Precision 3591

Technical Guidebook

D&LL Technologies

Notes, cautions, and warnings

(i) **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

Views of Precision 3591

Right

Figure 1. Right view

1. **microSD-card slot**

   Reads from and writes to the microSD-card.

2. **Universal audio jack**

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

3. **USB 3.2 Gen 1 port**

   Connect devices such as external storage devices and printers. It provides data transfer speeds up to 5 Gbps.

4. **USB 3.2 Gen 1 port with PowerShare**

   Connect devices such as external storage devices and printers.

   It provides data transfer speeds up to 5 Gbps. PowerShare enables you to charge your USB devices even when your computer is turned off.

   (i) **NOTE:** If the charge on your computer's battery is less than 10 percent, you must connect the power adapter to charge your computer, and USB devices connected to the PowerShare port.

   (i) **NOTE:** If a USB device is connected to the PowerShare port before the computer is turned off or in hibernate state, you must disconnect and connect it again to enable charging.

   (i) **NOTE:** Certain USB devices may not charge when the computer is turned off or in a sleep state. In such cases, turn on the computer to charge the device.

5. **HDMI 2.1 TMDS port**

   Connect to a TV, external display, or another HDMI-in enabled device. Provides video and audio output.

6. **Network port**

   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.

7. **Security-cable slot (wedge-shaped)**

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

Left

Figure 2. Left view

1. **Thunderbolt 4.0 with DisplayPort Alt Mode/USB Type-C/USB4/Power Delivery**

   Supports USB4, DisplayPort 1.4, Thunderbolt 4 and also enables you to connect to an external display using a display adapter. Provides data transfer rates of up to 40 Gbps for USB4 and Thunderbolt 4.

   ⓘ **NOTE:** You can connect a Dell Docking Station to one of the Thunderbolt 4 ports. For more information, search in the Knowledge Base Resource at www.dell.com/support.

   ⓘ **NOTE:** A USB Type-C to DisplayPort adapter (sold separately) is required to connect a DisplayPort device.

   ⓘ **NOTE:** USB4 is backward compatible with USB 3.2, USB 2.0, and Thunderbolt 3.

   ⓘ **NOTE:** Thunderbolt 4 supports two 4K displays or one 8K display.

2. **Thunderbolt 4.0 with DisplayPort Alt Mode/USB Type-C/USB4/Power Delivery**

   Supports USB4, DisplayPort 1.4, Thunderbolt 4 and also enables you to connect to an external display using a display adapter. Provides data transfer rates of up to 40 Gbps for USB4 and Thunderbolt 4.

   ⓘ **NOTE:** You can connect a Dell Docking Station to one of the Thunderbolt 4 ports. For more information, search in the Knowledge Base Resource at www.dell.com/support.

   ⓘ **NOTE:** A USB Type-C to DisplayPort adapter (sold separately) is required to connect a DisplayPort device.

   ⓘ **NOTE:** USB4 is backward compatible with USB 3.2, USB 2.0, and Thunderbolt 3.

   ⓘ **NOTE:** Thunderbolt 4 supports two 4K displays or one 8K display.

3. **Battery-status light**

   Battery-status light indicates the battery-charge status.

   - White-Battery is charging.
   - Solid yellow-Battery charge is low.
   - Blinking yellow-Battery charge is critical.
   - Off—Battery is fully charged.

4. **Smart-card reader slot (optional)**

   Using smart card provides authentication in corporate networks.

Top

Figure 3. Top view

1. **Power button with optional fingerprint reader**

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

   When the computer is turned on, press the power button to put the computer into sleep state; press and hold the power button for 10 s to force shut-down the computer.

   If the power button has a fingerprint reader, place your finger on the power button steadily to log in.

   ⓘ **NOTE:** You can customize the power-button behavior in Windows.

2. **Keyboard**

   Use the keyboard to input characters and functions into your computer.

3. **NFC or Contactless smart card reader (optional)**

   NFC or Contactless smart card reader provides contactless access of cards in corporate networks.

4. **Touchpad**

   Move your finger on the touchpad to move the mouse pointer. Tap to left-click and two fingers tap to right-click.

Front

Figure 4. Image: Front view

1. **Left microphone**

   Provides digital sound input for audio recording and voice calls.

2. **Infrared emitter (optional)**

   The infrared emitter emits infrared light, which enables the infrared camera to sense and track motion.

3. **Infrared camera (optional)**

   Enhances security when paired with Windows Hello face authentication.

4. **Camera shutter**

   Slide the privacy shutter to the left to access the camera lens.

5. **Camera**

   A camera enables you to video chat, capture photos, and record videos.

6. **Camera-status light**

   Turns on when the camera is in use.

7. **Ambient-light sensor (optional)**

   The sensor detects the ambient light and automatically adjusts the display brightness.

8. **Right microphone**

   Provides digital sound input for audio recording and voice calls.

Back

Figure 5. Image: Back view

1. **Nano-SIM card slot (optional)**

   Insert a nano-SIM card to connect to a mobile broadband network.

   ⓘ **NOTE:** Availability of the nano-SIM card slot depends on the region and configuration ordered.

Bottom
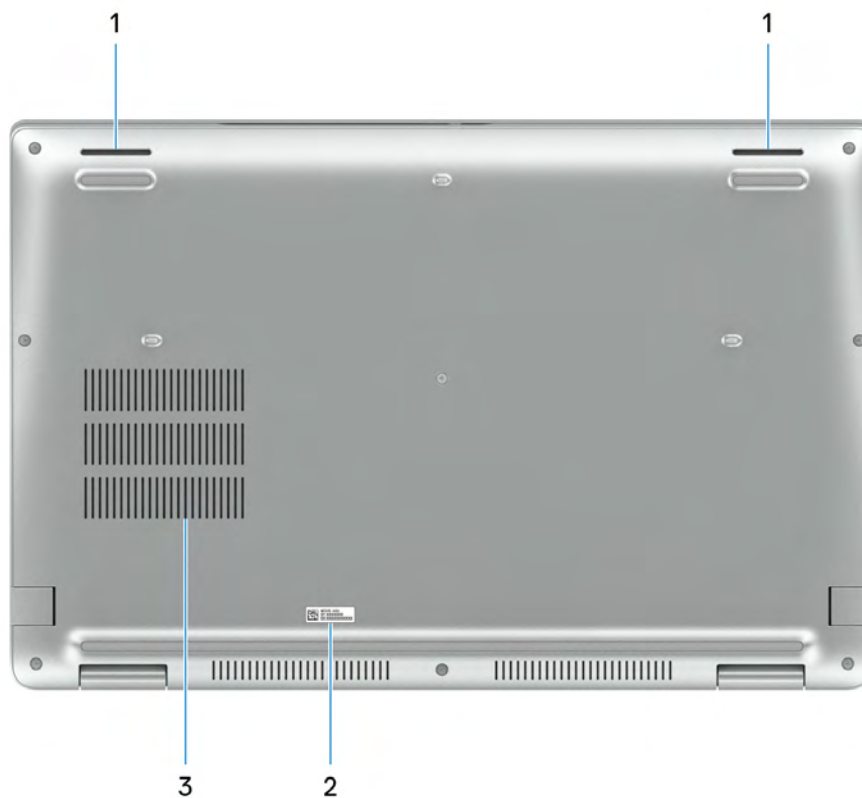
Figure 6. Image: Bottom view

1. **Speakers**

   Provide audio output.

2. **Service Tag label**

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

3. **Air vents**

Air vents provide ventilation for your computer. Clogged air vents can cause overheating and can affect your computer's performance and potentially cause hardware issues. Keep the air vents clear of obstructions and clean them regularly to prevent the build-up of dust and dirt. For more information about cleaning air vents, search for articles in the Knowledge Base Resource at www.dell.com/support.

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.
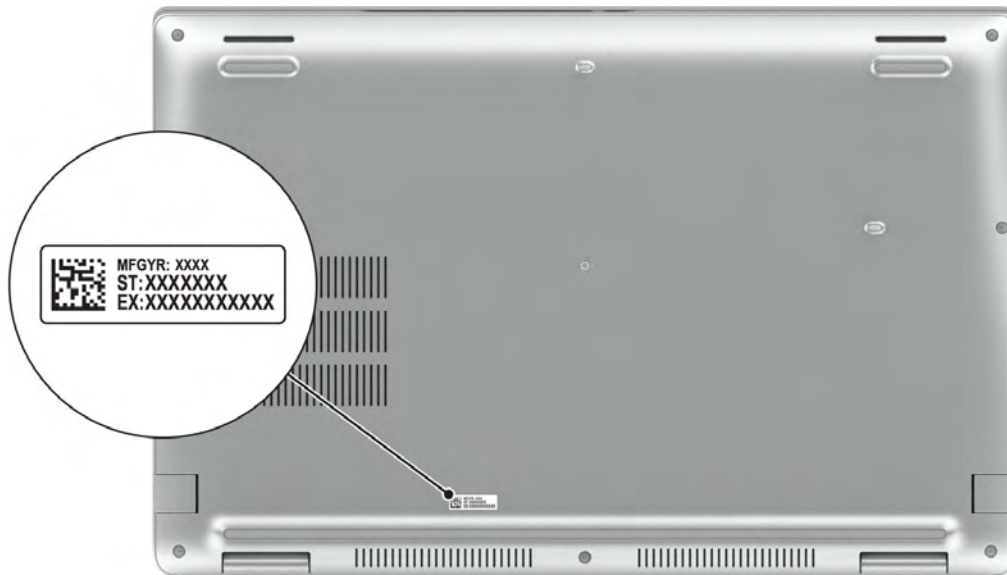
Figure 7. Image: Service Tag location

Battery charge and status light

The following table lists the battery charge and status light behavior of your Precision 3591.

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, except for a trickle power. The context data is written to a hard drive.
- S5 (OFF) - The system is in a shutdown state.

Specifications of Precision 3591

Dimensions and weight

The following table lists the height, width, depth, and weight of your Precision 3591.

Table 2. Dimensions and weight

Description	Values
Height:	
Front height	22.70 mm (0.89 in.)
Rear height	24.70 mm (0.97 in.)
Width	357.80 mm (14.09 in.)
Depth	233.30 mm (9.19 in.)
Weight ⓘ **NOTE:** The weight of your computer depends on the configuration that is ordered and manufacturing variability.	1.79 kg (3.96 lb) - minimum

Processor

The following table lists the details of the processors that are supported for your Precision 3591.

Table 3. Processor

Description	Option one	Option two	Option three	Option four
Processor type	Intel Core Ultra 5 135H vPro Enterprise	Intel Core Ultra 7 155H vPro Essentials	Intel Core Ultra 7 165H vPro Enterprise	Intel Core Ultra 9 185H vPro Enterprise
Processor wattage	45 W	45 W	45 W	45 W
Processor total core count	14	16	16	16
Performance-cores	4	6	6	6
Efficient-cores	● E-cores: 8 ● LPE-cores: 2	● E-cores: 8 ● LPE-cores: 2	● E-cores: 8 ● LPE-cores: 2	● E-cores: 8 ● LPE-cores: 2
Processor total thread counts ⓘ **NOTE:** Intel Hyper-Threading Technology is only available on Performance-cores.	18	22	22	22
Processor speed	Up to 4.60 GHz	Up to 4.80 GHz	Up to 5 GHz	Up to 5.10 GHz
Performance-cores frequency				
Processor base frequency	1.70 GHz	1.40 GHz	1.40 GHz	2.30 GHz
Maximum turbo frequency	4.60	4.80 GHz	5 GHz	5.10 GHz
Efficient-cores frequency				
Processor base frequency	1.20 GHz	900 MHz	900 MHz	1.80 GHz
Maximum turbo frequency	3.60	3.80 GHz	3.80	3.80 GHz
Processor cache	18 MB	24 MB	24 MB	24 MB
Integrated graphics	Intel Graphics or Intel Arc Graphics	Intel Graphics or Intel Arc Graphics	Intel Graphics or Intel Arc Graphics	Intel Graphics or Intel Arc Graphics

Chipset

The following table lists the details of the chipset that is supported for your Precision 3591.

Table 4. Chipset

Description	Values
Chipset	Integrated in the processor
Processor	Intel Core Ultra 5/7/9
DRAM bus width	64-bit

Table 4. Chipset (continued)

Description	Values
Flash EPROM	64 MB
PCIe bus	Up to Gen4

Operating system

Your Precision 3591 supports the following operating systems:

- Windows 11 Home
- Windows 11 Pro
- Ubuntu Linux 22.04 LTS

Memory

The following table lists the memory specifications of your Precision 3591.

Table 5. Memory specifications

Description	Values
Memory slots	Two-SODIMM slots
Memory type	DDR5
Memory speed	5600 MT/s
Maximum memory configuration	64 GB
Minimum memory configuration	8 GB
Memory size per slot	8 GB, 16 GB, or 32 GB
Memory configurations supported	1 x 8 GB, DDR5, 5600 MT/s, single-channel 1 x 16 GB, DDR5, 5600 MT/s, single-channel 2 x 8 GB, DDR5, 5600 MT/s, dual-channel 2 x 16 GB, DDR5, 5600 MT/s, dual-channel 1 x 32 GB, DDR5, 5600 MT/s, single-channel 2 x 32 GB, DDR5, 5600 MT/s, dual-channel

External ports

The following table lists the external ports of your Precision 3591.

Table 6. External ports

Description	Values
Network port	One RJ45 port
USB ports	- One USB 3.2 Gen 1 port - One USB 3.2 Gen 1 port with PowerShare - Two Thunderbolt 4 ports with Power Delivery and DisplayPort

Table 6. External ports (continued)

Description	Values
	(i) **NOTE:** You can connect a Dell Docking Station to this port. For more information, search in the Knowledge Base Resource at www.dell.com/support.
Audio port	One Universal audio port
Video port	One HDMI 2.1 TMDS port
Media-card reader	One microSD-card slot
Power-adapter port	USB Type-C power input
Security-cable slot	One wedge-shaped lock slot
SIM-card slot	nano-SIM card slot (optional)

Internal slots

The following table lists the internal slots of your Precision 3591.

Table 7. Internal slots

Description	Values
M.2	- One M.2 2230 slot for WiFi and Bluetooth combo card - Two M.2 2230 or 2280 slot for solid state drive - One M.2 3042 slot for WWAN card (i) **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.

Ethernet

The following table lists the wired Ethernet Local Area Network (LAN) specifications of your Precision 3591.

Table 8. Ethernet specifications

Description	Values
Model number	Intel I219-LM 10/100/Gb (1000BASE-T) for vPRO configurations
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 3591.

Table 9. Wireless module specifications

Description	Option one	Option two
Model number	Realtek RTL8852BE	Intel AX211

Table 9. Wireless module specifications (continued)

Description	Option one	Option two
Transfer rate	Up to 1201 Mbps	Up to 2400 Mbps
Frequency bands supported	2.4 GHz/5 GHz	2.4 GHz/5 GHz/6 GHz
Wireless standards	- WiFi 802.11a/b/g - Wi-Fi 4 (WiFi 802.11n) - Wi-Fi 5 (WiFi 802.11ac) - Wi-Fi 6 (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) ⓘ **NOTE:** Wi-Fi 6 is supported in regions where Wi-Fi 6E is unavailable.
Encryption	64-bit/128-bit WEP - AES-CCMP - TKIP	64-bit/128-bit WEP - AES-CCMP - TKIP
Bluetooth wireless card	Bluetooth 5.3	Bluetooth 5.3
	ⓘ **NOTE:** The version of the Bluetooth wireless card may vary depending on the operating system that is installed on your computer.	

WWAN module

The following table lists the Wireless Wide Area Network (WWAN) module supported on your Precision 3591.

Table 10. WWAN module specifications

Description	Option one	Option two
Model number	Qualcomm Snapdragon SDX12 Advanced (DW5825e), CAT 12	Qualcomm Snapdragon X62 Global 5G Modem (DW5932e)
Form factor	M.2 3042 Key-B	M.2 3042 Key-B
Host interface	USB 3.0/2.0	PCIe Gen3
Network standard	LTE FDD/TDD, WCDMA/HSPA+, GNSS/ Beidou, GPS/GLONASS/Beidou/Galileo	NR FR1 (Sub6) FDD/TDD, LTE FDD/ TDD, WCDMA/HSPA+, GPS/GLONASS/ Galileo/Beidou
Transfer data rate	- Up to 600 Mbps DL (CAT 12) - Up to 150 Mbps UL	5G NR: DL 3.5 Gbps/ UL 900 Mbps - LTE: DL 1.6 Gbps (CAT19)/ UL 211 Mbps (CAT18) - UMTS: DL DC-HSPA+ Rel8:42 Mbps / UL 5.76 Mbps
Operating frequency bands	- LTE (B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29, B30, B32, B38, B39, B40, B41, B42, B43, B48, B66, B71) - HSPA+ (1,2,4,5,6,8,19)	- NR (n1, n2, n3, n5, n7, n8, n20, n25, n28, n30, n38, n40, n41, n48, n66, n71, n77, n78, n79) - LTE (B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29, B30, B32, B34, B38, B39, B40, B41, B42, B43, B46, B48, B66, B71*) - WCDMA/HSPA+ (1, 2, 4, 5, 8)

Table 10. WWAN module specifications (continued)

Description	Option one	Option two
		*Modem hardware supports but currently disabled
Power supply	DC 3.135 V to 4.40 V, Typical 3.30 V	DC 3.135 V to 3.63 V, Typical 3.3 V
SIM card	Supported through external SIM slot	Supported through external SIM slot
eSIM with dual SIM (DSSA)	Supported (i) **NOTE:** The availability of eSIM functionality embedded on the module is dependent on the region and specific carrier requirements.	Supported (i) **NOTE:** The availability of eSIM functionality embedded on the module is dependent on the region and specific carrier requirements.
Antenna diversity	Supported	Supported
Radio On/Off	Supported	Supported
Wake on wireless	Supported	Supported
Temperature	● Normal operating temperature: -10°C to +55°C ● Extended Operating temperature: -30°C to +75°C	● Normal operating temperature: -10°C to +55°C ● Extended Operating temperature: -30°C to +75°C ● Storage temperature: -40°C to +85°
Antenna connector	● WWAN main antenna x 1 ● WWAN diversity antenna x 1	● WWAN main antenna x 1 ● WWAN diversity antenna x 1 ● 4x4 MIMO antenna x 2
(i) **NOTE:** For instructions on how to find your computer's International Mobile Equipment Identity (IMEI) number, search in the Knowledge Base Resource at www.dell.com/support.		

Audio

The following table lists the audio specifications of your Precision 3591.

Table 11. Audio specifications

Description	Values
Audio controller	Realtek Waves, MaxxAudio 13.0
Stereo conversion	Supported
Internal audio interface	High definition audio interface
External audio interface	Universal Audio Jack/HDMI 2.1 TMDS port
Number of speakers	2
Internal-speaker amplifier	Not supported
External volume controls	Keyboard shortcut controls
Speaker output:	

Table 11. Audio specifications (continued)

Description		Values
	Average speaker output	2 W
	Peak speaker output	2 W
Subwoofer output		Not supported
Microphone		Digital-array microphones in camera assembly

Storage

This section lists the storage options on your Precision 3591.

Your Precision 3591 supports two M.2 2230 or 2280 solid state drive storage configurations.

Table 12. Storage specifications

Storage type	Interface type	Capacity
M.2 2230 or 2280 solid state drive	PCIe Gen4 NVMe, up to 64 Gbps	Up to 2 TB
M.2 2230 self-encrypting drive	PCIe Gen4 NVMe, up to 64 Gbps	512TB

Keyboard

The following table lists the keyboard specifications of your Precision 3591.

Table 13. Keyboard specifications

Description	Values
Keyboard type	● Standard backlit AI hotkey keyboard ● Standard non-backlit AI hotkey keyboard ⓘ **NOTE:** Copilot in Windows is available only in approved markets.
Keyboard layout	QWERTY
Number of keys	● English US, English International, English UK, Canada (Bilingual), Arabic, Chinese (Traditional), French (Canadian), Greek, Hebrew, Korean, Russian, Thai, Ukrainian: 99 keys ● Bulgarian, English UK, French (Canadian), Spanish (Latin America), Brazilian, Belgian, Czech/Slovak (MUI), Danish, Estonian, French (European), German, Hungarian, Italian, Nordic (MUI), Norwegian, Portugese Iberian, Slovenian, Spanish (Castilian), Spanish (Latin America), Swedish/Finnish, Swiss/European (MUI), Turkish, Turkish (F): 100 keys ● Japanese - 103 keys
Keyboard size	X=18.05 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

Table 13. Keyboard specifications (continued)

Description	Values
	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. For more information, see Keyboard function keys.

Keyboard function keys

The **F1**-**F12** keys at the top of the keyboard are function keys. By default, these keys are used to perform specific functions defined by the software application in use.

Table 14. List of keyboard shortcuts

Key	Primary behavior
F1	Mute audio
F2	Decrease volume
F3	Increase volume
F4	Mute microphone
F5	Keyboard backlight ⓘ **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
F10	Print Screen
F11	Home
F12	End
Copilot	Launch Copilot in Windows ⓘ **NOTE:** If Copilot in Windows is not available on your computer, the CoPilot key launches Windows Search. For more information about Copilot in Windows, search in the Knowledge Base Resource at www.dell.com/support.

You can run the secondary tasks that are indicated by the symbols on the function keys by pressing the function key with **fn**, for example, **fn** and **F1**. See the table below for the list of secondary tasks and the key combinations to run them.

ⓘ **NOTE:** Keyboard characters may differ depending on the keyboard language configuration. Keys that are used for tasks remain the same, regardless of the keyboard language.

ⓘ **NOTE:** You can define the primary behavior of function keys in the **Function Key Behavior** menu of the BIOS setup program.

Table 15. Secondary tasks of keyboard keys

Key combination for task	What the task does
fn and **F1**	Operating system and application-specific F1 behavior
fn and **F2**	Operating system and application-specific F2 behavior

Table 15. Secondary tasks of keyboard keys (continued)

Key combination for task	What the task does
fn and **F3**	Operating system and application-specific F3 behavior
fn and **F4**	Operating system and application-specific F4 behavior
fn and **F5**	Operating system and application-specific F5 behavior
fn and **F6**	Operating system and application-specific F6 behavior
fn and **F7**	Operating system and application-specific F7 behavior
fn and **F8**	Operating system and application-specific F8 behavior
fn and **F9**	Operating system and application-specific F9 behavior
fn and **F10**	Operating system and application-specific F10 behavior
fn and **F11**	Operating system and application-specific F11 behavior
fn and **F12**	Operating system and application-specific F12 behavior

Keys with alternate characters

There are other keys on your keyboard with alternate characters. The symbols that are shown at the bottom of these keys are the main characters that are displayed when the key is pressed; the symbols that are shown at the top of these keys are displayed when the key is pressed with the shift key. For example, if you press **2**, **2** is displayed; if you press **Shift** and **2**, **@** is displayed.

Camera

The following table lists the camera specifications of your Precision 3591.

Table 16. Camera specifications

Description		Values
Number of cameras		One
Camera type		- FHD RGB HDR camera - FHD RGB+IR HDR camera - FHD RGB+IR HDR camera with Ambient Light Sensor, Express Sign-In with Presence Detection and Intelligent Privacy
Camera location		Front camera
Camera sensor type		CMOS sensor technology
Camera resolution:		
	Still image	2.07 megapixel
	Video	1920 x 1080 (FHD) at 30 fps
Infrared camera resolution:		
	Still image	0.23 megapixels
	Video	640 x 360 at 30 fps
Diagonal viewing angle:		

Table 16. Camera specifications (continued)

Description		Values
	Camera	80 degrees
	Infrared camera	86.60 degrees

Touchpad

The following table lists the touchpad specifications of your Precision 3591.

Table 17. Touchpad specifications

Description		Values
Touchpad resolution:		>300 DPI
Touchpad dimensions:		
	Horizontal	115 mm (4.52 in.)
	Vertical	67 mm (2.64 in.)
Touchpad gestures		For more information about touchpad gestures are available on: - Windows, see the Microsoft Knowledge Base article at support.microsoft.com. - Ubuntu, see ubuntu.com/support.

Power adapter

The following table lists the power adapter specifications of your Precision 3591.

Table 18. Power adapter specifications

Description		Option one	Option two
Type		100 W adapter, USB-C	130 W adapter, USB-C
Power-adapter dimensions:			
	Height	26.41 mm (1.04 in.)	22.09 mm (0.87 in.)
	Width	59.94 mm (2.36 in.)	66.04 mm (2.60 in.)
	Depth	121.92 mm (4.80 in.)	143 mm (5.63 in.)
Input voltage		100 VAC-240 VAC	100 VAC-240 VAC
Input frequency		50 Hz-60 Hz	50 Hz-60 Hz
Input current (maximum)		1.70 A	1.80 A
Output current (continuous)		20 V/5 A (continuous) 15 V/3 A (continuous) 9 V/3 A (continuous) 5 V/3 A (continuous)	20 V/6.50 A (continuous) 5 V/1 A (continuous)
Rated output voltage		20 VDC	20 VDC

Table 18. Power adapter specifications (continued)

Description	Option one	Option two
	• 15 VDC • 9 VDC • 5 VDC	• 5 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	-20°C to 70°C (-4°F to 158°F)	-40°C to 70°C (-4°F to 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 Precision 3591.

Table 19. Battery specifications

Description	Option one	Option two
Battery type	4 cell, 64 Wh, ExpressCharge	6 cell, 97 Wh, ExpressCharge
Battery voltage	15.20 VDC	11.40 VDC
Battery weight (minimum)	0.28 kg (0.49 lb)	0.42 kg (0.92 lb)
Battery dimensions:		
Height	7.60 mm (0.29 in.)	7.60 mm (0.29 in.)
Width	226.60 mm (8.92 in.)	336 mm (13.22 in.)
Depth	81.40 mm (3.20 in.)	81.40 mm (3.20 in.)
Temperature range:		
Operating	• Charge: 0°C to 45°C (32°F to 113°F) • Discharge: 0°C to 70°C (32°F to 158°F)	• Charge: 0°C to 45°C (32°F to 113°F) • Discharge: 0°C to 70°C (32°F to 158°F)
Storage	-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.
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 about Dell Power Manager, search in the Knowledge Base Resource at www.dell.com/support.	• From 0% up to 35% in 20 minutes (ExpressCharge Boost) • 80% in 1 hour • 2 hours to full • 3 hours to full (Standard charge)	• From 0% up to 35% in 20 minutes (ExpressCharge Boost) • 80% in 1 hour • 2 hours to full • 3 hours to full (Standard charge)

Table 19. Battery specifications (continued)

Description	Option one	Option two
Coin-cell battery	CR2032	CR2032

⚠ **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 Precision 3591.

Table 20. Display specifications

Description		Option one	Option two	Option three
Display type		15.6-inch Full High Definition (FHD)	15.6-inch Full High Definition (FHD)	15.6-inch Full High Definition (FHD), ComfortView Plus Low Blue Light, Battery Saving
Touch options		No	Yes	No
Display-panel technology		In-Plane Switching (IPS)	In-Plane Switching (IPS)	In-Plane Switching (IPS)
Display-panel dimensions (active area):				
	Height	193.60 mm (7.62 in.)	193.60 mm (7.62 in.)	193.60 mm (7.62 in.)
	Width	344.20 mm (13.55 in.)	344.20 mm (13.55 in.)	344.20 mm (13.55 in.)
	Diagonal	396 mm (15.60 in.)	396 mm (15.60 in.)	396 mm (15.60 in.)
Display-panel native resolution		1920 x 1080	1920 x 1080	1920 x 1080
Luminance (typical)		250 nits	250 nits	400 nits
Megapixels		2.07	2.07	2.07
Color gamut		45% NTSC	45% NTSC	100% sRGB
Pixels Per Inch (PPI)		141	141	141
Contrast ratio (typical)		700:1	700:1	800:1
Response time (maximum)		35 millisecond	35 millisecond	35 millisecond
Refresh rate		60 Hz	60 Hz	60 Hz
Horizontal view angle		+/- 80 degrees	+/- 80 degrees	+/- 80 degrees
Vertical view angle		+/- 80 degrees	+/- 80 degrees	+/- 80 degrees
Pixel pitch		0.179 x 0.179 mm	0.179 x 0.179 mm	0.179 x 0.179 mm

Table 20. Display specifications (continued)

Description	Option one	Option two	Option three
Power consumption (maximum)	4.60 W	4.60 W	4.50 W
Anti-glare vs glossy finish	Anti-glare	Anti-glare	Anti-glare

Fingerprint reader (optional)

The following table lists the specifications of the optional fingerprint-reader of your Precision 3591.

Table 21. 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 Precision 3591.

Table 22. Sensor

Sensor support
Ambient light sensor
Accelerometer in the base: ST Micro LIS2DW12TR
Accelerometer in the hinge-up (Upsell configuration with Emza/ALS/IR camera): ST Micro LNG2DMTR

GPU—Integrated

The following table lists the specifications of the integrated Graphics Processing Unit (GPU) supported by your Precision 3591.

Table 23. GPU—Integrated

Controller	Memory size	Processor
Intel Arc Graphics	Shared system memory	For Intel Core H processors and requires 128-bit (dual-channel) memory with minimum of 16 GB memory)

GPU—Discrete

The following table lists the specifications of the discrete Graphics Processing Unit (GPU) supported by your Precision 3591.

Table 24. GPU—Discrete

Controller	Memory size	Memory type
NVIDIA RTX 500 Ada Generation	4 GB	GDDR6

Table 24. GPU—Discrete (continued)

Controller	Memory size	Memory type
NVIDIA RTX 1000 Ada Generation	6 GB	GDDR6
NVIDIA RTX 2000 Ada Generation	8 GB	GDDR6

External display support

The following table lists the external display support for your Precision 3591.

Table 25. External display support

Graphics card	Supported external displays with laptop display enabled	Supported external displays with laptop display disabled
Intel Arc Graphics	3	4
Intel Graphics	3	4
ⓘ **NOTE:** For more information about external display support, see the External Display Connection Guide on www.dell.com/support.		

Hardware security

The following table lists the hardware security of your Precision 3591.

Table 26. Hardware security

Hardware security
Trusted Platform Module (TPM) 2.0 discrete
FIPS 140-2 certification for TPM
TCG Certification for TPM (Trusted Computing Group)
Finger Print Reader in Power Button available with and without ControlVault 3 Plus
ControlVault 3 Plus Advanced Authentication with FIPS 140-3 Level 3 Certification
Contacted Smart Card and ControlVault 3 Plus
Contactless Smart Card, NFC, and ControlVault 3 Plus
SED SSD NVMe, SSD, and hard drive (Opal and non-Opal) per SDL
FIPS 201 Full Scan FPR and ControlVault 3 Plus

Smart-card reader

Contactless smart-card reader

This section lists the contactless smart-card reader specifications of your Precision 3591. This module is only available in computers shipped with Smart-card readers.

Table 27. Contactless smart-card reader specifications

Title	Description	Dell ControlVault 3 Plus Contactless smart-card reader with NFC
Felica Card Support	Reader and software capable of supporting Felica contactless cards	Yes
Prox (Proximity) (125kHz) Card support	Reader and software capable of supporting Prox /Proximity/125 kHz contactless cards	No
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
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
NFC Proximity OS Interface	Enumerates NFP (Near Field Proximity) device for operating system to utilize	Yes
PC/SC operating system 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 operating system level drivers	Yes
Dell ControlVault support	The device connects to Dell ControlVault for usage and processing	Yes

(i) **NOTE:** 125 Khz proximity cards are not supported.

Table 28. Supported cards

Manufacturer	Card
HID	jCOP readertest3 A card (14443a)
	1430 1L
	DESFire D8H
	DESFIRE 4K Standard - 1450NGGNN
	iClass 16K/16 - 2002PGGMN
	iClass SR 16K/16 - 2002HPGGMN
	iCLASS 2K tag
	iCLASS GP - 2003 PGGMN
	iClass Clamshell - 2080PMSMV
	iClass Prox 16K/16 - 2022BGGMNN
	Mifare M1P 1430 NGGNN
	iclass Prox 2020BGGMNM
	DesFire D8P 1456CSGMN
	iCLASS MIFARE Px GM49Y 2623BNPGGBNAB
	iCLASS MIFARE Px 8M1L
	iClass SEOS JW 5006PGGMN
	Crescendo iCLASS Px G8H
	iCLASS Seos IY
	SEOS JMC4 J1Y 5806VNG1NNN4
	SEOS Key FOB 5266PNNA
	SEOS Clamshell 5656PMSAV
	SEOS + Prox 5106RGGMNN
	SEOS + DESFire 5906PNG1ANN7
	SEOS iClass 5006PGGMN7
	Seos Essential + Prox 551PPGGANN
	iCLASS 2K 2000PGGMN
	iCLASS 2K 3000PGGMN
	MIFARE DESFire 3700CPGGAN
	iCLASS DP
	DESFire 1Y
NXP/Mifare	Mifare DESFire 8K White PVC card
	Mifare Classic 1K White PVC card
	NXP Mifare Classic S50 ISO card
	Mifare DESFire 2K
	Mifare Plus S 2K/4K
	Mifare Plus X 4K
G&D	idOnDemand - SCE3.2 144K

Table 28. Supported cards (continued)

Manufacturer	Card
	SCE6.0 FIPS 80K Dual + 1K Mifare
	SCE6.0 nonFIPS 80K Dual + 1K Mifare
	SCE6.0 FIPS 144K Dual + 1K Mifare
	SCE6.0 nonFIPS 144K Dual + 1K Mifare
	SCE7.0 FIPS 144K
Oberthur	idOnDemand - OCS5.2 80K
	ID-One Cosmo 64 RSA D V5.4 T = 0 card
	ID-One Cosmo 128K V5.5 card
Gemalto	TOP DL GX4 144K card
Sony	Felica RC-S962
	Felica RC-S965
	Felica RC-S966
PIVKey	C910 PKI
NIST	PIV1
IDENTIV	PIV programmed cards
	uTrust
Transport cards	Oyster (London) MIFARE DESFire
	T-Money (Korea)
	Octopus Card (Hong Kong)
	SUICA (Japan)

Table 29. Qualified NFC tags

NFC tag	Supported
Tap and do - NFC Forum Type 1 Tag - Topaz 512 (BCM920203)	Yes
Tap and do - NFC Forum Type 1 Tag - Topaz 512 (BCM20203T512)	Yes
Tap and do - NFC Forum Type 1 Tag - Topaz (BCM20203T96)	Yes
Tap and do - NFC Forum Type 2 Tag - Mifare UltraLight	Yes
Tap and do - NFC Forum Type 2 Tag - Mifare UltraLight C	Yes
Tap and do - NFC Forum Type 2 Tag - NTAG203	Yes
Tap and do - NFC Forum Type 3 Tag - FeliCa Lite RC-S965	Yes
Tap and do - NFC Forum Type 3 Tag - FeliCa RC-S962	Yes
Tap and do - NFC Forum Type 4 Tag - Mifare DESFire EV1Card 2K	Yes
Tap and do - NFC Forum Type 4 Tag - Mifare DESFire EV1Card 4K	Yes
Tap and do - NFC Forum Type 4 Tag - Mifare DESFire EV1Card 8K	Yes
Tap and do - ISO 15693 - Tag-it Plus	Yes

Table 29. Qualified NFC tags (continued)

NFC tag	Supported
HID I-code ISO card	Yes

Contacted smart-card reader

The following table lists the contacted smart-card reader specifications of your Precision 3591.

Table 30. Contacted smart-card reader specifications

Title	Description	Dell ControlVault 3 Plus Contacted smart-card reader
ISO 7816-3 Class A Card Support	Reader capable of reading 5 V powered smart card	Yes
ISO 7816-3 Class B Card Support	Reader capable of reading 3 V powered smart card	Yes
ISO 7816-3 Class C Card support	Reader capable of reading 1.8 V powered smart card	Yes
T = 0 support	Cards support character level transmission	Yes
T = 1 support	Cards support block level transmission	Yes
EMVCo Certified	Formally certified based on EMVCo smart card standards	Yes
PC/SC operating system 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 operating system level drivers	Yes
Windows Certified	Certified by the Windows Hardware Certification program	Yes
FIPS 201 (PIV/HSPD-12) Compliant	Device compliant with FIPS 201/PIV/HSPD-12 requirements	Yes
ISO 7816-1 Compliant	Specification for the physical characteristics of integrated circuit cards with contacts	Yes
ISO 7816-2 Compliant	Specification for the dimensions and location of the contacts	Yes
ISO 7816-3 Compliant	Specification for electrical interface and transmission protocols	Yes
ISO 7816-4 Compliant	Specification for organization, security, and commands for interchange	Yes
Dell ControlVault support	Device connects to Dell ControlVault for usage and processing	Yes

Operating and storage environment

This table lists the operating and storage specifications of your Precision 3591.

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

Table 31. 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 10,000 ft)	-15.2 m to 10,668 m (-49.87 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.

Dell support policy

For information about Dell support policy, search in the Knowledge Base Resource at www.dell.com/support.

ComfortView Plus

⚠ **WARNING: Prolonged exposure to blue light from the display may lead to long-term effects such as eye strain, eye fatigue, or damage to the eyes.**

Blue light is a color in the light spectrum which has a short wavelength and high energy. Chronic exposure to blue light, particularly from digital sources, may disrupt sleep patterns and cause long-term effects such as eye strain, eye fatigue, or damage to the eyes.

The display on this computer is designed to minimize blue light and complies with TÜV Rheinland's requirement for low blue light displays.

Low blue light mode is enabled at the factory, so no further configuration is necessary.

To reduce the risk of eye strain, it is also recommended that you:

● Position the display at a comfortable viewing distance between 20 and 28 inches (50 cm and 70 cm) from your eyes.
● Blink frequently to moisten your eyes, wet your eyes with water, or apply suitable eye drops.
● Look away from your display, and gaze at a distant object at 20 ft (609.60 cm) away for at least 20 seconds during each break.
● Take an extended break for 20 minutes every two hours.

Using the privacy shutter

1. Slide the privacy shutter to the left to access the camera lens.
2. Slide the privacy shutter to the right to cover the camera lens.

Figure 8. Camera shutter

Dell Optimizer

This section provides the Dell Optimizer specifications of your Precision 3591.

On Precision 3591 with Dell Optimizer, the following features are supported:
- **ExpressConnect**—Automatically joins the access point with the strongest signal, and directs bandwidth to conferencing applications when in use.
- **ExpressSign-in**—The Intel Context Sensing Technology's proximity sensor detects your presence to instantly wake up the computer and login using the IR camera and Windows Hello feature. Windows locks when you walk away.
- **ExpressResponse**—Prioritizes the most important applications. Applications open faster and perform better.
- **ExpressCharge**—Extends the battery runtime and improves battery performance by adapting to your patterns.
- **Intelligent Audio**—Collaborate like you're in the same room. Intelligent Audio enhances your audio quality and reduces background noises, so you can hear and be heard, creating a better conference experience for all.

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

Engineering specifications

Ethernet

Intel Ethernet Connection i219-LM

The following table lists the i219-LM specifications.

Table 32. 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 i219-V

The following table lists the i219-V specifications.

Table 33. Intel Ethernet Connection i219-V 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.

Wireless module

Realtek RTL8852BE, 2x2, Wi-Fi 6 (Wi-Fi 802.11 a/b/g/n/ac/ax), Bluetooth 5.3 wireless card

The following table lists the Realtek RTL8852BE specifications.

Table 34. Realtek RTL8852BE specifications

Description	Value
Host interface	- PCIe for Wi-Fi - USB for Bluetooth
Network standard	IEEE 802.11a/b/g/n/ac/ax, MU-MIMO
Wi-Fi Alliance certifications	Wi-Fi CERTIFIED* a/b/g/n/ac/ax, WMM*, WPA, WPA2*, WPA3*, and Wi-Fi Direct (Microsoft Windows* only)
Operating frequency bands	2.4 GHz 5 GHz
Data rate	2.4 GHz 40M: Up to 574 Mbps 5 GHz 80M: Up to 1201 Mbps
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
Client utility	Native Wi-Fi and Bluetooth Microsoft UI support
Software support	- Microsoft WHQL certified for Windows - Linux
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
Operating temperature	0°C to + 70°C
Storage temperature	-40°C to +85°C

(i) **NOTE:** *Other names and brands may be claimed as the property of others.

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

The following table lists the Intel AX211 specifications.

(i) **NOTE:** Wi-Fi 6 is supported in regions where Wi-Fi 6E is unavailable.

Table 35. Intel AX211 specifications

Description	Value
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*
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

Table 35. Intel AX211 specifications (continued)

Description	Value
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)

ⓘ **NOTE:** *Other names and brands may be claimed as the property of others.

WWAN module

Qualcomm Snapdragon SDX12 Global LTE-Advanced (DW5825e)

The following table lists specifications of the Qualcomm Snapdragon SDX12 Global LTE-Advanced (DW5825e) WWAN module.

Table 36. Qualcomm Snapdragon SDX12 Global LTE-Advanced (DW5825e) specifications

Description	Value
Form factor	M.2 3042 Key-B
Host interface	USB 3.0/2.0
Network standard	• LTE FDD/TDD • WCDMA/HSPA+ • GPS/GLONASS/Beidou/Galileo
Transfer rate	• Up to 600 Mbps DL (CAT6) • Up to 150 Mbps UL
Operating frequency bands	• LTE (B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29, B30, B32, B38, B39, B40, B41, B42, B43, B48, B66, B71) • HSPA+ (1,2,4,5,6,8,19)
Power supply	DC 3.135 V to 4.4 V, Typical 3.3 V
SIM card	Supported through external SIM-card slot
eSIM with Dual SIM (DSSA)	Supported ⓘ **NOTE:** The availability of eSIM functionality embedded on the module is dependent on the region and specific carrier requirements.
Antenna diversity	Supported
Radio On/Off	Supported
Wake on wireless	Supported
Normal operating temperature	-10°C to +55°C

Table 36. Qualcomm Snapdragon SDX12 Global LTE-Advanced (DW5825e) specifications (continued)

Description	Value
Extended operating temperature	-30°C to +75°C
Antenna connector	- WWAN Main Antenna x 1 - WWAN Diversity Antenna x 1

Qualcomm Snapdragon X62 Global 5G Modem (DW5932e)

The following table lists specifications of the Qualcomm Snapdragon X62 Global 5G Modem (DW5932e) WWAN module.

Table 37. Qualcomm Snapdragon X62 Global 5G Modem (DW5932e) specifications

Description	Value
Form factor	M.2 3042 Key-B
Host interface	PCIe Gen3
Network standard	- NR FR1 (Sub6) FDD/TDD - LTE FDD/TDD - WCDMA/HSPA+ - GPS/GLONASS/Beidou/Galileo
Transfer rate	5G NR: DL 3.5 Gbps/UL 900 Mbps - LTE: DL 1.6 Gbps (CAT19)/UL 211 Mbps (CAT18) - UMTS: DL DC-HSPA+ Rel8:42 Mbps/UL 5.76 Mbps
Operating frequency bands	- NR (n1, n2, n3, n5, n7, n8, n12, n13, n14, 18, n20, n25, n26, n28, n30, n38, n40, n41, n48, n53, n66, n70, n71, n75, n76, n77, n78, n79) - LTE (B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29, B30, B32, B34, B38, B39, B40, B41, B42, B43, B46, B48, B66, B71) - WCDMA/HSPA+ (1, 2, 4, 5, 8)
Power supply	DC 3.135 V to 3.63 V, Typical 3.3 V
SIM card	Supported through external SIM-card slot
eSIM with Dual SIM (DSSA)	Supported ⓘ **NOTE:** The availability of eSIM functionality embedded on the module is dependent on the region and specific carrier requirements.
Antenna diversity	Supported
Radio On/Off	Supported
Wake on wireless	Supported
Normal operating temperature	-30°C to +70°C
Extended operating temperature	-40°C to +85°C
Storage temperature	-40°C to +85°C
Antenna connector	- WWAN Main Antenna x 1 - WWAN Diversity Antenna x 1 4x4 MIMO Antenna x 2

GPU—Integrated

Intel Arc Graphics

The following table lists the Intel Arc Graphics specifications.

Table 38. Intel Arc Graphics specifications

Bus type	Integrated graphics ⓘ **NOTE:** Intel Arc Graphics uses the computers memory as video memory.
Memory type	Shared with system memory
Graphics level	i5/i7
Memory interface	64 Gbps, Unified Memory Architecture
Estimated maximum power consumption (TDP)	28 W (H-series), included in the CPU power
Overlay planes	Yes
Operating systems graphics/ video API support	DirectX 12 Ultimate, OpenGL 4.6
Maximum color depth	10 bits
Maximum vertical refresh rate	Up to 120 Hz ⓘ **NOTE:** The refresh rate depends on the resolution.
External ports	HDMI 2.1 port, DisplayPort 2.1 over USB Type-C
Multiple display support	Up to 4 displays including laptop display

Intel Graphics

The following table lists the Intel Graphics specifications.

Table 39. Intel Graphics specifications

Bus type	Integrated graphics ⓘ **NOTE:** Intel Graphics uses the computers memory as video memory.
Memory type	Shared with system memory
Graphics level	i5/i7
Memory interface	64 Gbps, Unified Memory Architecture
Estimated maximum power consumption (TDP)	15 W (U-series) included in the CPU power
Overlay planes	Yes
Operating systems graphics/ video API support	DirectX 12 Ultimate, OpenGL 4.6
Maximum color depth	10 bits
Maximum vertical refresh rate	Up to 120 Hz ⓘ **NOTE:** The refresh rate depends on the resolution.
External ports	HDMI 2.1 port, DisplayPort 2.1 over USB Type-C
Multiple display support	Up to 4 displays including laptop display

GPU—Discrete

NVIDIA RTX 500 ADA Generation, 4 GB, GDDR6, GB5B-128

The following table lists the NVIDIA RTX 500 ADA Generation specifications.

Table 40. NVIDIA RTX 500 ADA Generation specifications

Feature	Values
GPU	NVIDIA RTX 500 ADA Generation Laptop GPU
Cores	CUDA cores 2048
Memory bandwidth	112 Gbps
Memory type	GDDR6
Memory size	4 GB
Memory interface	64-bit
Memory configuration	2 x 8 GB (2CH x 256M x 16, 16 Gbps)
GPU package	GB5B-128
TDP	● GPU - 26.3 W ● Memory - 7.2 W
TGP	35 W
GPU base clock	1485 MHz
GPU boost clock	2025 MHz
Vram clock	8001 MHz
PCIe	Gen 4 x 8
Features	Dynamic boost
Concurrency	55 W - 20W CPU + 35W GPU

NVIDIA RTX 1000 ADA Generation laptop, 6 GB, GDDR6, GB5B-128

The following table lists the NVIDIA RTX 1000 ADA Generation laptop specifications.

Table 41. NVIDIA RTX 1000 ADA Generation laptop specifications

Feature	Values
GPU	NVIDIA RTX 1000 ADA Generation Laptop
Cores	CUDA cores 2560
Memory bandwidth	176 Gbps
Memory type	GDDR6
Memory size	6 GB
Memory interface	96-bit
Memory configuration	3 x 8 GB (2CH x 256M x 16, 16 Gbps)
GPU package	GB5B-128
TDP	● GPU - 18.9 W ● Memory - 12 W

Table 41. NVIDIA RTX 1000 ADA Generation laptop specifications (continued)

Feature	Values
TGP	35 W
GPU base clock	990 MHz
GPU boost clock	1740 MHz
PCIe	Gen 4 x 8
Vram clock	8001 MHz
Features	Dynamic Boost
Concurrency	55 W - 20W CPU + 35W GPU

NVIDIA RTX 2000 ADA Generation laptop, 8 GB, GDDR6, GB5C-128

The following table lists the NVIDIA RTX 2000 ADA Generation laptop specifications.

Table 42. NVIDIA RTX 2000 ADA Generation laptop specifications

Feature	Values
GPU	NVIDIA RTX A2000 ADA Generation laptop
Cores	CUDA cores 3072
Memory bandwidth	256 Gbps
Memory type	GDDR6
Memory size	8 GB
Memory interface	128-bit
Memory configuration	4 x 8 GB (2CH x 256M x 16, 16 Gbps)
GPU package	GB5C-128
TDP	- GPU - 25 W - Memory - 14 W
TGP	35 W
GPU base clock	930 MHz
GPU boost clock	1455 MHz
Vram clock	8001 MHz
PCIe	Gen4 x 8
Features	Dynamic boost
Concurrency	55 W - 20W CPU + 35W GPU

Video port and resolution matrix

The following table lists the Video port and resolution matrix of your Precision 3591.

Table 43. Video port and resolution matrix

Port type	USB Type-C Thunderbolt 4 with DisplayPort 1.4	HDMI 2.0 port
Maximum resolution—single display	7680 x 4320 at 60 Hz	4096 x 2160 at 60 Hz
Maximum resolution—dual MST	Two 4096 x 2304 at 60 Hz	Not applicable

Table 43. Video port and resolution matrix (continued)

Port type	USB Type-C Thunderbolt 4 with DisplayPort 1.4	HDMI 2.0 port
Maximum resolution—triple MST	Three 4096 x 2304 at 60 Hz	Not applicable

Storage

256 GB, M.2 2230, TLC PCIe NVMe Gen4

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

Table 44. 256 GB SSD specifications

Description	Values
Capacity	256 GB
Height (approximate)	2.38 mm (0.09 in.)
Width (approximate)	22 mm (0.87 in.)
Depth (approximate)	30 mm (1.18 in.)
Interface type	PCIe Gen4
Speed (maximum)	64 Gb/s (up to four lanes)
MTTF	1.4M hours
Logical blocks	500,118,192
Power source	
Power consumption (reference only)	● Idle: 5 mW (PS4) ● Active: 4 W
Environmental operating conditions (non-condensing)	
Temperature range	0°C to 70°C
Relative humidity range	10% to 90%
Op shock	1500G
Environmental nonoperating conditions (non-condensing)	
Temperature range	-40°C to 70°C
Relative humidity range	5% to 95%

512 GB, M.2 2230, TLC PCIe NVMe Gen4, SSD

The following table lists the M.2 2230, 512 GB SSD specifications.

Table 45. 512 GB SSD specifications

Description	Values
Capacity	512 GB
Height (approximate)	2.38 mm (0.09 in.)
Width (approximate)	22 mm (0.87 in.)
Depth (approximate)	30 mm (1.18 in.)

Table 45. 512 GB SSD specifications (continued)

Description	Values
Interface type	PCIe Gen4
Speed (maximum)	64 Gb/s (up to four lanes)
MTTF	1.4M hours
Logical blocks	1,000,215,216
Power source	
Power consumption (reference only)	● Idle: 5 mW (PS4) ● Active: 4 W
Environmental operating conditions (non-condensing)	
Temperature range	0°C to 70°C
Relative humidity range	10% to 90%
Op shock	1500G
Environmental nonoperating conditions (non-condensing)	
Temperature range	-40°C to 70°C
Relative humidity range	5% to 95%

1 TB, M.2 2230, TLC PCIe NVMe Gen4, SSD

The following table lists the M.2 2230, 1 TB SSD specifications.

Table 46. 1 TB SSD specifications

Description	Values
Capacity	1 TB
Height (approximate)	2.38 mm (0.09 in.)
Width (approximate)	22 mm (0.87 in.)
Depth (approximate)	30 mm (1.18 in.)
Interface type	PCIe Gen4
Speed (maximum)	64 Gb/s (up to four lanes)
MTBF	1.4M hours
Logical blocks	2,000,409,264
Power source	
Power consumption (reference only)	● Idle: 5 mW (PS4) ● Active: 4 W
Environmental operating conditions (non-condensing)	
Temperature range	0°C to 70°C
Relative humidity range	10% to 90%
Op shock	1500G
Environmental nonoperating conditions (non-condensing)	
Temperature range	-40°C to 70°C
Relative humidity range	5% to 95%

512 GB, M.2 2230, TLC PCIe NVMe Gen4, SED SSD (Opal certified)

The following table lists the M.2 2230, 1 TB SSD specifications.

Table 47. 512 SED SSD specifications

Description	Values
Capacity	512 GB
Height (approximate)	2.38 mm (0.09 in.)
Width (approximate)	22 mm (0.87 in.)
Depth (approximate)	30 mm (1.18 in.)
Interface type	PCIe Gen4
Speed (maximum)	64 Gb/s (up to four lanes)
MTBF	1.4M hours
Logical blocks	1,000,215,216
Power source	
Power consumption (reference only)	● Idle: 5 mW (PS4) ● Active: 4 W
Environmental operating conditions (non-condensing)	
Temperature range	0°C to 70°C
Relative humidity range	10% to 90%
Op shock	1500G
Environmental nonoperating conditions (non-condensing)	
Temperature range	-40°C to 70°C
Relative humidity range	5% to 95%

512 GB, M.2 2280, TLC PCIe NVMe Gen4, SSD

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

Table 48. 512 GB SSD 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.)
Interface type	PCIe Gen4
Speed (maximum)	64 Gb/s (up to four 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 48. 512 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 nonoperating conditions (non-condensing)	
Temperature range	-40°C to 70°C
Relative humidity range	5% to 95%

1 TB, M.2 2280, TLC PCIe NVMe Gen4, SSD

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

Table 49. 1 TB SSD 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 four 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 nonoperating conditions (non-condensing)	
Temperature range	-40°C to 70°C
Relative humidity range	5% to 95%

2 TB, M.2 2280, TLC PCIe NVMe Gen4, SSD

The following table lists the M.2 2280, 2024 GB SSD specifications.

Table 50. 2 TB SSD specifications

Description	Values
Capacity	2 TB

Table 50. 2 TB SSD specifications (continued)

Description	Values
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 four 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 nonoperating 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 Precision 3591.

Table 51. Power adapter specifications

Description		Option one	Option two
Type		100 W adapter, USB-C	130 W adapter, USB-C
Power-adapter dimensions:			
	Height	26.41 mm (1.04 in.)	22.09 mm (0.87 in.)
	Width	59.94 mm (2.36 in.)	66.04 mm (2.60 in.)
	Depth	121.92 mm (4.80 in.)	143 mm (5.63 in.)
Input voltage		100 VAC-240 VAC	100 VAC-240 VAC
Input frequency		50 Hz-60 Hz	50 Hz-60 Hz
Input current (maximum)		1.70 A	1.80 A
Output current (continuous)		20 V/5 A (continuous) 15 V/3 A (continuous) 9 V/3 A (continuous) 5 V/3 A (continuous)	20 V/6.50 A (continuous) 5 V/1 A (continuous)
Rated output voltage		20 VDC	20 VDC

Table 51. Power adapter specifications (continued)

Description		Option one	Option two
		• 15 VDC • 9 VDC • 5 VDC	• 5 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	-20°C to 70°C (-4°F to 158°F)	-40°C to 70°C (-4°F to 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.**			

Accessories

The following table lists the supported accessories on your Precision 3591.

Table 52. Accessories

Accessories
Audio: Dell Pro Wireless Headset - WL5022
Adapters: Dell 7-in-1 USB-C Multiport Adapter - DA310
Speakerphone: Dell Speakerphone - SP3022
Carrying case: Dell EcoLoop Pro Backpack - CP5723
Power bank: Dell Notebook Power Bank Plus û USB C, 65Wh - PW7018LC
Dock: Dell Thunderbolt 4 Dock - WD22TB4
Mouse: Dell Mobile Pro Wireless Mice - MS5120W
Keyboard: Dell Pro Wireless Keyboard and Mouse - KM5221W
Monitor: • Dell 27 USB-C HUB Monitor - P2723DE • Dell Collaboration 24 Monitor - C2423H
Webcam: Dell Pro Webcam - WB5023

Security

Software security

The following table lists the software security details of your Precision 3591.

Table 53. Software security

Security options
McAfee Generic Build 30-day Commercial
McAfee Generic Build 30-day Commercial JPN

Fingerprint reader

The following table lists the fingerprint reader specifications of your Precision 3591.

Table 54. Fingerprint reader specifications

Description	Value
Category	Goodix—GF5288WNC
Sensor technology	Capacitive sensing
Sensor resolution	500 dpi
Sensor pixel size	108 x 88
Dell ControlVault support	Yes
Dell ControlVault 3.0 support	Yes
Anti-spoofing	Yes
Template storage	Dell ControlVault HW protected and encrypted
Match on chip	Yes
FIPS 201 certified	No

Dell ControlVault 3.0

The following table lists the Dell ControlVault 3.0 specifications of your Precision 3591.

Table 55. Dell ControlVault 3.0 specifications

Title	Description	Dell ControlVault 3.0
CPU technology	Not applicable	1 GHz ARM Cortex A7
RAM	Not applicable	1 MB
ROM	Not applicable	16 MB
TPM included	TPM enumeration included within ControlVault	No
Host Interface	Not applicable	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

Table 55. Dell ControlVault 3.0 specifications (continued)

Title	Description	Dell ControlVault 3.0
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 Precision 3591.

Table 56. Trusted Platform Module (TPM)

TPM: ST/ST33 HTPH2X32AHE4
SPI interface
TPM 2.0
FIPs 140-2 certificate

Thermal and acoustic improvements

The following table lists the thermal and acoustic improvements of your Precision 3591.

Table 57. Thermal and acoustic improvements

Feature	Description
New larger single heat pipe	Increase the heat capacity to improve thermal dissipation
Better system tuning/setting	Get higher performance and a good user experience
Pro-OS enhanced thermal setting (Dynamic PL1)	Optimized boot-up time to balance thermals at start-up
Linear fan control	Fan speed ramp more smoothly for better user experience, no more significant acoustic changing
DDT SSD setting	Protecting the SSD device in high temperature and worse cases to prevent blue screen of death (BSOD)
IEC 60529 ingress protection: IP-54	● Dust protected ● Protected against dripping water
Better acoustic experience	Enhance acoustic to 0.6 sone during daily working conditions

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

Color, material, and finish

This section details the color, material, and finish (CMF) specifications of your Precision 3591.

Titan Gray

Table 58. CMF specifications

Description	Value
A Cover (Top)	- Carbon Fiber Reinforced Plastic (CFRP) + Bi-Injection Antenna Cover - Titan Gray Satin Waterborne UV Monocoat (WUVM) 17+/-3 Gloss Units (GU)
B Cover (Bezel)	- PC/ABS + Elastomer **NOTE:** PC/ABS: PC/ABS (polycarbonate/ acrylonitrile-butadiene-styrene terpolymer blend) is a thermoplastic alloy of (PC) polycarbonate and (ABS) acrylonitrile-butadiene-styrene. - Apollo, Resin - Bezel: Fine texture, 23 µm, 5+/-1 GU - Bumper: Fine texture, 17 µm, 5+/-1 GU
C Cover (Palmrest)	- Plastic (Rustic Pewter Resin) - Titan Gray Satin WUVM 17+/-3 GU
D Cover (Bottom)	- Black CFRP - Titan Gray Satin WUVM 17+/-3 GU

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

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 59. Self-help resources

Self-help resources	Resource location
Information about Dell products and services	www.dell.com
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 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 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.

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

(i) **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.