



VBrick 7000 Series Appliances

VBrick v3.1 H.264 Appliance Getting Started Guide



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VBrick declares that this product conforms to the following certificate standards for electromagnetic emissions when installed according to the manufacturer's specifications: EN 55022:2006; EN 55024:1998, A1:2001, A2:2003; EN 61000-3-2:2005; EN 61000-3-3:1995, A1:2001, A2:2005.



This product is Listed by Underwriters Laboratories Inc. Representative samples of this product have been evaluated by UL and meet applicable safety standards. Although this product can operate in a 70°C environment, the maximum recommended room ambient is 66°C or lower to meet UL 60950-1 accessible surface temperature requirements.



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About VBrick Systems

Founded in 1997, VBrick Systems, an ISO 9001 certified vendor, is a privately held company that has enjoyed rapid growth by helping our customers successfully introduce mission critical video applications across their enterprise networks. Since our founding, VBrick has been setting the standard for quality, performance and innovation in the delivery of live and stored video over IP networks—LANs, WANs and the Internet. With thousands of video appliances installed world-wide, VBrick is the recognized leader in reliable, high-performance, easy-to-use networked video solutions.

VBrick is an active participant in the development of industry standards and continues to play an influential role in the Internet Streaming Media Alliance (ISMA), the MPEG Industry Forum, and Internet2. In 1998 VBrick invented and shipped the world's first MPEG Video Network Appliance designed to provide affordable DVD-quality video across the network. Since then, VBrick's video solutions have grown to include Video on Demand, Management, Security and Access Control, Scheduling, and Rich Media Integration. VBrick solutions are successfully supporting a broad variety of applications including distance learning and training, conferencing and remote office communications, security, process monitoring, traffic monitoring, business and news feeds to the desktop, webcasting, corporate communications, collaboration, command and control, and telemedicine. VBrick serves customers in education, government, healthcare, and financial services markets among others.

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H.264 v3.1 Getting Started Guide

Preface

This document explains how to set up and configure a VBrick H.264 network video appliance. It explains the management tools available and describes some of the fundamental concepts behind the technology. It also explains how to use the VAdmin management interface to configure the appliance and control appliance functions.

Organization

This online help system provides access to VBrick H.264 documentation. It has a powerful search engine so you can get answers to technical questions in seconds; it also has the documentation in PDF format if you need hard-copy. Our publications team is committed to providing first-rate documentation and your feedback is important to us. If you find errors or omissions, click the e-mail icon in the upper-right corner of this window or send your feedback to documentation@vbrick.com

1. Introduction	Lists the specifications and describes the features and functions of the H.264 appliance.
2. Appliance Setup	Explains the basics. Provides general configuration recommendations as well as how to cable the appliance and connect it to the network.
3. Shelf Setup	Explains how to set up and configure a Rack Mount Shelf that houses from 1 to 11 H.264 blade encoders.
4. Software Upgrade	Explains how to upgrade the appliance or blade when new software is available from VBrick.
5. Management Tools	Explains how to configure the appliance using a variety of management tools. These include the VAdmin web interface, Telnet, SNMP, and the command line.
6. VAdmin	Explains how to use the VAdmin application to manage VBrick configuration from an external browser.
8. Front Panel Edit	Explains how to use the keypad on the appliance front panel to set IP Address, DHCP Enable/Disable, Subnet Mask, and other parameters.
7. Command Line Interface	Explains how to configure an appliance from the command line using Telnet or HyperTerminal (when an Internet connection is not available).
8. Streaming Video Basics	Explains some of the fundamentals behind the technology including compression techniques, network concepts, serial port passthrough, and other video basics.
9. VBrick 7000 Series Reference	Provides back panel drawings, COM port pinouts, LED descriptions, and other miscellaneous information.

Getting Help

If you need help, or more information about any topic, use the online help system. The online help is cross-referenced and searchable and can usually find the information in a few seconds. Use the tree controls in the left pane to open documents and the up and down arrows to page through them. Use the **Search** box to find specific information. Simply enter one or more words in the box and press Enter. The search results will return pages that have all of the words you entered—highlighted in yellow (Internet Explorer only). The **Search** box is not case-sensitive and does not recognize articles (a, an, the), operators (+ and –), or quotation marks. You can narrow the search by *adding* words.

Our publications team is committed to accurate and reliable documentation and we appreciate your feedback. If you find errors or omissions in any of our documents, please let us know. If you can't find the information you need in this document, or from your reseller, you can contact VBrick Support Services on the [web](#), by [e-mail](#), or by calling 1-203 303-0222. For faster service, be sure to have your VBrick product serial number or support contract number. Support Services can usually answer your technical questions in 24 business hours or less. Note that all VBrick documentation is on the web. For more information about any VBrick product, go to www.vbrick.com/documentation

Font Conventions

Arial bold is used to describe dialog boxes and menu choices, for example: **Start > All Programs > VBrick**

Courier fixed-width font is used for scripts, code examples, or keyboard commands.

Courier bold fixed-width font is used for user input in scripts, code examples, or keyboard commands.

This bold black font is used to strongly emphasize important words or phrases.

Folder names and user examples in text are displayed in this sans serif font.

User input in text is displayed in this bold sans serif font.

Italics are used in text to emphasize specific words or phrases.

Printer-Friendly


VBrick H.264 Appliance Getting Started Guide





▼ To save or print a PDF document:

1. Click once to open the PDF document in Acrobat Reader.
2. To save or print a PDF document, right-click and select **Save Target As** or **Print Target**.



Product Safety

-  **Battery.** The appliance contains a lithium battery which may explode if replaced incorrectly. Do not attempt to replace this battery. If absolutely necessary, replace only with the same or equivalent type recommended by manufacturer. Recycle batteries if possible and dispose used batteries in accordance with local environmental regulations.

-
-  **General.** Do not spill food or liquids on your appliance. Protect your appliance from sudden power-surges and interruptions by using a surge suppressor, line conditioner, or uninterruptable power supply (UPS). Avoid using and/or connecting appliance during an electrical storm. Comply with all standard safety precautions associated with the use of electronic devices.
 -  **Servicing.** This product contains no user-serviceable parts. No user is authorized to remove the appliance's cover. This device has tamper-evident seals. Breaking or modifying the seals will immediately invalidate the product warranty. If you have problems with this appliance, contact VBrick Support Services.
 -  **Placement.** Use common sense when installing the device. Do not expose the appliance to direct sunlight, high humidity or wet conditions. Do not block the air vents or impede the airflow in any way. And once installed, do not place anything on top of unit. Failure to follow these guidelines can cause overheating and affect the reliability of your appliance
 -  **Cleaning.** This product and accessories will only require an occasional wipe with a dry cloth. Do not spray any substance or use any thinners, abrasives, liquids, or aerosol products to clean the device.

Introduction

Topics in this section

Appliance Overview	1
Features and Specifications	2

Appliance Overview

VBrick's H.264 Encoding Appliance represents our newest advance in video streaming, and is a great general-purpose platform for a wide range of IP video applications. Supporting both standard definition and high definition video delivery, the H.264 product family delivers stunning video quality at unmatched reliability and bandwidth efficiency. And like all VBrick encoding appliances, key functions such as a high capacity streaming server and rich networking support are fully integrated into the device vs. the multiple boxes typically required by other approaches.



Figure 1. VBrick H.264 Network Video Appliance

Capabilities

VBrick's H.264 appliances are the first in a line of products that will be delivered on VBrick's new architecture. These appliances provide the following capabilities:

- High Definition Video – High definition video resolution allowing unsurpassed quality video at bandwidths of 1 Mb/sec and up.
- Standard Definition Video – For lower bandwidth applications, video can still be delivered in standard definition with resolutions up to D1.
- Encoding – Digitizing and compressing a video signal for delivery over an IP network in the H.264 video format.
- Multicasting – Multicast a live video directly from the appliance.
- Serving – Serve live unicast streams via RTSP Low Delay – VBrick's appliances can deliver video to Windows PCs and Macintosh PCs.
- Archiving – Save a local copy of a stream to an internal (SATA) or external (USB) hard drive.

- Front Panel Display and Management – For easy configuration and parameter changes.
- Remote Management – Complete remote configuration and management via web-based interface, web services, command line interface, or SNMP.

Features and Specifications

Table 1. Supported Browsers (VBAAdmin)

Browser	Version
Microsoft Internet Explorer	6.0 or higher
Mozilla Firefox	2.0 or higher

Table 2. Recommended H.264 Players

Player †	Vendor	Notes
QuickTime 7.0	Apple	If not installed, download application from Apple website.
VLC 1.0.1	VideoLAN	Not fully tested or supported by VBrick.

† Use version shown or higher.

Table 3. Features and Specifications

Video Encoder	<ul style="list-style-type: none"> • H.264 Encoding: Baseline Profile • SD Inputs: Composite or S-Video • SD Input Formats: NTSC, PAL • HD Inputs: SD-SDI, HD-SDI, 3G-SDI, HDMI, and Component • HD Input Formats: 480i, 480p, 576i, 576p, 720p50/60, 1080i50/60, 1080p50/60 • Aspect Ratio: 4:3 and 16:9 • Encoded Resolutions see Table above. • Video Frame Rates: NTSC (0.5, 1, 2, 3, 5, 6, 7.5, 10, 15, 30, 50, 60 fps), PAL (0.5, 1, 2.5, 5, 12.5, 25 fps) • Constant Bit Rate / Constant Frame Rate, user defined key frame interval, rate control • Rates: 32 Kbps – 20 Mbps
Audio Encoder	<ul style="list-style-type: none"> • AAC-LC and AAC-HE Encoding • Sample Frequency 8 Khz – 48 Khz • Rates: 8 Kbps – 256 Kbps • Audio Modes: Stereo, Mono, Dual • Inputs: Unbalanced, balanced, and microphone via minijack. Audio inputs can also come through the HDMI, HD-SDI, or SDI inputs. (HDMI and SDI input available on High Definition models only.)
Transmitter	Transmit to multiple concurrent unicast and multicast destinations
Server	Live streaming server – up to 200 concurrent live streams
Ethernet Network	<ul style="list-style-type: none"> • 10/100/1000 Mbps Ethernet via RJ-45. Static or DHCP • Auto sense Full / Half duplex

Transport Types	<ul style="list-style-type: none"> • RTP • Transport Stream • RTMP (Flash)
Protocols	Unicast / Multicast, DiffServ (QoS), UDP / IP / RTSP/ RTCP / RTP / HTTP / RTSP Interleave / IGMP/RTMP
Additional Ports	One serial port for local maintenance or data transport; one USB port
Dimensions	7101 models: W 7.8" x H 1.75" x D 9.2" 7102 models: W 8.1" x H 3.0" x D 9.5"
Weight	Approx. 1.5 – 3 lb. depending on model
Temperature Range	Operating Temperature: 0° – +70° Celsius
Power	Input: 100 to 240 VAC, 50 / 60 Hz, 45 Watts, 12V DC, 4A
Regulatory	FCC Part 15, UL, CE
LCD	80-character backlit display (20 characters x 4 lines)
Compatibility	<ul style="list-style-type: none"> • Windows Media® Player (via VBrick player plug-in) • QuickTime Player (Windows and Macintosh) • IGMP v3 SNMP v3 IPv4/6 • Wowza Media Server • Adobe Flash Media Server



Appliance Setup

Topics in this chapter

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Environmental Considerations	7
Appliance Setup	8

This chapter explains how to set up and configure VBrick H.264 network appliances. The information here is basically the same as that in the *Quick Start Guide* that came with the appliance. **You can use this document or the Quick Start Guide set up and configure an appliance.** Before you do anything else, be sure to open the box and inspect the components. Each shipment comes with:

- H.264 network appliance
- H.264 Quick Start Guide
- H.264 Product CD
- Power supply and cable
- Serial cable and adapter
- Cable and adapter kit

Appliance Setup Overview

Your VBrick H.264 appliance is shipped with all appropriate cables and connectors. The appliance(s) you purchased may vary slightly from the illustration in Figure 2 but the basic elements are common to all H.264 appliances. See [VBrick H.264 Appliance Models](#) on page 61 for more model information.



Figure 2. H.264 Enterprise Encoder (rear)

S-Vid	S-Video cable in.
Comp-In	Composite video cable in.
Main	Audio connector. Use for microphones and other input devices.
Aux	Audio connector. Use (in addition to Main) for consumer devices that support two-jack stereo.

COM	RS-232/RS-422/485. Used with HyperTerminal for appliance configuration or as a dedicated serial port for Serial Port Passthrough.
Ethernet	RJ-45 connector. Connect to the network.
USB	Use to attach an external storage device.
Power In 12VDC	Power input. LED illuminates when power is applied.
Component	Three color-coded connectors (Y, Pb, Pr) with BNC connectors.
HDMI	High Definition Multimedia Interface that transmits uncompressed digital data.
SD-SDI/HD-SDI	Accepts Standard Definition SDI, High Definition SDI, or High Definition 3G-SDI.

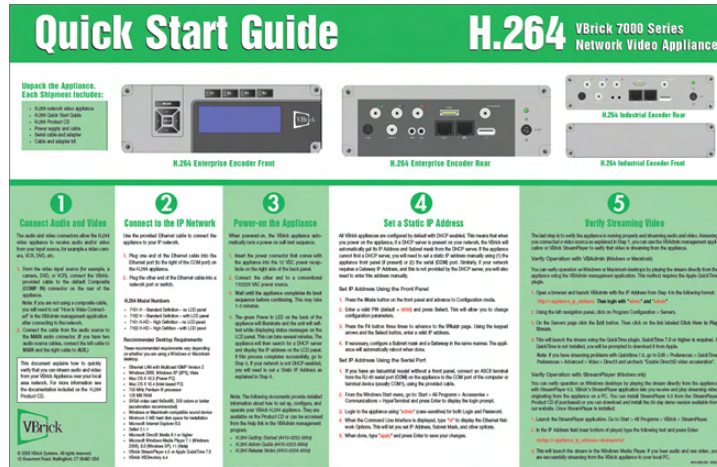


Figure 3. H.264 Enterprise Encoder (front)

Keypad	Used to change modes, navigate through menus, or select configuration parameters. See Front Panel Edit on page 49 for more information.
LCD Display	Depending on how it is configured in VAdmin, shows IP Address, system status, error and warning messages, and transmitter data on a 20 char x 4 line display panel.
F1–F4	The function keys are used to run scripts that have been associated with each key in VAdmin, or to advance to the Previous (F1) and Next (F4) screen in Configuration mode.

Using the Quick Start Guide

An 11x17 in. *Quick Start Guide* that explains how to set up the appliance is shipped with each device. The *Quick Start Guide* explains how to setup the appliance to quickly verify that you can stream audio and video over your local network. (Your actual production setup may be different.) The information is included here for your convenience.



[Click to enlarge](#)

Figure 4. H.264 Appliance Quick Start Guide

Environmental Considerations

Airflow and ventilation are primary concerns when installing VBrick appliances. Each appliance has slots and openings to guard against overheating and guarantee reliable performance. Never block these openings or cover them when placing equipment in a cabinet, rack, or shelf. Never place an appliance inside a built-in enclosure such as a bookcase unless proper ventilation and airflow is available. In all cases, the equipment must be separated from other products by at least two inches on each side and at least four inches above and below in order to provide maximum airflow and circulation.

The equipment should never be placed on top or near any heat-radiating product or equipment. The equipment should not be used near water sources or high-humidity areas. Side ventilation provides the best air circulation. There are vents on each side of the appliance and a fan that provides circulation. If appliances are rack-mounted in a cabinet and air flow is blocked, you may need to provide a vent hole or a notch on the side of the rack that is roughly equal in size to the vents on the appliance. You need to make sure there is at least two inches of space between the appliance and the edge of the rack.

Note If you are mounting the device on a wall or ceiling, the best option is an open shelf or an open mount. Poor ventilation can affect performance and may cause the appliance to fail prematurely.

Best Practices

In general, VBrick appliances are designed for rooms that are comfortable for humans (approx. 70°F or 21°C) with adequate airflow and ventilation. Wall mounting will typically block the side vents and is not recommended. Mounting appliances above a drop ceiling is also discouraged. Ceiling spaces have little protection against heat, cold, dust, etc. and you will not be able to use the IR remote control. Some common practices to avoid include:

- Attempts to "hide" appliances in enclosed areas.
- Closed cabinets with poor air circulation or no air circulation.
- Appliances mounted too close to other heat sources or other electrical devices.

Appliance Setup

Use the steps listed below, in the order shown, to setup your appliance. Table 4 shows the recommended end user environment needed to play H.264 streams on Windows and Macintosh desktops. These recommended requirements vary depending on whether you are using a Windows or Macintosh desktop. If you are upgrading the appliance software, see [Software Upgrade](#) on page 21.

Table 4. Recommended Desktop Requirements

-
- Ethernet LAN with Multicast IGMP Version 2
 - Windows 2000, Windows XP (SP3), Vista
 - Mac OS X 10.3 (Power PC)
 - Mac OS X 10.4 (Intel-based PC)
 - 750 MHz Pentium III processor (Windows)
 - 128 MB RAM
 - SVGA video card 640x480, 256 colors or better
 - Windows or Macintosh-compatible sound device
 - Minimum 5 MB hard disk space for installation
 - Microsoft Internet Explorer 6.0 or Safari 3.1.1
 - Microsoft DirectX Media 8.1 or higher
 - Microsoft Windows Media Player 7.1 (Windows 2000), 9.0 (Windows XP), 11 (Vista)
 - VBrick StreamPlayer 4.5 or Apple QuickTime 7.0
 - VBrick VBDirectory 4.4
-

Step 1. Connect the Audio and Video

The audio and video connectors allow the H.264 video appliance to receive audio and/or video from your input source, for example a video camera, VCR, DVD, etc.

▼ To connect the audio and video inputs:

1. From the video input source (for example, a camera, DVD, or VCR), connect the vendor-provided cable to the default Composite (**COMP IN**) connector on the rear of the appliance.

Note If you are not using a composite cable, you will need to set "How is Video Connected" in the VBAdmin management application after connecting to the network.

2. Connect the cable from the audio source to the **MAIN** audio connector. (If you have two audio source cables, connect the left cable to **MAIN** and the right cable to **AUX**.)

Step 2. Connect to the IP Network

Use the provided Ethernet cable to connect the appliance to your IP network.

▼ To connect to the IP network:

1. Plug one end of the Ethernet cable into the Ethernet port (to the right of the COM port) on the H.264 appliance.
2. Plug the other end of the Ethernet cable into a network port or switch.

Step 3. Power-on the Appliance

- ▼ To power-on the appliance:
 1. Insert the power connector that comes with the appliance into the 12 VDC power receptacle on the right side of the back panel.
 2. Connect the other end to a conventional 110/220 VAC power source.
 3. *Wait until the appliance completes its boot sequence before continuing.* This may take 1–3 minutes.
 4. The green Power In LED on the back of the appliance will illuminate and the unit will self-test while displaying status messages on the LCD panel. This can take several minutes. When done the appliance will search for a DHCP server, display the IP address on the LCD panel, and you can go to Step 5. If your network is not DHCP-enabled, you will need to set a Static IP Address as explained in Step 4.

Step 4. Set the IP Address

All VBrick appliances are configured by default with DHCP (Dynamic Host Configuration Protocol) enabled. This means that when you power on the appliance on, if a DHCP server is present on your network, the VBrick will automatically get its IP Address and Subnet Mask from the DHCP server. If the appliance cannot find a DHCP server, you will need to set a static IP address manually using (1) the front panel (if available) or (2) the serial port. *Once the IP address is set, you can use the management interface (VAdmin) to configure all other parameters.*

If the appliance cannot connect to a DHCP server, it will wait two minutes and then start in Limited Run Mode using the default IP Address of `172.17.5.5`. After 15 minutes, it will automatically reset and again try to obtain a DHCP address. The LCD screen on the front panel will display a `DHCP failed` message and then read `VBrick Systems` and continue to cycle through various messages. If you want to configure a static IP address, you must do it while the unit is operating in Limited Run Mode. *You cannot access the appliance while it is searching for DHCP server.*

Note If the appliance cannot find a DHCP server, you will need to set a static IP address manually using (1) the appliance front panel (if present) or (2) the serial (COM) port. Similarly, if your network requires a Gateway IP Address, and this is not provided by the DHCP server, you will also need to enter this address manually.

Set IP Address Using the Front Panel

1. Press the **Mode** button on the front panel and advance to Configuration mode.
2. Enter a valid PIN (default = `0000`) and press **Select**. This will allow you to change configuration parameters.
3. Press the **F4** button three times to advance to the **IPAddr** page. Using the keypad arrows and the **Select** button, enter a valid IP address.
4. If necessary, configure a **Subnet** mask and a **Gateway** in the same manner. The appliance will automatically reboot when done.

Set IP Address Using the Serial Port

1. **If you have an industrial model (or a blade) without a front panel**, connect an ASCII terminal from the RJ-45 serial port (**COM**) on the appliance to the COM port (usually COM1) of a computer or terminal device using the provided cable.

4. This will launch the stream using the QuickTime plugin. **QuickTime 7.0 or higher is required.** If QuickTime is not installed, you will be prompted to download it from Apple.

Note: If you have streaming problems with QuickTime 7.6, go to Edit > Preferences > QuickTime Preferences > Advanced > Video > DirectX and uncheck "Enable DirectX3D video acceleration".

Verify Operation with StreamPlayer (Windows only)

You can verify operation on Windows desktops by playing the stream directly from the appliance using StreamPlayer 4.5. VBrick's StreamPlayer application lets you receive and play streaming video originating from the appliance on a PC. You can install StreamPlayer 4.5 from the StreamPlayer Product CD (if purchased) or you can download and install the 30-day demo version available from our website. Once StreamPlayer is installed:

1. Launch the StreamPlayer application. Go to Start > All Programs > VBrick > StreamPlayer.
2. In the IP Address field (near bottom of player) type the following text and press Enter:
`vbrtsp://<appliance_ip_address>/vbstream1s1`
3. This will launch the stream in the Windows Media Player. If you have audio and video, you are successfully streaming from the VBrick appliance to your PC.

This completes the initial installation and verification. If you can stream and view video you are ready to configure your appliance for the real-world streaming video requirements at your site. The next step is to review the *H.264 Appliance Admin Guide*. This document explains all of the possible video and audio configuration options you are likely to use. If you are upgrading your appliance software, see [Software Upgrade](#) on page 21.



Shelf Setup

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Shelf Setup Overview

The VBrick H.264 Rack Mount Shelf is a customized enclosure that accepts VBrick blades only. It provides a common redundant power source and common cooling and supports 11 VBrick H.264 blade encoders in a standard 19 in. rack. It has hot-swappable, redundant AC input power supplies and LED and audible failure alarms. It also has a common, hot swappable cooling unit and a replaceable air filter. The chassis for a rack mount shelf has a removable cable management panel (not shown) and card rails that make it easy to insert or remove individual blade encoders.



Figure 5. VBrick H.264 Rack Mount Shelf

H.264 Blades

In general, the blades are fully-functional encoders housed within shelf rather than as standalone appliances. Each blade is configured independently of the others and has its own network connection and IP address. The blades can have Standard Definition connectors (see Figure 6) or Standard and High Definition connectors (see Figure 7). In most respects, the

blade models operate in the same manner as the 1RU Industrial models without a front panel (see [VBrick H.264 Appliance Models](#) on page 61) but there are some important exceptions:

- The blade has a scrolling 8x1 character mini LCD on the face plate.
- The blade displays their shelf slot position (1–11) in the VAdmin management program.
- The blade in Slot 1 will read and display shelf manufacturing data from an EEPROM on the backplane.



Figure 6. H.264 Standard Definition Blade



Figure 7. H.264 High Definition Blade

Table 5. Rack Mount Shelf Specifications

Dimensions	<ul style="list-style-type: none"> • 8U height • 19 in. EIA rack mount
Fan Tray Unit	<ul style="list-style-type: none"> • Slides out for easy replacement • Hot swappable • Visual LED failure indicator
Air Flow	<ul style="list-style-type: none"> • Intake – front bottom • Output – rear top
Encoder Blades	1–11 VBrick H.264 encoder blades.
Power Supplies	<ul style="list-style-type: none"> • Redundant AC Input • Hot-swappable • Visual LED failure indicator and audible alarm
Cable Panel	Removable cable management panel allows for easy routing and management of cables (video, audio, Ethernet, etc.).
Environmental	<ul style="list-style-type: none"> • Standard operating temperature: 5° to 40° C • Storage temperature: -45° to 85° C • FCC Part 15 Class A, CE, UL • EIA Compliant • RoHS Compliant

Blade LCD Display

Each blade has an 8x1 character, mini LCD on the faceplate panel that displays eight characters at a time and scrolls through informational messages. During boot and POST processing, the LCD will display appropriate messages. Once the encoder is running

normally, the encoder will cycle through the IP address and various other messages for five seconds each.

Table 6. Mini LCD Color and Messages

Color	Message	Description
Green	Release x.x.x.x IP:xxx.xx.xxx.x	Blade is good.
Yellow	Warning	Blade in warning mode. This can include a DHCP failure, a video input problem, a temperature problem, or an encoder in limited run mode.
Red	Failure	Blade in failure mode. This can include a POST failure, a hardware failure, or a hardware mismatch.

Installation

Unpacking and Inspection

Before installing the shelf in a rack mount chassis, unpack and inspect the components to make sure you received everything that was ordered. If anything is missing or damaged, contact VBrick or your reseller at once. Otherwise install the shelf in a standard 19 in. EIA rack mount chassis. Each VBrick rack mount shelf has the components listed below.

Note Since the encoder blades are removed from the front, VBrick rack mount units can be mounted back-to-back (on the same shelf) without consuming additional vertical rack space. This effectively doubles the density in installations where rack space is an issue.

- VBrick H.264 rack mount enclosure
- Cable management panel
- 1–11 H.264 encoder blades
- 2 AC power supply cords
- 1 anti-static wrist strap (per order)
- 1 *Quick Start Guide* (per order)

Installing the Blades

Note that if you purchased blades with your order they will be packaged separately and not installed in the rack mount shelf prior to shipment. Each blade is configured by default for DHCP. You set up and connect each blade in the same manner as a standalone appliance (see [Appliance Setup](#) on page 8). The only difference is that, if necessary, you must use the serial port to set a static IP address since there is no front panel. (See [Set IP Address Using the Serial Port](#) on page 9 for details.) Use the provided anti-static wrist strap by attaching the banana pin to receptacle in upper right corner of the shelf. Ten blank filler panels are included. If you remove a blade, be sure to install a filler panel to maintain proper air flow. Before installing blades, be sure to read the [Blade Safety Precautions](#) on page 18.

- ▼ To install individual blades in the shelf:
 1. Unpack and inspect each blade.
 2. Remove and save as many blank filler panels as necessary.

3. Install the blades from left to right beginning in Slot 1. (The Slot 1 blade will report backplane data to VBAAdmin if service is ever required.)
4. Each encoder slot has top and bottom card guides. *Work carefully and be sure the encoder card is properly seated in the guides before connecting to the backplane.*
5. When done, tighten the spring-loaded screws with a screwdriver to prevent them from being accidentally removed.
6. Connect audio/video input and network connections.
7. Connect the power cords from the power supplies to AC power and turn on both power supplies.

Note Before installing blades, you may want to install ground screws (not included) in the unpainted area on each side of enclosure. Use #10-32 machine screws to attach earth ground. When rack-mounting, you can also adjust the mounting ears on each side of the unit if necessary.

Software Configuration

All blades are independently configurable using the IP address and the VBAAdmin management program. In all respects, blade software configuration is identical to appliance software configuration. See the *H.264 Appliance Admin Guide* for details about all configurable parameters. To identify the blade by slot number, launch VBAAdmin, go to the Monitor > System page, and note the **Slot ID** (see below). The blades are numbered 1–11 from left to right. If service is ever required, scroll down to the **Add-on Boards** table (Slot 1 only) for manufacturing data associated with the backplane.

The screenshot displays the VBAAdmin web interface. On the left is a 'Configuration Menu' with options like Home, System Configuration, Video/Audio Configuration, Program Configuration, Monitor, Program Status, and Troubleshoot. The main area shows system status: Temperature (36°C), Fan Status (On), Slot ID (1), Overloaded Count (0), CPU Utilization (52%), System Up Time (00:50:16), Total System Up Time (00:007 21:51 (yr.day hr:min)), and System Date & Time (8/31/2009 11:31). Below this is a 'Manufacturing Information' section with fields for User Information Version, Part Number, System Serial Number, Customer Class, Manufacturing Date, Board Assembly Number, Power Assembly Number, Lot Number, Board Serial Number, MAC Address, and Upgrade Date. At the bottom is an 'Add-on Boards Information Table' with columns for Board Name, Version, Assembly #, Lot #, Unit Serial #, and Board Serial #. The table lists Processor, AV Module, and Shelf. 'Refresh' and 'Edit' buttons are at the bottom.

Board Name	Version	Assembly #	Lot #	Unit Serial #	Board Serial #
Processor	User Info 1.0	6105-0010-xxxx			
AV Module	User Info 1.0	6105-0020-0000			
Shelf	User Info 1.0	6105-0080-xxxx			

Maintenance

Power Supplies

The Rack Mount Shelf has dual, hot-swappable AC input power supplies (Figure 8). An LED and an audible alarm will indicate if either of the power supplies has failed. If a power supply fails, contact VBrick for a replacement as soon as possible. Do not attempt to repair a power supply as this will invalidate the warranty. Although the shelf will operate with a failed power supply, a redundant power supply will ensure there is no downtime in the future.

Table 7. AC Input Voltage and Frequency (iStarUSA Model IS-500R8P)

Parameter	Minimum	Nominal	Maximum	Max. Current
Voltage (115V)	90 VAC	100–120 VAC	132 VAC	8A
Voltage (230V)	180 VAC	200–24 VAC	264 VAC	4A
Frequency	47 Hz	50/60 Hz	63 Hz	

Table 8. Power Supply LEDs

Color	Description
Green	Power supply is good.
Yellow	AC power is applied but power supply is off.
Red	The power supply has failed.

If a power supply fails, the LED will turn red and an alarm will sound. Push the alarm reset button (the small black bubble button to the left of the left power cord receptacle) to silence the alarm.

- ▼ To remove/replace the power supply:
 1. Turn off power to the power supply with switch at bottom and unplug power cord.
 2. Pull unit out with handle while pressing the red release lever.
 3. When replacing a power supply, push in firmly to seat firmly in backplane.



Figure 8. Dual Power Supplies

Fan Tray

The shelf has a common fan tray with four fans and a replaceable air filter. There are no user-serviceable components in the fan tray. If an individual fan fails, you must replace the entire unit or you will invalidate the shelf warranty. Contact VBrick for a replacement fan tray as soon as possible. The **Status** LED will turn red if any of the fans has failed. *To avoid damaging the blades, do not run the shelf if more than one fan has failed.* When you pull out the fan tray, you can see the fans slowly spinning down. Any fan not spinning down has likely failed.

Table 9. Fan Tray LEDs

Color	Description
Green	Fan tray is good.
Red	The fan tray has failed and should be replaced as soon as possible. <i>Do not run the shelf if more than one fan has failed or the tray been removed.</i>

- ▼ To remove/replace the fan tray:
 1. Loosen the screws on each side of unit.
 2. Press the **REQ** (Request) button. This will power down the fan tray. The status LED will go from green to red and the **OK** LED will illuminate blue.
 3. Remove the tray and determine how many fans have failed (see above). Do not run the shelf if more than one fan has failed.
 4. Contact VBrick for a replacement fan tray as soon as possible.
 5. When powering down the fan tray to install a replacement, work quickly to avoid overheating the blades.



Figure 9. Fan Tray Controls and Indicators








Air Filter

The air intake unit at the bottom of the enclosure has a replaceable filter element. Inspect and replace the filter element every 90 days—more often in challenging environments. For best results, use replacement filters from VBrick. You need not power off the shelf to replace the filter element.

- ▼ To remove/replace the filter element:
 1. Loosen the screws on each side and remove the entire unit.
 2. Replace the filter with a VBrick-supplied replacement element.

Blade Safety Precautions

Use common sense when installing the blade server. Do not expose the unit to direct sunlight, high humidity or wet conditions. Do not block the air vents or impede the airflow in any way. Before you rack mount the blade server, please take a moment to read the following important safety precautions.

-  **Restricted Location.** Because of hazardous energy circuits on the backplane that are exposed when the fan tray or the blades are removed, this equipment must be installed in a restricted location with limited access for authorized users who are familiar with the electrical hazards and required safety precautions. It should not be used in a home, school, or other area accessible to the public. To be installed only in restricted access areas (dedicated equipment rooms, equipment closets, or the like) in accordance with Articles 110-26, 110-27 or the National Electric Code ANSI/NFPA70, or per the applicable code in the country of installation.
-  **Operating Temperature.** If installed in a closed or multi-unit rack, the operating ambient temperature may be greater than the room ambient. Install the equipment in an environment compatible with the maximum ambient temperature (T_{ma}) specified by the manufacturer.
-  **Reduced Air Flow.** Do not restrict air flow in any way. Rack mount the equipment so that the amount of air flow required for safe operation is not compromised.
-  **Mechanical Loading.** Avoid uneven mechanical loading. When rack-mounting the equipment, be sure that the devices are evenly balanced.
-  **Circuit Overloading.** Do not overload the supply circuits. Be aware of the effect that overloading the circuits can have on overcurrent protection and supply wiring. Refer to the equipment nameplate ratings for details.
-  **Reliable Earthing.** The rack-mounted equipment must be reliably earthed. This particularly applies to power strips and other indirect connections to the branch circuit.
-  **Replaceable Battery.** Do not attempt to replace the battery since it may explode if replaced incorrectly. Return to VBrick Support Services for replacement with the same or equivalent type of battery. VBrick will dispose of used batteries in accordance with manufacturer recommendations.



Software Upgrade

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Software Upgrade

Note When you purchased your network video appliance from VBrick, it was shipped with the latest software already installed and no additional software installation is necessary. If you ever need to reinstall the software, you can get it from the [Downloads](#) page on our website. **Use the following instructions only when upgrading the software.**

VBrick appliances are shipped with PC applications that allow for easy upgrade. Once the release is installed, the upgrade tools become available in the VBrick program group, located under **Start > All Programs > VBrick**. The upgrade procedure can be invoked by using either the VBDownload application or the VBDirectory application. Either application can be used as the starting point for updating the appliance's flash memory (TCP/IP FTP transport services are used for this). Using VBDirectory is an easier method since it lets you choose the appliances by name instead of IP address. When VBrick appliances are not accessible to VBDirectory, the VBDownload application must be used. Also keep in mind the following considerations:

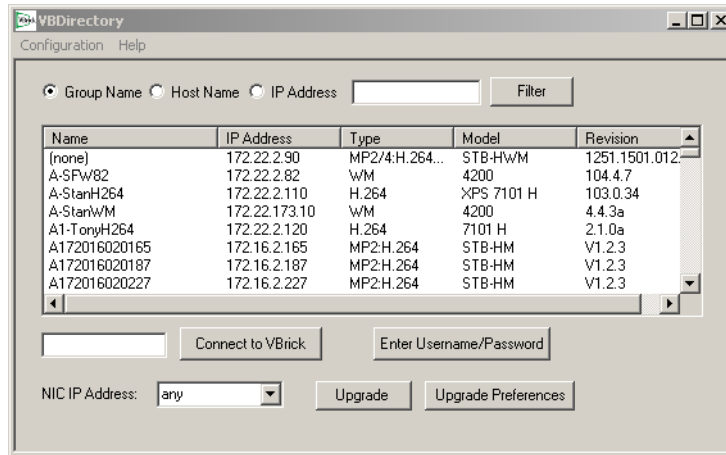
- All saved configuration parameters are saved when you upgrade your encoder and there is no need to reconfigure the unit after an upgrade. The upgrade process requires a unit reset, so be sure to save your configuration prior to the upgrade.
- Part of the install process occurs during the first reboot after the upgrade. Do not power off the unit during this time. The process may take 5 minutes and include an automatic reboot of the unit. The appliance is ready for operation when you are able to login via VAdmin or CLI.
- VBrick strongly recommends against loading a earlier version of code. As a general rule, never downgrade a unit to a code version older than what was originally installed at the factory. If you do load an earlier version of code, reset all parameters to the factory defaults and remove the external USB drive (if present) before the downgrade.

Installing a Software Upgrade

▼ To upgrade a VBrick:

1. Double-click on the release executable ([SetupVB7000_x_x_x.exe](#)) to install the release on your PC. It is recommended that you accept the default destination folder which is `Program Files\VBrick\VB7000\download\ReleaseVx_x_x`.
2. The setup programs for VBDownload and VBDirectory will automatically run after the files have been extracted. Click **Next**, follow the instructions, and use the default folders if possible.

- When the **Maintenance Complete** page is displayed, click **Finish**.
- Go to **Start > All Programs > VBrick > VBDirectory** to start the management utility. The VBDirectory program will show all VBrick appliances available for upgrade.



- Select the device to be updated by highlighting the name and then click the **Upgrade** button. (If the user name and password are not set, a dialog box will appear and you will need to configure the appliances's username and password (default = `admin/admin`).
- In the VBDownload window, if you installed the release to the default directory, that directory will be auto-selected in the **Revision Folder**. If not, **Browse** to the directory that contains the unzipped files from the release package.
- Select a **Revision** and click **OK** to start the download. Since the default mode of VBDownload is **Intelligent Download** the utility will query the VBrick to determine which release components need to be downloaded. When prompted, press **OK** to allow VBDownload to upgrade the suggested components. This may take several minutes.
- When the download completes, reboot the appliance using the **Reset Unit** radio button and follow the prompts.
- Note that part of the upgrade takes place during the first boot after the download and may take up to 5 minutes. The upgrade is complete when you can login via VAdmin or CLI, or when its name is refreshed in VBDirectory.
- When done close the window or click **Exit**.

Note To verify the download has successfully installed, check the **Application Code Revision** field on the VAdmin "Welcome" page.

Configuring VBDownload

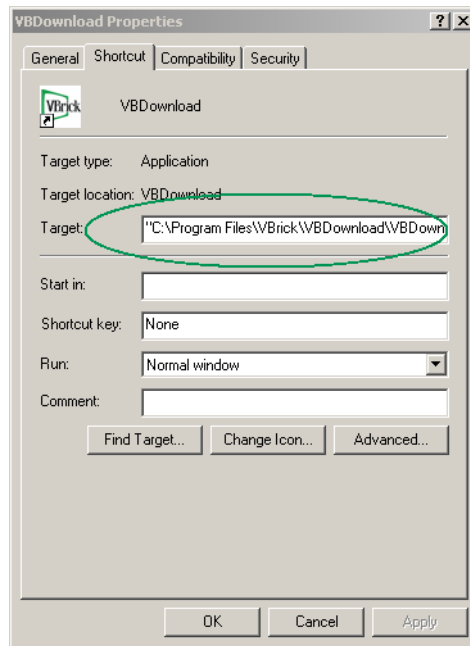
The VBDownload application is used to upgrade VBrick appliances. When you click on the setup executable, the application files are automatically installed in `Program Files/VBrick / VB6000` or `VBrick 7000-8000-9000`. If you have both VB6000 Series devices and VBrick 7000-8000-9000 devices present, the application will default to the `VBrick 7000-8000-9000` folder. Experienced VBrick users can modify this default behavior by creating a new shortcut for VBDownload that uses `VB6000` as the default folder.

▼ To configure the `VB6000` folder as the default folder:

- Go to `Start > All Programs > VBrick`.

2. Highlight **VBDownload** then right-click and select **Create Shortcut**. Then highlight the new shortcut and select **Rename**.
3. Enter a meaningful name, highlight it, then right-click and select **Properties**.
4. In the **Target** field, append the following text, beginning with a space, to the existing path. (Note that question marks are required for any spaces in the path.)

```
-i " " -f C:\Program?Files\VBrick\VB6000\Download\ReleaseVx_x_x
```
5. Replace `ReleaseVx_x_x` with the actual version number of the setup file and click **OK** when done.





Management Tools

Overview

The VBAAdmin configuration tool is an intuitive GUI-based management tool and VBrick recommends using VBAAdmin as the primary means of managing VBrick appliances. You can also use any of the following tools to manage a VBrick:

Table 10. VBrick Management Tools

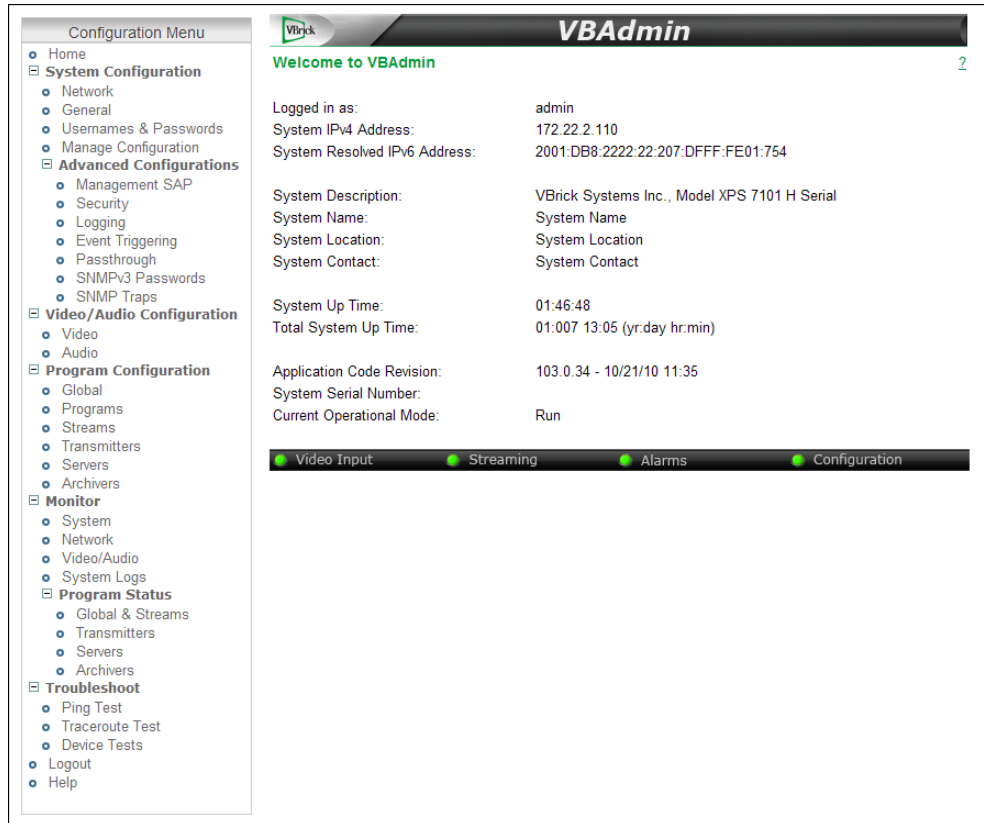
VBrick Tool	Description
VBAAdmin	The VBAAdmin management interface allows quick and secure control through the VBrick's IP interface. See Using VBAAdmin on page 31.
VBDirectory	The H.264 Appliance Product CD includes VBDirectory, an application that facilitates finding, accessing, and upgrading all VBricks on a network. For more information, see the VBDirectory online help.
Command Line Interface	The Command Line Interface provides management through the VBrick's COM port. See Connecting via the COM Port with HyperTerminal on page 39 or Connecting with Telnet or SSH on page 39.
SNMP	SNMP commands through VBrick's IP interface, including SNMP Traps.
Front Panel Edit	The front panel on the appliance displays appliance status information and can be used to set basic configuration parameters. See Front Panel Edit on page 49.
Web Services	You can set any configuration parameter in the MIB using an industry-standard Web Service.
Auto Configuration	See System Configuration > Auto Configuration in the <i>H.264 Appliance Admin Guide</i> .

Note There is only one active editing session allowed at any time in a single appliance. In VBAAdmin it is possible to exit a session which still in **Edit** mode. Other users then must determine whether or not to log off the previous editor. For that reason, it is recommended that all editing sessions be ended directly. Telnet, CLI and SNMP automatically log you out when you exit the program.

VBAAdmin

The appliance has an embedded web server lets you manage the configuration from an external browser. This allows network managers to remotely configure and monitor the appliances from virtually anywhere in the world. VBAAdmin is compatible with Internet

Explorer and Firefox (other browsers may not give acceptable results). For best results, VBrick Systems recommends Internet Explorer 6.0 or Firefox 3.0. You connect to VAdmin by pointing to the IP Address (e.g. <http://172.17.5.5>) of the VBrick appliance and logging in. VAdmin is one of several ways to manage a VBrick appliance. There are other methods but VAdmin's graphical user interface is the easiest to use. VAdmin is described in detail in [VAdmin](#) on page 31.

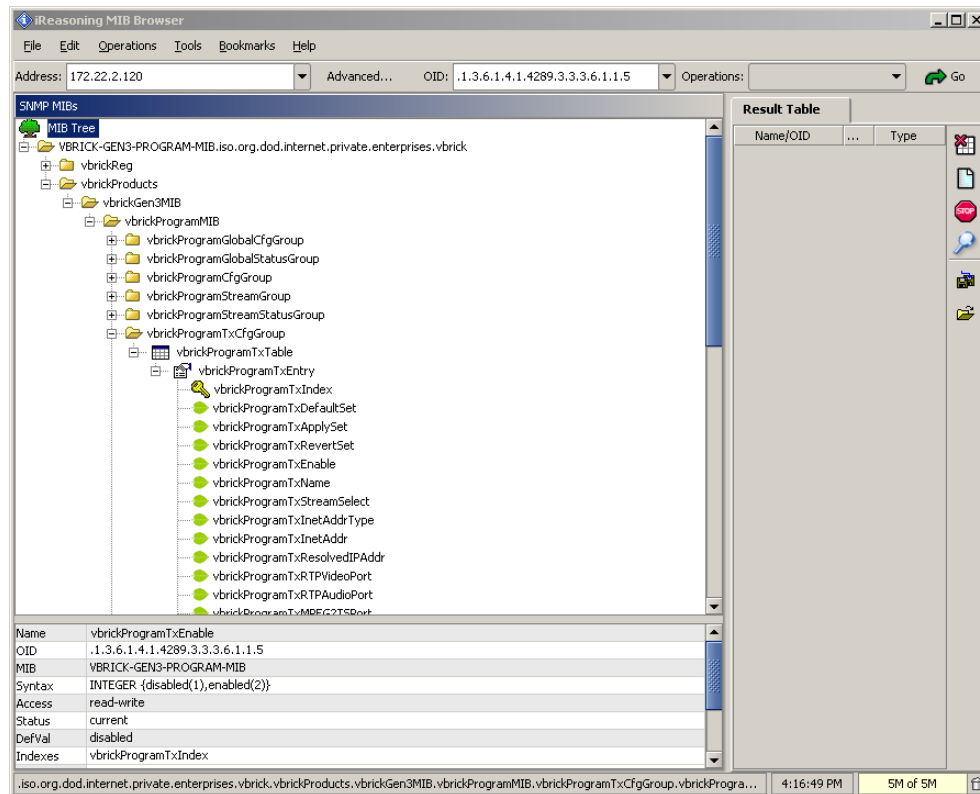


VBDirectory

VBrick provides a management application called VBDirectory that provides quick reference and access to all VBrick Appliances on a network. VBDirectory v4.4 or higher is compatible with H.264 appliances. VBDirectory is automatically installed with a software upgrade and is also available on the H.264 Appliance Product CD. For more information, see the *VBDirectory User Guide* which is also included on the H.264 Appliance Product CD.

SNMP

The VBrick appliance can also be configured and managed through its MIB which is available on the Product CD or on the VBrick website. Various SNMP (Simple Network Management Protocol) management tools are available to issue SNMP based commands to the appliance. The command structure is similar to CLI and Telnet. It is necessary to become the active editor and apply the changes before they take effect in the appliance. Note that the SNMP community strings are the usernames. The following screen shows a typical, freeware MIB browser.



Front Panel Edit

The front panel on the appliance displays appliance status information and can be used to set basic configuration parameters such as IP address and DHCP enable. It can also be used to run predefined scripts that are executed using the function (F1–F4) keys. For more information see [Front Panel Edit](#) on page 49.

Web Services

For customers who want to build custom applications, the VBrick 7000 Series SDK provides a standards-based SOAP architecture to programmatically interface to the appliance. It includes detailed documentation that explains how to configure and control appliances via command line scripts. The SDK is sold separately and is not bundled with other VBrick products. Contact a VBrick sales [representative](#) or your certified VBrick reseller to purchase the SDK.

Auto Configuration

Auto Configuration lets you perform a configuration via a URL script file. It is typically used for remote configuration and troubleshooting or to configure VBrick appliances that are behind a firewall. To configure a parameter on an appliance (or more likely a set of parameters) you simply point the URL to a server with an .xml configuration file. This is useful, for example, to change a transmitter destination address, set the audio and video rates, etc. when the VBrick appliances are behind a firewall and cannot be accessed remotely. See System Configuration > Auto Configuration in the *H.264 Appliance Admin Guide* for complete details.

Auto Configuration	
URL	<input type="text"/>
Poll Rate (minutes)	<input type="text" value="0"/>
Auto Config Status	SCRIPT NEVER RUN <input type="button" value="Run Script"/>

VAdmin

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Using VAdmin

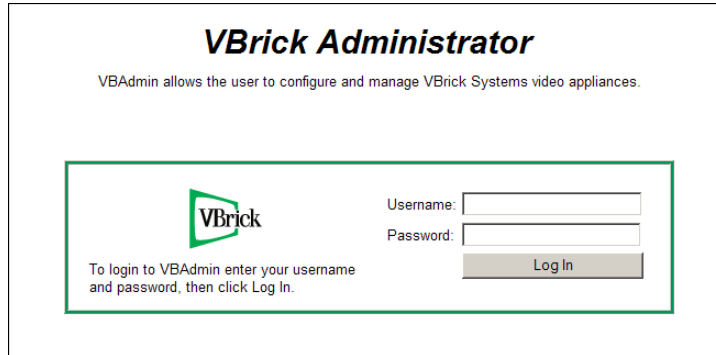
The VBrick H.264 Appliance has an integrated management interface (VAdmin) that lets you manage VBrick configuration from an external browser. This allows network managers to remotely configure and monitor the appliances from virtually anywhere. As shown in Table 11 you can launch VAdmin in Internet Explorer or Firefox (other browsers are not supported by VBrick). You connect to VAdmin by pointing to the IP Address (for example: <http://192.168.5.5>) of the VBrick appliance and logging in. (Note that passwords passed between client and server are encrypted.) VAdmin is one of several ways you can manage the VBrick encoder (for example you can also use Telnet or the [Command Line Interface](#)) but VAdmin is the easiest to use.

Table 11. Supported Browsers

Browser	Version
Microsoft Internet Explorer	8.0 or higher
Mozilla Firefox	3.6 or higher


To login to a VBrick 7000 Series appliance with Microsoft Internet Explorer, you must have **Session Cookies** and **Active Scripting** enabled. Depending on your browser version, these settings are in the **Security** or **Privacy** tabs in **Internet Options**. If either option is disabled, a correct username and password will refresh the screen without login. If **Active Scripting** cannot be enabled, check with your system administrator to see if it was disabled at the server level. To avoid having the VAdmin window automatically close when accessing a different VBrick appliance, go to Tools > Internet Options > Advanced and *uncheck* the **Reuse windows for launching shortcuts**.

Login Page



VBrick Administrator

VBAAdmin allows the user to configure and manage VBrick Systems video appliances.

 Username:

Password:

To login to VBAAdmin enter your username and password, then click Log In.

Figure 10. Login Page

▼ To login to VBAAdmin:

1. Enter the IP address of the H.264 appliance in the address bar.
2. When the login page is displayed, login to VBAAdmin with a valid user name and password (case-sensitive), and then click the **Log In** button. The default user name and password is `admin` and `admin`. It is highly recommended that you use the **Maintenance** pages in VBAAdmin to change the user name and password. The user name and password cannot exceed 20 characters. It may include any combination of alphanumeric characters and only the following special characters: `~ ! # $ ^ * + & [] { } | < >`

Table 12. Default Passwords and Privileges

User Level	Default User Name	Default Password	Privileges
Administrator	admin	admin	Read, diagnostics, edit, change passwords.
Operator	operator	operator	Read, diagnostics, edit.
Diagnostics	diagnostics	diagnostics	Read, diagnostics.
Public	public	public	Read.

Home Page

A successful login displays the Welcome to VBAAdmin page shown below. This is the "home" page; it provides system information and the colored LEDs in the middle of the page give you a quick snapshot of the health and status of the appliance.

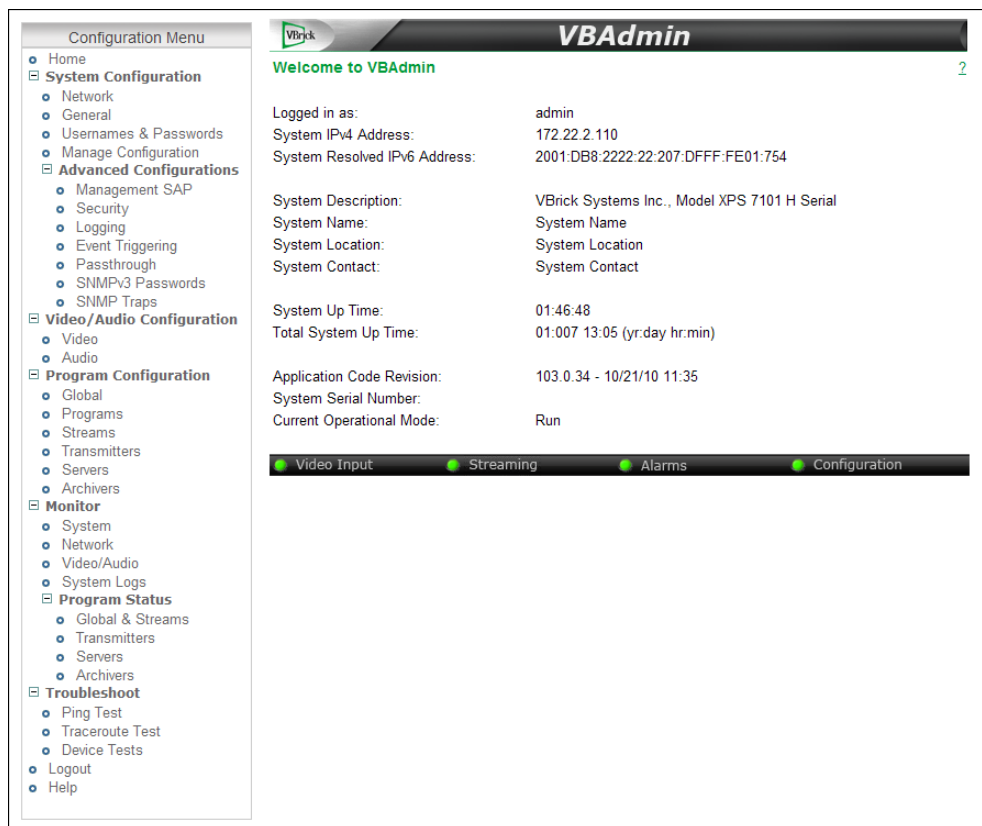


Figure 11. Welcome Page

Configuration Menu

The options on the Configuration Menu (see Figure 11) are shown below. This menu provides access to all configurable features and functions on the appliance. It also provides access to the help system. All configuration options are described in detail in the *H.264 Appliance Admin Guide*. Use the (plus and minus) tree controls in the Configuration Menu to expand or collapse the selectable options and note that many pages have additional links to hide or show less frequently used settings.

Home	Provides a quick snapshot of appliance health and status
System Configuration	Used to configure "system" settings such as IP address and host name as well as user names and passwords. Also let's you read, reset, or restore the system configuration. Advanced Configurations are used for security, logging, event triggering and other less frequently used options.
Audio/Video Configuration	Used to set audio and video parameters for the appliance.
Program Configuration	Used to set global and program options as well as to configure transmitters and servers.
Monitor	Lets you view system, network, and audio/video data as well as the various system logs. Program Status lets you view the status of programs, transmitters, and servers.

Troubleshoot	Lets you troubleshoots operational problems by running network tests and devices tests.
Logout	Logs you out of the system.
Help	Launches the online help system.

LED Indicators

The colored LEDs in the middle of the page give you a quick snapshot of the health and status of the appliance. These indicators are dynamically refreshed every five seconds and give you an up-to-the-minute snapshot of the current status.



Video Input	Checks whether Video State on the Monitor > Video/Audio page is running or not running. <ul style="list-style-type: none"> • Green – Running. • Red – Video Input problem.
Streaming	Checks whether the State on the Program Status > Transmitters page is transmitting or not transmitting. This includes any configured transmitters or any server clients connected to the appliance. <ul style="list-style-type: none"> • Green – at least one transmitter or server client is streaming. • Yellow – no transmitters or server clients are streaming.
Alarms	Checks whether the System Traps on the Monitor > System Logs page has any bad traps (for example a temperature alarm or a POST failure) that were not cleared. <ul style="list-style-type: none"> • Green – no alarms are present. • Red – one or more alarms are present.
Configuration	Checks for configuration errors or invalid input on any appliance configuration pages. <ul style="list-style-type: none"> • Green – no configuration errors are present. • Yellow – one or more configuration errors are present.

Edit Mode

In order to change configuration settings in the VBrick encoder, you must click **Edit** to become the active editor so that multiple users cannot be changing parameters at the same time. After clicking **Edit**, the button changes to **Finish Edit**, and the message **Edit Session In Progress** is displayed on the front panel of the appliance. *Only one user can be in Edit mode at any time.* Any user can end the current editing session of any other user regardless of login level—admin or operator. As a best practice, you should click **Edit**, make any necessary changes and then click **Save** and **Finish Edit** to avoid interfering with other users.

Note All configuration screens have a **View** mode and an **Edit** mode. All screens in this document are shown in **Edit** mode, that is *after* you have clicked the **Edit** button.

The screenshot shows the VBAAdmin web interface. On the left is a 'Configuration Menu' with a tree view containing categories like System Configuration, Advanced Configurations, Video/Audio Configuration, Program Configuration, Monitor, Program Status, and Troubleshoot. The 'Video/Audio Configuration' section is expanded, and the 'Video' sub-section is selected. The main content area is titled 'Video/Audio Configuration --> Video' and shows the following settings:

How is Video Connected?	Composite
Video Format	NTSC
Video Aspect Ratio	4:3
Detected Video Format	NTSC
Closed Caption	Inserted CC Enabled
Closed Caption Insertion Text	\H \D \T
Closed Caption Insertion Display Row	15
Closed Caption Insertion Update Rate	Fast
KLV	Disabled

Below these settings is a link for [Show advanced settings](#). The page then displays three sections for video rate templates:

- Video Rate 1 Template Settings:** Video Rate (Enabled), Template (Best Quality (Parameters Do Not Match)), Resolution (640x480), Target Bit Rate (bit/sec) (8000000), Target Frame Rate (frames/sec) (30). Includes a [Show advanced settings](#) link.
- Video Rate 2 Template Settings:** Video Rate (Disabled).
- Video Rate 3 Template Settings:** Video Rate (Disabled).

An **Edit** button is located at the bottom right of the configuration area.

Figure 12. View Mode

Be aware that some parameters, menu items, and fields are not shown unless you are in edit mode.

Click the **Edit** button to see all fields, parameters, and buttons. VBAAdmin validates most user entries. If you select and apply invalid settings or mismatched parameters, it will display error messages in red showing the valid range of values or a description of the conflicting parameters. When this happens, try again with different values or parameters and press **Apply**.

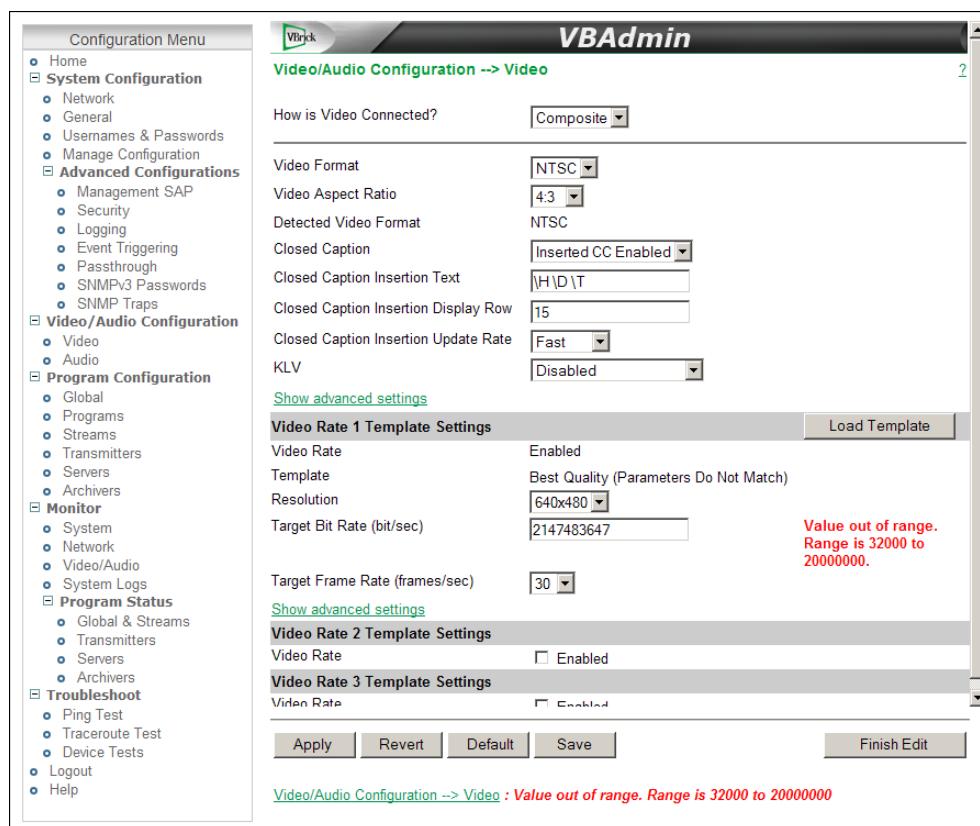



Figure 13. Edit Mode

Finish Edit	Ends the editing session and displays View mode.
Save	 <p>Writes all applied changes to flash memory. If you do not click Save after editing, any changes you made are lost if the appliance loses power or is reset.</p>

If the browser is closed after entering the Edit Mode, editing will not be ended. Therefore, a second user can't know if the first user has simply forgotten to log off or is still engaged in editing. After an hour of inactivity, Edit Mode times out, whether the browser is open on the desktop or closed without ending the Edit session. In VAdmin, the **Logout** button on the left side of the menu bar ends editing and logs you out of the application.

Using Apply, Revert, and Default

Depending on screen resolution, it may be necessary to scroll down the page to see additional information and fields. The **Apply**, **Revert** and **Default** buttons however, are always shown at the bottom of the page when appropriate. You may also see **Refresh**, **Reset Counters**, and other buttons depending on what page you are on.

Apply	Applies the changes made on the screen to the appliance. Note that these changes will not be stored in the appliance's flash memory until you click Save . This means if the appliance is powered down the changes will be lost. Don't forget to save the configuration.
-------	---

Revert	Aborts all changes made on the screen and returns to the values that were present prior to the first change that was made. Note that this only applies to changes made prior to the last "apply."
Default	Returns to the default settings for all parameters on the page. You must still click Apply for the settings to take effect.
Save	Saves the configuration to the appliance's Flash memory.

Resetting the Appliance

- ▼ To reset the VBrick appliance do one of the following:
1. Power the VBrick appliance off and on by removing and reinserting the power cord.
 2. Press the **Reset** button on the System Configuration > General page. This button is only available in **Edit** mode.

Note Some changes to the configuration will initiate an automatic reboot. When this happens, wait approximately 60 seconds, then refresh the page and log back in with your user name and password.

The screenshot shows the VBAAdmin interface for System Configuration -> General. The left sidebar contains a Configuration Menu with categories like System Configuration, Advanced Configurations, Video/Audio Configuration, Program Configuration, Monitor, Program Status, and Troubleshoot. The main content area is titled 'System Configuration --> General' and includes sections for System Identification, System Time, Additional System Settings, and System Reset. The 'System Reset' section contains a 'Reset' button, which is circled in green. At the bottom of the page are buttons for 'Apply', 'Revert', 'Default', 'Save', and 'Finish Edit'.

Logout

Click **Logout** on the Configuration Menu to exit VBAAdmin and automatically end any editing sessions. After logging out of VBAAdmin, it is a good idea to close the window and exit Internet Explorer.

Help

A link to the online help system is available from the Configuration Menu on the left side of the VAdmin page. This help system has a powerful full-text search engine that can quickly find the information you need. You may wish to take a few minutes to familiarize yourself with the help system. It can save time when trying to find information about appliance parameters or options. When using VAdmin, click on the question mark hyperlink in the upper-right corner of each page to get context-sensitive help for that page.

Note The online help system requires an Internet connection but can be configured to run on your local web server. See "Configuring Local Online Help" in the *H.264 Appliance Admin Guide* for more information.

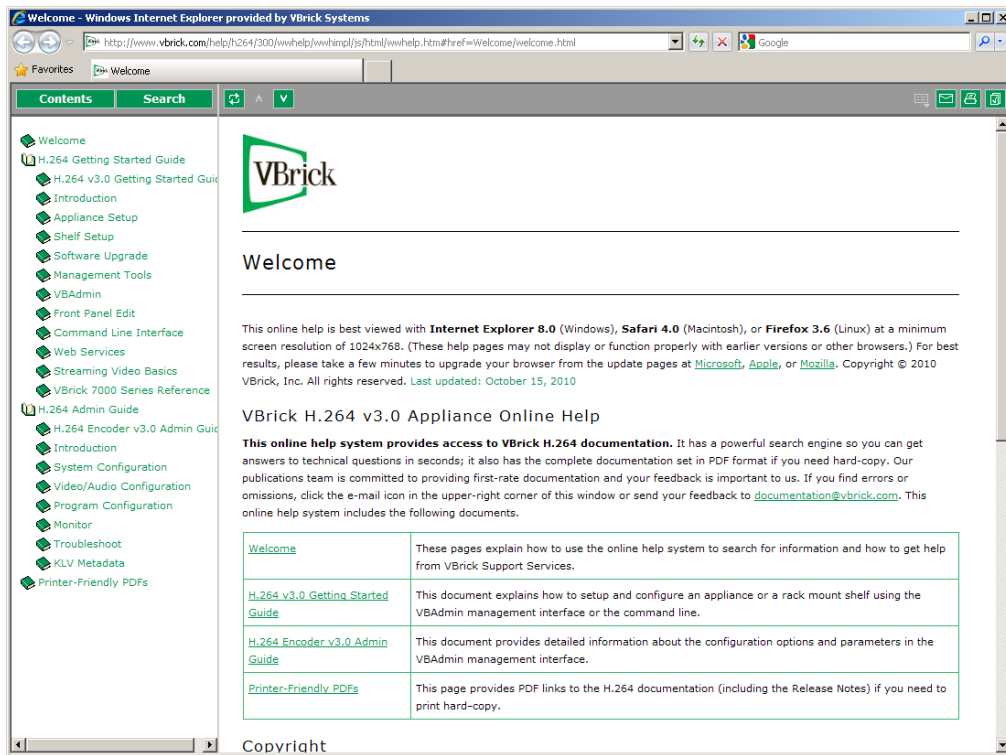


Figure 14. Online Help Page

Command Line Interface

Although VBAAdmin is the preferred management interface you can also access the appliance configuration using the Command Line Interface and some users prefer the Command Line.

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Connection Modes

This section explains how to access VBrick appliance parameters using the COM serial port or over an IP network. You can use HyperTerminal or ProComm with the serial port for example, or Telnet or PuTTY over an IP network. To send input commands to a VBrick appliance, you can use ProComm, Telnet, scripts, cut-and-paste, or any program that supplies text-based input via the get and set commands.

Connecting via the COM Port with HyperTerminal

To manage an appliance via terminal emulation (for example with HyperTerminal), connect the included cable (which provides a standard 9-pin serial connection) from the serial port on your computer to the VBrick's **COM** RJ-45 connector. To access the VBrick using HyperTerminal go to **Start > Programs > Accessories > Communication > HyperTerminal**. Connect through your computer's COM Port (usually COM1) with the following settings.

Bits per second	9600
Data bits	8
Parity	None
Stop bits	1
Flow control	None

When you connect to a terminal, a prompt for login (username) and password will be displayed. Login and password are case sensitive (**admin**). Once logged in, the main menu will appear by typing a question mark (?) at the **vbrick>** prompt.

Connecting with Telnet or SSH

VBrick appliances can be managed remotely via industry-standard Telnet or an SSH client like PuTTY. With Telnet the same commands that are displayed on a local terminal are

- ▼ Use these basic steps to find and set VBrick appliance parameters with the CLI:
 1. Find the parameter you want to set or change. See [Finding VBrick Parameters](#) on page 41.
 2. Set the parameter using valid values obtained from the MIB. See [Setting VBrick Parameters](#) on page 44.
 3. Apply the changed value(s) using the `ApplySet` command for that group as specified in the MIB. See [Applying Changes](#) on page 46.
 4. Optional. Save the configuration file. See [Saving Changes](#) on page 46.

The Get and Set commands are shown in the following table. All CLI commands are shown in Table 15 on page 44. You will need to login to the VBrick and begin an edit session before you can make any changes. Once the parameters have been set to the correct values, you must do an `ApplySet`. If the response to any `ApplySet` does not match the value of the set, an error message is displayed. Use care when typing commands. **All commands and parameter names are case sensitive. All parameter names must be prefixed by "vbrick".**

Table 13. Get and Set Command Syntax

Command	Response
<code>GVAR vbrickMIBNAME</code>	<code>#!MIBNAME=value</code> or <code>#!ERROR=errorstring</code>
<code>SVAR vbrickMIBNAME=value</code>	<code>#!MIBNAME=value</code> or <code>#!ERROR=errorstring</code>

Note The serial port is also used by the VBrick appliance to emit system messages. In order to allow the script writer to distinguish between direct responses to commands and other output, all CLI response messages have `#!` as leading characters. *Any responses that do not begin with these characters can be safely ignored.*

It is important to note that some commands also cause a reboot of the VBrick. In order to notify the command initiator when this happens, the string `#!Rebooting ...` is emitted from the VBrick. In this case the commanding entity must be prepared to wait before continuing the editing session. In practice, it is unlikely that any automated program will be tasked with initiating any tasks that will cause a spontaneous reboot.

Finding VBrick Parameters

The best way to find a parameter name is by viewing the Configuration Log. Once you find the parameter name, you can check the MIB using a MIB browser to verify the definition and usage.

- ▼ To locate a parameter name using the Configuration Log:
 1. Use VAdmin to set or change a parameter and click **Apply**.
 2. Then go to **Monitor > System Logs > Configuration Log** and examine the log. You will see a configuration log message reporting the exact name of the parameter you just changed.
 3. Verify the definition and usage of the parameter by examining the MIB file with either a standard MIB browser or a text editor.
 4. You can use this parameter name in a script. Make sure you prefix the parameter name with `vbrick`, for example: `vbrickProgramTransmitterName`

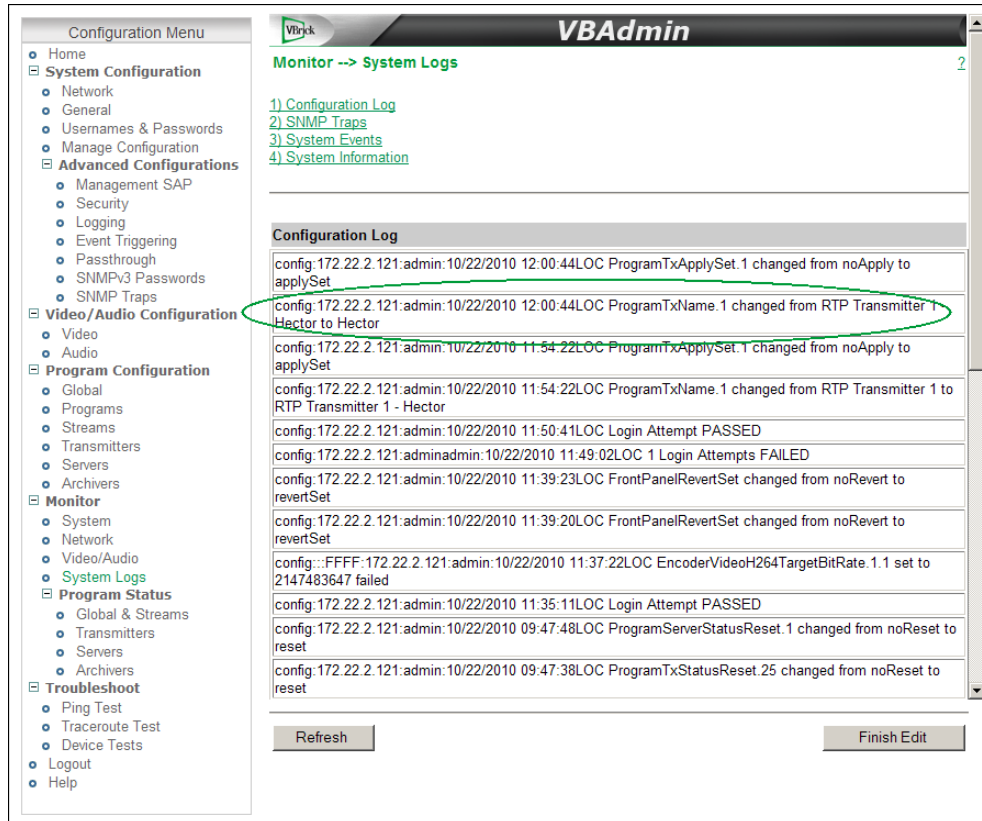
The following example shows how the **Transmitter Name** in VAdmin is associated with `vbrickProgramTransmitterName` in the MIB. First find the **Transmitter Name** parameter name using the Configuration Log. Then open the appropriate MIB file (see Table 14 below) in a MIB browser. The valid value for this variable is `DisplayString`. If the syntax calls for an integer, use a numeric value; if the syntax calls for a string, use an alpha value.

▼ To find the VBrick parameter name and syntax:

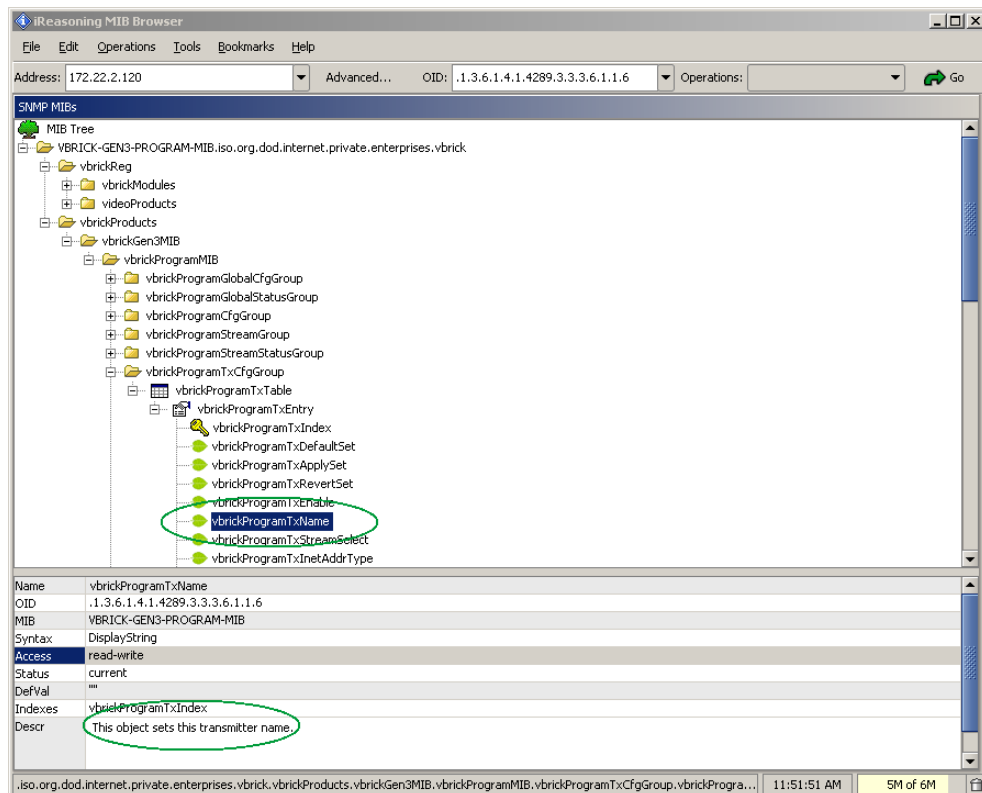
1. Find and change the parameter in VAdmin.

The screenshot displays the VAdmin web interface for configuring transmitters. The left sidebar shows a navigation menu with categories like System Configuration, Advanced Configurations, Video/Audio Configuration, Program Configuration, Monitor, Program Status, and Troubleshoot. The main content area is titled 'Program Configuration --> Transmitters' and shows settings for 'Transmitter 1 - RTP Transmi...'. The 'Transmitter Name' field is highlighted with a green oval and contains the value 'Hector'. Other settings include 'Enable Transmitter' (checked), 'Stream Select' (Stream 1), 'Transport Type' (RTP), 'Destination' (IP Address 239.22.180.201), 'Destination Video Port' (4444), 'Destination Audio Port' (4644), 'Auto Unicast Mode' (Disabled), 'RTCP Transmit' (checked), 'RTCP Transmit Interval' (10), 'Announce Settings' (Announce checked, Use Global Announce IP and Port checked, Send To Unicast Destination unchecked), 'Destination IP Address' (224.2.127.254), and 'Destination Port' (9875). At the bottom, there are buttons for 'Apply', 'Revert', 'Default', 'Save', and 'Finish Edit'.

2. Go to the Monitor > System Logs > Configuration Log and find the name of the parameter you just changed.



3. Open the appropriate MIB file in a MIB browser and view the syntax. Once you know the syntax, you can use the correct variable name and value on the Command Line.



Working with MIB Files

The MIB files provide read-only access to all configurable encoder parameters and are organized as shown in Table 14. To access any MIB variable, open the appropriate file in a MIB browser. The easiest way to visualize VBrick's control structure is to understand the relationship between the VAdmin and the MIB. To get started, open a MIB file in a text editor or a MIB browser. For the most part, parameters are grouped according to where they appear on the VAdmin pages. Once you find the parameter, other related parameters are usually contained in the same group. Each of the top-level groups comprises a page in VAdmin. Note that valid values for the selected parameter are shown next to the **Syntax** column in the lower left area of the window in the MIB browser example above.

Table 14. MIB Files

MIB	Description
<code>vbrick_reg.mib</code>	This file is used as a reference by the MIB browser.
<code>vbrickEncoder.mib</code>	Contains encoder parameters including video, audio, configuration, and status parameters.
<code>vbrickProgram.mib</code>	Contains transmitter, server, and SAP parameters.
<code>vbrickSystem.mib</code>	Contains IP address, network traps, auto-config, front panel configuration, etc.

Setting VBrick Parameters

Logging In

The first step is to connect to the VBrick appliance using whatever method is appropriate at your site (e.g. Telnet, HyperTerminal, etc.). When logging in, you are prompted for a login name and password. These credentials give you access to the VBrick and are typically provided by an administrator. When the `vbrick>` prompt is displayed, you are successfully logged in. The CLI shortcut commands are shown below.

```
Login: <username>
Password: <password>
vbrick>
```

Table 15. CLI Shortcut Commands

Command	Description
<code>BE</code>	Begin edit session
<code>EE</code>	End edit session
<code>ERRORS</code>	Show configuration errors
<code>GVAR</code>	Get parameter
<code>NT</code>	Ethernet Network Configuration
<code>QUIT</code>	Logoff the CLI session
<code>RESET</code>	System reset
<code>SAVE</code>	Save configuration
<code>SD</code>	Set defaults

Command	Description
SFD	Set factory defaults
SVAR	Set parameter
WAIT	Delay for specified time

Beginning or Ending an Edit Session

To begin a CLI edit session, first login as explained above, and then enter the first two commands shown below *using the same username you used to login to the VBrick*. You only need to do this at the start of an edit session or if someone has ended your edit session. Also, you only need to begin an edit session to *set* variable and table parameters—not to *get* parameters. You can *get* parameters without starting an edit session. When your edit session is done, and after you have applied or saved your changes, do an end edit. You can also use the Begin Edit (BE) and End Edit (EE) shortcut commands shown in Table 15.

▼ To begin an edit session:

```
vbrick> SVAR vbrickEditName=
vbrick> SVAR vbrickEditName=<admin>
```

▼ To end an edit session:

```
vbrick> SVAR vbrickEditName=
```

Getting or Setting Variables

Use the following format to get or set a variable. Note that this is only an example. Use the actual parameter name and value as shown in the MIB. [Finding VBrick Parameters](#) on page 41 explains how to do this. **All parameter names must be prefixed by "vbrick".**

```
vbrick> gvar vbrickManagementSapGroupName
```

Valid system commands display a response in the following format:

```
#!vbrickSlot1ArchiveMode=1
```

Invalid system commands display an error response in the following format:

```
#!ERROR=Value out of range
```

Note Double quotes (" ") *may* be used for any strings but they *must* be used if the string contains spaces. For example, use the following syntax to set the `ManagementSAPGroupName` using white space:

```
svar "vbrickManagementSapGroupName=Madrid VBrick"
```

Getting or Setting Table Variables

Table variables can be single-indexed where there is only one instance of a variable (for example an IP address) or double-indexed where there are multiple instances (for example TransmitterName). As shown below, when viewing the Configuration Log, single-indexed table variables will be appended with ".n". Double-indexed table variables will be appended with ".n.m"

```
vbrick> svar vbrickEncoderVideoCommonLuminance.1=99
```

```
vbrick> svar vbrickEncoderVideoH264Profile.1.1=2
```

Applying Changes

The `ApplySet` command is used to apply changes. There is one `ApplySet` command per program group in the MIB and the syntax varies slightly according to the group. Use this command, for example `vbrickProgramTransmitterApplySet`, to actually apply the change(s) you made with an `SVAR` or a `STAB`. An `ApplySet` is always written in the following format with the trailing `=2`.

```
VBrick> svar vbrickEncoderVideoCommonApplySet.1=2
```

It is important to note that some `ApplySets` can cause the VBrick appliance to send unsolicited messages. For example, the appliance may reboot with the following message:
`#!Rebooting ...`

Saving Changes

Once you are done, you must save to persistent storage if you want your edits saved in the configuration file. Unless you save the configuration, any changes you have made will be lost if the appliance reboots. A save is always written in the following format with the trailing `=2`. Note that some changes to the configuration will reboot the VBrick in which case you must wait for it to reset. Note that you can also use the `SAVE` command as a shortcut.

```
VBrick> svar vbrickSysSaveConfiguration=2
```

Error Handling

Programming errors, for example syntax errors, illegal values, etc. display informational messages in the CLI, for example `#!ERROR=Value out of range`. Other system or network issues, for example a dropped connection or a failed save (see below) are shown in the System Log (open VAdmin and go to **Monitor > System Logs > Configuration Log** to see the log). You can also see all configuration errors using the `ERRORS` command. You can also detect potential errors in advance by getting the value of various status parameters in the VBrick. For example, if you are writing a script, you might want to check **Transmitter State** or **FTP Status** before you set parameters for a related task.

Resetting the Appliance

Use the following command (or the `RESET` shortcut) to reset the appliance. A reset is simply a reboot. It does not change or reset any configured parameters.

```
vbrick> svar vbrickSysReset=2
```

CLI Examples

The following examples show common configuration tasks. User input commands are shown in bold text. Remember that you only need to begin an edit session at the start of an edit session or if someone has ended your edit session. You only need to end an edit session when you are done, and after you have applied or saved your changes. Remember that an `ApplySet` command is always required and comments are not allowed on the same line as a command.

Example 1

This example sets the 1.5M High Quality video template for `Video Source1` and `Video Rate1`.

```
// Comments must be on a separate line.
```

```
vbrick> svar vbrickEncoderVideoH264Template.1.1=3
```

```
vbrick> svar vbrickEncoderVideoH264TemplateAction.1.1=2
```



```
vbrick> svar vbrickEncoderVideoCommonApplySet.1=2
```

Example 2

This example shows how to set the Destination unicast address and enable the transmitter for Program1 and Transmitter1.

```
vbrick> svar vbrickProgramTransmitterInetAddrType.1=1
```

```
vbrick> svar vbrickProgramTransmitterInetAddr.1=172.22.118.105
```

```
vbrick> svar vbrickProgramTransmitterEnable.1=2
```

```
vbrick> svar vbrickProgramTransmitterApplySet.1=2
```

Front Panel Edit

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Overview

The front panel on the appliance displays appliance status information and can be used to set basic configuration parameters such as IP address and DHCP enable. It can also be used to run predefined scripts that are executed using the function (F1–F4) keys. *Note that Front Panel Edit allows you to configure only a small subset of appliance configuration parameters.* Use [VBAAdmin](#) to access all configurable appliance parameters. The front panel has a 4 line x 20 character LCD screen and various input buttons. During normal operation (in Status mode) the front panel LCD cycles through a series of informational messages. If for some reason you cannot access VBAAdmin or the front panel, you can still set basic configuration options using the COM serial port or Telnet. See using the [Command Line Interface](#) more information.

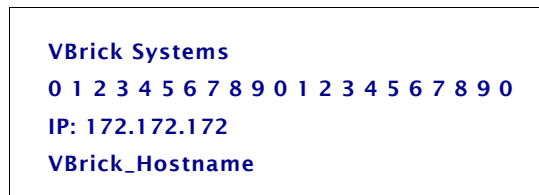


Figure 15. Front Panel LCD with Sample Data

Front Panel Modes

When you first power on the appliance, it runs through the power on self-test sequence during which a series of informational messages are displayed. When the self tests are complete (after a minute or two) the appliance is in Status mode and will display appropriate status messages on the LCD screen. At this point you can use the **Mode** button to cycle to Configuration mode or Function mode. As a visual cue, each mode has different backlighting.

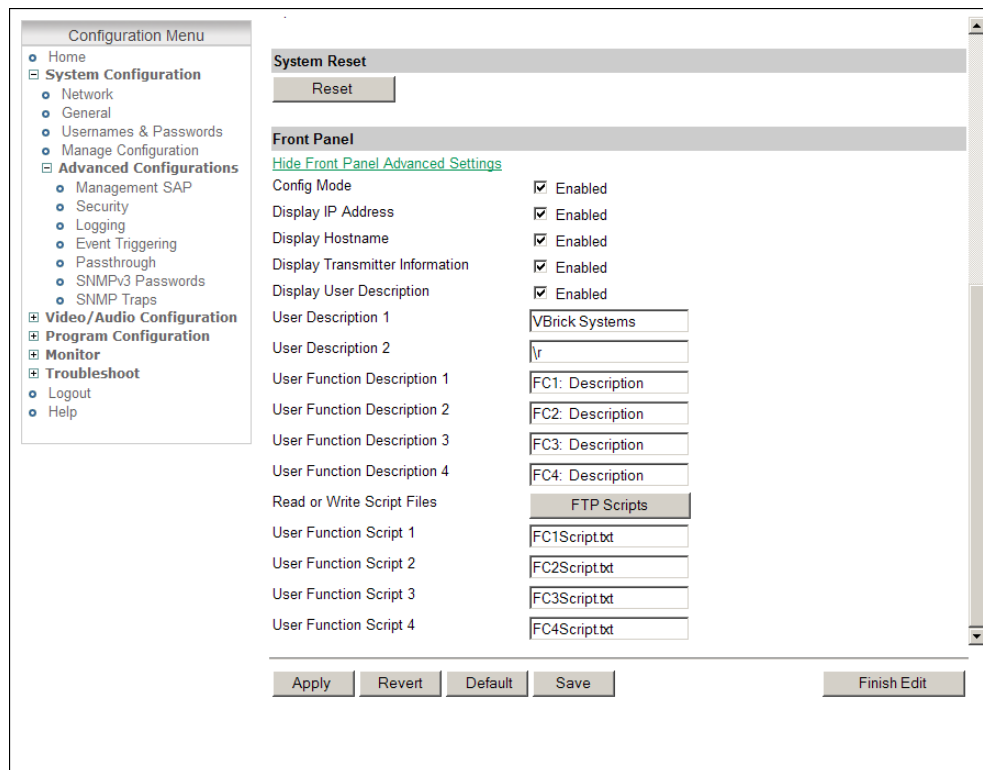
Table 16. Front Panel Modes

Mode	Description	Backlight
Status	Read-only. Scrolls through a sequence of informational messages every three seconds.	Blue
Configuration	Lets you configure a PIN, DHCP On/Off, IP address, and other values. Requires a PIN to login.	Grey

Mode	Description	Backlight
Function	Each function key can be associated with a script so that you can make rapid changes to the configuration.	Green

Front Panel Configuration in VAdmin

The behavior and appearance of the front panel can be configured using the VAdmin System Configuration > General page shown below. Among other things, you can choose whether or not to display the hostname and IP address and you can configure the first two lines with user-defined text as shown in Figure 15. See the *H.264 Appliance Admin Guide* for complete details.



Front Panel Navigation

The front panel has a 20 char. x 4 line LCD display, a keypad, and four function keys. Use the **Mode** button to select a mode, the arrow keys to navigate through menus, and the **Select** button to apply changes.



Figure 16. H.264 Appliance Front Panel

Table 17. Front Panel Edit Buttons

Button	Description
Mode	Use to select Status, Configuration, or Function mode.
Select	Select options in Configuration mode only.
Arrows	Navigate in Configuration mode only.
F1 – F4	Used to run scripts in Function mode. Can also be used to advance to the Previous (F1) and Next (F4) screen in Configuration mode. See Mapping a Function Key in the <i>H.264 Admin Guide</i> for more information.

Status Mode

In Status mode the screen scrolls through a series of messages every three seconds. The backlighting on the LCD panel alerts you to warnings or errors. The sequence of information is as follows:

- Basic information – always present.
- Edit message - when an Edit session is in progress.
- Warning messages – displayed if present.
- Configured destinations – shows program information and destinations configured on the Transmitter page in VAdmin.
- Error messages – displayed if present.

Table 18. LCD Status Backlighting

Color	Description
Red	Indicates errors are present
Yellow	Indicates warnings are present.
Blue	No warnings, no errors.

Configuration Mode

Configuration mode lets you set high-level configuration parameters for the appliance using the keypad. Table 19 shows keypad navigation functions; Table 20 shows the configuration options that are available using the front panel. In Configuration mode you use the keypad arrows to navigate and the **Select** button to choose the "selected" items or numbers. If you enter invalid data, error messages (and other messages) are displayed on the bottom line of the LCD. If you press **Select** without making changes, the message **No Network Changes** is displayed on the bottom line. (Note that the Hostname and User Descriptions on lines 1 and 2 of the LCD are set using VAdmin. See Configuration > General in the *H.264 Admin Guide* for details.)

Table 19. Keypad Navigation Functions

Key	Function
Up and Down arrows	Scrolls up to number nine or down to zero.
Left and Right arrows	Scrolls left or right in the LCD display.

Key	Function
Select	Select specified number or character.
F1 (Previous)	This key is functional in Configuration mode when Prv is displayed on top line of LCD panel.
F4 (Next)	This key is functional in Configuration mode when Nxt is displayed on top line of LCD panel.

Configurable Parameters

As noted, you can only modify a small subset of appliance parameters using the front panel. All other appliance parameters are modified with VAdmin. Before you begin, you must enter a valid PIN to access front panel edit. The PIN (default = 0000) is a four-digit numeric string configured in VAdmin (on the System Configuration > Usernames & Passwords page). The sequence of navigable screens on the Configuration menu is shown in Table 20. Changes are applied by pressing **Select**. Note that some parameter changes will automatically reboot the appliance before the setting is applied.

▼ To configure parameters from the front panel:

1. Press the **Mode** button to advance to Configuration mode.
2. Enter a valid PIN (default = 0000)
3. Press **F4** (Next) or **F1** (Previous) to advance to the parameter you wish to change.
4. Use the arrow keys to "highlight" items and the **Select** button to choose items.
5. Set appliance to Status mode when done.

Table 20. Front Panel Configurable Parameters

Sequence	Parameter	Description	Reboot
(1)	Enter PIN	Use the letter keys to enter the current PIN followed by the Select key. Entering the operator password will not allow you to change the IP Address, Subnet, or Gateway. Entering the case-sensitive administrator password (admin) allows you to change all configurable parameters.	N
(2)	Default	Use to set appliance to default parameters. <ul style="list-style-type: none"> • None – do not change. • Factory – sets all parameters to factory defaults <i>except</i> System Date and Time. • All – sets all parameters <i>except</i> IP address, Subnet, Gateway, Usernames & Passwords, System Date and Time. 	Y
(3)	DHCP On/Off	If you enable DHCP (Dynamic Host Configuration Protocol) the VBrick will reboot and attempt to obtain a dynamic IP Address from the DHCP server.	Y
(4)	IPAddr	Displays the current IPv4 address of the appliance. If the current setting is OK, press the Select. Otherwise enter the correct value and press Select. If you enter an invalid IP address an error message is displayed on the bottom line.	N

Sequence	Parameter	Description	Reboot
(5)	Subnet	Displays current Subnet mask of the appliance. If the current setting is OK press Select. Otherwise enter correct value and press Select. If you enter an invalid subnet mask an error message is displayed on the bottom line.	N
(6)	Gateway	Displays the current Gateway of the appliance. If the current setting is OK, press Select. Otherwise enter the correct value and press Select. If the IP address, Subnet mask or Gateway IP has been modified and there are no errors, the appliance will reboot. If you press Select and a valid gateway was entered, and the stored network parameters do not match the current network parameters, the network parameters are changed. If the change is successful the unit reboots. If the change fails the bottom line on the LCD displays Inconsistent Parms and you must reenter some combination of IP address, subnet mask, and gateway.	Y

Function Mode

The front panel can be used to execute predefined scripts that activate certain functions on the appliance. For example you may have a script mapped to the **F1** key that enables or disables a transmit stream. You run a script using the function key that was mapped to that script in VAdmin. Scripts are saved on the appliance and can be uploaded via FTP. After navigating to Function mode with the **Mode** button, the front panel displays four configurable lines of text (one for each Function key) that can be used to describe the function that the script will perform. This descriptive text is configurable in VAdmin on the Configuration > General page. See [Mapping a Function Key](#) in the *H.264 Admin Guide* for more information.



Web Services

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Web Services Interface

VBrick 7000 Series appliances provide a standards-based SOAP architecture to programmatically interface to the appliance. The Web Service interface allows the user application to `Get/Set` MIB parameters in the appliance. The methods supported by the service are listed below.

Table 21. Web Services Methods

Method	Description
<code>getNewSessionId (device)</code>	Used to get a new session id from the appliance. It allows the web service to maintain session with the appliance.
<code>test (echoString)</code>	Used as a test web service method to test if the interface to the appliance is working. It returns the input string as an echo.
<code>login (sessionId, loginName, hashedPassword)</code>	Used as method to allows the user to login into the box as a particular user with appropriate privileges. Returns <code>OK</code> if successful, <code>ERROR</code> otherwise.
<code>beginEdit (sessionId, editName)</code>	Used as a method to begin the edit session to become editor of parameters. Returns <code>editName</code> if successful, <code>ERROR</code> otherwise.
<code>endEdit (sessionId)</code>	Used as a method to end the editor session. Returns <code>OK</code> if successful, <code>ERROR</code> otherwise.
<code>endOtherEdit (sessionId)</code>	Used as a method to forcefully end another editor session. Returns <code>OK</code> if successful, <code>ERROR</code> otherwise.
<code>logout (sessionId)</code>	Used to logout of a web session. Returns <code>OK</code> if successful, <code>ERROR</code> otherwise.
<code>getParameterValue (sessionId, parmName, parmIndex)</code>	Used as a parameter to get a parameter value. Returns parameter value as a string if successful, <code>ERROR</code> otherwise
<code>setParameterValue (sessionId, parmName, parmIndex, parmValue)</code>	Used as a method to set a parameter value. Returns <code>OK</code> if successful, <code>ERROR</code> otherwise.
<code>setMultipleParameterValue (sessionId, parmName, parmValue, count)</code>	Used as a method to set multiple parameter values, where <code>parmName</code> is a string array of names, <code>parmValue</code> is a string array of values to the corresponding array of names, and <code>count</code> is the number of items in the array. Returns <code>OK</code> if successful, <code>ERROR</code> otherwise.

The WSDL file for the web service methods can be obtained by calling the following URL where `<appliance_ip_address>` is the IP address of the appliance or a host name that can be resolved to an IP by the local DNS server.

`http://<appliance_ip_address>/VBrickWebSrvc/VBrickWebSrvc.wsdl`

All methods return `ERROR` as the response if the request cannot be fulfilled. `OK` is returned for methods that complete successfully. `GetNewSessionId` returns a new `SessionId` if it succeeds; `test` returns the input string as an echo. In order to set parameters, the user must be authenticated and must also be an active editor (by calling `beginEdit`). A typical sequence of calls to the methods is shown below.

Note There are multiple ways to locate and verify VBrick parameters. See [Setting VBrick Parameters](#) on page 44 for more information.

▼ To Get a parameter value:

1. Get a new `SessionId` by calling `getNewSessionId`.
2. Login into the appliance by calling the `login` method and supplying the login name and hashed password value. The algorithm to hash the password is provided as "C" code and also as a VBCrypt package for the Microsoft .NET and C# environments.
3. Get the parameter value by calling the `getParameterValue` method supplying the MIB name and parameter Index (if any). Note: Some parameters may require the user to be the active editor. More parameters can be retrieved by calling the method several times.
4. Logout of the session by calling the `logout` method.

▼ To Set a parameter value:

1. Get a new `SessionId` by calling `getNewSessionId`.
2. Login into the appliance by calling the `login` method and supplying the login name and hashed password value. The algorithm to hash the password is provided as "C" code and also as a VBCrypt package for the Microsoft .NET and C# environments.
3. Call the `beginEdit` method to become the active editor in the box.
4. Set the parameter value by calling the `setParameterValue` method supplying the MIB name, parameter Index (if any), and parameter value. More parameters can be set by calling the method several times, or by calling the `setMultipleParameterValue` method.
5. End the edit by calling `endEdit`
6. Logout of the session by calling the `logout` method.

Note If you successfully login to the appliance, you must logout when your session completes or subsequent users will be unable to access the appliance. You should end edit and logout if login or begin edit were successful regardless of the success or failure of your Get or Set call.

Streaming Video Basics

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Video Basics

It is important that the source of the video being encoded and streamed is of the highest possible quality in order to avoid using unnecessary bandwidth to transport source video artifacts, distortion, etc. If using a camera, exercise common sense; good lighting and a steady camera will improve overall performance. Cameras, VCR tape players, DVD players, and live television broadcast feeds from a TV tuner can all be used as video sources. VBrick supports standard video via BNC connectors, or S-Video via mini-DIN connectors. BNC-to-RCA adapters are readily available if RCA-type cables are used.

Getting the Best Video

Video quality is a subjective concept that depends on a variety of factors. VBrick's philosophy is to make our network appliances as flexible as possible so they can be used effectively in different applications on a wide variety of networks. This means you can configure an appliance for maximum performance but you can also configure it in such a way that it will only work well in a very limited environment. Video quality is also relative. What is acceptable quality for a surveillance application on a low-bandwidth network is most likely unacceptable for a corporate presentation or a two-way video conference on a high-speed LAN. Much depends on your network, the bandwidth you have available, and the audience you are trying to reach.

For best results, start with the default values and then adjust the bit rate, frame rate, resolution, and other parameters with care. Experiment with different settings to see the trade-offs in quality and performance. You can track your changes by periodically saving the configuration file using the **Read** and **Restore** options on the Manage Configuration page in VAdmin. If the audio and video quality is still less than you would expect, re-apply your saved configuration and try again. Keep in mind that the VBrick is stable, reliable and flexible. In most cases a small amount of experimentation will help you find the configuration settings that will deliver the best audio and video your network can support. For more information, or help configuring your appliance, contact VBrick [Support Services](#).

Network Considerations

Assigning Multicast Addresses

Many factors must be considered when designing a multicast address infrastructure since Ethernet switch implementations can significantly vary between vendors. Furthermore, multicast addressing techniques rely on an Ethernet to IP Address mapping rule, which does not guarantee a unique physical address. In fact, it is possible to create multicast addresses that differ from an IP perspective, but overlap when presented to the Ethernet network. Addresses created in this situation can cause significant network and operational problems.

Specifically, multiple IP Addresses are mapped into the same physical layer address. For example, all IP multicast addresses with the same or differing first octet, and the second octet differing by exactly 128, map to the same physical address (226.5.5.4, 227.5.5.4, and 228.133.5.4 all map to the same physical address).

Another factor to keep in mind when assigning multicast addresses is that 224.x.x.x is a range containing reserved addresses, particularly in the range 224.0.0.x. For example, 224.0.0.1 is the 'all hosts' multicast address and 224.0.0.2 is the 'all routers' reserved address. Other 224.0.0.X numbers are reserved for RIP, OSPF, DVMRP, etc. Here are some recommended rules for multicast IP Address assignment:

1. Do not use 224 in the first octet since many of these are reserved.
2. Use a digit between (225–239) for the first octet and standardize on it for each network.
3. In the second octet, either use numbers from 1–127, or 129–255, do not mix ranges on a given network.

VBrick Accessories

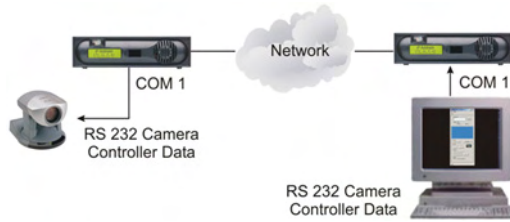
VBrick appliances have various optional hardware accessories. These work directly with VBrick appliances or through the use of ActiveX control software, also available from VBrick. For information about microphones, cameras and other VBrick hardware accessories, please contact VBrick directly. ActiveX controls for cameras and other software accessories are also available from VBrick.

Serial Port Passthrough

When configured properly, VBricks provide full duplex, end-to-end transparent passthrough of user data from one VBrick to another, or to other IP devices. The COM port is used for passthrough. The serial port operates at its configured baud rate (e.g. 110 to 115.2K bps). See the *H.264 Admin Guide* for passthrough configuration details. Some common applications include:

- Remote control of a camera, pan-tilt-zoom.
- Remote control of a security door lock.
- Low speed data transport.
- Data collaboration between PCs.

Note Passthrough mode is used to send control information from one VBrick to another and may not support sustained data at higher data rates.



How Passthrough Works

VBrick appliances are able to receive data on a particular TCP/IP port and transparently output that data to a serial port. Conversely, any data input to a serial port can be passed through to other devices connected to that TCP/IP port. Devices include other VBricks or special applications connected to the appropriate TCP/IP port. This feature is called "Serial Port Passthrough." COM is assigned port 4439. A typical application is for two VBricks connected to each other's TCP/IP port 4439. In this case, characters typed into a terminal program attached to one VBrick's serial port appear on a terminal program attached to the other VBrick's serial port. In this case, the TCP/IP network serves as an intermediary between the serial ports of two VBrick appliances.

You must select configuration settings to enable Serial Port Passthrough. First it is necessary to decide if the appliance will be designated as an **Initiator** or **Responder** of Passthrough connections. If configured as an **Initiator** it will continuously attempt to setup a Passthrough connection to other devices. When configured as a **Responder** it will accept up to 64 connections from **Initiator** appliances. It is possible to Disable Passthrough Mode, so that the VBrick neither initiates nor responds to Passthrough requests. If a VBrick is set to be an **Initiator**, a **Destination** must be selected. The appliance will use the destination information when trying to establish a connection. The destination can be configured as follows:

Dedicated	Means that the initiator will attempt to make a Passthrough connection to the configured Dedicated Destination and Port. The Dedicated Destination can either be configured using IP Address or Host Name. If set to Host Name, the Resolved Destination IP Address is derived from the Host Name parameter. If set to IP Address, the Resolved Destination IP Address is derived from the IP Address parameter.
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Since the medium used for setting up Passthrough connections is a generic TCP/IP port, any IP device that is prepared to connect to a VBrick's port can be considered as a Passthrough Initiator. The VBrick Responder appliance will not know the exact nature of the device at the other end of the port. For example, a generic Telnet client configured to connect to a VBrick on port 4439 will cause a VBrick **Responder** to start sending data from it's serial port, using the connection it accepted from the Telnet client.

If the appliance is configured as an **Initiator** and the **Responder** appliance has Passthrough disabled or is not on the network it will continue to try to establish a connection. A VBrick appliance must be configured as a **Responder** to accept Passthrough connections initiated by other devices. In addition to the Initiator versus Responder selection, the serial port operation settings must be entered to establish a connection, baud rate, stop bits etc.

Note Once a Passthrough connection is established between VBricks the actual flow of data is symmetric between the ends of the connection. That is, the behavior of the serial ports with respect to typed characters will appear to be the same at both ends.

Serial Port Passthrough Using Telnet

As mentioned in the previous section, either serial port can be accessed over Ethernet via a Telnet client. A VBrick appliance configured as a Passthrough Responder will accept a connection request to TCP port 4439 (COM). The request can come from a Telnet client or other PC application. Any data sent by the PC to TCP port 4439 will be delivered out of the VBrick serial ports and any data present on the VBrick serial port will be sent to the connected PC.



If multiple Telnet sessions are active on one VBrick (each VBrick supports up to 64 sessions), the data from the VBrick will be sent to all connected PC's, and the data received by the VBrick from the PC's will be delivered on the serial port. If multiple Telnet sessions are active and each is sending data to the VBrick, the data delivered by the RS-232 port will be a mix of characters presented in the order they were received (e.g. the data from all the senders is bridged together). This feature provides a method to broadcast alarm status or other information to multiple locations.

VBrick 7000 Series Reference

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VBrick H.264 Appliance Models

VBrick network appliances come in a variety of models and configurations. The following tables will help to identify your model and explain its characteristics.

Table 22. H.264 7000 Series Models

Standard Definition	<ul style="list-style-type: none"> Blade appliance (small form factor housed in VBrick blade server shelf). Industrial-class appliance (metal enclosure, no front panel or controls, small form factor). Enterprise-class appliance (metal enclosure, LED front panel and controls, large form factor).
High Definition	<ul style="list-style-type: none"> Blade appliance (small form factor housed in VBrick blade server shelf). Industrial-class appliance (metal enclosure, no front panel or controls, small form factor) with SDI and HDMI inputs. Enterprise-class appliance (metal enclosure, LED front panel and controls, large form factor) with SDI and HDMI inputs.

Table 23. H.264 7000 Series Encoder Models

	Part Number	Model Number	Description
Blade	9204-4202-000	BPS 8113 H	Blade H.264 SD Encoder
	9204-4202-300	BPS 8113 HS	Blade H.264 SD Encoder Internal EUSB Storage
	9204-4212-000	BPS 8123 H	Blade H.264 SD Encoder SDI
	9204-4212-300	BPS 8123 HS	Blade H.264 SD Encoder SDI Internal EUSB Storage
	9204-4200-000	XPS 8103 H	Blade H.264 SD MBR-Ready Encoder
	9204-4200-300	XPS 8103 HS	Blade H.264 SD MBR-Ready Internal EUSB Storage
	9204-4210-000	HPS 8103 H-HD	Blade H.264 HD Encoder
	9204-4210-300	HPS 8103 HS-HD	Blade H.264 HD Encoder Internal EUSB Storage

	Part Number	Model Number	Description
Industrial	9202-4202-000	BPS 7111 H	Industrial H.264 SD Encoder
	9202-4202-200	BPS 7111 HS	Industrial H.264 SD Encoder Solid State Storage
	9202-4212-000	BPS 7121 H	Industrial H.264 SD Encoder SDI
	9202-4212-200	BPS 7121 HS	Industrial H.264 SD Encoder SDI Solid State Storage
	9202-4200-000	XPS 7101 H	Industrial H.264 SD MBR-Ready Encoder
	9202-4200-200	XPS 7101 HS	Industrial H.264 SD MBR-Ready Solid State Storage
	9202-4210-000	HPS 7101 H-HD	Industrial H.264 HD Encoder
	9202-4210-200	HPS 7101 HS-HD	Industrial H.264 HD Encoder Solid State Storage
Enterprise	9200-4202-000	BPS 7112 H	Enterprise H.264 SD Encoder
	9200-4202-100	BPS 7112 HS	Enterprise H.264 SD Encoder Hard Drive
	9200-4212-000	BPS 7122 H	Enterprise H.264 SD Encoder SDI
	9200-4212-100	BPS 7122 HS	Enterprise H.264 SD Encoder Hard Drive
	9200-4200-000	XPS 7102 H	Enterprise H.264 SD MBR-Ready Encoder
	9200-4200-100	XPS 7102 HS	Enterprise H.264 SD MBR-Ready Hard Drive
	9200-4210-000	HPS 7102 H-HD	Enterprise H.264 HD Encoder
	9200-4210-100	HPS 7102 HS-HD	Enterprise H.264 HD Hard Drive

Table 24. H.264 7000 Series Model Descriptions

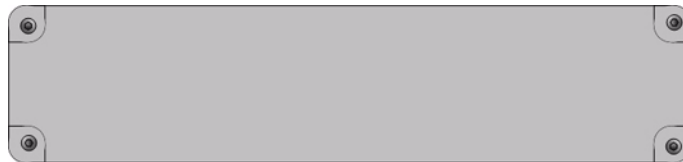
Model	Description
BPS	Baseline Performance Systems: SD inputs, encodes at SD resolutions, no MBR
BPS	Baseline Performance Systems: HD inputs, encodes at SD resolutions, no MBR, no 50/60 Target Frame Rate
XPS	Extended Performance Systems: SD inputs, Multiple Bit Rate
HPS	High Performance Systems: HD inputs, encodes at HD resolutions, MBR



Figure 17. H.264 Enterprise Encoder (front)



Figure 18. H.264 Enterprise Encoder (rear)



H.264 Industrial Encoder (front)



Figure 19. H.264 Industrial Encoder (rear)



Figure 20. H.264 Blade Encoder (front)

Device Interfaces

Video-In

Standard Definition	<ul style="list-style-type: none"> • S-Video – The S-VID interface is a standard mini-DIN connector. The audio is connected separately. • Composite – The COMP-IN interface is a standard BNC connector. The audio is connected separately.
High Definition	<ul style="list-style-type: none"> • Component – The component connectors (Y, Pb, Pr) support high definition video. The audio is connected separately using Main and/or Aux. • HDMI – The HDMI (High-Definition Multimedia Interface) connector supports both digital audio and video. • SDI – The SD-SDI/HD-SDI (Serial Digital Interface) supports both digital audio and video.

Table 25. S-Video Pinouts

Pin	Description
1	Ground
2	Ground
3	Luma
4	Chroma

Audio-In

As shown in Figure 18 and explained below, the H.264 encoder supports both analog audio (used with S-Video, Composite, and Component) and digital audio (used with HDMI and SDI).

Analog Audio

The H.264 encoder audio front-end has **Main** and **Aux** mini stereo jacks (Figure 21). The auxiliary (**Aux**) port is used (in addition to **Main**) for consumer devices that support two-jack stereo. The two audio jacks support Microphone and Line level input sources. Table 26 shows the range of different types of audio input sources.

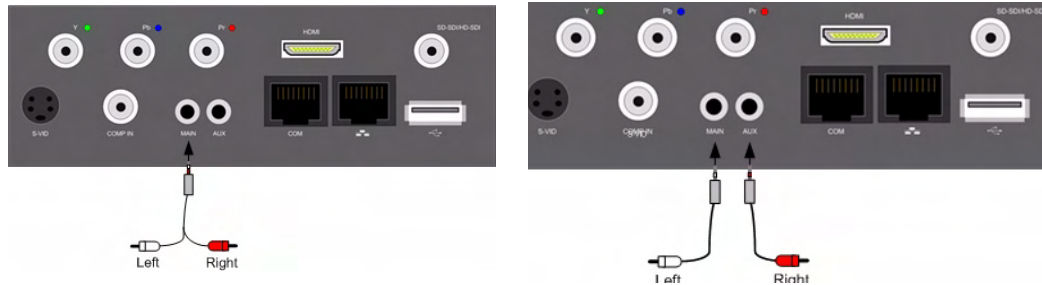


Figure 21. Audio Mini Stereo Jacks

Table 26. Range of Audio Input Sources

Microphone	<p>The pre-amplifier provides a selectable 16 or 32 db of gain (boost) as configured by the Input Range in VBAAdmin.</p> <ul style="list-style-type: none"> • Mic level with 16 dB pre-amp gain boost: 0 to 324 mVpp (~114 mVRMS) • Mic level with 32 dB pre-amp gain boost: 0 to 055 mVpp (~20 mVRMS)
Line Normal	Level from 0 to 2.2 V p-p (~0.78 VRMS) (0dbU)
Line High Headroom	Level from 0 to 6.9 V p-p (~2.44 VRMS) (10dbU)

Both unbalanced and balanced modes are available to the user. By default the connector accepts a stereo mini bantam plug whereby the tip, represents the left audio channel, the ring, the right audio channel, and the sleeve is the common (ground) signal in support of unbalanced line input stereo. When operated in mono mode, the main connector services the left channel. In mono modes, the jack can operate on balanced or unbalanced input signals. In unbalanced mono mode, only the left channel (tip of the bantam jack) is active. The main jack can also service a stereo mini jack configured to allow the differential signal to be input

as follows: (tip +) (ring -). The Frequency Response is +/- 0.5 dB from 20Hz to 20KHz for both the **Main** and **Aux** inputs.

Digital Audio

The H.264 encoder has two digital video/audio ports: **HDMI** and **SD-SDI/HD-SDI**. The **HDMI** port (High Definition Multimedia Interface) carries high-quality multichannel audio. It moves the audio across the TMDS lanes using a packet structure. The audio may be sampled at rates of 32, 44.1, or 48 KHz. The packets are transmitted during the vertical and horizontal blanking space. The receiver on the HD module generates 8 channels of audio (4 stereo channels). The **SDI** port (Serial Digital Interface) also carries 8 channels of digital audio of 48 KHz sampling rate. The SDI receiver supports 16, 20, 24 bit I2S audio format for both SD and HD. Only 2 of the 8 channels are used in the H264 encoder.

Table 27. Supported Digital Audio Formats

Format	Description
SDI	<ul style="list-style-type: none"> SDI (including SD-SDI, HD-SDI, and HD/3G-SDI) AES/EBU
HDMI	HDMI 1.1 compatible audio interface (basic audio).

COM

RS-232/422/485 COM Port Pinouts

The COM Passthrough Port is used to pass control information between VBrick appliances over the network. The **COM** port presents a standard DTE interface on an RJ-45 connector. The serial port operates at a default rate of 9.6 Kbps, Async, 8-Bit, No Parity, Controls = None. The pins on the passthrough port can be set for RS-232 *or* RS-422-485 (see below) using the **COM Interface Type** parameter on the Passthrough page in VAdmin.

Note See Configuration: Passthrough in the VBrick *H.264 Appliance Admin Guide* for detailed information about Passthrough configuration.

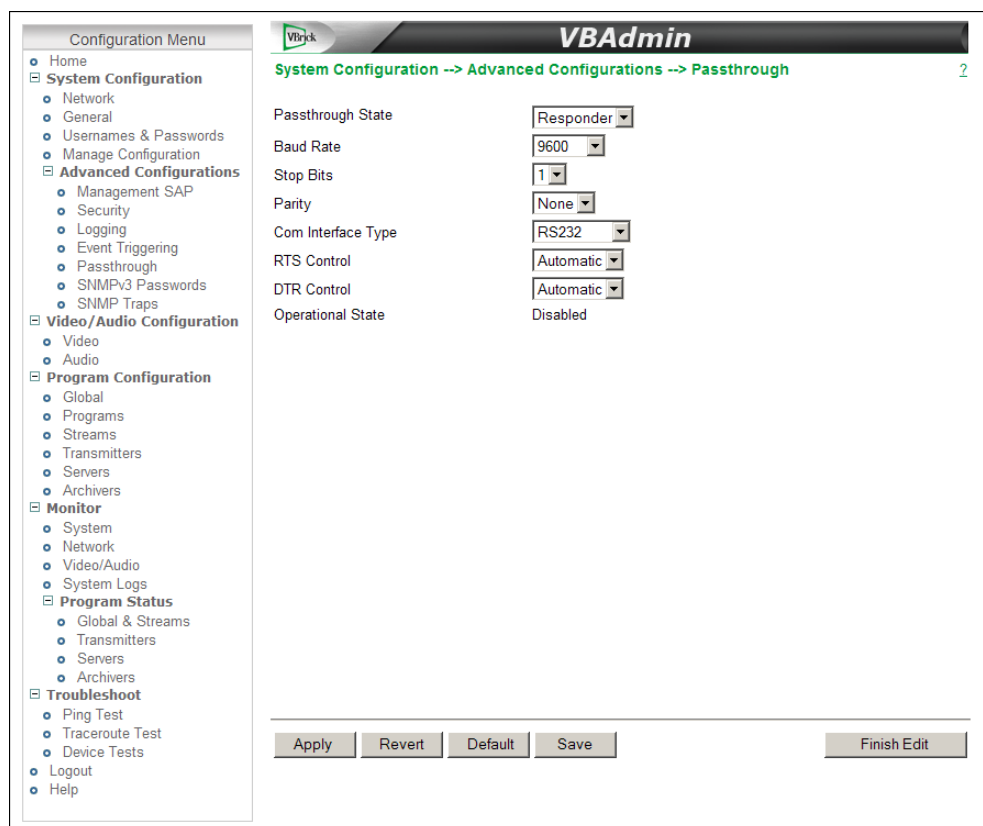


Table 28. RS-232 Pinouts

Pin	Function	Direction
1	RTS Request to Send	Output
2	DTR Data Terminal Ready	Output
3	TXD Send Data	Output
4	Ground	Common
5	Ground	Common
6	RXD Receive Data	Input
7	DSR Data Set Ready	Input
8	CTS Clear to Send	Input

Table 29. RS-232-422/485 Pinouts

Pin	Description
1	TD(+)
2	N/C
3	TD(-)
4	Optional gnd/common or n/c (GND connected to cable shielded)

Pin	Description
5	Optional gnd/common or n/c (GND connected to cable shielded)
6	RD(-)
7	N/C
8	RD(+)

Ethernet

The Ethernet port is used to connect the appliance to your network. It uses a standard 10/100/1000 cable.

USB

Not functional. Reserved for future use.

Power

The power entry interface supplies 12VDC to the appliance from an external 110/220 VAC power source.

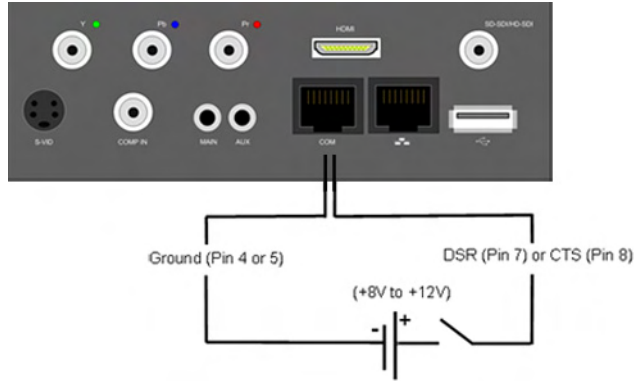
External Event Triggering

The VB 7000 event triggering feature lets you use an external switch to control the function of the VBrick. This section provides some examples of how to use this feature. In all the examples, a high event is triggered when the switch is closed and a low event is triggered when the switch is opened. The event trigger inputs on the VBrick recognize a *high* voltage anywhere above +8 volts DC with an upper limit of +12 volts. A *low* voltage is anything at or below 0 volts DC with a lower limit of -12 volts. The event can also be configured to run a script on Pin 7 or Pin 8 depending on how the connection is configured. See "Advanced Configurations > Event Triggering" in the *H.264 Appliance Admin Guide* for configuration details; see [RS-232/422/485 COM Port Pinouts](#) for pinout details.

Note You cannot execute a script using an event trigger if VAdmin is currently running in **Edit** mode. If you run a script directly from VAdmin, it automatically exits **Edit** mode and terminates the active editing session.

Example 1

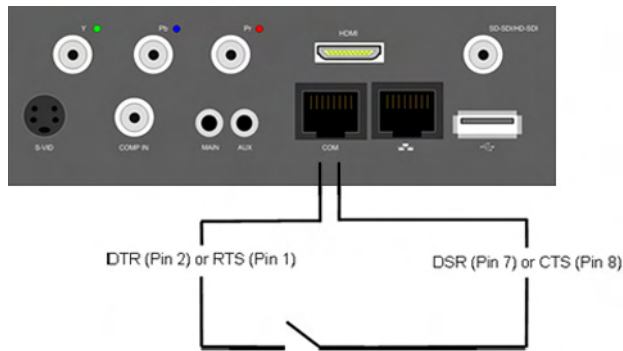
Connect an external power supply (+8V to +12V) and a switch directly to the ground pin and an event pin of the COM port on the VBrick.

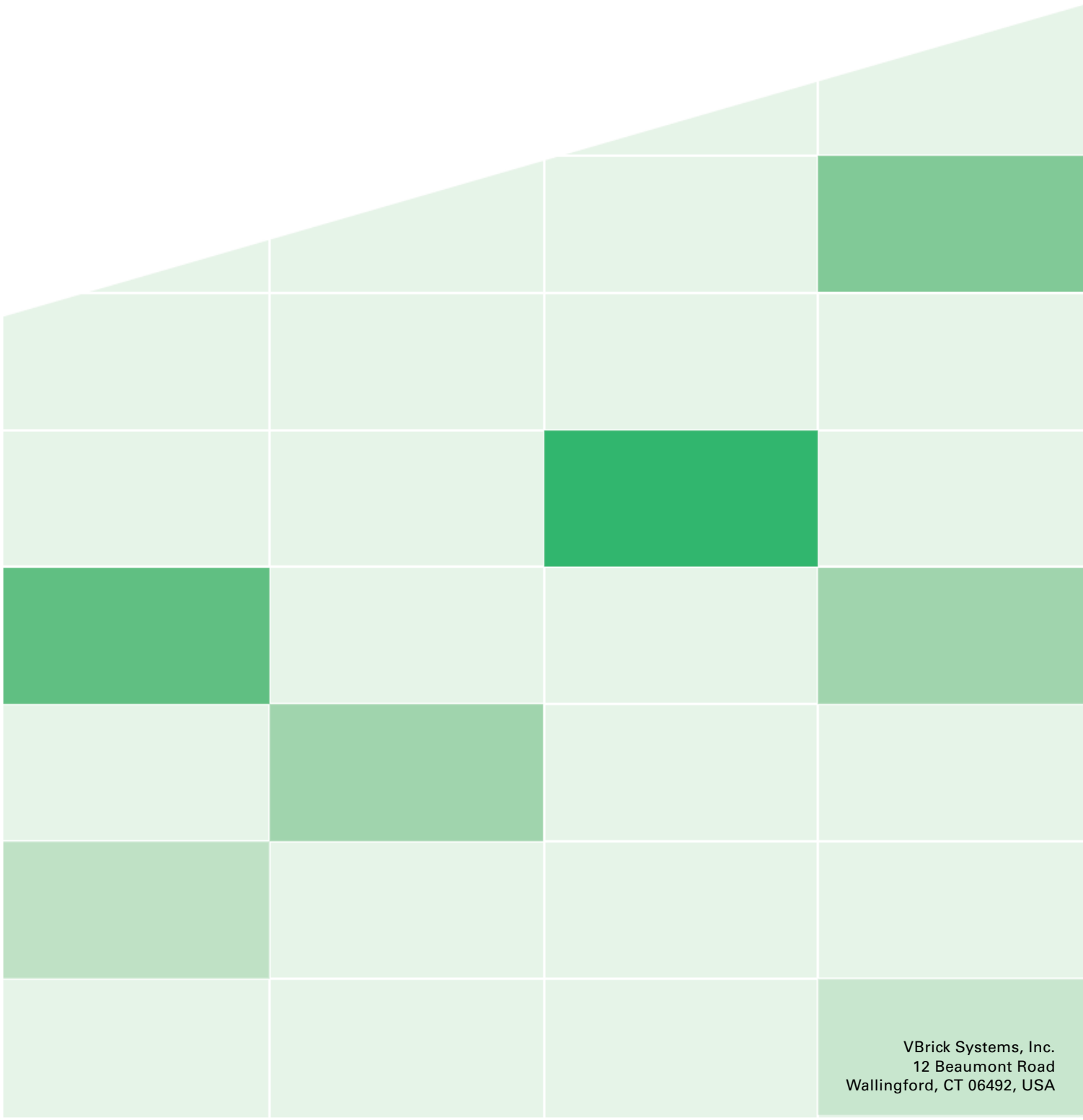


Example 2

Connect COM output pin (pin1 RTS or pin2 DTR) through a switch to a COM event pin. For this method to work, you must force the desired output pin (RTS or DTR) to On via VBAAdmin:

- ▼ To force the desired output pin to On:
 1. Go to the **System Configuration > Advanced Configurations > Passthrough** page in VBAAdmin.
 2. Change **Passthrough State** to **Responder** and click *Apply*.
 3. Change **RTS/DTR Control** to **Force On** and click *Apply*.
 4. Change **Passthrough State** to **Disabled** and click *Apply*.
 5. Click **Save Config** when done.





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