Precision 7680

External Display Connection Guide

D∕ELL 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

Before you begin

You can connect up to two 4K external displays or one 8K and above display using the two Thunderbolt 4 on your Precision 7680.

Total number of displays supported:
- Two 4K external displays: 2 ports (Thunderbolt 4)
- One 8K

Before you begin, ensure that you:
- Check the graphics options on your computer
- Check the ports available on your external displays and decide the Mode of connection.

Check the graphics options on your computer

The number of external displays that are supported depends on the type of graphics card available on your computer:
- The integrated graphics card can support a maximum of 4 displays.
- The discrete graphics card can support a maximum of 4 displays.

> (i) **NOTE:**
> - Dell Docking Station—WD19DCS display behavior follows the host the Thunderbolt 4 (USB Type-C) port.
> - The HDMI 2.1 port and MFDC (MFDP) Type-C port on the WD19DCS docking station cannot support dual monitors simultaneously.

For more information about the graphics card available on your computer, run Dell SupportAssist on your computer, or scan your hardware at www.dell.com/support.

The following are the graphic options that may be installed in your computer:
- Intel UHD Graphics (Integrated graphics)
- NVIDIA RTX A1000 6 GB laptop GPU (Discrete graphics)
- NVIDIA RTX 2000 Ada generation laptop GPU (Discrete graphics)
- NVIDIA RTX 3500 Ada generation laptop GPU (Discrete graphics)
- NVIDIA RTX 4000 Ada generation laptop GPU (Discrete graphics)
- NVIDIA RTX 5000 Ada generation laptop GPU (Discrete graphics)
- NVIDIA GeForce RTX 4090 laptop GPU (Discrete graphics)

External display connection mode

External display connection mode that is selected in the BIOS defines the number of displays that are supported by the computer.

External display connection modes are:
- Hybrid Graphics mode
- Hybrid Graphics mode with Direct Output
- Discrete Graphics mode

Hybrid Graphics mode

To enable Hybrid Graphics mode in the computer's BIOS:
1. Restart the system and immediately press **<F2>** to enter the BIOS.
2. On the BIOS screen, select **Video**.

3. Select **Switchable Graphics**.
4. Select **Enable Switchable Graphics**.
5. Save changes and exit the computer's BIOS.

For more information about accessing and configuring the BIOS, see the computer's *Service Manual* at www.dell.com/support.

Table 1. Hybrid Graphics mode

Graphic card type	Supported ports
Discrete GPU	- HDMI - USB-C (non-Thunderbolt 4)
Integrated GPU	Laptop display, Two Thunderbolt 4

Hybrid Graphics mode with Direct Output

To enable **Hybrid Graphics mode with Direct Output** in the computer's BIOS:
1. Restart the system and immediately press **<F2>** to enter the BIOS.
2. On the BIOS screen, select **Video**.
3. Select **Switchable Graphics**.
4. Select **Enable Switchable Graphics**.
5. Select **Discrete Graphics Controller Direct Output Mode**.
6. Save changes and exit the computer's BIOS.

For more information about accessing and configuring the BIOS, see the computer's *Service Manual* at www.dell.com/support.

Table 2. Hybrid Graphics mode with Direct Output

Graphic card type	Supported ports
Discrete GPU	- HDMI - USB-C (non-Thunderbolt 4) - Two Thunderbolts 4
Integrated GPU	Laptop display

Discrete Graphics Mode

To enable **Discrete Mode** in the computer's BIOS:
1. Restart the system and immediately press **<F2>** to enter the BIOS.
2. On the BIOS screen, select **Video**.
3. Select **Switchable Graphics**.
4. Uncheck **Enable Switchable Graphics**.
5. Save changes and exit the computer's BIOS

For more information about accessing and configuring the BIOS, see the computer's *Service Manual* at www.dell.com/support.

Table 3. Discrete Graphics mode

Graphic card type	Supported ports
Discrete GPU	- Laptop display - HDMI - USB-C (non-Thunderbolt 4) - Two Thunderbolt 4

Turn off the internal display

There may be instances where you may want to turn off the computer's internal display to connect more external displays.

You can turn off the LCD display of your computer by using the Intel HD Graphics Command Center.

To turn off the display:

1. In the Windows search bar, type **Intel Graphics Command Center** and press **<Enter>**.
2. Accept the **Intel Graphics Command Center** software licence agreement.
3. On the **Intel Graphics Command Center** window, click **Display**. The list of active displays is listed under the **Connected Displays** section.
4. Click the ellipsis (**...**) in the top-right corner of your primary display, then click **Extend > Display 2**.
5. Click the ellipsis (**...**) in the top-right corner of display 2, then click **Make Display Primary**.
6. Click the ellipsis (**...**) in the top-right corner of your computer's display, then click **Disable**.

Connect displays

Depending on the connectors available on your external display, you can connect the displays to the Thunderbolt 4 (USB Type-C) ports, HDMI port, Mini DisplayPort on your computer using:

- Thunderbolt 4 cables, adapters or docking stations
- USB Type-C cables. adapters or docking stations
- HDMI cables or adapters

ⓘ **NOTE:** To experience the full resolution supported by your external displays, use appropriate cables. For examples, use DisplayPort or HDMI cables for 4K and above resolution.

Supported Display

Table 4. Supported display using host display port under different modes

Graphics card mode	Connect to External Displays			
	One External Display	Two External Displays	Three External Displays	Four External Displays (Internal Display Off)
UMA	• HDMI: 3840 x 2160 @ 60 Hz	• HDMI: 3840 x 2160 @ 60 Hz • Type-C: 7680 x 4320 @ 60 Hz	• HDMI: 3840 x 2160 @ 60 Hz • Type-C: 7680 x 4320 @ 60 Hz • Type-C: 7680 x 4320 @ 60 Hz	• HDMI: 3840 x 2160 @ 60 Hz • Type-C: 7680 x 4320 @ 60 Hz • Type-C: 7680 x 4320 @ 60 Hz • Type-C: 7680 x 4320 @ 60 Hz
Hybrid mode	HDMI/Type-C: 7680 x 4320 @ 60 Hz	• HDMI: 7680 x 4320 @ 60 Hz • Type-C: 7680 x 4320 @ 60 Hz	• HDMI: 7680 x 4320 @ 60 Hz • Type-C: 7680 x 4320 @ 60 Hz • Type-C: 7680 x 4320 @ 60 Hz	• HDMI: 7680 x 4320 @ 60 Hz • Type-C: 7680 x 4320 @ 60 Hz • Type-C: 7680 x 4320 @ 60 Hz • Type-C: 7680 x 4320 @ 60 Hz
Hybrid mode with Direct Output	HDMI/Type-C: 7680 x 4320 @ 60 Hz	• HDMI: 7680 x 4320 @ 60 Hz • Type-C: 7680 x 4320 @ 60 Hz	• HDMI: 7680 x 4320 @ 60 Hz • Type-C: 3840 x 2160 @ 60 Hz • Type-C: 3840 x 2160 @ 60 Hz	• HDMI: 3840 x 2160 @ 60 Hz • Type-C: 3840 x 2160 @ 60 Hz • Type-C: 3840 x 2160 @ 60 Hz • Type-C: 3840 x 2160 @ 60 Hz
Discrete Mode	HDMI/Type-C: 7680 x 4320 @ 60 Hz	• HDMI: 7680 x 4320 @ 60 Hz • Type-C: 7680 x 4320 @ 60 Hz	• HDMI: 7680 x 4320 @ 60 Hz • Type-C: 3840 x 2160 @ 60 Hz • Type-C: 3840 x 2160 @ 60 Hz	N/A

*When connecting using docking station, additional external displays can be connected under Hybrid mode (with Internal Display Off).

(i) **NOTE:** Discrete mode and UMA modes are disabled when additional external displays are connected using docking station.

Table 5. Supported display using docking station under Hybrid mode

Hybrid mode		
TBT Dock	Type-C TBT + DP + DP + HDMI/MFDP: *4k@60 Hz + 2k@60 Hz*3	- Up to 3 if internal display on - Up to 4 if internal display off - Connect either HDMI or MFDP only, do not connect both of them.
Single Cable Dock	- DP + DP + HDMI : FHD@60 Hz*3 - DP + DP + MFDP : FHD@60 Hz*3	
Dual Cable Dock	- DP + DP + HDMI: 2k@60 Hz*3 - DP + DP + MFDP: 2k@60 Hz*3	

Table 6. Supported display using docking station under Discrete mode

Discrete mode		
TBT Dock	- DP + DP: 8K@60 Hz*1 - DP + HDMI: 4K@60 Hz*2 - MFDP/HDMI+DP1+DP2: 4K@60 Hz*3 - TBT + DP1+DP2+HDMI: 4K@60 Hz*4	- Up to 3 if internal display on - Up to 4 if internal display off - Connect either HDMI or MFDP only, do not connect both of them.
Single Cable Dock	- DP + DP: 4K@60 Hz *2 - DP + HDMI: 4K@60 Hz*2 - DP + MFDP: 4K@60 Hz*2	
Dual Cable Dock	- DP + DP: 8K@60 Hz*1 - DP+DP+HDMI/MFDP: 4K@60 Hz*3	

Troubleshooting

Question

When I connect an 8K display using the USB Type-C to DisplayPort adapter, the display resolution can reach to 8K, but refresh rate cannot reach to 60 Hz.

Workaround

Connect the 8K display with the dual USB Type-C to DisplayPort adapter.

Connect the 8K display with dual cable WD19DCS dock dual DisplayPort or Host dual USB Type-C to DisplayPort adapter.

Symptoms and solutions

Table 7. NVIDIA RTX 2000 Ada GPU/ NVIDIA RTX 3500 Ada GPU Symptom and solution

Symptom	Suggested solution
The Right side USB-C port display disappears when using the Thunderbolt USB Type-C port connected to a monitor or a dock. This issue occurs when the SBIOS graphic mode is in **Hybrid Graphics** disable or **Discrete Graphics Controller Direct Output Mode**.	Use the below procedure to Switch graphics mode to Hybrid Graphics: 1. Power On the system. 2. Press **F2** when the Dell logo appears on the screen. 3. System enters the BIOS setup menu, click **Display** on the left pane. 4. Scroll down to view the **Hybrid Graphics** options. 5. Switch **Off** > **On** to **Enable Hybrid Graphics**. 6. Click **Apply Changes**. 7. On the dialogue box, select the check box to **Save as Custom User Settings**. 8. Click **OK**. 9. Click **EXIT** to restart the system.

Table 8. Display scenario for NVIDIA RTX 2000 Ada GPU/ NVIDIA RTX 3500 Ada GPU on graphics mode: Discrete Graphics Controller Direct Output Mode and Discrete Graphics mode

Monitor Plug in scenario	Thunderbolt 1 (USB Type-C)	Thunderbolt 2 (USB Type-C)	Type-C port with DisplayPort
Thunderbolt monitor or Type-C to DP monitor (Scenario 1)	V*	N/A***	V
Thunderbolt monitor or Type-C to DP monitor (Scenario 2)	N/A	V	V
Thunderbolt monitor or Type-C to DP monitor (Scenario 3)	V	V	X**
WD19 or Dell Dual Charge Dock HD22Q (Scenario 1)	V	N/A	V
WD19 or Dell Dual Charge Dock HD22Q (Scenario 2)	N/A	V	V
WD19DC (Scenario 1)	V	USB I/F	V
WD19DC (Scenario 2)	USB I/F	V	V
WD19TB (Scenario 1-1)	V: Daisy Chain and down stream without monitor	N/A	V

Table 8. Display scenario for NVIDIA RTX 2000 Ada GPU/ NVIDIA RTX 3500 Ada GPU on graphics mode: Discrete Graphics Controller Direct Output Mode and Discrete Graphics mode (continued)

Monitor Plug in scenario	Thunderbolt 1 (USB Type-C)	Thunderbolt 2 (USB Type-C)	Type-C port with DisplayPort
WD19TB (Scenario 1-2)	V: Daisy Chain and down stream with monitor	X	X
WD19TB (Scenario 2-1)	N/A	V: Daisy Chain and down stream without monitor	V
WD19TB (Scenario 2-2)	X	V: Daisy Chain and down stream with monitor	X

- * Display
- ** No Display
- *** No connect.

With Thunderbolt: NVM 40.2

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 9. 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
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.