



Frame Grabber Installation Guide



Thank you for choosing Epiphan!

At Epiphan, product function and quality are our top priority. We make every effort to make sure that our products exceed our customers expectations. We regularly contact our customers to ensure product performance and reliability. We strive to continually enhance our products to accommodate your needs.

Specifications

Epiphan manufactures a wide range of VGA and DVI Frame Grabbers. You can go to the [Frame Grabbers](#) page of the Epiphan website and use the information in the comparison table to select the optimal Frame Grabber for your requirements.

Warranty

All Epiphan Systems products are provided with a 100% replacement warranty for one year from the date of purchase. We welcome your feedback and suggestions for product improvements. You can email your comments to info@epiphan.com.

Technical Support

Epiphan is staffed by a professional support team. If, after checking the FAQs for your product on the Epiphan website and re-installing the Epiphan driver software, you continue to have outstanding issues, email a problem report to support@epiphan.com. To help us solve the problem efficiently, include the following info:

- Your hardware platform and operating system.
- Your product serial number
- The version of the capture application and the USB driver that you are using.
- The behavior of your Frame Grabber product LED indicators.
- Technical description of the VGA or DVI signal source including resolution, refresh rate, synchronization, type of hardware.
- Complete description of the problem you're experiencing. If possible please provide screen captures that show the problem.

Environmental Information

The equipment that you bought has required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment.

In order to avoid the dissemination of those substances in our environment and to diminish the pressure on the natural resources, we encourage you to use the appropriate take-back systems. Those systems will reuse or recycle most of the materials of your end life equipment in a sound way.

The crossed-out wheeled bin symbol invites you to use those systems.

If you need more information about collection, reuse and recycling systems, please contact your local or regional waste administration.

You can also contact us for more information on the environmental performance of our products.

Table of Contents

1. Installation and Getting Started	4
How to use this document to install a Frame Grabber	5
Package contents	6
System Requirements	7
Windows video capture workstation Installation	8
Mac OS X video capture workstation installation	12
Connecting USB Frame Grabbers	15
Connecting Network Frame Grabbers	21
Connecting PCIe Frame Grabbers	28
Connecting KVM Frame Grabbers	32
Troubleshooting a Windows installation	41
Troubleshooting a Mac OS X installation	46

1. Installation and Getting Started

This chapter describes how to connect and install Epiphan USB, Network, PCI, and KVM Frame Grabbers. Unless otherwise specified, “Frame Grabber” refers to any Epiphan Frame Grabber.

Installation of Epiphan Frame Grabbers is described in this document according to how they connect to the video capture workstation and in the case of KVM Frame Grabbers, how they connect to the video source. The video capture workstation is a computer that runs the drivers and application software for the Frame Grabber and is used to display and record images captured by the Frame Grabber.

The installation categories are:

- **USB Frame Grabbers** include the VGA2USB, VGA2USB LR, VGA2USB HR, VGA2USB PRO, DVI2USB, DVI2USB Solo, and DVI2USB Duo devices. USB Frame Grabbers connect to a video capture workstation USB port and require installation of the Frame Grabber drivers and application software on the video capture workstation before connecting the hardware.
- **Network Frame Grabbers** include the VGA2Ethernet and VGA2Ethernet Pro device. Network Frame Grabbers connect to the same Ethernet network as the video capture workstation and use the Ethernet network to transmit images to the video capture workstation.
- **PCIe Frame Grabbers** include the VGA2PCIe card. Peripheral Component Interconnect Express (PCIe) Frame Grabbers are installed in a video capture workstation PCI Express (PCIe) slot and transmit captured images to the video capture workstation over the PCIe bus.
- **KVM Frame Grabbers** include the KVM2USB device (a USB Frame Grabber) and the KVM2Ethernet device (a Network Frame Grabber). KVM Frame Grabbers provide keyboard, video, and mouse connections to a headless server.

This chapter describes:

- [How to use this document to install a Frame Grabber](#)
- [Package contents](#)
- [System Requirements](#)
- [Windows video capture workstation Installation](#)
- [Mac OS X video capture workstation installation](#)
- [Connecting USB Frame Grabbers](#)
- [Connecting Network Frame Grabbers](#)
- [Connecting PCIe Frame Grabbers](#)
- [Connecting KVM Frame Grabbers](#)
- [Troubleshooting a Windows installation](#)

How to use this document to install a Frame Grabber

- 1 Review [“Package contents”](#) on page 6 to make sure you have received everything.
- 2 Review [“System Requirements”](#) on page 7 to select a video capture workstation. The video capture workstation can be running Windows, Mac OS, or Linux.

Note: This document does not describe how to install software on or connect a Frame Grabber to a PC running Linux.

- 3 Use one of the following sections to install the Epiphan drivers and application for the Frame Grabber on the video capture workstation, connect the Frame Grabber to the video capture workstation, and begin capturing images.



- If you are going to install the Epiphan drivers and application on a Windows video capture workstation, follow the instructions in [“Windows video capture workstation Installation”](#) on page 8.



- If you are going to install the Epiphan drivers and application on a Mac video capture workstation, follow the instructions in [“Mac OS X video capture workstation installation”](#) on page 12.

You can also view the information in the following sections for hardware details about each Frame Grabber.

- “Connecting USB Frame Grabbers” on page 15
- “Connecting Network Frame Grabbers” on page 21
- “Connecting PCIe Frame Grabbers” on page 28
- “Connecting KVM Frame Grabbers” on page 32

Package contents

Epiphan Frame Grabber devices include the following package contents:

- VGA or DVI cable
- DVI to VGA cable (DVI Frame Grabber devices)
- KVM cable (KVM Frame Grabber devices)
- USB cable (USB Frame Grabber devices)
- Passive VGA splitter
- Power supply (required for all models except the VGA2USB and VGA2PCIe)

Package contents for Epiphan Frame Grabbers are available on each Frame Grabber’s Specifications page on the Epiphan website (<http://www.epiphan.com>).

You can also download all the necessary software and product documentation from your Frame Grabber’s Download page on the Epiphan website.

System Requirements

Epiphan Frame Grabbers have the following hardware and software requirements:

Video Source

Equipment	Any VESA-compatible VGA or DVI source.
------------------	--

Video capture workstation

Processor speed minimum	VGA2USB All: 700 MHz. DVI2USB All: 700 MHz. KVM2USB: 1.6 GHz. Network Frame Grabbers: 700 MHz. VGA2PCIe: 700 GHz
Processor speed recommended	All: Duo Core 2 Ghz.
USB port	VGA2USB: USB 2.0 ONLY. VGA2USB HR/LR/PRO: USB 2.0 (also supports USB 1.1). DVI2USB SOLO/DUO: USB 2.0 (also supports USB 1.1). KVM2USB: USB 2.0 (also supports USB 1.1).
Ethernet port/Ethernet network	Network Frame Grabbers: 1-gigabit recommended. Also works with 100 Mbps or 10 Mbps but with reduced performance.
PCI Express Slot	VGA2PCIe only: 1x PCIe slot (4x, 8x or 16x and supported but 1x recommended)
RAM memory minimum	All: 256 MB.

RAM memory recommended	All: 1 GB
Hard disk space	6 MB plus whatever space you need for recorded files.

Software requirements

Video capture workstation operating system	Windows 2000, XP, Vista and Windows 7. See “Windows video capture workstation Installation” on page 8. Mac OS X 10.4 or more recent, see “Mac OS X video capture workstation installation” on page 12. Linux 2.6.x (i386 and x86_64).
VGA/DVI/KVM2USB, VGA2PCIe, VGA2Ethernet, and KVM2Ethernet, drivers and application	To download the latest version, browse to http://www.epiphan.com/products/ and locate the Downloads page for the product. (Also includes Linux install instructions.)

Windows video capture workstation Installation

Follow the step-by step procedures in this section if you are going to use a Windows PC as a video capture workstation to view and record images captured by a Frame Grabber.

Note: If want to use a Mac as a video capture workstation, see “Mac OS X video capture workstation installation” on page 12.

If you are installing a USB Frame Grabber you must install the drivers and application on the Windows video capture workstation *before* connecting the USB Frame Grabber to the workstation USB port.

If you are installing a PCIe Frame Grabber you should install the drivers and application on the Windows video capture workstation *after* installing the PCIe Frame Grabber in a PCIe slot of the Windows video capture workstation. See “[Connecting PCIe Frame Grabbers](#)” on page 28

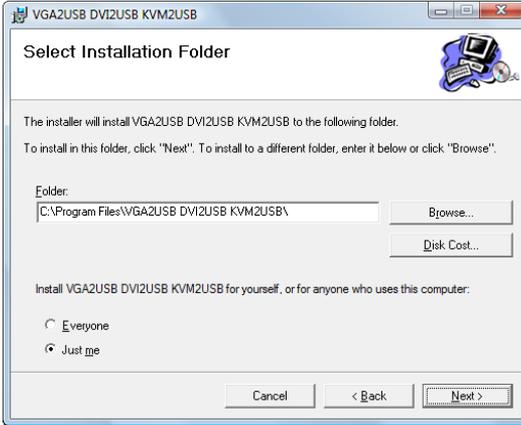
If you are installing a Network Frame Grabber you must install the drivers and application on a Windows video capture workstation that is connected to the same network as the Network Frame Grabber.

To install the Windows drivers and application

The same drivers and application software are used for all Frame Grabbers. The drivers and application software includes the Epiphan device drivers, the capture application, and the Network Discovery Utility (Network Frame Grabbers and KVM2Ethernet only).

- 1 Find the latest Windows Drivers and Application software.
Browse to <http://www.epiphan.com/products/>. Then find your Frame Grabber model and select its Download page and scroll down to the Windows section of the download page.
- 2 Download the latest version of the drivers and application that will run on the video capture workstation.
Make sure you note the download destination folder.
- 3 Unzip the downloaded file.
Right-click on the .zip file and choose Extract All.

- 4 Run the Setup Utility (setup.exe) and follow the prompts to install the software.



The Windows drivers and application software is now installed. The next step in the installation is to connect your Frame Grabber.

To connect the Frame Grabber

Note: Skip this step if you are installing PCIe Frame Grabber.

- 1 Use of the following sections to connect you Frame Grabber and then return to the following procedure to complete the installation.
 - “Connecting USB Frame Grabbers” on page 15
 - “Connecting Network Frame Grabbers” on page 21
 - “Connecting KVM Frame Grabbers” on page 32

Note: If, after connecting a USB or PCIe Frame Grabber, Windows displays the Found New Hardware Wizard, respond to the prompts before continuing.

To start the Windows capture application

- 1 Start the capture application.

Depending on your installation you could select **Start > VGA2USB** or **Start > Epiphan VGA2Ethernet > VGA2Ethernet GUI**.

The capture application starts up.

If the Frame Grabber is connected and powered on, the capture application should automatically find it and begin displaying captured images (see [Figure 1 on page 12](#)).

If the Frame Grabber is operating but not capturing images the device name and serial number should appear in the title bar and the capture application displays **No signal detected**. The status bar should display the IP address of a Network Frame Grabber.

If the capture application displays **Capture device not found** the capture application cannot find the Frame Grabber.

If you have added a viewer password to a Network Frame Grabber, you will be prompted to enter the password before the image being captured by the device appears in the capture window.

- 2 You can select **Capture > Select Device** to view the Frame Grabber devices that the capture application has found.

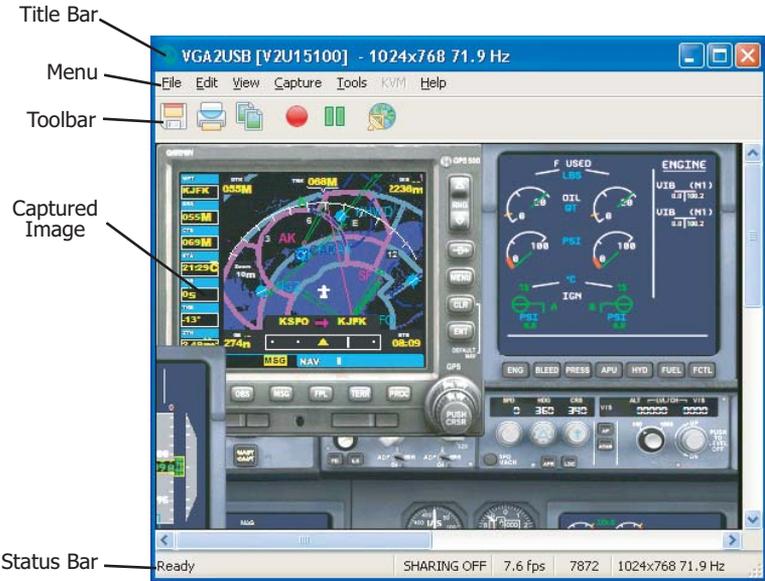
If you have more than one Frame Grabber, you can select the one to connect the capture application to from this list.

- 3 If you have a Network Frame Grabber you can also select **Capture > Connect Network Device** to select or enter the IP address of a Network Frame Grabber to connect to.

See [“Troubleshooting a Windows installation” on page 41](#) for information about troubleshooting the installation.

The Windows capture application is described in the [Frame Grabber User Guide](#).

Figure 1: Epiphany capture application window (Windows XP, VGA2USB Frame Grabber)



Mac OS X video capture workstation installation

Follow the step-by step procedures in this section if you are going to use a Mac as a video capture workstation to view and record images captured by the Frame Grabber.

Note: If want to use a Windows PC as a video capture workstation, see "[Windows video capture workstation Installation](#)" on page 8. You must install a PCIe Frame Grabber in a video capture workstation running Windows.

Note: You must install the drivers and application on the Mac OS X video capture workstation before connecting a USB Frame Grabber to the workstation USB port.

Note: You must install the drivers and application on a Mac OS X video capture workstation that is connected to the same network as the Network Frame Grabber.

To install the Mac drivers and application

The same drivers and application software are used for all Frame Grabbers. A single download from the Epiphan web site includes the capture application command line capture application (v2u), the VGA2Ethernet system preferences and the QuickTime digitizer (vdig).

- 1 Find the latest Mac Drivers and Application software.
Browse to <http://www.epiphan.com/products/> to locate the Download page for your Frame Grabber and scroll down to the Mac section of the download page
- 2 Download the latest version of the drivers and application that will run on the video capture workstation.
Make sure you note the download destination folder.
- 3 Double-click on the .dmg file to unpack it if it doesn't unpack automatically.
- 4 Double-click on the .pkg file and follow the prompts.

Note: The final step of the installation requires restarting the video capture workstation.

To connect the Frame Grabber

- 1 Use one of the following sections to connect the Frame Grabber:
 - “Connecting USB Frame Grabbers” on page 15
 - “Connecting Network Frame Grabbers” on page 21
 - “Connecting KVM Frame Grabbers” on page 32

To start the Mac OS capture application

- 1 On the video capture workstation, run the capture application. From the Applications folder, select **VGA2USB.app**.

The capture application starts up.

If the Frame Grabber is connected and powered on, the capture application should automatically find the Frame Grabber and begin displaying captured images (see [Figure 2 on page 15](#)).

If the Frame Grabber is operating but not capturing images the device name and serial number should appear in the title bar and the capture application displays **No signal detected**. The status bar should display the IP address of the Network Frame Grabber.

If the capture application displays **Capture device not found** the capture application cannot find the Frame Grabber.

If you have added a viewer password to a Network Frame Grabber, you will be prompted to enter the password before the image being captured by the device appears in the capture window.

- 2 You can select **View > Show Device List** to view the Frame Grabber devices that the capture application has found.

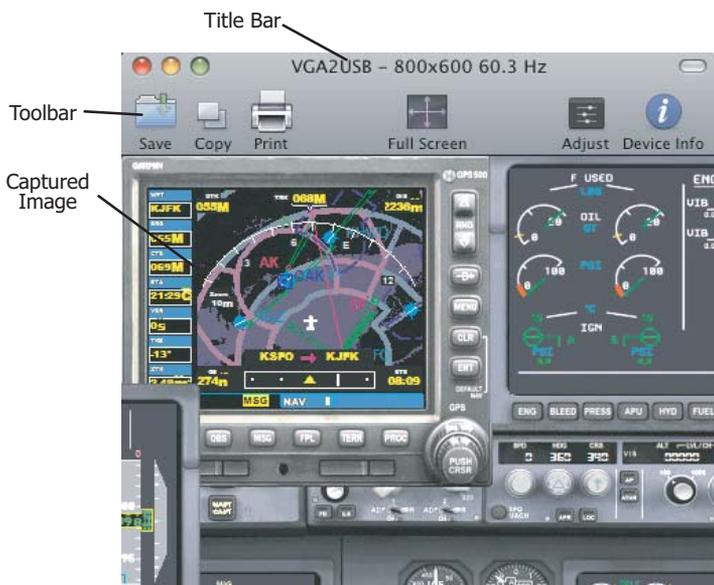
If you have more than one Frame Grabber, you can select the one to connect the capture application to from this list.

- 3 If you have a Network Frame Grabber you can also select **File > Open Network Grabber** to select or enter the IP address of a Network Frame Grabber to connect to.

See "[Troubleshooting a Windows installation](#)" on [page 41](#) for information about troubleshooting the installation.

The Mac OS capture application is described in the [Frame Grabber User Guide](#).

Figure 2: Epiphan capture application window (Mac OS X, VGA2USB Frame Grabber)



Connecting USB Frame Grabbers

This section describes the USB Frame Grabber hardware and how to connect a USB Frame Grabber.

Note: Before following the instructions in this section you should install the Windows or Mac OS X drivers and application. See [“Windows video capture workstation Installation”](#) on page 8 or [“Mac OS X video capture workstation installation”](#) on page 12.

USB Frame Grabber models include the VGA2USB and the VGA2USB LR, HR and Pro, and the DVI2USB, and the DVI2USB Solo and Duo.

Figure 3: USB Frame Grabbers (VGA models)



Figure 4: USB Frame Grabbers (DVI models)



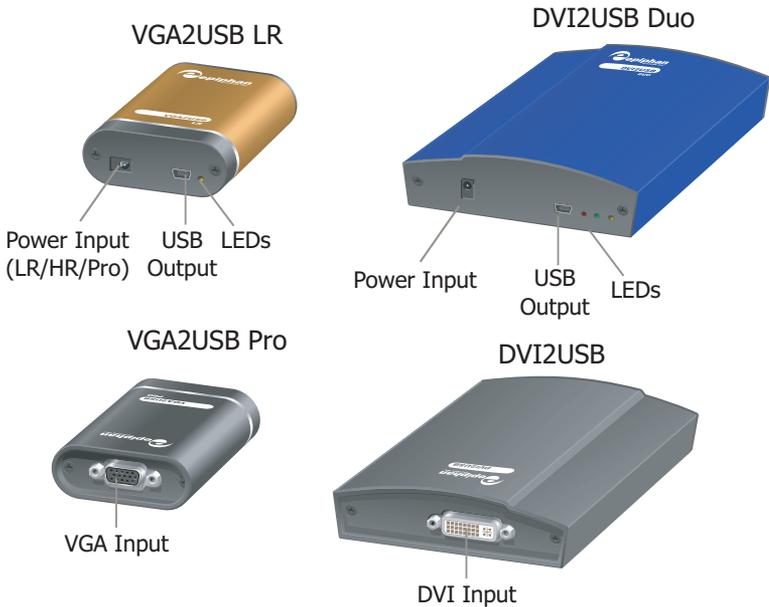
VGA USB Frame Grabbers capture images from most VESA-compatible VGA sources and transmit them to a video capture workstation using a USB 2.0 connection. Using the capture application installed on a video capture workstation you can view and record the captured images.

DVI USB Frame Grabbers capture images from most VESA-compatible DVI or dual-DVI sources and transmit them to a video capture workstation using a USB 2.0 connection. Using the capture application installed on a video capture workstation you can view and record the captured images.

USB Frame Grabber Hardware Features

This section provides an overview of USB Frame Grabber hardware features.

Figure 5: USB Frame Grabber connectors and LEDs



Power Input	Connect the AC adapter to the Frame Grabber power connector and to a power outlet. Required for all USB Frame Grabbers except the VGA2USB device. USB Frame Grabbers function best if the included power adapter is connected to the Frame Grabber and to a power outlet.
--------------------	---

USB Output	Connect to a USB 2.0 port on the video capture workstation using the USB cable supplied with the device.
LEDs	Some USB Frame Grabbers have one LED and others can have up to three. See “USB Frame Grabber LED indicators” on page 18.
VGA Input	To connect a VGA source to a VGA USB Frame Grabber. To connect a DVI source to a VGA2USB Frame Grabber you require a VGA to DVI converter. See the technical specifications for the Frame Grabber at http://www.epiphan.com for information about the supported VGA signaling, VGA modes, and video modes.
DVI Input	To connect a DVI source to a DVI USB Frame Grabber. To connect a VGA source to a DVI2USB Frame Grabber you require a DVI to VGA converter. See the technical specifications for the Frame Grabber at http://www.epiphan.com for information about the supported DVI signaling, DVI modes, and video modes. The DVI2USB Duo device includes a dual-link DVI input.

USB Frame Grabber LED indicators

The following table describes the LEDs for each USB Frame Grabber.

	Power	Ready	Capturing	Tuning Capture Settings
VGA2USB	Red	Green	Amber	
VGA2USB (LR/R/Pro)		Green	Red	Blue
KVM2USB		Green	Red	Blue

	Power	Ready	Capturing	Tuning Capture Settings
DVI2USB		Green	Amber	Red
DVI2USB Solo		Green	Red	Blue
DVI2USB Duo		Green	Amber	Red

- Ready indicates that the USB Frame Grabber has powered up and is ready to capture images.
- Capturing indicates that the USB Frame Grabber is capturing images. The LED flashes when an image is captured.
- Tuning capture settings indicates that the USB Frame Grabber is performing image adjustments to optimize the USB Frame Grabber’s capture settings.

Connecting USB Frame Grabbers

Use the following steps to connect VGA and DVI USB Frame Grabbers.

Figure 6: Connecting VGA USB Frame Grabbers



Figure 7: Connecting DVI USB Frame Grabbers



To connect a USB Frame Grabber

Make sure that the capture application is installed on the video capture workstation before connecting the Frame Grabber.

- 1 Use the VGA or DVI cable to connect the VGA or DVI signal output source to the Frame Grabber VGA or DVI port.

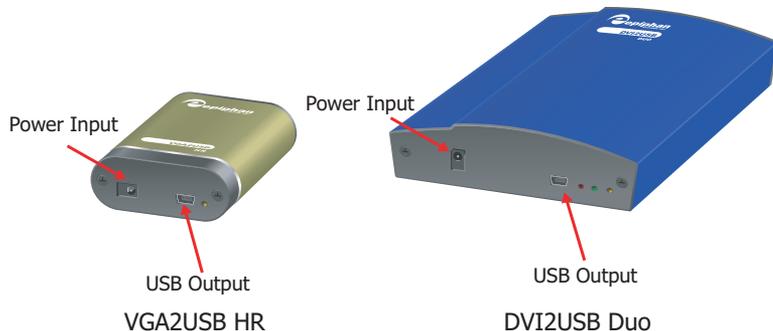


You can use a high-quality VGA or DVI splitter to split the VGA or DVI signal between an external monitor and the USB Frame Grabber.

- 2 Connect the power adapter to the device.

The power adapter is required for all models except the VGA2USB.

- 3 Use the USB cable to connect the USB Frame Grabber to a USB



2.0 port on the video capture workstation.

If you have installed the drivers and application software, the video capture workstation should automatically recognize the USB Frame Grabber and install drivers for it. See [“Troubleshooting a Windows installation”](#) on page 41 if this does not happen.

To complete the installation return to [“To start the Windows capture application”](#) on page 11 for a Windows video capture workstation or [“To start the Mac OS capture application”](#) on page 14 for a Mac video capture workstation.

Connecting Network Frame Grabbers

This section describes the Network Frame Grabber hardware and software and how to connect a Network Frame Grabber. Network Frame Grabber models include the VGA2Ethernet and the VGA2Ethernet Pro.

Note: Before following the instructions in this section you should install the Windows or Mac OS X drivers and application. See [“Windows video capture workstation Installation”](#) on page 8 or [“Mac OS X video capture workstation installation”](#) on page 12.

Network Frame Grabbers capture images from most VESA-compatible VGA or DVI sources and transmit them over an Ethernet network to a video capture workstation. Using the capture application installed on a video capture workstation you can view and record the captured images.

Network Frame Grabber Hardware Features

Network Frame Grabbers have the following hardware features.

Figure 8: VGA2Ethernet connectors and LEDs



Figure 9: VGA2Ethernet Pro connectors and LEDs



Power	Connect the AC adapter to the device power connector and to a power outlet.
Eth 1	Primary 10/100/1000 Base-T RJ-45 auto-sensing Ethernet network port to connect the device to the Ethernet network. The ethernet ports are auto-sensing. You can connect ETH 1 or ETH 2 directly to the video capture workstation Ethernet port.
ETH 2	Secondary 10/100/1000 Base-T RJ-45 auto-sensing Ethernet network port. This port is useful for some configurations. See the <i>Frame Grabber User Guide</i> for more information.
INPUT	Connect a DVI or VGA source to a VGA2Ethernet device. To connect a VGA source you require a VGA to DVI converter. See the VGA2Ethernet technical specifications for information about the VGA signaling, VGA modes, and video modes supported by Frame Grabber devices. INPUT also includes an audio input port for capturing audio.

OUTPUT	<p>Connect a DVI or VGA monitor or projector to view captured images from a VGA2Ethernet device.</p> <p>OUTPUT also includes an audio output port for monitoring captured audio.</p>
VGA IN	<p>Connect a VESA-compatible VGA source to the VGA2Ethernet Pro device. See the VGA2Ethernet Pro technical specifications on the Epiphan web site for information about the video input supported by the VGA2Ethernet Pro device.</p>
VGA OUT	<p>Optionally connect a monitor to the VGA2Ethernet Pro device. This is not a high-quality image. VGA OUT is intended only for checking the presence of the signal.</p>
USB port	<p>Not used.</p>
Factory Reset Button	<p>Reset the device to factory default settings. To use this button, disconnect power to the device, press and hold the Reset button as you reconnect the power. The blue LED lights up. Keep pressing the Reset button until the blue LED turns off and the Green LED lights up. Release the Reset button. The Frame Grabber device starts normally but with all settings returned to factory defaults.</p> <p>Note: You may have to re-configure the device's network settings to reconnect the device to the network. See the Frame Grabber User Guide for more information.</p>
LED startup sequence	<p>Green and blue LEDs. When the device first starts up, the blue led lights up. A few seconds later the green LED lights up. After about another 20 seconds the blue LED turns off, leaving the green LED on indicating that the device has started up and can start capturing images.</p> <p>During operation the blue LED blinks during VGA signal test operation and when the system tunes VGA parameters.</p>

Red LED	During operation the red LED blinks each time the device captures an image and sends it to a video capture workstation. You can use the red LED as an indicator that the device is capturing images.
----------------	--

Note: The VGA2Ethernet device will not capture images until a video capture workstation has found the device on the network and an application is requesting captured images. Even if the device is properly connected to a VGA source the red LED will not flash unless a video capture workstation is receiving captured images.

Network Frame Grabber Software Features

Use the following software features to install the VGA2Ethernet or VGA2Ethernet Pro device on the network.

Default IP address and network mask	IP: 192.168.255.250 Netmask: 255.255.255.252
IP address from a DHCP server	The device can get an IP address on the network from a DHCP server if the network has one. If the device gets an IP address from a DHCP server, the capture application and Network Discovery tool can automatically find the device on the network. If the network does not have a DHCP server, see the <i>Frame Grabber User Guide</i> .

Web admin interface	Use the Web admin interface for changing the IP address, making device Adjustments, and installing new firmware. You can log into the Web admin interface by selecting Web config from the Network Discovery Utility or by opening a web browser and browsing to: <code>http://<VGA2Ethernet_IP_Address></code> User Name: admin (no password) The Web admin interface is described in the <i>Frame Grabber User Guide</i> .
----------------------------	---

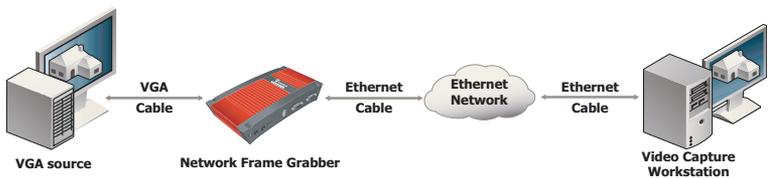
Connecting Network Frame Grabbers

To connect a Network Frame Grabber such as the VGA2Ethernet or VGA2Ethernet Pro device, in addition to the Network Frame Grabber itself you need:

- A VGA or DVI video source.
- An Ethernet connection between the device and the video capture workstation.

Note: The video capture workstation and the Network Frame Grabber must be on the same Ethernet subnet.

Figure 10:Connecting a VGA2Ethernet device



To connect and turn on a Network Frame Grabber

- 1 Use a VGA or DVI cable to connect the VGA or DVI source to the Network Frame Grabber INPUT or VGA IN port.

You can use an active VGA or DVI splitter to split the VGA or DVI signal between a monitor and the Network Frame Grabber.



- 2 Use a RJ-45 Ethernet cable to connect the Network Frame Grabber Eth 1 port to a 10/100/1000 Base-T Ethernet network.

For best performance, connect the VGA2Ethernet to a 1000 Base-T Ethernet network. You can also improve performance by using Ethernet cables with 4 pairs of wires. Cat5e or Cat6 cables are preferred to Cat5.

The network must be running the TCP/IP protocol. Ideally the Network Frame Grabber should be able to connect to the Internet.

You can optionally connect the Network Frame Grabber directly to a video capture workstation 1-gigabit Ethernet port.

- 3 Connect the power adapter to the Network Frame Grabber.



The Network Frame Grabber powers on and the LEDs go through their power on sequence:

- When power is first connected, the blue LED lights up.
- A few seconds later the green LED lights up.
- After about 20 seconds, the blue LED turns off leaving the green LED on to indicate that the Network Frame Grabber has started up and can start capturing images.

4 Start up the VGA source.

If you have installed the drivers and application software, you should be able to use the Epiphan Network Discovery Utility to find the Network Frame Grabber on your network. See [“To use the network discovery utility to find Network Frame Grabbers”](#) on page 44.

See [“Troubleshooting a Windows installation”](#) on page 41 if the Network Discovery Utility does not find the Network Frame Grabber.

To complete the installation return to [“To start the Windows capture application”](#) on page 11 for a Windows video capture workstation or [“To start the Mac OS capture application”](#) on page 14 for a Mac video capture workstation.

Connecting PCIe Frame Grabbers

This section describes the PCIe Frame Grabber hardware and how to install a PCIe Frame Grabber and connect a VGA source to it. PCIe Frame Grabber models include the VGA2PCIe card.

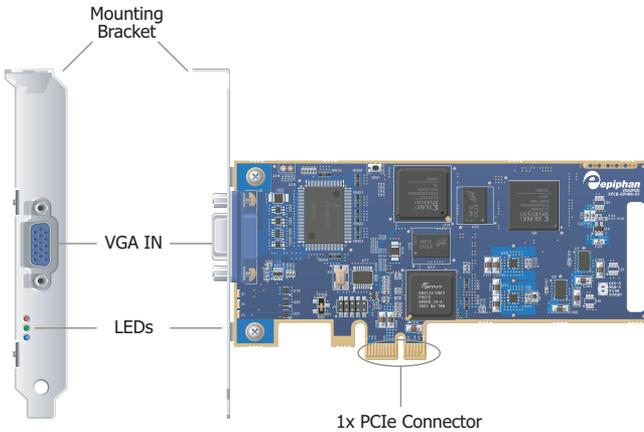
Note: It is recommended that you download and install the latest drivers for the video capture workstation motherboard from the motherboard manufacturer’s website before installing the PCIe Frame Grabber.

Note: You can install a PCIe Frame Grabber in an available PCIe slot in a Windows-compatible video capture workstation. After following the instructions in this section to install the PCIe Frame Grabber you should install the Epiphan Windows drivers and application for your PCIe Frame Grabber on the video capture workstation. See [“Windows video capture workstation Installation”](#) on page 8.

PCIe Frame Grabber Hardware features

The Epiphan VGA2PCIe Frame Grabber is a 1x PCIe card that includes a single VGA IN port and three activity LEDs.

Figure 11:VGA2PCIe connectors and LEDs



The VGA2PCIe PCIe card can be installed in a 1x, 4x, 8x or 16x PCIe slot on the motherboard of any video capture workstation running Windows. [Figure 12](#) shows an example of different PCIe slots on a single PC motherboard.

Note: 1x PCIe cards do not require high capacity (4x, 8x or 16x) PCIe slots. So the best place to install the VGA2PCIe card would be a 1x PCIe slot. Usually you would want to reserve high capacity PCIe slots for the devices that need them.

Figure 12:PCIe slots (from top to bottom: 4x, 16x, 1x and 16x), compared to a traditional 32-bit PCI slot (bottom)



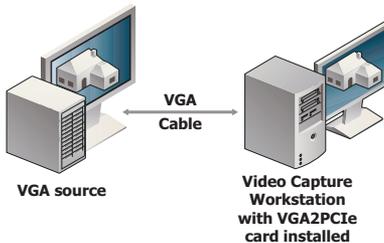
When installed the VGA2PCIe card adds a single VGA IN port and three LED indicators on the back of the PC. You can connect a VGA source directly to this VGA IN port using a standard VGA cable.

VGA IN	Connect a VESA-compatible VGA source to the VGA2PCIe card. See the VGA2PCIe technical specifications on the Epiphan web site for information about the video input supported by the VGA2PCIe card.
LED startup sequence	Green and blue LEDs. When the PC starts up the VGA2PCIe blue led lights up. A few seconds later the green LED lights up. After about another 20 seconds the blue LED turns off, leaving the green LED on indicating that the device has started up and can start capturing images. During operation the blue LED blinks during VGA signal test operation and when the system tunes VGA parameters.
Red LED	During operation the red LED blinks each time the device captures an image and sends it to a video capture workstation. You can use the red LED as an indicator that the device is capturing images.

Installing and connecting PCIe Frame Grabbers

To connect a PCIe Frame Grabber such as the VGA2PCIe card, in addition to the PCIe Frame Grabber itself you need:

- A video capture workstation running Windows XP, Vista or 7 with an available 1x, 4x, 8x or 16x PCIe slot.
- A VGA video source.
- An antistatic wrist strap to protect sensitive electronic components.

Figure 13: Connecting a VGA2PCIe card

To install and connect a PCIe Frame Grabber

This procedure describes how to install a PCIe Frame Grabber in a Windows video capture workstation.

- 1 Shut down and power off the video capture workstation.
- 2 Disconnect all cables from the video capture workstation.
- 3 Open the system unit to expose the PCIe slots (usually located at the back of the PC).
- 4 Attach the antistatic wrist strap to the metal casing of the PC power supply and to your wrist according to the instructions supplied with the wrist strap.
- 5 Select a PCIe slot and remove the corresponding filler panel from the PC slot opening.
- 6 Holding the VGA2PCIe card by the edges, align the card edge connector with the PCIe slot.
- 7 Slide the card mounting bracket into the small slot at the end of the PCIe opening.
- 8 Applying even pressure at both corners of the card, push the card down until it is firmly seated in the slot.

Caution: Do not use excessive force when installing the card into the PCIe slot. You might damage the card's PCIe connector. If the card does not seat properly when you apply even pressure, remove the card and carefully reinstall it.

- 9 Secure the card mounting bracket to the system unit using a screw at the top of the mounting bracket.
- 10 Detach the wrist strap and close the system unit.

- 11 Power on the video capture workstation.
- 12 Install the VGA2PCIe drivers and application and complete the installation. See [“To install the Windows drivers and application”](#) on page 9.

Connecting KVM Frame Grabbers

This section describes how to connect a KVM Frame Grabber to a computerized machine to be managed and to the administrator’s PC or to a network.

The KVM2USB device requires a USB connector between the Frame Grabber and the video capture workstation, and the KVM2Ethernet requires an Ethernet connection between the Frame Grabber and the video capture workstation.

KVM Frame Grabbers provide full Keyboard-Video-Mouse (KVM) capabilities that you can use to manage any computerized machine with a VGA output and keyboard/mouse inputs from a video capture workstation.

- If the computerized machine has a VGA port and PS2 mouse and keyboard ports, you can connect the KVM Frame Grabber directly.
- KVM Frame Grabbers also come with a PS/2 to USB adapter that you can use if the computerized machine only has USB ports for mouse and keyboard connections. The PS/2 to USB adapter is used to connect the two PS/2 cables to a single USB connector.
- KVM Frame Grabbers have a VGA video connector. However, the KVM Frame Grabbers are compatible with most DVI to VGA adapters if the computerized machine only has a DVI port.

Note: Before following the instructions in this section you should install the Windows or Mac OS X drivers and application. See [“Windows video capture workstation Installation”](#) on page 8 or [“Mac OS X video capture workstation installation”](#) on page 12.

KVM2USB Hardware Features

The KVM2USB device has the following hardware features.

Figure 14:KVM2USB connectors and LEDs



Power Input	Connect the AC adapter to the Frame Grabber power connector and to a power outlet.
USB Output	Connect to a USB 2.0 port on the video capture workstation using the USB cable supplied with your device.
LEDs	See “USB Frame Grabber LED indicators” on page 18.
KVM Input	Connect the yellow KVM connector of the Epiphany KVM cable to the KVM Input port of the KVM2USB device. See the KVM2USB technical specifications for information about the supported VGA signaling, VGA modes, and video modes supported.
KVM Cable	Special Epiphany cable used for the connection between the keyboard, video, and mouse connectors of the computerized machine and the KVM2USB device. Connect the black video connector and the green and purple PS/2 connectors to the computerized machine (using the PS/2 to USB adapter if required) and the yellow KVM connector to the KVM2USB device KVM input connector.

KVM2Ethernet Hardware Features

The KVM2Ethernet device has the following hardware features.

Figure 15:KVM2Ethernet connectors and LEDs



Power	Connect the AC adapter to the device power connector and to a power outlet.
ETH 1	Primary 10/100/1000 Base-T RJ-45 auto-sensing Ethernet network port to connect the device to the Ethernet network. The ethernet ports are auto-sensing. You can connect ETH 1 or ETH 2 directly to the video capture workstation Ethernet port.
ETH 2	Secondary 10/100/1000 Base-T RJ-45 auto-sensing Ethernet network port. This port is useful for some configurations. See the Frame Grabber User Guide for more information.
VGA IN	Connect the yellow end of an Epiphan KVM cable from the machine to be managed to the KVM2Ethernet device. See the KVM2Ethernet technical specifications on the Epiphan web site for information about the input supported by the KVM2Ethernet device.
USB port	Not used.

VGA OUT	Optionally connect a monitor. This is not a high-quality image. VGA OUT is intended only for checking the presence of the signal.
Factory Reset Button	<p>Reset the device to factory default settings. To use this button, disconnect power to the device, press and hold the Reset button as you reconnect the power. The blue LED lights up. Keep pressing the Reset button until the blue LED turns off and the Green LED lights up. Release the Reset button. The device starts normally but with all settings returned to factory defaults.</p> <p>Note: You may have to re-configure the device's network settings to reconnect the device to the network. See the Frame Grabber User Guide for more information.</p>
LED startup sequence	<p>Green and blue LEDs. When the device first starts up, the blue led lights up. A few seconds later the green LED lights up. After about another 20 seconds the blue LED turns off, leaving the green LED on indicating that the device has started up and can start capturing images.</p> <p>During operation the blue LED blinks during VGA signal test operation and when the system tunes VGA parameters.</p>
Red LED	During operation the red LED blinks each time the device captures an image and sends it to a video capture workstation. You can use the red LED as an indicator that the device is capturing images.
KVM Cable	Special Epiphan cable used for the connection between the keyboard, video, and mouse connectors of the computerized machine and the KVM2Ethernet device. Connect the black video connector and the green and purple PS/2 connectors to the computerized machine (using a PS/2 to USB adapter if required) and the yellow KVM connector to the KVM2Ethernet device KVM input connector.

Note: The KVM2Ethernet devices will not capture images until a video capture workstation has found the device on the network and an application is requesting captured images. Even if the device is properly connected to a KVM source the red LED will not flash unless a video capture workstation is receiving captured images.

KVM2Ethernet Software Features

Use the following software features to install the VGA2Ethernet or KVM2Ethernet device on your network.

Default IP address and network mask	IP: 192.168.255.250 Netmask: 255.255.255.252
IP address from a DHCP server	The device can get an IP address on the network from a DHCP server if the network has one. If the device gets an IP address from a DHCP server, the capture application and Network Discovery tool can automatically find the device on the network. If the network does not have a DHCP server, see the <i>Frame Grabber User Guide</i> .
Web admin interface	Use the Web admin interface for changing the IP address, making device Adjustments, and installing new firmware. You can log into the Web admin interface by selecting Web config from the Network Discovery Utility or by opening a web browser and browsing to: http://<KVM2Ethernet_IP_Address> User Name: admin (no password) The Web admin interface is described in the <i>Frame Grabber User Guide</i> .

Connecting KVM2USB Frame Grabbers

Use the following steps to connect a KVM2USB Frame Grabber.

Figure 16: Connecting a KVM2USB Frame Grabber



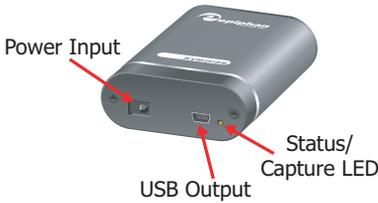
To connect a KVM2USB Frame Grabber

Make sure that the capture application is installed on the video capture workstation before connecting the KVM2USB Frame Grabber.

- 1 Connect the black video connector and the green and purple PS/2 connectors of the Epiphan KVM cable to the keyboard, video, and mouse ports of the equipment to be managed. Use the PS/2 to USB adapter and DVI to VGA adapters if required.
- 2 Connect the yellow KVM connector of the Epiphan KVM cable (the single-connector end) to the KVM2USB KVM input port.



- 3 Use the USB cable to connect the KVM2USB to a USB 2.0 port on the administrator’s PC.



If you have installed the drivers and application software, the video capture workstation should automatically recognize the KVM2USB device and install drivers for it. See [“Troubleshooting a Windows installation” on page 41](#) if this does not happen.

- 4 To complete the installation return to [“To start the Windows capture application” on page 11](#) for a Windows video capture workstation or [“To start the Mac OS capture application” on page 14](#) for a Mac video capture workstation.
- 5 Start the capture application and use the options on the KVM menu to start and stop KVM operation.

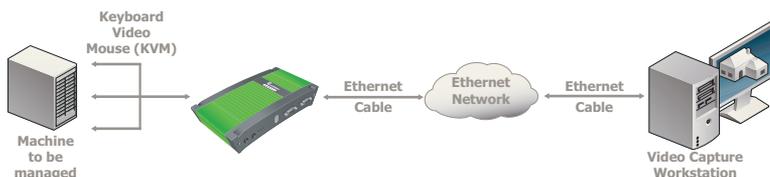
Connecting KVM2Ethernet Frame Grabbers

This section describes how to connect a KVM2Ethernet device to manage a computerized machine with a VGA output and keyboard/mouse input.

- If the machine to be managed has a VGA port and PS2 mouse and keyboard ports, you can connect the KVM2Ethernet device directly.
- KVM Frame Grabbers also come with a PS/2 to USB adapter that you can use if the computerized machine only has USB ports for mouse and keyboard connections. The PS/2 to USB adapter is used to connect the two PS/2 cables to a single USB connector.
- The KVM2Ethernet video connector is a VGA connector.

Note: The video capture workstation and the KVM2Ethernet device must be on the same Ethernet subnet.

Figure 17: Connecting the KVM2Ethernet device



To connect and turn on the KVM2Ethernet device

- 1 Connect the black video connector and the green and purple PS/2 connectors of the Epiphan KVM cable to the keyboard, video, and mouse ports of the equipment to be managed. Use the PS/2 to USB adapter if required.
- 2 Connect the yellow KVM connector of the Epiphan KVM cable (the single-connector end) to the KVM2Ethernet VGA IN port.

Figure 18: Connecting to the machine to be managed



- 3 Use a RJ-45 Ethernet cable to connect the KVM2Ethernet Eth 1 port to a 10/100/1000 Base-T Ethernet network.

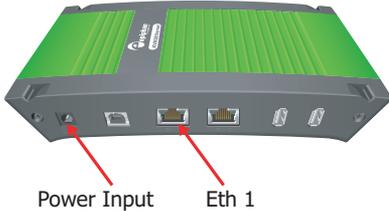
For best performance, connect the KVM2Ethernet to a 1000 Base-T Ethernet network. You can also improve performance by using Ethernet cables with 4 pairs of wires. Cat5e or Cat6 cables are preferred to Cat5.

The network must be running the TCP/IP protocol. Ideally the KVM2Ethernet should be able to connect to the Internet.

You can, optionally connect the KVM2Ethernet directly to a video capture workstation 1-gigabit Ethernet port.

- 4 Connect the power adapter to the KVM2Ethernet device.

Figure 19: Connecting to the Ethernet network and power



The KVM2Ethernet device powers on and the LEDs go through their power on sequence:

- When power is first connected, the blue LED lights up.
 - A few seconds later the green LED lights up.
 - After about 20 seconds, the blue LED turns off leaving the green LED on to indicate that the KVM2Ethernet has started up and can start capturing images.
- 5 Start up the VGA source.

If you have installed the drivers and application software, you should be able to use the Epiphan Network Discovery Utility to find the KVM2Ethernet device on your network. See [“To use the network discovery utility to find Network Frame Grabbers” on page 44.](#)

See [“Troubleshooting a Windows installation” on page 41](#) if the Network Discovery Utility does not find the Network Frame Grabber.

- 6 To complete the installation return to [“To start the Windows capture application” on page 11](#) for a Windows video capture workstation or [“To start the Mac OS capture application” on page 14](#) for a Mac video capture workstation.
- 7 Use the options on the capture application KVM menu to start and stop KVM operation.

Troubleshooting a Windows installation

If you experience any difficulty viewing captured images with the Windows capture application, review the following items prior to contacting technical support.

This section describes:

- [General troubleshooting](#)
- [Troubleshooting USB Frame Grabbers](#)
- [Troubleshooting Network Frame Grabbers](#)
- [To use the network discovery utility to find Network Frame Grabbers](#)
- [Troubleshooting PCIe Frame Grabbers](#)

General troubleshooting

Whenever possible, when splitting the VGA signal, use an active VGA splitter rather than a passive VGA splitter (also called a Y-adaptor). This will help maintain a cleaner video signal.

If included in the Frame Grabber package, always use the power adapter to ensure the Frame Grabber is receiving sufficient power. All Frame Grabbers function best if the included power adapter is connected to the Frame Grabber and to a power outlet.

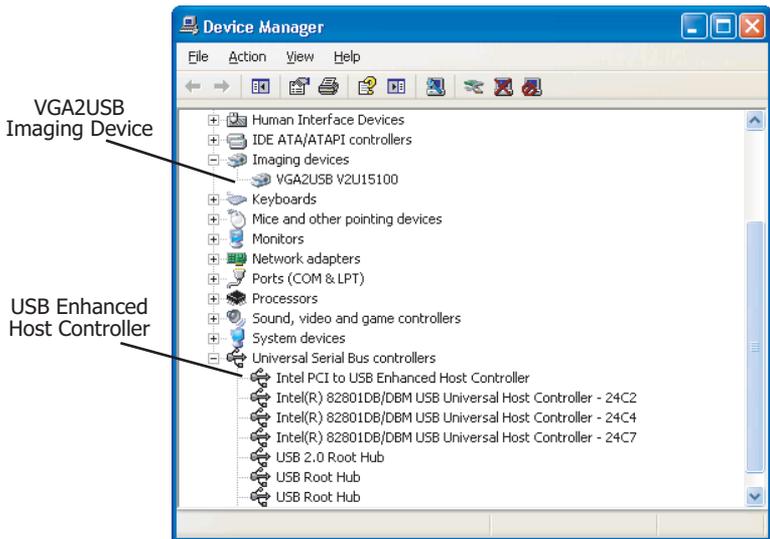
Troubleshooting USB Frame Grabbers

If the capture application cannot find the USB Frame Grabber:

- Confirm that the USB Frame Grabber is connected to a video capture workstation USB port and has power connected and the device's LEDs are lit.
- Disconnect and re-connect the USB Frame Grabber. This prompts Windows to install the device drivers for the Frame Grabber if they haven't already been installed.
- Observe the behavior of the Frame Grabber LED indicators. See "[USB Frame Grabber LED indicators](#)" on page 18 for LED information.

- Check the Windows Device Manager to verify that the USB Frame Grabber has installed successfully and that the PC supports USB 2.0. **Figure 20** shows an example Windows Device Manager list. The VGA2USB device appears in the device manager as an **Imaging Device** and the Windows Device includes an **Enhanced Host Controller** entry; which is how Windows reports a USB 2.0 port.

Figure 20: Windows Device Manager: imaging device and USB ports



- If you are still having problems, close all applications and restart the video capture workstation. When the video capture workstation has started up, open the Windows Device Manager to confirm that the USB Frame Grabber has been detected.

Troubleshooting Network Frame Grabbers

If the capture application cannot find the Network Frame Grabber:

- Confirm that the Network Frame Grabber is physically connected to the network, has power connected, and the device's LEDs are lit.
- Observe the behavior of the Frame Grabber LED indicators. See "[Network Frame Grabber Hardware Features](#)" on page 22 for LED information.
- Make sure the device's network interface LEDs are also lit. If the network interface LEDs are not lit, you can replace the network cable or confirm that the device that the Web admin interface Network Frame Grabber is connected to is operating.
- Confirm that the Network Frame Grabber is connected to the network. Use the Network Discovery Utility to find the Network Frame Grabber. See "[To use the network discovery utility to find Network Frame Grabbers](#)" on page 44.
- If the Network Discovery Utility cannot find the Network Frame Grabber, log into the Network Frame Grabber Web admin interface and change the Network Frame Grabber IP configuration to be compatible with your network. You can connect to the Network Frame Grabber Web admin interface by browsing to the default IP address, which is <http://192.168.255.250>. To log into a device using this IP address you must change the IP Address of a PC to the static IP address 192.168.255.249 and netmask 255.255.255.252. Then open a Web browser and browse to <http://192.168.255.250>.
- If you are still having problems, close all applications and restart the video capture workstation. Start the capture application and attempt to reconnect to the Network Frame Grabber.

To use the network discovery utility to find Network Frame Grabbers

You can use the Network Discovery Utility to find Network Frame Grabbers connected to your network. You would only need to use the Network Discovery Utility if the capture application cannot find them.

Start the Network Discovery Utility from the Windows Start menu by selecting **Start > Epiphan VGA2Ethernet > VGA2Ethernet DirectShow Config**.

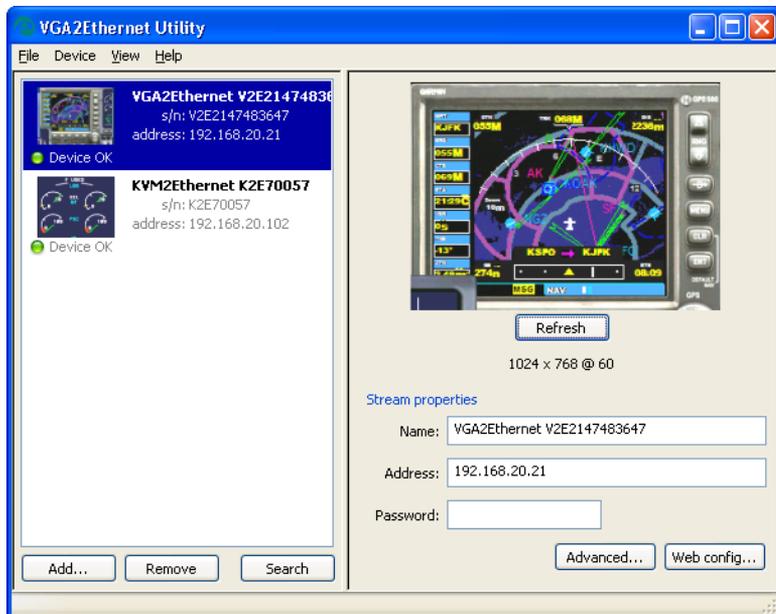
The Network Discovery Utility starts up and looks for Epiphan devices, including Network Frame Grabbers, connected to the network. The Network Discovery Utility will find any Epiphan device connected to the network.

For each Epiphan network device (including Network Frame Grabbers), the Network Discovery Utility displays a name, serial number, IP address and status (such as device OK, or Not Found). [Figure 21](#) shows the Network Discovery Utility connected to a VGA2Ethernet device at IP address 192.168.20.21 and a KVM2Ethernet device at IP address 192.168.20.102.

If a device is selected and is capturing images, the current captured image should appear on the Network Discovery Utility interface and the status of the device should be Device OK, shown with a green indicator. If the device is not capturing images the Device OK indicator can still appear but the display will not show a captured image.

Note: When you restart the Network Discovery Utility if it has already found an Epiphan device it will show the status of the device as Detecting and the indicator will be amber. If the Network Discovery Utility cannot find a previously found Epiphan device, the status will change to Not Found or Failed and the indicator will be red.

Figure 21: Example Network Discovery Utility display



Troubleshooting PCIe Frame Grabbers

Confirm that the PCIe Frame Grabber is properly installed in its PCIe slot. Windows Device Manager reports a the VGA2PCIe card under System Devices > PCIe Bus.

Observe the behavior of the Frame Grabber LED indicators. See “[PCIe Frame Grabber Hardware features](#)” on page 28 for LED information.

If, after following the installation steps, you are still having problems, close all applications and restart the video capture workstation. When the video capture workstation has started up, open the Windows Device Manager to confirm that the Frame Grabber is detected.

Troubleshooting a Mac OS X installation

If you experience any difficulty viewing captured images with the Windows capture application, review the following items prior to contacting technical support.

This section describes:

- [General troubleshooting](#)
- [Troubleshooting USB Frame Grabbers](#)

General troubleshooting

Whenever possible, when splitting the VGA signal, use an active VGA splitter rather than a passive VGA splitter (also called a Y-adaptor). This will help maintain a cleaner video signal.

If included in the Frame Grabber package, always use the power adapter to ensure the Frame Grabber is receiving sufficient power. All Frame Grabbers function best if the included power adapter is connected to the Frame Grabber and to a power outlet.

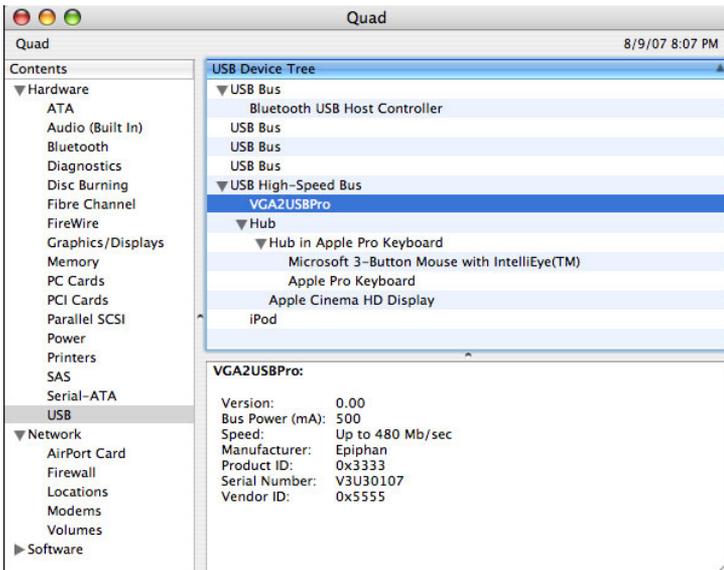
Troubleshooting USB Frame Grabbers

If the capture application cannot find the USB Frame Grabber:

- Confirm that the USB Frame Grabber is connected to a video capture workstation USB port and has power connected and the device's LEDs are lit.
- Confirm that the USB Frame Grabber is connected to a USB 2.0 port. As shown in [Figure 22 on page 47](#), the MAC OS X System Profiler reports a USB 2.0 port as a High-Speed Bus. Open System Profiler (under Applications > Utilities) and expand the USB Device Tree to confirm that the device is recognized.
- Disconnect and re-connect the USB Frame Grabber. This prompts the video capture workstation to install the device drivers for the Frame Grabber if they haven't already been installed.

- Observe the behavior of the Frame Grabber LED indicators. See “USB Frame Grabber LED indicators” on page 18 for LED information.

Figure 22:MAC OS System Profiler: USB 2.0 ports



For additional assistance with USB driver troubleshooting, browse to <http://www.epiphan.com/products/> and locate the Download page for the Frame Grabber.

- Observe the behavior of the Frame Grabber LED indicators. See “USB Frame Grabber LED indicators” on page 18 for LED information.
- If, after following the installation steps, you are still having problems, close all applications and restart the video capture workstation. When the workstation comes back online, open the System Profiler to confirm that the Frame Grabber is detected.