RTI

VHD-4x
4x4 HDBaseT Matrix Switcher Kit

Reference Guide

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- Reference Guide

Safety Suggestions

Read and Follow 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.
Heat. Keep the unit away from heat sources such as radiators, heat registers, stoves, etc., including amplifiers that produce heat.
Power Sources. Connect the unit only to a power supply of the type described in the operating instructions, or as marked on 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 cord plugs at power receptacles and at the point at which they exit from the unit.
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.
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:
- The power supply cord or the plug has been damaged.
- Objects have fallen or liquid has been spilled into the unit.
- The unit has been exposed to rain.
- 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.

Cleaning

To clean this product, lightly dampen a lint-free cloth with plain water or a mild detergent and wipe the outer surfaces.

NOTE: Do not use harsh chemicals as damage to the unit may occur.

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.

Contacting RTI

For news about the latest updates, new product information, and new accessories, please visit our web site at: **www.rticorp.com**

For general information, you can contact RTI at:
Remote Technologies Incorporated
5775 12th Ave. E Suite 180
Shakopee, MN 55379
Tel. (952) 253-3100
Fax (952) 253-3131
info@rticorp.com

Service & Support

If you are encountering any problems or have a question about your RTI product, please contact RTI Technical Support for assistance (see the Contacting RTI section of this guide for contact details).
RTI provides technical support by telephone or e-mail. For the highest quality service, please have the following information ready:
- 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.
Please do not return products to RTI without return authorization.

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.

VHD-4x 4x4 HDBaseT Matrix Switcher Kit

The VHD-4x 4x4 HDBaseT matrix switcher is used for convenient viewing of up to four video sources distributed to up to six displays. The switch features four HDMI inputs, four HDBaseT outputs and two mirror HDMI outputs. The system features HDMI-CEC control functions alongside bi-directional infrared and full online monitoring.
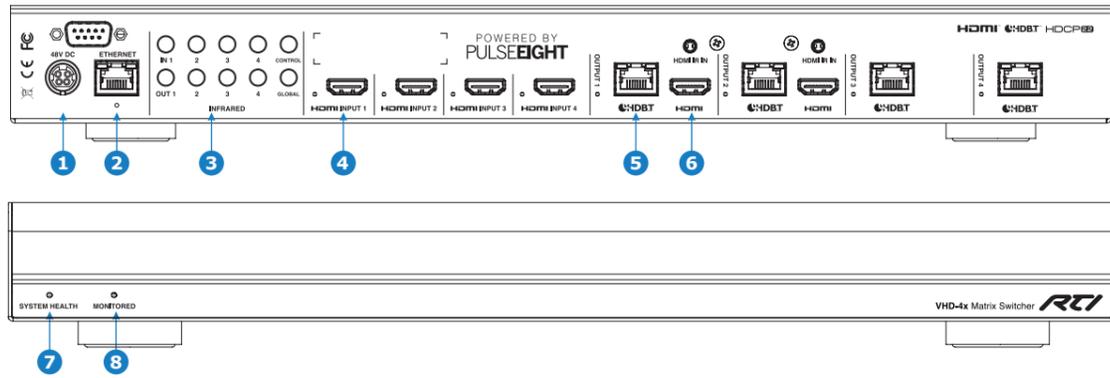
The VHD-4x enables cross-point switching from any input to any output and supports high resolution video up to 70 meters (1080p) or 40 meters (4K) over a single Cat5e/Cat6 cable. In addition, the kit includes four VHR-1x HDBaseT Class B Receivers which feature power over HDBaseT.

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

- Supports 4K video transmission, 1080p, 3D, deep color.
- Full HDCP 2.2 support.
- 4x HDMI inputs.
- 4x HDBaseT Class B outputs.
- 2x HDMI outputs (mirrored).
- HDMI-CEC bi-directional control.
- Bi-directional IR control.
- Automatic RTiQ integration.
- Interactive web interface.
- Automatic EDID management.
- Kit includes four VHR-1x PoH Receivers

Installation & Operation

VHD-4x FRONT AND REAR PANEL DESCRIPTION

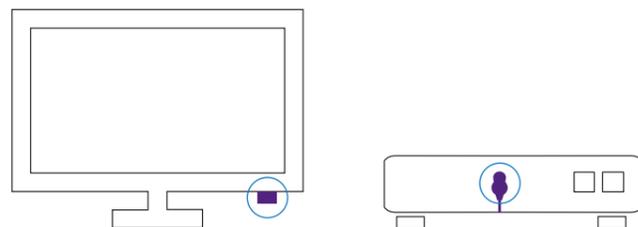| No.	Name	Function
1	Power	After setup is complete, connect the power cable to power on the VHD-4x.
2	Ethernet	Connect a standard Ethernet cable (while the matrix is disconnected from power source) from your router or network switch. NOTE: Cross over cables are not supported.
3	Infrared Out	Connect IR Emitter* for control of video source. *See Initial Setup.*
3	Infrared In	Connect to IR output of control processor. IR signals sent from control processor are available at the VHD-4x IR outputs, and they are transmitted to the HDBaseT receivers via Cat cable. NOTE: Requires OPT-1x IR Adapter Cable (sold separately) with mono end (white connector) plugged into the control processor.
4	HDMI Inputs	Connect source devices into the HDMI input ports using a High Speed HDMI cable (not supplied).
5	HDBaseT Outputs	For connection to a VHR-1x receiver via category (Cat5e/6/7) cable.
6	HDMI Mirror Outputs	HDMI Outputs are mirrored outputs from the adjacent HDBaseT output. If required, this output can be extended using an additional VHT-1x HDBaseT Transmitter and VHR-1x Receiver (not supplied). The Infrared port for this mirror port is situated above the port.
7	System Health LED	LED solid green when system is running correctly.
8	Monitored LED	Solid green LED when connected to RTiQ. Flashing green indicates system cannot reach the internet. Flashing yellow - Discovering IP address. Solid yellow - Has IP address but cannot ping router. Solid red - No network cable connected.

VHR-1x DESCRIPTION

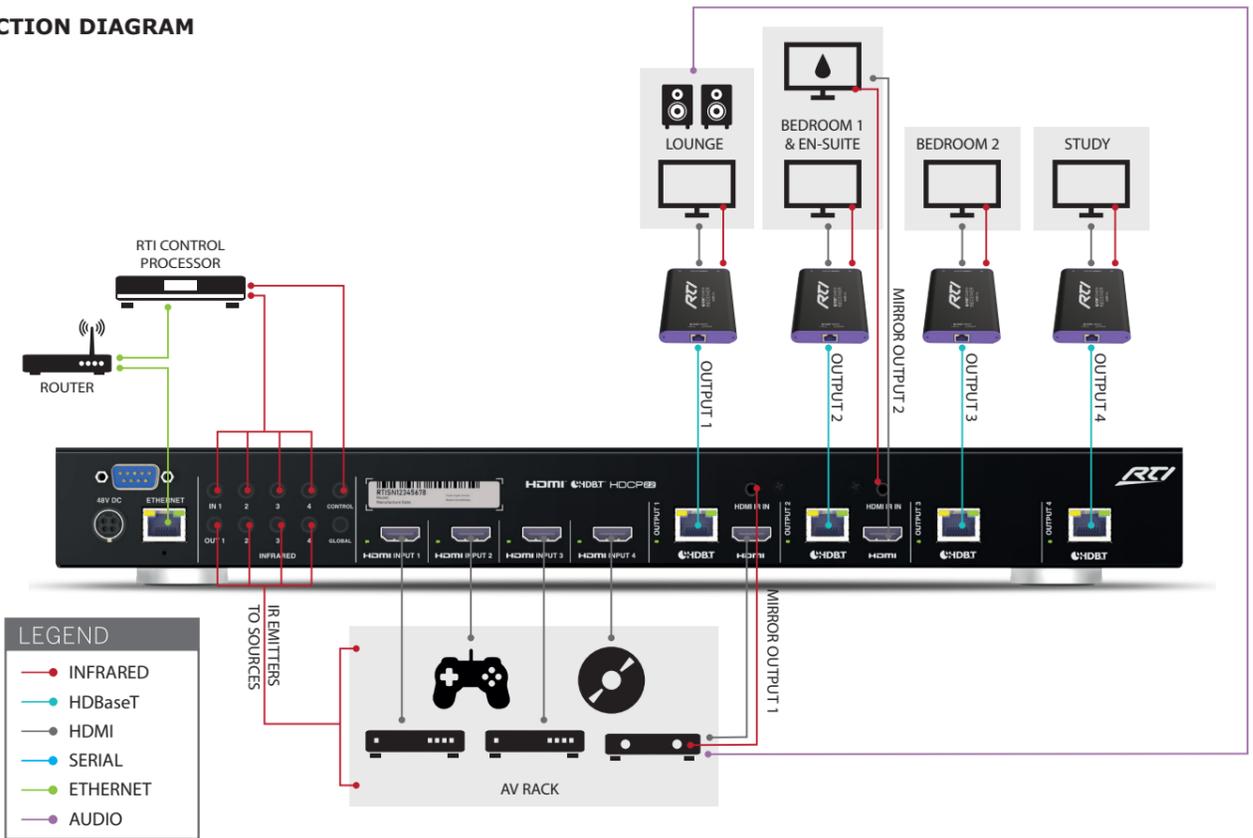| No.	Name	Function
A	HDBaseT Link LED	Solid orange LED above the HDBaseT port indicates a secure HDBaseT link has been established.
B	HDBaseT Input	Connect category (Cat5e/6/7) cable between the matrix and this port on the receiver.
C	HDBaseT Power LED	Solid green LED above the HDBaseT port indicates power over HDBaseT.
D	Infrared TX	Connect IR emitter* for control of display. *See Initial Setup.*
E	HDMI Output	Connect an HDMI cable between this port and the display device (i.e. your TV).
F	Infrared RX	IR Receiver inserted here and connected to the underside of the display device. (see below)

INFRARED INSTALLATION (OPTIONAL)

The IR Emitter is to be mounted over the source's IR window. The IR Receiver bud should be mounted underneath the display (TV) with the smallest end forwards and the sticky pad affixed upwards.

IR Receiver: Square with a shiny surface

IR Emitter: Identified by a matte surface

CONNECTION DIAGRAM

INITIAL SETUP

- Connect a standard Ethernet cable (while the matrix is disconnected from power source) from your router or network switch. NOTE: Cross over cables are not supported.
- Connect your source devices to the HDMI input ports using a High Speed HDMI cable or better (not supplied).
- Connect category (Cat5e/6/7) cable between the VHD-4x matrix Output port and the VHR-1x receiver. Complete the connection from the receiver to the Display device (i.e. TV) via an HDMI cable.
- Once all connections have been made, turn the matrix on by connecting the power supply.
- The system is designed to be on and connected to an active internet connection at all times. It will operate correctly without being connected to a network (or the internet) but certain functions will not be available including RTiQ.

IMPORTANT NOTES:
* Must use included IR emitters. RTI vIRsa Mouse IR emitters and third-party IR emitters will not work.
** IR pass-through from an RTI control processor requires a OPT-1x Opto-coupling IR Adapter Cable (sold separately).

CONFIGURING NETWORK SETTINGS

- By default the matrix is set to retrieve an IP address via DHCP. You must connect the system to a router or server that has DHCP enabled. Once initially configured you can modify this setting and switch to a static IP address.
- Ensure that the new settings are correct before saving as you will no longer be able to access the matrix if they are incorrect.
- In order for the internet based functions to operate such as the RTiQ and gotomymatrix.com you must provide at least one valid DNS address. We recommend using the Google Public DNS address 8.8.8.8 for Primary DNS and 8.8.4.4 for Secondary.
- NOTE: It is possible to configure and operate the system without an internet connection. However to configure the system from its defaults, a local network connection is required. Normal operation of the CEC and IR control systems does not require any network connection, but IP based control or Web based control does require a persistent network connection.

CONNECT TO THE WEB INTERFACE

- The built-in web interface can be accessed from any locally connected device (ex. PC, tablet) via Wi-Fi or wired network connection.
- The monitoring LED on the front of the matrix must be a solid green, indicating an internet connection.
- Access the web interface by visiting www.gotomymatrix.com using any web browser.
- The home page of the UI displays the current matrix routing. Highlighted devices are active.
- Many functions are not visible to the user during normal operation, to access these advanced options click on the 📶 'Monitoring' link on the left side navigation, then click on the '[Admin]' link at the foot of the page and login - the default password is *admin*.

CONTROL VIA RTI CONTROL SYSTEM

- TCP/IP: For control using TCP/IP protocol from an RTI control system the VHD-4x must be set to the same network segment. Visit the rticorp.com dealer website to download the control driver.
- RS-232: For control using serial communication, wire the RS-232 output of the control system to the VHD-4x DB9 connector. Baud rate: 9600, Data bit: 8, Stop bit: 1, Parity bit: none. DB9 Pinout: Transmit: Pin 2, Receive: Pin 3, Ground: Pin 5

SETTING UP CEC

- Common brand names for CEC are, Anynet+ (Samsung), BraviaLink or BraviaSync (Sony), EasyLink (Philips), SimpLink (LG), VieraLink (Panasonic) Kuro Link (Pioneer) CE-Link and Regza Link (Toshiba), RIHD (Onkyo). More and more devices are using the common name "HDMI-CEC". NOTE: Often it is disabled by default, and you may need to enable it in the settings menu before continuing.
- The brand/model of TV will determine which button to press to see a list of source devices. For example, on a Sony TV, press the "Sync Menu" button, this brings up a menu, from here select HDMI Device and your source devices are listed.
- In other brands, simply pressing the "Source" button will list all of the devices alongside other inputs (such as Network or USB media).