

# Lenovo P16s Gen 1 AMD

Version: 1.0 | 05/17/2022

## Downloads

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|                             |  |
|-----------------------------|--|
| Hardware Maintenance Manual | P16s Gen 1 AMD HMM                         |
| Drivers & Software          | ThinkPad P16s Gen 1 AMD Drivers & Software |

## SECTION I: Platform Overview

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|             |   |
|-------------|---|
| Description | ThinkPad P16s<br>A perfect mix of power and performance in a thin and light design, the ThinkPad® P16s ignites designers, engineers, and students to be creative anytime, anywhere. |
|-------------|---|

## CPU

|                   |                                |
|-------------------|--------------------------------|
| Processor Support | AMD Pro 6650U<br>AMD Pro 6850U |
| Socket Type       | BGA                            |

## Operating Systems

|           |   |
|-----------|---|
| Preloaded | Windows 11/DG10 Pro 64 (21H2)<br>Windows 11 Home 64 (21H2)<br>Windows 11 Home Single Language 64(21H2)<br>Windows 11 Home Chinese Language Edition 64(21H2)<br>Windows 11/DG10 CMIT Government Edition<br>Ubuntu (Version20.04) |
| Supported | Windows 11/DG10 Pro 64 (21H2)<br>Windows 11 Home 64 (21H2)  |

|   |
|---|
| Windows 11 Home Single Language 64(21H2)<br>Windows 11 Home Chinese Language Edition 64(21H2)<br>Windows 11/DG10 CMIT Government Edition<br>Ubuntu (Version20.04) |
|---|

## Memory

|                      |                     |
|----------------------|---------------------|
| Number of DIMM Slots | No                  |
| Channels             | Dual Channel LPDDR5 |
| Type                 | LPDDR5              |
| ECC Support          | No                  |
| Speed                | 6400 MHz            |
| Max DIMM Size        | No                  |
| Max System Memory    | 32GB                |
| Min System Memory    | 8GB                 |
| Soldered Memory      | 8/16/32GB           |

## Storage

|                                      |  |
|--------------------------------------|--|
| Storage Slots                        | 1 x PCIe Gen 4 M.2 2280                                |
| SATA                                 | /  |
| PCIe                                 | Solid State Drive, OPAL2 PCIe-NVMe Gen 4 M.2 2280- TLC |
| SAS                                  | None   |
| Interface                            | Yes->PCIe Gen 4  |
| Security                             | PCIE->YES  |
| Optional Hard Disk Drive Controllers | OPAL2 for NVMe SSD                                     |

## Video

|                     |                      |
|---------------------|----------------------|
| Integrated Graphics | AMD Radeon™ Graphics |
| Discrete Graphics   | N/A                  |
| Adapter             | None                 |
| Bus Interface       | NA                   |

## Display

|             |           |
|-------------|-----------|
| Resolutions | FHD+/QHD+ |
|-------------|-----------|

## Camera

|                   |  |
|-------------------|--|
| Resolution        | FHD 1080p  |
| Frames per Second | 30 fps   |
| Focus             | Fixed 50cm   |
| Camera Interface  | USB 2.0  |
| IR Camera         | Yes (optional) (with WWAN co-existence), Hybrid Camera |

## Keyboard

|                       |                             |
|-----------------------|-----------------------------|
| Number of Keys        | US : 84 / UK : 85 / JP : 89 |
| Numpad                | Yes                         |
| Size                  | 100% ISO                    |
| Function Key Features | Yes                         |
| Backlit               | Yes                         |
| Keyboard size         | CS20 KYB                    |
| Key stroke            | 1.5mm                       |
| Key pitch             | 19.05mm                     |
| Keyboard backlight    | Optional                    |
| Keyboard thickness    | Standard                    |

## Touchpad / Fingerprint Reader

|                             |                                  |
|-----------------------------|----------------------------------|
| TrackPoint Details          | COMO TrackPoint module (t5.5mm)  |
| Finger Print Reader Model   | Synaprics Metallica 8x8 FPR, MoC |
| Multi-Touch                 | Yes                              |
| Resolution                  | DPI≈304                          |
| TouchPad/Trackpad thickness | 3.3mm                            |
| TouchPad/Trackpad type      | 3 BCP                            |
| Trackpad size               | 115mm x 61 mm                    |
| Trackpad material/finish    | Mylar surface                    |

## I/O - Ports and Connectors

|             |   |
|-------------|---|
| USB         | 2x USB Type-A 3.1 Gen1, 2x Type-C (DP 1.4, USB3.2 Gen2, PD) |
| Thunderbolt | N/A   |
|             |   |

|                   |  |
|-------------------|--|
| HDMI              | 1x HDMI 2.0b                                 |
| Audio Combo Jack  | 1x Microphone & Headphone Combo Jack (3.5mm) |
| Media Card Reader | N/A  |
| Smart Card Reader | Yes (optional)                               |
| Power Connector   | DC-In  |
| Docking Port      | 2x Type-C                                    |
| VirtualLink       | None   |
| Network adapter   | Gigabit Ethernet (RJ45)                      |

## Power Connector

|       |                                     |
|-------|-------------------------------------|
| Main  | DC-In                               |
| USB-C | 2x Type-C (DP 1.4, USB3.2 Gen2, PD) |

## Ethernet

|            |   |
|------------|---|
| Vendor     | Realtek   |
| Count      | x1  |
| EEPROM     | SPI ROM (Merge with BIOS/MEFW)  |
| Speeds     | 10/100/1000 Mbps  |
| Functions  | Wake On LAN<br>MAC Address Pass Through<br>PXE Boot<br>Flash Over LAN |
| Connectors | RJ45  |

## WWAN

|       |                             |
|-------|-----------------------------|
| Model | optional: CAT16/4 with eSIM |
|-------|-----------------------------|

## Near Field Communications

|       |               |
|-------|---------------|
| Model | Yes, optional |
|-------|---------------|

## Audio

|        |         |
|--------|---------|
| Vendor | Realtek |
|--------|---------|

|                                    |   |
|------------------------------------|---|
| Type                               | High Definition Audio Codec   |
| Internal Speaker                   | Yes, dual speakers  |
| Connectors                         | Microphone & Headphone Combo Jack (3.5mm)   |
| Chipset                            | ALC3287   |
| Number of Channels                 | 2-channel DAC, 2-channel ADC  |
| Number of Bits/Audio Resolution    | 16/20/24-bit PCM format   |
| Sampling Rate (Recording/Playback) | n   |
| Signal to Noise Ratio              | 90dB Signal-to-Noise Ratio (A-weighting) for ADC input.<br>100dB Signal-to-Noise Ratio (A-weighting) for DAC output |
| Analog Audio                       | None  |
| Dolby Digital                      | Yes   |
| Digital Out (S/PDIF)               | No  |
| Speaker Power Rating               | 2W@4ohm/ch  |

## Power adapter

| Type          | 100W AC Adapter                     | 65W AC Slim Adapter                 | 65W AC Adapter                      |
|---------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Dimensions    | 142cc (28.5 x 46 x 108 mm) 65W (*0) | 142cc (28.5 x 46 x 108 mm) 65W (*0) | 142cc (28.5 x 46 x 108 mm) 65W (*0) |
| Input Voltage | 100-240V                            | 100-240V                            | 100-240V                            |

## Security

|                    |             |
|--------------------|-------------|
| TPM                | Yes, TPM2.0 |
| Asset ID           | Yes         |
| AMD Pro Technology | Yes         |

## Chassis Information

|                   |   |
|-------------------|---|
| Color             | Black/Storm Grey                                |
| Thermal Solutions | Internal Single FAN, Intelligent Cooling        |
| Weight            | with 3 Cell 52.5Whr Battery, Min 3.82lbs/1.73kg |

## Packaging Parameters

|             |     |
|-------------|-----|
| Height (mm) | 300 |
|-------------|-----|

|               |         |
|---------------|---------|
| Height (inch) | 11.8    |
| Width (mm)    | 446     |
| Width (inch)  | 17.6    |
| Depth (mm)    | 81      |
| Depth (inch)  | 3.1     |
| Weight (kgs)  | 0.32kg  |
| Weight (lbs)  | 0.71lbs |

## Security & Serviceability

|                             |   |
|-----------------------------|---|
| Hardware Maintenance Manual | P14s_gen2_HMM   |
| Drivers & Software          | P14s-gen-2-type-21a0-21a1/downloads/driver-list   |
| Self Healing BIOS           | Yes   |
| Access Panel                | Removeable bottom cover   |
| Number of Screws            | 6   |
| Swappable Components        | Base cover assembly, TrackPoint pointing stick, Lenovo factory recovery USB key, Power cord, ac power adapter |
| Storage Slots               | 1 storage slot  |
| Memory                      | 1 soldered down RAM   |
| System Board                | 1190 System Board. No self-service CRU.   |
| Restore CD/DVD/USB Set      | None. Purchase via Lenovo Customer Support Center   |
| Cable Lock Support          | Security-lock slot  |
| Power-On Password           | Yes   |
| Hard Disk Password          | Yes; User and Master hard disk password   |
| Supervisor Password         | Yes   |
| NIC LEDs (integrated)       | Yes (if it means the LED for Ethernet)  |
| Security Chip               | Yes (for TPM 2.0)   |
| Access Panel Key Lock       | Bottom Cover Tamper Detection   |
| Boot Sequence Control       | Yes   |

## Operating Environment

|                                 |  |
|---------------------------------|--|
| Operating - Air Temperature     | At altitudes up to 2438 m (8000 ft)<br>- Operating: 5°C to 35°C (41°F to 95°F)                                     |
| Non Operating - Air Temperature | At altitudes up to 2438 m (8000 ft)<br>- Storage: 5°C to 43°C (41°F to 109°F)                                      |
| Humidity                        | Operating: 8% to 95% at wet-bulb temperature 23°C (73°F)<br>Storage: 5% to 95% at wet-bulb temperature 27°C (81°F) |
| Corrosive Gas                   | G1   |

## SECTION II: Platform Detail

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### Supported Components

|                    |  |
|--------------------|--|
| Processor          | AMD Ryzen 5 RPO 6650U<br>AMD Ryzen 7 RPO 6850U |
| Memory Support     | LPDDR5 6400MHz                                 |
| Chipset (PCH)      | Integrated Soc                                 |
| Size of BIOS Flash | 256 Mb   |
| Clock              | Crystal  |
| Audio              | Realtek High Definition Audio                  |
| Ethernet           | Realtek RTL8111EPV Co-lay Realtek RTL8111H     |

### Memory

|                             |  |
|-----------------------------|--|
| System Capacity Options     | R5 Pro-6650U 8C: 8/16/32GB soldered-down<br>R7 Pro-6850U 8C: 16/32GB soldered-down |
| non-ECC                     | 8/16/32GB LPDDR5 6400MHz   |
| Brand of non-ECC Memory     | SK Hynix<br>Micron   |
| ECC                         | None   |
| Brand of ECC Memory         | N/A  |
| Memory clock frequency(MHz) | 6400 MHz   |

### Storage

|   |  |
|---|--|
| 2.5" SAS Hard Disk Drive (HDD)          | None   |
| 2.5" SATA Hard Disk Drive (HDD)         | None   |
| 2.5" SATA Solid State Drive (SSD)       | None   |
| M.2 (NGFF) PCIe Solid State Drive (SSD) | 256GB Opal 2 PCIe G4 NVMe M.2 2280<br>512GB Opal 2 PCIe G4 NVMe M.2 2280<br>512GB Opal 2 PCIe G4 NVMe Performance M.2 2280<br>1TB Opal 2 PCIe G4 NVMe M.2 2280 |

|                                   |  |
|-----------------------------------|--|
|                                   | 1TB Opal 2 PCIe G4 NVMe Performance M.2 2280<br>2TB Opal 2 PCIe Gen4 Performance NVMe M.2 2280 |
| 2.5" PCIe Solid State Drive (SSD) | None   |
| Brand of Drive                    | Samsung<br>WD<br>Hynix<br>Kioxia<br>Iue 256G<br>Micron   |
| Intel Optane Storage Technology   | No   |
| RAID                              | Not Supported  |

## Removeable Media

|                                  |     |
|----------------------------------|-----|
| Media Card Reader Specifications | N/A |
|----------------------------------|-----|

## SECTION III: Supported Component Detail

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### CPU Specifications

|                          |   |   |
|--------------------------|---|---|
| CPU                      | AMD Rembrandt R5 Pro-6650U                | AMD Rembrandt R7 Pro-6850U                |
| Integrated Graphics      | AMD Radeon™ Graphics + AMD Pro APU Driver | AMD Radeon™ Graphics + AMD Pro APU Driver |
| # of Cores               | 6 cores                                   | 8 cores                                   |
| # of Threads             | 12  | 16  |
| Processor Base Frequency | 2.9GHz                                    | 2.7GHz                                    |
| Max Turbo Frequency      | 4.5GHz                                    | 4.7GHz                                    |
| Cache                    | 19MB                                      | 20MB                                      |
| TDP                      | 15-30w                                    | 15-30w                                    |
| AMD Spec Link            | AMD Ryzen-5-pro-6650u                     | AMD Ryzen-7-pro-6850u                     |

### Display Specifications

| Model      | FHD+        | FHD+ w/oncell touch | FHD+ low power | FHD+ ePrivacy | QHD+        |
|------------|-------------|---------------------|----------------|---------------|-------------|
| Resolution | 1920 x 1200 | 1920 x 1200         | 1920 x 1200    | 1920 x 1200   | 2560 x 1660 |



|   |                        |                        |                                  |                          |   |
|---|------------------------|------------------------|----------------------------------|--------------------------|---|
| Diagonal  | 16"                    | 16"                    | 16"                              | 16"                      | 16"                                       |
| Aspect Ratio  | Ratio 16:10            | Ratio 16:10            | Ratio 16:10                      | Ratio 16:10              | Ratio 16:10                               |
| Backlight   | LED                    | LED                    | LED                              | LED                      | LED                                       |
| PPI   | 157                    | 157                    | 157                              | 157                      | 315                                       |
| Active Area   | 309.37 X<br>174.02     | 309.31 X<br>173.99     | 309.37 X<br>174.02               | 309.31 X<br>173.99       | 309.31 X<br>173.99                        |
| Refresh Rate  | 48 / 60 Hz             | 48 / 60 Hz             | 60Hz                             | 60Hz                     | 60Hz                                      |
| Contrast Ratio  | 700:1 (TYP)            | 700:1 (TYP)            | 800:1 (TYP)                      | 1000:1 (TYP)             | 1500:1 (TYP)                              |
| Viewing Angle   | 85/85/85/8<br>5 degree | 85/85/85/8<br>5 degree | 85/85/85/8<br>5 degree           | 85/85/85/8<br>5 degree   | 85/85/85/8<br>5 degree                    |
| Color gamut   | 45% NTSC               | 45% NTSC               | 100% sRGB                        | 100% sRGB                | 100% sRGB                                 |
| Brightness  | 300nit                 | 300nit                 | 400nit                           | 500nit                   | 400nit, HDR<br>400                        |
| Contrast  | Ratio 700:1            | Ratio 700:1            | Ratio 800:1                      | Ratio 1000:1             | Ratio 1500:1                              |
| Color Depth   | 16M                    | 262K                   | 16M                              | 16M                      | 1064M                                     |
| Interface   | eDP 1.2                | eDP 1.2                | eDP 1.3                          | eDP 1.4                  | eDP 1.4                                   |
| Panel ID Recognition                                    | EDID in<br>BIOS Table  | EDID in<br>BIOS Table  | EDID in<br>BIOS Table            | EDID in<br>BIOS Table    | EDID in<br>BIOS Table                     |
| Weight  | 290g max               | 290g max               | 220g max                         | 340g max                 | 220g max                                  |
| Color Calibrator  | None                   | None                   | None                             | None                     | X-Rite<br>Factory<br>Color<br>Calibration |
| Panel Technology  | IPS, Anti-<br>Glare    | IPS, Anti-<br>Glare    | IPS, Anti-<br>Glare, LBL,<br>TUV | IPS, Anti-<br>Glare, TUV | IPS, Anti-<br>Glare, LBL,<br>TUV          |
| Touch Panel   | None                   | YES                    | None                             | None                     | None                                      |
| 2.5" SAS Hard Disk Drive<br>(HDD)                       | N/A                    |                        |                                  |                          |   |
| 2.5" SATA Hard Disk Drive<br>(HDD)                      | N/A                    |                        |                                  |                          |   |
| Connector   | N/A                    |                        |                                  |                          |   |
| Transfer Rate (Gb/sec)                                  | N/A                    |                        |                                  |                          |   |
| Spindle Speed(RPM)                                      | N/A                    |                        |                                  |                          |   |
| Power off to Spindle<br>Stop(sec)                       | N/A                    |                        |                                  |                          |   |
| DC Power to Drive<br>Ready(sec)                         | N/A                    |                        |                                  |                          |   |
| Receipt of Start Unit<br>Command to Drive<br>Ready(sec) | N/A                    |                        |                                  |                          |   |
| Average Latency(msec)                                   | N/A                    |                        |                                  |                          |   |
| Input (VDC)   | N/A                    |                        |                                  |                          |   |
| Typical (Watts)   | N/A                    |                        |                                  |                          |   |
| Idle (Watts)  | N/A                    |                        |                                  |                          |   |
| Height (mm - Max)                                       | N/A                    |                        |                                  |                          |   |

|                           |     |
|---------------------------|-----|
| Width (mm)                | N/A |
| Depth (mm - Max)          | N/A |
| Weight (grams)            | N/A |
| Operating(C) Ambient      | N/A |
| Operating(C) Base Casting | N/A |
| Non-Operating(C) Ambient  | N/A |
| Gradient(C per Hour)      | N/A |
| Operating(Gs @ 2ms)       | N/A |
| Non-Operating(Gs @ 2ms)   | N/A |

## SSD Specifications

|   |                       |
|---|-----------------------|
| 2.5" SATA Solid State Drive (SSD)       | N/A                   |
| M.2 (NGFF) PCIe Solid State Drive (SSD) | 1x M.2 2280 PCIe Gen4 |
| 2.5" PCIe Solid State Drive (SSD)       | N/A                   |
| Intel Optane Storage Technology         | N/A                   |

## Solid State Storage Devices

|   |   |
|---|---|
| Supported Types                           | M.2   |
| Dimensions inches/centimeters (W x D x H) | 22.0 (+-0.15) x 80.0 (+-0.15) x 2.3 (max)   |
| Size                                      | M.2 2280S3  |
| Interface Type                            | PCIe NVMe Gen4  |
| Read/Write IOPS Specifications            | Read: 250K (2TB, 1TB, 512GB), 200K (256GB)<br>Write: 240K (2TB, 1TB, 512GB), 190K (256GB)<br>Burst 4K Random IOPS , Measured by Crystal Disk Mark (QD32T1, Data size set 1GB) |
| Bandwidth Performance                     | PCIe Gen3x4 (8Gb/S)   |
| Power Consumption (Max)                   | 3.0A (duration for 10 us)   |
| Active(AVG)                               | 5W  |
| Idle                                      | 5mW (L1.2)  |
| Min MTBF                                  | 2,000,000 (h)   |
| Min Sequential Read                       | 3000MB/s (2TB, 1TB, 512GB), 2900MB/s (256GB)  |
| Min Sequential Write                      | 1600MB/s (2TB, 1TB/512GB), 900MB/s (256GB)  |
| Hardware Encryption                       | Yes   |

# Discrete Graphics Adapter

|  |     |
|--|-----|
| GPU Name                                   | N/A |
| CUDA Processing Cores                      | N/A |
| GPU Memory                                 | N/A |
| Memory Bandwidth                           | N/A |
| Memory Type                                | N/A |
| Memory Interface                           | N/A |
| TGP Max Power Consumption                  | N/A |
| Display Port                               | N/A |
| OpenGL                                     | N/A |
| Shader Model                               | N/A |
| DirectX                                    | N/A |
| PCIe Generation                            | N/A |
| Floating-Point Performance                 | N/A |
| VR Ready                                   | N/A |
| Simultaneous Multi-Projection              | N/A |
| NVIDIA FXAA/TXAA Antialiasing              | N/A |
| NVIDIA nView Display Management Technology | N/A |
| GPU Direct for Video                       | N/A |
| Vulkan Support                             | N/A |
| NVIDIA Optimus                             | N/A |

# WLAN

|  |  |                                    |
|--|--|------------------------------------|
| Model                                  | Qualcomm NFA-725A<br>M.2 socket based  | Mediatek RZ616<br>M.2 socket based |
| Connector: Main, Aux/GNSS, GNSS        | ANT1:AUX WiFi + BT; ANT2: Main WiFi  |                                    |
| Antenna Diversity                      | Supported  |                                    |
| MIMO                                   | Not supported  |                                    |
| GNSS Bian                              | N/A  |                                    |
| Radio ON/OFF Control                   | Supported  |                                    |
| Connector interface                    | PCIE   |                                    |
| Operating Temperature (Adapter Shield) | 0c to +80c   |                                    |
| Humidity Non-Operating                 | 50%~90% Rh non condensing (at temperatures of 25c to 35c)  |                                    |
| Operating Systems                      | Microsoft Windows 7*, Microsoft Windows 8.1*, Microsoft Windows 10*, Linux* (limited feature support), Android |                                    |

|                          |  |
|--------------------------|--|
| Wi-Fi Alliance           | Wi-Fi CERTIFIED* a/b/g/n/ac, WMM*, WMM-PS*, WPA*, WPA2*, WPS2*, Protected Management Frames, Wi-Fi Direct* for peer to peer device connections, Wi-Fi Miracast* as Source. |
| IEEE WLAN Standard       | IEEE 802.11a/b/g/n/ac, 802.11d, 802.11e, 802.11h, 802.11i, 802.11w; 802.11r, 802.11k, 802.11v pending OS support; Fine Timing Measurement based on 802.11REVmc             |
| Roaming                  | Support seamless roaming between access points   |
| Bluetooth*               | Dual Mode Bluetooth® 5.0, BLE  |
| Authentication           | WPA and WPA2, 802.1X (EAP-TLS, TTLS, PEAP, LEAP, EAP-FAST), EAP-SIM, EAP-AKA, EAP-AKA  |
| Authentication Protocols | PAP, CHAP, TLS, MS-CHAP*, MS-CHAPv2  |
| Encryption               | 64-bit and 128-bit WEP, 128-bit AES-CCMP   |
| Regulatory               | For a list of country approvals, please contact your local Intel representatives.  |
| US Government            | FIPS10, FISMA  |
| Product Safety           | UL,C-UL,CB (IEC 60950-1)   |

## Battery

|                             |   |   |
|-----------------------------|---|---|
| Dimension                   | 266.6 mm x 86.6 mm x 5.45 mm  | 266.6 mm x 86.6 mm x 5.45 mm  |
| Weight                      | 240g  | 240g  |
| Type (Chemistry and Cell)   | Li-ion Polymer  | Li-ion Polymer  |
| Voltage                     | 11.52V  | 11.52V  |
| Battery Life                | Max >14 hours battery life  | Max >14 hours battery life  |
| Battery Capacity            | Integrated 3-cell 52.5Wh battery  | Integrated 3-cell 86Wh battery  |
| Charging Time               | 0% to 100% 0% to 80%<br>Battery [Wh] 50 40<br>Battery Charging Time (in-operation) 2.42 hrs(45W adapter)<br>TBC hr (65W adapter)<br>1.41 hrs(45W adapter) TBC hr (65W adapter)<br>Battery Charging Time (off) 2.38hr(45W adapter) 2.1hrs (65W adapter)<br>1.19 hrs(45W adapter) 0.98 hr (65W adapter) | 0% to 100% 0% to 80%<br>Battery [Wh] 50 40<br>Battery Charging Time (in-operation) 2.42 hrs(45W adapter)<br>TBC hr (65W adapter)<br>1.41 hrs(45W adapter) TBC hr (65W adapter)<br>Battery Charging Time (off) 2.38hr(45W adapter) 2.1hrs (65W adapter)<br>1.19 hrs(45W adapter) 0.98 hr (65W adapter) |
| Operating Temperature Range | between 10°C (50°F) and 35°C (95°F)   | between 10°C (50°F) and 35°C (95°F)   |
| Warranty                    | 1 Year / 3 Year Available   | 1 Year / 3 Year Available   |
| Coin Cell Battery (Model)   | CR2032  | CR2032  |

# SECTION IV: BIOS / Certifications / Standards /

## Environmental

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### BIOS Specifications

|  |  |
|--|--|
| WMI Support                                    | Yes, if it is BIOS Setup change by WMI.                |
| ROM-Based Setup Utility (F1)                   | Yes  |
| Bootblock Recovery                             | N/A  |
| Replicated Setup                               | Yes, it supported with SRSETUP tool.                   |
| Boot Control                                   | Yes, it means Boot order change.                       |
| Memory Change Alert                            | N/A  |
| Thermal Alert                                  | N/A  |
| Asset Tag                                      | Yes  |
| System/Emergency ROM Flash Recovery with Video | N/A  |
| Remote Wakeup/Remote Shutdown                  | Yes, if Remote wakeup is Wake on LAN from S4/S5.       |
| Keyboard-less Operation                        | N/A  |
| Per-port Control                               | Yes, if it is I/O port enable/disable by BIOS Setup.   |
| Adaptive Cooling                               | Yes, if it is thermal & fan control.                   |
| Security                                       | Yes, BIOS password / Hard disk password / Finger print |
| AMD KVM  | Yes  |
| AMD Platform Security Processor                | Yes  |
| Memory Modes                                   | N/A  |

### EMC & Safety

|     |  |
|-----|--|
| EMC | Published, Certified Existing Reports<br>EMC - Australia<br>EMC - Canada<br>EMC - China<br>EMC - EU/EFTA<br>EMC - Japan<br>EMC - New Zealand<br>EMC - South Korea<br>EMC - Taiwan<br>EMC - USA/Territories<br>Not Applicable / Not Required<br>EMC - Israel<br>EMC - Moldova<br>EMC - Serbia<br>EMC - Turkey |
|-----|--|

|        |   |
|--------|---|
|        | EMC - Uzbekistan<br>EMC - Vietnam   |
| Safety | To access the latest User Guide and Safety and Warranty Guide, go to:<br><a href="https://support.lenovo.com">https://support.lenovo.com</a><br>Low Halogen Declaration of Conformance<br>TNOT-2017-0040<br>Section 9 - Low Halogen Scorecard<br>Izod Test - EPEAT Compliant<br>Homologation PCR B Compliant<br>In the following countries: Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belize, Benin, Bermuda, Bolivia, Botswana, Burkina Faso, Burundi, Cambodia, Cameroon, Canada, Cape Verde, Cayman Islands, Central African Republic, Chad, China, Colombia, Comoros, Congo, Costa Rica, Djibouti, Dominican Republic, Egypt, El Salvador, Eritrea, Ethiopia, EU/EFTA, Fiji, Gabon, Gambia, Georgia, Ghana, Grenada, Guatemala, Guinea, Haiti, Honduras, Hong Kong, India, Indonesia, Israel, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kuwait, Laos, Lebanon, Liberia, Macau, Madagascar, Malawi, Malaysia, Mali, Mauritania, Mauritius, Mexico, Moldova, Mongolia, Morocco, Mozambique, Namibia, Nepal, New Zealand, Nicaragua, Niger, Nigeria, Oman, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Qatar, Russia, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, South Africa, South Korea, Sri Lanka, Swaziland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tunisia, Turkey, Turkmenistan, Uganda, Ukraine, United Arab Emirates, Uruguay, USA/Territories, Uzbekistan, Venezuela, Vietnam, Zambia, Zimbabwe, Brazil - Inmetro 170 Govt Bids, Guinea-Bissau, Lesotho |

## Environmentals

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| Energy Star          | ENERGY STAR® Version 8.0<br>For more information about ENERGY STAR, go to:<br><a href="https://www.energystar.gov">https://www.energystar.gov</a>  |
| EPEAT                | EPEAT Declaration of Conformance For Machine Types: 20S4, 20S5   |
| IT ECO declaration   | The latest environmental information about Lenovo products is available at:<br><a href="https://www.lenovo.com/ecodeclaration">https://www.lenovo.com/ecodeclaration</a>   |
| Hazardous Substances | The latest environmental information about Lenovo products is available at:<br><a href="https://www.lenovo.com/ecodeclaration">https://www.lenovo.com/ecodeclaration</a><br>European Union RoHS<br>This Lenovo product, with included parts (cables, cords, and so on) meets the requirements of Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment ("RoHS recast" or "RoHS 2").<br>For more information about Lenovo worldwide compliance on RoHS, go to:<br><a href="https://www.lenovo.com/rohs-communication">https://www.lenovo.com/rohs-communication</a> |

## Manageability

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| Industry Standard Specifications        | This product meets the following industry standard specifications for manageability functionality:<br>Intel LAN with AMT  |
| Remote Manageability Software Solutions | Lenovo ThinkManagement Console<br>Microsoft System Center Configuration Manager<br>LANDesk Management Suite for ThinkVantage Technologies<br>( <a href="http://www.landesk.com/lenovo">www.landesk.com/lenovo</a> ) |

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|--------------------------------|---|
| System Software Manager        | Lenovo ThinkPad supports software management tools from the Lenovo Vantage System Update suite:<br>System Update<br>Update Retriever  |
| Service, Support, and Warranty | On-site Warranty and Service: Three-years, limited warranty and service offering delivers on-site, next business-day service for parts and labor and includes free telephone support 8am to 5pm. Global coverage ensures that any product purchased in one country and transferred to another, non-restricted country will remain fully covered under the original warranty and service offering. |