Precision 3680 Tower

Technical Guidebook

Regulatory Model: D30M
Regulatory Type: D30M001
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DELL Technologies

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.

Contents

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Views of Precision 3680 Tower

Front

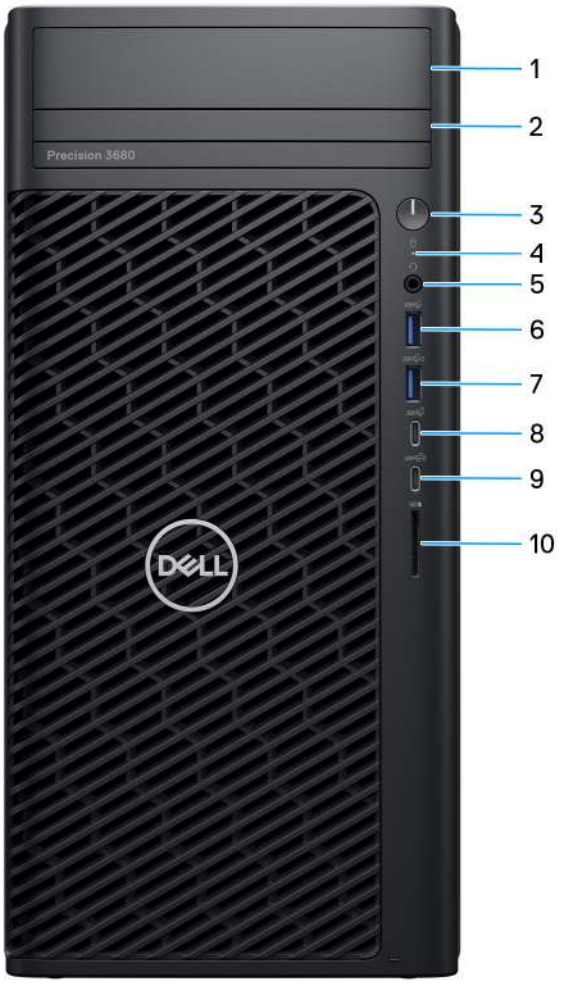

Figure 1. Image: Front view

1. **Front 3.5-inch hard drive bay (optional)**

   Slot to install the 3.5-inch hard drive

2. **Slim ODD (optional)**

   Reads from and writes to CDs, DVDs, and Blu ray disks.

3. **Power button with diagnostic LED**

   Press to turn on the computer if it is turned off, in sleep state, or in hibernate state.

4. **Hard-drive activity light**

   Turns on when the computer reads from or writes to the hard drive.

   NOTE: Hard-drive activity light is supported only on computers that are shipped with hard drive.

5. **Universal audio port**

   Connect headphones or a headset (headphone and microphone combo).

6. **USB 3.2 Gen 1 (5 Gbps) port**

   Connect devices such as external storage devices and printers.

   Provides data transfer speeds up to 5 Gbps.

7. **USB 3.2 Gen 1 (5 Gbps) port with PowerShare**

   Connect devices such as external storage devices and printers.

   Provides data transfer speeds up to 5 Gbps. PowerShare enables you to charge connected USB devices.

   NOTE: Connected USB devices will not charge when the computer is turned off or in a sleep state. To start charging connected devices, turn on the computer.

8. **USB 3.2 Type-C Gen 2 (10 Gbps) port**

   Connect devices such as external storage devices and printers. Provides data transfer speeds up to 10 Gbps.

9. **USB 3.2 Type-C Gen 2x2 (20 Gbps) port with PowerShare**

   Connect devices such as external storage devices, printers, and external displays. Provides data transfer rate of up to 20 Gbps.

   PowerShare enables you to charge connected USB devices.

   NOTE: Connected USB devices will not charge when the computer is turned off or in a sleep state. To start charging connected devices, turn on the computer.

10. **SD-card slot**

    Reads from and writes to the SD card.

Back

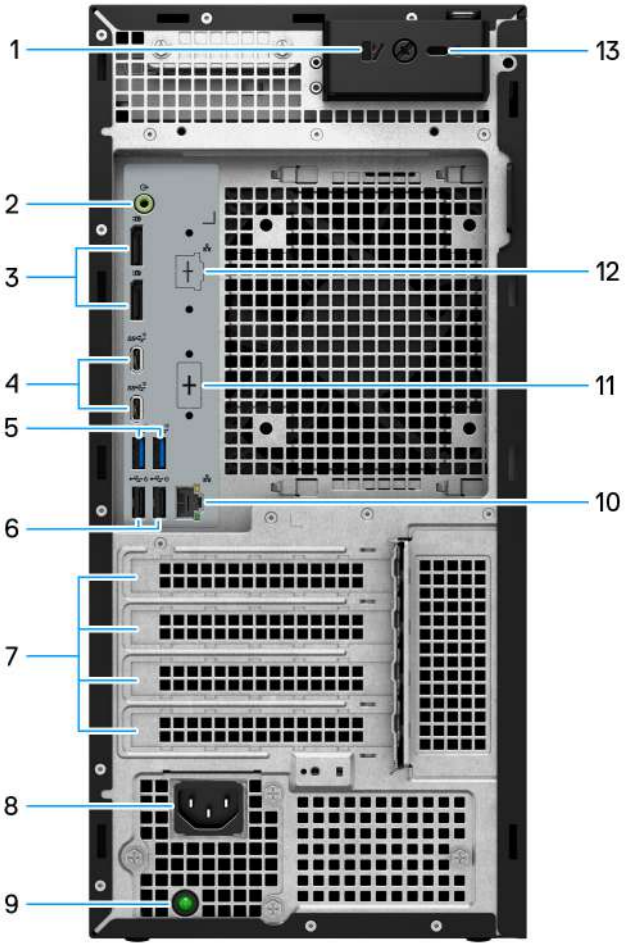

Figure 2. Image: Back view

1. **Side cover release latch**

   Release to allow to open the side cover.

2. **Audio line out port**

   Connect audio-output devices such as speakers and amplifiers. In a 5.1 speaker channel setup, connect the front-left and front-right speakers.

3. **Two DisplayPort 1.4 ports**

   Connect an external display or a projector.

4. **Two USB 3.2 Type-C Gen 2 (10 Gbps) ports**

   Connect devices such as external storage devices and printers. Provides data transfer speeds up to 10 Gbps.

5. **Two USB 3.2 Gen 2 (10 Gbps) ports**

   Connect devices such as external storage devices and printers. Provides data transfer speeds up to 10 Gbps.

6. **Two USB 2.0 (480 Mbps) ports with SmartPower**

Connect devices such as external storage devices and printers. Provides data transfer speeds up to 480 Mbps. Wake from standby with the keyboard or mouse that is connected to this port.

7. **Expansion card slots**

   Provide access to ports on any installed PCI Express cards.

8. **Power cord connector port**

   Connect a power cable to provide power to your computer.

9. **Power supply diagnostic light**

   Indicates the power-supply state.

10. **RJ45 port 10/100/1000 Mbps**

    Connect an Ethernet (RJ45) cable from a router or a broadband modem for network or Internet access, with a transfer rate of 10/100/1000 Mbps.

11. **HDMI 2.0/ DisplayPort 1.4/ VGA/ USB Type-C with DisplayPort Alt mode (optional)**

    The port available at this location may vary depending on the optional I/O card that is installed on your computer.

    - **HDMI 2.0 port**

      Connect to a TV, external display, or another HDMI-in enabled device. Maximum resolution that is supported up to 4096 x 2160 @60 Hz.

    - **DisplayPort 1.4**

      Connect an external display or a projector. Maximum resolution that is supported up to 5120 x 3200 @60 Hz.

    - **VGA port**

      Connect an external display or a projector. Maximum resolution that is supported up to 1920 x 1200 @60 Hz.

    - **USB Type-C with DisplayPort port**

      Connect devices such as external storage devices and printers. Provides data transfer speeds of up to 10 Gbps. Maximum resolution supported up to 5120x3200 @60Hz with a Type-C to DisplayPort adapter.

12. **2.5 GbE RJ45 port (optional)**

    Connect an Ethernet (RJ45) cable from a router or a broadband modem for network or Internet access.

13. **Kensington security-cable slot**

    Connect a security cable to prevent unauthorized movement of your computer.

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Specifications of Precision 3680 Tower

Dimensions and weight

The following table lists the height, width, depth, and weight of your Precision 3680 Tower.

Table 1. Dimensions and weight

Description	Values
Height	372.90 mm (14.68 in.)
Width	173.00 mm (6.81 in.)
Depth	420.20 mm (16.54 in.)
Weight **NOTE:** The weight of your computer depends on the configuration ordered and manufacturing variability.	• Minimum - 7.58 kg (16.71 lb) • Maximum - 16.05 kg (35.38 lb)

Processor

The following table lists the details of the processors that are supported for your Precision 3680 Tower.

Table 2. Processor

Description	Option one	Option two	Option three	Option four	Option five	Option six	Option seven	Option eight
Processor type	14th Gen Intel Core i3-14100	14th Gen Intel Core i5-14500 vPro	14th Gen Intel Core i5-14600 vPro	14th Gen Intel Core i5-14600K vPro	14th Gen Intel Core i7-14700 vPro	14th Gen Intel Core i7-14700K vPro	14th Gen Intel Core i9-14900 vPro	14th Gen Intel Core i9-14900K vPro
Processor wattage	60 W	65 W	65 W	125 W	65 W	125 W	65 W	125 W
Processor core count	4	14	14	14	20	20	24	24
Processor thread count	8	20	20	20	28	28	32	32
Processor speed	3.5 GHz to 4.7 GHz Turbo	2.6 GHz to 5.0 GHz Turbo	2.7 GHz to 5.2 GHz Turbo	3.5 GHz to 5.3 GHz Turbo	2.1 GHz to 5.4 GHz Turbo	3.4 GHz to 5.6 GHz Turbo	2.0 GHz to 5.8 GHz Turbo	3.2 GHz to 6.0 GHz Turbo
Processor cache	12 MB	24 MB	24 MB	24 MB	33 MB	33 MB	36 MB	36 MB
Integrated graphics	Intel UHD Graphics 730	Intel UHD Graphics 770	Intel UHD Graphics 770	Intel UHD Graphics 770	Intel UHD Graphics 770	Intel UHD Graphics 770	Intel UHD Graphics 770	Intel UHD Graphics 770

NOTE:

1. Precision 3680 Tower supports Unlimited Turbo Duration feature (PL1=PL2) for all K-processor (125W) CPUs. A 1000W power supply and Premium Air Cooling solution are required.
2. Precision 3680 Tower supports Enhanced Performance (PL1=85W) for 65W CPUs. A Premium Air Cooling solution is required.

Chipset

The following table lists the details of the chipset that is supported in your Precision 3680 Tower.

Table 3. Chipset

Description	Values
Chipset	W680
Processor	14th Gen Intel Core i3/i5/i7/i9
DRAM bus width	64-bit DIMM
Flash EPROM	16 MB + 32 MB
PCIe bus	Up to Gen5

Operating system

Your Precision 3680 Tower supports the following operating systems:

- Windows 11 Home, 64-bit
- Windows 11 Pro, 64-bit
- Windows 11 Pro National Education, 64-bit
- Windows 11 Pro for Workstations
- Ubuntu Linux 22.04 LTS, 64-bit

Memory

The following table lists the memory specifications that are supported by your Precision 3680 Tower.

Table 4. Memory specifications

Description	Values
Memory slots	Four-DIMM slots **NOTE:** Up to 128 GB or up to 4400 MT/s ECC and Non-ECC DDR5
Memory type	DDR5
Memory speed	Maximum speed: 4400 MT/s **NOTE:** Maximum memory speed varies by the following configuration on each channel. If the two DIMM configuration is not symmetrical, the maximum speed may drop. • 4400 MT/s: 1 DIMM-1R/2R • 4000 MT/s: 2 DIMM-1R • 3600 MT/s: 2 DIMM-2R

Table 4. Memory specifications (continued)

Description	Values
Maximum memory configuration	128 GB
Minimum memory configuration	8 GB
Memory size per slot	8 GB, 16 GB, and 32 GB
Memory configurations supported	• 8 GB: 1 x 8 GB, DDR5, 4400 MT/s, Non-ECC • 16 GB: 2 x 8 GB, DDR5, 4400 MT/s, Non-ECC, dual-channel • 16 GB: 1 x 16 GB, DDR5, 4400 MT/s, Non-ECC • 32 GB: 2 x 16 GB, DDR5, 4400 MT/s, Non-ECC, dual-channel • 32 GB: 4 x 8 GB, DDR5, 4000 MT/s, Non-ECC, dual-channel • 64 GB: 2 x 32 GB, DDR5, 4400 MT/s, Non-ECC, dual-channel • 64 GB: 4 x 16 GB, DDR5, 4000 MT/s, Non-ECC, dual-channel • 128 GB: 4 x 32 GB, DDR5, 3600 MT/s, Non-ECC, dual-channel • 16 GB: 1 x 16 GB, DDR5, 4400 MT/s, ECC • 32 GB: 2 x 16 GB, DDR5, 4400 MT/s, ECC, dual-channel • 64 GB: 2 x 32 GB, DDR5, 4400 MT/s, ECC, dual-channel • 64 GB: 4 x 16 GB, DDR5, 4000 MT/s, ECC, dual-channel • 128 GB: 4 x 32 GB, DDR5, 3600 MT/s, ECC, dual-channel **NOTE:** ECC memory is not supported on the Intel Core i3-14100 processor.

Memory matrix

The following table lists the memory configurations supported on your Precision 3680 Tower.

Table 5. Memory matrix

Configuration	Slot			
	DIMM1	DIMM2	DIMM3	DIMM4
8 GB DDR5	8 GB	N/A	N/A	N/A
16 GB DDR5	16 GB	N/A	N/A	N/A
16 GB DDR5	8 GB	8 GB	N/A	N/A
32 GB DDR5	16 GB	16 GB	N/A	N/A
64 GB DDR5	32 GB	32 GB	N/A	N/A
64 GB DDR5	16 GB	16 GB	16 GB	16 GB
128 GB DDR5	32 GB	32 GB	32 GB	32 GB

NOTE: 8 GB configuration available only for non-ECC memory.

External ports and slots

The following table lists the external ports of your Precision 3680 Tower.

Table 6. External ports and slots

Description	Values
Network port	• One RJ45 (1 GbE) Ethernet port • One RJ45 (2.5 GbE) Ethernet port (optional)
USB ports	Front: • One USB 3.2 Gen 1 (5 Gbps) port • One USB 3.2 Gen 1 (5 Gbps) port with PowerShare • One USB 3.2 Gen 2 (10 Gbps) Type-C port • One USB 3.2 Gen 2x2 (20 Gbps) Type-C port with PowerShare Rear: • Two USB 2.0 (480 Mbps) ports with SmartPower • Two USB 3.2 Gen 2 (10 Gbps) ports • Two USB 3.2 Gen 2 (10 Gbps) Type-C ports
Audio port	• Front: One Universal Audio port • Rear: One Audio line-out
Video port(s)	• Two DisplayPort 1.4a HBR2 ports • One Optional Port (VGA, HDMI 2.0, DP++ 1.4a HBR3, USB 3.2 Gen 2 (10 Gbps) Type-C with DP-Alt mode) **NOTE:** Download and install the latest Intel Graphics driver from Dell Support Site to enable multiple displays.
Media-card reader	One SD-card slot
Power-adapter port	N/A
Security-cable slot	One Kensington security-cable slot

Internal slots

The following table lists the internal slots of your Precision 3680 Tower.

Table 7. Internal slots

Description	Values
M.2	• One M.2 2230 slot for WiFi and Bluetooth card • Two M.2 2230/2280 slots (SSD0 and SSD1) for SSD • One M.2 2280 slot (SSD2) for SSD **NOTE:** SSD0 slot supports M.2 2230 and M.2 2280 SSDs by default. **NOTE:** SSD1 slot supports M.2 2230 and M.2 2280 SSDs by default. **NOTE:** SSD2 slot supports only M.2 2280 SSDs by default.

Table 7. Internal slots

Description	Values
	NOTE: To learn more about the features of different types of M.2 cards, search in the Knowledge Base Resource at Dell Support Site.

Ethernet

The following table lists the wired Ethernet Local Area Network (LAN) specifications of your Precision 3680 Tower.

Table 8. Ethernet specifications

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

Wireless module

The following table lists the Wireless Local Area Network (WLAN) modules that are supported on your Precision 3680 Tower.

Table 9. Wireless module specifications

Description	Option one	Option two
Model number	Intel AX211	Qualcomm WCN6856-DBS
Transfer rate	2400 Mbps	Up to 3571 Mbps
Frequency bands supported	2.4 GHz/5 GHz/6 GHz **NOTE:** The 6 GHz frequency is supported on computers that are installed with the Windows 11 operating system only.	2.4 GHz/5 GHz/6 GHz **NOTE:** The 6 GHz frequency is supported on computers that are installed with the Windows 11 operating system only.
Wireless standards	• WiFi 802.11a/b/g • Wi-Fi 4 (WiFi 802.11n) • Wi-Fi 5 (WiFi 802.11ac) • Wi-Fi 6E (WiFi 802.11ax)	• WiFi 802.11a/b/g • Wi-Fi 4 (WiFi 802.11n) • Wi-Fi 5 (WiFi 802.11ac) • Wi-Fi 6E (WiFi 802.11ax)
Encryption	• 64-bit/128-bit WEP • AES-CCMP • TKIP	• 64-bit and 128-bit WEP • AES-CCMP • TKIP
Bluetooth wireless card	5.3	5.3
	NOTE: The version of the Bluetooth wireless card may vary depending on the operating system that is installed on your computer.	

Audio

The following table lists the audio specifications of your Precision 3680 Tower.

Table 10. Audio specifications

Description		Values
Audio controller		Realtek ALC3246-CG
Stereo conversion		24-bit DAC (Digital-to-Analog) and ADC (Analog-to-Digital)
Internal audio interface		Intel HDA (high-definition audio)
External audio interface		• Front: One Universal Audio port • Rear: One Audio line-out
Number of speakers		One (optional)
Internal-speaker amplifier		Integrated in ALC3246-CG (Class-D 2 W)
External volume controls		Keyboard shortcut controls
Speaker output:		
	Average speaker output	2 W
	Peak speaker output	2.2 W
Subwoofer output		Not supported
Microphone		Not supported

Storage

This section lists the storage options on your Precision 3680 Tower.

- M.2 SSD Boot + Optional M.2 SSDs – This configuration enables boot on M.2 NVMe SSD with up to three additional NVMe SSDs. No SATA hard drive are configured in this option.
- M.2 SSD Boot + Optional M.2 SSD + 3.5-inch SATA hard drive + Optional 3.5-inch SATA hard drive – This configuration enables boot on M.2 NVMe SSD with up to three additional NVMe SSDs, one 3.5-inch SATA hard drive and one additional 3.5-inch SATA hard drive.
- M.2 SSD Boot + Optional SSDs + Front-accessible 3.5-inch SATA hard drive - This configuration enabled boot on M.2 NVMe SSD with up to three additional NVMe SSDs, one front-accessible 3.5-inch SATA hard drive + Two 3.5-inch SATA hard drive (internal)
- RAID 0/1/5 is available.

NOTE: M.2 NVMe SSD cannot build RAID disk with any SATA drive.

NOTE: Fourth NVMe SSD is supported by UltraSpeed Duo M.2 PCIe card.

NOTE: Precision 3680 Tower motherboard can support up to two M.2 2230 or up to three M.2 2280 NVMe SSDs.

Table 11. Storage specifications

Storage type	Interface type	Capacity
3.5-inch, 5400 RPM, hard drive	SATA 3.0	Up to 4 TB
3.5-inch, 7200 RPM, hard drive	SATA 3.0	Up to 2 TB

Table 11. Storage specifications (continued)

Storage type	Interface type	Capacity
3.5-inch, 7200 RPM, Enterprise hard drive (optional)	SATA 3.0	Up to 8 TB
M.2 2230 SSD	Gen 4 PCIe NVMe, Class 35	256 GB
M.2 2280 SSD	Gen 4 PCIe NVMe, Class 40	Up to 4 TB
M.2 2280 SSD Self-Encrypting	Gen 4 PCIe NVMe	Up to 1 TB

Storage matrix

The following table lists the storage configurations that are supported on your Precision 3680 Tower.

Table 12. Storage matrix

Configuration group	Storage			Bootable Device	1st M.2 PCIe NVMe SSD CPU lane	2nd M.2 PCIe NVMe SSD PCH lane	3rd M.2 PCIe NVMe SSD PCH lane	CFI only 3rd NVMe SSD in QX118 slim line slot	Ultra-Speed NVMe SSD Zoom AIC	3.5-inch hard drive	3.5-inch hard drive	3.5-inch hard drive	3.5-inch hard drive	ODD
	PCIe lane connection and SSD location							PCH Gen3 Slot 3						
	QX118/ODD Physical Location				CPU Gen4 Slot 1	PCH Gen4 Slot 2	PCH Gen3 Slot 3	5.25-inch front bay slimline	PCH Gen3 Slot 4					
C1	Internal M.2 SSD Boot (No SATA hard drive)			M.2 SSD	Y1 (boot)	Y2 (optional)	Y3 (optional)	N/A	Y4 (optional)	N/A	N/A	N/A	N/A	Y (optional)
C1	Internal M.2 SSD Boot (No SATA hard drive)			M.2 SSD	Y (boot) RAID 0 or 1	RAID 0 or 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y (optional)
C1	Internal M.2 SSD Boot (No SATA hard drive)			M.2 SSD	Y (boot) RAID 0 or 5	RAID 0 or 5	RAID 0 or 5	N/A	N/A	N/A	N/A	N/A	N/A	Y (optional)
C1	Internal M.2 SSD Boot (No SATA hard drive)			M.2 SSD	Y (boot) RAID 0 or 5	RAID 0 or 5	RAID 0 or 5	N/A	RAID 0 or 5	N/A	N/A	N/A	N/A	Y (optional)
C1	Internal M.2 SSD Boot (No SATA hard drive)			M.2 SSD	Y1 (boot)	Y2 (optional)	N/A	Y3 (optional)	Y4 (optional)	N/A	N/A	N/A	N/A	Y (optional)
C2	Internal M.2 SSD Boot	Optional SSDs	3.5-inch hard drives	M.2 SSD	Y1 (boot)	Y2 (optional)	Y3 (optional)	N/A	Y4 (optional)	Y1 Bay 1	Y2 (optional) Bay 2	N/A	N/A	Y (optional)

Table 12. Storage matrix (continued)

Configuration group	Storage			Bootable Device	1st M.2 PCIe NVMe SSD CPU lane	2nd M.2 PCIe NVMe SSD PCH lane	3rd M.2 PCIe NVMe SSD PCH lane	CFI only 3rd NVMe SSD in QX118 slim line slot	Ultra-Speed NVMe SSD Zoom AIC	3.5-inch hard drive	3.5-inch hard drive	3.5-inch hard drive	3.5-inch hard drive	ODD
	PCIe lane connection and SSD location							PCH Gen3 Slot 3						
	QX118/ODD Physical Location				CPU Gen4 Slot 1	PCH Gen4 Slot 2	PCH Gen3 Slot 3	5.25-inch front bay slimline	PCH Gen3 Slot 4					
C2	Internal M.2 SSD Boot	Optional SSDs	3.5-inch hard drives	M.2 SSD	Y (boot) RAID 0 or 1	RAID 0 or 1	N/A	N/A	N/A	Y1 Bay 1	Y2 (optional) Bay 2	N/A	N/A	Y (optional)
C2	Internal M.2 SSD Boot	Optional SSDs	3.5-inch hard drives	M.2 SSD	Y (boot) RAID 0 or 5	RAID 0 or 5	RAID 0 or 5	N/A	N/A	Y1 Bay 1	Y2 (optional) Bay 2	N/A	N/A	Y (optional)
C2	Internal M.2 SSD Boot	Optional SSDs	3.5-inch hard drives	M.2 SSD	Y1 (boot)	Y2 (optional)	N/A	Y3 (optional)	Y4 (optional)	Y1 Bay 1	Y2 (optional) Bay 2	N/A	N/A	Y (optional)
C2	Internal M.2 SSD Boot	Optional SSDs	3.5-inch hard drives	M.2 SSD	Y1 (boot)	Y2 (optional)	Y3 (optional)	N/A	Y4 (optional)	RAID 0 or 1 Bay 1	RAID 0 or 1 Bay 2	N/A	N/A	Y (optional)
C3	Internal M.2 SSD Boot	Optional SSDs	Front removable 3.5-inch hard drives	M.2 SSD	Y1 (boot)	Y2 (optional)	Y3 (optional)	N/A	Y4 (optional)	Y2 (optional) Bay 1	Y3 (optional) Bay 2	N/A	Y1 Front Bay 3	Y (optional)
C4	No storage drive			None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

RAID (Redundant Array of Independent Disks)

For optimal performance when configuring drives as a RAID volume, Dell Technologies recommends drive models that are identical.

NOTE: RAID is not supported on Intel Optane configurations.

RAID 0 (Striped, Performance) volumes benefit from higher performance when drives are matched because the data is split across multiple drives: any I/O operations with block sizes larger than the stripe size splits the I/O and become constrained by the slowest of the drives. For RAID 0 I/O operations where block sizes are smaller than the stripe size, whichever drive the I/O operation targets determine the performance, which increases variability and results in inconsistent latencies. This variability is particularly pronounced for write operations, and it can be problematic for applications that are latency sensitive. One such example of this is any application that performs thousands of random writes per second in small block sizes.

RAID 1 (Mirrored, Data Protection) volumes benefit from higher performance when drives are matched because the data is mirrored across multiple drives: all I/O operations must be performed identically to both drives, thus variations in drive performance when the models are different, results in the I/O operations completing only as fast as the slowest drive. While this does not suffer the variable latency issue in small random I/O operations as with RAID 0 across heterogeneous drives, the impact is nonetheless large because the higher performing drive becomes limited in all I/O types. One of the worst examples of constrained performance here is when using unbuffered I/O. To ensure that writes are fully committed to nonvolatile regions of the RAID volume, unbuffered I/O bypasses cache (for example by using the Force Unit Access bit in the NVMe protocol) and the I/O operation will not complete until all the drives in the RAID volume have completed the request to commit the data. This kind of I/O operation completely negates any advantage of a higher performing drive in the volume.

RAID 5 provides better performance by using data striping and protection through parity. The disadvantage of RAID 5 is that rebuilding a large RAID 5 volume requires a longer period of time. The following are the key features of RAID 5:

- Requires at least three drives.
- Data is available even if ones of the drives present in the volume fails. The failed drive must be replaced, and the volume must be rebuilt for the data to be accessible.
- The total capacity is N-1, where N is the total capacity of the drives in the array. For example, if you use three 1 TB drives in a RAID 5 array, the total volume size is 2 TB.

Care must be taken to match not only the drive vendor, capacity, and class, but also the specific model. Drives from the same vendor, with the same capacity, and even within the same class, can have different performance characteristics for certain types of I/O operations. Thus, matching by model ensures that the RAID volume is comprised of a homogeneous array of drives that deliver all the benefits of a RAID volume without incurring the additional penalties when one or more drives in the volume are lower performing.

Precision 3680 Tower supports RAID with more than one hard drive configuration.

Media-card reader

The following table lists the media cards that are supported in your Precision 3680 Tower.

Table 13. Media-card reader specifications

Description	Values
Media-card type	One SD-card slot **NOTE:** The SD-card reader maybe from different manufacturers and will require specific drivers to be installed.
Media-cards supported	• Secure Digital (SD) • Secure Digital High Capacity (SDHC) • Secure Digital Extended Capacity (SDXC)
NOTE: The maximum capacity that is supported by the media-card reader varies depending on the standard of the media card that is installed on your computer.	

Power ratings

The following table lists the power rating specifications of Precision 3680 Tower.

Table 14. Power ratings

Description	Option one	Option two	Option three
Type	300 W Platinum internal power supply unit (80PLUS Platinum Certified)	500 W Platinum internal power supply unit (80PLUS Platinum Certified)	1000 W Platinum internal power supply unit (80PLUS Platinum Certified)
Input voltage	90 VAC–264 VAC	90 VAC–264 VAC	90 VAC–264 VAC
Input frequency	47 Hz-63 Hz	47 Hz–63 Hz	47 Hz–63 Hz

Table 14. Power ratings (continued)

Description	Option one	Option two	Option three
Input current (maximum)	• 4.2 A	• 7 A	13.6 A
Output current (continuous)	• 12 VA/18 A • 12 VB/18 A Standby mode: • 12 VA/1.5 A • 12 VB/3.3 A	• 12 VA/18 A • 12 VB/18 A • 12 VC/18 A Standby mode: • 12 VA/1.5 A • 12 VB/3.3 A • 12 VC/0 A	• 12 VA/36 A • 12 VB/27 A • 12 VC/36 A Standby mode: • 12 VA/1.5 A • 12 VB/5 A • 12 VC/0 A
Rated output voltage	• 12 VA • 12 VB	• 12 VA • 12 VB • 12 VC	• 12 VA • 12 VB • 12 VC
Temperature range:			
Operating	5°C to 45°C (41°F to 113°F)	5°C to 45°C (41°F to 113°F)	5°C to 45°C (41°F to 113°F)
Storage	-40°C to 70°C (-40°F to 158°F)	-40°C to 70°C (-40°F to 158°F)	-40°C to 70°C (-40°F to 158°F)

Power supply connector

The following table lists the Power supply connector specifications of your Precision 3680 Tower.

Table 15. Power supply connector

Power supply unit	Connectors
300W (80 PLUS Platinum)	• Two 4-pin connectors for the processor • One 8-pin connector for the system board
500W (80 PLUS Platinum)	• Two 4-pin connectors for the processor • One 8-pin connector for the system board • One 6-pin and one 2 + 6-pin connectors for graphic card
1000W (80 PLUS Platinum)	• Two 4-pin connectors for the processor • One 8-pin connector for the system board • Two 6-pin and two 2 + 6-pin connectors for the graphic card

NOTE: This workstation uses high wattage power supply unit and it is recommended to use a Power Distribution Unit (PDU) always for protection of equipment.

GPU—Integrated

The following table lists the specifications of the integrated Graphics Processing Unit (GPU) supported by your Precision 3680 Tower.

Table 16. GPU—Integrated

Controller	Memory size	Processor
Intel UHD Graphics 730	Shared system memory	14th Gen Intel Core i3-14100

Table 16. GPU—Integrated (continued)

Controller	Memory size	Processor
Intel UHD Graphics 770	Shared system memory	14th Gen Intel Core i5-14500, i5-14600, i5-14600K, i7-14700, i7-14700K, i9-14900, and i9-14900K processors

Multiple display support matrix

The following table lists the multiple display support matrix for your Precision 3680 Tower.

Table 17. Multiple display support matrix

Description	Option one	Option two
Integrated Graphics Card	Intel UHD Graphics 730	Intel UHD Graphics 770
Optional Module	VGA, HDMI 2.0, DP++ 1.4a HBR3, USB 3.2 Gen 2 (10 Gbps) Type-C with DP-Alt mode	VGA, HDMI 2.0, DP++ 1.4a HBR3, USB 3.2 Gen 2 (10 Gbps) Type-C with DP-Alt mode
Supported 4K Displays	DP1.4a HBR2, 4096 x 2304 @60 Hz	DP1.4a HBR2, 4096 x 2304 @60 Hz
Supported 5K Displays	5K tiled resolution (5120 x 2880) support on DP panels. **NOTE:** Requires two DP cables that are driven through two separate DDIs from the source, and using DP-SST (Single Stream Transport) mechanism.	5K tiled resolution (5120 x 2880) support on DP panels. **NOTE:** Requires two DP cables that are driven through two separate DDIs from the source, and using DP-SST (Single Stream Transport) mechanism.

GPU—Discrete

The following table lists the specifications of the discrete Graphics Processing Unit (GPU) supported by your Precision 3680 Tower.

Table 18. GPU—Discrete

Controller	Memory size	Memory type
NVIDIA RTX 6000 Ada Generation	48 GB	GDDR6
NVIDIA RTX 5000 Ada Generation	24 GB	GDDR6
NVIDIA RTX 4500 Ada Generation	24 GB	GDDR6
NVIDIA RTX 4000 Ada Generation	20 GB	GDDR6
NVIDIA RTX 2000 Ada Generation	16 GB	GDDR6
NVIDIA RTX A1000	8 GB	GDDR6
NVIDIA RTX A400	4 GB	GDDR6
NVIDIA T1000	8 GB	GDDR6
NVIDIA T1000	4 GB	GDDR6
NVIDIA T400	4 GB	GDDR6

Table 18. GPU—Discrete (continued)

Controller	Memory size	Memory type
NVIDIA GeForce RTX 4090	24 GB	GDDR6X
NVIDIA GeForce RTX 4090D	24 GB	GDDR6X
NVIDIA GeForce RTX 4080 Super	16 GB	GDDR6X
NVIDIA GeForce RTX 4070	12 GB	GDDR6
NVIDIA GeForce RTX 4060	8 GB	GDDR6
AMD Radeon Pro W7900	48 GB	GDDR6
AMD Radeon Pro W7600	8 GB	GDDR6
AMD Radeon Pro W7500	8 GB	GDDR6
AMD Radeon Pro W6400	4 GB	GDDR6
AMD Radeon Pro W6300	2 GB	GDDR6

Video port resolution

The following table lists the video port resolution for your Precision 3680 Tower.

Table 19. Video port resolution

Graphics card	Video ports	Maximum supported resolution
NVIDIA RTX 6000 Ada Generation	Four DP 1.4 ports	7680 x 4320 @24 bpp at 120 Hz **NOTE:** Requires two DPs 1.4a and DSC **NOTE:** DisplayPort 1.2 Certified, DisplayPort 1.3 and 1.4 ready
NVIDIA RTX 5000 Ada Generation	Four DP 1.4 ports	7680 x 4320 @24 bpp at 120 Hz **NOTE:** Requires two DPs 1.4a and DSC **NOTE:** DisplayPort 1.2 Certified, DisplayPort 1.3 and 1.4 ready
NVIDIA RTX 4500 Ada Generation	Four DP 1.4 ports	7680 x 4320 @24 bpp at 120 Hz **NOTE:** Requires two DPs 1.4a and DSC **NOTE:** DisplayPort 1.2 Certified, DisplayPort 1.3 and 1.4 ready
NVIDIA RTX 4000 Ada Generation	Four DP 1.4 ports	7680 x 4320 @24 bpp at 120 Hz **NOTE:** Requires two DPs 1.4a and DSC **NOTE:** DisplayPort 1.2 Certified, DisplayPort 1.3 and 1.4 ready
NVIDIA RTX 2000 Ada Generation	Four mini-DP 1.4 ports	7680 x 4320 @24 bpp at 120 Hz **NOTE:** Requires two DPs 1.4a and DSC **NOTE:** DisplayPort 1.2 Certified, DisplayPort 1.3 and 1.4 ready

Table 19. Video port resolution (continued)

Graphics card	Video ports	Maximum supported resolution
NVIDIA RTX A1000	Three mini DisplayPort 1.4a ports	• 4096 x 2160 @ 120 Hz • 5120 x 2880 @ 60 Hz • 7680 x 4320 @ 30 Hz
NVIDIA RTX A400	Four mini DisplayPort 1.4a ports	• 4096 x 2160 @ 120 Hz • 5120 x 2880 @ 60 Hz
NVIDIA T1000 (8 GB)	Four mini-DP 1.4 ports	7680 x 4320 @24 bpp at 120 Hz **NOTE:** Requires three DPs 1.4a and DSC **NOTE:** DisplayPort 1.2 Certified, DisplayPort 1.3 and 1.4 ready
NVIDIA T1000 (4 GB)	Four mini-DP 1.4 ports	7680 x 4320 @24 bpp at 120 Hz **NOTE:** Requires three DPs 1.4a and DSC **NOTE:** DisplayPort 1.2 Certified, DisplayPort 1.3 and 1.4 ready
NVIDIA T400	Three mini-DP 1.4 ports	7680 x 4320 @24 bpp at 120 Hz **NOTE:** Requires two DPs 1.4a and DSC **NOTE:** DisplayPort 1.2 Certified, DisplayPort 1.3 and 1.4 ready
NVIDIA GeForce RTX 4090	• Three DisplayPort 1.4a ports • One HDMI 2.1 port	7680 x 4320 @60 Hz
NVIDIA GeForce RTX 4090D	• Three DisplayPort 1.4a ports • One HDMI 2.1 port	7680 x 4320 @60 Hz
NVIDIA GeForce RTX 4080 Super	• Three DisplayPort 1.4a ports • One HDMI 2.1 port	7680 x 4320 @60 Hz
NVIDIA GeForce RTX 4070	• Three DisplayPort 1.4a ports • One HDMI 2.1 port	7680 x 4320 @60 Hz
NVIDIA GeForce RTX 4060	• Three DisplayPort 1.4a ports • One HDMI 2.1 port	7680 x 4320 @60 Hz
AMD Radeon Pro W7900	• Three DisplayPort 2.1 ports • One enhanced mini-DP 2.1 port	7680 x 4320 @60 Hz
AMD Radeon Pro W7600	Four DP 2.1 ports	7680 x 4320 @60 Hz
AMD Radeon Pro W7500	Four DP 2.1 ports	7680 x 4320 @60 Hz
AMD Radeon Pro W6400	Two DP 1.4 ports	7680 x 4320 @60 Hz
AMD Radeon Pro W6300	Two DP 1.4 ports	7680 x 4320 @60 Hz

Hardware security

The following table lists the hardware security of your Precision 3680 Tower.

Table 20. Hardware security

Hardware security
Kensington security-cable slot
Padlock loop
Lockable cable cover (optional)
Lockable Bezel and Key for Front Accessible SATA hard drive (optional) **NOTE:** Included with front-accessible storage configurations
Chassis intrusion switch
Trusted Platform Module TPM 2.0 (FIPs 140-2 certificate)
Intel Integrated TPM

Environmental

The following table lists the environmental specifications of your Precision 3680 Tower.

Table 21. Environmental

Feature	Values
Recyclable packaging	Yes
BFR/PVC—free	No
Vertical orientation packaging support	Yes
MultiPack packaging	Yes (Except Brazil)
Energy-Efficient Power Supply	Standard
ENV0424 compliant	Yes

NOTE: Wood-based fiber packaging contains a minimum of 35% recycled content by total weight of wood-based fiber. Packaging that contains without wood-based fiber can be claimed as Not Applicable. The anticipated required criteria for EPEAT 2018.

Regulatory compliance

The following table lists the regulatory compliance of your Precision 3680 Tower.

Table 22. Regulatory compliance

Regulatory compliance
Product Safety, EMC and Environmental Datasheets
Dell Regulatory Compliance Home page
Responsible Business Alliance Policy

Operating and storage environment

This table lists the operating and storage specifications of your Precision 3680 Tower.

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

Table 23. Computer environment

Description	Operating	Storage
Temperature range	10°C-35°C (50°F-95°F)	-40°C-65°C (-40°F-149°F)
Relative humidity (maximum)	20% to 85% (non-condensing) (non-condensing, Max dew point temperature = 26°C)	0% to 95% (non-condensing) 5% to 95% (non-condensing, Max dew point temperature = 33°C)
Vibration (maximum)*	0.52 GRMS random at 5 Hz-350 Hz	2.0 GRMS random at 5 Hz-500 Hz
Shock (maximum)	40G Bottom half-sine pulse (2.5 ms)	105G half-sine pulse (2.5 ms)
Altitude range	-15.2 m to 3048 m (-49.86 ft to 10,000 ft)	-15.2 m to 10,668 m (-49.86 ft to 35,000 ft)
CAUTION: Operating and storage temperature ranges may differ among components, so operating or storing the device outside these ranges may impact the performance of specific components.		

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

† Measured using a 2 ms half-sine pulse.

3

Engineering specifications

Physical system dimensions

The following table provides the physical dimensions of your Precision 3680 Tower.

NOTE: System weight and shipping weight are based on a typical configuration and may vary based on your system configuration. A typical configuration includes integrated graphics, one hard drive, and one optical drive.

Table 24. Physical system dimensions

Feature	Values
Chassis volume	26.80 L
Chassis Weight	• Minimum: 7.58 kg (16.71 lb) • Maximum: 16.05 kg (35.38 lb)
Chassis dimensions	
Height	372.90 mm (14.68 in.)
Width	173.00 mm (6.81 in.)
Depth	420.20 mm (16.54 in.)
Shipping Weight (includes packaging materials)	• Minimum: 10.29 kg (22.68 lb) • Maximum: 18.86 kg (41.57 lb)
Packaging dimensions	
Height	546 mm (21.50 in.)
Width	492 mm (19.37 in.)
Depth	359 mm (14.13 in.)

Add-in card dimensions

System board connector maximum add-in card allowable dimensions

Table 25. System board connector maximum add-in card allowable dimensions

Feature	Values
M.2 connector	• Two M.2 2230/2280 PCIe Gen4 x4 • One M.2 2280 PCIe Gen3 x4
Voltage	3.3 V
Power	11.55W
PCIe x16 connector	One PCIe x16 slot
Voltage	3.3 V/12 V

Table 25. System board connector maximum add-in card allowable dimensions (continued)

Feature	Values
Maximum Height	4.98 +/-0.02 in. (126.5 +/-0.5 mm)
Maximum Length	12.28 in. (312 mm) (with an extender)
Maximum wattage	• 75W/300W PSU • 225W/500W PSU • 450W/1000W PSU
PCIe x4 connector	• One PCIe Gen3 x4 Closed-end • One PCIe Gen4 x4 Open end
Voltage	3.3 V/12 V
Maximum Height	• 4.38 in. (111.15 mm) (Closed-end connector) • 4.38 in. (111.15 mm) (Open-end connector)
Maximum Length	• 6.60 in. (167.65 mm) (Closed-end connector) • 12.28 in. (312 mm) (Closed-end connector, with an extender)
Maximum wattage	PCIe Gen3 x4 Closed-end • 10W for 300W/500W/1000W PSU PCIe Gen4 x4 Open end • 25W/300W PSU • 25W*/500W PSU (up to 125W if total slots <=250W) • Blocked by 450W graphics card/1000W PSU (up to 125W if total slots <= 460W)

PCIe lane details

Table 26. PCIe lane details

Expansion Slot Type	Voltage	Maximum Height	Maximum Length	Maximum Wattage	Cards supported
PCIe x16 connector	3.3 V/12 V	4.98 +/-0.02 in. (126.5 +/-0.5 mm)	12.28 in. (312 mm) (with an extender)	• 75W/300W PSU • 225W/500W PSU • 450W/1000W PSU	Yes
PCIe x4 connector	3.3 V/12 V	• 4.38 in. (111.15 mm) (Closed-end connector) • 4.38 in. (111.15 mm) (Open-end connector)	• 6.60 in. (167.65 mm) (Closed-end connector) • 12.28 in. (312 mm) (Closed-end connector, with an extender)	Slot 1 • 10W for 300W/500W/1000W PSU Slot 4 • 25W/300W PSU • 25W*/500W PSU (up to 125W if total slots <=250W) • Blocked by 450W graphics card	Yes

PCIe add-in cards

Serial port PCIe card, Low Profile

Table 27. Serial port PCIe card, Low Profile

Feature	Values
Interface	• RS-232 • IEEE1284
Data rates	• 50 bps ~115.2 Kbps (serial) • maximum 1.8 Mbps (parallel)
Controller details	
Controller	SUNIX SUN2212 (16C950 UART compatible)
Controller bus architecture	• PCI Express 2.0 • Single-Lane (x1)
Driver support	Windows 10 (64-bit)
Half-height serial add-in dongle	Optional
Environment	
Operating temperature	0°C to 60°C (32°F–140°F)
Operating humidity	5% to 95% RH
Storage temperature	-20°C to 85°C (-4°F to 185°F)

UltraSpeed Duo M.2 PCIe card

The following table lists the UltraSpeed Duo M.2 PCIe card specifications, also known as Zoom 2 card.

Table 28. UltraSpeed Duo M.2 PCIe card (Zoom 2 card) specifications

Feature	Values
Interface	PCIe
Data rates	PCIe Gen 4
Environment	
Operating temperature	0°C to 60°C (32°F to 140°F)
Operating humidity	5% to 95% RH
Storage temperature	-20°C to 70°C (-4°F to 158°F)

Thunderbolt 4 PCIe Add-In Card

The following table lists the Thunderbolt 4 PCIe Add-In Card specifications.

Table 29. Thunderbolt 4 PCIe Add-In Card

Features	Values
Design	LP HL PWA with PCIe 4.0 x4 Full height Bracket option
Number of ports	• 2x Type-C I/O • 2x DP input

Table 29. Thunderbolt 4 PCIe Add-In Card (continued)

Features	Values
	• GPIO (requires side-band cable)
Feature	• 40 Gb/s (2x 20) with TB4 and USB 4.0 • Auto switch/shift to Legacy TB/USB (support backwards compatibility) • DP1.4a HBR3 Out (DP-MF and DP-alt) two streams • DP Tunnel 32 Gb/s 2 Streams, USB3.0 Tunnel 10 Gb/s • Hub Support, TB Networking, Universal Cable
Power	• Upper Port - 5 V@3 A (TB + Power Delivery Icon) • Lower Port - 5 V@1.5 A (TB Icon Only)
Drivers	• Windows 10 and Windows 11 • Red Hat Enterprise Linux • Ubuntu
Cables	• 1x Sideband cable (system to TBT4 card) • 2x DP cables x24 cm Graphics loopback (DP connector from GFX card to TBT4 card)
Manuals	• Product Specification Sheet and User Guide • Online Post Drivers and Docs
Certificates	• Intel Thunderbolt Validation • WHQL • USB 4.0 40 Gb/s
Specifications	• Dell standard reliability • Behavior • Materials

Dust Filter

This topic illustrates the optional dust filter attachments for the Precision 3680 Tower.

Dust Filter

Table 30. Dust filter specifications

Feature	Value
Mesh count (cm/inch)	40/100
Weave	PW
Silk diameter (cm)	0.0055
Open area (%)	80
Thickness (cm)	0.01
Remark	PET

Ethernet

Intel Ethernet Connection i219-LM

The following table lists the i219-LM specifications.

Table 31. Intel Ethernet Connection i219-LM specifications

Feature	Values
External connector type	RJ45
Data rate	10/100/1000 Mbps
Controller Details	
Controller bus architecture	PCI Express base specification revision 1.1
Integrated memory	Yes
Data transfer mode	Yes (Bus-Master DMA)
Power consumption (Full operation per data rate connection speed)	542 mW (Max)
Power consumption (Standby operation)	76 mW (Max)
IEEE standards compliance	802.3
Hardware certifications	N/A
Boot ROM support	EEPROM (Located in SPI)
Network Transfer Mode	
Network transfer rate	10 Mb (full/half-duplex)
10BASE-T (full-duplex) 20 Mbps	100 Mb (full/half-duplex)
100BASE-TX (half-duplex) 100 Mbps	1000 Mb (full-duplex)
Environmental	
Operating temperature range	0°C–85°C (32°F–185°F)
Operating humidity	20% to 80% (non condensing)
Operating system driver Support	• Windows (x64) • Ubuntu • Neokylin
Manageability	• Wakeup On LAN • PXE 2.1
Management capabilities alerting	Optional Intel Standard Manageability (must be made at time of purchase).

This term does not connote an actual operating speed of 1 Gb/sec. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

Intel Ethernet Connection i226

The following table lists the i226 specifications.

Table 32. Intel Ethernet Connection i226 specifications

Feature	Values
External connector type	RJ45
Data rate	10/100/1000/2500 Mbps
Adapter Features	
Bus Type/Bus Width	PCI Express 3.1 x 1
Interrupt levels	INTA, MSI, MSI-X
Hardware certifications	FCC B, UL, CE, VCCI, BSMI, CTICK, KCC
Controller	Intel Ethernet Controller I226
Bracket	Full-height bracket installed.
Wake-on-LAN	Supported
Power Consumption	
Link Speed/Traffic	Typical power
10 Mbps	0.5W
100 Mbps	0.6W
1 Gbe	0.9W
2.5 Gbe	1.4W
Environmental	
Operating temperature range	0°C–55°C (32°F–131°F)
Storage temperature range	-40°C–70°C (-40°F–158°F)
Storage humidity	Maximum 90% non-condensing relative humidity at 35°C
Physical Dimensions	
Dimensions	68.70 mm x 65.30 mm

Wireless module

Intel AX211, 2x2 MIMO, 2400 Mbps, 2.4/5/6 GHz, Wi-Fi 6E (WiFi 802.11ax), Bluetooth 5.3

The following table lists the Intel AX211 specifications.

NOTE: Wi-Fi 6 is supported in regions where Wi-Fi 6E is unavailable.

Table 33. Intel AX211 specifications

Description	Specifications
Host interface	CNVio
Network standard	IEEE 802.11a/b/g/n/ac/ax, 160 MHz channel use, MU-MIMO, new 6 GHz band

Table 33. Intel AX211 specifications (continued)

Description	Specifications
Wi-Fi Alliance certifications	Wi-Fi CERTIFIED 6, Wi-Fi CERTIFIED a/b/g/n/a, WMMM, WMM-Power Save, WPA2, WPA3, WPS, PM, Wi-Fii Direct, Wi-Fi Agile Multiband **NOTE:** Other names and brands may be claimed as the property of others.
Operating frequency bands	• 2.4 GHz • 5 GHz • 6 GHz
Data rate	• 2.4 GHz 40M: Up to 574 Mbps • 5/6 GHz 80M: Up to 1.2 Gbps • 5/6 GHz 160M: Up to 2.4 Gbps
Power consumption	Optimized power modes (sleep states) reduce power consumption during periods of inactivity
Security methods	• WPA2 Personal and Enterprise • WPA3
Authentication protocols	• 802.1X EAP-TLS • EAP-TTLS/MSCHAPv2 • PEAPv0 -MSCHAPv2 (EAP-SIM, EAP-AKA, EAP-AKA)
Encryption	• 64-bit and 128-bit WEP • TKIP • 128-bit AES-CCMP • 256-bit AES-GCMP
Product safety	• UL • C-UL • CB (IEC60950-1)
Management capabilities alerting	Support for Intel AMT
Government compliance	• FIPS 140-2 • FISMA
Client utility	Intel PRO/Set wireless software v22 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
Wireless PAN standard	• Dual Mode Bluetooth 5.3 • BLE
Bluetooth data rates	Up to 3 Mbps
Bluetooth operating frequency bands	2.4 GHz
Bluetooth profiles supported	Support for Microsoft Inbox Bluetooth Wireless Card profiles in Windows
Bluetooth data encryption	128-bit encryption
Bluetooth output power	Power class 1

Table 33. Intel AX211 specifications (continued)

Description	Specifications
Operating temperature	0°C to + 50°C (Full performance at shield temperatures up to 80°C)
Storage temperature	-40°C to +70°C
Humidity	Up to 90% RH non-condensing (at temperatures of 25°C to 35°C)

Qualcomm WCN6856, 2x2, Wi-Fi 6E DBS, Bluetooth 5.3

The following table lists the Intel Qualcomm WCN6856 specifications.

Table 34. Qualcomm WCN6856 specifications

Description	Specifications
Host interface	• Wi-Fi - PCIe • Bluetooth - USB
Network standard	IEEE 802.11a/b/g/n/ac/ax, 160MHz channel use, MU-MIMO
Wi-Fi Alliance certifications	• 802.11 a/b/g/n/ac R2/ax R2 • WMM • WMM-PS • WPA3 • WPS2 • PMF • WFD • Miracast • Passpoint R2 • Voice Personal
Operating frequency bands	• 2.4 GHz • 5 GHz • 6 GHz
Data rate	• 2.4 GHz 40M: Up to 691 Mbps • 5 GHz 160M: Up to 2.88 Gbps • 6 GHz 160M: Up to 2.88 Gbps • DBS mode • 2.4 GHz 40M + 5/6 GHz 160M: Up to 3.57 Gbps
Power consumption	Optimized power modes (sleep states) reduce power consumption during periods of inactivity
Authentication	• WPA and WPA2 Personal and Enterprise • WPA3 Personal and Enterprise
Authentication protocols	• 802.1X EAP-TLS • EAP-TTLS/MSCHAPv2 • PEAPv0-MSCHAPv2 (EAP-SIM, EAP-AKA, EAP-AKA)
Encryption	• 64-bit and 128-bit WEP • TKIP • 128-bit AES-CCMP • 256-bit AES-GCMP
Product safety	• UL • C-UL

Table 34. Qualcomm WCN6856 specifications (continued)

Description	Specifications
	• CB (IEC60950-1)
Government compliance	• FIPS 140-2 • FISMA
Client utility	Intel PRO/Set wireless software v22 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
Wireless PAN standard	• Dual Mode Bluetooth 5.3 • BLE
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
Bluetooth data encryption	128-bit encryption
Bluetooth output power	Power Class 1
Operating temperature	0°C to + 50°C (Full performance at shield temperatures up to 80°C)
Storage temperature	-40°C to +70°C
Humidity	Up to 90% RH non-condensing (at temperatures of 25° C to 35° C)

GPU—Integrated

Intel UHD Graphics 730

Table 35. Intel UHD Graphics 730 specifications

Intel UHD Graphics 730	
Bus Type	Integrated
Memory Type	UMA
Graphics Level	i3: GT1 (UHD)
Overlay Planes	Yes
Operating Systems Graphics/ Video API Support	DirectX 12, OpenGL (4.6)
Supports maximum resolution	• On board integrated DP1.4 (HBR2)(4096 x 2304 @ 60 Hz) • Option card with VGA (1920 x 1200 @ 60 Hz) • Option card with DP1.4 (HBR3) (5120 x 3200 @ 60 Hz), (7680 × 4320 @ 60 Hz HDR with discrete graphics)

Table 35. Intel UHD Graphics 730 specifications (continued)

Intel UHD Graphics 730		
		• Option card with HDMI 2.0 (4096 x 2160 @ 60 Hz) • Option card with Type-C (5120 x 3200 @ 60 Hz), (7680 × 4320 @ 60 Hz HDR with discrete graphics)
Number of displays supported		Up to four displays are supported
Multiple Display Supports	2 displays	• On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + On board integrated DP1.4 (4096x2304 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + Option card with VGA (1920 x 1200 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + Option card with DP1.4 (5120 x 3200 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + Option card with HDMI 2.0 (4096 x 2160 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + Option card with Type-C (5120 x 3200 @ 60 Hz)
	3 displays	• On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + Option card with VGA (1920 x 1200 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + On board integrated DP1.4(4096 x 2304 @ 60 Hz) + Option card with DP1.4 (5120 x 3200 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + On board integrated DP1.4(4096 x 2304 @ 60 Hz) + Option card with HDMI 2.0 (4096 x 2160 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + Option card with Type-C (5120 x 3200 @ 60 Hz)
External connectors		• Two system-board integrated DP1.4 HBR2 + One video option (VGA/DP1.4 HBR3/ HDMI2.0/USB 3.2 Gen 2 type-C Alt-mode)

Intel UHD Graphics 770

Table 36. Intel UHD Graphics 770 specifications

Intel UHD Graphics 770		
Bus Type		Integrated
Memory Type		UMA
Graphics Level		i5/i7/i9: GT1 (UHD)
Overlay Planes		Yes
Operating Systems Graphics/ Video API Support		DirectX 12, OpenGL (4.6)
Supports maximum resolution		• On board integrated DP1.4 (HBR2)(4096 x 2304 @ 60 Hz) • Option card with VGA (1920 x 1200 @ 60 Hz) • Option card with DP1.4 (HBR3) (5120 x 3200 @ 60 Hz), (7680 × 4320 @ 60 Hz HDR with discrete graphics) • Option card with HDMI 2.0 (4096 x 2160 @ 60 Hz) • Option card with Type-C (5120 x 3200 @ 60 Hz), (7680 × 4320 @ 60 Hz HDR with discrete graphics)
Number of displays supported		Up to four displays are supported
Multiple Display Supports	2 displays	• On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + On board integrated DP1.4(4096 x 2304 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + Option card with VGA (1920 x 1200 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + Option card with DP1.4 (5120 x 3200 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + Option card with HDMI 2.0 (4096 x 2160 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + Option card with Type-C (5120 x 3200 @ 60 Hz)
	3 displays	• On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + On board integrated DP1.4(4096 x 2304 @ 60 Hz) + Option card with VGA (1920 x 1200 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + On board integrated DP1.4(4096 x 2304 @ 60 Hz) + Option card

Table 36. Intel UHD Graphics 770 specifications (continued)

Intel UHD Graphics 770		
		with DP1.4 (5120 x 3200 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + On board integrated DP1.4(4096 x 2304 @ 60 Hz) + Option card with HDMI 2.0 (4096 x 2160 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + On board integrated DP1.4 (4096 x 2160 @ 30 Hz)+ Option card with Type-C (5120 x 3200 @ 60 Hz)
External connectors		Two system-board integrated DP1.4 HBR2 + One video option (VGA/DP1.4 HBR3/ HDMI2.0/USB 3.2 Gen 2 type-C Alt-mode)

GPU—Discrete

NVIDIA RTX 6000 Ada Generation, 48 GB GDDR6

The following table lists the NVIDIA RTX 6000 Ada Generation specifications.

Table 37. NVIDIA RTX 6000 Ada Generation specifications

Description	Values
GPU Memory	48 GB GDDR6
Memory Interface	384-bit
Memory Bandwidth	960 GB/s
NVIDIA CUDA Cores	18176
System Interface	PCI Express 4.0 x16
Max Power Consumption	300 W
Thermal Solution	Active
Form Factor	Height: 4.37 in./111.15 mm/Length: 10.58 in./268.60 mm, Dual Slot
Display Connectors	4x DP 1.4a
Max Simultaneous Displays	4 direct, 4 DP 1.4a Multi-Stream
Display Resolution	• 2x 7680 x 4320 @ 60 Hz • 4x 5120 x 2880 @ 60 Hz • 4x 4096 x 2160 @ 120 Hz
Graphics APIs	• Shader Model 6.6 • OpenGL 4.6 • DirectX 12 • Vulkan 1.3

Table 37. NVIDIA RTX 6000 Ada Generation specifications (continued)

Description	Values
Compute APIs	• CUDA 11.6 • DirectCompute • OpenCL 3.0

NVIDIA RTX 5000 Ada Generation, 24 GB GDDR6

The following table lists the NVIDIA RTX 5000 Ada Generation specifications.

Table 38. NVIDIA RTX 5000 Ada specifications

Description	Values
GPU Memory	24 GB GDDR6
Memory Interface	256-bit
Memory Bandwidth	576 GB/s
NVIDIA CUDA Cores	12800
System Interface	PCI Express 4.0 x16
Max Power Consumption	250 W
Thermal Solution	Active
Form Factor	Height: 4.37 in./111.15 mm/Length: 10.58 in./268.60 mm, Dual Slot
Display Connectors	4x DP 1.4a
Max Simultaneous Displays	4 direct, 4 DP 1.4a Multi-Stream
Display Resolution	• 2x 7680 x 4320 @ 60 Hz • 4x 5120 x 2880 @ 60 Hz • 4x 4096 x 2160 @ 120 Hz
Graphics APIs	• Shader Model 6.7 • OpenGL 4.6 • DirectX 12 • Vulkan 1.3
Compute APIs	• CUDA 12.2 • DirectCompute • OpenCL 3.0

NVIDIA RTX 4500 Ada Generation, 24 GB GDDR6

The following table lists the NVIDIA RTX 4500 Ada Generation specifications.

Table 39. NVIDIA RTX 4500 Ada specifications

Description	Values
GPU Memory	24 GB GDDR6
Memory Interface	192-bit
Memory Bandwidth	432 GB/s
NVIDIA CUDA Cores	7680
System Interface	PCI Express 4.0 x16

Table 39. NVIDIA RTX 4500 Ada specifications (continued)

Description	Values
Max Power Consumption	210 W
Thermal Solution	Active
Form Factor	Height: 4.37 in./111.15 mm/Length: 10.58 in./268.60 mm, Dual Slot
Display Connectors	4x DP 1.4a
Max Simultaneous Displays	4 direct, 4 DP 1.4 Multi-Stream
Display Resolution	• 2x 7680 x 4320 @ 60 Hz • 4x 5120 x 2880 @ 60 Hz • 4x 4096 x 2160 @ 120 Hz
Graphics APIs	• Shader Model 6.7 • OpenGL 4.6 • DirectX 12 • Vulkan 1.3
Compute APIs	• CUDA 12.2 • DirectCompute • OpenCL 3.0

NVIDIA RTX 4000 SFF Ada Generation, 20 GB GDDR6

The following table lists the NVIDIA RTX 4000 SFF Ada Generation specifications.

Table 40. NVIDIA RTX 4000 SFF Ada Generation specifications

Description	Values
GPU Memory	20 GB GDDR6
Memory Interface	160-bit
Memory Bandwidth	360 GB/s
NVIDIA CUDA Cores	6144
System Interface	PCI Express 4.0 x16
Max Power Consumption	70 W
Thermal Solution	Active
Form Factor	Height: 4.39 in./111.75 mm and Length: 9.58 in./243.15 mm, Single Slot
Display Connectors	4x DP 1.4a
Max Simultaneous Displays	4 direct, 4 DP 1.4 Multi-Stream
Display Resolution	• 2x 7680 x 4320 @ 60 Hz • 4x 5120 x 2880 @ 60 Hz • 4x 4096 x 2160 @ 120 Hz
Graphics APIs	• Shader Model 6.7 • OpenGL 4.6 • DirectX 12 • Vulkan 1.3
Compute APIs	• CUDA 12.2 • DirectCompute • OpenCL 3.0

NVIDIA RTX 2000 Ada Generation, 16 GB, GDDR6

The following table lists the NVIDIA RTX 2000 Ada Generation specifications.

Table 41. NVIDIA RTX 2000 Ada Generation specifications

Description	Values
GPU Memory	16 GB GDDR6
Memory Interface	128-bit
Memory Bandwidth	224 GB/s
NVIDIA CUDA Cores	2816
System Interface	PCI Express 4.0 x 8
Max Power Consumption	70 W
Thermal Solution	Active
Form Factor	Height: 2.7 in./68.58 mm and Length: 9.58 in./167.64 mm, Dual Slot
Display Connectors	4x Mini DisplayPort 1.4a
Max Simultaneous Displays	4 direct, 4 Mini DisplayPort 1.4 Multi-Stream
Display Resolution	• 2x 7680 x 4320 @ 60 Hz • 4x 5120 x 2880 @ 60 Hz • 4x 4096 x 2160 @ 120 Hz
Graphics APIs	• Shader Model 6.6 • OpenGL 4.6 • DirectX 12 • Vulkan 1.3
Compute APIs	• CUDA 11.6 • DirectCompute • OpenCL 3.0

NVIDIA RTX A400, 4 GB GDDR6

The following table lists the NVIDIA RTX A400 specifications.

Table 42. NVIDIA RTX A400 specifications

Description	Values
GPU Memory	4 GB GDDR6
Memory Interface	64-bit
Memory Bandwidth	96 GB/s
NVIDIA CUDA Cores	768
System Interface	PCI 4.0 x8
Max Power Consumption	50 W
Thermal Solution	Active Fan
Form Factor	Height: 2.7 in./68.58 mm/Length: 6.4 in./162.56 mm, Single Slot
Display Connectors	4x Mini DisplayPort 1.4a
Max Simultaneous Displays	4 direct, 4 Mini DisplayPort 1.4a Multi-Stream

Table 42. NVIDIA RTX A400 specifications (continued)

Description	Values
Display Resolution	• 4x 5120 x 2880 @ 60 Hz • 4x 4096 x 2160 @ 120 Hz
Graphics APIs	• Shader Model 6.6 • OpenGL 4.6 • DirectX 12 • Vulkan 1.3
Compute APIs	• CUDA 11.6 • DirectCompute • OpenCL 3.0

NVIDIA RTX A1000 Generation, 8 GB GDDR6

The following table lists the NVIDIA RTX A1000 Generation specifications.

Table 43. NVIDIA RTX A1000 specifications

Description	Values
GPU Memory	8 GB GDDR6
Memory Interface	128-bit
Memory Bandwidth	192 GB/s
NVIDIA CUDA Cores	2304
System Interface	PCI Express 4.0 x8
Max Power Consumption	50 W
Thermal Solution	Active
Form Factor	Height: 2.7 in./68.58 mm/Length: 6.4 in./162.56 mm, Single Slot
Display Connectors	4x Mini DisplayPort 1.4a
Max Simultaneous Displays	4 direct, 4 Mini DisplayPort 1.4a Multi-Stream
Display Resolution	• 2x 7680 x 4320 @ 30 Hz • 4x 5120 x 2880 @ 60 Hz • 4x 4096 x 2160 @ 120 Hz
Graphics APIs	• Shader Model 6.6 • OpenGL 4.6 • DirectX 12 • Vulkan 1.3
Compute APIs	• CUDA 11.6 • DirectCompute • OpenCL 3.0

NVIDIA T1000, 8 GB GDDR6

The following table lists the NVIDIA T1000 specifications.

Table 44. NVIDIA T1000 specifications

Feature	Values
GPU frequency	1065 MHz
DirectX 12	12
Shader model	5.17
Open CL	3
Open GL	4.6
GPU memory interface	128 bits
PCIe bus	PCIe 3.0 x16
Display support	Four mini-DP 1.2 Certified, 1.3/1,4 Ready
Graphics memory configuration	8 GB, GDDR6
Graphics memory clock speed	5001 MHz
Active fan sink	4-pin embedded fan controller
Slot number	Single Slot
PCB form factor	Half Height
PCB layer	N/A
PCB solder mask	N/A
Bracket form factor	Low Profile or Full Height
Maximum resolution	7680 x 4320 x 24 bpp at 120 Hz (Requires two DPs 1.4a and DSC)
Power consumption	50 W

NVIDIA T1000, 4 GB GDDR6

The following table lists the NVIDIA T1000 specifications.

Table 45. NVIDIA T1000 specifications

Feature	Values
GPU frequency	1065 MHz
DirectX 12	12
Shader model	5.17
Open CL	3
Open GL	4.6
GPU memory interface	128 bits
PCIe bus	PCIe 3.0 x16
Display support	Four mini-DP 1.2 Certified, 1.3/1,4 Ready
Graphics memory configuration	4 GB, GDDR6
Graphics memory clock speed	1250 MHz

Table 45. NVIDIA T1000 specifications (continued)

Feature	Values
Active fan sink	4-pin embedded fan controller
Slot number	Single Slot
PCB form factor	Half Height
PCB layer	N/A
PCB solder mask	N/A
Bracket form factor	Low Profile or Full Height
Maximum resolution	7680 x 4320 x 24 bpp at 120 Hz (Requires two DPs 1.4a and DSC)
Power consumption	50 W

NVIDIA T400, 4 GB GDDR6

The following table lists the NVIDIA T400 specifications.

Table 46. NVIDIA T400 specifications

Feature	Values
GPU frequency	420 MHz
DirectX 12	12
Shader model	5.17
Open CL	3
Open GL	4.6
GPU memory interface	64 bits
PCIe bus	PCIe 3.0 x16
Display support	Three mini-DP 1.2 Certified, 1.3/1,4 Ready
Graphics memory configuration	4 GB, GDDR6
Graphics memory clock speed	5001 MHz
Active fan sink	4-pin embedded fan controller
Slot number	Single Slot
PCB form factor	Half Height
PCB layer	N/A
PCB solder mask	N/A
Bracket form factor	Low Profile
Maximum resolution	7680 x 4320 x 24 bpp at 120 Hz (Requires two DPs 1.4a and DSC)
Power consumption	30 W

NVIDIA GeForce RTX 4090, 24 GB, GDDR6

The following table lists the NVIDIA GeForce RTX 4090 specifications.

Table 47. NVIDIA GeForce RTX 4090 specifications

Feature	Values
GPU frequency	2230 MHz (base clock)
DirectX 12	12
Shader model	6.7
Open CL	3.0
Open GL	4.6
GPU memory interface	384-bit
PCIe bus	PCIe 4.0 x 16
Display support	• Three DisplayPort 1.4a ports • One HDMI 2.1a port
Graphics memory configuration	24 GB, GDDR6X
Graphics memory clock speed	21 Gbps
Active fan sink	Fan Controller Embedded (4-pin)
Slot number	3
PCB form factor	Full Height
PCB layer	14 layer
Bracket form factor	Triple
Maximum resolution	4K @ 120 Hz or 8K @ 60 Hz (with DSC)
Power consumption	450 W

NVIDIA GeForce RTX 4090D, 24 GB, GDDR6

The following table lists the NVIDIA GeForce RTX 4090D specifications.

Table 48. NVIDIA GeForce RTX 4090D specifications

Feature	Values
GPU frequency	2230 MHz (base clock)
DirectX 12	12
Shader model	6.7
Open CL	3.0
Open GL	4.6
GPU memory interface	384-bit
PCIe bus	PCIe 4.0 x 16
Display support	• Three DisplayPort 1.4a ports • One HDMI 2.1a port
Graphics memory configuration	24 GB, GDDR6X
Graphics memory clock speed	21 Gbps

Table 48. NVIDIA GeForce RTX 4090D specifications (continued)

Feature	Values
Active fan sink	Fan Controller Embedded (4-pin)
Slot number	3
PCB form factor	Full Height
PCB layer	14 layer
Bracket form factor	Triple
Maximum resolution	4K @ 120 Hz or 8K @ 60 Hz (with DSC)
Power consumption	450 W

NVIDIA GeForce RTX 4080 Super, 16 GB, GDDR6X

The following table lists the NVIDIA GeForce RTX 4080 Super specifications.

Table 49. NVIDIA GeForce RTX 4080 Super specifications

Feature	Values
GPU frequency	2210 MHz (base clock)
DirectX 12	12
Shader model	6.7
Open CL	3.0
Open GL	4.6
GPU memory interface	256-bit
PCIe bus	PCIe 4.0 x 16
Display support	• Three DisplayPort 1.4a ports • One HDMI 2.1a port
Graphics memory configuration	16 GB, GDDR6X
Graphics memory clock speed	21 Gbps
Active fan sink	Fan Controller Embedded (4-pin)
Slot number	3
PCB form factor	Full Height
PCB layer	14 layer
Bracket form factor	Triple
Maximum resolution	4K @ 120 Hz or 8K @ 60 Hz (with DSC)
Power consumption	320 W

NVIDIA GeForce RTX 4070, 12 GB, GDDR6

The following table lists the NVIDIA GeForce RTX 4070 specifications.

Table 50. NVIDIA GeForce RTX 4070 specifications

Feature	Values
GPU frequency	1920 MHz (base clock)

Table 50. NVIDIA GeForce RTX 4070 specifications (continued)

Feature	Values
DirectX 12	12
Shader model	6.7
Open CL	3.0
Open GL	4.6
GPU memory interface	192-bit
PCIe bus	PCIe 4.0 x 16
Display support	• Three DisplayPort 1.4a ports • One HDMI 2.1a port
Graphics memory configuration	12 GB, GDDR6
Graphics memory clock speed	21 Gbps
Active fan sink	Fan Controller Embedded (4-pin)
Slot number	3
PCB form factor	Full Height
PCB layer	14 layer
Bracket form factor	Triple
Maximum resolution	4K @ 120 Hz or 8K @ 60 Hz (with DSC)
Power consumption	200 W

NVIDIA GeForce RTX 4060, 8 GB GDDR6

The following table lists the NVIDIA GeForce RTX 4060 specifications.

Table 51. NVIDIA GeForce RTX 4060 specifications

Feature	Values
GPU frequency	1830 MHz (base clock)
DirectX 12	12
Shader model	6.7
Open CL	3.0
Open GL	4.6
GPU memory interface	128-bit
PCIe bus	PCIe 4.0 x 16
Display support	• Three DisplayPort 1.4a ports • One HDMI 2.1a port
Graphics memory configuration	8 GB, GDDR6
Graphics memory clock speed	21 Gbps
Active fan sink	Fan Controller Embedded (4-pin)
Slot number	3
PCB form factor	Full Height
PCB layer	14 layer

Table 51. NVIDIA GeForce RTX 4060 specifications (continued)

Feature	Values
Bracket form factor	Triple
Maximum resolution	4K @120 Hz or 8K @ 60 Hz (with DSC)
Power consumption	115 W

AMD Radeon Pro W7900, 48 GB GDDR6

The following table lists the AMD Radeon Pro W7900 specifications.

Table 52. AMD Radeon Pro W7900 specifications

Feature	Values
GPU frequency	1855 MHz (base clock)
DirectX 12	12.0 Ultimate
Shader model	6.7
Open CL	2.1
Open GL	4.6
GPU memory interface	384-bit
PCIe bus	Gen 4 (x8 lanes)
Display support	• 3x DP 2.1 • Enhanced mini-DP 2.1
Graphics memory configuration	48 GB DDR6
Graphics memory clock speed	2250 MHz
Active fan sink	Fan Controller Embedded (4 pin)
Slot number	Single slot
PCB form factor	Full Height, Three-Quarter Length
PCB layer	8
PCB solder mask	Matte Black
Bracket form factor	Full Height
Maximum resolution	7680 x 4320 @ 60 Hz
Power consumption	295 W

AMD Radeon Pro W7600, 8 GB GDDR6

The following table lists the AMD Radeon Pro W7600 specifications.

Table 53. AMD Radeon Pro W7600 specifications

Feature	Values
GPU frequency	1240 MHz (base clock)
DirectX 12	12.0 Ultimate
Shader model	6.7
Open CL	2.2

Table 53. AMD Radeon Pro W7600 specifications (continued)

Feature	Values
Open GL	4.6
GPU memory interface	128-bit
PCIe bus	Gen 4 (x8 lanes)
Display support	x4 DP 2.1
Graphics memory configuration	8 GB DDR6
Graphics memory clock speed	2250 MHz
Active fan sink	Fan Controller Embedded (4 pin)
Slot number	Single slot
PCB form factor	Full Height, Three-Quarter Length
PCB layer	8
PCB solder mask	Matte Black
Bracket form factor	Full Height
Maximum resolution	7680 x 4320 @ 60 Hz
Power consumption	130 W

AMD Radeon Pro W7500, 8 GB GDDR6

The following table lists the AMD Radeon Pro W7500 specifications.

Table 54. AMD Radeon Pro W7500specifications

Feature	Values
GPU frequency	540 MHz (base clock)
DirectX 12	12.0 Ultimate
Shader model	6.7
Open CL	2.2
Open GL	4.6
GPU memory interface	128-bit
PCIe bus	Gen 4 (x8 lanes)
Display support	x4 DP 2.1
Graphics memory configuration	8 GB DDR6
Graphics memory clock speed	1350 MHz
Active fan sink	Fan Controller Embedded (4 pin)
Slot number	Single slot
PCB form factor	Full Height, Three-Quarter Length
PCB layer	8
PCB solder mask	Matte black
Bracket form factor	Full Height
Maximum resolution	7680 x 4320 @ 60 Hz
Power consumption	70 W

AMD Radeon Pro W6400, 4 GB GDDR6

The following table lists the AMD Radeon Pro W6400 specifications.

Table 55. AMD Radeon Pro W6400 specifications

Feature	Values
GPU frequency	1923 MHz (base clock)
DirectX 12	12.0 Ultimate
Shader model	6.6
Open CL	2.2
Open GL	4.6
GPU memory interface	64-bit
PCIe bus	Gen 4 (x4 lanes)
Display support	x2 DP 1.4
Graphics memory configuration	4 GB DDR6
Graphics memory clock speed	14 Gbps
Active fan sink	Fan Controller Embedded(4 pin)
Slot number	Single slot
PCB form factor	Full Height, Full length
PCB layer	6
PCB solder mask	Black
Bracket form factor	Full Height
Maximum resolution	7680 x 4320 @ 60 Hz
Power consumption	50 W

AMD Radeon Pro W6300, 2 GB GDDR6

The following table lists the AMD Radeon Pro W6300 specifications.

Table 56. AMD Radeon Pro W6300 specifications

Feature	Values
GPU frequency	1096 MHz (base clock)
DirectX 12	12.0 Ultimate
Shader model	6.1
Open CL	2.2
Open GL	4.6
GPU memory interface	32-bit
PCIe bus	Gen 4 (x4 lanes)
Display support	x2 DP 1.4
Graphics memory configuration	2 GB DDR6
Graphics memory clock speed	16 Gbps
Active fan sink	Fan Controller Embedded (4 pin)

Table 56. AMD Radeon Pro W6300 specifications (continued)

Feature	Values
Slot number	Single slot
PCB form factor	Full Height, Half Length
PCB layer	6
PCB solder mask	Red
Bracket form factor	Full Height
Maximum resolution	7680 x 4320 @60 Hz
Power consumption	35 W

GPU and PSU matrix

The following table provides the GPU and PSU matrix of your Precision 3680 Tower.

Table 57. GPU and PSU matrix

Graphics card	Card length (Without extender)	Weight (kg)	Power connector	I/O connector	Single/Dual/ Triple wide	PSU
NVIDIA RTX 6000 Ada Generation	10.50 in.	1.18	16-pin	Four DisplayPort 1.4a ports	Dual	1000 W
NVIDIA RTX 5000 Ada Generation	10.50 in.	1.06	16-pin	Four DisplayPort 1.4a ports	Dual	1000 W
NVIDIA RTX 4500 Ada Generation	10.50 in.	1.07	16-pin	Four DisplayPort 1.4a ports	Dual	1000 W
NVIDIA RTX 4000 Ada Generation	9.50 in.	0.576	16-pin	Four DisplayPort 1.4a ports	Single	1000 W
NVIDIA RTX 2000 Ada	6.60 in.	0.296	16-pin	Four DisplayPort 1.4a ports	Dual	• 300 W • 500 W
NVIDIA RTX A400	6.60 in.	0.140	8-pin	4 x Mini DisplayPort 1.4a	Single	• 300 W • 500 W • 1000 W
NVIDIA RTX A1000	6.60 in.	0.140	8-pin	4 x Mini DisplayPort 1.4a	Single	• 300 W • 500 W • 1000 W
NVIDIA T1000 (8 GB)	6.13 in.	0.138	N/A	Four mini-DP 1.2 ports	Single	• 300 W • 500 W • 1000 W
NVIDIA T1000 (4 GB)	6.13 in.	0.132	N/A	Four mini-DP 1.2 ports	Single	• 300 W • 500 W • 1000 W
NVIDIA T400	6.13 in.	0.131	N/A	Three mini-DP 1.2 ports	Single	• 300 W • 500 W • 1000 W
NVIDIA GeForce RTX 4090	• 12.28 in. (With extender)	1.63	16-pin	• Three DisplayPort 1.4a ports • One HDMI 2.1a port	Triple (2.5-slot wide)	1000 W

Table 57. GPU and PSU matrix (continued)

Graphics card	Card length (Without extender)	Weight (kg)	Power connector	I/O connector	Single/Dual/ Triple wide	PSU
	• 12.01 in. (Without extender)					
NVIDIA GeForce RTX 4080	12.01 in.	1.48	16-pin	• Three DisplayPort 1.4a ports • One HDMI 2.1a port	Triple (2.5-slot wide)	1000 W
NVIDIA GeForce RTX 4070	7.992 in.	0.87	8-pin	• Three DisplayPort 1.4a ports • One HDMI 2.1a port	Dual (2.5-slot wide)	1000 W
NVIDIA GeForce RTX 4060	5.70 in.	0.348	8-pin	• Three DisplayPort 1.4a ports • One HDMI 2.1a port	Dual	• 500 W • 1000 W
AMD Radeon Pro W7900	11.0 in.	1.395	2 x 8-pin	• Three DisplayPort 2.1 ports • One enhanced mini-DP 2.1 port	Triple (2-slot bracket, 3.5-slot board width)	1000 W
AMD Radeon Pro W7600	9.50 in.	0.548	6-pin	Four DisplayPort 2.1 ports	Single	• 500 W • 1000 W
AMD Radeon Pro W7500	8.50 in.	0.346	N/A	Four DisplayPort 2.1 ports	Single	• 300 W • 500 W • 1000 W
AMD Radeon Pro W6400	6.60 in.	0.162	N/A	Two DisplayPort 1.4 ports	Single	• 300 W • 500 W • 1000 W
AMD Radeon Pro W6300	6.0 in.	0.14	N/A	Two DisplayPort 1.4 ports	Single	• 300 W • 500 W • 1000 W

Video port and resolution matrix

The following table lists the Video port and resolution matrix on your Precision 3680 Tower.

Table 58. Video port and resolution matrix

Port type	DP++ 1.4/HDCP 2.3 port (UMA and Discrete Graphics)	HDMI-OUT port—HDMI 1.4a (UMA Graphics)	HDMI-OUT port—HDMI 2.1 (Discrete Graphics)
Maximum resolution—single display	4096 x 2304 @ 60 Hz	4096 x 2160 @ 30 Hz	4096 x 2160 @ 60 Hz
Maximum resolution—dual MST	4096 x 2304 @ 60 Hz, 1400 x 1050 @ 60 Hz or 2880 x 1800 @ 60 Hz, 2880 x 1800 @ 60 Hz	Not applicable	Not applicable
Maximum resolution—triple MST	4096 x 2304 @ 60 Hz, 1360 x 768 @ 60 Hz, 640 x 480 @ 60 Hz or 2304 x 1440 @ 60 Hz, 2304 x 1440 @ 60 Hz, 2304 x 1440 @ 60 Hz	Not applicable	Not applicable

Table 58. Video port and resolution matrix (continued)

Port type	DP++ 1.4/HDCP 2.3 port (UMA and Discrete Graphics)	HDMI-OUT port—HDMI 1.4a (UMA Graphics)	HDMI-OUT port—HDMI 2.1 (Discrete Graphics)
Maximum resolution—quad MST	4096 x 2304 @ 60 Hz, 4096 x 2304 @ 60 Hz, 1360 x 768 @ 60 Hz, 640 x 480 @ 60 Hz or 2304 x 1440 @ 60 Hz, 2304 x 1440 @ 60 Hz, 2304 x 1440 @ 60 Hz, 2304 x 1440 @ 60 Hz	Not applicable	Not applicable

Hard-disk drive Preloaded bracket matrix

The following table lists the hard drive preloaded bracket information of your Precision 3680 Tower.

Table 59. Hard-disk drive Preloaded bracket matrix

Hard-disk drive Preloaded bracket	Available
3.5-inch Caddy or Bracket	Yes
2.5-inch Caddy or Bracket	No

Storage

3.5-inch, 1 TB, 7200 RPM, SATA, HDD

Table 60. 3.5-inch, 1 TB, 7200 RPM, SATA, HDD specifications

Description	Values
Capacity	1 TB
Speed	7200 RPM
Height (approximate)	26.10 mm (1.02 in.)
Width (approximate)	147.06 mm (5.79 in.)
Depth (approximate)	101.60 mm (4.00 in.)
Interface	SATA 3.0
Speed (maximum)	Up to 6 Gbps
MTBF	550,000 hours
Logical blocks	1,953,525,168
Power source	
Power consumption (reference only)	• Idle: 5 W • Active: 10 W
Environmental operating conditions (non-condensing)	
Temperature range	5°C to 60°C
Relative humidity range	5% to 90%
Op shock	65G @2ms
Environmental non-operating conditions (non-condensing)	
Temperature range	-40°C to 65°C

Table 60. 3.5-inch, 1 TB, 7200 RPM, SATA, HDD specifications (continued)

Description	Values
Relative humidity range	5% to 95%

3.5-inch, 2 TB, 7200 RPM, SATA, HDD

Table 61. 3.5-inch, 2 TB, 7200 RPM, SATA, HDD specifications

Description	Values
Capacity	2 TB
Speed	7200 RPM
Height (approximate)	25.40 mm (1.00 in.)
Width (approximate)	147.06 mm (5.79 in.)
Depth (approximate)	101.60 mm (4.00 in.)
Interface	SATA 3.0
Speed (maximum)	Up to 6 Gbps
MTBF	550,000 hours
Logical blocks	3,907,029,168
Power source	
Power consumption (reference only)	• Idle: 5 W • Active: 10 W
Environmental operating conditions (non-condensing)	
Temperature range	5°C to 60°C
Relative humidity range	5% to 90%
Op shock	65G @2ms
Environmental non-operating conditions (non-condensing)	
Temperature range	-40°C to 65°C
Relative humidity range	5% to 95%

3.5-inch, 4 TB, 5400 RPM, SATA, HDD

Table 62. 3.5-inch, 4 TB, 5400 RPM, SATA, HDD specifications

Description	Values
Capacity	4 TB
Speed	5400 RPM
Height (approximate)	25.40 mm (1.00 in.)
Width (approximate)	147.06 mm (5.79 in.)
Depth (approximate)	101.60 mm (4.00 in.)
Interface	SATA 3.0
Speed (maximum)	Up to 6 Gbps
MTBF	550,000 hours
Logical blocks	7,814,037,168

Table 62. 3.5-inch, 4 TB, 5400 RPM, SATA, HDD specifications (continued)

Description	Values
Power source	
Power consumption (reference only)	• Idle: 5 W • Active: 10 W
Environmental operating conditions (non-condensing)	
Temperature range	5°C to 60°C
Relative humidity range	5% to 90%
Op shock	65G @2ms
Environmental non-operating conditions (non-condensing)	
Temperature range	-40°C to 65°C
Relative humidity range	5% to 95%

3.5-inch, 4 TB, 7200 RPM, SATA, Enterprise hard drive

Table 63. 3.5-inch, 4 TB, 7200 RPM, SATA, Enterprise hard drive specifications

Description	Values
Capacity	4 TB
Speed	7200 RPM
Height (approximate)	25.40 mm (1.00 in.)
Width (approximate)	147.06 mm (5.79 in.)
Depth (approximate)	101.60 mm (4.00 in.)
Interface	SATA 3.0
Speed (maximum)	Up to 6 Gbps
MTBF	550,000 hours
Logical blocks	3,907,029,168
Power source	
Power consumption (reference only)	• Idle: 5 W • Active: 10 W
Environmental operating conditions (non-condensing)	
Temperature range	5°C to 60°C
Relative humidity range	5% to 90%
Op shock	65G @2ms
Environmental non-operating conditions (non-condensing)	
Temperature range	-40°C to 65°C
Relative humidity range	5% to 95%

3.5-inch, 8 TB, 7200 RPM, SATA, Enterprise hard drive

Table 64. 3.5-inch, 8 TB, 7200 RPM, SATA, Enterprise HARD DRIVEspecifications

Description	Values
Capacity	8 TB
Speed	7200 RPM
Height (approximate)	25.40 mm (1.00 in.)
Width (approximate)	147.06 mm (5.79 in.)
Depth (approximate)	101.60 mm (4.00 in.)
Interface	SATA 3.0
Speed (maximum)	Up to 6 Gbps
MTBF	550,000 hours
Logical blocks	3,907,029,168
Power source	
Power consumption (reference only)	• Idle: 5 W • Active: 10 W
Environmental operating conditions (non-condensing)	
Temperature range	5°C to 60°C
Relative humidity range	5% to 90%
Op shock	65G @2ms
Environmental non-operating conditions (non-condensing)	
Temperature range	-40°C to 65°C
Relative humidity range	5% to 95%

M.2 2230, 256 GB, TLC PCIe NVMe Gen 4, Class 35 SSD

The following table lists the M.2 2230, 256 GB SSD specifications.

Table 65. 256 GB SSD specifications

Description	Values
Capacity	256 GB
Height (approximate)	3.50 mm (0.13 in.)
Width (approximate)	22 mm (0.87 in.)
Depth (approximate)	30 mm (1.18 in.)
Interface type	PCIe Gen 4
Speed (maximum)	64 Gb/s (up to 4 lanes)
MTTF	1.4M hours
Logical blocks	500,118,192
Power source	
Power consumption (reference only)	• Idle: 5 mW (PS4) • Active: 4W

Table 65. 256 GB SSD specifications (continued)

Description	Values
Environmental operating conditions (non-condensing)	
Temperature range	0°C to 70°C
Relative humidity range	10% to 90%
Op shock	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, PCIe NVMe Gen4 x4, Class 40 SSD

The following table lists the M.2 2280, 512 GB SSD specifications.

Table 66. 512 GB SSD specifications

Description	Values
Capacity	512 GB
Height (approximate)	2.38 mm (0.17 in.)
Width (approximate)	22 mm (0.87 in.)
Depth (approximate)	80 mm (3.15 in.)
Interface type	PCIe Gen4
Speed (maximum)	64 Gb/s (up to 4 lanes)
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%
Op shock	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, PCIe NVMe Gen4 x4, Class 40 SSD

The following table lists the M.2 2280, 1 TB SSD specifications.

Table 67. 1 TB SSD specifications

Description	Values
Capacity	1 TB

Table 67. 1 TB SSD specifications (continued)

Description	Values
Height (approximate)	2.38 mm (0.17 in.)
Width (approximate)	22 mm (0.87 in.)
Depth (approximate)	80 mm (3.15 in.)
Interface type	PCIe Gen4
Speed (maximum)	64 Gb/s (up to 4 lanes)
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	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, PCIe NVMe Gen4 x4, Class 40 SSD

The following table lists the M.2 2280, 2 TB SSD specifications.

Table 68. 2 TB SSD specifications

Description	Values
Capacity	2 TB
Height (approximate)	2.38 mm (0.09 in.)
Width (approximate)	22 mm (0.87 in.)
Depth (approximate)	80 mm (3.15 in.)
Interface type	PCIe Gen4
Speed (maximum)	64 Gb/s (up to 4 lanes)
MTBF	1.4M hours
Logical blocks	4,000,797,360
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	1500G

Table 68. 2 TB SSD specifications (continued)

Description	Values
Environmental non-operating conditions (non-condensing)	
Temperature range	-40°C to 70°C
Relative humidity range	5% to 95%

M.2 2280, 4 TB, PCIe NVMe Gen4 x4, Class 40 SSD

The following table lists the M.2 2280, 4 TB SSD specifications.

Table 69. 4 TB SSD specifications

Description	Values
Capacity	4 TB
Height (approximate)	3.73 mm (0.15 in.)
Width (approximate)	22 mm (0.87 in.)
Depth (approximate)	80 mm (3.15 in.)
Interface type	PCIe Gen4
Speed (maximum)	64 Gb/s (up to 4 lanes)
MTBF	1.4M hours
Logical blocks	8,001,573,552
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	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, PCIe NVMe Gen4 x4, Opal Self-Encrypting Class 40 SSD

The following table lists the M.2 2280, 512 GB SSD, self-encrypting drive specifications.

Table 70. 512 GB SSD, self-encrypting drive specifications

Description	Values
Capacity	512 GB
Height (approximate)	2.38 mm (0.09 in.)
Width (approximate)	22 mm (0.87 in.)
Depth (approximate)	80 mm (3.15 in.)

Table 70. 512 GB SSD, self-encrypting drive specifications (continued)

Description	Values
Interface type	PCIe Gen4
Speed (maximum)	64 Gb/s (up to 4 lanes)
MTBF	1.4M hours
Logical blocks	1,000,215,216
Power source	
Power consumption (reference only)	• Idle: 5 mW (PS4 - L12) • Active: 5 W
Environmental operating conditions (non-condensing)	
Temperature range	0°C to 70°C
Relative humidity range	10% to 90%
Op shock	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, PCIe NVMe Gen4 x4, Opal Self-Encrypting Class 40 SSD

The following table lists the M.2 2280, 1 TB SSD, self-encrypting drive specifications.

Table 71. 1 TB SSD, self-encrypting drive specifications

Description	Values
Capacity	1 TB
Height (approximate)	2.38 mm (0.09 in.)
Width (approximate)	22 mm (0.87 in.)
Depth (approximate)	80 mm (3.15 in.)
Interface type	PCIe Gen4
Speed (maximum)	64 Gb/s (up to 4 lanes)
MTBF	1.4M hours
Logical blocks	2,000,409,264
Power source	
Power consumption (reference only)	• Idle: 5 mW (PS4 - L12) • Active: 5 W
Environmental operating conditions (non-condensing)	
Temperature range	0°C to 70°C
Relative humidity range	10% to 90%
Op shock	1500G
Environmental non-operating conditions (non-condensing)	
Temperature range	-40°C to 70°C

Table 71. 1 TB SSD, self-encrypting drive specifications (continued)

Description	Values
Relative humidity range	5% to 95%

8x DVD±RW, slimline

Table 72. 8x DVD±RW, slimline specifications

Description	Values
Height (without bezel)	9.50 mm (0.37 in.)
Width (without bezel)	128.00 mm (5.04 in.)
Depth (without bezel)	126.01 mm (4.97 in.)
Weight (maximum)	140 grams
Interface	SATA 1.5
Speed (maximum)	Up to 1.5 Gbps
Disc capacity	Standard
Internal buffer size	0.5 MB
Access times (typical)	Supplier dependent
Maximum data transfer rates	
Writes	8x DVD/ 24x CD
Reads	8x DVD/ 24x CD
Power source	
DC power requirements	5 V
DC current	1300 mA
Environmental operating conditions (non-condensing)	
Operating temperature range	5°C to 60°C
Relative humidity range	10% to 90% RH
Maximum wet bulb temperature	29°C
Altitude range	0 m to 3048 m
Environmental non-operating conditions (non-condensing)	
Operating temperature range	-40°C to 65°C
Relative humidity range	5% to 95% RH
Maximum wet bulb temperature	38°C
Altitude range	0 m to 10600 m

Media-card reader

The following table lists the media-card reader specifications on your Precision 3680 Tower.

Table 73. Media-card reader (standard offering)

Description	Value
Media supported (Maximum capacity that is supported will vary by Flash Media Types)	

Table 73. Media-card reader (standard offering) (continued)

Description	Value
Media Supported	SDXC, SDHC, SD Secure Digital (SD) 4.0 UHS-II Secure Digital (SD) 3.0 UHS-I
Support Specification Versions	Secure Digital (SD) 4.0
Power source	
Max Power Requirements	1.2 A
Supply Voltage Range	3.3 V
Power Consumption	MS 0.08 mA
Environmental operating conditions (Non-condensing)	
Operating Temperature Range	0 °C–70°C
Relative Humidity Range	N/A
Environmental non-operating conditions (Non-condensing)	
Operating Temperature Range	N/A
Relative Humidity Range	N/A

NOTE: Systems may be shipped with a media-card reader from Realtek or Genesys. If manually installing the Operating System, the appropriate driver must be installed.

Power supply unit

Table 74. Power supply unit specifications

Description	Values		
Type	300 W (internal power supply unit, 92% Efficient PSU, 80 Plus Platinum)	500 W (internal power supply unit, 92% Efficient PSU, 80 Plus Platinum)	1000 W (internal power supply unit, 92% Efficient PSU, 80 Plus Platinum)
Input voltage	90 VAC to 264 VAC	90 VAC to 264 VAC	90 VAC to 264 VAC
Input frequency	47 Hz to 63 Hz	47 Hz to 63 Hz	47 Hz to 63 Hz
Input current (maximum)	• 4.2 A @ 90 V AC • 2.1 A @ 180 V AC	• 7 A @ 90 V AC • 3.5 A @ 180 V AC	• 13.6 A @ 90 V AC • 12 A-6 A @ 100-240 V AC
Output current (continuous)	• 12 VA1/18 A • 12 VA2/18 A • 12 VB/18 A	• 12 VA1/18 A • 12 VA2/18 A • 12 VB/18 A • 12 VC/18 A	• 12 VA/36 A • 12 VB/27 A • 12 VC/36 A
Rated output voltage	• 12 VA1 • 12 VA2 • 12 VB	• 12 VA1 • 12 VA2 • 12 VB • 12 VC	• 12 VA • 12 VB • 12 VC
BTUs/h (based on PSU max wattage)	1023 BTU/h	1705 BTU/h	3410 BTU/h
Temperature range			
Operating	5°C to 50°C (41°F to 122°F)	5°C to 50°C (41°F to 122°F)	5°C to 50°C (41°F to 122°F)

Table 74. Power supply unit specifications (continued)

Description	Values		
Storage	-40°C to 70°C (-40°F to 158°F)	-40°C to 70°C (-40°F to 158°F)	-40°C to 70°C (-40°F to 158°F)
Compliance			
Erp Lot6 Tier 2 requirement	Yes	Yes	Yes
80Plus compliant	Yes	Yes	Yes
Energy Star 8.0 compliant	Yes	Yes	Yes
GS mark compliant	Yes	Yes	Yes
NCTC Anti Power Surge certification	Yes	Yes	Yes
NCTC Anti Lightning Strike certification	Yes	Yes	Yes

Thermal dissipation

The following table lists the thermal dissipation of your Precision 3680 Tower.

Table 75. Thermal dissipation

Power supply unit	Heat dissipation	Voltage
300W (80Plus Platinum)	300*3.412 = 818 BTU/hr	100 to 240 VAC, 47 to 63 Hz, 10.0 A/ 16.5 A
500W (80Plus Platinum)	500*3.412 = 1706 BTU/hr	100 to 240 VAC, 47 to 63 Hz, 16.0 A/ 18.0 A
1000W (80Plus Platinum)	1000*3.412 = 1706 BTU/hr	100 to 240 VAC, 47 to 63 Hz, 16.0 A/ 18.0 A/20.0 A

CMOS battery

The following table lists the CMOS battery specifications of your Precision 3680 Tower.

Table 76. CMOS battery

Brand	Type	Voltage	Composition	Battery life
SHUNWO, DOUBLE BEST, VIC-DAWN	CR2032	3.0 V	Lithium metal	Continuous Discharge Under 15 kΩ Load to 2.0 V End-Voltage. 20℃±2℃ 940 Hrs. or Longer.910 Hrs.or Longer after 12 mo.

Accessories

The following table lists the supported accessories on your Precision 3680 Tower.

Table 77. Accessories

Accessories
3Dconnexion SpaceMouse Wireless - 3DX-700066
Dell Slim Soundbar - SB521A

Table 77. Accessories (continued)

Accessories
Dell Pro Wireless ANC Headset - WL7022
Dell UltraSharp Webcam - WB7022
Dell Webcam - WB3023
Dell 27 Monitor - P2723D
Dell Pro Wireless Keyboard and Mouse - KM5221W
Precision Tower Cable Cover

Security

Software security

The following table lists the software security details of your Precision 3680 Tower.

Table 78. Software security

Software security
McAfee Small Business Security 30-Day Free Trial
McAfee Small Business Security 12-month Subscription
McAfee Small Business Security 36-month Subscription
Security software per software functional plan/cycle list
Dell Data Protection | Personal Edition (DDP | E PE) or Dell Encryption Personal (Future Name)
Dell Data Protection | Enterprise Edition (DDP | E EE) or Dell Encryption Enterprise (Future Name)
Dell Data Protection | External Media Edition (DDP | E EME) or Dell Encryption External Media (Future Name)
Data Leakage Protection (DLP) or Dell Data Guardian (new name)
Dell Data Protection | BitLocker Manager (DDP | BLM)
VMware Airwatch
Dell Data Protection | Endpoint Security Suite or Dell Endpoint Security Suite Pro
Dell Data Protection | Endpoint Security Suite Enterprise or Dell Endpoint Security Suite Enterprise
Mozy (Cloud Backup)
Dell Threat Defense
RSA SecurID
RSA NetWitness Endpoint
Absolute Data and Device Security
D-Pedigree (Secure Supply Chain Functionality)
Microsoft Windows BitLocker Manager
Support for Encryption SED hard drives (Opal FIPS and non-FIPS, SATA, PCIe)
Support eDRIVE Storage including RAID
Support UEFI-Preboot Authentication (PBA) solution for Windows 10

Table 78. Software security (continued)

Software security
Local hard drive data wipe via BIOS ("Secure Erase")
BIOS Administrative Password
BIOS Password
BIOS hard drive password option (default off)
Windows 10 Device Guard and Credential Guard
BIOS Data Port On/Off - Data Port disablement
Intel Secure Boot (TXT + TPM) - Launch control policy
Intel's Identity Protection (IPT)
Intel Guard Technologies and Secure Key
Secure update of pre-boot password(s) via remote BIOS update

Trusted Platform Module

The following table lists the Trusted Platform Module (TPM) of your Precision 3680 Tower.

Table 79. Trusted Platform Module (TPM)

TPM: Nuvoton NPCT760JABYX
SPI interface
TPM 2.0
FIPs 140-2 certificate

Mil-SPEC

The Precision 3680 Tower meets military specifications for the following MIL-STD 810H tests:

Table 80. Military specifications

Test Category	Test Method	Test Parameters
Non-operating altitude test	Method 500.6 Procedure I	Test specification: • Altitude: 15,000 ft • Temperature: 21°C • Duration: 1 hour
Operating altitude test	Method 500.6 Procedure II	Test specification: • Altitude: 15,000 ft • Temperature: 21°C • Duration: 1 hour
Non-operating high temperature test	Method 501.7 Procedure I	Test specification: • Temperature: 33°C - 71°C • High temperature cycles, climatic category A1 - Hot dry • Duration: 168 hours constant
Operating high temperature test	Method 501.7 Procedure II	Test specification: • Temperature: 32°C - 49°C

Table 80. Military specifications (continued)

Test Category	Test Method	Test Parameters
		• High temperature cycles • Duration: 120 hours constant
Non-operating low temperature test	Method 502.7 Procedure I - Storage	Test specification: • Temperature: -51°C • Duration: 24 hours
Operating low temperature test	Method 502.7 Procedure II - Operation	Test specification: • Temperature: -29°C • Duration: 24 hours
Humidity test	Method 507.6 Procedure I	Induced B3 • Duration: Hot-humid, 15 days exposure Induced B3, Non-operating
Mechanical shock test - I Bench handling	Method 516.8 Procedure VI	Test specification: • The lifted edge of the chassis has been raised 100 mm (4 in.) above the horizontal bench top.
Blowing dust test	Method 510.7 Procedure I	Test specification: • Temperature: 25°C and 60°C • Dust concentration: (10.6±7) g/m³ • Air flow velocity: 1.5 m/s to 8.9 m/s • Relative humidity: 30% • Duration: 12 hours
Operating vibration test	Method 514.8 Procedure I	Refer table 514.6C-II: Category 4 - common carrier
Shock material to be packaged non-operating	Method 516.8 Procedure II	Test specification: • Pulse shape: Trapezoidal • Acceleration: 30 g • Velocity change: 304 inch/second • Shock direction: 6 faces (±X, ±Y, ±Z axes) • No. of shock: 1 shock/ face (total 6 shocks)
Crash hazard shock test Non-operating	Method 516.8 Procedure V	Test specification: • Pulse shape: Half-sine • Acceleration: 185 g • Pulse duration: 2 ms • Shock direction: 12 faces (±X, ±Y, ±Z axes) • No. of shock: 1 shock/ face (total 12 shocks)

Acoustic noise emission information tower

The following table lists the acoustic noise emission information of your Precision 3680 Tower.

Table 81. Precision 3680 Tower with 14th Generation Intel Core i9-14900K vPro processor/32 GB memory/8 TB hard drive

Component	Test Configuration
CPU	14th Generation Intel Core i9-14900K vPro
Memory	32 GB
Hard drive (#, capacity)	3.5-inch hard drive, 8 TB
ODD	DVD+/-RW, 8X, 9.5T
Graphics Adapter	NVIDIA GeForce RTX 4090

Table 82. Declared Sound Power (LWAd)

Operating Mode	Declared Sound Power(LWAd)
Idle	3.66
Hard drive Operating	3.67
CPU Stressed (50% loading)	3.66
ODD Operating	4.42

Table 83. A-Weighted Sound Pressure Level (dB)

Declared Sound Pressure (LpA)				
	Tabletop System		Floor Standing System	
Operating Mode	Operator Position	Bystander Position	Operator Position	Bystander Position
Idle	28.9	23.6	22.1	20.1
CPU Stressed (50% loading)	28.8	23.5	22.1	20.0

All tests are conducted according to ISO 7779 and declared according to ISO 9296 except CPU Stressed. This test mode is not specified in ISO 7779, but was measured using the same microphone distances and measurement techniques that are defined for the other reported operating modes.

Declared Sound Power rounded to the nearest tenth of a bel per ISO 9296 section 4.4.2.

Chassis enclosure and ventilation requirements

Enclosure ventilation

If your enclosure has doors, they need to be of a type that allows at least 30% airflow through the enclosure (front and back).

Enclosure minimum clearance

Leave a 10.20 cm (4 in.) minimum clearance on all vented sides of the computer to permit the airflow required for proper ventilation.

Recommended enclosure

Do not install your computer in an enclosure that does not allow airflow/dusty environment/temperate over 35°C. Do not put any objects to directly block air-vent. This restricts the airflow and impacts your computer's performance, possibly causing it to overheat.

Open desk minimum clearance

If your computer is installed in a corner, on a desk, or under a desk, leave at least 5.10 cm (2 in.) clearance from the back of the computer to the wall to permit the airflow required for proper ventilation.

System management features

Some Dell computers come with several system management options that are included by default for In-Band management with Dell Client Command Suite. In-Band management means that the Operating System is functional and the device is connected to a network so that it can be managed. The Dell Client Command Suite of tools can be leveraged individually or with a systems management console like SCCM, LANDESK, KACE, and so on.

We also offer Out-of-Band management as an option. Out-of-band management is when the computer does not have a functional operating system or is turned off and you still want to be able to manage the computer in that state.

Dell Client Command Suite for in-band systems management

Dell Client Command Suite is a free toolkit available for download, for all Latitude Rugged tablets at dell.com/support, that automates and streamlines systems management tasks, saving time, money, and resources. It consists of the following modules that can be used independently, or with a variety of systems management consoles such as SCCM.

Dell Client Command Suite's integration with VMware Workspace ONE Powered by AirWatch, now allows customers to manage their Dell client hardware from the cloud, using a single Workspace ONE console.

Dell Command | Deploy enables easy operating system (OS) deployment across all major OS deployment methodologies and provides numerous system-specific drivers that have been extracted and reduced to an OS-consumable state.

Dell Command I Configure is a graphical user interface (GUI) admin tool for configuring and deploying hardware settings in a pre-OS or post-OS environment, and it operates seamlessly with SCCM and Airwatch and can be self-integrated into LANDesk and KACE. Simply, this is all about the BIOS. Command I Configure allows you to remotely automate and configure over 150+ BIOS settings for a personalized user experience.

Dell Command I PowerShell Provider can do the same things as Command I Configure, but with a different method. PowerShell is a scripting language that allows customers to create a customized and dynamic configuration process.

Dell Command I Monitor is a Windows Management Instrumentation (WMI) agent that provides IT admins with an extensive inventory of the hardware and health-state data. Admins can also configure hardware remotely by using command line and scripting.

Dell Command | Update (end-user tool) is factory-installed and allows admins to individually manage and automatically present and install Dell updates to the BIOS, drivers, and software. Command I Update eliminates the time-consuming hunting and pecking process of update installation.

Dell Command I Update Catalog provides searchable metadata that allows the management console to retrieve the latest system-specific updates (driver, firmware or BIOS). The updates are then delivered seamlessly to end-users using the customer's systems management infrastructure that is consuming the catalog (like SCCM).

Dell Command | vPro Out of Band console extends hardware management to systems that are offline or have an un-reachable OS (Dell exclusive features).

Dell Command | Integration Suite for System Center - This suite integrates all the key components of the Client Command Suite into Microsoft System Center Configuration Manager 2012 and Current Branch versions.

Out-of-band systems management

Intel Standard Manageability option **must be configured in our factory at the time of purchase, as it is NOT field upgradable.** It offers out-of-band management and DASH compliance (Certification Registry).

4

Dell Optimizer

This section details the Dell Optimizer specifications of your Precision 3680 Tower.

On Precision 3680 Tower with Dell Optimizer, the following features are supported:

- **Express Connect**—Automatically joins the access point with the strongest signal, and directs bandwidth to conferencing applications when in use.
- **ExpressResponse**—Prioritizes the most important applications. Applications open faster and perform better.
- **AudioOptimization**—The audio feature enhances the audio functionality during your online meetings. The audio feature helps filter the background noise, stabilize volume, and prioritize preferred voice streaming during online meetings.

For more information about configuring and using these features, see Dell Optimizer User Guide.

5

Getting help and contacting Dell

Self-help resources

You can get information and help on Dell products and services using these self-help resources:

Table 84. Self-help resources

Self-help resources	Resource location
Information about Dell products and services	Dell Site
Tips	
Contact Support	In Windows search, type `Contact Support`, and press Enter.
Online help for operating system	Windows Support Site Linux Support Site
Access top solutions, diagnostics, drivers and downloads, and learn more about your computer through videos, manuals, and documents.	Your Dell computer is uniquely identified using a Service Tag or Express Service Code. To view relevant support resources for your Dell computer, enter the Service Tag or Express Service Code at Dell Support Site. For more information about how to find the Service Tag for your computer, see Locate the Service Tag on your computer.
Dell knowledge base articles	1. Go to Dell Support Site. 2. On the menu bar at the top of the Support page, select **Support** > **Support Library**. 3. In the Search field on the Support Library page, type the keyword, topic, or model number, and then click or tap the search icon to view the related articles.

Contacting Dell

To contact Dell for sales, technical support, or customer service issues, see Dell Support Site.

NOTE: Availability of the services may vary depending on the country or region, and product.

NOTE: If you do not have an active Internet connection, you can find contact information about your purchase invoice, packing slip, bill, or Dell product catalog.