

TECHNICAL MANUAL

CHEETAH V5 – DVI MODULES



<u>Publication:</u> 81-9059-0611-0, Rev. E September, 2008



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Printed in the United States of America.

As of publication, this product had not completed FCC compliance testing.

July, 2008



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Chapter 1 About This Manual

1.1 DOCUMENTATION AND SAFETY OVERVIEW

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

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**

QuStream'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

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



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.

Resolution	V Refresh	Resolution	V Refresh
	(HZ)	 	(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		

Table 2-1 Supported Video Resolutions And Refresh Rates



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 WindowsTM 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.

TUSB3410 VCP Driver/Firmware Installer - InstallShield Wizard 🛛 🛛 🔀
Choose Destination Location Select folder where setup will install files.
Setup will install TUSB3410 VCP Driver/Firmware Installer in the following folder.
To install to this folder, click Next. To install to a different folder, click Browse and select another folder.
Destination Folder C:\TI\TI3410XP_DEVICE1\
< <u>B</u> ack <u>Next</u> > Cancel

- 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.



Softwar	e Installation
1	The software you are installing has not passed Windows Logo testing to verify its compatibility with Windows XP. (<u>Tell me why</u> this testing is important.) Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the software vendor for software that has passed Windows Logo testing.
	Continue Anyway

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 WindowsTM "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.



Found New Hardware Wizard		
	This wizard helps you install software for: Cheetah DVI Extender If your hardware came with an installation CD or floppy disk, insert it now. What do you want the wizard to do? Install the software automatically (Recommended) Install from a list or gpecific location (Advanced) Click Next to continue.	
	< <u>Back</u> <u>N</u> ext > Cancel	

- 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.



Found New Hardware Wizard		
	Completing the Found New Hardware Wizard	
	The wizard has finished installing the software for:	
	Click Finish to close the wizard.	
	< <u>Back</u> Finish Cancel	

- 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.



Found New Hardware Wizard			
Please wait while the wizard installs the	e software		
Cheetah DVI USB - Serial Port			
6			
	< <u>B</u> ack <u>N</u> ext > Cancel		

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.



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 and click Connect.

CheetahDVI Extender		
File Edit Help		
	Device Info	
	Device Type Befresh	
	Serial Num	
	Connect C Manual Lise	Port E
	· · · · · · · · · · · · · · · · · · ·	or ju
	•	

- 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.



CheetahDVI Extender		
File Edit Help Device Devic Sei	Info ce Type Transmitter Refresh rial Num (652748H08030796	
Transmitter Receiver Maintenance	Disconnect C Auto C Manual - Use Port: 5	
Input Status VGA RGsB (SOG) RGSB None Input Resolution: 1920x 1080 60Hz CEA 861B (47) Refresh Refresh Refresh	Settings Input Select C Auto C DVI C RGBHV (VGA) C RGBS DUT C Coal C None Analog Image Adjustments Screen Position Reset to Default C Dop C None Sampling Phase 50	
Connected on Port 5	(9/30/2008 (3.45 EM	

Input Select Setting

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

CheetahDVI Extender File Edit Help		
	ice Info evice Type Transmitter Refresh Serial Num [652749H08030796 Disconnect C Auto C Manual - Use Port: 5	
Transmitter Receiver Maintenan	Settings Input Select Output Select EDID Select Screen Position Imput Select Imput Select Video Video Screen Position Imput Select Imput Select Video Video Imput Select Imput Select Imput Select Imput Select Screen Position Imput Select Imput Select Imput Select Imput Select Imput Select Imput Select Imput Select	
Refresh Relock to	Apply Set	
Connected on Port 5	9/30/2008 3.46 P	



- 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.

CheetahDVI Extender File Edit Help		
	Device Info Device Type Transmitter Refresh Serial Num 652748H08030796 Disconnect © Auto © Manual - Use Port: 5	
Transmitter Receiver Main	enance	
Input Status DVI VGA RGB (SOG) RGBS None Input Resolution: 1920x 1080 60Hz	Settings Part Input Select Output Select C Auto Iv Audio C DVI Iv Video C RGsB (SOG) Iv Local C RGSS Iv Audio	g Image Adjustments
CEA 861B (47)	ck to	50
Connected on Port 5	9	3/30/2008 3:46 PM

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.





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.

CheetahDVI Extender		
File Edit Help		
Device Device Ser Transmitter Receiver Maintenance	nfo e Type Transmitter Refresh al Num 652748H08030796 Disconnect C Auto C Manual - Use Port: 5	
Input Status VGA RGBB (SOG) RGBS None Input Resolution: 1920x 1080 60Hz CEA 861B (47) Refresh Relock to Input	Settings Output Select Cuput Select Cuput Select Screen Position Imput Select Imput Select Imput Select Screen Position Imput Select Imput Select Imput Select Screen Position Imput Select Imput Select Imput Select Imput Select Imput Select Imput Select Imput Select Screen Position Imput Select Imput Select Imput Select Imput Select Imput Select<	
Connected on Port 5	9/30/2008 3:46 Pt	



- 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.

CheetahDVI Extender	
File Edit Help Device Info Device Type Transmitter Serial Num 652748H08030796 Disconnect C Manual Lice Part	
Input Status Input Status VI VGA RGsB (sOG) RGsB (sOG) RGsB (sOG) RGsB (sOG) Input Resolution: 1920x 1080 60Hz CEA 861B (47) RGsB (sOG) Refresh Relock to Input Re	
Connected on Port 5 9/30/2008 3:4	6 PM

- 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.

CheetahDVI Extender File Edit Help		
Device Devic Ser	Info Type Transmitter Refresh ial Num [652748H08030796 Disconnect C Auto C Manual - Use Port: 5	
Transmitter Receiver Maintenance	Settings Input Select C Auto C DVI C RG8BHV (VGA) C RG8B (S0G) C RG8S Analog Image Adjustments Analog Image Adjustments C DVI C VGA C Loop C None C Sampling Phase	
Refresh Relock to		
Connected on Port 5	9/30/2008 3:46 P	

- 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 WindowsTM 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 and click Connect.

CheetahDVI Extender		
File Edit Help		
Device Info		
Device Type Befresh		
Sovid Num		
Connect Connect		
V		
Status	6/28/2007	2:41 PM



- 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.

CheetahDVI Extender	
File Edit Help Device Info Device Type Receiver Refresh Serial Num 652749F07479202 Disconnect Auto Manual - Use Port: 5	
Transmitter Receiver Maintenance Input Status Coax Input: Present Fiber Input: not detected Fiber Rx Pwr: not detected Input Signal Lock: LOCKED DVI Cable Detect: not detected Transmitter Ser#: 0796 Resolution: 1920x 1080 60 Hz CEA 861B (47) C Auto (Fiber) Refresh Relock to Input Refresh	aler:)etect. Interval . (RGBS,
Connected on Port 5 9/30/2008	3:52 PM

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.



📮 CheetahDVI Extender		
File Edit Help Device Info Device Type Receiver Serial Num (652749F07479202 Disconnect C Auto C Manual - Use Port (5		
Transmitter Receiver Maintenance Input Status Coax Input: Present Fiber Input: nut ot detected Input Select Fiber Rx Pwr. not detected Coax Imput Select Input Signal Lock: LOCKED DVI DVI Cable Detect: not detected Imput Select Transmitter Serff: 0'96 Resolution: 1920x 1080 60 Hz CEA 861B (47) CAuto (BNC) Refresh Belock to Input Input	Output Options Enable Video Scaler: ○ 800x600 ○ 1024x768 ○ 1280x1024 ▼ Override Cable Detect. Include Vertical Interval Serration Pulses. (RGBS, SOG only.)	
Connected on Port 5	9/30/2008 3:52 PM	1 //

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.



GheetahDVI Extender	
File Edit Help Device Info Device Type Fileceiver Serial Num [652743907479202 Disconnect Auto Manual - Use Port: 5	
Transmitter Receiver Maintenance Input Status Coax Input: Present Fiber Input: not detected Fiber Input: not detected Input Signal Lock: LOCKED DVI Cable Detect: not detected Coax ✓ Audio Transmitter Status ✓ Audio ✓ Audio DVI Cable Detect: not detected ✓ Auto (BNC) ✓ RGBHV (VGA) Transmitter Status CEA 861B (47) C Auto (Fiber) ⊂ RGBS Refresh Relock to Input Input Apply	Output Options Enable Video Scaler: ○ 800x600 ○ 1024x768 ○ 1280x1024 ✓ Override Cable Detect. Include Vertical Interval Serration Pulses. (RGBS, SOG only.)
Connected on Port 5	9/30/2008 3:52 PM

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.

CheetahDVI Extender		
File Edit Help Device Info Device Type Refresh Serial Num 652749F07479202 Refresh Disconnect C Auto Manual - Use Port: 5		
Transmitter Receiver Maintenance Input Status Coax Input: Present Fiber Input: not detected Input Select Output Select Input Signal Lock: LOCKED DVI Analog Video: Imput Select DVI Cable Detect: not detected Fiber Analog Video: Imput Select DVI Cable Detect: not detected Fiber Analog Video: Imput Select DVI Cable Detect: not detected Analog Video: Imput Select Imput Select Resolution: 1920x 1080 60 Hz Auto (Fiber) Imput Select Imput Select Refresh Relock to Input Apply Apply	Output Options Enable Video Scaler: 900x600 1224x768 1280x1024 Override Cable Detect. Include Vertical Interval Serration Pulses. (RGBS, SOG only.)	
Connected on Port 5	9/30/2008 3:52 Pt	M

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



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 and click Connect.



CheetahDVI Extender		
File Edit Help		
Device Info Device Type Refresh Serial Num Connect © Auto Manual - Use Port: 5		
Status	6/28/2007	2:41 PM

- 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.

CheetahDVI Extender		- 🗆 🗙
File Edit Help	Device Info Device Type Transmitter Serial Num (552748H08030796 Disconnect Auto Manual - Use Port: 5 tenance tenance Settings Input Select Output Select EDID Select Audio P Audio P Audio P Audio P KGA RGBB/V (VGA) RGBB (SOG) Apply Set Set Set Set Set Set Set Set	
Connected on Port 5	9/30/2008 3:46 PM	



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

CheetahDVI Extender	
File Edit Help	
Device Info Device Type Transmitter Refresh Serial Num 652748D07264288 Disconnect C Auto C Manual - Use Port 5	
Transmitter Regimer Maintenance	
Input Status Input Select Output Select EDID Select Screen Position Input Resolution: 1920x 1200 60Hz C RGBS C Loop C None Analog Phase Refresh Relock to Input Apply Apply Set	
Connected on Port 5 7/14/2008 3:59 PM	

- 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



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 stepby-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 and click Connect.

CheetahDVI Extender	
File Edit Help	
Device Info	
Device Type [Befrech
, Serial Num [
,	Serveral C Auto
	C Manual - Use Port: 5
N	
Status	672872007 2:41 PM

- 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.



CheetahDVI Extender Fie Edit Help		
Device Info Device Type Receiver Refresh Serial Num (652749F07479202 Disconnect C Auto C Auto C Manual - Use Port: 5		
Input Status Coak Input: Present Fiber Input: not detected Fiber Input Status DVI Cable Detect: not detected Coak DVI Cable Detect: not detected Fiber Input Status Transmitter Serth: 0736 Resolution: 1920x1080 60 Hz CEA 861B (47) C Auto (Fiber) Refresh Relock to Input	Output Options Enable Video Scaler: © 800x600 © 1024x768 © 1280x1024 © Override Cable Detect. Include Vertical Interval Serration Pulses. (RGBS, SOG only.)	
Connected on Port 5	9/30/2008 3:52 PM	

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.

📮 CheetahDVI Extender	
File Edit Help Device Info Device Type Receiver Serial Num [652749F07479202 Disconnect C Manual - Use Port: 5	
Transmitter Receiver Input Status Input Status Coax Input: Present Fiber Input: not detected Fiber Rx Pwr. not detected Input Signal Lock: LOCKED DVI Cable Detect: not detected C Coax Imput Select Transmitter Sert#, 0796 Resolution: 1920x 1080: 60 Hz CEA 861B (47) C Auto (Fiber) C RGSB (SGG) Refresh Relock to Input	Output Options □ Enable Video Scaler: ○ 800x600 ○ 1024x768 ○ 1280x1024 ○ Override Cable Detect. Include Vertical Interval Serration Pulses. (RGBS, SOG only.)
Connected on Port 5	9/30/2008 3:52 PM

Typical Input Status Display When Using Coax Interconnect Cable



CheetahDVI Extender	
File Edit Help	
Device Info Device Type Receiver Serial Num 652749D07285341 Disconnect	Refresh ⁷ Auto ⁶ Manual - Use Port: 5
Input Status Settings Coax Input: not detected Input Select Fiber Input: Present Coax Input Signal Lock: LOCKED Coax DVI Cable Detect Detected Transmitter Ser#: 4288 C Auto (BNC) Resolution: 1680x 1050 60 Hz C Auto (Fiber)	Output Select Output Options Image: Audio Image: Enable Video Scaler: Image: DVI Image: Construct on the second secon
Refresh Relock to Input	Apply
Connected on Port 8	2/11/2008 2:44 PM

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 QuStream, 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 and click Connect.



CheetahDVI Extender				
File Edit Help				
	Device Info	Refresh		
	Connect	● Auto ⊂ Manual - Use Port: 5		
	N			
Status			6/28/2007	2:41 PM

- 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.

CheetahDVI Extender	
File Edit Help Device Info Device Type Transmitter Serial Num [652748H08030 Disconny	1796 C Auto C Manual - Use Port: 5
Transmitter Receiver Maintenance Updatable Items Update FPGA Current Revision: 8, 6 Update S/W Current Revision: 11 Update EDID Current Revision: 2 Update LUT Current Revision: 5 Update USB Current Revision: 1	Update Progress Current Operation: Idle Re Boot
Connected on Port 5	9/30/2008 3:46 PM //



- 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 QuStream 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.

CheetahDVI Extender	
File Edit Help	
Device Info Device Type Transmitter Refresh Serial Num 652748H08030796 Disconnect C Auto C Auto	
Transmitter Receiver Maintenance	
Updatable Items	
Update FPGA Current Revision: 8, 6 Update Progress Update S/W Current Revision: 11 Image: Current Revision: 2 Update EDID Current Revision: 2 Current Operation: Programming Completed Update LUT Current Revision: 5 Current Revision: 5	
Update USB Curre Image Programming Complete Re Boot Image Programming Completed Successfully Would you like to Re-boot the Device Now? Yes No	
Image Reprogramming Successful 9/30/2008 4:06 f	PM /

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



📮 CheetahDVI Extender	
File Edit Help	
Device Info Device Type Transmitter Serial Num [652748H08030796 Disconnect	C Auto C Manual - Use Port: 5
Transmitter Receiver Maintenance Updatable Items]
Update FPGA Current Revision: 8, 6 Update S/W Current Revision: 11 Update EDID Current Revision: 2 Undate LUIT Current Revision: 5	Update Progress
Update USB Current Revision: 1	Re Boot
Reboot Device Are You Sure You Want to R This Will Cause The Applicat OK	teboot This Device? ion To Disconnect From The Device.
Image Reprogramming Successful	9/30/2008 4:06 PM

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

CheetahDVI Extender	_ 🗆 🛛
File Edit Help	
Device Info Device Type Refresh Serial Num Connect C Auto C Manual - Use Port: 5	
Transmitter Receiver Maintenance	ſ
Update FPGA Current Revision: Update SAW Current Revision: Update EDID Current Revision: Update EDID Current Revision: Update LUT Current Revision: Update USB Device is Rebooting Re Boot Peace Wait A Few Seconds For The Device. Please Wait A Few Seconds For The Device To Perform USB Re-Enumeration Before Re-Connecting. OK	
Not Connected 9/30/2008 4:	07 PM

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.

CheetahDVI Extender File Edit Help		
Device Info Device Type Transmitter Refresh Serial Num [652748H08030796 Disconnect C Auto C Manual - Use Port: 5		
Transmitter Receiver Maintenance Updatable Items Update FPGA Current Revision: 8, 6 Update S/W Current Revision: 11 Update EDID Current Revision: 2 Update LUT Current Revision: 5 Update USB Current Revision: 1		
Connected on Port 5	9/30/2008 3:46 PM	

