

Lenovo ThinkStation P330 Tiny

Version: 1 | 10/29/2019

DOWNLOADS

Hardware Maintenance Manual	P330 Tiny HMM
Drivers & Software	P330 Tiny Drivers & Software
Available Whitepapers	RTX GPU Support Matrix Intel VROC Support To access additional whitepapers visit https://support.lenovo.com and select 'PC' then 'Workstations'

SECTION I: Platform Overview

Description	The world's smallest workstation, empowering you for great things. Engineered to go where others can't, the ThinkStation® P330 Tiny combines simple and efficient design with the professional power of a workstation.
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CPU

Processor Support	Intel Coffee Lake Core
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Socket Type	Socket-H4 (LGA 1151)
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Operating Systems

Preloaded	Windows 10 Pro 64-bit for Workstations Windows 10 Pro 64-bit Ubuntu 18.04 LTS (configuration specific) Ubuntu 16.04 LTS (configuration specific)
Supported	Windows 10 Home 64-bit Ubuntu 18.04 LTS Ubuntu 16.04 LTS Red Hat Enterprise Linux 7.5

Memory

Slots	Up to 2 SODIMMs
Channels	Supports up to 2 SODIMM Sockets, 2 Channels
Type	260-Pin, 2400/2666MHz non-ECC SODIMM
ECC Support	No
Speed	Up to 2666MHz
Max DIMM Size	32GB DDR4 SODIMM
Max System Memory	64GB
Disclaimers	

Storage

Total Bays/Size	1 x 2.5"
SATA	1 x SATA Connectors, Gen 3
PCIe	2 x M.2 PCIe Connector Onboard
Disclaimers	Additional parts/enclosures may be required for some configurations

Video

Integrated Graphics	Intel Integrated UHD Graphics 630
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Discrete Graphics	PCIe Add-In-Card, Details in Section Below
Multi-GPU Support	Yes
Type	PCIe Add-In-Card
Bus Interface	PCIe x8 Routed From CPU

Front I/O

USB	1 x USB 3.1 Gen 1 Type-A 1 x USB 3.1 Gen 1 Type-C
Audio	1 x Microphone Jack (3.5mm) 1 x Combo Audio/Microphone Jack (3.5mm)

Rear I/O

USB	2 x USB 3.1 Gen 2 Type-A 2 x USB 3.1 Gen 1 Type-A
DisplayPort	1 x Standard Optional 1 x Rear Port
HDMI	1 x Standard Optional 1 x Rear Port
VGA Port	Optional 1 x Rear Port
Serial Port	Optional 2 x Rear Port
Ethernet	1 x 1GbE - RJ45
Optional USB Adapter	Single Type-C + DP Port Dual USB 3.0 Gen 2 Type-A
Optional Network Adapter	Intel I350-T4 Dual Port Gigabit Ethernet Adapter

Ethernet

Vendor	Intel Jacksonville I219LM
Speeds	10/100/1000Mbps
Functions	PXE, ASF, WOL, Jumbo Frames, Teaming
Connectors	1 x RJ45

Audio

Vendor	Realtek
Type	Integrated Audio
Internal Speaker	Yes
Connectors	1 x Rear 3.5mm Jacks (Line Out)
Chipset	ALC233VB
Number of Channels	2 Channels
Number of Bits/Audio Resolution	2 Stereo ADC Supports 16/20 bit PCM

Thermal

Temp Sensors	Ambient Sensor VR1 Sensor PCIe Sensor M.2 Sensor
Fans	1 x CPU Fans

Power Specifications

Power Supply	135W
Power Efficiency	88% Efficient @ 50% Load
Operating Voltage Range	100 - 240V
Rated Voltage Range	90-264VAC
Rated Line Frequency	47Hz / 63Hz
Operating Line Frequency Range	50Hz / 60Hz
Rated Input Current	6.75A

BIOS

Vendor	AMI
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Chassis Information

Color	Raven Black
PSU	135W Power Brick Dimensions: 145*65*30mm Weight: Delta, ADL135NDC3A, around 463.4g Liteon, ADL135NLC3A, around 490.8g
Thermal Solutions	One System Fan Standard
Dimensions	36.5mm/1.437" W x 182.9mm/7.2" D x 179mm/7.047" H
Weight	1.32kg / 2.91lbs

Packaging Dimensions

Height (mm/in)	490mm / 19.29"
Width (mm/in)	141mm / 5.55"
Depth (mm)	268mm / 10.55"
Weight (kgs/lbs)	2.848kg / 6.28lbs

Security & Serviceability

TPM	Infineon SLB9670VQ2.0FW7.63 TPM 2.0
Asset ID	Yes, 1024 x 8bit
vPro	Intel vPro for WS (AMT 12.X)
Cable Lock Support	Yes, Optional Kensington Cable Lock
Serial, Parallel, USB, Audio, Network, Enable/Disable Port Control	Yes
Power-On Password	Yes
Setup Password	Yes
NIC LEDs (integrated)	Yes
Access Panel Key Lock	No
Boot Sequence Control	Yes
Padlock Support	No
Boot without keyboard	Yes

and/or mouse	
Access Panel	Tool-less Side Cover Removal
Hard Drives	Tool-less
Expansion Cards	Retained With Screws
Processor Socket	Tool-less
Color coded User Touch Points	Yes
Color-coordinated Cables and Connectors	Yes
Memory	Tool-less
System Board	Retained With Screws
Restore CD/DVD/USB Set	Not Included, Restore Media Available via Lenovo Customer Support Center

Operating Environment

Air Temperature	Operating: 10 ⁰ C to 35 ⁰ C (50 ⁰ F to 95 ⁰ F)
Storage	Storage: -40 ⁰ C to 60 ⁰ C (-40 ⁰ F to 140 ⁰ F) in Original Shipping Carton Storage: -10 ⁰ C to 60 ⁰ C (14 ⁰ F to 140 ⁰ F) Without Carton
Humidity	Relative Humidity Operating: 10% to 80% (non-condensing) Relative Humidity Storage/Transit: 10% to 90% (non-condensing) Wet Bulb Temperature Operating: 25 ⁰ C (77 ⁰ F) max Wet Bulb Temperature Non-operating: 40 ⁰ C (104 ⁰ F) max
Altitude	Operating: -15.2m to 3048m (-50ft to 10000ft) Storage: -15.2m to 10668m (-50ft to 35000ft)
Vibration	Package Vibration: Random,1.04G at 2-200 Hz, 15 Minutes XYZ 6 faces Operating Vibration: Random,0.27G at 5-500 Hz, 30 Minutes Per Surface (X,Y,Z) Non-Operating Vibration: Random,1.04G at 2-200 Hz, 15 Minutes Per Surface (\pm X, \pm Y, \pm Z)
Shock	Operation Shock: 3ms (15G) for 4 Axis (+X, -X, +Y,-Y) 3ms (30G) for 2 Axis (+Z, -Z), Half-sine Wave, Each Side Will do One Time Rack Operation Shock: 5ms (15G) for 6 Axis (+X, -X, +Y,-Y,+Z, -Z), Half-sine Wave, Each Side Will do One Time Non-operating Shock: Trapezoidal Wave, 50G, 9ms, 6 Sides (+X, -X, +Y,-Y, +Z, -Z), Filter 300Hz, Each Side Shock One Time

SECTION II: Platform Detail

Board Size	6.75" x 6.89" (171.5mm x 175mm)
Layout	Custom ATX

Motherboard Core

Processor Support	Intel Coffee Lake Core
Socket Type	Socket-H4 (LGA 1151)
Memory Support	DDR4 up to 2666MHz SODIMM Memory
Voltage Regulator	65W TDP Capable
Chipset (PCH)	Intel Q370 Chipset
Flash	16MB
Super I/O	Nuvoton NCT6686D-L
Clock	Intel Native isCLK
Audio	Realtek ALC233VB Codec
Ethernet	Intel Jacksonville I219LM

Supported Components

Processor Level	Intel Coffee Lake Core
Processor	i9-9900T i7-9700T i7-8700T i5-9600T i5-9500T i5-9400T i5-8600T i5-8500T i5-8400T i3-9300T i3-9100T i3-8300T i3-8100T i7-8700 i5-9600 i5-9500 i5-9400

	i5-8600 i5-8500 i5-8400 i3-9320 i3-9300 i3-9100 i3-8300 i3-8100
Memory Type	SODIMM 2666 MHz
Memory	4GB 2666MHz DDR4 SDRAM SODIMM 8GB 2666MHz DDR4 SDRAM SODIMM 16GB 2666MHz DDR4 SDRAM SODIMM 32GB 2666MHz DDR4 SDRAM SODIMM

Storage

2.5" SATA Hard Disk Drive (HDD)	500GB 2.5" SATA HDD 7200rpm (FIPS certified) 1TB 2.5" SATA HDD 7200rpm
2.5" SATA Solid State Drive (SSD)	256GB SATA SSD, 6Gb/s, TLC, 2.5", OPAL
M.2 PCIe Solid State Drive (SSD)	128GB M.2 PCIe SSD, Gen 3 x4, NVMe 256GB M.2 PCIe SSD, Gen 3 x4, NVMe, OPAL 512GB M.2 PCIe SSD, Gen 3 x4, NVMe, OPAL 1024GB M.2 PCIe SSD, Gen 3 x4, NVMe, OPAL
Intel Optane Storage Technology	16GB M.2 Optane Memory

RAID

RAID Levels and Requirements	Supported RAID 0/1
Notes	Supported RAID levels for a system will vary from the stated capabilities of the RAID controller due to dependencies on the number and capacity of physical disks in the system and on customer requirements for performance, fault tolerance, or data redundancy. Max supported RAID 0/1.

Optical Drive/Removable Media

DVD-ROM Drive	Slim DVD-ROM Drive
DVD Burner/CD-RW Drive	Slim DVD Burner/CD-RW Drive

Keyboard and Pointing Devices

Keyboard	Traditional USB Keyboard Calliope USB Wireless Keyboard
Pointing Devices	Calliope USB Mouse Calliope USB Wireless Mouse Fingerprint USB Mouse

PCIe Adapters

Network	Intel I350-T4 Quad Port Gigabit Ethernet Adapter
Thunderbolt	Rear Thunderbolt PCIe Adapter
USB	2 Port USB Expansion Card (USB3.0) PCIe x1 Gen 2
WiFi Cards	Intel PCIe WiFi Card With BT External Antenna Kit (9560 AC)

SECTION III: Supported Component Detail

CPU Specifications

CPU	Intel i9-9900T	Intel i7-9700T	Intel i7-8700T	Intel i5-9600T	Intel i5-9500
# of Cores	8	8	6	6	6
# of Threads	16	8	12	6	6
Processor Base Frequency	2.1GHz	2GHz	2.4GHz	2.3GHz	3GHz
Max Turbo Frequency	4.4GHz	4.3GHz	4GHz	3.9GHz	4.4GHz
Cache	16MB	12MB	12MB	9MB	9MB
TDP	35W	35W	35W	35W	65W
Intel ARK Spec Link	Intel i9-9900T	Intel i7-9700T	Intel i7-8700T	Intel i5-9600T	Intel i5-9500

CPU Specifications

CPU	Intel i5-9500T	Intel i5-8500	Intel i5-8500T	Intel i5-9400	Intel i5-9400T
# of Cores	6	6	6	6	6
# of Threads	6	6	6	6	6
Processor Base Frequency	2.2GHz	3GHz	2.1GHz	2.9GHz	1.8GHz
Max Turbo Frequency	3.7GHz	4.1GHz	3.5GHz	4.1GHz	3.4GHz
Cache	9MB	9MB	9MB	9MB	9MB
TDP	35W	65W	35W	65W	35W
Intel ARK Spec Link	Intel i5-9500T	Intel i5-8500	Intel i5-8500T	Intel i5-9400	Intel i5-9400T

CPU Specifications

CPU	Intel i5-8400T	Intel i3-9300	Intel i3-9300T	Intel i3-8300	Intel i3-8300T
# of Cores	6	4	4	4	4
# of Threads	6	4	4	4	4
Processor Base Frequency	1.7GHz	3.7GHz	3.2GHz	3.70GHz	3.2GHz
Max Turbo Frequency	3.3GHz	4.3GHz	3.8GHz	Not Available	Not Available
Cache	9MB	8MB	8MB	8MB	8MB
TDP	35W	62W	35W	62W	35W
Intel ARK Spec Link	Intel i5-8400T	Intel i3-9300	Intel i3-9300T	Intel i3-8300	Intel i3-8300T

CPU Specifications

CPU	Intel i3-9100	Intel i3-9100T	Intel i3-8100	Intel i3-8100T	Intel i7-9700
# of Cores	4	4	4	4	8
# of Threads	4	4	4	4	8
Processor Base Frequency	3.6GHz	3.1GHz	3.6GHz	3.1GHz	3.00 GHz

Max Turbo Frequency	4.2GHz	3.7GHz	Not Available	Not Available	4.70 GHz
Cache	6MB	6MB	6MB	6MB	12 MB
TDP	65W	35W	65W	35W	65 W
Intel ARK Spec Link	Intel i3-9100	Intel i3-9100T	Intel i3-8100	Intel i3-8100T	Intel i7-9700

CPU Specifications

CPU	Intel i9-9900
# of Cores	8
# of Threads	16
Processor Base Frequency	3.10 GHz
Max Turbo Frequency	5.00 GHz
Cache	16 MB
TDP	65 W
Intel ARK Spec Link	Intel i9-9900

Solid State Storage Specifications

Drive	M.2 256GB PCIe SSD (OPAL)	M.2 512GB PCIe SSD (OPAL)	M.2 1TB PCIe SSD (OPAL)
Dimensions Millimeters (W x D x H)	22 x 80 x 3	22 x 80 x 3	22 x 80 x 3
Interface Type	PCIe Gen 3x4	PCIe Gen 3x4	PCIe Gen 3x4
Power Active (AVG)	5.0W	5.0W	5.0W
Power Idle	50 mW	50 mW	50 mW
Typical Sequential Read	3000 MB/s	3000 MB/s	3000 MB/s
Typical Sequential Write	1500 MB/s	2400 mB/s	2700 MB/s
Typical Random Read (4GB Span)	240,000 IOPS	400,000 IOPS	550,000 IOPS
Typical Random Write (4GB Span)	230,000 IOPS	350,000 IOPS	500,000 IOPS
Operating Temperature Range	0 to 55°C	0 to 55°C	0 to 55°C

Endurance Rating (Lifetime Writes)	85 TB	150 TB	300 TB
Mean Time Between Failures (MTBF)	2.0M POH	2.0M POH	2.0M POH
Hardware Encryption	AES 256 bit	AES 256 bit	AES 256 bit
Disclaimers	SSD performance measured with Crystal Disk Mark version 6.0.2 with the default 1000 MB data set. Sequential measurements are with 1 Thread, Queue-Depth 32. Random measurements are with 4 threads and queue-depth 32.		

Integrated Graphics Adapter

Type	Intel UHD Graphics 630
Display Interface	1 x DP 1.2, 1 x HDMI 1.4
Video Resolution (max)	4096x2304 @ 60Hz (DP), 4096x2304 @ 24Hz (HDMI)

Discrete Graphics Adapter

Adapter	Quadro P620	Quadro P1000
Bus Interface	PCIe 3.0 x16	PCIe 3.0 x16
Display Interface	4 x mDP 1.4	4 x mDP 1.4
Graphics Chipset	Pascal	Pascal
Memory Clock Frequency (MHz)	1252MHz	1253MHz
Memory Size	2GB GDDR5	4GB GDDR5
Memory Interface	128-bit	128-bit
Memory Bandwidth	Up to 80GB/s	Up to 82GB/s
GPU Cores	CUDA Cores: 512	CUDA Cores: 640
GPU Core Frequency (MHz)	1266MHz	1266MHz
Maximum Power Consumption	40W	47W
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or Digital)	4 x 4096x2160 @ 60Hz 4 x 5120x2880 @ 60Hz	4 x 4096x2160 @ 60Hz 4 x 5120x2880 @ 60Hz
Thermal Solution	Ultra-quiet Active Fansink	Ultra-quiet Active Fansink
Dimension	2.713" H x 5.7" L	2.713" H x 5.7" L

Single Slot, Low Profile

Single Slot, Low Profile

SECTION IV: BIOS / Certifications / Standards / Environmental

BIOS Specifications

WMI Support	Compliant With Microsoft WBEM and the DMTF Common Information Model
ROM-Based Setup Utility (F1)	System Configuration Setup Program (text only interface) Available at Power-on With F1 Key
Bootblock Recovery	Recovers System BIOS if the Flash ROM Becomes Corrupted
Replicated Setup	Saves System Configuration Settings to a File That Can Then be Used to Replicate the Settings to Other Systems
Boot Control	Boot Control Available Through ROM-based Setup Utility or With F12 Key at Power-on
Memory Change Alert	Power-on Error Message in the Event of a Decrease in System Memory
Thermal Alert	Power-on Error message in the Event of a Fan Failure
Asset Tag	Supports Ability to Set SMBIOS Type 2 Baseboard Asset Tag Field
System/Emergency ROM Flash Recovery with Video	Supports Process to Recover the System BIOS if the Flash ROM Becomes Corrupted
Remote Wakeup/Remote Shutdown	System Admin Can Power On/Off a Client Computer from a Remote Location to Provide Maintenance
Quick Resume Time	Supports Low Power S3 (suspend to RAM) and Prompt Resume Times
ROM Revision Level	System UEFI (BIOS) Version Reported in SMBIOS Type 0 Structure and in BIOS Setup
Keyboard-less Operation	System Can be Booted Without a Keyboard
Per-port Control	Allows I/O Ports to be Individually Enabled/Disabled Through ROM-based Setup or WMI Interface
Adaptive Cooling	Offers Multiple Settings for Fan Control Ranging Between Better Performance and Better Acoustics
Security	User and Administrator Passwords Can Protect Boot and

	ROM-based Setup - Chassis Intrusion Detection - UEFI Secure Boot Support - HDD Password Can Protect HDD Data - Windows UEFI Firmware Update Support - Device Guard Support
Intel(R) AMT (includes ASF 2.0)	Allows System to be Supported from a Remote Location
Intel(R) TXT	Intel(R) Trusted Execution Technology Provides a Security Foundation to Build Protections Against Software Based Attacks
Windows 10 Ready	Supports Windows 10 Requirements for Secure Flash, UEFI v 2.7 Device Guard Support Spec

Industry Standard Specification Support

UEFI	Unified Extensible Firmware Interface v2.7
ACPI (Advanced Configuration and power Management Interface)	Advanced Configuration and Power Interface v6.0
ASF 2.0	DMTF Alert Standard Format Specification v2.0
ATA (IDE)	AT Attachment 6 with Packet Interface (ATA/ATAPI-6)
CD Boot	EI Torito Bootable CD-Rom Format Specification, v1.0
EHCI	Enhanced Host Controller Interface for Universal Serial Bus, Revision 1.0
PCI	PCI Local Bus v3.0 PC Firmware Specification 3.1
PCI Express	PCI Express Base Specification 3.0
SATA	Serial ATA Revision 3.0 Specification
TPM	Trusted Computing Group TPM Specification Version 2.0
UHCI	Universal Host Controller Interface Design Guide, Revision 1.1
USB	Universal Serial Bus Revision 1.1 Universal Serial Bus v2.0 Universal Serial Bus v3.0
SMBIOS	DMTF System Management Spec v2.8.0
XHCI	eXtensible Host Controller Interface for Universal Serial Bus.

Social and Environmental Responsibility

Quality Control	Lenovo is a member of an eco declaration system that
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	enforces regular independent quality control
Hazardous Substances and Preparation	<p>Products do not contain more than; 0.1% lead, 0.01% cadmium, 0.1% mercury, 0.1% hexavalent chromium, 0.1% polybrominated biphenyls (PBB) or 0.1% polybrominated diphenyl ethers (PBDE). (See legal reference and Note B1)</p> <p>Products do not contain Asbestos</p> <p>Products do not contain Ozone Depleting Substances: Chlorofluorocarbons (CFC), hydrobromofluorocarbons (HBFC), hydrochlorofluorocarbons (HCFC), Halons, carbontetrachloride, 1,1,1-trichloroethane, methyl bromide</p> <p>Products do not contain more than; 0.005% polychlorinated biphenyl (PCB), 0.005% polychlorinated terphenyl (PCT) in preparation</p> <p>Products do not contain more than 0.1% short chain chloroparaffins (SCCP) with 10-13 carbon atoms in the chain containing at least 48% per mass of chlorine in the SCCP</p> <p>Parts with direct and prolonged skin contact do not release nickel in concentrations above 0.5 microgram/cm²/week</p> <p>REACH Article 33 information about substances in articles is available at: http://www.lenovo.com/social_responsibility/us/en/ThinkGreen_products.html#environment</p>
Batteries	Not Available
Safety, EMC Connection to the Telephone Network and Labeling	Not Applicable, no Connection to a Telephone Network

Safety, EMC Connection to the Telephone Network and Labeling

System Software Manager	Lenovo ThinkStation Supports Software Management Tools by Lenovo Vantage
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Regulations & Standards

EMC & Safety	<p>FCC DoC for North America</p> <p>VCCI Certification for Japan</p> <p>BSMI Certification for Taiwan</p> <p>EU/EFTA CE Mark & DoC</p> <p>UL/CUL(P920,P720,P520,P520c), cTUVus(P330)</p> <p>UL-GS(P920,P720,P520,P520c), TUV-GS(P330)</p> <p>IEC60950-1 CB Report/Certificate</p> <p>Saudi Arabia SASO</p> <p>Kuwait KUCAS</p> <p>China CCC Mark</p> <p>Hong Kong SAR (CB report)</p> <p>South Africa SABS</p> <p>Russia-EAC</p> <p>Morocco-CM</p> <p>Mexico-NOM</p> <p>Kazakhstan-EAC</p>
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Belarus-EAC
 Serbia KVALITET
 Ukraine UKrCEPRO
 India-BIS
 USA Chemical Emission Test

Environmentals

Energy Star	ENERGY STAR® Version 7.0
EPEAT	EPEAT Certification Available on Select Models
ErP Lot-3 2013	Yes
Hazardous Substances	<ul style="list-style-type: none"> • Products do not contain more than; 0.1% lead, 0.01% cadmium, 0.1% mercury, 0.1% hexavalent chromium, 0.1% polybrominated biphenyls (PBB) or 0.1% polybrominated diphenol ethers (PBDE) • Products do not contain Asbestos • Products do not contain Ozone Depleting Substances: Chlorofluorocarbons (CFC), hydrobromofluorocarbons (HBFC), hydrochlorofluorocarbons (HCFC), Halons, carbontetrachloride, 1,1,1-trichloroethane, methyl bromide • Products do not contain more than; 0.005% polychlorinated biphenyl (PCB), 0.005% polychlorinated terphenyl (PCT) in preparation • Products do not contain more than 0.1% short chain chloroparaffins (SCCP) with 10-13 carbon atoms in the chain containing at least 48% per mass of chlorine in the SCCP • Parts with direct and prolonged skin contact do not release nickel in concentrations above 0.5 microgram/cm₂/week