Dell Precision 5680

Technical Guidebook

Regulatory Model: P123F
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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 Dell Precision 5680

Right

1. SD-card slot
2. USB 3.2 Gen 2 Type-C port with DisplayPort 1.4 Alt Mode
3. Wedge-shaped lock slot

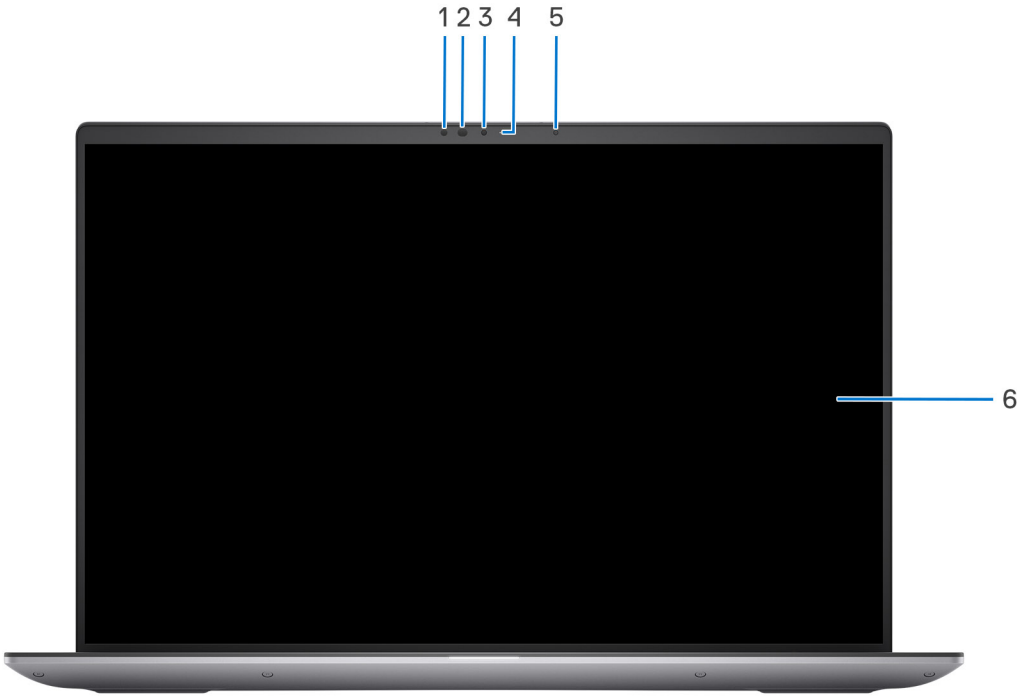
Left

1. HDMI 2.0b port
2. 3.5 mm audio jack
3. Two Thunderbolt 4 (USB Type-C) ports
4. Smartcard reader (optional)

Top

1. Left and right microphones
2. Power button with fingerprint reader
3. Haptics Trackpad

Front



1. IR sensor
2. IR LED
3. Camera
4. Camera-status light
5. Ambient Light Sensor
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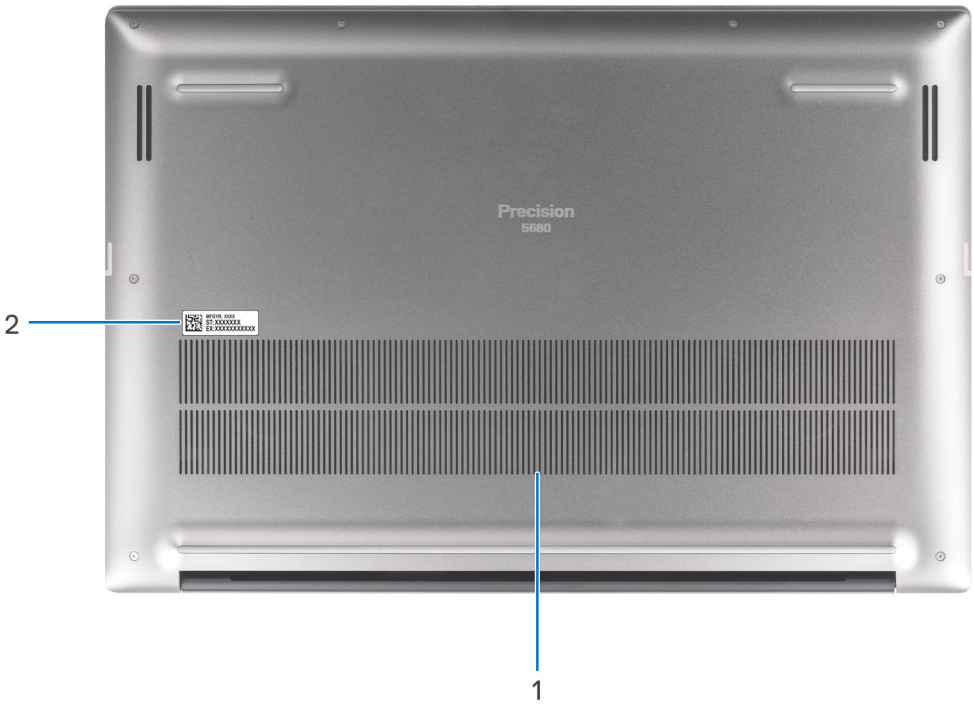
Bottom



1. Air vents
2. Service Tag location

Service Tag

The service tag is a unique alphanumeric identifier that allows Dell service technicians to identify the hardware components in your computer and access warranty information.

Battery charge and status light

The following table lists the battery charge and status light behavior of your Dell Precision 5680.

Table 1. Battery charge and status light behavior

Power Source	LED Behavior	System Power State	Battery Charge Level
AC Adapter	Off	S0 - S5	Fully Charged
AC Adapter	Solid White	S0 - S5	< Fully Charged
Battery	Off	S0 - S5	11-100%
Battery	Solid Amber (590+/-3 nm)	S0 - S5	< 10%

- S0 (ON) - System is turned on.
- S4 (Hibernate) - The system consumes the least power compared to all other sleep states. The system is almost at an OFF state, expect for a trickle power. The context data is written to hard drive.
- S5 (OFF) - The system is in a shutdown state.

2

Specifications of Dell Precision 5680

Dimensions and weight

The following table lists the height, width, depth, and weight of your Dell Precision 5680.

Table 2. Dimensions and weight

Description	Values
Height:	
Front height	26.17 mm (1.03 in.)
Rear height	26.17 mm (1.03 in.)
Width	353.68 mm (13.92 in.)
Depth	240.27 mm (9.45 in.)
Weight **NOTE:** The weight of your computer depends on the configuration ordered and manufacturing variability.	1.905 kg (4.20 lb)

Processor

The following table lists the details of the processors supported by your Dell Precision 5680.

Table 3. Processor

Description	Option one	Option two	Option three	Option four
Processor type	13th Generation Intel Core i5-13600H vPro Enterprise	13th Generation Intel Core i7-13700H vPro Essential	13th Generation Intel Core i7-13800H vPro Enterprise	13th Generation Intel Core i9-13900H vPro Enterprise
Processor wattage	45 W	45 W	45 W	45 W
Processor core count	12	14	14	14
Processor thread count	16	20	20	20
Processor speed	Up to 4.80 GHz	Up to 5.0 GHz	Up to 5.2 GHz	Up to 5.4 GHz
Processor cache	18 MB	24 MB	24 MB	24 MB
Integrated graphics	Intel Iris Xe Graphics	Intel Iris Xe Graphics	Intel Iris Xe Graphics	Intel Iris Xe Graphics

Chipset

The following table lists the details of the chipset supported by your Dell Precision 5680.

Table 4. Chipset

Description	Values
Chipset	Intel PCH
Processor	13th Generation Intel Core i5/i7/i9
DRAM bus width	128-bit
Flash EPROM	64 MB
PCIe bus	Up to Gen 4.0

Operating system

Your Dell Precision 5680 supports the following operating systems:

- Windows 11 Home, 64-bit
- Windows 11 Pro, 64-bit
- Windows 11 Pro for Workstation, 64-bit
- Windows 11 Pro for Education, 64-bit
- Windows 11 Enterprise, 64-bit
- Ubuntu 22.04 LTS, 64-bit

Memory

The following table lists the memory specifications of your Dell Precision 5680.

Table 5. Memory specifications

Description	Values
Memory slots	Integrated on system board **NOTE:** The memory is not replaceable or upgradeable. If memory has error, the system board must be replaced.
Memory type	Dual-channel LPDDR5
Memory speed	6400 MT/s or 6000 MT/s
Maximum memory configuration	64 GB
Minimum memory configuration	16 GB
Memory size per slot	16 GB, 32 GB, 64 GB
Memory configurations supported	• 16 GB LPDDR5 at 6400 MT/s, integrated, dual channel • 32 GB LPDDR5 at 6000 MT/s, integrated, dual channel • 64 GB LPDDR5 at 6000 MT/s, integrated, dual channel

External ports

The following table lists the external ports on your Dell Precision 5680.

Table 6. External ports

Description	Values
USB ports	• One USB 3.2 Gen 2 Type-C port with DisplayPort 1.4 Alt Mode • Two Thunderbolt 4 ports (USB Type-C)
Audio port	One 3.5 mm audio jack
Video port/ports	One HDMI 2.0b port
Media-card reader	One SD-card slot
Power-adapter port	Two Thunderbolt 4 ports (USB Type-C)
Security-cable slot	One wedge-shaped lock slot

Internal slots

The following table lists the internal slots of your Dell Precision 5680.

Table 7. Internal slots

Description	Values
M.2	• Two M.2 2230/2280 slot for solid-state drive/Intel Optane **NOTE:** To learn more about the features of different types of M.2 cards, search in the Knowledge Base Resource at www.dell.com/support.

Wireless module

The following table lists the Wireless Local Area Network (WLAN) module that is supported on your Dell Precision 5680.

Table 8. Wireless module specifications

Description	Values
Model number	Intel AX211
Transfer rate	Up to 2400 Mbps
Frequency bands supported	2.4 GHz/5 GHz/6 GHz
Wireless standards	• Wi-Fi 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

Table 8. Wireless module specifications (continued)

Description	Values
Bluetooth wireless card	Bluetooth 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 Dell Precision 5680.

Table 9. Audio specifications

Description		Values
Audio controller		Realtek ALC711-VD
Stereo conversion		Supported
Internal audio interface		High definition audio interface
External audio interface		One 3.5 mm audio jack
Number of speakers		• 2 x Woofers • 2 x Tweeters
Internal-speaker amplifier		Supported
External volume controls		Keyboard shortcut controls
Speaker output:		
	Average speaker output	• Woofer: 2 x 2 W • Tweeters: 2 x 2 W
	Peak speaker output	• Woofer: 2 x 2.5 W • Tweeters: 2 x 2.5 W
Subwoofer output		Supported
Microphone		Dual-array microphones in camera assembly

Storage

This section lists the storage options on your Dell Precision 5680.

Your Precision 5680 supports one of the following storage configurations:

- 2 x M.2 2230/M.2 2280, solid-state drive
- 2 x M.2 2280, Opal Self-Encrypting solid-state drive

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

Table 10. Storage specifications

Storage type	Interface type	Capacity
M.2 2230, Class 35 solid-state drive	PCIe NVMe Gen 4	256 GB

Table 10. Storage specifications (continued)

Storage type	Interface type	Capacity
M.2 2280, Class 40 solid-state drive	PCIe NVMe Gen 4	Up to 4 TB
M.2 2280, Class 40 solid-state drive, Opal Self-Encrypting solid-state drive	PCIe NVMe Gen 4	Up to 1 TB

Media-card reader

The following table lists the media cards supported by your Dell Precision 5680.

Table 11. Media-card reader specifications

Description	Values
Media-card type	One SD card slot
Media-cards supported	• Secure Digital (SD) • Secure Digital High Capacity (SDHC) • Secure Digital Extended Capacity (SDXC)
NOTE: The maximum capacity supported by the media-card reader varies depending on the standard of the media card installed in your computer.	

Keyboard

The following table lists the keyboard specifications of your Dell Precision 5680.

Table 12. Keyboard specifications

Description	Values
Keyboard type	Backlit keyboard
Keyboard layout	QWERTY
Number of keys	• United States and Canada: 79 keys • United Kingdom: 80 keys • Japan: 83 keys
Keyboard size	X=19.05 mm key pitch Y=18.05 mm key pitch
Keyboard shortcuts	Some keys on your keyboard have two symbols on them. These keys can be used to type alternate characters or to perform secondary functions. To type the alternate character, press Shift and the desired key. To perform secondary functions, press Fn and the desired key. **NOTE:** You can define the primary behavior of the function keys (F1–F12) changing **Function Key Behavior** in BIOS setup program.

Camera

The following table lists the camera specifications of your Dell Precision 5680.

Table 13. Camera specifications

Description		Values
Number of cameras		One
Camera type		FHD IR camera with narrow FHD+IR w/ XYZ ALS (MIPI), Dual-array microphones
Camera location		Front camera
Camera sensor type		Intel Camera Sensing Technology (ExpressSign-in 2.0)
Camera resolution:		
	Still image	0.90 megapixel
	Video	1920 x 1080 FHD at 30 fps
Infrared camera resolution:		
	Still image	0.23 megapixel
	Video	640 x 360 at 15 fps
Diagonal viewing angle:		
	Camera	78 degrees
	Infrared camera	78 degrees

Haptics trackpad

The following table lists the touchpad specifications of your Dell Precision 5680.

Table 14. Touchpad specifications

Description		Values
Touchpad resolution:		300 dpi
Touchpad dimensions:		
	Horizontal	136 mm (5.35 in.)
	Vertical	85 mm (3.34 in.)
Touchpad gestures		For more information about touchpad gestures available on Windows, see the Microsoft knowledge base article at support.microsoft.com.

Power adapter

The following table lists the power adapter specifications of your Dell Precision 5680.

Table 15. Power adapter specifications

Description		Option one	Option two
Type		100 W Pecos AC adapter, USB-C	165 W ERP AC adapter, USB-C
Input voltage		100 VAC—240 VAC	100 VAC—240 VAC
Input frequency		50 Hz-60 Hz	50 Hz–60 Hz
Input current (maximum)		1.7 A	2.2 A
Output current (continuous)		• 20 V/5 A • 15 V/3 A • 9 V/3 A • 5 V/3 A	• 28 V/5.893 A • 20 V/6.5 A • 15 V/3 A • 9 V/3 A • 5 V/3 A
Rated output voltage		20 VDC/15 VDC/9 VDC/5 VDC	5 VDC/9 VDC/15 VDC/20 VDC/28 VDC
Temperature range:			
	Operating	0 °C to 40 °C (32 °F to 104 °F)	0 °C to 40 °C (32 °F to 104 °F)
	Storage	-40 °C to 70 °C (-40 °F 158 °F)	-40 °C to 70 °C (-40 °F 158 °F)

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.

Battery

The following table lists the battery specifications of your Dell Precision 5680.

Table 16. Battery specifications

Description		Option one	Option two	Option three	Option four
Battery type		4-cell, 66 Whr lithium-ion battery	6-cell, 99.5 Whr lithium-ion battery	4-cell 66 Whr lithium-ion LcL battery	6-cell 99.5 Whr lithium-ion LcL battery
Battery voltage		15.4 VDC (Nominal)	11.55 VDC (Nominal)	15.4 VDC (Nominal)	11.55 VDC (Nominal)
Battery weight (maximum)		0.264 kg (0.58 lb)	0.363 kg (0.8 lb)	0.264 kg (0.58 lb)	0.363 kg (0.8 lb)
Battery dimensions:					
	Height	7.66 mm (0.30 in.)	7.66 mm (0.30 in.)	7.66 mm (0.30 in.)	7.66 mm (0.30 in.)
	Width	302 mm (11.89 in.)	302 mm (11.89 in.)	302 mm (11.89 in.)	302 mm (11.89 in.)
	Depth	85.4 mm (3.36 in.)	85.4 mm (3.36 in.)	85.4 mm (3.36 in.)	85.4 mm (3.36 in.)
Temperature range:					

Table 16. Battery specifications (continued)

Description		Option one	Option two	Option three	Option four
	Operating	• Charge: 0°C to 50°C (32°F to 122°F) • Discharge: 0°C to 60°C (32°F to 140°F)	• Charge: 0°C to 50°C (32°F to 122°F) • Discharge: 0°C to 60°C (32°F to 140°F)	• Charge: 0°C to 50°C (32°F to 122°F) • Discharge: 0°C to 60°C (32°F to 140°F)	• Charge: 0°C to 50°C (32°F to 122°F) • Discharge: 0°C to 60°C (32°F to 140°F)
	Storage	-20°C to 65°C (-4°F to 149°F)	-20°C to 65°C (-4°F to 149°F)	-20°C to 65°C (-4°F to 149°F)	-20°C to 65°C (-4°F to 149°F)
Battery operating time		Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.	Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.	Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.	Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.
Battery charging time (approximate) **NOTE:** Control the charging time, duration, start and end time, and so on using the Dell Power Manager application. For more information on the Dell Power Manager see, *Me and My Dell* on www.dell.com.		• From 0% up to 35% in as little as 20 minutes (ExpressCharge Boost) • 2 hours (Express charge) • 3 hours (Standard charge)	• From 0% up to 35% in as little as 20 minutes (ExpressCharge Boost) • 2 hours (Express charge) • 3 hours (Standard charge)	• 2 hours (Express charge) • 3 hours (Standard charge)	• 2 hours (Express charge) • 3 hours (Standard charge)
Coin-cell battery		No	No	No	No

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.

CAUTION: Dell recommends that you charge the battery regularly for optimal power consumption. If your battery charge is completely depleted, connect the power adapter, turn on your computer, and then restart your computer to reduce the power consumption.

Display

The following table lists the display specifications of your Dell Precision 5680.

Table 17. Display specifications

Description	Option one	Option two
Display type	16-inch, FHD+, non-touch, 60Hz, anti-glare, 500 nits WLED, Low Blue Light	16-inch OLED, touch, 60Hz, anti-smudge, 400 nits WLED
Touch options	No	Yes
Display-panel technology	WLED with Low Blue Light	OLED with Low Blue Light
Display-panel dimensions (active area):		

Table 17. Display specifications (continued)

Description		Option one	Option two
	Height	22.17 mm (0.87 in.)	22.17 mm (0.87 in.)
	Width	344.68 mm (13.57 in.)	344.45 mm (13.56 in.)
	Diagonal	406.4 mm (16 in.)	406.4 mm (16 in.)
Display-panel native resolution		1920 x 1200	3840 x 2400
Luminance (typical)		500 nits	400 nits
Megapixels		2.3	9.2
Color gamut		DCI-P3 100%	DCI-P3 100%
Pixels Per Inch (PPI)		142	283
Contrast ratio (min.)		1300:1	100000:1
Response time (max.)		30 ms	1 ms typ.
Refresh rate		60 Hz	60 Hz
Horizontal view angle		+/- 85 degrees	+/- 85 degrees typical
Vertical view angle		+/- 85 degrees	+/- 85 degrees typical
Pixel pitch		0.18 mm	0.09 mm
Power consumption (maximum)		6.32 W	11.14 W
Anti-glare vs glossy finish		Anti-glare	Anti-smudge

Fingerprint reader

The following table lists the fingerprint-reader specifications of your Dell Precision 5680.

NOTE: The fingerprint reader is located on the power button.

Table 18. Fingerprint reader specifications

Description	Values
Fingerprint-reader sensor technology	Capacitive
Fingerprint-reader sensor resolution	500 dpi
Fingerprint-reader sensor pixel size	108 x 88

Sensor

The following table lists the sensor of your Dell Precision 5680.

Table 19. Sensor

Sensor support
Accelerometer for adaptive thermal

GPU—Integrated

The following table lists the specifications of the integrated Graphics Processing Unit (GPU) supported by your Dell Precision 5680.

Table 20. GPU—Integrated

Controller	Memory size	Processor
Intel Iris X^e Graphics	Shared system memory	13^{th} Generation Intel Core i5/i7/i9 processors

GPU—Discrete

The following table lists the specifications of the discrete Graphics Processing Unit (GPU) supported by your Dell Precision 5680.

Table 21. GPU—Discrete

Controller	Memory size
NVIDIA RTX A1000 6GB Laptop GPU	6 GB
NVIDIA RTX 2000 Ada Generation Laptop GPU	8 GB
NVIDIA RTX 3500 Ada Generation Laptop GPU	12 GB
NVIDIA RTX 4000 Ada Generation Laptop GPU	12 GB
NVIDIA RTX 5000 Ada Generation Laptop GPU	16 GB
NVIDIA GeForce RTX 4090 Laptop GPU	16 GB

Multiple display support matrix

The following table lists the multiple display support matrix for your Dell Precision 5680.

Table 22. Multiple display support matrix

Graphics Card	Supported external displays
Intel Iris X^e Graphics	Yes, supported on USB-C, TBT and HDMI port.
NVIDIA RTX A1000 6GB Laptop GPU	Yes, supported on the right side USB-C port only.
NVIDIA RTX 2000 Ada Generation Laptop GPU	Yes, supported on the right side USB-C port only.
NVIDIA RTX 3500 Ada Generation Laptop GPU	Yes, supported on the right side USB-C port only.
NVIDIA RTX 4000 Ada Generation Laptop GPU	Yes, supported on the right side USB-C port only.
NVIDIA RTX 5000 Ada Generation Laptop GPU	Yes, supported on the right side USB-C port only.

Table 22. Multiple display support matrix (continued)

Graphics Card	Supported external displays
NVIDIA GeForce RTX 4090 Laptop GPU	Yes, supported on the right side USB-C port only.

Hardware security

The following table lists the hardware security of your Dell Precision 5680.

Table 23. Hardware security

Hardware security
Hardware TPM 2.0 discrete
Wedge-shaped lock slot
FIPS 140-2 certification for TPM
TCG Certificatication for TPM (Trusted Computing Group)
ControlVault 3 Advanced Authentication with FIPS 140-2 Level 3 Certification
Contacted Smart Card and Control Vault 3
Contactless Smart Card, NFC, and Control Vault 3
Statement of Non-Volatility

Smart-card reader

Contactless smart-card reader

This section lists the contactless smart-card reader specifications of your Dell Precision 5680.

Table 24. Contactless smart-card reader specifications

Title	Description	Dell ControlVault 3 contactless smart-card reader with NFC
Felica Card Support	Reader and software capable of supporting Felica contactless cards	Yes
ISO 14443 Type A Card Support	Reader and software capable of supporting ISO 14443 Type A contactless cards	Yes
ISO 14443 Type B Card Support	Reader and software capable of supporting ISO 14443 Type B contactless cards	Yes
ISO/IEC 21481	Reader and software capable of supporting ISO/IEC 21481 compliant contactless cards and tokens	Yes
ISO/IEC 18092	Reader and software capable of supporting ISO/IEC 21481 compliant contactless cards and tokens	Yes
ISO 15693 Card Support	Reader and software capable of supporting ISO15693 contactless cards	Yes
NFC Tag Support	Supports reading and processing of NFC compliant tag information	Yes

Table 24. Contactless smart-card reader specifications (continued)

Title	Description	Dell ControlVault 3 contactless smart-card reader with NFC
NFC Reader Mode	Support for NFC Forum Defined Reader mode	Yes
NFC Writer Mode	Support for NFC Forum Defined Writer mode	Yes
NFC Peer-to-Peer Mode	Support for NFC Forum Defined Peer to Peer mode	Yes
EMVCo Compliant	Compliant with EMVCO smart card standards as posted to www.emvco.com	Yes
EMVCo Certified	Formally certified based on EMVCO smart card standards	Yes
NFC Proximity OS Interface	Enumerates NFP (Near Field Proximity) device for OS to utilize	Yes
PC/SC OS interface	Personal Computer/Smart Card specification for integration of hardware readers into personal computer environments	Yes
CCID driver compliance	Common driver support for Integrated Circuit Card Interface Device for OS level drivers	Yes
Windows Certified	Device certified by Microsoft WHCK	Yes
Dell ControlVault support	Device connects to Dell ControlVault for usage and processing	Yes
FIDO2 compliance	Dell ControlVault 3 Smart-card reader is compliant with the FIDO SPEC	Yes

NOTE: 125 Khz proximity cards are not supported.

Table 25. Supported cards

Manufacturer	Card
HID	jCOP readertest3 A card (14443a)
	1430 1L
	DESFire D8H
	iClass (Legacy)
	iClass SEOS
NXP/Mifare	Mifare DESFire 8K White PVC Cards
	Mifare Classic 1K White PVC Cards
	NXP Mifare Classic S50 ISO Card
G&D	idOnDemand - SCE3.2 144K
	SCE6.0 FIPS 80K Dual+ 1 K Mifare
	SCE6.0 nonFIPS 80K Dual+ 1 K Mifare
	SCE6.0 FIPS 144K Dual + 1K Mifare
	SCE6.0 nonFIPS 144K Dual + 1 K Mifare
	SCE7.0 FIPS 144K

Table 25. Supported cards (continued)

Manufacturer	Card
Oberthur	idOnDemand - OCS5.2 80K
	ID-One Cosmo 64 RSA D V5.4 T=0 card

Contacted smart-card reader

The following table lists the contacted smart-card reader specifications of your Dell Precision 5680.

Table 26. Contacted smart-card reader specifications

Title	Description	Dell ControlVault 3 smart-card reader
ISO 7816 -3 Class A Card Support	Reader capable of reading 5V powered smart mcard	Yes
ISO 7816 -3 Class B Card Support	Reader capable of reading 3V powered smart card	Yes
ISO 7816 -3 Class C Card support	Reader capable of reading 1.8V powered smart card	Yes
ISO 7816-1 Compliant	Specification for the reader	Yes
ISO 7816 -2 Compliant	Specification for smart card device physical characteristics (size, location of connection points, etc.)	Yes
T=0 support	Cards support character level transmission	Yes
T=1 support	Cards support block level transmission	Yes
EMVCo Compliant	Compliant with EMVCo (for electronic payment standards) smart card standards as posted to www.emvco.com	Yes
EMVCo Certified	Formally certified based on EMVCO smart card standards	Yes
PC/SC OS interface	Personal Computer/Smart Card specification for integration of hardware readers into personal computer environments	Yes
CCID driver compliance	Common driver support for Integrated Circuit Card Interface Device for OS level drivers.	Yes
Windows Certified	Device certified by WHCK	Yes
FIPS 201 (PIV/HSPD-12) Compliant via GSA	Device compliant with FIPS 201/PIV/ HSPD-12 requirements	Yes
FIDO2 compliance	Dell ControlVault 3 Smart-card reader is compliant with the FIDO SPEC	Yes

Operating and storage environment

This table lists the operating and storage specifications of your Dell Precision 5680.

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

Table 27. Computer environment

Description	Operating	Storage
Temperature range	0°C to 35°C (32°F to 95°F)	-40°C to 65°C (-40°F to 149°F)
Relative humidity (maximum)	10% to 90% (non-condensing)	0% to 95% (non-condensing)
Vibration (maximum)*	0.66 GRMS	1.30 GRMS
Shock (maximum)	110 G†	160 G†
Altitude range	-15.2 m to 3048 m (-49.87 ft to 10000 ft)	-15.2 m to 10668 m (-49.87 ft to 35000 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 user environment.

† Measured using a 2 ms half-sine pulse.

3

Engineering specifications

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 28. Intel AX211 specifications

Host interface	CNVio
Network standard	IEEE 802.11a/b/g/n/ac/ax, 160 MHz channel use, MU-MIMO, new 6 GHz band
Wi-Fi Alliance certifications	Wi-Fi CERTIFIED 6, Wi-Fi CERTIFIED a/b/g/n/ac,WMM, WMM-Power Save, WPA2, WPA3, WPS, PMF,Wi-Fi 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

Table 28. Intel AX211 specifications (continued)

	• 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 Iris X ᵉ Graphics

The following table lists the Intel Iris X ᵉ Graphics specifications.

Table 29. Intel Iris X ᵉ Graphics specifications

Bus type	Integrated graphics
Memory type	UMA
Graphics level	i5/i7/i9: GT2 (UHD)
Estimated maximum power consumption (TDP)	45 W, included in the CPU power
Overlay planes	Yes
Operating systems graphics/ video API support	DirectX 12, OpenGL (4.5 from Intel CML POR)
Maximum vertical refresh rate	Up to 120 Hz **NOTE:** The refresh rate depends on the resolution.
External ports	Thunderbolt 4
Multiple display support	Up to 4 displays via DisplayPort Multi-Streaming Technology (MST)

GPU—Discrete

NVIDIA RTX A1000 6 GB Laptop, GDDR6

The following table lists the NVIDIA RTX A1000 laptop specifications.

Table 30. NVIDIA RTX A1000 6 GB Laptop GPU specifications

Feature	Values
GPU	NVIDIA RTX A1000 6 GB Laptop GPU
Cores	CUDA cores 2560
Memory bandwidth	132 GB/s
Memory type	GDDR6
Memory size	6 GB
Memory interface	96-bit
TGP	35 W
GPU base clock	652 MHz
GPU boost clock	1297 MHz
Vram clock	5501 MHz
PCIe	Gen 4 x 8
Features	• Dynamic boost • Configurable TGP

NVIDIA RTX 2000 Ada Generation Laptop, GDDR6

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

Table 31. NVIDIA RTX 2000 Ada Generation Laptop GPU specifications

Feature	Values
GPU	NVIDIA RTX 2000 Ada Generation Laptop GPU
Cores	CUDA cores 3072
Memory bandwidth	256 GB/s
Memory type	GDDR6
Memory size	8 GB
Memory interface	128-bit
TGP	35 W
GPU base clock	930 MHz
GPU boost clock	1455 MHz
Vram clock	8001 MHz
PCIe	Gen 4 x 8
Features	• Dynamic boost • Configurable TGP

NVIDIA RTX 3500 Ada Generation Laptop, GDDR6

The following table lists the NVIDIA RTX 3500 ADA Generation laptop specifications.

Table 32. NVIDIA RTX 3500 Ada Generation Laptop GPU pecifications

Feature	Values
GPU	NVIDIA RTX 3500 Ada Generation Laptop GPU
CUDA cores	5120
Memory bandwidth	432 GB/s
Memory type	GDDR6
Memory size	12 GB
Memory interface	192-bit
TGP	60 W
GPU base clock	1110 MHz
GPU boost clock	1545 MHz
Vram clock	9001 MHz
PCIe	Gen4 x 8
Features	• Dynamic boost • Configurable TGP

NVIDIA RTX 4000 Ada Generation Laptop, GDDR6

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

Table 33. NVIDIA RTX 4000 Ada Generation Laptop GPU specifications

Feature	Values
GPU	NVIDIA RTX 4000 Ada Generation Laptop GPU
CUDA cores	7424
Memory bandwidth	432 GB/s
Memory type	GDDR6
Memory size	12 GB
Memory interface	192-bit
TGP	60 W
GPU base clock	765 MHz
GPU boost clock	1440 MHz
Vram clock	9001 MHz
PCIe	Gen4 x 8
Features	• Dynamic boost • Configurable TGP

NVIDIA RTX 5000 Ada Generation Laptop, GDDR6

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

Table 34. NVIDIA RTX 5000 Ada Generation Laptop GPU specifications

Feature	Values
GPU	NVIDIA RTX 5000 Ada Generation Laptop GPU
CUDA cores	9728
Memory bandwidth	576 GB/s
Memory type	GDDR6
Memory size	16 GB
Memory interface	256-bit
TGP	80 W
GPU base clock	930 MHz
GPU boost clock	1680 MHz
Vram clock	9001 MHz
PCIe	Gen4 x 8
Features	Dynamic boost

NVIDIA GeForce RTX 4090 Laptop, GDDR6

The following table provides the NVIDIA GeForce RTX 4090 Laptop GPU specifications of your Dell Precision 5680.

Table 35. NVIDIA GeForce RTX 4090 Laptop GPU specifications

Feature	Values
GPU	NVIDIA GeForce RTX 4090 Laptop GPU
CUDA cores	9728
Memory bandwidth	576 GB/s
Memory type	GDDR6
Memory size	16 GB
Memory interface	256-bit
TGP	80 W
GPU base clock	930 MHz
GPU boost clock	1455 MHz
Vram clock	9001 MHz
PCIe	Gen4 x 8
Features	Dynamic boost

Storage

M.2 2230, 256 GB, PCIe NVMe Gen3 x4, Class 35 SSD

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

Table 36. 256 GB SSD specifications

Capacity	256 GB
Height (approximate)	2.38 mm (0.09 in.)
Width (approximate)	22.00 mm (0.87 in.)
Depth (approximate)	30.00 mm (1.18 in.)
Interface type	PCIe Gen3
Speed (maximum)	32 Gb/s (up to 4 lanes)
MTBF	1.4M hours
Logical blocks	500,118,192
Power source	
Power consumption (reference only)	• Idle: 5 mW (PS4) • Active: 3.50 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, Class 40 SSD

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

Table 37. 512 GB SSD specifications

Capacity	512 GB
Height (approximate)	2.38 mm (0.17 in.)
Width (approximate)	22.00 mm (0.87 in.)
Depth (approximate)	80.00 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

Table 37. 512 GB SSD specifications (continued)

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 38. 1 TB SSD specifications

Capacity	1 TB
Height (approximate)	2.38 mm (0.17 in.)
Width (approximate)	22.00 mm (0.87 in.)
Depth (approximate)	80.00 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 39. 2 TB SSD specifications

Capacity	2 TB
Height (approximate)	2.38 mm (0.09 in.)
Width (approximate)	22.00 mm (0.87 in.)
Depth (approximate)	80.00 mm (3.15 in.)

Table 39. 2 TB SSD specifications (continued)

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
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 40. 4 TB SSD specifications

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 Gen3 x4, Class 40 SSD, self-encrypting drive

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

Table 41. 512 GB SSD, self-encrypting drive specifications

Capacity	512 GB
Height (approximate)	2.38 mm (0.09 in.)
Width (approximate)	22.00 mm (0.87 in.)
Depth (approximate)	80.00 mm (3.15 in.)
Interface type	PCIe Gen3
Speed (maximum)	32 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: 4.50 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 Gen3 x4, Class 40 SSD, self-encrypting drive

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

Table 42. 1 TB SSD, self-encrypting drive specifications

Capacity	1 TB
Height (approximate)	2.38 mm (0.09 in.)
Width (approximate)	22.00 mm (0.87 in.)
Depth (approximate)	80.00 mm (3.15 in.)
Interface type	PCIe Gen3
Speed (maximum)	32 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: 4.50 W

Table 42. 1 TB SSD, self-encrypting drive specifications (continued)

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%

Power adapter

The following table lists the power adapter specifications of your Dell Precision 5680.

Table 43. Power adapter specifications

Values Description		
Type	100 W Pecos AC adapter, USB-C	165 W ERP AC adapter, USB-C
Input voltage	100 VAC–240 VAC	100 VAC–240 VAC
Input frequency	50 Hz–60 Hz	50 Hz–60 Hz
Input current (maximum)	1.7 A	2.2 A
Output current (continuous)	• 20 V/5 A • 15 V/3 A • 9 V/3 A • 5 V/3 A	• 28 V/5.893 A • 20 V/6.5 A • 15 V/3 A • 9 V/3 A • 5 V/3 A
Rated output voltage	20 VDC/15 VDC/9 VDC/5 VDC	5 VDC/9 VDC/15 VDC/20 VDC/28 VDC
BTUs/h (based on PSU max wattage)	888	888
Temperature range		
Operating	0 °C to 40°C (32°F to 104°F)	0°C to 40°C (32 °F to 104°F)
Storage	-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
80Plus compliant	Yes	Yes
Energy Star 8.0 compliant	Yes	Yes
GS mark compliant	Yes	Yes
NCTC Anti Power Surge certification	Yes	Yes
NCTC Anti Lightning Strike certification	Yes	Yes

Media-card reader

The following table lists the media-card reader specifications of your Dell Precision 5680.

Table 44. Media-card reader (standard offering)

Media supported (Maximum capacity supported will vary by Flash Media Types)	
Media Supported	• Secure Digital (SD) • Secure Digital High Capacity (SDHC) • Secure Digital Extended Capacity (SDXC)
Support Specification Versions	One SD card slot
Power source	
Max Power Requirements	1.5 A
Supply Voltage Range	3.3 V
Power Consumption	MS 0.18 A
Environmental operating conditions (Non-condensing)	
Operating Temperature Range	0°C to 70°C
Relative Humidity Range	N/A
Environmental non-operating conditions (Non-condensing)	
Operating Temperature Range	N/A
Relative Humidity Range	N/A

Accessories

The following table lists the supported accessories on your Dell Precision 5680.

Table 45. Accessories

Accessories
Dell 7-in-1 USB-C Multiport Adapter - DA310
Dell Performance Dock - WD19DCS
StarTech.com USB C to DisplayPort 1.4 Adapter - CDP2DP14B
Dell Mobile Adapter Speakerphone - MH3021P
Dell Portable Monitor - C1422H
Dell Premier Wireless ANC Headset - WL7022
Dell Speakerphone - SP3022
Dell UltraSharp 27 4K PremierColor Monitor - UP2720Q
Dell UltraSharp 27 4K USB-C HUB Monitor - U2723QE
Dell UltraSharp 32 6K USB-C HUB Monitor - U3224KB
Dell UltraSharp 34 Curved USB-C HUB Monitor - U3423WE
Dell UltraSharp Webcam - WB7022
HTC VIVE Pro 2 - Virtual Reality Headset
3Dconnexion SpaceMouse Enterprise - 3DX-700056

Table 45. Accessories (continued)

Accessories
3Dconnexion SpaceMouse Wireless - 3DX-700066
Dell Collaboration Keyboard and Mouse - KM900
Dell Premier Collaboration Keyboard - KB900
Dell Premier Rechargeable Mouse - MS900
Wacom Cintiq Pro 24 Creative Pen Display Touch - DTH-2420

Security

Software security

The following table lists the software security details of your Dell Precision 5680.

Table 46. Software security

Security options
Upsell and Optional:
McAfee Small Business Security 30-day free trial
McAfee Small Business Security 12-month subscription
McAfee Small Business Security 36-month subscription

Fingerprint reader

The following table lists the fingerprint reader specifications of your Dell Precision 5680.

Table 47. Fingerprint reader specifications

Category		
Sensor technology	Capacitive sensing	
Sensor resolution	500 dpi	
Sensor pixel size	108 x 88 pixels	
Dell ControlVault support	No	
Dell ControlVault 3.0 support	No	
Anti-spoofing	Yes	
Template storage	In-sensor storage	
Match on chip	Yes	
FIPS 201 certified	No	

Dell ControlVault 3.0

The following table lists the Dell ControlVault 3.0 specifications of your Dell Precision 5680.

Table 48. Dell ControlVault 3.0 specifications

Title	Description	Dell ControlVault 3.0
CPU technology	N/A	1 GHz ARM Cortex A7
RAM	N/A	1 MB
ROM	N/A	16 MB
TPM included	TPM enumeration included within ControlVault	No
Host Interface	N/A	USB 2.0
Fingerprint procession on chip	Fingerprint processing occurs within secure boundary of ControlVault	Yes
Windows WBF support	Support for Windows biometric framework when Fingerprint reader is attached	Yes
FIPS 140-2 level 3 complaint	Device complaint with FIPS 140-2 level 3 requirements	Yes
FIPS 140-2 level 3 certified	Device certified with FIPS 140-2 level 3 requirements	Yes

Trusted Platform Module

The following table lists the Trusted Platform Module (TPM) of your Dell Precision 5680.

Table 49. Trusted Platform Module (TPM)

TPM: ST/ST33 HTPH2X32AHD8
SPI interface
TPM 2.0
FIPs 140-2 certificate

System management features

Dell commercial systems come with a number of systems management options that are include by default for In-Band management with our Dell Client Command Suite. In-Band management meaning 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, etc.

We also offer Out-of-Band management as an option. Out-of-band management is when the system does not have a functional operating system or is turned off and you still want to be able to manage the system 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 | 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 | Configure allows you to remotely automate and configure over 150+ BIOS settings for a personalized user experience.

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

Dell Command | 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 | Update eliminates the time-consuming hunting and pecking process of update installation.

Dell Command | 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 (https://registry.dmtf.org/registry/results/field_initiative_name%3A%22DASH%201.0%22).

4

Dell Optimizer

This section details the Dell Optimizer specifications of your Dell Precision 5680.

Dell Optimizer is a software application that intelligently optimizes the performance of your system by using artificial intelligence and machine learning. Dell Optimizer dynamically configures your system settings to optimize the performance of your applications. It improves the productivity, performance, and user experience through system usage analysis and learning.

On Dell Precision 5680 with Dell Optimizer, the following features are supported:

- Improves user experience through computer usage analysis and learning
- Faster application launch and seamless application transition
- Intelligent battery run-time extension
- Optimized Audio for best meeting experience
- Locks computer when walks away for enhanced security
- Faster computer wake-on-user approach
- Intelligently shows alerts
- Updates automatically to minimize disruption

For more information about configuring and using these features, refer Dell Optimizer documentation.

5

Color, material, and finish

This section details the color, material, and finish (CMF) specifications of your Dell Precision 5680.

Table 50. CMF specifications

A Cover (Top)	• Aluminum/Extrusion + CNC + Insert Molded + Beadblast • Anodized Titan Gray • PMS Cool Gray 9C
B Cover (Hinge up)	• PC • UV Molding +CNC + Back Printing • Match to Apollo
C Cover (Palmrest)	• Plastic PC 50%GFC Bonded MgAl Frame + CNC Drilled speaker Holes • Dell Standard Black, Resin • PMS 19-4205 TPG • Apollo, Velvet
D Cover (Bottom)	• Aluminum/Extrusion + CNC + Insert Molded + Beadblast • Anodized Titan Gray • PMS Cool Gray 9C

NOTE: Titan Gray, Dull – Cool Gray 9C = RGB 117 120 123 HEX/HTML 75787B CMYK 30 22 17 57

NOTE: Apollo –19-4205 TPG RGB 64 65 69 HEX/HTML 404145 CMYK NA

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Keyboard shortcuts of Dell Precision 5680

NOTE: Keyboard characters may differ depending on the keyboard language configuration. Keys used for shortcuts remain the same across all language configurations.

Some keys on your keyboard have two symbols on them. These keys can be used to type alternate characters or to perform secondary functions. The symbol shown on the lower part of the key refers to the character that is typed out when the key is pressed. If you press shift and the key, the symbol shown on the upper part of the key is typed out. For example, if you press **2**, **2** is typed out; if you press **Shift** + **2**, **@** is typed out.

The keys F1-F12 at the top row of the keyboard are function keys for multi-media control, as indicated by the icon at the bottom of the key. Press the function key to invoke the task represented by the icon. For example, pressing F1 mutes the audio (refer to the table below).

However, if the function keys F1-F12 are needed for specific software applications, multi-media functionality can be disabled by pressing **Fn** + **Esc**. Subsequently, multi-media control can be invoked by pressing **Fn** and the respective function key. For example, mute audio by pressing **Fn** + **F1**.

NOTE: You can also define the primary behavior of the function keys (F1–F12) by changing **Function Key Behavior** in BIOS setup program.

Table 51. List of keyboard shortcuts

Function key	Primary behavior
F1	Mute audio
F2	Decrease volume
F3	Increase volume
F4	Mute Microphone
F5	Click keyboard backlight **NOTE:** Non-backlight keyboards have F5 function key without the backlight icon and do not support toggle keyboard backlight function. **NOTE:** Toggle to cycle the keyboard backlight status through off, low-backlight, and high-backlight
F6	Decrease brightness
F7	Increase brightness
F8	Switch to external display
F9	
F10	Print Screen
F11	Home
F12	End

The **Fn** key is also used with selected keys on the keyboard to invoke other secondary functions.

Table 52. Secondary behavior

Function key	Secondary behavior
Fn + F1	Operating system and application specific F1 behavior
Fn + F2	Operating system and application specific F2 behavior
Fn + F3	Operating system and application specific F3 behavior

Table 52. Secondary behavior (continued)

Function key	Secondary behavior
Fn + F4	Operating system and application specific F4 behavior
Fn + F5	Operating system and application specific F5 behavior
Fn + F6	Operating system and application specific F6 behavior
Fn + F8	Operating system and application specific F8 behavior
Fn + F9	Operating system and application specific F9 behavior
Fn + F10	Operating system and application specific F10 behavior
Fn + F11	Operating system and application specific F11 behavior
Fn + F12	Operating system and application specific F12 behavior
Fn + Right Ctrl	Open application menu
Fn + Esc	Toggle Fn-key lock
Fn + PgUp	Page up

7

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 53. Self-help resources

Self-help resources	Resource location
Information about Dell products and services	www.dell.com
My Dell app	
Tips	
Contact Support	In Windows search, type `Contact Support`, and press Enter.
Online help for operating system	www.dell.com/support/windows www.dell.com/support/linux
Access top solutions, diagnostics, drivers and downloads, and learn more about your computer through videos, manuals and documents.	Your Dell computer is uniquely identified by 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 www.dell.com/support. For more information on how to find the Service Tag for your computer, see Locate the Service Tag on your computer.
Dell knowledge base articles for a variety of computer concerns	1. Go to www.dell.com/support. 2. On the menu bar at the top of the Support page, select **Support** > **Knowledge Base**. 3. In the Search field on the Knowledge Base 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 www.dell.com/contactdell.

NOTE: Availability varies by country/region and product, and some services may not be available in your country/region.

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.