It's Under Control®

Installation and Operation Guide

VHD-4

4x4 HDBT Video Matrix Switch

RTI

FEDERAL COMMUNICATIONS COMMISSION NOTICE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the device.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received including interference that may cause undesired operation.

Industry Canada Compliance Statement

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:
1. This device may not cause harmful interference.
2. This device must accept any interference received including interference that may cause undesired operation.
Cet appareil est conforme avec Industrie Canada exempts de licence standard RSS (s). Son fonctionnement est soumis aux deux conditions suivantes:
1. Ce dispositif ne peut causer des interférences nuisibles.
2. Cet appareil doit accepter toute interférence reçue y compris des interférences qui peuvent provoquer un fonctionnement indésirable.

DECLARATION OF CONFORMITY (DOC)

The Declaration of Conformity for this product can be found on the RTI website at: www.rticorp.com/declaration

SAFETY SUGGESTIONS

Read Instructions. Read all safety and operating instructions before operating the unit.

Retain Instructions. Keep the safety and operating instructions for future reference.

Heed Warnings. Adhere to all warnings on the unit and in the operating instructions.

Follow Instructions. Install and operate in accordance with the manufacturer's instructions.

Accessories. Only use attachments/accessories specified by the manufacturer.

Portable Cart Warning. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

Heat. Do not block any ventilation openings.

Heat. Keep the unit away from heat sources such as radiators, heat registers, stoves, etc., including amplifiers that produce heat.

Power. Unplug this apparatus during lightning storms or when unused for long periods of time.

Power Sources. Connect only to the power cord that was included with the unit.

Power Cord Protection. Route power supply cords so that they are not likely to be walked on or pinched by items placed on or against them, paying particular attention to the cords at plugs, at convenient receptacles, and at the point at which they exit from the unit.

Power Cord Grounding Plug. Do not remove the grounding prong of the grounding-type plug. A grounding type plug has two blades and a third grounding prong. The third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

MAINS Outlet. Where MAINS outlets are used, the apparatus shall be connected to a MAINS socket outlet with a protective earthing connection.

MAINS Plug. Where the MAINS plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.

Water and Moisture. Do not use the unit near water—for example, near a sink, in a wet basement, near a swimming pool, near an open window, etc.

Object and Liquid Entry. Do not allow objects to fall or liquids to be spilled into the enclosure through openings.

Cleaning. Clean only with dry cloth.

Servicing. Do not attempt any service beyond that described in the operating instructions. Refer all other service needs to qualified service personnel.

Damage Requiring Service. The unit should be serviced by qualified service personnel when:

- Objects have fallen or liquid has been spilled into the unit.
- The power supply cord or the plug has been damaged.
- The unit does not appear to operate normally or exhibits a marked change in performance.
- The unit has been dropped or the enclosure has been damaged.

> **WARNING!**
>
> **TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THE UNIT TO RAIN OR MOISTURE.**

DISCLAIMER

LIMITED WARRANTY

RTI warrants new products for a period of three (3) years (excluding consumables such as rechargeable batteries which are warrantied for one (1) year) from the date of purchase by the original purchaser (end user) directly from RTI / Pro Control (herein referred to as "RTI"), or an authorized RTI dealer.

Warranty claims may be initiated by an authorized RTI dealer using the original dated sales receipt or other proof of warranty coverage. In the absence of the receipt of purchase from the original dealer, RTI will provide warranty coverage extension of six (6) months from the date code of the product. Note: RTI warranty is limited to the provisions set forth in this policy and does not preclude any other warranties offered by third parties who are solely responsible for those other warranties.

Except as specified below, this warranty covers defects in product material and workmanship. The following are not covered by the warranty:
- Product purchased via unauthorized sellers or internet sites will not be serviced- regardless of purchase date.
- Damages caused by accident, misuse, abuse, neglect or acts of God.
- Cosmetic damage, including, but not limited to, scratches, dents and normal wear and tear.
- Failure to follow instructions contained in the Product Installation Guide.
- Damages due to products used in an application or environment other than that for which it was intended, improper installation procedures or adverse environmental factors such as incorrect line voltages, improper wiring, or insufficient ventilation.
- Repair or attempted repair by anyone other than RTI and Pro Control or authorized service partners.
- Failure to perform recommended periodic maintenance.
- Causes other than product defects, including lack of skill, competence or experience of user.
- Damage due to shipment of this product (claims must be made to the carrier).
- Altered unit or altered serial number: defaced, modified or removed.

RTI is also not liable for:
- Damages caused by its products or for failure of its products to perform, including any labor costs, lost profits, lost savings, incidental damages, or consequential damages.
- Damages based upon inconvenience, loss of use of the product, loss of time, interrupted operation, commercial loss, any claim made by a third party or made on behalf of a third party.
- Loss of, or damage to, data, computer systems or computer programs.

RTI's liability for any defective product is limited to repair or replacement of the product, at the sole discretion of RTI.

In cases where the warranty policy conflicts with local laws, the local laws will be adopted.

If any component of your VHD HDBT Matrix Switch needs service, please contact Remote Technologies Incorporated by telephone, fax or E-mail for return information. **Please do not return products to Remote Technologies Incorporated without return authorization**.

TABLE OF CONTENTS

CHAPTER 1 | INTRODUCTION

Thank you for using the VHD-4 HDBT Video Matrix Switch.

The VHD-4 4x4 HDBT professional matrix switch is used for convenient viewing of up to four video sources distributed to four displays. The switch is complete with four HDMI inputs, four HDBaseT outputs and two local HDMI outputs. In addition, the VHD-4 also includes four de-embedded stereo audio outputs.

The VHD-4 enables cross-point switching from any input to any output, and supports high resolution video output at 4K, 1080P and HD3D. In addition, the HDBaseT outputs deliver video, IR and RS-232 communication, and PoC over a Cat5e/Cat6 cable to a VHR-1 HDBaseT receiver up to to 230 feet (70 meters) away.

The VHD-4 provides superior quality and reliability as well as these specific features:

- Supports video output at 4K, 1080P and 3D.
- HDCP 2.2 Compliant and DVI compatible, supporting HDMI 1.4a & DVI1.0.
- Powerful EDID & HDCP management.
- HDBaseT outputs transmit HDMI@1080p, IR & RS-232 up to 230 feet (70 meters) over a Cat5E/6 cable (115ft/35m at 4Kx2K).
- HDBaseT outputs supports PoC (Power over Cable) to power VHR receivers.
- Supports multiple control methods, including front panel, RS-232, IR and TCP/IP.
- LCD indicator shows connection status, switching status, HDCP status, and output resolution.
- Built-in GUI for TCP/IP management.
- Supports firmware upgrades through micro USB port.
- Easy installation with rack-mount design.

IMPORTANT NOTES

Please read these important notes about the VHD-4:

- The VHD-4 should be placed in an area where it is around normal room temperature (between 60°F to 90°F).
- Avoid installing the VHD-4 in a location with little or no air circulation.
- Avoid installing the VHD-4 in a location where it can come in contact with direct sunlight.
- Do not let the VHD-4 get wet. It should not be handled with wet hands or placed in an area where it could get wet.
- Do not subject the VHD-4 to smoke, dust, or vibrations.
- Only use the power cord that is supplied with the VHD-4. Using the wrong type of power cord may result in damage.
- Do not disassemble the unit. Service of the VHD-4 should be performed by authorized personnel only.

CHAPTER 1 | PRODUCT CONTENTS

Contents within the box include the following items:

- One (1) VHD-4 HDBT Video Matrix Switch
- Two (2) Rack Mounting Ears with Screws
- Four (4) Feet with Screws
- One (1) Power Cord and Power Adapter (24VDC/2.71A)
- Four (4) 3.5mm mono-to-mono IR cables
- One (1) Installation Guide

UNPACKING AND INSPECTION

After unpacking the VHD-4 Video Matrix Switch, save all of the packing materials in case you ever have to ship the unit.

Thoroughly inspect the VHD-4 and packing materials for signs of damage. Report any damage to the carrier immediately. Report any equipment malfunctions to RTI or an authorized RTI distributor.

CHAPTER 2 | DESCRIPTION

VHD-4 FRONT PANEL
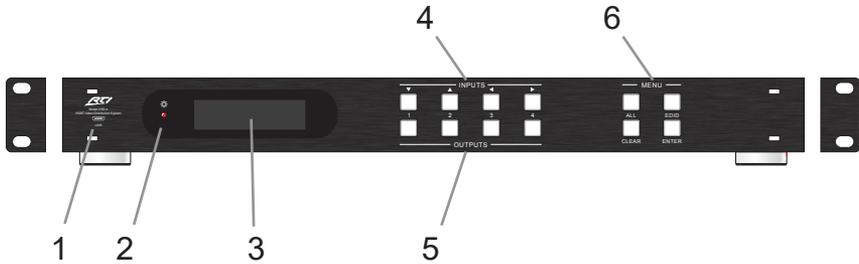
1. Firmware

Micro USB port for update firmware.

2. Power Indicator

Lit when power is on.

3. LCD Indicator

For real-time system status.

4. INPUTS/Menu buttons

- Normal mode: Input buttons, ranging from "1" to "4".
- Inquire mode: Press "ENTER" for more than 3 seconds to enter this mode.

   To select different menus, press: ◄ ►

   To select different options, press: ▲▼

5. OUTPUTS/EDID Management buttons

- Normal mode: Output buttons, ranging from "1" to "4".
- Output 1~2 support synchronous local HDMI output.
- EDID Invoking mode: press and hold EDID button for 3 seconds or more to enter this mode. In this mode, button 1, 2 are used to switch to the previous or next EDID data.

6. MENU Buttons

- **ALL** output button: To transfer one input to all outputs.

   Example: To transfer both AV signals from input channel No.1 to all output channels.

   Operation: Press buttons in this order "1" + "ALL" + "ENTER"

- **EDID** management button: manually capture and copy the EDID data from output device to input port.

   Example: To capture and copy the EDID data from output channel No.4 to input channel No.2.

   Operation: Press buttons in this order "EDID" + "2" + "4" ~ Press button "2" in INPUTS area, "4" in OUTPUTS area.

- **CLEAR:** Withdraw an operation like switching output channel, learning EDID data before it comes into effect. The matrix will return to the previous status.

- **ENTER:** Confirm operation. Press and hold it for 3 seconds to enter in Inquiry mode.

CHAPTER 2 | DESCRIPTION

VHD-4 REAR PANEL
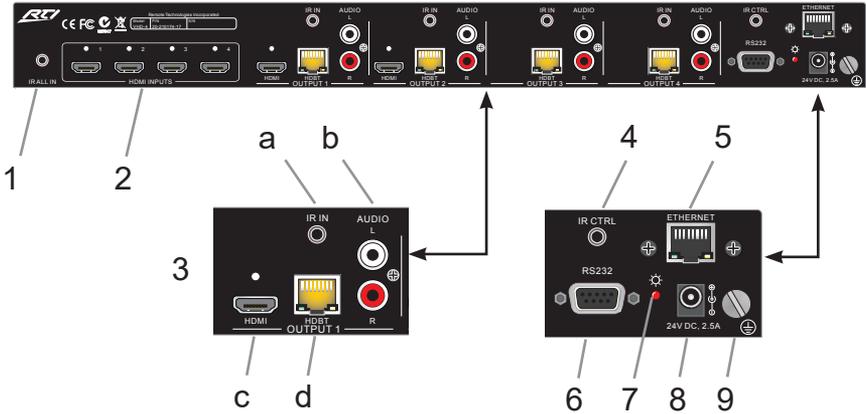
1. IR ALL IN

3.5mm Mono Mini: IR control signal input port, connect with control system IR output. Passes through IR signal to all VHR-1 HDBaseT receiver ports to control remote devices.

2. HDMI INPUTS

HDMI input ports, 4 in total, type A female HDMI connector, connect with HDMI input source devices.

3. OUTPUTS

a. IR IN - **3.5mm Mono Mini:** Connect to the IR output of a control processor for control of a remote device via the designated VHR-1 HDBaseT receiver output.

b. AUDIO - **RCA:** Two de-embedded audio output jacks (left and right channels) for connection to speakers or the inputs of an audio distribution system.

c. HDMI Port: HDMI output port, connect with HDMI output devices. To split HDMI output for local monitoring.

d. HDBaseT - RJ45: Works with VHR-1 HDBaseT receiver. Transmits HDMI@1080p, IR & RS-232 up to 230 feet (70 meters) over a Cat5E/6 cable (115ft/35m at 4Kx2K). NOTE: The Cat5e/6 cables for HDBaseT must be straight-through, using T568A or T568B standard.

4. IR CTRL

3.5mm Mono Mini: Connect to control processor IR output for control of the VHD-4.

5. ETHERNET

RJ45 Jack: Connect to an Ethernet network for control of the VHD-4 via TCP/IP.
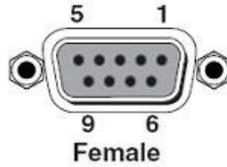
CHAPTER 2 | DESCRIPTION

VHD-4 REAR PANEL

6. RS-232

D-Connector 9-pin: Connect to the serial output of a control processor for control of the VHD-4 via RS-232 communication.

RS-232 port pinout diagram:

No.	Pin	Function
1	N/u	Unused
2	Tx	Transmit
3	Rx	Receive
4	N/u	Unused
5	Gnd	Ground
6	N/u	Unused
7	N/u	Unused
8	N/u	Unused
9	N/u	Unused

7. POWER INDICATOR

Lit red when powered on.

8. 24VDC

Connect with the included 24VDC/2.71Amp power adaptor.

9. GROUND

Connect to ground.

CHAPTER 3 | INSTALLATION AND OPERATION

PRECAUTIONS

1) System should be installed in a clean environment and has a proper temperature and humidity.
2) All of the power switches, plugs, sockets and power cords should be insulated.
3) All devices should be connected before powering on VHD-4.

RACK MOUNT INSTALLATION

The VHD-4 can be mounted in a component rack using the included rack mounting ears. Align the rack mounting ears with the screw holes located on the sides of the VHD-4 near the front. Fasten the rack ears to the VHD-4 using the screws (supplied). Remove feet before mounting in a rack.

NOTE: To maintain proper ventilation, it is recommended that you leave a rack space above and below the VHD-4.
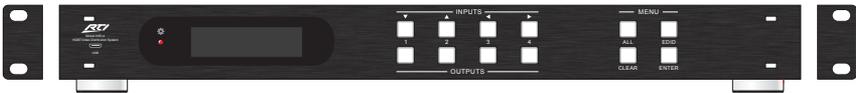
CONNECTION PROCEDURE

AV INPUTS/OUTPUTS

1) Connect HDMI sources (e.g. DVD) to HDMI inputs of VHD-4 with HDMI cables.
2) Connect displays (e.g. HDTV) to HDMI outputs of VHD-4 with HDMI cables.
3) Connect speakers or audio distribution system to AUDIO output ports.
4) Connect VHR-1 HDBaseT receiver to the VHD-4 HDBaseT ports with Cat5e/Cat6 cable. NOTE: The VHR-1 is PoC (Power over Cable) compatible. It can be powered over the same Cat5e/Cat6 cable or a local power supply may be used.
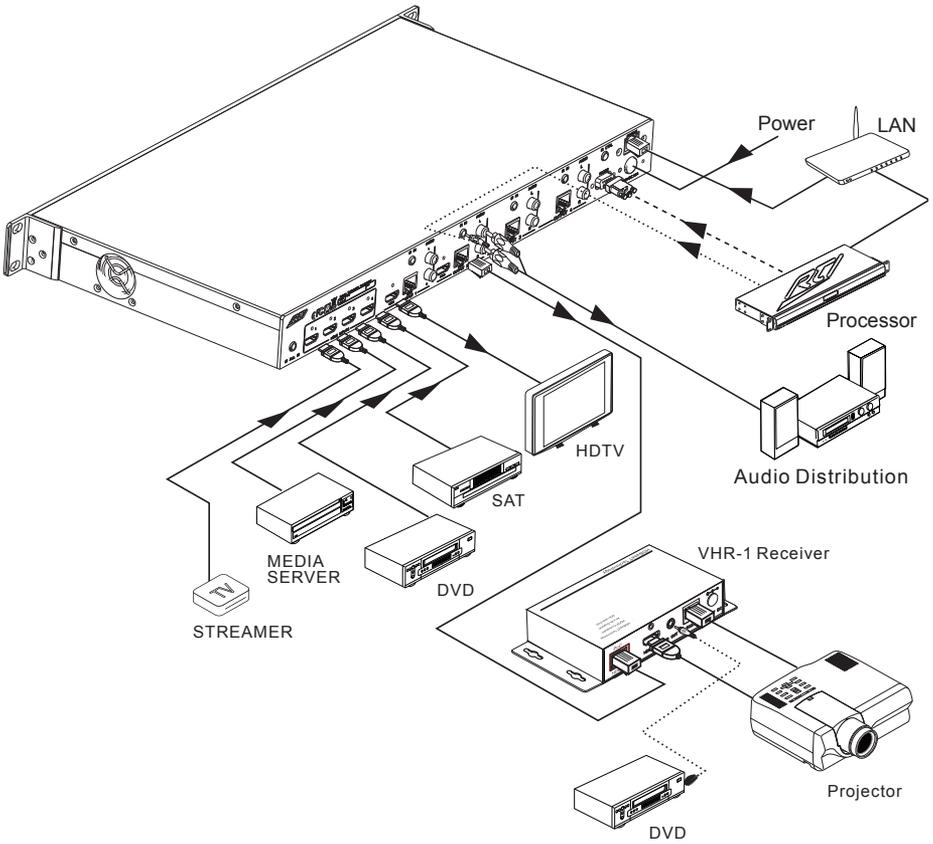
CONTROL OPTIONS

5) Connect the RS-232 port (9 pin female D) of VHD-4 to a control system processor (see pinout diagram in previous section).
6) Connect the IR CTRL 3.5mm mono mini jack to a control processor IR output for control of the VHD-4.
7) Connect IR IN (1-4) or IR ALL IN 3.5mm mono mini jacks to a control processor for IR control of devices via the VHR-1.
8) Connect to an Ethernet network for control of the VHD-4 via TCP/IP over Cat5e/Cat6 cable.

POWER

8) Connect the included 24VDC power adaptor to VHD-4.

CHAPTER 3 | INSTALLATION AND OPERATION

CONNECTION DIAGRAM

Power

LAN

Processor

Audio Distribution

HDTV

SAT

MEDIA
SERVER

DVD

STREAMER

VHR-1 Receiver

Projector

DVD

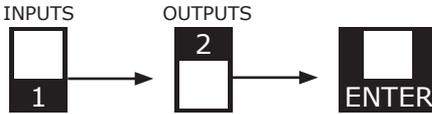## CHAPTER 3 | INSTALLATION AND OPERATION

FRONT PANEL CONTROL

The VHD-4 provides control via the front panel buttons. Below is an introduction to the system operations.

Switching I/O connection

1) To convert one input to an output:
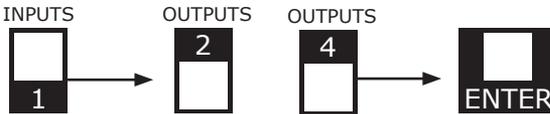
Operation: Select INPUT + OUTPUT + ENTER

Example: Input 1 to Output 2

INPUTS   OUTPUTS

[1] → [2] → [ENTER]

2) To switch an input to several outputs:

Operation: Select INPUT + OUTPUT + OUTPUT + ENTER

Example: Switch input 2 to output 2, 4

INPUTS   OUTPUTS   OUTPUTS

[1] → [2]   [4] → [ENTER]
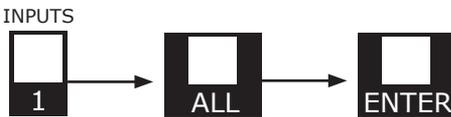
3) To switch an input to all outputs:

Operation: Select INPUT + ALL + ENTER

Example: Switch input 1 to all outputs

INPUTS

[1] → [ALL] → [ENTER]

Note: Indicators of the pressed buttons will blink green for three times if the switch is done, then turn off. If the switch operation failed, they will be off immediately.

EDID MANAGEMENT

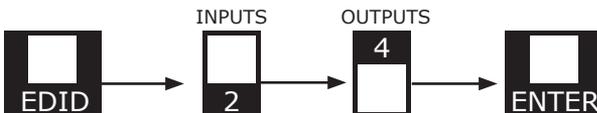The VHD-4 features EDID management to maintain compatibility between all devices.

It can be controlled via EDID learning and EDID invoking.

EDID Learning (from output):

1) One input port learns the EDID data of one output port

Operation: Press EDID, Select INPUTS + OUTPUTS + ENTER.

Example: Input 2 learns EDID data from output 4

INPUTS   OUTPUTS
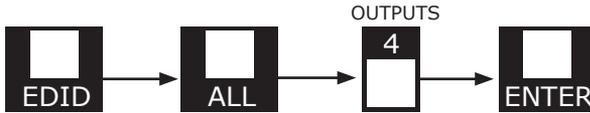
[EDID] → [2] → [4] → [ENTER]

CHAPTER 3 | INSTALLATION AND OPERATION

2) All input ports learn EDID data from one output port

Operation: Press EDID + ALL + OUTPUTS +ENTER

Example: All input ports learn EDID data from output 4

Note: Indicators of the pressed buttons will blink green for three times if the switch is done, then turn off. If the switch operation failed, they will be off immediately.

EDID INVOKING

There are five types of embedded EDID data. The chart below illustrates the detailed information of the embedded EDID data:

EDID Types	EDID Data
1	1080P 2D 2CH
2	1080P 3D 2CH
3	1080P 2D Multichannel
4	1080P 3D Multichannel
5	3840x2160 2D (30Hz)

Press and hold EDID for 3 seconds to enter EDID invoking mode. In this mode, use output buttons 1/2 to switch among the 5 embedded EDID data. Then press ENTER to confirm invoking.

Format: Press and hold EDID for 3 seconds + INPUTS + OUTPUTS 1/2 + ENTER.

Operations:

1) Invoke embedded EDID data for one input

Operation: Press EDID (hold for 3 seconds) + INPUTS + OUTPUTS +ENTER

Example: Set the EDID data of INPUT 2 to the forth type of embedded EDID data:
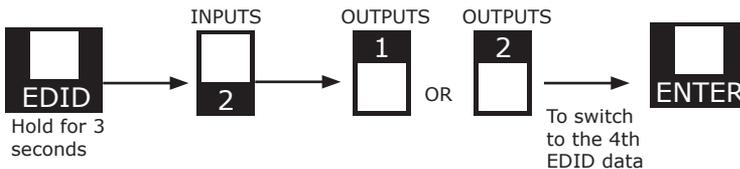
Note: Indicators of the pressed buttons will blink green for three times if the switch is done, then turn off. If the switch operation failed, they will be off immediately.

CHAPTER 3 | INSTALLATION AND OPERATION

CHECK STATUS INQUIRY

Press and hold ENTER for 3 seconds, it will enter into system inquiry menu. Use Left and Right direction buttons to navigate checking the previous/next items.

FUNCTION ITEMS	EXAMPLE	DESCRIPTION
Check the connection status of inputs	IN 1 2 3 4 CONNECT Y Y N N	Y means the corresponding port is connected with an input device, N means not.
Check the connection status of outputs	OUT 1 2 3 4 CONNECT Y Y N N	Y means the corresponding port is connected with an output device, N means not.
Correspondence between inputs and outputs	OUT 1 2 3 4 IN 1 2 3 3	Shows the correspondence between the 4 inputs and 4 outputs
Check if the input is with HDCP	IN 1 2 3 4 HDCP Y Y N N	Y means the input signal is with HDCP, N means not.
Check if the output is with HDCP	OUT 1 2 3 4 HDCP Y Y N N	Y means the output signal is with HDCP, N means not.
Check the output resolution	Resolution Out 1 1920x1080	Use the UP and DOWN direction button to check all the 4 output resolutions.

Output Check

1) Press any output button to check its corresponding input.

Example: Determine the corresponding input for output 2. (Presume Output 2 corresponds to Input 1.)

Operation: Press Output 2 button, LCD screen display AV: 1->2 IR: 1->2, and indicators of input 1 and output 2 turn on and last for 3 seconds, then output 2 corresponds to input 1.

CLEAR OPERATION

When you switch output channel, learn EDID data, or set EDID data, pressing the CLEAR button will withdraw the operation, before you press ENTER to complete an operation. When you press CLEAR, the matrix will return to the previous status.

CLEAR

CHAPTER 3 | INSTALLATION AND OPERATION

IR CONTROL

● IR Control of VHD-4 - CTRL IN

This 3.5mm mono mini-jack is for infrared control of the VHD-4 from a control system. A discrete set of IR codes is available within the RTI Integration Designer programming software or on the RTI website (RTI dealer section).
NOTE: Mini-jack is mono with tip = IR+, ring=Gnd.

● IR Control of Remote Devices - IR IN (Ports 1-4)

Discrete control of remote devices is possible via the IR IN 3.5 mono mini-jack associated with outputs 1-4. The IR signal is delivered to the VHD-4 via an RTI control processor and is sent over Cat5e/Cat6 cable to a VHR-1 HDBaseT receiver. An infrared emitter is wired to the VHR-1 IR OUT port and wired to the controlled device. See VHR-1 installation guide for detailed information.

Note: The IR signal connected to IR IN must be with IR carrier.

● IR Control of Remote Devices - IR ALL IN

Control of remote devices is also possible via the IR ALL IN 3.5 mono mini-jack on the VHD-4. The IR signal is delivered to the VHD-4 via an RTI control processor and is sent over Cat5e/Cat6 cable to all connected VHR-1 HDBaseT receivers. All infrared emitters wired to the VHR-1 IR OUT ports will receive the signal. See VHR-1 installation guide for detailed information.

Note: The IR signal connected to IR ALL IN must be with IR carrier.

RS-232 CONTROL

● RS-232 Control of VHD-4 - RS-232 port

A DB-9 jack offers RS-232 control of the VHD-4 from an RTI or third-party control system. A set of RS-232 codes is built into the Integration Designer programming software and a two-way driver is available on the RTI website (dealer section).
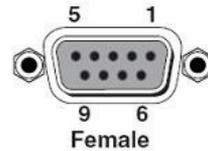
NOTE: DO NOT use both RS-232 and IP for control simultaneously. Using both control methods at the same time will affect control reliability.

Connection Settings:
Baud rate: 9600 • Data bits: 8 • Parity: None • Stop bits: 1
DB-9 Jack Pinout:

Pin 2	TXD Transmit Data
Pin 3	RXD Receive Data
Pin 5	GND Ground

5   1

9   6
Female

● RS-232 Control of Remote Devices

RS-232 control of remote devices is possible via the VHD-4 using an RTI control system and a VHR-1 HDBaseT receiver. To implement, go to the VHD-4 driver configuration in Integration Designer and define the RS-232 string, baud rate and the VHD-4 port that the VHR-1 is connected to. See VHR-1 reference guide for cable installation information.

FIRMWARE UPDATE VIA USB

To perform firmware updates via the USB port on the front panel:

Step1. Visit the firmware update section of the RTI Dealer website (rticorp.com/dealer) to download the latest version to a PC.

Step2. Connect a USB cable to the USB ports of VHD-4 and the PC.

Step3. Double-click the firmware update software icon and follow the onscreen instructions.

NOTE: Do NOT unplug the USB cable during the update process or damage to the unit may result.

CHAPTER 3 | INSTALLATION AND OPERATION

ETHERNET (IP) CONTROL

The built-in Ethernet port allows control of the VHD-4 via an Ethernet network (LAN) from an RTI XP processor. Configuration of the VHD-4 networking is done through a web interface which is accessible through any web browser.

NOTES: For IP control:

• DO NOT use both RS-232 and IP for control simultaneously. Using both control methods at the same time will affect control reliability.

• The RTI control system must have a two-way driver running on an XP processor.

• The RTI control system and VHD-4 must be connected to the same Ethernet network (LAN).

CONNECTION TO THE ETHERNET NETWORK

Wire the VHD-4 to the Ethernet network using Cat-5 cable with the RJ45 termination and power the unit on. The network router will assign an IP address to the VHD-4 automatically and allow it to join the network.

NOTES:

• The VHD-4 is set to use DHCP by default.

• Router must have DHCP enabled.

CONFIGURING THE VHD-4 USING THE WEB INTERFACE

The VHD-4 web interface is accessible via a standard web browser (Chrome®, Internet Explorer®, Firefox® , Safari® etc) on a PC, tablet or smartphone.

The web interface is used for configuring network settings (IP address and Network ID).

ACCESSING THE WEB INTERFACE

To access the web interface, first determine the IP address that was assigned to the VHD-4 by the network router which can be found by looking for UPNP devices on the network.

NOTE: If using Windows XP, you may need to enable viewing of UPNP devices and "Windows Discovery".

> • Click on My Network Places
> • If UPNP devices are not displayed, under Network Tasks, click on "Show icons for networked UPNP devices". Click yes to allow the installation wizard.

To view UPNP devices on the network, go to the "network" area in your version of Windows.

• In the "Computer" tab under the Start Menu.
• Click on "Network".
• On the right side window, scroll down to "Other Devices".
• Find the VHD-4 in the list of devices and double click on the icon to open the web interface.

OR

• The VHD-4 icon will display the IP address it is using. Open a web browser on your PC, tablet or smartphone and type the IP address into the browser address bar.
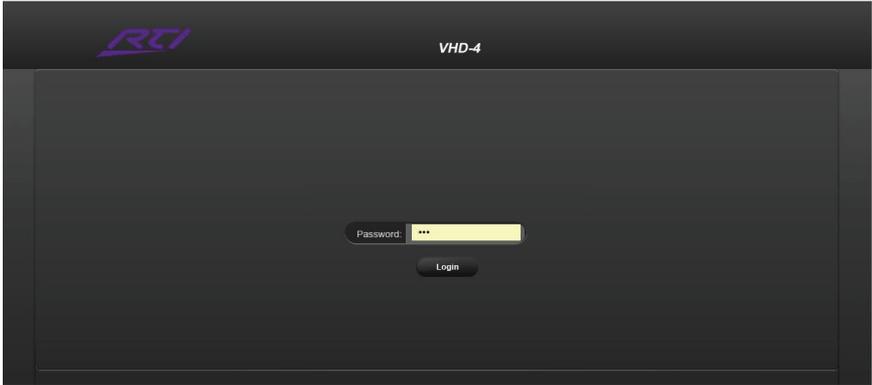
> Example: http://192.168.0.15

CHAPTER 3 | INSTALLATION AND OPERATION

WEB INTERFACE - LOGIN

To access the web interface, enter the password and press LOGIN

NOTE: The default password is: **rti**

CHAPTER 3 | INSTALLATION AND OPERATION

WEB INTERFACE - NETWORK CONFIGURATION PAGE

Upon logging into the web interface the Network Configuration page will be displayed.

IP ADDRESS CONFIGURATION
IMPORTANT NOTES:
- Setting a static IP address is not necessary. The RTI two-way driver uses the UPNP name of the VHD-4 to find it on the network.
- Setting a static IP address and clicking "Update Settings" will cause the web interface to no longer be displayed in your web browser. Enter the new static IP address into your web browser address bar to access the web interface again.

To set the static IP address:
1. Select **Address Type** (set to DHCP by default): click this button and select "Static IP" from the drop down list.
2. Enter **Static IP Address**: Enter the static IP address.
3. Enter **Subnet Mask**: Enter the network subnet used by the VHD-4 and RTI XP processor.
4. Enter **Default Gateway:** Enter the IP address of the network gateway.
5. Click on the "Update Settings" button to save these settings.

NETWORK IDENTIFICATION
This section allows you to change the name of the device as it shows up on the network and list of UPNP devices.
1. Unit Name: Enter a new VHD-4 name
2. Click on the "Update Settings" button to save these settings.

CHAPTER 3 | INSTALLATION AND OPERATION

WEB INTERFACE

CHAPTER 4 | SPECIFICATIONS

GENERAL

Power Supply	DC 24V 2.71A, 48W (Max)
Mounting	Rack mount or free standing
Dimensions (W x H x D)	17.1" (437mm) x 1.7" (44mm) x 9.25" (235mm) (1U high, full rack width)
Weight	4.4lb (2.0kg)
Operational Temperature	32°F - 104°F (0°C – 40°C)
Humidity	10% to 90% Non-Condensing
Warranty	Three Years (Parts & Labor)

AUDIO/VIDEO

Video Input	Four HDMI
Input Level	T.M.D.S. 2.9V~3.3V
Input Impedance	100Ω (Differential)
Video Output	Two HDMI, Four HDBaseT (RJ45)
Output Level	T.M.D.S. 2.9V~3.3V
Output Impedance	100Ω (Differential)
Gain	0dB
Bandwidth	10.2Gbit/s
Video Signal	HDMI (or DVI-D)
Resolution Range	Up to 4K x 2K@30Hz
HDBaseT Transmission Distance	1080P@60Hz ≤230ft (70m) 4Kx2K@30Hz ≤115ft (35m)
Switching Speed	200ns (Max.)
EDID Management	In-built EDID data and manual EDID management
HDCP	Supports HDCP 1.4, auto and manual HDCP management.
Audio Output	Stereo audio, Eight RCA Jacks

All specifications subject to change without notice.

CHAPTER 4 | SPECIFICATIONS

CONTROL

IR Control	One, 3.5mm jack (IR CTRL), compatible with industry standard IR repeaters and receivers
Remote Source IR Inputs	Four discrete (IR IN), One universal (IR ALL IN), 3.5mm jacks
Panel Control	Twelve Front Panel buttons
Serial (RS-232) Port	One, Bi-directional Female DB-9
Ethernet Port	One, 10/100Base-T, RJ45 Connection
USB	One, Micro USB, Female

All specifications subject to change without notice.

CHAPTER 5 | TROUBLESHOOTING

If you are having problems with your VHD-4, please read the information below before contacting technical support.

If you continue to have problems, see Chapter 6 for more information on contacting RTI technical support.

SYMPTOM:
Color loss or no video signal output
CAUSES:
1) The connecting cables may not be connected correctly or it may be broken.
SOLUTIONS:
1) Check whether the cables are connected correctly and in working condition.

SYMPTOM:
No output image when switching
CAUSES:
1) No signal at the input/output end
2) Fail or loose connection
3) Input source is with HDCP while the HDCP compliance is switched off
4) The display doesn't support the input resolution
SOLUTIONS:
1) Check with oscilloscope or multimeter if there is any signal at the input/ output end.
2) Make sure the connection is good
3) Send command /%[Y]/[X]:1.
4) Switch for another input source or enable the display to learn the EDID data of the input.

SYMPTOM:
Cannot control the device via front panel buttons
CAUSES:
1) Front panel buttons are locked
SOLUTIONS:
1) Send command /%Unlock; or select unlock in GUI interface to unlock

SYMPTOM:
Power Indicator remains off when powered on
CAUSES:
1) Fail or loose power connection
SOLUTIONS:
1) Check whether the cables are connected correctly

SYMPTOM:
EDID management does not work normally
CAUSES:
1) The HDMI cable is broken at the output end.
SOLUTIONS:
1) Change for another HDMI cable which is in good working condition.
SYMPTOM:
There is a blank screen on the display when switching
CAUSES:
1) The display does not support the resolution of the video source.
SOLUTIONS:
1) Switch again.
2) Manage the EDID data manually to make the resolution of the video source automatically compliant with the output resolution.

CHAPTER 5 | TROUBLESHOOTING

SYMPTOM:
No RS-232 control of VHD-4
CAUSES:
1) Faulty wiring
2) Incorrect string
3) Wrong RS-232 parameters
SOLUTIONS:
1) Verify cable and check RS-232 pinout
2) Verify string from manual.
3) Type in correct RS-232 communication parameters: Baud rate:9600; Data bit: 8; Stop bit: 1; Parity bit: none

SYMPTOM:
No IR control of VHD-4
CAUSES:
1) Faulty wiring
2) IR signal level
SOLUTIONS:
1) Verify all wiring & terminations - IR jacks are 1/8" mono, tip = IR+, ring=Gnd.
2) Adjust IR signal going into VHD-4.
3) Verify connection is to IR CTRL input jack.

SYMPTOM:
No IR control via VHR-1
CAUSES:
1) Faulty wiring
2) IR signal level
3) IR emitter or IR emitter placement
SOLUTIONS:
1) Verify all wiring & terminations - IR jacks are 1/8" mono, tip = IR+, ring=Gnd.
2) Adjust IR signal going into VHD-4.
3) Verify IR emitter is working and properly placed.

SYMPTOM:
Static becomes stronger when connecting the video connectors
CAUSES:
1) Bad grounding
SOLUTIONS:
1) Check the grounding connections.

SYMPTOM:
Cannot control the device by RS-232, IR or front panel buttons
CAUSES:
1) The VHD-4 has failed
SOLUTIONS:
1) See service and support section of this guide

CHAPTER 6 | SERVICE AND SUPPORT

For news about the latest updates, new product information, and new accessories, please visit our web site at:

www.rticorp.com

CONTACTING RTI

For general info, you can contact RTI at:

Tel. (952) 253-3100
Fax (952) 253-3131
info@rticorp.com

RTI TECHNICAL SUPPORT

At RTI, customer service and satisfaction is an utmost priority. If you are encountering any problems or have a question about your RTI product, please contact RTI Technical Support for assistance.

RTI provides technical support by telephone, fax or e-mail. For the highest quality service, please have the following information ready, or provide it in your fax or e-mail.

- Your Name
- Company Name
- Telephone Number
- E-mail Address
- Product model and serial number (if applicable)

If you are having a problem with hardware, please note the equipment in your system, a description of the problem, and any troubleshooting you have already tried.

If you are having a problem with software, please note what version you have installed, the operating system on your PC, a description of the problem, and any troubleshooting you have already tried.

If you are calling about a software or programming question or problem, please be at you computer when you place your call. This will considerably speed up the troubleshooting process.

For technical support or assistance with your VHD-4, software, or accessories, contact RTI at:

(952) 253-3137
support@rticorp.com
www.rticorp.com

For questions regarding service or repair, contact RTI at:

(952) 253-3136
service@rticorp.com
www.rticorp.com

Please do not return products to RTI without return authorization.

CHAPTER 6 | SERVICE AND SUPPORT

Shipment of VHD-4 for Service

RTI will pay all labor and material expenses for all repairs covered by this product's warranty. If necessary repairs are not covered by warranty, or if a unit is examined which is not in need of repair, you may be charged for the repairs or examination.

If it is necessary to ship the VHD-4 for service:

- Please pack it securely (we suggest that it be insured).
- Do not include accessories such as power cords or manuals unless instructed to do so.

You must pay any shipping charges incurred in getting your VHD-4 to RTI. RTI will pay reasonable return shipping charges via a carrier of our choice to any destination within the United States if the repairs are covered under warranty.

A copy of the original dated sales receipt must be provided whenever warranty service is required. You will need this receipt to establish the date of purchase.

NOTES

It's Under Control®

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