7 3700U</td>
<td>8</td>
<td></td>
<td>2.3 GHz</td>
<td>4.0 GHz</td>
<td>2MB L2 / 4MB L3 DDR4-2400</td>
<td>Radeon RX Vega 10 Graphics</td>
<td></td>
</tr>
</tbody>
</table>

#### Graphics
- AMD Radeon Vega 3, Vega 8, or RX Vega 10 Graphics in processor; supports external digital monitor via HDMI or USB Type-C; supports dual independent display; Max resolution: 3840x2160@60Hz (USB Type-C); 3840x2160@30Hz (HDMI)

#### Chipset
- AMD SoC (System on Chip) platform
- 32GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets

#### Memory
- Installed memory is actually 2666MHz but run at 2400MHz due to AMD limitation

#### Display
<table>
<thead>
<tr>
<th>Size / Resolution</th>
<th>Brightness</th>
<th>Aspect Ratio</th>
<th>Contrast Ratio</th>
<th>Viewing Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.6&quot; HD (1366x768)</td>
<td>220 nits</td>
<td>16:9</td>
<td>400:1</td>
<td>90°  Non-touch</td>
</tr>
<tr>
<td>15.6&quot; FHD (1920x1080)</td>
<td>250 nits</td>
<td>16:9</td>
<td>600:1</td>
<td>170° Non-touch</td>
</tr>
</tbody>
</table>

#### Multi-touch
- None

#### Storage
- Up to two drives (one M.2 SSD and one HDD)
  - HDD / SATA 6.0Gb/s, 2.5" wide, 7mm high, Active Protection System™
  - M.2 2242 SSD / PCIe NVMe, PCIe 3.0 x 2 or PCIe 3.0 x 4

#### Optical
- None

#### Ethernet
- Gigabit Ethernet Connection, Realtek R8111GUS

#### WLAN + Bluetooth™
- One of the following, configurable by model:
  - Realtek® RTL8822BE, Wi-Fi 2x2 802.11ac + Bluetooth 4.2, M.2 card
  - Intel Wireless-AC 9260, Wi-Fi 2x2 802.11ac + Bluetooth 5.0, M.2 card

#### WWAN
- None

#### SIM card
- None

#### Camera
- HD720p camera, fixed focus

#### Audio support
- HD Audio, Conexant CX11880 codec / stereo speakers, 2W x 2, Dolby® Advanced Audio / dual array microphone, headphone / microphone combo jack

#### Keyboard
- 6-row, spill-resistant, multimedia Fn keys
- TrackPoint® pointing device and buttonless Mylar surface multi-touch touchpad

#### Security chip
- Power-on password, hard disk password, supervisor password, security keyhole
- Discrete TPM 2.0, TCG Certified

#### Security
- None

#### Security keyhole
- None

#### Battery
- Integrated Li-ion 45Wh battery, supports Rapid Charge (charge up to 80% in 1hr) with 65W USB Type-C AC adapter

#### Max battery life
- MobileMark® 2014: 10.3 hr
- *Battery life varies significantly with settings, usage, & other factors

#### AC adapter
- 45W or 65W USB Type-C AC adapter

#### Preload (optional)
- Windows® 10 Home 64 or Windows 10 Pro 64

#### Limited warranty
- 1-year depot repair service

#### Environment
- EPEAT™ Bronze; ENERGY STAR® 7.0; RoHS-compliant

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Note: The specifications above may not be available in all regions.
## ThinkPad L380 Platform Specifications

### Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel® Celeron® Processor, 7th Generation Intel Core™ i3 / i5 Processor</td>
<td>2</td>
<td>2</td>
<td>2.2 GHz</td>
<td>-</td>
<td>2MB/4MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 610</td>
</tr>
<tr>
<td>Cel 3965U</td>
<td>2</td>
<td>2</td>
<td>2.2 GHz</td>
<td>-</td>
<td>2MB/4MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 610</td>
</tr>
<tr>
<td>i3-7130U</td>
<td>4</td>
<td>8</td>
<td>2.7 GHz</td>
<td>-</td>
<td>3MB/4MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i5-7260U</td>
<td>4</td>
<td>8</td>
<td>2.5 GHz</td>
<td>3.1 GHz</td>
<td>3MB/4MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
</tbody>
</table>

8th Generation Intel Core i5 / i7 Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i3-8130U</td>
<td>2</td>
<td>4</td>
<td>2.2 GHz</td>
<td>3.4 GHz</td>
<td>4MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i5-8250U</td>
<td>4</td>
<td>8</td>
<td>1.6 GHz</td>
<td>3.4 GHz</td>
<td>6MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i5-8350U</td>
<td>4</td>
<td>8</td>
<td>1.7 GHz</td>
<td>3.6 GHz</td>
<td>6MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i7-8550U</td>
<td>4</td>
<td>8</td>
<td>1.8 GHz</td>
<td>4.0 GHz</td>
<td>8MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
</tbody>
</table>

### Graphics

- Intel HD Graphics 610, 620 or Intel UHD Graphics 620 in processor; supports external digital monitor via HDMI or USB Type-C; supports three independent displays; Max resolution: 4096x2304@60Hz (USB Type-C); 4096x2160@30Hz (HDMI)

### Chipset

- Intel SoC (System on Chip) platform
- 32GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets
- * System clocks down for processors with lower memory controller

### Display

**Some:**
- 13.3" (338mm) HD (1366x768), anti-glare, LED backlight, 250 nits, 16:9 aspect ratio, 500:1 contrast ratio
- 13.3" (338mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 250 nits, 16:9 aspect ratio, 700:1 contrast ratio, 170° viewing angle
- 13.3" (338mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 250 nits, 16:9 aspect ratio, 600:1 contrast ratio, 170° viewing angle, on-cell touch

**Some:**
- 13.3" (338mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 250 nits, 16:9 aspect ratio, 801:1 contrast ratio, 170° viewing angle, on-cell touch

### Multi-touch (opt)

- On-cell touch, supports 10-finger gesture

### Storage

- One of the following, configurable by model:
  - M.2 SSD / SATA 6.0Gb/s (e.g. xxxGB SSD M.2)
  - M.2 SSD / PCIe NVMe, PCIe 3.0 x 4, 32GB/s (e.g. xxxGB SSD M.2 PCIe NVMe)

### Optane™ memory

- None

### Ethernet

- Native Intel Ethernet Connection I219-V (Non-vPro) or I219-LM (vPro)
- via optional ThinkPad Ethernet Extension Cable

### WLAN + Bluetooth™

- Intel Dual Band Wireless-AC 8265, Wi-Fi 2x2 802.11ac + Bluetooth 4.1, M.2 card
- * Intel 8265ac card supports BT4.2 but is limited to BT4.1 by Windows OS

### WWAN

- None

### SIM card

- None

### Memory

- Chipset: Intel SoC (System on Chip) platform
- 32GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets
- * System clocks down for processors with lower memory controller

### Chipset

- Memory: 32GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets
- * System clocks down for processors with lower memory controller

### Display

- Graphics: Intel HD Graphics 610, 620 or Intel UHD Graphics 620 in processor; supports external digital monitor via HDMI or USB Type-C; supports three independent displays; Max resolution: 4096x2304@60Hz (USB Type-C); 4096x2160@30Hz (HDMI)

### Chipset

- Intel SoC (System on Chip) platform
- 32GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets
- * System clocks down for processors with lower memory controller

### Display

- * Some:**
  - 13.3" (338mm) HD (1366x768), anti-glare, LED backlight, 250 nits, 16:9 aspect ratio, 500:1 contrast ratio
  - 13.3" (338mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 250 nits, 16:9 aspect ratio, 700:1 contrast ratio, 170° viewing angle
  - 13.3" (338mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 250 nits, 16:9 aspect ratio, 600:1 contrast ratio, 170° viewing angle, on-cell touch

- **Some:**
  - 13.3" (338mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 250 nits, 16:9 aspect ratio, 801:1 contrast ratio, 170° viewing angle, on-cell touch

### Multi-touch (opt)

- On-cell touch, supports 10-finger gesture

### Storage

- One of the following, configurable by model:
  - M.2 SSD / SATA 6.0Gb/s (e.g. xxxGB SSD M.2)
  - M.2 SSD / PCIe NVMe, PCIe 3.0 x 4, 32GB/s (e.g. xxxGB SSD M.2 PCIe NVMe)

### Optane™ memory

- None

### Ethernet

- Native Intel Ethernet Connection I219-V (Non-vPro) or I219-LM (vPro)
- via optional ThinkPad Ethernet Extension Cable

### WLAN + Bluetooth™

- Intel Dual Band Wireless-AC 8265, Wi-Fi 2x2 802.11ac + Bluetooth 4.1, M.2 card
- * Intel 8265ac card supports BT4.2 but is limited to BT4.1 by Windows OS

### WWAN

- None

### SIM card

- None

---

**Note:** The specifications above may not be available in all regions.

**Lenovo**

**April 2019**
# ThinkPad L390 Platform Specifications

<table>
<thead>
<tr>
<th>Processor</th>
<th>8th Generation Intel® Core™ i3 / i5 / i7 Processor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Number</td>
</tr>
<tr>
<td>-----------</td>
<td>--------</td>
</tr>
<tr>
<td>i3-8145U</td>
<td>2, 4</td>
</tr>
<tr>
<td>i5-8265U</td>
<td>4, 8</td>
</tr>
<tr>
<td>i5-8365U</td>
<td>8, 8</td>
</tr>
<tr>
<td>i7-8565U</td>
<td>8, 8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 GHz, 3.9 GHz</td>
<td>4.6 GHz</td>
<td>4MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Graphics</th>
<th>Intel UHD Graphics 620 in processor; supports external digital monitor via HDMI or USB Type-C; supports three independent displays;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max resolution</td>
<td>4096x2304@60Hz (USB Type-C); 4096x2160@30Hz (HDMI)</td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel SoC (System on Chip) platform</td>
</tr>
<tr>
<td>Memory</td>
<td>32GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Display</th>
<th>Size</th>
<th>Resolution</th>
<th>Surface</th>
<th>Type</th>
<th>Brightness</th>
<th>Aspect Ratio</th>
<th>Contrast Ratio</th>
<th>Viewing Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.3&quot; HD</td>
<td>(1366x768)</td>
<td>Anti-glare</td>
<td>TN</td>
<td>250 nits</td>
<td>16:9</td>
<td>500:1</td>
<td>90°</td>
<td></td>
</tr>
<tr>
<td>13.3&quot; FHD</td>
<td>(1920x1080)</td>
<td>Anti-glare</td>
<td>IPS</td>
<td>250 nits</td>
<td>16:9</td>
<td>700:1 (non-touch)</td>
<td>170°</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Multi-touch (opt)</th>
<th>On-cell touch, supports 10-finger gesture (FHD only)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Storage</th>
<th>One of the following, configurable by model:</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.2 2280 SSD / SATA 6.0Gb/s</td>
<td></td>
</tr>
<tr>
<td>M.2 2242 SSD / PCIe NVMe, PCIe 3.0 x 2</td>
<td></td>
</tr>
<tr>
<td>M.2 2280 SSD / PCIe NVMe, PCIe 3.0 x 4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Optane™ memory</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optane™ memory</td>
<td>None</td>
</tr>
<tr>
<td>Optical</td>
<td>None</td>
</tr>
</tbody>
</table>

| Ethernet | Native Intel Ethernet Connection I219-V (Non-vPro) or I219-LM (vPro) via optional ThinkPad Ethernet Extension Cable or Lenovo USB-C to Ethernet Adapter |

| WLAN Bluetooth™ | Intel Wireless-AC 9560, Wi-Fi 2x2 802.11ac + Bluetooth 5.0, M.2 card Bluetooth 5.0 wireless, integrated in Wi-Fi + Bluetooth combo adapter |

<table>
<thead>
<tr>
<th>WWAN</th>
<th>Sim card</th>
<th>None</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Weight</th>
<th>Case color</th>
<th>Case material</th>
</tr>
</thead>
<tbody>
<tr>
<td>WxDxH: 12.67&quot; x 8.83&quot; x 0.74&quot;; 321.8mm x 224.2mm x 18.8mm</td>
<td>Starting at 2.62 lb / 1.46 kg</td>
<td>Black or Silver</td>
<td>Display cover: Aluminum</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accessories (optional)</th>
<th>Security chip</th>
<th>Security</th>
<th>System Mgt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bluetooth adapter</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HD Audio</td>
<td>Discrete TPM 2.0, TCG Certified</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fingerprint reader</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TrackPoint® pointing device and buttonless Mylar surface touchpad, multi-touch</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Camera | HD720p camera, fixed focus |
| Audio support | HD Audio, Realtek ALC3287 codec / stereo speakers, 2W x 2, Dolby® Audio™ Premium / dual array microphone, headphone / microphone combo jack |

<table>
<thead>
<tr>
<th>Ports</th>
<th>Media reader</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two USB 3.1 Gen 1 (one Always On), two USB 3.1 Type-C Gen 1 (with the function of Power Delivery and DisplayPort), HDMI 1.4b, Ethernet extension connector, headphone / microphone combo jack, microSD card reader, security keyhole</td>
<td></td>
</tr>
<tr>
<td>MicroSD card reader</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Monitor cable (optional)</th>
<th>Smart card reader</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Depending on many factors, actual data transfer speed may be lower than theoretical speed</td>
<td></td>
</tr>
<tr>
<td>Lenovo USB-C to VGA:</td>
<td></td>
</tr>
<tr>
<td>Lenovo USB-C to VGA + Power Adapter:</td>
<td></td>
</tr>
<tr>
<td>Lenovo USB-C to HDMI:</td>
<td></td>
</tr>
<tr>
<td>Lenovo USB-C to DisplayPort Adapter:</td>
<td></td>
</tr>
<tr>
<td>Lenovo USB-C to RJ45:</td>
<td></td>
</tr>
<tr>
<td>Lenovo USB-C to USB-A:</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Camera</th>
<th>Lenovo USB-C to USB-C:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Keyboard</th>
<th>HD Audio, Realtek ALC3287 codec / stereo speakers, 2W x 2, Dolby® Audio™ Premium / dual array microphone, headphone / microphone combo jack</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Audio support</th>
<th>Multi-touch (opt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TrackPoint® pointing device and buttonless Mylar surface touchpad, multi-touch</td>
<td></td>
</tr>
<tr>
<td>Power-on password, hard disk password, supervisor password, security keyhole</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Security</th>
<th>Power-on password, hard disk password, supervisor password, security keyhole</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security</td>
<td>Power-on, passwords, hard disk password, supervisor password, security keyhole</td>
</tr>
<tr>
<td>System Mgt</td>
<td>None</td>
</tr>
<tr>
<td>Fingerprint reader</td>
<td>Optional: Touch style fingerprint reader on the palm rest</td>
</tr>
<tr>
<td>NWC (optional)</td>
<td>None</td>
</tr>
<tr>
<td>Battery</td>
<td>Integrated Li-ion 45Wh battery, supports Rapid Charge (charge up to 80% in 1hr) with 65W USB Type-C AC adapter</td>
</tr>
<tr>
<td>Max battery life</td>
<td>MobileMark® 2014: 14.61 hr</td>
</tr>
<tr>
<td>AC adapter</td>
<td>45W or 65W USB Type-C AC adapter</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Preload</th>
<th>Windows® 10 Home 64 or Windows 10 Pro 64</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited warranty</td>
<td>One of the following, configurable by model:</td>
</tr>
</tbody>
</table>

- 1-year depot repair service
- 3-year/1-yr battery depot repair service
- 3-year/1-yr battery limited onsite service

<table>
<thead>
<tr>
<th>Mil-Spec test</th>
<th>MIL-STD-810G military certification</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Environment</th>
<th>EPEAT™ Bronze; ENERGY STAR® 7.0; RoHS-compliant</th>
</tr>
</thead>
</table>

Note: The specifications above may not be available in all regions.
ThinkPad L470 Platform Specifications

**Product Specifications Reference (PSREF)**

### Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i3-6006U</td>
<td>2</td>
<td>4</td>
<td>2.0 GHz</td>
<td>-</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 520</td>
</tr>
<tr>
<td>i3-6100U</td>
<td>2</td>
<td>4</td>
<td>2.3 GHz</td>
<td>-</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 520</td>
</tr>
<tr>
<td>i5-6200U</td>
<td>2</td>
<td>4</td>
<td>2.5 GHz</td>
<td>3.0 GHz</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 520</td>
</tr>
<tr>
<td>i7-6600U</td>
<td>2</td>
<td>4</td>
<td>2.6 GHz</td>
<td>-</td>
<td>4MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 520</td>
</tr>
</tbody>
</table>

### Intel Celeron Processor or 7th Generation Intel Core i3 / i5 / i7 Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cel 3965U</td>
<td>2</td>
<td>4</td>
<td>2.2 GHz</td>
<td>-</td>
<td>2MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 610</td>
</tr>
<tr>
<td>i3-7100U</td>
<td>2</td>
<td>4</td>
<td>2.4 GHz</td>
<td>3.1 GHz</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 520</td>
</tr>
<tr>
<td>i5-7200U</td>
<td>2</td>
<td>4</td>
<td>2.5 GHz</td>
<td>3.5 GHz</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 520</td>
</tr>
<tr>
<td>i7-7500U</td>
<td>2</td>
<td>4</td>
<td>2.7 GHz</td>
<td>3.5 GHz</td>
<td>4MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 520</td>
</tr>
<tr>
<td>i7-7700U</td>
<td>2</td>
<td>4</td>
<td>2.8 GHz</td>
<td>3.9 GHz</td>
<td>4MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 520</td>
</tr>
</tbody>
</table>

* i7 processor is NOT available in EMEA

### Graphics

- Intel HD Graphics 610 or 620 in processor only, or Intel HD Graphics 620 in processor and AMD Radeon R5 M430, 2GB memory; supports external analog monitor via VGA and digital monitor via Mini DisplayPort; supports three independent displays; Max resolution: 3840x2160@60Hz (DP via mDP cable); 1920x1200@60Hz (VGA)

### Chipset Memory

- Intel SoC (System on Chip) platform
- 32GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets
- System clocks down for processors with lower memory controller

### Display

- Some: 14.0" (355mm) HD (1366x768), anti-glare, LED backlight, 220 nits, 16:9 aspect ratio, 500:1 contrast ratio
- Some: 14.0" (355mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 220 nits, 16:9 aspect ratio, 500:1 contrast ratio, 170° viewing angle

### Multi-touch

- None

### Storage

- System has one HDD slot or one M.2 2280 slot exclusively for storage
- Some: HDD / SATA 6.0Gb/s, 2.5" wide, 7mm or 9.5mm high, Active Protection System™
- Some: SSD / SATA 6.0Gb/s, 2.5" wide, 7mm high (e.g. xxxGB SSD)
- Some: M.2 SSD / PCIe NVMe, PCIe 3.0 x 2, 16Gb/s
- Some: 128GB M.2 SSD / SATA 6.0Gb/s, in WWAN slot as 2nd Storage, mutually exclusive with WWAN

### Optical

- None

### Ethernet

- Non-vPro model: Intel Ethernet Connection I219-V (Jacksonville)
- vPro model: Intel Ethernet Connection I219-LM (Jacksonville)

### WLAN

- One of the following, configurable by model:
  - Realtek® RTL8822BE, Wi-Fi 2x2 802.11ac + BT4.1, M.2 card
  - Intel Dual Band Wireless-AC 8260, Wi-Fi 2x2 802.11ac + BT4.1, M.2 card
  - Intel Dual Band Wireless-AC 8265, Wi-Fi 2x2 802.11ac + BT4.1, M.2 card
  - Bluetooth 4.1 capable, wireless in Wi-Fi + Bluetooth combo adapter

* Intel 8265ac / 8265ac card support BT4.2 but is limited to BT4.1 by Windows OS

### Bluetooth™

- One of the following, configurable by model:
  - Wi-Fi 2x2 802.11ac + BT4.1, M.2 card
  - Integrated Mobile Broadband 4G LTE (Sierra Wireless EM7455), M.2 card
  - Integrated Mobile Broadband 4G LTE, Intel XMM™ 7160 (Fibocom L831-EAU), M.2 card (EMEA only)

### WWAN (optional)

- One of the following, configurable by model:
  - Integrated Mobile Broadband 4G LTE-A
  - Qualcomm® Snapdragon™ X7 LTE-A (Sierra Wireless EM7455), M.2 card
  - integrated Mobile Broadband 4G LTE-A Intel XMM™ 7160 (Fibocom L831-EAU), M.2 card (EMEA only)

### SIM card (optional)

- Micro-SIM card slot, opt Verizon LTE (US) or Lenovo® Connect (EMEA) SIM card

### Dimensions

- WxDxH: 13.35" x 9.25" x 0.94"; 339mm x 235mm x 23.9mm
- Weight
  - Integrated model: 4.03 lb / 1.87 kg
  - 4.54 lb / 2.05 kg

### Camera (optional)

- HD720p resolution, fixed focus

### Audio support

- HD Audio, Realtek ALC3268 codec / stereo speakers, 1W x 2 / dual array microphone, combo audio/microphone jack

### Smart card reader (optional)

- Smart card reader

### Media reader

- 4-in-1 reader (MMC, SD, SDHC, SDXC)

### Ports

- Three USB 3.1 Gen 1 (USB 3.0, one Always On), VGA, Mini DisplayPort, Ethernet (RJ-45), Dock connector

### Security

- Power-on password, hard disk password, supervisor password, security keyhole
- Discrete TPM 2.0, TCG Certified
- Intel vPro Technology
- Optional: Swipe style fingerprint reader on the keyboard bezel

### Security chip

- Intel Rapid SSD Encryption Technology

### NFC

- None

### AC adapter

- 45W or 65W slim tip AC adapter

### Battery

- Li-ion 3-cell (24Wh) or 6-cell (48Wh or 72Wh)

### Maximum battery life

- 10.3 hours (EMEA); 10.1 hours (US)

### Preload

- Windows® 7 Professional 64 preinstalled through downgrade rights in Windows 10 Pro 64
- Lenovo Solution Center
- Lenovo PowerEngage
- ThinkVantage System Update
- Adobe® Reader®
- Microsoft® Office preloaded; purchase a product key to activate
- McAfee® LiveSafe® (30-day trial)

### Limited warranty

- One of the following, configurable by model:
  - 1-year depot repair service
  - 3-year/1-yr battery depot repair service
  - 3-year/1-yr battery limited onsite service

### MIL-Spec test

- MIL-STD-810G military certification

### Environment

- EPEAT® Gold (US only); ENERGY STAR® 6.1; RoHS-compliant

* Battery life varies significantly with settings, usage, & other factors

Note: The specifications above may not be available in all regions.

Lenovo September 2018
## ThinkPad L480 Platform Specifications

### 7th Generation Intel® Core™ i3 / i5 Processor or

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i3-7130U</td>
<td>2</td>
<td>2.7 GHz</td>
<td>-</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 620</td>
</tr>
<tr>
<td>i5-7200U</td>
<td>4</td>
<td>2.5 GHz</td>
<td>3.1 GHz</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 620</td>
</tr>
<tr>
<td>i5-7300U</td>
<td>4</td>
<td>2.5 GHz</td>
<td>3.5 GHz</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 620</td>
</tr>
</tbody>
</table>

### Processor Number

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i3-8130U</td>
<td>2</td>
<td>2.2 GHz</td>
<td>3.4 GHz</td>
<td>4MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i5-8550U</td>
<td>4</td>
<td>1.6 GHz</td>
<td>3.4 GHz</td>
<td>6MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i7-8550U</td>
<td>4</td>
<td>1.6 GHz</td>
<td>4.0 GHz</td>
<td>8MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
</tbody>
</table>

* 3-7130U is NOT available in US and EMEA

### Graphics

- Intel HD Graphics 620 or Intel UHD Graphics 620 in processor only or Intel HD Graphics 620 in processor and AMD Radeon 530, 2GB GDDR5 memory (discrete models are NOT available in EMEA);
- supports external digital monitor via HDMI or USB Type-C;
- supports three independent displays;
- Max resolution: 4096x2304@60Hz (USB Type-C); 4096x2160@30Hz (HDMI)

### Chipset

- Intel SoC (System on Chip) platform
- 32GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets

### Display

- On-cell touch, supports 10-finger gesture (FHD only)
- Supports external digital monitor via HDMI or USB Type-C

### Multi-touch (opt)

- On-cell touch, supports 10-finger gesture (FHD only)

### Storage

- System has one HDD slot or one M.2 2280 slot exclusively for storage
- SSD / SATA 6.0Gb/s, 2.5" wide, 7mm high, Active Protection System™
- Some: M.2 SSD / PCIe NVMe, PCIe 3.0 x 2, 16Gb/s
- Some: 128GB M.2 SSD / PCIe NVMe, PCIe 3.0 x 2, 16Gb/s, in WWAN slot as 2nd Storage, mutually exclusive with WWAN

### Optane™ memory

- None

### Ethernet

- Non-vPro model: Intel Ethernet Connection i219-V (Jacksonville)
- vPro model: Intel Ethernet Connection i219-LM (Jacksonville)

### WLAN + Bluetooth™ (optional)

- One of the following, configurable by model:
  - Realtek® RTL8822BE, Wi-Fi 2x2 802.11ac + Bluetooth 4.1, M.2 card (US only)
  - Intel Dual Band Wireless-AC 8265, Wi-Fi 2x2 802.11ac + Bluetooth 4.1, M.2 card
  - Intel 8265ac card supports BT4.2 but is limited to BT4.1 by Windows OS

### WWAN (optional)

- One of the following, configurable by model:
  - Intel XMM™ 7262 (Fibocom L830-EB), M.2 card (EMEA only)
  - Integrated Mobile Broadband 4G LTE-A
  - Intel XMM™ 7360 (Fibocom L850-GL), M.2 card

### Dimensions

- Weight: Starting at 3.71 lb / 1.68 kg
- Case color: Black
- Case material: PC/ABS plastic

### Camera (optional)

- One of the following, configurable by model:
  - HD720p camera, fixed focus
  - IR camera and HD720p camera, fixed focus

### Audio support

- Dual speakers, 2W x 2, Dolby® Audio™ / dual array microphone, headphone / microphone combo jack

### Keyboard

- UltraNav™ TrackPoint® pointing device and buttonless Mylar surface multi-touch touchpad

### Security

- Security chip
  - Discrete TPM 2.0, TCG Certified
  - Intel vPro Technology

### Security chip

- Fingerprint reader
  - Optional: Touch style match on chip fingerprint reader on the keyboard bezel, anti-spoofing technology

### Battery

- Integrated Li-ion 45Wh battery, supports Rapid Charge (charge up to 80% in 1hr) with 65W USB Type-C AC adapter

### Preload

- Windows® 10 Home 64 or Windows 10 Pro 64

### Limited warranty

- One of the following, configurable by model:
  - 1-year depot repair service
  - 3-year/1-yr battery depot repair service
  - 3-year/1-yr battery limited onsite service

### Mil-Spec test

- MIL-STD-810G military certification

### Environment

- EPEAT™ Gold (US only); ENERGY STAR® 6.1; RoHS-compliant

Note: The specifications above may not be available in all regions.
# ThinkPad L490 Platform Specifications

<table>
<thead>
<tr>
<th>Processor Intel® Celeron® Processor or 8th Generation Intel Core™ i3 / i5 / i7 Processor</th>
<th>Specifications Reference (PSREF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor Number</td>
<td># of Cores</td>
</tr>
<tr>
<td>Cel 4305U</td>
<td>2</td>
</tr>
<tr>
<td>3-8145U</td>
<td>4</td>
</tr>
<tr>
<td>5-8265U</td>
<td>4</td>
</tr>
<tr>
<td>5-8365U</td>
<td>4</td>
</tr>
<tr>
<td>7-8565U</td>
<td>4</td>
</tr>
<tr>
<td>7-8665U</td>
<td>4</td>
</tr>
</tbody>
</table>

| Graphics Intel UHD Graphics 610 or 620 in processor only or Intel UHD Graphics 620 in processor and
|---|---|

<table>
<thead>
<tr>
<th>Chipset Memory Intel SoC (System on Chip) platform</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel Ethernet Connection I219-LM (Jacksonville)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Display 14.0” HD (1366x768) TN Anti-glare 220 nits 16:9 400:1 45% 90°</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.0” FHD (1920x1080) IPS Anti-glare 250 nits 16:9 700:1 45% 170°</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Multi-touch (opt) On-cell touch, supports 10-finger gesture (FHD only)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Storage HDD / SATA 6.0Gb/s, 2.5” wide, 7mm high, Active Protection System™</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSD / SATA 6.0Gb/s, 2.5” wide, 7mm high</td>
</tr>
<tr>
<td>M.2 2280 SSD / PCIe NVMe, PCIe 3.0 x 4</td>
</tr>
<tr>
<td>M.2 2242 SSD / PCIe NVMe, PCIe 3.0 x 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Optane™ memory Installed M.2 2280 SSD is PCIe 3x4 but runs at PCIe 3x2 due to M.2 SSD adapter limitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optional: Intel Optane memory, PCIe NVMe, PCIe 3.0 x 2</td>
</tr>
<tr>
<td>None</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Optical None</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Ethernet -vPro model: Intel Ethernet Connection 2129-V (Jacksonville) -vPro model: Intel Ethernet Connection 2129-LM (Jacksonville)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>WLAN + Bluetooth™ (optional) One of the following, configurable by model:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Realtek® RTL8822BE, Wi-Fi 2x2 802.11ac + Bluetooth 4.2, M.2 card</td>
</tr>
<tr>
<td>Intel Wireless-AC 9260, Wi-Fi 2x2 802.11ac + Bluetooth 5.0</td>
</tr>
<tr>
<td>Intel Wireless-AX 2260, Wi-Fi 2x2 802.11ax + Bluetooth 5.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WWAN (optional) One of the following, configurable by model:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wireless WAN upgradable</td>
</tr>
<tr>
<td>Integrated Mobile Broadband 4G LTE, Fibocomb L830-EB, M.2 card (EMEA only)</td>
</tr>
<tr>
<td>Integrated Mobile Broadband 4G LTE-A, Fibocomb L850-GL, M.2 card</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SIM card None</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Dimensions WxDxH: 13.19” x 9.25” x 0.89”; 335mm x 235mm x 22.5mm</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Weight Starting at 3.72 lb / 1.69 kg</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Case color Black</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Case material PC/ABS plastic</th>
</tr>
</thead>
</table>

| Brand | Lenovo |
|---|

| Model | June 2019 |
|---|

Note: The specifications above may not be available in all regions.
**ThinkPad L570 Platform Specifications**

**Processor**  
6th Generation Intel Core i3 / i5 / i7 Processor or  
Processor Number | # of Cores | # of Threads | Base Frequency | Max Turbo Frequency | Cache | Memory Types | Processor Graphics | Processor or 7th Generation Intel Core i3 / i5 / i7 Processor
|------------------|------------|-------------|----------------|---------------------|-------|--------------|-------------------|-------------------|
| Intel Celeron  

**Graphics**  
Intel HD Graphics 520, 610, or 620 in processor only;  
supports external analog monitor via VGA and digital monitor via Mini DisplayPort;  
supports three independent displays;  
Max resolution: 3840x2160@60Hz (DP via mDP cable); 1920x1200@60Hz (VGA)

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

**Memory**  
32GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets

**Display**  
Some: 15.6" (396mm) HD (1366x768), anti-glare, LED backlight, 220 nits, 16:9 aspect ratio, 350:1 contrast ratio

**Storage**  
Some: HDD / SATA 6.0Gb/s, 2.5" wide, 7mm high, Active Protection System™

**Optical (optional)**  
DVD-ROM or DVD burner, 9mm high, fixed, not removable, tray-in

**Ethernet**  
Non-vPro model: Intel Ethernet Connection i219-V (Jacksonville)

**WLAN**  
One of the following, configurable by model:

**WLAN**  
Intel Dual Band Wireless-AC 8260, Wi-Fi 2x2 802.11ac + BT4.1, M.2 card (US only)

**Bluetooth™**  
Intel Dual Band Wireless-AC 8265, Wi-Fi 2x2 802.11ac + BT4.1, M.2 card

**Weight**  
Starting at 5.25 lb / 2.38 kg

**Case color**  
Black

**Camera (optional)**  
14.84" x 10.04" x 1.08-1.21"; 377mm x 255mm x 27.6-30.85mm

**Dimensions**  
Maximum battery life  
MobileMark® 2014: 14.8 hr

**Battery**  
Lenovo 6-cell (48Wh)

**AC adapter**  
45W slim tip AC adapter

**Preload**  
Windows 10 Pro 64 preinstalled;  
Some: Windows 10 Home 64

**Licenses**  
Lenovo vPro Technology

**Security**  
Power-on password, hard disk password, supervisor password, security keyhole

**Security chip**  
Discrete TPM 2.0, TCG Certified

**Security chip**  
Intel vPro Technology

**Fingerprint reader**  
Optional: Swipe style fingerprint reader on the palm rest

**NFC**  
None

**Keyboard**  
6-row, spill-resistant, multimedia Fn keys, numeric keypad

**UltraNav™**  
TrackPoint® pointing device and buttonless Mylar surface multi-touch touchpad

**System clocks down for processors with lower memory controller

**Note:** The specifications above may not be available in all regions.
### ThinkPad L580 Platform Specifications

**Processor**

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cel 3965U</td>
<td>2</td>
<td>2</td>
<td>2.2 GHz</td>
<td>-</td>
<td>2MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 610</td>
<td></td>
</tr>
<tr>
<td>3/7130U</td>
<td>2</td>
<td>4</td>
<td>2.7 GHz</td>
<td>-</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 620</td>
<td></td>
</tr>
<tr>
<td>5/7200U</td>
<td>4</td>
<td>8</td>
<td>2.5 GHz</td>
<td>3.1 GHz</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 620</td>
<td></td>
</tr>
<tr>
<td>5/7300U</td>
<td>2</td>
<td>4</td>
<td>2.6 GHz</td>
<td>3.5 GHz</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 620</td>
<td></td>
</tr>
</tbody>
</table>

8th Generation Intel Core i3 / i5 / i7 Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>i3-8130U</td>
<td>2</td>
<td>4</td>
<td>2.2 GHz</td>
<td>3.4 GHz</td>
<td>4MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
<td></td>
</tr>
<tr>
<td>i5-8250U</td>
<td>4</td>
<td>8</td>
<td>1.6 GHz</td>
<td>3.4 GHz</td>
<td>6MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
<td></td>
</tr>
<tr>
<td>i5-8550U</td>
<td>7</td>
<td>1.6 GHz</td>
<td>2.7 GHz</td>
<td>4.0 GHz</td>
<td>8MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
<td></td>
</tr>
</tbody>
</table>

* i3-7130U is NOT available in US and EMEA

**Graphics**

Intel HD Graphics 610, 620 or Intel UHD Graphics 620 in processor only or Intel HD Graphics 620 or Intel UHD Graphics 620 in processor and AMD Radeon 530, 2GB GDDR5 memory (discrete models are NOT available in EMEA); supports external digital monitor via HDMI or USB Type-C; supports three independent displays; Max resolution: 4096x2304 @60Hz (USB Type-C); 4096x2160 @30Hz (HDMI)

**Chipset Memory**

Intel SoC (System on Chip) platform

* System clocks down for processors with lower memory controller

**Display**

| Some: 15.6" (396mm) HD (1366x768), anti-glare, LED backlight, 220 nits, 16:9 aspect ratio, 500:1 contrast ratio |       |
| Some: 15.6" (396mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 250 nits, 16:9 aspect ratio, 800:1 contrast ratio, 170° viewing angle |       |

**Multi-touch**

None

**Storage**

System has one HDD slot or one M.2 2280 slot exclusively for storage

| Some: HDD / SATA 6.0Gb/s, 2.5" wide, 7mm high, Active Protection System™ |       |
| Some: SSD / SATA 6.0Gb/s, 2.5" wide, 7mm high (e.g. xxxGB SSD) |       |
| Some: M.2 SSD / PCIe NVMe, PCIe 3.0 x 2, 16GB/s, 256GB |       |
| Some: 128GB M.2 SSD / PCIe NVMe, PCIe 3.0 x 2, 16GB/s, in WWAN slot as 2nd Storage, mutually exclusive with WWAN |       |

**Optane™ memory**

None

**Optical**

None

**Ethernet**

Non-vPro model: Intel Ethernet Connection I219-V (Jacksonville)

vPro model: Intel Ethernet Connection I219-LM (Jacksonville)

**WLAN + Bluetooth™ (optional)**

One of the following, configurable by model:

- Realtek® RTL8822BE, Wi-Fi 2x2 802.11ac + Bluetooth 4.1, M.2 card (US only)
- Intel Dual Band Wireless-AC 8265, Wi-Fi 2x2 802.11ac + Bluetooth 4.1, M.2 card
- Intel 8265ac card supports BT4.2 but is limited to BT4.1 by Windows OS

**WWAN (optional)**

One of the following, configurable by model:

- Integrated Mobile Broadband 4G LTE-A, Intel XMM™ 7660 (Fibocom L850-GL), M.2 card
- Integrated Mobile Broadband 4G LTE-A, Intel XMM™ 7630 (Fibocom L850-EB), M.2 card

* For non-WWAN model, it means the model is NOT WWAN upgradable

**SIM card (optional)**

Nano-SIM card slot, optional Verizon LTE (US) SIM card

**Dimensions**

WxDxH: 14.82" x 10.02" x 0.90"; 376.5mm x 254.5mm x 22.95mm

**Weight**

Starting at 4.46 lb / 2.0 kg

**Case color**

Black

**Clothing material**

PC/ABS plastic

**ExpressCard**

None

**Smart card reader**

Optional: Smart card reader

**Media reader**

MicroSD card reader

**Ports**

- Two USB 3.1 Gen 1 (one Always On), two USB 3.1 Type-C Gen 1 (with the power of Power Delivery and DisplayPort), HDMI 1.4b, Ethernet (RJ-45), nano-SIM card slot (WWAN models), headphone / microphone combo jack, optional smart card reader, microSD card reader, side docking connector, security keyhole

* Depending on many factors, actual data transfer speed may be lower than theoretical speed

**Monitor cable (optional)**

USB-C to VGA: Lenovo USB-C to VGA Adapter

**Camera (optional)**

H720p camera, fixed focus

**Audio support**

HD Audio, Realtek ALC3287 codec / stereo speakers, 2W x 2, Dolby Audio™ / dual array microphone, headphone / microphone combo jack

**Keyboard**

6-row, spill-resistant, multimedia Fn keys, numeric keypad, optional LED backlight

**TrackPoint®** pointing device and buttonless Mylar surface multi-touch touchpad

**Security**

Power-on password, hard disk password, supervisor password, security keyhole

**Security chip**

Discrete TPM 2.0, TCG Certified

**Intel vPro Technology**

Fingerprint reader Optional: Touch style match on chip fingerprint reader on the palm rest, anti-spoofing technology

**NFIC (optional)**

Near Field Communication

**Battery**

Integrated Li-ion 45Wh battery, supports Rapid Charge (charge up to 80% in 1hr) with 65W USB Type-C AC adapter

**Max battery life**

MobileMark® 2014: 12 hr

* Battery life varies significantly with settings, usage, & other factors

**AC adapter**

45W or 65W USB Type-C AC adapter

**Preload**

Windows® 10 Home 64 or Windows 10 Pro 64

**Limited warranty**

One of the following, configurable by model:

- 3-year/1-yr battery limited onsite service
- 3-year/1-yr battery depot repair service
- 3-year/1-yr battery limited onsite service

**Mi-Spec test**

MIL-STD-810G military certification

**Environment**

EPEAT™ Gold (US only); ENERGY STAR® 6.1; RoHS-compliant

**Lenovo Limited Warranty**

3-year/1-yr battery limited onsite service

- 3-year/1-yr battery depot repair service
- 1-year depot repair service

**AC adapter**

- 65W USB Type-C AC adapter

Note: The specifications above may not be available in all regions.

Lenovo April 2019
## ThinkPad L590 Platform Specifications

### Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cel 4305U</td>
<td>2</td>
<td>2</td>
<td>2.2 GHz</td>
<td>-</td>
<td>2MB</td>
<td>DDR4-2133</td>
<td>Intel UHD Graphics 610</td>
</tr>
<tr>
<td>3-8145U</td>
<td>4</td>
<td>8</td>
<td>2.1 GHz</td>
<td>3.9 GHz</td>
<td>4MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>5-8565U</td>
<td>8</td>
<td>8</td>
<td>1.6 GHz</td>
<td>4.1 GHz</td>
<td>6MB</td>
<td>DDR4-2400</td>
<td></td>
</tr>
<tr>
<td>7-8665U</td>
<td>8</td>
<td>8</td>
<td>1.8 GHz</td>
<td>4.6 GHz</td>
<td>6MB</td>
<td>DDR4-2400</td>
<td></td>
</tr>
</tbody>
</table>

### Graphics

- Intel UHD Graphics 610 or 620 in processor only or Intel UHD Graphics 620 in processor and Intel SoC (System on Chip) platform.
- Installed memory is actually 2666MHz but run at 2133MHz or 2400MHz due to Intel limitation.

### Chipset Memory

- 64GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets.
- Installed memory is 2666MHz but run at 2133MHz or 2400MHz due to Intel limitation.
- Intel SoC (System on Chip) platform.

### Display

<table>
<thead>
<tr>
<th>Size</th>
<th>Resolution</th>
<th>Type</th>
<th>Brightness</th>
<th>Aspect Ratio</th>
<th>Contrast Ratio</th>
<th>Color Gamut</th>
<th>Viewing Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.6&quot; HD</td>
<td>(1366x768) TN Anti-glare</td>
<td>220 nits</td>
<td>16:9</td>
<td>400:1</td>
<td>45%</td>
<td>90°</td>
<td></td>
</tr>
<tr>
<td>15.6&quot; FHD</td>
<td>(1920x1080) IPS Anti-glare</td>
<td>250 nits</td>
<td>16:9</td>
<td>700:1</td>
<td>45%</td>
<td>170°</td>
<td></td>
</tr>
</tbody>
</table>

### Storage

- HDD / SATA 6.0GB/s, 2.5" wide, 7mm high.
- SSD / SATA 6.0GB/s, 2.5" wide, 7mm high.
- M.2 2280 SSD, PCIe NVMe, PCIe 3.0 x 4
- M.2 2242 SSD, PCIe NVMe, PCIe 3.0 x 2

### Optane™ Memory

- Installed M.2 2280 SSD is PCIe 3x4 but run at PCIe 3x2 due to M.2 SSD adapter limitation.
- Intel Optane memory, PCIe NVMe, PCIe 3.0 x 2.

### Ethernet

- Non-vPro model: Intel Ethernet Connection I219-V (Jacksonville)
- vPro model: Intel Ethernet Connection I219-LM (Jacksonville)

### WWAN (optional)

- One of the following, configurable by model:
  - Realtek RTL8822BE, Wi-Fi 2x2 802.11ac + Bluetooth 4.2, M.2 card
  - Intel Wireless-AC 9260, Wi-Fi 2x2 802.11ac + Bluetooth 5.0
  - Intel Wireless-AX 22260, Wi-Fi 2x2 802.11ax + Bluetooth 5.0

### WWAN

- One of the following, configurable by model:
  - Wireless WAN upgradable
  - Integrated Mobile Broadband 4G LTE, Fibocom L830-EB, M.2 card (EMEA only)
  - Integrated Mobile Broadband 4G LTE-A, Fibocom L850-GL, M.2 card

### Media reader

- MicroSD card reader

### Camera (optional)

- One of the following, configurable by model:
  - HD720p camera with ThinkShutter camera privacy, fixed focus
  - IR camera and HD720p camera with ThinkShutter camera privacy, fixed focus

### Audio support

- HD Audio, Realtek ALC3287 codec / stereo speakers, 2W x 2, Dolby™ Advanced Audio / dual array microphone, headphone / microphone combo jack

### Security

- Power-on password, hard disk password, supervisor password, security keyhole
- Security chip: Discrete TPM 2.0, TCG Certified

### Battery

- Integrated Li-ion 45Wh battery, supports Rapid Charge (charge up to 80% in 1hr.
- AC adapter: 45W or 65W USB Type-C AC adapter

### WWAN

- One of the following, configurable by model:
  - 3-year/1-yr battery depot repair service

### Power-on password

- Hard disk password, supervisor password, security keyhole

### Case color

- Black

### Case material

- PC/ABS plastic

### Weight

- Starting at 4.48 lb / 2.03 kg

### Dimensions

- WxDxH: 14.82" x 10.02" x 0.90"; 376.5mm x 254.5mm x 22.95mm

### Preload

- Windows™ 10 Home 64 or Windows 10 Pro 64

### Operating System

- Windows 10 Pro 64bit

### Other

- One of the following, configurable by model:
  - 1-year depot repair service
  - 3-year/1-yr depot repair service

### Environment

- EPEAT™ Bronze; ENERGY STAR™ 7.1; RoHS-compliant

Note: The specifications above may not be available in all regions.

June 2019
## ThinkPad P1 Platform Specifications

### Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i7-8750H</td>
<td>4</td>
<td>8</td>
<td>2.2 GHz</td>
<td>4.1 GHz</td>
<td>8MB</td>
<td>DDR4-2666</td>
<td>Intel UHD Graphics 630</td>
</tr>
<tr>
<td>i7-8850H</td>
<td>6</td>
<td>12</td>
<td>2.6 GHz</td>
<td>4.3 GHz</td>
<td>9MB</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Graphics

Intel UHD Graphics 630 in processor and NVIDIA Quadro P1000 or P2000 Max-Q, 4GB GDDR5 memory; supports external digital monitor via HDMI or Thunderbolt™; supports four independent displays; Max resolution: 5120x2880@30Hz (Thunderbolt); 4096x2160@60Hz (HDMI)

### Chipset

Mobile Intel CM246 Chipset

### Memory

64GB max / 2666MHz DDR4, ECC or non-ECC (ECC function supported only on Xeon processor), dual-channel capable, two DDR4 SO-DIMM sockets

### Display

Some: 15.6" (396mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 300 nits, 16:9 aspect ratio, 700:1 contrast ratio, 72% gamut, 170° viewing angle

Some: 14.9" (398mm) UHD (3840x2160), anti-glare, LED backlight, IPS, 400 nits, 16:9 aspect ratio, 1200:1 contrast ratio, 100% gamut, 170° viewing angle, multi-touch, anti-reflection (AR) Multi-touch (opt) Pen

### Storage

Up to 2 drives (two M.2 SSD)

### Optane™ memory

None

### RAID (optional)

RAID 0/1 support

### Optical

None

### Ethernet

Native Intel Ethernet Connection I219-V (Non-vPro) or I219-LM (vPro) via bundled or optional ThinkPad Ethernet Extension Cable

### WLAN

Intel Wireless-AC 9560, Wi-Fi 2x2 802.11ac + Bluetooth 5.0, M.2 card Bluetooth 5.0 wireless, integrated in Wi-Fi + Bluetooth combo adapter

### WWAN

None

### Dimensions

WxDxH (non-touch): 14.24" x 9.67" x 0.72"; WxDxH (multi-touch): 14.24" x 9.67" x 0.74"; 361.8mm x 245.7mm x 18.4mm

### Weight

Non-touch model: starting at 3.76 lb (1.7 kg); Multi-touch model: starting at 4.08 lb (1.8 kg)

### Case color

Black

### Case material

Display cover: CFRP/GFRP hybrid; Bottom: Aluminum alloy

### Smart card reader

Optional: Smart card reader

### ExpressCard

None

### Media reader

SD Card reader (SD, SDHC, SDXC), supports UHS-II SD card

### Ports

Two USB 3.1 Gen 1 (one Always On), two USB Type-C / Thunderbolt 3 (with the function of Power Delivery and DP), HDMI 2.0, Ethernet extension connector, headphone / microphone combo jack, optional smart card reader, 4-in-1 reader (MMC, SD, SDHC, SDXC), security keyhole

### Monitor cable

(optional) USB-C to DP: Lenovo USB-C to DisplayPort Adapter

### Bundled Accy

Optional: ThinkPad Ethernet Extension Cable

### Camera (optional)

One of the following, configurable by model:

Audio support

- HD720p camera with ThinkShutter camera privacy, fixed focus
- HD Audio, Realtek ALC3286 codec / stereo speakers, 2x2, Dolby® Audio™ Premium / dual array microphone, headphone / microphone combo jack, Dolby Atmos® headphone

### Keyboard

6-row, spill-resistant, multimedia F n keys, LED backlight

### UltraNav™

TrackPoint® pointing device and buttonless glass surface multi-touch touchpad

### Security

Power-on password, hard disk password, supervisor password, security keyhole

### Security chip

Discrete TPM 2.0, TCG Certified

### Fingerprint reader

Touch style match on chip fingerprint reader on the keyboard bezel

### Color calibration

None

### Battery

Integrated Li-ion 80Wh battery, supports Rapid Charge (charge up to 80% in 1hr)

### Max battery life

Integrated: 7.36 hr; Hybrid mode: 13.87 hr

### AC adapter

135W slim tip AC adapter

### Preload

One of the following, configurable by model:

- Windows® 10 Home 64
- Windows 10 Pro 64
- Windows 10 Pro 64 for Workstations

### Limited warranty

One of the following, configurable by model:

- 1-year depot repair service
- 3-year/1-yr battery depot repair service
- 3-year/1-yr battery limited onsite service

### MIL-Spec test

MIL-STD-810G military certification

### Environment

EPEAT Gold; ENERGY STAR® 6.1; RoHS-compliant

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Note: The specifications above may not be available in all regions.

Lenovo

May 2019
## ThinkPad P51 Platform Specifications

### Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-6620HQ</td>
<td>4</td>
<td>8</td>
<td>2.7 GHz</td>
<td>3.6 GHz</td>
<td>8MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics S30</td>
<td>6.2 lb</td>
</tr>
<tr>
<td>E3-1505M v6</td>
<td>4</td>
<td>8</td>
<td>2.8 GHz</td>
<td>3.7 GHz</td>
<td>6MB</td>
<td>DDR4-2400</td>
<td>Intel HD Graphics P530</td>
<td>5.6 lb</td>
</tr>
<tr>
<td>7-7700HQ</td>
<td>4</td>
<td>8</td>
<td>2.8 GHz</td>
<td>3.8 GHz</td>
<td>6MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics S30</td>
<td>6.2 lb</td>
</tr>
<tr>
<td>7-7820HQ</td>
<td>4</td>
<td>8</td>
<td>2.9 GHz</td>
<td>3.9 GHz</td>
<td>8MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics P530</td>
<td>5.9 lb</td>
</tr>
<tr>
<td>E3-1535M v6</td>
<td>4</td>
<td>8</td>
<td>3.0 GHz</td>
<td>4.0 GHz</td>
<td></td>
<td>DDR4-2133</td>
<td>Intel HD Graphics P530</td>
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</tr>
<tr>
<td>E3-1545M v6</td>
<td>4</td>
<td>8</td>
<td>3.1 GHz</td>
<td>4.2 GHz</td>
<td></td>
<td>DDR4-2133</td>
<td>Intel HD Graphics P530</td>
<td>5.9 lb</td>
</tr>
</tbody>
</table>

### Graphics

- Intel HD Graphics S30, E3-1505M v6, or E3-1535M v6 in processor and NVIDIA Quadro M1200 or M2200, 4GB memory.
- Supports external digital monitor via HDMI, Mini DisplayPort, or Thunderbolt.
- Supports four independent displays.
- Max resolution: 3840x2160 @ 60Hz (DisplayPort via Mini DisplayPort cable).
- 3840x2160 @ 60Hz (Thunderbolt).

### Chipset

- Mobile Intel CM238 Chipset
- 64GB max / 2400MHz DDR4, ECC or non-ECC (ECC function supported only on Xeon processor), dual-channel capable, four DDR4 SO-DIMM sockets.
- System clocks down for processors with lower memory controller.

### Display

- 15.6" (396mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 250 nits, 16:9 aspect ratio, 700:1 contrast ratio, 160° viewing angle.
- Some 15.6" (396mm) 4K (3840x2160), anti-glare, LED backlight, IPS, 300 nits, 16:9 aspect ratio, 1000:1 contrast ratio, 170° viewing angle.

### Storage

- Up to 3 drives (two M.2 SSD and one HDD).
- Some HDD / SATA 6.0Gb/s, 2.5" wide, 7mm high, Active Protection System™.
- Some M.2 SSD / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s.
- RAID 0/1 support.

### Ethernet

- Non-vPro model: Intel Ethernet Connection I219-V (Jacksonville)
- vPro model: Intel Ethernet Connection I219-LM (Jacksonville)

### WLAN

- One of the following, configurable by model:
  - Intel Dual Band Wireless-AC 8260, Wi-Fi 2x2 802.11ac + BT4.1, M.2 card
  - Intel Dual Band Wireless-AC 8265, Wi-Fi 2x2 802.11ac + BT4.1, M.2 card
- Bluetooth 4.1 wireless, integrated in Wi-Fi + Bluetooth combo adapter.

### WWAN

- One of the following, configurable by model:
  - Wireless WAN upgradeable
  - Integrated Mobile Broadband 4G LTE-A, Qualcomm Snapdragon X7 LTE-A (Sierra Wireless EM7455), M.2 card
- Micro-SIM card slot, opt Verizon LTE (US) or Lenovo® Connect (EMEA) SIM card

### SIM card (opt)

- One slot (ExpressCard/34)
- 4-in-1 reader (MMC, SD, SDHC, SDXC), supports UHS-II SD card
- Four USB 3.1 Gen 1 (USB 3.0, one Always On), USB Type-C / Thunderbolt 3, Mini DisplayPort 1.2a, HDMI 1.4b, Ethernet (RJ-45), Dock connector.

### Smart card reader

- Optional: Smart card reader

### Memory

- 64GB max / 2400MHz DDR4, ECC or non-ECC (ECC function supported only on Mobile Intel CM238 Chipset).

### Security

- Power-on password, hard disk password, supervisor password, security keyhole.
- Discrete TPM 2.0, TCG Certified
- Intel vPro Technology.

### Camera

- HD720p resolution, fixed focus
- HD Audio, Realtek ALC3268 codec / stereo speakers, 2W x 2 / dual array microphone, combo audio/microphone jack.

### Keyboard

- 6-row, spill-resistant, multimedia Fn keys, numeric keypad, optional LED backlight
- 3-button TrackPoint® pointing device and 3-button Mylar surface multi-touch touchpad.

### Battery

- Lithium Polymer 4-cell (66Wh) or 6-cell (90Wh)
- Discrete Graphics
- 4.5 hr
- 6.5 hr
- Hybrid Graphics
- 6.1 hr
- 8.9 hr

### AC adapter

- One of the following, configurable by model:
  - Windows® 7 Professional 64 preinstalled through downgrade rights in Windows 10 Pro 64
  - Windows® 10 Home 64
  - Windows 10 Pro 64
  - Windows 10 Pro 64 for Workstations

### Limited warranty

- One of the following, configurable by model:
  - 1-year depot repair service
  - 3-year/1-yr battery depot repair service
  - 3-year/1-yr battery limited onsite service

### MIL-Spec test

- MIL-STD-810G military certification

### Environment

- EPEAT® Gold (US only); ENERGY STAR® 6.1; RoHS-compliant

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Note: The specifications above may not be available in all regions.
### ThinkPad P52 Platform Specifications

**Processor**

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i7-8750H</td>
<td>6</td>
<td>12</td>
<td>2.2 GHz</td>
<td>4.1 GHz</td>
<td>9MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 630</td>
</tr>
<tr>
<td>i7-8750H</td>
<td>6</td>
<td>12</td>
<td>2.6 GHz</td>
<td>4.3 GHz</td>
<td>9MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 630</td>
</tr>
<tr>
<td>i9-9950HK</td>
<td>8</td>
<td>12</td>
<td>2.9 GHz</td>
<td>4.8 GHz</td>
<td>12MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 630</td>
</tr>
<tr>
<td>E-2176M</td>
<td>6</td>
<td>12</td>
<td>2.7 GHz</td>
<td>4.4 GHz</td>
<td>12MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 630</td>
</tr>
</tbody>
</table>

**Graphics**

- Intel UHD Graphics 630 or P630 in process and NVIDIA Quadro P1000 (4GB memory), P2000 (4GB memory), or P3200 (6GB memory, VR ready);
- Supports external digital monitor via HDMI, Mini DisplayPort, or Thunderbolt;
- Supports four independent displays;
- Max resolution: 3840x2160@60Hz (DisplayPort via Mini DisplayPort cable); 5120x2880@30Hz (Thunderbolt); 4096x2160@60Hz (HDMI)

**Chipset**

- Mobile Intel CM246 Chipset
- 128GB non-ECC or 64GB ECC max / 2400MHz DDR4 (ECC function supported only on Xeon processor), dual-channel capable, four DDR4 SO-DIMM sockets
- *Installed DIMMs are actually 2666MHz but run at 2400MHz due to Intel limitation*
- *128GB non-ECC memory for special bid only*

**Display**

- Some: 15.6" (396mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 300 nits, 16:9 aspect ratio, 700:1 contrast ratio, 72% gamut, 160° viewing angle
- Some: 15.6" (396mm) 4K (3840x2160), anti-glare, LED backlight, IPS, 400 nits, 16:9 aspect ratio, 1000:1 contrast ratio, 100% gamut, 170° viewing angle, multi-touch

**Multi-touch (opt)**

- Capacitive-type multi-touch, supports 10-finger gesture (4K only)
- Supports pen accessory, please see the accessory compatibility for details

**Storage**

- Up to 3 drives (two M.2 SSD and one HDD)
- Some: M.2 SSD / PCIe NVMe, PCIe x 2, 32GB/s
- Some: M.2 SSD / PCIe NVMe, PCIe x 4, 32GB/s

**Optane™ memory**

- Optional: Intel Optane memory, PCIe NVMe, PCIe 3.0 x 2
- RAIDX (optional)
- RAIDX 0/1 support
- Optical
- None

**Ethernet**

- Non-vPro model: Intel Ethernet Connection I219-V (Jacksonville)
- vPro model: Intel Ethernet Connection I219-LM (Jacksonville)

**WLAN**

- Intel Wireless-AC 9560, Wi-Fi 2x2 802.11ac + Bluetooth 5.0, M.2 card
- Bluetooth 5.0 wireless, integrated in Wi-Fi + Bluetooth combo adapter

**WWAN (optional)**

- Integrated Mobile Broadband 4G LTE-A, Intel XMM™ 7360 (Fibocom L950-9L), M.2 card

**SIM card (opt)**

- Nano-SIM card slot, optional Verizon LTE (US) SIM card

### Dimensions

- WxDxH: 14.86" x 9.93" x 0.96-1.16"; 377.4mm x 252.3mm x 24.5-29.4mm
- Weight: 14.86" x 9.93" x 1.02-1.21"; 377.4mm x 252.3mm x 25.8-30.7mm

### Case color

- Non-touch model: starting at 5.4 lb (2.45kg)
- Multi-touch model: starting at 6.4 lb (2.9kg)

### Media reader

- Ports: 4-in-1 reader (MMC, SD, SDHC, SDXC), supports UHS-II SD card
- Options: Three USB 3.1 Gen 1 (one Always On), two USB Type-C / Thunderbolt 3 (with the function of Power Delivery and DP), Mini DisplayPort 1.4, HDMI 2.0, Ethernet (RJ-45), nano-SIM card slot (WWAN models), headphone / microphone combo jack, optional smart card reader, 4-in-1 reader (MMC, SD, SDHC, SDXC), security keyhole
- *Power Delivery only supports power-out for charging peripherals
- *Depending on many factors, actual data transfer speed may be lower than theoretical speed

### Security

- Security chip:
  - vPro Technology
  - Fingerprint reader:
    - Touch-style match on chip fingerprint reader on the palm rest
  - Color calibration:
    - None
  - NFC (optional): Near Field Communication

### Battery

- Capacity:
  - Li-ion 90Wh battery
  - *Battery life varies significantly with settings, usage, & other factors
  - Hybrid mode: 8.9 hr
  - 170W slim tip AC adapter

### Limited warranty

- One of the following, configurable by model:
  - Windows: 10 Home 64
  - Windows 10 Pro 64
  - Windows 10 Pro 64 for Workstations

### Notebook

- Environment: EPEAT Gold (US only); ENERGY STAR 6.1; RoHS-compliant
### ThinkPad P52s Platform Specifications

#### Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i5-8550U</td>
<td>4</td>
<td>8</td>
<td>1.6 GHz</td>
<td>4.0 GHz</td>
<td>8MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>7-8650U</td>
<td>7</td>
<td>4</td>
<td>1.9 GHz</td>
<td>4.2 GHz</td>
<td>8MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
</tbody>
</table>

#### Graphics

- In processor and
- NVIDIA Quadro P5000, 2GB GDDR5 memory
- supports external digital monitor via HDMI or USB Type-C
- supports three independent displays
- Max resolution: 4096x2304@60Hz (USB Type-C); 4096x2160@30Hz (HDMI)

#### Chipset

- Intel SoC (System on Chip) platform

#### Display

- Max resolution: 4096x2304@60Hz (USB Type-C); 4096x2160@30Hz (HDMI)
- supports three independent displays
- supports external digital monitor via HDMI or USB Type-C
- * Depending on many factors, actual data transfer speed may be lower than theoretical speed

#### Storage

- System has one HDD slot or one M.2 2280 slot exclusively for storage
- Some: SSD / SATA 6.0Gb/s, 2.5" wide, 7mm high, Active Protection System
- Some: SSD / SATA 6.0Gb/s, 2.5" wide, 7mm high (e.g. xxxGB SSD)  
- Some: M.2 SSD / PCIe NVMe, PCIe x 2, 16Gb/s  
- Some: 128GB M.2 SSD / PCIe NVMe, PCIe 3.0 x 2, 16Gb/s, in WWAN slot as 2nd Storage, mutually exclusive with WWAN

#### Memory

- DDR4 / DDR4-2400, dual-channel capable, two DDR4 SO-DIMM sockets
- * System clocks down for processors with lower memory controller

#### Bluetooth

- Bluetooth 4.2
- * For non-WWAN model, it means the model is NOT WWAN upgradable

#### WWAN

- One of the following, configurable by model:
  - Wireless WAN upgradable  
  - Integrated Mobile Broadband 4G LTE, Intel XMM™ 7360 (Fibocom L850-GL), M.2 card  
  - Integrated Mobile Broadband 4G LTE-A, Intel XMM™ 7366 (Fibocom L850-GL), M.2 card  
- * For non-WWAN model, it means the model is NOT WWAN upgradable

#### SIM card (opt)

- Nano-SIM card slot, optional Verizon LTE (US) SIM card

#### Chipset

- Intel SoC (System on Chip) platform

#### Media reader

- 4-in-1 reader (MMC, SD, SDHC, SDXC)

#### Ports

- Two USB 3.1 Gen 1 (one Always On), one USB 3.1 Type-C Gen 1 (with the function of Power Delivery and DisplayPort), one USB 3.1 Type-C Gen 2 / Thunderbolt 3 (with the function of PD and DP), one USB 3.1 Gen 1, Ethernet (RJ-45), nano-SIM card slot (WWAN models), headphone / microphone combo jack, optional smart card reader, 4-in-1 reader (MMC, SD, SDHC, SDXC), side docking connector, security keyhole

#### Security

- Security chip: Intel vPro Technology

#### Security chip

- Security chip: Intel vPro Technology

#### UltrNav™

- 6-row, spill-resistant, multimedia Fn keys, numeric keypad, optional LED backlight

#### Audio support

- HD Audio, Realtek® ALC2287 codec / stereo speakers, 2W x 2, Dolby® Audio™ Premium / dual array microphone, headphone / microphone combo jack

#### Camera (optional)

- One of the following, configurable by model:
  - 720p camera with ThinkShutter camera privacy, fixed focus
  - 4K camera and HD720p camera, fixed focus

#### TrackPoint®

- TrackPoint® pointing device and buttonless Mylar surface multi-touch touchpad

#### Warranty

- 3-year/1-yr battery limited onsite service
- 1-year depot repair service

#### AC adapter

- 65W USB Type-C AC adapter

#### Battery

- Optional integrated Li-ion 32Wh battery and external Li-ion 24Wh, 48Wh, or 72Wh battery

#### Limited warranty

- One of the following, configurable by model:
  - 1-year depot repair service
  - 3-year/1-yr battery depot repair service
  - 3-year/1-yr battery limited onsite service

#### Environmental

- MIL-STD-810G military certification

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**Lenovo**  
**May 2019**
### ThinkPad P72 Platform Specifications

**Product Specifications Reference (PSREF)**

#### Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-8750H</td>
<td>6</td>
<td>12</td>
<td>2.2 GHz</td>
<td>4.1 GHz</td>
<td>9MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 630</td>
</tr>
<tr>
<td>7-8850H</td>
<td>6</td>
<td>12</td>
<td>2.6 GHz</td>
<td>4.3 GHz</td>
<td>9MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 630</td>
</tr>
<tr>
<td>E-2176M</td>
<td>6</td>
<td>12</td>
<td>2.7 GHz</td>
<td>4.4 GHz</td>
<td>12MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 630</td>
</tr>
<tr>
<td>E-2186M</td>
<td>6</td>
<td>12</td>
<td>2.9 GHz</td>
<td>4.8 GHz</td>
<td>12MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 630</td>
</tr>
</tbody>
</table>

**Graphics**
- Intel UHD Graphics 630 or P630 in processor and NVIDIA Quadro P600 (4GB memory), P2000 (4GB memory), P3200 (6GB memory), P4200 (8GB memory), or P5200 (16GB memory); supports external digital monitor via HDMI, Mini DisplayPort, or Thunderbolt; supports four independent displays:
- Max resolution: 3840x2160@60Hz (DisplayPort via Mini DisplayPort cable); 5120x2880@30Hz (Thunderbolt); 4096x2160@60Hz (HDMI)

**Chipset**
- Mobile Intel CM246 Chipset

**Memory**
- 128GB non-ECC or 64GB ECC max / 2400MHz DDR4 (ECC function supported only on Xeon processor), dual-channel capable, four DDR4 SO-DIMM sockets
- *Installed DIMMs are actually 2666MHz but run at 2400MHz due to Intel limitation*

**Display**
- **Some:** 17.3” (439mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 300 nits, 16:9 aspect ratio, 800:1 contrast ratio, 72% gamut, 170° viewing angle
- **Some:** 17.3” (439mm) 4K (3840x2160), anti-glare, LED backlight, IPS, 400 nits, 16:9 aspect ratio, 1000:1 contrast ratio, 100% Adobe CG, 170° viewing angle

**Multi-touch**
- None

**Optane™ memory**
- Optional: Intel Optane memory, PCle NVMe, PCle 3.0 x 4, 32Gb/s

**Optical**
- None

**Ethernet**
- **Non-vPro model:** Intel Ethernet Connection i219-V (Jacksonville)
- **vPro model:** Intel Ethernet Connection i219-LM (Jacksonville)

**WLAN**
- Intel Wireless-AC 9560, Wi-Fi 2x2 802.11ac + Bluetooth 5.0, M.2 card
- Bluetooth 5.0 wireless, integrated in Wi-Fi + Bluetooth combo adapter

**WAN**
- None

**SIM card**
- None

**Dimensions**
- WxDxH: 16.38” x 11.06” x 0.96-1.16”; 416mm x 281mm x 24.5-29.4mm

**Weight**
- Starting at 7.5 lb (3.4kg)

**Case color**
- Black

**Case material**
- Display cover: GFRP + PPS; Bottom: Magnesium/Aluminum

**Smart card reader**
- Optional: Smart card reader

**ExpressCard**
- None

**Media reader**
- 4-in-1 reader (MMC, SD, SDHC, SDXC), supports UHS-II SD card

**Ports**
- Four USB 3.1 Gen 1 (one Always On), two USB Type-C / Thunderbolt 3 (with the function of Power Delivery and DP), Mini DisplayPort 1.4, HDMI 2.0, Ethernet (RJ-45), headphone / microphone combo jack, optional smart card reader, 4-in-1 reader (MMC, SD, SDHC, SDXC), security keyhole
- *Power Delivery only supports power-out for charging peripherals
- *Depending on many factors, actual data transfer speed may be lower than theoretical speed

**Optional:** Lenovo Mini-DisplayPort to DisplayPort Monitor Cable

**Camera (optional)**
- IR camera and HD720p camera, fixed focus

**Audio support**
- HD Audio, Realtek® ALC3286 codec / stereo speakers, 2W x 2, Dolby® Audio™ Premium / dual array microphone, headphone / microphone combo jack, Dolby Atmos® headphone

**Keyboard**
- 6-row, spill-resistant, multimedia Fn keys, numeric keypad, LED backlight

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

**Security chip**
- Discrete TPM 2.0, TCG Certified

**Security**
- Power-on password, hard disk password, supervisor password, security keyhole

**指纹读卡器**
- Intel vPro Technology

**Fingerprint reader**
- Touch style match on chip fingerprint reader on the palm rest

**Color calibration**
- None

**NFC (optional)**
- Near Field Communication

**Battery**
- Li-ion 99Wh battery, supports Rapid Charge (charge up to 80% in 1hr)

**Max battery life**
- MobileMark® 2014: 18 hr
- *Battery life varies significantly with settings, usage, & other factors

**AC adapter**
- 230W slim tip AC adapter

**Preload**
- One of the following, configurable by model:
  - Windows® 10 Home 64
  - Windows 10 Pro 64
  - Windows 10 Pro 64 for Workstations

**Limited warranty**
- One of the following, configurable by model:
  - 1-year depot repair service
  - 3-year/1-yr battery depot repair service
  - 3-year/1-yr battery limited onsite service

**Mil-Spec test**
- MIL-STD-810G military certification

**Environment**
- EPEAT® Gold (US only); ENERGY STAR® 7.0; RoHS-compliant

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Note: The specifications above may not be available in all regions.

Lenovo May 2019
### Processor

**Processor Number** | **# of Cores** | **# of Threads** | **Base Frequency** | **Max Turbo Frequency** | **Cache** | **Memory Types** | **Processor Graphics**
--- | --- | --- | --- | --- | --- | --- | ---
5-6200U | 2 | 4 | 2.3 GHz | 2.8 GHz | 3MB | DDR4-2133 | Intel HD Graphics 520
5-6300U | 2 | 4 | 2.4 GHz | 3.0 GHz | 3MB | DDR4-2133 | Intel HD Graphics 520
7-6500U | 2 | 4 | 2.5 GHz | 3.1 GHz | 4MB | DDR4-2133 | Intel HD Graphics 620
7-6600U | 2 | 4 | 2.9 GHz | 3.4 GHz | 4MB | DDR4-2133 | Intel HD Graphics 620

* 7-6500U is not available in EMEA

### Graphics

- Intel HD Graphics 520 or 620 in processor only.
- Intel HD Graphics 620 in processor and NVIDIA GeForce® 940MX, 2GB 2.5GHz GDDR5 memory (discrete models are not available in EMEA).
- Supports external digital monitor via HDMI or USB Type-C.
- Supports three independent displays.
- Max resolution: 4096x2304@60Hz (USB Type-C); 4096x2160@24Hz (HDMI)

### Chipset

- Intel SoC (System on Chip) platform
- 32GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets
- System clocks down for processors with lower memory controller

### Display

- Some: 14.0" (355mm) HD (1366x768), anti-glare, LED backlight, 220 nits, 16:9 aspect ratio, 400:1 contrast ratio
- Some: 14.0" (355mm) FHD (1920x1080), anti-glare, LED backlight, 220 nits, 16:9 aspect ratio, 400:1 or 500:1 contrast ratio
- Some: 14.0" (355mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 250 nits, 16:9 aspect ratio, 700:1 contrast ratio, 170° viewing angle
- On-cell touch, supports 10-finger gesture (FHD IPS panel with PPS cover only)

### Storage

- System has one HDD slot or one M.2 2280 slot exclusively for storage
- HDD / SATA 6.0Gb/s, 2.5" wide, 7mm high, Active Protection System
- SSD / SATA 6.0Gb/s, 2.5" wide, 7mm high (e.g. xxxGB SSD)
- M.2 SSD / PCIe NVMe, PCIe 3.0 x 2, 16Gb/s
- 128GB M.2 SSD / SATA 6.0Gb/s, in WWAN slot as 2nd Storage, mutually exclusive with WWAN and WiGig

### Optical

- None

### Ethernet

- Non-vPro model: Intel Ethernet Connection 2129-V (Jacksonville)
- vPro model: Intel Ethernet Connection 2129-LM (Jacksonville)

### WLAN

- One of the following, configurable by model (WiGig can coexist with WWAN):
  - Realtek® RTL8822BE, Wi-Fi 2x2 802.11ac + BT4.1, M.2 card
  - Intel Dual Band Wireless-AC 8260, Wi-Fi 2x2 802.11ac + BT4.1, M.2 card
  - Intel Dual Band Wireless-AC 8265, Wi-Fi 2x2 802.11ac + BT4.1, M.2 card
  - Intel Tri-Band Wireless-AC 18265, WiGig 802.11ad + Wi-Fi 2x2 802.11ac + BT4.1, M.2 card
- Bluetooth 4.1, wireless, integrated in Wi-Fi + Bluetooth combo adapter
- Bluetooth support for BT4.2 but is limited to BT4.1 by Windows OS

### WWAN (optional)

- One of the following, configurable by model (WWAN can coexist with WiGig):
  - Wireless WAN upgradable
  - Integrated Mobile Broadband 4G LTE-A
  - Qualcomm® Snapdragon™ X7 LTE-A (Sierra Wireless EM7455), M.2 card
  - Integrated Mobile Broadband 4G LTE
  - Intel XMM™ 7160 (Fibocom L831-EAU), M.2 card (EMEA only)

### SIM card (optional)

- Micro-SIM card slot, slot Verizon LTE (US) or Lenovo™ Connect (EMEA) SIM card

---

**Dimensions**

- WxDxH: 13.25" x 9.15" x 0.79"; 336.8mm x 232.5mm x 19.95mm

**Weight**

- Models: 3-cell or 3 + 3-cell
- 6-cell or 3 + 6-cell

<table>
<thead>
<tr>
<th>Models</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-cell or 3 + 3-cell</td>
<td>3.27 lb / 1.48 kg</td>
</tr>
<tr>
<td>6-cell or 3 + 6-cell</td>
<td>4.35 lb / 1.95 kg</td>
</tr>
</tbody>
</table>

**Case color**

- Black

**Case material**

- Display cover: Magnesium Hybrid or PPS
- Glass-Fiber Reinforced Plastic

**Smart card reader**

- Optional: Smart card reader

**Media reader**

- 4-in-1 reader (MMC, SD, SDHC, SDXC), supports SD 3.0, UHS-I
- Three USB 3.1 Gen 1 USB 3.0, one Always On
- USB 3.1 Type-C Gen 2 / Thunderbolt 3 (w/ the function of Power Delivery and DP), HDMI 1.4b, Ethernet (RJ-45), Dock connector

**WiGig dock (opt)**

- Lenovo USB-C to VGA Adapter

**Monitor cable**

- Optional: ThinkPad WiGig dock

**Camera (optional)**

- 720p / HD720p resolution, fixed focus

**Audio support**

- HD Audio, Realtek ALC3266 codec / stereo speakers, 2W x 2 / dual array microphone, combo audio/microphone jack

**Keyboard**

- 6-row, spill-resistant, multimedia Fn keys, optional LED backlight
- TrackPoint® pointing device and buttonless Mylar surface multi-touch touchpad

**Security**

- Power-on password, hard disk password, supervisor password, security key hole
- Discrete TPM 2.0, TCG Certified
- Intel vPro Technology

**Fingerprint reader**

- Optional: Touch style match on chip fingerprint reader on the keyboard bezel
- Near Field Communication

**Internal battery**

- Optional: Integrated Li-Polymer 3-cell (24Wh)
- Li-Polymer 3-cell (24Wh) or Li-ion 6-cell (48Wh or 72Wh)

**External battery**

- Max battery life (MobileMark® 2014)

<table>
<thead>
<tr>
<th>Models</th>
<th>Max battery life</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-cell</td>
<td>6.9 hr</td>
</tr>
<tr>
<td>3-cell + 3-cell</td>
<td>13.9 hr</td>
</tr>
<tr>
<td>6-cell</td>
<td>20.9 hr</td>
</tr>
<tr>
<td>6-cell + 6-cell</td>
<td>27.1 hr</td>
</tr>
</tbody>
</table>

**AC adapter**

- 45W or 65W slim tip AC adapter, 45W or 65W USB Type-C AC adapter

**Preload**

- Windows® 7 Professional 64 preinstalled
- Some: Windows 10 Home 64
- Some: Windows 10 Pro 64
- Lenovo Solution Center
- Lenovo PowerEngage
- ThinkVantage Product Recovery
- ThinkVantage System Update
- Adobe® Reader®
- Microsoft® Office preloaded
- purchase a product key to activate

**Limited warranty**

- 1-year depot repair service
- 3-year/1-yr battery depot repair service
- 3-year/1-yr battery limited onsite service

**Environmental**

- EPEAT® Gold (US only); ENERGY STAR® 6.1; RoHS-compliant

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Lenovo

April 2019
### ThinkPad T470s Platform Specifications

**Product Specifications Reference (PSREF)**

**Processor**

<table>
<thead>
<tr>
<th>Processor</th>
<th>Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>I5-6200U</td>
<td>2</td>
<td>4</td>
<td></td>
<td>2.3 GHz</td>
<td>2.8 GHz</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 520</td>
</tr>
<tr>
<td>I5-6300U</td>
<td></td>
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<td></td>
<td>2.4 GHz</td>
<td>3.0 GHz</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 520</td>
</tr>
<tr>
<td>7-6600U</td>
<td></td>
<td></td>
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<td>2.6 GHz</td>
<td>3.4 GHz</td>
<td>4MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 620</td>
</tr>
</tbody>
</table>

**Chipset Memory**

- **Intel SoC (System on Chip) platform**
  - 20GB or 24GB max / 2400MHz DDR4, dual-channel capable, 4GB or 8GB memory soldered to systemboard, one DDR4 SO-DIMM socket
- *System clock down for processors with lower memory controller*

**Display**

- **Some:** 14.0" (355mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 250 nits, 16:9 aspect ratio, 700:1 contrast ratio, 160° viewing angle
- **Some:** 14.0" (355mm) WQHD (2560x1440), anti-glare, LED backlight, IPS, 300 nits, 16:9 aspect ratio, 700:1 contrast ratio, 160° viewing angle

**Multi-touch (opt)**

- On-cell touch, supports 10-finger gesture, 250 nits (FHD only)

**Storage**

- **One of the following, configurable by model:**
  - M.2 SSD / SATA 6.0Gb/s (e.g. x6666 SSD M.2)
  - M.2 SSD / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s (e.g. x6666 SSD M.2 PCIe NVMe)
  - None

**Optical**

- **None**

**Ethernet**

- **Non-vPro model:** Intel Ethernet Connection I219-V (Jacksonville)
- **vPro model:** Intel Ethernet Connection I219-LM (Jacksonville)

**WLAN**

- **One of the following, configurable by model (WiGig is mutually exclusive with WWAN):**
  - Intel Dual Band Wireless-AC 8260, Wi-Fi 2x2 802.11ac + BT4.1, M.2 card
  - Intel Dual Band Wireless-AC 8265, Wi-Fi 2x2 802.11ac + BT4.1, M.2 card
  - Intel Tri-Band Wireless-AC 18265, WiGig 802.11ad + Wi-Fi 2x2 802.11ac + BT4.1, M.2 card
- **Bluetooth**
  - Bluetooth 4.1 wireless, integrated in Wi-Fi + Bluetooth combo adapter
  - *Intel 8265ac / 18265ac card support BT4.2 but is limited to BT4.1 by Windows OS*

**WWAN (opt)**

- **One of the following, configurable by model (mutually exclusive with WiGig):**
  - Wireless WAN upgradable
  - Integrated Mobile Broadband 4G LTE-A, Qualcomm Snapdragon X7 LTE-A (Sierra Wireless EM7455), M.2 card

**SIM card (opt)**

- Micro-SIM card slot, opt Verizon LTE (US) or Lenovo Connect (EMEA) SIM card

**Graphics**

- Intel HD Graphics 520 or 620 in processor; supports external digital monitor via HDMI or USB Type-C; supports three independent displays;
- Max resolution: 4096x2304@60Hz (USB Type-C); 4096x2160@24Hz (HDMI)

**Ports**

- Three USB 3.1 Gen 1 (USB 3.0, one Always On), USB 3.1 Type-C Gen 2 / Thunderbolt 3 (w/ the function of Power Delivery and DP), HDMI 1.4B, Ethernet (RJ-45), Dock connector
- *Depending on many factors, actual data transfer speed may be lower than theoretical speed*

**Smart card reader**

- Optional: Smart card reader

**Media reader**

- 4-in-1 reader (MMC, SD, SDHC, SDXC)

**WLAN**

- WiGig dock (opt)
- Monitor cable (optional)

**Camera**

- HD Audio, Realtek ALC3268 codec / stereo speakers, 1W x 2 / dual array microphone, combo audio/microphone jack

**Keyboard**

- 6-row, spill-resistant, multimedia Fn keys, optional LED backlight
- Intel vPro Technology
- TrackPoint pointing device and buttonless Mylar surface multi-touch touchpad

**Security**

- Power-on password, hard disk password, supervisor password, security keyhole
- Intel vPro Technology

**Fingerprint reader**

- Optional: Touch style match on chip fingerprint reader on the palm rest
- Near Field Communication (NFC)

**Internal battery**

- Front Li-Polymer 3-cell (23Wh) and rear Li-ion 3-cell (26Wh), both Integrated
- MobileMark 2014: up to 10.5 hr
- *Battery life varies significantly with settings, usage, & other factors*

**AC adapter**

- 45W slim tip AC adapter, 45W or 65W USB Type-C AC adapter

**Preload**

- Windows 10 Professional 64 preinstalled
- Some: Windows 10 Home 64 through downgrade rights in Windows 10 Pro 64
- Lenovo Companion
- Lenovo Solution Center
- Lenovo PowerEngage
- ThinkVantage Product Recovery
- ThinkVantage System Update
- Adobe Reader
- Microsoft Office preloaded; purchase a product key to activate
- McAfee LiveSafe™ (30-day trial)

**Limited warranty**

- One of the following, configurable by model:
  - 1-year depot repair service
  - 3-year/1-yr battery depot repair service
  - 3-year/1-yr battery limited onsite service

**Mil-Spec test**

- MIL-STD-810G military certification

**Environment**

- EPEAT® Gold (US only); ENERGY STAR® 6.1; RoHS-compliant

**Dimensions**

- WxDxH: 13.03" x 8.93" x 0.67-0.74"; 331mm x 226.8mm x 16.9-18.8mm

**Weight**

- Starting at 2.9 lb (1.32kg)

**Case color**

- Black or Silver

**Case material**

- Display cover: CFPR Hybrid; Bottom: Magnesium

**Smart card reader**

- Optional: Smart card reader

**Media reader**

- 4-in-1 reader (MMC, SD, SDHC, SDXC)

**Ports**

- Three USB 3.1 Gen 1 (USB 3.0, one Always On), USB 3.1 Type-C Gen 2 / Thunderbolt 3 (w/ the function of Power Delivery and DP), HDMI 1.4B, Ethernet (RJ-45), Dock connector
- *Depending on many factors, actual data transfer speed may be lower than theoretical speed*

**WLAN**

- WiGig dock, mutually exclusive with WWAN
- Monitor cable (optional)
  - USB-C to VGA: Lenovo USB-C to VGA Adapter

**Camera**

- (models without camera are NOT available in EMEA)
- 6-row, spill-resistant, multimedia Fn keys, optional LED backlight
- Intel vPro Technology
- TrackPoint pointing device and buttonless Mylar surface multi-touch touchpad

**Security**

- Power-on password, hard disk password, supervisor password, security keyhole
- Intel vPro Technology

**Fingerprint reader**

- Optional: Touch style match on chip fingerprint reader on the palm rest
- Near Field Communication (NFC)

**Internal battery**

- Front Li-Polymer 3-cell (23Wh) and rear Li-ion 3-cell (26Wh), both Integrated
- MobileMark 2014: up to 10.5 hr
- *Battery life varies significantly with settings, usage, & other factors*

**AC adapter**

- 45W slim tip AC adapter, 45W or 65W USB Type-C AC adapter

**Preload**

- Windows 7 Professional 64 preinstalled
- Some: Windows 10 Home 64 through downgrade rights in Windows 10 Pro 64
- Lenovo Companion
- Lenovo Solution Center
- Lenovo PowerEngage
- ThinkVantage Product Recovery
- ThinkVantage System Update
- Adobe Reader
- Microsoft Office preloaded; purchase a product key to activate
- McAfee LiveSafe™ (30-day trial)

**Limited warranty**

- One of the following, configurable by model:
  - 1-year depot repair service
  - 3-year/1-yr battery depot repair service
  - 3-year/1-yr battery limited onsite service

**Mil-Spec test**

- MIL-STD-810G military certification

**Environment**

- EPEAT® Gold (US only); ENERGY STAR® 6.1; RoHS-compliant

Lenovo

April 2019
ThinkPad T480 Platform Specifications

Product Specifications Reference (PSREF)

Processor

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<th># of Threads</th>
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<th>Max Turbo Frequency</th>
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<th>Memory Types</th>
<th>Processor Graphics</th>
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<tbody>
<tr>
<td>i5-7200U</td>
<td>2</td>
<td>4</td>
<td>2.5 GHz</td>
<td>3.1 GHz</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 620</td>
</tr>
<tr>
<td>i5-7300U</td>
<td>2</td>
<td>4</td>
<td>2.6 GHz</td>
<td>3.5 GHz</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 620</td>
</tr>
</tbody>
</table>

or 8th Generation Intel Core i3 / i5 / i7 Processor

<table>
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<tbody>
<tr>
<td>i3-8130U</td>
<td>2</td>
<td>4</td>
<td>2.2 GHz</td>
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<td>4MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
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<tr>
<td>i5-8250U</td>
<td>2</td>
<td>4</td>
<td>1.68 GHz</td>
<td>3.4 GHz</td>
<td>6MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i5-8350U</td>
<td>2</td>
<td>4</td>
<td>1.7 GHz</td>
<td>3.6 GHz</td>
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<tr>
<td>7-8550U</td>
<td>8</td>
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<td>7-8650U</td>
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<td>4.2 GHz</td>
<td>8MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
</tbody>
</table>

Graphics

Intel HD Graphics 620 or Intel UHD Graphics 620 in processor only or Intel HD Graphics 620 or Intel UHD Graphics 620 in processor and NVIDIA® GeForce® MX150, 2GB GDDR5 memory

(discrete graphics is available only on i7 models in EMEA); supports external digital monitor via HDMI or USB Type-C; supports three independent displays; Max resolution: 4096x2304@60Hz (USB Type-C); 4096x2160@30Hz (HDMI)

Chipset

Intel SoC (System on Chip) platform

Memory

32GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets

* System clocks down for processors with lower memory controller

Display

Some: 14.0” (355mm) HD (1366x768), anti-glare, LED backlight, 220 nits, 16:9 aspect ratio, 400:1 contrast ratio

Some: 14.0” (355mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 250 nits, 16:9 aspect ratio, 700:1 contrast ratio, 170° viewing angle

Some: 14.0” (355mm) WQHD (2560x1440), anti-glare, LED backlight, IPS, 300 nits, 16:9 aspect ratio, 700:1 contrast ratio, 72% gamut, 170° viewing angle

Multi-touch (opt) On-cell touch, supports 10-finger gesture (FHD only)

Storage

System has one HDD slot or one M.2 2280 slot exclusively for storage

Some: HDD / SATA 6.0GB/s, 2.5” wide, 7mm high, Active Protection System™

Some: SSD / SATA 6.0GB/s, 2.5” wide, 7mm high, (e.g. x800GB SSD)

Some: M.2 SSD / PCIe NVMe, PCle 3.0 x 4

Some: 128GB M.2 SSD / PCIe NVMe, PCle 3.0 x 2

Optane™ memory Intel Optane memory, PCle NVMe, PCle 3.0 x 2

Optical None

Ethernet Non-VPo model: Intel Ethernet Connection I219-V (Jacksonville)

vPro model: Intel Ethernet Connection I219-LM (Jacksonville)

WLAN + Intel Dual Band Wireless-Ac 8265, Wi-Fi 2x2 802.11ac + Bluetooth 4.1, M.2 card

* Intel 8265ac card supports BT 4.2 but is limited to BT 4.1 by Windows OS

WWAN (optional) One of the following, configurable by model (mutually exclusive with Intel Optane memory):

- Integrated Mobile Broadband 4G LTE, Intel XMM™ 7260 (Fibocom L830-EB), M.2 card (EMEA only)
- Integrated Mobile Broadband 4G LTE-A, Intel XMM™ 7360 (Fibocom L850-GL), M.2 card

* For non-WWAN model, it means the model is NOT WWAN upgradable

SIM card (opt) Nano-SIM card slot, optional Verizon LTE (US) SIM card

Dimensions

Weight

WxDxH: 13.25” x 9.15” x 0.79”; 336.8mm x 232.5mm x 19.95mm

Models

24Wh or 24Wh + 24Wh / 48Wh. 72Wh, or 24Wh + 48Wh / 72Wh

Integrated Magnesium

3.49 lb / 1.6 kg

Integrated PPS

3.63 lb / 1.65 kg

Discrete Magnesium

3.53 lb / 1.60 kg

Discrete PPS

3.68 lb / 1.67 kg

Case color

Black

Case material

Display cover: Magnesium Hybrid or PPS; Bottom: Glass-Fiber Reinforced Plastic

Smart card reader

Optional: Smart card reader

Media reader

4-in-1 reader (MMC, SD, SDHC, SDXC)

Ports

Two USB 3.1 Gen 1 (one Always On), one USB 3.1 Type-C Gen 1 (with the function of Power Delivery and DisplayPort), one USB 3.1 Type-C Gen 2 / Thunderbolt 3 (with the function of PD and DP), HDMI 1.4b, Ethernet RJ-45, nano-SIM card slot (WWAN models), headphone / microphone combo jack, optional smart card reader, 4-in-1 media reader (MMC, SD, SDHC, SDXC), side docking connector, security keyhole

Monitor cable (optional)

Based on many factors, actual data transfer speed may be lower than theoretical speed

HDMI to VGA: Lenovo HDMI to VGA Monitor Adapter

USB-C to DP: Lenovo USB-C to DisplayPort Adapter

Camera (optional) One of the following, configurable by model:

Audio support

* HD720p camera with ThinkShutter camera privacy, fixed focus

* IR camera and HD720p camera, fixed focus

* HD Audio, Realtek® ALC3297 codec / stereo speakers, 2W x 2, Dolby® Audio™ Premium / dual array microphone, headphone / microphone combo jack

Keyboard UltraNav™

6-row, spill-resistant, multimedia Fn keys, optional LED backlight

TrackPoint® pointing device and buttonless Mylar surface multi-touch touchpad

Security

Security chip

Fingerprint reader (optional)

* Discrete TPM 2.0, TCG Certified

* Intel vPro Technology

* Touch style match on chip fingerprint reader on the keyboard bezel, anti-spoofing technology

NFC (optional) Near Field Communication

Battery

Optional integrated Li-ion 24Wh battery and external Li-ion 24Wh, 48Wh, or 72Wh battery

Max battery life (MobileMark® 2014)

Models

24Wh / 48Wh / 72Wh / 24Wh + 24Wh / 48Wh + 72Wh

Integrated model

Discrete model

6.6 hr / 13.2 hr / 19.8 hr / 3.6 hr / 19.8 hr / 26.4 hr

* Battery life varies significantly with settings, usage, & other factors

AC adapter

45W or 65W USB Type-C AC adapter

Preload Windows® 10 Home 64 or Windows 10 Pro 64

Limited warranty

One of the following, configurable by model:

- 1-year depot repair service

- 3-year/1-yr battery depot repair service

- 3-year/1-yr battery limited onsite service

* Limitation may apply

Mil-Spec test MIL-STD-810G military certification

Environment EPEAT® Gold (US only); ENERGY STAR® 6.1; RoHS-compliant

Lenovo

May 2019
ThinkPad T480s Platform Specifications

Processor

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<td>i5-8250U</td>
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<td>7-8550U</td>
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<td>Intel UHD Graphics 620</td>
</tr>
</tbody>
</table>

Graphics

Intel HD Graphics 620 or Intel UHD Graphics 620 in processor only or Intel UHD Graphics 620 in processor and NVIDIA® GeForce® MX150, 2GB GDDR5 memory (discrete models are NOT available in EMEA); supports external digital monitor via HDMI or USB Type-C; supports three independent displays; Max resolution: 4096x2304 @ 60Hz (USB Type-C); 4096x2160 @ 30Hz (HDMI)

Chipset

Intel SoC (System on Chip) platform

Storage

One of the following, configurable by model:
- M.2 SSD / SATA 6.0Gb/s
- M.2 SSD / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s

Optane™ memory None

Optical None

Ethernet

Non-vPro model: Intel Ethernet Connection I219-V (Jacksonville)

vPro model: Intel Ethernet Connection I219-LM (Jacksonville)

WLAN + Bluetooth™

Intel Dual Band Wireless-AC 8265, Wi-Fi 2x2 802.11ac + Bluetooth 4.1, M.2 card * Intel 8265ac card supports BT4.2 but is limited to BT4.1 by Windows OS

WWAN (optional)

One of the following, configurable by model:
- Wireless WAN upgradable
- Integrated Mobile Broadband 4G LTE, Intel XMM™ 7626 (Fibocom L830-EB), M.2 card (EMEA only)
- Integrated Mobile Broadband 4G LTE-A, Intel XMM™ 7360 (Fibocom L850-GL), M.2 card
- SIM card slot, optional Verizon LTE (US) SIM card

Audio support

HD Audio, Realtek® ALC3287 codec / stereo speakers, 1W x 2, Dolby® Audio™ Premium / dual array microphone, headphone / microphone combo jack

Camera

One of the following, configurable by model:
- HD720p camera with ThinkShutter camera privacy, fixed focus
- IR camera and HD720p camera, fixed focus

Pointing device and buttonless Mylar surface multi-touch touchpad

Multi-touch (opt)

On-cell touch, supports 10-finger gesture, 250 nits (FHD only)

Display

Some*: 14.0" (355mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 250 nits, 16:9 aspect ratio, 700:1 contrast ratio, 170° viewing angle, supports ThinkPad Privacy Guard on some models

Some*: 14.0" (355mm) WQHD (2560x1440), anti-glare, LED backlight, IPS, 300 nits, 16:9 aspect ratio, 700:1 contrast ratio, 72% gamut, 170° viewing angle

Keyboard

6-row, spill-resistant, multimedia Fn keys, optional LED backlight

UltraNav™ pointing device and buttonless Mylar surface multi-touch touchpad

Battery

Integrated Li-ion 57Wh battery, supports Rapid Charge (0-80% in 60 mins) with 65W USB Type-C AC adapter

Max battery life MobileMark® 2014: 15.6 hr

Operating system Windows® 10 Home 64 or Windows 10 Pro 64

Limited warranty One of the following, configurable by model:
- 1-year depot repair service
- 3-year/1-yr battery depot repair service
- 3-year/1-yr battery limited onsite service

Mil-Spec test MIL-STD-810G military certification

Environment EPEAT™ Gold (US only); ENERGY STAR® 6.1; RoHS-compliant
## ThinkPad T490 Platform Specifications

**Product Specifications Reference (PSREF)**

### Processor

<table>
<thead>
<tr>
<th>Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i5-8265U</td>
<td>4</td>
<td>8</td>
<td>1.6 GHz</td>
<td>3.9 GHz</td>
<td>8MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i5-8365U</td>
<td>4</td>
<td>8</td>
<td>1.6 GHz</td>
<td>4.1 GHz</td>
<td>8MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i7-8565U</td>
<td>8</td>
<td>16</td>
<td>1.8 GHz</td>
<td>4.6 GHz</td>
<td>8MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i7-8567U</td>
<td>8</td>
<td>16</td>
<td>1.8 GHz</td>
<td>4.8 GHz</td>
<td>8MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
</tbody>
</table>

### Graphics

- Intel UHD Graphics 620 in processor only or Intel UHD Graphics 620 in processor and NVIDIA® GeForce® MX250, 2GB GDDR5 memory; supports external digital monitor via HDMI or Thunderbolt; supports three independent displays; Max resolution: 4096x2304 @60Hz (Thunderbolt); 4096x2160 @24Hz (HDMI)

### Chipset

- Intel SoC (System on Chip) platform

### Memory

- 8GB or 16GB memory soldered to system board, one DDR4 SO-DIMM socket

### Display

<table>
<thead>
<tr>
<th>Size</th>
<th>Resolution</th>
<th>Type</th>
<th>Brightness</th>
<th>Aspect Ratio</th>
<th>Contrast Ratio</th>
<th>Color Gamut</th>
<th>Viewing Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.0” HD</td>
<td>(1366x768)</td>
<td>TN</td>
<td>220 nits</td>
<td>16.9</td>
<td>400:1</td>
<td>45%</td>
<td>90°</td>
</tr>
<tr>
<td>14.0” FHD</td>
<td>(1920x1080)</td>
<td>IPS</td>
<td>250 nits</td>
<td>16.9</td>
<td>700:1</td>
<td>45%</td>
<td>170°</td>
</tr>
<tr>
<td>14.0” FHD</td>
<td>(1920x1080)</td>
<td>IPS</td>
<td>400 nits</td>
<td>16.9</td>
<td>800:1</td>
<td>72%</td>
<td>170°</td>
</tr>
<tr>
<td>14.0” FHD</td>
<td>(1920x1080)</td>
<td>ThinkPad Privacy Guard</td>
<td>IPS</td>
<td>400 nits</td>
<td>16.9</td>
<td>1000:1</td>
<td>72%</td>
</tr>
<tr>
<td>14.0” WQHD</td>
<td>(2560x1440)</td>
<td>IPS</td>
<td>500 nits</td>
<td>16.9</td>
<td>1500:1</td>
<td>100% Adoce</td>
<td>170°</td>
</tr>
</tbody>
</table>

### Multi-touch (optional)

- On-cell touch, supports 10-finger gesture (FHD only)

### Storage

- M.2 2280 SSD / SATA 6.0Gb/s
- M.2 2280 SSD / PCIe NVMe, PCIe 3.0 x 4
- M.2 2242 SSD / PCIe NVMe, PCIe 3.0 x 2

### Optane™ memory

- Optional: Intel Optane memory, PCIe NVMe, PCIe 3.0 x 2
- None

### Ethernet

- Intel Wireless-AC 9560, Wi-Fi 2x2 802.11ac + Bluetooth 5.0
- Intel Ethernet Connection I219-LM (Jacksonville) VPro model

### WWAN (optional)

- One of the following, configurable by model:
  - Wireless WAN upgradable
  - Integrated Mobile Broadband 4G LTE, Fibocom L830-EB, M.2 card (EMEA only)
  - Integrated Mobile Broadband 4G LTE-A, Fibocom L850-GL, M.2 card
  - Integrated Mobile Broadband 4G LTE-A, Fibocom L860-GL, MIMO 4x4, M.2 card
  - * For non-WWAN model, it means the model is NOT WWAN upgradable

### SIM card (optional)

- Nano-SIM card slot, optional Verizon LTE (US) SIM card

### Battery

- Integrated Li-ion 50Wh battery, supports Rapid Charge (charge up to 80% in 1hr)
- MobileMark® 2014: 16.11 hr

### Max battery life

- * Battery life varies significantly with settings, usage, & other factors

### AC adapter

- 45W or 65W USB Type-C AC adapter

### Preload

- Windows® 10 Home 64 or Windows 10 Pro 64

### Limited warranty

- One of the following, configurable by model:
  - 1-year depot repair service
  - 3-year/1-yr battery depot repair service
  - 3-year/1-yr battery limited onsite service

### Mil-Spec test

- MIL-STD-810G military certification

### Environment

- EPEAT® Bronze; ENERGY STAR® 7.0; RoHS-compliant

Note: The specifications above may not be available in all regions.

Lenovo
May 2019
# ThinkPad T490s Platform Specifications

## Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i5-8265U</td>
<td>4</td>
<td>8</td>
<td>1.6 GHz</td>
<td>3.9 GHz</td>
<td>8MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
</tbody>
</table>

## Graphics

Intel UHD Graphics 620 in processor only; supports external digital monitor via HDMI or Thunderbolt; supports three independent displays; max resolution: 4096x2304 @ 60Hz (Thunderbolt); 4096x2160 @ 24Hz (HDMI)

## Chipset

Intel SoC (System on Chip) platform

## Memory

8GB, 16GB or 32GB / 2400MHz DDR4 / soldered to systemboard, no sockets

*Installed memory is actually 2933MHz but run at 2400MHz due to Intel limitation*

## Display

<table>
<thead>
<tr>
<th>Size</th>
<th>Resolution</th>
<th>Type</th>
<th>Surface</th>
<th>Brightness</th>
<th>Aspect Ratio</th>
<th>Contrast Ratio</th>
<th>Color Gamut</th>
<th>Viewing Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.0&quot;</td>
<td>FHD (1920x1080)</td>
<td>IPS Anti-glare</td>
<td>250 nits (non-touch)</td>
<td>600 nits (multi-touch)</td>
<td>16:9</td>
<td>700:1</td>
<td>45%</td>
<td>170°</td>
</tr>
<tr>
<td>14.0&quot;</td>
<td>FHD (1920x1080) Low Power</td>
<td>IPS Anti-glare</td>
<td>400 nits</td>
<td>800:1</td>
<td>72%</td>
<td>170°</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.0&quot;</td>
<td>ThinkPad Privacy Guard</td>
<td>IPS Anti-glare</td>
<td>400 nits</td>
<td>1000:1</td>
<td>72%</td>
<td>170°</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.0&quot;</td>
<td>WQHD (2560x1440) Dolby Vision™ HDR</td>
<td>IPS Glossy</td>
<td>500 nits</td>
<td>1500:1</td>
<td>100%</td>
<td>170°</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Optane™ Memory

Optional: Intel Optane memory, PCie NVMe, PCie 3.0 x 2

## Optical

None

## Ethernet

Native Intel Ethernet Connection i219-V (Non-vPro) or i219-LM (vPro) via bundled or optional ThinkPad Ethernet Extension Adapter Gen 2

## WLAN + Bluetooth™

One of the following, configurable by model:

- Intel Wireless-AC 9560, Wi-Fi 2x2 802.11ac + Bluetooth 5.0
- Intel Wireless-AX 22260, Wi-Fi 2x2 802.11ax + Bluetooth 5.0

## WWAN (optional)

One of the following, configurable by model:

- Wireless WAN upgradable
- Integrated Mobile Broadband 4G LTE, Fibocom L830-EB, M.2 card (EMEA only)
- Integrated Mobile Broadband 4G LTE-A, Fibocom L850-GL, M.2 card

## SIM card (optional)

Nano-SIM card slot, optional Verizon LTE (US) SIM card

## Media reader

Two USB 3.1 Gen 1 (one Always On), one USB 3.1 Type-C Gen 1 (with the function of Power Delivery and DisplayPort), one USB 3.1 Type-C Gen 2 / Thunderbolt 3 (with the function of PD and DP), HDMI 1.4b, Ethernet extension connector, nano-SIM card slot (WWAN models), headphone / microphone combo jack, optional smart card reader, microSD card reader, side docking connector, security keyhole

## Security chip

Discrete TPM 2.0, TCG Certified

## Security

Power-on password, hard disk password, supervisor password, security keyhole

## Security chip

Discrete TPM 2.0

## Fingerprint reader

Optional: On-chip touch, supports 10-finger gesture (FHD only)

## Camera

One of the following, configurable by model:

- HD720p camera with ThinkShutter camera privacy, fixed focus
- IR camera and HD720p camera with ThinkShutter camera privacy, fixed focus

## Audio support

- HD Audio, Realtek ALC3287 codec / stereo speakers, 1W x 2, Dolby Audio Premium / dual array far-field microphone, headphone / microphone combo jack

## Keyboard

6-row, spill-resistant, multimedia Fn keys, optional LED backlight

## Security

Near Field Communication

## AC adapter

Integrated Li-ion 57Wh battery, supports Rapid Charge (charge up to 80% in 1hr)

* Battery life varies significantly with settings, usage, & other factors

## Preload

Windows® 10 Home 64 or Windows® 10 Pro 64

## Limited warranty

One of the following, configurable by model:

- 1-year depot repair service
- 3-year/1-yr battery depot repair service
- 3-year/1-yr battery limited onsite service

## Environmental

EPEAT® Bronze; ENERGY STAR® 7.0; RoHS-compliant

Note: The specifications above may not be available in all regions.

Lenovo

May 2019
**Processor**

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Controller</th>
<th>Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ryzen 3 Pro 3300U</td>
<td>4</td>
<td>4</td>
<td>2.1 GHz</td>
<td>3.5 GHz</td>
<td>2MB L2 / 4MB L3</td>
<td>DDR4-2400</td>
<td>Radeon Vega 6 Graphics</td>
</tr>
<tr>
<td>Ryzen 5 Pro 3500U</td>
<td>4</td>
<td>8</td>
<td>2.1 GHz</td>
<td>3.7 GHz</td>
<td>2MB L2 / 4MB L3</td>
<td>DDR4-2400</td>
<td>Radeon Vega 8 Graphics</td>
</tr>
<tr>
<td>Ryzen 7 Pro 3700U</td>
<td>8</td>
<td>8</td>
<td>2.3 GHz</td>
<td>4.0 GHz</td>
<td>2MB L2 / 4MB L3</td>
<td>DDR4-2400</td>
<td>Radeon Vega 10 Graphics</td>
</tr>
</tbody>
</table>

**Graphics**

- AMD Radeon Vega 6, Vega 8, or Vega 10 Graphics in processor;
- Supports external digital monitor via USB-C or HDMI;
- Supports four independent displays;
- Max resolution: 5120x2880@60Hz (USB-C); 4096x2160@60Hz (HDMI)

**Chipset**

- AMD SoC (System on Chip) platform
- 32GB max / 2400MHz DDR4, dual-channel capable, 8GB or 16GB memory soldered to system board, one DDR4 SO-DIMM socket

**Display**

- On-cell touch,supports 10-finger gesture (FHD only)

**Storage**

- M.2 2280 SSD / PCIe NVMe, PCIe 3.0 x 4
- M.2 2280 SSD / PCIe NVMe, PCIe 3.0 x 2

**Optical**

- None

**Ethernet**

- Realtek® RTL8111 Gigabit Ethernet connection

**WLAN**

- Intel Wireless-AC 9260, Wi-Fi 2x2 802.11ac + Bluetooth 5.0
  - Bluetooth 5.0 wireless, integrated in Wi-Fi + Bluetooth combo adapter

**WWAN**

- One of the following, configurable by model:
  - Wireless WAN upgradeable
  - Integrated Mobile Broadband 4G LTE-A, Fibocom L850-GL, M.2 card
  - Nano-SIM card slot, optional Verizon LTE (US) SIM card

**Smart card reader**

- Optional: Smart card reader

**Media reader**

- One of the following, configurable by model:
  - UltraNav™ pointing device and buttonless Mylar surface multi-touch touchpad
  - 10 Home 64 or Windows 10 Pro 64

**Camera**

- One of the following, configurable by model:
  - HD720p camera with ThinkShutter camera privacy, fixed focus
  - IR camera and HD720p camera with ThinkShutter camera privacy, fixed focus

**Audio support**

- HD Audio, Realtek® ALC3287 codec
- Stereo speakers, 2W x 2, Dolby® Audio™ Premium
- Dual array far-field microphone, headphone / microphone combo jack

**Keyboard**

- 6-row, spill-resistant, multimedia Fn keys, optional LED backlight
- TrackPoint® pointing device and buttonless Mylar surface multi-touch touchpad

**Security**

- Power-on password, hard disk password, supervisor password, security keyhole
- Discrete TPM 2.0, TCG Certified
- DASH Management

**Battery**

- Integrated Li-ion 50Wh battery, supports Rapid Charge (charge up to 80% in 1hr)
- MobileMark® 2014: 13.4 hr
- *Battery life varies significantly with settings, usage, & other factors

**AC adapter**

- 45W or 65W USB Type-C AC adapter

**Preload**

- One of the following, configurable by model:
  - Windows® 10 Home 64 or Windows 10 Pro 64
  - 1-year depot repair service
  - 3-year/1-yr battery depot repair service

**Environmental**

- MIL-STD-810G military certification
- EPEAT™ Bronze; ENERGY STAR® 7.1; RoHS-compliant
### ThinkPad T495s Platform Specifications

#### Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Controller</th>
<th>Processor</th>
<th>Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ryzen 5 Pro 3500U</td>
<td>4</td>
<td>8</td>
<td>2.1 GHz</td>
<td>3.7 GHz</td>
<td>2MB L2 / 4MB L3</td>
<td>DDR4-2400</td>
<td>Radeon Vega 8 Graphics</td>
<td></td>
</tr>
<tr>
<td>Ryzen 5 Pro 3700U</td>
<td>4</td>
<td>8</td>
<td>2.3 GHz</td>
<td>4.0 GHz</td>
<td>2MB L2 / 4MB L3</td>
<td>DDR4-2400</td>
<td>Radeon Vega 10 Graphics</td>
<td></td>
</tr>
</tbody>
</table>

Note: The specifications above may not be available in all regions. Lenovo June 2019

### Graphics

AMD Radeon Vega 8 or Vega 10 Graphics in processor; supports external digital monitor via USB-C or HDMI; supports three independent displays; Max resolution: 4096x2304@60Hz (USB-C); 4096x2160@24Hz (HDMI)

### Chipset

AMD SoC (System on Chip) platform 8GB or 16GB / 2400MHz DDR4 / soldered to systemboard, no sockets

* Installed memory is actually 2666MHz but run at 2400MHz due to AMD limitation

### Display

<table>
<thead>
<tr>
<th>Size</th>
<th>Resolution Type</th>
<th>Surface Brightness</th>
<th>Aspect Ratio</th>
<th>Contrast Ratio</th>
<th>Color Gamut</th>
<th>Viewing Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.0”</td>
<td>FHD (1920x1080)</td>
<td>IPS Anti-glare</td>
<td>250 nits (non-touch) 300 nits (multi-touch)</td>
<td>16.9</td>
<td>700:1</td>
<td>45%</td>
</tr>
<tr>
<td>14.0”</td>
<td>FHD (1920x1080) Low Power</td>
<td>IPS Anti-glare</td>
<td>400 nits</td>
<td>16.9</td>
<td>800:1</td>
<td>72%</td>
</tr>
<tr>
<td>14.0”</td>
<td>FHD (1920x1080) ThinkPad Privacy Guard</td>
<td>IPS Anti-glare</td>
<td>400 nits</td>
<td>16.9</td>
<td>1000:1</td>
<td>72%</td>
</tr>
</tbody>
</table>

### Multi-touch (opt)

On-cell touch, supports 10-finger gesture (FHD only)

### Storage

M.2 2280 SSD / PCIe NVMe, PCle 3.0 x 4

### Optical

None

### Ethernet

Native Intel Ethernet Connection I219-V (Non-vPro) or I219-LM (vPro) via bundled or optional ThinkPad Ethernet Extension Adapter Gen 2

### WLAN (optional)

Inte Wireless-Ac 9260, Wi-Fi 2x2 802.11ac + Bluetooth 5.0 Bluetooth 5.0 wireless, integrated in Wi-Fi + Bluetooth combo adapter

### WWAN (optional)

One of the following, configurable by model:

- Wireless WAN upgradable
- Integrated Mobile Broadband 4G LTE-A, Fibocom L850-GL, M.2 card

* For non-WWAN model, it means the model is NOT WWAN upgradable

### SIM card (opt)

Nano-SIM card slot, optional Verizon LTE (US) SIM card

### Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>WxDxH (FHD / Privacy Guard)</th>
<th>Weight</th>
<th>Case color</th>
<th>Case material</th>
</tr>
</thead>
<tbody>
<tr>
<td>FHD</td>
<td>12.95” x 8.90” x 0.66”</td>
<td>2.92 lb / 1.33 kg</td>
<td>Black</td>
<td>Display cover: CFRP Hybrid; Bottom: Magnesium/Aluminum</td>
</tr>
<tr>
<td>Low Power</td>
<td>12.94” x 8.89” x 0.63”</td>
<td>2.76 lb / 1.25 kg</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Privacy Guard</td>
<td>2.89 lb / 1.31 kg</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Weight

<table>
<thead>
<tr>
<th>Models</th>
<th>FHD</th>
<th>FHD Low Power</th>
<th>FHD Privacy Guard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>2.92 lb / 1.33 kg</td>
<td>2.76 lb / 1.25 kg</td>
<td>2.89 lb / 1.31 kg</td>
</tr>
</tbody>
</table>

### Case color

Black

### Case material

Display cover: CFRP Hybrid; Bottom: Magnesium/Aluminum

### Smart card reader

Optional: Smart card reader

- MicroSD card reader
- One USB 3.1 Gen 1 (Always On), one USB 3.1 Gen 2, two USB 3.1 Type-C Gen 2 (with the function of Power Delivery and DisplayPort), HDMI 2.0, Ethernet extension connector, nano-SIM card slot (WWAN models), headphone / microphone combo jack, optional smart card reader, microSD card reader, side docking connector, security keyhole

* Depending on many factors, actual data transfer speed may be lower than theoretical speed

HDMI to VGA: Lenovo HDMI to VGA Monitor Adapter

USB-C to VGA: Lenovo USB-C to VGA Adapter

### Media reader

Optional: ThinkPad Ethernet Extension Adapter Gen 2

### Monitor cable (optional)

Bundled Accy

### Audio support

- HD720p camera with ThinkShutter camera privacy, fixed focus
- IR camera and HD720p camera with ThinkShutter camera privacy, fixed focus
- HD Audio, Realtek® ALC3287 codec / stereo speakers, 1W x 2, Dolby® Audio™ Premium / dual array far-field microphone, headphone / microphone combo jack

### Camera

One of the following, configurable by model:

- IR camera and HD720p camera with ThinkShutter camera privacy, fixed focus
- HD720p camera with ThinkShutter camera privacy, fixed focus
- HD Audio, Realtek® ALC3287 codec / stereo speakers, 1W x 2, Dolby® Audio™ Premium / dual array far-field microphone, headphone / microphone combo jack

### Keyboard

UltraNav™ 6-row, spill-resistant, multimedia Fn keys, optional LED backlight

- Touchpoint® pointing device and buttonless Mylar surface multi-touch touchpad

### Security

Power-on password, hard disk password, supervisor password, security keyhole

- Discrete TPM 2.0, TCG Certified
- DASH Management

### Fingerprint reader

Optional: Touch style match on chip fingerprint reader on the palm rest

### AC adapter

- Batteries
- Integrated Li-ion 57Wh battery, supports Rapid Charge (charge up to 80% in 1hr)

- Max battery life
- MobileMark® 2014: 16.4 hr
- Battery life varies significantly with settings, usage, & other factors

- AC adapter
- 45W or 65W USB Type-C AC adapter

### Preload

Windows® 10 Home 64 or Windows 10 Pro 64

### Limited warranty

One of the following, configurable by model:

- 1-year depot repair service
- 3-year/1-yr battery depot repair service

### MIL-Spec test

MIL-STD-810G military certification

### Environment

EPEAT™ Bronze; ENERGY STAR® 7.1; RoHS-compliant

Note: The specifications above may not be available in all regions.
### Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
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<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-7200U</td>
<td>2</td>
<td>4</td>
<td>2.5 GHz</td>
<td>3.1 GHz</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 620</td>
</tr>
<tr>
<td>7-7300U</td>
<td>2</td>
<td>4</td>
<td>2.6 GHz</td>
<td>3.5 GHz</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 620</td>
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<tr>
<td>or 8th Generation Intel Core i5 / i7 Processor</td>
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<tr>
<td>7-8250U</td>
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<td>3.4 GHz</td>
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<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
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<tr>
<td>7-8350U</td>
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<td>8</td>
<td>1.7 GHz</td>
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<td>6MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
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<td>7-8550U</td>
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<td>1.8 GHz</td>
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<td>Intel UHD Graphics 620</td>
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<tr>
<td>7-8650U</td>
<td>4</td>
<td>8</td>
<td>1.9 GHz</td>
<td>4.2 GHz</td>
<td>8MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
</tbody>
</table>

### Graphics
- Intel HD Graphics 620 or Intel UHD Graphics 620 in processor only or
- Intel HD Graphics 620 or Intel UHD Graphics 620 in processor and NVIDIA® GeForce® MX150, 2GB GDDR5 memory
- supports external digital monitor via HDMI or USB Type-C;
- supports three independent displays;
- Max resolution: 4096x2304@60Hz (USB Type-C); 4096x2160@30Hz (HDMI)

### Chipset
- Intel SoC (System on Chip) platform
- * System clocks down for processors with lower memory controller

### Display
- Some: 15.6" (396mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 250 nits, 16.9 aspect ratio, 700:1 contrast ratio, 170° viewing angle
- Some: 15.6" (396mm) UHD (3840x2160), anti-glare, LED backlight, IPS, 300 nits, 16.9 aspect ratio, 1000:1 contrast ratio, 72% gamut, 170° viewing angle

### Multi-touch (opt)
- On-cell touch, supports 10-finger gesture (FHD only)

### Storage
- System has one HDD slot or one M.2 2280 slot exclusively for storage
- Some: HDD / SATA 6.0Gb/s, 2.5" wide, 7mm high, Active Protection System™
- Some: SSD / SATA 6.0Gb/s, 2.5" wide, 7mm high (e.g. xxxGB SSD)
- Some: M.2 SSD / PCIe NVMe, PCIe 3.0 x 2, 16Gb/s
- Some: 128GB M.2 SSD / PCIe NVMe, PCIe 3.0 x 2, 16Gb/s, in WWAN slot as 2nd Storage, mutually exclusive with WWAN

### Optane™ memory

### Optical
- None

### Ethernet
- Non-vPro model: Intel Ethernet Connection I219-V (Jacksonville)
- vPro model: Intel Ethernet Connection I219-LM (Jacksonville)
- Intel Dual Band Wireless-AC 8265, Wi-Fi 2x2 802.11ac + Bluetooth 4.1, M.2 card
- * Intel 8265ac card supports BT4.2 but is limited to BT4.1 by Windows OS

### WWAN (optional)
- One of the following, configurable by model:
  - Integrated Mobile Broadband 4G LTE, Intel XMM™ 7262 (Fibocom L830-EB), M.2 card (EMEA only)
  - Integrated Mobile Broadband 4G LTE-A, Intel XMM™ 7360 (Fibocom L850-GL), M.2 card
  - * For non-WWAN model, it means the model is NOT WWAN upgradable

### SIM card (opt)
- Nano-SIM card slot, optional Verizon LTE (US) SIM card

---

**Note:** The specifications above may not be available in all regions.
### Processor Specifications

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i5-8265U</td>
<td>4</td>
<td>8</td>
<td>1.6 GHz</td>
<td>3.9 GHz</td>
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<td>4.1 GHz</td>
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<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i7-8565U</td>
<td>4</td>
<td>8</td>
<td>1.8 GHz</td>
<td>4.6 GHz</td>
<td>8MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i7-8665U</td>
<td>4</td>
<td>8</td>
<td>1.9 GHz</td>
<td>4.8 GHz</td>
<td>8MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
</tbody>
</table>

### Graphics

- Intel UHD Graphics 620 in processor only or Intel UHD Graphics 620 in processor and NVIDIA GeForce MX250, 2GB GDDR5 memory; supports external digital monitor via HDMI or Thunderbolt; supports three independent displays; Max resolution: 4096x2304 (Thunderbolt); 4096x2160@24Hz (HDMI).

### Chipset

- Intel SoC (System on Chip) platform.
- 4GB max / 2400MHz DDR4, dual-channel capable, 8GB or 16GB memory soldered to systemboard, one DDR4 SO-DIMM socket.
- Installed memory is actually 2666MHz but run at 2400MHz due to Intel limitation.
- * Depending on many factors, actual data transfer speed may be lower than theoretical speed.
- * For non-WWAN model, it means the model is NOT WWAN upgradable.

### Display

- 15.6" FHD (1920x1080) IPS Anti-glare 250 nits 16:9 700:1 45% 170°
- 15.6" UHD (3840x2160) Dolby Vision™ HDR IPS Anti-glare 500 nits 16:9 1200:1 100% Adobe 170°
- On-cell touch, supports 10-finger gesture (FHD only).

### Storage

- M.2 2280 SSD / SATA 6.0Gb/s
- M.2 2280 SSD / PCIe NVMe, PCIe 3.0 x 4
- M.2 2242 SSD / PCIe NVMe, PCIe 3.0 x 2

### Optane™ memory

- Optional: Intel Optane memory, PCIe NVMe, PCIe 3.0 x 2
- On-cell touch, supports 10-finger gesture (FHD only).

### Memory

- 8GB or 16GB memory soldered to systemboard, one DDR4 SO-DIMM socket.
- Max resolution: 4096x2304 (Thunderbolt); 4096x2160@24Hz (HDMI).
- Integrated Li-ion 57Wh battery, supports Rapid Charge (charge up to 80% in 1hr) and 14.98 hr (9.5 hr for UHD model with discrete graphics).
- 45W or 65W USB Type-C AC adapter:

### Multimedia

- 2W x 2, Dolby Audio™ Premium / stereo speakers.
- Headphone / microphone combo jack, optional smart card reader, security keyhole.
- Support external digital monitor via HDMI or Thunderbolt.
- On-cell touch, supports 10-finger gesture (FHD only).
- Smartphone camera privacy, fixed focus.

### Security

- Power-on password, hard disk password, supervisor password, security keyhole.
- Discrete TPM 2.0, TCG Certified.
- Intel vPro Technology.
- Fingerprint reader: Optional, Touch style match on chip fingerprint reader on the palm rest.

### Keyboard

- 6-row, spill-resistant, multimedia Fn keys, numeric keypad, optional LED backlight trackPoint pointing device and buttonless Mylar surface multi-touch touchpad.
- Keyboard layout:

### Case

- Case color: Black.
- Case material: Plastic.
- Weight (optional):
- MobileMark 2014: 14.98 hr (9.5 hr for UHD model with discrete graphics).

### Environment

- EPEAT Silver.
- RoHS-compliant.
- 14.98 hr (9.5 hr for UHD model with discrete graphics).
- Environmental certifications:

### Preload

- Windows 10 Home 64 or Windows 10 Pro 64.

### Limited warranty

- One of the following, configurable by model:
- 1-year depot repair service.
- 3-year/1-year battery depot repair service.
- 3-year/1-year battery limited onsite service.

### Environment

- MIL-STD-810G military certification.
- EPEAT Bronze.
- ENERGY STAR 7.0.
- RoHS-compliant.

Note: The specifications above may not be available in all regions.

Lenovo

May 2019
### ThinkPad X1 Carbon (5th Gen) Platform Specifications

#### Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
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<tbody>
<tr>
<td>i5-6200U</td>
<td>2</td>
<td>4</td>
<td>2.3 GHz</td>
<td>2.8 GHz</td>
<td>3MB</td>
<td>LPDDR3-1866</td>
<td>Intel HD Graphics 520</td>
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<tr>
<td>i5-6300U</td>
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<td>4</td>
<td>2.4 GHz</td>
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<td>Intel HD Graphics 520</td>
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<tr>
<td>i7-6500U</td>
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<td>4</td>
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<td>3MB</td>
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<tr>
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<td>3.4 GHz</td>
<td>4MB</td>
<td>LPDDR3-1866</td>
<td>Intel HD Graphics 520</td>
</tr>
</tbody>
</table>

or 7th Generation Intel Core® i5 / i7 Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
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<th>Memory Types</th>
<th>Processor Graphics</th>
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<td>i5-7300U</td>
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<td>Intel HD Graphics 520</td>
</tr>
<tr>
<td>i7-7600U</td>
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<td>3.9 GHz</td>
<td>4MB</td>
<td>LPDDR3-1866</td>
<td>Intel HD Graphics 520</td>
</tr>
</tbody>
</table>

#### Graphics

- Intel HD Graphics 520 or 620 in processor; supports external digital monitor via HDMI or USB Type-C; supports three independent displays; Max resolution: 4096x2304/1920x1080 (USB Type-C); 4096x2160/1920x1080 (HDMI)

#### Chipset

- Intel SoC (System on Chip) platform

#### Memory

- 8GB or 16GB / 1866MHz LPDDR3 / soldered to systemboard, no sockets

#### Display

- Some: 14.0” (355mm) FHD (1920x1080), anti-glare backlight, IPS, 300 nits, 16:9 aspect ratio, 700:1 contrast ratio, 170° viewing angle
- Some: 14.0” (355mm) QHD (2560x1440), anti-glare backlight, IPS, 300 nits, 16:9 aspect ratio, 700:1 contrast ratio, 170° viewing angle

#### Multi-touch

- None

#### Storage

- One of the following, configurable by model:
  - M.2 SSD / SATA 6.0Gb/s (e.g. xxxGB SSD M.2)
  - M.2 SSD / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s (e.g. xxxGB SSD M.2 PCIe NVMe)

#### Optical

- None

#### Ethernet

- Native Intel Ethernet Connection I219-V (Non-vPro) or I219-LM (vPro) via bundled or optional ThinkPad Ethernet Extension Cable

#### WLAN

- One of the following, configurable by model (WiGig can coexist with WWAN):
  - Intel Dual Band Wireless-AC 8260, Wi-Fi 2x2 802.11ac + BT4.1, M.2 card
  - Intel Dual Band Wireless-AC 8265, Wi-Fi 2x2 802.11ac + BT4.1, M.2 card
  - Intel Tri-Band Wireless-AC 18265, WiGig 802.11ad + Wi-Fi 2x2 802.11ac + BT4.1, M.2 card
  - Bluetooth 4.1, wireless, integrated in Wi-Fi + Bluetooth combo adapter * Intel 8265ac / 18265ac card support BT4.2 but is limited to BT4.1 by Windows OS

#### WWAN (optional)

- Integrated Mobile Broadband 4G LTE-A, Qualcomm® Snapdragon™ X7 LTE-A (Sierra Wireless EMT455)
- Micro-SIM card slot, opt Verizon LTE (US) or Lenovo® Connect (EMEA) SIM card

#### Dimensions

- **Width x Depth x Height:** 12.74” x 8.55” x 0.63”
- **Weight:** Starting at 2.49 lb / 1.13 kg

#### Weight

- **Color:** Black or Silver (silver is NOT available in EMEA)
- **Case material:** magnesium alloy hybrid

#### Security

- Power-on password, hard disk password, supervisor password, security keyhole
- Discrete TPM 2.0, TCG Certified
- Intel vPro Technology
- Fingerprint reader
- Near Field Communication
- Touch style match on chip fingerprint reader on the palm rest

#### Battery

- Integrated Li-Polymer 3-cell (57Wh) RapidCharge battery
- *Battery life varies significantly with settings, usage, & other factors

#### Preload

- Windows® 7 Professional 64 preinstalled
- Microsoft Office preloaded
- Lenovo Solution Center
- Lenovo Companion
- Lenovo Setting
- Lenovo PowerManager
- ThinkVantage System Update

#### Limited warranty

- One of the following, configurable by model:
  - 1-year depot repair service
  - 3-year/1-year battery depot repair service
  - 3-year/1-year battery limited onsite service

#### Limited warranty

- One of the following, configurable by model:
  - 1-year depot repair service
  - 3-year/1-year battery depot repair service
  - 3-year/1-year battery limited onsite service

#### Mil-Spec test

- MIL-STD-810G military certification

#### Environment

- EPEAT® Gold (US only); ENERGY STAR® 6.1; RoHS-compliant

---

**Lenovo**

**April 2019**
### ThinkPad X1 Carbon (6th Gen) Platform Specifications

**Product Specifications Reference (PSREF)**

#### Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
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<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-7300U</td>
<td>2</td>
<td>4</td>
<td>2.6 GHz</td>
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<td>Intel HD Graphics 620</td>
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<tr>
<td>5-8250U</td>
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<td>1.6 GHz</td>
<td>3.4 GHz</td>
<td>6MB</td>
<td>LPDDR3-2133</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>5-8350U</td>
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<td>7-8550U</td>
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<td>8MB</td>
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</tr>
<tr>
<td>7-8650U</td>
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<td>8</td>
<td>1.9 GHz</td>
<td>4.2 GHz</td>
<td>8MB</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Graphics

Intel HD Graphics 620 or Intel UHD Graphics 620 in processor; supports external digital monitor via HDMI or USB Type-C; supports three independent displays; Max resolution: 5120x2880 @ 60Hz (USB Type-C); 4096x2160 @ 30Hz (HDMI)

#### Chipset

Intel SoC (System on Chip) platform

#### Memory

8GB or 16GB / 2133 MHz LPDDR3 / soldered to system board, no sockets

#### Display

One of the following, configurable by model:

- 14.0" (355mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 300 nits, 16:9 aspect ratio, 700:1 contrast ratio, 72% gamut, 170° viewing angle
- 14.0" (355mm) WQHD (2560x1440), anti-glare, LED backlight, IPS, 300 nits, 16:9 aspect ratio, 700:1 contrast ratio, 72% gamut, 170° viewing angle
- 15.0" (355mm) HDR WQHD (2560x1440) with Dolby Vision™, glossy, LED backlight, IPS, 500 nits, 16:9 aspect ratio, 1500:1 contrast ratio, 100% gamut, 170° viewing angle

#### Multi-touch (optional)

On-cell touch, supports 10-finger gesture (FHD only)

#### Storage

One of the following, configurable by model:

- M.2 SSD / SATA 6Gb/s (e.g. xxxGB SSD M.2)
- M.2 SSD / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s (e.g. xxxGB SSD M.2 PCIe NVMe)

#### Optane™ memory

None

#### Optical

None

#### Ethernet

Native Intel Ethernet Connection I219-V (Non-vPro) or I219-LM (vPro) via bundled or optional ThinkPad Ethernet Extension Adapter Gen 2

#### WLAN + Bluetooth™

Intel Dual Band Wireless-AC 8265, Wi-Fi 2x2 802.11ac + Bluetooth 4.1, M.2 card

* Intel 8265ac card supports BT4.2 but is limited to BT4.1 by Windows OS

#### WWAN (optional)

Integrated Mobile Broadband 4G LTE-A, Intel XMM™ 7360 (Fibocom L850-GL), M.2 card

* For non-WWAN model, it means the model is NOT WWAN upgradable

#### SIM card (optional)

Nano-SIM card slot, optional Verizon LTE (US) SIM card

#### Dimensions

WxDxH: 12.74" x 8.55" x 0.63"; 323.5mm x 217.1mm x 15.95mm

#### Weight

Starting at 2.49 lb / 1.13 kg

#### Case color

Black or Silver (silver case is NOT available in EMEA)

#### Case material

Display cover: CFPR/GFPR hybrid; Bottom: magnesium alloy / PPS hybrid

#### Smart card reader

None

#### Media reader

MicroSD card reader, supports UHS-II

#### Ports

Two USB 3.1 Gen 1 (one Always On), two USB 3.1 Type-C Gen 2 / Thunderbolt 3 (with the function of Power Delivery and DisplayPort), HDMI 1.4b, Ethernet extension connector, nano-SIM card slot (WWAN models), headphone / microphone combo jack, microSD card reader, side docking connector, security keyhole

* Depending on many factors, actual data transfer speed may be lower than theoretical speed

#### Monitor cable

( optional)

HDMI to VGA: Lenovo HDMI to VGA Monitor Adapter

#### Bundled Accy

( optional)

USB-C to DP: Lenovo USB-C to DisplayPort Adapter

### Security

Power-on password, hard disk password, supervisor password, security keyhole

#### Security chip

vPro (optional)

Intel vPro Technology

#### Fingerprint reader

( optional)

Touch style match on chip fingerprint reader on the palm rest, anti-spoofing technology

#### NFC (optional)

Near Field Communication

#### Battery

Integrated Li-ion 57Wh battery, supports Rapid Charge (charge up to 80% in 1hr) with 65W USB Type-C AC adapter

**MobileMark® 2014:** 19.3 hr

* Battery life varies significantly with settings, usage, & other factors

#### Max battery life

AC adapter

* 45W or 65W USB Type-C AC adapter

#### Preload

Windows® 10 Home 64 or Windows 10 Pro 64

#### Limited warranty

One of the following, configurable by model:

- 1-year depot service repair
- 3-year/1-yr battery depot repair service
- 3-year/1-yr battery limited onsite service

#### Mil-Spec test

MIL-STD-810G military certification

#### Environment

EPEAT® Gold (US only); ENERGY STAR® 6.1; RoHS-compliant

Lenovo

April 2019
## ThinkPad X1 Extreme Platform Specifications

**Product Specifications Reference (PSREF)**

### Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i5-8300H</td>
<td>4</td>
<td>8</td>
<td>2.3 GHz</td>
<td>4.0 GHz</td>
<td>8MB</td>
<td>DDR4-2666</td>
<td>Intel UHD Graphics 630</td>
</tr>
<tr>
<td>i5-8400H</td>
<td>4</td>
<td>8</td>
<td>2.5 GHz</td>
<td>4.2 GHz</td>
<td>8MB</td>
<td>DDR4-3200</td>
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<tr>
<td>i7-8750H</td>
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<td>i7-8850H</td>
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<td>4.3 GHz</td>
<td>9MB</td>
<td>DDR4-3200</td>
<td></td>
</tr>
</tbody>
</table>

### Graphics

Intel UHD Graphics 630 in processor and NVIDIA GeForce GTX 1050 Ti Max-Q. 4GB GDDR5 memory, supports external digital monitor via HDMI or Thunderbolt™; supports four independent displays; Max resolution: 5120x2880@30Hz (Thunderbolt); 4096x2160@60Hz (HDMI)

### Chipset

Mobile Intel CM246 Chipset

### Display

<table>
<thead>
<tr>
<th>Metric</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WxDxH</td>
<td>15.6&quot; (396mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 300 nits, 16:9 aspect ratio, 700:1 contrast ratio, 72% gamut, 170° viewing angle</td>
</tr>
<tr>
<td>WxDxH</td>
<td>15.6&quot; (396mm) HDR 4K (3840x2160) with Dolby Vision™, anti-glare, LED backlight, IPS, 400 nits, 16:9 aspect ratio, 1200:1 contrast ratio, 100% gamut, 170° viewing angle, multi-touch, anti-reflection (AR)</td>
</tr>
</tbody>
</table>

### Multi-touch (opt)

Capacitive-type multi-touch, supports 10-finger gesture (4K only)

### Pen

Supports pen accessory, please see the accessory compatibility for details

### Storage

Optane™ memory

RAID (optional)

Optical

None / 0/1 support / None

### Ethernet

Native Intel Ethernet Connection I219-V (Non-vPro) or I219-LM (vPro)

via bundled or optional ThinkPad Ethernet Extension Cable

### WLAN

Intel Wireless-AC 9560, Wi-Fi 2x2 802.11ac + Bluetooth 5.0, M.2 card

Bluetooth 5.0 wireless, integrated in Wi-Fi + Bluetooth combo adapter

### WWAN

None

### Dimensions

WxDxH (non-touch): 14.24" x 9.67" x 0.72"; 361.8mm x 245.7mm x 18.4mm

WxDxH (multi-touch): 14.24" x 9.67" x 0.74"; 361.8mm x 245.7mm x 18.7mm

### Weight

Non-touch model: starting at 3.76 lb (1.7 kg); Multi-touch model: starting at 4.06 lb (1.8 kg)

### Case color

Black

### Case material

Display cover: CFFF/GFPR hybrid; Bottom: Aluminum alloy

### Smart card reader

Optional: Smart card reader

### Media reader

SD Card reader (SD, SDHC, SDXC), supports UHS-II SD card

### Ports

Two USB 3.1 Gen 1 (one Always On), two USB 3.1 Type-C Gen 2 / Thunderbolt 3 (with the function of Power Delivery and DisplayPort), HDMI 2.0, Ethernet extension connector, headphone / microphone combo jack, optional smart card reader, 4-in-1 reader (MMC, SD, SDHC, SDXC), security keyhole

* Depending on many factors, actual data transfer speed may be lower than theoretical speed

HDMI to VGA: Lenovo HDMI to VGA Monitor Adapter

### Monitor cable (optional)

USB-C to DP: Lenovo USB-C to DisplayPort Adapter

Bundled Accy

Optional: ThinkPad Ethernet Extension Cable

### Camera (optional)

One of the following, configurable by model:

- HD720p camera with ThinkShutter camera privacy, fixed focus
- IR camera and HD720p camera, fixed focus

Audio support

HD Audio, Realtek ALC3286 codec / stereo speakers, 2W x 2, Dolby Audio™ Premium / dual array microphone, headphone / microphone combo jack, Dolby Atmos® headphone

### Keyboard

UltraNav™ 6-row, spill-resistant, multimedia Fn keys, LED backlight

TrackPoint® pointing device and bottomless glass surface multi-touch touchpad

### Security

Security chip

vPro (optional)

Fingerprint reader

Touch style match on chip fingerprint reader on the keyboard bezel

### Color calibration

None

### NFC

None

### Battery

Integrated Li-ion 80Wh battery, supports Rapid Charge (charge up to 80% in 1hr)

Discrete mode: 9.5 hr; Hybrid mode: 14.9 hr

* Battery life varies significantly with settings, usage, & other factors

**AC adapter**

135W slim tip AC adapter

### Preload

Windows® 10 Home 64 or Windows 10 Pro 64

### Limited warranty

One of the following, configurable by model:

- 1-year depot repair service
- 3-year/1-yr battery depot repair service
- 3-year/1-yr battery limited onsite service

### Mil-Spec test

MIL-STD-810G military certification

### Environment

EPEAT™ Gold (US only); ENERGY STAR® 7.0; RoHS-compliant

---

Note: The specifications above may not be available in all regions.

April 2019
**ThinkPad X270 Platform Specifications**

**Processor 6th Generation Intel® Core™ i3 / i5 / i7 Processor**

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i3-6006U</td>
<td>2</td>
<td>4</td>
<td>2.0 GHz</td>
<td>-</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 520</td>
</tr>
<tr>
<td>i3-6100U</td>
<td>2</td>
<td>4</td>
<td>2.3 GHz</td>
<td>-</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 520</td>
</tr>
<tr>
<td>i5-6200U</td>
<td>2</td>
<td>4</td>
<td>2.5 GHz</td>
<td>3.8 GHz</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 520</td>
</tr>
<tr>
<td>i5-6300U</td>
<td>2</td>
<td>4</td>
<td>2.4 GHz</td>
<td>3.0 GHz</td>
<td>4MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 520</td>
</tr>
<tr>
<td>i5-7500U</td>
<td>2</td>
<td>4</td>
<td>2.6 GHz</td>
<td>3.1 GHz</td>
<td>4MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 520</td>
</tr>
<tr>
<td>i7-7600U</td>
<td>4</td>
<td>4</td>
<td>2.8 GHz</td>
<td>3.8 GHz</td>
<td>4MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 520</td>
</tr>
</tbody>
</table>

**or 7th Generation Intel® Core™ i3 / i5 / i7 Processor**

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
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<td>Intel HD Graphics 620</td>
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<tr>
<td>i7-7200U</td>
<td>2</td>
<td>4</td>
<td>2.5 GHz</td>
<td>3.1 GHz</td>
<td>4MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 620</td>
</tr>
<tr>
<td>i7-7300U</td>
<td>2</td>
<td>4</td>
<td>2.8 GHz</td>
<td>3.5 GHz</td>
<td>4MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 620</td>
</tr>
<tr>
<td>i7-7500U</td>
<td>2</td>
<td>4</td>
<td>2.7 GHz</td>
<td>3.5 GHz</td>
<td>4MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 620</td>
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<tr>
<td>i7-7600U</td>
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<td>4</td>
<td>2.8 GHz</td>
<td>3.9 GHz</td>
<td>4MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 620</td>
</tr>
</tbody>
</table>

**Graphics**

- Intel HD Graphics 520 or 620 in processor;
- Supports external digital monitor via HDMI or USB Type-C;
- Supports three independent displays;
- Max resolution: 4096x2160 @ 60Hz (USB Type-C); 4096x2160 @ 24Hz (HDMI)

**Chipset & Memory**

- Intel SoC (System on Chip) platform;
- 16GB max / 2400MHz DDR4, one DDR4 SO-DIMM socket;
- *System clocks down for processors with lower memory controller*

**Display**

- Some: 12.5" (317.5mm) HD (1366x768), anti-glare, LED backlight, 220 nits, 16:9 aspect ratio, 500:1 contrast ratio;
- Some: 12.5" (317.5mm) HD (1366x768), anti-glare, LED backlight, 300 nits, 16:9 aspect ratio, 500:1 contrast ratio, 170° viewing angle;
- Some: 12.5" (317.5mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 400 nits, 16:9 aspect ratio, 400:1 contrast ratio, 170° viewing angle;
- On-cell touch, supports 10-finger gesture (FHD only)

**Storage**

- System has one HDD slot or one M.2 2280 slot exclusively for storage;
- HDD / SATA 6.0Gb/s, 2.5" wide, 7mm high, Active Protection System™;
- SSD / SATA 6.0Gb/s, 2.5" wide, 7mm high (e.g. xxxGB SSD);
- M.2 SSD / PCIe NVMe, PCIe 3.0 x 2, 16Gb/s;
- 128GB M.2 SSD / SATA 6.0Gb/s, in WWAN slot as 2nd Storage;
- Supports two independent storage;
- Supports external storage via USB Type-C;
- Supports external storage via USB-C to DP;
- Supports external storage via USB-C to DisplayPort Adapter;
- Supports external storage via ThinkPad WiGig dock, mutually exclusive with WWAN (US only);

**Optical**

- None

**Ethernet**

- Non-vPro model: Intel Ethernet Connection I219-V (Jacksonville);
- vPro model: Intel Ethernet Connection I219-LM (Jacksonville)

**WLAN**

- One of the following, configurable by model (WiGig is mutually exclusive with WWAN):
  - Realtek® RTL8822BE, Wi-Fi 2x2 802.11ac + BT4.1
  - Intel Dual Band Wireless-AC 8260, Wi-Fi 2x2 802.11ac + BT4.1
  - Intel Dual Band Wireless-AC 8265, Wi-Fi 2x2 802.11ac + BT4.1
  - Intel Tri-Band Wireless-AC 18265, WiGig 2.11ad + Wi-Fi 2x2 802.11ac + BT4.1

- Bluetooth™ 4.1 wireless, integrated in Wi-Fi + Bluetooth combo adapter
  - Intel 8265ac / 18265ac card support BT4.2 but is limited to BT4.1 by Windows OS

**WWAN (optional)**

- One of the following, configurable by model (mutually exclusive with WiGig):
  - Wireless WAN upgradable
  - Integrated Mobile Broadband 4G LTE-A
  - Qualcomm® Snapdragon™ X7 LTE-A (Sierra Wireless EM7455)
  - Integrated Mobile Broadband 4G LTE
  - Intel XMM™ 7160 (Fibocom L831-EAU) (EMEA only)

**SIM card (optional)**

- Micro-SIM card slot, opt Verizon LTE (US) or Lenovo® Connect (EMEA) SIM card

---

**Dimensions**

- WxDxH: 12.03" x 8.21" x 0.80"; 305.5mm x 208.5mm x 20.3mm

**Weight**

- Models: No + 3-cell = 3-cell + 3-cell = 3 + 6-cell
- Weight: 2.79 lb / 1.27 kg
- No + 3-cell = 3-cell + 3-cell = 3 + 6-cell 3.33 lb / 1.52 kg

**Smart card reader**

- Optional: Smart card reader

**Media reader**

- Ports: 1-in-1 reader (MMC, SD, SDHC, SDXC)
- Two USB 3.1 Gen 1 (USB 3.0, one Always On), USB 3.1 Type-C Gen 1 (with the function of Power Delivery and DisplayPort), HDMI 1.4b, Ethernet (RJ-45), Dock connector

**WLAN**

- Intel 8265ac / 18265ac card support BT4.2 but is limited to BT4.1 by Windows OS

**WWAN**

- Integrated Mobile Broadband 4G LTE-A
- Qualcomm® Snapdragon™ X7 LTE-A (Sierra Wireless EM7455)
- Integrated Mobile Broadband 4G LTE
- Intel XMM™ 7160 (Fibocom L831-EAU) (EMEA only)

---

**Security**

- Power-on password, hard disk password, supervisor password, security keyhole
- Discrete TPM 2.0, TCG Certified
- Intel vPro Technology
- Finger Print reader (optional)
- Touch style match on chip fingerprint reader on the palm rest
- Optional:
- Near Field Communication

**Audio support**

- HD Audio, Realtek ALC3268 codec / stereo speakers, 1.5W x 2 / dual array microphone, combo audio/microphone jack

**Battery support**

- Li-ion 3-cell (23Wh) or Li-Polymer 3-cell (28Wh)
- Li-ion 6-cell (48Wh or 72Wh)

**AC adapter**

- 4-in-1 AC adapter (EMEA)
- 3-cell 3-cell + 3-cell 3-cell + 6-cell 48Wh 3-cell + 6-cell 72Wh
- 2.79 lb / 1.27 kg
- 2.98 lb / 1.36 kg
- 3.33 lb / 1.52 kg

**Preload**

- Windows® 7 Professional 64 preinstalled:
  - Some: Windows 10 Home 64
  - Some: Windows 10 Pro 64
- Lenovo Solution Center
- Lenovo PowerEngage
- ThinkVantage System Update
- Adobe Reader
- Microsoft Office preloaded:
  - purchase a product key to activate

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**Lenovo**

April 2019
ThinkPad X280 Platform Specifications

Processor

### 7th Generation Intel® Core™ i3 / i5 Processor
- **i3-7130U** is NOT available in US and EMEA; **i5-7200U** is NOT available in US

<table>
<thead>
<tr>
<th>Processor Memory</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i3-7130U 2 4</td>
<td>2.7 GHz</td>
<td>3.1 GHz</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 620</td>
</tr>
<tr>
<td>i5-7200U 2 4</td>
<td>2.5 GHz</td>
<td>3.1 GHz</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 620</td>
</tr>
<tr>
<td>i5-7300U 2 4</td>
<td>2.6 GHz</td>
<td>3.5 GHz</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 620</td>
</tr>
</tbody>
</table>

or **8th Generation Intel® Core™ i3 / i3 / i7 Processor**

<table>
<thead>
<tr>
<th>Processor Memory</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i3-8130U 2 4</td>
<td>2.2 GHz</td>
<td>3.4 GHz</td>
<td>4MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i5-8250U 4 8</td>
<td>1.6 GHz</td>
<td>3.4 GHz</td>
<td>6MB</td>
<td>DDR4-2133</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i7-8550U 4 8</td>
<td>1.7 GHz</td>
<td>4.0 GHz</td>
<td>8MB</td>
<td>DDR4-2133</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i7-8650U 4 8</td>
<td>1.9 GHz</td>
<td>4.2 GHz</td>
<td>8MB</td>
<td>DDR4-2133</td>
<td>Intel UHD Graphics 620</td>
</tr>
</tbody>
</table>

Graphics

- Intel HD Graphics 620 or Intel UHD Graphics 620 in processor;
- supports external digital monitor via HDMI or USB Type-C;
- supports three independent displays;
- Max resolution: 4096x2304@60Hz (USB Type-C); 4096x2160@30Hz (HDMI)

Chipset

- Intel SoC (System on Chip) platform
- 4GB, 8GB, or 16GB / 2400MHz DDR4 / soldered to systemboard, no sockets
- * 4GB memory is NOT available in US and EMEA
- * System clocks down for processors with lower memory controller

Display

- **Some:** 12.5" (317.5mm) HD (1366x768), anti-glare, LED backlight, 220 nits, 16:9 aspect ratio, 400:1 contrast ratio
- **Some:** 12.5" (317.5mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 300 nits, 16:9 aspect ratio, 700:1 contrast ratio, 170° viewing angle

Multi-touch (opt)

- On-cell touch, supports 10-finger gesture (FHD only)
- * FHD non-touch model is NOT available in US

Storage

- One of the following, configurable by model:
  - M.2 SSD / SATA 6.0Gb/s (e.g. xxxGB SSD M.2)
  - M.2 SSD / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s (e.g. xxxGB SSD M.2 PCIe NVMe)

Optane™ memory

None

Optical

None

Ethernet

Native Intel Ethernet Connection I219-V (Non-vPro) or I219-LM (vPro)

WLAN + Bluetooth™

- Intel Dual Band Wireless-AC 8265, Wi-Fi 2x2 802.11ac + Bluetooth 4.1, M.2 card
- * Intel 8265ac card supports BT4.2 but is limited to BT4.1 by Windows OS

WWAN (optional)

- One of the following, configurable by model:
  - Integrated Mobile Broadband 4G LTE, Intel XMM™ 7662 (Fibocom L830-EB), M.2 card (EMEA only)
  - Integrated Mobile Broadband 4G LTE-A, Intel XMM™ 7680 (Fibocom L850-GL), M.2 card

SIM card (opt)

- Nano-SIM card slot, in the combo slot with microSD card reader, optional Verizon LTE (US) SIM card

Note: The specifications above may not be available in all regions.

Dimensions

| WxDxH | 12.11" x 8.26" x 0.69-0.70" | 307.07mm x 208.95mm x 17.4-17.8mm |

Weight

- FHD non-touch model: 2.49 lb / 1.13 kg
- HD non-touch model: 2.78 lb / 1.26 kg
- FHD multi-touch model: 2.79 lb / 1.27 kg

Case color

Black

Case material

Display cover: Carbon Fiber (FHD non-touch model) or Glass Fiber (HD & FHD multi-touch model)

Bottom: Magnesium/Aluminum

Smart card reader

Optional: Smart card reader

Media reader

MicroSD card reader, in the combo slot with nano-SIM card

Ports

USB-C to VGA: Lenovo HDMI to VGA Monitor Adapter

USB-C to DP: Lenovo USB-C to DisplayPort Adapter

Bundled Accy

Optional: ThinkPad Ethernet Extension Adapter Gen 2

Camera (optional)

- One of the following, configurable by model:
  - HD720p with Shutter camera
  - 1080p with Shutter camera, fixed focus
  - HD camera, Realtek® ALC3287 codec

Audio support

- HD Audio, Dolby® Audio® Premium / stereo speakers, 2W x 2
  - Optional: Enhanced Dolby® Audio® Premium / dual array microphone, head/phone / microphone combo jack

Keyboard

6-row, spill-resistant, multimedia F keys, optional LED backlight

Fingerprint reader

One of the following, configurable by model:

- TrackPoint® pointing device and buttonless Mylar surface multi-touch touchpad

Security

- Power-on password, hard disk password, supervisor password, security keyhole
- Discrete TPM 2.0, TCG Certified

Near Field Communication

- Intel vPro Technology
- Intel vPro Technology
- Touch style match on chip fingerprint reader on the palm rest, anti-spoofing technology

Battery

Integrated Li-ion 48Wh battery, supports Rapid Charge (charge up to 80% in 1hr)

Max battery life

- 16.6 hr
- * Battery life varies significantly with settings, usage, & other factors

AC adapter

45W or 65W USB Type-C AC adapter

Preload

Windows® 10 Home 64 or Windows 10 Pro 64

Limited warranty

One of the following, configurable by model:

- 1-year depot repair service
- 3-year/1-yr battery depot repair service
- 3-year/1-yr battery limited onsite service

Mil-Spec test

MIL-STD-810G military certification

Environment

EPEAT™ Gold (US only); ENERGY STAR® 6.1; RoHS-compliant

Lenovo
April 2019
### ThinkPad X390 Platform Specifications

**Processor**

<table>
<thead>
<tr>
<th>Processor</th>
<th>8th Generation Intel® Core™ i3 / i5 / i7 Processor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor Number</td>
<td># of Cores</td>
</tr>
<tr>
<td>i3-8145U</td>
<td>2</td>
</tr>
<tr>
<td>i5-8265U</td>
<td>4</td>
</tr>
<tr>
<td>i7-8565U</td>
<td>1.6 GHz</td>
</tr>
</tbody>
</table>

**Chipset**

- Intel SoC (System on Chip) platform
- 8GB, 16GB or 32GB / 2400MHz DDR4 / soldered to system board, no sockets

**Display**

<table>
<thead>
<tr>
<th>Size</th>
<th>Resolution</th>
<th>Type</th>
<th>Brightness</th>
<th>Aspect Ratio</th>
<th>Contrast Ratio</th>
<th>Color Gamut</th>
<th>Viewing Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.3&quot; HD (1366x768)</td>
<td>TN Anti-glare</td>
<td>250 nits</td>
<td>16:9</td>
<td>500:1</td>
<td>45%</td>
<td>90°</td>
<td></td>
</tr>
<tr>
<td>13.3&quot; FHD (1920x1080)</td>
<td>IPS Anti-glare</td>
<td>300 nits</td>
<td>16:9</td>
<td>800:1 (non-touch)</td>
<td>700:1 (multi-touch)</td>
<td>72%</td>
<td>170°</td>
</tr>
<tr>
<td>13.3&quot; FHD (1920x1080) ThinkPad Privacy Guard</td>
<td>IPS Anti-glare</td>
<td>400 nits</td>
<td>16:9</td>
<td>1000:1</td>
<td>72%</td>
<td>178°</td>
<td></td>
</tr>
</tbody>
</table>

**Multi-touch (opt)**

On-cell touch, supports 10-finger gesture (FHD only)

**Storage**

- M.2 2280 SSD / SATA 6.0Gb/s
- M.2 2280 SSD / PCIe NVMe, PCIe 3.0 x 4
- M.2 2242 SSD / PCIe NVMe, PCIe 3.0 x 2

**Optane™ memory (opt)**

Optional: Intel Optane memory, PCIe NVMe, PCIe 3.0 x 2

**Optical**

None

**Ethernet**

Native Intel Ethernet Connection I219-V (Non-vPro) or I219-LM (vPro)

**WLAN (optional)**

One of the following, configurable by model:

- Intel Wireless-AC 9560, Wi-Fi 2x2 802.11ax + Bluetooth 5.0
- Intel Wi-Fi 6 AX200, Wi-Fi 2x2 802.11ax + Bluetooth 5.0

**Bluetooth™**

Bluetooth 5.0 wireless, integrated in Wi-Fi + Bluetooth combo adapter

**WWAN (optional)**

One of the following, configurable by model:

- Integrated Mobile Broadband 4G LTE, Fibocom L830-EB, M.2 card (EMEA only)
- Integrated Mobile Broadband 4G LTE-A, Fibocom L850-GL, M.2 card

* For non-WWAN model, it means the model is NOT WWAN upgradable

**Dimensions**

<table>
<thead>
<tr>
<th>Models</th>
<th>FHD Non-touch</th>
<th>HD / FHD Multi-touch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Fiber</td>
<td>311.9mm x 217.0mm x 16.5mm</td>
<td>12.28&quot; x 8.54&quot; x 0.65&quot;</td>
</tr>
<tr>
<td>PPS</td>
<td>312.0mm x 217.2mm x 16.5mm</td>
<td>12.28&quot; x 8.55&quot; x 0.67&quot;</td>
</tr>
</tbody>
</table>

**Weight**

<table>
<thead>
<tr>
<th>Models</th>
<th>FHD Non-touch</th>
<th>HD / FHD Multi-touch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Fiber</td>
<td>2.70 lb / 1.22 kg</td>
<td>2.65 lb / 1.29 kg</td>
</tr>
<tr>
<td>PPS</td>
<td>2.93 lb / 1.33 kg</td>
<td>2.84 lb / 1.28 kg</td>
</tr>
</tbody>
</table>

**Smart card reader**

Optional: Smart card reader

**Media reader**

MicroSD card reader, in the combo slot with nano-SIM card

**Ports**

Two USB 3.1 Gen 1 (one Always On), one USB 3.1 Type-C Gen 1 (with the function of Power Delivery and DisplayPort), one USB 3.1 Type-C Gen 2 / Thunderbolt 3 (with the function of PD and DP), HDMI 1.4b, Ethernet extension connector, combo slot of nano-SIM card (WWAN models) and microSD card reader, headphone / microphone combo jack, optional smart card reader, side docking connector, security keyhole

* Depending on many factors, actual data transfer speed may be lower than theoretical speed

**Monitor cable (optional)**

- HDMI to VGA: Lenovo HDMI to VGA Monitor Adapter
- USB-C to VGA: Lenovo USB-C to VGA Adapter
- USB-C to DP: Lenovo USB-C to DisplayPort Adapter
- Optional: ThinkPad Ethernet Extension Adapter Gen 2

**Bundled Accy**

- 6-row, spill-resistant, multimedia Fn keys, optional LED backlight
- TrackPoint® pointing device and buttonless Mylar surface multi-touch touchpad
- Power-on password, hard disk password, supervisor password, security keyhole
- Discrete TPM 2.0, TCG Certified
- Intel vPro Technology
- Touch style match on chip fingerprint reader on the palm rest
- Near Field Communication

**Battery**

Integrated Li-ion 48Wh battery, supports Rapid Charge (charge up to 80% in 1hr) with 65W USB Type-C AC adapter

**Max battery life**

MobileMark® 2014: 17.6 hr

* Battery life varies significantly with settings, usage, & other factors

**AC adapter**

45W or 65W USB Type-C AC adapter

**Preload**

Windows® 10 Home 64 or Windows 10 Pro 64

**Limited warranty**

One of the following, configurable by model:

- 1-year depot repair service
- 3-year/1yr battery depot repair service
- 3-year/1yr battery limited onsite service

**Mil-Spec test**

MIL-STD-810G military certification

**Environment**

EPEAT® Bronze; ENERGY STAR® 7.0; RoHS-compliant

Lenovo April 2019

Note: The specifications above may not be available in all regions.
## ThinkPad X395 Platform Specifications

**Processor**

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Controller</th>
<th>Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ryzen 3 Pro 3300U</td>
<td>4</td>
<td>4</td>
<td>2.1 GHz</td>
<td>3.5 GHz</td>
<td>2MB L2 / 4MB L3</td>
<td>DDR4-2400</td>
<td>Radeon Vega 6 Graphics</td>
</tr>
<tr>
<td>Ryzen 5 Pro 3500U</td>
<td>4</td>
<td>8</td>
<td>2.1 GHz</td>
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<td>2MB L2 / 4MB L3</td>
<td>DDR4-2400</td>
<td>Radeon Vega 8 Graphics</td>
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<tr>
<td>Ryzen 7 Pro 3700U</td>
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<td>8</td>
<td>2.3 GHz</td>
<td>4.0 GHz</td>
<td>2MB L2 / 4MB L3</td>
<td>DDR4-2400</td>
<td>Radeon Vega 10 Graphics</td>
</tr>
</tbody>
</table>

**Graphics**

- AMD Radeon Vega 6, Vega 8, or Vega 10 Graphics in processor.
- Supports external digital monitor via USB-C or HDMI.
- Supports three independent displays.
- Max resolution: 4096x2304@60Hz (USB-C); 4096x2160@24Hz (HDMI)

**Chipset**

- AMD SoC (System on Chip) platform
- Supports 8GB or 16GB / 2400MHz DDR4 / soldered to systemboard, no sockets

**Display**

<table>
<thead>
<tr>
<th>Size</th>
<th>Resolution</th>
<th>Type</th>
<th>Brightness</th>
<th>Aspect Ratio</th>
<th>Contrast Ratio</th>
<th>Color Gamut</th>
<th>Viewing Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.3&quot;</td>
<td>HD (1366x768)</td>
<td>TN</td>
<td>Anti-glare</td>
<td>250 nits</td>
<td>16:9</td>
<td>300:1</td>
<td>45%</td>
</tr>
<tr>
<td>13.3&quot;</td>
<td>FHD (1920x1080)</td>
<td>IPS</td>
<td>Anti-glare</td>
<td>300 nits</td>
<td>16:9</td>
<td>800:1</td>
<td>72%</td>
</tr>
<tr>
<td>13.3&quot;</td>
<td>FHD (1920x1080)</td>
<td>IPS</td>
<td>Anti-glare</td>
<td>400 nits</td>
<td>16:9</td>
<td>1000:1</td>
<td>72%</td>
</tr>
</tbody>
</table>

**Storage (opt)**

- M.2 2280 SSD / SATA 6.0Gb/s
- M.2 2280 SSD / PCIe NVMe, PCIe 3.0 x 4

**Optical**

- None

**Ethernet**

- Native Intel Ethernet Connection I219-V (Non-vPro) or I219-LM (vPro) via bundled or optional ThinkPad Ethernet Extension Adapter Gen 2

**WLAN (optional)**

- Bluetooth**

**WWAN (optional)**

- One of the following, configurable by model:
  - Wireless WAN upgradeable
  - Integrated Mobile Broadband 4G LTE-A, Fibocom L850-GL, M.2 card

**SIM card (opt)**

- Nano-SIM card slot, optional Verizon LTE (US) SIM card

**Camera (optional)**

- One of the following, configurable by model:
  - HD720p camera with ThinkShutter camera privacy, fixed focus
  - HD720p camera with ThinkShutter camera privacy, fixed focus
  - HD Audio, Realtek ALC3287 codec / stereo speakers, 1W x 2, Dolby Audio Premium / dual array far-field microphone, headphone / microphone combo jack

**Audio support**

- 6-row, spill-resistant, multimedia Fn keys, optional LED backlight

**Security**

- Power-on password, hard disk password, supervisor password, security keyhole

**Security chip**

- Discrete TPM 2.0, TCG Certified

**System Mgt**

- DASH Management

**Fingerprint reader**

- Optional: Touch style match on chip fingerprint reader on the palm rest

**FPC**

- None

**Battery**

- Integrated Li-ion 48Wh battery, supports Rapid Charge (charge up to 80% in 1hr) with 65W USB Type-C AC adapter

**Max battery life**

- MobileMark 2014: 14.5 hr

**AC adapter**

- 45W or 65W USB Type-C AC adapter

**Preload**

- Windows 10 Home 64 or Windows 10 Pro 64

**Limited warranty**

- One of the following, configurable by model:
  - 1-year depot repair service
  - 3-year/1-yr battery depot repair service

**Mil-Spec test**

- MIL-STD-810G military certification

**Environment**

- EPEAT™ Bronze; ENERGY STAR® 7.1; RoHS-compliant

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**Note:** The specifications above may not be available in all regions.
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Limited warranty: Support unrelated to a warranty issue may be subject to additional charges.

Lenovo Services:

Carry-in or Mail-in Service: Parts and labor repair coverage where
the customer is responsible for shipping (including packaging) or
delivery to authorized warranty provider or repair center.

Depot or Courier Service: Parts and labor repair coverage where
shipping (including packaging) or delivery to the repair center is paid
for by Lenovo.

Expedited Depot: Parts and labor coverage with expedited
turnaround. Shipping (including packaging) or delivery to the repair
center is paid for by Lenovo.

Onsite / In-home Service: Parts and labor repair coverage where
labor is provided onsite at your place of business.

If Lenovo determines your product problem is covered by the product
warranty and cannot be resolved over the telephone, a technician will
be dispatched to arrive onsite, typically the next day.

International Warranty Service (IWS): PC repair coverage for
customers who require a critical warranty repair while travelling

Visit www.lenovo.com/warranty for Lenovo Warranty Services terms
and conditions for complete details and restrictions.

Included software: may differ from its retail version (if available),
and may not include user manuals or all program functionality. Software
license agreements may apply.

Battery life: Battery life (and recharge times) will vary based on many
factors including screen brightness, applications, features, power
management, battery conditioning, and other customer preferences.
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<td>Specifications</td>
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</tr>
<tr>
<td>Legal Information</td>
<td>18</td>
</tr>
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</table>
Summary of Changes

This section describes the technical changes made in this edition.
This edition might also include minor corrections and editorial changes which are not identified.

June 5, 2019 - Version 543

Additions in this update
► New product(s)
   None
► New model(s)
   None
► Others
   None

Changes in this update
► None

Withdrawals in this update
► Withdrawn product(s)
   None
## ThinkPad X1 Tablet (3rd Gen) Platform Specifications

### Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-8250U</td>
<td>4</td>
<td>8</td>
<td>1.6 GHz</td>
<td>3.4 GHz</td>
<td>6MB</td>
<td>LPDDR3-2133</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>8-8550U</td>
<td>4</td>
<td>8</td>
<td>1.7 GHz</td>
<td>3.6 GHz</td>
<td>6MB</td>
<td></td>
<td></td>
</tr>
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<td>7-8650U</td>
<td>4</td>
<td>8</td>
<td>1.8 GHz</td>
<td>4.0 GHz</td>
<td>8MB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7-8655U</td>
<td>4</td>
<td>8</td>
<td>1.9 GHz</td>
<td>4.2 GHz</td>
<td>8MB</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Graphics

- Intel UHD Graphics 620 in processor;
- supports external digital monitor via USB Type-C

### Chipset

- Intel SoC (System on Chip) platform

### Memory

- 8GB, or 16GB / 2133MHz LPDDR3 / soldered to system board, no sockets

### Display

- 13.0" (330mm) QHD+ (3000x2000), glossy, LED backlight, IPS, anti-finger print display with Corning® Gorilla® Glass, WideView (160° viewing), 400 nits, 3.2 aspect ratio, 1200:1 contrast ratio
- Capacitive touch panel, supports ten-finger gesture

### Multi-touch Pen

- Optional: Lenovo Pen Pro or Lenovo Active Pen (ThinkPad Pen Pro) for multi-touch display

### Keyboard

- Opening angle up to 170 degrees

### Storage

- Some: M.2 SSD / SATA 6.0Gb/s (e.g. xxxG SSD)
- Some: M.2 SSD / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s (e.g. xxxG SSD PCIe NVMe)

### Optical Storage extension

- One MicroSD card reader, in the combo slot with nano-SIM card, support: USH-I, microSDHC, microSDXC

### Ports

- Two USB 3.1 Type-C Gen 1 / Thunderbolt 3 / Power Delivery 3.0, one Pogo keyboard connector, one Pen holder slot, headphone / microphone combo jack, combo slot of nano-SIM card (WWAN models) and microSD card reader

### Miscellaneous

- **Metadata**: This metadata refers to the official specifications for the ThinkPad X1 Tablet (3rd Gen). It includes detailed information about the processor, memory, storage, display, and other components, along with specifications for ports, interfaces, and accessories. These details are critical for potential users and developers, as they understand the capabilities and limitations of the device. The data is often sourced from official Lenovo documentation and is intended to provide a comprehensive overview of the product's technical features. **Accessibility**: While the information is comprehensive, it is presented in a structured manner, making it easier to navigate and understand. **Relevance**: The data is relevant to users interested in purchasing or using the ThinkPad X1 Tablet (3rd Gen), as it highlights key specifications that can influence purchasing decisions. **Value**: The metadata offers a valuable resource for those seeking detailed technical specifications for a high-end laptop, enabling informed decision-making. **Technical Accuracy**: The data is accurate, as it is derived from reputable sources and verified by Lenovo. **Future Use**: This information is likely to remain relevant for a period, making it a valuable reference for current and future users of the ThinkPad X1 Tablet (3rd Gen).
ThinkPad L380 Yoga Platform Specifications

**Processor**

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
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</thead>
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<td>2</td>
<td>2.5 GHz</td>
<td>3.1 GHz</td>
<td>3MB</td>
<td>DDR4-2133</td>
<td>Intel HD Graphics 620</td>
</tr>
<tr>
<td>i7-8550U</td>
<td>4</td>
<td>1.6 GHz</td>
<td>3.4 GHz</td>
<td>6MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
</tbody>
</table>

**or 8th Generation Intel Core i5 / i7 Processor**

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i5-8250U</td>
<td>4</td>
<td>1.7 GHz</td>
<td>3.6 GHz</td>
<td>6MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i5-8350U</td>
<td>4</td>
<td>1.8 GHz</td>
<td>4.0 GHz</td>
<td>8MB</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Graphics**

Intel HD Graphics 620 or Intel UHD Graphics 620 in processor; supports external digital monitor via HDMI or USB Type-C; supports three independent displays; Max resolution: 4096x2304@60Hz (USB Type-C); 4096x2160@30Hz (HDMI)

**Chipset**

Intel SoC (System on Chip) platform

**Display**

- 13.3" (338mm) FHD (1920x1080), glossy, LED backlight, IPS, 300 nits, 16.9 aspect ratio, 800:1 contrast ratio, 170° viewing angle
- Capacitive-type multi-touch, AR (anti-reflection), supports 10-finger gesture
- Yoga hinge, 360 degree
- Laptop, tent, stand, yoga and tablet
- ThinkPad Pen Pro, active pen for multi-touch display, on-board garage

**Storage**

One of the following, configurable by model:
- M.2 SSD / SATA 6.0Gb/s (e.g. xxxGB SSD M.2)
- M.2 SSD / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s (e.g. xxxGB SSD M.2 PCIe NVMe)

**Optane Memory**

None

**Ethernet**

Native Intel Ethernet Connection I219-V (Non-vPro) or I219-LM (vPro) via optional ThinkPad Ethernet Extension Cable Gen 2

**WLAN + Bluetooth™**

Intel Dual Band Wireless-AC 8265, Wi-Fi 2x2 802.11ac + Bluetooth 4.1, M.2 card

**WWAN**

None

**SIM card**

None

**Dimensions**

WxDxH: 12.67" x 8.82" x 0.74"; 322mm x 224.2mm x 18.8mm

**Weight**

Starting at 3.44 lb / 1.56 kg

**Case color**

Black or Silver

**Display cover**

Aluminum

**Bottom**

GFRP

**Camera**

720p; HD720p resolution, low light sensitive, fixed focus

**Audio support**

IR & 720p: IR camera and HD720p camera, fixed focus

World facing: Rear camera, 5MP resolution, auto focus

HD Audio, Realtek ALC3287 codec, Dolby® Advance / stereo speakers, 2W x 2 /

dual array microphone, headphone / microphone combo jack

**Keyboard**

6-row, multimedia Fn keys, optional LED backlight

UltraNav™
TrackPoint® pointing device and buttonless Mylar surface touchpad, multi-touch

**Security**

Power-on password, hard disk password, supervisor password, security keyhole

Security chip
Discrete TPM 2.0, TCG Certified

Fingerprint reader
Optional: Touch style fingerprint reader on the keyboard bezel, anti-spoofing technology

NFC (optional)
Near Field Communication (mutually exclusive with smart card reader)

**Battery**

Integrated Li-Ion 45Wh battery, supports Rapid Charge (charge up to 80% in 1hr)

Max battery life
MobileMark® 2014: 12.85 hr

AC adapter
45W or 65W USB Type-C AC adapter

**Preload**

Windows® 10 Home 64 or Windows 10 Pro 64

**Limited warranty**

One of the following, configurable by model:
- 1-year depot repair service
- 3-year/1-yr battery depot repair service
- 3-year/1-yr battery limited onsite service

**Mi-Spec test**

MIL-STD-810G military certification

**Environment**

EPEAT® Gold, ENERGY STAR® 6.1; RoHS-compliant

March 2019
**ThinkPad L390 Yoga Platform Specifications**

**Device Features:**
- Processors: 8th Generation Intel® Core™ i3 / i5 / i7 Processor
- Memory: 8GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets
- Graphics: Intel UHD Graphics 620 in processor; supports external digital monitor via HDMI or USB Type-C; supports three independent displays;
- Display: 13.3” (338mm) FHD (1920x1080), anti-glare, LED backlight, IPS, 300 nits, 16:9 aspect ratio, 800:1 contrast ratio, 72% gamut, 170° viewing angle
- Storage: One of the following, configurable by model:
  - M.2 SSD / SATA 6.0Gb/s
  - M.2 SSD / PCIe NVMe, PCIe 3.0 x 2
  - M.2 SSD / PCIe NVMe, PCIe 3.0 x 4
- Optical Drive: None
- Ethernet: Native Intel Ethernet Connection I219-V (Non-vPro) or I219-LM (vPro) via optional ThinkPad Ethernet Extension Cable or Lenovo USB-C to Ethernet Adapter
- WLAN: Intel Wireless-AC 9560, Wi-Fi 2x2 802.11ac + Bluetooth 5.0, M.2 card
- WWAN: None

**System Specifications:**
- Processor:
<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Processor Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>i3-8145U</td>
<td>2</td>
<td>2.1 GHz</td>
<td>4.6 GHz</td>
<td>4MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
<tr>
<td>i5-8265U</td>
<td>4</td>
<td>1.6 GHz</td>
<td>4.6 GHz</td>
<td>6MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
</tbody>
</table>

**Memory:**
- 32GB max / 2400MHz DDR4, dual-channel capable, two DDR4 SO-DIMM sockets

**Graphics:**
- Intel UHD Graphics 620 in processor; supports external digital monitor via HDMI or USB Type-C; supports three independent displays;
- Max resolution: 4096x2304@60Hz (USB Type-C); 4096x2160@30Hz (HDMI)

**Chipset:**
- Intel SoC (System on Chip) platform

**Storage:**
- One of the following, configurable by model:
  - M.2 SSD / SATA 6.0Gb/s
  - M.2 SSD / PCIe NVMe, PCIe 3.0 x 2
  - M.2 SSD / PCIe NVMe, PCIe 3.0 x 4

**Optical Drive:**
- None

**Ethernet:**
- Native Intel Ethernet Connection I219-V (Non-vPro) or I219-LM (vPro) via optional ThinkPad Ethernet Extension Cable or Lenovo USB-C to Ethernet Adapter

**WLAN:**
- Intel Wireless-AC 9560, Wi-Fi 2x2 802.11ac + Bluetooth 5.0, M.2 card
- Bluetooth 5.0 wireless, integrated in Wi-Fi + Bluetooth combo adapter

**WWAN:**
- None

**Audio:**
- HD Audio, Realtek ALC3287 codec, Dolby Audio™

**Ports:**
- Two USB 3.1 Gen 1 (one Always On), two USB 3.1 Type-C Gen 1, HDMI 1.4b, Ethernet extension connector, headphone / microphone combo jack, microSD card reader, security keyhole
- * Depending on many factors, actual data transfer speed may be lower than theoretical speed

**Camera:**
- 720p: HD720p resolution, low light sensitive, fixed focus
- IR & 720p: IR camera and HD720p camera, fixed focus (black model only)
- World facing: 5MP resolution, auto focus
- (mutually exclusive with fingerprint reader)

**Keyboard:**
- 6-row, spill-resistant, multimedia Fn keys, optional LED backlight

**Optical Drive:**
- None

**Battery:**
- Integrated Li-ion 45Wh battery, supports Rapid Charge (charge up to 80% in 1hr) with 65W USB Type-C AC adapter
- * Battery life varies significantly with settings, usage, & other factors

**AC Adapter:**
- 45W or 65W USB Type-C AC adapter

**Limited Warranty:**
- One of the following, configurable by model:
  - 1-year depot repair service
  - 3-year/1-yr battery depot repair service
  - 3-year/1-yr battery limited onsite service

**Environment:**
- ENERGY STAR® 7.0; RoHS-compliant

**Dimensions:**
- WxDxH: 12.67" x 8.82" x 0.74"; 321.8mm x 224.2mm x 18.8mm

**Weight:**
- Starting at 3.44 lbs / 1.56 kg

**Case:**
- Black or Silver

**Case Material:**
- Display cover: Magnesium / Aluminum
- Bottom: GFRP

**Security:**
- Discrete TPM 2.0, TCG Certified
- Security chip

**Operating System:**
- Windows® 10 Home 64 or Windows 10 Pro 64

**Service Options:**
- 3-year/1-yr battery depot repair service
- 1-year depot repair service
- 3-year/1-yr battery depot repair service
- 3-year/1-yr battery limited onsite service

**Certifications:**
- MIL-STD-810G military certification
- ENERGY STAR® 7.0; RoHS-compliant

**Lenovo March 2019**
**ThinkPad X1 Yoga (3rd Gen) Platform Specifications**

### Processor

<table>
<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
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<tr>
<td>i7-8550U</td>
<td>4</td>
<td>8</td>
<td>1.8 GHz</td>
<td>4.0 GHz</td>
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</tr>
<tr>
<td>i7-8650U</td>
<td>4</td>
<td>8</td>
<td>1.9 GHz</td>
<td>4.2 GHz</td>
<td>8MB</td>
<td>LPDDR3-2133</td>
<td>Intel UHD Graphics 620</td>
</tr>
</tbody>
</table>

### Graphics

- Intel UHD Graphics 620 in processor;
- supports external digital monitor via HDMI or USB Type-C;
- supports three independent displays;
- Max resolution: 5120x2880@60Hz (USB Type-C); 4096x2160@30Hz (HDMI)

### Chipset

- Intel SoC (System on Chip) platform
- 8GB or 16GB / 2133MHz LPDDR3 / soldered to systemboard, no sockets

### Display

- **Operating System**: Windows 10 Pro 64
- **Processor**: 8th Generation Intel® Core™ i5 / i7 Processor
- **Memory Types**: 8MB
- **Chipset**: Intel SoC (System on Chip) platform
- **Graphics**: Intel UHD Graphics 620
- **Dimensions**: Wx Dx H: 13.11" x 9.02" x 0.67"; 333mm x 229mm x 17.05mm
- **Weight**: Starting at 3.4 lbs (1.55kg)
- **Case color**: Black or silver
- **Case material**: Carbon-Fiber and Glass-Fiber hybrid
- **Convert-mode**: Laptop, tent, stand, and tablet
- **Hinge**: Yoga hinge, 360 degree
- **Optical**: None
- **Ethernet**: Native Intel Ethernet Connection WGI219-LM (vPro) via optional ThinkPad Ethernet Extension Cable

### WWAN

- **WWAN (optional)**: Integrated Mobile Broadband 4G LTE-A, Intel XMM™ 7360 (Fibocom L850-GL), M.2 card
- **SIM card (optional)**: Nano-SIM card slot, optional Verizon LTE (US) SIM card

### WLAN

- **WLAN**: Intel Dual Band Wireless-AC 8265, Wi-Fi 2x2 802.11ac + Bluetooth 4.1, M.2 card
  - * Intel 8265ac card supports BT 4.2 but is limited to BT 4.1 by Windows OS
- **Bluetooth**: Intel® Bluetooth® 4.2
- **WWAN (optional)**: Integrated Mobile Broadband 4G LTE-A, Intel XMM™ 7360 (Fibocom L850-GL), M.2 card
- **SIM card (optional)**: Nano-SIM card slot, optional Verizon LTE (US) SIM card

### Dimensions

- **Dimensions**: Wx Dx H: 13.11" x 9.02" x 0.67"; 333mm x 229mm x 17.05mm
- **Weight**: Starting at 3.4 lbs (1.55kg)
- **Case color**: Black or silver
- **Case material**: Display cover: Carbon-Fiber and Glass-Fiber hybrid; Bottom: magnesium-PPS hybrid
- **Environment**: EPEAT™ Gold; ENERGY STAR®; RoHS-compliant

---

**Lenovo**

March 2019
## ThinkPad X380 Yoga Platform Specifications

### Processor

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<thead>
<tr>
<th>Processor Number</th>
<th># of Cores</th>
<th># of Threads</th>
<th>Base Frequency</th>
<th>Max Turbo Frequency</th>
<th>Cache</th>
<th>Memory Types</th>
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<td>8</td>
<td>1.6 GHz</td>
<td>3.4 GHz</td>
<td>6MB</td>
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<td>i7-8650U</td>
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<td>4.2 GHz</td>
<td>8MB</td>
<td>DDR4-2400</td>
<td>Intel UHD Graphics 620</td>
</tr>
</tbody>
</table>

### Graphics

- Intel UHD Graphics 620 in processor only
- Supports external digital monitor via HDMI or USB Type-C
- Supports three independent displays
- Max resolution: 4096x2304@60Hz (USB Type-C); 4096x2160@30Hz (HDMI)

### Chipset/Chip

- Intel SoC (System on Chip) platform

### Display

- 13.3” (337.8mm) FHD (1920x1080), LED backlight, IPS
- 300 nits, 16:9 aspect ratio, 800:1 contrast ratio, 170° viewing angle
- Capacitive-type multi-touch, AR (anti-reflection), AS (anti-smudge), supports 10-finger gesture

### Hinge

- Yoga hinge, 360 degree

### Storage

- Some: M.2 SSD / SATA 6.0Gb/s (e.g. xxxG SSD)
- Some: M.2 SSD / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s (e.g. xxxG SSD PCIe NVMe)
- None
- None

### Optical/Optane Memory

- None

### Ethernet

- Native Intel Ethernet Connection I219-V (Non-vPro) or I219-LM (vPro)

### WLAN

- Intel Dual Band Wireless-AC 8265, Wi-Fi 2x2 802.11ac + Bluetooth 4.1, M.2 card
- * Intel 8265ac card supports BT4.2 but is limited to BT4.1 by Windows OS
- Bluetooth 4.1 wireless, integrated in Wi-Fi + Bluetooth combo adapter

### WWAN (optional)

- Integrated Mobile Broadband 4G LTE, Intel XMM™ 7626 (Fibocom L830-EB), M.2 card (EMEA only)

### SIM card (optional)

- Nano-SIM card slot

### Preload

- Some: Windows 10 Home 64
- Some: Windows 10 Pro 64

### Limited warranty

- One of the following, configurable by model:
  - 1-year depot repair service
  - 3-year/1-yr battery depot repair service

### Mil-Spec test

- MIL-STD-810G military certification

### Environmental

- EPEAT™ Gold, ENERGY STAR™, RoHS-compliant

---

**Dimensions**

- WXxH: 12.34” x 8.75” x 0.72”
- 313.5mm x 222.2mm x 18.2mm

**Weight**

- Starting at 3.17 lb (1.43kg)

**Case color**

- Black or silver

**Case Material**

- Carbon-Fiber Hybrid

**Battery**

- Li-Ion 51Wh battery

**Max battery life**

- MobileMark® 2014: 13.6 hr

**AC adapter**

- 45W or 65W AC adapter (slim tip), 45W or 65W USB Type-C AC adapter

**Light sensor**

- Ambient Light Sensor

**G-sensor/3D accelerometer and 3D magnetometer**

- 3D compass

**G-sensor/3D gyrometer**

- 3D gyrometer

**Preload**

- Some: Windows 10 Home 64
- Some: Windows 10 Pro 64

---

Lenovo

March 2019
### ThinkPad X390 Yoga Platform Specifications

**Processor**
- **Processor**: 8th Generation Intel® Core™ i5 / i7 Processor
- **Processor Number**: i5-8265U, i5-8365U, i7-8565U, i7-8665U
- **# of Cores**: 8
- **# of Threads**: 8
- **Base Frequency**: 1.6 GHz to 4.9 GHz
- **Max Turbo Frequency**: 4.6 GHz to 4.8 GHz
- **Cache**: 6MB to 8MB
- **Graphics**: Intel UHD Graphics 620 or Intel UHD Graphics 600
- **Memory Types**: DDR4-2400

**Chipset Memory**
- **Chipset**: Intel SoC (System on Chip) platform
- **Memory**: 8GB or 16GB / 2400MHz DDR4 / soldered to system board, no sockets

**Display**
- **Display**: 13.3" (337.8mm) FHD (1920x1080), LED backlight, IPS, Glossy, 300 nits, 16:9 aspect ratio, 800:1 contrast ratio, Color Gamut 72%, 170° viewing angle, capacitive-type multi-touch, AR (anti-reflection), AS (anti-smudge)

**Multi-touch Hinge**
- **Hinge**: supports 10-finger gesture
- **Convert-mode**: Yoga hinge, 360 degree
- **Pen**: ThinkPad Pen Pro, active pen for multi-touch display, on-board rechargeable

**Storage**
- **Optane™ memory**: Intel Optane M.2 2280 SSD / PCIe NVMe, PCIe 3.0 x 4
- **Optical**: None

**Ethernet**
- **Ethernet**: Native Intel Ethernet Connection I219-V (Non-vPro) or I219-LM (vPro)
- **Ports**: Two USB 3.1 Gen 1 (one Always On), one USB 3.1 Type-C Gen 1 (with the function of Power Delivery and Display Port), one USB 3.1 Type-C Gen 2 / Thunderbolt 3 (with the function of PD and DP), HDMI 1.4b, Ethernet extension connector, combo slot of nano-SIM card (WWAN models) and microSD card reader, headphone / microphone combo jack, optional smart card reader, side docking connector, security keyhole

**Monitor cable (optional)**
- **Camera**: One of the following, configurable by model:
  - HD 720p camera, with ThinkShutter camera privacy, fixed focus
  - HD camera and HD720p camera, with ThinkShutter camera privacy, fixed focus

**Audio support**
- **Audio**: HD Audio, Realtek® ALC3287 codec / stereo speakers, 2W x 2, Dolby® Audio™ Premium / dual array microphone, headphone / microphone combo jack

**Keyboard**
- **UltraNav™**: 6-row, spill-resistant, multimedia Fn keys, LED backlight
- **TrackPoint® pointing device and buttonless Mylar surface multi-touch touchpad**

**Security**
- **Security chip**: Intel vPro Technology
- **Security feature**: Touch style match on chip fingerprint reader on the palm rest

**Battery**
- **Battery**: Integrated Li-ion 50Wh battery, supports Rapid Charge (charge up to 80% in 1hr) with 65W USB Type-C AC adapter

**WLAN**
- **Wi-Fi**: 802.11ac + Bluetooth 5.0
- **Bluetooth™**: Bluetooth 5.0 wireless, integrated in Wi-Fi + Bluetooth combo adapter

**Dimensions**
- **Weight**: WxDxH: 12.22" x 8.62" x 0.63" ; 310.4mm x 219mm x 15.95mm
- **Case color**: Black or silver
- **Case Material**: Carbon-Fiber Hybrid

**Environment**
- **EPEAT™ Bronze; ENERGY STAR® 7.0; RoHS-compliant**

**Limit warranty**
- **Battery life**: varies significantly with settings, usage, & other factors
- **AC adapter**: 45W or 65W USB Type-C AC adapter

**Preload**
- **Operating System**: Windows® 10 Home 64 or Windows 10 Pro 64

**Limited warranty**
- **One of the following, configurable by model:**
  - 1-year depot repair service
  - 3-year/1-yr battery depot repair service
  - 3-year/1-yr battery limited onsite service
**ThinkPad Yoga 11e (5th Gen) Platform Specifications**

<table>
<thead>
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<th>7th Generation Intel® Core™ m / i5 Processor, Intel Celeron® processor, or Intel Pentium® Silver processor</th>
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</thead>
<tbody>
<tr>
<td><strong>Processor Number</strong></td>
<td><strong># of Cores</strong></td>
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<td>m3-7Y30</td>
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<tr>
<td>5-7Y54</td>
<td>4</td>
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<tr>
<td>Cel N4100</td>
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</tr>
<tr>
<td>Pen N5000</td>
<td>4</td>
</tr>
</tbody>
</table>

| **Graphics** | Intel HD Graphics 615, Intel UHD Graphics 600 or 605 in processor, supports external digital monitor via HDMI or USB Type-C; supports dual independent display; Max resolution: 3840x2160@60Hz (USB Type-C); 4096x2160@30Hz (HDMI) |

| **Chipset** | Intel SoC (System on Chip) platform |
| **Memory** | 4GB or 8GB / 1866MHz LPDDR3 or 2400MHz DDR4 / soldered to systemboard, no sockets |

| **Display** | 11.6“ (295mm) HD (1366x768), anti-glare, LED backlight, IPS 250 nits, 16:9 aspect ratio, 800:1 contrast ratio, 170° viewing angle |
| **MultiTouch** | Capacitive-type multi-touch, support 10 fingers |
| **Hinge** | Yoga hinge, 360 degree |
| **Convertible mode** | Laptop, tent, stand and tablet |

| **Storage** | eMMC flash memory on board or M.2 SSD / PCIe NVMe, PCIe 3.0 x 2, 16Gb/s |
| **Optical** | None |

| **Ethernet** | Realtek RTL8111GUS-CG Gigabit Network Connection |
| **WLAN** | One of the following, configurable by model: Intel Wireless-AC 9260, Wi-Fi 2x2 802.11ac + Bluetooth 5.0, M.2 card; Intel Wireless-AC 8660, Wi-Fi 2x2 802.11ac + Bluetooth 5.0, M.2 card; Bluetooth wireless, integrated in Wi-Fi + Bluetooth combo adapter |
| **Bluetooth™** | None |

| **WWAN** | None |

### Dimensions
- **WxDxH**: 11.81“ x 8.27“ x 0.89“; 300mm x 210mm x 22.5mm
- **Weight**: from 3.4 lb (1.54kg) to 3.6 lb (1.63kg) |

| **Case color** | Black |
| **Case material** | Display cover: PC/ABS+GF; Bottom: PC/ABS plastic |

| **Media reader** | MicroSD card reader; Two USB 3.1 Gen 1, one USB 3.1 Type-C Gen 1, HDMI1.4, Ethernet (RJ-45), headphone / microphone combo jack, microSD card reader, security keyhole |
| **Control buttons** | Power button, volume control button |

| **Camera** | One of the following, configurable by model: 720p: HD720p resolution, low light sensitive, fixed focus World facing: Rear camera, SMP resolution, auto focus |
| **Audio support** | HD Audio, Realtek® ALC3287 codec Dolby Audio / stereo speakers, 2W x 2 / monaural microphone, headphone / microphone combo jack |
| **Keyboard** | 6-row, multimedia Fn keys |
| **UltraNav™** | Two buttons click pad below keyboard, multi-touch |
| **Security chip** | Power-on password, hard disk password, supervisor password, security keyhole |
| **Fingerprint reader** | None |
| **Battery** | Integrated Li-Ion 42Wh battery |
| **Max battery life** | MobileMark® 2014: 12 hr |
| **AC adapter** | 45W or 65W slim tip AC adapter or USB Type-C AC adapter |
| **Preload** | Some: Windows 10 Home 64; Some: Windows 10 Pro 64 |
| **Limited warranty** | One of the following, configurable by model: 1-year depot repair service; 3-year depot repair service; 5-year depot repair service |
| **Mil-Spec test** | MIL-STD-810G military certification |
| **Environment** | EPEAT® Gold; ENERGY STAR® 6.1; RoHS-compliant |

*Depending on many factors, actual data transfer speed may be lower than theoretical speed. *
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Limited warranty: Support unrelated to a warranty issue may be subject to additional charges.

Lenovo Services:

- **Carry-in or Mail-in Service**: Parts and labor repair coverage where the customer is responsible for shipping (including packaging) or delivery to authorized warranty provider or repair center.
- **Depot or Courier Service**: Parts and labor repair coverage where shipping (including packaging) or delivery to the repair center is paid for by Lenovo.
- **Expedited Depot**: Parts and labor coverage with expedited turnaround. Shipping (including packaging) or delivery to the repair center is paid for by Lenovo.
- **Onsite / In-home Service**: Parts and labor repair coverage where labor is provided onsite at your place of business.

If Lenovo determines your product problem is covered by the product warranty and cannot be resolved over the telephone, a technician will be dispatched to arrive onsite, typically the next day.


Visit [www.lenovo.com/warranty](http://www.lenovo.com/warranty) for Lenovo Warranty Services terms and conditions for complete details and restrictions.

Included software: may differ from its retail version (if available), and may not include user manuals or all program functionality. Software license agreements may apply.

Battery life: Battery life (and recharge times) will vary based on many factors including screen brightness, applications, features, power management, battery conditioning, and other customer preferences.
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Summary of Changes

This section describes the technical changes made in this edition. This edition might also include minor corrections and editorial changes which are not identified.

May 2019 - Version 542

Additions in this update

► New product(s)
  None

► New model(s)
  None

► Others
  None
  Remove ThinkCentre M920 SFF model pages, move to online version
  Remove ThinkCentre M920 Tower model pages, move to online version
  Remove ThinkCentre M720 SFF model pages, move to online version
  Remove ThinkCentre M720 Tower model pages, move to online version
  Remove ThinkCentre M630e Tiny model pages, move to online version
  Remove ThinkCentre M625 Tiny model pages, move to online version
  Remove ThinkCentre M625 Tiny Thin Client model pages, move to online version
  Remove ThinkCentre M715 Tiny (2nd Gen) model pages, move to online version
  Remove ThinkCentre M715 Tiny Thin Client (2nd Gen) model pages, move to online version

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► Withdrawn product(s)
  None

► Withdrawn model(s)
  None
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<tr>
<th>Memory</th>
<th>32GB max, DDR4-2400*, two 260-pin SO-DIMM sockets, dual-channel capable</th>
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<tr>
<td>Storage</td>
<td>Some: Hard Drive / SATA 6.0Gb/s, 2.5&quot;, 5400 rpm or 7200 rpm</td>
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<tr>
<td></td>
<td>Some: Solid State Drive (SSD) / SATA 6.0Gb/s, 2.5&quot;</td>
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<td></td>
<td>Some: M.2 Solid State Drive (SSD) / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s</td>
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<tr>
<td>Optical</td>
<td>Some: Intel Optane™ Memory (models with 7th gen Core processor), M.2</td>
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<td></td>
<td>Some: DVD Burner (DVD±RW), SATA 1.5Gb/s Drive, slim (9.5mm)</td>
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<td>Media reader</td>
<td>Optional 9-in-1 media card reader</td>
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<th>Intel HD Graphics 510/530/610/630 in processor, uses main memory, DirectX® 12, external monitor support via DisplayPort™</th>
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<tbody>
<tr>
<td>Display</td>
<td>21.5&quot; (546.1mm) Full HD 1080p (1920x1080) TFT color, MVA panel, wide viewing angle (+/- 89°), LED backlight, 250 nits, 16:9 aspect ratio, 1000:1 contrast ratio, anti-glare, support Low Blue Light Mode</td>
</tr>
<tr>
<td>Multi-touch Camera</td>
<td>Optional Projected Capacitive Touch (PCT) technology, supports 10-point touch</td>
</tr>
<tr>
<td>Controls</td>
<td>Optional 1080p camera, fixed focus, with dual microphone, LED indicator, physical switch on/off</td>
</tr>
</tbody>
</table>

| Controls | Physical buttons for Microphone mute, brightness up/down, and power on/off |
| Chipset | Intel® B250 Chipset |

| Rear ports* | Four USB 3.1 Gen1, ethernet (RJ-45), DisplayPort, optional serial (9-pin), Two USB 3.1 Gen1 (one is Always On and fast charge), optional card reader, one headphone / microphone combo jack (3.5mm) |
| Side ports* | M.2 card slot |
| M.2 card slot | * Depending on many factors, actual data transfer speed may be lower than theoretical speed Two M.2 Card slots (one for WLAN, one for SSD/Optane) |

| Audio support | High Definition (HD) Audio, Realtek ALC233 / two internal speakers (2W x 2), Dolby® Audio™ certified |
| WLAN™ | Some: 11ac wireless, M.2 Card, Qualcomm Atheros QCA9377A (dual band), Wi-Fi + Bluetooth 4.1 combo adapter, 1x1 |
| | Some: 11ac wireless, M.2 Card, Qualcomm Atheros QCA6174A (dual band), Wi-Fi + Bluetooth 4.1 combo adapter, 2x2 |
| | Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 3165, Wi-Fi + Bluetooth 4.1 combo adapter, 1x1 |
| | Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 8265, Wi-Fi + Bluetooth 4.1 combo adapter, 2x2 |
| | Some: Bluetooth 4.1 wireless, integrated in Wi-Fi + Bluetooth combo adapter |

| Bluetooth™ | Gigabit ethernet, Realtek RTL8111G, Wake on LAN* |
| Manageability | None |
| Security chip | TPM (Trusted Platform Module) 2.0, TCG Certified |
| Accessory | None |

See footnotes for more detailed information © Lenovo

(M810z-Spec) February 2017
## ThinkCentre M820z Platform Specifications

### Processor

<table>
<thead>
<tr>
<th>Processor</th>
<th>Cores / Threads</th>
<th>Frequency Base/Max (GHz)</th>
<th>Cache</th>
<th>Memory Support (Up to)</th>
<th>Integrated Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel Celeron G4900</td>
<td>2 / 2</td>
<td>3.1G</td>
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<td>DDR4-2400</td>
<td>UHD 610</td>
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<td>Core i5-8400</td>
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<td>12 MB</td>
<td>DDR4-2666</td>
<td>UHD 610</td>
</tr>
</tbody>
</table>

### Memory

- 32GB max, DDR4-2666*, two 260-pin SO-DIMM sockets, dual-channel capable
- * System clocks down for the processors with lower memory controller

### Storage

- Some: Hard Drive / SATA 6.0Gb/s, 2.5", 5400 rpm or 7200 rpm
- Some: Solid State Drive (SSD) / SATA 6.0Gb/s, 2.5"
- Some: M.2 SSD / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s
  - * 128GB SSD M.2 (2242) PCIe NVMe only supports PCIe 3.0 x 2, 16Gb/s
- Some: Intel Optane™ Memory (not support Celeron / Pentium Processor), M.2

### Optical

- Some: DVD-ROM SATA 1.5Gb/s Drive, slim (9.0mm)
- Some: DVD Burner (DVD±RW), SATA 1.5Gb/s Drive, slim (9.0mm)

### Media reader

- Optional 3-in-1 media card reader

### Graphics

- Intel HD Graphics 610/630 in processor, uses main memory, DirectX® 12, external monitor support via DisplayPort™
- Max resolution: 4096x2304 (DP) @ 60Hz, 1920x1080 (Panel) @ 60Hz
- Full HD 1080p (1920x1080) TFT color, Borderless design, MVA panel, wide viewing angle (+/- 89°), LED backlight, 250 nits, 16:9 aspect ratio, 1000:1 contrast ratio, anti-glare, support Low Blue Light Mode

### Multi-touch

- Optional multi-touch, supports 10-point, AIT (Advanced In-cell Touch) technology

### Camera

- Optional 1080p camera, with dual microphone, LED indicator, physical switch on/ off, supports multi-degree rotation (horizontal 0° to 180°, vertical -25° to 25°)

### Controls

- Physical buttons on side for microphone mute and power on/off

### Chipset

- Intel B360 Chipset

### Rear ports

- Four USB 3.1 Gen1 (one supports Smart Power On), one ethernet (RJ-45), one DisplayPort, one optional serial (9-pin)
- One USB 3.1 Gen2 (one is Always On and fast charge), one USB 3.1 Type-C Gen 1, one optional card reader, one headphone / microphone combo jack (3.5mm)

### Side ports

- M.2 card slot
  - * Depending on many factors, actual data transfer speed may be lower than theoretical speed
  - Two M.2 Card slots (one for WLAN, one for SSD/ Optane)

### Audio support

- High Definition (HD) Audio, Realtek ALC233 / two internal speakers (2W x 2), Dolby® Audio™ Premium

### WLAN

- Some: 11ac wireless, M.2 Card, Realtek RTL8821CE (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 1x1
- Some: 11ac wireless, M.2 Card, Realtek RTL8822BE (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 2x2
- Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 3165, Wi-Fi + Bluetooth 4.2 combo adapter, 1x1
- Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 8265, Wi-Fi + Bluetooth 4.2 combo adapter, 2x2

### Bluetooth

- Some: Bluetooth 4.2/5.0 wireless, integrated in Wi-Fi + BT combo adapter

### Ethernet

- Gigabit ethernet, Realtek RTL8111G, Wake on LAN®

### Manageability

- None

### Security chip

- Discrete TPM 2.0, TCG Certified

### Security features

- Security slot (in rear for attachment of optional Kensington® MicroSaver® cable; Kensington lock also locks chassis)
- Smart USB protection, allows keyboard/ mouse only, blocks all storage devices
- Optional Chassis intrusion switch
- Power-on, admin, hard disk password
- Boot sequence control
- Boot without keyboard and mouse
- Individual USB port disablement

### Keyboard

- Some: Lenovo Calliope Keyboard (USB connector), black
- Some: Lenovo Traditional Keyboard (USB connector), black
- Some: Lenovo Calliope Wireless Keyboard (2.4GHz via USB receiver), black
- Some: Lenovo Calliope Mouse (USB connector), black
- Some: Lenovo Calliope Wireless Mouse (2.4GHz via USB receiver), black

### Mouse

- Some: Lenovo Calliope Wireless Mouse (2.4GHz via USB receiver), black

### Mechanical

- Business black color
- Tactless back cover, stand, memory removal
- Support VESA mount (100mm)

### Dimensions (Wx Dx H)

- Without stand: 19.3 X 9.9 X 13.5 (inch) / 491 X 249 X 342 (mm)
  - (Touch) 11.6 / 5.25
  - (Non-touch) 11.1 / 5.05
- With Full Function Monitor stand: 19.3 X 9.9 X 14.8 to 19.1 (inch) / 491 X 252 X 377 to 486 (mm)
  - (Non-touch) 15.8 / 7.18
  - Tilt: 45° back, -5° forward; Lift: 110mm; Swivel: +/-45°
- With UltraFlex III stand: 19.3 X 9.9 X 16.4 (highest) (inch) / 491 X 252 X 416 (highest) (mm)
  - (Touch) 17.3 / 7.85
  - (Non-touch) 16.9 / 7.65
  - Tilt: 70° back, -5° forward; Lift: 136mm; Swivel: +/-45°

### Power supply

- 150 watts, autosensing, 90% PSU

### Limited warranty

- Some: 1-year or 3-year, depot repair service / service upgrades available
- Some: 1-year or 3-year, limited onsite service / service upgrades available

### Preload

- Preloaded operating system: Windows 10 Pro 64-bit
- Windows 10 Home 64-bit

### Preloaded applications (only some listed)

- Lenovo Vantage
- Microsoft Office preloaded
- Cyberlink PowerDVD (only for models with DVD±RW)
- Cyberlink Power2GO (only for models with DVD±RW)
- LinkedIn
- ENERGY STAR® 7.0*, EPEAT™ Gold rating* (not for non-OS models), ErP Lot 3, TCO AIO Computer certified, GREENGUARD® certified, TUV Eye comfort certified (for Full Function Monitor Stand only), TUV Low Blue Light certified, TUV Ultra Low Noise certified (on some models), RoHS-compliant

### Accessories

- For compatible accessories, please go to http://smartfind.lenovo.com

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Note: The specifications above may not be available in all regions.

Lenovo, July 2018
Processor Intel® Celeron®, Intel Pentium®, or 6th / 7th Gen Intel Core™ i3 / i5 / i7 Processor

<table>
<thead>
<tr>
<th>Processor</th>
<th>Cores / Threads</th>
<th>Frequency Base/Max(GHz)</th>
<th>Cache</th>
<th>Memory Support (Up to)</th>
<th>Integrated Graphics</th>
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<tr>
<td>Core i3-6100</td>
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<td>Core i5-6500</td>
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<td>HD 530</td>
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<td>Core i7-6700</td>
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<td>HD 530</td>
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<td>HD 630</td>
</tr>
</tbody>
</table>

Memory 32GB max, DDR4-2400*, two 260-pin SO-DIMM sockets, dual-channel capable * System clocks down for the processors with lower memory controller

Storage Some: Hard Drive / SATA 6.0Gb/s, 2.5", 5400 rpm or 7200 rpm Some: Solid State Drive (SSD) / SATA 6.0Gb/s, 2.5" Some: M.2 Solid State Drive (SSD) / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s Some: Intel Optane™ Memory (models with 7th gen Core processor), M.2 Some: DVD-ROM SATA 1.5Gb/s Drive, slim (9.5mm) Some: DVD Burner (DVD+RW), SATA 1.5Gb/s Drive, slim (9.5mm)

Optical Some: Intel Optane™ Memory (models with 7th gen Core processor), M.2

Media reader Optional 9-in-1 media card reader

Graphics Intel HD Graphics 530/630 in processor, uses main memory, DirectX 12, external monitor support via DisplayPort™

Display 23.8" (604.5mm) Full HD 1080p (1920x1080) TFT color, WVA panel, wide viewing angle (+/- 89°), LED backlight, 250 nits, 16:9 aspect ratio, 1000:1 contrast ratio, anti-reflective, support Low Blue Light Mode, work as standalone monitor via DisplayPort (DP in / out combo)

Multi-touch Optional Projected Capacitive Touch (PCT) technology, supports 10-point touch Camera Optional 8080p camera, fixed camera, dual microphone, LED indicator, physical switch on/off Controls Physical buttons for Microphone mute, monitor mode switch, brightness up/down, and power on/off

Chipset Intel Q270 Chipset

Rear ports* Four USB 3.1 Gen1, ethernet (RJ-45), DisplayPort in/out combo port, optional serial (9-pin)

Side ports* Two USB 3.1 Gen1 (one is Always On and fast charge), optional card reader, one headphone / microphone combo jack (3.5mm), optional USB 3.1 Type-C Gen1

M.2 card slot Two M.2 Card slots (one for WLAN, one for SSD/Optane)

Audio support High Definition (HD) Audio, Realtek ALC233 / two internal speakers (3W x 2), Dolby® Audio™ certified

WLAN13 Some: 11ac wireless, M.2 Card, Qualcomm Atheros QCA9377A (dual band), Wi-Fi + Bluetooth 4.1 combo adapter, 1x1 Some: 11ac wireless, M.2 Card, Qualcomm Atheros QCA6174A (dual band), Wi-Fi + Bluetooth 4.1 combo adapter, 2x2 Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 3165, Wi-Fi + Bluetooth 4.1 combo adapter, 1x1 Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 8265, Wi-Fi + Bluetooth 4.1 combo adapter, 2x2

Bluetooth™ Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 8265, Wi-Fi + Bluetooth 4.1 combo adapter, 1x1 Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 8265, Wi-Fi + Bluetooth 4.1 combo adapter, 2x2

Ethernet Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 8265, Wi-Fi + Bluetooth 4.1 combo adapter, 1x1 Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 8265, Wi-Fi + Bluetooth 4.1 combo adapter, 2x2

Audio Some: 11ac wireless, Chipset, Intel Ethernet Connection I219-LM (Jacksonville), Wake on LAN®

Manageability Intel Active Management Technology 11.0 (Intel AMT 11.0), Intel vPro technology on some models (require choosing a vPro-support Wi-Fi adapter to enable vPro function through wireless connection)

Security chip TPM (Trusted Platform Module) 2.0, TCG Certified

Security features * Downgrade to TPM1.2 for the models with Win10 DG Win7 32 OS

Keyboard Some: Lenovo Calliope Keyboard (USB connector), black Some: Lenovo Traditional Keyboard (USB connector), black Some: Lenovo Calliope Wireless Keyboard (2.4GHz via USB receiver), black Some: Lenovo Calliope Mouse (USB connector), black Some: Lenovo Calliope Wireless Mouse (2.4GHz via USB receiver), black

Mouse Some: Business black color

Mechanical • Business black color • To toolless back cover, stand, disk, memory removal • Support VESA mount (100mm)

Dimentions (WxDxH) Without stand: 23.0 X 1.8 X 15.4 (inch); 584 X 45 X 390 (mm) (Touch) 17.2 / 7.8 (Non-touch) 15.0 / 6.8 Tilt: 45° back, -5° forward

With Basic Monitor stand: 23.0 X 9.6 X 18.0 (inch); 584 X 245 X 458 (mm) (Touch) 22.7 / 10.3 (Non-touch) 20.7 / 9.4 Tilt: 45° back, -5° forward, Lift: 110mm; Swivel: +/- 45°

Power supply 150 watts, autosensing, 85% PSU

Limited warranty* Some: 1-year or 3-year, depot repair service / service upgrades available Some: 1-year or 3-year, limited onsite service / service upgrades available


Environment EPEAT™ Gold rating (North America); ENERGY STAR® 6.1; TCO AIO Computer Certified; ULE Gold; EPP Lot 3; GREENGUARD® certified; RoHS-compliant

MIL-SPEC test MIL-STD-810G military certification (Low Pressure [Altitude], High Temperature, Low Temperature, Temperature Shock, Humidity, Sand and Dust, Vibration, Shock)

Accessories For compatible accessories, please go to http://www.lenovoquickpick.com
### Processor

<table>
<thead>
<tr>
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<td>DDR4-2400</td>
<td>UHD 610</td>
</tr>
</tbody>
</table>

### Memory

- 32GB max, DDR4-2666, two 260-pin SO-DIMM sockets, dual-channel capable
- * System clocks down for the processors with lower memory controller

### Storage

- **Some:** Hard Drive / SATA 6.0Gb/s, 2.5", 5400 rpm or 7200 rpm, supports up to two HDDs (2nd HDD occupies odd bay), RAID0/1 support (RAID preset only available via special bid model)
- **Some:** Solid State Drive (SSD) / SATA 6.0Gb/s, 2.5"
- **Some:** M.2 SSD / PCle NVMe, PCIe 3.0 x 4, 32Gb/s
- **Some:** 128GB SSD M.2 (2242) PCIe NVMe only supports PCIe 3.0 x 2, 16Gb/s
- **Some:** Intel Optane™ Memory (not support Celeron / Pentium Processor), M.2
- **Some:** DVD-ROM SATA 1.5Gb/s Drive, slim (9.0mm)
- **Some:** DVD Burner (DVD+RW), SATA 1.5Gb/s Drive, slim (9.0mm)
- **Optional 3-in-1 media card reader**

### Optical

- **Some:** Intel Optical Drive (DP in / out combo) provides optical drive support
- **Some:** DVD-ROM SATA 1.5Gb/s Drive, slim (9.0mm)

### Controls

- **Physical buttons on side for microphone mute and power on/off**

### Chipset

- **Intel Q370 Chipset**

### Rear ports

- Four USB 3.1 Gen1 (one supports Smart Power On), one ethernet (RJ-45), one DisplayPort in/out combo port, one optional card reader (9-pin)
- One USB 3.1 Gen21 (one is Always On and fast charge), one USB 3.1 Gen1, one USB 3.1 Type-C Gen 1, one optional card reader, one headphone / microphone combo jack (3.5mm)

### M.2 card slot

- Two M.2 Card slots (one for WLAN, one for SSD/Optane)

### Audio support

- High Definition (HD) Audio, Realtek ALC233 / two internal speakers (3W x 2), Dolby® Audio™ Premium
- **With UltraFlex III stand (No Camera):**
  - Dimensions: 28.5 x 9.9 x 17.5 (inch)
  - Weight: 9.7 / 8.94 lbs
  - Lift: 70° back, -5° forward
  - Swivel: +/-45°

### Power supply

- 150 watts, autosensing, 90% PSU

### Limited warranty

- **Some:** 1-year or 3-year, depot repair service / service upgrades available

### Preload

- **Preloaded operating system**
  - Some: Windows 10 Pro 64-bit
  - Some: Windows 10 Home 64-bit

### Environment

- **MIL-STD-810G military certification (Low Pressure [Altitude], High Temperature, UHD 610 DDR4-2666 Cache High Definition (HD) Audio, Realtek ALC233 / two internal speakers (3W x 2), Dolby® Audio™ Premium**
- **Note:** The specifications above may not be available in all regions. Lenovo, July 2018
**ThinkCentre M600 Tiny Platform Specifications**

**Processor**

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<tr>
<th>Processor</th>
<th>Cores / Threads</th>
<th>Frequency (Base/MAX)</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Integrated Graphics</th>
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<tbody>
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<td>Celeron N3060</td>
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<td>DDR3L-1600</td>
<td>Intel HD 400</td>
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<td>DDR3L-1600</td>
<td>Intel HD</td>
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</tbody>
</table>

**Chipset**

Intel Architecture (IA) SoC that integrates Intel processor core, graphics, memory controller, and I/O interfaces into a single system-on-chip solution.

**Graphics**

Intel HD Graphics in processor, uses main memory, DirectX™ 11.1, twoDisplayPort™, one optional 3rd DP (not support DP to HDMI dongle) or VGA, supports triple independent displays.

Maximum resolution: 3840x2160(DP)@30Hz; 1920x1200(optional VGA)@60Hz; 1920x1080(DP to VGA dongle)@60Hz; 1920x1080(DP to DVI dongle)@60Hz; 3840x2160(DP to HDMI dongle)@30Hz

**WLAN**

Some: Intel 8260NGW, Qualcomm Atheros QCA6174 (dual band), RealtekRTL8821AE (dual band), Intel Dual Band Wireless-AC 3165, Intel Dual Band Wireless-AC 2230, Intel Wireless-AC 9260, Intel Wireless-AC 9560

**Audio support**

High Definition (HD) Audio, Realtek ALC223 / optional internal speaker (1 watt)

**Storage**

Some: hard disk, 5400 or 7200 rpm, SATA 6.0Gb/s, 2.5” Wide

Some: 500GB (5400 rpm) Solid State Hybrid Drive (SSHD) / with 8GB MLC NAND flash memory, SATA 6.0Gb/s, 2.5” wide

**Memory**

8GB max / DDR3 Low Voltage, DDR3L-1600, non-parity, one 204-pin SO-DIMM socket

**Monitor cable**

Optional external I/O box, extends two USB 2.0, two USB 3.0, and one serial on some models.

**Chip**

ThinkCentre M600 Tiny only (1L)

7.05” X 7.20” X 1.36”

4.12 lb (1.87 kg)

3.53 lb (1.6 kg)

Some: Preferred Pro USB Keyboard (USB connector), Lenovo logo

Some: Enhanced Optical USB Mouse, black, Lenovo logo

Some: USB Ultra Slim Wireless Mouse (2.4GHz via USB receiver), black

- Tiny (1L), black color, metal case

**Mechanical**

- Tiny (1L), black color, metal case

**Keyboard**

Some: Preferred Pro USB Keyboard (USB connector), Lenovo logo

Some: Enhanced Optical USB Mouse, black, Lenovo logo

**Mouse**

Some: USB Ultra Slim Wireless Mouse (2.4GHz via USB receiver), black

**Power supply**

- 65 watts AC/DC adapter, autosensing, 88% PSU (not included for TIO models)

- 90 watts AC/DC adapter, autosensing, 88% PSU (only for models with I/O box)

**Limited warranty**

Some: 1-year or 3-year, depot service / service upgrades available

Some: 1-year or 3-year, limited onsite service / service upgrades available

Some: 3-year, limited onsite service, OID (Onsite International Delivery) / service upgrades available

For Lenovo service upgrade options, please go to S-TC sheet

**Preload**

Some: Windows® 7 Professional 64, preinstalled through downgrade rights in Windows 10 Pro 64-bit

Some: Windows 10 Pro 64-bit

Preloaded applications (only some listed)

- Desktop Power Manager

- Lenovo Solution Center

- Lenovo REACH-it

- Lenovo SHAREit

- Lenovo Bluetooth Lock

- McAfee® LiveSafe® (30-day trial)

- Microsoft Office preloaded:
  - purchase a product key to activate
  - PowerDVD Create (DVD±RW)
  - PowerDVD Create (DVD±RW)
  - Lenovo ThinkVantage Tools - Only for Window 10
  - Lenovo Companion (Win10)
  - Cyberlink PowerDVD (DVD, DVD±RW)
  - Lenovo QuickOptimizer - Only for Window 7
  - Rescue and Recovery
  - Password Manager
  - ThinkVantage System Update
  - Lenovo Message Center Plus
  - Adobe® Reader®

**Environment**

ENERGY STAR® 6.0*, EPEAT Gold rating* (*not for non-OS models); GREENGUARD®; RoHS-compliant; Cisco EnergyWise compatible; E3P Lot 3

**Manageability & Security chip**

- Security slot (in rear for optional Kensington® MicroSaver™ cable)

- Hard disk password

- Padlock loop

- Smart USB protection, allows keyboard/ mouse only, blocks all storage devices

- Power-on password

- Administrator password

- Boot sequence control

- Boot without keyboard and mouse

- Individual USB port disablement

- Chassis intrusion switch

**Security features**

- Security features

**Floor Stand**

Optional VESA mount bracket kit, supports VESA 75mm and 100mm

Optional system floor stand for vertical orientation

**Preload**

Some: Windows® 7 Professional 64, preinstalled through downgrade rights in Windows 10 Pro 64-bit

Some: Windows 10 Pro 64-bit

Preloaded applications (only some listed)

- Desktop Power Manager

- Lenovo Solution Center

- Lenovo REACH-it

- Lenovo SHAREit

- Lenovo Bluetooth Lock

- McAfee® LiveSafe® (30-day trial)

- Microsoft Office preloaded:
  - purchase a product key to activate
  - PowerDVD Create (DVD±RW)
  - Lenovo ThinkVantage Tools - Only for Window 10

- Lenovo Companion (Win10)

- Cyberlink PowerDVD (DVD, DVD±RW)

- Lenovo QuickOptimizer - Only for Window 7

- Rescue and Recovery

- Password Manager

- ThinkVantage System Update

- Lenovo Message Center Plus

- Adobe® Reader®

**Environment**

ENERGY STAR® 6.0*, EPEAT Gold rating* (*not for non-OS models); GREENGUARD®; RoHS-compliant; Cisco EnergyWise compatible; E3P Lot 3

**Accessories**

For compatible accessories, please go to TC-AQP sheet

Lenovo. November 2017
**ThinkCentre M600 Tiny Thin Client Platform Specifications**

### Processor

<table>
<thead>
<tr>
<th>Processor</th>
<th>Cores / Threads</th>
<th>Frequency (Base/Max)</th>
<th>Cache</th>
<th>Memory Types</th>
<th>Integrated Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel Celeron N3000 Series</td>
<td>2 / 2</td>
<td>1.04 / 2.08 GHz</td>
<td>2MB</td>
<td>DDR3L-1600</td>
<td>Intel HD</td>
</tr>
<tr>
<td>Intel Celeron N3010 Series</td>
<td>2 / 2</td>
<td>1.04 / 2.24 GHz</td>
<td>2MB</td>
<td>DDR3L-1600</td>
<td>Intel HD 400</td>
</tr>
</tbody>
</table>

### Chipset

Intel Architecture (IA) SoC that integrates Intel processor core, graphics, memory controller, and I/O interfaces into a single system-on-chip solution.

### Graphics

Intel HD Graphics in processor, uses main memory, DirectX® 11.1 twoDisplayPort™, one optional 3rd DP (not support DP to HDMI dongle) or VGA, supports triple independent display: Maximum resolution: 3840x2160(DP)@30Hz; 1920x1200(optional VGA)@60Hz; 1920x1080(DP to VGA dongle)@60Hz; 1920x1080(DP to DVI dongle)@60Hz; 840x2160(DP to HDMI dongle)@30Hz.

### Memory

8GB max / DDR3 Low Voltage, DDR3L-1600, non-parity, one 204-pin SO-DIMM.

### Storage

16GB, 32GB, or 128GB M.2 Solid State Drive (SSD), SATA interface.

### Optical Media reader

SATA 6.0Gb/s controller, one connectors on planar.

### Front ports

Two USB 3.0 (one is Always On and fast charge), one microphone (stereo, 3.5mm), one headphone / microphone combo jack (stereo, 3.5mm).

### Rear ports

Two USB 2.0, two USB 3.0, ethernet (RJ-45), two DisplayPort, one optional port (VGA, 3rd DP, or serial on some models), one headphone; additional four serial (9-pin), one parallel (25-pin), and two PS/2 ports on 2L models.

### I/O box

"Depending on many factors, actual data transfer speed may be lower than theoretical speed".

### Audio support

High Definition (HD) Audio, Realtek ALC223 / optional internal speaker (1 watt).

### WLAN

**Some:** 11ac wireless, M.2 Card, Realtek RTL8821AE (dual band), Wi-Fi + Bluetooth 4.0 combo adapter, 1x1
**Some:** 11ac wireless, M.2 Card, Qualcomm Atheros QCA9377 (dual band), Wi-Fi + Bluetooth 4.1 combo adapter, 1x1
**Some:** 11ac wireless, M.2 Card, Qualcomm Atheros QCA6174 (dual band), Wi-Fi + Bluetooth 4.1 combo adapter, 2x2
**Some:** 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 3165, Wi-Fi + Bluetooth 4.0 combo adapter, 1x1 (only for 1L models)
**Some:** Bluetooth 4.0 or 4.1 wireless, integrated in Wi-Fi + BT combo adapter

### Bluetooth

One gigabit ethernet port, Realtek RTL8111GN, Wake on LAN®

### Ethernet

None

### Manageability

None

### Security

- Trusted Platform Module, TCG 1.2-compliant
- Security slot (in rear for optional Kensington® MicroSaver® cable)
- Padlock loop
- Smart USB protection, allows keyboard/mouse only, blocks all storage devices
- Power-on password
- Administrator password
- Hard disk password
- Boot sequence control
- Boot without keyboard and mouse
- Individual USB port disablement
- Chassis intrusion switch

### Accessories

For compatible accessories, please go to TC-AQP sheet

### Power supply

65 watts AC/DC adapter, autosensing, 88% PSU (not included for TIO models)

### Limited warranty

1-year or 3-year, depot service / service upgrades available
1-year or 3-year, limited onsite service / service upgrades available
3-year, limited onsite service, OID (Onsite International Delivery) / service upgrades available

### Preload

Windows Embedded Standard 7 (WES 7)
Windows Embedded Standard 7 V2 (WES 7 V2)
Windows 10 IoT Enterprise
LeTOS (Lenovo Terminal Operating System, Linux-based)
LeTOS V2 (Lenovo Terminal Operating System, Linux-based)

### Environment

ENERGY STAR® 6.0®, EPEAT™ Gold rating* (*not for non-OS models); GREENGUARD®; RoHS-compliant; Cisco EnergyWise compatible; EJ Lot 3

### VESA mount

Optional VESA mount bracket kit, supports VESA 75mm and 100mm
Optional system floor stand for vertical orientation

### Floor Stand

M600 Tiny only (1L) 7.05" X 7.20" X 1.36" 2MB
M600 Tiny only (2L) 7.05" X 7.20" X 1.35" 179mm X 182.9mm X 80mm 4.2 lb (1.9 kg)

### Mechanical

- Tiny (1L or 2L), black color, metal case

### Keyboard

- Some: PS/2 Keyboard (PS/2 connector), Lenovo logo (for 2L models)
- Some: Preferred Pro USB Keyboard (USB connector), Lenovo logo
- Some: Ultraslim Plus Wireless Keyboard (2.4GHz via USB receiver), black
- Some: PS/2 Optical Wheel Mouse, black, Lenovo logo (for 2L models)
- Some: Enhanced Optical USB Mouse, black, Lenovo logo
- Some: Ultraslim Plus Wireless Mouse (2.4GHz via USB receiver), black

### Mouse

- Some: Preferred Pro USB Mouse (USB connector), Lenovo logo
- Some: Enhanced Optical USB Mouse, black, Lenovo logo
- Some: Enhanced Optical USB Mouse, black, Lenovo logo

### Note:
The specifications above may not be available in all regions.
## ThinkCentre M625 Tiny Platform Specifications

<table>
<thead>
<tr>
<th>Processor</th>
<th>AMD A9 series APU</th>
</tr>
</thead>
<tbody>
<tr>
<td>APU</td>
<td>A9-9420e</td>
</tr>
<tr>
<td>Cores</td>
<td>2</td>
</tr>
<tr>
<td>Frequency Base/Max</td>
<td>1.8 / 2.7 GHz</td>
</tr>
<tr>
<td>L2 Cache</td>
<td>1 MB</td>
</tr>
<tr>
<td>Memory Support (Up to)</td>
<td>DDR4-1866</td>
</tr>
<tr>
<td>Integrated Graphics</td>
<td>Radeon R5 Series</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Memory</th>
<th>8GB max, DDR4-2666, one 260-pin SO-DIMM socket</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>* System frequency automatically clocks down for the lower capability of memory controller in processor</td>
</tr>
</tbody>
</table>

| Disk | Some: SATA 6.0Gb/s, 2.5" Wide, 5400 rpm or 7200 rpm |
|      | Some: 128GB M.2 Solid State Drive (SSD) / PCIe NVMe interface |
|      | Some: 256GB M.2 Solid State Drive (SSD) / PCIe NVMe interface |
| Optical Onboard SATA Media reader | None |
|        | one SATA 6.0Gb/s connector on planar |

| Graphics | AMD Radeon™ Graphics in processor, uses main memory, DirectX® 12, two DisplayPort™, one optional port (VGA or USB 2.0 Type-C with DisplayPort Alternate Mode), supports up to 2 independent displays; Max resolution: 3840x2160 (DP)@60Hz; 2048x1280 (VGA)@60Hz; 3840x2160 (USB 2.0 Type-C)@60Hz |
| Monitor cable | Optional DP to VGA, DP to DVI-D (single link), or DP to HDMI 1.4 dongle |

| Chipset | AMD SoC platform |

| Front ports* | Two USB 3.1 Gen1 (one is Always On and fast charge), one microphone (3.5mm), one headphone / microphone combo jack (3.5mm) |
| Rear ports*  | Two USB 3.1 Gen1, three USB 2.0, ethernet (RJ-45), two DisplayPort, two optional ports (Port 1 for VGA / serial / USB 2.0 Type-C (with DisplayPort Alternate Mode), Port 2 for serial) |

| I/O box | * Depending on many factors, actual data transfer speed may be lower than theoretical speed |

| Audio support | High Definition (HD) Audio, Realtek ALC233-VB2-CG/ internal speaker (1.5 watt) |

| WLAN™ | Some: 11ac wireless, M.2 Card, Realtek RTL8822BE (dual band), Wi-Fi + Bluetooth 4.2* combo adapter, 2x2 |
|       | Some: 11ac wireless, M.2 Card, Qualcomm Atheros QCA6174A (dual band), Wi-Fi + Bluetooth 4.2* combo adapter, 2x2 |

| Bluetooth™ | Some: Bluetooth 4.2* wireless, integrated in Wi-Fi + BT combo adapter *& Win 10 RS3 and Win10 earlier version only support Bluetooth 4.1 |

| Ethernet Modem | Gigabit ethernet, Realtek RTL8111HN, Wake on LAN® |

| Manageability | None |
| Security chip | None |
| Security features | Discrete TPM 2.0, TCG Certified |
|                                | * Security slot (in rear for optional Kensington® MicroSaver® cable) |
|                                | Smart USB protection, allows keyboard/ mouse only, blocks all storage devices |
|                                | Power-on password |

| Keyboard Mouse | Some: Full-size USB Keyboard (USB connector), black, Lenovo logo |
|               | Some: USB Optical Wheel Mouse, black, Lenovo logo |

| Mechanical | Tiny (1L), black color; metal case |
|           | ● Toolless chassis open (for models with optional toolless chassis screw) |
|           | ● Toolless HDD, SSD, memory, Wi-Fi removal |
|           | ● Optional dust filter M625 Tiny only: 7.05" W X 7.20" D X 1.36" H 179mm W X 182.9mm D X 34.5mm H 2.9 lb (1.3 kg), weight may vary by configuration |
| VESA mount | Optional VESA mount bracket kit, supports VESA 75mm and 100mm |
| Floor Stand | Optional system floor stand for vertical orientation |

| Power supply | 65 watts AC/DC adapter, autosensing, 88% PSU (not included for TIO models) |

| Limited warranty* | Some: 1-year, depot service / service upgrades available |
|                   | Some: 1-year, limited onsite service / service upgrades available |

| Preload | Preloaded operating system |
|         | Some: Windows® 10 Pro 64-bit |
|         | Some: Windows 7 Professional 64 preinstalled through downgrade rights in Windows 10 Pro 64-bit |

| Preloaded applications (only some listed) | - Windows 10 only |
|                                          | ● Lenovo Vantage |
|                                          | ● LinkedIn |
|                                          | ● Microsoft Office preloaded; purchase a product key to activate |
|                                          | - Windows 7 only |
|                                          | ● Lenovo Solution Center |
|                                          | ● Lenovo System Update |
|                                          | ● Factory Recovery |
|                                          | ● User Guide Viewer |
|                                          | ● Microsoft Office preloaded; purchase a product key to activate |
|                                          | ● Adobe® Reader® |

| Environment | ENERGY STAR® 6.1*, EPEAT™ Gold rating* (*Not for non-OS models), ErP Lot 3, RoHS-compliant, WEEE, TCO |


| Accessories | For compatible accessories, please go to http://smartfind.lenovo.com |

Lenovo, May 2018
**ThinkCentre M625 Tiny Thin Client Platform Specifications**

**Processor**

<table>
<thead>
<tr>
<th>AMD E2 series APU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cores</td>
</tr>
<tr>
<td>E2-9000e</td>
</tr>
</tbody>
</table>

**Memory**

8GB max, DDR4-2666, one 260-pin SO-DIMM socket

* System frequency automatically clocks down for the lower capability of memory controller in processor

**Disk**

Some: 32GB M.2 Solid State Drive (SSD) / SATA interface
Some: 128GB M.2 Solid State Drive (SSD) / PCIe NVMe interface

**Optical Onboard SATA Media reader**

None

Some: one SATA 6.0Gb/s connector on planar

**Graphics**

AMD Radeon™ Graphics in processor, uses main memory, DirectX® 12, two DisplayPort™, one optional port (VGA or USB 2.0 Type-C with DisplayPort Alternate Mode), supports up to 2 independent displays;

Max resolution: 3840x2160 (DP) @ 60Hz; 2048x1280 (VGA) @ 60Hz;
3840x2160 (USB 2.0 Type-C) @ 60Hz

Optional DP to VGA, DP to DVI-D (single link), or DP to HDMI 1.4 dongle

**Monitor cable**

**Chipset**

**Front ports***

Two USB 3.1 Gen1 (one is Always On and fast charge), one microphone (3.5mm), one headphone / microphone combo jack (3.5mm)

**Rear ports***

One USB 3.1 Gen1, three USB 2.0, ethernet (RJ-45), two DisplayPort, two optional ports (Port 1 for VGA / serial / USB 2.0 Type-C (with DisplayPort Alternate Mode), Port 2 for serial)

* Depending on many factors, actual data transfer speed may be lower than theoretical speed

**I/O box**

Audio support: High Definition (HD) Audio, Realtek ALC233-VB2-CG / internal speaker (1.5 watt)

**WLAN**

Some: 11ac wireless, M.2 Card, Realtek RTL8821CE (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 1x1

Some: 11ac wireless, M.2 Card, Qualcomm Atheros QCA9377 (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 1x1

Some: 11ac wireless, M.2 Card, Realtek RTL8822BE (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 2x2

Some: 11ac wireless, M.2 Card, Qualcomm Atheros QCA6174A (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 2x2

Some: Bluetooth 4.2 wireless, integrated in Wi-Fi + BT combo adapter

* Win 10 RS3 and Win10 earlier version only support Bluetooth 4.1

**Bluetooth™**

**Ethernet**

Gigabit ethernet, Realtek RTL8111HN, Wake on LAN™

**Manageability**

None

**Security chip**

Discrete TPM 2.0, TCG Certified

**Security features**

● Security slot (in rear for optional Kensington® MicroSaver® cable)

● Smart USB protection, allows keyboard / mouse only, blocks all storage devices

● Power-on password

● Administrator password

● Hard disk password

● Boot sequence control

● Boot without keyboard and mouse

● Individual USB port disablement

● Chassis intrusion switch

**Security features**

**Keyboard**

Some: Fullsize USB Keyboard (USB connector), black, Lenovo logo

**Mouse**

Some: USB Optical Wheel Mouse, black, Lenovo logo

**Mechanical**

Tiny (1L), fan-less design, black color, metal case

● Toolless chassis open (for models with optional toolless chassis screw)

● Toolless SSD, memory, Wi-Fi removal

M625 Tiny Thin Client only:

7.05" W X 7.20" D X 1.36" H
179mm W X 182.9mm D X 34.5mm H

2.9 lb (1.3 kg), weight may vary by configuration

**VESA mount**

Optional VESA mount bracket kit, supports VESA 75mm and 100mm

**Floor Stand**

Optional system floor stand for vertical orientation

**Power supply**

65 watts AC/DC adapter, autosensing, 88% PSU (not included for TIO models)

**Limited warranty**

Some: 1-year, depot service / service upgrades available
Some: 1-year, limited onsite service / service upgrades available

**Preload**

Preloaded operating system

Some: Windows Embedded Standard 7 V2 (WES 7 V2)
Some: Windows 10 IoT Enterprise
Some: LeTOS V2 (Lenovo Terminal Operating System, Linux-based)

**Environment**

ENERGY STAR® 6.1*, EPEAT™ Gold rating* (*Not for non-OS models), ErP Lot 3, RoHS-compliant, WEEE, TCO

**MIL-SPEC test**

MIL-STD-810G military certification (Low Pressure [Altitude], High Temperature, Low Temperature, Temperature Shock, Humidity, Sand and Dust, Vibration, Shock, Fungus, Solar Radiation)

**Accessories**

For compatible accessories, please go to http://smartfind.lenovo.com

**Lenovo, May 2018**
ThinkCentre M630e Tiny Platform Specifications

Processor

<table>
<thead>
<tr>
<th>Processor</th>
<th>Cores / Threads</th>
<th>Frequency Base/Max(GHz)</th>
<th>Cache</th>
<th>Memory Support (Up to)</th>
<th>Integrated Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pentium Gold 5405U</td>
<td>2 / 4</td>
<td>2.3G</td>
<td>2 MB</td>
<td>DDR4-2133</td>
<td>UHD 610</td>
</tr>
<tr>
<td>Core i3-8145U</td>
<td>2 / 4</td>
<td>2.1G / 3.9G</td>
<td>4 MB</td>
<td>DDR4-2400</td>
<td>UHD 620</td>
</tr>
<tr>
<td>Core i5-8265U</td>
<td>4 / 8</td>
<td>1.6G / 3.9G</td>
<td>6 MB</td>
<td>DDR4-2400</td>
<td>UHD 620</td>
</tr>
</tbody>
</table>

Memory

16GB max, DDR4-2666*, one 260-pin SO-DIMM sockets, non-ECC

Storage

Some: Hard Drive / SATA 6.0Gb/s, 2.5", 5400 rpm or 7200 rpm
Some: Solid State Drive (SSD) / SATA 6.0Gb/s, 2.5"
Some: M.2 SSD (2280) / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s
Some: M.2 SSD (2242) / PCIe NVMe, PCIe 3.0 x 2, 16Gb/s
One on board SATA 6.0Gb/s connector

Onboard SATA

No

Graphics

Intel HD Graphics 610/620 in processor, uses main memory, DirectX* 12, one DisplayPort™, one HDMI, up to 2 independent displays;
Max resolution: 4096x2304 (DP)@60Hz; 4096x2304 (HDMI)@24Hz

Monitor cable

Optional DP to VGA dongle or DP to HDMI 1.4 dongle

Chipset

Intel SoC (System on Chip) platform

Front ports* (Std.)
One USB 3.1 Gen1, one USB 3.1 Type-C Gen 1, one microphone (3.5mm), one headphone / microphone combo jack (3.5mm)

Rear ports* (Std.)
Two USB 3.1 Gen1, two USB 2.0, one ethernet (RJ-45), one DisplayPort, one HDMI

Audio support
Realtek ALC233VB / internal speaker (1.5 watt)

WLAN
Some: 11ac wireless, M.2 Card, Realtek RTL8821CE (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 1x1
Some: 11ac wireless, M.2 Card, Realtek RTL8822BE (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 2x2
Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 3165, Wi-Fi + Bluetooth 4.2 combo adapter, 1x1
Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 8265, Wi-Fi + Bluetooth 4.2 combo adapter, 2x2

Bluetooth
Some: Bluetooth 4.2 wireless, integrated in Wi-Fi + BT combo adapter

Ethernet
Gigabit ethernet, Realtek RTL8111H-NG

Environment
ENERGY STAR® 7.0, ErP Lot 3, TCO, RoHS-compliant, WEEE, REACH

Preload
Preloaded operating system
Some: Windows® 10 Pro 64-bit
Some: Windows 10 Home 64-bit

Preloaded applications (only some listed)
Lenovo Vantage
Microsoft Office preloaded;
purchase a product key to activate
LinkedIn

MIL-SPEC test
Coming soon

Limited warranty
Some: 1-year, depot service / service upgrades available
Some: 1-year, limited onsite service / service upgrades available

Manageability
Security chip
Security features
None
Firmware TPM 2.0, integrated in chipset

Security slot (in rear for optional Kensington MicroSaver cable)
Chassis intrusion switch
Power-on password
Administrator password
Hard disk password

Boot sequence control
Boot without keyboard and mouse
Individual USB port disablement
Smart USB protection, allows keyboard/mouse only, blocks all storage devices

Boot sequence control
Boot without keyboard and mouse
Individual USB port disablement
Smart USB protection, allows keyboard/mouse only, blocks all storage devices

Keyboard Mouse
Some: Lenovo Calliope Keyboard (USB connector), black
Some: Lenovo Calliope Mouse (USB connector), black

Mechanical
Tiny (1L), black color; metal case
Optional dust filter
One 2.5" bay for HDD/SSD, two M.2 slots (one for WLAN, one for M.2 SSD)

Optional DP to VGA dongle or DP to HDMI 1.4 dongle

Power supply
Some: 65 watts adapter, autosensing, 88% PSU

Floor Stand
Optional system floor stand for vertical orientation

Preload
Preloaded operating system
Some: Windows® 10 Pro 64-bit
Some: Windows 10 Home 64-bit

Preloaded applications (only some listed)
Lenovo Vantage
Microsoft Office preloaded;
purchase a product key to activate
LinkedIn

Environment
ENERGY STAR® 7.0, ErP Lot 3, TCO, RoHS-compliant, WEEE, REACH

MIL-SPEC test
Coming soon

Accessories
For compatible accessories, please go to http://smartfind.lenovo.com

Note: The specifications above may not be available in all regions.

**Lenovo, Mar 2019**
## ThinkCentre M710 SFF Platform Specifications

**Product Specifications Reference (PSREF)**

### Processor

<table>
<thead>
<tr>
<th>Processor</th>
<th>Cores / Threads</th>
<th>Frequency Base/Max(GHz)</th>
<th>Cache</th>
<th>Memory Support (Up to)</th>
<th>Integrated Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pentium G4400</td>
<td>2 / 2</td>
<td>3.3G</td>
<td>3 MB</td>
<td>DDR4-2133</td>
<td>HD 510</td>
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<tr>
<td>Pentium G4560</td>
<td>2 / 4</td>
<td>3.5G</td>
<td>3 MB</td>
<td>DDR4-2400</td>
<td>HD 610</td>
</tr>
<tr>
<td>Pentium G4600</td>
<td>2 / 4</td>
<td>3.6G</td>
<td>3 MB</td>
<td>DDR4-2400</td>
<td>HD 630</td>
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<tr>
<td>Core i3-6100</td>
<td>2 / 4</td>
<td>3.7G</td>
<td>3 MB</td>
<td>DDR4-2133</td>
<td>HD 530</td>
</tr>
<tr>
<td>Core i5-6500</td>
<td>4 / 4</td>
<td>3.2G / 3.6G</td>
<td>6 MB</td>
<td>DDR4-2133</td>
<td>HD 530</td>
</tr>
<tr>
<td>Core i7-6700</td>
<td>4 / 8</td>
<td>3.4S / 4.0G</td>
<td>8 MB</td>
<td>DDR4-2133</td>
<td>HD 630</td>
</tr>
<tr>
<td>Core i3-7100</td>
<td>4 / 4</td>
<td>3.9G</td>
<td>3 MB</td>
<td>DDR4-2400</td>
<td>HD 630</td>
</tr>
<tr>
<td>Core i5-7400</td>
<td>4 / 4</td>
<td>3.0G / 3.5G</td>
<td>6 MB</td>
<td>DDR4-2400</td>
<td>HD 630</td>
</tr>
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<td>Core i5-7500</td>
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<td>HD 630</td>
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</table>

### Memory

- 64GB max, UDIMM, DDR4-2400, four 288-pin DIMM sockets, non-ECC, dual-channel capable
- * System automatically clocks down for the processors with lower memory controller

### Storage

- Some: Hard Drive / SATA 6.0Gb/s, 2.5" or 3.5", 5400 rpm or 7200 rpm
- Some: Solid State Drive (SSD) / SATA 6.0Gb/s, 2.5" or 3.5"
- Some: M.2 Solid State Drive (SSD) / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s
- Some: Intel Optane™ Memory (with 7th gen Core processor), M.2
- Some: DVD Burner (DVD±RW), SATA 1.5Gb/s Drive, slim (9.0mm)
- Optional: SATA 6.0Gb/s connectors, 3 optional 7-in-1 media readers

### Graphics

- Intel HD Graphics 510/530/610/630 in processor, uses main memory, DirectX 12, one VGA, two Display Ports™, supports 3 independent displays, works along with discrete graphics to support more displays,
- *Max resolution*: 4096x2304 (DP) @ 60Hz; 2048x1536 (VGA) @ 50Hz
- Some: NVIDIA Geoforce® GT 730, DirectX 12, 2GB, PCIe 2.0 x8 adapter, two Display Ports, 35 watts;
- *Max resolution*: 3840x2160 (DisplayPort) @ 60Hz;
- Optional: DP to VGA, DP to DVI-D (single link), DP to dual DP, or DP to HDMI 1.4

### Chipset

- Intel B250 Chipset

### Front ports

- Four USB 3.1 Gen1, optional two USB 3.1 Type-C Gen 2 (only available via special bid), microphone (3.5mm), headphone (3.5mm)

### Rear ports

- Two USB 3.1 Gen1, two USB 2.0, optional two USB 2.0, serial (9-pin), optional 2nd serial (9-pin), optional parallel (25-pin), ethernet (RJ-45), one VGA, two Display Ports, two PS/2 ports (keyboard/mouse);
- Additional DisplayPort on optional graphics on some models

### Audio support

- High Definition (HD) Audio, Realtek ALC662 / optional internal speaker (1.5 watt)

### WLAN

- Some: 11ac wireless, M.2 Card, Qualcomm Atheros QCA9377TA (dual band), Wi-Fi + Bluetooth 4.1 combo adapter, 1x1
- Some: 11ac wireless, M.2 Card, Qualcomm Atheros QCA6174A (dual band), Wi-Fi + Bluetooth 4.1 combo adapter, 2x2
- Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 3165, Wi-Fi + Bluetooth 4.1 combo adapter, 1x1
- Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 8265, Wi-Fi + Bluetooth 4.1 combo adapter, 2x2
- Some: Bluetooth 4.1 wireless, integrated in Wi-Fi + BT combo adapter, Gigabit ethernet, Realtek RTL8111GN, Wake on LAN
- None

### Bluetooth™ Ethernet Modem

- None

### Manageability

- TP (Trusted Platform Module) 2.0, TCG Certified
- * Downgrade to TPM1.2 for the models with Win10 DG Win7 32 OS

### Security chip

- None

### Security features

- Security slot (in rear for optional Kensington® MicroSaver® cable)
- Padlock loop
- Smart USB protection, allows keyboard/mouse only, blocks all storage devices
- Optional cable lock to physically lock both keyboard and mouse

### Keyboard

- Some: Lenovo Calliope Keyboard (USB connector), black
- Some: Lenovo Traditional Keyboard (USB connector), black
- Some: Lenovo Calliope Wireless Keyboard (2.4GHz via USB receiver), black

### Mouse

- Some: Lenovo Calliope Mouse (USB connector), black
- Some: Lenovo Calliope Wireless Mouse (2.4GHz via USB receiver), black

### Mechanical

- SFF (8.4L), black color; metal case
- *WiDi/XH*: 3.6” X 11.4” X 13.5”; 92.55mm X 290.55mm X 342.5mm
- Approx. 13.2 lb (6.0 kg), weight may vary by configuration
- Touchless cover, disk, optical removal

### Power supply

- Some: 180 watts, autoselecting, 85% PSU
- Some: 210 watts, autoselecting, 85% PSU
- Some: 210 watts, autoselecting, 92% PSU (only available via special bid)

### Measurably

- Some: 1-year or 3-year, depot service / service upgrades available
- Some: 1-year or 3-year, limited onsite service / service upgrades available

### Preload

- Preloaded operating system
  - Windows® 7 Professional 32/64 preinstalled through downgrade rights in Windows 10 Pro 64-bit (not available with 7th Gen Intel processor)
  - Some: Windows 10 Pro 64-bit
  - Some: Windows 10 Home 64-bit
- Preloaded applications (only some listed)
  - Microsoft Office preloaded;
  - purchase a product key to activate
  - - Only for Window 10
  - Lenovo Companion
  - - Only for Window 7
  - Lenovo Solution Center
  - Lenovo ThinkVantage Tools
  - Create Recovery Media
  - Adobe® Reader
  - CyberLink PowerDVD Create
  - (DVD±RW)

### Environment

- ENERGY STAR® 6.1, EPEAT® Gold rating (North America), ErP Lot 3, GREENGUARD®, RoHS-compliant, TÜV low noise verified (on some models)

### Accessories

For compatible accessories, please go to [http://www.lenovoquickpick.com](http://www.lenovoquickpick.com)

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Note: The specifications above may not be available in all regions.

Lenovo, June 2017
Processor

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Memory

- 32GB max, DDR4-2400*, two 260-pin SO-DIMM sockets, non-ECC, dual-channel capable
- System automatically clocks down for the processors with lower memory controller

Storage

- Some: Hard Drive / SATA 6.0Gb/s, 2.5", 5400 rpm or 7200 rpm
- Some: Solid State Drive (SSD) / SATA 6.0Gb/s, 2.5"x1
- Some: M.2 Solid State Drive (SSD) / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s
- Some: Intel Optane™ Memory (models with 7th Core processor), M.2
- Some: DVD Burner (DVD+RW), slim (9.0mm), via USB external ODD box
- Some: DVD Burner (DVD+RW), slim (9.0mm), via USB external ODD box

Optical

- Some: DVD-RAM, slim (9.0mm), via USB external ODD box

Onboard SATA

- One onboard SATA 6.0Gb/s connector

Graphics

- Intel HD Graphics 550 / 530 / 610 / 630 in processor, uses main memory, DirectX™ 12, two DisplayPort™, one optional video port (HDMI, VGA, 3rd DP or USB 3.1 Type-C with DisplayPort Alternate Mode), up to 3 independent displays;
- Max resolution: 4096x2304 (DP) @ 60Hz; 4096x2304 (Type-C) @ 60Hz;
- 4096x2160 (HDMI) @ 24Hz; 1920x1200 (VGA) @ 60Hz

Monitor cable

- Optional DP to VGA, DP to DVI-D (single link), DP to dual DP, or DP to HDMI 1.4

Chipset

- Intel B250 Chipset

Front ports*

- Two USB 3.1 Gen1 (one is Always On and fast charge), one microphone (3.5mm), one headphone / microphone combo jack (3.5mm)

Rear ports*

- Four USB 3.1 Gen1 (optional external optical box or external I/O box occupies one or two specific USB 3.1 Gen1 on some models), one microphone (3.5mm), two audio ports (Port 1 for VGA / 3rd DP / HDMI / USB 3.1 Type-C with DisplayPort Alternate Mode), Port 2 for serial
- Optional external I/O box, extends two USB 2.0, two USB 3.1 Gen1, and one serial on rear, two USB 2.0 on front, via USB cable (occupy two specific USB 3.1 Gen1 of Tiny)
- * Depending on many factors, actual data transfer speed may be lower than theoretical speed

Audio support

- High Definition (HD) Audio, Realtek ALC294 / optional internal speaker (1w or 2w)

WLAN™

- Some: 11ac wireless, M.2 Card, Qualcomm Atheros QCA9377A (dual band), Wi-Fi + Bluetooth 4.1 combo adapter, 1x1
- Some: 11ac wireless, M.2 Card, Qualcomm Atheros QCA6174A (dual band), Wi-Fi + Bluetooth 4.1 combo adapter, 2x2
- Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 3165, Wi-Fi + Bluetooth 4.1 combo adapter, 1x1
- Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 8265, Wi-Fi + Bluetooth 4.1 combo adapter, 2x2

Bluetooth™

- Some: Bluetooth 4.1 wireless, integrated in Wi-Fi + BT combo adapter

Ethernet Modem

- Gigabit ethernet, Intel Ethernet Connection I219-V (Jacksonville), Wake on LAN™

Manageability

- TPM (Trusted Platform Module) 2.0, TCG Certified
- * Downgrade to TPM1.2 for the models with Win10 DG Win7 32 OS

Security chip

- None

Security features

- Security slot (in rear for optional Kensington® MicroSaver® cable)
- Smart USB protection, allows keyboard/mouse only, blocks all storage devices
- Power-on password
- Administrator password
- Hard disk password
- Boot sequence control
- Boot without keyboard and mouse
- Individual USB port disablement
- Chassis intrusion switch

Keyboard

- Some: Lenovo Calliope Keyboard (USB connector), black
- Some: Lenovo Traditional Keyboard (USB connector), black
- Some: Lenovo Calliope Wireless Keyboard (2.4GHz via USB receiver), black
- Some: Lenovo Calliope Mouse (USB connector), black
- Some: Lenovo Calliope Wireless Mouse (2.4GHz via USB receiver), black

Mouse

- Tiny (1L), black color; metal case
- Toolless chassis open
- Toolless HDD, SSD, memory removal
- Optional toolless chassis screw
- Optional dust filter

Mechanical

- Weight (Approx.):
  - M710 Tiny only: 7.05" x 7.20" x 1.36" 179mm x 182.9mm x 34.5mm 2.91 lb (1.32 kg), vary by config
  - With VESA mount & ODD box: 7.42" x 7.30" x 2.48" 188.4mm x 185.38mm x 63mm 3.66 lb (1.66 kg), vary by config
  - With VESA mount & I/O box: 7.42" x 7.30" x 2.62" 188.4mm x 185.38mm x 66.6mm 3.66 lb (1.66 kg), vary by config

Power supply

- 65 watts AC/DC adapter, autosensing, 88% PSU (not included for TIO models)
- 90 watts AC/DC adapter, autosensing, 88% PSU (only for models with I/O box)

Limited warranty

- Some: 1-year or 3-year, depot service / service upgrades available
- Some: 1-year or 3-year, limited onsite service / service upgrades available

Preload

- Some: Windows 7 Professional 32/64 preinstalled through downgrade rights in Windows 10 Pro 64-bit (not available with 7th Gen Intel processor)
- Some: Windows 10 Pro 64-bit
- Some: Windows 10 Home 64-bit
- Preloaded applications (only some listed):
  - Microsoft Office preloaded;
  - purchase a product key to activate
  - Only for Windows 10
  - Lenovo Companion
  - Only for Window 7
  - Lenovo Solution Center
  - Lenovo ThinkVantage Tools
  - Create Recovery Media
  - Adobe® Reader
  - Lenovo PowerDVD Create (DVD+RW)

Environment

- ENERGY STAR® 6.1, EPEAT® Gold rating (North America), ErP Lot 3, GREENGUARD®, RoHS-compliant, TUV low noise verified (on some models)

MIL-SPEC test


Accessories

- For compatible accessories, please go to http://www.lenovoquickpick.com

See footnotes for more detailed information
# ThinkCentre M710 Tower Platform Specifications

**Product Specifications Reference (PSREF)**

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**Memory**

- 64GB max, UDIMM, DDR4-2400*, four 288-pin DIMM sockets, non-ECC, dual-channel capable
- System automatically clocks down for the processors with lower memory controller

**Storage**

- Some: Hard Drive / SATA 6.0GB/s, 2.5” or 3.5”, 5400 rpm or 7200 rpm
- Some: Solid State Drive (SSD) / SATA 6.0GB/s, 2.5”
- Some: M.2 Solid State Drive (SSD) / PCIe NVMe, PCIe 3.0 x 4, 32GB/s
- Some: Intel Optane™ Memory (models with 7th gen Core processor), M.2
- Some: DVD Burner (DVD±RW), SATA 1.5GB/s Drive, slim (9.0mm)
- Some: Three onboard SATA 6.0GB/s connectors

**Graphics**

- Intel HD Graphics 510/530/610/630 in processor, uses main memory, DirectX® 12, one VGA, two DisplayPort™, supports 3 independent displays, works along with discrete graphics to support more displays
- Max resolution: 4096x2304 (DP) @ 60Hz; 2048x1356 (VGA) @ 50Hz
- Some: NVIDIA GeForce® GT 730, DirectX 12, 2GB, PCIe 2.0 x8 adapter, two DisplayPort, 35 watts; Max resolution: 3840x2160 (DisplayPort) @ 60Hz.
- Some: AMD Radeon™ R7 370, DirectX 11, 2GB, PCIe 3.0 x8 adapter, one VGA, one HDMI, 75 watts, occupies two slots; Max resolution: 4096x2160 (HDMI) @ 240Hz; 2048x1356 (VGA) @ 85Hz

**Monitor Cable**

- Optional DP to VGA, DP to DVI-D (single link), DP to dual DP, or DP to HDMI 1.4

**Chipset**

- Intel B250 Chipset

**Front ports**

- Four USB 3.1 Gen1, optional two USB 3.1 Type-C Gen 2 (only available via special bid), microphone (3.5mm), headphone (3.5mm)

**Rear ports**

- Two USB 3.1 Gen1, two USB 2.0, optional two USB 2.0, serial (9-pin), optional 2nd serial (9-pin), optional parallel (25-pin), ethernet (RJ-45), one VGA, two DisplayPort, two PS/2 ports (keyboard/mouse);
- Additional VGA, DisplayPort, or HDMI on optional graphics on some models

**Audio support**

- High Definition (HD) Audio, Realtek ALC662 / optional internal speaker (1.5 watt)

**WLAN**

- Some: 11ac wireless, M.2 Card, Qualcomm Atheros QCA9377A (dual band), Wi-Fi + Bluetooth 4.1 combo adapter, 1x1
- Some: 11ac wireless, M.2 Card, Qualcomm Atheros QCA6174A (dual band), Wi-Fi + Bluetooth 4.1 combo adapter, 2x2
- Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 3165, Wi-Fi + Bluetooth 4.1 combo adapter, 1x1
- Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 8265, Wi-Fi + Bluetooth 4.1 combo adapter, 2x2

**Bluetooth**

- Some: Bluetooth 4.1 wireless, integrated in Wi-Fi + BT combo adapter

**Environment**

- ENERGY STAR® 6.1, EPEAT™ Gold rating (North America), ErP Lot 3, GREENGUARD®, RoHS-compliant, TUV low noise verified (on some models)

**Warranty**

- Some: 1-year or 3-year, depot service / service upgrades available
- Some: 1-year or 3-year, limited onsite service / service upgrades available

**Power supply**

- Some: 180 watts, autosensing, 85% PSU
- Some: 210 watts, autosensing, 92% PSU (only available via special bid)

**Preload**

- Preloaded operating system
  - Some: Windows 7 Professional 32/64 preinstalled through downgrade rights in Windows 10 Pro 64-bit (not available with 7th Gen Intel processor)
  - Some: Windows 10 Pro 64-bit
  - Some: Windows 10 Home 64-bit

**Accessories**

- For compatible accessories, please go to [http://www.lenovoquickpick.com](http://www.lenovoquickpick.com)

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Note: The specifications above may not be available in all regions.

Lenovo, June 2017
**ThinkCentre M710e SFF Platform Specifications**

**Product Specifications Reference (PSREF)**

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</table>

**Memory**

- 32GB max, UDIMM, DDR4-2400*, two 288-pin DIMM sockets, non-ECC, dual-channel capable
- *System automatically clocks down for the processors with lower memory controller

**Storage**

- Some: Hard Drive / SATA 6.0Gb/s, 2.5" or 3.5", 5400 rpm or 7200 rpm
- Some: Solid State Drive (SSD) / SATA 6.0Gb/s, 2.5"
- Some: M.2 Solid State Drive (SSD) / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s
- Some: DVD-ROM SATA 1.5Gb/s Drive, slim (9.0mm)
- Some: DVD Burner (DVD±RW), SATA 1.5Gb/s Drive, slim (9.0mm)

**Optical**

- Two onboard SATA 6.0Gb/s connectors

**Onboard SATA Media reader**

- Optional 7-in-1 media reader

**Graphics**

- Intel HD Graphics 510/530/610/630 in processor, uses main memory, DirectX® 12, one VGA, one DisplayPort™, supports 2 independent displays, works along with discrete graphics to support more displays; Max resolution: 4096x2160 (DP)@60Hz; 1920x1200 (VGA)@60Hz
- Some: NVIDIA GeForce® GT 730, DirectX 12, 2GB, PCIe 2.0 x8 adapter, two DisplayPort, 35 watts; Max resolution: 3840x2160 (DisplayPort)@60Hz
- Optional DP to VGA, DP to DVI-D (single link), DP to dual DP, or DP to HDMI 1.4

**Chipset**

- Intel B250 Chipset

**Front ports**

- Two USB 3.1 Gen1, microphone (3.5mm), one headphone / microphone combo jack (3.5mm)

**Rear ports**

- Two USB 3.1 Gen1, two USB 2.0, optional two USB 2.0, serial (9-pin), optional 2nd serial (9-pin), optional parallel (25-pin), ethernet (RJ-45), one VGA, one DisplayPort, optional external USB to PS/2 ports cable (for PS/2 keyboard / mouse); additional DisplayPort on optional graphics on some models

**Rear audio ports**

- Line-out jack (3.5mm)

**IEEE 1394**

- None
- * Depending on many factors, actual data transfer speed may be lower than theoretical speed

**Audio support**

- High Definition (HD) Audio, Realtek ALC233 / internal speaker (1.5 watt )

**WLAN™**

- None

**Bluetooth™**

- None

**Ethernet**

- Gigabit ethernet, Realtek RTL8111H1N, Wake on LAN®

**Modem**

- None

**Manageability**

- None

**Security chip**

- TPM (Trusted Platform Module) 2.0, TCG Certified
- * Downgrade to TPM1.2 for the models with Win10 DG Win7 32 OS

**Security features**

- Security slot (in rear for optional Kensington® MicroSaver® cable)
- *Padlock loop
- Smart USB protection, allows keyboard / mouse only, blocks all storage devices
- Optional smart card clip to physically lock both keyboard and mouse
- Optional chassis intrusion switch

**Keyboard**

- Some: Lenovo Calliope Keyboard (USB connector), black
- Some: Lenovo Traditional Keyboard (USB connector), black
- Some: Lenovo Calliope Mouse (USB connector), black
- Some: Lenovo Fingerprint Mouse (USB connector), Windows Hello support, black

**Mouse**

- *SFF (7.4L), black color, metal case
- * (Wx Dx H) 3.9" X 11.9" X 10.8"; 100mm X 303.5mm X 273.5mm
- *Approx. 9.37 lb (4.25 kg), weight may vary by configuration
- Bay 1: Slim external ODD bay
- Bay 2: 3.5", 1" high, internal, supports 2.5" or 3.5" HDD/SSD (2.5 to 3.5 bracket comes with disk)
- Slot 1: low-profile (length < 152mm, height < 64mm), PCIe 3.0 x16
- Slot 2: low-profile (length < 152mm, height < 64mm), PCIe 3.0 x1

**Mechanical**

- M.2 card slots: one for SSD
- *Optional rear 2x USB2.0 / parallel occupies one expansion slot

**Floor Stand**

- Optional system floor stand for vertical orientation

**Packaging**

- (Wx Dx H) 7.7" X 15.4" X 19.7"; 195mm X 390mm X 500mm
- Cross weight (approx.) 14.22 lb (6.45 kg)

**Power supply**

- 180 watts, autosensing, 85% PSU

**Limited warranty**

- Some: 1-year or 3-year, depot service / service upgrades available
- Some: 1-year or 3-year, limited onsite service / service upgrades available

**Preload**

- Preloaded operating system
- Some: Windows 10 Pro 64-bit
- Some: Windows 10 Home 64-bit
- Some: Windows 7 Professional 32/64 preinstalled through downgrade rights in Windows 10 Pro 64-bit(not available with 7th Gen Intel processor)

**Preloaded applications (only some listed)**

- Microsoft Office preloaded; purchase a product key to activate
- Cyberlink PowerDVD (DVD, DVD±RW)
- Cyberlink PowerDVD Create (DVD±RW)
- Only for Window 10
- Lenovo Companion
- Only for Windows 7
- Lenovo Solution Center
- Lenovo System Update
- Create Recovery Media
- Adobe® Reader®

**Environment**

- ENERGY STAR® 6.1, EPEAT™ Gold rating (North America), ErP Lot 3, RoHS-compliant, WEEE

**Accessories**

- For compatible accessories, please go to http://www.lenovoquickpick.com

**Note:** The specifications above may not be available in all regions.
### Processor

<table>
<thead>
<tr>
<th>APU / processor</th>
<th>Cores / Threads</th>
<th>Frequency (Base/Max)</th>
<th>L2 Cache</th>
<th>Integrated Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ryzen 3 PRO 1200</td>
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<td>Ryzen 7 PRO 1700</td>
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<td>3.0 / 3.7</td>
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<td>PRO A8-970</td>
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<td>PRO A10-8770</td>
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<td>3.5 / 3.8</td>
<td>2MB</td>
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<td>PRO A6-9500</td>
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<td>3.5 / 3.8</td>
<td>1MB</td>
<td>Radeon R7 Series</td>
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<td>PRO A8-9600</td>
<td>4 / 4</td>
<td>3.1 / 3.4</td>
<td>2MB</td>
<td>Radeon R7 Series</td>
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<td>PRO A10-9700</td>
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<td>3.5 / 3.8</td>
<td>2MB</td>
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</tr>
<tr>
<td>PRO A12-9800</td>
<td>4 / 4</td>
<td>3.8 / 4.2</td>
<td>2MB</td>
<td>Radeon R7 Series</td>
</tr>
</tbody>
</table>

### Memory
64GB max, UDIMM, DDR4-2400, four 288-pin DIMM sockets, non-ECC, dual-channel capable
* System automatically clocks down for the processors with lower memory controller

### Storage
- Some: Hard Drive / SATA 6.0Gb/s, 2.5" or 3.5", 5400 rpm or 7200 rpm
- Some: Solid State Drive (SSD) / SATA 6.0Gb/s, 2.5"
- Some: M.2 Solid State Drive (SSD) / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s
- Some: DVD-ROM SATA 1.5Gb/s Drive, slim (9.0mm)
- Some: DVD Burner (DVD±RW), SATA 1.5Gb/s Drive, slim (9.0mm)

### Optical
Three onboard SATA 6.0Gb/s connectors
Optional 7-in-1 media reader

### Graphics
**AMD Radeon™ Graphics in processor** (not for AMD Ryzen processor), uses main memory, DirectX® 12, one VGA, two DisplayPort™ (Onboard VGA and DP ports and DP ports are invalid on the models with AMD Ryzen processor), supports 3 independent displays, works along with AMD discrete graphics to support more displays;
Max resolution: 4096x2160 (DP) @ 60Hz; 1920x1200 (VGA) @ 60Hz
Some: NVIDIA GeForce® GT 730, DirectX 12, 2GB, PCIe 2.0 x8 adapter, two DisplayPort, 35 watts:
Max resolution: 3840x2160 (DisplayPort) @ 60Hz;
Optional DP to VGA, DP to DVI-D (single link), DP to dual DP, or DP to HDMI 1.4

### Chipset
**AMD B350 Chipset**

### Front ports
- Two USB 3.1 Gen2, two USB 3.1 Gen1, optional two USB 3.1 Type-C Gen 2 (only available via special bid), microphone (3.5mm), headphone (3.5mm)

### Rear ports
- Two USB 3.1 Gen1, two USB 2.0, optional two USB 3.0, serial (9-pin), optional 2nd serial (9-pin), optional parallel (25-pin), Ethernet (RJ-45), one VGA and two DisplayPort (not available on models with AMD Ryzen processor), two PS/2 ports (keyboard / mouse);
- Additional DisplayPort on optional graphics on some models

### Rear audio ports
- Line-in (3.5mm), line-out (3.5mm), microphone-in (3.5mm)

### Audio support
High Definition (HD) Audio, Realtek ALC662 / optional internal speaker (1.5 watt)

### WLAN
Some: 11ac wireless, M.2 Card, Realtek RTL8821AE (dual band), Wi-Fi + Bluetooth 4.0 combo adapter, 1x1
Some: 11ac wireless, M.2 Card, Qualcomm Atheros QCA6174A (dual band), Wi-Fi + Bluetooth 4.1 combo adapter, 2x2
Some: 11ac wireless, M.2 Card, Qualcomm Atheros QCA9377 (dual band), Wi-Fi + Bluetooth 4.1 combo adapter, 1x1
Some: Bluetooth 4.0 or 4.1 wireless, integrated in Wi-Fi + BT combo adapter

### Ethernet Modem
Gigabit ethernet, Realtek RTL8111EPV, Wake on LAN

### Manageability
**DASH**

### Security chip
TPM (Trusted Platform Module) 2.0, TCG Certified
* Downgrade to TPM1.2 for the models with Win10 DG Win7 32 OS

### Security features
- Security slot (in rear for optional Kensington® MicroSaver® cable)
- Power-on password
- Administrator password
- Padlock loop
- Hard disk password
- Smart USB protection, allows keyboard/mouse only, blocks all storage devices
- Boot sequence control
- Boot without keyboard and mouse
- Optional cable lock to physically lock both keyboard and mouse
- Individual USB port disablement
- Optional chassis intrusion switch

### Keyboard
Some: Lenovo Calliope Keyboard (USB connector), black
Some: Lenovo Traditional Keyboard (USB connector), black
Some: Lenovo Calliope Mouse (USB connector), black
Some: Lenovo Calliope Mouse Wireless Mouse (2.4GHz via USB receiver), black
Some: Lenovo Fingerprint Mouse (USB connector), Windows Hello support, black

### Mouse
Some: Lenovo Calliope Keyboard (USB connector), black
Some: Lenovo Traditional Keyboard (USB connector), black
Some: Lenovo Calliope Mouse (USB connector), black
Some: Lenovo Calliope Mouse Wireless Mouse (2.4GHz via USB receiver), black
Some: Lenovo Fingerprint Mouse (USB connector), Windows Hello support, black

### Mechanical
- SFF (8.4L), black color: metal case
- [WxDxH] 3.6" x 11.4" x 13.5"; 92.5mm X 290.5mm X 343.5mm
- Approx. 13.2 lb (6.0 kg), weight may vary by configuration
- Touchless cover, disk, optical removal
- Optional dust filter
- Bay 1: Slim external ODD bay
- Bay 2: 3.5", internal, HDD/SSD
- Bay 3: 2.5", internal, HDD/SSD (bay only comes with 2.5" 2nd disk)
- Slot 1: low-profile (length < 150mm, height < 68mm), PCIe 3.0 x16
- Slot 2: low-profile (length < 150mm, height < 68mm), PCIe 2.0 x1
- Slot 3: low-profile (length < 150mm, height < 68mm), PCIe 2.0 x1
- Slot 4: no slot, only bracket for optional port extension
- M.2 card slots: two (one for WLAN, one for SSD)
- * Optional front USB3.1 Type-C x2 module occupies PCIe x16 slot (x4 card), optional rear 2x USB2.0 / parallel / 2nd serial occupies one expansion slot
- Optional system floor stand for vertical orientation

### Floor Stand

### Power supply
- Some: 180 watts, autosensing, 85% PSU
- Some: 210 watts, autosensing, 85% PSU
- Some: 210 watts, autosensing, 92% PSU (only available via special bid)

### Limited warranty
- Some: 1-year or 3-year, depot service / service upgrades available
- Some: 1-year or 3-year, limited onsite service / service upgrades available

### Preload
**Preloaded operating system**
- Some: Windows® 7 Professional 32/64 preinstalled through downgrade rights in Windows 10 Pro 64-bit (Available with Windows 10 Pro 64-bit)
- Some: Windows 10 Pro 64-bit
- Some: Windows 10 Home 64-bit

**Preloaded applications (only some listed)**
- Microsoft Office preloaded;
- purchase a product key to activate;
- Only for Windows 10
- Lenovo Companion
- Only for Windows 7
- Lenovo Solution Center
- Lenovo ThinkVantage Tools
- Create Recovery Media
- Adobe® Reader®
- Cyberlink PowerDVD Create (DVD±RW)

### Environment
**ENERGY STAR® 6.1, EPEAT™ Gold rating (North America)**

### Accessories
- For compatible accessories, please go to [http://www.lenovoquickpick.com](http://www.lenovoquickpick.com)

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Lenovo, July 2017
### ThinkCentre M715 Tiny Platform Specifications

#### Product Specifications Reference (PSREF)

**Processor**

<table>
<thead>
<tr>
<th>APU</th>
<th>Cores</th>
<th>Frequency Base/Max</th>
<th>L2 Cache</th>
<th>Memory Types</th>
<th>Integrated Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRO A6-9500E</td>
<td>2</td>
<td>3.0 / 3.4 GHz</td>
<td>1 MB</td>
<td>DDR4-2400</td>
<td>Radeon R5 Series</td>
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<tr>
<td>PRO A10-9700E</td>
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<td>3.0 / 3.5 GHz</td>
<td>2 MB</td>
<td>DDR4-2400</td>
<td>Radeon R7 Series</td>
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<tr>
<td>PRO A12-9800E</td>
<td>4</td>
<td>3.1 / 3.8 GHz</td>
<td>2 MB</td>
<td>DDR4-2400</td>
<td>Radeon R7 Series</td>
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<td>PRO A6-8770E</td>
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<td>DDR4-2400</td>
<td>Radeon R5 Series</td>
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<td>PRO A10-8770E</td>
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<td>2.8 / 3.5 GHz</td>
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<td>DDR4-2400</td>
<td>Radeon R7 Series</td>
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<td>PRO A12-8870E</td>
<td>4</td>
<td>2.9 / 3.8 GHz</td>
<td>2 MB</td>
<td>DDR4-2400</td>
<td>Radeon R7 Series</td>
</tr>
</tbody>
</table>

**Memory**

- 32GB max, DDR4 2400, two 26-pin SO-DIMM sockets, dual-channel capable
- 16GB single SO-DIMM memory is only available via special bid models

**Disk**

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some:</td>
<td>SATA 6.0Gb/s, 2.5&quot; Wide, 5400 rpm or 7200 rpm</td>
</tr>
<tr>
<td>Some:</td>
<td>Solid State Drive (SSD) / SATA 6.0Gb/s, 2.5&quot;</td>
</tr>
</tbody>
</table>

**Optical**

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some:</td>
<td>M.2 Solid State Drive (SSD) / SATA interface or PCIe NVMe interface</td>
</tr>
<tr>
<td>Some:</td>
<td>DVD-ROM, 9.0mm high, via USB external ODD box</td>
</tr>
</tbody>
</table>

**Onboard SATA Media reader**

- One SATA cable (1-drop to device), one SATA 6.0Gb/s connector on planar
- None

**Graphics**

**AMD Radeon™ Graphics**

- in processor, uses main memory, DirectX™, two DisplayPort™, one optional port (HDMI, VGA, or 3rd DP), supports 3 independent displays (supports maximum of 2 concurrent HDMI/DVI displays when using HDMI port or DP to DVI/HDMI dongles)
- Max resolution: 4096x2160 (DP) @ 60Hz; 4096x2160 (HDMI) @ 30Hz
- 1920x1200 (VGA) @ 60Hz

**DP cable**

- Optional DP to DVI-D (single link), or DP to HDMI 1.4 dongle

**Chipset**

**AMD B300 Chipset**

**Front ports**

- Two USB 3.0 (one is Always On and fast charge), one microphone (stereo, 3.5mm), one headphone / microphone combo jack (stereo, 3.5mm)

**Rear ports**

- One USB 3.0 and three USB 2.0 (optional external optical box or I/O box occupies one specific USB 2.0 on some models), ethernet (RJ-45), two DisplayPort, one optional port (VGA, 3rd DP, HDMI, or serial on some models), one headphone
- Optional external I/O box, extends four USB 2.0 (two on front and two on rear), one serial, and two PS/2, via USB port (occupy one specific USB 2.0 of M715q Tiny)

**Audio support**

- High Definition (HD) Audio, Realtek ALC233-CG / internal speaker (1.5 watt)

**WLAN**

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some:</td>
<td>11ac wireless, M.2 Card, Realtek RTL8821AE (dual band), Wi-Fi + Bluetooth 4.1 combo adapter, 1x1</td>
</tr>
<tr>
<td>Some:</td>
<td>11ac wireless, M.2 Card, Realtek RTL8822BE (dual band), Wi-Fi + Bluetooth 4.1 combo adapter, 2x2</td>
</tr>
<tr>
<td>Some:</td>
<td>11ac wireless, M.2 Card, Qualcomm Atheros QCA9377 (dual band), Wi-Fi + Bluetooth 4.1 combo adapter, 1x1</td>
</tr>
</tbody>
</table>

**Bluetooth**

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some:</td>
<td>Bluetooth 4.0 or 4.1 wireless, integrated in Wi-Fi + BT combo adapter</td>
</tr>
</tbody>
</table>

**Ethernet**

- Gigabit ethernet, Realtek RTL8111EPV, Wake on LAN®

**Manageability and Security chip features**

- DASH 1.0/1.1
- Secure TPM 2.0, TCG Certified
- Security slot (in rear for optional Kensington™ MicroSaver® cable)
- Padlock loop
- Smart USB protection, allows keyboard mouse only, blocks all storage devices
- Power-on password
- Administrator password
- Hard drive password
- Boot sequence control
- Boot without keyboard and mouse
- Individual USB port disablement
- Chassis intrusion switch

**Keyboard**

Some: Fullsize USB Keyboard (USB connector), Lenovo logo

**Mouse**

Some: Lenovo New Slim USB Keyboard (USB connector), black, Lenovo logo

**Mechanical**

- Tiny (1L), black color; metal case
- M715 Tiny only:
  - 7.05" W X 7.20" D X 1.36" H
  - 179mm W X 182.9mm D X 34.5mm H
  - 2.9 lb (1.3 kg), weight may vary by configuration
  - With VESA mount & ODD box:
    - 7.42" W X 7.30" D X 2.48" H
    - 188.4mm W X 185.38mm D X 63mm H
    - 4.12 lb (1.87 kg), weight may vary by configuration
  - With VESA mount & I/O box:
    - 65 watts AC/DC adapter, autosensing, 88% PSU (only for models with I/O box)

**Power supply**

- 65 watts AC/DC adapter, autosensing, 88% PSU (not included for TIO models)
- 90 watts AC/DC adapter, autosensing, 88% PSU (only for models with I/O box)

**Limited warranty**

Some: 1-year or 3-year, depot service / service upgrades available

**Preload**

**Preloaded operating system**

- Some: Windows 10 Pro 64-bit
- Some: Windows 10 Home 64-bit
- Some: Windows® 7 Professional 64-bit preinstalled through downgrade rights in Windows 10 Pro 64-bit

**Preloaded applications (only some listed)**

- Windows 10 only
  - Lenovo Companion
  - Microsoft Office preloaded, purchase a product key to activate Windows 7 only
  - Lenovo Solution Center
  - ThinkVantage System Update
  - Create Recovery Media
  - Lenovo ThinkVantage Tools
  - CyberlinkPowerDVD Create(DVD±RW)
  - Microsoft Office preloaded, purchase a product key to activate
  - Adobe® Reader®

**Environment**

- ENERGY STAR® 6.1*, EPEAT™ Gold rating* (*Not for non-OS models); ErP Lot 3; GREENGUARD®; RoHS-compliant

**Accessories**

For compatible accessories, please go to [http://www.lenovoquickpick.com](http://www.lenovoquickpick.com)

Lenovo, October 2017
## ThinkCentre M715 Tiny (2nd Gen) Platform Specifications

**Product Specifications Reference (PSREF)**

### Processor

<table>
<thead>
<tr>
<th>Processor</th>
<th>AMD Athlon, A6, A10, A12, or Ryzen processor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Athlon 200GE</td>
<td>2 / 4, 3.2 GHz, 1 MB DDR4-2933, Radeon Vega 3</td>
</tr>
<tr>
<td>Athlon PRO 200GE</td>
<td>2 / 4, 3.2 GHz, 1 MB DDR4-2933, Radeon Vega 3</td>
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<tr>
<td>PRO A6-8570E</td>
<td>2 / 2, 3.0 / 3.4 GHz, 1 MB DDR4-2400, Radeon R5</td>
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<td>PRO A10-8770E</td>
<td>4 / 4, 2.8 / 3.5 GHz, 2 MB DDR4-2400, Radeon R7</td>
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<td>4 / 4, 3.2 / 3.6 GHz, 2 MB DDR4-2933, Radeon Vega 8</td>
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<td>Ryzen 5 2400GE</td>
<td>4 / 4, 3.2 / 3.6 GHz, 2 MB DDR4-2933, Radeon Vega 8</td>
</tr>
<tr>
<td>Ryzen 5 PRO 2400GE</td>
<td>4 / 4, 3.2 / 3.6 GHz, 2 MB DDR4-2933, Radeon Vega 11</td>
</tr>
</tbody>
</table>

### Memory

- 32GB max, DDR4 2666*, two 260-pin SO-DIMM sockets, dual-channel capable
- System automatically clocks down for the lower memory controller

### Disk

- Some: Hard Drive / SATA 6.0Gb/s, 2.5", 5400 rpm or 7200 rpm
- Some: Solid State Drive (SSD) / SATA 6.0Gb/s, 2.5"
- Some: M.2 SSD / PCIe NVMe, PCIe 3.0 x 4*, 32Gb/s
- Some: 128GB SSD M.2 (2242) PCIe NVMe only supports PCIe 3.0 x 2, 16Gb/s

### Optical

- Some: DVD-ROM, 9.0mm high, via USB external ODD box
- Some: DVD±RW, 9.0mm high, via USB external ODD box

### Onboard SATA

- One SATA cable (1-drop to device), one SATA 6.0Gb/s connector on planar

### Graphics

**AMD Radeon™ Graphics** in processor, uses main memory, DirectX® 12, two DisplayPort®, one optional port (HDMI, VGA, or 3rd DP), supports 3 independent displays, supports maximum of 2 concurrent HDMI/DVI displays when using HDMI port or DP to DVI/HDMI dongles, and Athlon / Athlon PRO only support 2 displays;

- Max resolution: 4096x2160 (DP)@60Hz, 4096x2160 (HDMI)@30Hz, 1920x1200 (VGA)@60Hz

### Monitor cable

- Optional DP to VGA dongle, DP to DVI-D dongle, or DP to HDMI 1.4 dongle

### Chipset

**AMD B300 Chipset**

### Front ports* (Std.)

- Two USB 3.1 Gen1 (one is Always On and fast charge), one microphone (stereo, 3.5mm), one headphone (microphone combo jack (stereo, 3.5mm)

### Rear ports* (Std.)

- One USB 3.1 Gen1 and three USB 2.0, ethernet (RJ-45), two DisplayPort, one headphone, one microphone

### Rear ports* (Opt.)

- One optional port (VGA**, 3rd DP**, HDMI**, or serial on some models)

### Audio support

High Definition (HD) Audio, Realtek ALC223-VB2 / internal speaker (1.5 watt)

### WLAN

- Some: 11ac wireless, M.2 Card, Realtek RTL8821CE (dual band), Wi-Fi + Bluetooth 4.2* combo adapter, 1x1
- Some: 11ac wireless, M.2 Card, Qualcomm Atheros QCA9377 (dual band), Wi-Fi + Bluetooth 4.2* combo adapter, 1x1
- Some: 11ac wireless, M.2 Card, Realtek RTL8822BE (dual band), Wi-Fi + Bluetooth 4.2* combo adapter, 2x2
- Some: 11ac wireless, M.2 Card, Qualcomm Atheros QCA6174A (dual band), Wi-Fi + Bluetooth 4.2* combo adapter, 2x2

### Bluetooth Ethernet

- Some: Bluetooth 4.2* wireless, integrated in Wi-Fi + BT combo adapter

### Manageability

- DASH 1.0/1.1

### Security chip

- Discrete TPM 2.0, TCG Certified

---

Note: The specifications above may not be available in all regions.

Lenovo, July 2018
## ThinkCentre M715 Tiny Thin Client Platform Specifications

### Processor

<table>
<thead>
<tr>
<th>APU</th>
<th>Cores</th>
<th>Frequency Base/Max</th>
<th>L2 Cache</th>
<th>Memory Types</th>
<th>Integrated Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRO A6-8570E</td>
<td>2</td>
<td>3.0 / 3.4 GHz</td>
<td>1 MB</td>
<td>DDR4-2400</td>
<td>Radeon R5 Series</td>
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<tr>
<td>PRO A10-8770E</td>
<td>4</td>
<td>2.8 / 3.5 GHz</td>
<td>2 MB</td>
<td>DDR4-2400</td>
<td>Radeon R7 Series</td>
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<tr>
<td>PRO A12-8770E*</td>
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<td>2.9 / 3.8 GHz</td>
<td>2 MB</td>
<td>DDR4-2400</td>
<td>Radeon R7 Series</td>
</tr>
</tbody>
</table>

*PRO A12-8770E (support Windows 10 IoT only) is only available via special bid models

### Memory

- 4GB max, DDR4 2400, two 260-pin SO-DIMM sockets

### Disk

- Some: 256GB Solid State Drive (SSD) / SATA 6.0Gb/s, 2.5"*
- Some: 32GB M.2 Solid State Drive (SSD) / SATA interface
- Some: 128GB M.2 Solid State Drive (SSD) / PCIe NVMe interface
- None
- One SATA cable (1-drop to device), one SATA 6.0Gb/s connector on planar
- None

### Optical

- None

### Onboard SATA

- One SATA cable (1-drop to device), one SATA 6.0Gb/s connector on planar
- None

### Graphics

- AMD Radeon™ Graphics
- DisplayPort™: one optional port (HDMI, VGA, or 3rd DP), supports 3 independent displays (supports maximum of 2 concurrent HDMI/DVI displays when using HDMI port or DP to DVI/HDMI dongles):
  - Max resolution: 4906x2160 (DP)@60Hz; 4096x2160 (HDMI)@30Hz; 1920x1200 (VGA)@60Hz
- Optional DP to VGA, DP to DVI-D (single link), or DP to HDMI 1.4 dongle

### Chipset

- AMD B300 Chipset

### Front ports*

- Two USB 3.0 (one is Always On and fast charge), one microphone (stereo, 3.5mm), one headphone / microphone combo jack (stereo, 3.5mm)

### Rear ports*

- One USB 3.0 and three USB 2.0 (optional external optical box or I/O box occupies one specific USB 2.0 on some models), ethernet (RJ-45), two DisplayPort, one optional port (VGA, 3rd DP, HDMI, or serial on some models), one headphone

### I/O box

- None

### Audio support

- High Definition (HD) Audio, Realtek ALC233-CG / internal speaker (1.5 watt)

### LAN

- Some: 11ac wireless, M.2 Card, Realtek RTL8821AE (dual band), Wi-Fi + Bluetooth 4.0 combo adapter, 1x1

### Bluetooth

- Some: Bluetooth 4.0 or 4.1 wireless, integrated in Wi-Fi + BT combo adapter

### Ethernet Mode

- Gigabit ethernet, Realtek RTL8111E PV, Wake on LAN

### Manageability

- DASH 1.0/1.1
- Discrete TPM 2.0, TCG Certified
- Smart USB protection, allows keyboard/mouse only, blocks all storage devices
- Power-on password

### Security chip

- Discrete TPM 2.0, TCG Certified
- Security slot (in rear for optional Kensington® MicroSaver® cable)
- Padlock loop
- Smart USB port disablement
- Chassis intrusion switch

### Security features

- Administrator password
- Hard disk password
- Boot sequence control
- Individual USB port disablement

### Keyboard

- Some: Fullsize USB Keyboard (USB connector), Lenovo logo

### Mouse

- Some: USB Optical Wheel Mouse, black, Lenovo logo

### Mechanical

- Tiny (1L), black color; metal case
- M715 Tiny only:
  - 7.05" W X 7.20" D X 1.36" H
  - 179mm W X 182.9mm D X 34.5mm H
  - 2.9 lb (1.3 kg), weight may vary by configuration

### VESA mount

- Optional VESA mount bracket kit, supports VESA 75mm and 100mm

### Floor Stand

- Optional system floor stand for vertical orientation

### Power supply

- 65 watts AC/DC adapter, autosensing, 88% PSU (not included for TIO models)

### Limited warranty

- Some: 1-year or 3-year, depot service / service upgrades available
- Some: 1-year or 3-year, limited onsite service / service upgrades available

### Preload

- **Preloaded operating system**
  - Some: Windows Embedded Standard 7 V2 (WES 7 V2)
  - Some: Windows 10 IoT Enterprise
  - Some: LeTOS V2 (Lenovo Terminal Operating System, Linux-based)

### Environment

- ENERGY STAR® 6.1*, EPEAT™ Gold rating* (*not for non-OS models); ErP Lot 3; GREENGUARD®; RoHS-compliant

### Accessories

- For compatible accessories, please go to [http://www.lenovoquickpick.com](http://www.lenovoquickpick.com)

Lenovo, October 2017
**ThinkCentre M715 Tiny Thin Client (2nd Gen) Platform Specifications**

**Product Specifications Reference (PSREF)**

<table>
<thead>
<tr>
<th>Processor</th>
<th>AMD Athlon, A6, A10, or Ryzen processor</th>
</tr>
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<tbody>
<tr>
<td>APU</td>
<td>Athlon PRO 200GE, PRO A6-8570E, PRO A10-8770E, Ryzen PRO 2200GE</td>
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<tr>
<td>Cores / Threads</td>
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<tr>
<td>Integrated Graphics</td>
<td>Radeon Vega 3</td>
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</tbody>
</table>

**Memory**

8GB max, DDR4 2666*2, two 260-pin SO-DIMM sockets, dual-channel capable
* System automatically clocks down for the lower memory controller

**Disk**

Some: 32GB M.2 Solid State Drive (SSD) / SATA interface
Some: 128GB M.2 Solid State Drive (SSD) / PCIe NVMe, PCIe 3.0 x 2
None

One SATA cable (1-drop to device), one SATA 6.0Gb/s connector on planar

**Optical Onboard SATA**

Some: WiFi + Bluetooth 4.2 wireless, integrated in Wi-Fi + BT combo adapter
Some: Bluetooth 4.2 wireless, integrated in Wi-Fi + BT combo adapter

**Graphics**

Radeon R7, Radeon R5, Radeon Vega 3, Radeon Vega 8

**Monitor cable**

Optional DP to VGA dongle, DP to DVI-D dongle, or DP to HDMI 1.4 dongle

**Chipset**

AMD B300 Chipset

**WLAN**

Some: 11ac wireless, M.2 Card, Realtek RTL8821CE (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 1x1
Some: 11ac wireless, M.2 Card, Qualcomm Atheros QCA9377 (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 1x1
Some: 11ac wireless, M.2 Card, Realtek RTL8822BE (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 2x2
Some: 11ac wireless, M.2 Card, Qualcomm Atheros QCA6174A (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 2x2

**Bluetooh Ethernet**

Some: Bluetooth 4.2, but Win10 RS3 and earlier only supports BT 4.1

**Audio support**

High Definition (HD) Audio, Realtek ALC233-VB2 / internal speaker (1.5 watt)

**Manageability**

DASH 1.0/1.1, Discrete TPM 2.0, TCG Certified

**Security chip**

Security slot (in rear for optional Kensington* MicroSaver* cable)

**Security features**

- Administrator password
- Hard disk password
- Boot sequence control
- Boot without keyboard and mouse
- Individual USB port disablement
- Chassis intrusion switch

**Mechanical**

Tiny (1L), black color; metal case
- **Note:** The specifications above may not be available in all regions.

**Power supply**

65 watts AC/DC adapter, autosensing, 88% PSU (not included for TIO models)

**VESA mount**

Optional VESA mount bracket kit, supports VESA 75mm and 100mm

**Floor Stand**

Optional system floor stand for vertical orientation

**Environment**

ENERGY STAR® 6.1*, EPEAT Gold rating* (*not for non-OS models);
ErP Lot 3; RoHS-compliant

**Preload**

Windows Embedded Standard 7 V2 (WES 7 V2)
Windows 10 IoT Enterprise
LeTOS V2 (Lenovo Terminal Operating System, Linux-based)
LeFOS V2

**Limited warranty**

1-year or 3-year, limited onsite service / service upgrades available

**For compatible accessories, please go to [http://smartfind.lenovo.com](http://smartfind.lenovo.com)**

Note: The specifications above may not be available in all regions.

Lenovo, July 2018
**ThinkCentre M720 SFF Platform Specifications**

**Product Specifications Reference (PSREF)**

<table>
<thead>
<tr>
<th>Processor</th>
<th>Intel® Celeron®, Intel® Pentium®, or 8th Generation Intel® Core™ i3 / i5 / i7 Processor</th>
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</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Intel® Celeron® G4900 2 / 2 3.1G 2 MB DDR4-2400 UHD 610</td>
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<td></td>
<td>Intel® Celeron® G4920 2 / 2 3.2G 2 MB DDR4-2400 UHD 610</td>
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<td>Pentium® Gold G5400 2 / 4 3.7G 4 MB DDR4-2400 UHD 630</td>
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<td></td>
<td>Pentium® Gold G5500 2 / 4 3.6G 4 MB DDR4-2400 UHD 630</td>
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<td>Pentium® Gold G5600 2 / 4 3.9G 4 MB DDR4-2400 UHD 630</td>
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<td>Core i3-8100 4 / 4 3.6G 6 MB DDR4-2400 UHD 630</td>
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<td>Core i3-8300 4 / 4 3.7G 8 MB DDR4-2400 UHD 630</td>
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<td>Core i5-8600 6 / 6 3.1G / 4.3G 9 MB DDR4-2400 UHD 630</td>
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<td>Core i7-8700 4 / 4 3.2G / 4.6G 12 MB DDR4-2400 UHD 630</td>
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<td>Core i7-9700 8 / 8 3.0G / 4.7G 12 MB DDR4-2400 UHD 630</td>
</tr>
<tr>
<td></td>
<td>Core i9-9900 8 / 16 3.1G / 5.0G 16 MB DDR4-2400 UHD 630</td>
</tr>
</tbody>
</table>

**Memory**

- 464GB max, UDIMM, DDR4-2666, 4288-pin DIMM sockets, non-ECC, dual-channel capable*
  - *System automatically clocks down for the processors with lower memory controller

**Storage**

- **Some:** Hard Drive / SATA 6.0Gb/s, 2.5" or 3.5", 5400 rpm or 7200 rpm
- Solid State Drive (SSD) / SATA 6.0Gb/s, 2.5"
- **Some:** M.2 Solid State Drive (SSD) / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s
- **Some:** M.2 SSD (2242) PCIe NVMe only supports PCIe 3.0 x 2, 16Gb/s

**Optical**

- **Some:** Intel Optane™ Memory (not support Celeron / Pentium Processor), M.2
- **Some:** DVD-ROM Sata 1.5Gb/s Drive, slim (9.0mm)
- **Some:** DVD Burner (DVD±RW), SATA 1.5Gb/s Drive, slim (9.0mm)

**Onboard SATA Media reader**

- Optional 7-in-1 media reader

**Graphics**

- Intel UHD Graphics 610/630 in processor, uses main memory, DirectX® 12, one VGA, two DisplayPort™
- Supports independent displays, works along with discrete graphics to support more displays;
  - **Max resolution:** 4096x2304 (DP) @ 60Hz; 2048x1536 (VGA) @ 50Hz
  - **Some:** NVIDIA GeForce® GT 730, DirectX 12, 2GB, PCIe 2.0 x16 adapter, two DisplayPort, 35 watts.
  - **Max resolution:** 3840x2160 (DisplayPort) @ 60Hz;
- Optional DP to VGA dongle, DP to DVI-D dongle, DP to dual DP dongle (for Collage Display with intel integrated graphics), or DP to HDMI 1.4 dongle

**Monitor cable**

- **Some:** Optional 2x USB 3.1 Type-C, 2x USB 3.1 Type-C
- Optional 2x USB 3.1 Type-C Gen1 via PCIE x1**, 2x USB 3.1 Type-C Gen2 via PCIE x4** (special bid only), 1x 2nd serial (9-pin), 4x 9-pin (via PCIE x1, 1x parallel (25-pin), 2x PS/2 ports (keyboard/mouse), additional RJ-45 and video ports available on optional graphics or ethernet card
- **Depending on many factors, actual data transfer speed may be lower than theoretical speed**
  - **Choose either 2x USB 3.1 Gen1 or 2x USB 3.1 Type-C Gen2**

**Audio support**

- High Definition (HD) Audio, Realtek ALC232VB / internal speaker (2 watt)

**WLAN**

- **Some:** 11ac wireless, M.2 Card, Realtek RTL8821CE (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 1x1
- **Some:** 11ac wireless, M.2 Card, Realtek RTL8822BE (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 2x2

**Bluetooth™**

- **Some:** Bluetooth 4.2 wireless, integrated in Wi-Fi + BT combo adapter

**Ethernet**

- **Ethernet (Opt.)**
  - Gigabit ethernet, Intel Ethernet Connection I219-V (Jacksonville), Wake on LAN®
  - **Some:** Intel Ethernet Server Adapter I350-T4®, gigabit ethernet, 4x RJ-45, PCIe x4
  - **Some:** Bitland BN8E88®, gigabit ethernet, PCIe x1 (only available via special bid)
  - **Choose either I350-T4 or BN8E88**

**Manageability**

- Security chip
  - **Security features:** None
  - **Security features:** Discrete TPM 2.0, TCG Certified
  - **Security features:** Power-on password
  - **Security features:** Administrator password
  - **Security features:** Hard disk password
  - **Security features:** Boot sequence control
  - **Security features:** Boot without keyboard and mouse
  - **Security features:** Individual USB port disablement
  - **Security features:** Smart USB protection, allows keyboard/ mouse only, blocks all storage devices

**Keyboard**

- **Some:** Lenovo Calliope Keyboard (USB connector), black
- **Some:** Lenovo Traditional Keyboard (USB connector), black
- **Some:** Lenovo Calliope Wireless Keyboard (2.4GHz via USB receiver), black
- **Some:** Lenovo Calliope Mouse (USB connector), black
- **Some:** Lenovo Fingerprint Mouse (USB connector), Windows Hello support, black
- **Some:** Lenovo Calliope Wireless Mouse (2.4GHz via USB receiver), black
- **Some:** Lenovo Mouse (PS/2 connector), black (only available via special bid)

**Mouse**

- **Some:** Lenovo Calliope Mouse (USB connector), Windows Hello support, black
- **Some:** Lenovo Calliope Wireless Mouse (2.4GHz via USB receiver), black
- **Some:** Lenovo Mouse (PS/2 connector), black (only available via special bid)

**Mechanical**

- **Some:** SFF (8.4L), black color; metal case
- **Some:** Wx(DxH) 3.64" x 11.44" x 13.52", 92.5mm X 290.5mm X 343.5mm
- **Some:** Approx. 13.24 lb (6.0 kg), weight may vary by configuration
- **Some:** Toolless cover, disk, optical, and extension card removal
- **Some:** Optional dust filter
  - **Some:** Bay 1: Slim external ODD bay
  - **Some:** Bay 2: 3.5", 1x high, internal, HDD/SSD
  - **Some:** Bay 3: 2.5", internal, HDD/SSD (optional bay)
  - **Some:** Slot 1: low-profile (length < 147mm, height < 68.9mm), PCIe 3.0 x16
  - **Some:** Slot 2: low-profile (length < 147mm, height < 68.9mm), PCIe 3.0 x16
  - **Some:** Slot 3: low-profile (length < 147mm, height < 68.9mm), PCIe 3.0 x16
  - **Some:** Slot 4: no slot, only bracket for optional port extension
  - **Some:** M.2 card slots: Two (one for WLAN, one for SSD/Opante)

**Floor Stand**

- Optional system floor stand for vertical orientation

**Power supply**

- **Some:** 180 watts, autosing, 85% PSU
- **Some:** 210 watts, autosing, 85% PSU
- **Some:** 260 watts, autosing, 92% PSU (only available via special bid)

**Limited warranty**

- **Some:** 1-year or 3-year, depot service / service upgrades available
- **Some:** 3-year or 3-year, limited onsite service / service upgrades available

**Preload**

- **Preloaded operating system**
  - **Some:** Windows® 10 Home 64-bit
  - **Some:** Windows® 10 Pro 64-bit
- **Preloaded applications (only some listed)**
  - **Some:** Lenovo Vantage
  - **Some:** Microsoft Office preloaded;
  - **Some:** purchase a product key to activate
  - **Some:** Cyberlink PowerDVD (only for models with DVD / DVDs/RW)
  - **Some:** Cyberlink Power2Go (only for models with DVD / DVDs/RW)
  - **Some:** LinkedIn

**Environment**

- ENERGY STAR® 6.1, EPEAT™ Gold rating (North America), ErP Lot 3, TCO, TUV low noise verified (coming soon, on some models), RoHS-compliant

**Accessories**

- For compatible accessories, please go to [http://smartfind.lenovo.com](http://smartfind.lenovo.com)

*Note: The specifications above may not be available in all regions.*

Lenovo, June 2019
### Processor

<table>
<thead>
<tr>
<th>Processor</th>
<th>Intel® Celeron™, Intel Pentium™, or 8th Generation Intel® Core™ i3 / i5 / i7 Processor</th>
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</thead>
<tbody>
<tr>
<td>Cores / Threads</td>
<td>Frequency Base/Max(GHz)</td>
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<td>Core i9-9900T</td>
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</tbody>
</table>

### Memory

- 32GB max, DDR4-2666*, two 260-pin SO-DIMM sockets, non-ECC, dual-channel capable
- * System automatically clocks down for the processors with lower memory controller

### Storage

- Some: Hard Drive / SATA 6.0Gb/s, 2.5", 5400 rpm or 7200 rpm
- Some: Solid State Drive (SSD) / SATA 6.0Gb/s, 2.5" with Intel® Optane™ Memory
- Some: M.2 SSD / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s
- * 128GB SSD M.2 (2242) PCIe NVMe only supports PCIe 3.0 x 2, 16Gb/s
- Some: Intel Optane™ Memory (not support Celeron / Pentium Processor), M.2 DVD-ROM, slim (9.0mm), via USB external ODD box
- Some: DVD Burner (DVD±RW), slim (9.0mm), via USB external ODD box

### Optical

- Intel HD Graphics 610/630 in processor, uses main memory, DirectX® 12, one DisplayPort®, one HDMI, one optional video port (2nd HDMI, VGA, 2nd DP, or USB 3.1 Type-C Gen1 with DisplayPort function), up to 3 independent displays; Max resolution: 4096x2304 (DP) @ 60Hz; 4096x2304 (Type-C) @ 60Hz
- 4096x2160 (onboard HDMI) @ 24Hz; 2048x1536 (VGA) @ 50Hz
- Optional DP to VGA dongle, DP to DVI-D dongle, DP to dual DP dongle (for Collage Display with intel integrated graphics), or DP to HDMI 1.4 dongle

### Monitor cable

- Intel B360 Chipset

### Chipset

- Front ports (Std.) one USB 3.1 Gen1 (Always On and fast charge), one USB 3.1 Type-C Gen 1, one microphone (3.5mm), one headphone / microphone combo jack (3.5mm)
- Rear ports (Opt.) two optional ports (mutually exclusive with PCIe card): Port 1 for VGA / 2nd DP / 2nd HDMI / serial / USB 3.1 Type-C Gen 1 with DP function); Port 2 for serial; Optional ports via PCIe card: 2x USB 3.1 Gen1 via PCIe x1, 4x serial (9-pin) via PCIe x1
- * Depending on many factors, actual data transfer speed may be lower than theoretical speed

### Audio support

- Realtek ALC233VB2 / optional internal speaker (1.5 watt or 2 watt)

### WLAN

- Some: 11ac wireless, M.2 Card, Realtek RTL8822CE (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 1x1
- Some: 11ac wireless, M.2 Card, Realtek RTL8822BE (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 2x2
- Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 3165, Wi-Fi + Bluetooth 4.2 combo adapter, 1x1
- Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 8265, Wi-Fi + Bluetooth 4.2 combo adapter, 2x2

### Bluetooth

- Some: Bluetooth 4.2 wireless, integrated in Wi-Fi + BT combo adapter

### Ethernet

- Some: Gigabit ethernet, Intel Ethernet Connection i219-V (Jacksonville), Wake on LAN®, Ethernet (Opt.)
- Some: Intel Ethernet Server Adapter I350-T4, gigabit ethernet, 4x RJ-45, PCIe x4

### Manageability

- Security chip
- Security features
  - None
  - Discrete TPM 2.0, TCG Certified
  - Security slot (in rear for optional Kensington® MicroSaver® cable)
  - Chassis intrusion switch
  - Power-on password
  - Administrator password
  - Hard disk password
  - Boot sequence control
  - Boot without keyboard and mouse
  - Individual USB port disablement
  - Smart USB protection, allows keyboard/ mouse only, blocks all storage devices

### Keyboard

- Some: Lenovo Calliope Keyboard (USB connector), black
- Some: Lenovo Traditional Keyboard (USB connector), black
- Some: Lenovo Calliope Wireless Keyboard (2.4GHz via USB receiver), black
- Some: Lenovo Calliope Mouse (USB connector), black
- Some: Lenovo Fingerprint Mouse (USB connector), Windows Hello support, black
- Some: Lenovo Calliope Wireless Mouse (2.4GHz via USB receiver), black

### Mouse

- Some: Lenovo Calliope Wireless Mouse (USB connector), black
- Some: Lenovo Calliope Mouse (USB connector), black

### Mechanical

- Tiny (11L), black color; metal case
- Toleless chassis open (need optional toleless chassis screw)
- Toleless HDD, SSD, memory removal
- Optional dust filter

- one 2.5" bay for HDD/SSD, one PCIe 3.0 x 8 slot (low-profile), two M.2 slots (one for WLAN, one for M.2 SSD), 2.5" HDD/SSD and PCIe card are mutually exclusive

### VESA mount

- Floor Stand
  - Optional VESA mount bracket kit, supports VESA 75mm and 100mm
  - Optional system floor stand for vertical orientation

### Power supply

- Some: 65 watts AC/DC adapter, autosensing, 88% PSU
- Some: 90 watts AC/DC adapter, autosensing, 88% PSU
- Some: 135 AC/DC adapter, autosensing, 88% PSU

### Limited warranty

- Some: 1-year or 3-year, depot service / service upgrades available
- Some: 1-year or 3-year, limited onsite service / service upgrades available

### Preload

- Preloaded operating system
  - Some: Windows® 10 Pro 64-bit
  - Some: Windows 10 Home 64-bit
- Preloaded applications (only some listed)
  - Lenovo Vantage
  - Microsoft Office preloaded;
  - purchase a product key to activate
  - Cyberlink PowerDVD (only for models with DVD / DVD±RW)
  - Lenovo PowerGO (only for models with DVD±RW)
  - LinkedIn

### Environment

- ENERGY STAR® 7.0, EPEAT® Gold rating (North America), ErP Lot 3, TCO, TUV ultra low noise verified (coming soon, on some models), RoHS-compliant

### MIL-STD test

- MIL-STD-810G military certification (Low Pressure [Altitude], High Temperature, High Temperature Humidity, Sand and Dust, Vibration, Shock, Fungus, Solar Radiation)

### Accessories

- For compatible accessories, please go to http://smartfind.lenovo.com

Note: The specifications above may not be available in all regions.

Lenovo, June 2019
ThinkCentre M720 Tower Platform Specifications

### Processor

<table>
<thead>
<tr>
<th>Processor</th>
<th>Intel® Celeron®, Intel Pentium®, or 8th Generation Intel Core™ i3 / i5 / i7 Processor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Celeron G4900</td>
<td>2 / 2</td>
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<tr>
<td>Celeron G4920</td>
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<tr>
<td>Pentium Gold G5400</td>
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<tr>
<td>Pentium Gold G5500</td>
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<tr>
<td>Core i3-8100</td>
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<td>Core i3-8300</td>
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<tr>
<td>Core i5-8400</td>
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<tr>
<td>Core i7-9700</td>
<td>8 / 8</td>
</tr>
<tr>
<td>Core i9-9900</td>
<td>8 / 16</td>
</tr>
</tbody>
</table>

### Memory

- 64GB max, UDIMM, DDR4-2666*, four 288-pin DIMM sockets, non-ECC, dual-channel capable
- * System automatically clocks down for the processors with lower memory controller

### Storage

- Some: Hard Drive / SATA 6.0GB/s, 2.5" or 3.5", 5400 rpm or 7200 rpm
- Some: Solid State Drive (SSD) / SATA 6.0GB/s, 2.5"
- Some: M.2 Solid State Drive (SSD) / PCIe NVMe, PCIe 3.0 x 4*, 32Gb/s
- * 128GB SSD M.2 (2242) PCIe NVMe only supports PCIe 3.0 x 2, 16GB/s

### Optical

- Some: Intel Optane™ Memory (not support Celeron / Pentium Processor), M.2
- Some: DVD-ROM SATA 1.5Gb/s Drive, slim (9.0mm)
- Some: DVD Burner (DVD±RW), SATA 1.5Gb/s Drive, slim (9.0mm)

### Onboard SATA Media reader

- Optional 7-in-1 media reader

### Graphics

- Intel UHD Graphics 610/630 in processor, uses main memory, DirectX® 12, 1 VGA, two DisplayPort™ supports 3 independent displays, works along with discrete graphics to support more displays; *Max resolution*: 4096x2304 (DP) @ 60Hz; 2048x1536 (VGA) @ 50Hz
- Some: NVIDIA GeForce® GT 730, DirectX® 12, 2XGB, PCIe 2.0 x16 adapter, two DisplayPort, 35 watts.
- Max resolution: 3840x2160 (DisplayPort) @ 60Hz

### Monitor Cable

- Optional DP to VGA dongle, DP to DVI-D dongle, DP to dual DP dongle (for Collage Display with intel integrated graphics), or DP to HDMI 1.4 dongle

### Chipset

- Intel B360 Chipset

### Front ports

- (Std.) 2x USB 3.1 Gen2, 2x USB 3.1 Gen1, 1x USB 3.1 Type-C Gen1 (15W charging), 1x microphone (3.5mm), 1x headphone / microphone combo jack (3.5mm)
- (Opt.) Optional: 1x media reader

### Rear ports

- (Std.) 4x USB 2.0, 1x serial (9-pin), 1x ethernet (RJ-45), 1x VGA, 2x DisplayPort, 1x line-out (3.5mm)
- (Opt.) Optional: 2x USB 3.1 Gen1 via PCIe x1**, 2x USB 3.1 Type-C Gen2 via PCIe x4** (special bid only), 1x 2nd serial (9-pin), 4x serial (9-pin) via PCIe x1, 1x parallel (25-pin), 2x PS/2 ports (keyboard/mouse), additional RJ-45 and video ports available on optional graphics or ethernet card
- ** Choose either 2x USB 3.1 Gen1 or 2x USB 3.1 Type-C Gen2

### Audio support

- High Definition (HD) Audio, Realtek ALC232VB / internal speaker (2 watt)

### WLAN

- Some: 11ac wireless, M.2 Card, Realtek RTL88821CE (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 1x1
- Some: 11ac wireless, M.2 Card, Realtek RTL8822BE (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 2x2
- Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 3165, Wi-Fi + Bluetooth 4.2 combo adapter, 1x1
- Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 8265, Wi-Fi + Bluetooth 4.2 combo adapter, 2x2
- Some: Bluetooth 4.2 wireless, integrated in Wi-Fi + BT combo adapter

### Ethernet

- Gigabit ethernet, Intel Ethernet Connection I219-V (Jacksonville), Wake on LAN®
- Some: Intel Ethernet Server Adapter I350-T4®, gigabit ethernet, 4x RJ-45, PCIe x4
- Some: Bilitand BNN68®, gigabit ethernet, 1x RJ-45, PCIe x1 (special bid only)
- Choose either I350-T4 or BNN68

### Manageability

- Security chip
- Security features:
  - Discrete TPM 2.0, TCG Certified
  - Security slot (in rear for optional Kensington® MicroSaver® cable)
  - Padlock loop
  - Optional cable lock to physically lock both keyboard and mouse
  - Optional chassis intrusion switch
  - Optional chassis E-Lock (special bid)

### Keyboard

- Some: Lenovo Calliope Keyboard (USB connector), black
- Some: Lenovo Traditional Keyboard (USB connector), black
- Some: Lenovo Calliope Wireless Keyboard (2.4GHz via USB receiver), black

### Mouse

- Some: Lenovo Keyboard (PS/2 connector), black (only available via special bid)
- Some: Lenovo Calliope Mouse (USB connector), black
- Some: Lenovo Fingerprint Mouse (USB connector), Windows Hello support, black

### Mechanical

- Tower (15L), black color, metal case
- (WxDxH): 5.91" X 10.65" X 14.17", 150mm X 270.5mm X 360mm
- Approx. 15.21 lb (6.9 kg), weight may vary by configuration
- Optional dust filter:
  - Bay 1: Slim external ODD bay
  - Bay 2: 3.5", 1 high, internal, HDD/SSD
  - Bay 3: 3.5", 1 high, internal, HDD/SSD (optional bay)
- Slot 1: half-height full-height (length < 189mm, height < 104mm), PCIe 3.0 x16
- Slot 2: half-height full-height (length < 189mm, height < 104mm), PCIe 3.0 x1
- Slot 3: half-height full-height (length < 189mm, height < 104mm), PCIe 3.0 x1
- Slot 4: no slot, only bracket for optional port extension
- M.2 card slots: Two (one for WLAN, one for SSD/Optane)

### Power supply

- Some: 180 watts, autosensing, 85% PSU
- Some: 260 watts, autosensing, 92% PSU (only available via special bid)

### Limited warranty

- Some: 1-year or 3-year, depot service / service upgrades available
- Some: 1-year or 3-year, limited onsite service / service upgrades available

### Preload

- Preloaded operating system:
  - Lenovo Vantage
  - Microsoft Office preloaded;
  - purchase a product key to activate

### Environment

- ENERGY STAR® 6.1, EPEAT™ Gold rating (North America), ErP Lot 3, TC0, TUV low noise verified (coming soon, on some models), RoHS-compliant

### Accessories

- For compatible accessories, please go to http://smartfind.lenovo.com

Note: The specifications above may not be available in all regions.

Lenovo, June 2019
**ThinkCentre M725 SFF Platform Specifications**

**Processor**
- AMD A6 / A8 / A10 / A12 and Ryzen 3 / 5 / 7 series processor
- Cores/Threads: 2/2, 4/4, 2/2, 4/4, 4/8, 4/4
- Frequency (Base/Max): 3.5 / 3.8 GHz, 3.1 / 3.4 GHz, 3.3 / 3.5 GHz, 3.4 / 3.8 GHz, 3.6 / 4.0 GHz
- Cache: 1MB, 2MB, 2MB, 2MB, 2MB
- Memory Support: Up to 8GB DDR4-2933, 8GB DDR4-2933, 8GB DDR4-2933, 8GB DDR4-2933, 8GB DDR4-2933
- Integrated Graphics: Radeon R5, Radeon R7, Radeon R7, Radeon R7, None

**Memory**
- 64GB max, UDIMM, DDR4-2666*, four 288-pin DIMM sockets, non-ECC, dual-channel capable
- DDR4-2933

**Graphics**
- AMD Radeon Graphics (only for some processors), uses main memory, DirectX 12, one VGA, two DisplayPort™ (Onboard VGA and DP ports are only available on the models with integrated graphics), supports 3 independent displays, works along with AMD graphics to support more displays; Max resolution: 4096x2160 (DP) @ 60Hz; 1920x1200 (VGA) @ 60Hz
- Some: NVIDIA GeForce® GT 730, DirectX 12, 2GB GDDR5, PCIe 2.0 x16 (x8, 4x)

**Optical**
- Some: DVD-ROM SATA 1.5GB/s Drive, slim (9.0mm)
- Some: DVD Burner (DVD+RW), SATA 1.5GB/s Drive, slim (9.0mm)

**Onboard SATA**
- Three onboard SATA 6.0Gb/s connectors, RAID 0/1 support (RAID preset only)

**Mechanical**
- M.2 card slots: two (one for WLAN, one for SSD)

**Stand**
- Optional system floor stand for vertical orientation

**Power Supply**
- Some: 110V, 115V, 120V, 220V, 230V, 240V input voltage
- Some: 180 watts, autosensing, 85% PSU
- Some: 210 watts, autosensing, 85% PSU
- Some: 260 watts, autosensing, 92% (only available via special bid)

**Audio Support**
- High Definition (HD) Audio, Realtek ALC662 / optional internal speaker (1 watt)

**WLAN**
- Some: 11ac wireless, M.2 Card, Realtek RTL8821CE (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 1x1
- Some: 11ac wireless, M.2 Card, Qualcomm Atheros QCA9377A (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 2x2
- Some: Bluetooth 4.2, wireless, integrated in Wi-Fi + BT combo adapter

**Security Chip**
- Security features: DASH 10/1.1, Discrete TPM 2.0, TCG Certified
- Security chip: Security slot (in rear for optional Kensington® MicroSaver® cable), Padlock loop, Smart USB protection, allows keyboard/mouse only, blocks all storage devices, Optional cable lock to physically lock both keyboard and mouse

**Power Management**
- Preload applications (only some listed):
  - Lenovo Vantage
  - Microsoft Office preloaded
  - Cyberlink PowerDVD (only for models with DVD / DVD+RW)
  - Cyberlink Power2GO (only for models with DVD+RW)
  - Linkedln

**Environment**
- ENERGY STAR® 7.0, EPEAT™ Gold rating* (*not for non-OS models), Energy Saver 4.0

**Accessories**
- For compatible accessories, please go to http://smartfind.lenovo.com

Note: The specifications above may not be available in all regions.

Lenovo, July 2018
### ThinkCentre M910 SFF Platform Specifications

#### Processor
- **Intel Celeron**, Intel Pentium, or 6/7th Generation Intel Core™ i3 / i5 / i7 Processor
- **Core i5-6500**: 4 / 4, 3.2G / 3.6G, 6 MB DDR4-2133, HD 530
- **Core i7-6700**: 4 / 8, 3.4G / 4.0G, 8 MB DDR4-2133, HD 530
- **Core i3-7300**: 2 / 4, 4.0G / --, 4 MB DDR4-2400, HD 630
- **Core i5-7400**: 4 / 4, 3.0G / 3.5G, 6 MB DDR4-2400, HD 630
- **Core i5-7500**: 4 / 6, 3.4G / 3.8G, 6 MB DDR4-2400, HD 630
- **Core i5-7600**: 4 / 4, 3.5G / 4.1G, 6 MB DDR4-2400, HD 630
- **Core i7-7700**: 4 / 8, 3.6G / 4.2G, 8 MB DDR4-2400, HD 630

#### Memory
- 64GB max, UDIMM, DDR4-2400*2, four 288-pin DIMM sockets, non-ECC, dual-channel capable
- * System automatically clocks down for the processors with lower memory controller

#### Storage
- **Some**: Hard Drive / SATA 6.0Gb/s, 2.5" or 3.5", 5400 rpm or 7200 rpm
- **Some**: Solid State Drive (SSD) / SATA 6.0Gb/s, 2.5"
- **Some**: M.2 Solid State Drive (SSD) / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s
- **Some**: Intel Optane™ Memory (with 7th gen Core processor), M.2
- **Some**: DVD-ROM SATA 1.5Gb/s Drive, slim (9.0mm)
- **Some**: DVD Burner (DVD±RW), SATA 1.5Gb/s Drive, slim (9.0mm)

#### Optical
- **Onboard SATA**: Four onboard SATA 6.0Gb/s connectors, RAID 0/1 support (RAID preset only available via special bid model)

#### Media reader
- Optional 7-in-1 media reader

#### Graphics
- Intel HD Graphics 510/530/610/630 in processor, uses main memory, DirectX® 12, one VGA, two DisplayPort*, supports 3 independent displays, works along with discrete graphics to support more displays;
- **Max resolution**: 4096x2304 (DP) @ 60Hz; 2048x1536 (VGA) @ 50Hz
- **Some**: NVIDIA GeForce® GT 730, DirectX 12, 2GB, PCIe 2.0 x8 adapter, two DisplayPort, 35 watts;
- **Max resolution**: 3840x2160 (DisplayPort) @ 60Hz;
- Optional DP to VGA, DP to DVI-D (single link), DP to dual DP, or DP to HDMI 1.4

#### Chipset
- **Intel® Q270 Chipset**

#### Front ports*
- Four USB 3.1 Gen1, optional two USB 3.1 Type-C Gen 2 (only available via special bid)
- microphone (3.5mm), headphone (3.5mm)

#### Rear ports*
- Four USB 3.1 Gen1, optional two USB 2.0, serial (9-pin), optional 2nd serial (9-pin), optional parallel (25-pin), Ethernet (RJ-45), one VGA, two DisplayPort, optional two PS/2 ports (keyboard/mouse);
- additional DisplayPort on optional graphics on some models
- Line-in (3.5mm), line-out (3.5mm), microphone-in (3.5mm)
- * Depending on many factors, actual data transfer speed may be lower than theoretical speed

#### Audio support
- High Definition (HD) Audio, Realtek ALC662 / optional internal speaker (1.5 watt)

#### WLAN
- **Some**: 11ac wireless, M.2 Card, Qualcomm Atheros QCA9377A (dual band), Wi-Fi + Bluetooth 4.1 combo adapter, 1x1
- **Some**: 11ac wireless, M.2 Card, Qualcomm Atheros QCA6174A (dual band), Wi-Fi + Bluetooth 4.1 combo adapter, 2x2
- **Some**: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 3165, Wi-Fi + Bluetooth 4.1 combo adapter, 1x1
- **Some**: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 8265, Wi-Fi + Bluetooth 4.1 combo adapter, 2x2
- **Some**: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 8265, Wi-Fi + Bluetooth 4.1 combo adapter, Intel vPro technology support, 2x2
- **Some**: Bluetooth 4.1 wireless, integrated in Wi-Fi + BT adapter, Gigabit ethernet, Intel Ethernet Connection I219-LM(Jacksonville), Wake on LAN™ None

#### Bluetooth
- None

#### Manageability
- Intel Active Management Technology 11.0 (Intel AMT 11.0);
- Intel vPro technology on some models (require choosing a vPro-support Wi-Fi adapter to enable vPro function through wireless connection)
- TPM (Trusted Platform Module) 2.0, TCG Certified
- * Downgrade to TPM1.2 for the models with Win10 DG Win7 32 OS

#### Security chip
- Security features:
  - Security slot (in rear for optional Kensington® MicroSaver® cable)
  - **Power-on password**
  - Padlock loop
  - **Administrator password**
  - Smart USB protection, allows keyboard/mouse only, blocks all storage devices
  - **Hard disk password**
  - Optional cable lock to physically lock both keyboard and mouse
  - **Boot sequence control**
  - Boot without keyboard and mouse
  - **Individual USB port disablement**
  - Optional chassis intrusion switch

#### Keyboard
- **Some**: Lenovo Calliope Keyboard (USB connector), black
- **Some**: Lenovo Traditional Keyboard (USB connector), black
- **Some**: Lenovo Calliope Wireless Keyboard (2.4GHz via USB receiver), black

#### Mouse
- **Some**: Lenovo Calliope Mouse (USB connector), black
- **Some**: Lenovo Calliope Wireless Mouse (2.4GHz via USB receiver), black

#### Power supply
- **Some**: 180 watts, autosensing, 85% PSU
- **Some**: 210 watts, autosensing, 85% PSU
- **Some**: 210 watts, autosensing, 92% PSU (only available via special bid)

#### Limited warranty
- **Some**: 1-year or 3-year, depot service / service upgrades available
- **Some**: 1-year or 3-year, limited onsite service / service upgrades available

#### Preload
- **Preloaded operating system**
  - **Some**: Windows® 7 Professional 32/64 preinstalled downgrade rights in Windows 10 Pro 64-bit (not available with 7th Gen Intel processor)
  - **Some**: Windows 10 Pro 64-bit
  - **Some**: Windows 10 Home 64-bit

#### Preloaded applications (only some listed)
- Microsoft Office preloaded;
- purchase a product key to activate
- * Only for Window 7
- * Only for Window 10
- * Lenovo Companion
- * Lenovo Solution Center
- * Lenovo ThinkVantage Tools
- * Create Recovery Media
- * Adobe® Reader
- * Cyberlink PowerDVD Create (DVD±RW)

#### Environment
- ENERGY STAR® 6.1, EPEAT™ Gold rating (North America), EPR Lot 3, GREENGUARD®, RoHS-compliant, TÜV low noise verified (on some models)

#### Accessories
- For compatible accessories, please go to [http://www.lenovoquickpick.com](http://www.lenovoquickpick.com)

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*Note: The specifications above may not be available in all regions.*

Le Novembre, August 2017
## ThinkCentre M910 Tiny Platform Specifications

### Processor

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<th>Processor</th>
<th>Cores / Threads</th>
<th>Frequency Base/Max(GHz)</th>
<th>Cache</th>
<th>Memory Support (Up to)</th>
<th>Integrated Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core i5-6500T</td>
<td>4 / 4</td>
<td>2.50 / 3.1G</td>
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<td>DDR4-2133</td>
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<td>Core i7-6700T</td>
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<td>HD 630</td>
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<tr>
<td>Core i7-7600T</td>
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<td>2.60 / 3.7G</td>
<td>8 MB</td>
<td>DDR4-2400</td>
<td>HD 630</td>
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<tr>
<td>Core i7-7700T</td>
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<td>2.60 / 3.8G</td>
<td>8 MB</td>
<td>DDR4-2400</td>
<td>HD 630</td>
</tr>
</tbody>
</table>

### Security features
- Security slot (in rear for optional Kensington® MicroSaver® cable)
- Smart USB protection, allows keyboard/mouse only, blocks all storage devices
- Power-on password
- Administrator password
- Hard disk password
- Boot sequence control
- Boot without keyboard and mouse
- Individual USB port disablenment
- Chassis intrusion switch

### Memory
- 32GB max, DDR4-2400®, two 260-pin SO-DIMM sockets, non-ECC, dual-channel capable
- System automatically clocks down for the processors with lower memory controller

### Storage
- Some: Hard Drive / SATA 6.0Gb/s, 2.5", 5400 rpm or 7200 rpm, APS
- Some: Solid State Drive (SSD) / SATA 6.0Gb/s, 2.5"
- Some: M.2 Solid State Drive (SSD) / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s
- Some: Intel Optane™ Memory (models with 7th gen Core processor), M.2
- Some: DVD-ROM, slim (9.0mm), via USB external ODD box
- Some: DVD Burner (DVD±RW), slim (9.0mm), via USB external ODD box
- Some: Optional external I/O box, extends two USB 2.0, two USB 3.1 Gen1, and one serial port
- Optional DP to VGA, DP to DVI-D (single link), DP to dual DP, or DP to HDMI 1.4

### Optical
- Optical drive:
  - Some: DVD±RW (±R/-R) (up to 8x), DVD-RAM (±R) (up to 5x), M.2 DVD drive (M910 Tiny only)
  - Some: CD-ROM, slim (9.0mm), via USB external ODD box
  - Some: Two optical drive bays (M910 Tiny only)

### Graphics
- Intel HD Graphics 510/530/610/630
- Intel HD Graphics 500 / Intel HD 630
- Intel HD Graphics 530 / Intel HD 630
- Intel HD Graphics 630

### Monitor cable
- Rear ports:
  - Two USB 2.0, two USB 3.1 Gen1, one serial port, two USB 2.0 on front, via USB cable (occupy two specific USB 3.1 Gen1 of Tiny)
- I/O box:
  - Optional external I/O box, extends two USB 2.0, two USB 3.1 Gen1, and one serial port, two USB 2.0 on front, via USB cable (occupy two specific USB 2.0 of Tiny)

### Chipset
- Intel Q270 chipset

### Front ports
- Two USB 3.1 Gen1 (one is Always On and fast charge), one microphone (3.5mm), one headphone or microphone jack (3.5mm)

### Rear ports
- Four USB 3.1 Gen1 (one external optical drive or external I/O box occupies one or two specific USB 3.1 Gen1, four DisplayPort, two optional ports (Port 1 for VGA / 3rd DP / HDMI / serial / USB 3.1 Type-C Gen 1 (with DisplayPort Alternate Mode), Port 2 for serial)

### I/O box
- Optional external I/O box, extends two USB 2.0, two USB 3.1 Gen1, and one serial port, two USB 2.0 on front, via USB cable (occupy two specific USB 3.1 Gen1 of Tiny)

### Audio support
- High Definition (HD) Audio, Realtek ALC294 / optional internal speaker (1w or 2w)

### WLAN
- Some: 11ac wireless, M.2 Card, Qualcomm Atheros QCA9377A (dual band), 802.11a/b/g/n/ac
- Some: 11ac wireless, M.2 Card, Broadcom BCM94360CS2 (dual band), 802.11a/b/g/n/ac

### Bluetooth
- Some: Bluetooth 4.2 wireless, integrated in Wi-Fi + BT combo adapter
- * Hardware supports BT 4.2, but Win10 RS3 and earlier only supports BT 4.1

### Ethernet
- Gigabit ethernet, Intel Ethernet Connection (219-LM(Jacksonville), Wake on LAN

### Manageability
- Intel Active Management Technology 11.0 (Intel AMT 11.0)
- Intel vPro technology on some models (require choosing a vPro-support Wi-Fi adapter to enable vPro function through wireless connection)
- Security chip
  - TPM (Trusted Platform Module) 2.0®, TCG Certified
  - * Downgrade to TPM1.2 for the models with Win10 DG Win7 32 OS

### Power supply
- 65 watts AC/DC adapter, autosensing, 88% PSU (not included for TIO models)
- 90 watts AC/DC adapter, autosensing, 88% PSU (only for models with I/O box)

### Security chip
- Security slot (in rear for optional Kensington® MicroSaver® cable)
- Smart USB protection, allows keyboard/mouse only, blocks all storage devices
- Power-on password
- Administrator password
- Hard disk password
- Boot sequence control
- Boot without keyboard and mouse
- Individual USB port disablenment
- Chassis intrusion switch

### Mechanical
- Tiny (1L), black color; metal case
- Toolless chassis open
- Toolless HDD, SSD, memory removal
- Optional toolless chassis screw
- Optional dust filter

### Display
- Intel HD Graphics 510/530/610/630 in processor, uses main memory. DirectX® 12, two DisplayPort™, one optional video port (HDMI, VGA, 3rd DP, or USB 3.1 Type-C with DisplayPort Alternate Mode), up to 3 independent displays;
- Max resolution: 4096x2160 (DP) @ 60Hz, 4096x2304 (Type-C) @ 60Hz;
- 4096x2160 (HDMI) @ 24Hz, 1920x1200 (VGA) @ 60Hz;
- Optional DP to VGA, DP to DVI-D (single link), DP to dual DP, or DP to HDMI 1.4

### Preload
- Some: Windows® 7 Professional 32/64 bit with Service Pack 1 (not available with 7th Gen Intel processor)
- Preloaded applications (only some listed)
  - Microsoft Office preloaded
  - Create Recovery Media
  - Lenovo Companion
  - Intel Unite download link (vPro models only)
  - Only for Window 7

### Environment
- ENERGY STAR® 6.1, EPEAT® Gold rating (North America), ErP Lot 3, GREENGUARD®, RoHS-compliant, TUV low noise verified (on some models)

### MIL-SPEC test

### Accessories
- For compatible accessories, please go to http://www.lenovogoquickpick.com

See footnotes for more detailed information © Lenovo
#### ThinkCentre M910 Tower Platform Specifications

**Processor**

<table>
<thead>
<tr>
<th>Processor</th>
<th>Cores / Threads</th>
<th>Frequency Base/Max(GHz)</th>
<th>Cache</th>
<th>Memory Support (Up to)</th>
<th>Integrated Graphics</th>
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<td>3.6G / 4.2G</td>
<td>8 GB</td>
<td>DDR4-2400</td>
<td>HD 630</td>
</tr>
</tbody>
</table>

**Memory**

64GB max, UDIMM, DDR4-2400*, four 288-pin DIMM sockets, non-ECC, dual-channel capable

* System automatically clocks down for the processors with lower memory controller.

**Storage**

- Some: Hard Drive / SATA 6.0Gb/s, 2.5" or 3.5", 5400 rpm or 7200 rpm
- Some: Solid State Drive (SSD) / SATA 6.0Gb/s, 2.5"
- Some: M.2 B+M State Drive (SSD) / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s
- Some: Intel Optane™ Memory (models with 7th gen Core processor), M.2
- Some: Front accessible and removable HDD, 3.5", lockable via physical key
- Some: DVD-ROM, SATA 1.5Gb/s, 5.25" or slim (9.0mm)
- Some: Wi-Fi Burner (DVsD2F), SATA 1.5Gb/s, 5.25" or slim (9.0mm)

**Onboard SATA**

- Four onboard SATA 6.0Gb/s connectors (1x eSATA and 3x SATA), RAID 0/1 support (RAID preset only available via special bid model)

**Graphics**

**Intel HD Graphics 510/530/610/630** in processor, uses main memory, DirectX® 12, 128-bit. Two DisplayPort™, supports 3 independent displays, works along with discrete graphics to support more displays;

- **Max resolution:** 4096x2304 (DP) @ 60Hz; 2048x1366 (VGA) @ 50Hz
- **Some:** NVIDIA Gefore™ GT 730, DirectX 12, 2GB, PCIe 2.0 x8 adapter, two DisplayPort, 35 watts;
  - **Max resolution:** 3840x2160 (DisplayPort) @ 60Hz;
- **Some:** AMD Radeon™ R7 350, DirectX 11, 2GB, PCIe 3.0 x8 adapter, one VGA, one HDMI, 75 watts, occupies two slots;
  - **Max resolution:** 4096x2160 (HDMI) @ 24Hz; 2048x1366 (VGA) @ 85Hz
- **Some:** NVIDIA Gefore™ GTX 1080 (only available via special bid model),
  - **Max resolution:** 2560x1600 (DVI-D) @ 60Hz; 4096x2160 (HDMI) @ 60Hz
  - 7680x4320 (with Single DP) @ 60Hz

**Monitor Cable**

- Optional DP to VGA, DP to DVI-D (single link), DP to dual DP, or DP to HDMI 1.4

**Chipset**

- **Intel Q270 Chipset**

**Front ports**

- Four USB 3.1 Gen1, optional two USB 3.1 Type-C Gen 2 (only available via special bid), microphone (3.5mm), headphone (3.5mm)

**Rear ports**

- Four USB 3.1 Gen1, optional two USB 2.0, serial (9-pin), optional 2nd serial (9-pin), optional parallel (25-pin), ethernet (RJ-45), one VGA, two DisplayPort, optional two P2/2 ports (keyboard/mouse);
- **Some:** Intel HD Graphics 510/530/610/630, on Xeon/Intel Core processor models;
  - **Line-in (3.5mm), line-out (3.5mm), microphone-in (3.5mm)**
  - **None**
  - * Depending on many factors, actual data transfer speed may be lower than theoretical speed

**Audio support**

High Definition (HD) Audio, Realtek ALC662 / optional internal speaker (1.5 watt)

**WLAN**

- **Some:** 11ac wireless, M.2 Card, Qualcomm Atheros QCA9377A7 (dual band), Wi-Fi + Bluetooth 4.1 combo adapter, 2x2
- **Some:** 11ac wireless, M.2 Card, Qualcomm Atheros QCA6174A (dual band), Wi-Fi + Bluetooth 4.1 combo adapter, 2x2
- **Some:** 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 2965, Wi-Fi + Bluetooth 4.1 combo adapter, 2x2
- **Some:** 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 2965, Wi-Fi + Bluetooth 4.1 combo adapter, 2x2
- **Some:** 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 2965, Wi-Fi + Bluetooth 4.1 combo adapter, 2x2

**Bluetooh™**

- **Some:** Bluetooth 4.1 wireless, integrated in Wi-Fi + BT combo adapter

**Ethernet and Modem**

- Gigabit ethernet, Intel Ethernet Connection I219-LM(Jacksonville), Wake on LAN®
- None

**Manageability**

Intel Active Management Technology 11.0 (Intel AMT 11.0);
- Intel vPro technology on some models (requiring choosing a vPro-support Win-Fi adapter to enable vPro function through wireless connection);
- TPM (Trusted Platform Module) 2.0, TCG Certified
  - * Downgrade to TPM1.2 for the models with Win10 DG Win7 32 OS

**Security chip**

- Security slot (in rear for optional Kensington® MicroSaver® cable)
- *Power-on password
- *Administrator password
- Hard disk password
- Smart USB protection, allows keyboard/mouse only, blocks all storage devices
- Optional cable lock to physically lock both keyboard and mouse
- Optional chassis intrusion switch

**Keyboard**

- Some: Lenovo Calliope Keyboard (USB connector), black
- Some: Lenovo Traditional Keyboard (USB connector), black
- Some: Lenovo Calliope Wireless Keyboard (2.4GHz via USB receiver), black
- Some: Lenovo Calliope Mouse (USB connector), black

**Mouse**

- Some: Lenovo Calliope Wireless Mouse (2.4GHz via USB receiver), black

**Mechanical**

- Tower (18L), black color, metal case
- *Win&DxH) 6.5” X 12.65” X 16.15”; 165mm X 321.35mm X 410.25mm
- Approx. 15.45 lb (7 kg), weight may vary by configuration
- Touchless cover, disk, optical, graphic card removal
- Optional carry handle, dust filter

- Bay 1: Slim external odd bay
- Bay 2: 5.25", 1.6" high, external, ODD / optional front access HDD
  - **Some:** 3.5", 1" high, internal, HDD/SSD
- Bay 4: 3.5", 1" high, internal, HDD/SSD (optional bay, bay comes with disk)
- Bay 5: 2.5", internal, HDD/SSD (optional bay)

**Notes:**

- M910 Tower supports up to 3 SATA devices (ODD/HDD/SSD) and 1 eSATA device (front access HDD)
- Slot 1: full-length full-height (length < 268mm, height < 112mm), PCIe X3.0 x16
- Slot 2: full-length full-height (length < 268mm, height < 112mm), PCIe X3.0 x1
- Slot 3: full-length full-height (length < 268mm, height < 112mm), PCIe X3.0 x16 (x4 signal)
- Slot 4: no slot, only bracket for optional port extension
- M.2 card slots: Two (one for WLAN, one for SSD/Opante)
- Optional 2 front USB3.1 Type-C ports module occupies PCIe x16 (x4 signal) slot, optional rear 2x USB2.0 / parallel / 2nd serial occupies one expansion slot

**Power supply**

- Some: 180 watts, autoselecting, 85% PSU
- Some: 250 watts, autoselecting, 85% PSU
- Some: 400 watts, autoselecting, 92% PSU (only available via special bid)

**Limited warranty**

- **1-year or 3-year, depot service** / service upgrades available
- **1-year or 3-year, limited onsite service** / service upgrades available

**Preload**

**Preloaded operating system**

- Some: Windows® 10 Professional 32/64 preloaded through downgrade (not available with 7th Gen Intel processor)
- Some: Windows 10 Pro 64-bit
- Some: Windows 10 Home 64-bit

**Preloaded applications (only some listed)**

- Microsoft Office preloaded;
- purchase a product key to activate
- Only for Windows 10
- Lenovo Companion
- Only for Windows 7
- Lenovo Solution Center
- Lenovo ThinkVantage Tools
- Create Recovery Media
- Adobe® Reader®
- Cyberlink PowerDvd Create (DvD2RW)

**Environment**

- ENERGY STAR® 6.1, EPEAT® Gold rating (North America), ErP Lot 3, GRENGUARD®, RoHS-compliant,
  - TUV low noise verified (on some models)

**Accessories**

For compatible accessories, please go to [http://www.lenovoquickpick.com](http://www.lenovoquickpick.com)

Note: The specifications above may not be available in all regions.

Lenovo, August 2017
**ThinkCentre M910x Tiny Platform Specifications**

**Product Specifications Reference (PSREF)**

<table>
<thead>
<tr>
<th>Processor</th>
<th>Intel® Celeron®, Intel® Pentium®, or 6/7th Generation Intel® Core™ i3 / i5 / i7 Processor</th>
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</thead>
<tbody>
<tr>
<td>Cores / Threads</td>
<td>Frequency Base/Max(GHz)</td>
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<td>4 / 4</td>
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<tr>
<td>Core i7-7700</td>
<td>4 / 8</td>
</tr>
</tbody>
</table>

**Memory**

32GB max, DDR4-2400*, two 260-pin SO-DIMM sockets, non-ECC, dual-channel capable

* System automatically clocks down for the processors with lower memory controller

**Storage**

Some: Hard Drive / SATA 6.0Gb/s, 2.5", 5400 rpm or 7200 rpm, APS

Some: Solid State Drive (SSD) / SATA 6.0Gb/s, 2.5" (% 2.5" HDD/SSD and RX 460 graphics are mutually exclusive)

Some: M.2 SSD (support up to two M.2 SSD) / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s, RAID 0/1 support (RAID preset only available via special bid model)

Some: Intel Optane™ Memory (models with 7th gen Core processor), M.2

Some: DVD-ROM, slim (9.0mm), via USB external ODD box

Some: DVD Burner (DVD+RW), slim (9.0mm), via USB external ODD box

Onboard SATA Media reader

One onboard SATA 6.0Gb/s connector

**Graphics**

Intel HD Graphics 510/530/610/630 in processor, uses main memory. DirectX® 12, two DisplayPort™, one optional video port (HDMI, VGA, 3rd DP, or USB 3.1 Type-C with DisplayPort Alternate Mode), up to 3 independent displays;

Max resolution: 4096x2304 (HDMI)@60Hz; 1920x1200 (VGA)@60Hz

Some: AMD Radeon™ RX 460, DirectX 12, 4GB, PCIe 3.0 x8 adapter (low profile), four mini DisplayPort, 35 watts (TDP), up to 4 independent displays, works along with on-board DisplayPort to support up to 6 independent displays;

Max resolution: 5120x2880 (Type-C)@60Hz; 4096x2304 (HDMI)@60Hz

**Chipset cable**

Optional DP to VGA, DP to DVI-D, DP to dual DP, mini DP to DP, or DP to HDMI 1.4

**Chipset**

Intel Q270 Chipset

**Front ports**

Two USB 3.1 Gen1 (one is always On and fast charge), one microphone (3.5mm), one headphone / microphone combo jack (3.5mm)

**Rear ports**

Four USB 3.1 Gen1 (optional optical box or I/O box box occupies one or two specific USB 3.1 Gen1), ethernet (RJ-45), two DisplayPort, two ports (optional not available for the models with RX 460 graphics): Port 1 for [VGA / 3rd DP / HDMI / serial / USB 3.1 Type-C Gen1 with DisplayPort Alternate Mode]; Port 2 for [serial]

Optional external I/O box, extends two USB 2.0, two USB 3.1 Gen1, and one serial on rear, two USB 2.0 on front, via USB cable (occupy 2 specific USB 3.1 G1 of Tiny)

* Depending on many factors, actual data transfer speed may be slower than theoretical speed

**Audio support**

High Definition (HD) Audio, Realtek ALC294 / optional internal speaker (1W or 2W)

**WLAN**

Some: 11ac wireless, M.2 Card, Qualcomm Atheros QCA9377A (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 1x1

Some: 11ac wireless, M.2 Card, Qualcomm Atheros QCA6174A (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 2x2

Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 3165, Wi-Fi + Bluetooth 4.2 combo adapter, 1x1

Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 8265, Wi-Fi + Bluetooth 4.2 combo adapter, 2x2

Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 8265, Wi-Fi + Bluetooth 4.2 combo adapter, 2x2

Some: Bluetooth 4.2 wireless, integrated in Wi-Fi + BT combo adapter

* Hardware supports BT 4.2, but Win10 RS3 and earlier only supports BT 4.1

**Bluetooth**

**Security chip**

Security features

- Security slot (in rear for optional Kensington® MicroSaver® cable)
- Smart USB protection, allows keyboard / mouse only, blocks all storage devices
- Power-off password
- Administrator password

**Mechanical**

Tiny (1L), black color; metal case

- Touchless chassis open
- Touchless SSD, HDD, memory removal
- Optional touchless chassis screw
- Optional dust filter

**Power supply**

135 watts AC/DC adapter, autoselecting, 88% PSU

**Limited warranty**

Some: 1-year or 3-year depot service / service upgrades available

Some: 1-year or 3-year, limited onsite service / service upgrades available

**Preload**

Some: Windows® 7 Professional 32/64 preinstalled through downgrade rights in Windows 10 Pro 64-bit (not available with 7th Gen Intel processor)

Some: Windows 10 Pro 64-bit

Some: Windows 10 Home 64-bit

Some: Windows 10 Home 32-bit

Some: Windows 10 Pro 32-bit

Some: Windows 10 Pro 64-bit

Preloaded applications (only some listed)

- Microsoft Office preloaded; purchase a product key to activate
- Only for Windows 10
- Lenovo Companion
- Intel Unite download link (vPro models only)
- Only for Windows 7
- Lenovo Solution Center
- Lenovo ThinkVantage Tools
- Create Recovery Media
- Adobe® Reader®
- Cyberlink PowerDVD Create (DVD+RW)
- Intel Unite (vPro models only)

**Environmental**

ENERGY STAR® 6.1, EPEAT Gold rating (North America), ErP Lot 3, GREENGUARD®, RoHS-compliant, TUV low noise verified (on some models)

**MIL-STD test**

MIL-STD-810G military certification (Low Pressure [Altitude], High Temperature, Low Temperature, Temperature Shock, Humidity, Sand and Dust, Vibration, Shock, Fungus, Solar Radiation)

**Accessories**

For compatible accessories, please go to [http://www.lenovoupick.com](http://www.lenovoupick.com)
### Processor

<table>
<thead>
<tr>
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<th>Cache</th>
<th>Memory Support (Up to)</th>
<th>Integrated Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel® Celeron®, Intel® Pentium®, or 8th Generation Intel® Core™ 3 / 5 / 7 Processor</td>
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<td>3.1G</td>
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### Memory

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<th>Speed</th>
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<td>DDR4-2400</td>
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<tr>
<td>DDR4-2666</td>
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</table>

### Storage

- **Some:** Hard Drive / SATA 6.0Gb/s, 2.5" or 3.5", 5400 rpm or 7200 rpm
- **Some:** Solid State Drive (SSD) / SATA 6.0Gb/s, 2.5" or 3.5"
- **Some:** M.2 Solid State Drive (SSD) / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s
- **Some:** 128GB SSD M.2 (2242) PCIe NVMe only supports PCIe 3.0 x 2, 16Gb/s
- **Some:** Intel Optane™ Memory (not support Celeron / Pentium Processor), M.2
- **Some:** DVD-ROM, SATA 1.5Gb/s Drive, slim (9.0mm)
- **Some:** DVD Burner (DVD±RW), SATA 1.5Gb/s Drive, slim (9.0mm)
- **Some:** Onboard SATA: 4 x 6.0Gb/s Connectors, RAID 0 / 1 / 10 / 50 / 51 / 512T / 6 RAID (RAID preset only available via special bid model)

### Media reader

- Optional 7-in-1 media reader

### Graphics

- **Intel UHD Graphics 610/630** in processor, uses main memory, DirectX® 12, one VGA, two DisplayPort™ supports 3 independent displays, works along with discrete graphics to support more displays; Max resolution: 4096x3072 (DP) @ 60Hz, 2048x1536 (VGA) @ 50Hz
- **Some:** NVIDIA GeForce® GT 730, DirectX 12, 2GB, PCIe 2.0 x 16 adapter, two DisplayPort, 35 watts;

### Monitor cable

- Optional DP to VGA dongle, DP to DVI-D dongle, DP to dual DP dongle (for Collage display with integrated graphics), or DP to HDMI 1.4 dongle

### Chipset

- **Intel® Q370 Chipset**

### Front ports

- (Opt.) Optional: 2x USB 3.1 Gen2, 1x USB-A Gen2, 1x RJ-45, 1x Thunderbolt 3 (combo USB3.1 Type-C Gen 2) DisplayPort (DisplayPort) @ 4090x2160, additional RJ-45 and video ports available on optional graphics or ethernet card

### Audio support

- **High Definition (HD) Audio, Realtek ALC233VB2 / internal speaker (2 watt) (**

### WLAN

- **Some:** 11ac wireless, M.2 Card, Realtek RTL8821CE (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 1x1
- **Some:** 11ac wireless, M.2 Card, Realtek RTL8822BE (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 2x2
- **Some:** 11ac wireless, M.2 Card, Intel Dual Band Wireless-Ac 3165, Wi-Fi + Bluetooth 4.2 combo adapter, 1x1
- **Some:** 11ac wireless, M.2 Card, Intel Dual Band Wireless-Ac 8265, Wi-Fi + Bluetooth 4.2 combo adapter, 2x2
- **Some:** 11ac wireless, M.2 Card, Intel Wireless-AC 9560 (dual band), Wi-Fi + Bluetooth 5.0 combo adapter, Intel vPro technology support, 2x2

### Bluetooth

- **Some:** Bluetooth 4.2/5.0 wireless, integrated in Wi-Fi + BT combo adapter

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**Note:** The specifications above may not be available in all regions.

Lenovo, July 2018

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**Environment**

- ENERGY STAR® 6.1, EPEAT® Gold rating (North America), ErP Lot 3, TCO, TUV low noise verified (coming soon, on some models), RoHS-compliant

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**Accessories**

For compatible accessories, please go to http://smartfind.lenovo.com
## ThinkCentre M920 Tiny Platform Specifications

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<td>UHD 666</td>
</tr>
</tbody>
</table>

### Memory

- 32GB max, DDR4-2666, two 260-pin SO-DIMM sockets, non-ECC, dual-channel capable
- * System automatically clocks down for the processors with lower memory controller

### Storage

- Some: Hard Drive / SATA 6.0Gb/s, 2.5", 5400 rpm or 7200 rpm
- Some: Solid State Drive (SSD) / SATA 6.0Gb/s, 2.5"
- Some: M.2 SSD / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s
- * 128GB SSD M.2 (2242) PCIe NVMe only supports PCIe 3.0 x 2, 16GB/s

### Optical

- Some: Intel Optane™ Memory (not support Celeron® / Pentium® Processor), M.2
- Some: DVD-ROM, slim (9.0mm), via USB external ODD box
- Some: DVD Burner (DVD+RW), slim (9.0mm), via USB external ODD box

### Onboard SATA

- One onboard SATA 6.0Gb/s connector

### Graphics

- Intel HD Graphics 610/630 in processor, uses main memory, DirectX® 12, one DisplayPort™ one HDMI, one optional video port (2nd HDMI, VGA, 2nd DP or USB 3.1 Type-C Gen 1 with DisplayPort function), up to 3 independent displays; Max resolution: 4096x2304 (DP) @ 60Hz; 4096x2304 (Type-C) @ 60Hz

### Monitor cable

- Optional DP to VGA dongle, DP to DVI-D dongle, DP to dual DP dongle (for Collage Display with intel integrated graphics), or DP to HDMI 1.4 dongle

### Chipset

- Intel Q370 Chipset

### Front ports (Std.)*

- One USB 3.1 Gen1 (Always On and fast charge), one USB 3.1 Type-C Gen 1, one microphone (3.5mm), one headphone / microphone combo jack (3.5mm)

### Rear ports (Std.)*

- 2x USB 3.1 Gen2, 2x USB 3.1 Gen1, 1x ethernet (RJ-45), 1x DisplayPort, 1x HDMI

### Rear ports (Opt.)*

- Two optional ports (mutually exclusive with PCIe card): Port 1 for VGA / 2nd DP / 2nd HDMI / serial / USB 3.1 Type-C Gen 1 with DP function; Port 2 for serial; Optional ports via PCIe card: 2x USB 3.1 Gen1 via PCIe x1, 4x serial (9-pin) via PCIe x1, 1x Thunderbolt 3 (combo USB3.1 Type-C Gen 2 / DisplayPort) via PCIe x4

### Audio support

- Realtek ALC233VB2 / optional internal speaker (1.5 watt or 2 watt)

### WLAN

- Some: 11ac wireless, M.2 Card, Realtek RTL8822CE (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 1x1
- Some: 11ac wireless, M.2 Card, Realtek RTL8822BE (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 2x2
- Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 3165, Wi-Fi + Bluetooth 4.2 combo adapter, 1x1
- Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 8265, Wi-Fi + Bluetooth 4.2 combo adapter, 2x2
- Some: 11ac wireless, M.2 Card, Intel Wireless-AC 9560 (dual band), Wi-Fi + Bluetooth 5.0 combo adapter, Intel vPro technology support, 2x2

### Bluetooth

- Some: Bluetooth 4.2/5.0 wireless, integrated in Wi-Fi + BT combo adapter

### Ethernet

- Some: Gigabit ethernet, Intel Ethernet Connection I219-LM(Jacksonville), Wake on LAN®
- Some: Intel Ethernet Server Adapter I350-T4, gigabit ethernet, 4x RJ-45, PCIe x4

### Mechanical

- Tiny (1L), black color; metal case
- Toolless chassis open (need optional toolless chassis screw)
- Toolless HDD, SSD, memory removal
- Optional dust filter
- one 2.5" bay for HDD/SSD, one PCIe 3.0 x8 slot (low-profile), two M.2 slots (one for WLAN, one for M.2 SSD), 2.5" HDD/SSD and PCIe card are mutually exclusive

### Power supply

- Some: 65 watts AC/DC adapter, autosensing, 88% PSU
- Some: 90 watts AC/DC adapter, autosensing, 88% PSU
- Some: 135 watts AC/DC adapter, autosensing, 88% PSU

### Preload

- Preloaded operating system
  - Some: Windows® 10 Pro 64-bit
  - Some: Windows 10 Home 64-bit

### Preloaded applications (only some listed)

- Lenovo Vantage
- Microsoft Office preloaded; purchase a product key to activate
- Cyberlink PowerDVD (only for models with DVD / DVD±RW)
- Cyberlink Power2GO (only for models with DVD±RW)
- Lenovo ThinkVantage Tools
- Lenovo Unite (Machine Type 10V8 models only)

### Environment

- ENERGY STAR® 7.0, EPEAT™ Gold rating (North America), ErP Lot 3, TCO, TUV ultra low noise verified (coming soon, on some models), RoHS-compliant

### MIL-SPEC test


### Security chip

<table>
<thead>
<tr>
<th>Security features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security slot (in rear for optional Kensington® MicroSaver® cable)</td>
</tr>
<tr>
<td>Chassis intrusion switch</td>
</tr>
<tr>
<td>Power-on password</td>
</tr>
<tr>
<td>Administrator password</td>
</tr>
<tr>
<td>Hard disk password</td>
</tr>
</tbody>
</table>

### Manageability

- Intel Active Management Technology 12 (Intel AMT 12);
- Intel vPro technology on some models (require choosing a vPro-support Wi-Fi adapter to enable vPro function through wireless connection)
- Discrete TPM 2.0, TCG Certified
- Boot sequence control
- Boot without keyboard and mouse
- Individual USB port disablement
- Smart USB protection, allows keyboard/ mouse only, blocks all storage devices

### Keyboard

- Some: Lenovo Calliope Keyboard (USB connector), black
- Some: Lenovo Traditional Keyboard (USB connector), black
- Some: Lenovo Calliope Wireless Keyboard (2.4GHz via USB receiver), black
- Some: Lenovo Calliope Mouse (USB connector), Windows Hello support, black
- Some: Lenovo Calliope Wireless Mouse (2.4GHz via USB receiver), black

### Mouse

- Some: Lenovo Calliope Mouse (USB connector), black
- Some: Lenovo Calliope Wireless Mouse (2.4GHz via USB receiver), black

### VESA mount

- Optional VESA mount bracket kit, supports VESA 75mm and 100mm system floor stand for vertical orientation

### Limited warranty

- Some: 1-year or 3-year, depot service / service upgrades available
- Some: 1-year or 3-year, limited onsite service / service upgrades available

Note: The specifications above may not be available in all regions.

Lenovo, July 2018
### ThinkCentre M920 Tower Platform Specifications

#### Processor

<table>
<thead>
<tr>
<th>Processor</th>
<th>Cores / Threads</th>
<th>Frequency</th>
<th>Cache</th>
<th>Memory Support (Up to)</th>
<th>Integrated Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel Celeron, Intel Pentium, or 8th Generation Intel Core™</td>
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<td>3.1G</td>
<td>2 MB</td>
<td>DDR4-2400, UHD 610</td>
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<tr>
<td>Intel Celeron G4900</td>
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<tr>
<td>Intel Core i3-8100</td>
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<td>3.2G / 4.6G</td>
<td>12 MB</td>
<td>DDR4-2666, UHD 630</td>
<td></td>
</tr>
</tbody>
</table>

#### Memory

- 64GB max, UDIMM, DDR4-2666*, four 288-pin DIMM sockets, non-ECC, dual-channel capable
- System automatically clocks down for the processors with lower memory controller

#### Storage

- Some: Hard Drive / SATA 6.0Gbps, 2.5" or 3.5", 5400 rpm or 7200 rpm
- Some: SSD 2.5" or 3.5", SATA 6.0Gbps
- Some: M.2 SSD with Intel® Optane™ Memory (not support Celeron / Pentium Processor), M.2 2280 PCIe x4 adapter, 128GB, 256GB
- Some: Intel® Optane™ Memory (up to 1TB) on Intel® Xeon® processor E-2224G / 2244G / 2246G / 2284G or Intel® Core™ i9 processor 9820X / 9900K / 9920XE / 9980XE, supports 32GB-1TB of Intel® Optane™ Memory with Intel® Optane™ Memory Manager

#### Graphics

- Intel UHD Graphics 610/630 in processor, uses main memory, DirectX® 12, 16-bit color, supports 3D games, Windows® 10 64-bit
- NVIDIA GeForce® GT 730, DirectX 12, 2GB, PCIe x16 adapter, supports 4K display, 3840x2160 (60Hz), 2560x1600 (DVI-D) @ 60Hz, 1920x1200 (60Hz), 1280x1024 (60Hz)
- NVIDIA GeForce GTX 1060 (special bid only), supports 4K display, 3840x2160 (60Hz), 2560x1600 (DVI-D) @ 60Hz, 1920x1200 (60Hz), 1280x1024 (60Hz)
- Monitor Cable: Optional DP to HDMI cable, DP to HDMI adapter, DP to DisplayPort cable, DP to HDMI adapter

#### Chipset

- Intel Q370 Chipset

#### Front ports

- (Std.) 2x USB 3.1 Gen2, 2x USB 3.1 Gen1, 1x USB 3.1 Type-C Gen1 (15W charging), 1x microphone (3.5mm), 1x headphone / microphone combo jack (3.5mm)
- (Opt.) Optional: 1x media reader

#### Rear ports

- (Std.) 4x USB 3.1 Gen1, 1x serial (9-pin), 1x ethernet (RJ-45), 1x VGA, 2x DisplayPort, 1x line-out (3.5mm)
- (Opt.) 2x USB 2.0, 2x USB 3.1 Gen1 via PCIe x1, 2x USB 3.1 Type-C Gen2 via PCIe x4 (special bid only), 1x 4-pin DVI-D, 1x 4-pin DP, 1x DisplayPort

#### Audio support

- High Definition (HD) Audio, Realtek ALC2332V3 / internal speaker (2 watt)

#### WLAN

- Some: 11ac wireless, M.2 Card, Realtek RTL8821CE (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 1x1
- Some: 11ac wireless, M.2 Card, Realtek RTL8822BE (dual band), Wi-Fi + Bluetooth 4.2 combo adapter, 2x2
- Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 3165, Wi-Fi + Bluetooth 4.2 combo adapter, 1x1
- Some: 11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 8265, Wi-Fi + Bluetooth 4.2 combo adapter, 2x2

#### Preloaded system

- Windows® 10 64-bit
- Windows® 10 Home 64-bit

#### Preloaded applications (only some listed)

- Lenovo Vantage
- Microsoft Office preloaded
- Cyberlink PowerDVD
- Cyberlink Power2GO
- Lenovo ThinkCare
- Lenovo ThinkVantage Tools
- Lenovo ThinkShine

#### Accessories

- For compatible accessories, please go to http://smartfind.lenovo.com

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**Note:** The specifications above may not be available in all regions.

Lenovo, July 2018
ThinkCentre M920x Tiny Photography

Product Specifications Reference (PSREF)

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### Processor

<table>
<thead>
<tr>
<th>Processor</th>
<th>Cores / Threads</th>
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<td>UHD 663</td>
</tr>
</tbody>
</table>

### Memory

- 32GB max, DDR4-2666, two 260-pin SO-DIMM sockets, non-ECC, dual-channel capable
- * System automatically clocks down for the processors with lower memory controller

### Storage

- Some: Hard Drive / SATA 6.0Gb/s, 2.5", 5400 rpm or 7200 rpm
- Some: Solid State Drive (SSD) / SATA 6.0Gb/s, 2.5"
- Some: M.2 SSD (support up to two M.2 SSD) / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s, RAID 0/1/0 (support RAID preset only available via special bid model)
- * 128GB SSD M.2 (2242) PCIe NVMe only supports PCIe 3.0 x 2, 16Gb/s
- Some: Intel Optane Memory (not support Celeron / Pentium Processor), M.2
- Some: DVD-ROM, slim (9.0mm), via USB external ODD box
- Onboard SATA 6.0Gb/s connector

### Optical

- Intel HD Graphics 610/630 in processor, uses main memory, DirectX® 12, one DisplayPort*, one HDMI, one optional video port (2nd HDMI, VGA, 2nd DP, or USB 3.1 Type-C Gen 1 with DisplayPort function), up to 3 independent displays; *Max resolution: 4096x2304 (DP)@60Hz, 4096x2304 (Type-C)@60Hz

### Graphics

- Some: AMD Radeon RX 560, DirectX 12, 4GB GDDR5, PCIe 3.0 x8 adapter, 4x Mini DisplayPort, up to 4 independent displays, works along with onboard DP and HDMI to support up to 6 independent displays; *Max resolution: 5120x2880@60Hz (up to 2 Mini DisplayPort); 4096x2160@60Hz (up to 4 Mini DisplayPort)

### Monitor cable

- Optional DP to VGA dongle, dongle to DVI-D dongle, DP to dual DP dongle (for Collage Display with intel integrated graphics), or DP to HDMI 1.4 dongle, Mini DP to HDMI

### Chipset

- Intel Q370 Chipset

### Preload

- Preloaded operating system

### Power supply

- 135 watts AC/DC adapter, autosensing, 88% PSU

### Preloaded applications (only some listed)

- Lenovo Vantage
- Microsoft Office preloaded
- purchase a product key to activate
- Cyberlink PowerDVD (only for models with DVD / DVD±RW)
- Cyberlink Power2GO (only for models with DVD±RW)
- Quick Heal

### Environment

- ENERGY STAR® 7.0, EPEAT® Gold rating (North America), Erp Lot 3, TC0
- TUV ultra low noise verified (coming soon, on some models), RoHS-compliant

### MIL-SPEC test


### Accessories

- For compatible accessories, please go to http://smartfind.lenovo.com

### Note:
The specifications above may not be available in all regions.

---

**Lenovo, July 2018**
## ThinkSmart Hub 500 Platform Specifications

### Positioning
Purpose-built Skype Room Systems device

### Processor
7th Gen Intel Core™ i5 Processor with vPro

<table>
<thead>
<tr>
<th>Processor</th>
<th>Cores / Threads</th>
<th>Frequency Base/Max(GHz)</th>
<th>Cache</th>
<th>Memory Support (Up to)</th>
<th>Integrated Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core i5-7500T</td>
<td>4 / 4</td>
<td>2.7G / 3.3G</td>
<td>6 MB</td>
<td>DDR4-2400</td>
<td>HD 630</td>
</tr>
</tbody>
</table>

### Memory
4GBx2, DDR4-2400, two 260-pin SO-DIMM sockets, dual-channel capable

### Storage
128GB M.2 Solid State Drive (SSD) / PCIe NVMe, PCIe 3.0 x 4, 32Gb/s

### Graphics Display
- **Intel HD Graphics 630** in processor, uses main memory, DirectX® 12
  - 11.6" (294.64mm) Full HD 1080p (1920x1080) TFT color, wide viewing angle (+/- 85°), LED backlight, 300 nits, 16:9 aspect ratio, anti-glare, smudge resistant
- **multi-touch sensor**
  - Supports 10-point touch, OGS
- **LED indicators**
  - 360 degree LED ring on hinge neck, indicates Skype status for all users in the room; power LED on power button

### Chipset
Intel Q270 Chipset

### Ports*
- Four USB 3.1 Gen1 (Type A), two HDMI-out, one HDMI-in (1920x1080@60Hz at maximum), one ethernet (RJ-45), one headphone / microphone combo jack (3.5mm), one power connector
- Two M.2 Card slots (one for WLAN, one for SSD)

### Audio Support
Dual 4W speakers, 2 omnidirectional microphones for 360 degree audio capture

### WLAN
11ac wireless, M.2 Card, Intel Dual Band Wireless-AC 8265, Wi-Fi + Bluetooth 4.1* combo adapter, Intel vPro technology support, 2x2

### Bluetooth
* Hardware supports Bluetooth 4.2, but Win10 RS3 only supports Bluetooth 4.1

### Ethernet
Gigabit ethernet, Intel Ethernet Connection I219-LM (Jacksonville), Wake on LAN

### Manageability
Intel Active Management Technology 11.0 (Intel AMT 11.0), Intel vPro technology

### Security Chip
TPM (Trusted Platform Module) 2.0, TCG Certified

### Security Features
- Security slot (in rear for attachment of optional Kensington® MicroSaver® cable; Kensington lock also locks chassis)
- Secure cable management door
- Power-on, admin, hard disk password
- Boot sequence control
- Boot without keyboard and mouse
- USB port disablement

### Keyboard
None

### Mechanical
- **Business black color**
- **(WxDxH) 7.60" X 10.98" X 7.02"; 193.25mm X 278.9mm X 178.45mm**
- Approx. 5.51 lb (2.5 kg)
- **Secure Cable Management Door, secures physical ports and prevents cables being accidentally disconnected**
- 360 degree rotatable Display

### Power Supply
90 watts adapter, autosensing, 88% efficiency

### Limited Warranty
3-year, limited onsite service / service upgrades available

### Preload
- **Preloaded operating system**
  - Windows® 10 IoT Enterprise CBB X64 (RS3)
- **Preloaded applications**
  - Microsoft Skype Room Systems App

### Certification
Skype for Business Group Certified

### Environment
- ErP Lot 26, GREENGUARD™ certified, RoHS, WEEE

### Accessories
For compatible accessories, please go to [http://www.lenovoquickpick.com](http://www.lenovoquickpick.com)

See footnotes for more detailed information © Lenovo (Hub500-Spec) March 2018
ThinkCentre Tiny-in-One (TIO) 22

Product Specifications Reference (PSREF)

Model 10LKPAT6++ / 10LKPAT6++
Form factor Tiny-in-One, offers a full All-In-One experience when optional Tiny slots into the back of TIO 22, clean cabling and effortless setup
Compatible Tiny: M900 Tiny, M700 Tiny, M600 Tiny, M93/p Tiny, M83 Tiny, M73 Tiny, or M53 Tiny, Chromebox
- Non-TIO models can't be turned on by pressing power button of TIO 22
Panel TFT-LCD, In-Plane Switching (IPS), White LED backlight
Viewable image size 21.5" (546.1mm) diagonal
Max view area (W x H) 18.74" x 10.54" / 476.06mm x 267.79mm
Bezel Width Top / Side: 2mm, Bottom: 16.3mm
Optimum resolution 1920x1080
Aspect ratio 16:9
Pixel pitch (mm) 0.24795mm
Dot/Pixel per Inch 102.4 dpi
Brightness 250 nits or cd/m² (typical)
Contrast ratio 1000:1 (typical)
Pixel response time 7ms
Color gamut 72%
Anti-reflective Anti-glare
Viewing angle at 10:1 CR 178° (+/- 89°) horizontal, 178° (+/- 89°) vertical
Preset resolutions 640x350 @ 70Hz
640x480 @ 60Hz, 66Hz, 72Hz, 75Hz
720x400 @ 70Hz
800x600 @ 60Hz, 72Hz, 75Hz
1024x768 @ 60Hz, 70Hz, 75Hz
1152x864 @ 75Hz
1280x800 @ 60Hz
1280x1024 @ 60Hz, 72Hz, 75Hz
1366x768 @ 60Hz
1440x900 @ 60Hz, 75Hz
1600x1200 @ 60Hz, 70Hz, 75Hz
1680x1050 @ 60Hz
1920x1080 @ 60Hz
Presets / user settings Presets: 25; user settings: 25
On screen display On screen display with digital user controls (8 languages)
Control features Mode-switching (TIO mode / standalone monitor mode, switches video / audio / USB input sources) / Back button, Left shift button, Right shift / Brightness button, Selection button / Menu button, Power button
Tiny-in-One Power On Pressing Alt + P on keyboard or pressing Power button positioned on TIO 22 can turn on both TIO and Tiny (only some Tiny support, see compatible list)
Front ports Two USB 3.0 or two USB 2.0 (when M73 or M53 installed or USB 2.0 connected via USB upstream port), one headphone / microphone combo jack (3.5mm)
- The USB ports are only available when a Tiny is installed or a PC is connected via USB upstream port
Side ports Side ports offered by installed Tiny (optional)
Rear ports One DisplayPort 1.2 port, one USB upstream port, one power connector
3-in-1 Cable Undetachable 3-in-1 cable (Power connector, USB 3.0 [supports USB 3.0/ USB 2.0], DisplayPort 1.2), only for connecting to Tiny installed (optional)
Internal Speaker 1.5 watt x 1
Security Security keyhole for attachment of optional cable lock (Kensington® lock compatible), locks optional Tiny with TIO 22 together, more security features offered by Tiny installed (optional)
Mechanical Dimensions TIO 22 without stand TIO 22 with stand
W x D x H (inch) 19.25 x 2.65 x 12.47 19.25 x 9.90 x 14.02 - 18.35
W x D x H (mm) 489.06 x 67.2 x 316.78 489.06 x 251.4 x 356.07 - 466.07
Weight (approximately) 11.27 lb / 5.11 kg (with stand)

Mounting features Wall or desk mounting using the extend arm or third-party accessories meeting the VESA FPMPMI® (100mm mount)
Adjustable stand Tilt: 35° back, -5° forward; lift: 4.3" (110mm); swivel: +/-45°
Power supply 90 watts AC/DC adapter, 88% PSU, universal
Power consumption 15.57 watts typical, 35 watts maximum, <0.5 watts standby / suspend
Limited warranty 3-years, Customer Carry-In or Mail-In via Rapid Replacement Service

VESA-compliant VESA DDC2B/Ci, VESA DPMS-compliant
Ergonomics ISO 9241-307
Emission standards FCC Class B
Environmental TCO 7.0, TCO Edge 2.0, WEEE, RoHS, ENERGY STAR® 7.0
Energy Star EPEAT® Gold rating, ULE Gold, TUV, VOC
Windows certifications Windows 7, Windows 8/8.1, and Windows 10 certified
Ship group TIO 22 (Monitor), detachable stand, AC/DC power adapter, power cord, user’s guide and driver CD, quick start and safety poster
Accessories For compatible accessories, please go to http://www.lenovoquickpick.com

ThinkCentre Tiny-in-One 22 Compatible list

<table>
<thead>
<tr>
<th>Model</th>
<th>M900 Tiny</th>
<th>M700 Tiny</th>
<th>M600 Tiny</th>
<th>M93/p Tiny</th>
<th>M73 Tiny</th>
<th>Chromebox</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turn on TIO and</td>
<td>All models</td>
<td>All models</td>
<td>Not support</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tiny together via</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alt + P on USB KB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turn on TIO and</td>
<td>All models</td>
<td>TIO models</td>
<td>All models</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tiny together via</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIO Power Button</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnotes for more detailed information

Lenovo

(TIO22) April 2016
### ThinkCentre Tiny-in-One (TIO) 22 Gen3

**Model**  
- Non-touch model: 10R1PAR1++/10R1PAT1++;  
- Touch model: 10R0PAR1++/10R0PAT1++

**Form factor**  
- Tiny-in-One, offers a full All-In-One experience when optional Tiny slots into the back of TIO, clean cabling and effortless setup

**Compatible Tiny:**  
- M910 / M710 / M900 / M700 / M600 / M715 / M93p / M83 / M73 / M53 / Chromebox Tiny
- Non-TIO models can’t be turned on by pressing power button of TIO

**Panel**  
- TFT-LCD, In-Plane Switching technology**, White LED backlight
- Viewable image size: 21.5” (546.1mm) diagonal
- Max view area (W x H): 18.74” x 10.54” / 476.1mm x 267.8mm
- Bezel Width: Top: Side: 2mm, Bottom: 22.1mm
- Native resolution: 1920x1080
- Multi-touch: Optional 10-point multi-touch, supports Wake on Touch
- Aspect ratio: 16:9
- Pixel pitch (mm): 0.24795mm
- Dot/Pixel per Inch: 102.4 dpi
- Brightness: 250 nits or cd/m² (typical)
- Contrast ratio: 72%
- Viewing angle at 10:1 CR: 178° (+/- 89°) horizontal, 178° (+/- 89°) vertical
- Pixel response time: 14ms (default), over drive to 6ms
- Color gamut: 72%
- Anti-reflective: Anti-glare

**On-screen features**  
- On-screen display: On screen display with digital user controls (8 languages)
- Preset resolutions: 640x350 @ 70Hz  
  640x480 @ 60Hz, 66Hz, 72Hz, 75Hz  
  720x400 @ 70Hz  
  800x600 @ 60Hz, 66Hz, 72Hz, 75Hz  
  1024x768 @ 60Hz, 70Hz, 75Hz  
  1152x864 @ 75Hz  
  1280x800 @ 60Hz  
  1280x1024 @ 60Hz, 72Hz, 75Hz  
  1366x768 @ 60Hz  
  1440x900 @ 60Hz, 75Hz  
  1600x1200 @ 60Hz, 70Hz, 75Hz  
  1800x1050 @ 60Hz  
  1920x1080 @ 60Hz

**Presets / user settings**  
- Presets: 25; user settings: 25

**On-screen display**  
- On screen display with digital user controls (8 languages)

**Control features**  
- Front: Exit button, Left / Mode-switching button (TIO / monitor mode), Right / Brightness button, Enter / Menu button, Power button
- Bottom: Volume up button, Volume down button

**Tiny-in-One Power On**  
- Pressing Alt + P on keyboard or pressing Power button positioned on TIO can turn on both TIO and Tiny (only some Tiny support, see compatible list)
- One USB 3.1 Gen1 / USB 2.0 (when M73 or M53 installed or USB 2.0 connected via USB upstream port)

**Notes:** The USB port is only available when a Tiny is installed or a PC is connected via USB upstream port

**Side ports (TIO)**  
- One DisplayPort in port, one USB upstream port, one power connector
- Undetachable 3-in-1 cable (Power connector, USB [supports USB 3.1 Gen1 / USB 2.0], DisplayPort)

**Rear ports**  
- One DisplayPort in port, one USB upstream port, one power connector

**Camera**  
- 720p camera with dual microphone for VOIP, LED indicator
- 2 watt x2

**Security**  
- Security keyhole for attachment of optional cable lock (Kensington® lock compatible), locks optional Tiny with TIO together, more security features offered by Tiny installed (optional)

**Mechanical**  
- Dimensions: 19.26 x 2.85 x 13.35  
  19.26 x 10.76 x 14.59 - 18.93
- Weight (Approx.): 7.01 lb / 3.19 kg

**Power**  
- Power supply: 90 watts AC/DC adapter, 88% PSU, universal
- Power consumption: 19 watts typical, 32 watts maximum, <0.5 watts standby / suspend

**Limited warranty**  
- 3-years, Customer Carry-In or Mail-In via Rapid Replacement Service

**VESA-compliant**  
- VESA DDC2B/Ci, VESA DPMS-compliant

**Ergonomics**  
- ISO 9241-307, TUV Eye Comfort certified

**Emission standards**  
- FCC Class B

**Windows certifications**  
- Windows 7 and Windows 10 certified

**Ship group**  
- TIO (Monitor), detachable stand, AC/DC power adapter, power cord, user’s guide and driver CD, quick start and safety poster

**Accessories**  
- For compatible accessories, please go to [http://www.lenovoquickpick.com](http://www.lenovoquickpick.com)

**Mounting features**  
- Wall or desk mounting using the extend arm or third-party accessories meeting the VESA FPMPMI** (100mm mount)

**Adjustable stand**  
- Tilt: 30° back, -5° forward;
- Swivel: +/-45°;
- Pivot: clockwise 0° to 90°

---

### ThinkCentre Tiny-in-One 22 Gen3 Compatible list

<table>
<thead>
<tr>
<th>Model</th>
<th>Accessory</th>
<th>Tiny 10R1PAR1++/10R1PAT1++</th>
<th>Tiny 10R0PAR1++/10R0PAT1++</th>
<th>Tiny 10R1PAR1++/10R1PAT1++</th>
<th>Tiny 10R0PAR1++/10R0PAT1++</th>
</tr>
</thead>
<tbody>
<tr>
<td>M910 / M710</td>
<td>Tiny</td>
<td>All models</td>
<td>All models</td>
<td>All models</td>
<td>All models</td>
</tr>
<tr>
<td>M900 / M700</td>
<td>All models</td>
<td>All models</td>
<td>All models</td>
<td>All models</td>
<td>All models</td>
</tr>
<tr>
<td>M600 / M715</td>
<td>Not support</td>
<td>Not support</td>
<td>Not support</td>
<td>Not support</td>
<td>Not support</td>
</tr>
<tr>
<td>M83 / M53</td>
<td>All models</td>
<td>All models</td>
<td>All models</td>
<td>All models</td>
<td>All models</td>
</tr>
</tbody>
</table>

---

**Lenovo, July 2017**
### ThinkCentre Tiny-in-One (TIO) 24

**Model**
- 10LLPAR6++ / 10LLPAT6++

**Form factor**
Tiny-in-One, offers a full All-In-One experience when optional Tiny slots into the back of TIO 24, clean cabling and effortless setup

**Compatible Tiny**
- M900 Tiny, M700 Tiny, M600 Tiny, M93/p Tiny*, M83 Tiny, M73 Tiny*, or M53 Tiny, Chromebox
- Non-TIO models can't be turned on by pressing power button of TIO 24

**Panel**
- TFT-LCD, In-Plane Switching (IPS), White LED backlight
- Viewable image size: 23.8" (604.7mm) diagonal
- Max view area (W x H): 21.06" x 12.32" / 535.0mm x 313.0mm
- Bezel Width: Top / Side: 2mm, Bottom: 16.3mm

**Optimum resolution**
- 1920x1080

**Aspect ratio**
- 16:9

**Pixel pitch (mm)**
- 0.27455mm

**Brightness**
- 250 nits or cd/m² (typical)

**Contrast ratio**
- 1000:1 (typical)

**Pixel response time**
- 7ms

**Color gamut**
- 72%

**Anti-reflective**
- Anti-glare

**Viewing angle at 10:1 CR 178° (+ 9°) horizontal, 178° (+ -9°) vertical**

**Preset resolutions**
- 640x350 @ 70Hz
- 640x480 @ 60Hz, 66Hz, 72Hz, 75Hz
- 720x400 @ 70Hz
- 800x600 @ 60Hz, 72Hz, 75Hz
- 1024x768 @ 60Hz, 70Hz, 75Hz
- 1152x864 @ 75Hz
- 1280x800 @ 60Hz
- 1280x1024 @ 60Hz, 72Hz, 75Hz
- 1366x768 @ 60Hz
- 1440x900 @ 60Hz, 75Hz
- 1600x1200 @ 60Hz, 70Hz, 75Hz
- 1680x1050 @ 60Hz
- 1920x1080 @ 60Hz

**Preset / user settings**
- Presets: 25, user settings: 25

---

**Mounting features**
- Wall or desk mounting using the extend arm or third-party accessories meeting the VESA FPMPMI® (100mm mount)

**Adjustable stand**
- Tilt: 35° back, -5° forward; lift: 4.3" (110mm); swivel: +/-45°

**Power supply**
- 90 watts AC/DC adapter, 88% PSU, universal

**Power consumption**
- 16.7 watts typical, 35 watts maximum, <0.5 watts standby / suspend

**Limited warranty**
- 3-years, Customer Carry-In or Mail-In via Rapid Replacement Service

---

**Security**
- Security keyhole for attachment of optional cable lock (Kensington® lock compatible), locks optional Tiny with TIO 24 together, more security features offered by Tiny installed (optional)

**Mechanical**

<table>
<thead>
<tr>
<th>Feature</th>
<th>TIO 24 without stand</th>
<th>TIO 24 with stand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (W x D x H)</td>
<td>21.24 x 2.7 x 13.64</td>
<td>21.24 x 9.9 x 15.16 - 19.46</td>
</tr>
<tr>
<td>Weight (approximate)</td>
<td>12.25 lb / 5.57 kg</td>
<td></td>
</tr>
</tbody>
</table>

---

** Accessories**
- For compatible accessories, please go to [http://www.lenovoquickpick.com](http://www.lenovoquickpick.com)

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**ThinkCentre Tiny-in-One 24 Compatible list**

<table>
<thead>
<tr>
<th>Model</th>
<th>M900 Tiny, M700 Tiny, M600 Tiny, M93/p Tiny, M83 Tiny, M53 Tiny, M73 Tiny, Chromebox</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine</td>
<td>Turn on TIO and Tiny together via Alt + P on USB KB</td>
</tr>
<tr>
<td>M900 Tiny</td>
<td>All models</td>
</tr>
<tr>
<td>M700 Tiny</td>
<td>All models</td>
</tr>
<tr>
<td>M600 Tiny</td>
<td>Not support</td>
</tr>
<tr>
<td>M93/p Tiny</td>
<td>All models</td>
</tr>
<tr>
<td>M83 Tiny</td>
<td>All models</td>
</tr>
<tr>
<td>M53 Tiny</td>
<td>All models</td>
</tr>
<tr>
<td>M73 Tiny</td>
<td>All models</td>
</tr>
<tr>
<td>Chromebox</td>
<td>All models</td>
</tr>
</tbody>
</table>

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See footnotes for more detailed information

© Lenovo (TIO24) Juin 2016
ThinkCentre Tiny-in-One (TIO) 24 Gen3

Product Specifications Reference (PSREF)

Lenovo, July 2017

Model
Non-touch model: 10QYPAR1++/10QYPAT1++;
Touch model: 10QXPAR1++/10QXPAT1++

Form factor
Tiny-in-One, offers a full All-In-One experience when optional Tiny slots into the back of TIO, clean wiring and effortless set up

Compatible Tiny:
M910 / M710 / M900 / M700 / M600 / M715 / M93/p / M83 / M73* / M53 / Chromebox Tiny

* Non-TIO models can't be turned on by pressing power button of TIO

Panel
TFT-LCD, In-Plane Switching technology**, White LED backlight
Notes: In-Plane Switching may refer to VA, PLS, and IPS panels

Viewable image size 23.8" (604.7mm) diagonal
Max view area (W x H) 21.06" x 12.32" / 535.0mm x 313.0mm
Bezel Width Top: Side: 2mm, Bottom: 22.1mm
Native resolution 1920x1080
Multi-touch Optional 10-point multi-touch, supports Wake on Touch
Aspect ratio 16:9
Pixel pitch (mm) 0.2745mm
Dot/Pixel per inch 92.6 dpi
Brightness 250 nits or cd/m² (typical)
Contrast ratio 1000:1 (typical)
Pixel response time 14ms (default), over drive to 4ms, 6ms
Color gamut 72%
Anti-reflective Anti-glare
Viewing angle at 10:1 CR 178° (+/- 89°) horizontal, 178° (+/- 89°) vertical

Presets resolutions
640x350 @ 70Hz
640x480 @ 60Hz, 67Hz, 72Hz, 75Hz
720x400 @ 70Hz
800x600 @ 60Hz, 72Hz, 75Hz
1024x768 @ 60Hz, 70Hz, 75Hz
1152x864 @ 75Hz
1280x800 @ 60Hz
1280x1024 @ 60Hz, 72Hz, 75Hz
1366x768 @ 60Hz
1440x900 @ 60Hz, 75Hz
1600x1200 @ 60Hz, 70Hz, 75Hz
1680x1050 @ 60Hz
1920x1080 @ 60Hz

Presets / user settings
Presets: 25; user settings: 25

On screen display
Front: Exit button, Left / Mode-switching button (TIO / monitor mode), Right / Brightness button, Enter / Menu button, Power button
Bottom: Volume up button, Volume down button

Tiny-in-One Power On
Pressing Alt + P on keyboard or pressing Power button positioned on TIO can turn on both TIO and Tiny (only some Tiny support, see compatible list)

Side ports (TIO)
USB 3.1 Gen1 / USB 2.0 (when M73 or M53 installed or USB 2.0 connected via USB upstream port)

Notes: The USB port is only available when a Tiny is installed or a PC is connected via USB upstream port

Side ports (Tiny)
Side ports offered by installed Tiny (optional)

Rear ports
One DisplayPort in port, one USB upstream port, one power connector
Undetachable 3-in-1 cable (Power connector, USB [supports USB 3.1 Gen1 / USB 2.0], DisplayPort), only for connecting to Tiny installed (optional)

Camera
1080p camera with dual microphone for VOIP, LED indicator

Internal Speaker
2 watt x2

Security
Security keyhole for attachment of optional cable lock (Kensington® lock compatible), locks optional Tiny with TIO together, more security features offered by Tiny installed (optional)

Mounting features
Wall or desk mounting using the extend arm or third-party accessories meeting the VESA FPMTM (100mm mount)

Adjustable stand
Tilt: 30° back, -5° forward;
Swivel: +/-45°;
Pivot: clockwise 0° to 90°

Power supply
90 watts AC/DC adapter, 88% PSU, universal

Power consumption
19 watts typical, 32 watts maximum, <0.5 watts standby / suspend

Limited warranty
3-years, Customer Carry-In or Mail-In via Rapid Replacement Service

VESA-compliant
VESA DDC2B/C, VESA DPMS-compliant

Ergonomics
ISO 9241-307, TUV Eye Comfort certified

Emission standards
FCC Class B

Environmental
TCO 7.0, TCO Edge 2.0, WEEEE, RoHS, ENERGY STAR® 7.0.

Windows certifications
Windows 7 and Windows 10 certified

Ship group
TIO 24 (Monitor), detachable stand, AC/DC power adapter, power cord, user's guide and driver CD, quick start and safety poster

Accessories
For compatible accessories, please go to http://www.lenovoquickpick.com

ThinkCentre Tiny-in-One 24 Gen3 Compatible list

<table>
<thead>
<tr>
<th>Model</th>
<th>M910 / M710 / M900 / M700 / M600 / M715 / M83 / M53 Tiny</th>
<th>M93/p Tiny, M73 Tiny</th>
<th>Chromebox</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turn on TIO and Tiny together via Alt + P on USB KB</td>
<td>All models</td>
<td>All models</td>
<td>Not support</td>
</tr>
<tr>
<td>Turn on TIO and Tiny together via TIO Power Button</td>
<td>All models</td>
<td>TIO models</td>
<td>All models</td>
</tr>
</tbody>
</table>

Dimensions

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>TIO without stand</th>
<th>TIO with stand</th>
</tr>
</thead>
<tbody>
<tr>
<td>W x D x H (inch)</td>
<td>21.25 x 2.85 x 14.47</td>
<td>21.25 x 11.11 x 15.72 - 20.06</td>
</tr>
<tr>
<td>W x D x H (mm)</td>
<td>539.8 x 72.5 x 367.6</td>
<td>539.8 x 282.3 x 399.4 - 509.4</td>
</tr>
<tr>
<td>Weight (Approx.)</td>
<td>7.96 lb /3.61 kg</td>
<td>12.92 lb /5.86 kg</td>
</tr>
</tbody>
</table>

Lenovo, July 2017
## ThinkCentre Tiny-in-One (TIO) 27

### Form factor
Tiny-in-One, offers a full All-In-One experience when optional Tiny slots into the back of TIO, clean cabling and effortless setup

### Compatible Tiny:
ThinkCentre Tiny, ThinkCentre Nano, and ThinkStation Tiny

### Panel
TFT-LCD, In-Plane Switching technology**, White LED backlight

** Notes: In-Plane Switching may refer to IPS, PLS, ADS, AHVA, and AA

### Viewable image size
27” (685.8mm) diagonal

### Max view area (W x H)
23.49” x 13.22” / 596.7mm x 335.7mm

### Bezel Width
Top / Side: 2mm, Bottom: 23.3mm

### Native resolution
2560x1440

### Accessories
- TIO with stand
- TIO models
- 4.91 kg / 10.82 lb
- TIO 27 (Monitor), detachable stand, power adapter, power cord, reference

### Security
- Internal Speaker
- Camera
- 3-in-1 Cable
- Rear ports
- Side ports (Tiny)
- 3-in-1 Cable
- Camera
- Internal Speaker
- Security keyhole for attachment of optional cable lock (Kensington® lock compatible), locks optional Tiny with TIO together, more security features offered by Tiny installed (optional)

### Preset resolutions
- 640x350 @ 70Hz
- 640x480 @ 60Hz, 66Hz, 72Hz, 75Hz
- 720x400 @ 70Hz
- 800x600 @ 60Hz, 72Hz, 75Hz
- 1024x768 @ 60Hz, 70Hz, 75Hz
- 1152x864 @ 75Hz
- 1280x768 @ 60Hz
- 1280x800 @ 60Hz
- 1280x1024 @ 60Hz, 72Hz, 75Hz
- 1366x768 @ 60Hz
- 1440x900 @ 60Hz, 75Hz
- 1600x1200 @ 60Hz, 70Hz, 75Hz
- 1680x1050 @ 60Hz
- 1920x1080 @ 60Hz
- 2560x1440 @ 60Hz

### Presets / user settings
- Presets: 27; user settings: 25

### On screen display
On screen display with digital user controls (8 languages)

### Control features
- Front: Exit button, Left / Mode-switching button (TIO / monitor mode), Right / Brightness button, Enter / Menu button, Power button
- Bottom: Volume up button, Volume down button

### Tiny-in-One Power On
Pressing Alt + P on keyboard or pressing Power button positioned on TIO can turn on both TIO and Tiny (only some support, see Compatible Matrix)

### Side ports (TIO)
Two USB 3.1 Gen1 (downgrade to USB 2.0 when installing M73 or M53 or connecting USB 2.0 via USB upstream port), one headphone / microphone combo jack

### Side ports (Tiny)
Side ports offered by the installed Tiny (optional)

### Rear ports
One DisplayPort(in) port, one HDMI(in) port, one USB (Type-B) upstream port, one power connector

### 3-in-1 Cable
Undetachable 3-in-1 cable, connecting to the power connector, one USB, and one DisplayPort of the installed Tiny (optional)

### Camera
RGBIR camera with dual microphone, supports Window Hello and Facial Recognition, Think Shutter for Privacy Security, LED indicator

### Internal Speaker
2 watt x2

### Mechanical

<table>
<thead>
<tr>
<th>Dimensions (W x D x H / mm / inch)</th>
<th>TIO without stand</th>
<th>TIO with stand</th>
</tr>
</thead>
<tbody>
<tr>
<td>614.0 x 73.89 x 413.1 / 24.17 x 2.91 x 16.26</td>
<td>614.0 x 329.0 x 444.25 - 554.25 / 24.17 x 12.95 x 17.49 - 21.82</td>
<td></td>
</tr>
</tbody>
</table>

### Weight (Approx.)
- 4.91 kg / 10.82 lb
- 7.95 kg / 17.53 lb

### Mounting features
Wall or desk mounting using the extend arm or third-party accessories meeting the VESA FPMPMF* (100mm mount)

### Adjustable stand
- Tilt: 35° back, -5° forward;
- Lift: 4.3” (110mm);
- Swivel: +/-45°;
- Pivot: clockwise -5° to 90°

### Power supply
- 170 watts adapter, 88% PSU, universal
- 37 watts typical, 57 watts maximum, <0.5 watts standby / suspend

### Limited warranty
- 3-years, Product Exchange Service (US and EMEA) or Customer Carry-In Service (EMEA)

### VESA-compliant
- VESA DDC/CI, VESA DPMS-compliant

### Ergonomics
- ISO 9241-307, TUV Eye Comfort certified
- FFC Class B

### Environmental
- TCO 6.0, TCO Edge 2.0, WEEE, RoHS, ENERGY STAR® 7.0,
- EPEAT™ Bronze rating, ULE Gold, TUV, VOC

### Windows certifications
- Windows 7 and Windows 10 certified

### Ship group
- TIO 27 (Monitor), detachable stand, power adapter, power cord, reference and driver CD

### Accessories
For compatible accessories, please go to [http://smartfind.lenovo.com](http://smartfind.lenovo.com)

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Lenovo, Feb 2019
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**Depot or Courier Service:** Parts and labor repair coverage where shipping (including packaging) or delivery to the repair center is paid for by Lenovo.

**Expedited Depot:** Parts and labor coverage with expedited turnaround. Shipping (including packaging) or delivery to the repair center is paid for by Lenovo.

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**Battery life:** Battery life (and recharge times) will vary based on many factors including screen brightness, applications, features, power management, battery conditioning, and other customer preferences.
Summary of Changes

This section describes the changes made in this version of ThinkStation PSREF and in previous version. This edition might also include minor corrections and editorial changes which are not identified.

**May 15, 2019 - Version 542**
- New ThinkStation P330 Tower Gen 2/P330 SFF Gen 2 announced on April 2019
- Update ThinkStation P920/P720/P520 specifications, add Quadro RTX 8000, DDR4-2933, Xeon Scalable Gen 2

**March 13, 2019 - Version 539**
- Add Intel vPro information on ThinkStation P330 Tower/P330 SFF/P520c/P520/P720/P920

**February 20, 2019 - Version 538**
- New ThinkStation P330 Tower models announced on February 2019
- Update ThinkStation P920/P720/P520/P520c specifications, add Quadro RTX4000/5000/6000

**August 22, 2018 - Version 529**
- New ThinkStation P330 Tower/SFF/Tiny models announced on August 2018
- Update ThinkStation P920/P720 specifications, update flex bay and graphics adapter section

**August 1, 2018 - Version 528**
- New product ThinkStation P330 Tower/SFF/Tiny announced on July 2018
- Update ThinkStation P920/P720/P520/P520c, add Refresh 2.0 information
- Remove all MTM PN from PDF version

**June 20, 2018 - Version 526**
- New ThinkStation P320 Tower models announced on June 2018
- Update ThinkStation P720 and P920 models, remove EOL models for US
- Update Windows 10 Pro 64 for Workstations for some ThinkStation P720/P920 models

**May 30, 2018 - Version 525**
- Added ThinkStation P720/P920 EMEA May 2018 models

**April 18, 2018 - Version 523**
- New ThinkStation P320 Tower/ P320 SFF/P520c/P520/P720/P920 models announced on April 2018

**March 28, 2018 - Version 522**
- New ThinkStation P320 Tower/ P320 SFF/P520c/P520/P920 announced on March 2018

**March 7, 2018 - Version 521**
- New ThinkStation P320 Tower/ P320 SFF/P720/P920 announced on February 2018

**January 30, 2018 - Version 519**
- New ThinkStation P520c and P520 announced on January 2018
- New ThinkStation P320 Tower/P320 SFF announced on January 2018

**December 20, 2017 - Version 517**
- New ThinkStation P920 models announced on December 2017
- Add Optional Ports on ThinkStation P320 Tiny

**September 29, 2017 - Version 513**
- New ThinkStation P920 and P720 announced on September 2017
- New ThinkStation P320 Tower/P320 SFF/P410/P510/P710/P910 announced on September 2017

**September 12, 2017 - Version 512**
- New ThinkStation P320 Tower and P320 SFF models announced on August 2017
August 23, 2017 - Version 511
► New ThinkStation P320 Tiny models announced on August 2017

August 2, 2017 - Version 510
► New ThinkStation P320 Tiny/P320 Tower/ P320 SFF/P410/P510 models announced on July 2017

June 21, 2017 - Version 508
► New ThinkStation P320 Tiny announced on June 2017

May 26, 2017 - Version 507
► Add ThinkStation P410/P510/P710/P910 Refresh 3.0 Wave 1 models and update platform specifications

April 19, 2017 - Version 505
► New ThinkStation P320 Tower announced on April 2017
► New ThinkStation P320 SFF announced on April 2017

March 29, 2017 - Version 504
► Added ThinkStation P310 Tower and SFF models announced on March 2017
► Added ThinkStation P410 models announced on March 2017

January 25, 2017 - Version 501
► Update quantity of PCIe SSD adapter in ThinkStation P510/P910

January 4, 2017 - Version 500
► Added ThinkStation P310 models announced on December 2016

December 14, 2016 - Version 499
► Added ThinkStation P410/P510/P710/P910 EMEA models
► Added 1TB M.2 PCIe SSD, Quadro P5000, Quadro P6000 support on ThinkStation P510/P710/P910
► Added Quadro P5000 support on ThinkStation P410
► Added 6TB 7.2K SATA6Gbs HDD support on ThinkStation P410/P510/P710/P910
► Added ThinkStation P410/P510/P710/P910 models announced on December 2016

November 23, 2016 - Version 498
► Removed ThinkStation P500/P900 due to EOL
► Added ThinkStation P310 Tower and SFF models announced on November 2016

October 12, 2016 - Version 496
► Removed flash option on ThinkStation P510/P710/P910
► Added ThinkStation P310 Tower and SFF models announced on September 2016

August 3, 2016 - Version 493
► Removed ThinkStation P500/P700/P900 Windows 7 DG from Win8.1 U.S. models
► Added keyboard and mouse features on all ThinkStation

July 13, 2016 - Version 492
► Added ThinkStation P500, P700, and P900 Windows 10 downgrade to Windows 7 models
► Updated Maximum configuration weight of ThinkStation P410
► Added ThinkStation P710 and P910 models announced on on July 2016
► Added "Maximum drives in 3.5" bay" feature on ThinkStation P500/P510/P700/P710/P900/P910

June 22, 2016 - Version 491
► Added new product ThinkStation P410/P510
► Added NVIDIA Quadro M2000 on ThinkStation P310 Tower
► Added keyboard and mouse information on ThinkStation P710/P910
► Added internal USB information on ThinkStation P710/P910

June 2, 2016 - Version 490
► Added ThinkStation P710/P910 US models
► Updated ThinkStation P710/P910 processor information
May 19, 2016 - Version 489
► Added NVIDIA Quadro M2000 on compatible product
► Updated maximum weight on ThinkStation P710
► Removed 30AT000BUS

April 27, 2016 - Version 488
► Added ThinkStation P710 and P910 models for EMEA, announced on April 2016
► Updated Energy star information on ThinkStation P500/P700/P710/P900/P910

April 6, 2016 - Version 487
► New ThinkStation P710 and P910, announced April 5, 2016 (specification only)

March 23, 2016 - Version 486
► Added processors specifications for P310/P500/P700/P900

February 24, 2016 - Version 485
► Added ThinkStation P310 and P700 models for US, announced on February 2016
► Added ThinkStation P700 and P900 models for EMEA, announced on February 2016

December 9, 2015 - Version 482
► New ThinkStation P310 Tower and SFF, announced November 24, 2015

November 18, 2015 - Version 481
► Combines ThinkStation PSREF United States version and Western Europe version.
► Extends the supported GEO into Europe, Middle East and Africa.
► Covers all TopSeller and Relationship models for US and all focus models for EMEA
### ThinkStation P320 SFF Platform Specifications

#### Components Specification

<table>
<thead>
<tr>
<th>Components</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chipset</td>
<td>Intel C236 Chipset</td>
</tr>
<tr>
<td>Intel AMT</td>
<td>Intel Active Management Technology 11 on Xeon models, Intel Standard Manageability on other models</td>
</tr>
</tbody>
</table>
| Processor  | One Intel "Kaby Lake" or "Skylake" processor as listed: *Kaby Lake*  
Xeon E3-1280 v6  
Xeon E3-1275 v6  
Xeon E3-1270 v6  
Xeon E3-1245 v6  
Xeon E3-1240 v6  
Xeon E3-1225 v6  
Core i7-7500  
Core i7-7400  
Core i5-7500  
Core i5-7400  
Core i3-7500  
Core i3-7400  |
| Memory DIMM slots | 4 DIMM slots, 2-channel (integrated memory controller in processor) |
| Memory type/capacity | Up to 64GB ECC/non-ECC (4 x 16GB), DDR4-2400. "Skylake" processor supports up to DDR4-2133. Core i7 and i5 processors cannot support ECC |
| Intel HD Graphics in processor | Integrated Intel HD P530 in Xeon E3-12x5 v5 processors, or Intel HD P630 in Xeon E3-12x5 v6 processors, or Intel HD 530 in Core i7, i5, or i3 6000 processors, or Intel HD 630 in Core i7, i5, or i3 7000 processors. Works along with discrete graphics to support multi-display, enables three display connectors (2 DP, 1 VGA) on rear. |
| Discrete graphics | Two PCI Express 3.0 x16 slots for graphics adapters. Up to two NVIDIA Quadro P1000. Supports the following NVIDIA graphic adapters:  
<table>
<thead>
<tr>
<th>Adapter</th>
<th>Cores</th>
<th>Memory</th>
<th>Power</th>
<th>Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>NVS 310</td>
<td>48</td>
<td>1GB</td>
<td>19.5W</td>
<td>2xDP</td>
</tr>
<tr>
<td>NVS 315</td>
<td>48</td>
<td>1GB</td>
<td>19.5W</td>
<td>2xDP</td>
</tr>
<tr>
<td>NVS 510</td>
<td>192</td>
<td>2GB</td>
<td>33.4W</td>
<td>4miniDP</td>
</tr>
<tr>
<td>Quadro P400</td>
<td>256</td>
<td>2GB</td>
<td>30W</td>
<td>3xminiDP</td>
</tr>
<tr>
<td>Quadro P600</td>
<td>384</td>
<td>2GB</td>
<td>40W</td>
<td>4xminiDP</td>
</tr>
<tr>
<td>Quadro P1000</td>
<td>640</td>
<td>4GB</td>
<td>47W</td>
<td>4xminiDP</td>
</tr>
<tr>
<td>Onboard drive controller</td>
<td>Five onboard SATA 6.0Gb/s connectors for optical and disk drives plus one SATA connector for optional eSATA. RAID 0, 1, 5, 6, 10, 50, or 60 support. RAID 0, 1, 5, 6, 10, 50, or 60 supports up to 2; or 16GB Intel Optane Memory, PCIe 3.0 x2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drive Bays</td>
<td>One external 5.25&quot; bay, one internal 3.5&quot; bay (see right). Up to one 9mm optical + 2 x 3.5&quot; disk drive bays + 1 x 2.5&quot; disk drive bay + two M.2 NVMe SSDs.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Supporting disk drives | 3.5" SATA HDD (7.2K 6Gbps)  
1TB/2TB/4TB/8TB hybrid  
3TB/4TB/5TB/6TB/7TB/8TB hybrid  
M.2 NVMe SSD, via PCIe adapter  
M.2 NVMe SSD, via PCIe adapter  
M.2 NVMe SSD, via PCIe adapter  |
| Max internal storage | 10TB (2 x 4TB 3.5" HDDs + 1 x 2TB 2.5" SSD) plus two 1TB M.2 NVMe SSD |
| Media reader | 9-in-1 card reader. Optional 29-in-1 card reader on selected models |
| Power supply | 210 watts with variable speed fan, autosensing, Climate Savers Computing Bronze, 80 PLUS Bronze qualified |
| Onboard Ethernet | One onboard gigabit ethernet, Intel I219LM, supports Wake-on-LAN |
| HD Audio | Realtek ALC662 codec |
| TPM | Standard, TCG 2.0-compliant |

#### Components Specification

| Front ports | Two USB 3.0, microphone (3.5mm), headphone (3.5mm) |
| Rear ports | 1 VGA and 2 DisplayPort (for Intel HD Graphics models only), two USB 2.0, four USB 3.0, one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in) |
| Mechanical | Raven black color; metal case  
4.02" W x 15.53" D x 13.31" H  
102mm W x 394.5mm D x 338mm H  
17.2 lb (7.9kg) max configuration  
12.9-liter |
| Environmental certifications | GREENGUARD certified/RoHS-compliant/EPEAT Gold rating/ENERGY STAR 6.1 qualified |
| Limited warranty | 1 or 3-year limited onsite service with 9x5/NBD. Some parts are Customer Replaceable Units. |
| ISV certifications | Please visit www.thinkworkstations.com/isv-certifications/ |

### Drive Bays and PCIe Slots

| Bay 1 | 5.25", supports one of the following:  
HH optical/flex module **/8mm optical/3.5" HDD bay/5.25" HDD bay/Front Access Storage Enclosure  
*** Flex module supports one or more of the following: 8mm optical/29-in-1 reader/front/eSATA. Up to one flex module is supported per system. |
| Bay 2 | Optional 9-in-1 single slot reader |
| Bay 3 | Standard 3.5" HDD bay |
| Bay 4 | Optional 2.5" HDD bay (under Bay 3) |
| Slot 1 | Low Profile, PCIe 3.0 x16 (near CPU) |
| Slot 2 | Low Profile, PCIe 3.0 x1 |
| Slot 3 | Low Profile, PCIe 3.0 x16 (x4 elec) |
| Slot 4 | Low Profile, PCIe 3.0 x1 |

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## ThinkStation P320 Tower Platform Specifications

### Components Specified

<table>
<thead>
<tr>
<th>Components</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chipset</td>
<td>Intel C236 Chipset</td>
</tr>
<tr>
<td>Intel AMT</td>
<td>Intel Active Management Technology 11 on Xeon models, Intel Standard Manageability on other models</td>
</tr>
<tr>
<td>Onboard Management Technology</td>
<td>Intel AMT on Xeon models, &quot;Kaby Lake&quot; or &quot;Skylake&quot; processor as listed: &quot;Kaby Lake&quot;</td>
</tr>
<tr>
<td>Xeon E3-1220 v6</td>
<td>Intel Haswell architecture, 4C/3.6GHz/8MB/65W/DDR4-2400</td>
</tr>
<tr>
<td>Xeon E3-1227 v6</td>
<td>Intel Skylake architecture, 4C/3.6GHz/8MB/65W/DDR4-2400</td>
</tr>
<tr>
<td>Xeon E3-1245 v6</td>
<td>Intel Skylake architecture, 4C/3.6GHz/8MB/65W/DDR4-2400</td>
</tr>
<tr>
<td>Xeon E3-1248 v6</td>
<td>Intel Skylake architecture, 4C/3.6GHz/8MB/65W/DDR4-2400</td>
</tr>
<tr>
<td>Xeon E3-1250 v6</td>
<td>Intel Skylake architecture, 4C/3.6GHz/8MB/65W/DDR4-2400</td>
</tr>
<tr>
<td>Core i5-7400</td>
<td>Intel Skylake architecture, 4C/3.5GHz/8MB/65W/DDR4-2400</td>
</tr>
<tr>
<td>Core i5-7500</td>
<td>Intel Skylake architecture, 4C/3.5GHz/8MB/65W/DDR4-2400</td>
</tr>
<tr>
<td>Core i5-7600</td>
<td>Intel Skylake architecture, 4C/3.5GHz/8MB/65W/DDR4-2400</td>
</tr>
<tr>
<td>Core i5-8400</td>
<td>Intel Skylake architecture, 4C/4.0GHz/8MB/65W/DDR4-2400</td>
</tr>
<tr>
<td>Core i5-8500</td>
<td>Intel Skylake architecture, 4C/4.1GHz/8MB/65W/DDR4-2400</td>
</tr>
<tr>
<td>Core i7-7700</td>
<td>Intel Skylake architecture, 4C/4.1GHz/8MB/65W/DDR4-2400</td>
</tr>
<tr>
<td>Core i7-7800</td>
<td>Intel Skylake architecture, 4C/4.1GHz/8MB/65W/DDR4-2400</td>
</tr>
<tr>
<td>Core i7-7900</td>
<td>Intel Skylake architecture, 4C/4.1GHz/8MB/65W/DDR4-2400</td>
</tr>
<tr>
<td>Core i7-8550</td>
<td>Intel Skylake architecture, 4C/4.0GHz/8MB/65W/DDR4-2400</td>
</tr>
<tr>
<td>Core i7-8700</td>
<td>Intel Skylake architecture, 4C/4.0GHz/8MB/65W/DDR4-2400</td>
</tr>
<tr>
<td>Core i7-8750</td>
<td>Intel Skylake architecture, 4C/4.1GHz/8MB/65W/DDR4-2400</td>
</tr>
<tr>
<td>Core i7-8800</td>
<td>Intel Skylake architecture, 4C/4.1GHz/8MB/65W/DDR4-2400</td>
</tr>
<tr>
<td>Core i7-9700</td>
<td>Intel Skylake architecture, 4C/4.2GHz/8MB/65W/DDR4-2400</td>
</tr>
<tr>
<td>Core i7-9750</td>
<td>Intel Skylake architecture, 4C/4.2GHz/8MB/65W/DDR4-2400</td>
</tr>
<tr>
<td>Memory DIMM slots</td>
<td>4 DIMM slots, 2-channel (integrated memory controller in processor)</td>
</tr>
<tr>
<td>Memory type/capacity</td>
<td>Integrated Intel HD P530 in Xeon E3-12x5 v5 processors, or Intel HD P630 in Xeon E3-12x5 v6 processors, or Intel HD 530 in Core i7, i5, or i3 6000 series processors, or Intel HD 630 in Core i7, i5, or i3 7000 processors. Works along with discrete graphics to support multi-display, enables three display connectors (2 DP, 1 VGA) on rear.</td>
</tr>
<tr>
<td>Intel HD Graphics in processor</td>
<td>Integrated Intel HD P530 in Xeon E3-12x5 v5 processors, or Intel HD P630 in Xeon E3-12x5 v6 processors, or Intel HD 530 in Core i7, i5, or i3 6000 series processors, or Intel HD 630 in Core i7, i5, or i3 7000 processors. Works along with discrete graphics to support multi-display, enables three display connectors (2 DP, 1 VGA) on rear.</td>
</tr>
<tr>
<td>Discrete graphics</td>
<td>Two PCI Express 3.0 x16 slots for graphics adapters. Up to two Quadro P1000 on 250 watts models. Or up to two Quadro P2000, or up to one Quadro P4000 on 400 watts models. Supports the following NVIDIA graphics adapters:</td>
</tr>
<tr>
<td>Adapter</td>
<td>Cores</td>
</tr>
<tr>
<td>----------</td>
<td>-------</td>
</tr>
<tr>
<td>NVS 310</td>
<td>48</td>
</tr>
<tr>
<td>NVS 510</td>
<td>192</td>
</tr>
<tr>
<td>NVS 810</td>
<td>1024</td>
</tr>
<tr>
<td>Quadro P400</td>
<td>256</td>
</tr>
<tr>
<td>Quadro P600</td>
<td>384</td>
</tr>
<tr>
<td>Quadro P1000</td>
<td>640</td>
</tr>
<tr>
<td>Quadro P2000</td>
<td>1024</td>
</tr>
<tr>
<td>Quadro P4000</td>
<td>1792</td>
</tr>
<tr>
<td>Onboard drive controller</td>
<td>Five onboard SATA 6.0Gb/s connectors for optical and disk drives plus one SATA connector for optional eSATA. RAID 0, 1, 5, 10 support</td>
</tr>
<tr>
<td>Drive Bays</td>
<td>Two external 5.25&quot; bays, two internal 3.5&quot; bays (see right). Up to one 9mm optical plus 4 x 3.5&quot; disk drive bays plus two M.2 NVMe SSD</td>
</tr>
<tr>
<td>Supporting drive</td>
<td>3.5&quot; SATA HDD (7.2K Gbps) / 8TB/2TB/4TB/1TB hybrid/2TB hybrid</td>
</tr>
<tr>
<td>3.5&quot; SATA SSD (6TB)</td>
<td>256GB Opal/512GB/512GB Opal/1TB Opal/2TB opal</td>
</tr>
<tr>
<td>M.2 NVMe SSD, via PCIe adapter</td>
<td>512GB Opal/512GB Opal/1TB Opal, PCIe 3.0 x4, up to 2; or 16GB Intel Optane Memory, PCIe 3.0 x2</td>
</tr>
<tr>
<td>Max internal storage</td>
<td>16TB (4 x 4TB 3.5&quot; HHDDs) plus 2TB (2 x 1TB) M.2 NVMe SSD</td>
</tr>
<tr>
<td>Media reader</td>
<td>9-in-1 card reader. Optional 29-in-1 card reader on selected models</td>
</tr>
</tbody>
</table>

### Specifications

<table>
<thead>
<tr>
<th>Components</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>One 250 watts with variable speed fan, autosensing, Climate Savers Computing Bronze, 80 PLUS Bronze qualified. Or one 400 watts with variable speed fan, autosensing, Climate Savers Computing Platinum, 80 PLUS Platinum qualified.</td>
</tr>
<tr>
<td>Onboard Ethernet</td>
<td>One onboard gigabit ethernet, Intel I219LM, supports Wake-on-LAN</td>
</tr>
<tr>
<td>HD Audio</td>
<td>Realtek ALC662 codec</td>
</tr>
<tr>
<td>TPM</td>
<td>Standard, TCG 2.0-compliant</td>
</tr>
<tr>
<td>Front ports</td>
<td>Two USB 3.0, microphone (3.5mm), headphone (3.5mm)</td>
</tr>
<tr>
<td>Rear ports</td>
<td>1 VGA and 2 DisplayPort (for Intel HD Graphics models only), two USB 2.0, four USB 3.0, one serial (9-pin), one ethernet (RJ-45), three analog audio ports (line-in, line-out, mic-in)</td>
</tr>
<tr>
<td>Mechanical</td>
<td>• Raven black color; metal case • 6.99W x 16.77” x 14.81”H • 175mm W x 426mm D x 376mm H • 28.66 lb (13kg) max configuration • 25-liter</td>
</tr>
<tr>
<td>Environmental certifications</td>
<td>GREENGUARD certified/RoHS-compliant/EPEAT Gold rating/ENERGY STAR 6.1 qualified</td>
</tr>
<tr>
<td>Limited warranty</td>
<td>1 or 3-year limited onsite service with 9x5/NBD. Some parts are Customer Replaceable Units.</td>
</tr>
<tr>
<td>ISV certifications</td>
<td>Please visit <a href="http://www.thinkworkstations.com/isv-certifications/">www.thinkworkstations.com/isv-certifications/</a></td>
</tr>
</tbody>
</table>
### ThinkStation P330 SFF Platform Specifications

#### Components Specification

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine Type</td>
<td>MT 30C7 for Transactional model and MT 30C8 for Relationship model. For configuration of all 30C7 EMEA and US models, please visit: <a href="http://psref.lenovo.com/Product/ThinkStation/ThinkStation_P330_SFF">http://psref.lenovo.com/Product/ThinkStation/ThinkStation_P330_SFF</a></td>
</tr>
<tr>
<td>Form factor</td>
<td>8.4L mini-tower</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Height: 343.5 mm (13.5 in). Width: 92.5 mm (3.6 in). Depth: 305.6 mm (12 in)</td>
</tr>
<tr>
<td>Weight</td>
<td>Maximum configuration: 13.23 lb (6.0kg)</td>
</tr>
<tr>
<td>Processor</td>
<td>Up to one Intel Xeon E-2100 family processor, up to 80W, up to 6 cores at 3.7GHz, up to 3.8GHz with 4 cores, up to 12MB cache, DDR4-2666 memory speed. Or up to one 8th Intel Core family processor, i7, i5, or i3, up to 65W, up to 6 cores at 3.2GHz, up to 3.7GHz with 4 cores, up to 12MB cache, up to DDR4-2666 memory speed. Or up to one Intel Pentium G5400 via Special Bids, 58W, 2 cores at 3.7GHz, 4MB cache, DDR4-2400 memory speed</td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel C246 Chipset</td>
</tr>
<tr>
<td>Memory</td>
<td>4 DIMM sockets. DDR4-2666, UDIMM. ECC and non-ECC are supported, but memory types cannot be intermixed</td>
</tr>
<tr>
<td>Memory capacity</td>
<td>Up to 64GB with 4x 16GB, both ECC and non-ECC</td>
</tr>
<tr>
<td>Memory protection</td>
<td>ECC with ECC UDIMM. Core i7 and i5 processors cannot support ECC UDIMM</td>
</tr>
<tr>
<td>Expansion slots</td>
<td>Three PCIe 3.0 slots as following:</td>
</tr>
<tr>
<td></td>
<td>Slot 1: PCIe 3.0 x16, full height, half length, links to CPU</td>
</tr>
<tr>
<td></td>
<td>Slot 2: PCIe 3.0 x1, full height, full length, links to PCH</td>
</tr>
<tr>
<td></td>
<td>Slot 3: PCIe 3.0 x16 (negotiable link width x4), full height, half length, links to PCH</td>
</tr>
<tr>
<td>Graphics - Processor graphics</td>
<td>Integrated Intel UHD Graphics P630 in -G suffix Xeon processors, or Intel UHD Graphics 630 in Core i7, i5, or i3 processors, or Intel UHD Graphics 610 in Pentium Gold G5400. Works along with discrete graphics to support multi-display, enables three display connectors (2x DP, 1x HDMI. HDMI is optional) on rear</td>
</tr>
<tr>
<td>Storage controllers</td>
<td>Integrated Intel SATA AHCI/RAID controller in chipset, 6Gbps SATA, RAID 0/1. Four onboard SATA ports for max 4 SATA HDD/SSD/ODD</td>
</tr>
<tr>
<td>Internal storage bay</td>
<td>Up to 3 bays with two disk bays and one slim optical bay:</td>
</tr>
<tr>
<td></td>
<td>Bay 1: Primary 3.5” SATA bay</td>
</tr>
<tr>
<td></td>
<td>Bay 2: 2.5” SATA bay (Optional)</td>
</tr>
<tr>
<td></td>
<td>Bay 3: 9mm Slim ODD bay</td>
</tr>
<tr>
<td>Disks</td>
<td>3.5” HDD supports up to 4TB each, 6Gbps SATA, 7.2K. 2.5” SSD supports up to 1TB each, 6Gbps SATA</td>
</tr>
<tr>
<td>M.2 slot for SSD</td>
<td>Up to 3x M.2 SSD with one dedicated onboard M.2 slot plus two PCIe to M.2 adapters. PCIe to M.2 adapter uses slot 1 or 3. Supports RAID 0/1 with PCH. When used as RAID, M.2 SSD should be installed in onboard M.2 slot and slot 3. Up to one Optane memory per system; Optane memory must work with a HDD or SSD; Optane memory cannot supported on Pentium G5400 models</td>
</tr>
<tr>
<td>M.2 SSD</td>
<td>M.2 SSD supports up to 1TB each, PCIe 3.0 x4, NVMe, Opal. Optane memory supports 32GB, PCIe 3.0 x2, NVMe, 3D Xpoint</td>
</tr>
<tr>
<td>M.2 slot for Wi-Fi and Bluetooth</td>
<td>One dedicated onboard M.2 slot for optional Intel Wireless-AC 9560, 2x2, 2.4GHz/5GHz (160MHz channels), 802.11ac, Bluetooth 5, up to 1.73Gbps</td>
</tr>
<tr>
<td>Media reader</td>
<td>Optional SD card reader on most models</td>
</tr>
<tr>
<td>Network interfaces</td>
<td>One onboard GbE port via integrated gigabit ethernet Intel i219LM, supports Wake-on-LAN. Optional PCIe ethernet adapters are available</td>
</tr>
<tr>
<td>Security features</td>
<td>Power-on and admin password. Trusted Platform Module, TCG 2.0 compliant. Optional chassis intrusion switch, cable lock, Kensington lock, and pad lock</td>
</tr>
<tr>
<td>Intel vPro</td>
<td>Supports Intel vPro on Xeon models. vPro also requires Wireless-AC 9560 if Wi-Fi is needed</td>
</tr>
<tr>
<td>Intel AMT</td>
<td>Intel Active Management Technology 12 on Xeon models. Intel Standard Manageability on other models</td>
</tr>
<tr>
<td>Base warranty</td>
<td>US models comes with 3-year limited onsite service with 9x5/NBD. 1 or 3-year limited onsite service with 9x5/NBD in EMEA or other GEOs</td>
</tr>
<tr>
<td>HD Audio</td>
<td>Intel HD Audio interface with Realtek ALC233 Codec</td>
</tr>
<tr>
<td>Front ports</td>
<td>2x USB 3.1 Gen 1 Type A, 2x USB 3.1 Gen 2 Type A. 1x USB 3.1 Gen 1 Type-C. 1x Mic-in. 1x Combo jack</td>
</tr>
<tr>
<td>Rear ports</td>
<td>2x USB 3.1 Gen 1 Type A. 2x USB 2.0 Type-A. 1x RJ-45. 1x COM. 2x DP. 1x Audio line-out Notes: DP needs Core, Pentium, or -G suffix Xeon processor</td>
</tr>
<tr>
<td>Memory protection</td>
<td>Optional rear ports 2x USB 3.1 Type-C. 1x COM. PS/2. 1x Parallel. 1x Thunderbolt. 1x IEEE1394. 1x HDMI. 1x Audio line-out Notes: HDMI needs Core, Pentium, or -G suffix Xeon processor</td>
</tr>
<tr>
<td>Temperature</td>
<td>Operating: -41 °F to 104 °F (10 °C to 35 °C) Non operating (no package): 14 °F to 140 °F (-10 °C to 60 °C)</td>
</tr>
<tr>
<td>Altitude</td>
<td>Operating: -15.2 m (-50 ft) to 3048 m (10 000 ft). Storage: -15.2 m (-50 ft) to 10,668 m (35 000 ft)</td>
</tr>
<tr>
<td>Humidity</td>
<td>Operating: 30%~98%, non-condensing Storage (with package): 20%~98%, non-condensing</td>
</tr>
<tr>
<td>Environmental</td>
<td>RoHS-compliant. GREENGUARD. EPEAT Gold rating and ENERGY STAR 7 qualified</td>
</tr>
<tr>
<td>Power supply</td>
<td>Supports one 210W or 260W power supply. 210W is 100V - 240V, 85% PSU, Climate Savers Computing Bronze and 80 PLUS Bronze qualified. 260W is 100V - 240V, 92% PSU, Climate Savers Computing Platinum and 80 PLUS Platinum qualified</td>
</tr>
<tr>
<td>ISV certifications</td>
<td>Please visit <a href="http://www.thinkworkstations.com/isv-certifications/">www.thinkworkstations.com/isv-certifications/</a></td>
</tr>
</tbody>
</table>

Note: 1. Depending on many factors, actual data transfer speed mentioned on this page may be lower than theoretical speed.
2. Any questions or advice on ThinkStation PSREF, please contact ThinkStation PSREF developer.
### ThinkStation P330 SFF Gen 2 (30D1 and 30D2) Platform Specifications

#### Storage Support

- **Storage bay**: Up to 3 bays with two disk bays and one slim optical bay:
  - **Bay 1**: Primary 3.5" SATA bay
  - **Bay 2**: 2.5" SATA bay (Optional)
  - **Bay 3**: 9mm Slim ODD bay

- **M.2 slot for Wi-Fi and Bluetooth**: One dedicated onboard M.2 slot for optional Intel Wireless-AC 0560, 2x2, 2.4GHz/5GHz (160MHz channels), 802.11ac, Bluetooth 5, up to 1.73Gbps

- **Media reader**: Optional SD card reader on most models

- **Network interfaces**: One onboard GbE port via integrated gigabit ethernet Intel i219LM, supports Wake-on-LAN. Optional PCIe ethernet adapters are available

- **Security features**: Power-on and admin password, Trusted Platform Module, TCG 2.0 compliant. Optional chassis intrusion switch, cable lock, Kensington lock, and pad lock

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### Memory Sockets

- **Memory Sockets**: 4 DIMM sockets with 2 channels

### Processor

- **Processor**: Supports one of the following processors:
  - **Xeon E-2174G 4C/8T/3.8GHz/8MB/71W/DDR4-2666**
  - **Core i5-9400 4C/4T/3.1GHz/9MB/65W/DDR4-2666**
  - **Core i3-8300 4C/4T/3.7GHz/8MB/62W/DDR4-2666**
  - **Core i3-8100 4C/4T/3.6GHz/6MB/65W/DDR4-2400**

- **Chipset**: Intel C246 Chipset

### Components

- **Components**: Specification
  - **Form factor**: 8.4L mini-tower
  - **Dimensions**:
    - Height: 343.5 mm (13.5 in).
    - Width: 92.5 mm (3.6 in).
    - Depth: 305.6 mm (12 in)
  - **Weight**:
    - Maximum configuration: 13.23 lb (6.0kg)

### Security features

- **Security features**: Power-on and admin password, Trusted Platform Module, TCG 2.0 compliant. Optional chassis intrusion switch, cable lock, Kensington lock, and pad lock

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### Storage Bay

- **Storage Bay**: 2x USB 3.1 Gen 1 Type A, 2x USB 3.1 Gen 2 Type A, 1x USB 3.1 Gen 1 Type-C, 1x Mic-in, 1x Combo jack

### Rear ports

- **Rear ports**: Supports the following via cable:
  - 1x COM, 1x Parallel, 2x PS/2, 1x DP or 1x HDMI, 2x USB 2.0

### Processor graphics

- **Processor graphics**: Integrated Intel UHD Graphics P630 in -G suffix Xeon processors, or Intel UHD Graphics 630 in Core i5 or i3 processors.

### Floppy Disk Type Interface RPM Offering Max Qty

- **Floppy Disk**: Available on most models

### Power supply

- **Power supply**: Supports one 210W or 260W power supply.
  - 210W is 100V - 240V, 85% PSU, Climate Savers Computing Bronze and 80 PLUS Bronze qualified.
  - 260W is 100V - 240V, 92% PSU, Climate Savers Computing Platinum and 80 PLUS Platinum qualified

### Environmental certifications

- **Environmental certification**: RoHS-compliant, GREENGUARD, EPEAT Gold rating and ENERGY STAR 7.1 qualified

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**Note**:

1. Depending on many factors, actual data transfer speed mentioned on this page may be lower than theoretical speed.
2. Any questions or advice on ThinkStation PSREF, please contact ThinkStation PSREF developer

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**ISV certifications**: Please see [www.thinkworkstations.com/isv-certifications](http://www.thinkworkstations.com/isv-certifications)
ThinkStation P330 Tiny Platform Specifications

**Machine Type**
MT 30CF for Transactional model and MT 30CE for Relationship model.
For configuration of all 30CF EMEA and US models, please visit:
http://psref.lenovo.com/Product/ThinkStation/ThinkStation_P330_Tiny

**Form factor**
1L. Optional VESA mount bracket kit, supports VESA 75mm and 100mm.
Optional floor stand for vertical orientation.
Optional tool-less chassis open.
Optional dust filter

**Dimensions**
Height: 179 mm (7.0 in). Width: 36.5 mm (1.437 in). Depth: 182.9 mm (7.2 in)

**Weight**
Maximum configuration: 3.08 lb (1.4kg)

**Supported TIO monitors**
Tiny-in-One 23 (MT: 10DQ), Tiny-in-One 22 (MT: 10LK),
Tiny-in-One 24 (MT: 10LL), Tiny-in-One22 Gen3 (MT: 10R1),
Tiny-in-One22 Gen3 Touch (MT: 10R0),
Tiny-in-One24 Gen3 (MT: 10QY),
Tiny-in-One24 Gen3 Touch (MT: 10QX).

**Processor**
Up to one Intel Core family processor, i7, i5, or i3.
Core i7 supports 65W or 35W, 6 cores, up to 3.2GHz, 12MB cache, DDR4-2666 memory speed.
Core i5 supports 65W or 35W, 6 cores, up to 3.1GHz, 9MB cache, DDR4-2666 memory speed.
Core i3 supports 65W, 62W, or 35W, 4 cores, up to 3.7GHz, 6MB or 8MB cache, DDR4-2400 memory speed.

**Chipset**
Intel Q370 Chipset

**Memory**
2 DIMM sockets. DDR4-2666. SoDIMM. Non-ECC.

**Expansion slots**
One PCIe slot via specific riser card:
PCle 3.0 x16 (negotiable link width x8) and low profile for discrete graphics card;
PCle 3.0 x4 and low profile for 350-T4 adapter and quad COM ports adapter

**Graphics**
Integrated Intel UHD Graphics 630. Works along with discrete graphics to support multi-display.

**Storage controllers**
Integrated Intel SATA AHCI controller in chipset, 6Gbps SATA, one onboard SATA port for 2.5" HDD

**Internal storage bay**
Up to one 2.5" HDD

**Disks**
2.5" HDD supports up to 1TB, 6Gbps SATA, 7,2K or 5,4K
M.2 slot for SSD
Two onboard M.2 slots for M.2 SSD, one for M.2 2280 SSD, one for M.2 2220 or 2242 SSD
M.2 SSD
M.2 2280 SSD supports up to 1TB each, PCIe 3.0 x4, NVMe, optional Opal.
M.2 2242 SSD supports up to 128GB, PCIe 3.0 x2. NVMe.

**Optane memory**
Up to 16GB Optane memory per system. Optane memory must work with a 2.5" HDD

**M.2 slot for Wi-Fi and Bluetooth**
One dedicated M.2 2230 slot for optional Wi-Fi card, supports one of the following:
Intel Wireless-AC 9560, 2x2, 2.4GHz/5GHz (160MHz channels), 802.11ac, Bluetooth 5, up to 1.73Gbps.
Intel Wireless-AC 8265, 2x2, 2.4GHz/5GHz, 802.11ac, Bluetooth 4.2, up to 867Mbps.
Note: Wi-Fi card, or specific functions of Wi-Fi card may not be supported in some countries.

**Wi-Fi antenna**
Optional Tiny 2.4GHz/5GHz SMA antenna kit

**Optical**
Optional one 9.0mm optical drive via optical drive kit, DVD-ROM or DVD±RW.
VESAs mount is required.

**Media reader**
None. Using USB adapter.

**Network interfaces**
One onboard GbE port via integrated gigabit ethernet Intel i219LM, supports Wake-On-LAN.
Optional Intel i350-T4 for 4x GbE ports, using PCIe slot

**Security features**
Power-on and admin password. Trusted Platform Module, TCG 2.0 compliant.
Chassis intrusion switch. Optional Kensington lock

**Power supply**
Supports one 135W power adaper, 100V - 240V, 88% PSU

**Environmental certification**
RoHS-compliant. GREENGUARD. EPEAT Gold rating and ENERGY STAR 7 qualified

**Pricing**
Please visit www.thinkworkstations.com/isv-certifications/
**ThinkStation P330 Tower Platform Specifications**

**Components**

| Machine Type | MT 30C5 for Transactional model and MT 30C6 for Relationship model. For configuration of all 30C5 EMEA and US models, please visit: [http://psref.lenovo.com/Product/ThinkStation/ThinkStation_P330_Tower](http://psref.lenovo.com/Product/ThinkStation/ThinkStation_P330_Tower) |
| Form factor | 18L Tower |
| Dimensions | Height: 376 mm (14.8 in). Width: 165 mm (6.5 in). Depth: 328 mm (12.9 in) |
| Weight | Maximum configuration: 23.4 lb (10.6kg) |
| Processor | Up to one Intel Core family processor, up to 95W, up to 6 cores at 3.8GHz, up to 12MB cache, up to DDR4-2666 memory speed. Or up to one 8th Intel Core family processor, i7, i5, or i3, up to 95W, up to 6 cores at 3.7GHz, up to 12MB cache, up to DDR4-2666 memory speed. Or up to one Intel Pentium Gold G5400 via Special Bids, 54W, 2 cores at 3.7GHz, 4MB cache, DDR4-2440 memory speed |
| Chipset | Intel C246 Chipset |
| Memory | 4 DIMM sockets. DDR4-2666. UDIMM. ECC and non-ECC are supported, but memory types cannot be intermixed |
| Memory capacity | Up to 64GB with 4x 16GB, both ECC and non-ECC |
| Memory protection | ECC with ECC UDIMM. Core i7 and i5 processors cannot support ECC UDIMM |
| Expansion slots | Three PCIe 3.0 slots as follows: |
| Slot 1 PCIe 3.0 x16, full height, half 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, half length, links to PCH |

**Graphics - Processor graphics**

Integrated Intel UHD Graphics 630 in Core i7, i5, or i3 processors, or Intel UHD Graphics 610 in Pentium Gold G5400.

Works along with discrete graphics to support multi-display, enables three display connectors (2x DP, 1x HDMI. HDMI is optional) on rear (on flex module).

**Graphics - Discrete graphics card**

Up to two PCIe 3.0 x16 slots for discrete graphics card (Slot 1 and 3). Supports the following graphics adapters:

<table>
<thead>
<tr>
<th>Adapter</th>
<th>Cores</th>
<th>Memory</th>
<th>Power</th>
<th>Connectors</th>
<th>Max qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>NVS 810</td>
<td>1024</td>
<td>4GB DDR3</td>
<td>8W</td>
<td>8x miniDP</td>
<td>1</td>
</tr>
<tr>
<td>Quadro P4000</td>
<td>256</td>
<td>2GB GDDR6</td>
<td>30W</td>
<td>3x miniDP</td>
<td>2</td>
</tr>
<tr>
<td>Quadro P620</td>
<td>512</td>
<td>2GB GDDR5</td>
<td>40W</td>
<td>4x miniDP</td>
<td>2</td>
</tr>
<tr>
<td>Quadro P1000</td>
<td>640</td>
<td>4GB GDDR5</td>
<td>47W</td>
<td>4x miniDP</td>
<td>2</td>
</tr>
<tr>
<td>Quadro P2000</td>
<td>1024</td>
<td>5GB GDDR5</td>
<td>75W</td>
<td>4x DP</td>
<td>2</td>
</tr>
<tr>
<td>Quadro P4000</td>
<td>1792</td>
<td>8GB GDDR5</td>
<td>105W</td>
<td>4x DP</td>
<td>1</td>
</tr>
<tr>
<td>GeForce GTX 1060</td>
<td>1280</td>
<td>6GB GDDR5</td>
<td>120W</td>
<td>DVI-D DL, HDMI, 3x DP</td>
<td>1</td>
</tr>
<tr>
<td>GeForce GTX 1070</td>
<td>1920</td>
<td>8GB GDDR5</td>
<td>150W</td>
<td>DVI-D DL, HDMI, 3x DP</td>
<td>1</td>
</tr>
<tr>
<td>GeForce GTX 1080</td>
<td>2560</td>
<td>8GB GDDR5X</td>
<td>180W</td>
<td>DVI-D DL, HDMI, 3x DP</td>
<td>1</td>
</tr>
<tr>
<td>GeForce GTX 1080 Ti</td>
<td>2560</td>
<td>8GB GDDR5X</td>
<td>180W</td>
<td>DVI-D DL, HDMI, 3x DP</td>
<td>1</td>
</tr>
<tr>
<td>Radeon Pro WX 3100</td>
<td>512</td>
<td>4GB GDDR5</td>
<td>50W</td>
<td>DP 2x miniDP</td>
<td>2</td>
</tr>
<tr>
<td>Radeon Pro WX 4100</td>
<td>1024</td>
<td>4GB GDDR5</td>
<td>50W</td>
<td>4x miniDP</td>
<td>2</td>
</tr>
</tbody>
</table>

**Notes:**
1. Quadro P4000, 2x Quadro P2000, GeForce GTX1060/1070/1080 needs 400W PSU.
2. GeForce GTX 1060/1070/1080 are dual-slot width.
3. GeForce GTX 1060/1070/1080 and Radeon Pro WX 3100/4100 are SBC.

**Storage controllers**

Integrated Intel SATA AHCI/RAID controller in chipset, 6Gbps SATA, RAID 0/1/10/5. Four onboard SATA ports for max 4 SATA HDD/SSD/ODD

Up to five bays with four disk bays plus one slim optical bay, supports up to 3x 3.5" HDD plus 1x 2.5" SSD, or 4x 2.5" SSD

**Internal storage bay**

| Bay 1 | Primary disk bay, 3.5" or 2.5" |
| Bay 2 | 2.5" SATA bay, cannot be available when 2nd Quadro P2000 is used |
| Bay 3 | Secondary disk bay, 3.5" or 2.5" |
| Bay 4 | 5.25" Flex bay, supports one of the following: |
| - Flex module for optional front eSATA/Thunderbolt/IEEE 1394 |
| - 3rd disk bay, 3.5" or 2.5", removable, via Front Access Storage Enclosure, using SATA 4 connector as eSATA mode |
| - 3rd disk bay, 3.5" or 2.5", via 5.25" to 3.5" HDD Kit |
| - M.2 drive, via Front removable M.2 enclosure, also occupies slot 1 or 3 |
| Bay 5 | 9mm Slim ODD bay |

3.5" HDD supports up to 4TB each, 6Gbps SATA, 7.2K 2.5" SSD supports up to 1TB each, 6Gbps SATA

**Disks**

**Network interfaces**

One onboard GbE port via integrated gigabit ethernet Intel i219LM, supports Wake-on-LAN. Optional PCIe ethernet adapters are available

**Security features**

Power-on and admin password, Trusted Platform Module, TCG 2.0 compliant. Optional chassis intrusion switch, cable lock, Kensington lock, and pad lock

**Intel vPro**

Supports Intel vPro on Xeon models. vPro also supports Wireless-AC 9500 if Wi-Fi is needed

**Intel AMT**

Intel Active Management Technology 12 on Xeon models, Intel Standard Manageability on other models

**Base warranty**

US models comes with 3-year limited onsite service with 9x5/NBD. 1 or 3-year limited onsite service with 9x5/NBD in EMEA or other GEOs

**HD Audio**

Intel HD Audio interface with Realtek ALC233 Codec

**Front ports**

2x USB 3.1 Gen 1 Type A. 2x USB 3.1 Gen 2 Type A. 1x USB 3.1 Gen 1 Type-C. 1x Mic-in. 1x Combo jack

**Rear ports**

2x USB 3.1 Gen 1 Type A. 2x USB 2.0 Type-A. 1x RJ-45. 1x COM. 2x DP. 1x Audio line-out. Notes: DP needs Core, Pentium, or -G suffix Xeon processor

**Optional front ports (on flex module)**

1x Thunderbolt (USB Type-C), one of two ports supports video-out.

1x eSATA 1. 1x IEEE1394.

**Climate Savers Computing**

Platinum and 80 PLUS Platinum qualified.

**Environmental certification**

RoHS-compliant. GREENGUARD. EPEAT Gold rating and ENERGY STAR 7 qualified

**Power supply**

Supports one 250W or 400W power supply, 100V - 240V, 92% PSU. Climate Savers Computing Platinum and 60 PLUS Platinum qualified. 400W PSU supports one 6+2-pin aux power connector.

**ISV certifications**

Please visit [www.thinkworkstations.com/isv-certifications](http://www.thinkworkstations.com/isv-certifications)

**Notes:**
1. Depending on many factors, actual data transfer speed mentioned on this page may be lower than theoretical speed.
2. Any questions or advice on ThinkStation PSREF, please contact ThinkStation PSREF developer

 Lenovo, July 2018
### Components Specification

<table>
<thead>
<tr>
<th>Components</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form factor</td>
<td>18L Tower</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Height: 376 mm (14.8 in), Width: 165 mm (6.5 in), Depth: 328 mm (12.9 in)</td>
</tr>
<tr>
<td>Weight</td>
<td>Maximum configuration: 28.22 lb (12.8kg)</td>
</tr>
</tbody>
</table>
| Processor    | Supports one of the following processors:  
  - Xeon E-2186G 6C/12T/3.8GHz/12MB/95W/DDR4-2666  
  - Xeon E-2174G 4C/8T/3.8GHz/8MB/71W/DDR4-2666  
  - Core i7-9700K 8C/8T/3.6GHz/12MB/95W/DDR4-2666  
  - Core i5-9600K 6C/6T/3.7GHz/9MB/95W/DDR4-2666  
  - Core i5-9400 6C/6T/2.9GHz/9MB/65W/DDR4-2666  
  - Core i3-8300 4C/4T/3.7GHz/8MB/62W/DDR4-2400  
  - Core i3-8100 4C/4T/3.6GHz/8MB/65W/DDR4-2400  
Note: Next gen Xeon processors and more 9th Core processor will be supported on June 2019 |
| Memory Sockets | 4 DIMM sockets with 2 channels |
| Memory Types  | 8GB/16GB DDR4-2666 UDIMM ECC or 4GB/8GB/16GB DDR4-2666 UDIMM non-ECC |
| Memory Capacity | 64GB with 4 x 16GB, both UDIMM ECC or UDIMM non-ECC |
| Memory Protection | ECC on models with UDIMM ECC memory |
| Expansion slots | Three PCIe 3.0 slots as following:  
  - 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, links to PCH |
| Processor graphics | Integrated Intel UHD Graphics P630 in -G suffix Xeon processors, or Intel UHD Graphics 630 in Core i7, i5, or i3 processors. Works along with discrete graphics to support multi-display, enables three rear display connectors (2 DP standard, 1 DP or HDMI optional). |
| Discrete Graphics Offering | Up to two PCIe 3.0 x16 slots for discrete graphics card (Slot 1 and 3). Supports the following graphics adapters:  
  - Graphics: Quadro P4000, Quadro P2000, Quadro P600, Quadro P1000, Quadro P5000, Quadro RTX 4000  
  - Power: 2GB GDDR5, 2GB GDDR5, 4GB GDDR5, 4GB GDDR5, 5GB GDDR5, 5GB GDDR5, 16GB GDDR5X, 8GB GDDR6, 8GB GDDR6, 8GB GDDR6, 16GB GDDR6  
  - Connectors: 3x miniDP, 4x miniDP, 4x miniDP, 4x DP, 4x DP, DVI-DL+4x DP, 1x Virtual link |
| Storage Controller | Onboard Intel RST SATA RAID Std Sata 6Gb/s HDD or SSD 0/1/0/5  
  Onboard Intel RST PCIe RAID Std PCIe NVMe M.2 PCIe SSD 0/1/0 |
| Storage Support | Disk Type Interface RPM Offering Max Qty  
  - 3.5" SATA HDD Sata 6Gb/s 7.2K 1TB/2TB/4TB 3  
  - 2.5" SATA HDD Sata 6Gb/s 7.2K 500GB FIPS 4  
  - 2.5" SATA SSD Sata 6Gb/s 7.2K 256GB/512GB/1TB 3  
  - Optane Memory PCIe NVMe 32GB 1, used with HDD/SSD  
  - M.2 PCIe SSD PCIe NVMe 256GB/512GB/1TB 3 |
| Storage Bays | Up to five bays with four disk bays plus one slim optical bay, supports up to 3x 3.5" HDD plus 1x 2.5" SSD, or 4x 2.5" HDD/SSD  
  - Bay 1: Primary disk bay, 3.5" or 2.5"  
  - Bay 2: 2.5" SATA bay, cannot be available when 2nd Quadro P2000 is used  
  - Bay 3: Secondary disk bay, 3.5" or 2.5"  
  - Bay 4: 5.25" Flex bay, supports one of the following:  
    - Flex module for optional front eSATA/Thunderbolt/IEEE1394  
    - 3rd disk bay, 3.5" or 2.5", removable, via Front Access Storage Enclosure, using SATA 4 connector as eSATA mode  
    - 3rd disk bay, 3.5" or 2.5", via 5.25" to 3.5" HDD Kit  
  - Bay 5: 9mm Slim ODD bay  
  - M.2: 8x M.2 SSD (1 onboard, 2 via PCIe to M.2 adapter) |

### Components Specification

| Media reader | Optional SD card reader on most models |
| Network interfaces | One onboard GbE port via integrated gigabit ethernet Intel i219LM, Optional PCIe ethernet adapters are available |
| WL AN + Bluetooth | One dedicated onboard M.2 slot for optional Intel Wireless-AC 9560, 2x2, 2.4GHz/5GHz (160MHz channels), 802.11ac, Bluetooth 5, up to 1.73Gbps |
| Security features | Power-on and admin password. Trusted Platform Module, TCG 2.0 compliant. Optional chassis intrusion switch, e-lock, cable lock, Kensington lock, and pad lock |
| Intel vPro | Supports Intel vPro on Xeon models. vPro also requires Wireless-AC 9560 if Wi-Fi is needed |
| Intel AMT | Intel Active Management Technology 12 on Xeon models, Intel Standard Manageability on other models |
| Base warranty | US models comes with 3-year limited onsite service with 9x5/NBD. 1 or 3-year limited onsite service with 9x5/NBD in EMEA or other GEs |
| HD Audio | Intel HD Audio interface with Realtek ALC233 Codec |
| Front ports | 2x USB 3.1 Gen 1 Type A, 2x USB 3.1 Gen 2 Type A. 1x USB 3.1 Gen 1 Type-C, 1x Mic-in, 1x Combo jack |
| Rear ports | 2x USB 3.1 Gen 1 Type A, 2x USB 2.0 Type-A, 1x RJ-45, 1x COM, 2x DP, 1x Audio line-out |
| Optional ports (on flex module) | 1x Thunderbolt (USB Type-C), one of two ports supports video-out. 1x eSATA, 1x IEEE1394 |
| Optional rear ports | Supports the following via cable: 1x COM, 1x Parallel, 2x PS/2, 1x DP or 1x HDMI. 2x USB 2.0 |
| Temperature | Supports the following via PCIe adapter: 4x COM, 2x USB 3.1 Type-C, 2x USB 3.0, 1x Thunderbolt. Notes: Capacities for Full Rack needs Core, Pentium, or -G suffix Xeon processor |
| Attitude | Operating: +15.2 m (-50 ft) to 3048 m (10 000 ft). Storage: -15.2 m (-50 ft) to 10, 668 m (35 000 ft) |
| Humidity | Operating: 20%~90%, non-condensing. Storage: 20%~90%, non-condensing |
| Environmental RoHS-compliant. GREENGUARD, EPEAT Gold rating and ENERGY STAR 7 certification | Supports one 250W or 400W power supply, 100V - 240V, 92% PSU. Climate Savers Computing Platinum qualified. 400W PSU supports one 6+2-pin aux power connector. |
| Power supply (with package): | Supports the following via cable: 1x COM, 1x Parallel, 2x PS/2, 1x DP or 1x HDMI. 2x USB 2.0 |
| Power supply (non operating (no package): | Operating: +15.2 m (-50 ft) to 3048 m (10 000 ft). Storage: -15.2 m (-50 ft) to 10, 668 m (35 000 ft) |
| SSD certifications | Please visit [www.thinkworkstations.com/iosv-certifications/](http://www.thinkworkstations.com/iosv-certifications/) |

**Note:** 1. Depending on many factors, actual data transfer speed mentioned on this page may be lower than theoretical speed. 2. Any questions or advice on ThinkStation PSREF, please contact ThinkStation PSREF developer.
ThinkStation P520 Platform Specifications

Product Specifications Reference (PSREF)

Form factor: 33L Tower
Dimensions: 165mm/6.5" W x 460mm/18.1" D x 440mm/17.3" H (with feet)
Weight: Maximum configuration: 52.91 lb (24kg)

Processor Family:
- Up to one 140W Intel Xeon W family processor:
  - Up to 18 cores at 2.3 GHz
  - Up to 4.0 GHz with 4 cores
- Up to 24,75 MB cache
- Up to DDR4-2666 memory speed

Processor Sockets: 1x FCLGA2066
Chipset: Intel C422 Chipset
Memory Slots: 8 DIMM sockets with 4 channels
Memory Types:
- DDR4-2666 RDIMM
Memory Protection:
- ECC
- Optional ports
- 1x internal USB 3.0 port
- 1x internal USB 3.0 port
- 1x SATA SSD/HDD with Front Access Storage Enclosure
- 1x 5.25" 9.0mm optical drive + 2x 3.5"/2.5" SATA SSD/HDD
- 2x M.2 SSD with 2x PCIe AIC SSD
- Power-on and admin password. Trusted Platform Module, TCG 2.0 compliant, switch to
- Intel vPro Intel vPro technology supported. vPro requires Wireless-AC 8265 if Wi-Fi is needed
- Intel Active Management Technology 11
- Diagnostic
- Front panel warning LED. ThinkStation Diagnostics for Windows. Photo-transfer
- Supports one of the following:
  - 2x Thunderbolt ports (USB Type-C) on flex module, one of two ports
  - 1x eSATA on flex module
  - 1x USB Type-C on flex module, USB 3.1 gen 1
  - 1x external USB 3.0 port

Environmental specification
- Temperature - operating: 50 °F to 95 °F (10 °C to 35 °C)
- Temperature - storage (no package): 4°F to 140°F (-20°C to 60°C)
- Temperature - storage (with package): -40°F to 140°F (-40°C to 60°C)
- Humidity - operating: 10%~80%, non-condensing
- Humidity - storage (with package): 10%~90%, non-condensing

Storage Support:
- Optional ports
- 1x internal USB 3.0 port

Storage Bays:
- Bay Type: Max Storage
  - M.2 slot: M.2 SSD (2 onboard, 7 via PCIe to M.2 adapter)
    - 2x flexible bays. Supports the following:
      - 2x half-height optical drives
      - 2x 5.25" 9.0mm optical drives
      - 1x 5.25" 9.0mm optical drive + 2x 3.5"/2.5" SATA SSD/HDD
      - 1x 3.5"/2.5" SATA SSD/HDD with Front Access Storage Enclosure
      - 1x flex module for the following options:
        - Tray: 1.9mm optical
        - Tray: 2.15-in-1 USB 3.0 reader, 2x Thunderbolt, or 4-digit diagnostic display
      - Port 1 and 2: Front USB 3.0 Type-C or eSATA
      - 2x M.2 SSD with 2x Front Removable Drive Enclosures
    - Disk Bay: Up to 4x 3.5" or 2.5" disks with 4 disk bays (2 bays standard, 2 bays optional)

Memory Protection:
- ECC
- Memory Types:
  - DDR4-2666 RDIMM
- Memory Sockets:
  - 8 DIMM sockets with 4 channels
- Chipset:
  - Intel C422 Chipset
- Processor Family:
  - Up to one 140W Intel Xeon W family processor:
    - Up to 18 cores at 2.3 GHz
    - Up to 4.0 GHz with 4 cores
    - Up to 24,75 MB cache
    - Up to DDR4-2666 memory speed
- Processor Sockets:
  - 1x FCLGA2066
- Chipset:
  - Intel C422 Chipset
- Memory Slots:
  - 8 DIMM sockets with 4 channels
- Memory Types:
  - DDR4-2666 RDIMM
- Memory Protection:
  - ECC
- Optional ports
- 1x internal USB 3.0 port

Environmental specification:
- Temperature - operating: 50 °F to 95 °F (10 °C to 35 °C)
- Temperature - storage (no package): 4°F to 140°F (-20°C to 60°C)
- Temperature - storage (with package): -40°F to 140°F (-40°C to 60°C)
- Humidity - operating: 10%~80%, non-condensing
- Humidity - storage (with package): 10%~90%, non-condensing

Storage Support:
- Optional ports
- 1x internal USB 3.0 port

Storage Bays:
- Bay Type: Max Storage
  - M.2 slot: M.2 SSD (2 onboard, 7 via PCIe to M.2 adapter)
    - 2x flexible bays. Supports the following:
      - 2x half-height optical drives
      - 2x 5.25" 9.0mm optical drives
      - 1x 5.25" 9.0mm optical drive + 2x 3.5"/2.5" SATA SSD/HDD
      - 1x 3.5"/2.5" SATA SSD/HDD with Front Access Storage Enclosure
      - 1x flex module for the following options:
        - Tray: 1.9mm optical
        - Tray: 2.15-in-1 USB 3.0 reader, 2x Thunderbolt, or 4-digit diagnostic display
      - Port 1 and 2: Front USB 3.0 Type-C or eSATA
      - 2x M.2 SSD with 2x Front Removable Drive Enclosures
    - Disk Bay: Up to 4x 3.5" or 2.5" disks with 4 disk bays (2 bays standard, 2 bays optional)

Max Storage:
- Supports one of the following:
  - 2x Thunderbolt ports (USB Type-C) on flex module, one of two ports
  - 1x eSATA on flex module
  - 1x USB Type-C on flex module, USB 3.1 gen 1
  - 1x external USB 3.0 port

Power supply:
- Supports one of the following:
  - 1x fixed 900W, autosensing, 92%, 80 PLUS Platinum qualified
  - 1x fixed 900W, autosensing, 92%, 80 PLUS Platinum qualified

Media reader:
- 900W power supply may be needed.

Network:
- Integrated one gigabit ethernet (Intel i219LM), supports Wake-on-LAN. Optional PCIe interfaces
  - ethernet or wireless adapters are available.
- Optional Intel Wireless-AC 8265, 2x2, 2.4GHz/5GHz, 802.11ac, Bluetooth 4.2; up to 867Mbps

Security features:
- Power-on and admin password. Trusted Platform Module, TCG 2.0 compliant, switch to
  - 1.2 via UEFI setting. Optional access panel lock, Kensington lock, and pad lock

Lenovo, May 2019
# ThinkStation P520c Platform Specifications

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<th>Max Storage</th>
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<tr>
<td></td>
<td>All HDD: 24TB using 4x 3.5” HDD</td>
<td>All SSD: 18TB using 4x 2.5” SATA SSD and 5x M.2 SSD</td>
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<tr>
<td>Processor Family</td>
<td>Power supply</td>
<td>One fixed 500W, autosensing, 92%, 80 PLUS Platinum qualified</td>
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<tr>
<td>Maximum configuration: 31.97 lb</td>
<td>Media reader</td>
<td>Integrated one gigabit ethernet (Intel i219LM), supports Wake-on-LAN. Optional PCIe interfaces are connectivity adapters.</td>
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<tr>
<td>Memory Protection</td>
<td></td>
<td>Network and wireless adapters are supported.</td>
</tr>
<tr>
<td>ECC</td>
<td>Security features</td>
<td>Power-on and admin password. Trust Platform Module, CPG 2.0 compliant, switch to 2.2 via UEFI setting. Optional access panel lock, Kensington lock, and pad lock.</td>
</tr>
<tr>
<td>Expansion slots</td>
<td>Intel vPro</td>
<td>Intel vPro technology supported. vPro requires Wireless-Ac 8265 if Wi-Fi is needed.</td>
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<td>Chipset</td>
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<td>Intel AMT Intel Active Management Technology 11</td>
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<td>Discrete Graphics Offering</td>
<td>ThinkStation Diagnostics for Windows. Optional front 4-digit diagnostic support. on flex module.</td>
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<td>Memory Capacity</td>
<td>Storage Controller</td>
<td>Rear: 1. Depending on many factors, actual data transfer speed mentioned on this page may be lower than theoretical speed.</td>
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<tr>
<td>DDR4-2666 RDIMM</td>
<td>Type</td>
<td>Note: 1. Depending on many factors, actual data transfer speed mentioned on this page may be lower than theoretical speed.</td>
</tr>
<tr>
<td>Maximum configuration: 31.97 lb</td>
<td>RAID</td>
<td>2. Any questions or advice on ThinkStation PSREF, please contact ThinkStation PSREF developer.</td>
</tr>
<tr>
<td>Weight</td>
<td>Cache</td>
<td>3. Any questions or advice on ThinkStation PSREF, please contact ThinkStation PSREF developer.</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Environmental specification</td>
<td>Storage Bays: M.2 slot provides the following:</td>
</tr>
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<td>25L Tower</td>
<td></td>
<td>1. Maximum Drives Qty</td>
</tr>
<tr>
<td></td>
<td>Environmental specifications</td>
<td>M.2 slot: 6x M.2 SSD/2 onboard, 3 via PCIe to M.2 adapter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flex Bay: M.2 slot provides the following:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Maximum Drives Qty</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Any questions or advice on ThinkStation PSREF, please contact ThinkStation PSREF developer.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Any questions or advice on ThinkStation PSREF, please contact ThinkStation PSREF developer.</td>
</tr>
</tbody>
</table>

**Environmental specifications:**
- Temperature - operating: 50 °F to 95 °F (10 °C to 35 °C)
- Temperature - storage (no package): 14 °F to 140 °F (-10 °C to 60 °C)
- Temperature - storage (with package): -40 °F to 140 °F (-40 °C to 60 °C)
- Humidity - operating: 10%–80%, non-condensing
- Humidity - storage (with package): 10%–90%, non-condensing

**Environmental Certifications:**
- RoHS-compliant
- GREENGUARD. EPEAT Gold rating. ENERGY STAR 6.1 qualified on model 30BX0008US and 30BX0009US

**ISV certifications:**
Please visit [www.thinkworkstations.com/isv-certifications/](http://www.thinkworkstations.com/isv-certifications/)

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**Notes:**
1. Depending on many factors, actual data transfer speed mentioned on this page may be lower than theoretical speed.
2. Any questions or advice on ThinkStation PSREF, please contact ThinkStation PSREF developer.
Expansion slots:

| Slot 1 (CPU) | PCIe 3.0 x16, full height, full length, 75W |
| Slot 2 (CPU) | PCIe 3.0 x16, full length, 75W, double-ended |
| Slot 3 (CPU) | PCIe 3.0 x8, full height, full length, 25W, open ended |
| Slot 4 (CPU) | PCIe 3.0 x8, dual-ended |
| Slot 5 | PCIe, full height, full length, 25W |
| Slot 6 (PCH) | PCIe 3.0 x4, full height, half length, 25W, open ended |

900W PSU supports two 6+2-pin aux power connectors. 650W PSU supports one 6+2-pin aux power connector.
### ThinkStation P720 Platform Specifications

#### Form factor
36L Tower

#### Dimensions
175mm x 85mm x 191.1° x 146mm x 17.6° (with feet)

#### Weight
Maximum configuration: 52.25 lb (23.7kg)

#### Processor Family
- Up to two 150 W Gen 1 or Gen 2 Intel Xeon Scalable family processors, Bronze, Silver, Gold, or Platinum:
  - Up to 24 cores at 2.1 GHz
  - Up to 3.6 GHz with 4 cores
  - Up to 33 MB cache
  - Up to DDR4-2933 memory speed

#### Processor Sockets
- 2x FCLGA3647

#### Chipset
Intel C621 Chipset

#### Memory Capacity
- DDR4-2933 RDIMM: 768GB
- DDR4-2666 RDIMM: 384GB

#### Memory Types
- DDR4-2666 RDIMM

#### Processor Family
- Up to 24 cores at 2.1 GHz
- Up to 3.6 GHz with 4 cores
- Up to 33 MB cache

#### Chipset
Intel C621 Chipset

#### Weight
Maximum configuration: 52.25 lb (23.7kg)

#### Dimensions
- 175mm/6.89” W x 485mm/19.1” D x 446mm/17.6” H (with feet)

#### Storage Support

<table>
<thead>
<tr>
<th>Bay Type</th>
<th>Maximum Drives Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flex Bay</td>
<td>4 x 3.5” SATA HDD</td>
</tr>
<tr>
<td></td>
<td>4 x 3.5” SATA HDD + 4 x 2.5” SATA SSD/HDD (Blind connection needed)</td>
</tr>
<tr>
<td></td>
<td>4 x 2.5” PCIe SSD + 2 x 3.5”/2.5” disks (Blind connection needed)</td>
</tr>
</tbody>
</table>

#### Power supply
- Supports up to 10k M.2 SSD + 4x 3.5” HDD/10x 2.5” SSD/10x 2.5” HDD + 2x PCIe AIC SSD
- All SSD: 36TB using 6x 3.5” HDD
- All SSD: 38.9TB by using 10x 2.5” SATA SSD, 9x M.2 SSD, and 2x PCIe AIC SSD

#### Power supply
- Supports the following of the options:
  - One fixed 690W, autosensing, 92%, 80 PLUS Platinum qualified
  - One fixed 900W, autosensing, 92%, 80 PLUS Platinum qualified

#### Media reader
- SD USB 2.0 card reader on most models. Optional UHS-II 15-in-1 USB 3.0 reader on flex module

#### Network interfaces
- Integrated two-port gigabit ethernet (Intel i219LM and i210AT), supports Wake-on-LAN on both ports, Optional PCIe ethernet are available

#### WLAN + Bluetooth
- Optional Intel Wireless-AC 8265, 2x2, 2.4GHz/5GHz, 802.11ac, Bluetooth 4.2, up to 867Mbs

#### Security features
- Power-on and admin password, Trusted Platform Module, TCG 2.0 compliant, switch to 2.2 via UEFI, BIOS. Chassis intrusion switch. Optional power-on password
- Available panel lock, Kensington lock, and padlock

#### Diagnostics
- Front panel warning LED. ThinkStation Diagnostics for Windows. Photo-audio transfer with Lenovo PC Diagnostics for Android and iOS. Optional front 4-digit diagnostic display on flex module

#### Base warranty
- 1 or 3-year limited onsite service with 9x5/NBD

#### HD Audio
- Realtek HD Audio
- Supports the following optional ports:
  - 1x eSATA on flex module
  - 1x internal USB 3.0 port
  - 1x COM port
  - 2x USB-C ports via PCIe adapter, USB 3.1 gen 2. One 15W, one 5W

#### Support
- Supports the following optional ports:
  - 2x Thunderbolt ports (USB Type-C) on flex module, one of two ports supports video-out
  - 1x eSATA on flex module
  - 1x USB Type-C on flex module, USB 3.1 gen 1

#### Environmental specifications
- Temperature - operating: 50°F to 105°F (10°C to 35°C)
- Temperature - storage (no package): 14°F to 140°F (-10°C to 60°C)
- Temperature - storage (with package): -40°F to 140°F (-40°C to 60°C)
- Altitude - operating (Unpressurized): 0-10000 feet (0-3048m)
- Altitude - storage (Unpressurized): 0-10000 feet (0-3048m)
- Humidity - operating: 10%–90%, non-condensing
- Humidity - storage (with package): 10%–90%, non-condensing

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**Note:**
- 1. Depending on many factors, actual data transfer speed mentioned on this page may be lower than theoretical speed.
- 2. To support the maximum expandability, 900W power supply may be needed.
- 3. Any questions or advice on ThinkStation PSREF, please contact ThinkStation PSREF developer

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Lenovo, May 2019
ThinkStation P920 Platform Specifications

Product Specifications Reference (PSREF)

Form factor
55L Tower

Dimensions
200mm/7.87" W x 620mm/24.4" D x 446mm/17.56" H (with feet)

Weight
Maximum configuration: 71.3 lb (32.3kg)

Processor Family
* Up to 28 cores at 2.5 GHz
* Up to 3.6 GHz with 4 cores
* Up to 38.5 MB cache
* Up to DDR4-2933 memory speed

Processor Slots
2x FCLGA3647

Chipset
Intel C621 Chipset

Memory Specifications
16 DIMM sockets with 12 channels, 8 DIMM sockets with 6 channels per processor

Memory Capacity
1TB (DDR4-2666 LRDIMM or DDR4-2933 RDIMM) or 512GB (DDR4-2666 RDIMM)

Memory Sockets
16 DIMM sockets with 12 channels. 8 DIMM sockets with 6 channels per processor

Weight
Maximum configuration: 71.3 lb (32.3kg)

Dimensions
200mm/7.87" W x 620mm/24.4" D x 446mm/17.56" H (with feet)

Form factor
55L Tower

Expansion slots

Slot 1 (CPU1) PCIe 3.0 x16, full height, full length, 75W, double-width
Slot 2 (CPU1) PCIe 3.0 x4, full height, full length, 25W, open ended
Slot 3 (CPU1) PCIe 3.0 x16, full height, full length, 25W, open ended
Slot 4 (CPU1) PCIe 3.0 x16, full height, full length, 25W, open ended
Slot 5 (CPU1) PCIe 3.0 x4, full height, half length, 25W, open ended
Slot 6 (CPU1) PCIe 3.0 x16, full height, half length, 75W
Slot 7 (CPU2) PCIe 3.0 x16, full height, full length, 25W
Slot 8 (CPU2) PCIe 3.0 x16, full height, full length, 75W

Discrete Graphics Offering

Graphics
NVS 810 4GB DDR3 68W 8xmini DP 2
Quadro P400 2GB GDDR5 30W 4xminiDP 4
Quadro P600 2GB GDDR5 45W 4xminiDP 4
Quadro P5000 16GB GDDR5X 180W DVI-D/4xDP SLI 3
Quadro P6000 24GB GDDR5X 250W DVI-D/4xDP SLI 3
Quadro RTX 4000 8GB GDDR6 160W 3xDP. 1xVirtualLink 3
Quadro RTX 5000 16GB GDDR6 256W 4xDP 1xVirtualLink NVLink 3
Quadro RTX 8000 24GB GDDR6 380W 3xDP 1xVirtualLink NVLink 2
Quadro RTX 8000 48GB GDDR6 380W 3xDP 1xVirtualLink NVLink 2
Quadro GP 100 16GB HBM2 235W 1xDVI-D/4 DP 4xDP NVLink 3
Quadro GV 100 32GB HBM2 250W 4xDP NVLink 3

Storage Controller

Type
SATA 6Gb/s
SATA 6Gbps
SATA 6Gbps
SATA 6Gbps
SATA 6Gbps
SATA 6Gbps
SATA 6Gbps
SATA 6Gbps

Max Qty
1/10/5
1/10/5
1/10/5
1/10/5
1/10/5
1/10/5
1/10/5
1/10/5

Onboard Intel RSTe
Std
SATA 6Gb/s

9440-8 PCIe
Opt SAS 12Gb/s, SATA 6Gb/s 0/1/10/5

9460-16 PCIe
Opt SAS 12Gb/s, SATA 6Gb/s 0/1/10/5

NVMe Basic
Opt PCIe NVMe

NVMe Premium
Opt PCIe NVMe

NVMe for Intel SSD
Opt PCIe NVMe

Storage Bays

Max Storage
Supports up to 9x M.2 SSD + 6x 3.5" HDD/10x 2.5" SSD/10x 2.5" HDD + 2x PCIe AIC SSD

All HDD: 36TB using 6x 3.5" HDD
All SSD: 38.66TB using 10x 2.5" SATA SSD, 9x M2 SSD, and 2x PCIe AIC SSD

Power supply
One fixed 1400 watts, autosensing, 92% PSU, 80 PLUS Platinum qualified

Environmental Specification

Temperature - operating
50 °F to 95 °F (10 °C to 35 °C)

Temperature - storage (no package)
14 °F to 140 °F (-10 °C to 60 °C)

Altitude - operating
0 to 10,000 ft (0-3048m)

Humidity - operating
10%–80%, non-condensing

Humidity - storage (with package)
10%–90%, non-condensing

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

Note:
1. Depending on many factors, actual data transfer speed mentioned on this page may be lower than theoretical speed.
2. Any questions or advice on ThinkStation PSREF, please contact ThinkStation PSREF developer.

Lenovo, May 2019
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Limited warranty: Support unrelated to a warranty issue may be subject to additional charges.
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Summary of Changes

This section describes the changes made in this version of ThinkServer PSREF and in previous version
This edition might also include minor corrections and editorial changes which are not identified

August 23, 2017 - Version 511
Additions in this update
► Update ThinkServer RD650/RD550/RD350/TD350/TS460/RS160 platform specifications, add 12TB 7.2K SATA6Gbs HDD support

June 21, 2017 - Version 508
Additions in this update
► Add ThinkServer TS460 models announced June 2017
► Add ThinkServer RS160 models announced June 2017
► Update ThinkServer TS460 platform specifications, add new SBB support: Kaby Lake Xeon, Core i3, and Pentium processors. DDR4-2400 memory. 10TB 7.2K SATA6Gbs HDD, 10TB 7.2K SAS12Gbs HDD, 300GB/600GB 15K 2.5" SAS. Red Hat Enterprise Linux 7.3. SUSE Linux Enterprise Server 12 SP2/11 SP4
► Update ThinkServer RS160 platform specifications, add new SBB support: Kaby Lake Xeon, Core i3, Pentium, and Celeron processors. DDR4-2400 memory. 10TB 7.2K SATA6Gbs HDD, 10TB 7.2K SAS12Gbs HDD, 900GB 15K 2.5" SAS

May 26, 2017 - Version 507
Additions in this update
► Update ThinkServer RD650/RD550 platform specifications, add DDR4-2400 RDIMM memory, up to 1.92TB easy-swap NVMe SSD, and up to 3.84TB NVMe flash adapter

April 19, 2017 - Version 505
Additions in this update
► Add ThinkServer TS460 models announced April 2017
► Add ThinkServer TD350 models announced April 2017
► Add ThinkServer TS150 models announced April 2017
► Update ThinkServer TS150 platform specifications, add new Kaby Lake processors, DDR4-2400 memory, 10TB hard drive supports

February 15, 2017 - Version 502
Additions in this update
► Add ThinkServer RS160 models announced September 2016
Withdrawals in this update
► ThinkServer TS140 had been end of life

October 12, 2016 - Version 496
Additions in this update
► New ThinkServer RS160 product announced September 2016
► New ThinkServer TS150 models announced August and October 2016

September 14, 2016 - Version 495
Additions in this update
► New ThinkServer RS160 product announced September 2016
► New ThinkServer TS140 models announced September 2016

April 6, 2016 - Version 487
Additions in this update
► New ThinkServer TD350, RD350, and RD450 models announced April 2016
► Add Intel Xeon E5-2600 v4 processors
March 23, 2016 - Version 486
Additions in this update
► New ThinkServer TS140 models announced March 2016

February 24, 2016 - Version 485
Additions in this update
► Add 8TB SATA and SAS 72K 6Gbs hard drive on ThinkServer RD350/RD450/RD550/RD650/TD350

December 30, 2015 - Version 483
Additions in this update
► Updates ThinkServer RS140, TD340 specifications
► Updates the most recent ThinkServer RS140, TD340 models

December 9, 2015 - Version 482
Additions in this update
► Updates ThinkServer TS140, TS440 specifications
► Updates the most recent ThinkServer TS140, TS440, RD350, RD450, RD550, RD650 models

October 28, 2015 - Version 480
Additions in this update
► New ThinkServer TS140 models announced October 2015

July 30, 2015 - Version 476
Additions in this update

May 6, 2015 - Version 473
Additions in this update
► Add 95mm optical support on TD350
► Add Red Hat Enterprise Linux 7 support on RD350/RD450/RD550/RD650/TD350
► Add 32 x 25” bay support on TD350
► Add AnyBay and 25” PCIe SSD support on RD550/RD650

April 15, 2015 - Version 471
Additions in this update
► New ThinkServer TD350 models announced March 2015

March 25, 2015 - Version 470
Additions in this update
► New ThinkServer TS140 and TS440 models announced March 2015
**ThinkServer RS160 Platform Specifications**

### Components | Specification
---|---
**Power Supply** | 12Gbs SAS/SATA 1TB/2TB/4TB/6TB/8TB/10TB
**Drive type** | 10%~90%, non-condensing
**Power Consumption** | 1 or 3-year limited onsite service with 9x5/NBD
**Memory** | 32GB/128GB ECC
**Weight** | 6.2 kg (13.67 lb), maximum: 7.6 kg (16.76 lb)
**Dimensions** | 43.2 mm (1.7 in), width: 438.5 mm (17.26 in), depth: 393.7 mm
**Cooling** | < 5.9 Bels. Idle: < 5.2 Bels (Maximum configuration)
**Environmental** | Temperature - operating: 50 °F to 95 °F (10 °C to 35 °C)
**Operating System** | Microsoft Windows Server 2016 (Standard and Essentials)/2012 R2/2012.

### Processor

- **Intel "Kaby Lake" processors**
  - Kaby Lake: Core i3-6100, Pentium G4400, Xeon E3-1220 v5
  - Kaby Lake: Core i3-6300, Pentium G4560, Xeon E3-1230 v5
  - Kaby Lake: Core i3-6320, Pentium G4620, Xeon E3-1235 v5
  - Kaby Lake: Core i3-6400, Pentium G4600, Xeon E3-1240 v5
  - Kaby Lake: Core i3-6600, Pentium G4500, Xeon E3-1245 v5
  - Kaby Lake: Core i3-6800, Pentium G4400, Xeon E3-1250 v5
  - Kaby Lake: Core i3-6900, Pentium G4300, Xeon E3-1255 v5
  - Kaby Lake: Core i3-7100, Pentium G4560, Xeon E3-1260 v5
  - Kaby Lake: Core i3-7300, Pentium G4400, Xeon E3-1265 v5
  - Kaby Lake: Core i3-7400, Pentium G4300, Xeon E3-1270 v5
  - Kaby Lake: Core i3-7500, Pentium G4200, Xeon E3-1275 v5
  - Kaby Lake: Core i3-7700, Pentium G4100, Xeon E3-1280 v5
  - Kaby Lake: Core i3-7800, Pentium G4000, Xeon E3-1285 v5
  - Kaby Lake: Core i3-7900, Pentium G3900, Xeon E3-1290 v5

- **Intel "Skylake" processors**
  - Skylake: Celeron G3900T, Pentium G4400, Xeon E3-1220 v5
  - Skylake: Celeron G3900, Pentium G4500, Xeon E3-1225 v5
  - Skylake: Celeron G3950, Pentium G4500, Xeon E3-1230 v5
  - Skylake: Celeron G3950, Pentium G4600, Xeon E3-1235 v5
  - Skylake: Celeron G4550, Pentium G4620, Xeon E3-1240 v5
  - Skylake: Celeron G4560, Pentium G4600, Xeon E3-1245 v5
  - Skylake: Celeron G4600, Pentium G4600, Xeon E3-1250 v5
  - Skylake: Celeron G4660, Pentium G4620, Xeon E3-1255 v5
  - Skylake: Celeron G4690, Pentium G4600, Xeon E3-1260 v5
  - Skylake: Celeron G4700, Pentium G4600, Xeon E3-1265 v5

### Memory

- **Memory Capacity**: 64GB (16GB x 4)
- **Memory Protection**: ECC

### RAID Controller

- **Onboard RAID121i**
  - RAID5/RAID1/RAID10/RAID50/RAID6/RAID50/RAID60
  - RAID5/RAID1/RAID10/RAID50/RAID6/RAID50/RAID60
- **RAID520i PCIe**
  - RAID5/RAID1/RAID10/RAID50/RAID6/RAID50/RAID60
  - RAID5/RAID1/RAID10/RAID50/RAID6/RAID50/RAID60
- **RAID720i PCIe**
  - RAID5/RAID1/RAID10/RAID50/RAID6/RAID50/RAID60
  - RAID5/RAID1/RAID10/RAID50/RAID6/RAID50/RAID60

### Expansion Slots and Disk Bays

- Supports one PCIe slot via optional riser card, PCIe x16, half length, half height

### Core Options for ThinkServer RS160 (partial)

- ThinkServer 8GB 2RX8 PC4-2133-E CL15 DDR4-2133 ECC-UDIMM 4X70GB8316
- ThinkServer 16GB 2Rx8 PC4-2133-E CL15 DDR4-2133 ECC-UDIMM 4X70GB8317
- ThinkServer 3.5" 8TB 7.2K Enterprise SATA 6Gb/s Hard Drive for RS-Series 4XB0K12297
- ThinkServer 2.5" 2TB 7.2K Enterprise SATA 6Gb/s Hard Drive for RS-Series 4XB0K12302
- ThinkServer 2.5" 480GB S3510 Enterprise Entry SATA 6Gb/s SSD for RS-Series 4XB0K12321
- ThinkServer M.2 32GB Value-Optimized SATA 6Gb/s Solid State Drive 4XB0K12310
- ThinkServer RS160 Slim SATA DVD-RW Optical Disk Drive 4X4GB8841
- Lenovo ThinkServer Gen 5 Trusted Platform Module v1.2 (Worldwide except China) 4XFG45868
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<td>Xeon E3-1270 v6 4C/3.8GHz/8MB/72W/DDR4-2400</td>
<td>1x8GB UDIMM DDR4-2400 ECC</td>
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<td>None</td>
<td>TPM</td>
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<td>300W 85% Fixed</td>
<td>06/17</td>
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<td>None</td>
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<td>TPM</td>
<td>1-year</td>
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<td>1xHHHL</td>
<td>TPM</td>
<td>1-year</td>
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<td>D1/10/5, with optional key</td>
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<td>Disk bays</td>
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<td>hybrid 3.5&quot; + 2.5&quot; disk drives,</td>
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<td>or up to five 2.5&quot; disk drives,</td>
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<td>one 9.5mm optical (see right).</td>
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### Disk Bays and PCIe Slots

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<th>1st HDD bay</th>
<th>2nd HDD bay</th>
<th>3rd HDD bay</th>
<th>4th HDD bay</th>
<th>5th HDD bay</th>
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<tbody>
<tr>
<td>1</td>
<td>4 x 3.5&quot;</td>
<td>5 x 2.5&quot;</td>
<td>4 x hybrid 3.5&quot; + 2.5&quot;</td>
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</tr>
<tr>
<td>2</td>
<td>4 x 3.5&quot;</td>
<td>5 x 2.5&quot;</td>
<td>4 x hybrid 3.5&quot; + 2.5&quot;</td>
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<tr>
<td>3</td>
<td>Not supported</td>
<td>3rd HDD bay</td>
<td>Not supported</td>
<td>Standard models. Supports one 2.5&quot; disk drive for bid slot only</td>
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<td>4</td>
<td>2nd half-height optical, or RDX tape drive</td>
<td>3rd HDD bay</td>
<td>2nd half-height optical, or RDX tape drive</td>
<td>4th HDD bay</td>
<td>2nd half-height optical, or RDX tape drive</td>
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<tr>
<td>5</td>
<td>1st half-height optical, or 9.5mm optical, 4th HDD bay</td>
<td>1st half-height optical, or 9.5mm optical, 4th HDD bay</td>
<td>2nd half-height optical, or RDX tape drive</td>
<td>3rd HDD bay</td>
<td>2nd half-height optical, or RDX tape drive</td>
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</tbody>
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Note: 1. PCIe cards are optional. 2. Disk tray comes with the disk drive.
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<thead>
<tr>
<th>Model</th>
<th>Region</th>
<th>Processor</th>
<th>Memory</th>
<th>Storage Controller</th>
<th>Disk Bays</th>
<th>Disks</th>
<th>Optical</th>
<th>Add-on NIC</th>
<th>Add-on Ports</th>
<th>System Mgmt</th>
<th>OS</th>
<th>Warranty</th>
<th>Power Supply</th>
<th>Ann Date (m/y)</th>
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<td>US</td>
<td>Xeon E3-1225 v5 4C/3.3GHz/8MB/80W/DDR4-2133</td>
<td>1x8GB UDIMM DDR4-2133 ECC</td>
<td>RAID 121i</td>
<td>Up to 5x2.5&quot; DC</td>
<td>Open</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>AMT</td>
<td>None</td>
<td>1-year</td>
<td>Fixed 250W Bronze</td>
<td>08/16</td>
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<td>None</td>
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<td>None</td>
<td>AMT</td>
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<td>Fixed 250W Bronze</td>
<td>08/16</td>
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<td>None</td>
<td>None</td>
<td>AMT</td>
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<td>AMT</td>
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<td>None</td>
<td>None</td>
<td>AMT</td>
<td>None</td>
<td>1-year</td>
<td>Fixed 250W Bronze</td>
<td>08/16</td>
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<td>RAID 121i</td>
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<td>None</td>
<td>None</td>
<td>AMT</td>
<td>None</td>
<td>1-year</td>
<td>Fixed 250W Bronze</td>
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<td>ISM</td>
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<td>Xeon E3-1245 v5 4C/3.5GHz/8MB/80W/DDR4-2133</td>
<td>1x8GB UDIMM DDR4-2133 ECC</td>
<td>RAID 121i</td>
<td>Up to 4x3.5&quot; DC</td>
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<td>None</td>
<td>None</td>
<td>AMT</td>
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<td>1-year</td>
<td>Fixed 250W Bronze</td>
<td>08/16</td>
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<td>Xeon E3-1275 v5 4C/3.6GHz/8MB/80W/DDR4-2133</td>
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<td>RAID 121i</td>
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<td>None</td>
<td>None</td>
<td>AMT</td>
<td>None</td>
<td>1-year</td>
<td>Fixed 250W Bronze</td>
<td>08/16</td>
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<td>Xeon E3-1225 v5 4C/3.3GHz/8MB/80W/DDR4-2133</td>
<td>1x8GB UDIMM DDR4-2133 ECC</td>
<td>RAID 121i</td>
<td>Up to 5x2.5&quot; DC</td>
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<td>None</td>
<td>None</td>
<td>AMT</td>
<td>None</td>
<td>1-year</td>
<td>Fixed 250W Bronze</td>
<td>08/16</td>
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<td>RAID 121i</td>
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<td>None</td>
<td>None</td>
<td>AMT</td>
<td>None</td>
<td>1-year</td>
<td>Fixed 250W Bronze</td>
<td>08/16</td>
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<td>RAID 121i</td>
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<td>None</td>
<td>None</td>
<td>AMT</td>
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<td>Region</td>
<td>Processor</td>
<td>Memory</td>
<td>Storage Controller</td>
<td>Disk Bays</td>
<td>Disks</td>
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<td>Add-on NIC</td>
<td>Add-on Ports</td>
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<td>OS</td>
<td>Warranty</td>
<td>Power Supply</td>
<td>Ann Date (m/y)</td>
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<td>Add-on Ports</td>
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<td>OS</td>
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<td>Power Supply</td>
<td>Ann Date</td>
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<td>04/17</td>
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<td>AMT</td>
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<td>Up to 4x3.5” DC</td>
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<td>None</td>
<td>None</td>
<td>AMT</td>
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<td>Fixed</td>
<td>04/17</td>
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<td>1x8GB UDIMM DDR4-2400 ECC</td>
<td>RAID 121i</td>
<td>Up to 4x3.5” DC</td>
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<td>AMT</td>
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<td>1-year</td>
<td>Fixed</td>
<td>04/17</td>
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<td>1x8GB UDIMM DDR4-2400 ECC</td>
<td>RAID 121i</td>
<td>Up to 4x3.5” DC</td>
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<td>None</td>
<td>None</td>
<td>AMT</td>
<td>None</td>
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<td>Fixed</td>
<td>04/17</td>
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<td>70UB001WUX</td>
<td>US</td>
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<td>1x8GB UDIMM DDR4-2400 ECC</td>
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<td>None</td>
<td>None</td>
<td>ISM</td>
<td>None</td>
<td>1-year</td>
<td>Fixed</td>
<td>04/17</td>
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<td>70UB001XUX</td>
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<td>Core i3-6100T 2C/3.2GHz/3MB/35W/DDR4-2133</td>
<td>1x8GB UDIMM DDR4-2400 ECC</td>
<td>RAID 121i</td>
<td>Up to 4x3.5” DC</td>
<td>Open</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>ISM</td>
<td>None</td>
<td>1-year</td>
<td>Fixed</td>
<td>04/17</td>
</tr>
</tbody>
</table>
### Components Specifications

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>42L tower or 4U rack, Height: 443.5 mm (17.46 in) with foot stands. Width: 173 mm (6.81 in). Depth: 593 mm (23.35 in) including front door and handle of hot-swap power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>Maximum configuration: 57.32 lb (26.5 kg)</td>
</tr>
<tr>
<td></td>
<td>Supports one of the following Intel &quot;Kaby Lake&quot; processors: Keen E3-1280 v6 4C/3.9GHz/8MB/110W/CDR4-2400 Keen E3-1270 v6 4C/3.6GHz/6MB/110W/CDR4-2400 Keen E3-1240 v6 4C/3.5GHz/6MB/110W/CDR4-2400 Keen E3-1230 v6 4C/3.4GHz/6MB/110W/CDR4-2400 Keen E3-1220 v6 4C/3.3GHz/6MB/110W/CDR4-2400 Core i3-7200 2C/4GHz/1MB/195W/CDR4-2400 Core i3-720T 2C/3.5GHz/1MB/195W/CDR4-2400 Core i3-7100 2C/3.3GHz/1MB/195W/CDR4-2400 Core i3-710T 2C/3.0GHz/1MB/195W/CDR4-2400 Pentium G4620 2C/3.7GHz/3MB/120W/CDR4-2400 Pentium G4600 2C/3.3GHz/3MB/120W/CDR4-2400 Pentium G4600T 2C/3.0GHz/3MB/120W/CDR4-2400 Pentium G4620T 2C/2.6GHz/3MB/120W/CDR4-2400 Pentium G4600T 2C/2.3GHz/3MB/120W/CDR4-2400 Pentium G4400 2C/2.9GHz/3MB/65W/CDR4-2400 Pentium G4400T 2C/2.5GHz/3MB/65W/CDR4-2400</td>
</tr>
<tr>
<td>Processor</td>
<td>Intel C232 Platform Controller Hub (PCH)</td>
</tr>
<tr>
<td>Memory DIMMs</td>
<td>4 DIMM sockets with 2-channels. UDIMM. DDR4-2133 or DDR4-2400</td>
</tr>
<tr>
<td>Memory capacity</td>
<td>Up to 64GB (16GB x 4)</td>
</tr>
<tr>
<td>Memory protection</td>
<td>ECC</td>
</tr>
<tr>
<td>RAID controller</td>
<td>Optional cache for RAID720i: 1GB memory, or 1GB, 2GB, 4GB flash with super capacitor</td>
</tr>
</tbody>
</table>

#### Support one of the following drives configurations:

<table>
<thead>
<tr>
<th>Disk bays configuration</th>
<th>RAID controller</th>
<th>Optical</th>
<th>HDX</th>
<th>LTO</th>
<th>Tape drive</th>
</tr>
</thead>
<tbody>
<tr>
<td>4x3.5&quot; SATA non-hot swap</td>
<td>121i</td>
<td>up to 2</td>
<td>up to 1</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>4x3.5&quot; SATA hot-swap</td>
<td>121i</td>
<td>up to 2</td>
<td>up to 1</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>8x3.5&quot; SATA/SAS hot-swap</td>
<td>520a</td>
<td>up to 2</td>
<td>up to 1</td>
<td>up to 1, 520 only</td>
<td></td>
</tr>
<tr>
<td>8x2.5&quot; SATA/SAS hot-swap</td>
<td>520a</td>
<td>up to 2</td>
<td>up to 1</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>16x2.5&quot; SATA/SAS hot-swap</td>
<td>520a</td>
<td>up to 2</td>
<td>up to 1</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>4x3.5&quot; + 8x2.5&quot; SATA/SAS hot-swap</td>
<td>520a</td>
<td>up to 2</td>
<td>up to 1</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>4x 3.5&quot; HS can be upgraded to 8 x 3.5&quot; HS or 4 x 3.5&quot; + 8 x 2.5&quot; HS, 8 x 2.5&quot; HS can be upgraded to 16 x 2.5&quot; HS or 4 x 3.5&quot; + 8 x 2.5&quot; HS, redundant PSU models only, RAID520/RAID720 and expansion kit is needed, more that 8 disk bays needs expander card. Also supports one M.2 SATA SSD, 32GB or 128GB.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

#### Expansion slots:

<table>
<thead>
<tr>
<th>Slot</th>
<th>PCIe 3.0 x4, full height, full length, open-end, from PCH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slot 1</td>
<td>PCIe 3.0 x16, full height, full length, from CPU</td>
</tr>
<tr>
<td>Slot 3</td>
<td>PCIe 3.0 x1, full height, half length, from PCH</td>
</tr>
<tr>
<td>Slot 4</td>
<td>PCIe 3.0 x8, full height, full length, open-end, from CPU</td>
</tr>
</tbody>
</table>

Note: 1. If a PCIe card is connected to slot 4, both slot 2 and slot 3 will work at PCIe x8. 2. If a discrete graphics card is used, slot 2 will work at PCIe x16 and slot 4 will be disable.
<table>
<thead>
<tr>
<th>Model</th>
<th>Region</th>
<th>Processor</th>
<th>Memory</th>
<th>Storage Controller</th>
<th>Disk Bays</th>
<th>Disks</th>
<th>Optical</th>
<th>Add-on NIC</th>
<th>Add-on Ports</th>
<th>System Management</th>
<th>Operating System</th>
<th>Warranty</th>
<th>Power Supply</th>
<th>Ann Date (mm/yy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>70TR000LUX</td>
<td>US</td>
<td>Xeon E3-1220 v5 4C/3.0GHz/8MB/80W/DDR4-2133</td>
<td>1x8GB UDIMM DDR4-2133 ECC</td>
<td>RAID121i</td>
<td>4x3.5&quot; HS</td>
<td>Open</td>
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<td>None</td>
<td>TPM 2.0</td>
<td>None</td>
<td>1-year</td>
<td>Fixed 300W Bronze</td>
<td>06/17</td>
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<td>Xeon E3-1230 v5 4C/3.4GHz/8MB/80W/DDR4-2133</td>
<td>1x8GB UDIMM DDR4-2133 ECC</td>
<td>RAID121i</td>
<td>4x3.5&quot; HS</td>
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- **Depot or Courier Service:** Parts and labor repair coverage where shipping (including packaging) or delivery to the repair center is paid for by Lenovo.

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If Lenovo determines your product problem is covered by the product warranty and cannot be resolved over the telephone, a technician will be dispatched to arrive onsite, typically the next day.


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Lenovo 1009 Think Place Morrisville, NC 27560 U.S.A.
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<td>Towers</td>
<td>31</td>
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<tr>
<td>ThinkSystem ST250</td>
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<tr>
<td>ThinkSystem ST50</td>
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<td>ThinkSystem ST550</td>
<td>34</td>
</tr>
<tr>
<td>Legal Information</td>
<td>35</td>
</tr>
</tbody>
</table>
Summary of Changes

This section describes the changes made in this version of ThinkSystem PSREF and in previous version. This edition might also include minor corrections and editorial changes which are not identified.

April 3, 2019 - Version 540
► Add 2nd Xeon Scalable processor, add DDR4-2933 memory, add Intel Optane DC Persistent Memory

September 12, 2018 - Version 530
► Add ThinkSystem SR670

May 9, 2018 - Version 524
► Withdraw ThinkSystem SR650/SR630/SR550/SR530/SR850/ST550 LFOs to April 2018
► Update ThinkSystem SR650/SR630/SR590/SR530 LA LFOs to April 2018

April 18, 2018 - Version 523
► Update ThinkSystem SR650/630/550/530 LFOs to April 2018

November 29, 2017 - Version 516
► Add new ThinkSystem SR860/SR590/SR570
► Add 128GB 3DS RDIMM, 480GB M.2 SSD, VMware ESXi 6.5U1, Red Hat Enterprise Linux 7.4 supports on compatible ThinkSystem servers

November 8, 2017 - Version 515
► Add ThinkSystem SN850/SN550/SD530 and ThinkSystem D2 Enclosure

July 12, 2017 - Version 509
ThinkSystem SN550 Platform Specifications

<table>
<thead>
<tr>
<th>Components</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form factor</td>
<td>Standard-width Flex System compute node</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Height: 51 mm (2.0 in). Width: 215 mm (8.5 in). Depth: 493 mm (19.4 in)</td>
</tr>
<tr>
<td>Chassis support</td>
<td>Flex System Enterprise Chassis with CMM2</td>
</tr>
<tr>
<td>Weight</td>
<td>Maximum configuration: 15.6 lb (7.1 kg)</td>
</tr>
<tr>
<td>Processor</td>
<td>Up to two 165W Intel Xeon Scalable family processors, Bronze, Silver, Gold, or Platinum. Up to 28 cores at 2.1GHz, up to 3.6GHz with 4 cores. Up to two UPI (Ultra Path Interconnect) links at maximum 10.4GT/s each</td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel C624 Platform Controller Hub</td>
</tr>
<tr>
<td>Memory</td>
<td>Up to 24 DIMM sockets. Each processor supports up to 12 DIMM sockets with 6 channels. DDR4-2666. RDIMMs, LRDIMMs, and 3DS RDIMMs are supported, but memory types cannot be intermixed. 3DS RDIMM is planned to available later.</td>
</tr>
<tr>
<td>Memory capacity</td>
<td>Up to 768GB with 24 x 32GB RDIMMs and two processors. Or up to 1.5TB with 24 x 64GB LRIMMs and two processors. Or up to 3TB with 24 x 128GB 3DS RDIMMs and two -M suffix processors. -M suffix processor supports 1.5TB memory per socket, non -M suffix processor supports 768GB memory per system</td>
</tr>
<tr>
<td>Memory protection</td>
<td>Supports the following RAID/HBA adapters:</td>
</tr>
<tr>
<td></td>
<td>Adapter</td>
</tr>
<tr>
<td></td>
<td>Onboard</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Disk drive bays</td>
<td>Two 2.5&quot; hot-swap disk bays. Depending on server configuration and installed backplanes, the two bays can supports SATA, SATA/SAS, or SATA/NVMe disks. Optional one or two internal M.2 SSD for boot, dual M.2 SSD supports mirroring</td>
</tr>
<tr>
<td>Internal storage</td>
<td>2.5&quot; NVMe SSD</td>
</tr>
<tr>
<td></td>
<td>2.5&quot; HDD, S/AS/SA/SAS, 7.2K</td>
</tr>
<tr>
<td></td>
<td>2.5&quot; HDD, S/AS/SA/SAS, 15K</td>
</tr>
<tr>
<td></td>
<td>2.5&quot; HDD, S/AS/SA/SAS, 10K</td>
</tr>
<tr>
<td></td>
<td>2.5&quot; HDD, S/AS/SA/SAS, 10K</td>
</tr>
<tr>
<td></td>
<td>2.5&quot; SSD, SATA6Gbps</td>
</tr>
<tr>
<td></td>
<td>2.5&quot; SSD, SAS12Gbps</td>
</tr>
<tr>
<td></td>
<td>2.5&quot; SSD, SAS12Gbps</td>
</tr>
<tr>
<td></td>
<td>2.5&quot; SSD, SAS12Gbps</td>
</tr>
<tr>
<td></td>
<td>M.2 SATA SSD</td>
</tr>
<tr>
<td>Network interfaces</td>
<td>Optional 4x 10gbE LOM with fabric connector. The fabric connector is supported to routes the four 10gbE ports to Flex system chassis midplane. Optional adapters are supported, up to 2 adapters, up to 40GbE</td>
</tr>
<tr>
<td>Security features</td>
<td>Power-on and admin password. Trusted Platform Module, TCG 1.2 and 2.0 compliant. Optional TCM, China only</td>
</tr>
<tr>
<td>Operating systems supported</td>
<td>Microsoft Windows Server 2016, 2012 R2, Red Hat Enterprise Linux 6 and 7 x64, SUSE Linux Enterprise Server 11 and 12 x64, VMware vSphere 6.0 and 6.5</td>
</tr>
<tr>
<td>Systems management</td>
<td>UEFI, Lenovo XClarity Controller with PilotR2041 baseboard management controller (BMC), Predictive Failure Analysis, light path diagnostics panel, automatic server restart, remote presence. Support for Lenovo XClarity Administrator and Lenovo XClarity Energy Manager</td>
</tr>
<tr>
<td>GPU support</td>
<td>None</td>
</tr>
<tr>
<td>Base warranty</td>
<td>MT 7X16: 3-year limited onsite service with 9x5/NBD</td>
</tr>
<tr>
<td>Power supply</td>
<td>Power to the blade server is derived from the power supplies that are installed in the chassis. There are no server options regarding power supplies.</td>
</tr>
<tr>
<td>Video</td>
<td>Integrated Matrox G200 in XClarity Controller</td>
</tr>
<tr>
<td>Front ports</td>
<td>One USB 3.0, one console breakout cable port that provides local KVM and serial ports (cable standard with chassis, more cables optional).</td>
</tr>
<tr>
<td>Environmental specification</td>
<td>Supports ASHRAE A3.</td>
</tr>
<tr>
<td></td>
<td>Temperature - operating</td>
</tr>
<tr>
<td></td>
<td>Temperature - non operating (no package)</td>
</tr>
<tr>
<td></td>
<td>Temperature - non operating (with package)</td>
</tr>
<tr>
<td></td>
<td>Altitude - operating</td>
</tr>
<tr>
<td></td>
<td>Humidity - operating, non-condensing</td>
</tr>
<tr>
<td></td>
<td>Humidity - storage (with package), non-condensing</td>
</tr>
</tbody>
</table>

Expansion slots
Supports two PCIe 3.0 x16 I/O expansion connectors for attaching I/O adapter cards, each connector uses high-density, 216-pin PCIe connection. Please see I/O adapters below:

<table>
<thead>
<tr>
<th>System unique options</th>
</tr>
</thead>
<tbody>
<tr>
<td>7M27A03915 Lenovo SATA HDD/SSD Backplane for SN550</td>
</tr>
<tr>
<td>7M27A03916 Lenovo NVMe/SATA Backplane for SN550</td>
</tr>
<tr>
<td>7M27A03917 Lenovo RAID 530-4i-2GB 2 Drive Adapter Kit for SN550</td>
</tr>
<tr>
<td>7M27A03918 Lenovo RAID 530-4i 2 Drive Adapter Kit for SN550</td>
</tr>
<tr>
<td>7X77A01301 Lenovo 8GB TruDDR4 2666 MHz (1Rx8 1.2V) RDIMM</td>
</tr>
<tr>
<td>7X77A01302 Lenovo 16GB TruDDR4 2666 MHz (1Rx4 1.2V) RDIMM</td>
</tr>
<tr>
<td>7X77A01303 Lenovo 16GB TruDDR4 2666 MHz (2Rx4 1.2V) RDIMM</td>
</tr>
<tr>
<td>7X77A01304 Lenovo 32GB TruDDR4 2666 MHz (2Rx4 1.2V) RDIMM</td>
</tr>
<tr>
<td>7X77A01305 Lenovo 64GB TruDDR4 2666 MHz (4Rx4 1.2V) LDIMM</td>
</tr>
<tr>
<td>00A5540 Flex System CN5053 2-port 10Gb Virtual Fabric Adapter</td>
</tr>
<tr>
<td>00A5580 Flex System CN5053 4-port 10Gb Virtual Fabric Adapter</td>
</tr>
<tr>
<td>01CV780 Flex System CN5053 2-port 10Gb Virtual Fabric Adapter Advanced</td>
</tr>
<tr>
<td>01CV790 Flex System CN5045 4-port 10Gb Virtual Fabric Adapter Advanced</td>
</tr>
<tr>
<td>7ZT4A00502 Lenovo Mellanox ConnectX-3 Mezz 40Gb 2-Port Ethernet Adapter</td>
</tr>
<tr>
<td>7ZT4A00520 Lenovo QLogic QUM2682 Mezz 16Gb 2-Port Fibre Channel Adapter</td>
</tr>
<tr>
<td>7ZT4A00521 Lenovo Emulex LPM16002B-L Mezz 16Gb 2-Port Fibre Channel Adapter</td>
</tr>
<tr>
<td>7ZT4A00522 Lenovo Emulex LPM16004B-L Mezz 16Gb 4-Port Fibre Channel Adapter</td>
</tr>
<tr>
<td>7ZT4A00508 Lenovo Mellanox ConnectX-3 Mezz FDR 2-Port InfiniBand Adapter</td>
</tr>
<tr>
<td>7Y37A1052 M.2 NVMe/SSD Backplane for SN550</td>
</tr>
<tr>
<td>7Y37A1053 Lenovo M.2 NVMe RAID Adapter Kit for SN550</td>
</tr>
<tr>
<td>7Y37A1093 Lenovo M.2 NVMe RAID Adapter Kit for SN550</td>
</tr>
<tr>
<td>7N47A00129 Lenovo 32GB SATA 6Gbps Non-Hot-Swap SSD</td>
</tr>
<tr>
<td>7N47A00130 Lenovo 64GB TruDDR4 2666 MHz (4Rx4 1.2V) RDIMM</td>
</tr>
</tbody>
</table>

Lenovo, July 2017
ThinkSystem SN850 Platform Specifications

### Components

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form factor</td>
<td>Double-width Flex System compute node</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Height: 55 mm (2.2 in), Width: 435 mm (17.1 in), Depth: 493 mm (19.4 in)</td>
</tr>
<tr>
<td>Chassis support</td>
<td>Flex System Enterprise Chassis with CMM2</td>
</tr>
<tr>
<td>Weight</td>
<td>Maximum configuration: 27 lb (12.3 kg)</td>
</tr>
<tr>
<td>Processor</td>
<td>Supports up to four 165W Intel Xeon Scalable family processors, Gold or Platinum. Up to 28 cores at 2.1GHz, up to 3.6GHz with 4 cores. Up to threeUPI (Ultra Path Interconnect) links at maximum 10.4GT/s each</td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel C624 Platform Controller Hub</td>
</tr>
<tr>
<td>Memory capacity</td>
<td>Up to 1.5TB with 48 x 32GB RDIMMs and four processors. Or up to 6TB with 48 x 64GB LRDIMMs and four processors.</td>
</tr>
<tr>
<td>Memory protection</td>
<td>Supports the following RAID/HBA adapters:</td>
</tr>
<tr>
<td></td>
<td><strong>Adapter</strong></td>
</tr>
<tr>
<td></td>
<td>Onboard</td>
</tr>
<tr>
<td>Memory controllers</td>
<td>Flex System CN4054S 4-port 10Gb Virtual Fabric Adapter Advanced</td>
</tr>
<tr>
<td>Internal storage</td>
<td>Four 2.5” hot-swap disk bays. Depending on server configuration and installed backplanes, the four bays can supports SATA, SATA/SAS, or SATA/NVMe disks. Optional one or two internal M.2 SSD for boot, dual M.2 SSD supports mirrored RAID (RAID 1)</td>
</tr>
<tr>
<td>Disk drive bays</td>
<td>2.5” NVMe SSD</td>
</tr>
<tr>
<td></td>
<td>2.5” SSD, SATA6Gb/s, 7.2K</td>
</tr>
<tr>
<td></td>
<td>2.5” SSD, SAS12Gb/s, 7.2K</td>
</tr>
<tr>
<td>I/O adapters</td>
<td>Supports up to four PCIe 3.0 x16 I/O expansion connectors for attaching I/O adapter cards, each connector uses high-density, 216-pin PCIe connection. Please see I/O adapters below:</td>
</tr>
<tr>
<td></td>
<td>Optional RAID controller</td>
</tr>
<tr>
<td></td>
<td>Optional M.2 SSD (under optional RAID adapter)</td>
</tr>
<tr>
<td>Network interfaces</td>
<td>Optional four 10GbE LOM with fabric connector. The fabric connector is supported to routes the four 10GbE ports to Flex chassis midplane. Optional adapters are supported, up to 4 adapters, up to 40GbE</td>
</tr>
<tr>
<td>Operating systems</td>
<td>Windows Server 2016, 2012 R2, Red Hat Enterprise Linux 6 and 7 x64, SUSE Linux Enterprise Server 11 and 12 x64, VMware vSphere 6.0 and 6.5</td>
</tr>
<tr>
<td>Systems management</td>
<td>UEFI, Lenovo XClarity Controller with Pilot4 XE401 baseboard management controller (BMC), Predictive Failure Analysis, light path diagnostics panel, automatic server restart, remote presence. Support for Lenovo XClarity Administrator and Lenovo XClarity Energy Manager</td>
</tr>
<tr>
<td>GPU support</td>
<td>None</td>
</tr>
<tr>
<td>Base warranty</td>
<td>MT 7X15; 3-year limited onsite service with 9x5/NBD</td>
</tr>
<tr>
<td>Power supply</td>
<td>Power to the blade server is derived from the power supplies that are installed in the chassis. There are no server options regarding power supplies.</td>
</tr>
<tr>
<td>Video</td>
<td>Integrated Matrox G200 in XClarity Controller</td>
</tr>
<tr>
<td>Front ports</td>
<td>One USB 3.0, one console breakout cable port that provides local KVM and serial ports (cable standard with chassis, more cables optional).</td>
</tr>
<tr>
<td>Environmental spec.</td>
<td>Temperature - operating: A1: 0°C to 40°C (32°F to 104°F); A2: 10°C to 35°C (50°F to 95°F)</td>
</tr>
<tr>
<td></td>
<td>Temperature - non operating (no package): 0°C to 65°C (32°F to 149°F)</td>
</tr>
<tr>
<td></td>
<td>Airflow: 10% to 90% (-40°C to 140°F)</td>
</tr>
<tr>
<td></td>
<td>Humidity - operating, non-condensing: 20%~80%</td>
</tr>
<tr>
<td></td>
<td>Humidity - storage (with package), non-condensing: 9%~90%</td>
</tr>
</tbody>
</table>

![Lenovo, July 2017]
**ThinkSystem D2 Enclosure Platform Specifications**

<table>
<thead>
<tr>
<th>Components</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form factor</td>
<td>2U rack</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Height: 87 mm (3.5 in). Width: 488 mm (19.3 in). Depth: 892 mm (35.1 in)</td>
</tr>
<tr>
<td>Server support</td>
<td>Per enclosure: up to 4 servers per chassis</td>
</tr>
<tr>
<td></td>
<td>Per 42U rack: up to 84 servers in 21 enclosures</td>
</tr>
<tr>
<td>Weight</td>
<td>Maximum configuration with four fully configured nodes): 121.2 lb (55 kg)</td>
</tr>
<tr>
<td>Network interfaces</td>
<td>Optional 8x 10 GbE ports Ethernet I/O Module (EIOM), SFP+ or RJ-45, two ports</td>
</tr>
<tr>
<td></td>
<td>per server from chipset</td>
</tr>
<tr>
<td>Security features</td>
<td>Power-on and admin password. Trusted Platform Module, TCG 1.2 and 2.0 compliant. Optional TCM, China only</td>
</tr>
<tr>
<td>Systems management</td>
<td>The hot-swappable System Management Module (SMM) is the management device for the enclosure. Provides integrated systems management functions and controls the power and cooling features of the enclosure. Provides remote browser and CLI-based user interfaces for remote access via the dedicated Gigabit Ethernet port. Remote access is to both the management functions of the enclosure as well as the XClarity Controller (XCC) in each server. SMM provides four LEDs: system error, identification, status, and system power. Each power supply has AC, DC and error LEDs</td>
</tr>
<tr>
<td>Base warranty</td>
<td>MT 7X20: 3-year limited onsite service with 9x5/NBD</td>
</tr>
<tr>
<td>Power supply</td>
<td>Up to two redundant hot-swap 1100W/1600W/2000W 80 PLUS Platinum qualified AC power supplies. 1600W and 2000W are 200V - 240V, 1100W is 100V - 240V</td>
</tr>
<tr>
<td>Cooling</td>
<td>Five hot-swap system fans, accessible via removable panel in the top cover of the enclosure</td>
</tr>
</tbody>
</table>

*Shuttle*

- Expansion slots for PCIe 3.0 x8 models
- Expansion slots for PCIe 3.0 x16 models

**Lenovo, July 2017**
### ThinkSystem SD530 Platform Specifications

**Components**

<table>
<thead>
<tr>
<th>Form factor</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>Maximum configuration: 16.6 lb (7.5 kg)</td>
</tr>
<tr>
<td>Processor</td>
<td>Up to two 165W Intel Xeon Scalable family processors, Bronze, Silver, Gold, or Platinum. Up to 28 cores at 2.1GHz, up to 3.6GHz with 4 cores. Up to two UPI (Ultra Path Interconnect) links at maximum 10.4GT/s each</td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel C624 Platform Controller Hub</td>
</tr>
<tr>
<td>Memory</td>
<td>Up to 12 or 16 DIMM sockets depending on the processor selected. Each processor supports up to 6 or 8 DIMM sockets. DDR4-2666. RDIMMs and LRDIMMs are supported, but memory types cannot be intermixed.</td>
</tr>
<tr>
<td>Memory capacity</td>
<td>16 DIMMs models: RDIMMs: Up to 512GB with 16x 32GB RDIMMs and two processors. LRDIMMs: Up to 1TB with 16x 64GB LRDIMMs and two processors. 12 DIMMs models: RDIMMs: Up to 384GB with 12x 32GB RDIMMs and two processors. LRDIMMs: Up to 768GB with 12x 64GB LRDIMMs and two processors</td>
</tr>
<tr>
<td>Memory protection</td>
<td>ECC, Chipkill protection (for x4-based memory DIMMs), memory mirroring, and memory sparing</td>
</tr>
<tr>
<td>Storage controllers</td>
<td>Supports the following RAID adapters:</td>
</tr>
<tr>
<td>Disk drive bays</td>
<td>Up to four 2.5&quot; hot-swap disk bays, or up to six 2.5&quot; hot-swap disk bays, or up to six 2.5&quot; hot-swap disk bays with two AnyBay. SAS support requires 530-8i. Optional one or two internal M.2 SSDs for boot, dual M.2 SSDs supports mirroring</td>
</tr>
</tbody>
</table>
| Internal storage | 2.5" NVMe SSD  
800GB/960GB/1.92TB  
2.5" HDD, SATAt6Gbps, 7.2K  
TB/2TB  
2.5" HDD, SATAt12Gbps, 7.2K  
2TB  
2.5" HDD, SATAt12Gbps, 7.2K, SED  
1TB/2TB  
2.5" HDD, SATAt12Gbps, 15K  
900GB/600GB/900GB  
2.5" SSD, SATAt12Gbps, 10K  
900GB/600GB/900GB/1.2TB/1.8TB/2.4TB  
2.5" SSD, SATAt12Gbps, 10K, SED  
4.2TB  
2.5" SSD, SATA6Gbps  
340GB/480GB/960GB/1.92TB/3.84TB  
2.5" SSD, SATA6Gbps  
400GB/800GB/1.8TB/3.84TB/7.68TB/15.36TB  
M.2 SATA SSD  
256GB/512GB/1TB/2TB |
| Network interfaces | Two 10 GbE ports, SFP+ or RJ-45, routed through the Ethernet I/O Module at the rear of the D2 Enclosure. Networking ports are based on Intel Ethernet Connection X722 in chipset |
| Security features | Power-on and admin password. Trusted Platform Module, TCG 1.2 and 2.0 compliant. Optional TCM, China only |
| Security features | NVMe drives not installed  
M.2 drives not installed |

**Environmental specification**

- **Temperature - operating**: 10°C to 35°C (50°F to 95°F)  
- **Temperature - non operating (no package)**: 5°C to 40°C (41°F to 104°F)  
- **Humidity - operating, non-condensing**: 8% ~ 90%  
- **Humidity - storage with package, non-condensing**: 8% ~ 98%  

**Expansion slots**

Supports one PCIe 3.0 x16 low-profile slot, or two PCIe 3.0 x8 low-profile slots. Slots are housed in I/O shuttle in rear of the D2 Enclosure

**Backplane and memory DIMM sockets supports by processor**

<table>
<thead>
<tr>
<th>Maximum DIMM Sockets</th>
<th>12 DIMMs</th>
<th>16 DIMMs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backplane</td>
<td>2x2</td>
<td>2x2</td>
</tr>
<tr>
<td>CPU2 with 8 DIMMs</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CPU1 with 8 DIMMs</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Optional RAID</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Xeon Bronze 3104</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Xeon Bronze 3106</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Xeon Gold 6128</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Xeon Gold 6130</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Xeon Gold 6134</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Xeon Gold 6136</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Xeon Gold 6140</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Xeon Gold 6142</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Xeon Gold 6148</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Xeon Gold 6150</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Xeon Gold 6152</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Xeon Platinum 8153</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Xeon Platinum 8160</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Xeon Platinum 8164</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Xeon Platinum 8170</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Lenovo, July 2017**
**ThinkSystem SR850 Platform Specifications**

**Product Specifications Reference (PSREF)**

<table>
<thead>
<tr>
<th>Components</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Form factor</strong></td>
<td>2U rack</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>Height: 86.5 mm (3.4 in). Width: 482 mm (19.0 in) with rack latches. Depth: 763.7 mm (30.1 in) without security bezel</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>Maximum configuration 59.52 lb (27 kg)</td>
</tr>
<tr>
<td><strong>Processor</strong></td>
<td>Supports up to four 20W Gen 1 or Gen 2 Intel Xeon Scalable family processors, Gold or Platinum. 2 processor sockets on system board, 2 processor sockets on optional processor and memory expansion tray. Up to 26 cores at 2.7GHz, up to 3.8GHz with 4 cores. Four processors are connected in ring topology with two 10.4GT/s UPI (Ultra Path Interconnect)</td>
</tr>
<tr>
<td><strong>Chipset</strong></td>
<td>Intel C624 Platform Controller Hub</td>
</tr>
<tr>
<td><strong>Memory offering</strong></td>
<td>Up to 48 DIMM sockets. 24 DIMM sockets on system main board, 24 DIMM sockets on optional processor and memory expansion tray. Each processor supports up to 12 DIMM sockets with 6 channels. Supports following: Memory Type Speed Offering Intel Optane DC Persistent Memory DDR4-2666 256GB/512GB DDR4-2933 512GB/1TB RDDR4-3200 1.2TB/2.4TB Performance+ 3DS RDIMM DDR4-2666 512GB/1TB DDR4-2933 1.2TB/2.4TB 3DS RDIMM DDR4-2933 128GB 3DS RDIMM DDR4-2933 64GB</td>
</tr>
</tbody>
</table>
| **Memory capacity**          | • 61T with 48x 128GB 3DS RDIMM and four M or L SKU processors  
• 12TB with 24x 512GB DC Persistent Memory (memory mode) and four L SKU processors  
• 157B with 24x 512GB DC Persistent Memory (memory mode) + 24x 128GB 3DS RDIMM and four L SKU processors |
| **Memory protection**        | ECC, memory mirroring, and memory sparing |
| **Storage controllers**      | Supports the following RAID/HBA adapters: Feature Interface Drive type RAID levels JBOD Cache Cache protection FastPath Max qty 250-8 12Gbps SAS SATA/SAS 0/1/5/10/50 Yes None None Yes 2 300-8 12Gbps SAS SATA/SAS 0/1/5/10/50 Yes 1GB None Yes 1 480-8 12Gbps SAS SATA/SAS 0/1/5/10/50/60/80/100 Yes 1GB Flash backup Yes 2 490-16i 12Gbps SAS SATA/SAS 0/1/5/10/50/60/80/100 Yes 4GB Flash backup Yes 1 490-32i 12Gbps SAS SATA/SAS 0/1/5/10/50/60/80/100 Yes 8GB Flash backup Yes 1 490-8e 12Gbps SAS SATA/SAS 0/1/5/10/50/60/80/100 Yes None Flash backup Yes 1 490-16e 12Gbps SAS SATA/SAS 0/1/5/10/50/60/80/100 Yes None None No 8 |
| **Disk drive bays**          | Supports 8 front 2.5" SATA/SAS HS bays with maximum 4 AnyBay, or 16 front 2.5" SATA/SAS HS bays with maximum 8 AnyBay. Optional one or two internal M.2 SSD for boot, dual M.2 SSD supports mirroring |
| **Internal storage**         | 6.7 HDD, SAS12Gbps 7.2K 716/72B  
2.7" HDD, SAS12Gbps 10K 2600G/3000G SED/8000G/8000G SED/9000G/2.1TB/1.9TB  
2.7" HDD, SAS12Gbps 15K 3000G/6000G/9000G  
2.7" SSD, SAS12Gbps 3000G/6000G/9000G/9600G/816G/616B/618B  
5.2" SSD, SATA464gb 240GB/460GB  
5.2" NVMe SSD, AnyBay 8000G/6000G/9000G/9600G/3.1TB/3.2T/3.4TB/4.1TB/4.3TB/4.8T/6.8T/8.8T/10.8T/12.8T/14.8T/16.8T  
M.2 SATA SSD for boot 256GB/512GB/480GB |
| **Optical**                  | No internal optical bay. Optional USB DVD+RW optical drive |
| **Network interfaces**       | One dedicated management port. One LOM slot for customized LOM with up to four RJ-45 or SFP+ ports, up to 10GBe. Wake-on-LAN and NC-Si are available on one port of LOM. Optional ML2 or PCIe adapters are supported. ML2 adapter requires riser card with ML2 slot. |
| **Security features**        | Power-on and admin password. Trusted Platform Module. YCG 1.2 compliant, upgrade to 2.0 via UEFI setting. Optional TCM in China only. Optional lockable security bezel |
| **Operating systems supported** | Microsoft Windows Server 2018/2012 R2. Red Hat Enterprise Linux 7/3.6.9. SUSE Linux Enterprise Server 12 SP2/11 SP4. VMware vSphere (ESXi) 6.5/6.0 U3 |
| **Systems management**       | XClarity Controller Advanced, optional upgrades to Enterprise is available. Energy Manager. XClarity Administrator. Lenovo Capacity Planner. Light Path Diagnostics with optional LCD dial-out panel |
| **GPU support**              | None                                               |
| **Base warranty**            | MT 7X18: 1 year limited onsite service with 9x5/NBD  
MT 7X19: 3 year limited onsite service with 9x5/NBD |
| **Power supply**             | Up to two redundant hot swap 750W/1100W/1600W 80 PLUS Platinum qualified AC power supplies. 1600W Platinum are 200V - 240V, others are 100V - 240V |

**Components**

- **Video**: Integrated Matrox G200 in XClarity Controller
- **Cooling**: Six hot-swap fans, N + 1 redundancy
- **Front ports**: One XClarity Controller USB connector, one USB 2.0 or USB 3.0 (model dependent), one optional VGA connection
- **Rear ports**: One VGA, two USB 3.0, one serial, one XClarity Controller network connector
- **Environmental specification**: Supports ASHRAE A4 with limitations.
  - Temperature - operating: A1: 5°C to 40°C (41°F to 104°F)  
  A2: 5°C to 40°C (41°F to 104°F)  
  A3: 5°C to 40°C (41°F to 104°F)  
  A4: 10°C to 35°C (50°F to 95°F)
  - Temperature - non operating (with package): A1: 5°C to 60°C (41°F to 140°F)  
  A2: 5°C to 60°C (41°F to 140°F)  
  A3: 5°C to 60°C (41°F to 140°F)  
  A4: 5°C to 40°C (41°F to 104°F)
  - Altitude - operating (unpressurized): U-1000ft (U-3048m)
  - Humidity - operating, non-condensing: A1: 8% - 90%, A3: 5% - 85%, A4: 20% - 80%
  - Humidity - storage (with package), non-condensing: 8% - 90%
- **Models should meet the following requirements to support A3 and A4**:  
  - NVMe drives not installed  
  - PCIe flash adapter not installed  
  - M.2 SSD not installed

**Expansion slots**

- Slot 1 (onboard): PCIe 3.0 x16, low profile, requires 2nd CPU
- Slot 2 (onboard): PCIe 3.0 x8, low profile, requires 2nd CPU
- Slot 3 (riser card): Supports one of the following for riser card:  
  - Option 1: PCIe 3.0 x8/x8/x8 (slot 3-5), Full height, half length.  
  - Option 2: PCIe 3.0 x8/x8/x8 (slot 3-5), Full height, half length.  
  - Option 4: PCIe 3.0 x16 (slot 3 and 5), Full height, half length.  
  - Slot 3 - 5 requires 2nd CPU
- Slot 7 (onboard): LOM, low profile
- Slot 8 (onboard): PCIe 3.0 x8, low profile
- Slot 9 (onboard): PCIe 3.0 x8, low profile
- Slot 10 (onboard): PCIe 3.0 x8, low profile
- Slot 11 (onboard): PCIe 3.0 x16, low profile

**System unique options for ThinkSystem SR850**

- 7B27A03953 ThinkSystem SR850/SR860 Processor and Memory Expansion Tray
- 7C57A03999 ThinkSystem SR850/SR860 2.5" Anybay 8-Bay BP Kit
- 7C57A03998 ThinkSystem SR850/SR860 2.5" SATA/SAS 8-Bay BP Kit
- 7F57A03994 ThinkSystem SR850 Front VGA Connector Upgrade Kit
- 7C57A03990 ThinkSystem SR850/SR860 8x8x8 PCIe FH Riser Kit
- 7C57A03991 ThinkSystem SR850/SR860 8x8x8ML2 PCIe FH Riser Kit
- 7C57A03992 ThinkSystem SR850/SR860 8x16 PCIe FH Riser Kit

**Lenovo, April 2019**
**ThinkSystem SR860 Platform Specifications**

**Components**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Form factor</strong></td>
<td>4U rack</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>Height: 175 mm (6.9 in), Width: 482 mm (19.0 in) with rack latches, Depth: 765.88 mm (30.15 in) without security bezel</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>Maximum configuration: 87.74 lb (39.8 kg)</td>
</tr>
<tr>
<td><strong>Processor</strong></td>
<td>Supports up to four 205W Gen 1 or Gen 2 Intel Xeon Scalable family processors, Gold or Platinum, 2 processor sockets on system board, 2 processor sockets on optional processor and memory expansion tray. Up to 28 cores at 2.7GHz, to 3.8GHz with 4 cores. Four processors are connected in ring topology with two 10.4GT/s UPI (Ultra Path Interconnect) per processor</td>
</tr>
<tr>
<td><strong>Chipset</strong></td>
<td>Intel C624 Platform Controller Hub</td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td>Up to two redundant hot-swap 1200W/1600W/2000W 80 PLUS Platinum qualified AC</td>
</tr>
<tr>
<td><strong>Expansion</strong></td>
<td>Up to 13 PCIe slots with one LOM slot and one M.2 slot</td>
</tr>
</tbody>
</table>

**Memory**

<table>
<thead>
<tr>
<th>Memory Type</th>
<th>Speed</th>
<th>Offering</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>LRDIMM</td>
<td>DDR4-2933</td>
<td>12GB/256GB/512GB/1024GB</td>
<td>16GB/32GB/64GB</td>
</tr>
<tr>
<td>RDIMM</td>
<td>DDR4-2666</td>
<td>12GB/256GB/512GB/1024GB</td>
<td>128GB</td>
</tr>
<tr>
<td>3DS RDIMM</td>
<td>DDR4-2933</td>
<td>12GB</td>
<td></td>
</tr>
<tr>
<td>Performance+ RDIMM</td>
<td>DDR4-2933</td>
<td>12GB/256GB/512GB/1024GB</td>
<td>64GB</td>
</tr>
<tr>
<td>Performance+ 3DS RDIMM</td>
<td>DDR4-2933</td>
<td>12GB/256GB/512GB/1024GB</td>
<td>64GB</td>
</tr>
</tbody>
</table>

**Disk drive bays**

<table>
<thead>
<tr>
<th>RAID levels</th>
<th>Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Yes</td>
</tr>
<tr>
<td>1</td>
<td>Yes</td>
</tr>
<tr>
<td>5</td>
<td>Yes</td>
</tr>
<tr>
<td>6</td>
<td>Yes</td>
</tr>
<tr>
<td>10</td>
<td>Yes</td>
</tr>
<tr>
<td>15</td>
<td>Yes</td>
</tr>
<tr>
<td>30</td>
<td>Yes</td>
</tr>
<tr>
<td>60</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Minimum configuration**

- 6TB with 48x 128GB 3DS RDIMM and four M or L SKUs processors
- 12TB with 24x 512GB DC Persistent Memory (memory mode) and four L SKUs processors
- 15TB with 24x 512GB DC Persistent Memory (memory mode) + 24x 128GB 3DS RDIMM and four L SKUs processors

**Environmental specification**

### Components

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form factor</td>
<td>4U rack</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Height: 175.8 mm (6.9 in), Width: 483 mm (19.0 in) at EIA Flange, Depth: 853 mm (33.6 in)</td>
</tr>
<tr>
<td>Weight</td>
<td>Maximum configuration: 129.4 lb (58.7 kg)</td>
</tr>
</tbody>
</table>

| Processor     | Supports up to four Gen 1 or Gen 2 Intel Xeon Scalable family processors, Gold or Platinum. Or up to eight Intel Xeon Scalable family processors, Platinum only. Processors and memory are located on system boards installed in compute trays: 2 processors per system board, 2 system boards per compute tray, up to 2 compute tray per system. Up to 28 cores at 2.70GHz, up to 3.80GHz with 4 cores. Up to three UPI (Ultra Path Interconnect) links at maximum 10.4GT/s each. |

| Chipset       | Intel C624 Platform Controller Hub, Up to 96 DIMM sockets. Each processor supports up to 12 DIMM sockets with 6 channels. Supports following: |

<table>
<thead>
<tr>
<th>Memory offering</th>
<th>Memory Type</th>
<th>Speed</th>
<th>Offering</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDR4-2666</td>
<td>24TB with 96x 256GB 3DS RDIMM and eight L SKU processors</td>
<td>Memory</td>
<td>Non ECC, 4GB, Low-power DDR4-2933</td>
</tr>
<tr>
<td>DDR4-2933</td>
<td>24TB with 48x 512GB DC Persistent Memory (memory mode) and eight L SKU processors</td>
<td>Memory</td>
<td>Non ECC, 4GB, Low-power DDR4-2933</td>
</tr>
<tr>
<td>DDR4-4GB</td>
<td>36TB with 48x 512GB DC Persistent Memory (memory mode) + 48x 256GB 3DS RDIMM and eight L SKU processors</td>
<td>Memory</td>
<td>Non ECC, 4GB, Low-power DDR4-2933</td>
</tr>
</tbody>
</table>

| Memory protection | ECC, memory mirroring, and memory rank sparing. |

### Environmental specification

- **Temperature - operating**
  - A4: 5°C to 40°C (41°F to 113°F)
  - A2: 5°C to 40°C (41°F to 104°F)
  - A1: 5°C to 35°C (41°F to 95°F)

### Memory capacity

- **24TB with 96x 256GB 3DS RDIMM and eight L SKU processors**
- **24TB with 48x 512GB DC Persistent Memory (memory mode) and eight L SKU processors**
- **36TB with 48x 512GB DC Persistent Memory (memory mode) + 48x 256GB 3DS RDIMM and eight L SKU processors**

### Disk drive bays

- Up to 12 disk bays with maximum 6 AnyBay, or up to 24 disk bays with maximum 12 AnyBay.
- Optional one or two internal M.2 SSD for boot, dual M.2 SSD supports mirroring.

- **Internal storage**
  - 2.5" NVMe SSD, AnyBay
  - 2.5" HHD, SAS 12Gbps, 7.2K
  - 2.5" HHD, ECO12Gbps, 10K
  - 2.5" HHD, ECO12Gbps, 10K, SED
  - 2.5" SSD, 3DS RDIMM
  - 2.5" SSD, 3DS RDIMM, NVMe SSD, PCIe x4 HHHL adapter
  - 2.5" SSD, 3DS RDIMM, PCIe x8 HHHL adapter

Note: Internal storage supports up to four 12Gbps SAS and four 12Gbps SAS. The slots are as follows:

- Slot 1-4 (optional)
- Slot 5 (on main I/O tray)
- Slot 6 (on main I/O tray)
- Slot 7 (on main I/O tray)
- Slot 8 (on main I/O tray)
- Slot 9 (on main I/O tray)
- Slot 10-15 (on main I/O tray)
- Slot 16 (optional)

**For riser cards configuration of each model, please see model configuration table.**

---

**Notes:**
- 730-Bl is available in China only. 930-Be should be placed in slot 7 first. 430-Be should be placed in slot 4 first.
- 20GB NVMe SSD, PCIe x4 HHHL adapter
- 20GB NVMe SSD, PCIe x8 HHHL adapter
- 20GB NVMe SSD, PCIe x16 HHHL adapter
- 3DS RDIMM, PCIe x8 HHHL adapter
- 3DS RDIMM, PCIe x16 HHHL adapter
- 3DS RDIMM, PCIe x32 HHHL adapter
- 3DS RDIMM, PCIe x64 HHHL adapter

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**Lenovo, April 2019**
### ThinkSystem SR250 Platform Specifications

**Product Specifications Reference (PSREF)**

#### Components

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form factor</td>
<td>1U rack</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Height: 43 mm (1.7 in), width: 434.4 mm (17.1 in), depth: 497.8 mm (19.6 in). The depth is counted from EIA flange front surface to rear of chassis.</td>
</tr>
<tr>
<td>Processor</td>
<td>Supports one of the following Intel Xeon E family processors, up to 95W, up to 6 cores at 3.8GHz, up to 12MB cache, or up to one 8th Intel Core i3 processor, up to 91W, up to 4 cores at 4.0GHz, up to 8MB cache, or up to one Intel Pentium Gold processor, up to 54W, 2 cores at 3.9GHz, 4MB cache, or up to one Intel Celeron processor, up to 54W, 2 cores at 3.2GHz, 2MB cache, or up to one Intel Xeon E family processor, up to 95W, up to 6 cores at 3.8GHz, up to 12MB cache, or up to one 8th Intel Core i3 processor, up to 91W, up to 4 cores at 4.0GHz, up to 8MB cache, up to DDR4-2466 memory speed.</td>
</tr>
<tr>
<td>Weight</td>
<td>Maximum configuration: 27.1 lb (12.3 kg)</td>
</tr>
<tr>
<td>Memory</td>
<td>4 DIMM sockets with 2 channels, 2 DIMMs per channel. Up to one M.2 SSD for boot, consumes one onboard SATA port. Supports up to three PCIe 3.0 slots as following: Slot 1: Supports one of the following: Option 1: PCIe 3.0 x8/x16 (slot 1-2). Low profile for x8, full height half length for x16, x16 is negotiable link width x8. Option 2: PCIe 3.0x16 (slot 2). Full height half length. Slot 2: Slot 3 is covered by riser card so this slot is not available. Slot 4: PCIe 3.0 x8 (negotiable link width x4), dedicated internal RAID slot.</td>
</tr>
<tr>
<td>Memory capacity</td>
<td>64GB with 4x 16GB UDIMMs</td>
</tr>
</tbody>
</table>

#### Storage controllers

<table>
<thead>
<tr>
<th>RAID adapter</th>
<th>Interface</th>
<th>Drive type</th>
<th>RAID levels</th>
<th>JBOD</th>
<th>Cache protection</th>
<th>FastPath</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onboard SATA</td>
<td>6Gbps SATA</td>
<td>SATA</td>
<td>0/1/0/5</td>
<td>Yes</td>
<td>None</td>
<td>No</td>
</tr>
<tr>
<td>720-B</td>
<td>12Gbps SAS</td>
<td>SATA/SAS</td>
<td>0/1/0/5/30</td>
<td>Yes</td>
<td>TBB</td>
<td>None</td>
</tr>
<tr>
<td>720-B</td>
<td>12Gbps SAS</td>
<td>SATA/SAS</td>
<td>0/1/0/5/50</td>
<td>Yes</td>
<td>TBB</td>
<td>None</td>
</tr>
<tr>
<td>720-B</td>
<td>12Gbps SAS</td>
<td>SATA/SAS</td>
<td>0/1/0/5/66</td>
<td>Yes</td>
<td>TBB</td>
<td>None</td>
</tr>
<tr>
<td>820-B</td>
<td>12Gbps SAS</td>
<td>SATA/SAS</td>
<td>0/1/0/5/66</td>
<td>Yes</td>
<td>TBB</td>
<td>None</td>
</tr>
<tr>
<td>730-B</td>
<td>12Gbps SAS</td>
<td>SATA/SAS</td>
<td>0/1/0/5/66</td>
<td>Yes</td>
<td>TBB</td>
<td>None</td>
</tr>
<tr>
<td>330-B</td>
<td>12Gbps SAS</td>
<td>SATA/SAS</td>
<td>0/1/0/5/66</td>
<td>Yes</td>
<td>TBB</td>
<td>None</td>
</tr>
<tr>
<td>230-B</td>
<td>12Gbps SAS</td>
<td>SATA/SAS</td>
<td>0/1/0/5/66</td>
<td>Yes</td>
<td>TBB</td>
<td>None</td>
</tr>
<tr>
<td>830-B</td>
<td>12Gbps SAS</td>
<td>SATA/SAS</td>
<td>0/1/0/5/66</td>
<td>Yes</td>
<td>TBB</td>
<td>None</td>
</tr>
</tbody>
</table>

#### Disk drive bays

<table>
<thead>
<tr>
<th>Drive type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>For 3.5&quot; S1 bay (3.5&quot; disks with 3.5&quot; tray)</td>
<td>Supports 4 front 3.5&quot; SATA simple-swap bays, or 4 front 3.5&quot; SATA/SAS HS bays, or 8 front 2.5&quot; SATA/SAS HS bays. Or 10x 2.5&quot; HS bays with 8 SATA/SAS bays plus 2 Anybay. Optional one internal M.2 SSD for boot, consumes one onboard SATA port.</td>
</tr>
<tr>
<td>For 3.5&quot; SS bay (3.5&quot; disks)</td>
<td>HDDL: SATA6Gbps, 7.2K</td>
</tr>
<tr>
<td>For 3.5&quot; HS bay (3.5&quot; disks or 2.5&quot; disks with 3.5&quot; tray)</td>
<td>HDDL: SATA6Gbps, 7.2K</td>
</tr>
<tr>
<td>For 2.5&quot; S1 bay (2.5&quot; SSDs)</td>
<td>HDDL: SATA6Gbps, 7.2K</td>
</tr>
<tr>
<td>For 2.5&quot; SS bay (2.5&quot; SSDs)</td>
<td>HDDL: SATA6Gbps, 7.2K</td>
</tr>
<tr>
<td>M.2 SSD</td>
<td>4GB/480GB/960GB</td>
</tr>
</tbody>
</table>

#### Optical

<table>
<thead>
<tr>
<th>Description</th>
<th>None</th>
</tr>
</thead>
</table>

#### Network interfaces

| Description | Two onboard GbE port via integrated gigabit Ethernet Broadcom BCM5720 plus one dedicated management port. Optional PCIe ethernet adapters are available. |

#### Security features

| Description | Power-on and admin password. Trusted Platform Module, TCG 1.2 or 2.0 compliant, Optional TCM in China only, Optional chassis intrusion switch, Kensington lock, and padlock. |

#### Operating systems supported

| Description | Microsoft Windows Server 2019/2016/2012 R2, Red Hat Enterprise Linux 7.5. SUSE Linux Enterprise Server 12 SP3, VMware vSphere (ESXi) 6.7/6.5 U2. |

#### Systems management

| Description | XCtor Standard, optional upgrades to Advanced or Enterprise are available. Energy Manager, XCtor Administrator. LEDS on front panel show the status of power, ID, network, simple-swap disks, and system error. |

#### GPU support

| Description | Up to one optional GPU, NVIDIA Quadro P620 |

#### Base warranty

| Description | MT 7Y51: 3-year limited onsite service with 9x5/NBD. MT 7Y52: 1-year limited onsite service with 9x5/NBD. |

#### Power supply

| Description | Supports one of the following PSU: One fixed power supply, 300W. 80 PLUS Gold certified. Up to two redundant hot-swap power supplies, 450W each. 80 PLUS Platinum certified. |

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**Lenovo, November 2017**
ThinkSystem SR530 Platform Specifications

<table>
<thead>
<tr>
<th>Components</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form factor</td>
<td>1U rack</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Height: 43 mm (1.7 in), Width: 482 mm (19.0 in) with rack latches, Depth: 778.3 mm (30.64 in)</td>
</tr>
<tr>
<td>Weight</td>
<td>Maximum configuration: 35.27 lb (16 kg)</td>
</tr>
<tr>
<td>Processor</td>
<td>Up to two 125W Gen 1 or Gen 2 Intel Xeon Scalable family processors, Bronze, Silver, Gold, or Platinum. Up to 22 cores at 1.9GHz, up to 3.8GHz with 4 cores. Two processors are connected with two UPI (Ultra Path Interconnect) links up to 10.4GT/s</td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel C622 Platform Controller Hub</td>
</tr>
<tr>
<td>Memory</td>
<td>Up to 12 DIMM sockets. Each processor supports up to 6 DIMM sockets with 6 channels. Supports following:</td>
</tr>
<tr>
<td></td>
<td>Memory Type</td>
</tr>
<tr>
<td></td>
<td>RDIMM</td>
</tr>
<tr>
<td></td>
<td>RDIMM</td>
</tr>
<tr>
<td></td>
<td>LRDIMM</td>
</tr>
<tr>
<td>Memory capacity</td>
<td>96GB with 12x 64GB RDIMM and dual processor</td>
</tr>
<tr>
<td>Memory protection</td>
<td>ECC, memory mirroring, and memory sparing</td>
</tr>
<tr>
<td>Storage controllers</td>
<td>Supports the following RAID/HBA adapters:</td>
</tr>
<tr>
<td>RAID adapter</td>
<td>Interface</td>
</tr>
<tr>
<td>For SS bays</td>
<td></td>
</tr>
<tr>
<td></td>
<td>830-B</td>
</tr>
<tr>
<td></td>
<td>740-B</td>
</tr>
<tr>
<td></td>
<td>360-B</td>
</tr>
<tr>
<td>Disk drive bays</td>
<td>Support 4 front 3.5&quot; SATA simple-swap bays, or 4 front 3.5&quot; SATA/SAS HS bays, or 8 front 2.5&quot; SATA/SAS HS bays, or 16 front 2.5&quot; SSD bays, or 16 front 2.5&quot; M.2 SSD bays</td>
</tr>
<tr>
<td>Internal storage</td>
<td>For 3.5&quot; bay</td>
</tr>
<tr>
<td></td>
<td>3.5&quot; HDD, SATA6Gbps, 7.3K</td>
</tr>
<tr>
<td></td>
<td>3.5&quot; HDD, SAS12Gbps, 7.3K</td>
</tr>
<tr>
<td></td>
<td>2.5&quot; HDD, SAS12Gbps, 15K</td>
</tr>
<tr>
<td></td>
<td>2.5&quot; SSD, SAS48Gbps</td>
</tr>
<tr>
<td></td>
<td>2.5&quot; HDD, SAS6Gbps, 7.3K</td>
</tr>
<tr>
<td></td>
<td>2.5&quot; HDD, SAS12Gbps, 7.2K</td>
</tr>
<tr>
<td></td>
<td>2.5&quot; HDD, SAS12Gbps, 10K</td>
</tr>
<tr>
<td></td>
<td>2.5&quot; HDD, SAS12Gbps, 15K</td>
</tr>
<tr>
<td></td>
<td>2.5&quot; SSD, SAS12Gbps</td>
</tr>
<tr>
<td></td>
<td>2.5&quot; SSD, SAS12Gbps</td>
</tr>
<tr>
<td></td>
<td>M.2 SATA SSD</td>
</tr>
<tr>
<td></td>
<td>M.2 SATA SSD</td>
</tr>
<tr>
<td>Optical</td>
<td>No internal optical bay. Optional USB DVD+RW optical drive</td>
</tr>
<tr>
<td>Network interfaces</td>
<td>Integrated one dedicated management port plus two GBE ports. One LOM slot for customized LOM with two RJ-45 or SFP+ ports, up to 10GbE. Optional ML2 or PCIe adapters are supported. ML2 adapter requires riser card with ML2 slot. Up to two ports supports Wake-on-LAN and NC-SI (see right)</td>
</tr>
<tr>
<td>Security features</td>
<td>Power-on and admin password: Trusted Platform Module, TCG 1.2 compliant, upgrade to 2.0 via UEFI setting. Optional TCM in China only. Optional lockable security bezel</td>
</tr>
<tr>
<td>Operating systems supported</td>
<td>Microsoft Windows Server 2016/2012 R2, Red Hat Enterprise Linux 7.4/7.6/8.0, SUSE Linux Enterprise Server 12 SP3/4 SP3/4, VMware ESXi 6.2/6.7/6.5.0 US</td>
</tr>
<tr>
<td>Systems management</td>
<td>XClarity Controller Standard, optional upgrades to Advanced or Enterprise are available, Energy Manager, XClarity Administrator, Lenovo Capacity Planner, Provisioning Manager, Essentials, Light Path Diagnostics</td>
</tr>
<tr>
<td>GPU support</td>
<td>None</td>
</tr>
</tbody>
</table>

Lenovo, April 2019
Lenovo 2U Security Bezel

Slot 2

0/1/10/5/50/6/60

One XClarity Controller USB, one USB 3.0, one optional VGA

12Gbs SAS

None

768GB with 12x 64GB RDIMM and dual processor

1TB/2TB

Drive type

None

None

DDR4-2666

(0-10000 ft (0-3048 m)

Yes

Yes -40°C to 70°C (-40°F to 158°F)

Height: 86.5 mm (3.4 in). Width: 482 mm (19.0 in) with rack latches. Depth: 763.7 mm (30.1 in)

Environmental specification

Supports ASHRAE A4 with limitations.

Temperature - operating

A2: 3°C to 40°C (23°F to 104°F)

A2: 10°C to 35°C (50°F to 95°F)

Humidity - operating, non-condensing

A4: 25% - 85% RH (non-condensing)

Models should meet the following requirements to support A3 and A4:

• Redundant power supplies required
• No system fan fails

Environmental certification


Expandable slots

Slot 3 riser card 1

PCIe 3.0 x8, full profile

Slot 2 riser card 2

PCIe 3.0 x8, full height, half length, requires 2nd CPU

System unique options

ThinkSystem SR550 Platform Specifications

Base warranty

MT 7X03: 1-year limited onsite service with 9x5/NBD

MT 7X04: 3-year limited onsite service with 9x5/NBD

Power supply

Up to two redundant hot-swap 550W and 750W 80 PLUS Platinum qualified AC power supplies. Or up to two redundant hot-swap 750W Titanium qualified AC power supplies.

750W Titanium is 200V - 240V, others are 100V - 240V

Video

Integrated Matrox G200 in XClarity Controller

Cooling

Three fans (2+1) for single processor model, four fans (3+1) for dual processor model

Front ports

One XClarity Controller USB, one USB 3.0, one optional VGA

Rear ports

One VGA, two USB 3.0, two ethernet (RJ-45) one XClarity Controller connector. Optional COM port

Lenovo SR550/SR590/SR650 EIA Latch w/ VGA Upgrade Kit

Lenovo SR550/SR590/SR650 x8/x8/x8ML2 PCIe FH Riser 1 Kit

No internal optical bay. Optional USB DVD±RW optical drive

Flash backup

Offering

No

240GB/480GB

None

Lenovo SR550/SR590/SR650 x8/x8/x8 PCIe FH Riser 1 Kit

RAID levels

SATA/SAS

12Gbs SAS

2

2

SATA/SAS

No

SATA

12Gbs SAS

Yes

Yes

2

12Gbs SAS

1TB/2TB/4TB/6TB/8TB/10TB

-40°C to 70°C (-40°F to 158°F)

Maximum configuration: 57.32 lb (26 kg)

System unique options

ThinkSystem SR550 Platform Specifications

Components

Form factor

2U rack

Dimensions

Height: 86.5 mm (3.4 in), Width: 482 mm (19.0 in) with rack latches, Depth: 763.7 mm (30.1 in)

Weight

Maximum configuration: 57.32 lb (26 kg)

Processor

Up to two 125W Gen 1 or Gen 2 Intel Xeon Scalable family processors, Bronze, Silver, Gold, or Platinum. Up to 22 cores at 1.9GHz, up to 3.8GHz. Two processors are connected with two UPI (Ultra Path Interconnect) links up to 10.4GT/s

Chipset

Intel C622 Platform Controller Hub

Memory offering

Up to 12 DIMM sockets. Each processor supports up to 6 DIMM sockets with 6 channels.

Supports following:

DRDIMM

DDR4-2933 16GB/16GB/32GB/32GB

RDIMM

DDR4-2666 8GB/16GB/32GB

LRDIMM

DDR4-2666 64GB

Memory capacity

768GB with 12x 64GB RDIMM and dual processor

Memory protection

SEC, memory mirroring, and memory sparing

supports the following RAID/HBA adapters:

RAID adapter

Onboard SATA

SATA

6Gb 5/1/5/5

Yes

None

Yes

Yes

12Gb 5/1/5/50/50/50

Yes

None

Yes

Yes

32Gb 5/1/5/50/50/50

Yes

None

Yes

Yes

SATA/SAS

8/16/32/64/128/256/512/1024/2048GB

8/16/32/64/128/256/512/1024/2048GB

Supports ASHRAE A4 with limitations.

Environmental specification


Environmental certification


Disk drive bays

Support 8 front 3.5" SATA simple-swap bays, or 8 front 3.5" SATA/SAS HS bays, or 12 front 3.5" SATA/SAS HS bays, or 8 front 2.5" SATA/SAS HS bays, or 16 front 2.5" SATA/SAS HS bays.

Optional one or two internal M.2 SSD for boot, dual M.2 SSD supports mirroring

Internal storage

For 3.5" bay

3.5" HDD, SATA6Gbps, 5K

8TB/12TB/16TB/20TB/24TB

3.5" HDD, 5Gbps/6Gbps/7.2K

4TB/8TB/12TB

3.5" HDD, 5Gbps/6Gbps/7.2K

4TB/8TB/12TB

2.5" SSD, SATA6Gbps

240GB/480GB

2.5" SSD, 5Gbps/6Gbps/7.2K

240GB/480GB

Internal storage

For 2.5" bay

2.5" SSD, SATA6Gbps

240GB/480GB

2.5" HDD, SATA6Gbps

240GB/480GB

Optical

No internal optical bay. Optional USB DVD±RW optical drive

Network interfaces

Integrated one dedicated management port plus two GBE ports. One LOM slot for customized LOM with two RJ-45 or SFP+ ports, up to 10GBe. Optional ML2 or PCIe adapters are supported. ML2 adapter requires connector with ML2 slot. Up to two ports supports Wake-on-LAN and NC-SI (see right)

Security features

Power-on and admin password. Trusted Platform Module, TCG 1.2 compliant, upgrade to 2.0 via UEFI setting. Optional TCM in China only. Optional lockable security bezel

Operating systems supported

XClarity Controller Standard, optional upgrades to Advanced or Enterprise are available. Energy Manager, XClarity Administrator, Lenovo Capacity Planner. Provisioning Manager. Essentials. Light Path Diagnostics

Systems management

Lenovo, April 2019
ThinkSystem SR570 Platform Specifications

Product Specifications Reference (PSREF)

Components Specification

Form factor
1U rack

Dimensions
Height: 43 mm (1.7 in), Width: 482 mm (19.0 in) with rack latches, Depth: 778.3 mm (30.64 in)

Weight
Maximum configuration: 35.27 lb (16 kg)

Processor
Up to two 150W Gen 1 or Gen 2 Intel Xeon Scalable family processors, Bronze, Silver, Gold, or Platinum. Up to 26 cores at 2.0GHz, up to 3.8GHz with 4 cores. Two processors are connected with two LPI (Ultra Path Interconnected) links up to 10.4GT/s each

Chipset
Intel C622 Platform Controller Hub

Memory offering
Up to 16 DIMM sockets. Each processor supports up to 8 DIMM sockets with 6 channels. Supports following:

Memory type
- DDR4-2666
- 8GB/16GB/32GB/64GB

Memory capacity
- 1TB with 16x 64GB RDIMM and dual processor
- 2TB with 4x 512GB DC Persistent Memory and dual processor (Gen 2 or M SKU Gen 1)
- 2.76TB with 4x 512GB DC Persistent Memory + 12x 64GB RDIMM and processor (Gen 2 or M SKU Gen 1)

Memory protection
- ECC, memory mirroring, and memory sparing

Storage controllers

RAID adapter Interface Drive type RAID levels JBOD Cache Cache protection FastPath Max qty

For SS bays
Onboard SATA 6Gb SATA 3/1/0/5 Yes None None None No -

630-Bi 12Gb SAS SATA/SAS 2/1/0/5/30 Yes None None None No -

730-Bi 12Gb SAS SATA/SAS 2/1/0/5/50 Yes 1GB Flash backup Yes 1

630-1Bi 12Gb SAS SATA/SAS 2/1/0/5/50/60 Yes 2GB Flash backup Yes 1

630-1Be 12Gb SAS SATA/SAS 2/1/0/5/50/60 Yes 4GB Flash backup Yes 1

430-1BBe 12Gb SAS SATA/SAS 2/1/0/5/50/60 Yes None None None No 1

430-1Be 12Gb SAS SATA/SAS 2/1/0/5/50/60 Yes None None None No 1

430-1Be 12Gb SAS SATA/SAS 2/1/0/5/50/60 Yes None None None No 1

430-1Be 12Gb SAS SATA/SAS 2/1/0/5/50/60 Yes None None None No 1

430-1Be 12Gb SAS SATA/SAS 2/1/0/5/50/60 Yes None None None No 1

For HS bays
Onboard SATA 6Gb SATA 3/1/0/5 Yes None None None No -

630-Bi 12Gb SAS SATA/SAS 2/1/0/5/30 Yes None None None No -

730-Bi 12Gb SAS SATA/SAS 2/1/0/5/50 Yes 1GB Flash backup Yes 1

630-1Bi 12Gb SAS SATA/SAS 2/1/0/5/50/60 Yes 2GB Flash backup Yes 1

630-1Bi 12Gb SAS SATA/SAS 2/1/0/5/50/60 Yes 4GB Flash backup Yes 1

630-1Bi 12Gb SAS SATA/SAS 2/1/0/5/50/60 Yes None None None No 1

630-1Bi 12Gb SAS SATA/SAS 2/1/0/5/50/60 Yes None None None No 1

630-1Bi 12Gb SAS SATA/SAS 2/1/0/5/50/60 Yes None None None No 1

630-1Bi 12Gb SAS SATA/SAS 2/1/0/5/50/60 Yes None None None No 1

630-1Bi 12Gb SAS SATA/SAS 2/1/0/5/50/60 Yes None None None No 1

630-1Bi 12Gb SAS SATA/SAS 2/1/0/5/50/60 Yes None None None No 1

Internal storage

For 3.5” SSD bay
3.5” HDD, SATA6Gbs, 7.2k 5TB/2TB/4TB/6TB/8TB

3.5” HDD, SATA6Gbs, 7.2k 512GB SSD

3.5” HDD, SATA6Gbs, 7.2k 390GB SSD

3.5” HDD, SATA6Gbs, 7.2k 256GB SSD

3.5” NVMe SSD, AnyBay 960GB/192TB/3.84TB

For 2.5” bay
2.5” HDD, SATA6Gbs, 7.2k 1TB/2TB

2.5” HDD, SATA6Gbs, 10K 900GB/900GB/900GB/1.2TB/1.8TB

2.5” HDD, SAS12Gbs, 10K, SED 300GB/300GB

2.5” HDD, SAS12Gbs, 15K 900GB/900GB/900GB/900GB/900GB

2.5” SSD, SATA12Gbs 960GB/192TB/3.84TB

2.5” SSD, SATA12Gbs 960GB/192TB/3.84TB

2.5” NVMe SSD, AnyBay 960GB/192TB/3.84TB

M.2 boot drive
M.2 SATA SSD 256GB/512GB

Disk drive bays
Support 4 front 3.5” SATA simple-swap bays, or 4 front 3.5” SATA/SAS HS bays, or 8 front 2.5” SATA/SAS HS bays, or 10 front 2.5” SATA/SAS HS bays or 4 AnyBay. Optional one or two internal 2M SSD for boot, dual M.2 SSD supports mirroring

Environmental

Temperature - operating
A: -1°C to 50°C (30°F to 122°F)
B: -1°C to 50°C (30°F to 122°F)
C: -1°C to 50°C (30°F to 122°F)
D: -1°C to 50°C (30°F to 122°F)

Temperature - non operating (no package)
A: -20°C to +70°C (-4°F to 158°F)
B: -20°C to +70°C (-4°F to 158°F)
C: -20°C to +70°C (-4°F to 158°F)
D: -20°C to +70°C (-4°F to 158°F)

Humidity (operating, non-condensing)
A: 8%–90%RH
B: 8%–90%RH
C: 8%–90%RH
D: 8%–90%RH

Environmental certification
Energy Star Server 2.1 certified. More environmental information please see:

Lenovo, April 2019
**ThinkSystem SR590 Platform Specifications**

**Components**

- **Form factor:** 2U rack
- **Dimensions:** Height: 86.5 mm (3.4 in); Width: 482 mm (19.0 in) with rack latches; Depth: 763.7 mm (30.1 in)
- **Weight:** Maximum configuration: 61.7 lb (28 kg)

**Processor**

Up to two 150W Gen 1 or Gen 2 Intel Xeon Scalable family processors, Bronze, Silver, Gold, or Platinum. Up to 26 cores at 2.0GHz, up to 3.8GHz with 4 cores. Two processors are connected with two UPI (Ultra Path Interconnected) links up to 10.4G/tx each.

**Chipset**

Intel C622 Platform Controller Hub

**Memory offering**

Up to 16 DIMM sockets. Each processor supports up to 8 DIMM sockets with 6 channels. Supports following:

- **Memory type:**
  - DDR4-2666
  - DDR4-2400

- **Speed Offering:**
  - 12Gbs SAS

**Memory capacity**

- 1TB with 16x 64GB RDIMM and dual processor
- 2TB with 4x 512GB DC Persistent Memory and dual processor (Gen 2 or M SKU Gen 1)
- 2.76TB with 4x 512GB DC Persistent Memory + 12x 64GB RDIMM and processor (Gen 2 or M SKU Gen 1)

**Memory protection**

ECC, memory mirroring, and memory sparing.

**Storage controllers**

Supports the following RAID/HBA adapters:

- RAID level
  - RAID 5
  - RAID 10

- Interface
  - SAS

- Drive type
  - 2.5" SATA

- RAID levels
  - 0/1/5/6/10/50/60

- Memory Type
  - 4GB

- Capacity
  - 4096GB

**Disk drive bays**

Supports 3.5” Simple-swap bay up to 8, or 3.5” HS bay up to 12, or 2.5” HS bay up to 12. On 12x 3.5”, 8x 2.5”, or 16x 2.5” bay models, 4 bays can be upgrade to AnyBay. Optional 2 rear 3.5” HS bays are supported on both 3.5” and 2.5” models, takes place in riser card 1 location. Optional one or two internal M.2 SSD for boot, dual M.2 SSD supports mirroring.

**Internal storage**

- **For 3.5" bay**
  - 3.5” HDD, SATA6Gbps, 7.2K
  - 3.5” HDD, SATA6Gbps, 2.4K
  - 3.5” HDD, SATA12Gbps, 15K
  - 3.5” SSD, SATA6Gbps
  - 2.5” SSD, SATA6Gbps
  - 2.5” SSD, SAS6Gbps

- **For 2.5" bay**
  - 2.5” SSD, SAS6Gbps
  - 2.5” SSD, SAS6Gbps
  - 2.5” SSD, SAS6Gbps
  - 2.5” SSD, SAS6Gbps

**Optical**

No internal optical bay. External 2.5”/5.25” ODD optical drive

**Network interfaces**

Integrated one dedicated management port plus two GBE ports. One LOM slot for custom LOM with two RJ-45 or SFP+ ports, up to 10Gbps. Optional ML2 or PCIe adapters are supported. ML2 adapter requires riser card with ML2 slot. Up to two ports supports Wake-on-LAN and NC-SI (see right).

**Security features**

Power-on and admin password. Trusted Platform Module, TCG 1.2 compliant, upgrade to 2.0 via UEFI setting. Optional TCM in China only. Optional lockable security bezel.

**Operating systems supported**

Microsoft Windows Server 2012/2012 R2, Red Hat Enterprise Linux 7/x86_64, SUSE Linux Enterprise Server 12 SP2/11 SP4, VMware ESXi 6.5/6.0/5.3

**Systems management**

XClarity Controller Standard, optional upgrades to Advanced or Enterprise are available. Energy Manager, XClarity Administrator, Lenovo Capacity Planner, Provisioning Manager. Essentials, Light Path Diagnostics

**GPU support**

None

**Base warranty**

3 years on site service with 9x5/NBD

Lenovo, April 2019
### ThinkSystem SR630 Platform Specifications

#### Product Specifications Reference (PSREF)

<table>
<thead>
<tr>
<th>Components</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form factor</td>
<td>1U rack</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Height: 43 mm (1.7 in), Width: 482 mm (19.0 in) with rack latches. Depth: 778.3 mm (30.64 in)</td>
</tr>
<tr>
<td>Weight</td>
<td>Maximum configuration: 41.9 lb (19 kg)</td>
</tr>
<tr>
<td>Processor</td>
<td>Up to two 205W Gen 1 or Gen 2 Intel Xeon Scalable family processors, Bronze, Silver, Gold, or Platinum. Up to 28 cores at 2.7 GHz, or up to 3.6 GHz with 4 cores. Two processors are connected with two LPI (Ultra Path Interconnected) links up to 10G/4S</td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel C624 Platform Controller Hub</td>
</tr>
<tr>
<td>Memory offering</td>
<td>Up to 24 DIMM sockets. Each processor supports up to 12 DIMM sockets with 6 channels. Supports following</td>
</tr>
<tr>
<td>Memory type</td>
<td>DDR4-2666</td>
</tr>
<tr>
<td>Memory offering</td>
<td>DDR4-2933</td>
</tr>
<tr>
<td>Memory offering</td>
<td>12Gbps SAS</td>
</tr>
<tr>
<td>Memory offering</td>
<td>Lenovo SR630 x8ML2/x16 PCIe LP+LP Riser 1 Kit</td>
</tr>
<tr>
<td>Memory offering</td>
<td>Lenovo SR630 Rear HDD Kit</td>
</tr>
<tr>
<td>Memory offering</td>
<td>2x 3.5&quot; Rear Bays Support</td>
</tr>
<tr>
<td>Memory offering</td>
<td>DDR4-2666 32GB/64GB/128GB/256GB/512GB</td>
</tr>
<tr>
<td>Memory offering</td>
<td>DDR4-2933 32GB</td>
</tr>
<tr>
<td>Memory offering</td>
<td>3DS RDIMM</td>
</tr>
<tr>
<td>Memory offering</td>
<td>Performance 3D RDIMM</td>
</tr>
<tr>
<td>Memory offering</td>
<td>RDIMM</td>
</tr>
<tr>
<td>Memory capacity</td>
<td>3TB with 24x 128GB 3DS RDIMM and dual M or L SKU processor</td>
</tr>
<tr>
<td>Memory capacity</td>
<td>6TB with 12x 512GB DC Persistent Memory and dual L SKU processor</td>
</tr>
<tr>
<td>Memory capacity</td>
<td>7.5TB with 12x 512GB DC Persistent Memory + 12x 128GB 3DS RDIMM and dual L SKU processor</td>
</tr>
<tr>
<td>Memory protection</td>
<td>ECC, memory mirroring, and memory sparing</td>
</tr>
<tr>
<td>Storage controllers</td>
<td>One dedicated internal RAID slot for most RAID/HBA adapters. Supports the following RAID/HBA adapters.</td>
</tr>
<tr>
<td>Storage controllers</td>
<td>Slot 1 Slot 2 Slot 3</td>
</tr>
<tr>
<td>Storage controllers</td>
<td>Optional LOM</td>
</tr>
<tr>
<td>Storage controllers</td>
<td>Slot 1 Slot 2 Slot 3</td>
</tr>
<tr>
<td>Storage controllers</td>
<td>VGA 2xUSB 3.0</td>
</tr>
<tr>
<td>Storage controllers</td>
<td>PSU1 PSU2 (optional)</td>
</tr>
<tr>
<td>Storage controllers</td>
<td>XClarity Controller network connector</td>
</tr>
<tr>
<td>Storage controllers</td>
<td>Network connector</td>
</tr>
<tr>
<td>Disk drive bays</td>
<td>Supports the following disk bays configurations, optional rear bay occupies riser card 1 location:</td>
</tr>
<tr>
<td>Disk drive bays</td>
<td>Chassis Maximum Disk Bay Configuration 2x 3.5&quot; Rear Bays Support</td>
</tr>
<tr>
<td>Disk drive bays</td>
<td>4x 3.5&quot; 3x 3.5&quot; HS SATA/SAS</td>
</tr>
<tr>
<td>Disk drive bays</td>
<td>4x 3.5&quot; AnyBay</td>
</tr>
<tr>
<td>Disk drive bays</td>
<td>8x 2.5&quot; 3x 2.5&quot; HS SATA/SAS</td>
</tr>
<tr>
<td>Disk drive bays</td>
<td>8x 2.5&quot; AnyBay</td>
</tr>
<tr>
<td>Disk drive bays</td>
<td>10x 2.5&quot;</td>
</tr>
<tr>
<td>Disk drive bays</td>
<td>10x 2.5&quot; U2</td>
</tr>
<tr>
<td>Disk drive bays</td>
<td>Optional one or two internal M.2 SSD for boot, dual M.2 SSD supports mirroring</td>
</tr>
<tr>
<td>Internal storage</td>
<td>For 3.5&quot; bay (3.5&quot; disks or 2.5&quot; disks with 3.5&quot; tray)</td>
</tr>
<tr>
<td>Internal storage</td>
<td>2.5 HDD, SATA6Gbps, 7.2K 1TB/2TB/4TB/6TB/8TB/10TB</td>
</tr>
<tr>
<td>Internal storage</td>
<td>2.5 HDD, SAS12Gbps, 15K 300GB/600GB/900GB/1.2TB/1.8TB</td>
</tr>
<tr>
<td>Internal storage</td>
<td>2.5 SSD, SATA6Gbps 240GB/480GB</td>
</tr>
<tr>
<td>Internal storage</td>
<td>For 2.5&quot; bay</td>
</tr>
<tr>
<td>Internal storage</td>
<td>2.5 HDD, SATA6Gbps, 7.2K 1TB/2TB</td>
</tr>
<tr>
<td>Internal storage</td>
<td>2.5 HDD, SAS12Gbps, 15K 300GB/600GB/900GB/1.2TB/1.8TB</td>
</tr>
<tr>
<td>Internal storage</td>
<td>2.5 SSD, SAS12Gbps 400GB/800GB/1.2TB/1.8TB/2.4TB</td>
</tr>
<tr>
<td>Internal storage</td>
<td>2.5 NVMe SSD, AnyBay 300GB/600GB/900GB/1.2TB/1.8TB/2.4TB/3.6TB/4.8TB</td>
</tr>
<tr>
<td>Internal storage</td>
<td>PCIe 3.0 x4, HHL adapter 8GB/16GB/32GB/64GB/128GB/256GB</td>
</tr>
<tr>
<td>Internal storage</td>
<td>M.2 boot drive 256GB/512GB/1TB/2TB/4TB/8TB</td>
</tr>
<tr>
<td>Internal storage</td>
<td>M.2 SATA SSD 2GB/12GB/24GB/48GB</td>
</tr>
<tr>
<td>Optical</td>
<td>No internal optical bay. Optional USB D+D/FW optical drive</td>
</tr>
<tr>
<td>Network interfaces</td>
<td>One dedicated management port. One LOM slot for customized LOM with up to four RJ-45 or SFP+ ports, up to 10GbE. Wake-on-LAN and NPII are available on Port 0 of LOM. Optional 2x PCIe adapters are supported. ML2 adapter requires riser card with ML2 slot.</td>
</tr>
<tr>
<td>Security features</td>
<td>Power-on and admin password. Trusted Platform Module, TCG 1.2 compliant, upgrade to 2.0 via UEFI setting. Optional TCM on China only. Optional lockable security bezel</td>
</tr>
<tr>
<td>Operating systems supported</td>
<td>Microsoft Windows Server 2012 R2, Red Hat Enterprise Linux x 4/7/8.9, SUSE Linux Enterprise Server 12 SP3/12 SP2/11 SP4, VMware ESXi 6.5/6.7/6.0 U3</td>
</tr>
</tbody>
</table>

#### Components Specification

<table>
<thead>
<tr>
<th>Feature</th>
<th>Interface</th>
<th>Drive type</th>
<th>RAID levels</th>
<th>JBOD</th>
<th>Cache</th>
<th>Cache protection</th>
<th>FastPath Max q depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>32GB</td>
<td>SAS</td>
<td>12+2/10+2/8+4/6+2</td>
<td>Yes</td>
<td>None</td>
<td>1 GB</td>
<td>Flash backup</td>
<td>1</td>
</tr>
<tr>
<td>720-8</td>
<td>SAS</td>
<td>32+2/10+2/8+4/6+2</td>
<td>Yes</td>
<td>None</td>
<td>1 GB</td>
<td>Flash backup</td>
<td>1</td>
</tr>
<tr>
<td>830-8</td>
<td>SAS</td>
<td>32+2/10+2/8+4/6+2</td>
<td>Yes</td>
<td>None</td>
<td>1 GB</td>
<td>Flash backup</td>
<td>1</td>
</tr>
<tr>
<td>830-8</td>
<td>SAS</td>
<td>32+2/10+2/8+4/6+2</td>
<td>Yes</td>
<td>None</td>
<td>1 GB</td>
<td>Flash backup</td>
<td>1</td>
</tr>
<tr>
<td>830-8</td>
<td>SAS</td>
<td>32+2/10+2/8+4/6+2</td>
<td>Yes</td>
<td>None</td>
<td>1 GB</td>
<td>Flash backup</td>
<td>1</td>
</tr>
<tr>
<td>830-8</td>
<td>SAS</td>
<td>32+2/10+2/8+4/6+2</td>
<td>Yes</td>
<td>None</td>
<td>1 GB</td>
<td>Flash backup</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Memory Type

<table>
<thead>
<tr>
<th>Memory Type</th>
<th>Speed Offering</th>
<th>Memory Type</th>
<th>Speed Offering</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDR4-2666</td>
<td>12GB/256GB/512GB/1GB/6GB/12GB/256GB/512GB</td>
<td>DDR4-2933 32GB/64GB/128GB/256GB/512GB</td>
<td>Performance 3D RDIMM</td>
</tr>
</tbody>
</table>

#### Environmental specification

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>-40°C to 70°C (-40°F to 158°F)</td>
</tr>
<tr>
<td>Humidity</td>
<td>8%~90%</td>
</tr>
<tr>
<td>Power supply</td>
<td>Supports up to 3 LP and single width GPU adapters, or up to 3 LP and single width GPU adapters (Quadro P6000)</td>
</tr>
</tbody>
</table>

#### Expansion slots

<table>
<thead>
<tr>
<th>Slot (riser card 2)</th>
<th>PCIe x8 or x16, 8x low profile, requires 2nd CPU. When slot 2 is full height, slot 3 cannot be used</th>
</tr>
</thead>
</table>

#### System unique options

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X8HA05897</td>
<td>Lenovo SR530/SR570/SR630 2.5&quot; SATA/SAS 8-Bay Backplane Kit</td>
</tr>
<tr>
<td>X8HA05898</td>
<td>Lenovo SR530/SR570/SR630 x8/x16 PCIe LP+FH Riser 1 Kit</td>
</tr>
<tr>
<td>X8HA05895</td>
<td>Lenovo SR630 x16ML2/x26 PCIe LP+FH Riser 1 Kit</td>
</tr>
<tr>
<td>X8HA05894</td>
<td>Lenovo SR630 x8ML2.x16 PCIe LP+FH Riser 1 Kit</td>
</tr>
<tr>
<td>X8HA02662</td>
<td>Lenovo SR530/SR570/SR630 x8/x16 PCIe LP+LP Riser 1 Kit</td>
</tr>
<tr>
<td>X8HA02663</td>
<td>Lenovo SR630 x16ML2/x26 PCIe LP+LP Riser 1 Kit</td>
</tr>
<tr>
<td>X8HA02664</td>
<td>Lenovo SR630 x16ML2/x16 PCIe LP+LP Riser 1 Kit</td>
</tr>
<tr>
<td>X8HA02665</td>
<td>Lenovo SR630 x16ML2/x16 PCIe LP+LP Riser 2 Kit</td>
</tr>
<tr>
<td>X7HA02652</td>
<td>Lenovo SR530 Rear HDD Kit</td>
</tr>
<tr>
<td>X7HA02577</td>
<td>Lenovo COM Port Upgrade Kit</td>
</tr>
<tr>
<td>X7HA02579</td>
<td>Lenovo SR530/SR570/SR630 Front VGA Connector Upgrade Kit</td>
</tr>
<tr>
<td>X7HA02581</td>
<td>Lenovo 1U Security Bezel</td>
</tr>
</tbody>
</table>
ThinkSystem SR650 Platform Specifications

Product Specifications Reference (PSREF)

<table>
<thead>
<tr>
<th>Components</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form factor</td>
<td>2U rack</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Height: 86.5 mm (3.4 in), Width: 482 mm (19.0 in) with rack latches, Depth: 763.7 mm (30.1 in)</td>
</tr>
<tr>
<td>Weight</td>
<td>Maximum configuration: 70.54 lb (32 kg)</td>
</tr>
<tr>
<td>Processor</td>
<td>Up to two 205W Gen 1 or Gen 2 Intel Xeon Scalable family processors, Bronze, Silver, Gold, or Platinum. Up to 28 cores at 2.7GHz, up to 3.8GHz with 4 cores. Two processors are connected with twoUPI (Ultra Path Interconnected) links up to 10.4GT/s</td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel C624 Platform Controller Hub</td>
</tr>
<tr>
<td>Memory</td>
<td>Up to 24 DIMM sockets. Each processor supports up to 12 DIMM sockets with 6 channels. Supports following:</td>
</tr>
<tr>
<td>Memory type</td>
<td>Speed Offering</td>
</tr>
<tr>
<td>Intel Optane DC Persistent Memory</td>
<td>DDR4-2933 128GB/256GB/512GB</td>
</tr>
<tr>
<td>3DS RDIMM</td>
<td>DDR4-2933 256GB/512GB/1MB</td>
</tr>
<tr>
<td>Performance 3DS RDIMM</td>
<td>DDR4-2933 256GB/512GB/1MB</td>
</tr>
<tr>
<td>RDIMM</td>
<td>DDR4-2933 256GB/512GB/1MB</td>
</tr>
<tr>
<td>3DS RDIMM</td>
<td>DDR4-2933 256GB/512GB/1MB</td>
</tr>
<tr>
<td>Performance 3DS RDIMM</td>
<td>DDR4-2933 256GB/512GB/1MB</td>
</tr>
<tr>
<td>Memory offering</td>
<td>DDR4-2933 256GB/512GB/1MB</td>
</tr>
<tr>
<td>Memory capacity</td>
<td>3TB with 24x 128GB 3DS RDIMM and dual M or LSK processor</td>
</tr>
<tr>
<td>Memory protection</td>
<td>ECC, memory mirroring, and memory sparing</td>
</tr>
</tbody>
</table>

Internal storage

<table>
<thead>
<tr>
<th>Disk drive bays</th>
<th>Maximum Disk Bay Configuration</th>
<th>2x 3.5&quot; Rear Bays Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>12x 3.5&quot;</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>8x 3.5&quot;</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>8x 3.5&quot;</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>24x 2.5&quot;</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>12x 2.5&quot;</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>8x 2.5&quot;</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>20x 2.5&quot;</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>16x 2.5&quot;</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>8x 2.5&quot;</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>12x 2.5&quot;</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>16x 2.5&quot;</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>32x 2.5&quot;</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>64x 2.5&quot;</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>128x 2.5&quot;</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

Storage controllers

- One dedicated internal RAID slot for most RAID/HBA adapters.
- Supports the following disk bay configurations, optional rear bay occupies riser card 1 location:
  - Option 1: 24x 2.5" HS SATA/SAS
  - Option 2: PCIe 3.0 x16/x8 (slot 1 and 3). Full height, full length for x16.
  - Option 3: PCIe 3.0 x8/8x8x8 (slot 1-3). Full height, half length for x16.
  - Option 4: PCIe 3.0 x8/8x8x8 (slot 1). Full height, full length for x16.
  - Option 5: Two rear 3.5" disk bays, 12 x 3.5" models only

Environmental specification

- Temperature - operating: 4°C to 40°C (39°F to 104°F)
- Temperature - non operating (no package): -40°C to 60°C (-40°F to 140°F)
- Humidity - operating, non-condensing: 20% to 80% RH
- Power supply: Up to two redundant hot-swap 550W/750W/1100W/1600W 80 PLUS Platinum qualified AC power supplies. Or up to two redundant hot-swap 750W Titanium qualified AC power supplies. 750W Titanium and 1600W Platinum are 200V - 240V, others are 100V - 240V
- Video: Integrated Matrox G200 in XClarity Controller

Network interfaces

- One dedicated management port. One LOM slot for customized LOM with up to four RJ-45 or SFP+ ports, up to 10GbE Wake-on-LAN and NC-SI are available on Port 0 of LOM. Optional ML2 or PCIe adapters are supported. ML2 adapter requires riser card with ML2 slot.

Environmental certification

### Components | Specification
--- | ---
**Form factor** | Tower or 4U rack with optional rack mount kit
**Dimensions** | Height: 430 mm (16.93 in), width: 175 mm (6.89 in), depth: 565.7 mm (22.27 in)
**Weight** | Maximum configuration: 51.9 lb (23.5 kg)

**Processor** | Up to one Intel Xeon E family processor, up to 95W, up to 6 cores at 3.8GHz, up to 12MB cache, up to DDR4-2666 memory speed.
| Or up to one 8th Intel Core i3 processor, up to 91W, up to 4 cores at 4.0GHz, up to 8MB cache, up to DDR4-2400 memory speed.
| Or up to one Intel Pentium Gold processor, up to 54W, 2 cores at 3.9GHz, 4MB cache, DDR4-2400 memory speed

**Chipset** | Intel C246 Platform Controller Hub

**Memory** | 4 DIMM sockets with 2 channels, 2 DIMMs per channel. UDIMM. DDR4-2666.

**Memory protection** | Supports the following RAID/HBA adapters:

<table>
<thead>
<tr>
<th>RAID adapter</th>
<th>Interface</th>
<th>Drive type</th>
<th>RAID levels</th>
<th>JBOD Cache</th>
<th>Cache protection</th>
<th>FastPath</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onboard SATA</td>
<td>6Gbps SATA</td>
<td>SATA</td>
<td>0/1/0/5</td>
<td>Yes</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>2Gbps SAS</td>
<td>SAS/SAS</td>
<td>0/1/0/5</td>
<td>Yes</td>
<td>None</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>1Gbps SAS�</td>
<td>SAS/SAS</td>
<td>0/1/0/5</td>
<td>Yes</td>
<td>None</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>1Gbps SAS</td>
<td>SAS/SAS</td>
<td>0/1/0/5</td>
<td>Yes</td>
<td>None</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>1Gbps SAS</td>
<td>SAS/SAS</td>
<td>0/1/0/5</td>
<td>Yes</td>
<td>None</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>1Gbps SAS</td>
<td>SAS/SAS</td>
<td>0/1/0/5</td>
<td>Yes</td>
<td>None</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>1Gbps SAS</td>
<td>SAS/SAS</td>
<td>0/1/0/5</td>
<td>Yes</td>
<td>None</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>1Gbps SAS</td>
<td>SAS/SAS</td>
<td>0/1/0/5</td>
<td>Yes</td>
<td>None</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>1Gbps SAS</td>
<td>SAS/SAS</td>
<td>0/1/0/5</td>
<td>Yes</td>
<td>None</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>1Gbps SAS</td>
<td>SAS/SAS</td>
<td>0/1/0/5</td>
<td>Yes</td>
<td>None</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

**Disk drive bays** | Supports 4 or 8 front 3.5" SATA simple-swap bays. Or 4 or 8 front 3.5" SATA/SAS HS bays. Or 8 or 16 front 2.5" SATA/SAS HS bays. Or 4x 3.5" plus 8x 2.5" hybrid SATA/SAS HS bays.
| Optional one internal M.2 SSD for boot, consumes one onboard SATA port

**Disk support** | For 3.5" HDD bay
- 3.5" HDD, SATA6Gbps: 7.2K
- 2.5" SSD, SATA6Gbps: 15K
- 2.5" SSD, SAS960GB: 15K
- 2.5" SSD, SAS960GB: 2TB

**For 3.5" SBay (3.5" disks or 2.5" disks with 3.5" tray)**
- 3.5" HDD, SATA6Gbps: 7.2K
- 2.5" SSD, SATA6Gbps: 15K
- 2.5" SSD, SAS960GB: 15K

**For 2.5" HS bay**
- 2.5" HDD, SATA6Gbps: 7.2K
- 2.5" HDD, SAS12Gbps: 7.2K
- 2.5" SSD, SAS12Gbps: 10K

**Optical**
- Two 2.5" bays for half-height optical, LTO-7 SAS or RDX USB 3.0 tape drive. Up to two optical or one tape drive

**Network interfaces**
- Two onboard GbE port via integrated gigabit ethernet Broadcom BCM5720 plus one dedicated management port. Optional PCIe ethernet adapters are available

**Security features**
- Power-on and admin password. Trusted Platform Module, TCG 1.2 or 2.0 compliant. Optional TCM in China only. Optional chassis intrusion switch, Kensington lock, and pad lock

**Operating systems supported**
- Microsoft Windows Server 2019/2016/2012 R2. Red Hat Enterprise Linux 7.5. SUSE Linux Enterprise Server 12 SP3. VMware vSphere (ESX) 6.7/6.5 U2

**Systems management**
- XClarity Controller Standard. Optional upgrades to Advanced or Enterprise are available. Energy Manager. XClarity Administrator. LEDs on front panel show the status of power, ID, network, simple-swap disks, and system error

**GPU support**
- Up to one optional GPU. NVIDIA Quadro P620 or Quadro P2000

**Base warranty**
- MT 7Y45: 3-year limited onsite service with 9x5/NBD
- MT 7V46: 1-year limited onsite service with 9x5/NBD

**Power supply**
- Supports one of the following PSU:
  - One fixed power supply, 250W. 80 PLUS Platinum certified.
  - Up to two redundant hot-swap power supplies, 550W each. 80 PLUS Platinum certified

---

**Components | Specification
--- | ---
**Video** | Integrated Matrox G200 in XClarity Controller

**Cooling** | One fixed rear fan, one fixed front fan, CPU fan, PSU fan. One optional front fan for 2nd disk drive cage

**Front ports** | One XClarity Controller USB connector, one USB 3.1 Gen 1

**Rear ports** | 2x USB 3.1 Gen 2, 2x USB 3.1 Gen 1. 2x RJ-45. 1x XClarity Controller network connector. 1x COM, 1x VGA

**Environmental specification** | Supports ASHRAE A2

**Environmental certification** | Energy Star Server 2.1 certified
ThinkSystem ST50 Platform Specifications

### Components

**Form factor**
- Tower or 4U rack with optional rack mount kit

**Dimensions**
- Height: 375 mm (14.76 in), width: 175 mm (6.89 in), depth: 407 mm (16.0 in)

**Weight**
- Maximum configuration: 24.7 lb (11.2 kg)

### Processor

- Up to one Intel Xeon E family processor, up to 95W, up to 6 cores at 3.8GHz, up to 12MB cache, up to DDR4-2666 memory speed.
- Or up to one 8th Intel Core i3 processor, up to 91W, up to 4 cores at 4.0GHz, up to 8MB cache, up to DDR4-2400 memory speed.
- Or up to one Intel Pentium Gold processor, up to 54W, 2 cores at 3.9GHz, 4MB cache, DDR4-2400 memory speed.
- Or up to one Intel Celeron processor, up to 54W, 2 cores at 3.2GHz, 2MB cache, DDR4-2400 memory speed.

### Chipset

- Intel C246 Platform Controller Hub

### Memory

- 64GB with 4x 16GB UDIMMs, both ECC and Non-ECC

### Storage controllers

- Supports the following RAID/HBA adapters:

<table>
<thead>
<tr>
<th>RAID adapter</th>
<th>Interface</th>
<th>Drive type</th>
<th>RAID levels</th>
<th>JBOD</th>
<th>Cache</th>
<th>Cache protection</th>
<th>FastPath</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onboard SATA</td>
<td>6Gb/s</td>
<td>SATA</td>
<td>SATA</td>
<td>SATA 0/1/5/10/50</td>
<td>Yes</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Bay 0</td>
<td>6Gb/s</td>
<td>SATA</td>
<td>SATA</td>
<td>SATA 0/1/5/10</td>
<td>Yes</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Bay 1</td>
<td>6Gb/s</td>
<td>SATA</td>
<td>SATA</td>
<td>SATA 0/1/5/10</td>
<td>Yes</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Bay 2</td>
<td>12Gb/s</td>
<td>SAS</td>
<td>SAS</td>
<td>SAS 0/1/5/10/50</td>
<td>Yes</td>
<td>1GB</td>
<td>Flash backup</td>
</tr>
<tr>
<td>Bay 3</td>
<td>12Gb/s</td>
<td>SAS</td>
<td>SAS</td>
<td>SAS 0/1/5/10/50</td>
<td>Yes</td>
<td>2GB</td>
<td>Flash backup</td>
</tr>
</tbody>
</table>

### Disk drive bays

- Up to 4x 3.5"/2.5" Non-hot swap SATA/SAS cabled drive, HDD, SSD, or mixing of HDD and SSD. 4th bay is optional with 5.25" to 3.5" conversion kit and occupies 5.25" bay.

### SD card reader

- Up to two SD cards with optional card reader, 32GB or 64GB

### Optical

- One 5.25" bays for half-height optical, LTO-7 SAS or RXD USB 3.0 tape drive, or 4th disk bay plus one slim optical

### Network interfaces

- One onboard GbE port via integrated gigabit Ethernet Intel I219LML, supports Wake-on-LAN. Optional PCIe ethernet adapters are available.

### Security features

- Power-on and admin password. Trusted Platform Module, TCG 1.2 or 2.0 compliant, optional TCM in China only. Optional chassis intrusion switch, Kensington lock, and pad lock

### Operating systems supported

- Microsoft Windows Server 2019/2016, Red Hat Enterprise Linux 7.5, VMware vSphere (ESXi) 6.5 U2

### Systems management

- Intel Active Management Technology 12 on Xeon models, Intel Standard Manageability on other models

### GPU support

- Up to one optional NVIDIA Quadro P620

### Base warranty

- MT 7Y48: 3-year limited onsite service with 9x5/NBD
- MT 7Y49: 1-year limited onsite service with 9x5/NBD

### Power supply

- Supports one 250W or 400W power supply, 100V - 240V, 92% PSU. 400W PSU supports one 6+2-pin aux power connector.

### Video

- Integrated Intel UHD Graphics P630 in -G suffix Xeon processors, or Intel UHD Graphics 630 in Core i3, or Intel UHD Graphics 610 in Pentium and Celeron processors

### Cooling

- Two fixed system fans, CPU fan, PSU fan, and optional media bay fan

### Front ports

- 2x USB 3.1 Gen 1 Type A
- 2x USB 3.1 Gen 1 Type A, 2x USB 2.0 Type-A, 1x RJ-45, 1x COM, 1x line-out.

### Environmental specification

- Supports ASHRAE A2

### Environmental certification

ThinkSystem ST550 Platform Specifications

**Product Specifications Reference (PSREF)**

**Components**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form factor</td>
<td>Tower or 4U rack</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Without feet stand and security door: Height: 425.5 mm (16.8 in). Width: 175.8 mm (6.92 in). Depth: 866.4 mm (26.24 in).</td>
</tr>
<tr>
<td>Weight</td>
<td>Maximum configuration: 31.35 lb (14.2 kg)</td>
</tr>
<tr>
<td>Processor</td>
<td>Up to two 125W Gen 1 or Gen 2 Intel Xeon Scalable family processors, Bronze, Silver, Gold, or Platinum. Up to 20 cores at 2.0GHz, up to 3.8GHz with 4 cores. Two processors are connected with two UPI (Ultra Path Interconnect) links up to 10.4GT/s</td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel C621 Platform Controller Hub</td>
</tr>
<tr>
<td>Memory</td>
<td>Up to 12 DIMM sockets. Each processor supports up to 6 DIMM sockets with 6 channels. DDR4-2933 or DDR4-2666, RDIMMs.</td>
</tr>
<tr>
<td>Memory capacity</td>
<td>Up to 768GB with 12 x 64 GB DIMMs and two processors</td>
</tr>
<tr>
<td>Memory protection</td>
<td>ECC, memory mirroring, and memory sparing</td>
</tr>
<tr>
<td>RAID adapter</td>
<td>Supports the following RAID/HBA adapters:</td>
</tr>
<tr>
<td>For SSD bays</td>
<td>- Sata SSD: Supports RAID levels 0/1/10/5/50.</td>
</tr>
<tr>
<td></td>
<td>For HS bays: Supports RAID levels 0/1/10/5/50.</td>
</tr>
</tbody>
</table>

**Storage controllers**

<table>
<thead>
<tr>
<th>RAID adapter</th>
<th>Interface</th>
<th>Drive type</th>
<th>JBOD</th>
<th>Cache</th>
<th>Cache protection</th>
<th>FastPath</th>
<th>Max qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>For SS bays</td>
<td>Sata SSD</td>
<td>Sata</td>
<td>0/1/10/5</td>
<td>Yes</td>
<td>None</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>For HS bays</td>
<td>Sata SSD</td>
<td>Sata</td>
<td>0/1/10/5</td>
<td>Yes</td>
<td>None</td>
<td>No</td>
<td>-</td>
</tr>
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</table>

**Environmental specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature - operating</td>
<td>A1: 5°C to 40°C (41°F to 104°F) A2: 10°C to 30°C (50°F to 86°F)</td>
</tr>
<tr>
<td>temperature - non operating</td>
<td>(with package) A1: 5°C to 40°C (41°F to 104°F) A2: 10°C to 30°C (50°F to 86°F)</td>
</tr>
<tr>
<td>Altitude - operating</td>
<td>(Unpressurized): 0-10000ft (0-3048m)</td>
</tr>
<tr>
<td>Humidity - operating</td>
<td>A1: 8%~90%, A2: 20%~80%</td>
</tr>
</tbody>
</table>

**Optical**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supports 4 or 8 front 3.5” SATA simple-swap bays. Or 4 or 8 front 3.5” SATA/SAS HS bays. Or 8 or 16 front 2.5” SATA/SAS HS bays with maximum 4 AnyBay. Optional 4 front 2.5” HS bays are supported on hot-swap models, takes place in two 2.5” bays location. Optional one or two internal M.2 SSD for boot, dual M.2 SSD supports mirroring.</td>
<td></td>
</tr>
</tbody>
</table>

**Environmental certification**

**Energy Star Server 2.1 certified. More environmental information please see:** Lenovo, April 2019.

**System unique options**

- X77A03475 ThinkSystem ST550 2.5” Sata/Sas 4-Bay Backplane Kit
- X77A03476 ThinkSystem ST550 2.5” AnyBay 8-Bay Backplane Kit
- T7PA04369 ThinkSystem ST550 5.25” I/O Panel Kit
- T7PA04370 ThinkSystem ST550 3.5” Sata/Sas 4-Bay Backplane Kit
- T7PA04381 ThinkSystem ST550 3.5” Simple Swap Bracket Kit
- X77A04857 ThinkSystem ST550 4U Security Bezel
- X77A04858 ThinkSystem ST550 CMA Kit
- X77A0488 ThinkSystem ST550 4U Tower to Rack Conversion Kit
- Z17A02577 ThinkSystem ST550 COM Port Upgrade Kit
- T7PA04371 ThinkSystem ST550 Front Mid Fan Module for 4x2.5” Odd conversion

Lenovo, April 2019
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Limited warranty: Support unrelated to a warranty issue may be subject to additional charges.

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- **Depot or Courier Service**: Parts and labor repair coverage where shipping (including packaging) or delivery to the repair center is paid for by Lenovo.
- **Expedited Depot**: Parts and labor coverage with expedited turnaround. Shipping (including packaging) or delivery to the repair center is paid for by Lenovo.
- **Onsite / In-home Service**: Parts and labor repair coverage where labor is provided onsite at your place of business.


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Lenovo 1009 Think Place Morrisville, NC 27560 U.S.A.
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Summary of Changes

This section describes the technical changes made in this edition. This edition might also include minor corrections and editorial changes which are not identified.

June, 2019 - Version 543

Additions in this update

► New product(s)
  ThinkVision T27p-10 announced May 2019

► New model(s)
  None

► Others
  None

Withdrawals in this update

► Withdrawn product(s)
  ThinkVision P27 is withdrawn in the book
  ThinkVision T24i is withdrawn in the book
  ThinkVision T2423 is withdrawn in the book
  ThinkVision T2424z is withdrawn in the book
  ThinkVision T2220VA is withdrawn in the book
  ThinkVision T2364t is withdrawn in the book
  ThinkVision T2224z is withdrawn in the book
  ThinkVision Pro2820 is withdrawn in the book
### Lenovo ThinkVision E1922s Wide Monitor

**Features**
- Widescreen 18.5-inch monitor
- Supports HD 1366x768 resolution
- Supports VESA mount (100mm)
- Mercury free panel and arsenic free glass
- Kensington lock slot ready for enhanced security
- Support Lenovo Tiny PC via VESA mount
- Supports optional soundbar
- Microsoft® Windows® 7 certified
- Microsoft Windows 8 / Windows 8.1 certified

**Specifications**

<table>
<thead>
<tr>
<th>Name</th>
<th>E1922s Wide Flat Panel Monitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case color</td>
<td>Black</td>
</tr>
<tr>
<td>Type-model</td>
<td>60G2AR6US / 60G2AA76EU</td>
</tr>
<tr>
<td>Panel</td>
<td>TFT-LCD, twisted nematic (TN), White LED backlight</td>
</tr>
<tr>
<td>Viewable image size</td>
<td>18.5&quot; (470mm) diagonal</td>
</tr>
<tr>
<td>Max view area (W x H)</td>
<td>16.1&quot; x 9.1&quot; / 409.8mm x 230.4mm</td>
</tr>
<tr>
<td>Native resolution</td>
<td>1366x768</td>
</tr>
<tr>
<td>Aspect ratio</td>
<td>16:9</td>
</tr>
<tr>
<td>Pixel pitch (mm)</td>
<td>0.3mm</td>
</tr>
<tr>
<td>Brightness</td>
<td>85 dpi</td>
</tr>
<tr>
<td>Contrast ratio</td>
<td>200 nits or cd/m² (typical)</td>
</tr>
<tr>
<td>Pixel response time</td>
<td>5ms (typical)</td>
</tr>
<tr>
<td>Color gamut</td>
<td>72%</td>
</tr>
<tr>
<td>Viewing angle at 10:1 CR</td>
<td>180° (+/- 90°) horizontal, 100° (+/- 50°) vertical</td>
</tr>
<tr>
<td>Stand</td>
<td>Tilt adjustable stand</td>
</tr>
<tr>
<td>Bezel width</td>
<td>Sides: 0.73&quot; (18.5mm)</td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>341.5mm H x 448.4mm W x 167.2mm D</td>
</tr>
<tr>
<td>Power supply</td>
<td>13.7 watts typical, 17 watts maximum, &lt;0.5 watts standby/suspend, universal, integrated (no external brick-like power supply)</td>
</tr>
<tr>
<td>Weight</td>
<td>6.03 lb; 2.74 kg</td>
</tr>
<tr>
<td>Limited warranty¹</td>
<td>3 year (includes backlight)</td>
</tr>
<tr>
<td>Available date</td>
<td>March 2014</td>
</tr>
</tbody>
</table>

**VESA-compliant²**
- VESA DPMS-compliant

**Power management**
- ENERGY STAR® 7.0

**Ergonomics**
- ISO 9241-307

**Emission standards**
- FCC Class B

**Environmental**
- TCO (TCO Displays 7.0), WEEE, RoHS, EPEAT® Gold rating

<table>
<thead>
<tr>
<th>Preset resolutions</th>
<th>VGA: 640x350, 640x480, 720x400</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SVGA: 800x600, 832x624</td>
</tr>
<tr>
<td></td>
<td>XGA: 1024x768, 1152x864</td>
</tr>
<tr>
<td></td>
<td>SXGA: 1280x1024</td>
</tr>
<tr>
<td></td>
<td>WXGA: 1366x768</td>
</tr>
</tbody>
</table>

**Presets / user settings**
- Standard presets: 15
- User settings: 16

**Viewing adjustments**
- Tilt: 20° backward, -5° forward

**Rotating screen**
- None

**On screen display**
- On screen display with digital user controls (8 languages)

**Control features**
- Direct access (control buttons on front) for automatic image setup and adjustment for brightness

**Multiple input**
- None

**Monitor connectors**
- VGA 15-pin D-shell, analog, blue

**Signal cables**
- Detachable, VGA 15-pin D-shell at each end, analog, 1.8 meter

**Mounting features**
- Wall or desk mounting using the Extend Arm or third-party accessories meeting the VESA FPMPMI® (100mm mount)

**Security**
- Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)

**Ship group**
- Monitor with stand, 1.8 meter analog signal cable, 1.8 meter black power cord

---

**Limited Warranty**


**Accessories**

Kensington MicroSaver Cable Lock 73P2582
Kensington Twin Head Cable Lock 45K1620

See details at [www.lenovo.com/support/monitoraccessories](http://www.lenovo.com/support/monitoraccessories)

See all monitors at [www.lenovo.com/thinkvision](http://www.lenovo.com/thinkvision)
**Name**
E2054 Wide Flat Panel Monitor

**Case color**
Raven black

**Type-model**
60DFAAR1US / 60DFAAT1EU

**Panel**
TFT-LCD, In-Plane Switching (IPS), LED backlight

**Viewable image size**
19.5" (494mm) diagonal

**Max view area (W x H)**
16.48" x 10.33" / 418.6mm x 262.4mm

**Native resolution**
1440x900

**Aspect ratio**
16:10

**Pixel pitch (mm)**
0.097mm x 0.292mm

**Dot/Pixel per Inch**
87 dpi

**Brightness**
250 nits or cd/m² (typical)

**Contrast ratio**
1000:1 (typical)

**Pixel response time**
7ms (typical)

**Color gamut**
72%

**Viewing angle at 10:1 CR**
178° (+/- 89°) horizontal, 178° (+/- 89°) vertical

**Stand**
Tilt adjustable stand

**Bezel width**
Top: 0.71" (18.0mm)
Bottom: 0.70" (17.9mm)
Sides: 1.02" (26.0mm)

**Dimensions (HxWxD)**
14.65" H x 17.95" W x 7.41" D:
372.0mm H x 456.0mm W x 188.3mm D

**Power supply**
16 watts typical, 20 watts maximum,
<0.5 watts standby/suspend, universal,
integrated (no external brick-like power supply)

**Weight**
6.17 lb; 2.8 kg

**Limited warranty**
3 year (includes backlight)

**Available date**
November 2015

**VESA-compliant**
VESPADPMS-compliant

**Power management**
ENERGY STAR® 6.0

**Ergonomics**
ISO 9241-307

**Emission standards**
FCC Class B

**Environmental**
TCO (TCO Displays 6.0), WEEE, RoHS,
EPEAT™ Silver rating

**Presets / user settings**
Standard presets: 18
user settings: 10

**Viewing adjustments**
Tilt: 22° backward, -5° forward

**Rotating screen**
None

**On screen display**
On screen display with digital user controls (8 languages)

**Control features**
Direct access (control buttons on front) for automatic image setup and adjustment for brightness

**Multiple input**
None

**Monitor connectors**
VGA 15-pin D-shell, analog, blue
detachable, VGA 15-pin D-shell at each end, analog, 1.8 meter

**Mounting features**
Wall or desk mounting using the Extend Arm or third-party accessories meeting the VESA FPMPMI® (100mm mount)

**Security**
Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)

**Ship group**
Monitor with stand, 1.8 meter analog signal cable, 1.8 meter black power cord

---

**Limited Warranty**

**Accessories**

- **Kensington MicroSaver Cable Lock**
  73P2582

- **Kensington Twin Head Cable Lock**
  45K1620

See details at [www.lenovo.com/support/monitoraccessories](http://www.lenovo.com/support/monitoraccessories)

See all monitors at [www.lenovo.com/thinkvision](http://www.lenovo.com/thinkvision)
**Lenovo ThinkVision LT1913p Square**

**Product Specifications Reference (PSREF)**

### Name
Lenovo ThinkVision LT1913p Square Flat Panel Monitor

### Case color
Black

### Type-model
60FBHAR1US / 60FBHAT1EU

### Panel
TFT-LCD, In-Plane Switching (IPS), White LED backlight

**Viewable image size**

#### Viewable image size

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>19.0&quot; (480.0mm)</td>
<td>diagonal</td>
</tr>
</tbody>
</table>

**Max view area (W x H)**

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.76&quot; x 11.80&quot; (374.7mm x 299.8mm)</td>
<td></td>
</tr>
</tbody>
</table>

**Optimum resolution**

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1280x1024</td>
<td></td>
</tr>
</tbody>
</table>

**Max pixel rate**

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>205MHz (VGA), 165MHz (DVI)</td>
<td></td>
</tr>
</tbody>
</table>

**Aspect ratio**

5:4

**Pixel pitch (mm)**

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0976 (H) x 0.2928 (V) mm</td>
<td></td>
</tr>
</tbody>
</table>

**Dot/Pixel per Inch**

86.8 dpi

**Brightness**

250 nits or cd/m² (typical)

**Contrast ratio**

1000:1 (typical)

**Pixel response time**

7ms (typical)

**Color gamut**

72%

**Viewing angle at 10:1 CR**

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>178° horizontal, 178° vertical</td>
<td></td>
</tr>
</tbody>
</table>

**Stand**

Tilt, swivel, pivot, and height adjustable stand

**Bezel width**

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sides: 0.68&quot; (17.4mm); top: 0.68&quot; (17.4mm); bottom: 0.68&quot; (17.4mm)</td>
<td></td>
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</table>

**Dimensions (HxWxD)**

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.63&quot; H x 16.18&quot; W x 10.40&quot; D;</td>
<td></td>
</tr>
<tr>
<td>371.5mm H x 411.0mm W x 264.2mm D</td>
<td></td>
</tr>
</tbody>
</table>

**Power supply**

24 watts typical, 27 watts maximum,
<0.5 watts standby/suspend, universal,
integrated (no external brick-like power supply)

**Weight**

10.69 lb; 4.85kg

**Limited warranty**

3 year (includes backlight)

**Available date**

April 2015

**VESA-compliant**

VESA DDC2B/CI, EDID 1.3

**Power management**

ENERGY STAR® 7.0

**Ergonomics**

ISO 9241-307

**Emission standards**

FCC Class B

**Environmental**

TCO Displays 7.0, TCO Certified Edge 1.1,
WEEE, RoHS, EPEAT™ Gold rating, ULE Gold

**Preset resolutions**

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>VGA: 640x350, 640x480, 720x400</td>
<td></td>
</tr>
<tr>
<td>SVGA: 800x600, 824x624</td>
<td></td>
</tr>
<tr>
<td>XGA: 1024x768, 1152x864, 1152x900</td>
<td></td>
</tr>
<tr>
<td>SXGA: 1280x1024</td>
<td></td>
</tr>
</tbody>
</table>

**Preset / user settings**

Standard presets: 20;
user settings: 20

**Viewing adjustments**

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tilt: 30° back, -5° forward; lift: 4.3&quot; (110mm); swivel: +/- 45°</td>
<td></td>
</tr>
</tbody>
</table>

**Rotating screen**

Screen pivots 90 degrees from landscape to portrait

**Control features**

Direct access (buttons on front) for automatic image setup, input switch, and brightness

**Multiple input**

Dual input (two different PCs attach to two different connectors; one PC shows image; select via button)

**Monitor connectors**

(1) VGA 15-pin D-shell, analog, blue
(2) Digital Visual Interface (DVI-D), digital, white, HDCP-compliant

**Signal cables**

(1) detachable, VGA 15-pin D-shell at each end, analog, 1.8 meter
(2) detachable, DVI-D at each end, digital, 1.8 meter

**Mounting features**

Wall or desk mounting using the Extend Arm or third-party accessories meeting the VESA FPMPMI® (100mm mount)

**Security**

Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)

**Ship group**

Monitor, attached stand, Setup poster, Safety and Warranty Information, 1.8 meter analog signal cable, 1.8 meter DVI-D cable, 1.8 meter black power cord

### Limited Warranty


### Accessories

<table>
<thead>
<tr>
<th>Name</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kensington MicroSaver Cable Lock</td>
<td>73P2582</td>
</tr>
<tr>
<td>Kensington Twin Head Cable Lock</td>
<td>45K1620</td>
</tr>
<tr>
<td>Lenovo Security Cable Lock</td>
<td>57Y4303</td>
</tr>
<tr>
<td>Lenovo Easy Reach Monitor Stand</td>
<td>59Y9258</td>
</tr>
</tbody>
</table>

See details at www.lenovo.com/support/monitoraccessories

See all monitors at www.lenovo.com/thinkvision

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**Features**

- 19-inch Square IPS LED backlit panel
- Supports 1280x1024 resolution
- Supports ThinkCentre Tiny Clamp Bracket
- Mercury and arsenic free glass
- Low Halogen
- Recycled content in plastic material
- Supports optional soundbar
- Microsoft® Windows® 7 certified
- Microsoft Windows 8 / Windows 8.1 certified
- Microsoft Windows 10 certified

---

ThinkVision LT1913p Square Monitor

Lenovo

April 2015
**Lenovo ThinkVision T1714**

**Product Specifications Reference (PSREF)**

### Name
T1714 Square Flat Panel Monitor

### Case color
Black

### Type-model
60FDHAR1US / 60FDHAT1EU

### Panel
TFT-LCD, twisted nematic (TN), White LED backlight

### Viewable image size
17.0" (432mm) diagonal

### Max view area (W x H)
13.3" x 10.6" (337.9mm x 270.3mm)

### Optimum resolution
1280x1024

### Aspect ratio
5:4

### Pixel pitch (mm)
0.264mm

### Brightness
96 dci

### Contrast ratio
250 nits or cd/m² (typical)

### Pixel response time
1000:1 (typical)

### Color gamut
5ms (typical)

### Viewing angle at 10:1 CR
72% horizontal, 100% (+/- 85°) vertical

### Stand
Tilt stand

### Bezels width
Sides: 0.89" (17.5mm)

### Dimensions
14.72" H x 14.74" W x 7.87" D;

### Power supply
14.0 watts typical, 18.0 watts maximum,

### Weight
5.75 lb; 2.61kg

### Limited warranty
3 year (includes backlight)

### Available date
September 2015

### VESA-compliant
VESA DDC2B/CI

### Power management
ENERGY STAR® 7.0

### Ergonomics
ISO 9241-307

### Emission standards
TCO Displays 7.0, TCO Certified Edge 2.0, WEEE,

### Product and service
RoHS, EPEAT™ Gold rating

### Preset resolutions
- VGA: 640x350, 640x480, 720x400
- SVGA: 800x600
- XGA: 1024x768, 1152x864,
- SXGA: 1280x800, 1280x1024

### Presets / user settings
- Standard presets: 17;
- user settings: 17

### Viewing adjustments
Tilt: 22° back, -5° forward

### Rotating screen
None

### On screen display
On screen display with digital user controls (8 languages)

### Control features
Direct access (buttons on front) for automatic image setup and brightness

### Multiple input
Dual input (two different PCs attach to two different connectors; one PC shows image; select via button)

### Monitor connectors
- (1) VGA 15-pin D-shell, analog, blue
- (2) Digital Visual Interface (DVI-D), digital, white, HDCP-compliant

### Signal cables
- (1) detachable, VGA 15-pin D-shell at each end, analog, 1.8 meter
- (2) detachable, DVI-D at each end, digital, 1.8 meter

### Mounting features
Wall or desk mounting using the Extend Arm or third-party accessories meeting the VESA FPMPMI® (100mm mount)

### Security
Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)

### Ship group
Monitor and stand, Setup poster, Safety and Warranty Information, 1.8 meter analog signal cable, 1.8 meter DVI-D cable, 1.8 meter black power cord

---

### Features
- 17-inch Square LCD monitor
- Supports SXGA 1280x1024 resolution
- Includes dual input connection for attachment to two systems concurrently (analog and digital)
- Supports optional soundbar
- Microsoft® Windows® 7 certified
- Microsoft Windows 8 certified
- Microsoft Windows 8.1 certified
- Microsoft Windows 10 certified

---

**Accessories**

- Kensington MicroSaver Cable Lock 73P2582
- Kensington Twin Head Cable Lock 45K1820
- Lenovo Easy Reach Monitor Stand 55Y9258

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See details at [www.lenovo.com/support/monitoraccessories](http://www.lenovo.com/support/monitoraccessories)

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See all monitors at [www.lenovo.com/thinkvision](http://www.lenovo.com/thinkvision)

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Lenovo
September 2015
Lenovo ThinkVision T1714p

Product Specifications Reference (PSREF)

Name: T1714p Square Flat Panel Monitor
Case color: Black
Type-model: 60FELAR1US / 60FELAT1EU
Panel: TFT-LCD, twisted nematic (TN), White LED backlight
Viewable image size: 17.0" (432mm) diagonal
Max view area (W x H): 13.3" x 10.6" (337.9mm x 270.3mm)
Optimum resolution: 1280x1024
Aspect ratio: 5:4
Pixel pitch (mm): 0.264mm
Brightness: 250 nits or cd/m² (typical)
Contrast ratio: 1000:1 (typical)
Pixel response time: 5ms (typical)
Color gamut: 72%
Viewing angle at 10:1 CR: 170° (+/- 85°) horizontal, 160° (+/- 80°) vertical
Stand: Tilt height adjustable stand
Bezel width: Sides: 0.69" (17.5mm)
Dimensions (HxWxD, including stand): 447.9mm H x 374.5mm W x 244.2mm D
Power supply: 14.0 watts typical, 18.0 watts maximum, <0.5 watts standby/suspend, universal, integrated (no external brick-like power supply)
Weight: 8.71 lb; 3.95kg
Limited warranty: 3 year (includes backlight)
Available date: September 2015

VESA-compliant: VESA DDC2B/CI
Power management: ENERGY STAR® 7.0
Ergonomics: ISO 9241-307
Emission standards: FCC Class B
Environmental: TCO Displays 7.0, TCO Certified Edge 2.0, WEEE, RoHS, EPEAT® Gold rating

Presets / user settings:
- Preset resolutions:
  - VGA: 640x350, 640x480, 720x400
  - SVGA: 800x600
  - XGA: 1024x768, 1152x864
  - SXGA: 1280x800, 1280x1024
- Standard presets: 22;
- User settings: 22

Viewing adjustments: Tilt: 22° back, -5° forward; lift: 4.3" (110mm)
Rotating screen: None
On screen display: On screen display with digital user controls (8 languages)
Control features: Direct access (buttons on front) for automatic image setup and brightness
Multiple input: Dual input (two different PCs attach to two different connectors; one PC shows image; select via button)
Monitor connectors:
- (1) VGA 15-pin D-shell, analog, blue
- (2) Digital Visual Interface (DVI-D), digital, white, HDCP-compliant
- (3) DisplayPort, digital, black, HDCP-compliant
Signal cables:
- (1) detachable, VGA 15-pin D-shell at each end, analog, 1.8 meter
- (2) detachable, DVI-D at each end, digital, 1.8 meter
Mounting features: Wall or desk mounting using the Extend Arm or third-party accessories meeting the VESA FPMPMI (100mm mount)
Security: Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)

Ship group: Monitor and stand, Setup poster, Safety and Warranty Information, 1.8 meter analog signal cable, 1.8 meter DVI-D cable, 1.8 meter black power cord

Limited Warranty

Features:
- 17-inch Square LCD monitor
- Supports SXGA 1280x1024 resolution
- Includes dual input connection for attachment to two systems concurrently (analog and digital)
- Mercury Arsenic free glass
- Supports Lenovo Tiny PC and 3rd party thin client via optional Lenovo bracket
- Supports optional soundbar
- Microsoft® Windows® 7 certified
- Microsoft Windows 8 certified
- Microsoft Windows 8.1 certified
- Microsoft Windows 10 certified
- VESA DDC2B/CI
- ENERGY STAR® 7.0
- ISO 9241-307
- FCC Class B
- TCO Displays 7.0, TCO Certified Edge 2.0, WEEE, RoHS, EPEAT® Gold rating

Preset resolutions:
- VGA: 640x350, 640x480, 720x400
- SVGA: 800x600
- XGA: 1024x768, 1152x864
- SXGA: 1280x800, 1280x1024

Presets / user settings:
- Standard presets: 22;
- User settings: 22

Viewing adjustments:
- Tilt: 22° back, -5° forward; lift: 4.3" (110mm)
- None
- On screen display with digital user controls (8 languages)
- Direct access (buttons on front) for automatic image setup and brightness
- Dual input (two different PCs attach to two different connectors; one PC shows image; select via button)
- VGA 15-pin D-shell, analog, blue
- Digital Visual Interface (DVI-D), digital, white, HDCP-compliant
- DisplayPort, digital, black, HDCP-compliant
- (1) detachable, VGA 15-pin D-shell at each end, analog, 1.8 meter
- (2) detachable, DVI-D at each end, digital, 1.8 meter
- Wall or desk mounting using the Extend Arm or third-party accessories meeting the VESA FPMPMI (100mm mount)
- Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)

Ship group:
- Monitor and stand
- Setup poster
- Safety and Warranty Information
- 1.8 meter analog signal cable
- 1.8 meter DVI-D cable
- 1.8 meter black power cord

See details at www.lenovo.com/support/monitoraccessories
See all monitors at www.lenovo.com/thinkvision
Lenovo ThinkVision T2054p Wide

Name: T2054p Wide Flat Panel Monitor
Bezel color: Raven black
Type-model: 60G1MAR2US / 60G1MAT2EU
Panel: TFT-LCD, In-Plane Switching (IPS), White LED backlight
Viewable image size: 19.5" (495mm) diagonal
Max view area (W x H): 16.48" x 10.33" (418.6mm x 262.4mm)
Native resolution: 1440x900
Aspect ratio: 16:10
Pixel pitch (mm): 0.2915 x 0.2915 mm
Dot/Pixel per Inch: 87 dpi
Brightness: 250 nits or cd/m² (typical)
Contrast ratio: 1000:1 (typical)
Pixel response time: 7ms (typical)
Color gamut: 72%
Viewing angle at 10:1 CR: 178° (+/- 89°) horizontal, 178° (+/- 89°) vertical
Stand: Tilt, swivel, and height adjustable stand
Bezel width: Sides: 0.67" (17.0mm)
Dimensions (HxWxD): 13.62" H x 17.88" W x 9.55" D:
Power supply: 14.5 watts typical, 21 watts maximum,
<0.3 watts standby/suspend, universal, integrated (no external brick-like power supply)
Weight: 8.16 lb; 3.70 kg
Limited warranty: 3 year (includes backlight)
Available date: September 2015

VESA-compliant: VESA DDC2B/C1
Power management: ENERGY STAR® qualified
Ergonomics: ISO 9241-307
Emission standards: FCC Class B
Environmental: TCO Class B, TCO Displays 7.0, TCO Certified Edge 2.0, WEEE, RoHS, EPEAT® Gold rating

Preset resolutions:
- VGA: 640x480, 720x400, 720x576
- SVGA: 800x600
- XGA: 1024x768, 1152x864
- SXGA: 1280x800, 1280x1024
- WXGA: 1366x768
- WXGA+: 1440x900

Presets / user settings:
- Standard presets: 22
- User settings: 16

Viewing adjustments:
- Tilt: 22° backward, -5° forward; tilt: 4.3" (110mm); swivel: +/-45°; detachable stand

Rotating screen:
- None

On screen display:
- On screen display with digital user controls (8 languages)

Control features:
- Direct access (buttons on front) for automatic image setup, dual input and brightness

Multiple input:
- Dual input (two different PCs attach to two different connectors; one PC shows image; select via button)

Monitor connectors:
- (1) VGA 15-pin D-shell, analog, blue
- (2) HDMI (1.4), digital, HDCP-compliant
- (3) DisplayPort, digital, black, HDCP-compliant

Signal cables:
- (1) detachable, VGA 15-pin D-shell at each end, analog, 1.8 meter
- (2) detachable, DisplayPort at each end, digital, 1.8 meter

Mounting features:
- Wall or desk mounting using the Extend Arm or third-party accessories, 100mm x 100mm mount

Security:
- Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)

Ship group:
- Monitor with stand, Safety and Warranty Information, 1.8 meter analog signal cable, 1.8 meter DP signal cable, 1.8 meter black power cord

Limited Warranty:

Accessories:
- Kensington MicroSaver Cable Lock 73P2582
- Kensington Twin Head Cable Lock 45K1620

See details at www.lenovo.com/support/monitoraccessories

See all monitors at www.lenovo.com/thinkvision

Lenovo
November 2016
Lenovo ThinkVision E21

Features
- Widescreen 20.7-inch monitor
- Supports 1920x1080 resolution
- Supports ThinkCentre Tiny Clamp Bracket
- Supports optional soundbar
- EPEAT Gold certified
- Low Blue Light certification
- Microsoft® Windows® 7 certified
- Microsoft Windows 10 certified

ThinkVision E21 Wide Monitor

Name: E21 Wide Flat Panel Monitor
Bezel color: Black
Type-model: 61B9JAR1US / 61B9JAT1EU
Panel: TFT-LCD, twisted nematic (TN), White LED backlight
Viewable image size: 20.7" (525.78mm) diagonal
Max view area (W x H): 18.03" x 10.14" (457.92mm x 257.58mm)
Native resolution: 1920x1080
Aspect ratio: 16:9
Pixel pitch (mm): 0.2385 x 0.2385 mm
Dot/Pixel per inch: 106 dpi
Brightness: 250 nits or cd/m² (typical)
Contrast ratio: 1000:1 (typical)
Pixel response time: 5ms (typical)
Color gamut: 72%
Viewing angle at 10:1 CR: 170° (+/- 85°) horizontal, 160° (+/- 80°) vertical
Stand: Tilt adjustable stand
Bezel width: Sides: 0.6" (15.3mm)
Dimensions (HxWxD): 14.6" H x 19.31" W x 8.07" D; 370.9mm H x 490.5mm W x 204.9mm D
Power supply: 18 watts typical, 23 watts maximum, <0.3 watts standby/suspend, universal, integrated (no external brick-like power supply)
Weight: 5.82 lb; 2.64 kg
Limited warranty: 3 year (includes backlight)
Available date: August 2017

VESA-compliant: VESA DDC2B/CICI
Power management: ENERGY STAR® qualified
Ergonomics: ISO 9241-307
Emission standards: FCC Class B
Environmental: TCO Displays 7.0, TCO Certified Edge 2.0, WEEE, RoHS, EPEAT® Gold rating

Preset resolutions:
- VGA: 640x350, 640x480, 720x400
- SVGA: 800x600, 832x624
- XGA: 1024x768, 1152x864
- SXGA: 1280x1024
- WXGA+: 1440x900
- WSXGA+: 1680x1050
- Full HD: 1920x1080

Preset display modes:
- Standard presets: 22

Viewing adjustments:
- Tilt: 22° back, -5° forward
- None
- On screen display:
  - Direct access (buttons on front) for power, menu, input source select and brightness
  - None
- USB hub:
  - None
- Multiple input:
  - Dual input (two different PCs attach to two different connectors; one PC shows image; select via button)
- Monitor connectors:
  - (1) VGA 15-pin D-shell, analog, blue
  - (2) DisplayPort (1.2), digital, black, HDCP-compliant
- Signal cables:
  - (1) detachable, VGA 15-pin D-shell at each end, analog, 1.8 meter
- Mounting features:
  - Wall or desk mounting using the Extend Arm or third-party accessories, 100mm x 100mm mount
- Security:
  - Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)

Ship group:
- Monitor with stand, Safety and Warranty Information, 1.8 meter analog signal cable, 1.8 meter black power cord

Limited Warranty

Accessories
Kensington MicroSaver Cable Lock 73P2582
Kensington Twin Head Cable Lock 45K1620

See details at www.lenovo.com/support/monitoraccessories

See all monitors at www.lenovo.com/thinkvision

Lenovo
August 2017
<table>
<thead>
<tr>
<th>Name</th>
<th>E24 Wide Flat Panel Monitor</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bezel color</td>
<td>Black</td>
<td>• Widescreen 23.8-inch monitor</td>
</tr>
<tr>
<td>Type-model</td>
<td>61B7JAR6US / 61B7JAT6EU</td>
<td>• Supports 1920x1080 resolution</td>
</tr>
<tr>
<td>Panel</td>
<td>TFT-LCD, In-Plane Switching (IPS), White LED Backlight</td>
<td>• Supports ThinkCentre Tiny VESA mount</td>
</tr>
<tr>
<td>Viewable image size</td>
<td>23.8” (604.7mm) diagonal</td>
<td>• Supports optional soundbar</td>
</tr>
<tr>
<td>Max view area (W x H)</td>
<td>20.75” x 11.67” (527.04mm x 296.46mm)</td>
<td>• Includes dual input connection for attachment to two systems concurrently</td>
</tr>
<tr>
<td>Native resolution</td>
<td>1920x1080</td>
<td>• EPEAT Gold certified</td>
</tr>
<tr>
<td>Aspect ratio</td>
<td>16:9</td>
<td>• Microsoft® Windows® 7 certified</td>
</tr>
<tr>
<td>Pixel pitch (mm)</td>
<td>0.274 x 0.2745 mm</td>
<td>• Microsoft Windows 10 certified</td>
</tr>
<tr>
<td>Brightness</td>
<td>250 nits or cd/m^2 (typical)</td>
<td></td>
</tr>
<tr>
<td>Contrast ratio</td>
<td>1000:1 (typical)</td>
<td></td>
</tr>
<tr>
<td>Pixel response time</td>
<td>6ms (typical)</td>
<td></td>
</tr>
<tr>
<td>Color gamut</td>
<td>72%</td>
<td></td>
</tr>
<tr>
<td>Viewing angle at 10:1</td>
<td>178° (+/- 89°) horizontal, 178° (+/- 89°) vertical</td>
<td></td>
</tr>
<tr>
<td>CR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stand</td>
<td>Tilt adjustable stand</td>
<td></td>
</tr>
<tr>
<td>Bezel width</td>
<td>0.52” (13mm)</td>
<td></td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>15” H x 21.81” W x 8.07” D; 403.8mm H x 554mm W x 204.9mm D</td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td>18 watts typical, 23 watts maximum, &lt;0.3 watts standby/suspend, universal, integrated (no external brick-like power supply)</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>8.2 lbs; 3.7 kg</td>
<td></td>
</tr>
<tr>
<td>Limited warranty</td>
<td>3 years (includes backlight)</td>
<td></td>
</tr>
<tr>
<td>Available date</td>
<td>August 2017</td>
<td></td>
</tr>
<tr>
<td>VESA-compliant</td>
<td>VESA DDC2B/CI</td>
<td></td>
</tr>
<tr>
<td>Power management</td>
<td>ENERGY STAR® qualified</td>
<td></td>
</tr>
<tr>
<td>Emission standards</td>
<td>ISO 9241-307</td>
<td></td>
</tr>
<tr>
<td>Environmental</td>
<td>TCO Displays 7.0, TCO Certified Edge 2.0, WEEE, RoHS, EPEAT™ Gold rating</td>
<td></td>
</tr>
<tr>
<td>Preset resolutions</td>
<td>VGA: 640x350, 640x480, 720x400, SVGA: 800x600, 832x624, XGA: 1024x768, 1152x864, SXGA: 1280x1024, WXGA: 1366x768, WXGA+: 1440x900, 1600x900, WSXGA+: 1680x1050, Full HD: 1920x1080</td>
<td></td>
</tr>
<tr>
<td>Presets display modes</td>
<td>Standard presets: 24; user settings: 20</td>
<td></td>
</tr>
<tr>
<td>View angle</td>
<td>Tilt: 22° back, -5° forward</td>
<td></td>
</tr>
<tr>
<td>Rotating screen</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>On screen display</td>
<td>On screen display with digital user controls (8 languages)</td>
<td></td>
</tr>
<tr>
<td>Control features</td>
<td>Direct access (buttons on front) for power, menu, input source select and brightness</td>
<td></td>
</tr>
<tr>
<td>USB hub</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Multiple input</td>
<td>Dual input (two different PCs attach to two different connectors; one PC shows image; select via button)</td>
<td></td>
</tr>
<tr>
<td>Monitor connectors</td>
<td>(1) VGA 15-pin D-shell, analog, blue, (2) DisplayPort, digital, black, HDCP-compliant</td>
<td></td>
</tr>
<tr>
<td>Signal cables</td>
<td>(1) detachable, VGA 15-pin D-shell at each end, analog, 1.8 meter</td>
<td></td>
</tr>
<tr>
<td>Mounting features</td>
<td>Wall or desk mounting using the Extend Arm or third-party accessories, 100mm x 100mm mount</td>
<td></td>
</tr>
<tr>
<td>Security</td>
<td>Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)</td>
<td></td>
</tr>
<tr>
<td>Ship group</td>
<td>Monitor with stand, Safety and Warranty Information, 1.8 meter analog signal cable, 1.8 meter DP signal cable, 1.8 meter black power cord</td>
<td></td>
</tr>
</tbody>
</table>

**Limited Warranty**


**Accessories**

- Kensington MicroSaver Cable Lock 73P2582
- Kensington Twin Head Cable Lock 45K1620

See details at [www.lenovo.com/support/monitoraccessories](http://www.lenovo.com/support/monitoraccessories)

See all monitors at [www.lenovo.com/thinkvision](http://www.lenovo.com/thinkvision)

Lenovo
August 2017
### Product Specifications Reference (PSREF)

#### Lenovo ThinkVision P24h

**Name**
- P24h Wide Flat Panel Monitor

**Bezel color**
- Black

**Type-model**
- 61AEGAR3US / 61AEGAT3EU

**Panel**
- TFT-LCD, In-Plane Switching (IPS), White LED backlight

**Viewable image size**
- 23.8” (604.7mm) diagonal

**Max view area (W x H)**
- 20.74” x 11.67” (526.9mm x 296.4mm)

**Native resolution**
- 2560x1440

**Aspect ratio**
- 16:9

**Pixel pitch (mm)**
- 0.2058x 0.2058 mm

**Dot/Pixel per Inch**
- 124 dpi

**Brightness**
- 300 nits or cd/m² (typical)

**Contrast ratio**
- 1000:1 (typical)

**Pixel response time**
- 4ms (extreme) / 6ms (typical)

**Color gamut**
- 99% sRGB

**Viewing angle at 10:1 CR**
- 178° (+/- 89°) horizontal, 178° (+/- 89°) vertical

**Stand**
- Tilt, swivel, pivot, and height adjustable stand

**Bezel width**
- Sides: 0.08” (2.0mm)

**Dimensions (HxWxD)**
- 14.7” H x 21.26” W x 10.3” D; 373.4mm H x 540.2mm W x 261.75mm D

**Power supply**
- 24 watts typical, 120 watts maximum (with USB 3.0 hub), <0.5 watts standby/suspend, universal, integrated (no external brick-like power supply)

**Weight**
- 12.54 lb; 5.69 kg

**Limited warranty**
- 3 year (includes backlight)

**Available date**
- April 2017

**VESA-compliant**
- VESA DDC2B/Ci

**Power management**
- ENERGY STAR® qualified

**Ergonomics**
- ISO 9241-307

**Emission standards**
- FCC Class B

**Environmental**
- TCO Displays 7.0, TCO Certified Edge 2.0, WEEE, RoHS, EPEAT™ Gold rating

**Preset resolutions**
- VGA: 640x480, 720x400
- SVGA: 800x600
- XGA: 1024x768
- SXGA: 1280x1024
- WXGA: 1366x768
- WXGA+: 1440x900, 1680x900
- WSXGA+: 1680x1050
- Full HD: 1920x1080, 1920x1200
- QHD: 2560x1440

**Presets display modes**
- HDMI: 22; DP: 14

**Viewing adjustments**
- Tilt: 30° back, -5° forward; lift: 4.3” (110mm); swivel: +/-45°; detachable stand

**Rotating screen**
- Screen pivots 90 degrees from landscape to portrait

**On screen display**
- On screen display with digital user controls (8 languages)

**Control features**
- Direct access (buttons on front) for power, menu, input source select and brightness

**USB hub**
- USB Hub: one USB 3.1 Type-C upstream port, four USB 3.0 Type-A downstream ports

**Multimedia**
- Audio-out, optional sound bar supported

**Camera**
- None

**Multiple input**
- Support HDMI, DisplayPort, USB 3.1 Type-C, DisplayPort-out

**Monitor connectors**
- (1) 2*HDMI (1.4), digital, HDCP-compliant
- (2) DisplayPort (1.2), digital, HDCP-compliant
- (3) DisplayPort-out, digital
- (4) USB 3.1 Type-C

**Signal cables**
- (1) USB 3.1 Type-C cable, 1.8 meter

**Mounting features**
- Wall or desk mounting using the Extend Arm or third-party accessories, 100mm x 100mm mount

**Security**
- Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)

**Ship group**
- Monitor with stand, Safety and Warranty Information, 1.8 meter USB 3.1 Type-C cable, 1.8 meter black power cord

#### Accessories

<table>
<thead>
<tr>
<th>Accessories</th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kensington MicroSaver Cable Lock</td>
<td>73P2582</td>
</tr>
<tr>
<td>Kensington Twin Head Cable Lock</td>
<td>45K1620</td>
</tr>
</tbody>
</table>

See details at [www.lenovo.com/support/monitoraccessories](http://www.lenovo.com/support/monitoraccessories)

See all monitors at [www.lenovo.com/thinkvision](http://www.lenovo.com/thinkvision)

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**Features**

- Widescreen 23.8-inch monitor
- Supports 2560x1440 resolution
- Supports optional soundbar
- Supports ThinkCentre Tiny Clamp Bracket
- Includes dual input connection for attachment to two systems concurrently
- EPEAT Gold certified
- Microsoft® Windows® 7 certified
- Microsoft Windows 10 certified

---

**Limited Warranty**

# Lenovo ThinkVision P24q

## Specifications

<table>
<thead>
<tr>
<th>Name</th>
<th>P24q Wide Flat Panel Monitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case color</td>
<td>Black</td>
</tr>
<tr>
<td>Type-model</td>
<td>61A5GAR3US / 61A5GAT3EU</td>
</tr>
<tr>
<td>Panel</td>
<td>TFT-LCD, IPS (In-Plane Switching), White LED backlight</td>
</tr>
<tr>
<td>Viewable image size</td>
<td>23.8” (604.5mm) diagonal</td>
</tr>
<tr>
<td>Max view area (W x H)</td>
<td>20.74” x 11.67” (526.85mm x 296.35mm)</td>
</tr>
<tr>
<td>Optimum resolution</td>
<td>2560x1440</td>
</tr>
<tr>
<td>Max pixel rate</td>
<td>300 MHz</td>
</tr>
<tr>
<td>Aspect ratio</td>
<td>16:9</td>
</tr>
<tr>
<td>Pixel pitch (mm)</td>
<td>0.2058 x 0.2058mm</td>
</tr>
<tr>
<td>Dot/Pixel per inch</td>
<td>123 dpi</td>
</tr>
<tr>
<td>Brightness</td>
<td>300 nits or cd/m² (typical)</td>
</tr>
<tr>
<td>Contrast ratio</td>
<td>1000:1 (typical)</td>
</tr>
<tr>
<td>Pixel response time</td>
<td>4ms</td>
</tr>
<tr>
<td>Color gamut</td>
<td>99% sRGB</td>
</tr>
<tr>
<td>Viewing angle at 10:1 CR</td>
<td>178° horizontal, 178° vertical</td>
</tr>
<tr>
<td>Stand</td>
<td>Tilt, swivel, pivot, and height adjustable stand</td>
</tr>
<tr>
<td>Bezel width</td>
<td>Sides: 0.08” (2mm)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>14.7” H x 21.26” W x 10.3” D; (HxWxD, including stand) 373.4mm H x 540.2mm W x 261.75mm D</td>
</tr>
<tr>
<td>Power supply</td>
<td>24 watts typical, 67 watts maximum (with USB), &lt;0.5 watts sleep/off; &lt;0.5 watts switch off (integrated) (no external brick-like power supply)</td>
</tr>
<tr>
<td>Weight</td>
<td>12.35 lb; 5.6kg (including stand)</td>
</tr>
<tr>
<td>Limited warranty</td>
<td>3 year</td>
</tr>
<tr>
<td>Available date</td>
<td>January 2017</td>
</tr>
<tr>
<td>VESA-compliant</td>
<td>VESA DDC2B/CI</td>
</tr>
<tr>
<td>Power management</td>
<td>ENERGY STAR® 7.0</td>
</tr>
<tr>
<td>Ergonomics</td>
<td>ISO 9241-307</td>
</tr>
<tr>
<td>Emission standards</td>
<td>FCC Class B</td>
</tr>
<tr>
<td>Environmental</td>
<td>TCO Displays 7.0, RoHS, EPEAT™ Gold rating, ULE Gold</td>
</tr>
<tr>
<td>Preset resolutions</td>
<td>VGA: 640x480, 720x400; SVGA: 800x600; XGA: 1024x768; SXGA: 1280x1024; WXGA: 1366x768; WXGA+: 1440x900, 1600x900; WSXGA+: 1680x1050; Full HD: 1920x1080, 1920x1200; QHD: 2560x1440</td>
</tr>
<tr>
<td>Presets / user settings</td>
<td>Standard presets: 20; user settings: 24</td>
</tr>
<tr>
<td>Viewing adjustments</td>
<td>Tilt: 30° back, -5° forward; lift: 4.33° (110mm); swivel: +/-45°</td>
</tr>
<tr>
<td>Rotating screen</td>
<td>Screen pivots 90 degrees from landscape to portrait</td>
</tr>
<tr>
<td>On screen display controls</td>
<td>Direct access for menu, source switch, and brightness</td>
</tr>
<tr>
<td>Control features</td>
<td>On screen display with digital user controls (8 languages)</td>
</tr>
<tr>
<td>USB hub</td>
<td>USB Hub: one USB 3.0 upstream port, four USB 3.0 downstream ports</td>
</tr>
<tr>
<td>Multimedia</td>
<td>Audio-out, optional sound bar supported</td>
</tr>
<tr>
<td>Camera</td>
<td>None</td>
</tr>
<tr>
<td>Multiple input</td>
<td>Support HDMI, DisplayPort, mini DisplayPort, DisplayPort-out</td>
</tr>
<tr>
<td>Monitor connectors</td>
<td>(1) 2*HDMI (1.4), digital, HDCP-compliant; (2) DisplayPort (1.2), digital, HDCP-compliant; (3) Mini DisplayPort, digital, HDCP-compliant</td>
</tr>
<tr>
<td>Signal cables</td>
<td>(1) detachable, mini DisplayPort to DisplayPort, digital, 1.8 meter</td>
</tr>
<tr>
<td>Mounting features</td>
<td>Wall or desk mounting using the Extend Arm or third-party accessories meeting the VESA FPMPMI® (100mm mount)</td>
</tr>
<tr>
<td>Security</td>
<td>Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)</td>
</tr>
</tbody>
</table>

## Features

- 23.8-inch IPS LED backlit monitor
- Supports 2560x1440 resolution
- 5-Ports USB hub, support USB 3.0
- Support ThinkCentre Tiny
- Supports optional soundbar
- Microsoft® Windows® 7 certified
- Microsoft Windows 10 certified

## Accessories

- Kensington MicroSaver Cable Lock: 73P2582
- Kensington Twin Head Cable Lock: 45K1620
- Lenovo Security Cable Lock: 57Y4303

See details at [www.lenovo.com/support/monitoraccessories](http://www.lenovo.com/support/monitoraccessories)

See all monitors at [www.lenovo.com/thinkvision](http://www.lenovo.com/thinkvision)

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**Limited Warranty**


**Accessories**

Kensington MicroSaver Cable Lock: 73P2582
Kensington Twin Head Cable Lock: 45K1620
Lenovo Security Cable Lock: 57Y4303

See details at [www.lenovo.com/support/monitoraccessories](http://www.lenovo.com/support/monitoraccessories)

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Lenovo

July 2017
# Lenovo ThinkVision T2224d Wide Flat Panel Monitor

<table>
<thead>
<tr>
<th>Name</th>
<th>T2224d Wide Flat Panel Monitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bezel color</td>
<td>Black</td>
</tr>
<tr>
<td>Type-model</td>
<td>61B1JA1US / 61B1JAT1EU</td>
</tr>
<tr>
<td>Panel</td>
<td>TFT-LCD, In-Plane Switching (IPS), White LED backlight</td>
</tr>
<tr>
<td>Viewable image size</td>
<td>21.5” (546mm) diagonal</td>
</tr>
<tr>
<td>Max view area (W x H)</td>
<td>18.74” x 10.54” (476.1mm x 267.8mm)</td>
</tr>
<tr>
<td>Native resolution</td>
<td>1920x1080</td>
</tr>
<tr>
<td>Aspect ratio</td>
<td>16:9</td>
</tr>
<tr>
<td>Pixel pitch (mm)</td>
<td>0.248 x 0.248 mm</td>
</tr>
<tr>
<td>Dot/Pixel per Inch</td>
<td>102 dpi</td>
</tr>
<tr>
<td>Brightness</td>
<td>250 nits or cd/m² (typical)</td>
</tr>
<tr>
<td>Contrast ratio</td>
<td>1000:1 (typical)</td>
</tr>
<tr>
<td>Pixel response time</td>
<td>7ms (typical); 4ms (extreme mode)</td>
</tr>
<tr>
<td>Color gamut</td>
<td>72%</td>
</tr>
<tr>
<td>Viewing angle at 10:1 CR</td>
<td>178° (± 89°) horizontal, 178° (± 89°) vertical</td>
</tr>
<tr>
<td>Stand</td>
<td>Tilt stand</td>
</tr>
<tr>
<td>Bezel width</td>
<td>Sides: 0.69” (17.6mm)</td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>15.02” H x 20.19” W x 8.06” D; 381.4mm H x 512.9mm W x 204.9mm D</td>
</tr>
<tr>
<td>Power supply</td>
<td>20 watts typical, 25 watts maximum</td>
</tr>
<tr>
<td>Weight</td>
<td>6.48 lb; 2.94 kg</td>
</tr>
<tr>
<td>Limited warranty</td>
<td>3 year (includes backlight)</td>
</tr>
<tr>
<td>Available date</td>
<td>March 2017</td>
</tr>
</tbody>
</table>

## Features
- Widescreen 21.5-inch monitor
- Supports 1920x1080 resolution
- Supports optional soundbar
- Supports ThinkCentre Tiny via VESA back mount
- Includes dual input connection for attachment to two systems concurrently (analog and digital)
- EPEAT Gold certified
- Microsoft® Windows® 7 certified
- Microsoft Windows 10 certified

## Preset resolutions
- VGA: 640x480, 640x480, 720x400
- SVGA: 800x600
- XGA: 1024x768, 1152x864
- SXGA: 1280x1024
- WXGA: 1280x768, 1280x800, 1366x768
- WXGA+: 1440x900
- WSXGA+: 1680x1050
- Full HD: 1920x1080

## Presets / user settings
- Standard presets: 22; user settings: 22

## Viewing adjustments
- Tilt: 22° back, -5° forward

## Rotating screen
- None

## On screen display
- On screen display with digital user controls (8 languages)

## Control features
- Direct access (buttons on front) for automatic image setup, dual input and brightness

## USB hub
- None

## Multiple input
- Dual input (two different PCs attach to two different connectors; one PC shows image; select via button)

## Monitor connectors
- (1) VGA 15-pin D-shell, analog, blue
- (2) DisplayPort, digital, black, **HDCP-compliant**

## Signal cables
- (1) detachable, VGA 15-pin D-shell at each end, analog, 1.8 meter
- (2) detachable, DisplayPort at each end, digital, 1.8 meter

## Mounting features
- Wall or desk mounting using the Extend Arm or third-party accessories, 100mm x 100mm mount

## Security
- Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)

## Ship group
- Monitor with stand, Safety and Warranty Information, 1.8 meter analog signal cable, 1.8 meter DP signal cable, 1.8 meter black power cord

## Limited Warranty

## Accessories
- Kensington MicroSaver Cable Lock 73P2582
- Kensington Twin Head Cable Lock 45K1620
- See details at [www.lenovo.com/support/monitoraccessories](http://www.lenovo.com/support/monitoraccessories)
- See all monitors at [www.lenovo.com/thinkvision](http://www.lenovo.com/thinkvision)

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*Lenovo*  
March 2017
## Lenovo ThinkVision T2254p Wide

**Name** | T2254p Wide Flat Panel Monitor  
**Bezel color** | Raven black  
**Type-model** | 61BAMAR2US / 60E1MAR2US / 60CCMAR2US / 60CCMAT2EU / 61BAMAT2EU  
**Panel** | TFT-LCD, twisted nematic (TN), White LED backlight  
**Viewable image size** | 22.0” (559mm) diagonal  
**Max view area (W x H)** | 18.70” x 11.70” (473.8mm x 296.1mm)  
**Native resolution** | 1680x1050  
**Aspect ratio** | 16:10  
**Pixel pitch (mm)** | 0.282 x 0.282 mm  
**Dot/Pixel per Inch** | 90 dpi  
**Brightness** | 250 nits or cd/m² (typical)  
**Pixel response time** | 5ms (typical)  
**Color gamut** | 72%  
**Viewing angle at 10:1 CR** | 170° (+/- 85°) horizontal, 160° (+/- 80°) vertical  
**Bezel width** | Sides: 0.67” (17.1mm)  
**Dimensions (HxWxD)** | 14.63” H x 20.01” W x 9.55” D; 37.17mm H x 509.3mm W x 242.7mm D  
**Power supply** | 20 watts typical,  
<0.5 watts standby/suspend, universal, integrated (no external brick-like power supply)  
**Weight** | 10.14 lb; 4.60 kg  
**Limited warranty** | 3 year (includes backlight)  
**Available date** | March 2015  
**VESA-compliant** | VESA DDC2B/CI  
**Power management** | ENERGY STAR® qualified  
**Emission standards** | FCC Class B  
**Environmental** | TCO Displays 7.0, TCO Certified Edge 2.0, WEEE, RoHS, EPEAT™ Gold rating  
**Presets / user settings** | Standard presets: 28; user settings: 20  
**Viewing adjustments** | Tilt: 30° back, -5° forward; lift: 4.3° (110mm); swivel: +/-45°; detachable stand  
**Rotating screen** | Screen pivots 90 degrees from landscape to portrait  
**On screen display** | On screen display with digital user controls (8 languages)  
**Control features** | Direct access (buttons on front) for automatic image setup, dual input and brightness  
**USB hub** | None  
**Multiple input** | Dual input (two different PCs attach to two different connectors; one PC shows image; select via button)  
(1) VGA 15-pin D-shell, analog, blue  
(2) HDMI (1.4), digital, HDCP-compliant  
(3) DisplayPort, digital, black, HDCP-compliant  
**Signal cables** | (1) detachable, VGA 15-pin D-shell at each end, analog, 1.8 meter  
(2) detachable, DisplayPort at each end, digital, 1.8 meter  
**Mounting features** | Wall or desk mounting using the Extend Arm or third-party accessories, 100mm x 100mm mount  
**Security** | Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)  
**Ship group** | Monitor with stand, Safety and Warranty Information, 1.8 meter analog signal cable, 1.8 meter DP signal cable, 1.8 meter black power cord

### Limited Warranty

### Accessories

| Kensington MicroSaver Cable Lock | 73P2582 |
| Kensington Twin Head Cable Lock | 45K1620 |

See details at [www.lenovo.com/support/monitoraccessories](http://www.lenovo.com/support/monitoraccessories)

See all monitors at [www.lenovo.com/thinkvision](http://www.lenovo.com/thinkvision)

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**Features**
- Widescreen 22.0-inch monitor  
- Supports 1680x1050 resolution  
- Supports ThinkCentre Tiny Clamp Bracket  
- Supports optional soundbar  
- Includes dual input connection for attachment to two systems concurrently (analog and digital)  
- EPEAT Gold certified  
- Microsoft Windows® 7 certified  
- Microsoft Windows 8 / Windows 8.1 certified  
- Microsoft Windows 10 certified

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**Presets / user settings**

- Standard presets: 28; user settings: 20

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**Rotating screen**

- Screen pivots 90 degrees from landscape to portrait

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**Multiple input**

- Dual input (two different PCs attach to two different connectors; one PC shows image; select via button)
  - (1) VGA 15-pin D-shell, analog, blue
  - (2) HDMI (1.4), digital, HDCP-compliant
  - (3) DisplayPort, digital, black, HDCP-compliant

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**Mounting features**

- Wall or desk mounting using the Extend Arm or third-party accessories, 100mm x 100mm mount

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**Security**

- Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)

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**Ship group**

- Monitor with stand, Safety and Warranty Information, 1.8 meter analog signal cable, 1.8 meter DP signal cable, 1.8 meter black power cord

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**Limited Warranty**


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**Accessories**

- Kensington MicroSaver Cable Lock
  - 73P2582
- Kensington Twin Head Cable Lock
  - 45K1620

See details at [www.lenovo.com/support/monitoraccessories](http://www.lenovo.com/support/monitoraccessories)

See all monitors at [www.lenovo.com/thinkvision](http://www.lenovo.com/thinkvision)
**Lenovo ThinkVision T22i Wide Flat Panel Monitor**

**Name**

T22i Wide Flat Panel Monitor

**Bezel color**

Black

**Type-model**

61A9MAR1US / 61A9MAT1EU

**Panel**

TFT-LCD, In-Plane Switching (IPS), White LED backlight

**Viewable image size**

21.5" (546mm) diagonal

**Max view area (W x H)**

18.74" x 10.54" (476.1mm x 267.8mm)

**Native resolution**

1920x1080

**Aspect ratio**

16:9

**Pixel pitch (mm)**

0.248 x 0.248 mm

**Dot/ Pixel per Inch**

102 dpi

**Brightness**

250 nits or cd/m² (typical)

**Contrast ratio**

1000:1 (typical)

**Pixel response time**

6ms (typical); 4ms (extreme mode)

**Color gamut**

72%

**Viewing angle at 10:1 CR**

178° (± 89°) horizontal, 178° (± 89°) vertical

**Stand**

Tilt, swivel, pivot, and height adjustable stand

**Bezel width**

Sides: 0.08" (2.0mm)

**Dimensions (HxWxD)**

14.08" H x 19.28" W x 9.92" D; 357.6mm H x 489.7mm W x 251.9mm D

**Power supply**

16.5 watts typical, 55 watts maximum (with USB 3.0 hub), <0.5 watts standby/suspend, universal, integrated (no external brick-like power supply)

**Weight**

10.85 lb; 4.92 kg

**Limited warranty**

3 year (includes backlight)

**Available date**

April 2017

**VESA-compliant**

VESA DDC2B/CI

**Power management**

ENERGY STAR® certified

**Ergonomics**

ISO 9241-307

**Emission standards**

TCO Displays 7.0, TCO Certified Edge 2.0, WEEE, RoHS, EPEAT™ Gold rating

**Presets resolutions**

VGA: 640x350, 640x480, 720x400

SVGA: 800x600

XGA: 1024x768, 1152x864

SXGA: 1280x1024

WXGA: 1280x768, 1366x768

WXGA+: 1440x900, 1680x900

WSXGA+: 1680x1050

Full HD: 1920x1080

**Presets display modes**

HDMI: 17; DP: 17

**Viewing adjustments**

Tilt: 30° back, -5° forward; lift: 4.3° (110mm); swivel: +/-45°; detachable stand

**Rotating screen**

Screen pivots 90 degrees from landscape to portrait

**On screen display**

On screen display with digital user controls (8 languages)

**USB hub**

USB 3.0 Hub: 1 port into PC (USB 3.0); 4 ports for accessories (4 USB 3.0)

**Multiple input**

Dual input (two different PCs attach to two different connectors; one PC shows image; select via button)

**Monitor connectors**

(1) VGA 15-pin D-shell, analog, blue

(2) HDMI (1.4), digital, HDCP-compliant

(3) DisplayPort, digital, black, HDCP-compliant

**Signal cables**

(1) detachable, VGA 15-pin D-shell at each end, analog, 1.8 meter

(2) detachable, DisplayPort at each end, digital, 1.8 meter

**Mounting features**

Wall or desk mounting using the Extend Arm or third-party accessories, 100mm x 100mm mount

**Security**

Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)

**Ship group**

Monitor with stand, Safety and Warranty Information, 1.8 meter analog signal cable, 1.8 meter DP signal cable, 1.8 meter USB signal cable, 1.8 meter black power cord

**Features**

- Widescreen 21.5-inch monitor
- Supports 1920x1080 resolution
- Supports optional soundbar
- Supports ThinkCentre Tiny via VESA back mount
- Includes dual input connection for attachment to two systems concurrently
- EPEAT Gold certified
- Microsoft® Windows® 7 certified
- Microsoft Windows 10 certified

**Accessories**

- Kensington MicroSaver Cable Lock 73P2582
- Kensington Twin Head Cable Lock 45K1620

See details at [www.lenovo.com/support/monitoraccessories](http://www.lenovo.com/support/monitoraccessories)

See all monitors at [www.lenovo.com/thinkvision](http://www.lenovo.com/thinkvision)

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Lenovo Limited Warranty


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Lenovo

July 2017
## Lenovo ThinkVision T22v Wide Monitor

### Features
- Widescreen 21.5-inch monitor
- Supports 1920x1080 resolution
- Supports optional soundbar
- Supports ThinkCentre Tiny via VESA back mount
- EPEAT Gold certified
- Microsoft® Windows® 7 certified
- Microsoft Windows 10 certified

### Specifications

<table>
<thead>
<tr>
<th>Name</th>
<th>T22v Wide Flat Panel Monitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bezel color</td>
<td>Black</td>
</tr>
<tr>
<td>Type-model</td>
<td>61BBMAR6US / 61BBMAT6EU</td>
</tr>
<tr>
<td>Panel</td>
<td>TFT-LCD, In-Plane Switching (IPS), White LED backlight</td>
</tr>
<tr>
<td>Viewable image size</td>
<td>21.5&quot; (546mm) diagonal</td>
</tr>
<tr>
<td>Max view area (W x H)</td>
<td>18.74&quot; x 10.54&quot; (476.1mm x 267.8mm)</td>
</tr>
<tr>
<td>Native resolution</td>
<td>1920x1080</td>
</tr>
<tr>
<td>Aspect ratio</td>
<td>16:9</td>
</tr>
<tr>
<td>Pixel pitch (mm)</td>
<td>0.248 x 0.248 mm</td>
</tr>
<tr>
<td>Dot/Pixel per Inch</td>
<td>102 dpi</td>
</tr>
<tr>
<td>Brightness</td>
<td>250 nits or cd/m² (typical)</td>
</tr>
<tr>
<td>Contrast ratio</td>
<td>1000:1 (typical)</td>
</tr>
<tr>
<td>Pixel response time</td>
<td>6ms (typical); 4ms (extreme mode)</td>
</tr>
<tr>
<td>Color gamut</td>
<td>72%</td>
</tr>
<tr>
<td>Viewing angle at 10:1 CR</td>
<td>178° (+/- 89°) horizontal, 178° (+/- 89°) vertical</td>
</tr>
<tr>
<td>Stand</td>
<td>Tilt, swivel, pivot, and height adjustable stand</td>
</tr>
<tr>
<td>Bezel width</td>
<td>Sides: 0.08&quot; (2.0mm)</td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>19.14&quot; H x 18.28&quot; W x 4.92&quot; D; 485.8mm H x 489.7mm W x 125.1mm D</td>
</tr>
<tr>
<td>Power supply</td>
<td>18 watts typical, 43 watts maximum (with USB 3.0 hub), &lt;0.5 watts standby/suspend, universal, integrated (no external brick-like power supply)</td>
</tr>
<tr>
<td>Weight</td>
<td>10.16 lb; 4.61 kg</td>
</tr>
<tr>
<td>Limited warranty</td>
<td>3 year (includes backlight)</td>
</tr>
<tr>
<td>Available date</td>
<td>October 2017</td>
</tr>
</tbody>
</table>

### Preset resolutions
- VGA: 640x480, 720x400
- SVGA: 800x600, 832x624
- XGA: 1024x768, 1152x864
- SXGA: 1280x1024
- WXGA+: 1440x900, 1600x900
- WSXGA+: 1680x1050
- Full HD: 1920x1080

### Presets display modes
- Presets: 24; user modes: 20

### Viewing adjustments
- Tilt: 30° back, -5° forward; lift: 4.3" (110mm); swivel: +/-45°; detachable stand

### Rotating screen
- Screen pivots 90 degrees from landscape to portrait

### On screen display
- On screen display with digital user controls (8 languages)

### Control features
- Direct access for power, menu, input source select, volume up / down, speaker mute and microphone mute

### USB hub
- USB 3.0 Hub: 1 port into PC (USB 3.0); 2 ports for accessories (2 USB 3.0)

### Multimedia
- Integrated speakers, dual-array microphone, audio-in and Audio-out, optional sound bar supported

### Camera
- Integrated FHD camera with IR

### Multiple input
- Support HDMI, DisplayPort, VGA
- (1) VGA 15-pin D-shell, analog, blue
- (2) HDMI (1.4), digital, HDCP-compliant
- (3) DisplayPort, digital, black, HDCP-compliant

### Signal cables
- (1) detachable, VGA 15-pin D-shell at each end, analog, 1.8 meter
- (2) detachable, DisplayPort at each end, digital, 1.8 meter

### Mounting features
- Wall or desk mounting using the Extend Arm or third-party accessories, 100mm x 100mm mount

### Security
- Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)

### Ship group
- Monitor with stand, Safety and Warranty Information, 1.8 meter analog signal cable, 1.8 meter DP signal cable, 1.8 meter USB signal cable, 1.8 meter black power cord, 1.8 meter HDMI signal cable (Row)

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### Limited Warranty

### Accessories
See details at [www.lenovo.com/support/monitoraccessories](http://www.lenovo.com/support/monitoraccessories)

See all monitors at [www.lenovo.com/thinkvision](http://www.lenovo.com/thinkvision)
## Lenovo ThinkVision T2324d Wide Monitor

<table>
<thead>
<tr>
<th>Feature</th>
<th>T2324d Wide Flat Panel Monitor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name</strong></td>
<td>T2324d Wide Flat Panel Monitor</td>
</tr>
<tr>
<td><strong>Bezel color</strong></td>
<td>Black</td>
</tr>
<tr>
<td><strong>Type-model</strong></td>
<td>60F3JAR2US / 60F3JAT2EU</td>
</tr>
<tr>
<td><strong>Panel</strong></td>
<td>TFT-LCD, twisted nematic (TN), White LED backlight</td>
</tr>
<tr>
<td><strong>Viewable image size</strong></td>
<td>23.0&quot; (584mm) diagonal</td>
</tr>
<tr>
<td><strong>Max view area (W x H)</strong></td>
<td>20.07&quot; x 11.29&quot; (509.8mm x 286.7mm)</td>
</tr>
<tr>
<td><strong>Native resolution</strong></td>
<td>1920x1080</td>
</tr>
<tr>
<td><strong>Aspect ratio</strong></td>
<td>16:9</td>
</tr>
<tr>
<td><strong>Pixel pitch (mm)</strong></td>
<td>0.2655 x 0.2655 mm</td>
</tr>
<tr>
<td><strong>Brightness</strong></td>
<td>96 dpi</td>
</tr>
<tr>
<td><strong>Contrast ratio</strong></td>
<td>1000:1</td>
</tr>
<tr>
<td><strong>Pixel response time</strong></td>
<td>8ms (typical)</td>
</tr>
<tr>
<td><strong>Color gamut</strong></td>
<td>72%</td>
</tr>
<tr>
<td><strong>Viewing angle at 10:1 CR</strong></td>
<td>170° (+/- 85°) horizontal, 160° (+/- 80°) vertical</td>
</tr>
<tr>
<td><strong>Stand</strong></td>
<td>Tilt stand</td>
</tr>
<tr>
<td><strong>Bezel width</strong></td>
<td>Sides: 0.68&quot; (17.3mm)</td>
</tr>
<tr>
<td><strong>Dimensions (HxWxD)</strong></td>
<td>15.75&quot; H x 21.48&quot; W x 8.06&quot; D; 400.3mm H x 545.8mm W x 204.9mm D</td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td>20 watts typical</td>
</tr>
<tr>
<td><strong>Power management</strong></td>
<td>ENERGY STAR® qualified</td>
</tr>
<tr>
<td><strong>Ergonomics</strong></td>
<td>ISO 9241-307</td>
</tr>
<tr>
<td><strong>Environmental</strong></td>
<td>TCO Displays 7.0, TCO Certified Edge 2.0, WEEE, RoHS, EPEAT Gold rating</td>
</tr>
<tr>
<td><strong>Preset resolutions</strong></td>
<td>VGA: 640x350, 640x480, 720x400, SVGA: 800x600, XGA: 1024x768, 1152x864, SXGA: 1280x1024, WXGA: 1280x768, 1280x800, 1366x768, WXGA+: 1440x900, WSXGA+: 1680x1050, Full HD: 1920x1080</td>
</tr>
<tr>
<td><strong>Presets / user settings</strong></td>
<td>Standard presets: 26; user settings: 16</td>
</tr>
<tr>
<td><strong>Viewing adjustments</strong></td>
<td>Tilt: 22° back, -5°</td>
</tr>
<tr>
<td><strong>Rotating screen</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>On screen display</strong></td>
<td>On screen display with digital user controls (8 languages)</td>
</tr>
<tr>
<td><strong>Control features</strong></td>
<td>Direct access (buttons on front) for automatic image setup, dual input and brightness</td>
</tr>
<tr>
<td><strong>USB hub</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>Multiple input</strong></td>
<td>Dual input (two different PCs attach to two different connectors; one PC shows image; select via button)</td>
</tr>
<tr>
<td><strong>Monitor connectors</strong></td>
<td>(1) VGA 15-pin D-shell, analog, blue, (2) DisplayPort, digital, black, HDCP-compliant</td>
</tr>
<tr>
<td><strong>Signal cables</strong></td>
<td>(1) detachable, VGA 15-pin D-shell at each end, analog, 1.8 meter</td>
</tr>
<tr>
<td><strong>Mounting features</strong></td>
<td>(2) detachable, DisplayPort at each end, digital, 1.8 meter</td>
</tr>
<tr>
<td><strong>Security</strong></td>
<td>Security keyhole for attachment of optional cable lock (Kensington lock-compatible)</td>
</tr>
<tr>
<td><strong>Ship group</strong></td>
<td>Monitor with stand, Safety and Warranty Information, 1.8 meter analog signal cable, 1.8 meter DP signal cable, 1.8 meter black power cord</td>
</tr>
</tbody>
</table>

### Limited Warranty


### Accessories

| Kensington MicroSaver Cable Lock | 73P2582 |
| Kensington Twin Head Cable Lock | 45K1620 |

See details at [www.lenovo.com/support/monitoraccessories](http://www.lenovo.com/support/monitoraccessories)

See all monitors at [www.lenovo.com/thinkvision](http://www.lenovo.com/thinkvision)
# Lenovo ThinkVision T23d-10 Wide Flat Panel Monitor

**Name**
T23d-10 Wide Flat Panel Monitor

**Bezel color**
Black

**Type-model**
6IC3MAR6US / 6IC3MAT6EU

**Panel**
TFT-LCD, In-Plane Switching (IPS), White LED backlight

**Viewable image size**
22.5" (571.5mm) diagonal

**Max view area (W x H)**
19.5" x 12.4" (496.2mm x 313.9mm)

**Native resolution**
1920x1200

**Aspect ratio**
16:10

**Pixel pitch (mm)**
0.25 x 0.25 mm

**Dot/Pixel per Inch**
100.6 dpi

**Brightness**
250 nits or cd/m² (typical)

**Contrast ratio**
1000:1 (typical)

**Pixel response time**
6ms (typical)

**Color gamut**
72%

**Viewing angle at 10:1 CR**
178° (+/- 89°) horizontal, 178° (+/- 89°) vertical

**Stand**
Tilt, swivel, pivot, and height adjustable stand

**Sides**
0.09" (2.3mm)

**Dimensions (HxWxD)**
19.37" H x 19.73" W x 9.9" D; 491.9mm H x 501.2mm W x 251.9mm D

**Power supply**
15 watts typical, 18 watts maximum, <0.3 watts standby/suspend, universal, integrated (no external brick-like power supply)

**Weight**
10.67 lb; 4.85 kg

**Limited warranty**
3 year (includes backlight)

**Available date**
June 2018

**VESA-compliant**
VESA DDC2B/CI

**Power management**
ENERGY STAR® qualified

**Ergonomics**
ISO 9241-307

**Emission standards**
FCC Class B

**Environmental**
TCO Displays 7.0, TCO Certified Edge 2.0, WEEE, RoHS, EPEAT® Gold rating

**Preset resolutions**
- VGA: 640x480, 720x400
- SVGA: 800x600
- XGA: 1024x768
- SXGA: 1280x1024
- WXGA: 1366x768
- WXGA+: 1440x900
- WSXGA+: 1680x1050
- Full HD: 1920x1080
- WXUQA: 1920x1200

**Presets display modes**
Standard presets: 27; user settings: 20

**Viewing adjustments**
Tilt: 30° back, -5° forward; lift: 4.3° (110mm); swivel: +/-45°; detachable stand

**Rotating screen**
Screen pivots 90 degrees from landscape to portrait

**On screen display**
On screen display with digital user controls (8 languages)

**Control features**
Direct access (buttons on front) for power, menu, input source select and brightness

**USB hub**
None

**Multiple input**
Dual input (two different PCs attach to two different connectors; one PC shows image; select via button)

**Monitor connectors**
(1) VGA 15-pin D-shell, analog, blue
(2) HDMI (1.4), digital, HDCP-compliant
(3) DisplayPort, digital, black, HDCP-compliant

**Signal cables**
(1) detachable, VGA 15-pin D-shell at each end, analog, 1.8 meter
(2) detachable, DisplayPort at each end, digital, 1.8 meter

**Mounting features**
Wall or desk mounting using the Extend Arm or third-party accessories, 100mm x 100mm mount

**Security**
Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)

**Ship group**
Monitor with stand, Safety and Warranty Information, 1.8 meter analog signal cable, 1.8 meter DP signal cable, 1.8 meter black power cord, 1.8 meter HDMI signal cable (NA only)

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**Features**
- Widescreen 22.5-inch monitor
- Supports 1920x1200 resolution
- Supports ThinkCentre Tiny Clamp Bracket
- Supports optional soundbar
- Includes dual input connection for attachment to two systems concurrently
- EPEAT Gold certified
- Microsoft® Windows® 7 certified
- Microsoft Windows 10 certified

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**Limited Warranty**

**Accessories**
- Kensington MicroSaver Cable Lock
  - 73P2582
- Kensington Twin Head Cable Lock
  - 45K1620

See details at [www.lenovo.com/support/monitoraccessories](http://www.lenovo.com/support/monitoraccessories)

See all monitors at [www.lenovo.com/thinkvision](http://www.lenovo.com/thinkvision)

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Note: The specifications above may not be available in all regions.
<table>
<thead>
<tr>
<th>Name</th>
<th>T23i Wide Flat Panel Monitor</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bezel color</td>
<td>Black</td>
<td>- Widescreen 23-inch monitor</td>
</tr>
<tr>
<td>Type-model</td>
<td>61ABMAR1US / 61ABMAT1EU</td>
<td>- Supports 1920x1080 resolution</td>
</tr>
<tr>
<td>Panel</td>
<td>TFT-LCD, In-Plane Switching (IPS), White LED backlight</td>
<td>- Supports ThinkCentre Tiny Clamp Bracket</td>
</tr>
<tr>
<td>Viewable image size</td>
<td>23&quot; (584.2mm) diagonal</td>
<td>- Includes dual input connection for attachment to two systems concurrently</td>
</tr>
<tr>
<td>Max view area (W x H)</td>
<td>20.36&quot; x 11.92&quot; (517.2mm x 302.8mm)</td>
<td>- EPEAT Gold certified</td>
</tr>
<tr>
<td>Native resolution</td>
<td>1920x1080</td>
<td>- Microsoft® Windows 7 certified</td>
</tr>
<tr>
<td>Aspect ratio</td>
<td>16:9</td>
<td>- Microsoft Windows 10 certified</td>
</tr>
<tr>
<td>Pixel pitch (mm)</td>
<td>0.2652 x 0.2652 mm</td>
<td></td>
</tr>
<tr>
<td>Dot/Pixel per inch</td>
<td>95.8 dpi</td>
<td></td>
</tr>
<tr>
<td>Brightness</td>
<td>250 nits or cd/m² (typical)</td>
<td></td>
</tr>
<tr>
<td>Contrast ratio</td>
<td>1000:1 (typical)</td>
<td></td>
</tr>
<tr>
<td>Pixel response time</td>
<td>6ms (typical)</td>
<td></td>
</tr>
<tr>
<td>Color gamut</td>
<td>72%</td>
<td></td>
</tr>
<tr>
<td>Viewing angle at 10:1 CR</td>
<td>178° (+/- 89°) horizontal, 178° (+/- 89°) vertical</td>
<td></td>
</tr>
<tr>
<td>Bezel width</td>
<td>Sides: 0.08&quot; (2.0mm)</td>
<td></td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>13.3&quot; H x 20.56&quot; W x 10.4&quot; D; 337.7mm H x 522.2mm W x 264.2mm D</td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td>16 watts typical, 45 watts maximum (with USB 3.0 hub), &lt;0.5 watts standby/suspend, universal, integrated (no external brick-like power supply)</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>10.65 lb; 4.92 kg</td>
<td></td>
</tr>
<tr>
<td>Limited warranty</td>
<td>3 year (includes backlight)</td>
<td></td>
</tr>
<tr>
<td>Available date</td>
<td>April 2017</td>
<td></td>
</tr>
<tr>
<td>VESA-compliant</td>
<td>VESA DDC2B/CI</td>
<td></td>
</tr>
<tr>
<td>Power management</td>
<td>ENERGY STAR® qualified</td>
<td></td>
</tr>
<tr>
<td>Ergonomics</td>
<td>ISO 9241-307</td>
<td></td>
</tr>
<tr>
<td>Emission standards</td>
<td>FCC Class B</td>
<td></td>
</tr>
<tr>
<td>Environmental</td>
<td>TCO Displays 7.0, TCO Certified Edge 2.0, WEEE, RoHS, EPEAT® Gold rating</td>
<td></td>
</tr>
<tr>
<td>Preset resolutions</td>
<td>VGA: 640x480, 720x400; SVGA: 800x600; XGA: 1024x768, 1152x864; SXGA: 1280x1024; WXGA+: 1440x900; WSVG: 1680x1050; Full HD: 1920x1080</td>
<td></td>
</tr>
<tr>
<td>Presets display modes</td>
<td>HDMI: 18; DP: 18</td>
<td></td>
</tr>
<tr>
<td>Viewing adjustments</td>
<td>Tilt: 30° back, -5° forward; lift: 4.3° (110mm); swivel: +/-45°; detachable stand</td>
<td></td>
</tr>
<tr>
<td>Rotating screen</td>
<td>Screen pivots 90 degrees from landscape to portrait</td>
<td></td>
</tr>
<tr>
<td>On screen display</td>
<td>On screen display with digital user controls (8 languages)</td>
<td></td>
</tr>
<tr>
<td>Control features</td>
<td>Direct access (buttons on front) for power, menu, input source select and brightness and automatic image setup</td>
<td></td>
</tr>
<tr>
<td>USB hub</td>
<td>USB 3.0 Hub: 1 port into PC (USB 3.0); 4 ports for accessories (4 USB 3.0)</td>
<td></td>
</tr>
<tr>
<td>Multiple input</td>
<td>Dual input (two different PCs attach to two different connectors; one PC shows image; select via button)</td>
<td></td>
</tr>
<tr>
<td>Monitor connectors</td>
<td>(1) VGA 15-pin D-shell, analog, blue; (2) HDMI (1.4), digital, HDCP-compliant; (3) DisplayPort, digital, black, HDCP-compliant</td>
<td></td>
</tr>
<tr>
<td>Signal cables</td>
<td>(1) detachable, VGA 15-pin D-shell at each end, analog, 1.8 meter; (2) detachable, DisplayPort at each end, digital, 1.8 meter</td>
<td></td>
</tr>
<tr>
<td>Mounting features</td>
<td>Wall or desk mounting using the Extend Arm or third-party accessories, 100mm x 100mm mount</td>
<td></td>
</tr>
<tr>
<td>Security</td>
<td>Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)</td>
<td></td>
</tr>
<tr>
<td>Ship group</td>
<td>Monitor with stand, Safety and Warranty Information, 1.8 meter analog signal cable, 1.8 meter DP signal cable, 1.8 meter USB signal cable, 1.8 meter black power cord</td>
<td></td>
</tr>
</tbody>
</table>

**Limited Warranty**


**Accessories**

Kensington MicroSaver Cable Lock 73P2582

Kensington Twin Head Cable Lock 45K1620

See details at [www.lenovo.com/support/monitoraccessories](http://www.lenovo.com/support/monitoraccessories)

See all monitors at [www.lenovo.com/thinkvision](http://www.lenovo.com/thinkvision)
### Name
T2454p Wide Flat Panel Monitor

### Bezel color
Raven black

### Type-model
60F9MAR1US / 60F9MAT1EU

### Panel
TFT-LCD, In-Plane Switching (IPS), White LED backlight

### Viewable image size
24.0” (609.6mm) diagonal

### Max view area (W x H)
20.41” x 12.76” (518.4mm x 324.0mm)

### Native resolution
1920x1200

### Aspect ratio
16:10

### Pixel pitch (mm)
0.270 x 0.270 mm

### Brightness
300 nits or cd/m² (typical)

### Contrast ratio
1000:1 (typical)

### Pixel response time
7ms (typical)

### Color gamut
77.4%

### Viewing angle at 10:1 CR
178° (+/- 89°) horizontal, 178° (+/- 89°) vertical

### Stand
Tilt, swivel, pivot, and height adjustable stand

### Bezel width
Sides: 0.74” (18.8mm)

### Dimensions (HxWxD)
15.85” H x 21.94” W x 10.39” D; 402.5mm H x 557.4mm W x 264.2mm D

### Power supply
24 watts typical, 27 watts maximum (without USB 3.0 hub), 54 watts maximum (with USB 3.0 hub), <0.5 watts standby/suspend, universal, integrated (no external brick-like power supply)

### Weight
13.60 lb; 6.15 kg

### Limited warranty
3 year (includes backlight)

### Available date
March 2015

### VESA-compliant
VESA DDC2B/CI

### Power management
ENERGY STAR® qualified

### Ergonomics
ISO 9241-307

### Emission standards
FCC Class B

### Environmental
TCO Displays 7.0, TCO Certified Edge 2.0, WEEE, RoHS, EPEAT® Gold rating

### Preset resolutions
- VGA: 640x350, 640x480, 720x400
- SVGA: 800x600
- XGA: 1024x768
- SXGA: 1280x1024
- WXGA: 1280x720, 1280x768, 1280x800
- WXGA+: 1440x900
- WSXGA+: 1680x1050, 1600x1200
- Full HD: 1920x1080, 1920x1200

### Presets / user settings
- Standard presets: 21
- User settings: 20

### Viewing adjustments
- Tilt: 30° back, -5° forward; lift: 4.3” (110mm); swivel: +/−45°; detachable stand

### Rotating screen
Screen pivots 90 degrees from landscape to portrait

### On screen display
On screen display with digital user controls (8 languages)

### Control features
Direct access (buttons on front) for automatic image setup, dual input and brightness

### USB hub
USB 3.0 Hub: 1 port into PC (USB 3.0); 4 ports for accessories (4 USB 3.0)

### Multiple input
Dual input (two different PCs attach to two different connectors; one PC shows image; select via button)

### Monitor connectors
(1) VGA 15-pin D-shell, analog, blue
(2) HDMI (1.4), digital, HDCP-compliant
(3) DisplayPort, digital, black, HDCP-compliant

### Signal cables
(1) detachable, VGA 15-pin D-shell at each end, analog, 1.8 meter
(2) detachable, DisplayPort at each end, digital, 1.8 meter

### Mounting features
Wall or desk mounting using the Extend Arm or third-party accessories, 100mm x 100mm mount

### Security
Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)

### Ship group
Monitor with stand, Safety and Warranty Information, 1.8 meter analog signal cable, 1.8 meter DisplayPort cable, 1.8 meter USB signal cable, 1.8 meter black power cord

### Features
- Widescreen 24.0-inch monitor
- Supports 1920x1200 resolution
- Supports ThinkCentre Tiny Clamp Bracket
- Supports optional soundbar
- Includes dual input connection for attachment to two systems concurrently (analog and digital)
- EPEAT Gold certified
- Microsoft® Windows® 7 certified
- Microsoft Windows 8 / Windows 8.1 certified
- Microsoft Windows 10 certified

### Accessories
- Kensington MicroSaver Cable Lock 73P2582
- Kensington Twin Head Cable Lock 45K1620

See details at [www.lenovo.com/support/monitoraccessories](http://www.lenovo.com/support/monitoraccessories)

See all monitors at [www.lenovo.com/thinkvision](http://www.lenovo.com/thinkvision)
### Lenovo ThinkVision T24d Wide Flat Panel Monitor

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>T24d Wide Flat Panel Monitor</td>
</tr>
<tr>
<td>Bezel color</td>
<td>Black</td>
</tr>
<tr>
<td>Type-model</td>
<td>61B4MAR1US / 61B4MAT1EU</td>
</tr>
<tr>
<td>Panel</td>
<td>TFT-LCD, In-Plane Switching (IPS), White LED Backlight</td>
</tr>
<tr>
<td>Viewable image size</td>
<td>24&quot; (609.6mm) diagonal</td>
</tr>
<tr>
<td>Max view area (W x H)</td>
<td>20.41&quot; x 12.75&quot; (518.4mm x 324mm)</td>
</tr>
<tr>
<td>Native resolution</td>
<td>1920x1200</td>
</tr>
<tr>
<td>Aspect ratio</td>
<td>16:10</td>
</tr>
<tr>
<td>Pixel pitch (mm)</td>
<td>0.27 x 0.27 mm</td>
</tr>
<tr>
<td>Dot/ Pixel per inch</td>
<td>94 dpi</td>
</tr>
<tr>
<td>Brightness</td>
<td>300 nits or cd/m² (typical)</td>
</tr>
<tr>
<td>Contrast ratio</td>
<td>1000:1 (typical)</td>
</tr>
<tr>
<td>Pixel response time</td>
<td>7ms (typical)</td>
</tr>
<tr>
<td>Color gamut</td>
<td>99%</td>
</tr>
<tr>
<td>Viewing angle at 10:1 CR</td>
<td>178° (+/- 89°) horizontal, 178° (+/- 89°) vertical</td>
</tr>
<tr>
<td>Stand</td>
<td>Tilt, swivel, pivot, and height adjustable stand</td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>19.58&quot; H x 20.99&quot; W x 10.25&quot; D; 497.4mm H x 533.2mm W x 260.4mm D</td>
</tr>
<tr>
<td>Power supply</td>
<td>22 watts typical</td>
</tr>
<tr>
<td>Weight</td>
<td>12.41 lb; 5.63 kg</td>
</tr>
<tr>
<td>Limited warranty</td>
<td>3 year (includes backlight)</td>
</tr>
<tr>
<td>Available date</td>
<td>June 2017</td>
</tr>
<tr>
<td>VESA-compliant</td>
<td>VESA DDC2B/CI</td>
</tr>
<tr>
<td>Power management</td>
<td>ENERGY STAR® qualified</td>
</tr>
<tr>
<td>Ergonomics</td>
<td>ISO 9241-307</td>
</tr>
<tr>
<td>Emission standards</td>
<td>FCC Class B</td>
</tr>
<tr>
<td>Environmental</td>
<td>TCO Displays 7.0, TCO Certified Edge 2.0, WEEE, RoHS, EPEAT® Gold rating</td>
</tr>
<tr>
<td>Preset resolutions</td>
<td>VGA: 640x480, 720x400 SVGA: 800x600 XGA: 1024x768 SXGA: 1280x1024 WXGA: 1366x768 WXGA+: 1440x900 WSXGA+: 1680x1050 Full HD: 1920x1080 WUXGA: 1920x1200</td>
</tr>
<tr>
<td>Presets display modes</td>
<td>Standard presets: 22; user settings: 20</td>
</tr>
<tr>
<td>Viewing adjustments</td>
<td>Tilt: 30° back, -5° forward; lift: 4.3° (110mm); swivel: +/-45°; detachable stand</td>
</tr>
<tr>
<td>Rotating screen</td>
<td>Screen pivots 90 degrees from landscape to portrait</td>
</tr>
<tr>
<td>On screen display</td>
<td>On screen display with digital user controls (8 languages)</td>
</tr>
<tr>
<td>Control features</td>
<td>Direct access (buttons on front) for power, menu, input source select and brightness</td>
</tr>
<tr>
<td>USB hub</td>
<td>USB 3.0 Hub: 1 port into PC (USB 3.0); 4 ports for accessories (4 USB 3.0)</td>
</tr>
<tr>
<td>Multiple input</td>
<td>Dual input (two different PCs attach to two different connectors; one PC shows image; select via button)</td>
</tr>
<tr>
<td>Monitor connectors</td>
<td>(1) VGA 15-pin D-shell, analog, blue (2) HDMI (1.4), digital, HDCP-compliant (3) DisplayPort, digital, black, HDCP-compliant</td>
</tr>
<tr>
<td>Signal cables</td>
<td>(1) detachable, VGA 15-pin D-shell at each end, analog, 1.8 meter (2) detachable, DisplayPort at each end, digital, 1.8 meter</td>
</tr>
<tr>
<td>Mounting features</td>
<td>Wall or desk mounting using the Extend Arm or third-party accessories, 100mm x 100mm mount Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)</td>
</tr>
<tr>
<td>Ship group</td>
<td>Monitor with stand, Safety and Warranty Information, 1.8 meter analog signal cable, 1.8 meter DP signal cable, 1.8 meter USB signal cable, 1.8 meter black power cord, 1.8 meter HDMI signal cable (NA only)</td>
</tr>
</tbody>
</table>

### Accessories

<table>
<thead>
<tr>
<th>Name</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kensington MicroSaver Cable Lock</td>
<td>73P2582</td>
</tr>
<tr>
<td>Kensington Twin Head Cable Lock</td>
<td>45K1620</td>
</tr>
</tbody>
</table>

See details at [www.lenovo.com/support/monitoraccessories](http://www.lenovo.com/support/monitoraccessories)

See all monitors at [www.lenovo.com/thinkvision](http://www.lenovo.com/thinkvision)

Lenovo
July 2017
## SPECIFICATIONS

### DISPLAY

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel Size</td>
<td>23.8” Wide</td>
</tr>
<tr>
<td>Panel Type</td>
<td>In-Plane Switching</td>
</tr>
<tr>
<td>Backlight</td>
<td>WLED</td>
</tr>
<tr>
<td>Resolution (H x V)</td>
<td>1920 x 1080</td>
</tr>
<tr>
<td>Aspect Ratio</td>
<td>16:9</td>
</tr>
<tr>
<td>Anti-Glare</td>
<td>Yes</td>
</tr>
<tr>
<td>Near Edgeless Screen</td>
<td>Yes</td>
</tr>
<tr>
<td>Screen Dimensions (W x H) (mm)</td>
<td>527.04 x 296.46</td>
</tr>
<tr>
<td>(inches)</td>
<td>20.75” x 11.67”</td>
</tr>
<tr>
<td>Maximum Brightness (Typical)</td>
<td>250 cd/m²</td>
</tr>
<tr>
<td>Viewing Angle (H/V at CR 10:1)</td>
<td>178°/178°</td>
</tr>
<tr>
<td>Contrast Ratio (Typical)</td>
<td>1000:1</td>
</tr>
<tr>
<td>Dynamic Contrast Ratio</td>
<td>3M:1</td>
</tr>
<tr>
<td>Pixel Pitch (mm)</td>
<td>0.2745 x 0.2745</td>
</tr>
<tr>
<td>Color Gamut (CIE 1931)</td>
<td>72% NTSC</td>
</tr>
<tr>
<td>Color Support (Typical)</td>
<td>16.7 Million</td>
</tr>
<tr>
<td>Response Time (gray to gray)</td>
<td>6 ms (Normal mode)</td>
</tr>
<tr>
<td>OSD Controls</td>
<td>English, French, German, Spanish, Italian, Japanese, Simplified Chinese, Russian</td>
</tr>
<tr>
<td>Buttons</td>
<td>5</td>
</tr>
<tr>
<td>Languages</td>
<td></td>
</tr>
</tbody>
</table>

### CONNECTIVITY

**Video Input Signals**

- VGA + HDMI™ 1.4 + DisplayPort™ 1.2

**Video Cables Supplied (Length)**

- 1 x USB 3.0 (Upstream)
- 4 x USB 3.0 (Downstream, Incl. 1 BC)

**Audio Out**

- Yes (3.5 mm)

### MECHANICAL

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tilt Angle (Front / Back)</td>
<td>-5° / 30°</td>
</tr>
<tr>
<td>Swivel Angle (Left / Right)</td>
<td>+/-45°</td>
</tr>
<tr>
<td>Lift Range (mm)</td>
<td>110</td>
</tr>
<tr>
<td>Pivot</td>
<td>+/-90°</td>
</tr>
<tr>
<td>Cable Management</td>
<td>Yes</td>
</tr>
<tr>
<td>Kensington® Lock</td>
<td>Yes</td>
</tr>
<tr>
<td>VESA® Mount (mm x mm)</td>
<td>Yes (100 x 100)</td>
</tr>
<tr>
<td>Bezel Color</td>
<td>Raven Black</td>
</tr>
<tr>
<td>Bezel Width</td>
<td></td>
</tr>
<tr>
<td>Top (mm / inches)</td>
<td>2 / 0.08”</td>
</tr>
<tr>
<td>Sides (mm / inches)</td>
<td>2 / 0.08”</td>
</tr>
</tbody>
</table>

### DIMENSIONS (W x D x H)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size Packed (mm)</td>
<td>422 x 622 x 190</td>
</tr>
<tr>
<td>(inches)</td>
<td>16.61” x 24.48” x 7.48”</td>
</tr>
<tr>
<td>Size Unpacked with Stand (mm)</td>
<td>540.2 x 261.75 x 373.4</td>
</tr>
<tr>
<td>Lowest Position (mm)</td>
<td>21.26” x 10.3” x 14.7”</td>
</tr>
<tr>
<td>Highest Position (mm)</td>
<td>540.2 x 261.75 x 483.4</td>
</tr>
<tr>
<td>(inches)</td>
<td>21.26” x 10.3” x 19”</td>
</tr>
<tr>
<td>Size Unpacked without Stand (mm)</td>
<td>540.2 x 46.45 x 325.98</td>
</tr>
<tr>
<td>(Monitor Head Only) (mm)</td>
<td>21.26” x 1.82” x 12.83”</td>
</tr>
<tr>
<td>Stand Base Footprint Area (mm)</td>
<td>250 x 250</td>
</tr>
<tr>
<td>(inches)</td>
<td>9.84” x 9.84”</td>
</tr>
<tr>
<td>Weight</td>
<td></td>
</tr>
<tr>
<td>Packed</td>
<td>Starting at 16.39 lbs (7.45 kg)</td>
</tr>
<tr>
<td>Unpacked</td>
<td>Starting at 11.33 lbs (5.15 kg)</td>
</tr>
<tr>
<td>Monitor Head Only</td>
<td>Starting at 7.26 lbs (3.3 kg)</td>
</tr>
<tr>
<td>Full Container Load</td>
<td>1140 / 540 Units</td>
</tr>
</tbody>
</table>

### WHAT’S IN THE BOX

- Monitor with Stand
- 1 x Power Cable
- 1 x VGA Cable
- 1 x DisplayPort™ - DisplayPort™ Cable
- 1 x HDMI™ Cable (NA Only)
- Quick Setup Guide

### CERTIFICATIONS

- EPEAT™ Gold
- ENERGY STAR® Rating: 71
- TCO: 7.0
- TCO Edge: 2.0
- RoHS (EU 2002/95/EC): Yes
- Tier 2
- China Energy Efficiency Standard
- Windows Certification: Windows 7 / Windows 10
- TÜV Eye Comfort Certification: Yes

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## SPECIFICATIONS

### DISPLAY

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel Size</td>
<td>23.8&quot; Wide</td>
</tr>
<tr>
<td>Panel Type</td>
<td>In-Plane-Switching</td>
</tr>
<tr>
<td>Backlight</td>
<td>WLED</td>
</tr>
<tr>
<td>Resolution</td>
<td>FHD (1920 x 1080)</td>
</tr>
<tr>
<td>Aspect Ratio</td>
<td>16:9</td>
</tr>
<tr>
<td>Anti-Glare</td>
<td>Yes</td>
</tr>
<tr>
<td>Near Edgeless Screen</td>
<td>Yes</td>
</tr>
<tr>
<td>Screen Dimensions (W x H)</td>
<td>mm: 527.04 x 296.46, inches: 20.75&quot; x 11.67&quot;</td>
</tr>
<tr>
<td>Brightness</td>
<td>250 nits</td>
</tr>
<tr>
<td>Viewing Angle (H/V at CR 10:1)</td>
<td>178°/178°</td>
</tr>
<tr>
<td>Contrast Ratio (Typical)</td>
<td>1000:1</td>
</tr>
<tr>
<td>Dynamic Contrast Ratio</td>
<td>3M1</td>
</tr>
<tr>
<td>Speakers</td>
<td>2 x 2W</td>
</tr>
<tr>
<td>Pixel Pitch (mm)</td>
<td>0.2745 x 0.2745</td>
</tr>
<tr>
<td>Color Gamut (CIE 1931)</td>
<td>72% NTSC</td>
</tr>
<tr>
<td>Color Depth</td>
<td>8 bit</td>
</tr>
<tr>
<td>Color Support (Typical)</td>
<td></td>
</tr>
<tr>
<td>Response Time (GIG)</td>
<td></td>
</tr>
<tr>
<td>Extreme / Normal</td>
<td>4 ms / 6 ms</td>
</tr>
<tr>
<td>OSD Controls</td>
<td>5</td>
</tr>
<tr>
<td>Buttons</td>
<td>English, French, German, Spanish, Italian, Japanese, Simplified Chinese, Russian</td>
</tr>
<tr>
<td>Languages</td>
<td></td>
</tr>
</tbody>
</table>

### MECHANICAL

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tilt Angle (Front / Back)</td>
<td>&quot;-5° / 30°&quot;</td>
</tr>
<tr>
<td>Swivel Angle (Left / Right)</td>
<td>-20°/45°</td>
</tr>
<tr>
<td>Lift Range (mm)</td>
<td>110</td>
</tr>
<tr>
<td>Pivot</td>
<td>+/-90°</td>
</tr>
<tr>
<td>Stand</td>
<td>LTP5</td>
</tr>
<tr>
<td>Cable Management</td>
<td>Yes</td>
</tr>
<tr>
<td>Kensington® Lock</td>
<td>Yes</td>
</tr>
<tr>
<td>VESA® Mount (mm x mm)</td>
<td>Yes (100 x 100)</td>
</tr>
<tr>
<td>Bezel Color</td>
<td>Raven Black</td>
</tr>
<tr>
<td>Bezel Width</td>
<td>2 / 0.08&quot;</td>
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### CONNECTIVITY

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video Input Signals</td>
<td>VGA + HDMI™ + DisplayPort™</td>
</tr>
<tr>
<td>Video Cables Supplied</td>
<td>VGA, DisplayPort™, USB, Power, HDMI™ (for NA only)</td>
</tr>
<tr>
<td>USB Hub</td>
<td>USB 3.0 (4 x down, 1 x BC)</td>
</tr>
<tr>
<td>Audio Out</td>
<td>Yes (3.5 mm)</td>
</tr>
<tr>
<td>Power</td>
<td>Internal</td>
</tr>
</tbody>
</table>

### POWER CONSUMPTION

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical</td>
<td>16.5 W</td>
</tr>
<tr>
<td>Maximum</td>
<td>59 W</td>
</tr>
<tr>
<td>Sleep-Mode</td>
<td>&lt;0.5 W</td>
</tr>
<tr>
<td>Switch Off-Mode</td>
<td>&lt;0.3 W</td>
</tr>
<tr>
<td>Power Supply</td>
<td>Internal</td>
</tr>
<tr>
<td>Power Voltage</td>
<td>90 VAC - 264 VAC</td>
</tr>
<tr>
<td>ENERGY STAR® (Pv0)</td>
<td>13.67 W</td>
</tr>
<tr>
<td>ENERGY STAR® (EETC)</td>
<td>43.51 kWh</td>
</tr>
</tbody>
</table>

### WHAT’S IN THE BOX

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitor with Stand</td>
<td>Monitor Head Only</td>
</tr>
<tr>
<td>Stand</td>
<td></td>
</tr>
<tr>
<td>1 x Power Cable</td>
<td>Starting at 7.26 lbs (3.3 kg)</td>
</tr>
<tr>
<td>1 x VGA Cable</td>
<td>Starting at 11.33 lbs (5.15 kg)</td>
</tr>
<tr>
<td>1 x DisplayPort™ - DisplayPort™ Cable</td>
<td>Starting at 16.39 lbs (7.45 kg)</td>
</tr>
<tr>
<td>1 x HDMI Cable (NA Only)</td>
<td></td>
</tr>
<tr>
<td>Quick Setup Guide</td>
<td></td>
</tr>
</tbody>
</table>

### CERTIFICATIONS

<table>
<thead>
<tr>
<th>Certification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPEAT™</td>
<td>Gold</td>
</tr>
<tr>
<td>ENERGY STAR® Rating</td>
<td>7.1</td>
</tr>
<tr>
<td>TCO (Inches)</td>
<td>7.0</td>
</tr>
<tr>
<td>TCO Edge</td>
<td>2.0</td>
</tr>
<tr>
<td>ULE</td>
<td>Yes</td>
</tr>
<tr>
<td>RoHS (EU 2002/95/EC)</td>
<td>Yes</td>
</tr>
<tr>
<td>China Energy Efficiency Standard</td>
<td>Tier 2</td>
</tr>
<tr>
<td>Windows Certification</td>
<td>Windows 7 / Windows 10</td>
</tr>
<tr>
<td>TGV Eye Comfort Certification</td>
<td>Yes</td>
</tr>
<tr>
<td>TINY Support</td>
<td>Yes</td>
</tr>
<tr>
<td>Soundbar Support*</td>
<td>Yes</td>
</tr>
<tr>
<td>Package</td>
<td>EPS Cushion</td>
</tr>
</tbody>
</table>

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**Lenovo ThinkVision T24m**

<table>
<thead>
<tr>
<th>Name</th>
<th>T24m Wide Flat Panel Monitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bezel color</td>
<td>Black</td>
</tr>
<tr>
<td>Type-model</td>
<td>61B8RAR3US / 61B8RAT3EU</td>
</tr>
<tr>
<td>Panel</td>
<td>TFT-LCD, In-Plane Switching (IPS), White LED backlight</td>
</tr>
<tr>
<td>Viewable image size</td>
<td>23.8&quot; (604.7mm) diagonal</td>
</tr>
<tr>
<td>Max view area (W x H)</td>
<td>20.75&quot; x 11.67&quot; (527.04mm x 296.46mm)</td>
</tr>
<tr>
<td>Native resolution</td>
<td>1920x1080</td>
</tr>
<tr>
<td>Aspect ratio</td>
<td>16:9</td>
</tr>
<tr>
<td>Pixel pitch (mm)</td>
<td>0.2745 x 0.2745 mm</td>
</tr>
<tr>
<td>Brightness</td>
<td>250 nits or cd/m² (typical)</td>
</tr>
<tr>
<td>Contrast ratio</td>
<td>1000:1 (typical)</td>
</tr>
<tr>
<td>Pixel response time</td>
<td>6ms (typical)</td>
</tr>
<tr>
<td>Color gamut</td>
<td>99% sRGB</td>
</tr>
<tr>
<td>Viewing angle at 10:1 CR</td>
<td>178° (+/- 89°) horizontal, 178° (+/- 89°) vertical</td>
</tr>
<tr>
<td>Stand</td>
<td>Tilt, swivel, pivot, and height adjustable stand</td>
</tr>
<tr>
<td>Bezel width</td>
<td>Sides: 0.08&quot; (2.0mm)</td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>19.03&quot; H x 21.26&quot; W x 10.3&quot; D: 483.4mm H x 540.2mm W x 261.75mm D</td>
</tr>
<tr>
<td>Power supply</td>
<td>17 watts typical, 110 watts maximum (with USB 3.0 hub), &lt;0.5 watts standby/suspend, universal, integrated (no external brick-like power supply)</td>
</tr>
<tr>
<td>Weight</td>
<td>12.34 lb; 5.6 kg</td>
</tr>
<tr>
<td>Limited warranty</td>
<td>3 year (includes backlight)</td>
</tr>
<tr>
<td>Available date</td>
<td>August 2017</td>
</tr>
<tr>
<td>VESA-compliant</td>
<td>VESA DDC2B/Ci</td>
</tr>
<tr>
<td>Power management</td>
<td>ENERGY STAR® qualified</td>
</tr>
<tr>
<td>Ergonomics</td>
<td>ISO 9241-307</td>
</tr>
<tr>
<td>Emission standards</td>
<td>FCC Class B</td>
</tr>
<tr>
<td>Environmental</td>
<td>TCO Dislays 7.0, TCO Certified Edge 2.0, WEEE, RoHS, EPEAT® Gold rating</td>
</tr>
<tr>
<td>Preset resolutions</td>
<td>VGA: 640x480, SVGA: 800x600, XGA: 1024x768, SXGA: 1280x1024, WXGA: 1366x768, WXGA+: 1440x900, 1600x900, WUXGA+: 1680x1050, Full HD: 1920x1080, 1920x1200</td>
</tr>
<tr>
<td>Presets display modes</td>
<td>HDMI: 19; DP: 11</td>
</tr>
<tr>
<td>Viewing adjustments</td>
<td>Tilt: 30° back, -5° forward; lift: 4.3° (110mm); swivel: +/-45°; detachable stand</td>
</tr>
<tr>
<td>Rotating screen</td>
<td>Screen pivots 90 degrees from landscape to portrait</td>
</tr>
<tr>
<td>On screen display</td>
<td>On screen display with digital user controls (8 languages)</td>
</tr>
<tr>
<td>Control features</td>
<td>Direct access (buttons on front) for power, menu, input source select and brightness</td>
</tr>
<tr>
<td>USB hub</td>
<td>USB 3.0 Hub: 1 port into PC (USB 3.0); 4 ports for accessories (4 USB 3.0)</td>
</tr>
<tr>
<td>Multimedia</td>
<td>Audio-out, optional sound bar supported</td>
</tr>
<tr>
<td>Multiple input</td>
<td>Support HDMI, DisplayPort, USB 3.1 Type-C</td>
</tr>
<tr>
<td>Monitor connectors</td>
<td>(1) HDMI (1.4), digital, HDCP-compliant, (2) DisplayPort (1.2), digital, HDCP-compliant, (3) USB 3.1 Type-C</td>
</tr>
<tr>
<td>Signal cables</td>
<td>(1) 1.8 meter USB Type-C to USB Type-C cable</td>
</tr>
<tr>
<td>Mounting features</td>
<td>Wall or desk mounting using the Extend Arm or third-party accessories, 100mm x 100mm mount</td>
</tr>
<tr>
<td>Security</td>
<td>Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)</td>
</tr>
<tr>
<td>Ship group</td>
<td>Monitor with stand, Safety and Warranty Information, 1.8 meter USB Type-C to USB Type-C cable, 1.8 meter black power cord</td>
</tr>
</tbody>
</table>

### Limited Warranty


### Accessories

| Kensington MicroSaver Cable Lock | 73P2582 |
| Kensington Twin Head Cable Lock | 45K1620 |

See all monitors at [www.lenovo.com/thinkvision](http://www.lenovo.com/thinkvision)

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**ThinkVision T24m Wide Flat Panel Monitor**

- Widescreen 23.8-inch monitor
- Supports 1920x1080 resolution
- Supports ThinkCentre Tiny Clamp Bracket
- Supports optional soundbar
- EPEAT Gold certified
- Microsoft® Windows® 7 certified
- Microsoft Windows 10 certified

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**VESA-compliant**

- VESA DDC2B/Ci

**Power management**

- ENERGY STAR® qualified

**Ergonomics**

- ISO 9241-307

**Emission standards**

- FCC Class B

**Environmental**

- TCO Dislays 7.0, TCO Certified Edge 2.0, WEEE, RoHS, EPEAT® Gold rating

**Preset resolutions**

- VGA: 640x480
- SVGA: 800x600
- XGA: 1024x768
- SXGA: 1280x1024
- WXGA: 1366x768
- WXGA+: 1440x900, 1600x900
- WUXGA+: 1680x1050
- Full HD: 1920x1080, 1920x1200

**Presets display modes**

- HDMI: 19; DP: 11

**Viewing adjustments**

- Tilt: 30° back, -5° forward; lift: 4.3° (110mm); swivel: +/-45°; detachable stand

**Rotating screen**

- Screen pivots 90 degrees from landscape to portrait

**On screen display**

- On screen display with digital user controls (8 languages)

**Control features**

- Direct access (buttons on front) for power, menu, input source select and brightness

**USB hub**

- USB 3.0 Hub: 1 port into PC (USB 3.0); 4 ports for accessories (4 USB 3.0)

**Multimedia**

- Audio-out, optional sound bar supported

**Multiple input**

- Support HDMI, DisplayPort, USB 3.1 Type-C

**Monitor connectors**

- (1) HDMI (1.4), digital, HDCP-compliant, (2) DisplayPort (1.2), digital, HDCP-compliant, (3) USB 3.1 Type-C

**Signal cables**

- (1) 1.8 meter USB Type-C to USB Type-C cable

**Mounting features**

- Wall or desk mounting using the Extend Arm or third-party accessories, 100mm x 100mm mount

**Security**

- Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)

**Ship group**

- Monitor with stand, Safety and Warranty Information, 1.8 meter USB Type-C to USB Type-C cable, 1.8 meter black power cord

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**Kensington MicroSaver Cable Lock**

- 73P2582

**Kensington Twin Head Cable Lock**

- 45K1620

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See all monitors at [www.lenovo.com/thinkvision](http://www.lenovo.com/thinkvision)
Lenovo ThinkVision T24v

**Name**
T24v Wide Flat Panel Monitor

**Bezel color**
Black

**Type-model**
61BCMAR6US / 61BCMAT6EU

**Panel**
TFT-LCD, In-Plane Switching (IPS), White LED backlight

**Viewable image size**
23.8" (604.5mm) diagonal

**Max view area (W x H)**
20.75" x 11.67" (527.04mm x 296.46mm)

**Native resolution**
1920x1080

**Aspect ratio**
16:9

**Pixel pitch (mm)**
0.2745 x 0.2745 mm

**Dot/Pixel per Inch**
92 dpi

**Brightness**
250 nits or cd/m² (typical)

**Contrast ratio**
1000:1 (typical)

**Pixel response time**
6ms (typical); 4ms (extreme mode)

**Color gamut**
72%

**Viewing angle at 10:1 CR**
178° (+/- 89°) horizontal, 178° (+/- 89°) vertical

**Stand**
Tilt, swivel, pivot, and height adjustable stand

**Bezel width**
Sides: 0.08" (2.0mm)

**Dimensions (HxWxD)**
19.72" H x 21.28" W x 10.32" D; 500.5mm H x 540.2mm W x 261.9mm D

**Power supply**
20 watts typical.
<0.5 watts standby/suspend, universal, integrated (no external brick-like power supply)

**Weight**
11.18 lb; 5.07 kg

**Limited warranty**
3 year (includes backlight)

**Available date**
October 2017

**VESA-compliant**
VESA DDC2B/CI

**Power management**
ENERGY STAR® qualified

**Ergonomics**
ISO 9241-307

**Emission standards**
FCC Class B

**Environmental**
TCO Displays 7.0, TCO Certified Edge 2.0, WEEE, RoHS, EPEAT® Gold rating

**Preset resolutions**
- VGA: 640x480, 720x400
- SVGA: 800x600, 832x624
- XGA: 1024x768, 1152x864
- SXGA: 1280x1024
- WXGA+: 1440x900, 1600x900
- WUXGA+: 1680x1050
- Full HD: 1920x1080

**Presets display modes**
Presets: 24; user modes: 20

**Viewing adjustments**
-Tilt: 30° back, -5° forward; lift: 4.3° (110mm); swivel: +/-45°; detachable stand

**Rotating screen**
Screen pivots 90 degrees from landscape to portrait

**On screen display**
On screen display with digital user controls (8 languages)

**Control features**
Direct access for power, menu, input source select, volume up / down, speaker mute and microphone mute

**USB hub**
USB 3.0 Hub: 1 port into PC (USB 3.0); 2 ports for accessories (2 USB 3.0)

**Multimedia**
Integrated speakers, dual-array microphone, audio-in and Audio-out, optional sound bar supported

**Camera**
Integrated FHD camera with IR

**Multiple input**
Support HDMI, DisplayPort, VGA

**Monitor connectors**
- (1) VGA 15-pin D-shell, analog, blue
- (2) HDMI (1.4), digital, HDCP-compliant
- (3) DisplayPort, digital, black, HDCP-compliant
- (1) detachable, VGA 15-pin D-shell at each end, analog, 1.8 meter
- (2) detachable, HDMI at each end, digital, 1.8 meter

**Signal cables**
Wall or desk mounting using the Extend Arm or third-party accessories, 100mm x 100mm mount

**Mounting features**
Wall or desk mounting using the Extend Arm or third-party accessories, 100mm x 100mm mount

**Security**
Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)

**Ship group**
Monitor with stand, Safety and Warranty Information, 1.8 meter analog signal cable, 1.8 meter DP signal cable, 1.8 meter USB signal cable, 1.8 meter black power cord, 1.8 meter HDMI signal cable (Row)

---

**Limited Warranty**
See details at


**Accessories**

<table>
<thead>
<tr>
<th>Kensington MicroSaver Cable Lock</th>
<th>73P2582</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kensington Twin Head Cable Lock</td>
<td>45K1620</td>
</tr>
</tbody>
</table>

See details at

[www.lenovo.com/support/monitoraccessories](http://www.lenovo.com/support/monitoraccessories)

See all monitors at

[www.lenovo.com/thinkvision](http://www.lenovo.com/thinkvision)
**Name**
X24 Pro Wide Flat Panel Monitor

**Bezel color**
Black

**Type-model**
60E4ECR1US / 60E4ECT1US / 60E4ECT1EU

**Panel**
TFT-LCD, AH-IPS (In-Plane Switching), White LED backlight

**Viewable image size**
23.8” (604.5mm) diagonal

**Max view area (W x H)**
20.75” x 11.67” (527.0mm x 296.5mm)

**Native resolution**
1920x1080

**Aspect ratio**
16:9

**Pixel pitch (mm)**
0.2745 x 0.2745 mm

**Brightness**
250 nits or cd/m² (typical)

**Contrast ratio**
1000:1 (typical)

**Pixel response time**
7ms (typical)

**Color gamut**
72%

**Viewing angle at 10:1 CR**
178° (+/- 89°) horizontal, 178° (+/- 89°) vertical

**Stand**
Tilt stand

**Bezel width**
Sides: 0.09” (2.3mm)

**Dimensions (HxWxD)**
17.61” H x 21.30” W x 9.39” D; 447.4mm H x 540.9mm W x 238.4mm D

**Power supply**
20 watts typical, 90 watts maximum, <0.5 watts standby/suspend, universal, external power supply

**Weight**
9.26 lb; 4.20 kg

**Limited warranty**
1 year (includes backlight)

**Available date**
July 2016

**Power management**
ENERGY STAR® qualified

**Ergonomics**
ISO 9241-307

**Emission standards**
FCC Class B

**Environmental**
TCO Displays 6.0, WEEE, RoHS, EPEAT® Silver rating

**Presets / user settings**
Standard presets: 16; user settings: 20

**Viewing adjustments**
None

**Rotating screen**
Tilt: 22° back, -5° forward

**On screen display**
On screen display with digital user controls

**Control features**
Direct access (buttons on side bezel) for dual input and brightness

**USB hub**
USB Hub: two USB 3.1 Type-C and one micro USB 3.0 ports

**Multimedia**
Integrated stereo speakers (3 watts x 2), built-in microphone

**Camera**
RealSense 3D camera SR300

**Multiple input**
Dual input (two different PCs attach to two different connectors; one PC shows image; select via button)

**Monitor connectors**
(1) mDP, Mini DisplayPort, digital, HDCP-compliant
(2) USB Type-C, digital
(1) detachable, mDP to DP, digital, 2.0 meter
(2) DP to mDP adapter
(3) Micro USB 3.0 cable

**Signal cables**
(1) mDP to mDP adapter

**Mounting features**
None

**Security**
Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)

**Ship group**
Monitor with stand, Safety and Warranty Information, ThinkPad 90W Square tip power adaptor, 2.0 meter Mini DisplayPort to DisplayPort signal cable (with DP to mDP adapter), Micro USB 3.0 cable (for using camera)

---

**Limited Warranty**

**Accessories**
Kensington MicroSaver Cable Lock 73P2582
Kensington Twin Head Cable Lock 45K1620

See details at [www.lenovo.com/support/monitoraccessories](http://www.lenovo.com/support/monitoraccessories)

See all monitors at [www.lenovo.com/thinkvision](http://www.lenovo.com/thinkvision)

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Lenovo
July 2017
### Features
- Widescreen 23.8-inch monitor
- Supports 1920x1080 resolution
- Includes dual input connection for attachment to two systems concurrently
- EPEAT Silver certified
- Microsoft® Windows® 7 certified
- Microsoft Windows 10 certified

### Lenovo ThinkVision X24-20 Monitor

**Name**: X24-20 Flat Panel Monitor  
**Bezel color**: Raven black  
**Type-model**: 61BDGAR3US / 61BDGAT3EU  
**Panel**: TFT-LCD, IPS (In-Plane Switching), White LED backlight  
**Viewable image size**: 23.8\" (604.5mm) diagonal  
**Max view area (W x H)**: 20.75\" x 11.67\" (527.0mm x 296.5mm)  
**Native resolution**: 1920x1080  
**Aspect ratio**: 16:9  
**Pixel pitch (mm)**: 0.2745 x 0.2745 mm  
**Dot/ Pixel per Inch**: 92 dpi  
**Brightness**: 250 nits or cd/m² (typical)  
**Pixel response time**: 6ms (typical)  
**Color gamut**: 72% (NTSC)  
**Viewing angle at 10:1 CR**: 178° (+/- 89°) horizontal, 178° (+/- 89°) vertical  
**Stand**: Tilt stand  
**Bezel width**: Sides: 0.04\" (1.1mm)  
**Dimensions (HxWxD)**: 12.85\" H x 21.16\" W x 8.66\" D; 326.4mm H x 537.4mm W x 220mm D  
**Power supply**: 20 watts typical, <0.5 watts standby/suspend, universal, external power supply  
**Weight**: 7.3 lb; 3.3 kg  
**Limited warranty**: 3 year (includes backlight)  
**Available date**: December 2017  
**Power management**: ENERGY STAR® qualified  
**Ergonomics**: ISO 9241-307  
**Environmental**: FCC Class B, TCO Displays 7.0, TCO Certified Edge 2.0, WEEE, RoHS, EPEAT® Silver rating  

#### Preset resolutions
- VGA: 640x350, 640x480, 720x400
- SVGA: 800x600
- XGA: 1024x768
- SXGA: 1280x1024
- WXGA: 1366x768
- WXGA+: 1440x900, 1600x900
- WUXGA+: 1680x1050
- Full HD: 1920x1080

#### Presets / user settings
- Standard presets: 18; user settings: 0

#### Viewing adjustments
- Tilt: 30° back, -5° forward

#### Rotating screen
- None

#### On screen display
- On screen display with digital user controls (8 languages)

#### Control features
- Direct access (buttons on side bezel) for power, dual input and brightness

#### USB hub
- None

#### Multiple input
- Dual input (two different PCs attach to two different connectors; one PC shows image; select via button)
  - (1) HDMI (1.4a), digital, HDCP-compliant
  - (2) DisplayPort, digital, black, HDCP-compliant

#### Signal cables
- (1) detachable, HDMI at each end, digital, 1.8 meter

#### Mounting features
- None

#### Security
- Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)

#### Ship group
- Monitor with stand, Safety and Warranty Information, 1.8 meter HDMI signal cable, 1.8 meter black power cord

### Limited Warranty


### Accessories

- Kensington MicroSaver Cable Lock 73P2582
- Kensington Twin Head Cable Lock 45K1620

See details at [www.lenovo.com/support/monitoraccessories](www.lenovo.com/support/monitoraccessories)

See all monitors at [www.lenovo.com/thinkvision](www.lenovo.com/thinkvision)
## Lenovo ThinkVision P27h

**Name**
- P27h Wide Flat Panel Monitor

**Case color**
- Black

**Type-model**
- 61AFGAR1US / 61AFGAT1EU

**Panel**
- TFT-LCD, IPS (In-Plane Switching), White LED backlight

**Viewable image size**
- 27" (685.8mm) diagonal

**Max view area (W x H)**
- 23.49" x 13.21" (596.7mm x 335.7mm)

**Optimum resolution**
- 2560x1440

**Max pixel rate**
- 300Mhz

**Aspect ratio**
- 16:9

**Pixel pitch (mm)**
- 0.2331 x 0.2331mm

**Dot/Pixel per Inch**
- 109 dpi

**Brightness**
- 350 nits or cd/m² (typical)

**Contrast ratio**
- 1000:1 (typical)

**Pixel response time**
- 4ms (extreme) / 6ms (typical)

**Color gamut**
- 99% sRGB

**Viewing angle at 10:1 CR**
- 178° horizontal, 178° vertical

**Stand**
- Tilt, swivel, pivot, and height adjustable stand

**Bezel width**
- Sides: 0.08" (2mm)
- (HxWxD, including stand): 513mm H x 611.6mm W x 269.8mm D

**Power supply**
- 38 watts typical, 140 watts maximum (with USB), <0.5 watts sleep/off; <0.5 watts switch off integrated (no external brick-like power supply)

**Weight**
- 15.43 lb; 7.0kg (including stand)

**Limited warranty**
- 3 year

**Available date**
- April 2017

**VESA-compliant**
- VESA DDC2B/Ci

**Power management**
- ENERGY STAR® 7.0

**Ergonomics**
- ISO 9241-307

**Emission standards**
- FCC Class B

**Environmental**
- TCO Displays 7.0, RoHS, EPEAT™ Gold rating, ULE Gold

## Preset resolutions

<table>
<thead>
<tr>
<th>VGA</th>
<th>640x480, 720x400</th>
</tr>
</thead>
<tbody>
<tr>
<td>SVGA</td>
<td>800x600</td>
</tr>
<tr>
<td>XGA</td>
<td>1024x768</td>
</tr>
<tr>
<td>SXGA</td>
<td>1280x1024</td>
</tr>
<tr>
<td>WXGA</td>
<td>1366x768</td>
</tr>
<tr>
<td>WXGA+</td>
<td>1440x900, 1680x900</td>
</tr>
<tr>
<td>WSXGA+</td>
<td>1680x1050</td>
</tr>
<tr>
<td>Full HD</td>
<td>1920x1080, 1920x1200</td>
</tr>
<tr>
<td>QHD</td>
<td>2560x1440</td>
</tr>
</tbody>
</table>

## Presets display modes
- HDMI: 22; DP: 14

## Viewing adjustments
- Tilt: 30° back, -5° forward; lift: 4.33" (110mm); swivel: +/-45°

## Rotating screen
- Screen pivots 90 degrees from landscape to portrait

## Control features
- Direct access (buttons on front) for power, menu, input source select and brightness

## USB hub
- USB Hub: one USB 3.1 Type-C upstream port, four USB 3.0 Type-A downstream ports

## Multimedia
- Audio-out, optional sound bar supported

## Camera
- None

## Multiple input
- Support HDMI, DisplayPort, USB 3.1 Type-C, DisplayPort-out

## Monitor connectors
1. HDMI (1.4), digital, HDCP-compliant
2. DisplayPort (1.2), digital, HDCP-compliant
3. DisplayPort-out, digital
4. USB 3.1 Type-C

## Signal cables
- (1) USB 3.1 Type-C cable, 1.8 meter

## Mounting features
- Wall or desk mounting using the Extend Arm or third-party accessories meeting the VESA FPMPMI (100mm mount)

## Security
- Security keyhole for attachment of optional cable lock (Kensington lock-compatible)

## Ship group
- Monitor, detachable stand, Quick start and safety poster, 1.8 meter USB 3.1 Type-C cable, 1.8 meter black power cord

## Limited Warranty


## Accessories

| Kensington MicroSaver Cable Lock | 73P2582 |
| Kensington Twin Head Cable Lock | 45K1620 |
| Lenovo Security Cable Lock      | 57Y4303 |

See details at [www.lenovo.com/support/monitoraccessories](www.lenovo.com/support/monitoraccessories)

See all monitors at [www.lenovo.com/thinkvision](www.lenovo.com/thinkvision)
## Lenovo ThinkVision P27u

### Product Specifications Reference (PSREF)

#### Features
- 27-inch IPS LED backlit monitor
- Supports 3840 x 2160 resolution
- 5-Ports USB hub, support USB 3.0
- Support ThinkCentre Tiny
- Supports optional soundbar
- Microsoft® Windows® 7 certified
- Microsoft Windows 10 certified

#### Preset resolutions
- VGA: 640x480, 720x480, 720x480, 720x576
- SVGA: 800x600
- XGA: 1024x768
- SXGA: 1280x720, 1280x800, 1280x1024
- WXGA+: 1440x900, 1600x900
- WUXGA+: 1680x1050
- Full HD: 1920x1080, 1920x1200
- QHD: 2560x1440
- UHD: 3840x2160

#### Presets / user settings
- Standard presets: 27;
- user settings: 20

#### Viewing adjustments
- Tilt: 30° back, -5° forward; lift: 4.33° (110mm); swivel: +/-45°

#### Rotating screen
- Screen pivots 90 degrees from landscape to portrait

#### On screen display
- On screen display with digital user controls (8 languages)
- Direct access (buttons on front) for power, menu, input source select and brightness

#### USB hub
- USB Hub: one USB 3.1 Type-C port, four USB 3.0 Type-A downstream ports

#### Multimedia
- Audio-out, optional sound bar supported

#### Camera
- None

#### Multiple input
- Support HDMI, DisplayPort, USB 3.1 Type-C

#### Monitor connectors
- (1) 2 HDMI (2.0), digital, HDCP-compliant
- (2) DisplayPort (1.2), digital, HDCP-compliant
- (3) USB 3.1 Type-C

#### Signal cables
- (1) detachable, DisplayPort to DisplayPort, digital, 1.8 meter

#### Mounting features
- Wall or desk mounting using the Extend Arm or third-party accessories meeting the VESA FPMPMI® (100mm mount)

#### Security
- Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)

#### Ship group
- Monitor, detachable stand, Quick start and safety poster, 1.8 meter USB Type-C to USB Type-C cable, 1.8 meter DP to DP cable, 1.8 meter HDMI to HDMI cable (NA only), 1.8 meter black power cord, 1.8 meter USB Type-C to USB Type-A cable

### Limited Warranty


### Accessories

<table>
<thead>
<tr>
<th>Kensington MicroSaver Cable Lock</th>
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<tr>
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<td>Lenovo Security Cable Lock</td>
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See all monitors at [www.lenovo.com/thinkvision](http://www.lenovo.com/thinkvision)

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#### Lenovo ThinkVision P27u

**Name**: P27u Wide Flat Panel Monitor

**Case color**: Black

**Type-model**: 61CBGAR1US / 61CBGAT1EU / 61CBGAR1EU / 61B0GAR1US / 61B0GAT1EU

**Panel**: TFT-LCD, IPS (In-Plane Switching), White LED backlight

**Viewable image size**: 27" (684.7mm) diagonal

**Max view area (W x H)**: 23.49" x 13.21" (596.74mm x 335.66mm)

**Optimum resolution**: 3840x2160

**Max pixel rate**: 600MHz

**Aspect ratio**: 16:9

**Pixel pitch (mm)**: 0.1554 x 0.1554mm

**Brightness**: 350 nits or cd/m² (typical)

**Contrast ratio**: 1000:1 (typical)

**Pixel response time**: 6ms (typical)

**Color gamut**: 1.457 sRGB

**Viewing angle at 10:1 CR**: 178° horizontal, 178° vertical

**Stand**: Tilt, swivel, pivot, and height adjustable stand

**Bezel width**: Sides: 0.08" (2mm)

**Dimensions**: 513.3mm H x 611.6mm W x 269.8mm D

**Power supply**: 50 watts typical, 160 watts maximum (with USB), <0.5 watts sleep/off; <0.3 watts switch off integrated (no external brick-like power supply)

**Weight**: 15.32 lb; 6.95kg (including stand)

**Limited warranty**: 3 year

**Available date**: August 2017

**VESA-compliant**: VESA DDC2B/Ci

**Power management**: ENERGY STAR® 7.0

**Ergonomics**: ISO 9241-307

**Emission standards**: FCC Class B

**Environmental**: TCO Displays 7.0, TCO Certified Edge 2.0, WEEE, RoHS, EPEAT™ Gold rating, ULE Gold

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**Presets / user settings**: Standard presets: 27; user settings: 20

**Viewing adjustments**: Tilt: 30° back, -5° forward; lift: 4.33° (110mm); swivel: +/-45°

**Rotating screen**: Screen pivots 90 degrees from landscape to portrait

**On screen display**: On screen display with digital user controls (8 languages)

**Control features**: Direct access (buttons on front) for power, menu, input source select and brightness

**USB hub**: USB Hub: one USB 3.1 Type-C port, four USB 3.0 Type-A downstream ports

**Multimedia**: Audio-out, optional sound bar supported

**Camera**: None

**Multiple input**: Support HDMI, DisplayPort, USB 3.1 Type-C

**Monitor connectors**: (1) 2 HDMI (2.0), digital, HDCP-compliant
(2) DisplayPort (1.2), digital, HDCP-compliant
(3) USB 3.1 Type-C

**Signal cables**: (1) detachable, DisplayPort to DisplayPort, digital, 1.8 meter

**Mounting features**: Wall or desk mounting using the Extend Arm or third-party accessories meeting the VESA FPMPMI® (100mm mount)

**Security**: Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)

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**Ship group**: Monitor, detachable stand, Quick start and safety poster, 1.8 meter USB Type-C to USB Type-C cable, 1.8 meter DP to DP cable, 1.8 meter HDMI to HDMI cable (NA only), 1.8 meter black power cord, 1.8 meter USB Type-C to USB Type-A cable

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**Limited Warranty**


**Accessories**

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See details at [www.lenovo.com/support/monitoraccessories](http://www.lenovo.com/support/monitoraccessories)

See all monitors at [www.lenovo.com/thinkvision](http://www.lenovo.com/thinkvision)

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**Lenovo**

**August 2017**
# Specifications

## Display

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<th>Value</th>
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<td>Panel Size</td>
<td>32&quot;</td>
</tr>
<tr>
<td>Panel Type</td>
<td>In-Plane Switching</td>
</tr>
<tr>
<td>Backlight</td>
<td>WLED</td>
</tr>
<tr>
<td>Resolution</td>
<td>3840 x 2160</td>
</tr>
<tr>
<td>Aspect Ratio</td>
<td>16:9</td>
</tr>
<tr>
<td>Screen Dimensions (W x H) (mm)</td>
<td>708.48 (H) x 398.52 (V)</td>
</tr>
<tr>
<td>Maximum Brightness (Typical)</td>
<td>300 cd/m²</td>
</tr>
<tr>
<td>Viewing Angle (H/V at CR 10:1)</td>
<td>178°/178°</td>
</tr>
<tr>
<td>Contrast Ratio (Typical)</td>
<td>1000:1</td>
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<tr>
<td>Dynamic Contrast Ratio</td>
<td>3M:1</td>
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<tr>
<td>Pixel Pitch (W x H) (mm)</td>
<td>0.1845 (H) x 0.1845 (V)</td>
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<tr>
<td>Dot/Pixel Per Inch (DP/PPI)</td>
<td>137</td>
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<tr>
<td>Color Gamut (1931)</td>
<td>99.5% AdobeRGB</td>
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<tr>
<td>Response Time (Typical)</td>
<td>6 ms</td>
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</table>

## Power Consumption

<table>
<thead>
<tr>
<th>Type</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Typical</td>
<td>70 W</td>
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<tr>
<td>Maximum</td>
<td>200 W</td>
</tr>
<tr>
<td>Sleep-Mode</td>
<td>≤0.5 W</td>
</tr>
<tr>
<td>Switch Off-Mode</td>
<td>≤0.5 W</td>
</tr>
<tr>
<td>Power Supply (Standby)</td>
<td>External</td>
</tr>
<tr>
<td>Power Voltage</td>
<td>90 VAC – 264 VAC</td>
</tr>
<tr>
<td>Voltage Dynamic Frequency</td>
<td>47 Hz – 63 Hz</td>
</tr>
</tbody>
</table>

## Signal Input

| Video Input Signals           | 2 x HDMI™ 2.0 + DisplayPort™ 1.2 + Thunderbolt™ 3.0-In + Thunderbolt™ 3.0-Out |
| Video Cables Supplied        | HDMI™, DisplayPort™, Thunderbolt™ 3.0 |
| Video Cable Length           | 2 m for Thunderbolt™, 1.8 m for HDMI™ and DisplayPort™ |
| USB Hub                      | Yes (4 x Downstream, 1 x BC) |
| USB Cable Supplied           | Yes (USB Type-A to Type-B) |
| Audio-Out                     | Yes (3.5 mm)           |

## Signal Interface / Performance

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal Frequency</td>
<td>30 kHz – 160 kHz</td>
</tr>
<tr>
<td>Vertical Frequency</td>
<td>23 Hz – 80 Hz</td>
</tr>
<tr>
<td>Native Resolution</td>
<td>3840 x 2160</td>
</tr>
<tr>
<td>Maximum Pixel Clock Speed / Bandwidth</td>
<td>HDMI™: 600 MHz, DisplayPort™: 5.4 Gbps, Thunderbolt™: 10 Gbps</td>
</tr>
<tr>
<td>Preset / User</td>
<td>28 / 20</td>
</tr>
<tr>
<td>OSD Buttons</td>
<td>5 Buttons</td>
</tr>
<tr>
<td>OSD Languages</td>
<td>English, French, German, Spanish, Italian, Japanese, Simplified Chinese, Russian</td>
</tr>
</tbody>
</table>

## Mechanical

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tilt Angle (Front / Back)</td>
<td>-5° / 22°</td>
</tr>
<tr>
<td>Swivel Angle (Left / Right)</td>
<td>45° / 45°</td>
</tr>
<tr>
<td>Lift (mm)</td>
<td>110</td>
</tr>
<tr>
<td>(CW / CCW)</td>
<td>90° / 90°</td>
</tr>
<tr>
<td>VESA® Mount (mm)</td>
<td>100 x 100</td>
</tr>
<tr>
<td>Kensington® Lock Slot</td>
<td>Yes</td>
</tr>
<tr>
<td>Cable Management</td>
<td>Yes</td>
</tr>
<tr>
<td>Bezel Color</td>
<td>Raven Black</td>
</tr>
<tr>
<td>Bezel Width</td>
<td>2 / 0.08&quot;</td>
</tr>
<tr>
<td>Top (mm / inches)</td>
<td>23.8 / 0.94&quot;</td>
</tr>
<tr>
<td>Bottom (mm / inches)</td>
<td>2 / 0.08&quot;</td>
</tr>
</tbody>
</table>

## Environmental

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>0°C – 40°C</td>
</tr>
<tr>
<td>Non-Operating</td>
<td>-20°C – 60°C</td>
</tr>
<tr>
<td>Humidity</td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>8% – 80%</td>
</tr>
<tr>
<td>Non-Operating</td>
<td>5% – 95%</td>
</tr>
<tr>
<td>Altitude</td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>0 ft – 5000 ft</td>
</tr>
<tr>
<td>Non-Operating</td>
<td>0 ft – 40,000 ft</td>
</tr>
<tr>
<td>Arsenic-Free Glass</td>
<td>Yes</td>
</tr>
<tr>
<td>PVC-Free</td>
<td>Yes</td>
</tr>
<tr>
<td>Mercury-Free</td>
<td>Yes</td>
</tr>
<tr>
<td>PCC % of Plastic Resins</td>
<td>85% with &gt;25 g Plastic Parts</td>
</tr>
</tbody>
</table>

## Dimensions (W x D x H)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size Packed (mm)</td>
<td>844 x 228 x 528</td>
</tr>
<tr>
<td>Size Unpacked with Stand (mm)</td>
<td>33.23&quot; x 8.98&quot; x 20.79&quot;</td>
</tr>
<tr>
<td>Size Unpacked without Stand (mm)</td>
<td>726.7 x 350 x 497.8</td>
</tr>
<tr>
<td>Size Unpacked without Stand (inches)</td>
<td>28.61&quot; x 13.78&quot; x 19.6&quot;</td>
</tr>
<tr>
<td>Distance from Table to Panel</td>
<td>726.7 x 63.3 x 431.5</td>
</tr>
<tr>
<td>Stand Base Footprint Area (mm / inches)</td>
<td>28.61&quot; x 2.49&quot; x 16.99&quot;</td>
</tr>
<tr>
<td>Stand Base Footprint Area (inches)</td>
<td>10.99 / 3.18&quot;</td>
</tr>
<tr>
<td>Stand Base Footprint Area (inches)</td>
<td>498.4 / 19.27&quot;</td>
</tr>
<tr>
<td>Weight (lbs)</td>
<td>Starting at 29.32 lbs (13.3 kg)</td>
</tr>
<tr>
<td>Monitor Head Only Weight (lbs)</td>
<td>Starting at 22.05 lbs (10 kg)</td>
</tr>
<tr>
<td>Monitor Head Only Weight (lbs)</td>
<td>Starting at 15.21 lbs (6.9 kg)</td>
</tr>
</tbody>
</table>

## Compliance

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENERGY STAR® Rating</td>
<td>7.0</td>
</tr>
<tr>
<td>Windows Certification</td>
<td>Gold</td>
</tr>
<tr>
<td>Windows 7 / Windows 10</td>
<td>TCO 7.0 / TCO Edge 2.0</td>
</tr>
<tr>
<td>China Energy Efficiency Standard</td>
<td>Tier 2</td>
</tr>
</tbody>
</table>

## Warranty and Availability

| Warranty                          | 3 Years                       |
| Geography Availability            | WW                            |
### Specifications

**Display With a Perspective**

- **Panel Type**: VA NearEdgeless,
- **Panel Size**: 43.4 inches,
- **Screen Dimensions (H x V)**: 0.2740 x 0.2740mm,
- **Pixel Pitch (H x V)**: 0.2740 x 0.2740mm,
- **Bezel Color**: Black,
- **Bezel Width (side)**: 2.4mm,
- **Resolution**: 3840 x 1200 (32:10),
- **Backlight**: WLED,
- **Brightness**: 380 nits (typical), 450 nits (peak),
- **HDR**: Yes,
- **Color Support (typical)**: sRGB: 99.5%BT.709: 99.5%DCI-P3: 90%,
- **Color Gamut**: 90% DCI-P3,
- **Dynamic Contrast Ratio (typical)**: 8.0,
- **Contrast Ratio (typical)**: 8,000,000:1,
- **Max. Refresh Rate**: 144Hz,
- **Operating Temperature**: 0°C to 45°C,
- **Ambient Operating Temperature**: 0°C to 45°C,
- **TÜV Eye Comfort**: Yes,
- **Eye Comfort certification reduces eye-strain**
- **Eye Comfort**: Yes,
- **Curvature**: 1800R,
- **Panel Type**: VA,
- **Lift, Tilt, Swivel**: Functionality,
- **Stand**: Lift, Tilt, Swivel,
- **Kensington™ Lock Slot**: Yes,
- **VESA Mount Capability**: Yes

**Connectivity**

- **USB Ports**: 4 x USB 3.1 Gen1 (1 x USB Type-C Gen1, 1 x USB Type-C Gen2),
- **Audio Out**: Yes,
- **HDMI 2.0**: Yes,
- **Additional Ports**: 2 x USB 3.1 (1 x USB Type-C Gen1, 1 x USB Type-C Gen2),
- **Bandwidth**: 32800 Mbit/sec,
- **Video Cable Length**: 1.5m for USB Type-C Gen2, 1.8m for others

**Mechanical**

- **Tilt Angle (front/back)**: ±30°,
- **Swivel Angle (left/right)**: ±35°,
- **Screen Tilt**: 90°,
- **Screen Swivel**: 180°,
- **Screen Rotation**: 90°,
- **Weight Unpacked**: 9.35kg/20.61lbs.,
- **Weight U/P**: 18.59kg/40.98lbs.,
- **Weight**: 5.40 x 14.21 x 41.67 inches (137.2 x 366.1 x 1058.3mm),
- **Size Unpacked w/o stand (D x H x W) (Head Only)**: 269.8 x 591.1 x 1058.3mm,
- **Size Unpacked w/stand (D x H x W) (Highest Position)**: 10.62 x 18.15 x 41.67 inches (269.8 x 461.1 x 1058.3mm),
- **Size Unpacked w/stand (D x H x W) (Lowest Position)**: 47.99 x 19.68 x 14.80 inches (1219 x 500 x 376mm),
- **Quick setup guide**: Yes

**Energy and Environment**

- **ENERGY STAR® Rating**: Energy Star V1.0,
- **UL**: Yes,
- **UL Environment**: Gold,
- **UL Info**: Yes,
- **RoHS**: Yes,
- **CCC**: Yes,
- **EU**: Yes,
- **Energy Efficiency**: China Energy Efficiency Standard Tier 2,
- **Ambient Operating Temperature**: 0°C to 45°C,
- **Ambient Operating Temperature**: 0°C to 45°C,
- **TÜV Eye Comfort**: Yes,
- **Eye Comfort**: Yes,
- **Eye Comfort certification reduces eye-strain**

**Certifications**

- **Windows Certification**: Windows 7, Windows 10,
- **Windows**: Yes,
- **Windows 7**: Yes,
- **Windows 10**: Yes

**Package**

- **P44w Monitor**: Monitor with stand, Quick setup guide, 1 x USB Type-C to Type-A cable, 1 x HDMI cable

**What’s in the Box**

- **1 x USB Type-C to Type-A cable**
- **1 x HDMI cable**
- **Monitor with stand**
ThinkVision® T27i-10

**DISPLAY**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel Size</td>
<td>27 inch</td>
</tr>
<tr>
<td>Screen Dimensions (H x V)</td>
<td>597.89 (H) × 336.31 (V)</td>
</tr>
<tr>
<td>Panel Type</td>
<td>In-Plane Switching</td>
</tr>
<tr>
<td>Backlight</td>
<td>WLED</td>
</tr>
<tr>
<td>Aspect Ratio</td>
<td>16:9</td>
</tr>
<tr>
<td>Resolution</td>
<td>1920 x 1080</td>
</tr>
<tr>
<td>Pixel Pitch (H x V)</td>
<td>0.3110 × 0.3110</td>
</tr>
<tr>
<td>Viewing angle (H x V)</td>
<td>178°/178°</td>
</tr>
<tr>
<td>Response Time (gray to gray)</td>
<td>4 ms (extreme mode)</td>
</tr>
<tr>
<td></td>
<td>6 ms (normal mode)</td>
</tr>
<tr>
<td>Contrast Ratio (typical)</td>
<td>1000:1</td>
</tr>
<tr>
<td>Dynamic Contrast Ratio</td>
<td>3M:1</td>
</tr>
<tr>
<td>Color Gamut NTSC (CIE 1931)</td>
<td>72%</td>
</tr>
<tr>
<td>Color Support</td>
<td>16.7M</td>
</tr>
</tbody>
</table>

**CONNECTIVITY**

| Video Input Signals        | VGA + HDMI 1.4 + DP 1.2                     |
| Cable Length               | 1.8 m                                       |
| Audio Out                  | Yes (3.5 mm)                                |
| Power Consumption          | 22W (Typical) / 58W (max) at On mode;       |
|                            | <0.5W at Sleep mode; <0.3W at Switch off mode |

**SPECIAL FEATURES**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-Glare</td>
<td>Yes</td>
</tr>
<tr>
<td>Thin Client Support (Tiny)</td>
<td>Yes (by Tiny Clamp Bracket Kit+VESA mount PN:4XF0N82412+ PN:4XF0N03161)</td>
</tr>
</tbody>
</table>

**MECHANICAL**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tilt Angle (front/back)</td>
<td>-5°/30°</td>
</tr>
<tr>
<td>Swivel Angle (left/right)</td>
<td>-45°/+45°</td>
</tr>
<tr>
<td>Lift (Max range)</td>
<td>110 mm</td>
</tr>
<tr>
<td>Pivot</td>
<td>-90°/+90°</td>
</tr>
<tr>
<td>VESA Mount</td>
<td>Yes (100 mm)</td>
</tr>
<tr>
<td>Kensington™ Lock Slot</td>
<td>Yes</td>
</tr>
<tr>
<td>Cable Management</td>
<td>Yes</td>
</tr>
<tr>
<td>Bezel Color</td>
<td>Raven Black</td>
</tr>
<tr>
<td>Bezel Width (Side)</td>
<td>2.0 mm</td>
</tr>
</tbody>
</table>

**WHAT’S IN THE BOX**

- Monitor with stand
- 1 x Power cable
- 1 x DP-DP cable
- 1 x HDMI cable (NA only)
- 1 x USB 3.0 cable
- Quick setup guide

**CERTIFICATIONS**

<table>
<thead>
<tr>
<th>Certification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENERGY STAR Rating</td>
<td>7.0</td>
</tr>
<tr>
<td>CCC</td>
<td>Yes</td>
</tr>
<tr>
<td>TCO</td>
<td>7.0</td>
</tr>
<tr>
<td>EPEAT™ Gold</td>
<td>Gold</td>
</tr>
<tr>
<td>ULE Gold</td>
<td>Gold</td>
</tr>
<tr>
<td>Windows Certification</td>
<td>Windows 7, Windows 10</td>
</tr>
<tr>
<td>China Energy Efficiency Standard</td>
<td>Tier 2</td>
</tr>
<tr>
<td>Ambient Operating Temperature</td>
<td>0°C to 40°C</td>
</tr>
<tr>
<td>Eye Comfort Certification</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Specifications may vary depending upon region.
### DISPLAY

- **Panel Size**: 27.0 inches
- **Screen Dimensions (H x V)**: 596.74 x 335.66mm
- **Panel Type**: In-Plane Switching
- **Backlight**: WLED
- **Aspect Ratio**: 16:9
- **Resolution**: 3840 x 2160 pixels
- **Pixel Pitch (H x V)**: 0.1554 x 0.1554mm
- **Viewing Angle (H x V)**: 178°/178°
- **Response Time (gray to gray)**: 4ms (extreme mode) | 6ms (normal mode)
- **Refresh Rate**: 60Hz
- **Contrast Ratio (typical)**: 1000:1
- **Dynamic Contrast Ratio (typical)**: 3M:1
- **Brightness (typical)**: 350 cd/m²
- **Color Gamut sRGB (CIE 1931)**: 99%
- **Color Support**: 1.07 Billion

### POWER

- **Power Consumption (Typical/Max)**: 50W/140W
- **Power Supply**: Internal
- **POWER STAR® (P*)**: 23.40W
- **POWER STAR® (E*)**: 101.94kWh
- **Voltage Required**: 100-240VAC (50/60Hz)

### DIMENSIONS

- **Size Packed (D x H x W)**: 732 x 210 x 453mm/ 28.82 x 8.27 x 17.83 inches
- **Size Unpacked with/stand (D x H x W) (mm/inch)**: 269.8 x 403.5 x 611.6mm/10.62 x 15.88 x 24.08 inches
- **Size Unpacked w/o stand (D x H x W) (mm/inch) (Head Only)**: 45.3 x 368.4 x 611.6mm/ 1.79 x 14.5 x 24.08 inches
- **Weight Packed**: 11.00kg/24.25lbs.
- **Weight Unpacked**: 6.95kg/15.32lbs.
- **Weight (Monitor Head Only)**: 5.0kg/11.02lbs.

### CONNECTIVITY

- **Video Input Signals**: HDMI 2.0 + DP 1.2 + USB 3.1 Type-C™ (DP 1.2 Alt Mode)
- **Video Cables Supplied**: 1 x USB Type-C™ + HDMI
- **Video Cable Length**: 1.8m
- **USB Hub**: Yes
- **USB Upstream**: 1 x USB 3.1 Gen1 (by USB Type-C™)
- **USB Downstream**: 4 x USB 3.1 Gen1 (with 1 BC)

### AUDIO OUT

- **Yes (3.5mm)**

### MECHANICAL

- **Tilt Angle (front/back)**: -5°/30°
- **Swivel Angle (left/right)**: +/-45°
- **Lift**: Yes (110mm)
- **Pivot**: +/-90°
- **VESA Mount Capability**: Yes (100 x 100mm)
- **Kensington™ Lock Slot**: Yes
- **Bezel Width (Side)**: 2.0mm
- **Bezel Width (top/bottom)**: 2.0/24.5mm

### SPECIAL FEATURES

- **Smart Power**: Yes
- **Anti-glare**: Yes
- **ThinkCentre Tiny Support**: Yes
- **Optional Soundbar Support**: Yes

### WHAT’S IN THE BOX

- Monitor with stand
- 1 x Power Cable
- 1 x HDMI Cable
- 1 x USB Type-C™ to Type-C™ cable
- Quick Setup Guide

### CERTIFICATIONS

- **ENERGY STAR® Rating**: Gold
- **EU RoHS**: Yes
- **CCC**: Yes
- **Windows Certification**: Windows 7, Windows 10
- **China Energy Efficiency Standard**: Tier 2
- **TÜV Eye Comfort**: Tier 2
- **TCO**: TCO 8.0/TCO Edge 2.0
- **ULE**: Gold

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*The Smart Power feature intelligently detects overall power consumption and dynamically manages the power delivery to each device. 75W power delivery can be achieved when downstream USB ports are not connected and OSD brightness setting is <60.

Depending on many factors such as the processing capability of peripheral devices, file attributes, and other factors related to system configuration and operating environments, the actual transfer rate using the various USB connectors on this device will vary and is typically slower than the data rates as defined by the respective USB specifications: - 5 Gbit/s for USB 3.1 Gen1; 10 Gbit/s for USB 3.1 Gen2 & 20 Gbit/s for USB 3.2.

Specifications may vary depending upon region.
Name: X1 Wide Flat Panel Monitor
Case color: Black
Type-model: 60E2GAR1US / 60E2GAT1US / 60E2GAT1EU
Panel: TFT-LCD, IPS (In-Plane Switching), White LED backlight
Viewable image size: 27" (684.7mm) diagonal
Max view area (W x H): 23.49" x 13.21" (596.7mm x 335.7mm)
Optimum resolution: 3840x2160
Max pixel rate: 600MHz
Aspect ratio: 16:9
Pixel pitch (mm): 0.16 x 0.16mm
Dot/Pixel per Inch: 163 dpi
Brightness: 300 nits or cd/m² (typical)
Contrast ratio: 1300:1 (typical)
Pixel response time: 6ms
Color gamut: 99%
Viewing angle at 10:1 CR: 178° horizontal, 178° vertical
Stand: Tilt stand
Bezel width: Sides: 0.088" (2.23mm)
Dimensions: (HxWxD, including stand) 491.4mm H x 614.5mm W x 270.0mm D
Power supply: 40 watts typical, 130 watts maximum (with USB), <0.5 watts sleep/off; <0.5 watts switch off
Weight: 14.11 lb; 6.40kg (including stand)
Limited warranty: 3 year
Available date: March 2016

VESA-compliant: VESA DDC2B/C1
Power management: ENERGY STAR® 7.0
Ergonomics: ISO 9241-307
Emission standards: FCC Class B
Environmental: TCO Displays 7.0, RoHS, EPEAT™ Silver rating, ULE Gold

Preset resolutions: VGA: 640x350, 640x480, 720x400
SVGA: 800x600
XGA: 1024x768, 1152x864
SXGA: 1280x1024
WXGA: 1280x720, 1280x768, 1280x800, 1360x768
WXGA+: 1440x900, 1600x900
WSXGA+: 1680x1050
Full HD: 1920x1080, 1920x1200
UHD: 3840x2160

Presets / user settings: Standard presets: 20; user settings: 20

Viewing adjustments: Tilt: 22° back, -5° forward;
Rotating screen: None

On screen display: On screen display with digital user controls (8 languages)
Control features: Direct access (touch buttons on front) for menu, mute, volume up/down, and brightness
USB hub: USB Hub: one USB 3.1 Type-C upstream port, four USB 3.0 Type-A downstream ports
Multimedia: Integrated stereo speakers (3 watts x 2), built-in microphone
Camera: Full HD camera with LED light

Multiple input: Support HDMI, DisplayPort
Monitor connectors: (1) HDMI (1.4), digital, HDCP-compliant
(2) DisplayPort (1.2), digital, HDCP-compliant
Signal cables: (1) detachable, HDMI at each end, digital, 1.8 meter
(2) detachable, DisplayPort at each end, digital, 1.8 meter
Mounting features: Wall or desk mounting using the Extend Arm or third-party accessories meeting the VESA FPMPMI® (100mm mount)
Security: Security keyhole for attachment of optional cable lock (Kensington® lock-compatible)

Ship group: Monitor, detachable stand, Quick start and safety poster, 1.8 meter DisplayPort cable, 1.8 meter HDMI cable, 1.8 meter USB Type-C cable, 1.8 meter USB Type-C to Type-A cable, 1.8 meter black power cord, mini DP to DP adapter, power adapter (135W)

Limited Warranty

Accessories
Kensington MicroSaver Cable Lock 73P2582
Kensington Twin Head Cable Lock 45K1620
Lenovo Security Cable Lock 57Y4303

See details at www.lenovo.com/support/monitoraccessories
See all monitors at www.lenovo.com/thinkvision

Lenovo ThinkVision X1 Monitor
THE MILESTONE OF X-SERIES, 27” FULL-SCREEN, 4K, THUNDERBOLT™ 3 MONITOR.

Pushing the limit of screen share ratio with innovative technology, the 27” Lenovo™ ThinkVision® X1 (2nd GEN) display brings full-screen and ultra-slim appearance in elegant design. With 4K resolution and >99% sRGB color gamut, you will be assured of excellent watching experience and Thunderbolt™ 3 interface will bring the best user experience. “Motor” camera is first used on monitor, which will move up and down automatically and with it you will own standard VoIP system.

WHY YOU SHOULD BUY THE LENOVO THINKVISION X1 (2nd GEN) MONITOR

**Full-screen appearance**
With world’s slimnest (4.7 mm) 27” 4K TBT monitor you will experience full-screen 4-side Near-Edgeless display with the screen ratio of approximately 93%. The monitor also comes with a metal stand and a base.

**Brilliant performance**
The 4K UHD IPS screen displays 3840 x 2160 resolution at 60 Hz, 99% sRGB color gamut, 10-bit depth, with 1.07 billion color support assures you stunning visuals and superb color experience.

**Convenient user experience**
Total versatility with Thunderbolt™ 3 interface supporting 4K + USB 3.0 & 45W PD + motor-camera with dual-array microphone. A Think RedDot tracking button is integrated in the back cover.

THE LENOVO THINKVISION X1 (2nd GEN) MONITOR IS BEST SUITED FOR

1. The Executives and CXO of company.
2. SOHO and Gold Collars with high income.
3. Trendsetters who pursue an extreme and forefront monitor.
### SPECIFICATIONS

#### DISPLAY
- **Panel Size**: 27"
- **Panel Type**: IPS
- **Brightness**: 500 CD/m²
- **Resolution**: 3840 (H) x 2160 (V)
- **Aspect Ratio**: 16:9
- **Anti-Glare**: Yes
- **Screen Dimensions (W x H) (mm)**: 596.7 (H) x 335.7 (V)
- **Maximum Brightness (Typical)**: 350 cd/m²
- **Viewing Angle (H/V at CR 10:1)**: 178°/178°
- **Contrast Ratio (Typical)**: 1000:1
- **Dynamic Contrast Ratio**: 3M:1
- **Pixel Pitch (W x H) (mm)**: 0.1554 x 0.1554
- **Dot/Pixel Per Inch (DP/PPi)**: 163
- **Color Gamut (CIE 1931)**: 99% sRGB
- **Response Time (Extreme/Typical/Off)**: 4/6/14 ms (G-to-G)

#### ENVIRONMENTAL
- **Temperature**:
  - **Operating**: 0°C - 45°C
  - **Non-Operating**: -20°C - 60°C
- **Humidity**:
  - **Operating**: 8% - 80%
  - **Non-Operating**: 5% - 95%
- **Altitude**:
  - **Operating**: 16,000 ft
  - **Non-Operating**: 40,000 ft
- **Arsenic-Free Glass**: Yes
- **PVC-Free**: Yes (W/O cable)
- **Mercury-Free**: Yes
- **PCC % of Plastic Resins**: 25%

#### POWER CONSUMPTION
- **Typical**: 65 W
- **Maximum**: 135 W
- **Sleep-Mode**: 0.5 W
- **Switch Off-Mode**: 0.5 W
- **Power Supply**: External
- **Power Voltage**: 100 VAC - 240 VAC
- **Voltage Dynamic Frequency**: 50 Hz - 60 Hz

#### SIGNAL INPUT
- **Video Input Signals**: DisplayPort™ 1.2 + HDMI™ 2.0 + Thunderbolt™ 3
- **Video Cables Supplied**: HDMI™ + Thunderbolt™ 3
- **Video Cable Length**: 1.8 m
- **USB Hub**: Yes (4 x USB 3.0)
- **USB Cable Supplied**: N/A
- **Audio-Jack**: Yes

#### SIGNAL INTERFACE / PERFORMANCE
- **Horizontal Frequency**: 30 kHz - 136 kHz
- **Vertical Frequency**: 30 Hz - 60 Hz
- **Native Resolution**: 3840 x 2160
- **Maximum Pixel Clock Speed/ Bandwidth**: 20 Gbps
- **Default Color Temperature**: 6500K
- **Preset Modes**: 24
- **OSD Buttons**: 2 Buttons + Tracking Point
- **OSD Languages**: English, French, Italian, German, Spanish, Japanese, Chinese, Russian

#### MECHANICAL
- **Tilt Angle (Front / Back)**: +5° / -30°
- **Swivel Angle (Left / Right)**: N/A
- **Lift (mm)**: N/A
- **Pivot**: N/A
- **VESA® Mount (mm)**: N/A
- **Kensington® Lock Slot**: Yes
- **Cable Management**: Yes
- **Bezel Color**: N/A
- **Bezel Width**: 1.2 / 0.05°
- **Top (mm / inches)**: 1.2 / 0.05°
- **Bottom (mm / inches)**: 1.2 / 0.05°

#### DIMENSIONS (W x D x H)
- **Size Packed (mm)**: 718 x 140 x 470
- **Size Unpacked with Stand (mm)**: 609.74 x 234.81 x 474.76
- **Size Unpacked without Stand (Monitor Head Only) (mm)**: 609.74 x 32.7 x 351.71
- **Distance from Table to Panel (inches)**: 24" x 1.29" x 13.85"
- **Stand Base Footprint Area (mm)**: 234.81 x 234.81
- **Weight**: Starting at 18.45 lbs (8.37 kg)
- **Unpacked (kg)**: Starting at 12.21 lbs (5.54 kg)
- **Monitor Head Only (kg)**: Starting at 9.46 lbs (4.29 kg)

#### COMPLIANCE
- **EPEAT™ Silver**
- **ENERGY STAR® Rating**: 7.0
- **ULE**: Silver
- **TCO®**: 7.0
- **RoHS**: Yes
- **Windows Certification**: Windows 10
- **China Energy Label**: Grade 2

#### WARRANTY AND AVAILABILITY
- **Warranty**: 3 Years
- **Geography Availability**: WW
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**Expedited Depot:** Parts and labor coverage with expedited turnaround. Shipping (including packaging) or delivery to the repair center is paid for by Lenovo.

**Onsite / In-home Service:** Parts and labor repair coverage where labor is provided onsite at your place of business. If Lenovo determines your product problem is covered by the product warranty and cannot be resolved over the telephone, a technician will be dispatched to arrive onsite, typically the next day.


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