



TESLA™ K20 ACTIVE ACCELERATOR FOR WORKSTATION

INSTALLATION GUIDE



NVIDIA

NVIDIA Tesla K20 Active Accelerator for Workstation

TABLE OF CONTENTS

Introduction	1
About This Guide	1
Minimum System Requirements	2
Unpacking	3
Equipment	3
Hardware Installation	5
Safety Instructions	5
Before You Begin	6
Installing the Tesla K20 Graphics Card	6
Driver Installation	11
Downloading and Installing Windows Driver	11
Verifying the Windows Driver Installation	13
Linux Installation	14
Register, Warranty, and Support	15
Compliances	17

TABLE OF CONTENTS

01 INTRODUCTION

With many mainstream applications now taking advantage of the GPU computing found in the NVIDIA® Tesla™ K20, leading-edge customers are producing breakthroughs in their industries by achieving better results in a shorter period of time. Adding the NVIDIA Tesla K20 to an industry-standard workstation and configuring it with an NVIDIA Quadro Professional Graphics Solution enables performance scaling across a wide range of professional applications.

About This Guide

This installation guide discusses the installation and configuration of the Tesla K20 Active Accelerator for Workstations.

Minimum System Requirements

Prior to unpacking your new Tesla K20, confirm that your system meets all the requirements for a smooth installation.

> **Operating System**

- Microsoft Windows Vista, Windows 7 (32-bit versions of Windows are not supported, 64-bit only)
- Linux 32-bit and 64-bit on:
 - Fedora 16
 - RHEL 5.x
 - RHEL 6.x

> **Processor**

- Intel Pentium 4 or Xeon processor or higher
- AMD Athlon processor or higher

> **RAM**

- 5 GB recommended per Tesla K20

> **PCI Express Slot**

- PCI Express x16 slot, Gen2 recommended but not required

> **Power Consumption**

- 225 W maximum power consumption
- Power supply must have two 6-pin power connectors.

02 UNPACKING

Prior to unpacking your new NVIDIA Tesla K20 Active Accelerator graphics card, it is important to make sure you meet all the system requirements listed on page 2 for a smooth installation.

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

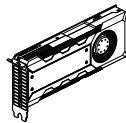
Equipment

The following equipment and documentation are included in the graphics card box.



Registration Card

Register to gain priority access to online and phone support.

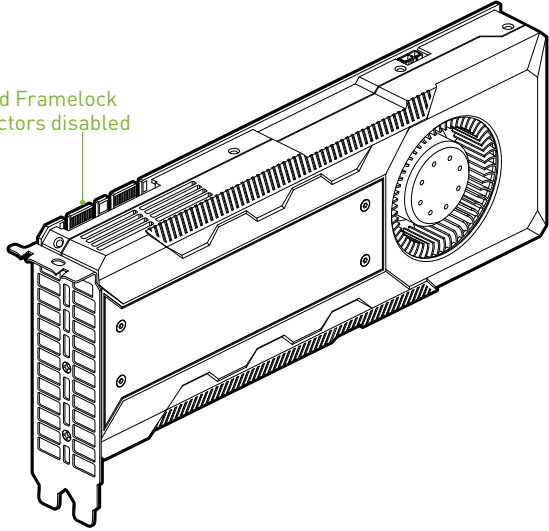


Tesla K20 Active Accelerator

Installs into the PCI Express x16 slot in your computer. (An image of the card showing the connectors is on the following page.)

02

SLI and Framelock connectors disabled



Power connectors back-edge of card



Tesla K20 Computing Processor

03

HARDWARE INSTALLATION

Installing the NVIDIA Tesla K20 Active Accelerator graphics card hardware involves opening up your computer. Follow all of the safety instructions provided here to ensure that there is no damage to you, your computer, or the graphics board.

Safety Instructions

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



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

- > Remove power from your computer by disconnecting the AC main source before installation.
- > Do not operate this product near water or when your hands or body are wet.
- > Do not place this product on soft surfaces that could block the ventilation slots and cause overheating.
- > Do not place this product near a heating register or radiator.
- > Place this product securely on a stable surface. Serious damage to this product may result if it falls.
- > Do not allow anything to rest on the power cord. Do not place this product where a person can step or trip on the power cord.

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Before You Begin

The Tesla K20 Active Accelerator graphics card is a PCI Express ×16 graphics card. Your computer may already have a graphics card installed in the PCI Express slot. If so, you will need to remove that graphics card and replace it with the Tesla K20 Active Accelerator graphics card.

If you do not have a graphics card, this means that your motherboard has on-board graphics (there is a graphics chip installed on your motherboard or integrated in the motherboard chipset). If this is the case, there is no action that needs to be taken before installing your new graphics card.

Installing the Tesla K20 Graphics Card

Because there are so many different computer systems on the market, the procedure to install the graphics card can vary from system to system. Use the following instructions as a guideline and consult the documentation for your computer system for any further information on your individual system.



Note: It is important that all power to the computer be disconnected before you install the graphics card.

Discharge your body's static electricity by touching a grounded surface before touching the graphics card. A grounded surface is the computer chassis, or some other surface you know to be grounded.

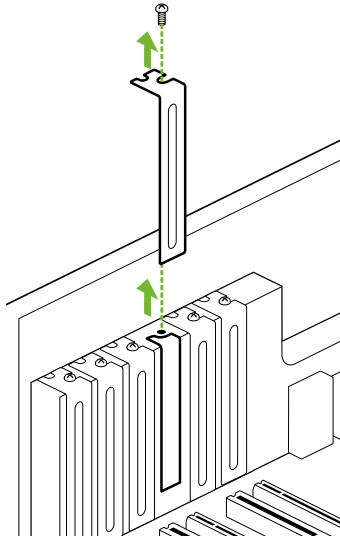
Use the following procedure to install the Tesla K20 Active Accelerator graphics card into your computer system.

- 1 Turn off your computer and monitor and disconnect the power cord. Depending on your computer system, you may need to disconnect the cable going to the back of your system. Mark the cables so you can make sure you reconnect them properly.
- 2 Open your computer by removing the cover/side panel. Refer to your computer documentation from the original manufacturer for assistance.

- 3 Remove any existing graphics card (if there is one). Save hardware (such as screws and brackets) to use when installing the NVIDIA graphics card.

! **Attention:** If your system has been running for a period of time prior to opening the panels, it is very important that you wait until the graphics card in your system has cooled before taking the card out of the system. Graphics cards get very hot when they have been operating for any length of time.

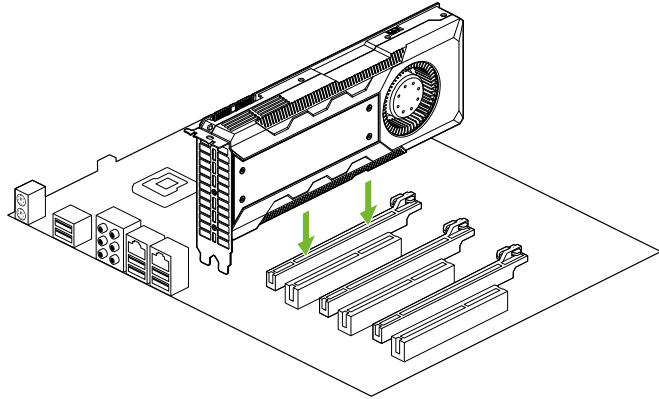
- 4 Remove adjacent slot covers if you do not have a graphics card installed.



Note: The Tesla K20 Active Accelerator card is double-wide so it will require removing **two** slot covers.

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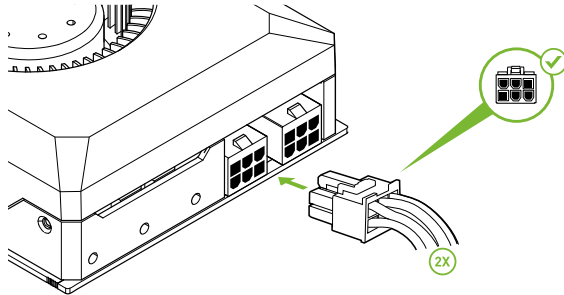
- 5 Plug the graphics card into the Primary PCI Express x16 slot on your motherboard. This is often the slot closest to the CPU but may be the second or third slot. Look for the slot labeled **x16**. It will likely be the only PCI Express slot with a retention lever on the end of the slot or the one closest to the CPU.



Note: It is recommended that you install the graphics card into the primary PCI Express x16 slot. If you install the graphics card into the secondary slot, your system may not recognize the graphics card and there will be nothing displayed on the monitor.

Also note that on some motherboard SBIOS, the physical location of the primary slot can be configured when there are more than one PCI Express x16 slots.

- 6 Connect two PCI Express 6-pin auxiliary power connectors from the system power supply to the top edge of the graphics card. Note that the connector and socket on the graphics card have a unique shape and connect one way only.



Connect two 6-pin connectors from the system power supply to the back edge of the graphics card

- 7 Reinstall the cover on your computer and reconnect any cables that you removed earlier in the installation.
- 8 Reconnect the power cord to your system.



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04

DRIVER INSTALLATION

With the hardware installed, it is now time to install the graphics driver. NVIDIA recommends downloading and installing the most recent drivers available at:

<http://www.nvidia.com/drivers>.

Downloading and Installing Windows Driver

Use the following procedure to download the graphics driver.



Note: It is recommended that you uninstall the existing driver from your system before installing the new driver.

- 1 Power up your system.
- 2 Go to www.nvidia.com/drivers.
- 3 Select an option for download. If Option 1 is selected, fill the required information.

NVIDIA Driver Downloads

Option 1: Manually find drivers for my NVIDIA products.

Product Type:	Tesla	▼
Product Series:	K-Series	▼
Product:	Tesla K20c	▼
Operating System:	Windows 7 64 bit	▼
Language:	English (US)	▼

SEARCH

- 4 Select **Agree & Download** and follow instructions displayed on the screen.



- 5 Select **Run** once the download has completed to begin the installation.



- 6 Select **AGREE AND CONTINUE** when the **NVIDIA** software license agreement displays.
- 7 Select an Install option and click **NEXT**.
- > **Express (Recommended)** installs the full list of options listed under Custom install
 - > **Custom (Advanced)** displays a list of options for you to choose to install. If you would like to clean up your old profiles and settings, click the Perform a clean installation check box. Performing a clean install also removes all files related to the previous driver.




Note: If you are installing the Tesla K20 as a companion device to your primary Quadro board, a clean install is recommended.

- 9 Select an install option and click **NEXT** when the *Installation Options* window displays.



- 10 Restart the computer if prompted.
- 11 Select **Close** to complete the installation

 **Note:** NVIDIA recommends that you periodically visit www.nvidia.com/drivers to update to the latest driver versions.

Verifying Windows Installation

It is recommended that you verify your installation by going to the Windows Device Manager and verifying that the Tesla K20 has been installed correctly and is recognized by the drivers.

Use the following procedure to verify the installation of the board:

- 1 Go to **Start > Computer**.
- 2 Select **System Properties**.
- 3 Go to **Device Manager** in the menu bar.
- 4 Expand **Display Adapters** in the list.
- 5 NVIDIA **Tesla K20** should be shown in the list.

Linux Installation

Before you begin the installation, you should exit the X server and close all OpenGL applications (it is possible that some OpenGL applications persist even after the X server has stopped). You should also set the default run level on your system such that it will boot to a VGA console and not directly to X. Doing so will make it easier to recover if there is a problem during the installation process.

- 1 Download the 32-bit or 64-bit Linux driver (the driver will have a similar naming convention as **NVIDIA-Linux-x86-100.14.11-pkg1.run** or **NVIDIA-Linux-x86_64-100.14.11-pkg2.run**) from www.nvidia.com/drivers.
- 2 Change to the directory containing the downloaded file.
- 3 Run as root the **NVIDIA-Linux*.run** file downloaded in Step 1. As the root user you can run the following executable files:
 - > **cd download_directory**
 - > **NVIDIA-Linux-x86-xxx-xx-xx.run** or
NVIDIA-Linux-x86_64-xxx-xx-xx.run

The **NVIDIA-Linux*.run** file is a self-extracting archive. When executed, it extracts the content of the archive and runs the contained **nvidia-installer** utility, which provides an interactive interface to walk you through the installation. **nvidia-installer** will also install itself to **/usr/bin/nvidia-installer** which may be used at a later time to uninstall drivers, auto download updated drivers, etc.

- 4 Select **Accept** to accept the License Agreement.

05

REGISTRATION, WARRANTY, AND SUPPORT

Registering Your Tesla K20 Active Accelerator for Workstations

Registering your Tesla K20 Active Accelerator card gives you priority access to the NVIDIA Customer Care support center. Once you have completed registration, you will be given a user ID and password for online customer care. You can also elect to receive automatic notification of special promotions and software updates through Email to ensure that your Tesla K20 card continues to operate optimally.

Warranty and Support

The Tesla K20 is covered by a 36 month warranty.

For support, visit the Customer Care Center at

www.nvidia.com/support.

The Web site offers access to a broad range of product information.

06 COMPLIANCES

The NVIDIA GeForce GTX 650 Ti graphics card is compliant with the following regulations:

- > Federal Communications Commission (FCC)
- > Industry Canada (IC)
- > Conformité Européenne (CE)
- > Australian Communications and Media Authority (C-tick)
- > Voluntary Control Council for Interference (VCCI)
- > Bureau of Standards Metrology and Inspection (BSMI)
- > Korean Certification (KC)
- > Underwriters Laboratories (UL, cUL)
- > ISO 9241-307 Visual Display Ergonomics

UNITED STATES

Federal Communications Commission (FCC)



This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause

harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- > Reorient or relocate the receiving antenna.
- > Increase the separation between the equipment and receiver.
- > Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- > Consult the dealer or an experienced radio/TV technician for help.

CANADA

Industry Canada (IC)

This Class B digital apparatus complies with ICES-003

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

EUROPEAN UNION

European Conformity; Conformité Européenne (CE)



This device complies with the EMC Directive for Class B, I.T.E equipment.

AUSTRALIA & NEW ZEALAND

Australian Communications and Media Authority (C-tick)



This product meets the applicable EMC requirements for Class B, I.T.E equipment

JAPAN

Voluntary Control Council for Interference (VCCI)



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取扱説明書に従って正しい取り扱いをして下さい。

VCCI-B

This is a Class B product based on the standard of the VCCI Council. If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

KOREA

Radio Research Agency (RRA)



KCC-REM-NVA-P2030

B급 기기(가정용 방송통신기기)

이 기기는 가정용(B급)으로 전자파적합등록을 한 기기로서 주로 가정에서 사용하는 것을 목적으로 하며, 모든 지역에서 사용할 수 있습니다.

Class B Equipment (For Home Use Broadcasting & Communication Equipment)

This equipment is home use (Class B) electromagnetic wave suitability equipment and to be used mainly at home and it can be used in all areas.

TAIWAN COMPLIANCE**Bureau of Standards, Metrology and Inspection (BSMI)****D33088**

This device complies with CNS 13438 (2006) Class B

SAFETY**Underwriters Laboratories (UL)**

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