# QUADRO PLEX

### Installation Guide



# NVIDIA Quadro Plex 2200 D2 Visual Computing System

# Table of Contents

Introduction to the NVIDIA Quadro Plex 2200 D2 About This Guide	<b>1</b>
Features	2
Minimum System Requirements	3
Unpacking the NVIDIA Quadro Plex 2200 D2	<b>5</b>
Unpacking	5
NVIDIA Quadro Plex 2200 D2 Equipment	6
NVIDIA Quadro Plex Rack-mount Kit (Optional)	8
NVIDIA Quadro Plex 2200 D2	10
Hardware Installation and Connections Safety Instructions Before You Begin Optional Low Profile Bracket Installation Instructions Connecting to the Host System Removing Old Drivers Installing the NVIDIA Quadro Plex Interface Card Installing and Connecting the NVIDIA Quadro Plex 2200 D2 Connecting the Power Cord Installing NVIDIA Quadro Plex Rack-mount Kit (Optional)	<b>11</b> 11 12 13 14 14 15 16 18 19
Driver Installation	<b>25</b>
Windows Installation	25
Verifying Windows Installation	28
Linux Installation	29
Verifying Linux Installation	31
<b>Enabling SLI Mosaic Mode</b>	<b>33</b>
Windows Setup	33
Linux Setup	35
Troubleshooting	37
Compliance and Certifications	39

NVIDIA Quadro Plex 2200 D2 Installation Guide

## Introduction

The NVIDIA Quadro<sup>®</sup> Plex dedicated visual computing system (VCS) represents a quantum leap in visual computing, enabling breakthrough levels of capability and productivity from an industrystandard architecture. Achieving unprecedented visual computing density, the NVIDIA Quadro Plex is easily deployed in a wide range of environments. Featuring NVIDIA<sup>®</sup> SLI<sup>™</sup> multi-GPU technology, this dedicated VCS scales graphics computing to meet the most demanding professional application requirements. Multiple NVIDIA Quadro Plex VCSs can be combined using the NVIDIA Quadro G-Sync to further scale performance, quality, and channels. Based on proven, industry-standard architectures, NVIDIA Quadro Plex can be deployed with any NVIDIA-certified PCI Express platform.

Note: It is important to register your NVIDIA Quadro Plex 2200 D2 in order to receive NVIDIA Customer Care online and phone support. You can register your NVIDIA Quadro Plex 2200 D2 at www.nvidia.com/register.

### About This Guide

This Installation Guide provides instructions to connect the NVIDIA Quadro Plex 2200 D2 to a certified host system<sup>1</sup> in a desktop or rack-mount environment. For information on using the system with applications, refer to the NVIDIA web site at:

www.nvidia.com/quadroplex

For a list of certified host systems visit www.nvidia.com/quadroplex

### Features

### 4 GB Frame Buffer per GPU (8 GB system total)

Delivers high throughput for interactive visualization of large models and high performance for real time processing of large textures and frames and enables the highest quality and resolution full-scene antialiasing (FSAA).

#### SLI Mosaic Mode

Enables transparent use of multi GPUs on multiple displays to simplify 4K projection systems.

#### Breakthrough Visual Compute Density

Unmatched graphics compute per cubic centimeter provides highest visual compute density enabling breakthrough levels of capability and productivity.

#### Flexible Form Factor

Compact design can be easily deployed in a desktop workspace or can be transformed to fit any standard 19" 3U rack environment.

#### Frame Synchronization

Allows the display channels from multiple workstations to be synchronized, thus creating one large "virtual display" that can be driven by a multisystem cluster for performance scalability.

#### Full-Scene Antialiasing (FSAA)

Up to 64× SLI FSAA dramatically reduces visual aliasing artifacts or *jaggies* resulting in highly realistic scenes.

#### Genlock/Frame Lock

Also known as *house sync*, Genlock allows the graphics output to be synchronized to an external source, typically for film and broadcast video applications.

#### Four Dual-Link Digital Display Connectors

Full dual-link TMDS transmitters support ultra-high-resolution panels, which result in amazing image quality producing detailed photorealistic images.

### Ultra Quiet Design

Sub 40 dB delivers acoustics lower than most desktop workstations to maintain a quiet and productive environment.

#### Unified Driver Architecture (UDA)

The NVIDIA UDA guarantees forward and backward compatibility with software drivers.

### Minimum System Requirements

The NVIDIA Quadro Plex 2200 D2 is designed to connect to an NVIDIA certified PCI Express host system. The specific motherboardand SBIOS of your system may affect the functionality of the NVIDIA Quadro Plex 2200 D2. Refer to the NVIDIA web site (**www.nvidia.com/quadroplex**) for a list of certified host systems.

The NVIDIA Quadro Plex 2200 D2 minimum system requirements include:

#### System/Platform

NVIDIA Quadro Plex officially certified system or platform

#### Operating System

- Microsoft Window XP or Professional ×64 Edition
- Linux 32-bit or 64-bit
- Solaris ×86

#### Processor

- Intel Pentium 4 or Xeon processor or higher
- AMD Opteron processor or higher
- RAM
  - Minimum 4 GB recommended

#### System Interface

 PCI Express Gen2×16 or ×8 slot (×8 is an optional card and must be ordered separately) NVIDIA Quadro Plex 2200 D2 Installation Guide

# Unpacking

### Unpacking

The NVIDIA Quadro Plex 2200 D2 is shipped as a standard desktop tower configuration for connection to a host system. An optional rack-mount kit is available if you are going to install the NVIDIA Quadro Plex 2200 D2 VCS into a cabinet. You will need one kit for each VCS to be rack-mounted.

Be sure to inspect each piece of equipment shipped in the packing box. If anything is missing or damaged, contact your reseller.

### NVIDIA Quadro Plex 2200 D2 Equipment

The following equipment is included in the Quadro Plex 2200 D2 box:



#### NVIDIA Quadro Plex 2200 D2

- Two (2) NVIDIA Quadro FX 5800 GPUs
- One (1) NVIDIA Quadro G-Sync board
- 8 GB frame buffer



#### One (1) NVIDIA Quadro Plex Interface Card

Installs into the PCI Express x16 slot in the host system. The card comes with the standard ATX height bracket attached. A low-profile bracket is also provided and can replace the standard bracket on the card.1



#### One (1) Low Profile Bracket

Used to replace the standard ATX (long) bracket shipped attached to the interface card.



#### One (1) Interconnect Cable

Connects from the interface card in the host system to the NVIDIA Quadro Plex 2200 D2.



#### Power Cord for the NVIDIA Quadro Plex 2200 D2

Used to supply power to the VCS. The host system controls the power.



#### Two (2) DVI-to-VGA Adapters

Used to connect a VGA monitor to the NVIDIA Quadro Plex 2200 D2 graphics cards (which are all dual-link DVI connectors).



#### One (1) NVIDIA Quadro Plex 2200 D2 Installation CD

Contains all the necessary drivers and installation guide to enable the NVIDIA Quadro Plex. To keep your drivers current, visit **www.nvidia.com** and download the latest drivers. A printed version of the Installation Guide is not included. It is stored electronically (.pdf) on the Installation CD.



#### One (1) Quick Install Guide

The Quick Start Guide (a summary of the Installation Guide) provides the basic procedures necessary to install and bring-up the VCS. If you use the Quick Start Guide, refer to the Installation Guide for detailed information.

### NVIDIA Quadro Plex Rack-Mount Kit (Optional)

The rack-mount kit is an optional kit ordered separately from the NVIDIA Quadro Plex 2200 D2 VCS. One (1) kit has all the hardware necessary to rack-mount one (1) NVIDIA Quadro Plex 2200 D2 in a standard 19-inch Electronics Industries Alliance (EIA) cabinet. The NVIDIA Quadro Plex 2200 D2 takes up half the width space in a rack which allows two (2) VCSs to be rack-mounted side-by-side.

Note: The rack-mount kit is not included in the NVIDIA Quadro Plex 2200 D2 box. This kit is an optional item.

The following equipment is included in the rack-mount kit box:



### NVIDIA Quadro Plex 2200 D2

The NVIDIA Quadro Plex 2200 D2 contains two (2) NVIDIA Quadro FX 5800 GPUs driving one (1) to four (4) channels and one (1) NVIDIA Quadro G-Sync II board. The four (4) dual-link DVI-I connectors are standard connections for high-speed, high-resolution digital displays. The DVI-I connectors support both digital and analog signals. The 3-pin mini-DIN is a standard VESA connector used for stereo connections.



# Hardware Installation and Connections

Installing and connecting the NVIDIA Quadro Plex 2200 D2 requires opening the host system. Follow all of the safety instructions provided here to ensure that there is no damage to you, your host system, or the NVIDIA Quadro Plex 2200 D2.

### Safety Instructions

To reduce the risk of fire, electric shock, and injury always follow basic safety precautions.

Remember to remove power from your host system by disconnecting the AC main source before installing any equipment into the host system chassis.

Note: All hardware must be installed prior to installation of the drivers.

### Before You Begin

The NVIDIA Quadro Plex 2200 D2 can be connected to a host system in a desktop or rack mount environment (an optional rackmount kit is required for installation into an equipment rack). In either situation, the host system accessing the NVIDIA Quadro Plex 2200 D2 must have the proper graphics drivers installed and have an open  $\times 16$  PCI Express slot. To avoid conflicts, any current graphics drivers must be uninstalled prior to installing the hardware and software associated with the NVIDIA Quadro Plex 2200 D2.

### **Optional Low Profile Bracket**

Before beginning the installation, determine if you are going to need the NVIDIA Quadro Plex interface card with the standard (long) bracket or the shorter low profile bracket. If you require the low profile bracket, use the following instructions to replace the standard bracket. Replacing the bracket requires a Philips #2 screw driver.

- 1. Remove one (1) screw attaching the standard bracket to the NVIDIA Quadro Plex interface card.
- 2. Remove the two (2) jack screws from the connector.
- 3. Install one (1) screw to attach the low profile bracket to the NVIDIA Quadro Plex interface card.
- 4. Install the two (2) jack screws removed in step 2 to secure the card to the bracket.



### Installation Instructions

For connection to a host system, be sure to review the minimum system requirements given on page 3. Then start your installation with "Connecting to the Host System" on page 14.

For the rack-mount instructions, start with "Installing NVIDIA Quadro Plex Rack-Mount Kit" on page 19.

The installation procedure will take you through the following steps:

- Removing old drivers
- Installing the NVIDIA Quadro Plex interface card
- Installing and connecting the NVIDIA Quadro Plex 2200 D2 VCS
- Rack-mount instructions

# Connecting to the Host System

Use the following procedure to connect the NVIDIA Quadro Plex 2200 D2 to a host system.

Note: Any previous NVIDIA graphics card drivers must be completely removed to avoid conflicts. NVIDIA recommends that you uninstall these drivers prior to removing the old hardware and installing the NVIDIA Quadro Plex interface card.

### **Removing Old Drivers**

- Remove current graphics driver installed on your host system Go to Start > Control Panel > Add or Remove Programs.
- 2. Turn off the host system, monitor, and any peripheral equipment.
- 3. Disconnect the power cord to the host system.

Some computer systems are shipped with graphics integrated into the motherboard. If this is the case, you may need to enter the SBIOS and disable the integrated graphics. Depending on the motherboard and the SBIOS you have, the NVIDIA Quadro Plex 2200 D2 may or may not function with the on-board graphics enabled.

For a list of compatible host systems visit www.nvidia.com/quadroplex

### Installing the NVIDIA Quadro Plex Interface Card

- 4. Open the host system. Refer to your host system documentation from the original manufacturer for assistance.
- 5. Locate your graphics card (usually the monitor is connected to the graphics card) or open the ×16 PCI Express slot.
- 6. Remove the graphics card (if there is one) from the host system. Save any hardware (such as screws and brackets) to use when installing the NVIDIA Quadro Plex interface card.
- Install the NVIDIA Quadro Plex interface card into the PCI Express ×16 graphics card slot. To replace the standard bracket with a low profile bracket, see the instructions given on page 14.
- 8. Secure the NVIDIA Quadro Plex interface card using any applicable hardware removed in step 6.
- 9. Reinstall the cover on your host system.

# Installing and Connecting the NVIDIA Quadro Plex 2200 D2

 Connect one end of the Quadro Plex interconnect cable supplied in the box to the exposed connector of the NVIDIA Quadro Plex interface card in the host system.



11. Connect the other end of the cable to the back of the NVIDIA Quadro Plex .

Interconnect cable connects to the back of the NVIDIA Quadro Plex 2200 D2

Interconnect cable connects to the back of the host system

Note: There is no specific order when connecting the interconnect cables between the host system and the NVIDIA Quadro Plex 2200 D2. Connect the DVI cable from the monitor to one of the DVI connectors on the NVIDIA Quadro Plex 2200 D2. If your monitor has a VGA connector, use the DVI-to-VGA adapter shipped in the box.



**Note:** When connecting one (1) monitor to the NVIDIA Quadro Plex 2200 D2, the active display connector is specified by your motherboard and SBIOS. This means that there is no standard way to determine which DVI connector on the NVIDIA Quadro Plex 1000 is active when connecting one (1) monitor.

In most cases, the active DVI connector would be the left most, bottom connector.

If there is no display when you do power on your host system, you will need to power down the host system and connect to a different DVI connector, restart the host system and see if the monitor is activated. If it is not, power down the host system and reconnect to another connector. Repeat this procedure until you find the active connector. You *must* restart your host system each time.

### Connecting the Power Cord

1. Connect the power cord to the NVIDIA Quadro Plex 2200 D2 by lifting the rear louvered cover to expose the power plug.



The power on state of the NVIDIA Quadro Plex 2200 D2 is controlled by the host system. The NVIDIA Quadro Plex 2200 D2 is powered on only when the host sytem is powered on.

- 2. Lower the louvered cover to close.
- 3. Plug the power cord from the NVIDIA Quadro Plex 2200 D2 to an AC outlet (it is recommended to use a power-surge protected outlet).
- 4. Reconnect the power cord to your host system.
- Power on the host system. At this time, power is also applied to the NVIDIA Quadro Plex 2200 D2.
- Click Cancel when the Found New Hardware Wizard window displays.

You are now ready to install the graphic drivers. Go to **Driver Installation Section** and begin the driver installation.



### Installing NVIDIA Quadro Plex Rack-Mount Kit (Optional)

The NVIDIA Quadro Plex 2200 D2 can be installed in a standard 19-inch EIA equipment cabinet. To perform this installation, the optional NVIDIA Quadro Plex rack-mount installation kit is necessary. The installation kit is not included in the NVIDIA Quadro Plex 2200 D2 shipping box. The kit is a separate order item and one kit will be required for each VCS installed in the cabinet.

Use the following procedure to install the NVIDIA Quadro Plex 2200 D2 into an equipment cabinet.

## Note: The hardware in the rack-mount kit is intended for a standard 19" EIA rack only.

You will need a Philips #2 screw driver to install the rack mount kit hardware. Due to cable length, the NVIDIA Quadro Plex 2200 D2 system must be mounted within 2 meters of the host system.

- Adjust the rack side panel to fit the rack. Loosen eight (8) screws to adjust the length of the side-panel.
- 2. Install the side panel into the cabinet using the four (4) 10-32 screws provided in the kit.



- 3. Remove the two (2) screws holding the two (2) side covers to the chassis. emove the side panels from the VCS.
- 4. Remove rear louvered cover by removing the two (2) screws inside the cover and releasing the catches.

Remove the two (2) screws securing the louvered cover located down inside the cover

5. Slide the top cover back off the VCS.

6. Turn the cover over and remove the eight (8) screws from inside the top cover to remove the top panel off the top cover.







7. Remove the two (2) screws holding the top cap on the VCS and remove the top cap.



- 8. Set the top cover back on the VCS about two (2) inches back from the front to align the cover with the chassis. Make sure the cover is aligned into the chassis before sliding it forward into place.
- 9. Reinstall the two (2) screws removed in step 3 into the chassis.
- 10. Slide the flat louver supplied in the box into place. Be sure it is seated in all the way.



11. Remove the feet from the bottom of the NVIDIA Quadro Plex 2200 D2 chassis by unscrewing the mounting screws.

12. Mount the front handle bracket to the bottom front of the chassis (where the front feet were removed) using the four (4) screws provided in the kit.



13. Mount the rear alignment bracket to the bottom rear of the chassis (where the rear feet were removed) using two (2) screws provided in the kit.



14. Slide the VCS onto the side bracket installed in the cabinet in step 2. Be sure to line up the alignment bracket on the VCS to the alignment pins on the side panel.



- 15. Connect the power cord to the VCS.
- 16. Secure the VCS to the rack and side panel using the two (2) thumb screws provided in the kit.



If you are installing one VCS into the rack, go to step 20. If you are installing a second VCS into the rack next to the first VCS, you need to continue with step 18.

18. Prepare the second VCS by following steps 1 through 17.

- 19. Install the mid cap between the two (2) VCSs in the rack using the four (4) screws provided.
- 20. Rotate the NVIDIA logo badges on the front VCS Bezel.

Two (2) NVIDIA Quadro Plex 2200 D2 VCSs mounted in a standard rack.



- 21. Prepare the host system by following steps 1 though 9 starting on page 16. If you need to replace the standard bracket on the interface card with a low profile bracket, see page 14. The host system must be within two (2) meters (the length of the interface cables) of the rack mounted VCS.
- 22. Connect the two (2) NVIDIA Quadro Plex interconnect cables supplied in the box as given in steps 10 and 11 on page 24.
- 23. Connect the DVI cable from the monitor to one of the DVI connectors on the VCS (given in step 13 on page 25).

## **Driver Installation**

This section contains the instruction to install the NVIDIA Quadro Plex 2200 D2 software drivers within a Windows environment or within a Linux environment on page 34.

### Windows Installation

Note:	When installing the graphics drivers, the resolution will default to the lowest setting (typically 800 x 600), making your display very large. Adjust accordingly.
	ert the NVIDIA Quadro Plex installation CD for the graphics ers included in the NVIDIA Quadro Plex 2200 D2 VCS package.
Note:	Since there are multiple graphics cards installed in your NVIDIA Quadro Plex 2200 D2 VCS you will be asked multiple times for all events once the drivers are installed.

2. Run setup.exe.

Depending on your system setup, the install disk may automatically run the install **setup.exe**. If it does not run, go to **My Computer** and click on the CD to open.



3. Click Next when the Welcome to the InstallShield Wizard window displays.

4. Click **Continue Anyway** if the Hardware Installation warning window displays.



Note: This warning tells you that the drivers you are about to install have not passed the Windows logo testing (WHQL). WHQL is a Microsoft testing procedure that is required before Microsoft approves the software. Clicking **Continue Anyway** will not harm your computer. These drivers are currently under WHQL testing. If you do not see this warning, the drivers have passed the testing requirements. This warning displays multiple times for each GPU in the VCS.

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- 5. Select Yes, I want to restart my computer now when the install is complete.

- 6. Click Finish to complete the installation and restart your system.
- Note: The in-the-box drivers provide all the functionality necessary for the system. However, it is highly recommended that you periodically visit www.nvidia. com to update to the latest driver versions.

### Verifying Windows Installation

It is recommended that you verify your installation by going to the NVIDIA Control Panel and verifying that the graphic cards have been installed correctly and are recognized by the drivers.

Use the following procedure to verify the installation of the graphic cards:

- 1. Go to Start > Control Panel.
- 2. Select NVIDIA Control Panel.
- 3. Go to Help > System Info in the menu bar.
- 4. Select **Display** tab.
- 5. Highlight the Quadro Plex 2200 D2 in the list of components.



### Linux Installation

- 1. Run the **.run** file from the root prompt.
- 2. Select Accept to accept the License Agreement.



3. Select **Yes** if a warning window displays indicating that there are drivers already installed. Selecting **Yes** tells the installation process to overwrite the previously installed drivers.



4. Select **Yes** when the Kernel Interface window displays.



5. Select **OK** to compile a Kernel interface.



- 6. Run nvidia-xconfig utility.
- 7. Install is complete.

### Verifying Linux Installation

- 1. Run nvidia-settings to displays the Server Settings window.
- 2. Verify here that the installation is correct and working.



NVIDIA Quadro Plex 2200 D2 Installation Guide

# **Enabling SLI Mosaic Mode**

In order to configure the Quadro Plex 2200 D2 to automatically scale across multiple display screens you will need to enable SLI Mosaic Mode. SLI Mosaic Mode can be configured for either Windows or Linux operating systems.

### Windows Setup

The SLI mosaic mode can be setup in 5 simple steps for Windows based systems.

1. Go to the "Set SLI configuration" page and enable SLI Frame Rendering mode.



- 2. Go to the Manage Quadroplex setting page.
- 3. Enable the SLI Mosaic Mode checkbox with desired options.

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- 4. Click **Apply** to apply settings.
- 5. Select **Yes** to save configuration changes.



### Linux Setup

The SLI mosaic mode can be setup in 5 simple steps for Linux based systems.

- 1. Go to the "OpenGL Settings" page.
- 2. Enable SLI Heads Up Display check box.

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3. Go to the "SLI Mosaic Mode Settings" page.

4. Enable the Use SLI Mosaic Mode checkbox with desired options.

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5. Save settings and exit the application

# Troubleshooting

Don't forget to register your NVIDIA Quadro Plex 2200 D2 and gain access to NVIDIA Customer Care with online and phone support at **www.nvidia.com/register.** 

Use the following guidelines to troubleshoot your unit. If you require further assistance, go to **www.nvidia.com/support.** 

### Table 1. Troubleshooting Guide

Symptom	Fix
No display on any monitor (audible beep codes from host system)	<ul> <li>Check you monitor connection to the NVIDIA Quadro Plex 2200 D2.</li> <li>Some motherboards choose different default connectors so try a different connector. Be sure to reset your systems each time you change the connections.</li> <li>If there is still no display, go to www.nvidia.com/quadroplex and make sure your host system contains a certified motherboard and/or is a certified system.</li> </ul>
No lights on the front of the NVIIDA Quadro Plex 2200 D2	<ul> <li>&gt; Check power cord.</li> <li>&gt; Check the interconnect cables.</li> <li>&gt; Check www.nvidia.com/quadroplex to make sure your system/motherboard are certified.</li> <li>&gt; If all connections check out and your system is certified, you may have a faulty power cord or a faulty interconnect cable.</li> </ul>

# Compliance and Certifications

- Bureau of Standards, Metrology, and Inspection (BSMI)
- C-Tick
- China Compulsory Certification (CCC)
- Conformité Européenne (CE)
- Federal Communications Commission (FCC) Class B
- Interference-Causing Equipment Standard (ICES)
- Ministry of Information and Communication (MIC)
- Underwriters Laboratories (UL, CUL) c() us
- Voluntary Control Council for Interference (VCCI)

NVIDIA Quadro Plex 2200 D2 Installation Guide

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