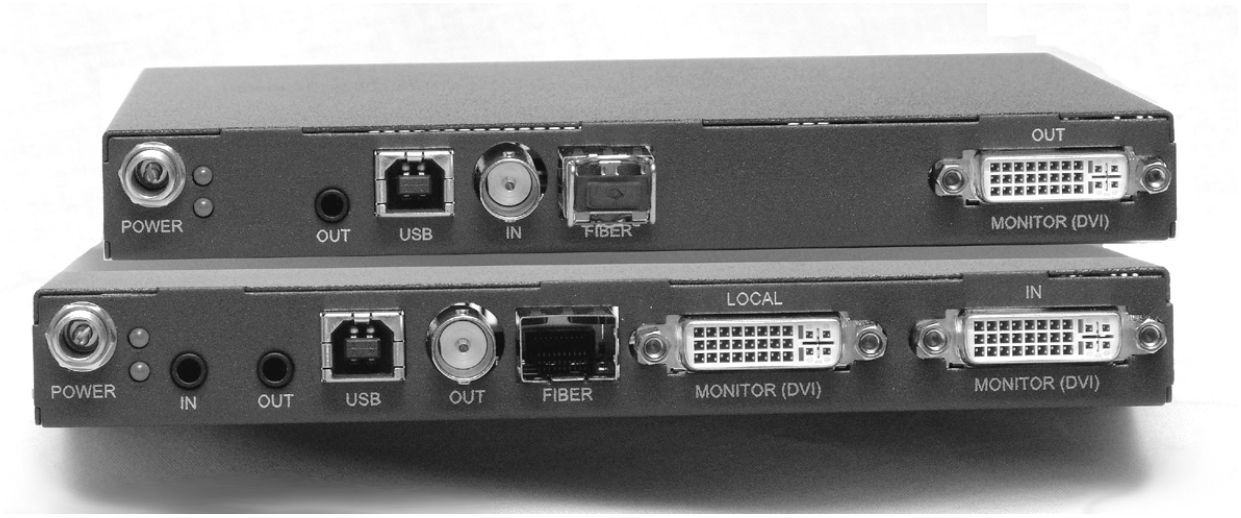
TECHNICAL MANUAL

CHEETAH V5 – DVI MODULES



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Thank You !! for purchasing your new V5 System from PESA. We appreciate your confidence in our products. PESA produces quality, state-of-the-art equipment designed to deliver our users the highest degree of performance, dependability and versatility available anywhere. We want you to know that if you ever have a concern or problem with a PESA product, we have a team of engineers, technicians and customer service professionals available 24/7/365 to help resolve the issue.

Our commitment is to continue earning the trust and confidence of our customers throughout the industry by incorporating cutting-edge technology into the highest quality, most cost effective products on the market. And we would like to invite you to tell us how we're doing. If you have any comments or suggestions concerning your PESA equipment, please contact our Customer Service Department.

Again thank you for choosing a PESA product and we look forward to a long-term partnership with you and your facility.

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1.1 DOCUMENTATION AND SAFETY OVERVIEW

This manual provides instructions for the installation, operation, and maintenance of the Cheetah V5 - DVI Modules built by PESA.

It is the responsibility of all personnel involved in the installation, operation, and maintenance of the equipment to know all the applicable safety regulations for the areas they will be working in. ***Under no circumstances should any person perform any procedure or sequence in this manual if the procedural sequence will directly conflict with local Safe Practices. Local Safe Practices shall remain as the sole determining factor for performing any procedure or sequence outlined in this document.***

1.2 WARNINGS, CAUTIONS, AND NOTES

Throughout this document, you should notice various Warnings, Cautions, and Notes. These addendum statements supply necessary information pertaining to the text or topic they address. It is imperative that audiences read and understand the statements to avoid possible loss of life, personal injury, and/or destruction/damage to the equipment. These additional statements may also provide added information that could enhance the operating characteristics of the equipment (i.e., Notes). Examples of the graphic symbol used to identify each type of statement and the nature of the statement content are shown in the following paragraphs:

1.2.1 WARNING

	**Warning statements identify conditions or practices that can result in loss of life or permanent personal injury if the instructions contained in the statement are not complied with.**

1.2.2 CAUTION

	**Caution statements identify conditions or practices that can result in personal injury and/or damage to equipment if the instructions contained in the statement are not complied with.**

1.2.3 NOTE

	**Notes are for information purposes only. However, they may contain invaluable information important to the correct installation, operation, and/or maintenance of the equipment.**

Chapter 2 Introduction

2.1 DESCRIPTION

PESA's Cheetah V5-DVI Modules allow transmission of digital or analog video and stereo audio, such as from a computer, over a single coaxial cable (or optional fiber optic link) to a remote location or to a routing switcher. Every Cheetah V5 System is composed of Transmit Modules and Receive Modules. Modules may be used as stand-alone "bricks" or mounted in an optional 1 Rack Unit (RU) frame that holds up to 4 modules. Figure 2-1 shows a typical transmit module (bottom) and receive module.

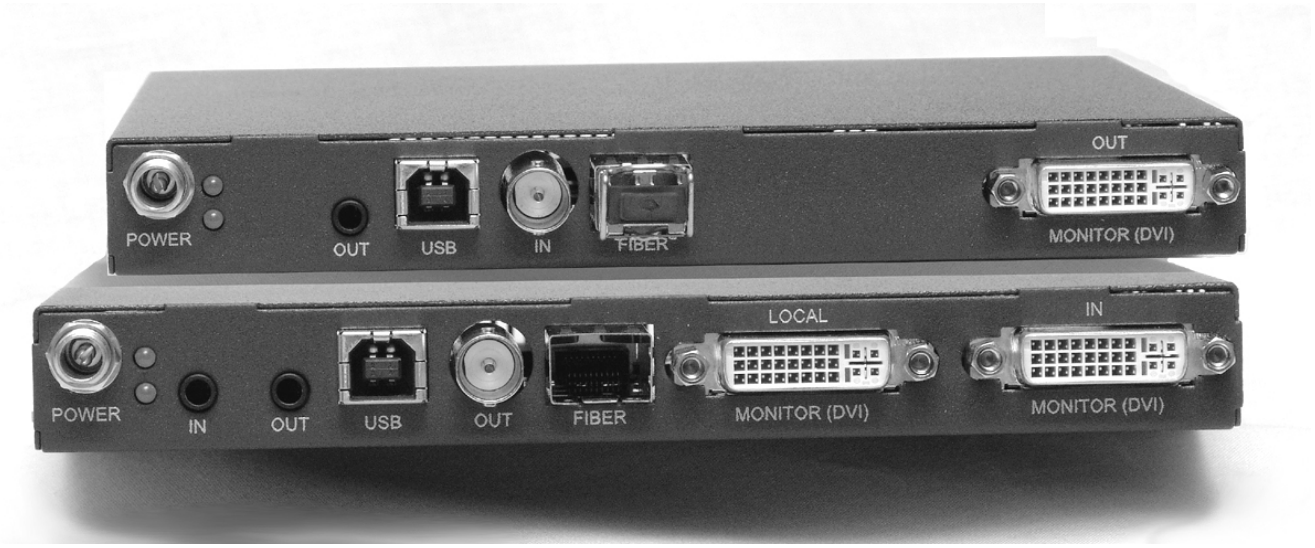


Figure 2-1 Cheetah V5–DVI - Typical Transmit and Receive Module

Cheetah V5 modules offer a great deal of flexibility in planning and configuring an A/V extender system. Typical applications range from a very basic extender installation using a single source origination computer and one V5 extender system to large systems using any number of V5 transmit modules for each A/V origination source and any number of receive modules for each A/V destination point. Incorporating a video matrix switcher in the system allows any A/V destination point access to any available A/V source.

Transmit modules accept an input of digital (DVI) video or analog video in RGBHV (VGA), RGsB (Sync-on-Green) or RGBS (RGB+Composite Sync) formats. Format detection is automatic, or may be manually selected. Regardless of the input signal format, the output signal on the remote receive module may be selected as either DVI or any of the valid analog formats.

2.2 TRANSMIT MODULE

A Cheetah V5 Transmit Module is the component of the V5 system that interfaces with the A/V origination source and generates the output data stream. The data stream may be sent to the receive module over high quality coaxial cable suitable for HDSDI Video, Belden 1694A or equivalent, fitted with a BNC connector on each end, or (optionally) over a fiber optic cable. Figure 2-2 illustrates a typical V5 transmit module.

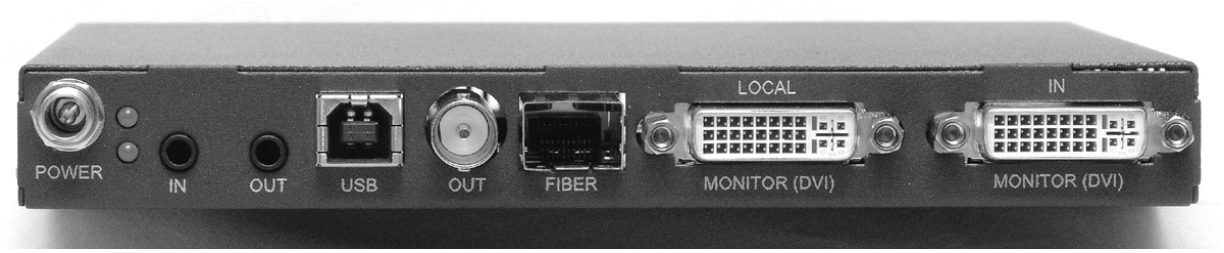


Figure 2-2 Cheetah V5 Transmit Module

All connectors and status LEDs are accessible from the module rear panel as shown in Figure 2-2. The function of each is discussed below:

Power — Operating power from an external supply is attached to this connector. When the module is used as a stand-alone, power is derived from a power brick. If the module is mounted in a rack frame, power for all modules in the frame, plus the frame cooling fans, is derived from a single power brick connected to the frame power distribution panel. A connecting cable connects between the frame power distribution panel and the module power input connector.

Status LEDs — There are two green LEDs mounted beside the power connector. The upper LED lights when a source of external power is applied to the connector. The lower LED lights when a valid video signal is transmitted.

In/Out — This connector pair is the input and loop-thru output connection for audio from the A/V origination source. Each connector accepts a 3.5mm stereo plug.

USB — The USB connector allows the transmit module to communicate with a host PC over a standard USB bus. This connector is used when initially entering operational and set-up parameters to the module via the GUI application. It is not necessary to keep the module attached to the host PC during normal operation of the V5 system.

Out — The output (OUT) connector provides the serial data stream signal output from the transmit module to the receive module or video matrix switcher. This is a standard BNC type connector and interfaces with coaxial cable. Cable runs of up to 100 meters are permitted between a transmit and receive module.

Fiber — A V5 transmit module equipped with optional fiber optic capability will have a fiber transceiver (LC type, SFP) module installed in the FIBER carrier slot. Either singlemode or multimode fiber cable can be used with the V5 module when connecting the module output to a receive module or fiber input of a video matrix switcher. Optical cable runs up to 10 kilometers are possible using singlemode fiber; runs up to 200 meters are possible when using multimode fiber cable.

Local/In Monitor (DVI) — This connector pair is the input (IN) and loop-thru output (LOCAL) connection for video from the A/V origination source. Each connector accepts a standard DVI-I mating plug. The DVI-I connector accepts both digital and analog video sources. A monitor may be attached to the local output connector. Note that the DVI-I loop-thru connector provides a signal output in the same format as the input signal applied to the input connector.

2.3 RECEIVE MODULE

A Cheetah V5 Receive Module is the component of the V5 system that interfaces with the A/V destination point and provides the video and audio outputs. The receive module interfaces with a V5 transmit module over a standard coaxial cable fitted with a BNC connector on each end, or (optionally) over a fiber optic cable. Figure 2-3 illustrates a typical V5 receive module.

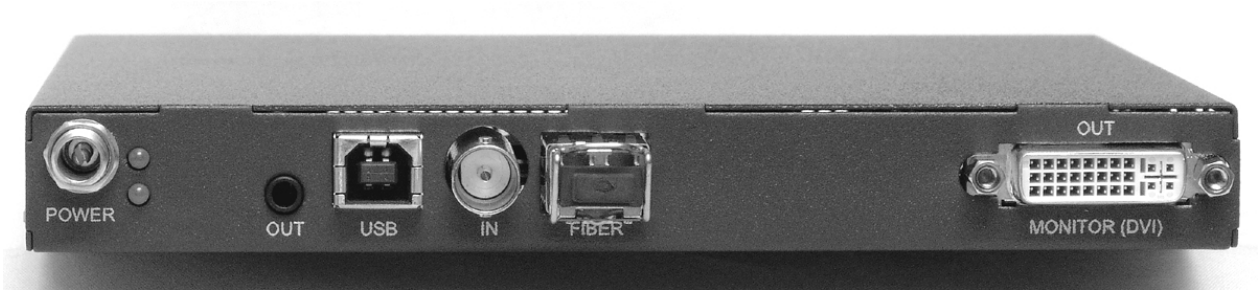


Figure 2-3 Cheetah V5 Receive Module

All connectors and status LEDs are accessible from the module rear panel as shown in Figure 2-3. The function of each is discussed below:

Power — Operating power from an external supply is attached to this connector. When the module is used as a stand-alone, power is derived from a power brick. If the module is mounted in a rack frame, power for all modules in the frame, plus the frame cooling fans, is derived from a single power brick connected to the frame power distribution panel. A connecting cable connects between the frame power distribution panel and the module power input connector.

Status LEDs — There are two green LEDs mounted beside the power connector. The upper LED lights when a source of external power is applied to the connector. The lower LED lights when a valid video signal is received.

Out — This connector accepts a 3.5mm stereo plug and is the output connection for audio from the A/V origination source.

USB — The USB connector allows the receive module to communicate with a host PC over a standard USB bus. This connector is used when initially entering operational and set-up parameters to the module via the GUI application. It is not necessary to keep the module attached to the host PC during normal operation of the V5 system.

In — The input (IN) connector receives the serial data stream signal from the transmit module or video matrix switcher. This is a standard BNC type connector and interfaces with coaxial cable. Cable runs of up to 100 meters are permitted between a transmit and receive module.

Fiber — A V5 receive module equipped with optional fiber optic capability will have a fiber transceiver (LC type, SFP) module installed in the FIBER carrier slot. Either singlemode or multimode fiber cable can be used with the V5 module when connecting the module output to a transmit module or fiber output of a video matrix switcher. Optical cable runs up to 10 kilometers are possible using singlemode fiber; runs up to 200 meters are possible when using multimode fiber cable.

Out Monitor (DVI) — This connector is the output (OUT) connection for video to the A/V destination point. The OUT connector accepts a standard DVI-I mating plug from the remote monitor. Note that the DVI-I connector provides both digital and analog video outputs.

2.4 TYPICAL CHEETAH V5 SYSTEM APPLICATIONS

Figure 2-4 illustrates the most basic Cheetah V5 configuration using one transmit and one receive module. Note from the illustration that video and audio sources, in this illustration from a computer, are connected to the V5 transmit module. The transmit module provides loop-thru connectors for both video and audio that allows a local video and audio monitor to remain attached to the originating computer.

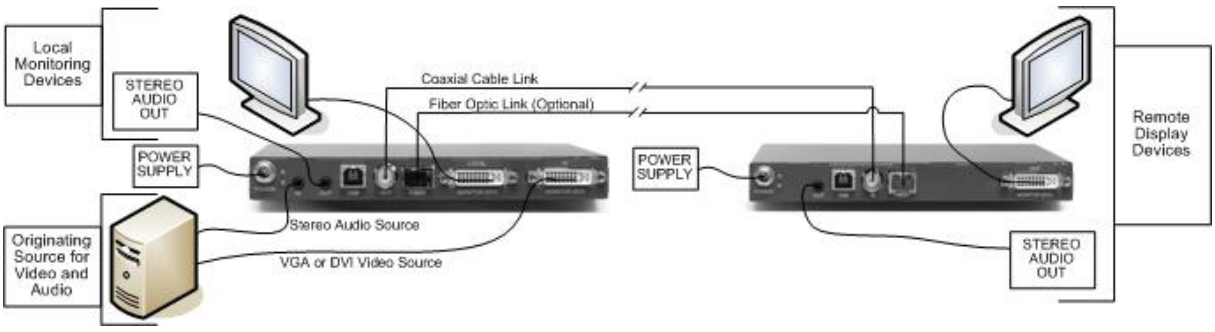


Figure 2-4 Typical Single-Point Installation

Figure 2-5 illustrates a typical expanded system using multiple transmit and receive modules. In this example the output signal from each transmit module is shown switched through a video matrix switcher. Each input module is connected to a dedicated output channel of the switcher. This arrangement allows any receiver module access to the output signal from any transmit module.

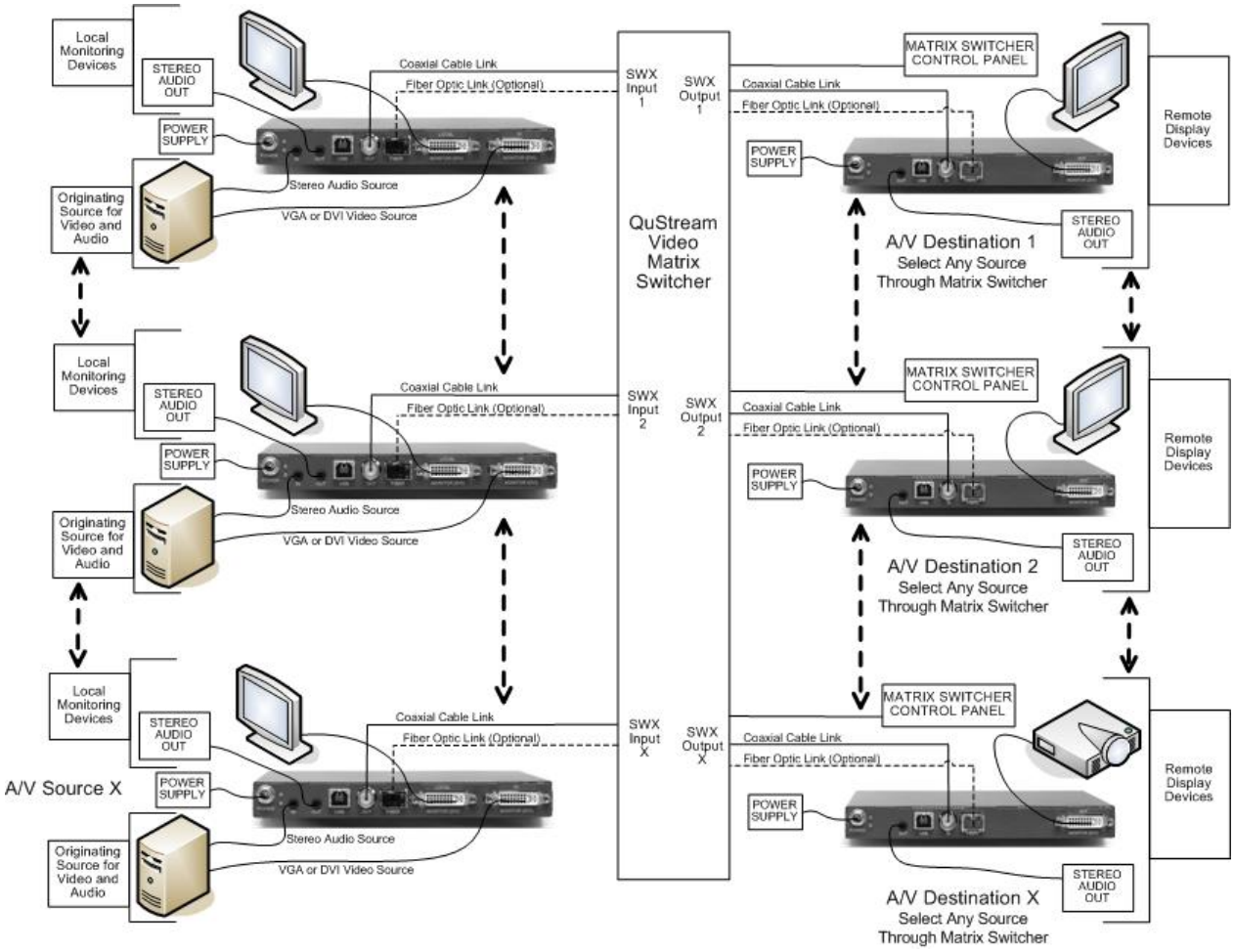


Figure 2-5 Typical Multi-Module Installation Including a Routing Switcher

CAUTION	**DO NOT connect a transmit or receive module to the host PC until the USB drivers are installed on the computer.**

2.5 SUPPORTED VIDEO RESOLUTION AND REFRESH RATES

Table 2-1 lists video resolutions and refresh rates supported by the Cheetah V5-DVI Modules.

Table 2-1 Supported Video Resolutions And Refresh Rates

Resolution	V Refresh (Hz)		Resolution	V Refresh (Hz)
640x350	70		1024x768	85
640x350	85		1152x768	55
640x400	56		1152x864	60
640x400	70		1152x864	70
640x400	85		1152x864	75
640x480	60		1152x864	84
640x480	67		1152x900	66
640x480	72		1280x768	60
640x480	75		1280x960	60
640x480	85		1280x960	75
720x400	70		1280x960	85
720x400	85		1280x1024	60
800x600	56		1280x1024	70
800x600	60		1280x1024	75
800x600	72		1280x1024	85
800x600	75		1400x1050	60
800x600	85		1400x1050	75
832x624	75		1600x1024	60
1024x768	60		1600x1024	72
1024x768	70		1600x1200	60
1024x768	72		1680x1050	60
1024x768	75		1920x1200	60
1024x768	76			

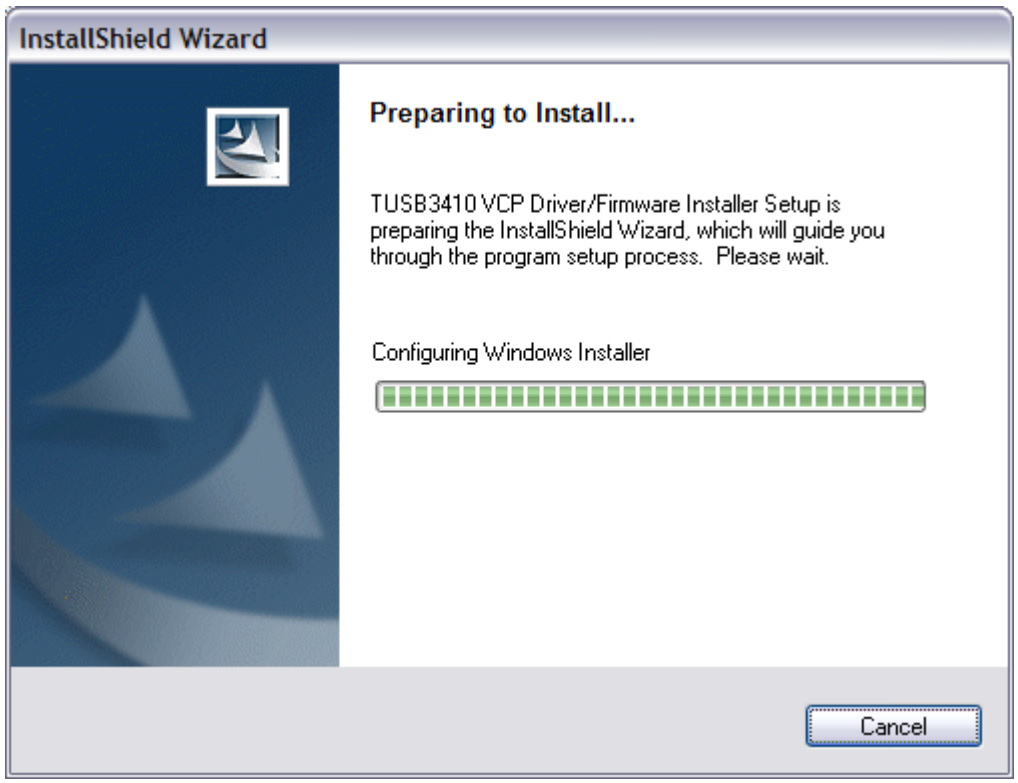
Chapter 3 System Set-Up and Configuration

3.1 INITIAL SET-UP STEPS

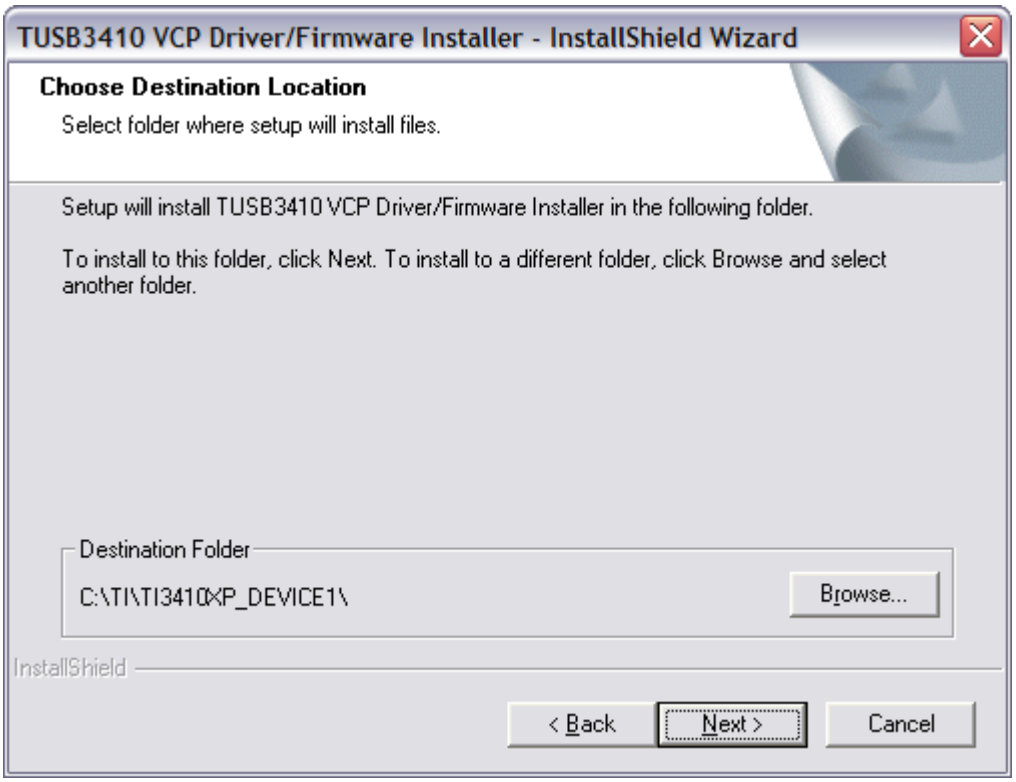
Configuring a Cheetah V5-DVI module system requires the use of a "host" PC running MicroSoft Windows™ with the Cheetah DVI USB Driver and Graphic User Interface (GUI) applications loaded. Operating parameters are loaded into each module via the USB interface. Module set-up and configuration steps are discussed in the following paragraphs. It is necessary to complete configuration of all V5 modules prior to installation in a system.

3.2 INSTALL CHEETAH DVI USB DRIVER TO THE HOST PC

1. Locate the CD shipped with your V5 module(s) and place it in the drive of the host PC.
2. Browse to the USB driver folder and double-click Setup.exe. The following screen is displayed on the monitor.

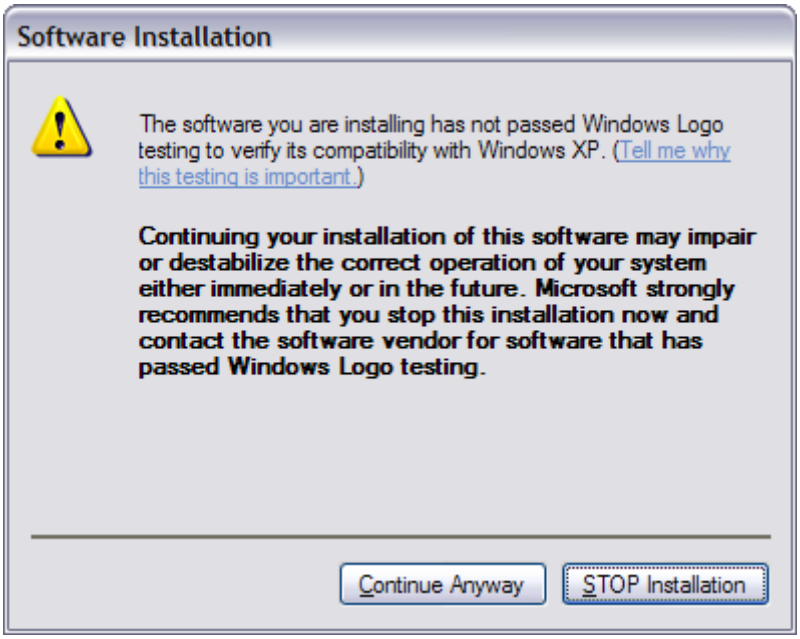


3. When configuration is complete, the following screen is displayed.

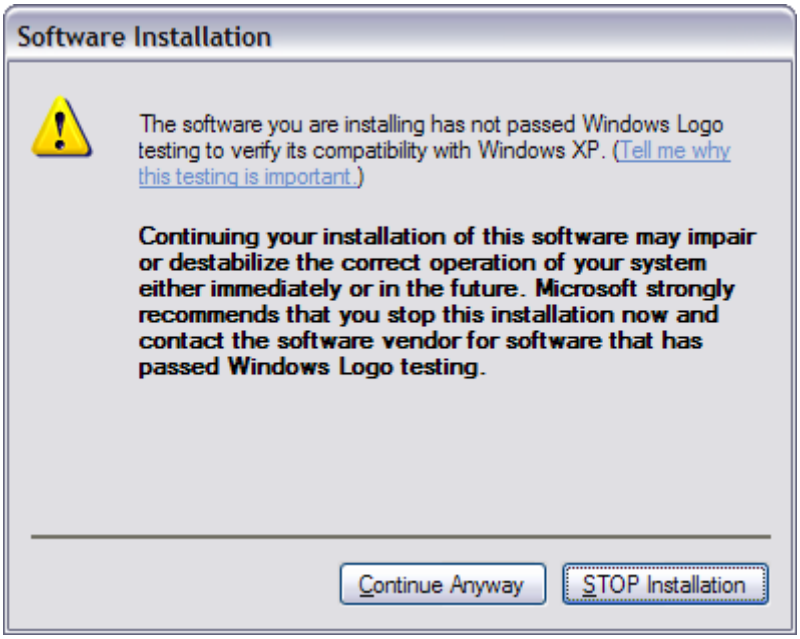


4. Modify the default Destination Folder, if you wish, by using the Browse function to select the desired directory for software installation. When the destination folder is correct, click the Next button to proceed with installation.

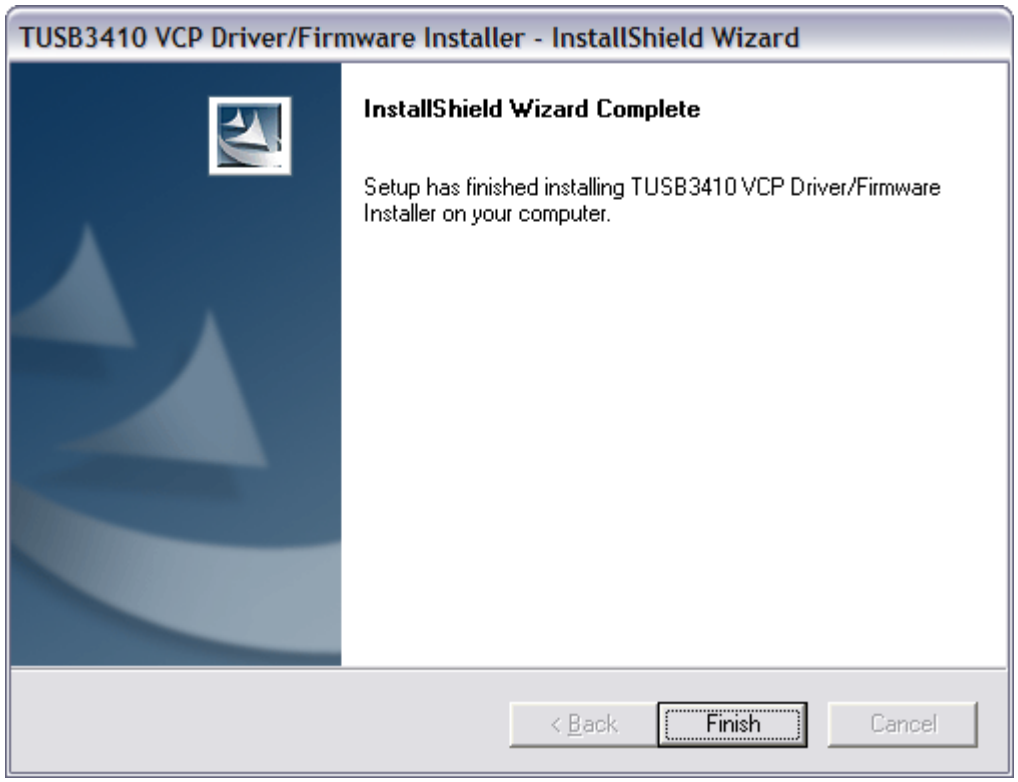
5. You will receive a message indicating that the software has not passed Windows Logo testing, as shown below. The USB Driver files have been provided by Texas Instruments and have been thoroughly validated. Click “Continue Anyway” to continue.



6. The Logo testing window will pop-up a 2nd time. Click "Continue Anyway" to continue.



7. When the driver installation is complete, you will receive the message window shown below, indicating that the Driver/Firmware is installed successfully on your PC.



8. Click the Finish button to exit the installer program.

3.3 CONNECT THE V5 MODULE TO THE HOST PC

Once the USB driver application is installed, perform the following steps to allow Windows™ "Plug and Play" capability to interface the V5 hardware to the host PC.

1. Apply power to a Cheetah V5 module by connecting the external power supply to the module and to a source of primary power. Either a transmit or receive module may be used for this step.
2. Connect a USB cable first to the V5 module and then into an open USB port on the host PC, Figure 3-1.

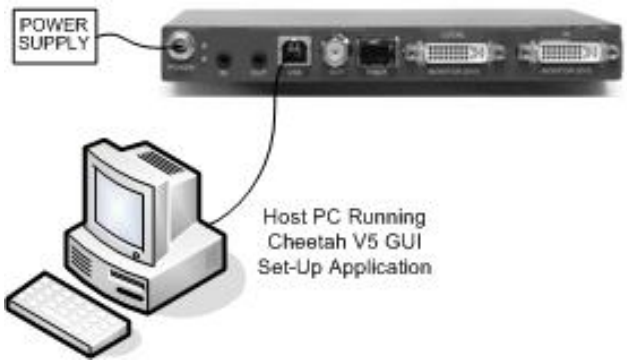
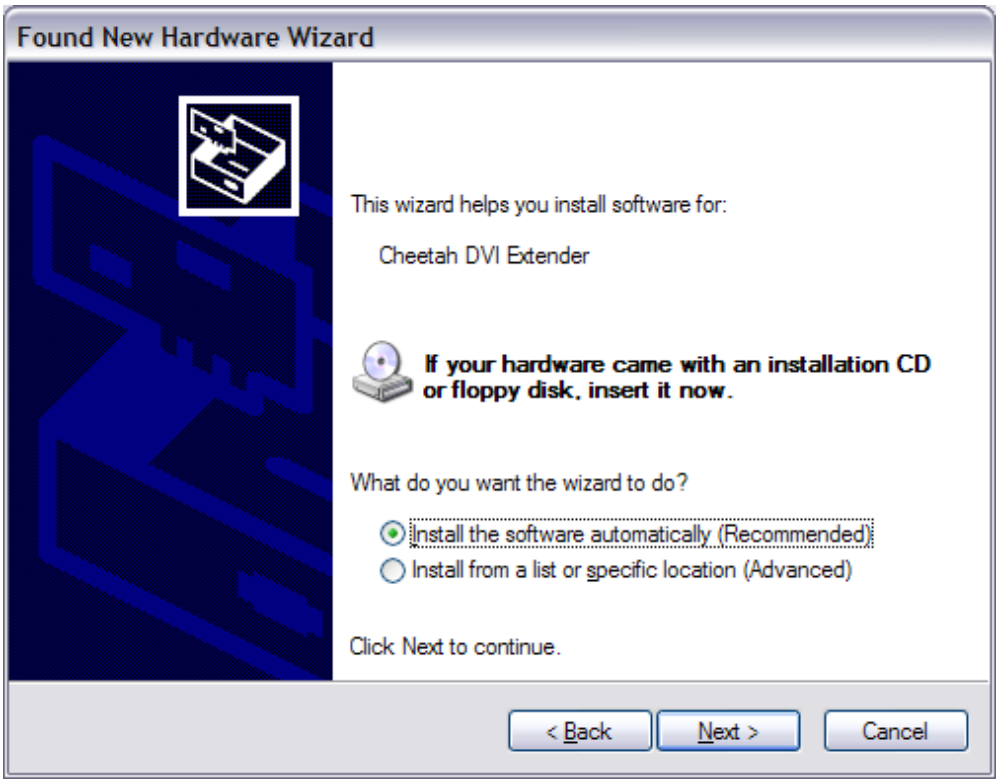


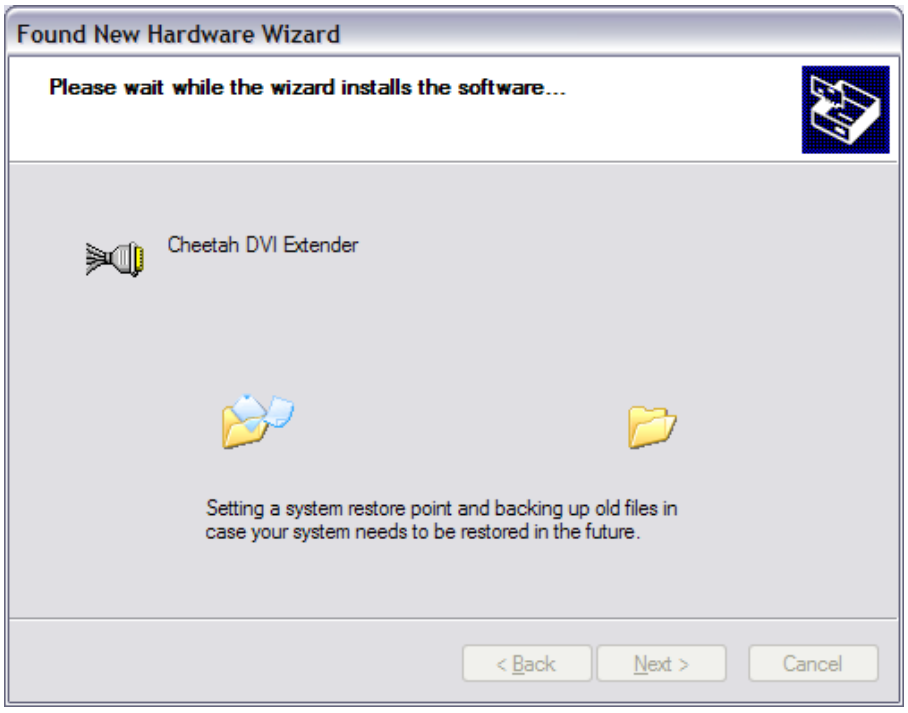
Figure 3-1 Connecting V5 Module To Host Pc

3. After a brief pop-up from the taskbar, the following "Found New Hardware" window should appear on the monitor.

4. Select the "No, not this time" option button and then click Next to continue.
5. The following window should display on the monitor.

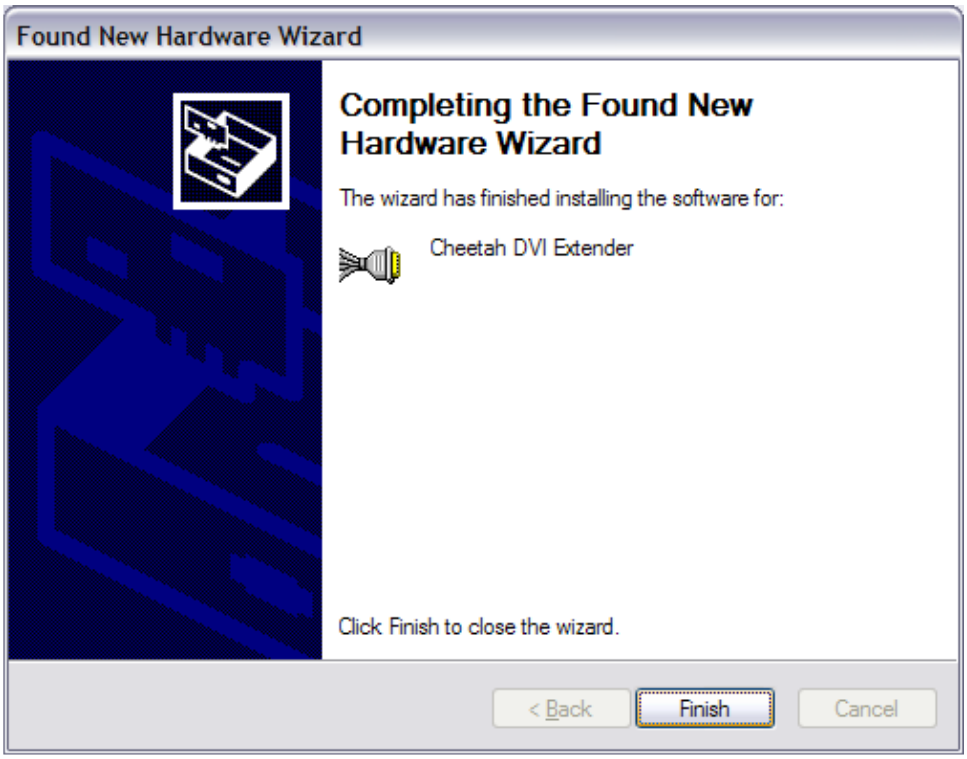


6. Select the "Install the software automatically" option button and then click Next to continue.
7. The following window should display on the monitor.

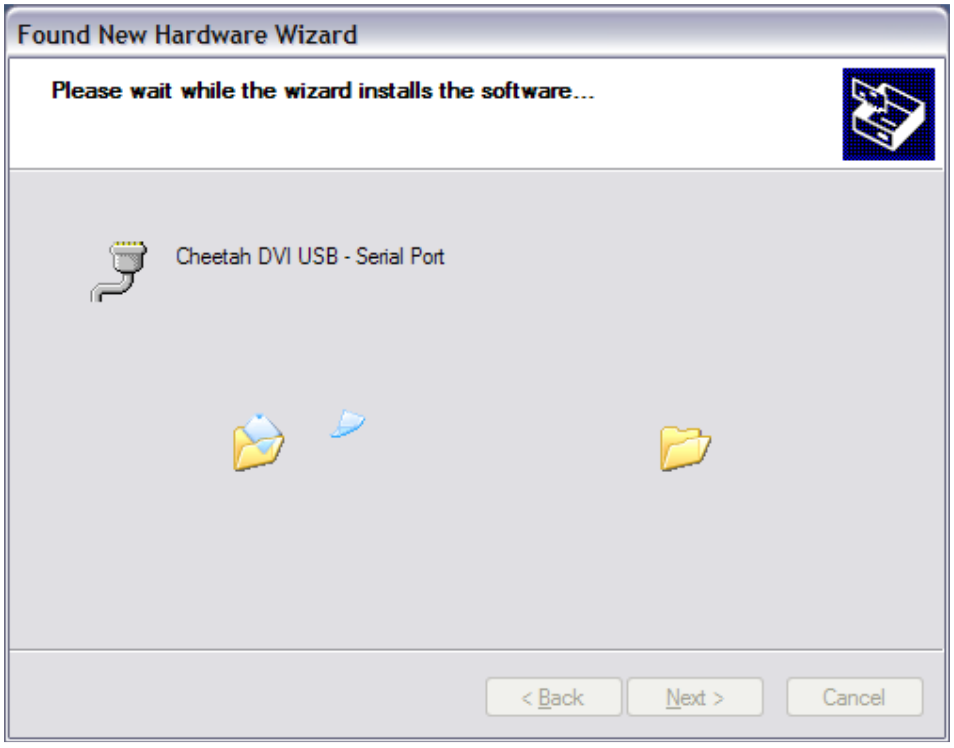


8. Software installation process will begin and you should receive the following window display message on the monitor indicating the software has not passed Windows Logo testing. The USB Driver files have been provided by Texas Instruments and have been thoroughly validated. Click "Continue Anyway" to continue installation.

9. Software installation process will continue and you should receive the following window display message on the monitor.

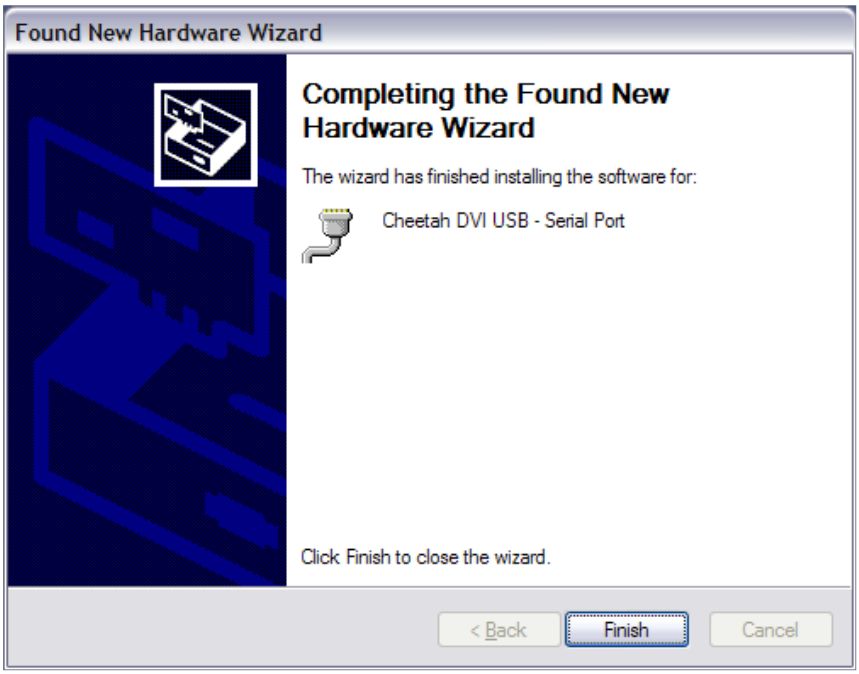


10. Click “Finish” to continue software installation.
11. The installation sequence will repeat itself while the 2nd component of the USB Driver is installed and you should receive the following display screen on the monitor.

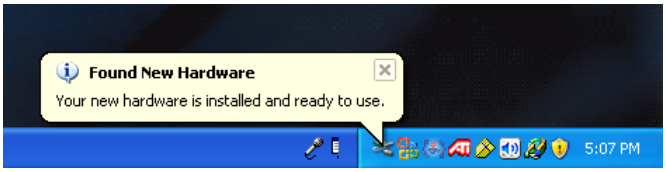


12. You will receive the following message indicating that the software has not passed Windows Logo testing. The USB Driver files have been provided by Texas Instruments and have been thoroughly validated. Click "Continue Anyway" to continue.

13. Software installation process will continue and you should receive the following window display message on the monitor.



14. Click "Finish" to complete software installation. The following message should be displayed.



15. The USB Driver has been successfully installed.

3.4 INSTALL GRAPHIC USER INTERFACE (GUI) TO THE HOST PC

1. Locate the CD shipped with your V5 module(s) and place it in the drive of the host PC.
2. Browse to the GUI Folder and double-click Setup.exe.
3. Choose a destination folder (Program Files\CheetahDVI\Drivers)
4. Overwrite existing files if prompted.
5. The GUI application will install to your computer.
6. Start the GUI application from the Windows Start Menu.
7. Browse to the Programs ⇒ PESA folder and click on the *Cheetah DVI Extender* icon.

3.5 TRANSMIT MODULE CONFIGURATION

Every transmit module used in a Cheetah V5-DVI installation must be configured individually prior to installation or use. Follow this procedure to configure a transmit module and repeat the process for each transmit module.

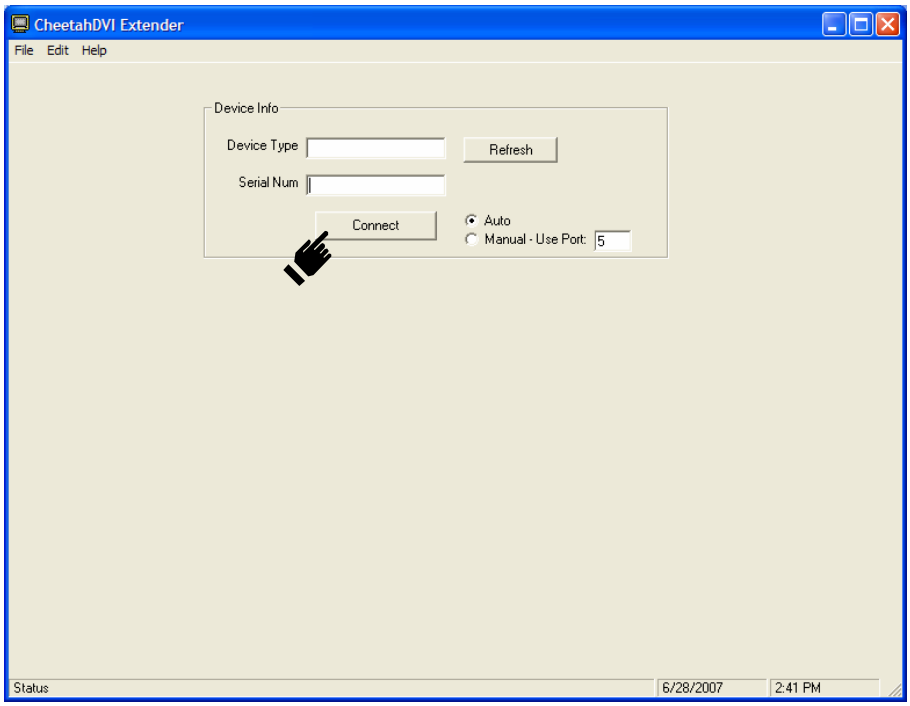
Transmit Module Configuration:

1. Determine whether the Transmitter will be configured to accept VGA or DVI video from the A/V origination source. You must configure the transmit module for the correct video type (VGA or DVI) before you can begin using it.

2. Configuration of the modules will be much simpler if you use a different PC (with the USB Drivers and GUI installed), rather than trying to configure the module using the same PC as the video origination source.

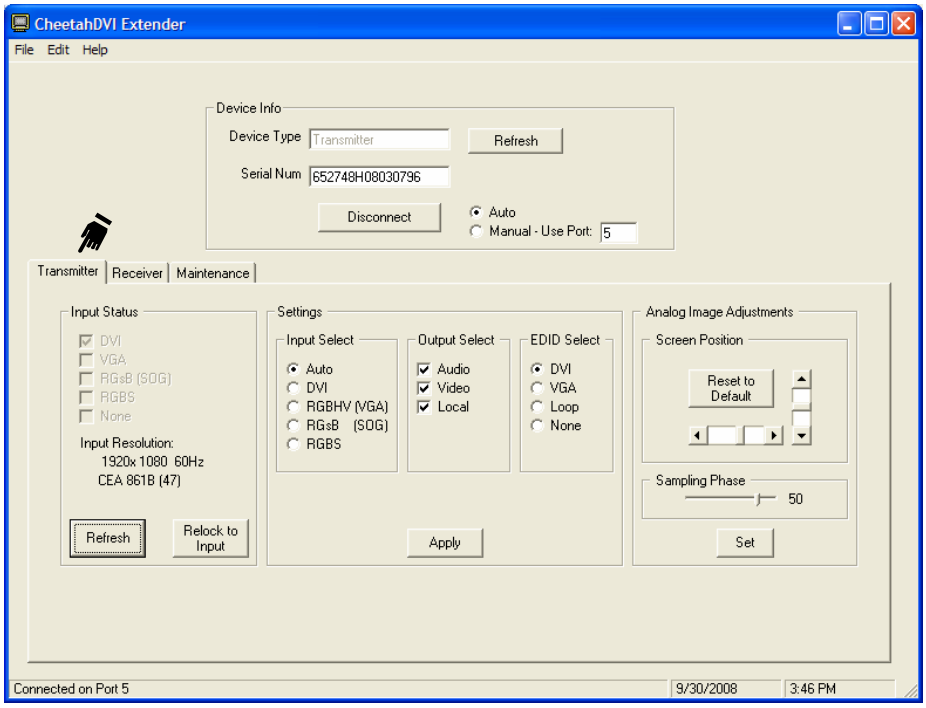
3. Connect the Cheetah V5 Gen II transmit module to the host PC with a USB cable and plug in the power supply, Figure 3-1.

4. Open the GUI application, refer to Paragraph 3.4, and click Connect.



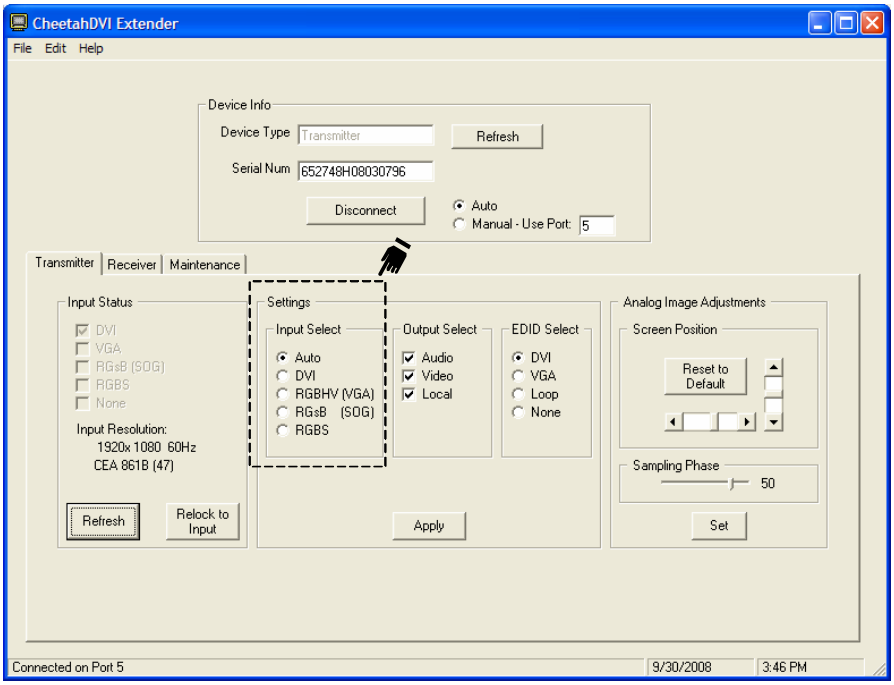
5. The GUI application will automatically establish communication with the module and display the Device Type (Transmitter) and Serial Number.

6. Click on the Transmitter Tab.



Input Select Setting

Options available through Input Select configure the transmit module for the type of video signal it accepts from the origination source.



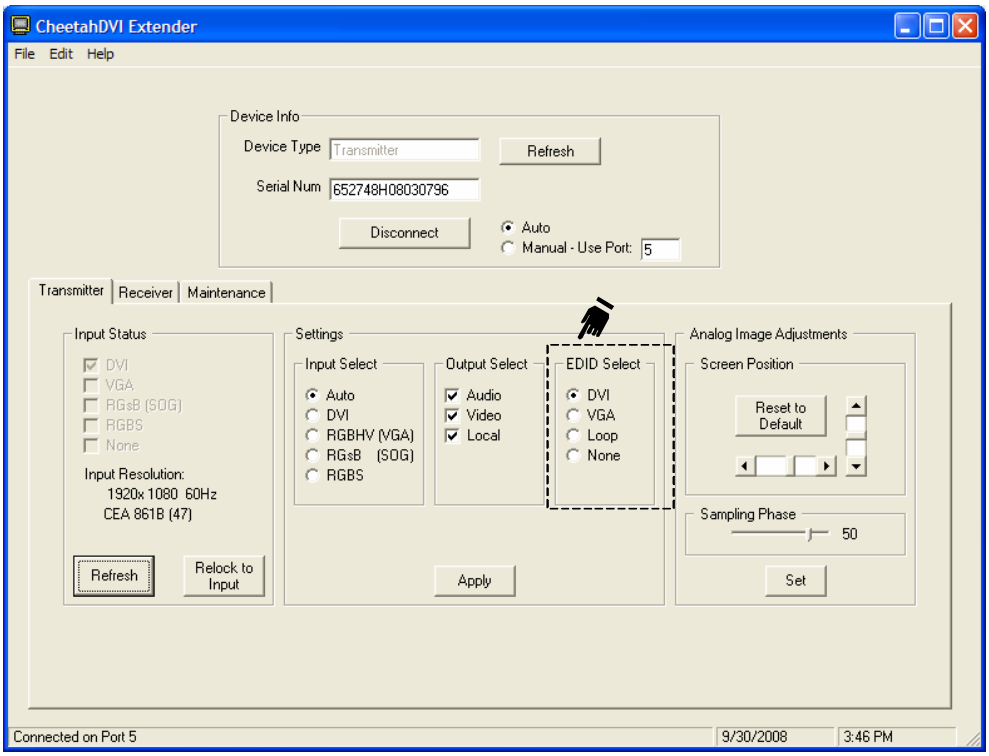
7. The default Input select setting is Auto. The Transmitter will attempt to automatically detect the format of the input signal as DVI, RGBHV, RGsB or RGBS.

8. If you would like to force the Transmitter to only accept either DVI or one of the analog format signals (you can change this at any time) or if you encounter problems detecting the input type in the Auto setting, select DVI or the desired analog format from the listing.

9. Select the desired Input Select setting and click Apply.

EDID Setting

Your PC uses EDID data to identify the type of monitor that is connected and the resolutions it can support.



10. The Cheetah V5 Gen II contains two sets of EDID information, one for VGA and one for DVI. The following choices are available to the user for the EDID setting:

DVI - Sends DVI EDID information to the PC
VGA - Sends VGA EDID information to the PC
Loop - Allows EDID data from the Local Monitor to be passed to the PC
None - Does not send any EDID information to the PC (older VGA cards may present more video resolution choices in Windows with this setting) !!! Do not use this setting with DVI !!!

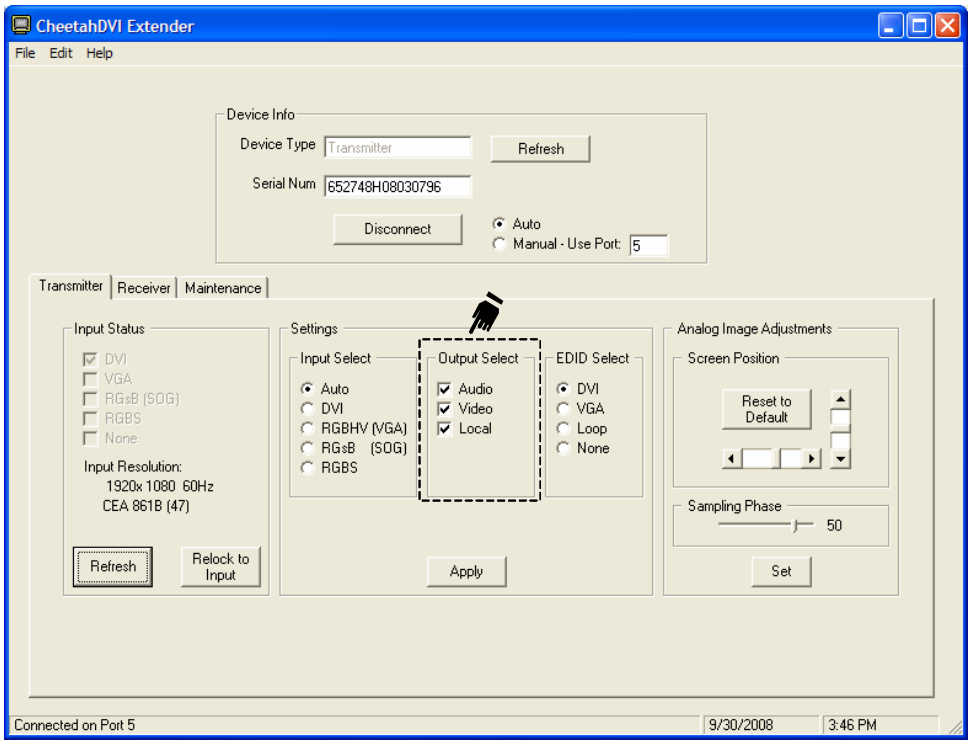
11. Select the desired EDID setting and click Apply.

NOTE	**It is recommended that either DVI or VGA be selected initially. Depending on the video card and driver combination or BIOS, the Auto setting may yield inconsistent results.**

NOTE	**EDID information stored in the V5 module is generic in order to accommodate a large number of resolution settings. If a desired resolution is not available in the Windows Display Properties Settings Tab, you may need to create a custom mode for your video driver in order for it to appear under the Windows Display Properties. Consult your video driver manual for instructions. If you have a monitor that presents a specific resolution when connected to a PC, use the Loop EDID setting and keep this monitor connected to the Local Monitor Port.**

Output Select Setting

Options available through the Output Select box allow the user to activate the local monitor connector and also disable transmission of audio or video from the origination source, if desired.



12. To use a Local Video Monitor, check the Local checkbox.

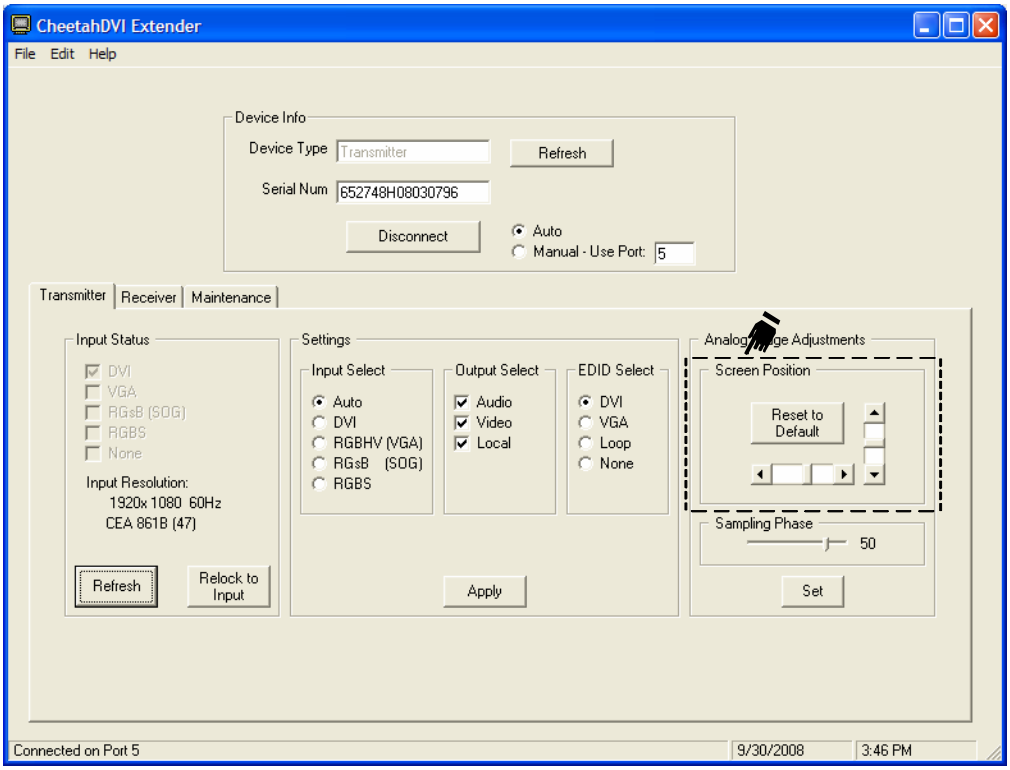
13. To disable video transmission to a Receiver Module, remove the check from the Video checkbox.

14. To disable audio transmission to a Receiver Module, remove the check from the Audio checkbox.

15. Click the Apply Button to apply your changes.

Screen Position Controls

Modifications made through the positioning controls allow you to change the screen position of the analog video image as desired. By clicking on the directional arrows, the screen image may be moved up, down, left or right.



16. If you wish to change the screen position of the analog video image, use the directional arrows to place the image as desired.

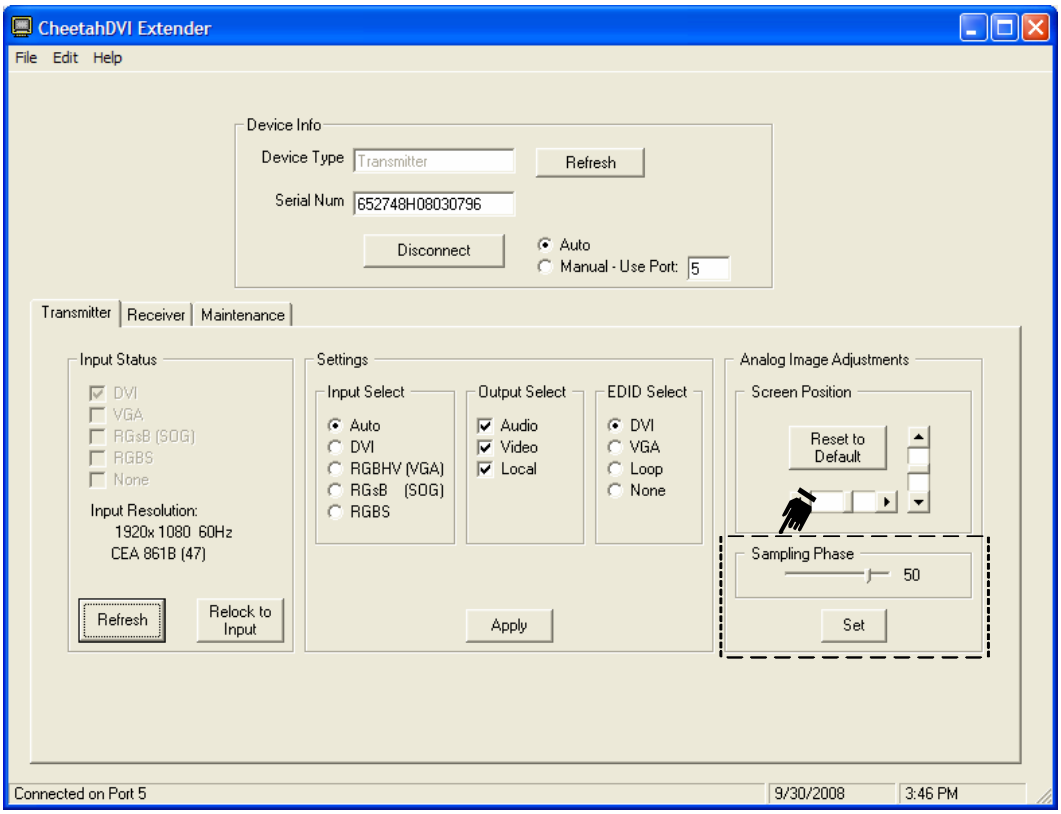
17. Clicking the Reset to Defaults Button removes any changes you have made and returns the image to the default position.

18. Once you have the image positioned as desired, click the Set Button to write the new position data to memory.

Sampling Phase

Adjustments made to the Sampling Phase Slider allow you to select the sampling phase of the analog signal to optimize the image quality.

Setting of the Sampling Phase control applies **only** to Analog Video input signals (VGA, RGsB, RGBS) applied to the Transmitter, and has no effect on DVI signals. Image quality on the Local port is not affected with this control.



19. If you wish to adjust the phase of the incoming analog video signal, use the cursor to move the slider for best image quality.

20. Once you have the slider set for best image quality, click the Set Button to save the new setting to memory.

Final Steps

21. Use the "Remove Hardware" function of Windows™ to disable the USB connection between the module and the PC.

22. Remove the USB cable from the transmit module and remove power.

23. The configured transmit module may now be installed as needed.

24. Repeat the configuration procedure for any remaining transmit modules.

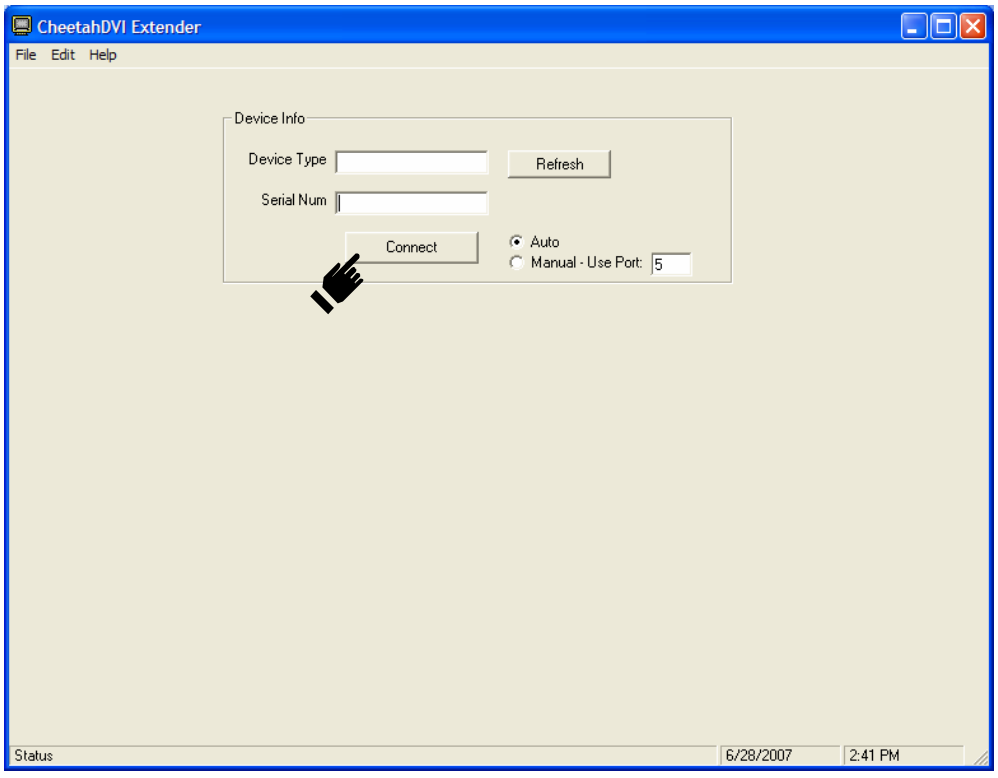
3.6 RECEIVE MODULE CONFIGURATION

Every receive module used in a Cheetah V5 Gen II installation must be configured individually prior to installation or use. Follow this procedure to configure a receive module and repeat the process for each receive module.

Receive Module Configuration:

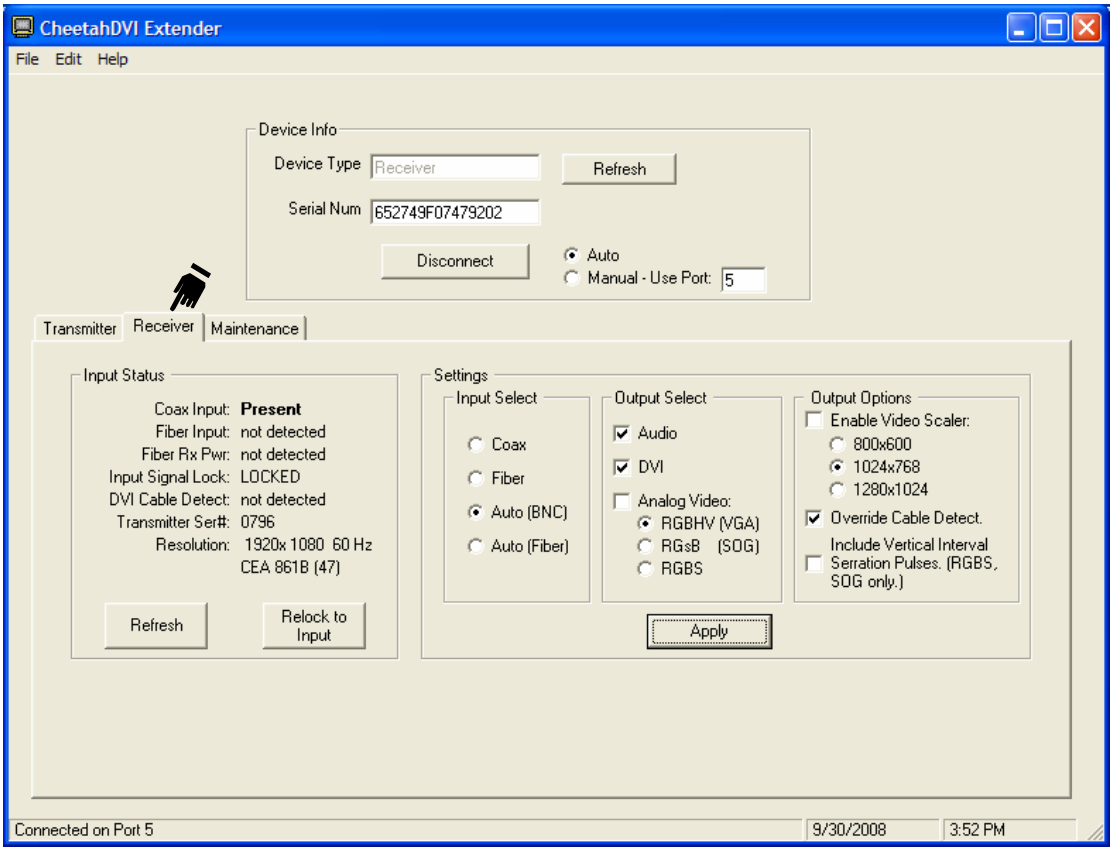
1. Connect the Cheetah V5-DVI Receive Module to the host PC with a USB cable and plug in the power supply, Figure 3-1.

2. Open the GUI application, refer to Paragraph 3.4, and click Connect.



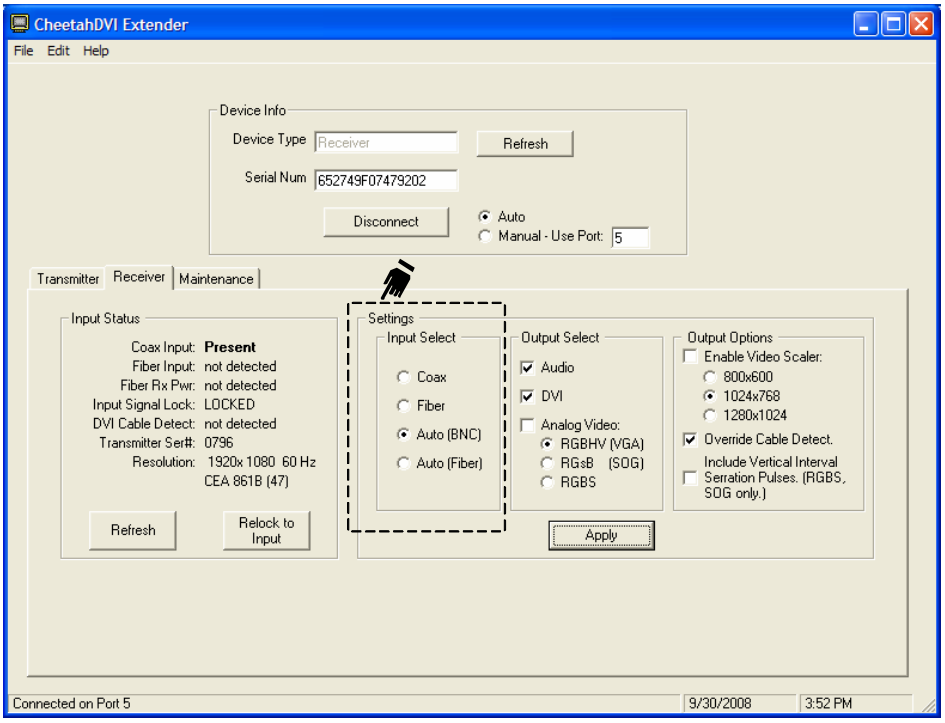
3. The GUI application will automatically establish communication with the module and display the Device Type (Receiver) and Serial Number.

4. Click on the Receiver Tab.



Input Select Setting

Options available through Input Select determine the input signal source for the receive module as the coaxial cable BNC or the fiber optic module.



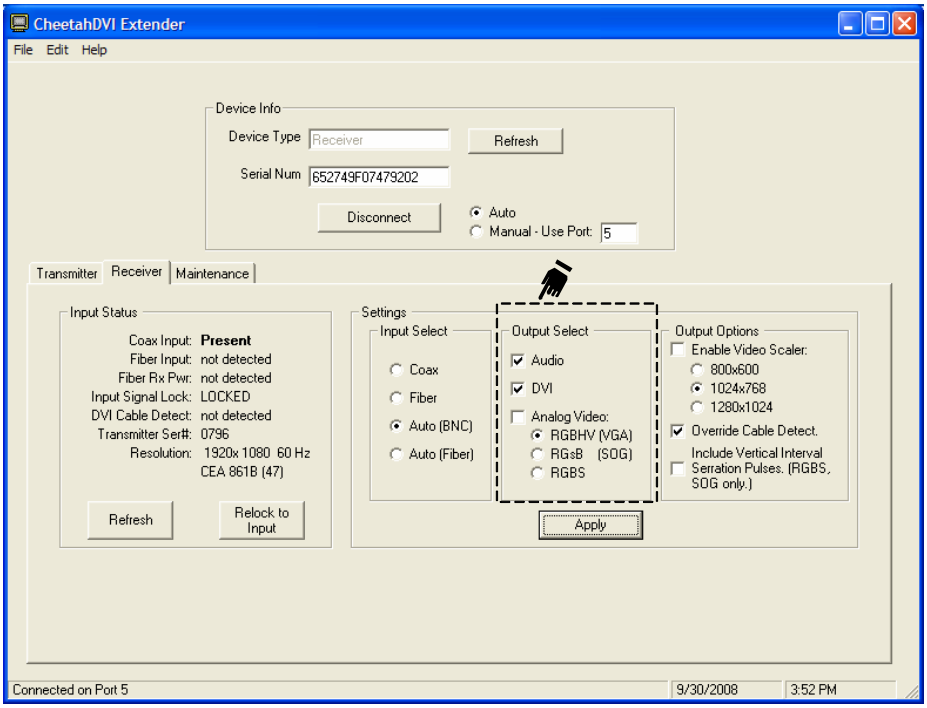
5. The following input select choices are available:

Coax – Forces selection of the coaxial cable as the input signal source
Fiber - Forces selection of the fiber optic cable as the input signal source
Auto (BNC) - Causes the Receiver to switch to the Coax input if signals are detected on both the Coax cable and fiber optic cable
Auto (Fiber) - Causes the Receiver to switch to the Fiber input if signals are detected on both the coax cable and fiber optic cable

6. Select the desired Input Select setting and click Apply.

Output Select Setting

Options available through the Output Select box allow you to deactivate specific outputs from the receive module, if desired. When a check is present next to the output option, the output signal is active. Removing the check deactivates the specified output signal.



7. Click in the box beside each output option to activate or de-activate the selection:

   Audio – Enables or disables the audio output
   DVI – Enables or disables the DVI output on the DVI-I connector.
   Analog – Enables or disables the analog video output on the DVI-I connector in the format selected by the radio buttons below the Analog Video checkbox
   RGBHV (VGA) – Selecting this radio button selects standard VGA output format for the analog video output signal
   RGsB (SOG) – Selecting this radio button selects Sync-On-Green output format for the analog video output signal
   RGBS – Selecting this radio button selects RGB+Composite Sync output format for the analog video output signal

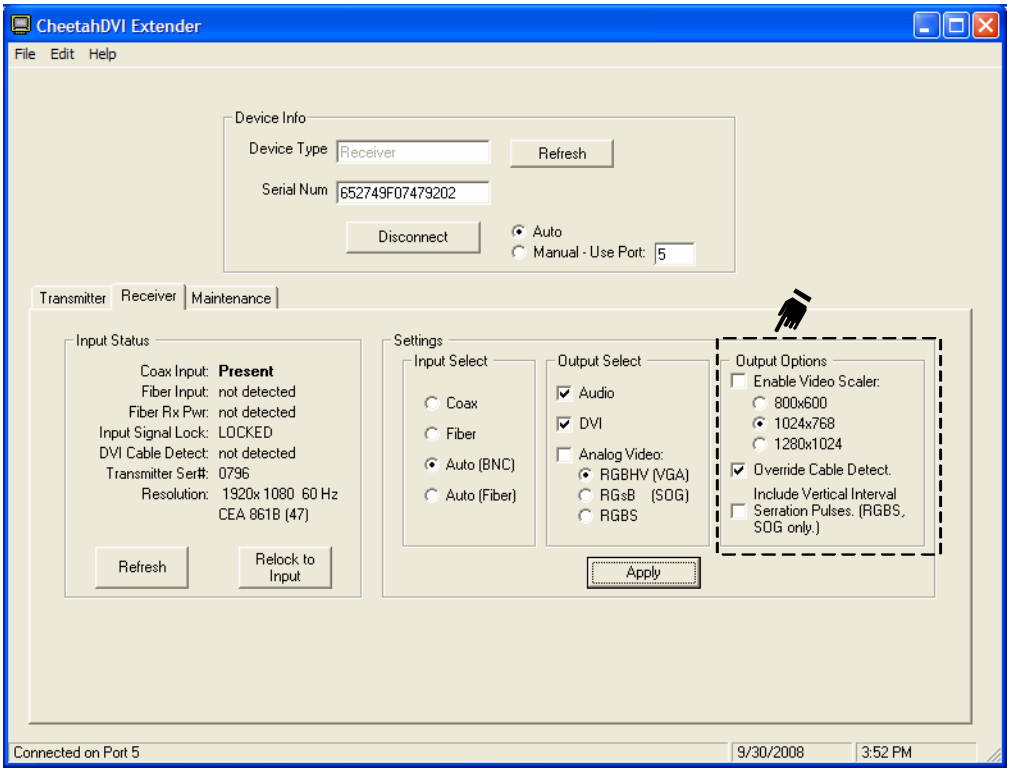
8. Make any desired changes to the Output Select options and click Apply.

Output Options Menu

Video Scaler

Cheetah V5_DVI Receive Modules can automatically scale the resolution of the video input to any of the three values listed beneath the Enable Video Scaler checkbox. Use of the scaler function is not necessary in most applications, but is provided in the event that the monitor or projector connected to the output of the receiver module does not contain an internal scaler; or if the internal scaler does not support a particular resolution.

The V5-DVI scaler function supports input resolutions up to 1280X1024 at 60Hz and 75Hz refresh rates. Input video can be scaled to any of three output resolutions: 800X600, 1024X768 or 1280X1024 at refresh rates of 60Hz or 75Hz. Note that refresh rates other than 60 or 75Hz, or video resolutions higher than 1280X1024 are not supported by the V5-DVI scaling function.



9. Click in the box beside each Video Scaler option to activate or de-activate the selection:

Enable Video Scaler - Click in this box to activate or de-activate the scaler function. Note that if the scaler function is disabled (not checked) the output resolution will be the same as the input resolution.

800X600 - Selects an output video resolution of 800X600 from the input video source

1024X768 - Selects an output video resolution of 1024X768 from the input video source

1280X1024 - Selects an output video resolution of 1280X1024 from the input video source

Override Cable Detect

Activating this function allows the receive module to produce a video output if a monitor's hot plug signal is not detected. This compensates for monitors that are not "Plug-and-Play" compatible and video cables or VGA to DVI adapters that do not contain the HotPlug signal pins. A check in the menu box indicates that the function is active.

Vertical Interval Serration Pulses

When using the RGsB or RGBS analog video format output, some monitors require the presence of Horizontal Serration Sync pulses during the Vertical Sync period in order to synchronize properly. This output option, when activated, will include these pulses in the video output signal. The default setting is to disable the sync pulse output (box not checked). Note that this function is available only when using the RGsB or RGBS analog video signal formats.

10. Make any desired changes to the Output Select options and click Apply.

Final Steps

11. Use the "Remove Hardware" function of Windows™ to disable the USB connection between the module and the PC.

12. Remove the USB cable from the receive module and remove power.

13. The configured receive module may now be installed as needed.

14. Repeat the configuration procedure for any remaining receive modules.

Chapter 4 Installation and Operation

4.1 TRANSMIT MODULE INSTALLATION AND OPERATION

NOTE	**Each Transmit Module MUST be configured using the GUI application prior to installation in a system. Refer to Paragraph 3.5 of this manual for a step-by-step configuration procedure.**

1. Connect video from the origination source to a configured Cheetah V5-DVI transmit module using an appropriate cable:

   For connection to a PC with a DVI video card, use a DVI-D to DVI-D or DVI-I to DVI-I cable.
   For connection to a PC with a VGA video card, use a VGA to VGA cable and a VGA to DVI-I converter adapter.

2. If desired, connect a local monitor to the transmit module using an appropriate cable

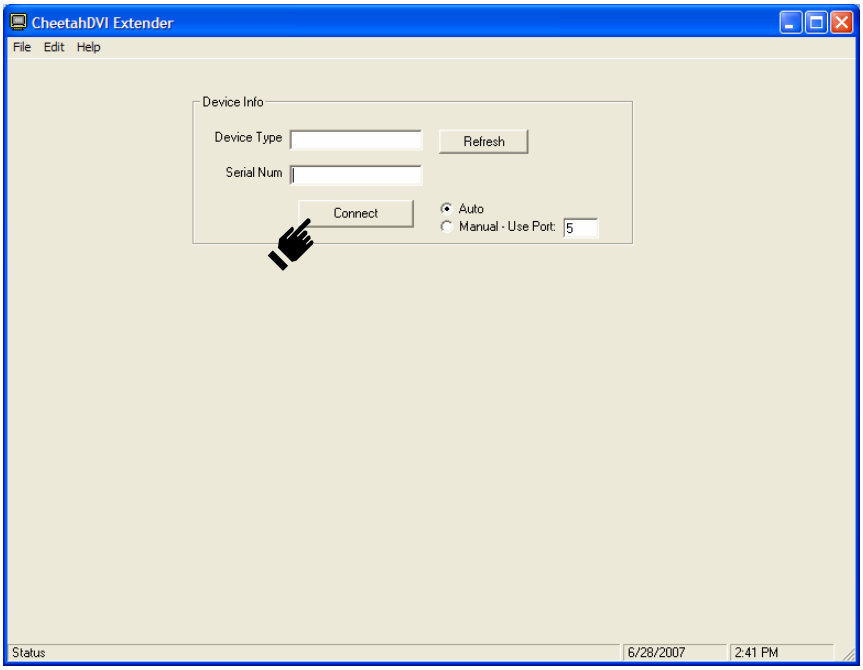
   Connect a DVI monitor using a DVI-D to DVI-D cable.
   Connect a VGA monitor using the monitor's VGA cable with a VGA to DVI-I converter attached.
   Connect a VGA monitor using a VGA to VGA cable with a VGA to DVI-I converter attached.

3. Connect audio from the PC to the transmit module, and to local speakers if desired, using appropriate 3.5mm stereo cables.

4. Connect the transmit module to either a Cheetah V5-DVI receive module or routing switcher using appropriate cabling (Belden 1694A coax or equivalent, or single-mode fiber cable with LC-connectors, if module is equipped for fiber transmission).

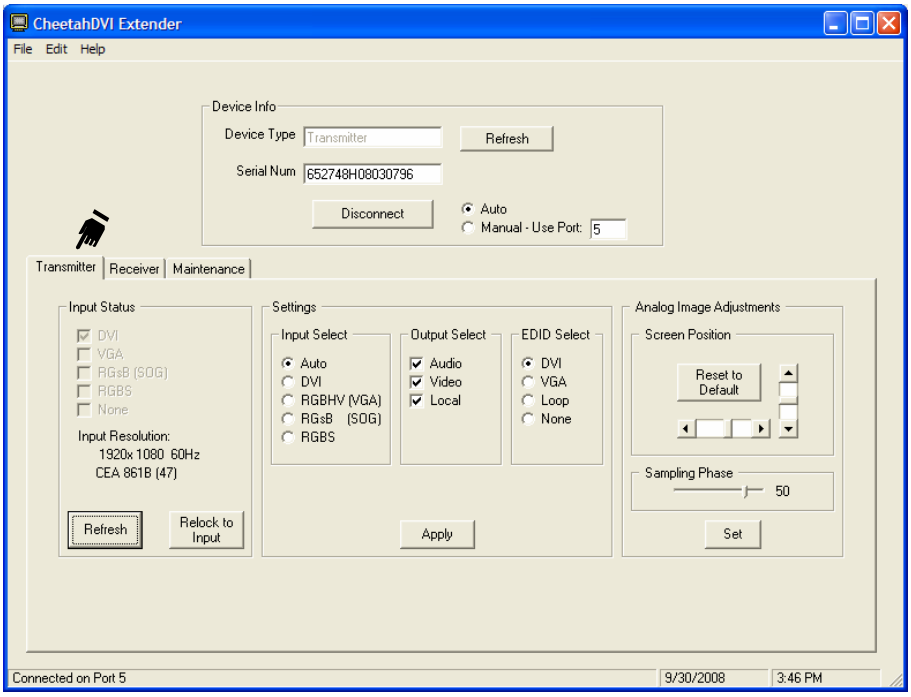
5. When the transmit module has been configured and installed, it is not necessary to keep it connected to the USB port for normal operation nor does the GUI need to be running. However, if you wish to monitor operation, you may connect the module to a host PC (running the GUI software) using a USB cable.

6. Start the GUI application, refer to Paragraph 3.4, and click Connect.

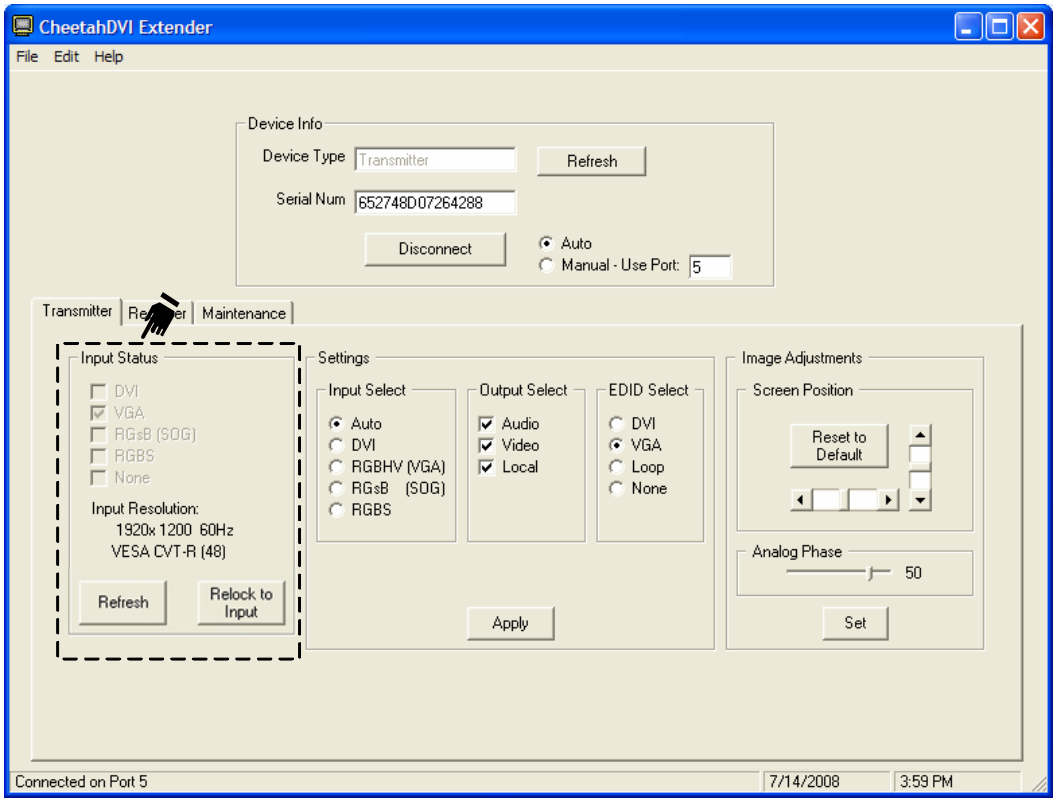


7. The GUI application will automatically establish communication with the module and display the Device Type (Transmitter) and Serial Number.

8. Click on the Transmitter Tab.



9. The Input Status box displays the video input type and resolution detected.



10. Press Refresh at any time to update the displayed information.

11. Press the Reclock to Input button to re-establish connection to the video graphics card in the event the EDID data should be corrupted or the V5 Transmitter did not properly lock to the video source.

4.2 RECEIVE MODULE INSTALLATION AND OPERATION

NOTE	**Each Receive Module MUST be configured using the GUI application prior to installation in a system. Refer to Paragraph 3.5 of this manual for a step-by-step configuration procedure.**

1. Connect video output from a configured Cheetah V5-DVI Receive Module to a monitor using an appropriate cable:

   For connection to a DVI monitor, use a DVI-D to DVI-D cable.
   For connection to a VGA monitor use the monitor's VGA cable with a VGA to DVI-I converter attached.

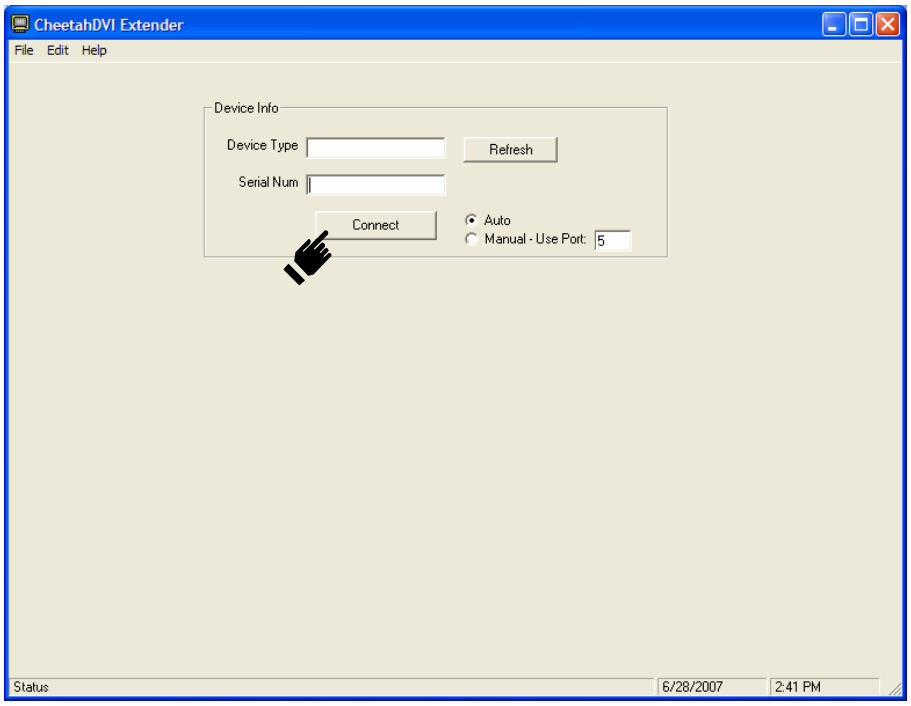
Or for connection to a VGA monitor use a VGA to VGA cable with a VGA to DVI-I converter attached.

2. Connect audio from the receive module to local speakers, if required, using appropriate 3.5mm stereo cables.

3. Connect the receive module to either a Cheetah V5-DVI transmit module or HD-SDI routing switcher using appropriate cabling (Belden 1694A coax or equivalent, or single-mode fiber cable with LC-connectors, if module is equipped for fiber transmission).

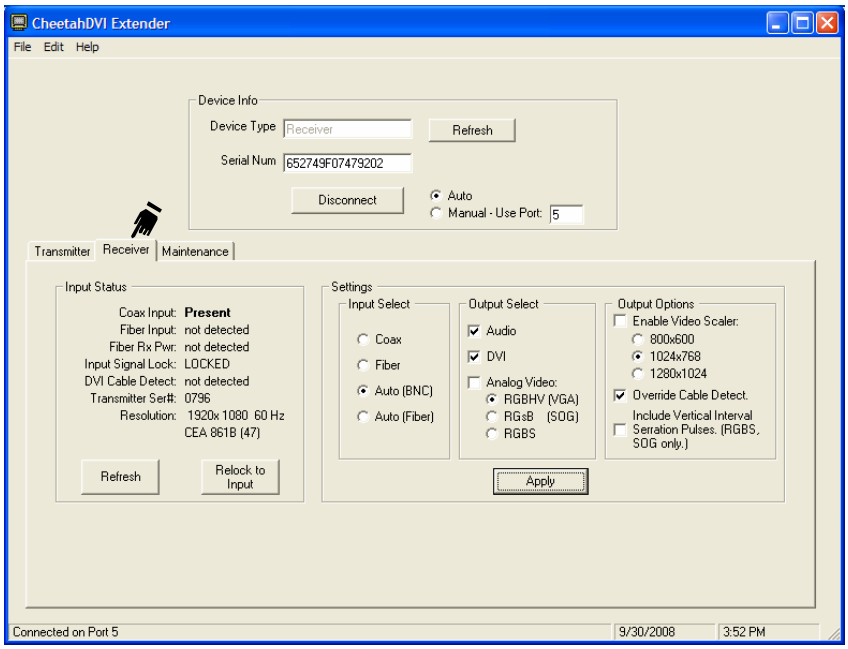
4. When the receive module has been configured and installed, it is not necessary to keep it connected to the USB port for normal operation nor does the GUI need to be running. However, if you wish to monitor operation, you may connect the module to a host PC (running the GUI software) using a USB cable.

5. Start the GUI application, refer to Paragraph 3.4, and click Connect.

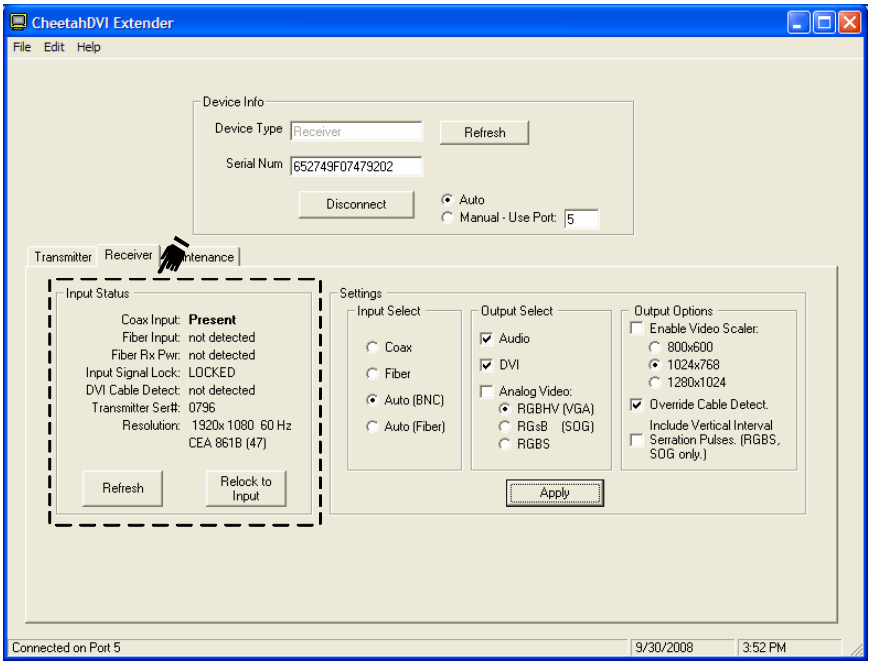


6. The GUI application will automatically establish communication with the module and display the Device Type (Transmitter) and Serial Number.

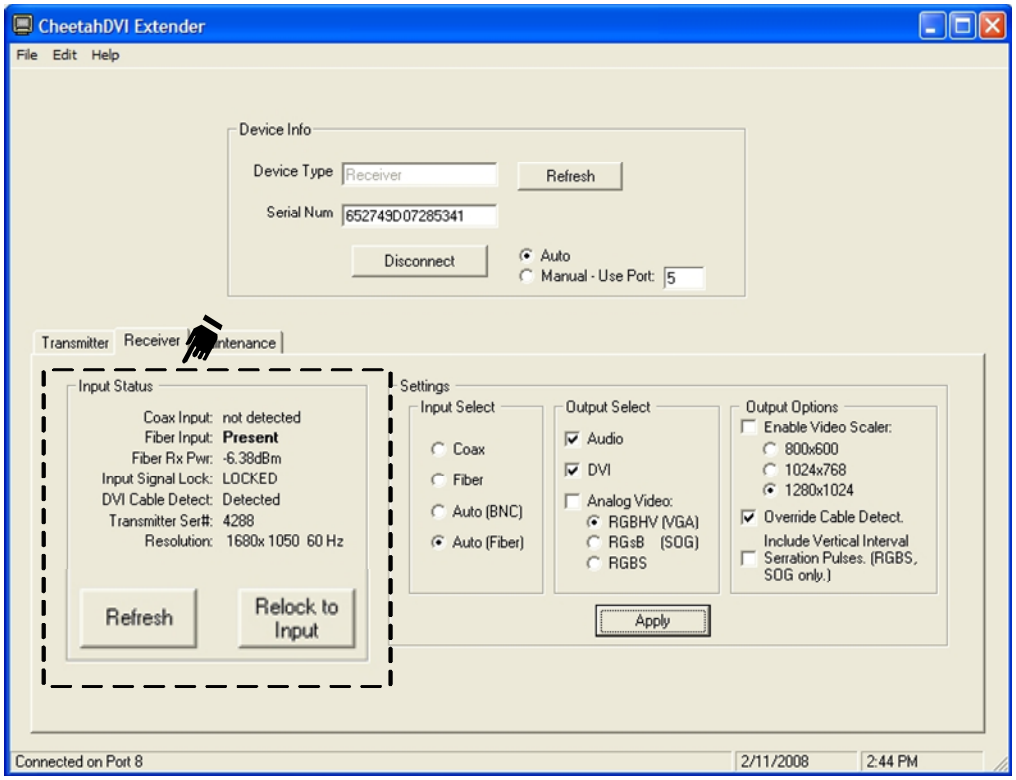
7. Click on the Receiver Tab.



8. The Input Status box displays the video input type and resolution detected; and indicates if a monitor has been detected on the output. This box will also display the ID number of the transmit module that is sending the video signal. The ID number is typically determined by the last 4 digits of the transmitter's serial number.



Typical Input Status Display When Using Coax Interconnect Cable



Typical Input Status Display When Using Fiber Optic Interconnect Cable

9. Press Refresh at any time to update the displayed information.

10. Press the Reclock to Input button to re-establish connection to the video graphics card in the event the EDID data should be corrupted or the V5 Receiver did not properly lock to the video source.

Chapter 5 Maintenance

5.1 UPDATING THE FIRMWARE

As firmware updates are released by PESA, they may easily be installed to the Cheetah V5-DVI modules in the field. The following procedure should be followed when updating system firmware.

1. Download the firmware update to a folder on a host PC with the USB Driver and GUI installed, Refer to Chapter 3 of this manual .

2. Apply power to the Cheetah V5-DVI module to be upgraded by connecting the external power supply to the module and to a source of primary power.

3. Connect a USB cable first to the V5 module and then into an open USB port on the host PC, Figure 5-1.

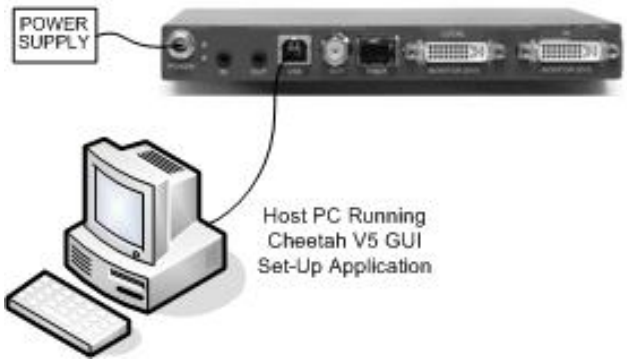
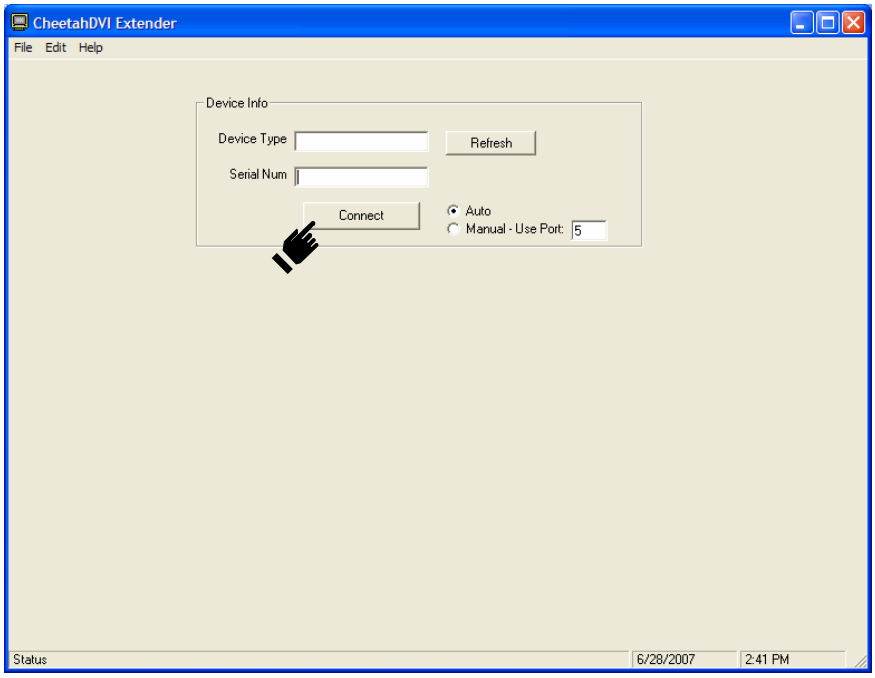


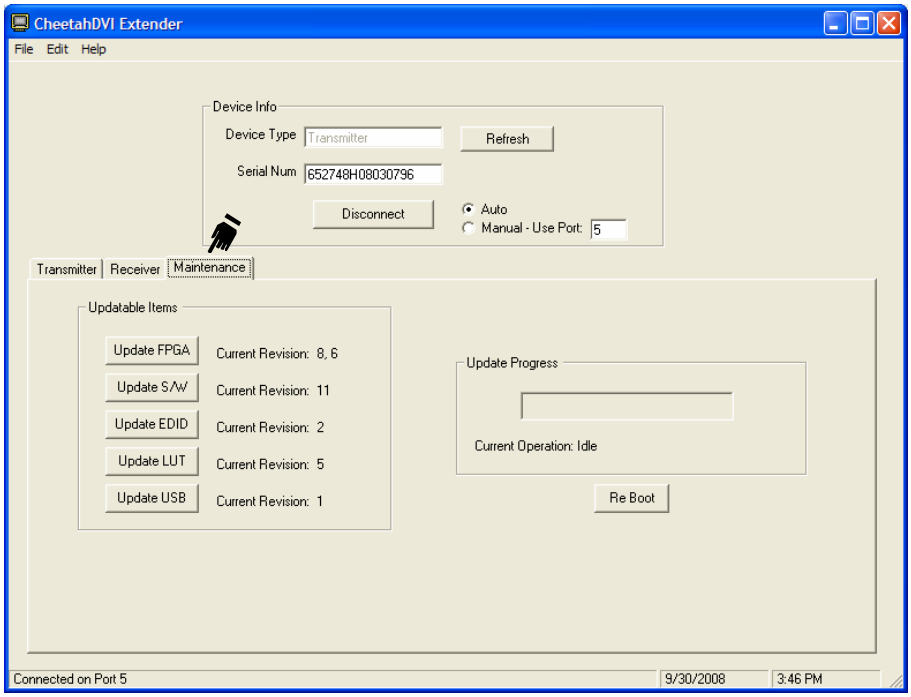
Figure 5-1 Connecting V5 Module To Host Pc

4. Open the GUI application, refer to Paragraph 3.4, and click Connect.



5. The GUI application will automatically establish communication with the module and display the Device Type and Serial Number.

6. Click on the Maintenance Tab.



7. Current revision level of all internal firmware is displayed for reference.

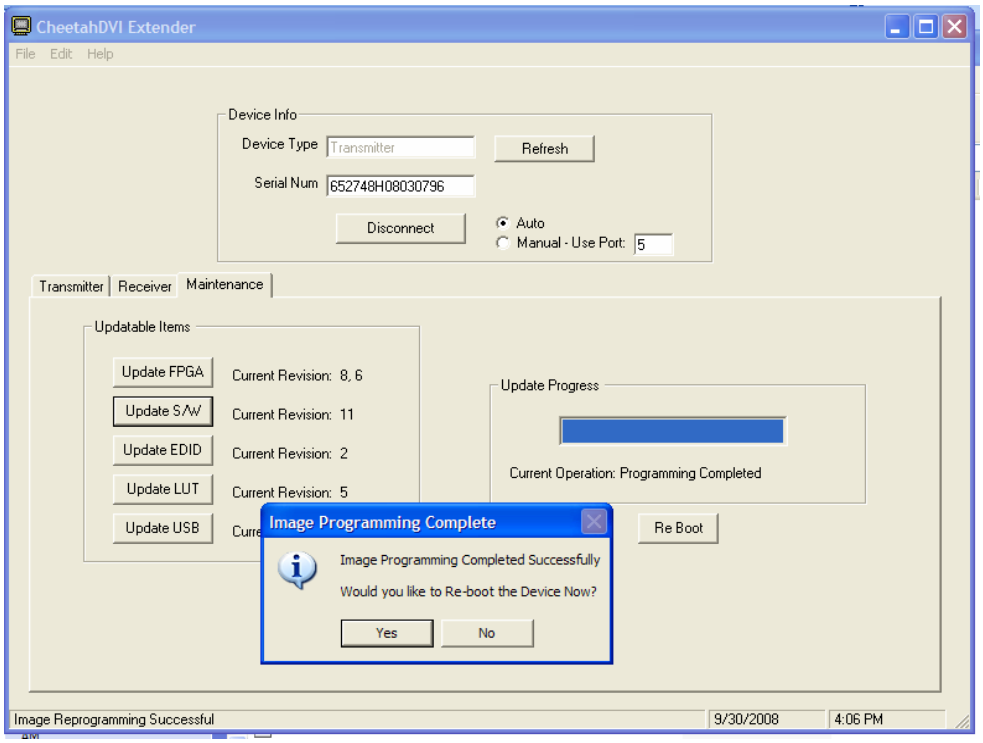
8. Click the button of the firmware you wish to update.

9. Browse to the location of the folder containing the update file, select the file and click OK.

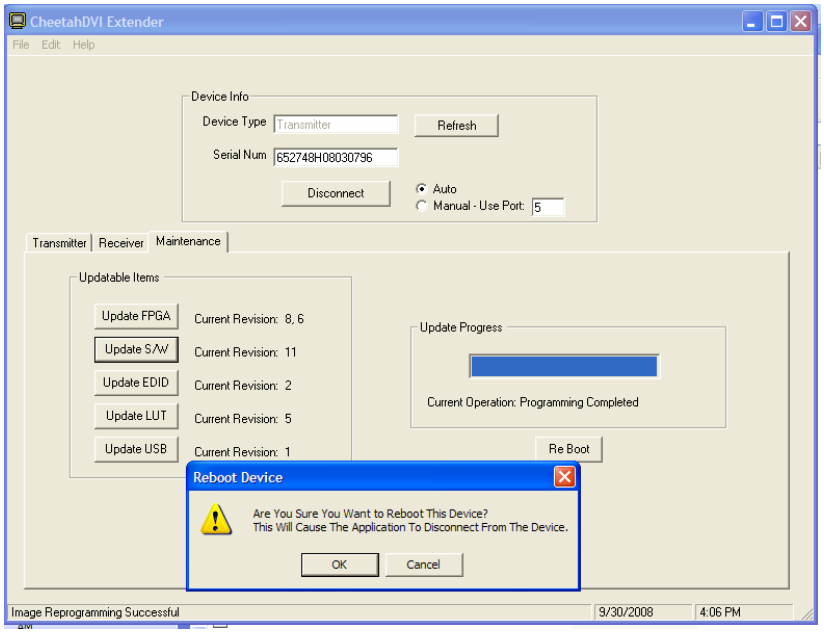
10. After the update completes, power cycle the V5 module and restart the GUI.

11. If you have any problems with the firmware update, contact the PESA Customer Advocacy Department for assistance.

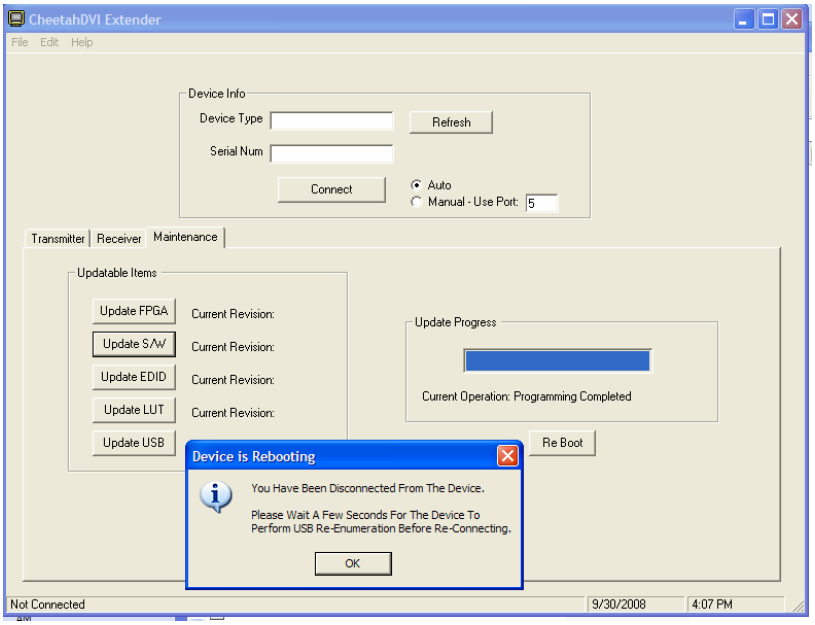
12. Following a successful PBN download and re-programming cycle, the user is prompted by the following sequence to proceed with re-boot of the module.



13. Click YES to begin the re-boot process.



14. If you are sure you wish to proceed with reboot, click YES to continue.



15. Click OK to clear the re-boot prompt.

5.2 RE-BOOT FUNCTION

The ReBoot button on the Maintenance Menu allows the user to execute a system restart on the selected module.

1. Click the ReBoot button to initiate the soft reset sequence.
2. A prompt box will ask if you wish to proceed with reset.
3. Accepting the reset function will disconnect you from the USB port and reset the module.