

Precision 7550

Technical Guide Book



Notes, cautions, and warnings

 **NOTE:** A NOTE indicates important information that helps you make better use of your product.

 **CAUTION:** A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

 **WARNING:** A WARNING indicates a potential for property damage, personal injury, or death.

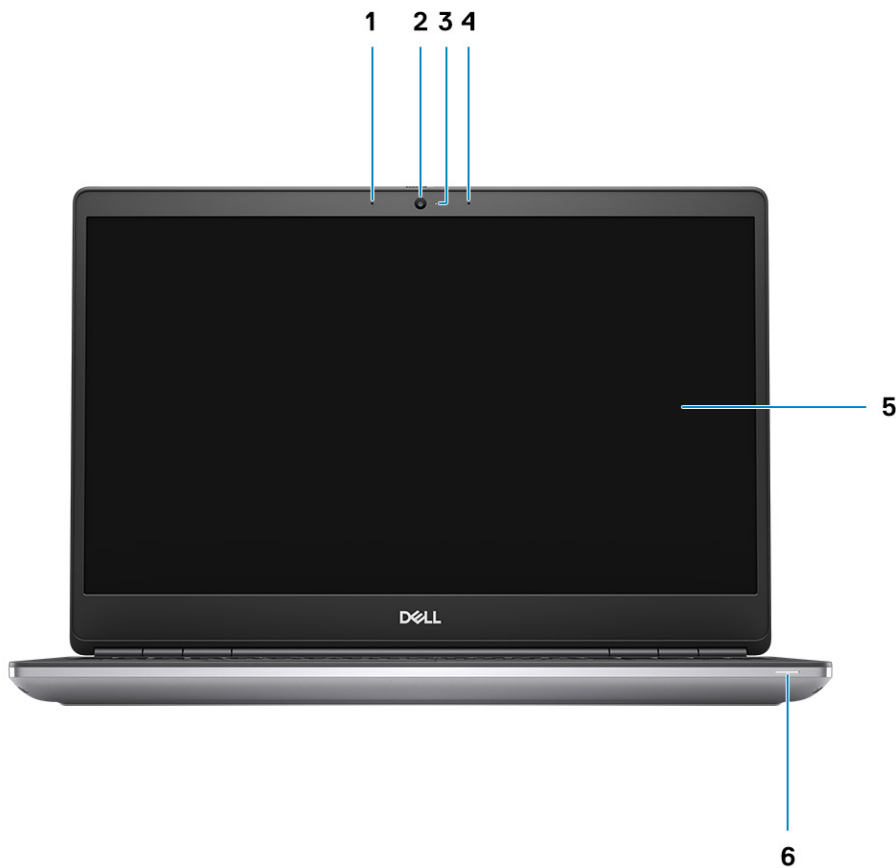
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Topics:

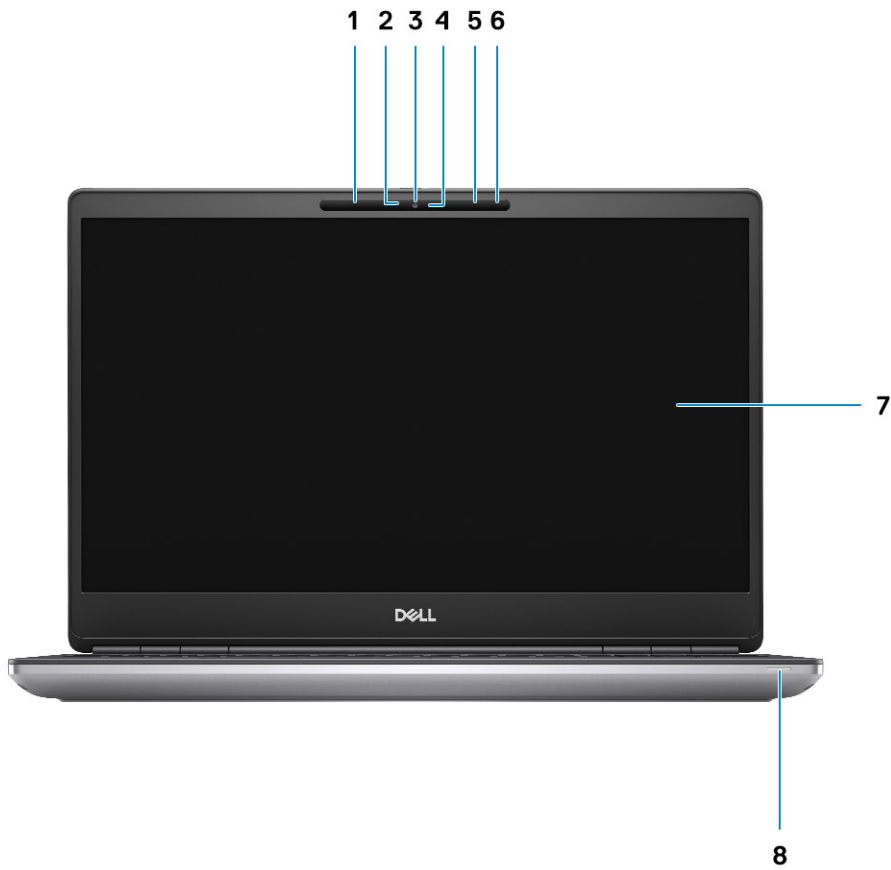
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- [Bottom view](#)

Display view

Display view with RGB camera

1. Microphone
2. Camera
3. Camera LED
4. Microphone
5. Display
6. Battery status light

Display view with IR camera



1. Microphone
2. IR camera sensor
3. Camera
4. Camera LED
5. Microphone
6. Proximity sensor
7. Display
8. Battery status light

Right view



1. SD card reader
2. Headset/Microphone port
3. USB 3.2 Gen 1 Type-A port
4. USB 3.2 Gen 1 Type-A port with PowerShare
5. Wedge-shaped lock slot

Left view



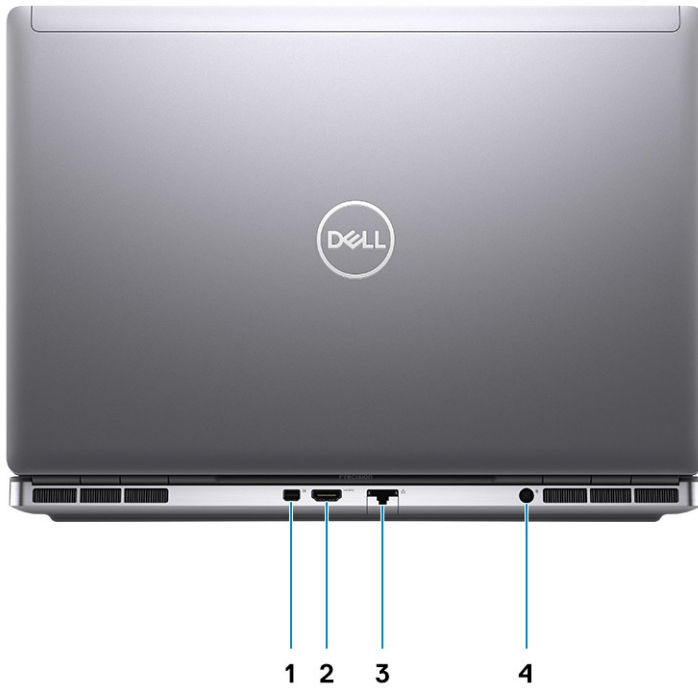
1. USB 3.2 Gen 2 Type-C Thunderbolt 3 port
2. USB 3.2 Gen 2 Type-C Thunderbolt 3 port
3. Smart card-reader (optional)

Palmrest view



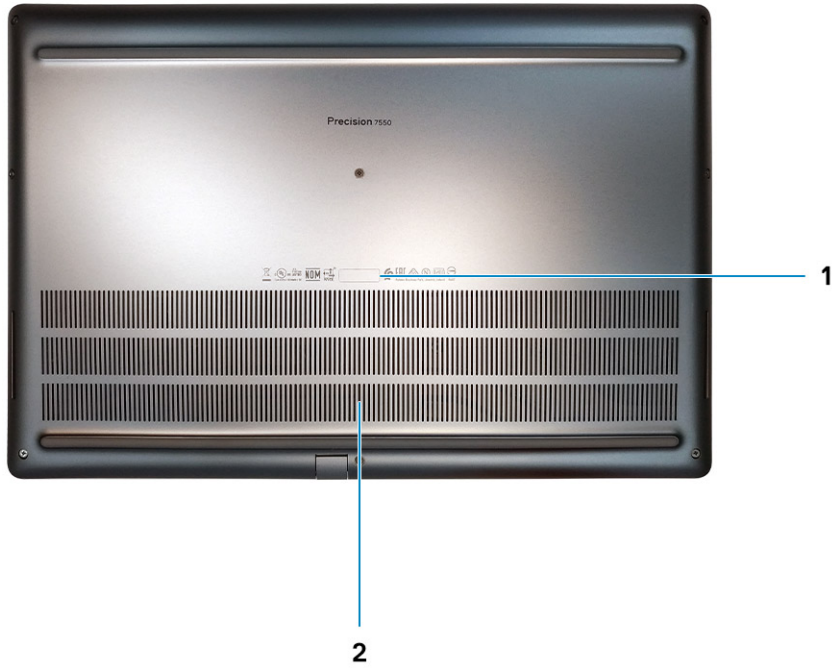
1. Camera shutter
2. Power button with optional fingerprint reader
3. Touchpad

Back view



1. Mini DisplayPort 1.4
2. HDMI 2.0 port
3. Network port
4. Power adapter port

Bottom view



1. Service tag label
2. Fan vent

Specifications of Precision 7550

Topics:

- Processors
- Chipset
- Operating system
- Memory
- Storage
- Audio and Speaker
- Graphics and Video controller
- Media-card reader
- Communications
- Ports and connectors
- Power adapter
- Battery
- Dimensions and weight
- Keyboard
- Touchpad
- Display
- Fingerprint reader
- Camera
- Security
- Service and support
- Computer environment

Processors

Table 1. Processors

Processors	Wattage	Core count	Thread count	Speed	Cache	Integrated graphics
10th Generation Intel Core i5-10400H, vPro	45 W	4	8	2.60 GHz to 4.60 GHz	8 MB	Intel UHD Graphics 630
10th Generation Intel Core i7-10750H	45 W	6	12	2.60 GHz to 5.0 GHz	12 MB	Intel UHD Graphics 630
10th Generation Intel Core i7-10850H, vPro	45 W	6	12	2.70 GHz to 5.1 GHz	12 MB	Intel UHD Graphics 630
10th Generation Intel Core i7-10875H, vPro	45 W	8	16	2.30 GHz to 5.10 GHz	16 MB	Intel UHD Graphics 630
10th Generation Intel Core i9-10885H, vPro	45 W	8	16	2.40 GHz to 5.30 GHz	16 MB	Intel UHD Graphics 630

Table 1. Processors (continued)

Processors	Wattage	Core count	Thread count	Speed	Cache	Integrated graphics
Intel Xeon W-10855M, vPro	45 W	6	12	2.80 GHz to 5.10 GHz	12 MB	Intel UHD Graphics P630
Intel Xeon W-10885M, vPro	45 W	8	16	2.40 GHz to 5.30 GHz	16 MB	Intel UHD Graphics P630

Chipset

Table 2. Chipset

Description	Values
Chipset	Intel WM490
Processor	10th Generation Intel Core i5/i7/i9/Xeon
DRAM bus width	64-bit
Flash EPROM	32 MB
PCIe bus	Up to Gen3

Operating system

- Windows 10 Home (64-bit)
- Windows 10 Professional (64-bit)
- Windows 10 Enterprise (64-bit)
- Windows 10 Pro Education (64-bit)
- Windows 10 Pro China (64-bit)
- Windows 10 Pro for Workstations (64-bit)
- Red Hat Enterprise Linux 8.2 (Certification Only)
- Ubuntu 18.04 SP1

Memory

Table 3. Memory specifications

Description	Values
Slots	Four-SODIMM slots
Type	Dual channel DDR4
Speed	2666 MHz, 2933 MHz, 3200 MHz
Maximum memory	128 GB
Minimum memory	8 GB
Memory size per slot	4 GB, 8GB, 16 GB, 32 GB
Configurations supported	• 8 GB, 1 x 8 GB, DDR4, 2666 MHz, ECC, SODIMM

Table 3. Memory specifications (continued)

Description	Values
	<ul style="list-style-type: none"> · 16 GB, 1 x 16 GB, DDR4, 2666 MHz, ECC, SODIMM · 16 GB, 2 x 8 GB, DDR4, 2666 MHz, ECC, SODIMM · 32 GB, 1 x 32 GB, DDR4, 2666 MHz, ECC, SODIMM · 32 GB, 2 x 16 GB, DDR4, 2666 MHz, ECC, SODIMM · 32 GB, 4 x 8 GB, DDR4, 2666 MHz, ECC, SODIMM · 64 GB, 4 x 16 GB, DDR4, 2666 MHz, ECC, SODIMM · 128 GB, 4 x 32 GB, DDR4, 2666 MHz, ECC, SODIMM · 8 GB, 1 x 8 GB, DDR4, 2933 MHz, ECC, SODIMM · 16 GB, 1 x 16 GB, DDR4, 2933 MHz, ECC, SODIMM · 16 GB, 2 x 8 GB, DDR4, 2933 MHz, ECC, SODIMM · 32 GB, 1 x 32 GB, DDR4, 2933 MHz, ECC, SODIMM · 32 GB, 2 x 16 GB, DDR4, 2933 MHz, ECC, SODIMM · 32 GB, 4 x 8 GB, DDR4, 2933 MHz, ECC, SODIMM · 64 GB, 4 x 16 GB, DDR4, 2933 MHz, ECC, SODIMM · 128 GB, 4 x 32 GB, DDR4, 2933 MHz, ECC, SODIMM · 8 GB, 1 x 8 GB, DDR4, 2933 MHz, Non-ECC, SODIMM · 16 GB, 1 x 16 GB, DDR4, 2933 MHz, Non-ECC, SODIMM · 16 GB, 2 x 8 GB, DDR4, 2933 MHz, Non-ECC, SODIMM · 32 GB, 1 x 32 GB, DDR4, 2933 MHz, Non-ECC, SODIMM · 32 GB, 2 x 16 GB, DDR4, 2933 MHz, Non-ECC, SODIMM · 32 GB, 4 x 8 GB, DDR4, 2933 MHz, Non-ECC, SODIMM · 64 GB, 4 x 16 GB, DDR4, 2933 MHz, Non-ECC, SODIMM · 128 GB, 4 x 32 GB, DDR4, 2933 MHz, Non-ECC, SODIMM · 8 GB, 1 x 8 GB, DDR4, 3200 MHz SuperSpeed, Non-ECC, SODIMM · 16 GB, 1 x 16 GB, DDR4, 3200 MHz SuperSpeed, Non-ECC, SODIMM · 16 GB, 2 x 8 GB, DDR4, 3200 MHz SuperSpeed, Non-ECC, SODIMM · 32 GB, 4 x 8 GB, DDR4, 3200 MHz SuperSpeed, Non-ECC, SODIMM

Storage

Your computer supports the following configurations:

- M.2 2230, solid-state drive (class 35)
- M.2 2280, solid-state drive (class 40)
- M.2 2280, solid-state drive (class 50)

The primary drive of your computer varies with the storage configuration.

Table 4. Storage specifications

Storage type	Interface type	Capacity
M.2 2230, Gen 3 PCIe x4 NVMe, Class 35 solid-state drive	Gen 3 PCIe NVMe	Up to 256 GB
M.2 2280, Gen 3 PCIe x4 NVMe, Class 40 solid-state drive	Gen 3 PCIe NVMe	Up to 2 TB
M.2 2280, Gen 3 PCIe x4 NVMe, Class 50 solid-state drive	Gen 3 PCIe NVMe	Up to 1 TB
M.2 2280, Gen 3 PCIe x4 NVMe, Class 40 SED solid-state drive	Gen 3 PCIe NVMe	Up to 1 TB

Audio and Speaker

Table 5. Audio specifications

Description	Values
Type	4 Channel High Definition Audio
Controller	Realtek ALC3281
Stereo conversion	Supported
Internal interface	High definition audio interface
External interface	Universal Audio Jack
Speakers	2
Internal speaker amplifier	Supported (audio codec integrated)
External volume controls	Keyboard shortcut controls
Speaker output average	2 W
Speaker output peak	2.5 W
Subwoofer output	Not supported
Microphone	Dual-array microphones

Graphics and Video controller

Table 6. Integrated graphics specifications

Controller	External display support	Memory size	Processor
Intel UHD Graphics 630	mDP/HDMI/Type-C	Shared system memory	10th Generation Intel Core i5/i7/i9
Intel UHD Graphics P630	mDP/HDMI/Type-C	Shared system memory	Intel Xeon

Table 7. Discrete graphics specifications

Controller	External display support	Memory size	Memory Type
NVIDIA Quadro T1000	mDP/HDMI/Type-C	4 GB	GDDR6
NVIDIA Quadro T2000	mDP/HDMI/Type-C	4 GB	GDDR6
NVIDIA Quadro RTX3000	mDP/HDMI/Type-C	6 GB	GDDR6
NVIDIA Quadro RTX4000	mDP/HDMI/Type-C	8 GB	GDDR6
NVIDIA Quadro RTX5000	mDP/HDMI/Type-C	16 GB	GDDR6

Media-card reader

The following table lists the media cards supported by your Precision 7550.

Table 8. Media-card reader specifications

Description	Values
Media-card type	1 SD card
Media-cards supported	<ul style="list-style-type: none">Secure Digital (SD)Secure Digital High Capacity (SDHC)Secure Digital Extended Capacity (SDXC)
NOTE: The maximum capacity supported by the media-card reader varies depending on the standard of the media card installed in your computer.	

Communications

Ethernet

Table 9. Ethernet specifications

Description	Values
Model number	Intel Ethernet Connection I219-LM
Transfer rate	10/100/1000 Mbps

Wireless LAN module

Table 10. Wireless LAN module specifications

Description	Values
Model number	Intel Wi-Fi 6 AX201
Transfer rate	Up to 2400 Mbps
Frequency bands supported	2.4 GHz/5 GHz
Wireless standards	<ul style="list-style-type: none">Wi-Fi 802.11a/b/gWi-Fi 4 (WiFi 802.11n)Wi-Fi 5 (WiFi 802.11ac)Wi-Fi 6 (WiFi 802.11ax)
Encryption	<ul style="list-style-type: none">64-bit/128-bit WEPAES-CCMPTKIP
Bluetooth	Bluetooth 5.1

WWAN module

Table 11. WWAN module specifications

Description	Values
Model number	Qualcomm Snapdragon X20 LTE (DW5821e)
Transfer rate	Up to 1 Gbps DL/150 Mbps UL (Cat 16)
Frequency bands supported	<ul style="list-style-type: none"> · (1, 2, 3, 4, 5, 7, 8, 12, 13, 14, 17, 18, 19, 20, 25, 26, 28, 29, 30, 32, 38, 39, 40, 41, 42, 43, 46, 66) · HSPA+ (1, 2, 4, 5, 6, 8, 9,19)
Network standards	<ul style="list-style-type: none"> · LTE FDD/TDD · WCDMA/HSPA+ · GPS/GLONASS/Beidou/Galileo
Host interface	USB 3.2 Gen 1/ USB 2.0
Power supply	DC 3.135 V to 4.4 V, Typical 3.3 V
Antenna connector	<ul style="list-style-type: none"> · WWAN Main Antenna x 1 · WWAN Diversity Antenna x 1 · 4 x 4 MIMO Antenna x 2


 **NOTE: WWAN configuration not available with computers with IR camera.**

Ports and connectors

Table 12. Ports and connectors

Description	Values
External:	
Network	1 RJ-45 port 10/100/1000 Mbps
USB	<ul style="list-style-type: none"> · 1 USB 3.2 Gen 1 Type-A port · 1 USB 3.2 Gen 1 Type-A port with PowerShare · 2 USB 3.2 Gen 2 Type-C Thunderbolt 3 ports
Audio	1 Universal audio Jack
Video	1 HDMI 2.0 port, 1 Mini DisplayPort 1.4* UMA with HBR2
Memory card reader	1 SD 6.0
Smart card reader	1 Smart card reader
Micro Subscriber Identity Module (uSIM) Card	1 Micro SIM card
Power port	DC-in port (7.4 mm standard plug)
Security	1 Wedge-shaped security slot
Internal:	
M.2	<ul style="list-style-type: none"> · Three PCIe expansion card slots · Two SATA M.2 2280 slot for solid-state drive · Three NVMe M.2 2280 slot for solid-state drive

Table 12. Ports and connectors (continued)

Description	Values
	 NOTE: To learn more about the features of different types of M.2 cards, see the knowledge base article SLN301626 .

Power adapter

Table 13. Power adapter specifications

Description	Values
Type	180 W adapter
Diameter (connector)	7.40 mm
Dimensions (L x W x H)	23 mm x 75 mm x 152 mm (0.91 in. x 2.95 in. x 5.98 in.)
Weight	1.28 lbs/ 0.58 kg
Input voltage	100 VAC x 240 VAC
Input frequency	50 Hz x 60 Hz
Input current (maximum)	2.34 A
Output current (continuous)	9.23 A
Rated output voltage	19.50 VDC
Temperature range:	
Operating	0°C to 40°C (32°F to 104°F)
Storage	-40°C to 70°C (-40°F to 158°F)

Battery

Table 14. Battery specifications

Description	Values		
Type	6-cell, 68 WHr, Lithium-ion, ExpressChargeBoost	6-cell, 95 WHr, Lithium-ion, ExpressCharge Boost	6-cell, 95 WHr, Lithium-ion LcL
Voltage	11.40 VDC	11.40 VDC	11.40 VDC
Weight (maximum)	0.39 Kg (0.86 lb)	0.43 kg (0.95 lb)	0.43 kg (0.95 lb)
Dimensions:			
Height	10.3 mm (0.41 in.)	10.3 mm (0.41 in.)	10.3 mm (0.41 in.)
Width	284.00 mm (11.18 in.)	284.00 mm (11.18 in.)	284.00 mm (11.18 in.)
Depth	76.75 mm (3.02 in.)	76.75 mm (3.02 in.)	76.75 mm (3.02 in.)
Temperature range:			

Table 14. Battery specifications (continued)

Description		Values		
	Operating	0 °C to 60 °C (32 °F to 140 °F)	0 °C to 60 °C (32 °F to 140 °F)	0 °C to 60 °C (32 °F to 140 °F)
	Storage	-20 °C to 60 °C (-4 °F to 140°F)	-20 °C to 60 °C (-4 °F to 140°F)	-20 °C to 60 °C (-4 °F to 140°F)
Operating time		Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.	Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.	Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.
Charging time (approximate)		<p>Express Charge Method:</p> <ul style="list-style-type: none"> 0 - 15°C maximum allowable charge time from 0 to 100% RSOC is 4 hours 16 - 45°C normal express charge¹ 46 - 50°C maximum allowable charge time from 0 to 100% RSOC is 3 hours <p>NOTE: 0 to 80% RSOC in 60 minutes; 0 to 100% RSOC in 120 minutes</p> <p>Standard Charge/ Predominately AC User Charge Method</p> <ul style="list-style-type: none"> 0 - 15°C maximum allowable charge time from 0 to 100% RSOC is 4 hours 16 - 50°C maximum allowable charge time from 0 to 100% RSOC is 3 hours <p>Express Charge Boost Charge Method (Fast Charge for Initial 35%)</p> <ul style="list-style-type: none"> 16 - 45°C target charge time from 0 to 35% RSOC is 20mins for Accelerated Charge 	<p>Express Charge Method:</p> <ul style="list-style-type: none"> 0 - 15°C maximum allowable charge time from 0 to 100% RSOC is 4 hours 16 - 45°C normal express charge¹ 46 - 50°C maximum allowable charge time from 0 to 100% RSOC is 3 hours <p>NOTE: 0 to 80% RSOC in 60 minutes; 0 to 100% RSOC in 120 minutes</p> <p>Standard Charge/ Predominately AC User Charge Method</p> <ul style="list-style-type: none"> 0 - 15°C maximum allowable charge time from 0 to 100% RSOC is 4 hours 16 - 50°C maximum allowable charge time from 0 to 100% RSOC is 3 hours <p>Express Charge Boost Charge Method (Fast Charge for Initial 35%)</p> <ul style="list-style-type: none"> 16 - 45°C target charge time from 0 to 35% RSOC is 20mins for Accelerated Charge 	<p>Standard Charge/ Predominately AC User Charge Method</p> <ul style="list-style-type: none"> 0 - 15°C maximum allowable charge time from 0 to 100% RSOC is 4 hours 16 - 50°C maximum allowable charge time from 0 to 100% RSOC is 3 hours
Life span (approximate)		300 discharge/charge cycles	300 discharge/charge cycles	1000 discharge/charge cycles
Coin-cell battery		Supported	Supported	Supported
Operating time		Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.	Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.	Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.

Dimensions and weight

Table 15. Dimensions and weight

Description	Values
Height:	

Table 15. Dimensions and weight (continued)

Description	Values
Front	25.00 mm (00.98 in.)
Rear	27.36 mm (1.08 in.)
Width	360.00 mm (14.17 in.)
Depth	242.00 mm (9.53 in.)
Weight (starting at)	2.45 kg (5.42 lb) <i>i</i> NOTE: The weight of your computer depends on the configuration ordered and the manufacturing variability.

Keyboard

Table 16. Keyboard specifications

Description	Values
Type	Standard keyboard
Layout	QWERTY
Number of keys	<ul style="list-style-type: none"> • United States and Canada: 101 keys • United Kingdom: 102 keys • Japan: 105 keys
Size	X=18.70 mm key pitch Y=18.05 mm key pitch
Shortcut keys	<p>Some keys on your keyboard have two symbols on them. These keys can be used to type alternate characters or to perform secondary functions. To type the alternate character, press Shift and the desired key. To perform secondary functions, press Fn and the desired key.</p> <p><i>i</i> NOTE: You can define the primary behavior of the function keys (F1–F12) changing Function Key Behavior in BIOS setup program.</p>

Touchpad

Table 17. Touchpad specifications

Description	Values
Resolution:	
Horizontal	1084
Vertical	984
Dimensions:	
Horizontal	3.92 inches (99.50 mm)
Vertical	80 mm (3.15 in.)

Display

The following table lists the display specifications of your Precision 7550.

Table 18. Display specifications

Description		Option one	Option two	Option three	Option four	Option five
Display type		15.6 in. Full High Definition (FHD)	15.6 in. Full High Definition (FHD)	15.6 in. Full High Definition (FHD)	15.6 in. Ultra High Definition (UHD)	15.6 in. Ultra High Definition (UHD)
Display-panel technology		WVA (Wide view angle)	WVA (Wide view angle)	WVA (Wide view angle)	HDR400	HDR600
Display-panel dimensions (active area):						
	Height	193.59 mm (7.62 in.)	193.59 mm (7.62 in.)	193.59 mm (7.62 in.)	193.59 mm (7.62 in.)	193.59 mm (7.62 in.)
	Width	344.16 mm (13.55 in.)	344.16 mm (13.55 in.)	344.16 mm (13.55 in.)	344.16 mm (13.55 in.)	344.16 mm (13.55 in.)
	Diagonal	394.87 mm (15.60 in.)	394.87 mm (15.60 in.)	394.87 mm (15.60 in.)	394.87 mm (15.55 in.)	394.87 mm (15.55 in.)
Display-panel native resolution		1920 x 1080	1920 x 1080	1920 x 1080	3840 x 2160	3840 x 2160
Luminance (typical)		220 nits	500 nits	500 nits	500 nits	600 nits
Megapixels		2.07	2.07	2.07	8.29	8.29
Color gamut		45% NTSC	100% DCIP3	100% DCIP3	100% Adobe	100% Adobe
Pixels Per Inch (PPI)		141	141	141	282	282
Contrast ratio (typ)		600:01	600:01	600:01	1500:1	6000:1
Response time (max)		35 ms	35 ms	35 ms	35 ms	35
Refresh rate		60 Hz	60 Hz	60 Hz	60 Hz	60
Horizontal view angle		+/- 80 degrees(min)	+/- 80 degrees(min)	+/- 80 degrees(min)	+/- 80 degrees(min)	+/- 80 degrees(min)
Vertical view angle		+/- 80 degrees(min)	+/- 80 degrees(min)	+/- 80 degrees(min)	+/- 80 degrees(min)	+/- 80 degrees(min)
Pixel pitch		0.18 x 0.18 mm	0.18 x 0.18 mm	0.18 x 0.18 mm	0.090 x 0.090 mm	0.090 x 0.090 mm
Power consumption (maximum)		4.20 W	7.2 W	7.4 W	10 W	18 W
Anti-glare vs glossy finish		Anti-glare	Anti-glare	Anti-glare	Anti-glare	Anti-glare
Touch options		No	No	Yes	No	No

Fingerprint reader

The following table lists the fingerprint-reader specifications of your Precision 7550.

Table 19. Fingerprint reader on power button specifications

Description	Values
Fingerprint-reader sensor technology	Capacitive
Fingerprint-reader sensor resolution	500 / 363 ppi
Fingerprint-reader sensor pixel size	<ul style="list-style-type: none"> · X: 108 / 76 · Y: 88 / 100
Fingerprint-reader sensor	<ul style="list-style-type: none"> · Horizontal: 8.40 mm x 6.90 mm · Vertical: 8.40 mm x 5.25 mm

Table 20. Fingerprint reader on palmrest specifications

Description	Values
Fingerprint-reader sensor technology	Capacitive
Fingerprint-reader sensor resolution	508 dpi
Fingerprint-reader sensor pixel size	360

Camera

Table 21. Camera specifications

Description	Values
Number of cameras	One
Type	There are 2 camera options: <ul style="list-style-type: none"> · HD RGB camera · IR camera
Location	Front camera
Sensor type	Proximity sensor technology
Resolution	
Camera	
Still image	0.92 megapixel
Video	1280 x 720 (HD) at 30 fps
Infrared camera	
Still image	0.30 megapixel
Video	1280 x 720 (HD) at 30 fps
Diagonal viewing angle	
Camera	74.9 degrees

Table 21. Camera specifications (continued)

Description	Values
Infrared camera	70 degrees

Security

Table 22. Security

Security options	Precision 7550
Trusted Platform Module (TPM) 2.0	Discreet TPM 2.0 IC FIPS-140-2 Certified / TCG Certified, TCG Certification for TPM (Trusted Computing Group)
Firmware TPM	Supported
Chassis lock slot and loop support	Yes, wedge-shaped lock slot
Finger print Reader	Two Optional fingerprint reader <ul style="list-style-type: none"> • on Power button • FIPS fingerprint reader in the palmrest
Optional Security Hardware Authentication Bundles	<ul style="list-style-type: none"> • Touch Fingerprint Reader (in Power Button) with Control Vault 3.0 Advanced Authentication with FIPS 140-2 Level 3 Certification • Contacted Smart Card and Control Vault 3 Advanced Authentication with FIPS 140-2 Level 3 Certification • Touch Fingerprint Reader (in Power Button), Contacted Smart Card, and Control Vault 3 Advanced Authentication with FIPS 140-2 Level 3 Certification • Touch Fingerprint Reader in Power Button, Contacted Smart Card, Contactless Smart Card, NFC, and Control Vault 3 Advanced Authentication with FIPS 140-2 Level 3 Certification • Optional Face IR camera (Windows Hello compliant) with Proximity Sensor

Service and support

NOTE: For more details on Dell Service Plans, see <https://www.dell.com/learn/us/en/19/services/warranty-support-services>.

Table 23. Warranty

Warranty
3 Years Hardware Service with Onsite/In-Home Service After Remote Diagnosis
4 Years Hardware Service with Onsite/In-Home Service after Remote Diagnosis
5 Years Hardware Service with Onsite/In-Home Service after Remote Diagnosis
3 Years ProSupport with Next Business Day Onsite Service
4 Years ProSupport with Next Business Day Onsite Service
5 Years ProSupport with Next Business Day Onsite Service
3 Years ProSupport Plus with Next Business Day Onsite Service
4 Years ProSupport Plus with Next Business Day Onsite Service
5 Years ProSupport Plus with Next Business Day Onsite Service

Table 24. Accidental damage services

Accidental Damage Services
3 Years Accidental Damage Service
4 Years Accidental Damage Service
5 Years Accidental Damage Service

Computer environment

Airborne contaminant level: G1 as defined by ISA-S71.04-1985

Table 25. Computer environment

Description	Operating	Storage
Temperature range	0°C to 35°C (32°F to 95°F)	-40°C to 65°C (-40°F to 149°F)
Relative humidity (maximum)	10% to 90% (non-condensing)	0% to 95% (non-condensing)
Vibration (maximum)*	0.66 GRMS	1.30 GRMS
Shock (maximum)	110 G†	160 G†
Altitude (maximum)	-15.2 m to 3048 m (4.64 ft to 5518.4 ft)	-15.2 m to 10668 m (4.64 ft to 19234.4 ft)

* Measured using a random vibration spectrum that simulates user environment.

† Measured using a 2 ms half-sine pulse when the hard drive is in use.

Engineering specifications

Topics:

- Communications
- Graphics options
- Supported hard drives

Communications

Wireless communication

Intel Wi-Fi 6 AX201 2x2 (Gig+) + Bluetooth 5.1

Table 26. Intel Wi-Fi 6 AX201 2x2 (Gig+) + Bluetooth 5.1 specifications

Feature	Values
Host interface	M.2 2230 form factor: <ul style="list-style-type: none"> • Wi-Fi - PCIe • Bluetooth - USB
Network standard	IEEE 802.11a/b/g/n/ac/ax, 160MHz channel use, MU-MIMO
Wi-Fi alliance certifications	<ul style="list-style-type: none"> • Wi-Fi Certified a/b/g/n/ac with wave 2 features • Designed to be Wi-Fi Certified ax (Wi-Fi 6) • WMM • WMM-PS • WPA • WPA2 • WPS2 • Protected Management Frames • Wi-Fi Direct (For Windows only)
Operating frequency bands	<ul style="list-style-type: none"> • 2.4 Ghz • 5 Ghz
Data rate	<ul style="list-style-type: none"> • 2.4 GHz 40M - Up to 574 Mbps • 5 GHz 80M - Up to 1.2 Gbps • 5 GHz 160M - Up to 2.4 Gbps
Power consumption	Optimized power modes (sleep states) reduce power consumption during periods of inactivity
Authentication	<ul style="list-style-type: none"> • WPA and WPA2 Personal and Enterprise • WPA3 (pending OS support)
Authentication protocols	<ul style="list-style-type: none"> • 802.1X EAP-TLS • EAP-TTLS/MSCHAPv2 • PEAPv0 -MSCHAPv2 (EAP-SIM, EAP-AKA, EAP-AKA)

Table 26. Intel Wi-Fi 6 AX201 2x2 (Gig+) + Bluetooth 5.1 specifications (continued)

Feature	Values
Encryption	<ul style="list-style-type: none"> 64-bit and 128-bit WEP TKIP 128-bit AES-CCMP 256-bit AES-GCMP
Product safety	<ul style="list-style-type: none"> UL C-UL CB(IEC60950-1)
Management capabilities alerting	Support for Intel AMT
Government compliance	<ul style="list-style-type: none"> FIPS 140-2 FISMA
Client utility	Intel PRO/Set Wireless Software v21 and later
Antenna diversity	Supported
Radio On/Off	Supported
Roaming	Support seamless roaming between access points
Wake On wireless	Supported
Wireless display	Native Miracast support by Windows 10
Wireless PAN standard	Dual Mode Bluetooth 5.1, BLE
Bluetooth version	Bluetooth 5.1
Bluetooth data rates	Up to 3 Mbps
Bluetooth operating frequency bands	2.4 GHz
Bluetooth profiles supported	Support for Microsoft Inbox Bluetooth profiles in Windows 10
Bluetooth data encryption	128-bit encryption
Bluetooth output power	Power class 1
Temperature	<ul style="list-style-type: none"> Operating temperature 0°C to + 50°C (Full performance at shield temperatures up to 80°C) Storage temperature of -40°C to +70°C
Humidity	Up to 90% RH non-condensing (at temperatures of 25°C to 35°C)

Qualcomm Snapdragon X20 LTE (DW5821e)

Table 27. Qualcomm Snapdragon X20 LTE (DW5821e)

Feature	Values
Form Factor	M.2 3042 Key.B single side
Host interface	USB 3.2 Gen 1/ USB 2.0
Network standard	LTE FDD/TDD, WCDMA/HSPA+, GPS/GLONASS/Beidou/Galileo

Table 27. Qualcomm Snapdragon X20 LTE (DW5821e) (continued)

Feature	Values
Transfer rate	Up to 1 Gbps DL/150 Mbps UL (Cat 16)
Operating Frequency Bands	(1,2,3,4,5,7,8,12,13,14,17,18,19,20,25,26,28,29,30,32,38,39,40,41,42,43,46,66), HSPA+ (1, 2, 4, 5,6, 8, 9, 19)
Power supply	DC 3.135 V to 4.4 V, Typical 3.3 V
SIM card	Supported ¹
eSIM with Dual SIM (DSSA)	Supported ²
Antenna Diversity	Supported
Radio On/Off	Supported
Wake On Wireless	Supported
Temperature	<ul style="list-style-type: none"> · Normal operating temperature: -30°C to + 70°C · Extended Operating temperature: -40°C to +85°C
Antenna connector	<ul style="list-style-type: none"> · WWAN Main Antenna x 1 · WWAN Diversity Antenna x 1 · 4 x 4 MIMO Antenna x 2

1. Use of SIM card is supported through external SIM slot.

2. The availability of eSIM functionality embedded on the module is dependent on the region and carrier requirements.

Graphics options

Intel UHD Graphics P630

Table 28. Intel UHD Graphics P630 specifications

Intel UHD P630 Graphics	
Bus Type	Integrated
Memory Type	UMA
Graphics Level	Xeon: GT2 (UHD P630)
Overlay Planes	Yes
Operating Systems Graphics/ Video API Support	DirectX 12, OpenGL (4.5 from Intel CML POR)
External Display Support	<ul style="list-style-type: none"> · Type-C · mDP/HDMI (If no discrete graphics)
Maximum Vertical Refresh Rate	<ul style="list-style-type: none"> · HDMI 1.4: 4096 x 2160 @ 60 Hz, 24bpp (HDMI or optional USB Type-C to HDMI dongle) · Max Digital: 4096 x 2304 @ 60 Hz, 24bpp (mDP or DP 1.2 over Type-C Port)
Number of Displays Supported	Up to 3 displays via DisplayPort Multi-Streaming Technology (MST)

Intel UHD Graphics 630

Table 29. Intel UHD Graphics 630 specifications

Intel UHD 630 Graphics	
Bus Type	Integrated
Memory Type	UMA
Graphics Level	i5/i7/i9: GT2 (UHD 630)
Overlay Planes	Yes
Operating Systems Graphics/ Video API Support	DirectX 12, OpenGL (4.5 from Intel CML POR)
External Display Support	<ul style="list-style-type: none"> · Type-C · mDP/HDMI (If no discrete graphics)
Maximum Vertical Refresh Rate	<ul style="list-style-type: none"> · HDMI 1.4: 4096 x 2160 @ 60 Hz, 24bpp (HDMI or optional USB Type-C to HDMI dongle) · Max Digital: 4096 x 2304 @ 60 Hz, 24bpp (mDP or DP 1.2 over Type-C Port)
Number of Displays Supported	Up to 3 displays via DisplayPort Multi-Streaming Technology (MST)

NVIDIA Quadro T1000

Table 30. NVIDIA Quadro T1000

Feature	Values
Graphics memory	4 GB
Cores	768
Memory bandwidth	128 Gbps
Memory type	GDDR6
Memory Interface	128-bit
Clock Speeds	1395 - 1455 (Boost) MHz
GPU base clock	8000 MHz (min. at P0)
Estimated Maximum Power	50 W
Display Support	eDP/mDP/HDMI/Type-C
Maximum Color Depth	Up to 10 bit/color
Operating Systems Graphics/ Video API Support	DirectX 12.0, OpenGL 4.6, DisplayPort 1.4, DirectX 12.1
Supported Resolutions and Max Refresh Rates (Hz)	<ul style="list-style-type: none"> · Max Digital : Single DisplayPort 1.4 - 7680 x 4320 (8k) @ 30 Hz (mDP/type-c to DP) · Max Digital : Dual DisplayPort 1.4 - 7680 x 4320 (8k) @ 60 Hz (mDP/type-c to DP)
Numbers of Display Support	Up to 4 displays

NVIDIA Quadro T2000

Table 31. NVIDIA Quadro T2000

Feature	Values
Graphics memory	4 GB
Cores	1024
Memory bandwidth	128 Gbps
Memory type	GDDR6
Memory Interface	128-bit
Clock Speeds	1575 - 1785 (Boost) MHz
GPU base clock	3504 MHz (min. at P0)
Estimated Maximum Power	60 W
Display Support	eDP/mDP/HDMI/Type-C
Maximum Color Depth	Up to 10 bit/color
Operating Systems Graphics/ Video API Support	DirectX 12.0, OpenGL 4.6, DisplayPort 1.4, DirectX 12.1
Supported Resolutions and Max Refresh Rates (Hz)	<ul style="list-style-type: none"> · Max Digital : Single DisplayPort 1.4 - 7680 x 4320 (8k) @ 30 Hz (mDP/Type-C to DP) · Max Digital : Dual DisplayPort 1.4 - 7680 x 4320 (8k) @ 60 Hz (mDP/Type-C to DP)
Numbers of Display Support	Up to 4 displays

NVIDIA Quadro RTX3000

Table 32. NVIDIA Quadro RTX3000

Feature	Values
Graphics memory	6 GB
Cores	2304
Memory bandwidth	336 Gbps
Memory type	GDDR6
Memory Interface	192-bit
Clock Speeds	945 - 1380 (Boost) MHz
GPU base clock	3504 MHz (min. at P0)
Estimated Maximum Power	80 W
Display Support	eDP/mDP/HDMI/Type-C
Maximum Color Depth	Up to 10 bit/color
Operating Systems Graphics/ Video API Support	DirectX 12.0, OpenGL 4.6, DisplayPort 1.4, DirectX 12.1
Supported Resolutions and Max Refresh Rates (Hz)	<ul style="list-style-type: none"> · Max Digital : Single DisplayPort 1.4 - 7680 x 4320 (8k) @ 30 Hz (mDP/type-c to DP) · Max Digital : Dual DisplayPort 1.4 - 7680 x 4320 (8k) @ 60 Hz (mDP/type-c to DP)
Numbers of Display Support	Up to 4 displays

NVIDIA Quadro RTX4000

Table 33. NVIDIA Quadro RTX4000

Feature	Values
Graphics memory	8 GB
Cores	2560
Memory bandwidth	448 Gbps
Memory type	GDDR6
Memory Interface	256-bit
Clock Speeds	1110 - 1560 (Boost) MHz
GPU base clock	14000 MHz
Estimated Maximum Power	80 W
Display Support	eDP/mDP/HDMI/Type-C
Maximum Color Depth	Up to 10 bit/color
Operating Systems Graphics/ Video API Support	DirectX 12.0, OpenGL 4.6, DisplayPort 1.4, DirectX 12.1
Supported Resolutions and Max Refresh Rates (Hz)	<ul style="list-style-type: none"> · Max Digital : Single DisplayPort 1.4 - 7680 x 4320 (8k) @ 30 Hz (mDP/Type-c to DP) · Max Digital : Dual DisplayPort 1.4 - 7680 x 4320 (8k) @ 60 Hz (mDP/Type-c to DP)
Numbers of Display Support	Up to 4 displays

NVIDIA Quadro RTX5000

Table 34. NVIDIA Quadro RTX5000

Feature	Values
Graphics memory	16 GB
Cores	3072
Memory bandwidth	448 Gbps
Memory type	GDDR6
Memory Interface	256-bit
Clock Speeds	1035 / 1350 - 1545 / 1770 (Boost) MHz
GPU base clock	14000 MHz
Estimated Maximum Power	80 W
Display Support	eDP/mDP/HDMI/Type-C
Maximum Color Depth	Up to 10 bit/color
Operating Systems Graphics/ Video API Support	DirectX 12.0, OpenGL 4.6, DisplayPort 1.4, DirectX 12.1
Supported Resolutions and Max Refresh Rates (Hz)	<ul style="list-style-type: none"> · Max Digital : Single DisplayPort 1.4 - 7680 x 4320 (8k) @ 30 Hz (mDP/Type-C to DP) · Max Digital : Dual DisplayPort 1.4 - 7680 x 4320 (8k) @ 60 Hz (mDP/Type-C to DP)
Numbers of Display Support	Up to 4 displays

Supported hard drives

M.2 2230 256 GB Gen 3 PCIe x4 NVMe Class 35 SSD

Table 35. M.2 2230 256 GB Gen 3 PCIe x4 NVMe Class 35 SSD

Capacity	256 GB
Dimensions	80.00 mm x 30.00 mm x 2.38 mm
Interface type and maximum speed	PCIe Gen3 32 Gb/s
MTTF	1.4 M hours
Logical blocks	500,118,192
Power Source	
Power consumption (reference only)	<ul style="list-style-type: none"> · Idle : 5 mW(PS4) · Active : 3.5 W
Environmental Operating Conditions (Non-Condensing)	
Temperature range	0°C to 70°C
Relative humidity range	10% to 90%
Non-op shock (@0.5 ms)	1500G
Environmental Non-Operating Conditions (Non-Condensing)	
Temperature range	-40°C to 70°C
Relative humidity range	5% to 95%

M.2 2280 256 GB Gen 3 PCIe x4 NVMe Class 40 Solid-State Drive

Table 36. M.2 2280 256 GB Gen 3 PCIe x4 NVMe Class 40 Solid-State Drive

Features	Specifications
Capacity	256 GB
Dimensions	22.00 mm x 80.00 mm x 2.38 mm
Interface type and maximum speed	Gen 3 PCIe 32 Gb/s
MTTF	1.4 M hours
Logical blocks	500,118,192
Power Source	
Power consumption (reference only)	<ul style="list-style-type: none"> · Idle : 5 mW (PS4) · Active : 4.5 W

Table 36. M.2 2280 256 GB Gen 3 PCIe x4 NVMe Class 40 Solid-State Drive (continued)

Features	Specifications
Environmental Operating Conditions (Non-Condensing)	
Temperature range	0°C to 70°C
Relative humidity range	10% to 90%
Non-op shock (@0.5 ms)	1500G
Environmental Non-Operating Conditions (Non-Condensing)	
Temperature range	-40°C to 70°C
Relative humidity range	5% to 95%

M.2 2280 512 GB Gen 3 PCIe x4 NVMe Class 40 Solid-State Drive

Table 37. M.2 2280 512 GB Gen 3 PCIe x4 NVMe Class 40 Solid-State Drive

Features	Specifications
Capacity	512 GB
Dimensions	22.00 mm x 80.00 mm x 2.38 mm
Interface type and maximum speed	Gen 3 PCIe 32 Gb/s
MTTF	1.4 M hours
Logical blocks	1000,215,216
Power Source	
Power consumption (reference only)	<ul style="list-style-type: none"> · Idle : 5 mW (PS4) · Active : 4.5 W
Environmental Operating Conditions (Non-Condensing)	
Temperature range	0°C to 70°C
Relative humidity range	10% to 90%
Non-op shock (@0.5 ms)	1500G
Environmental Non-Operating Conditions (Non-Condensing)	
Temperature range	-40°C to 70°C
Relative humidity range	5% to 95%

M.2 2280 1 TB Gen 3 PCIe x4 NVMe Class 40 Solid-State Drive

Table 38. M.2 2280 1 TB Gen 3 PCIe x4 NVMe Class 40 Solid-State Drive

Features	Specifications
Capacity	1 TB
Dimensions	22.00 mm x 80.00 mm x 3.73 mm
Interface type and maximum speed	Gen 3 PCIe 32 Gb/s
MTTF	1.4 M hours
Logical blocks	2000,409,264
Power Source	
Power consumption (reference only)	<ul style="list-style-type: none"> · Idle : 5 mW (PS4) · Active : 4.5 W
Environmental Operating Conditions (Non-Condensing)	
Temperature range	0°C to 70°C
Relative humidity range	10% to 90%
Non-op shock (@0.5 ms)	1500G
Environmental Non-Operating Conditions (Non-Condensing)	
Temperature range	-40°C to 70°C
Relative humidity range	5% to 95%

M.2 2280 2 TB Gen 3 PCIe x4 NVMe Class 40 Solid-State Drive

Table 39. M.2 2280 2 TB Gen 3 PCIe x4 NVMe Class 40 Solid-State Drive

Capacity	2 TB
Dimensions	22.00 mm x 80.00 mm x 3.73 mm
Interface type and maximum speed	Gen 3 PCIe 32 Gb/s
MTTF	1.4 M hours
Logical blocks	4000,797,360
Power Source	
Power consumption (reference only)	<ul style="list-style-type: none"> · Idle : 5 mW (PS4) · Active : 4.5 W
Environmental Operating Conditions (Non-Condensing)	

Table 39. M.2 2280 2 TB Gen 3 PCIe x4 NVMe Class 40 Solid-State Drive (continued)

Temperature range	0°C to 70°C
Relative humidity range	10% to 90%
Non-op shock (@0.5 ms)	1500G
Environmental Non-Operating Conditions (Non-Condensing)	
Temperature range	-40°C to 70°C
Relative humidity range	5% to 95%

M.2 2280 512 GB Gen 3 PCIe x4 NVMe Opal Self-Encrypting Class 40 Solid-State Drive

Table 40. M.2 2280 512 GB Gen 3 PCIe x4 NVMe Opal Self-Encrypting Class 40 Solid-State Drive

Features	Specifications
Capacity	512 GB
Dimensions	22.00 mm x 80.00 mm x 2.38 mm
Interface type and maximum speed	Gen 3 PCIe 32 Gb/s
MTTF	1.4 M hours
Logical blocks	1000,215,216
Power Source	
Power consumption (reference only)	<ul style="list-style-type: none"> · Idle : 5 mW (PS4) · Active : 4.5 W
Environmental Operating Conditions (Non-Condensing)	
Temperature range	0°C to 70°C
Relative humidity range	10% to 90%
Non-op shock (@0.5 ms)	1500G
Environmental Non-Operating Conditions (Non-Condensing)	
Temperature range	-40°C to 70°C
Relative humidity range	5% to 95%

M.2 2280 1 TB Gen 3 PCIe x4 NVMe Class 40 Opal 2.0 SED Solid-State Drive

Table 41. M.2 2280 1 TB Gen 3 PCIe x4 NVMe Class 40 Opal 2.0 SED SSD

Capacity	1 TB
Dimensions	22.00 mm x 80.00 mm x 3.73 mm
Interface type and maximum speed	Gen 3 PCIe 32 Gb/s
MTTF	1.4 M hours
Logical blocks	2000,409,264
Power Source	
Power consumption (reference only)	<ul style="list-style-type: none"> · Idle : 5 mW (PS4) · Active : 4.5 W
Environmental Operating Conditions (Non-Condensing)	
Temperature range	0°C to 70°C
Relative humidity range	10% to 90%
Non-op shock (@0.5 ms)	1500G
Environmental Non-Operating Conditions (Non-Condensing)	
Temperature range	-40°C to 70°C
Relative humidity range	5% to 95%

M.2 2280 512 GB Gen3 PCIe x4 NVMe Class 50 SSD

Table 42. M.2 2280 512 GB Gen3 PCIe x4 NVMe Class 50 SSD

Capacity (GB)	512 GB
Dimensions (mm) (W x D x H)	22 x 80 x 2.38
Interface type and Maximum speed	PCIe Gen3 32 Gb/s
MTBF	1.4M hours
Logical Blocks	1,000,215,216
Power Source:	
Power Consumption (reference only)	Idle 5 mW(PS4 - L1.2), Active 5 W
Environmental Operating Conditions (Non-Condensing):	
Temperature Range	0°C to 70°C
Relative Humidity Range	10 to 90%
Non-Op Shock (@2 ms)	1,500G

Table 42. M.2 2280 512 GB Gen3 PCIe x4 NVMe Class 50 SSD (continued)

Environmental Non-Operating Conditions (Non-Condensing):	
Temperature Range	-40°C to 70°C
Relative Humidity Range	5% to 95%

M.2 2280 1 TB Gen3 PCIe x4 NVMe Class 50 SSD

Table 43. M.2 2280 1 TB Gen3 PCIe x4 NVMe Class 50 SSD

Capacity (GB)	1 TB
Dimensions (W x D x H)	Approximately (22.00 in. x 80.00 in. x 2.38 in.)
Interface type and maximum speed	PCIe Gen3 32 Gb/s
MTBF	1.4M hours
Logical blocks	2,000,409,264
Power source	
Power consumption (reference only)	Idle 5 mW(PS4 - L1.2), Active 5 W
Environmental Operating Conditions (Non-Condensing)	
Temperature range	0°C to 70°C
Relative humidity range	10% to 90%
Op shock (@ 2ms)	1000 G
Environmental Non-Operating Conditions (Non-Condensing)	
Temperature range	-40°C to 70°C
Relative humidity range	5% to 95%


Getting help

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