

UltraLink 2 HDMI

Single HDMI Computer KVM-IP Remote Access

Installation and Operation Manual



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This equipment generates, uses and can radiate radio frequency energy and if not installed and used properly, that is in strict accordance with the manufacturer's instructions may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A digital device in accordance with the specifications Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

European EMC directive 2004/108/EC

This equipment has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in the European standard EN55022. These limits are designed to provide reasonable protection against harmful interference. 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 or television reception. However, there is no guarantee that harmful interference will not occur in a particular installation.

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This equipment does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le règlement sur le brouillage radioélectriques publié par le ministère des Communications du Canada.

Radio Frequency Energy

A Category 5 (or better) twisted pair cable must be used to connect the UltraLink 2 HDMI unit in order to maintain compliance with radio frequency energy emission regulations and ensure a suitably high level of immunity to electromagnetic disturbances. All other interface cables used with this equipment must be shielded in order to maintain compliance with radio frequency energy emission regulations and ensure a suitably high level of immunity to electromagnetic disturbances.

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INTRODUCTION

Disclaimer

While every precaution has been taken in the preparation of this manual, the manufacturer assumes no responsibility for errors or omissions. Neither does the manufacturer assume any liability for damages resulting from the use of the information contained herein. The manufacturer reserves the right to change the specifications, functions, circuitry of the product, and manual content at any time without notice.

The manufacturer cannot accept liability for damages due to misuse of the product or other circumstances outside the manufacturer's control. The manufacturer will not be responsible for any loss, damage, or injury arising directly or indirectly from the use of this product. (See limited warranty.)

System Introduction

Thank you for choosing UltraLink 2 HDMI (Part # UL2-DHD) from Rose Electronics for your network access solutions. This intelligent and innovative product is the result of Rose Electronics commitment to providing state of the art access solutions for today's demanding workplace. The UltraLink 2 HDMI, when installed and connected to your network, allows you full access and control of the connected computer from the RealVNC Viewer client from almost anywhere. This small, flexible, and powerful product uses RealVNC client software that is designed for very secure, encrypted, and password protected exchange of information between the server and the remote viewer.

The UltraLink 2 HDMI sets a new standard for remotely, securely and easily managing server room environments, standalone applications such as digital signage, and many other remote applications. Connect the UltraLink 2 HDMI to a DVI/USB KVM switch like the Vista DVI Plus, and you now have access and control to as many computers as your KVM switching system can support.

The UltraLink 2 HDMI is different in the way it manages remote access to your systems. All of the systems that will be accessed remotely remain completely unchanged and can run their usual operating system normally. They only need to be connected to the UltraLink 2 HDMI unit. Being totally operating system independent, the UltraLink 2 HDMI allows users to remotely connect to Windows, Linux, UNIX, and Sun systems without difficulty. The UltraLink 2 HDMI is ideal for remote computers running stand-alone applications like ATMs and digital signage devices.

Whatever your remote accessing needs, the versatility of the UltraLink 2 HDMI from Rose Electronics makes it a great choice. It can be installed at any network level, and connected to a single server, a computer running any operating system, or to a KVM switch.

Features

- Connect to a remote computer, server, or KVM switch over IP using the ReaVNC Viewer
- BIOS level control with USB keyboard and mouse
- Supports resolutions up to 1920 x 1200 @60Hz, 30fps, depending on available network bandwidth
- Can be connected to DVI and DisplayPort video output with converter cables
- Intelligent EDID management allows the user to specify the modes used by the controlled computer
- KVM console connections for local access at the unit
- Powered by an AC power adapter
- Files can be transferred between directly connected computers and remote computers
- Easy installation and configuration over IP
- Flash upgradeable to keep the unit up to date with new features and enhancements
- Private single user access or shared access, with up to eight users to accessing the computer connection simultaneously
- Create up to 15 user profiles with event logging
- Compatible with Rose Electronics Vista DVI KVM switches
- State of the art security using AES 128-bit or 256-bit encryption and RSA 2048-bit public key authentication
- Configurable to use your LDAP server for user authorization and validation
- Optional Rack mount kits available for mounting up to 16 units in 2U of rack space
- Can control programmable power switches through a USB-serial interface

Compatibility

Hardware	
Computer	PC, RS/6000, Alpha, SGI, Sun, Mac, and others
Keyboard	USB
Mouse	USB
Monitor	HDMI
Operating systems	Windows (all), Sun, Solaris, Mac, NetWare, Unix, Linux, BSD and others
Cables	
UltraLink 2 HDMI to computer	<ul style="list-style-type: none">■ 1 USB Type A to USB Type B cable (supplied),■ 1 HDMI video cable (supplied)
UltraLink 2 HDMI to network	CAT 5 or CAT 6 cable terminated with RJ45M connectors
UltraLink 2 HDMI to power	1 Power transformer with country-specific power cable

Package Contents

The package contents consist of the following:

- UltraLink 2 HDMI
- 1 x USB Type A to USB Type B cable
- 1 x HDMI male to HDMI male cable
- 4 x Self-adhesive rubber feet
- Power Adapter (Optional)
- Manual

Additional cables are usually ordered separately. If the package contents are not correct, contact Rose Electronics or your reseller so the problem can be quickly resolved.

MODELS

UltraLink 2 HDMI Models

The UltraLink 2 HDMI is available in a single model as shown below.

Front View

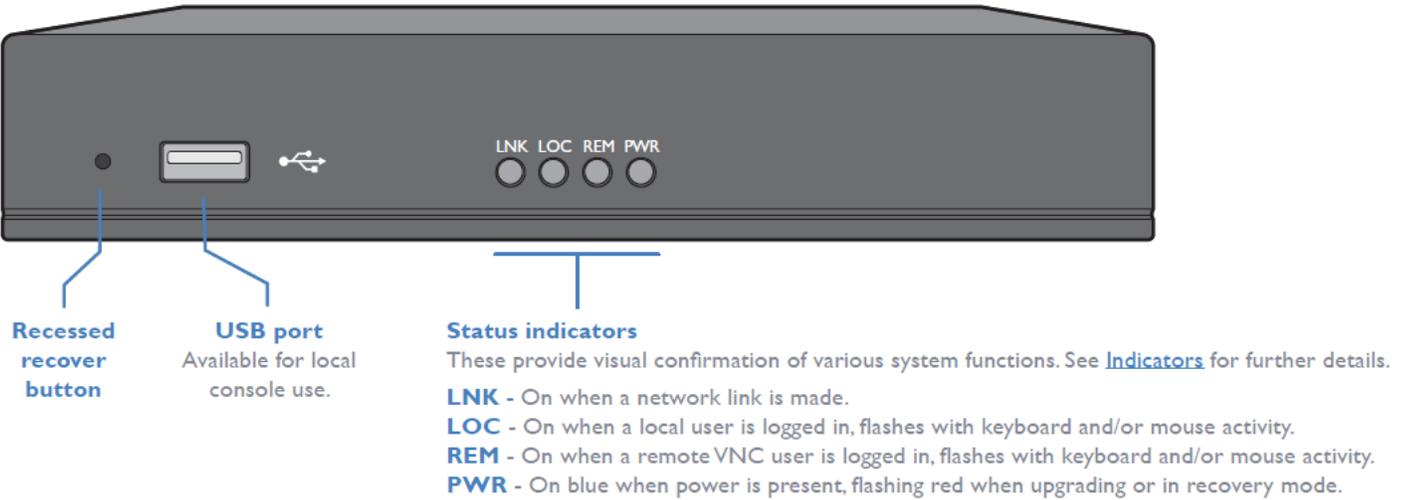


Figure 1. UltraLink 2 HDMI Front View

Rear View

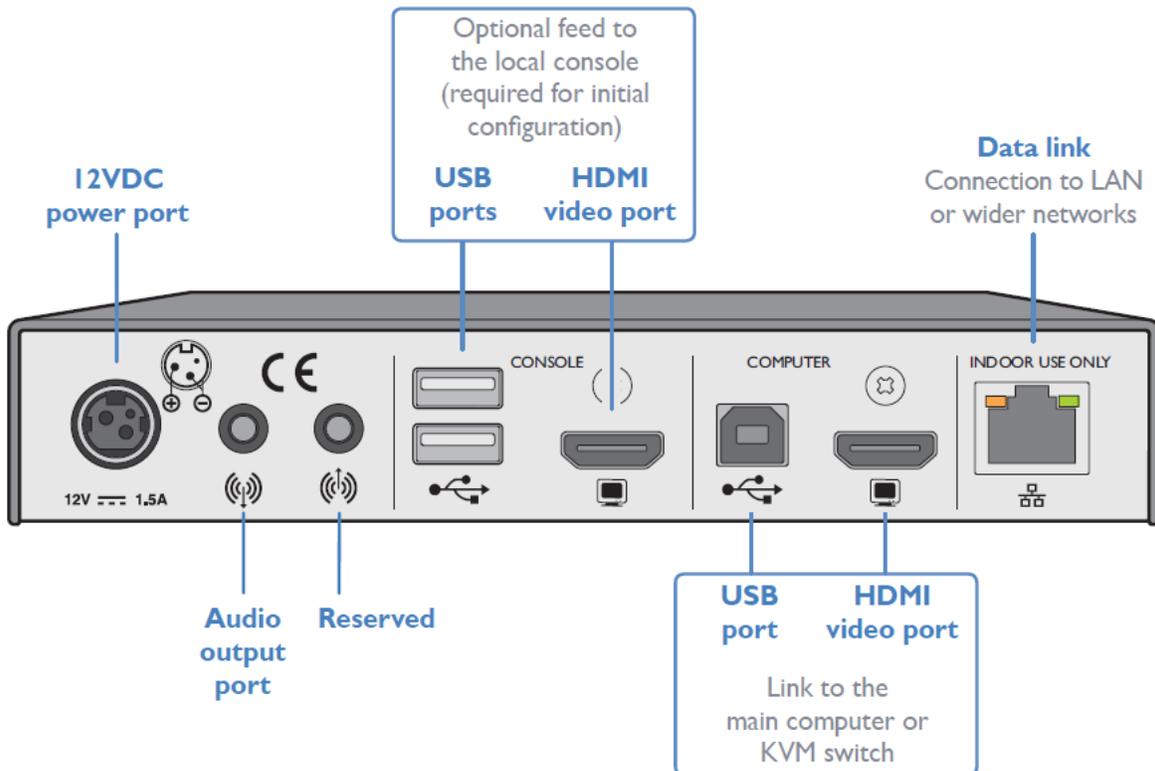


Figure 2. UltraLink 2 HDMI Rear View

INSTALLATION

Installation

The UltraLink 2 HDMI can be connected directly to a host computer's HDMI video and USB ports. Video resolutions up to 1920x1200@60Hz and 30 frames per second are supported. HDMI audio is not supported. Use the audio out ports to monitor audio signals.

If connection to multiple host computers is required, the UltraLink 2 HDMI can also be connected by an HDMI-to-DVI cable to a DVI/USB KVM switch like the Vista DVI Plus 4-port model (Part # KVM-4TDDL/A1). The UltraLink 2 HDMI is NOT compatible with the Vista DVI Plus 8-port model (KVM-8TDDL/A1).

This section describes how to connect the UltraLink 2 HDMI to the host computer, and how to change the UltraLink network settings to make it visible on the network.

Connecting the UltraLink 2 HDMI

While the following connections can generally be made in any order, it is recommended that power be applied as a final step.

Computer Connections

Two connections are required between the UltraLink 2 HDMI and a host computer or KVM switch are required: USB for keyboard and mouse, and video.

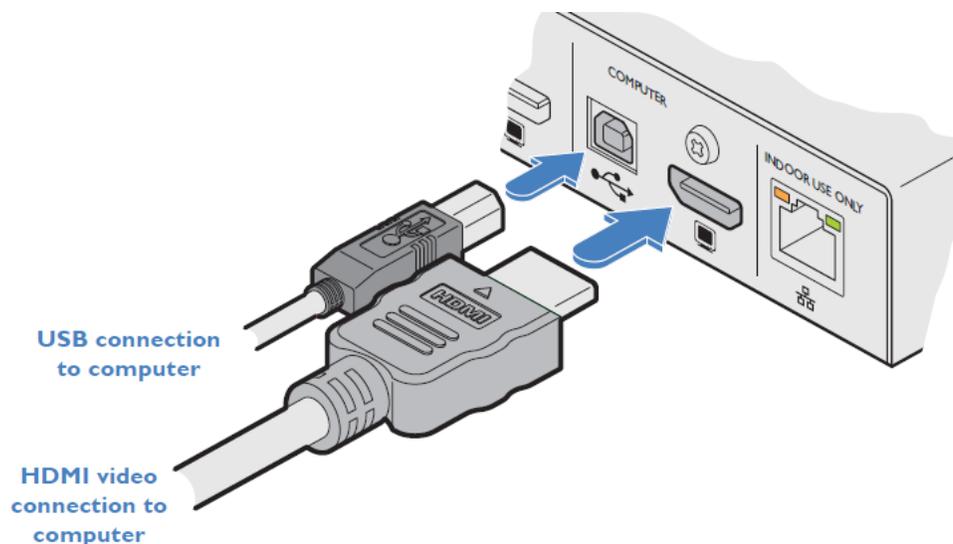


Figure 3. USB and HDMI connections

- Insert the supplied HDMI cable into the HDMI video socket in the COMPUTER section on the rear panel of the UltraLink 2, and connect the other end of the cable to either the video output port of a computer or the user console video output port of a KVM switch.
- Insert the supplied USB cable's type B connector into the USB type B socket in the COMPUTER section on the rear panel of the UltraLink 2, and connect the other end of the cable to either a USB socket on the computer or to a USB keyboard and mouse connector on the user console of a switch.

Console Connections

The UltraLink 2 HDMI console connections are required for initial configuration and optional thereafter for local control/monitoring of the active connection.

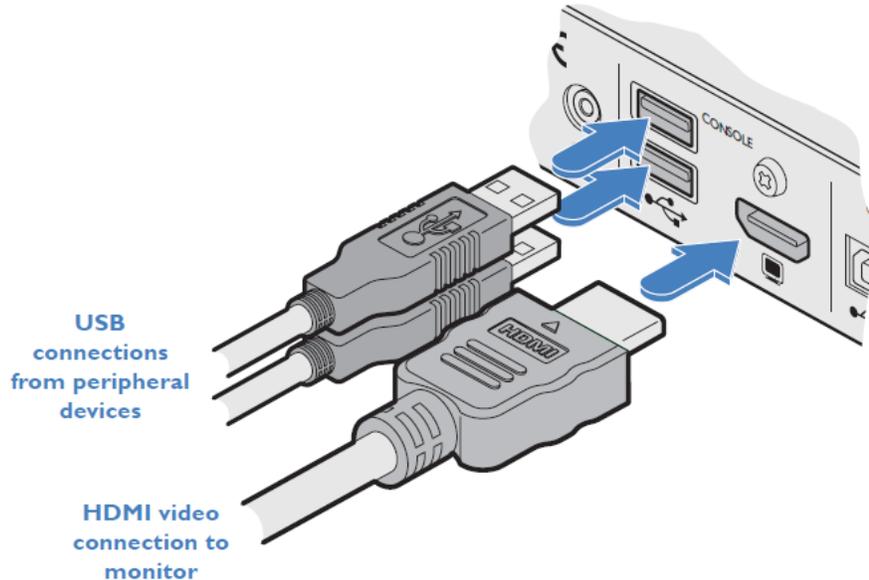


Figure 4. Console connections

- Insert the supplied HDMI cable between the HDMI video socket in the CONSOLE section on the rear panel and the HDMI video port on a monitor.
- Connect a USB keyboard and mouse to the two USB ports in the CONSOLE section on the rear panel. The third USB console port on the front panel is identical in function to the two ports on the rear panel.

Data Link Connection

Use the link connector to join the UltraLink 2 HDMI to a suitable network.

- Insert a standard CATx network cable into the socket on the far right of the rear panel.
- Connect the other end of the cable to either a suitable network switch, or directly to the network.

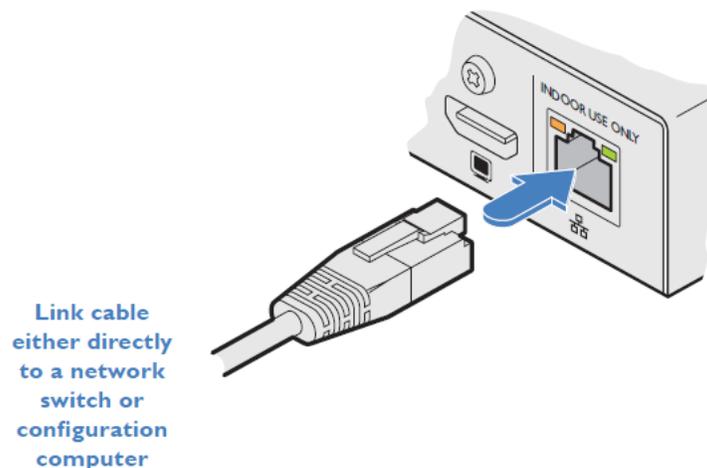


Figure 5. Network connection

Audio Connection

The UltraLink 2 HDMI can output CD-quality stereo audio at the audio output port located on the rear panel, between the Console section and the power connector. Headphones with up to 32 Ohms impedance are supported. HDMI audio output to the local HDMI monitor and remote connections is not supported.

- Connect an audio output device, such as speakers or headphones, to the 3.5 mm stereo jack.

Power Connection

UltraLink 2 HDMI is powered by the supplied 12V 1.5A power adapter. Do not use a power outlet which is not earth grounded or an extension cord. The power adapter requires air circulation for cooling.

- Attach the output plug of the power adapter to the power input socket on the left side of the rear panel. When inserting the plug, pull back slightly on the outer body of plug to assist the locking mechanism until the plug is fully inserted.
- Insert the IEC connector of the power cord to the socket of the power adapter.
- Connect the power cord to an AC power outlet.

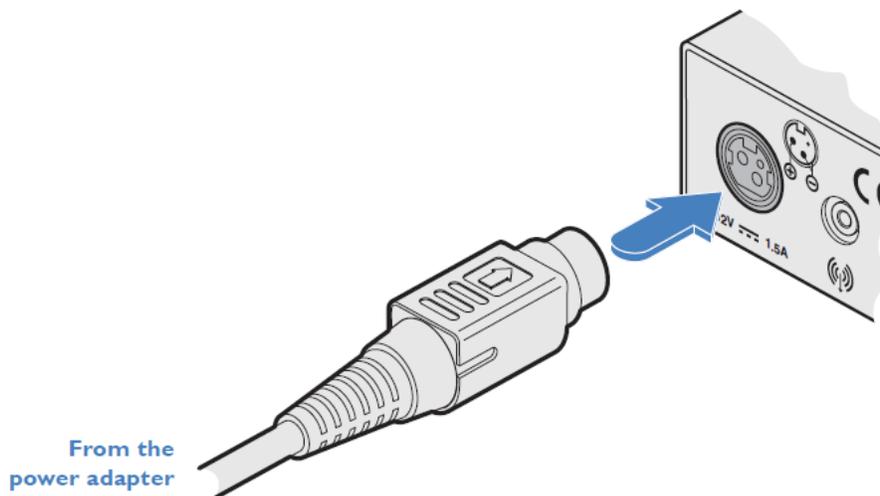


Figure 6. Power Adapter Connection

Disconnecting the Power Adapter

- Remove the connection to the AC power outlet.
- Grasp the outer body of the power adapter plug where it connects with the UltraLink 2 HDMI.
- Gently pull the outer sleeve of the plug away from the module. As the sleeve slides back, it will release the plug from the socket and you can withdraw the plug.

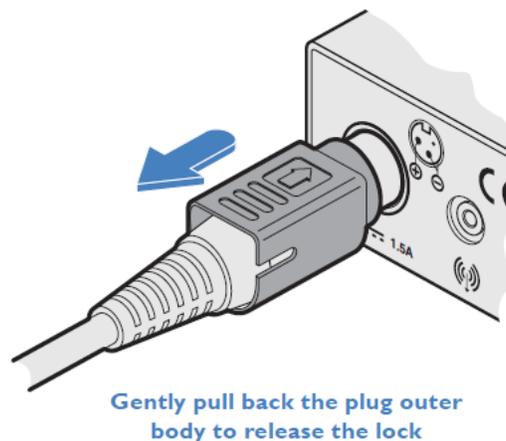


Figure 7. Power Adapter Disconnection

Initial Configuration

The factory network settings of UltraLink 2 HDMI are as follows:

- IP address: 192.168.1.42
- Subnet mask: 255.255.255.0
- Gateway: <undefined>

If these settings do not match the network, they must be changed to values that will allow the unit to be found on the network. The initial configuration changes must be made from the local console. ***Even if no changes are made to the factory configuration, the local console's two initial configuration pages must be navigated at the local console for a remote IP connection with the VCN Viewer to be successful.***

Initial Configuration from the local console

When the UltraLink 2 HDMI is powered on for the first time, the local console will display a login page for accessing the two initial configuration pages. Enter the default username, "admin", tab to the password entry and press enter (the default password is blank).

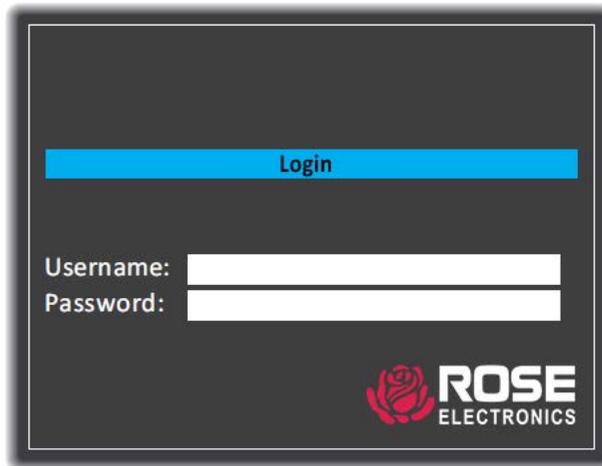


Figure 8. Console Login Screen

The initial Unit Configuration menu will be displayed. The admin password can be changed and the UltraLink 2 HDMI unit can also be assigned a name for easy recognition. The menu can be accessed at any time to make additional changes by typing Ctrl + Alt + C on the console keyboard.

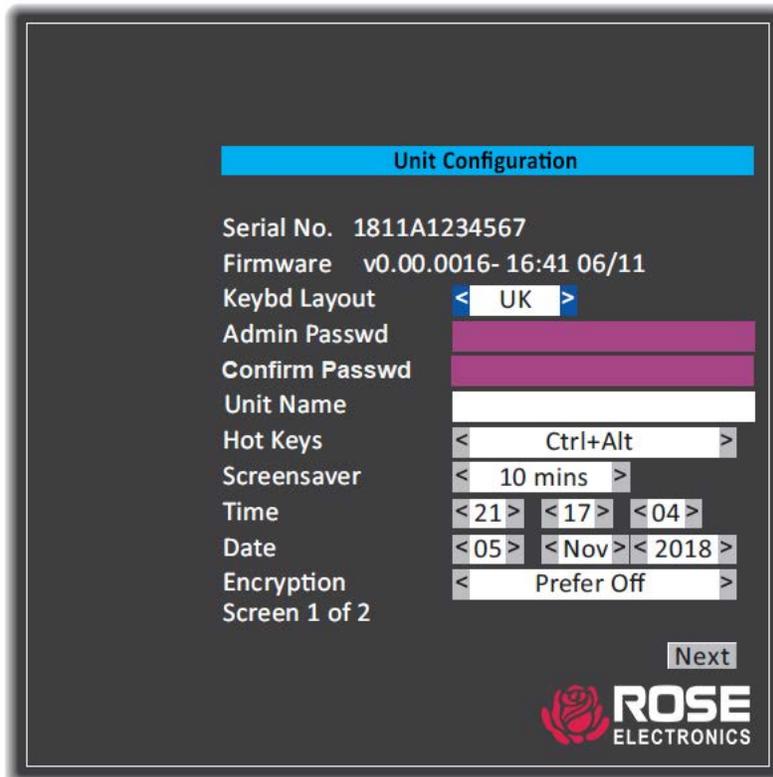


Figure 9. Console Initial Unit Configuration Menu

Click the Next button to display the initial Network Configuration menu.

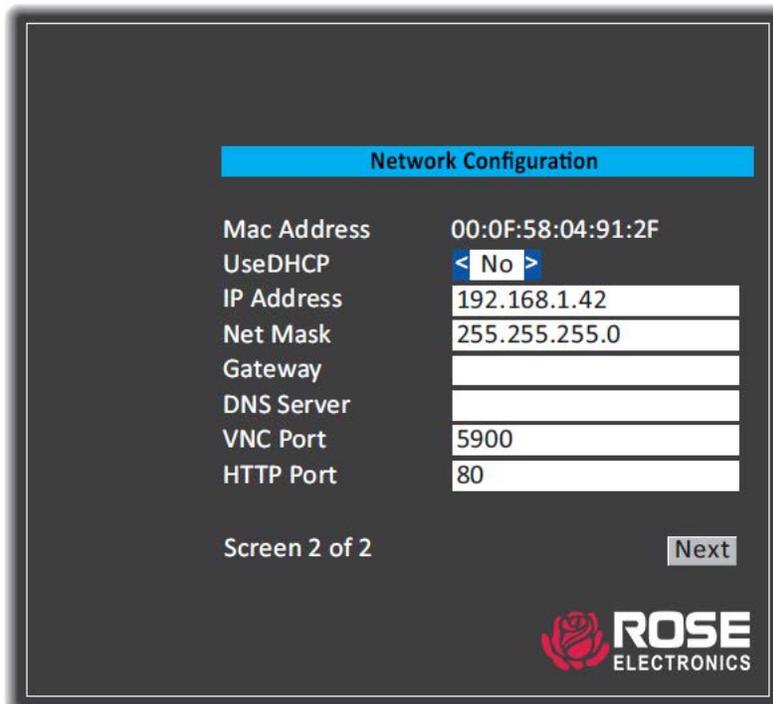


Figure 10. Console Initial Network Configuration Menu

The options in the Network Configuration menu can be used to set up the unit for the local network. Click the Next button. The Console login screen will be displayed again, even if no changes were made. After login, the main Console menu is displayed.

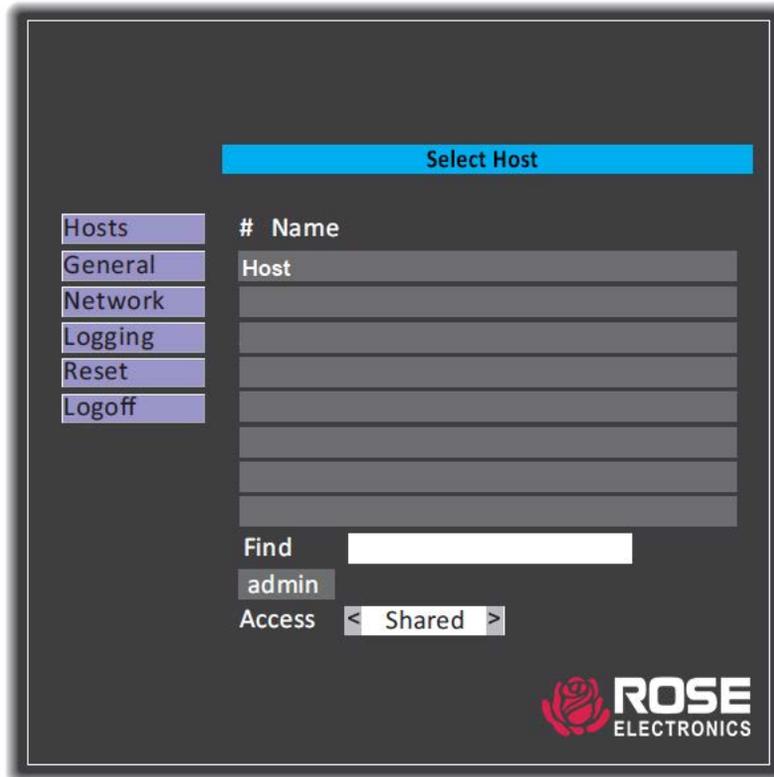


Figure 11. Console Host Menu

If a computer has been connected to the UltraLink 2 HDMI input ports, click the first name in the host list to connect to the computer. To display the console menus at any time, type Ctrl + Alt + C on the console keyboard. For more information about the settings available in the local console menus, see **Appendix C - Local Console Menus**.

Initial Configuration from a remote connection

Select a computer to connect to the UltraLink 2 HDMI remotely. Download and install the latest VNC® Viewer application from realvnc.com. If the UltraLink 2 HDMI has not been configured for a local network, connect both the UltraLink 2 HDMI and the configuration computer to an Ethernet switch. Change the computer's IP address to a value compatible with the UltraLink 2 HDMI's default address of 192.168.1.42. Open the Network and Sharing Center in the computer's control panel, select Change Adapter Settings, and select the computer's Ethernet adapter.

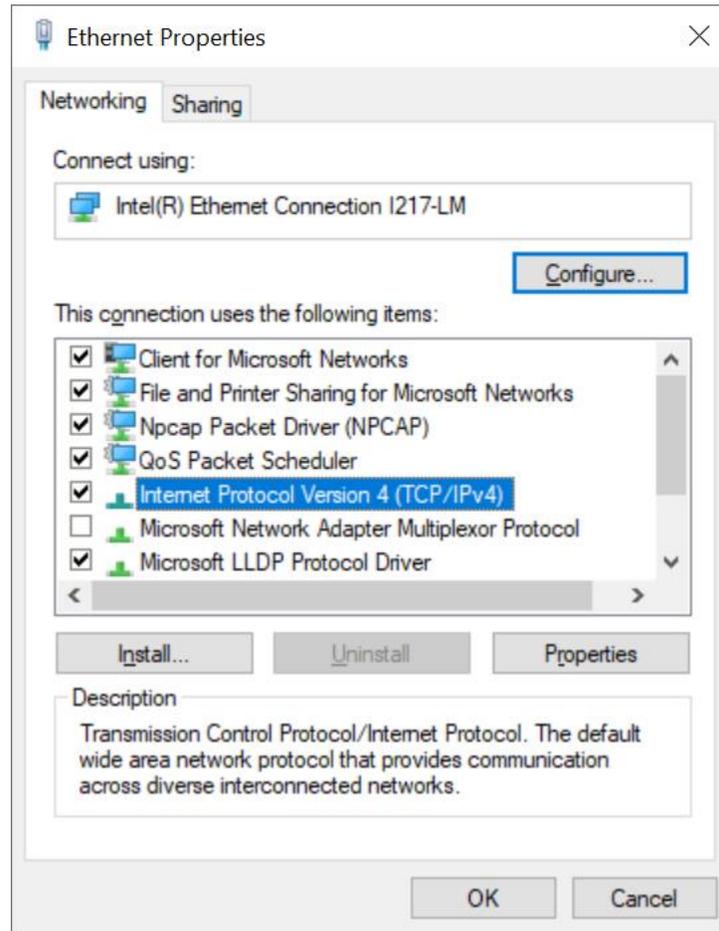


Figure 12. Change Ethernet Adapter Settings

Select Internet Protocol Version 4 (TCP/IPv4), and click properties.

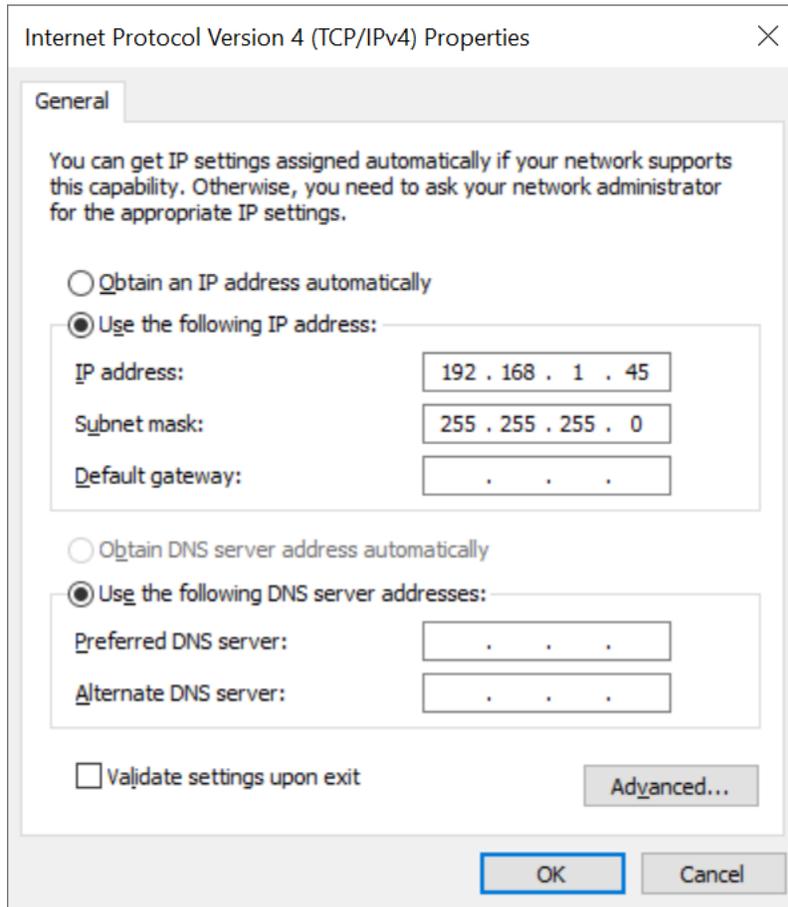


Figure 13. Change Configuration Computer's IP Address

Click OK to save the computer's IP address changes. Open the VNC® Viewer application and enter the UltraLink 2 HDMI default IP address of 192.168.1.42 in the address pane. Press enter.

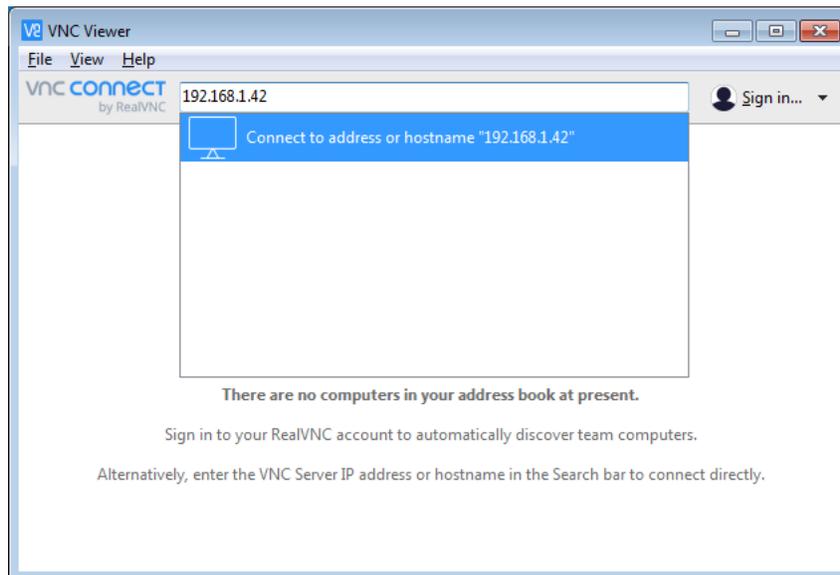


Figure 14. IP Connection screen

The access login screen will be displayed if the admin password has been changed from the default. Enter the password and click the OK button.

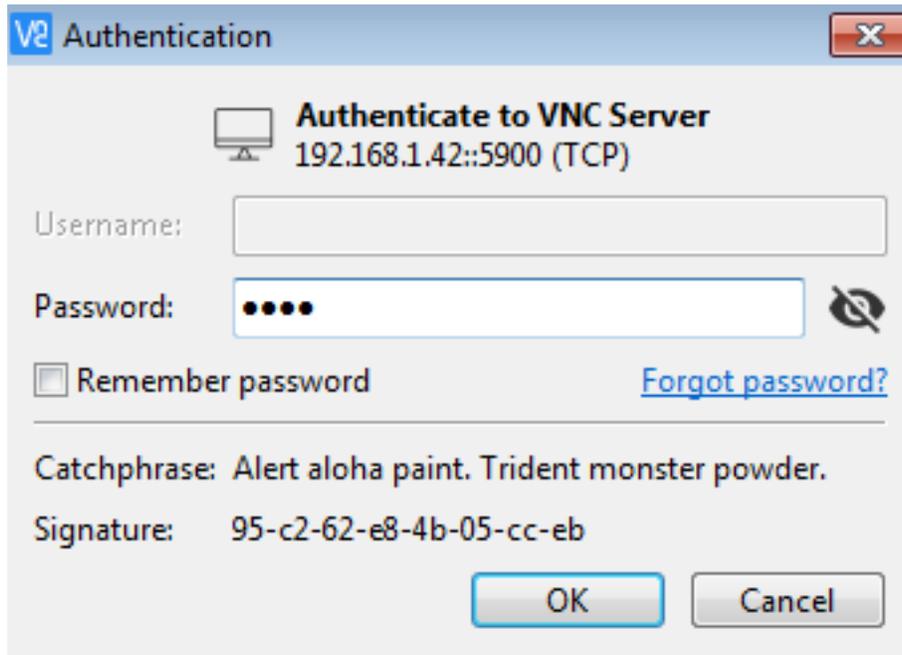


Figure 15. VNC Viewer Login Screen

When a connection to the UltraLink 2 HDMI is established, a viewer pane will be displayed.

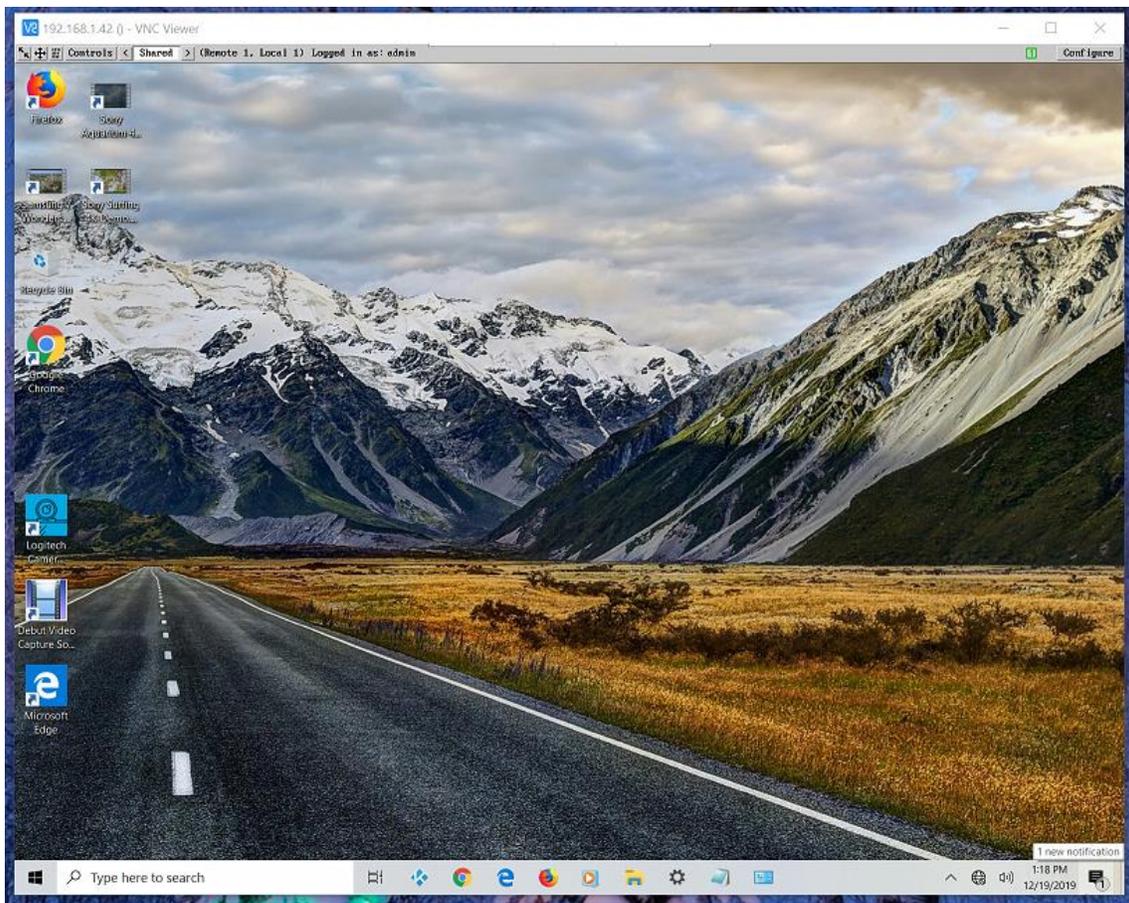


Figure 16. VNC Viewer Pane

Click the Configure button in the upper right corner of the VNC® Viewer menu bar to display the Configuration Menu.

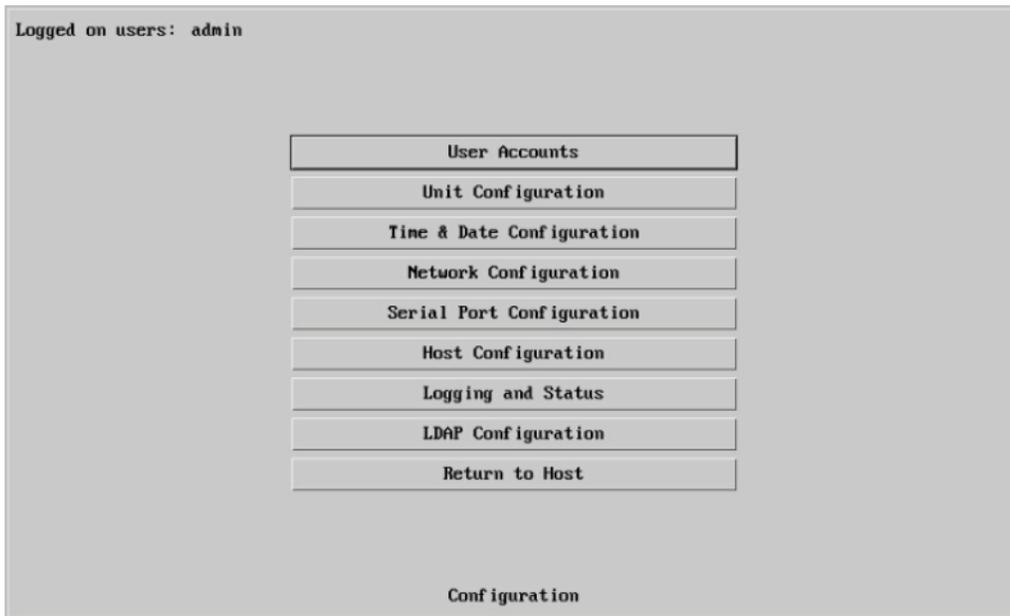


Figure 17. VNC Viewer Configuration Menu

Select the Unit Configuration button to change the Administrator password.

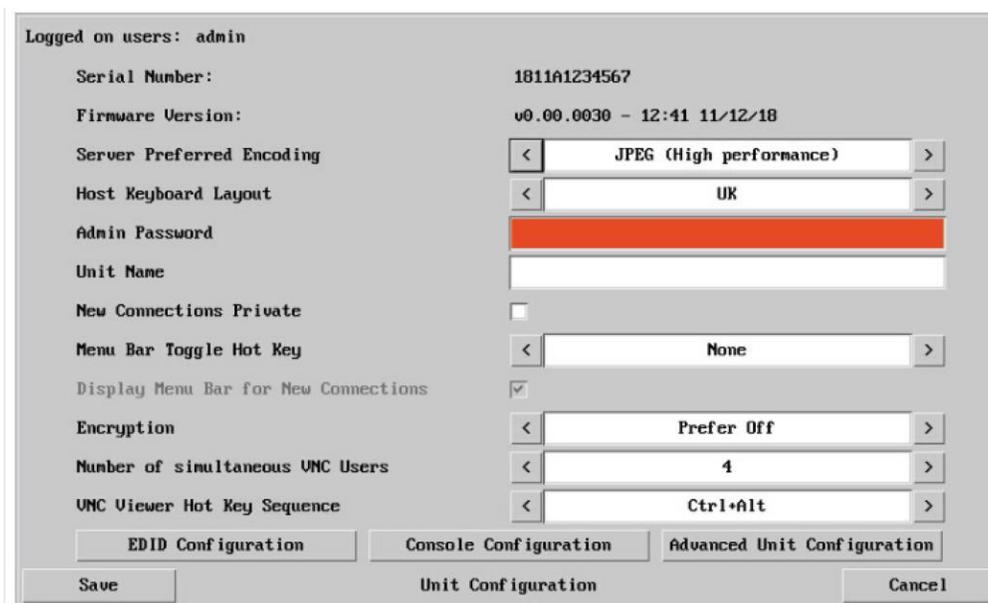


Figure 18. VNC Viewer Unit Configuration Menu

Click the Save button to save the new password and return to the main configuration menu.

UltraLink 2 HDMI Operation

UltraLink 2 HDMI allows users to access a connected host computer from a remote location using a VNC® Viewer connection. Up to eight remote users can concurrently connect with the host computer. When the UltraLink is connected to a compatible KVM switch, a choice of multiple host computers becomes possible. The UltraLink 2 HDMI local console enables connections to the host computer directly from the UltraLink unit.

Local Connection

To locally connect with a host

1. Move the mouse connected to the UltraLink 2 HDMI console to display the login screen. If previously logged in, enter CTRL + ALT + C to display the screen.

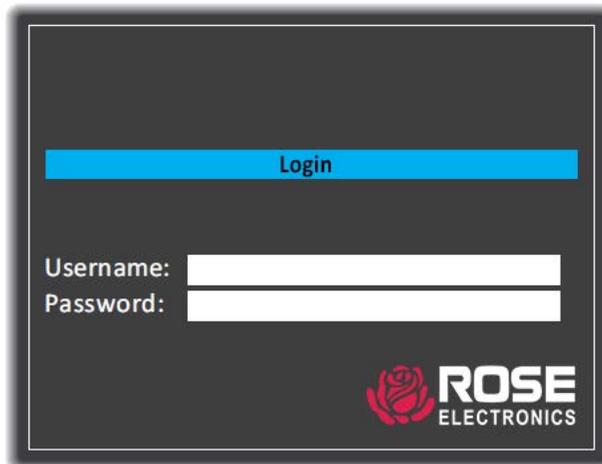


Figure 20. Local Console Login

2. Enter the username and password and press Enter. The default username is **admin** and the password is blank. The Main Menu Hosts page will be displayed.

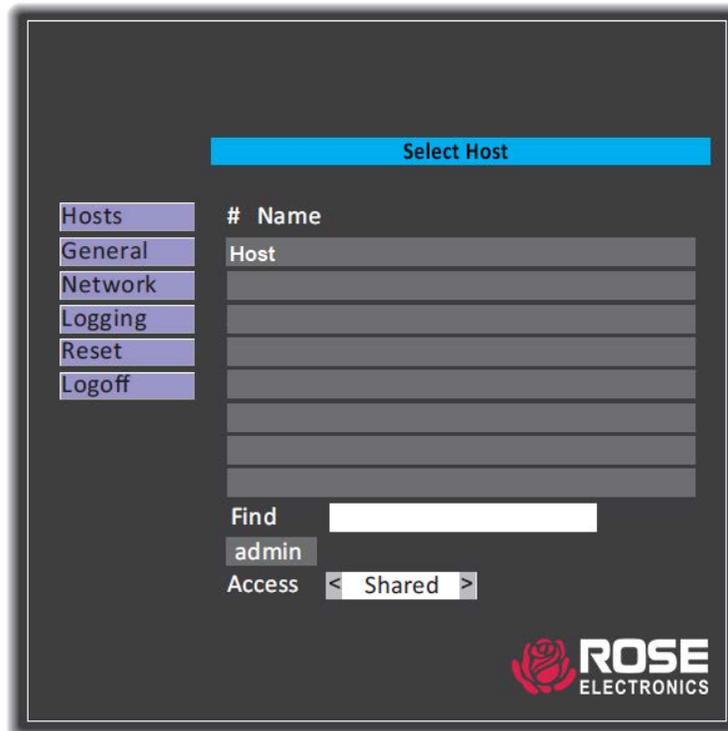


Figure 21. Local Console Hosts Menu

3. Click on a Host computer to connect with it. Optionally, change the Access mode setting between Shared (the connection can be viewed by others) and Private (all other users are locked out). The Find option can be used to locate a particular UltraLink 2 HDMI host computer name.
4. After a connection is established, type CTRL + ALT + C at any time to display the Hosts menu and select another Host.

Remote Connections

The VNC® Viewer application is available for download from www.realvnc.com. It allows the user to access the UltraLink 2 HDMI and its computers from a remote location.

To remotely connect with a host

1. Install and run the VNC® Viewer application. The Connections page will be displayed.

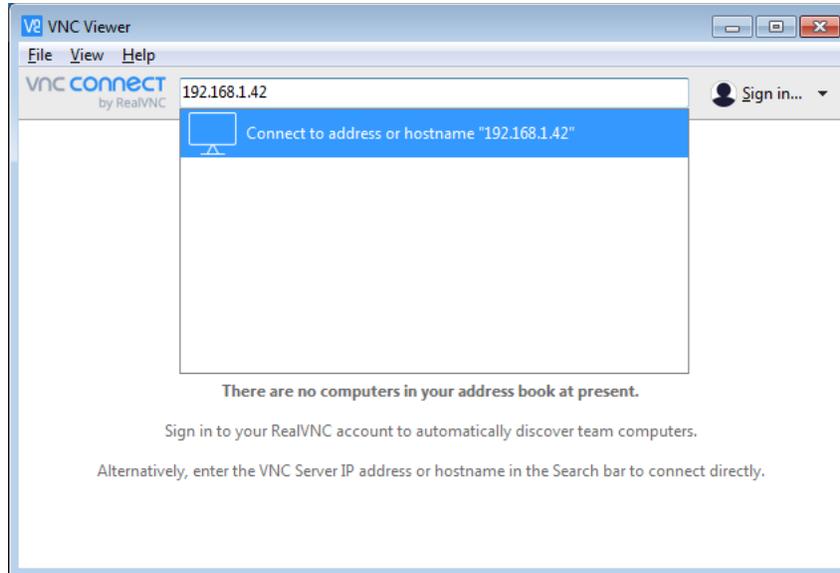


Figure 22. VNC Viewer Connections

2. Enter the UltraLink network address into the search bar and press Enter. Once a connection is made, the login screen will be displayed.

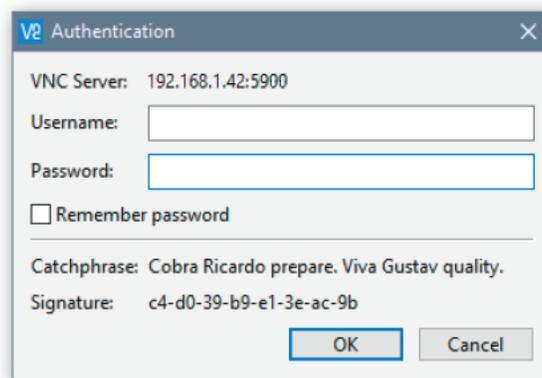


Figure 23. VNC Viewer Login Screen

3. Enter a username and password and click OK.

After successful connection and login, a new VNC® Viewer window will be opened with a menu bar along the top edge.

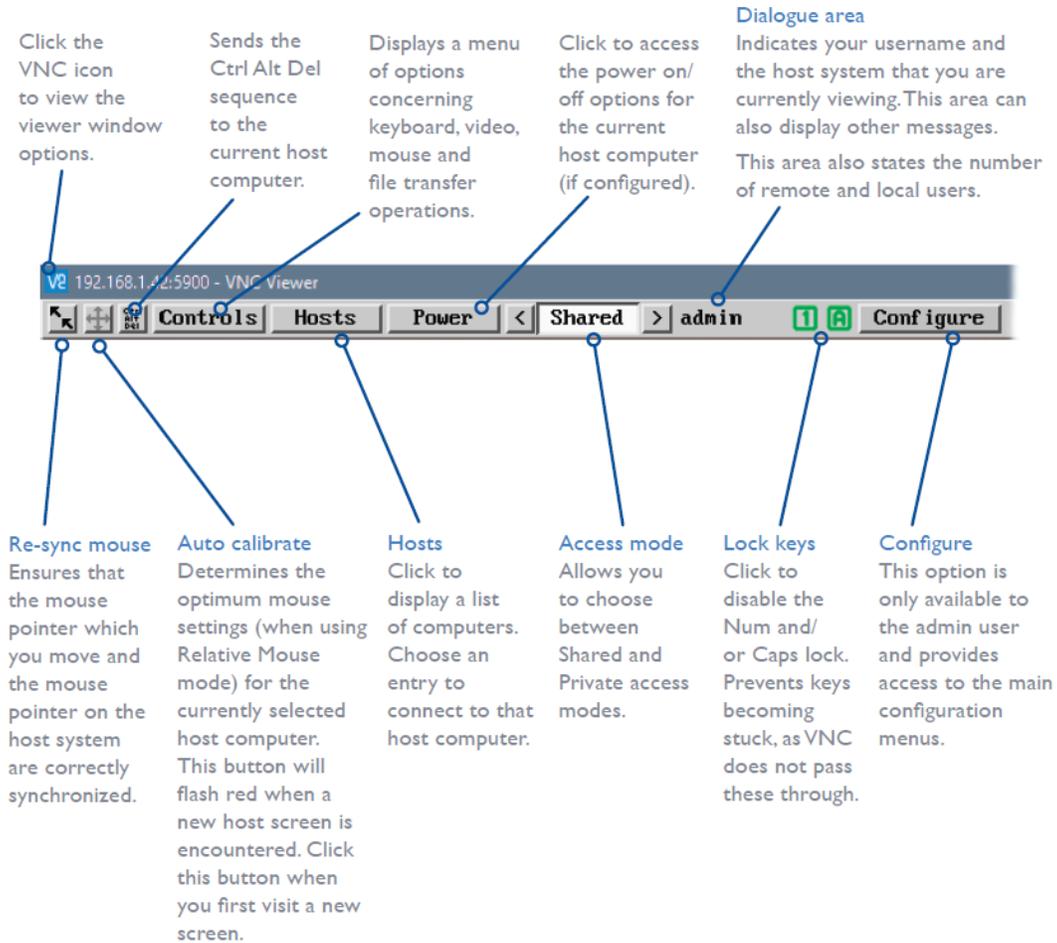


Figure 24. VNC Viewer Window Menu Bar

VNC Viewer Menu Bar Buttons

Menu Bar Re-synchronize Mouse Button

If the mouse cursor on the computer running VNC Viewer is not synchronized with the cursor on the host computer, click this button to re-align them. This feature is also selectable in the Controls menu. If the cursors are still not synchronized, it may be necessary to perform a mouse calibration.

Menu Bar Auto Calibrate Button

Auto calibrate will calibrate the mouse only if relative mouse mode is selected. This detects the mouse motion and will report that the mouse has been calibrated correctly, depending on the operating system. Once this has been done

Menu Bar Ctrl Alt Del Button

Click this button to send the keystroke sequence Ctrl Alt Del to the Host computer.

Menu Bar Controls Button

This button displays a drop-down menu of options for keyboard, video and mouse operation.

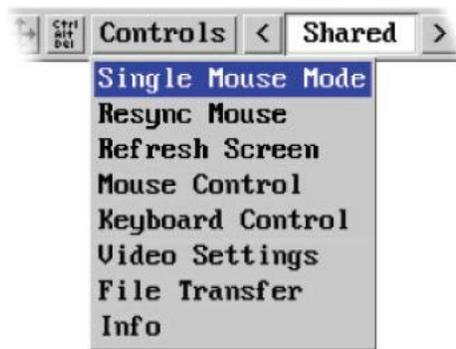


Figure 25. Controls Options

Controls Menu Single Mouse Mode

Normally, when the user's mouse cursor is within the Viewer window, two mouse cursors are displayed: a local cursor to indicate mouse position on the connecting computer, and a second cursor to indicate mouse position on the host computer. Single Mouse Mode can be used with fast network connections, where a local predictor cursor to indicate mouse destination on the host computer is not needed. Exit Single Mouse Mode by pressing F8 and then 'P'. Single mouse mode does not require calibration.

Controls Menu Resync Mouse

This option has the same effect as the Re-synchronize mouse button on the menu bar, realigning the user's mouse cursor with the host's mouse cursor.

Controls Menu Refresh Screen

This option refreshes the whole screen image to remove any artifacts from moved screen items. This is useful when using very low refresh rates on slow speed communication links.

Controls Menu Mouse Control

The mouse control dialog allows you to control the remote mouse cursor using a selection of buttons that you click with your local mouse.

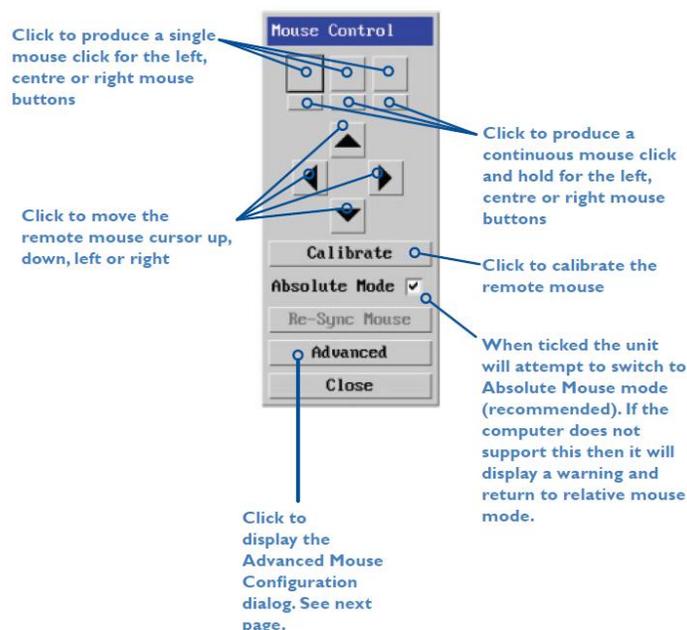


Figure 26. Mouse Control Menu

Controls Menu Mouse Control - Advanced Mouse Configuration

This dialog (accessible via the Mouse Control popup) allows the mouse acceleration to be configured according to the operating system in use and also permits manual fine tuning for situations where problems are encountered with the Calibrate function. For best results, choose the appropriate *Change motion:* entry to match the system of the host in use.

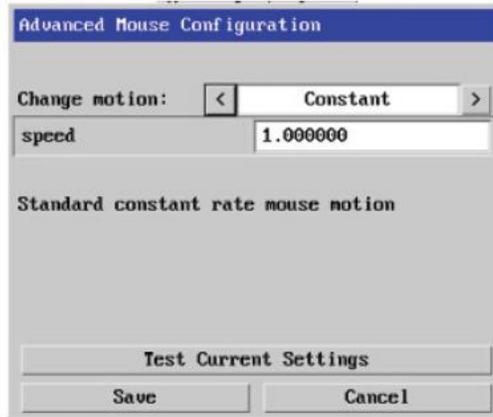


Figure 27. Advanced Mouse Configuration

The available Change Motion schemes are: *Constant*, *Windows 7/8/10*, *Solaris*, *Solaris 9* and *Mac OSX*.

When the *Absolute Mode* option is ticked in the main Mouse Control menu, the Absolute Offset Adjustment dialog allows you to adjust the *Absolute Offset* scale:

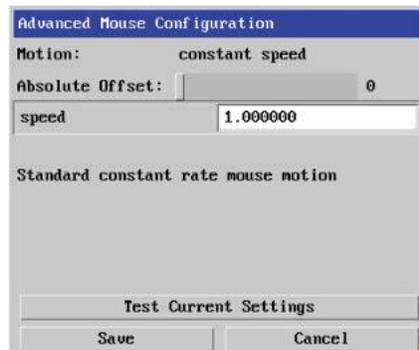


Figure 28. Absolute Offset Adjustment

Controls Menu Keyboard Control

This option displays a keyboard control dialog and is useful for sending keyboard combinations to the host computer that would be trapped by the user computer's operating system or by the UltraLink 2 HDMI unit.

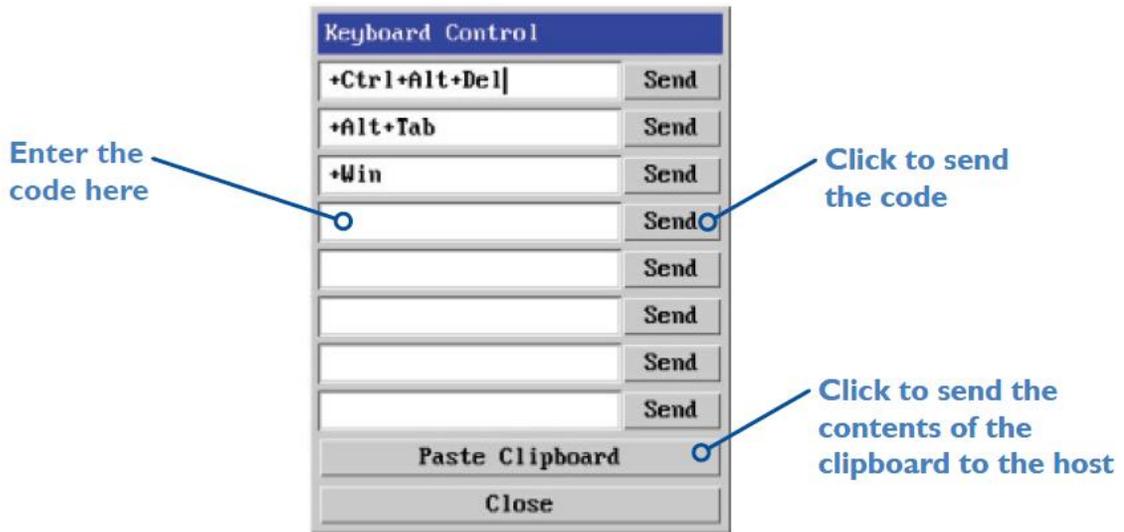


Figure 29. Keyboard Control Menu

When entering codes:

- + means press down the key that follows
- means release the key that follows
- + - means press down and release the key that follows
- * means wait 250ms (if a number follows the asterisk, the delay will equal the number in ms)

All keys are assumed to be released at the end, so there is no need to specify -Ctrl or -Alt if the keys are released together.

Examples:

Ctrl + Alt f 2 would be expressed as +Ctrl+Alt+f-f+2

+N means press the 'N' key

See **Appendix B - Recognized Abbreviations for Keyboard Keys** for more details on keyboard control codes.

Controls Menu Video Settings

This dialog shows the current video mode and display activity.

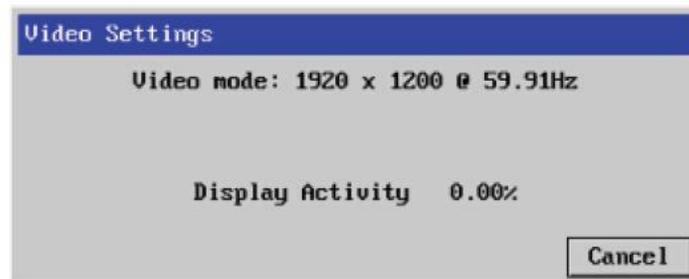


Figure 30. Video Settings

Controls Menu File Transfer

The file transfer function requires a USB flash drive or disk drive to be attached to one of the USB ports of the UltraLink 2 HDMI. The maximum size of a file that can be transferred is limited only by the size of this media.

File transfer works in two modes:

- In the first mode, files can be transferred from the VNC Viewer computer to the USB disk and from there to the host computer, and vice versa.
- In the second mode, the disk appears as a remote device connected to the host.

Transferring files to the host

1. Make sure Enable File Transfer is checked in the Advanced Unit Configuration section of the Unit Configuration menu.
2. Files must first be copied from the VNC Viewer computer to the USB disk, and then from there to the host computer.
3. Open the Controls -> File Transfer menu and make sure the arrow next to USB Disc DOES NOT point to Host.

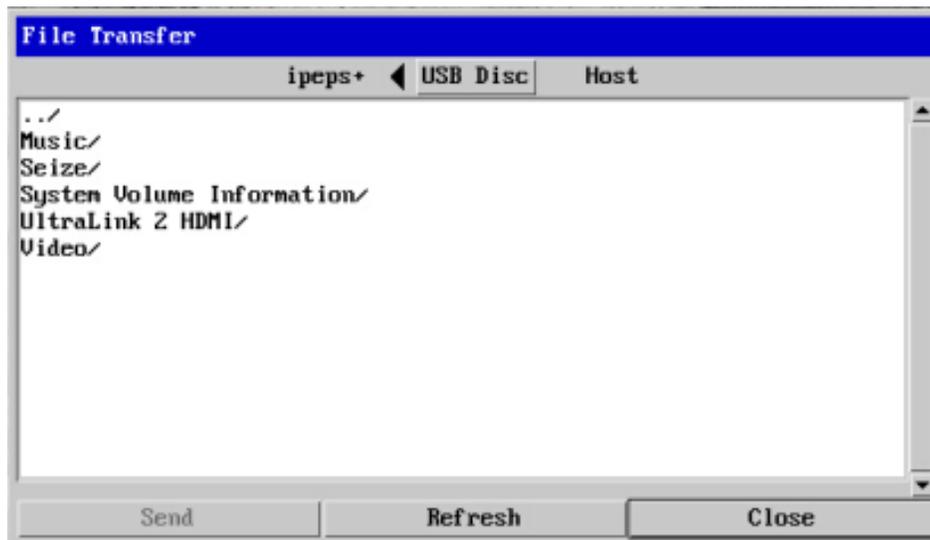


Figure 31. File Transfer Menu

4. Files can now be copied to the USB device by selecting Transfer Files from the F8 menu or by clicking on the icon in the VNC Viewer toolbar. VNC Server in the dialog means UltraLink 2 HDMI.

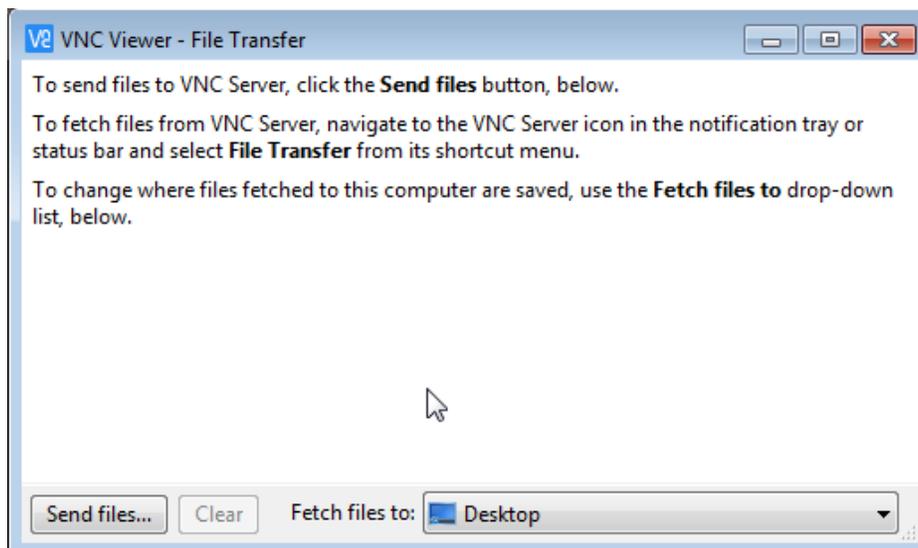


Figure 32. VNC Viewer File Transfer

- Click on “Send Files...” and select the files to be sent. A progress dialog is displayed during the file transfer until the process is complete.

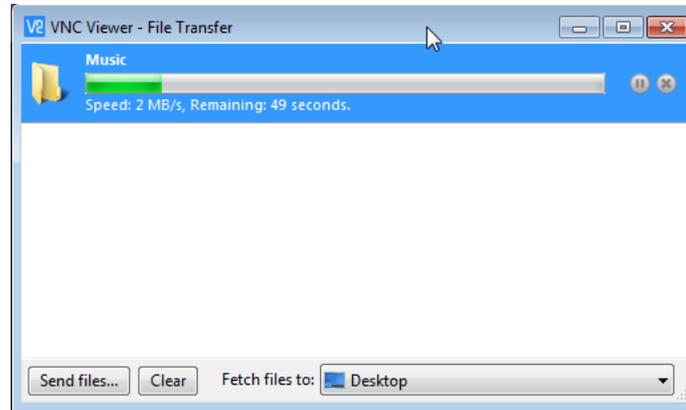


Figure 33. File Transfer Progress Dialog

- Once the transfer is complete, click on the USB Disc button to cause the arrow to point to Host. This can take some time, during which the arrow will flash, as buffered data may still be in the process of being written to the disc. When the arrow points solid to the Host, the disc is connected to the Host. **WARNING:** While transfers are in progress, avoid clicking on the USB disc indicator in the File Transfer menu. If this happens, a warning will be displayed, and after a warning the transfer will be aborted. This will also abort and transfers initiated by other users.

Transferring files from the host

- Make sure Enable File Transfer is checked in the Advanced Unit Configuration section of the Unit Configuration menu.
- Files must first be copied from the host to the USB disc and then from the disc to the VNC Viewer computer.
- Open the Controls -> File Transfer menu and make sure the arrow next to USB Disk DOES point to Host.
- Copy files from the Host to the USB disc as you would to any USB media.
- Click on the USB Disc indicator to switch the arrow to ipeps+ . The files transferred should appear in the window.
- Select the files to be transferred to the VNC Viewer computer and click Send. A “VNC Viewer – File Transfer” progress box will show the process until it is completed.
- Selecting the Clear button will clear the log from the window. The fetch files prompt does not apply to this system.

Controls Menu Info

When selected, this option displays an information dialog showing the current logged on users, the current host, its video mode and its mouse motion details.



Figure 34. Information

Menu Bar Access Mode Selection Buttons

Up to eight remote users can be simultaneously logged-in to the same host. To perform a sensitive task that should not be viewed by other users, change the access mode to Private. This action prevents other users connecting at the same time.



Figure 35. Menu Bar Access Mode Selection

Click one of the arrow buttons adjacent to the Shared/ Private indicator to change the access mode.

Front Panel Status Indicators

The status indicators on the front panel of UltraLink 2 HDMI provide important feedback on current operation.

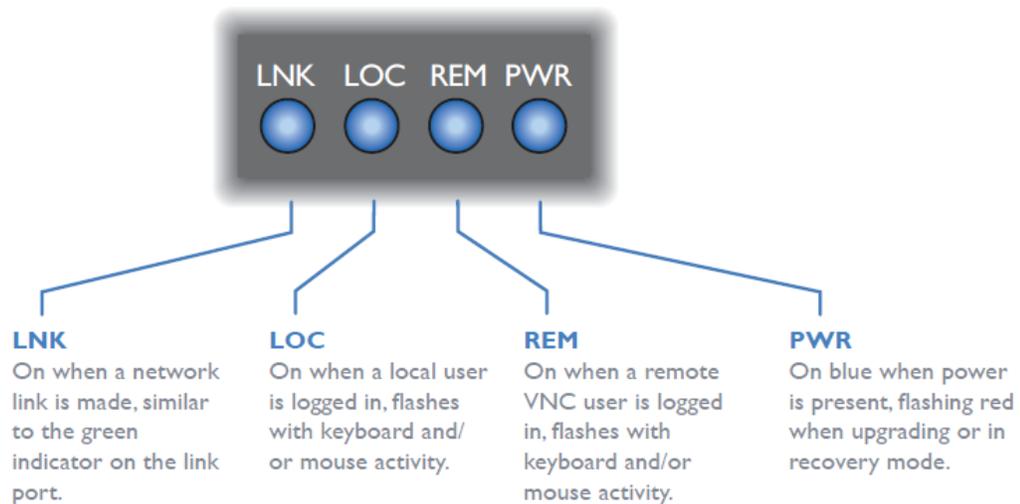


Figure 36. Front Panel Indicators

Rear Panel Link Status Indicators

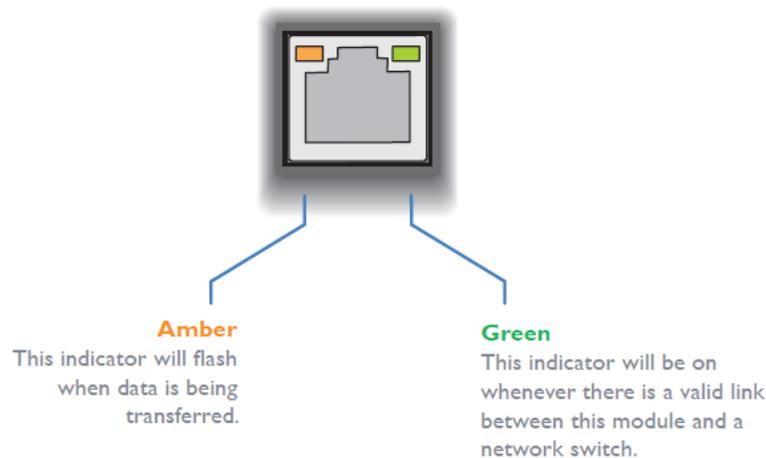


Figure 37. Rear Panel Link Status Indicators

CONFIGURATION

UltraLink 2 HDMI Configuration and Maintenance

This section of the manual describes how to configure the UltraLink 2 HDMI for optimal performance. Configuration can be performed with a remote VNC Viewer Connection or from the Local Console.

Remote Configuration using VNC Viewer

The *Configure* button on the right-hand side of the VNC Viewer Toolbar is used to display the Configuration Screen. Only the Administrator is allowed to configure the unit, so the Configuration button is displayed only when a user logs in using the admin account. The Configuration Menu provides access to all main settings of UltraLink 2 HDMI.

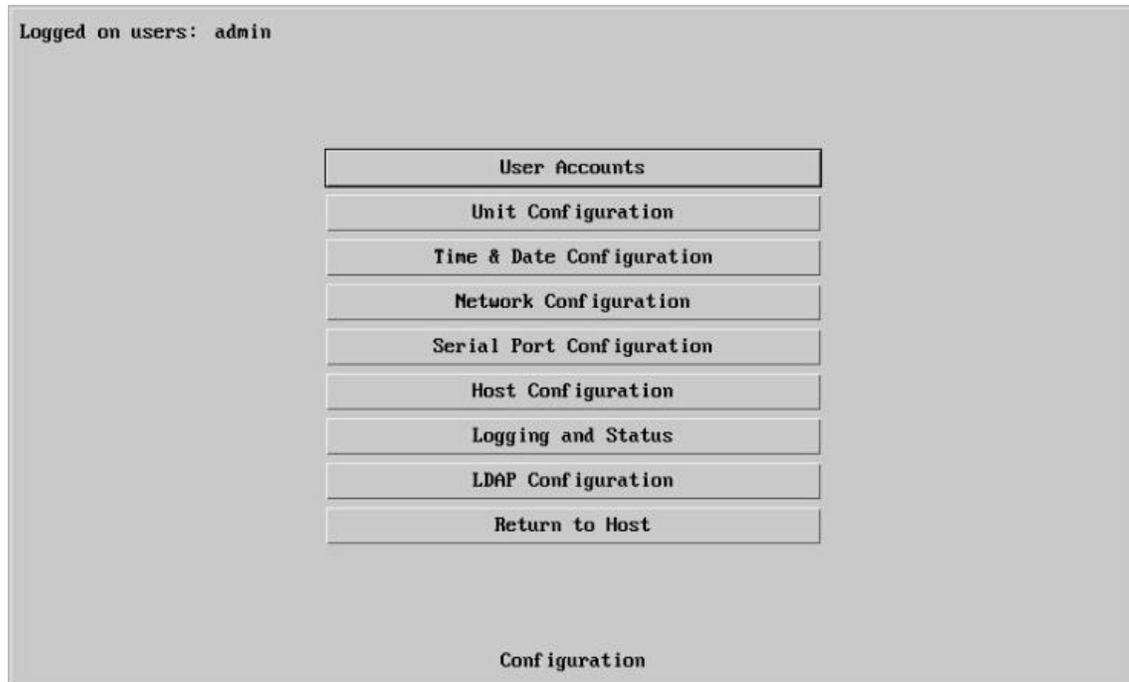


Figure 38. UltraLink 2 HDMI Configuration Menu

The *Logged on users* field at the top-left of the Configuration screen is present on all configuration sub-screens, and displays the names of all the users currently connected to UltraLink 2 HDMI.

Each button in the Configuration screen opens up a new screen with the same name as the button, where settings can be modified. The only exception is the *Return To Host* button, which closes the Configuration screen and returns to the VNC Viewer Display window.

The *Save* and *Cancel* buttons are present on all the configuration sub-screens. *Save* saves all changes made in a screen to the UltraLink 2 HDMI, while *Cancel* aborts all changes.

Each configuration sub-screen is described in greater detail below.

User Accounts Configuration

The User Accounts Configuration Screen is accessed by clicking the *User Accounts* button on the Configuration Screen. Up to 15 user accounts can be created by the Administrator, each with their own password and access privileges.

The first account is the admin account. Because it is the only account with access to the configuration menus, it cannot be deleted, and only the password can be modified. Even if other accounts are created with the same permissions as the admin account, only the admin can access the configuration menu.

User Name	Password	Local	Remote	Power	View Only	Auto Logon	Menu Bar
admin	Enter Password	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Edit
	Enter Password	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Edit
	Enter Password	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Edit
	Enter Password	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Edit
	Enter Password	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Edit
	Enter Password	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Edit
	Enter Password	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Edit
	Enter Password	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Edit
	Enter Password	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Edit
	Enter Password	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Edit
	Enter Password	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Edit
	Enter Password	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Edit
	Enter Password	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Edit
	Enter Password	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Edit
	Enter Password	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Edit
	Enter Password	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Edit

Figure 39. User Accounts Configuration Screen

User Name

All user names must consist of lower case characters, numbers and certain non-alphanumeric characters (e.g. '_') only. No symbols or upper case characters are permissible. The user name can be between 1 and 32 characters in length and cannot contain non-English characters.

Password

Each password can be between 1 and 16 characters in length. Good passwords have a mixture of more than 8 letters, numbers and punctuation characters.

Local

Local access allows the user to use UltraLink 2 HDMI's local console to access the host computer.

Remote

Remote access allows the user to use a VNC Viewer to connect to the UltraLink 2 via an IP network.

Power

Power access allows the user to control the power input to a host computer (requires an optional power control switch).

View Only

View Only access restricts a user's connections to a host computer to video access only.

Auto Logon

Disabled by default, this feature affects only the local console. It allows the local console to be used without requiring login.

Menu Bar

The VNC Viewer menu bar can be customized to display only the options considered necessary. It can be edited for by each user, or globally altered for all users.

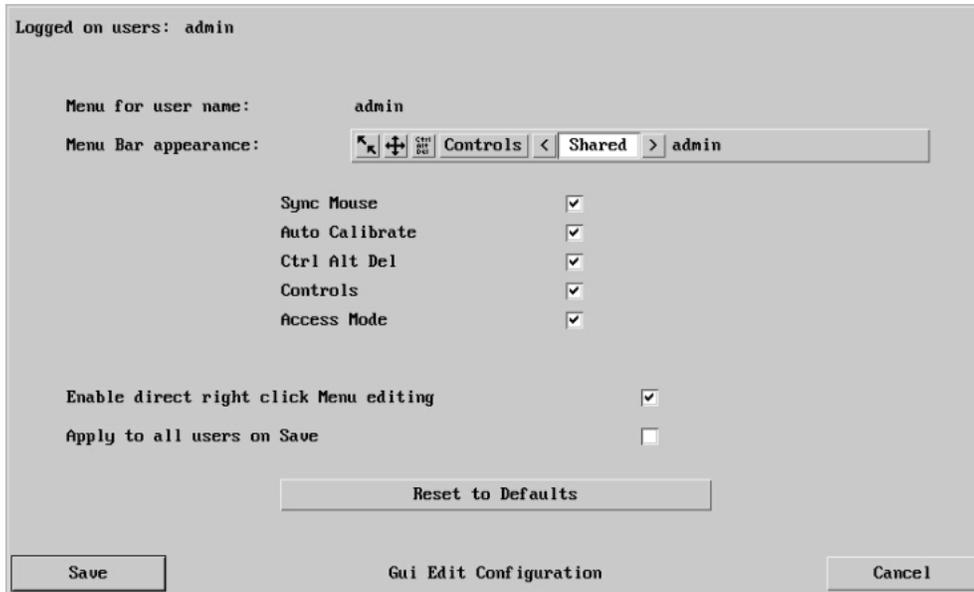


Figure 40. Menu Bar Editing

To globally edit the menu bar as admin:

1. Using VNC Viewer, log in as the admin user.
2. Click the 'Configure' button at the top right corner of the viewer window.
3. Click on User Configuration.
4. Click on a user's Menu Bar Edit button.
5. Click the appropriate menu options.
6. The *Reset to Defaults* button resets the user's VNC Viewer Toolbar to its default state.
7. "Enable direct right click Menu editing" allows the user to customize his own menu.
8. To apply the changes to all users, click on Apply to all users on Save.
9. Click the save button.

To locally edit the options displayed in a user's menu bar:

1. Using the VNC Viewer, login as any user.
2. Place the mouse pointer on the menu bar and click the right mouse button.

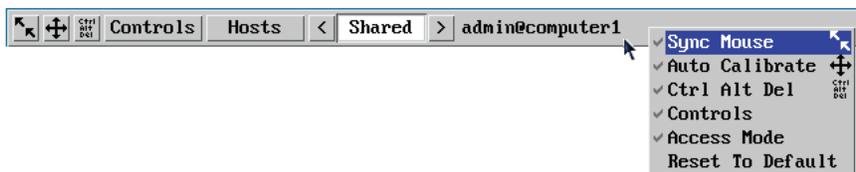


Figure 41. VNC Viewer Menu Bar Pop Up

3. Click on any option in the pop up menu to add or remove it from the menu bar.
4. Click anywhere in the VNC Viewer Window to erase the pop up menu.

Changes made in this way only affect the current user's menu.

Unit Configuration

The Unit Configuration menu is accessed by clicking the *Unit Configuration* button on the main Configuration Screen.

Logged on users: admin

Serial Number:	1910A0217695
Firmware Version:	v2.000 - 12:09 31/07/19
Server Preferred Encoding	< JPEG (High performance) >
Host Keyboard Layout	< UK >
Admin Password	Enter Password
Unit Name	
New Connections Private	<input type="checkbox"/>
Menu Bar Toggle Hot Key	< None >
Display Menu Bar for New Connections	<input checked="" type="checkbox"/>
Encryption	< Prefer Off >
Number of simultaneous UNC Users	< 4 >
UNC Viewer Hot Key Sequence	< Ctrl+Alt >

EDID Configuration Console Configuration Advanced Unit Configuration

Save Unit Configuration Cancel

Figure 42. Unit Configuration Screen

Firmware Version

This field indicates the version of firmware currently running in the UltraLink 2 HDMI

Server Preferred Encoding

This selection determines the graphics encoding method to be used in VNC Viewer connections. The options are:

- JPEG (High performance)
- Use Viewer Preference
- Raw
- RRE
- Hextile
- TRLE
- ZRLE

If Use Viewer Preference is selected, the user may be required to reboot the unit when switching to a different Server Preferred Encoding setting. See the Reboot Unit button in the Advanced Unit Configuration section.

Host Keyboard Layout

The *Host Keyboard Layout* field tells the UltraLink 2 HDMI which keyboard layout to use with the host computer. Click on the arrow buttons to cycle between the available keyboard layouts. The choice of keyboard layout should take into account the keyboards in use by remote users. Options include: UK, US, RU, PT, BE, DE, DE_CH, DK, ES, FR, FR_CH, IT, JP, NL, NO, and SE.

Admin Password

This field can be used to edit the password used to gain administrator access to the UltraLink 2 HDMI. Its functionality is the same as the *Password* field of the admin account in the User Account Settings Screen.

Unit Name

This field allows assigning an identifying name to the UltraLink 2 HDMI. This name will be displayed in the local console Hosts menu and in the VNC Viewer window for easy identification of the connected unit.

New Connections Private

This checkbox lets the administrator determine whether new local console or VNC Viewer connections should open in Private or Shared access mode.

Menu Bar Toggle Hot Key

This field determines the keyboard function key to be used for displaying and hiding the toolbar in the VNC Viewer. Click on the arrow buttons to cycle between the available selections, being careful not to select a key that needs to be passed to host computers or switches. For instance, if the unit is connected to a KVM switch which uses F5 as a trigger for some event, F5 should not be selected as the Menu Bar Toggle Hot Key. The VNC Viewer will use the key to toggle the menu bar, and will not pass it on to the KVM switch.

Display Menu Bar for New Connections

If menu bar toggle hot key is set to any value other than None, this field will determine whether new connections begin with the menu displayed or not.

Encryption

The *Encryption* field specifies whether connections between VNC Viewer and UltraLink 2 HDMI must be encrypted. Clicking on the arrow buttons cycles between the four options:

- Prefer Off – request encryption off at the server, but will accept on or off.
- Prefer On – request encryption on at the server, but will accept on or off.
- Always On – set 128 bit encryption
- Maximum – set 256 bit encryption

Data transmission takes about 10% longer when encryption is used, but the connection is highly secure against third party intrusion. *Prefer On* and *Prefer Off* will defer to the setting currently in use in the UltraLink 2 HDMI.

Number of simultaneous VNC Users

This setting allows changing the number of concurrent VNC Viewer sessions allowed from the default value of 4. The minimum value is 1 and the maximum is 8.

VNC Viewer Hot Key Sequence

This field is used to select a hot key sequence for switching between hosts, and also to display the Host selection dropdown menu. Click the arrow buttons to select the hot key sequence from the options: Ctrl+Alt, Ctrl+Shift, Alt+Shift, and none. The default setting is Ctrl+Alt, so if you press Ctrl+Alt, the Viewer will connect to the Host with the assigned number 2.

Three additional buttons allow further configuration of the unit: *EDID Configuration*, *Console Configuration*, and *Advanced Unit Configuration*.

EDID Configuration

This button displays EDID Configuration menu. It is normally not necessary to make any changes in this menu.

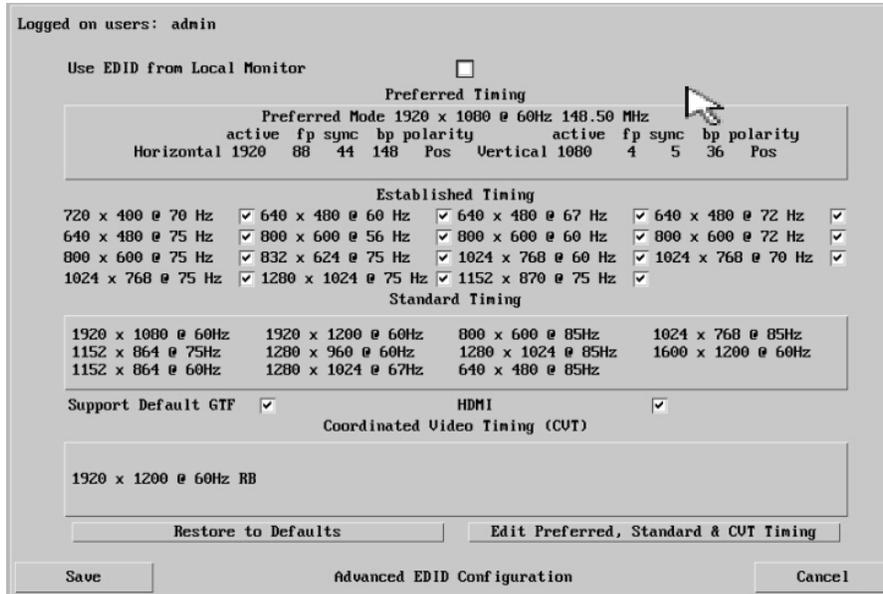


Figure 43. Advanced EDID Configuration Menu

Use EDID from Local Monitor

This option allows the EDID of the local Console display to be passed to the host computer. When checked, the other controls on this page are ignored. The other controls are used if the checkbox is clear or if there is no display connect to the local console output.

HDMI

The HDMI checkbox is normally checked, but it should be cleared if the display connected to the local console does not have a native HDMI connector.

Edit Preferred, Standard & CVT Timing

The default EDID should be sufficient for most applications. This page allows editing timings when necessary.

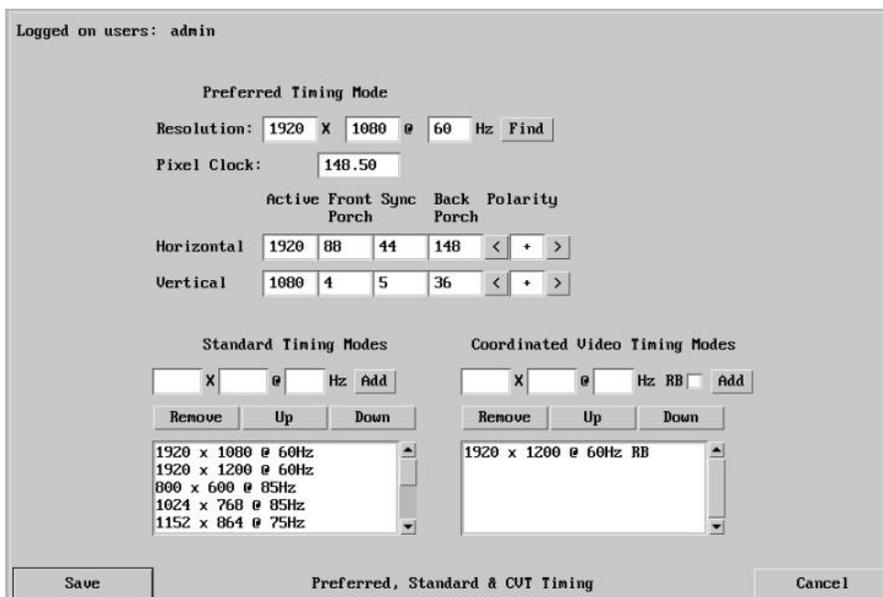


Figure 44. Preferred, Standard & CVT Timing Menu

When the Save button is clicked, the stored EDID table will be updated. Some computers only acquire the EDID table during the boot sequence, so it may be necessary to cycle power to the host computer to cause it to read the new EDID table from the UltraLink 2 HDMI.

Console Configuration

This menu allows adjustment of the settings that affect users of the UltraLink 2 HDMI local console.

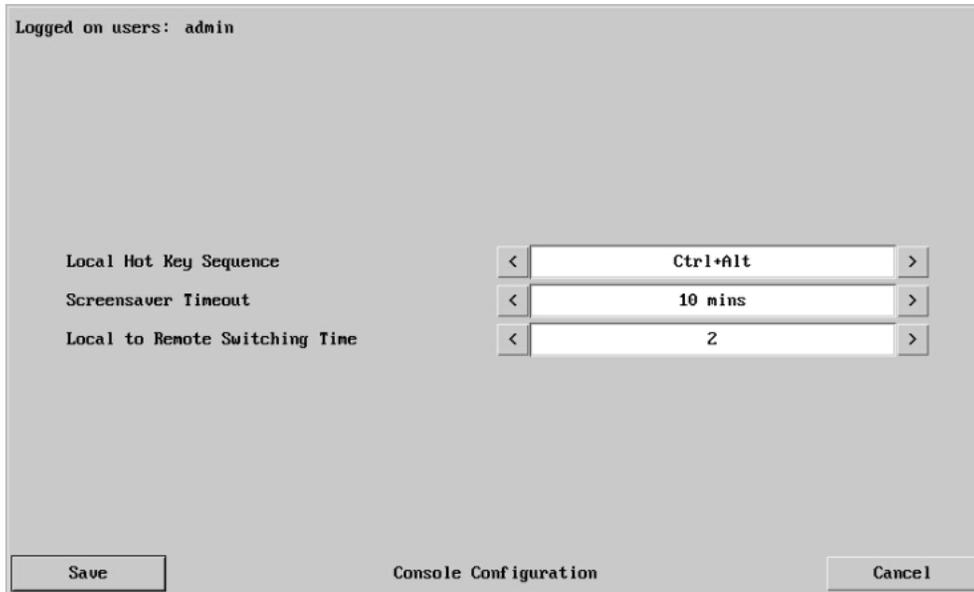


Figure 45. Console Configuration

Local Hot Key Sequence

Determines the hot keys used by the local console users to display the UltraLink 2 HDMI menus.

Screensaver Timeout

Sets the idle time before a screensaver is displayed on the local console monitor with an active connection.

Local to Remote Switching Time

When a VCN Viewer user and a local console user both have connections to the host computer, this setting is the number of seconds which must pass without keyboard and mouse activity from the active user before the other user can gain control of the computer's keyboard and mouse input.

Advanced Unit Configuration

Click this button to display advanced options that do not normally require alteration.

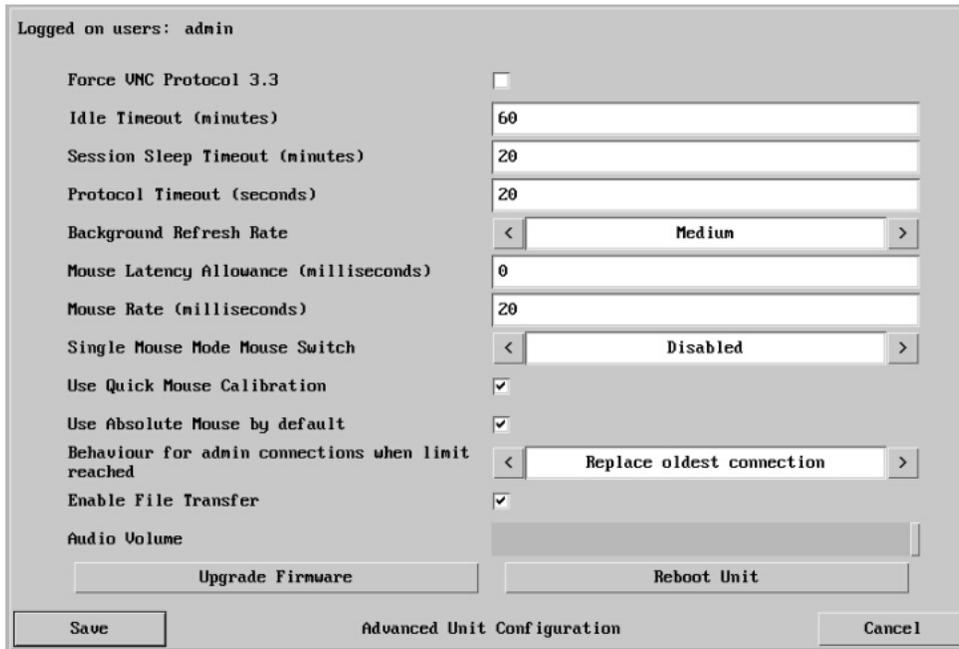


Figure 46. Advanced Unit Configuration Menu

Force VNC Protocol 3.3

Protocol 3.3 is a legacy version that does not offer any encryption. Hashed passwords are not supported with protocol 3.3

Idle Timeout

Determines the period of inactivity on a global connection before the user is logged out. This is to ensure inactive users do not prevent access by other users. The idle timeout period can be set to any time span, expressed in minutes.

Session Sleep Timeout

Determines the period of inactivity before the viewer screen will become blank

Protocol Timeout

This number is the time in seconds the UltraLink 2 HDMI will wait for a VNC Viewer to acknowledge packets. If a packet is not acknowledged within the specified time, the connection is considered lost and is terminated. This allows the UltraLink 2 HDMI to recover from connections that are hung or are terminated abruptly without disconnecting.

Background Refresh Rate

Use the arrow keys to alter the background refresh rate used to correct any screen changes missed in normal operation. The options are Slow, Medium, Fast, Auto, or Disabled. The Auto option automatically varies the refresh rate when multiple VNC sessions are active to provide a balance between the sessions. When a low connection speed is detected, the background refresh rate is automatically disabled, regardless of the option's setting.

Mouse Latency Allowance

This option is only used when Relative Mouse mode is active, and is used during calibration to account for the latency delays that may be caused as signals pass through a device. During calibration, the UltraLink 2 HDMI waits for 40ms after each mouse movement before sampling the next. If a device adds a significant delay to the flow of data, the calibration process can be lengthened or may fail entirely. The value entered here is added to (or subtracted from) the default 40ms sampling time. Negative values (down to -40) can be entered in order to speed up the calibration process when using fast KVM switches. Use this option with caution as it can adversely affect the calibration process.

Mouse Rate

Defines the rate at which mouse movement data are transmitted to the system. The default option is 20ms, which equates to 50 mouse events per second. This is used to slow down the rate in exceptional circumstances, but normally requires no adjustment.

Single Mouse Mode Mouse Switch

Select the mouse button combination to exit from single mouse mode when it is active.

Use Quick Mouse Calibration

Used only when Relative Mouse mode is active, this invokes optimized calibration techniques that handle the majority of mouse types.

Use Absolute Mouse by default

When selected, absolute mouse positioning data will be used instead of relative values.

Behavior for admin connections when limit reached

Determines what should occur when the limit on VNC users is reached. Options are: Replace oldest connection, Replace newest connection and Don't replace.

Enable File Transfer

When checked, allows file transfers to occur.

Audio Volume

Controls the volume of the short tone that is played to the local user to indicate when a remote connection is active.

Upgrade Firmware

Allows you to upgrade the firmware of the UltraLink 2 HDMI.

1. Download the required binary firmware file from Rose Electronics.
2. Click the Upgrade Firmware button to display the Upgrade Firmware screen.

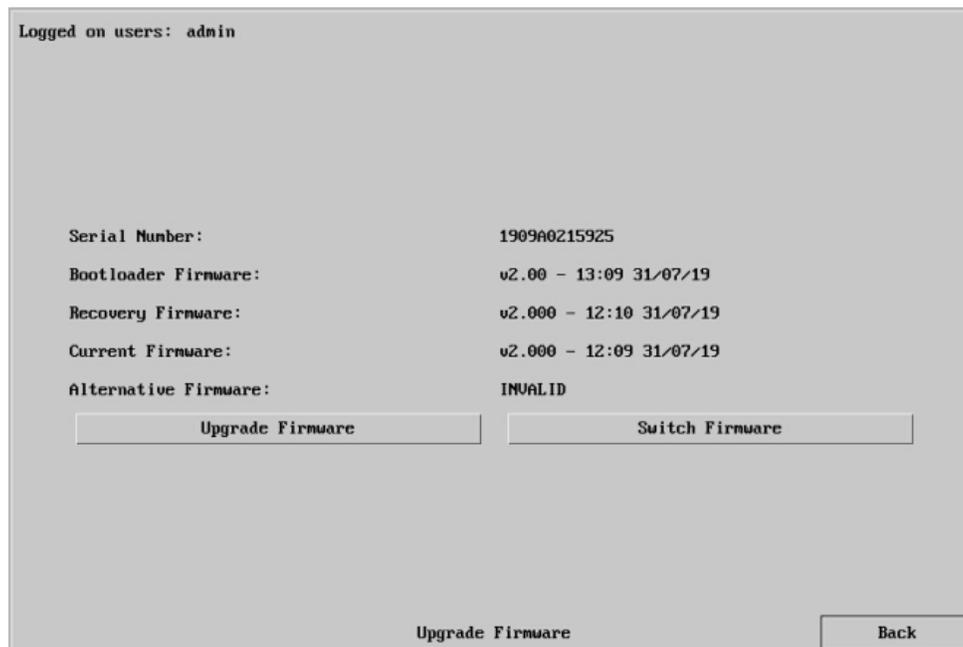


Figure 47. Upgrade Firmware Screen

3. Click the Upgrade Firmware button to display the following dialog:

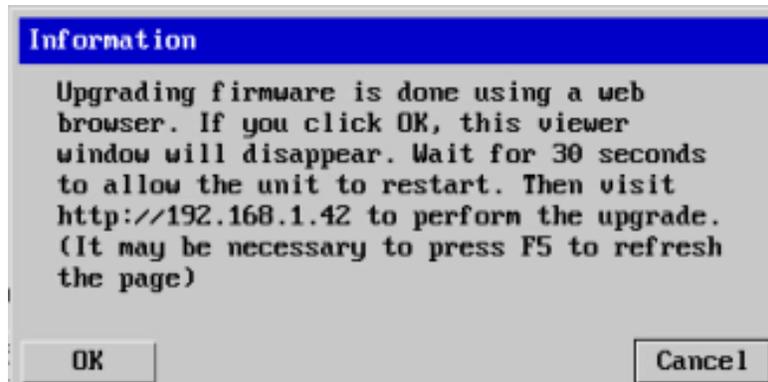


Figure 48. Upgrade Firmware Dialog

4. Note the IP address shown in the dialog box and click OK.
5. The unit is now ready to accept the upgrade files. Open a web browser and log into the UltraLink 2 HDMI using the IP address from the dialog box. The unit will display this screen:

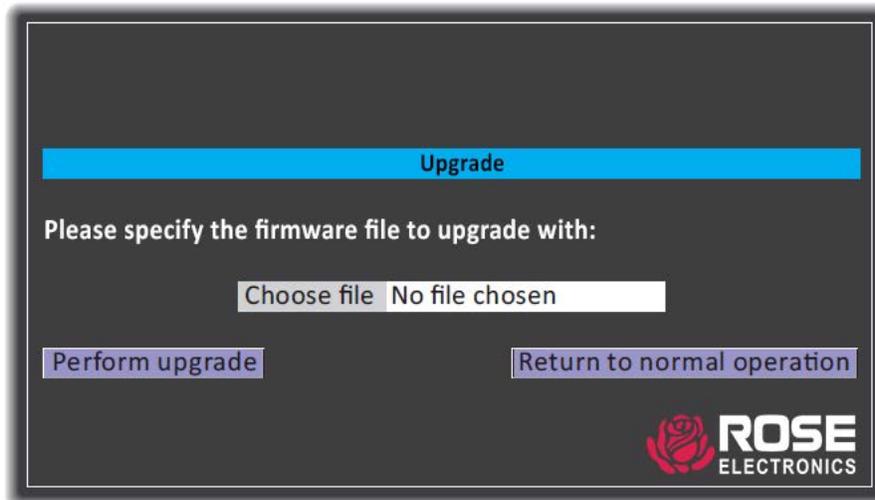


Figure 49. Perform Upgrade Screen

6. Click the *Choose file* button and locate the .bin upgrade file that you downloaded earlier.
7. Click the Perform Upgrade button. The progress of the upgrade will be shown on the screen.

Reboot Unit

Performs a complete cold boot of the UltraLink 2 HDMI.

Time & Date Configuration

The Time & Date Configuration Screen is accessed by clicking the *Time & Date Configuration* button on the UltraLink 2 HDMI main Configuration menu.

Logged on users: admin

Time And Date: 13 : 34 : 16

Timezone specifier (e.g. EST5): UTC

Use NTP:

NTP Server IP address:

Set Time from NTP Server

Save Time & Date Configuration Cancel

Figure 50. Time & Date Configuration Screen

Time & Date

Use the arrow keys to manually set the time (24-hour format) and the date.

Timezone specifier (e.g. EST5)

If *Use NTP* is selected, this field can be used to optionally provide the correct real time for the UltraLink 2 HDMI location. Enter the specifier for the local time zone in UTC time format. For the details of the timezone specifier format, refer to : http://www.gnu.org/software/libc/manual/html_node/TZ-Variable.html.

Use NTP:

This checkbox causes the UltraLink 2 HDMI to use a Network Time Protocol server to set its date and time, instead of manually entered values. When this field is checked, the *NTP Server IP address* field and *Set Time from NTP Server button* are enabled.

NTP Server IP Address:

If *Use NTP* is checked, enter the IP address of the NTP Server in this field. In order for the unit to access a server over the network, the necessary values in the Network Configuration Screen must be set.

Set Time from NTP Server:

After clicking the *Use NTP* checkbox and setting the *NTP Server IP Address*, click this button to immediately obtain the time and date from the server. If the operation is successful, the *Time & Date* fields are populated with the current date and time.

Network Configuration Screen

The Network Configuration Screen is accessed by clicking the *Network Configuration* button on the UltraLink 2 HDMI Configuration Screen. The network settings of the unit can be changed at any time by modifying the information in this screen. See Appendix D - Networking Considerations for more information.

The screenshot shows the Network Configuration screen with the following fields and values:

- Logged on users: admin
- MAC address: 00:0F:58:07:18:77
- Use DHCP:
- IP Address: 192.168.1.42
- IP Network Mask: 255.255.0.0
- IP Gateway: (empty)
- DNS Server: (empty)
- UNC Port: 5900
- HTTP Port (0=disabled): 80
- IP Access Control: A list containing "+0.0.0.0/0.0.0.0" with buttons for Add, Remove, Up, Down, and Edit.

Buttons at the bottom: Save, Network Configuration, Cancel

Figure 51. Network Configuration Screen

MAC address

The Media Access Control address is the unique and unchangeable code that was hard coded within the module when it was built. It consists of six 2-digit hexadecimal (base 16) numbers separated by colons.

Use DHCP

Determines whether a DHCP (Dynamic Host Configuration Protocol) server should be consulted on the connected network to automatically set an appropriate IP Address, IP Network Mask and IP Gateway.

IP Address

The *IP Address* field contain the IP address for the unit. It may either be assigned by a DHCP server, or may be statically assigned. If the *Use DHCP* checkbox is not checked, use this field to enter an IP address for the UltraLink 2 HDMI unit which is appropriate for the network to which it is connected.

IP Network Mask

If the *Use DHCP* checkbox is not checked, use this field to enter a subnet mask for the UltraLink 2 HDMI unit which is appropriate for the network to which it is connected

IP Gateway

If the *Use DHCP* checkbox is not checked, use this field to enter a gateway address for a network router or other device that acts a gateway to another network, to be used whenever a required address lies outside the local area network. When the gateway address is not entered, the unit can still be accessed from within the LAN. However, for the unit to access resources outside the LAN, such as an NTP server on the internet for Time & Date Configuration, the gateway address must be entered.

VNC Port

This is the logical link through which communications with a remote VNC viewer will be channeled. The default setting is 5900 which is a widely recognized port number for use by VNC software. However, in certain circumstances it may be advantageous to alter this number.

HTTP Port

This is the logical link through which communications with a remote web browser will be channeled. The default setting of 80 is an established standard for web traffic, though this can be changed to suit your local network requirements. It should only be changed if there is a conflict within existing network settings.

IP Access Control

This section allows you to optionally specify ranges of addresses which will or won't be granted access to the UltraLink 2 HDMI. If this option is left unchanged, then the default entry of '+0.0.0.0/0.0.0.0' ensures that access from all IP addresses will be permitted. In the list, access control addresses prefixed by '+' are allow entries while those prefixed by '-' are deny entries.

The rule of thumb with this feature is "Include before you exclude". In other words, arrange *allowed* addresses in the list *before* the *denied* addresses. This is because the positions of entries in the list are very important. Once a range of addresses is denied access, it is not possible to make exceptions for particular addresses within that range. For instance, if the range of addresses from A to F are denied access first, then the address C could not be granted access lower down the list. Address C needs to be placed in the list before the denied range. This feature should be used with caution, because it is possible to deny access to everyone. If that occurs, a reset to factory default settings will be required. An alternative to reset is to use the Clear IP Access Control button in the local console's Network Configuration menu.

To define a new IP access control entry:

1. Click the Add button to display a pop-up menu:

A dialog box titled "Host IP Address Filter" with a blue header. It contains four input fields: "Network/Address", "Mask", "Access", and "OK". The "Access" field is a dropdown menu currently showing "Allow" with left and right arrow buttons. There is a "Cancel" button at the bottom right.

Figure 52. Host IP Address Filter

2. Enter the network address that is to be allowed or denied access. If a range of addresses is being specified then specify any one of the addresses within the range and use the Mask entry to indicate the size of the range.
3. Enter an IP network mask that indicates the range of addresses that are to be allowed or denied access. For instance, if only a single specified IP address were to be required, the mask entry would be 255.255.255.255 in order to specify a single location.
4. Use the arrow buttons to select either 'Allow' or 'Deny' as appropriate.
5. Click the OK button.

To reorder access control entries:

1. In the access control list, click on the entry to be moved.
2. Click the Up or Down buttons as appropriate.

When reordering, ensure that any specific allowed addresses are listed higher in the list than any denied addresses. Take care not to invoke any deny access settings that would exclude valid users.

To edit/remove access control entries:

1. In the access control list, click on the appropriate entry.
2. Click either the Edit or Remove button as appropriate.

Serial Port Configuration

This menu is accessed by clicking the *Serial Port Configuration* button on the UltraLink 2 HDMI Configuration Screen. In order to support serial connections for power control purposes, a USB to Serial port adapter is required (third party adapters with Prolific PL2302 or FTDI chipsets are supported). This menu allows you to configure the baud rate of the serial port (via the USB connection) that can be used to control power switch devices. A full range of standard baud rates are available. The other communication settings are fixed as: no parity, 8 data bits, and 1 stop bit.

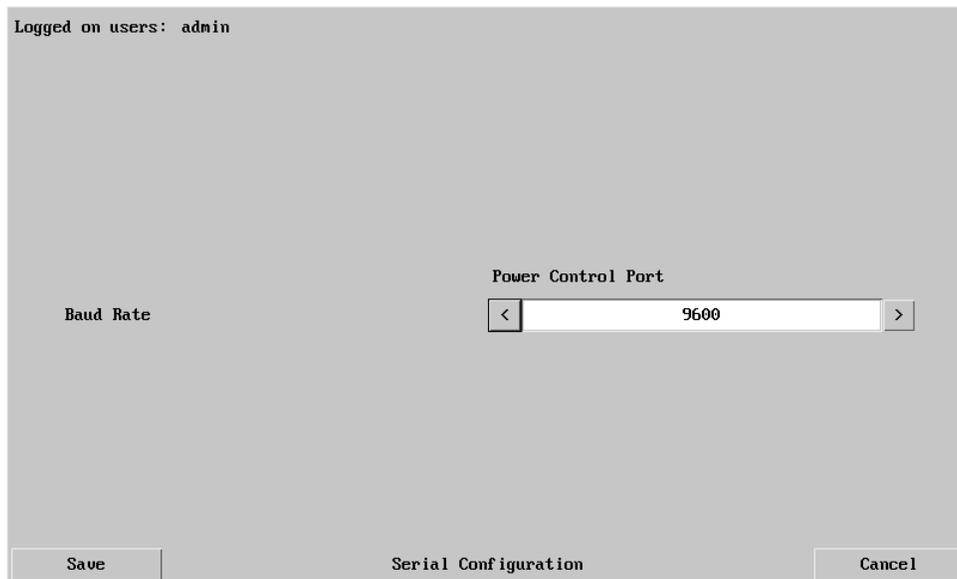


Figure 53. Serial Configuration Screen

Host Configuration

The Host Configuration Screen is accessed by clicking the *Host Configuration* button on the UltraLink 2 HDMI Configuration Screen. This page allows the configuration of the details of each of the host systems which may be connected to the UltraLink 2 HDMI. Each entry can be configured with a name, allowed users, the hot key combinations required to switch to it and, if required, appropriate power control commands. If Host computer entries are added in this screen, the *Hosts* button will be displayed in the VNC Viewer Toolbar. Power control commands must also be entered for the *Power* button to be shown in the VNC Viewer Toolbar.

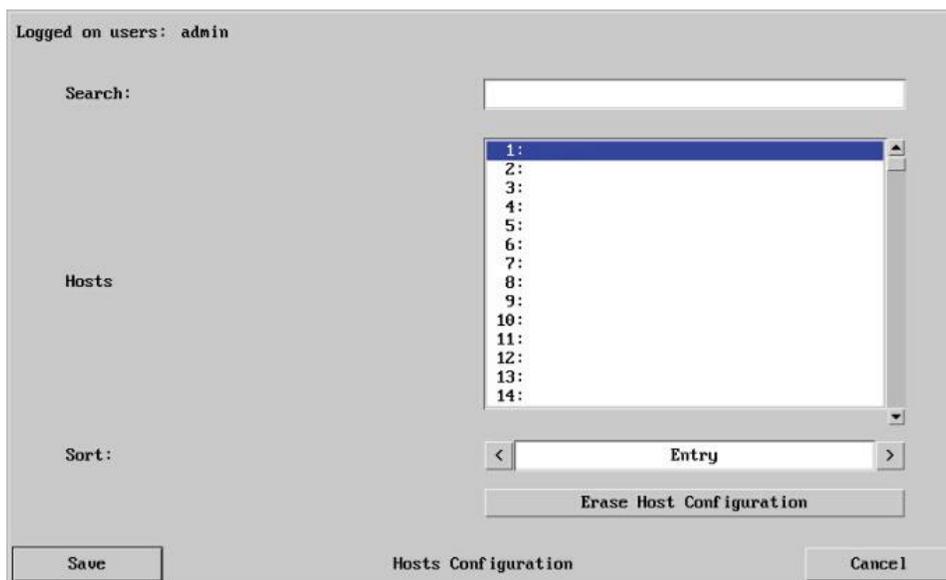


Figure 54. Host Configuration

Hosts

The *Hosts* field contains a list of defined host computers. Up to 128 computers can be identified. Each line shows an entry number and a computer name.

Search

The *Search* field is used to search by name for a specific entry in the hosts list.

Sort

This field allows sorting of the list of hosts either alphabetically or by entry number.

Erase Host Configuration

This button is used to clear all defined host names in the list.

To create a new host entry:

1. Click one of the host entries to display the Host Configuration dialog box.

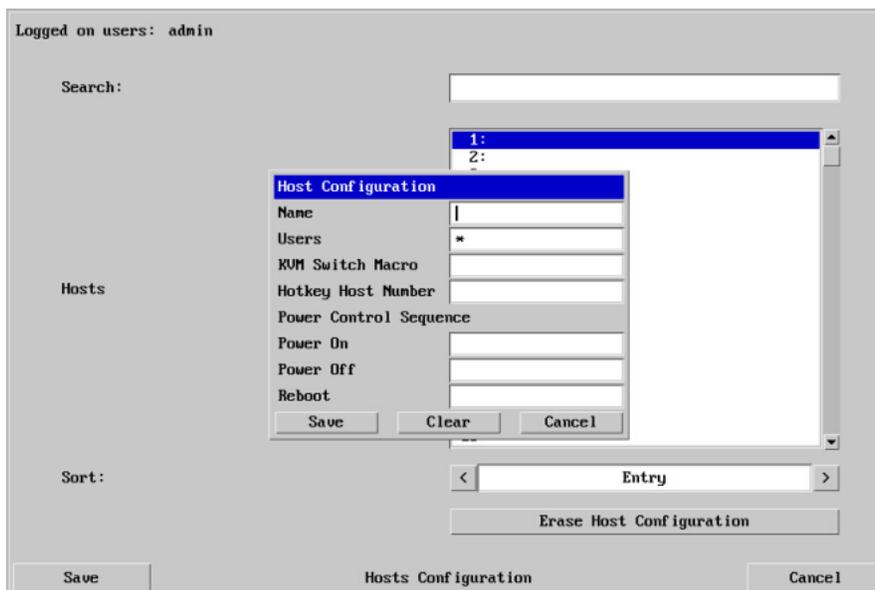


Figure 55. Host Configuration Dialog

2. Enter the required information in each field.
3. Click the OK button.

Name

Enter the name that will be displayed in the viewer window when you click the Host button.

Users

Enter a user name or a list of user names to be allowed access to the computer. Separate user names with commas. An asterisk in this field means all users are allowed access (the default setting).

KVM Switch Macro

Enter the keystrokes required by the KVM switch to cause it to connect to this computer. This is usually a sequence of keystrokes and a number, sometimes followed by enter. On the Vista DVI Plus (KVM-4TDDL/A1), the default keystroke combination is *Ctrl+Alt+<port number>*. Entering the macro follows the same format and rules as specified in the Keyboard Control portion of the VNC Viewer Controls Button described in the Operation section of this manual. The abbreviations for keystrokes recognized by the UltraLink 2 HDMI are listed in Appendix B.

Hotkey Host Number

Declare the numeric sequence that is pressed together with the VNC viewer hotkeys (usually Ctrl + Alt) to select this host system, which is the same value as the KVM port number.

Power On

Enter the code required to make an attached power control unit (via a third party converter attached to one of the UltraLink 2 HDMI USB ports) apply power to the host.

Power Off

Enter the code required to make an attached power control unit (via a third party converter attached to one of the UltraLink 2 HDMI USB ports) remove power from the selected host.

Reboot

Enter the code required to make an attached power control unit remove power and then re-apply it a few seconds later.

Logging and Status

The Logging and Status Screen is accessed by clicking the *Logging and Status* button on the UltraLink 2 HDMI Configuration Screen. The screen displays information about user activity on the UltraLink 2 HDMI.

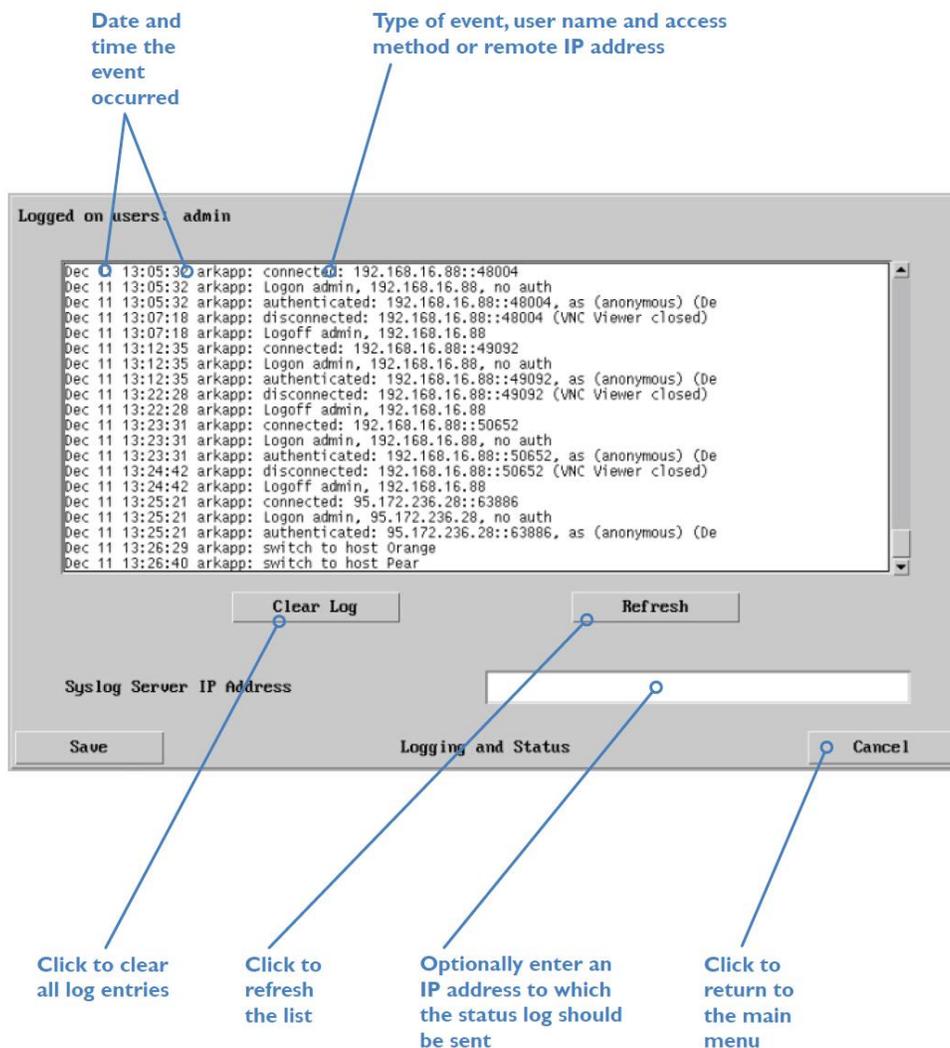


Figure 56. Logging and Status Screen

To copy and paste the log:

1. While viewing the log screen, press Ctrl and C, to copy the data into the clipboard.
2. In a text application (i.e. Word, WordPad, Notepad), press Ctrl and V, or right mouse click and 'Paste'.

Syslog Server IP Address

Logging information can optionally be sent, as it occurs, to a separate system using the standard Syslog protocol. Enter the IP address of a suitable system in the field provided.

For details of the Syslog protocol (RFC number: 3164), see: <http://www.ietf.org/rfc.html>

LDAP Configuration

The LDAP Configuration Screen is accessed by clicking the *LDAP Configuration* button on the Configuration Screen. Lightweight Directory Access Protocol allows users to log to the unit with their network credentials. LDAP configuration should be performed with the guidance of the network administrator. This screen allows configuration of the details related to the creation of an LDAP link to an external directory service, such as an Active Directory server.

When the unit's LDAP implementation is enabled, the administrator does not have to set up User Accounts, except for the admin account. Authentication of the admin user is handled locally by the unit even when LDAP is enabled.

Logged on users: admin

Use LDAP

Host Address

Host Port

Base DN

User field

Anonymous Bind

Filter

Save LDAP Configuration Cancel

Figure 57. LDAP Configuration Screen

Use LDAP

Click this checkbox to enable the Lightweight Directory Access Protocol features of the unit. When the box is not checked (the default), log in requests are authenticated against locally stored usernames and passwords.

Host Address

Enter the IP address of the LDAP server that holds the required directory service.

Host Port

The standard network port number for LDAP connections is 389, which is used by default. This should only need to be changed in special circumstances.

Base DN

In this field enter the top level of the LDAP directory tree at which an LDAP search should start. If, for example, the server's domain name is "rose.com", the Base DN would be "dc=rose,dc=com".

User Field

Enter the name of the LDAP database field which contains the user names. The details entered here will depend on the specific LDAP database being used. Commonly used field names are "uid" or "cn".

Anonymous Bind

If left unchecked then bind requests are sent with username (Base DN) and password (more suitable for Active Directory applications). If checked, bind requests are anonymous (more suitable for Linux LDAP implementations). Anonymous bindings are not recommended.

Filter

Search filters enable you to define search criteria and provide more efficient and effective searches. UltraLink 2 HDMI supports the LDAP search filters defined in RFC2254. These search filters are represented by Unicode strings.

all user objects except "pete":

```
"(&(objectCategory=person)(objectClass=user)!(cn=pete))"
```

all contacts with a surname equal to "Jones" or "Brown":

```
"(&(objectCategory=person)(objectClass=contact)(|(sn=Jones)(sn=Brown)))"
```

TROUBLESHOOTING

Troubleshooting

Unit does not power on

- Make sure that all power connectors are securely connected.

Remote network users are unable to contact the unit

- Check that the correct address is being used by the remote users.
- Check the network settings. Check that the user's network address has not been excluded in the IP access control section.
- If the UltraLink 2 HDMI is situated behind a firewall, check that the relevant ports are being allowed through the firewall and are being correctly routed.
- Check that the LNK indicator on the front panel is on.

Remote IP address is locked out (Blacklisted)

- If RealVNC Viewer logins are denied access, remove power from the UltraLink 2 HDMI for two to three seconds. This will reset the unit and unlock the IP address. If the unit is using DHCP, the previously assigned IP address may be changed to a different IP address when power is restored. Remote users will need to be informed of the new IP address. If you still have problems with a Blacklisted IP address, please contact Rose Electronics Technical Support.

The remote cursor is not correctly responding to my mouse movements

- Recalibrate the mouse. When doing so, ensure that the host system does not have mouse cursor trails enabled and that the top left corner of the screen is clear of application windows.

When logging on using VNC viewer, I cannot enter a username

- Either the VNC viewer is an old version or only the admin user has been configured on the unit.

Virtual media feature not functioning

- The *Enable File Transfer* checkbox must be checked in the checked in the VNC Viewer Advanced Unit Configuration section of the Unit Configuration menu.

Audio not functioning

- Make sure that the audio output connection is secure and is plugged in at the audio output port on the host computer.

PRODUCT SAFETY

Safety

The UltraLink 2 HDMI, like all electronic equipment, should be used with care. To protect yourself from possible injury and to minimize the risk of damage to the Unit, read and follow these safety instructions.

- Follow all instructions and warnings marked on this Unit.
- Except where explained in this manual, do not attempt to service this Unit yourself.
- Do not use this Unit near water.
- Assure that the placement of this Unit is on a stable surface.
- Provide proper ventilation and air circulation.
- Keep connection cables clear of obstructions that might cause damage to them.
- Use only power cords, power adapter and connection cables designed for this Unit.
- Keep objects that might damage this Unit and liquids that may spill, clear from this Unit. Liquids and foreign objects might come in contact with voltage points that could create a risk of fire or electrical shock.
- Do not use liquid or aerosol cleaners to clean this Unit. Always unplug this Unit from the power source before cleaning.

Remove power from the Unit and refer servicing to a qualified service center if any of the following conditions occur:

- The connection cables are damaged or frayed.
- The Unit has been exposed to any liquids.
- The Unit does not operate normally when all operating instructions have been followed.
- The Unit has been dropped or the case has been damaged.
- The Unit exhibits a distinct change in performance, indicating a need for service.

SERVICE AND MAINTENANCE

Maintenance and Repair

This Unit does not contain any internal user-serviceable parts. In the event a Unit needs repair or maintenance, you must first obtain a Return Authorization (RA) number from Rose Electronics or an authorized repair center. This Return Authorization number must appear on the outside of the shipping container.

See Limited Warranty for more information.

When returning a Unit, it should be double-packed in the original container or equivalent, insured and shipped to:

Rose Electronics
Attn: RA _____
10707 Stancliff Road
Houston, Texas 77099 USA

Technical Support

If you are experiencing problems, or need assistance in setting up, configuring or operating your UltraLink 2 HDMI, consult the appropriate sections of this manual. If, however, you require additional information or assistance, please contact the Rose Electronics Technical Support Department at:

Phone: (281) 933-7673
E-Mail: TechSupport@rose.com
Web: www.rose.com

Technical Support hours are from: 8:00 am to 6:00 pm CST (USA), Monday through Friday.

Please report any malfunctions in the operation of this Unit or any discrepancies in this manual to the Rose Electronics Technical Support Department.

APPENDICES

Appendix A - Specifications

Size (W x D x H)	6.65 in x 4.41 in x 1.22 in / 169 mm x 112 mm x 31 mm
Weight	1.3 lbs / 0.6 kg
Maximum Resolution	1920 x 1200 @ 60Hz, up to 30fps
Power adapter	100-240 VAC, 47 - 63 Hz in / +12VDC 18W out
CPU Connectors	1 x HDMI Female 1 x USB Type B female
Console Connectors	1 x HDMI Female 3 x USB Type A female 1 x 3.5mm stereo audio output
Network Connector	1 x RJ45 female
Operating Temperature	32°F to 104°F (0°C to 40°C)
Indicators (LEDs)	Front panel status LEDs for Link, Local, Remote, Power RJ45 port LEDs for link and data
Approvals	FCC, CE
Part No. UL2-DHD	UltraLink 2 HDMI

Table 1. UltraLink 2 HDMI Specifications

Appendix B - Recognized Abbreviations for Keyboard Keys

Keystrokes can be indicated in the Keyboard Control Screen (accessed from the *Controls* button and menu on the VNC Viewer Toolbar) and the Host Configuration Screen. Abbreviations recognized by the unit must be used to indicate keystrokes. All the keys on a standard keyboard can be specified through these abbreviations. The entries are not case-sensitive. It is not necessary to specify all keys to be released at the end because they are all released automatically after the last code.

Hotkey sequences

Almost any keypress combination can be emulated using the following notations:

- **+** means press down the key that follows
- **-** means release the key that follows
- **+ -** means press and then release the key that follows
- ***** means add a delay. The standard delay period is 250ms, however, if a number immediately follows the asterisk, this will define an alternate delay period (in milliseconds)

Standard keys

All standard characters for alphanumeric and punctuation keys whose ASCII values are in the range 32 to 126 are recognized, with the exception of the special characters listed above. Use the Math operand keys listed below for the special characters.

Main control keys

Backspace | Tab | Return | Enter | Ctrl | Alt | Win | Shift | LShift | RShift | LCtrl | RCtrl | LAlt | AltGr | RAlt | LWin | RWin | Menu | Escape | Space | CapsLock | NumLock | PrintScreen | Scrolllock

Math operand keys:

Add (Plus) | Subtract (Minus) | Multiply

Central control keys

Insert | Delete | Home | End | PageUp | PageDown | Up | Down | Left | Right | Print | Pause

Numeric Keypad keys

KP_Insert | KP_Delete | KP_Home | KP_End | KP_PageUp | KP_PageDown | KP_Up | KP_Down | KP_Left | KP_Right | KP_Enter | KP_Add | KP_Subtract | KP_Divide | KP_Multiply | KP_0 to KP_9

Function Keys

F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 | F11 | F12

To reduce the length of the key definitions, any unique abbreviation for a key can be used, as long as the key intended is clear. For example, “scroll”, “scr” and even “sc” all provide an identifiable match for “ScrollLock” whereas “en” could not be used because it might mean “Enter” or “End” (“ent” would be suitable for “Enter”).

Appendix C - Local Console Menu

To display the local console menu, move the mouse connected to the UltraLink 2 HDMI unit to display the login dialog (if already logged in, enter CTRL + ALT + C to display the dialog).

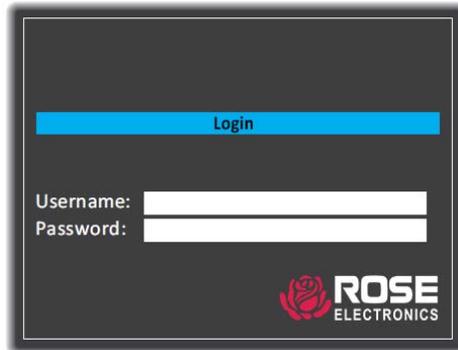


Figure 58. Local Console Login Dialog

Enter the username and password and press the Enter key. The default username is **admin**, and the default **password** is blank. The local console menu will be displayed starting with the Hosts Menu.

Hosts Menu

This page allows quick access to a host computer, whether it is directly connected to the UltraLink 2 HDMI or connected to a KVM switch like Vista DVI Plus.

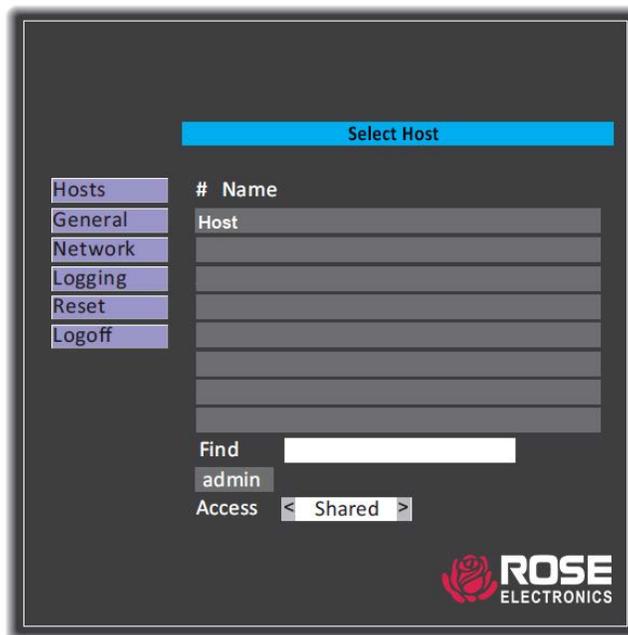


Figure 59. Console Hosts Menu

1. Optionally change the Access method between Shared (the connection can be viewed by other users) and Private (all other users are locked out).
2. Click on a host computer name to connect with it.

General Menu

In the main console menu, click on the General button to access the Unit Configuration menu.

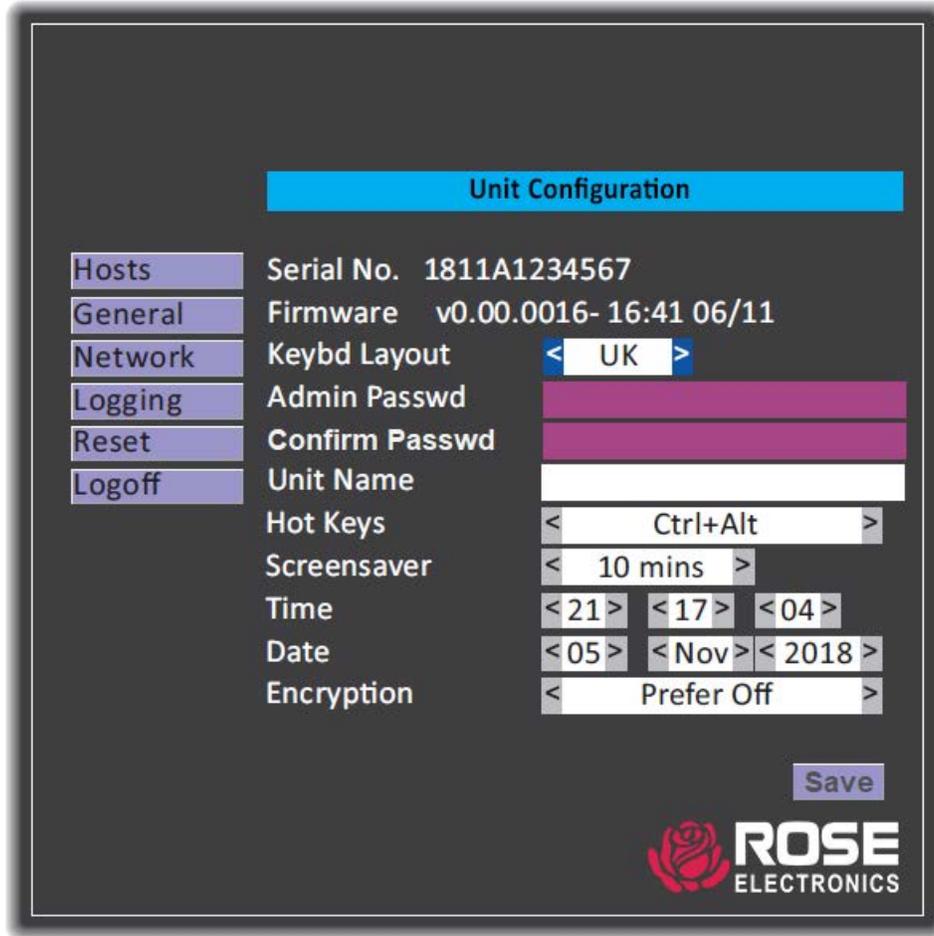


Figure 60. Console Unit Configuration

Keyboard Layout

Set the keyboard language layout used for the console keyboard. Options include UK, US, RU, PT, BE, DE, DE_CH, DK, ES, FR, FR_CH, IT, JP, NL, NO, and SE.

Admin Passwd

Set a new admin password. Passwords can be up to 16 characters in length. A suitable password is best constructed using a mixture of more than 8 letters, numbers and punctuation characters.

Unit Name

Assign an identifying name for this UltraLink 2 HDMI unit which will be seen by users connecting with VNC viewer.

Hot Keys

Select the hot keys used by the console keyboard to display the configuration menu.

Screensaver

Set the idle period after which a screensaver is displayed on the console video display. The user must login again after the screensaver is displayed.

Time and Date

Set the time and date used by the UltraLink 2 HDMI.

Encryption

Four options are available.

- *Prefer Off* – request encryption off at the server, but will accept on or off
- *Prefer On* – request encryption on at the server, but will accept on or off
- *Always On* – set encryption at 128 bit
- *Maximum* – set encryption at 256 bit

The one to choose depends on the specific details of the installation. The use of encryption imposes a slight performance overhead of roughly 10% but is highly secure against third party intrusion

Save

Click the Save button to retain any changes made in this menu.

Network Menu

In the main console menu, click the Network button to display the Network Configuration menu.

Network Configuration		
Hosts	Mac Address	00:0F:58:04:91:2F
General	UseDHCP	< No >
Network	IP Address	192.168.1.42
Logging	Net Mask	255.255.255.0
Reset	Gateway	
Logoff	DNS Server	
	VNC Port	5900
	HTTP Port	80

Clear IP Access Control Save

ROSE
ELECTRONICS

Figure 61. Console Network Configuration

MAC address

The Media Access Control address is the unique and unchangeable address that was placed in the unit when it was manufactured. It consists of six 2-digit hexadecimal (base 16) numbers separated by colons.

Use DHCP

This checkbox determines whether the IP address, Net Mask and Gateway should be obtained from a Dynamic Host Configuration Protocol server on the connected network.

IP Address

If *Use DHCP* is set to No, use this field to set an IP address for UltraLink 2 HDMI which is appropriate for the network to which it is connected.

Net Mask

If *Use DHCP* is set to No, use this field to set a subnet-mask for the UltraLink 2 HDMI which is appropriate for the network to which it is connected.

Gateway

If *Use DHCP* is set to No, use this field to set a gateway address for a network router which gives access to another network, to be used when a required address lies outside the current network.

DNS Server

If *Use DHCP* is set to No, use this field to enter a valid IP address here for a Domain Name System server which is reachable through the connected network.

VNC Port

This is the logical link through which communications with a remote VNC viewer will be channeled. The default setting, 5900, is a widely recognized port number used by VNC software. In some networks it may be necessary to change this number.

HTTP Port

This is the logical link through which communications with a remote web browser will be channeled. The default setting of 80 is an established standard for web (HTTP) traffic, but it can be changed to meet the requirements of the local network.

Clear IP Access Control

Addresses can be specified, using the admin account on a remote VNC connection, which will or won't be granted access to this UltraLink 2 HDMI. Because it is possible to accidentally exclude all IP addresses, this button is available only on the local console to remove all access control entries.

Save

Click the Save button to retain any changes made in this menu.

Diagnostics Menu

In the main console menu, click the Logging button to display the Logging menu.

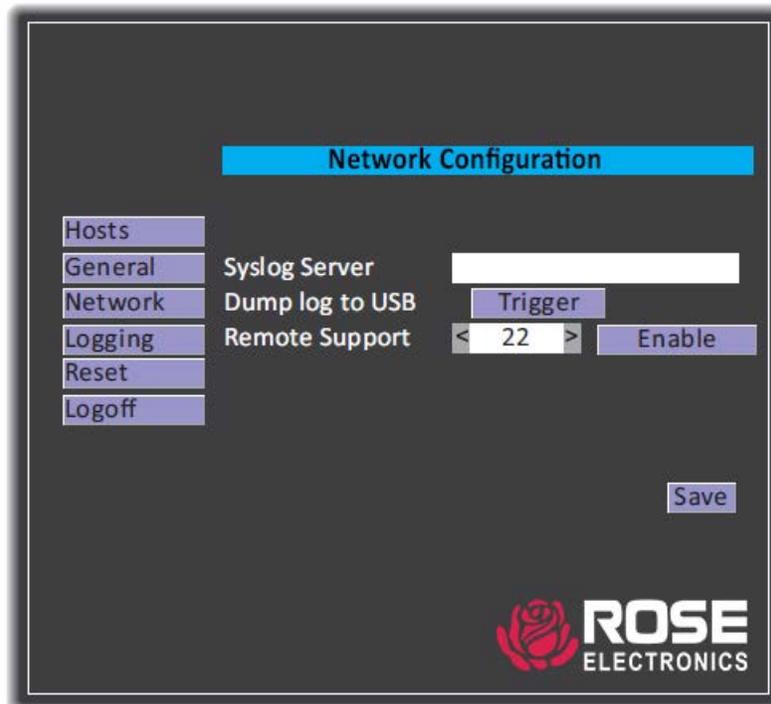


Figure 62. Console Diagnostics

Syslog Server

Enter the IP address of a valid syslog server to record log data generated by the UltraLink 2 HDMI.

Dump log to USB

Insert a USB memory stick into one of the USB ports on the UltraLink 2 HDMI unit and click the Trigger button to begin saving the current diagnostic log. The supported storage formats are 'FAT32' and 'EXT4'.

Save

Click the Save button to retain any changes made in this menu.

Reset Menu

In the main console menu, click the Reset button to display the Reset dialog. This page allows you to reset all configuration options to the factory defaults.

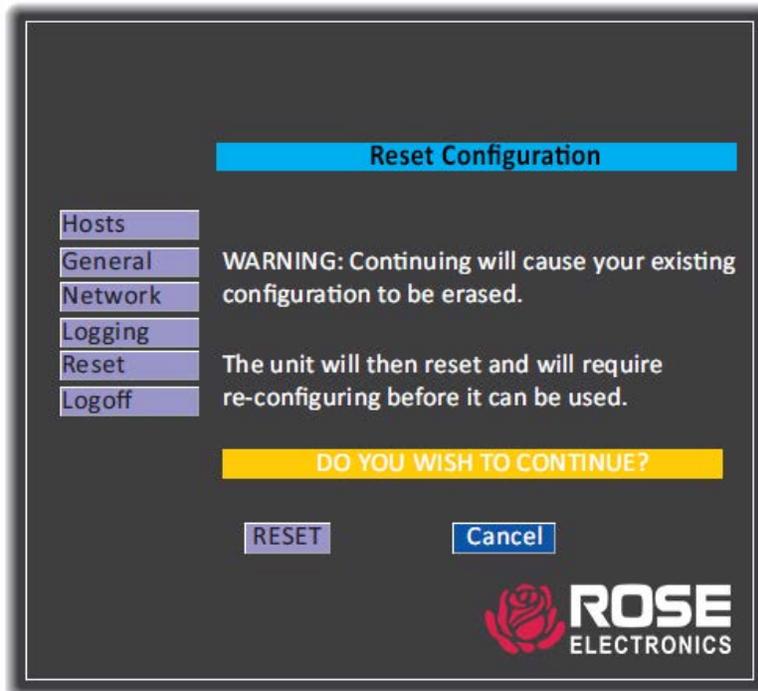


Figure 63.Console Reset Menu

Warning: Using this option will clear all configuration items and return the UltraLink 2 HDMI to its default condition.

Click the RESET button to return the unit to its factory settings and perform a reboot.

Reset UltraLink 2 HDMI using the front panel recover button

Use a thin implement such as a straightened paper clip to depress the recessed button on the front panel just below and to the left of the UltraLink 2 label. Keep the button pressed for about 12 seconds, until the blue POWER indicator begins to flash. When the button is released, the indicator will flash red to signify recovery mode is in progress. The Maintenance page will be displayed.

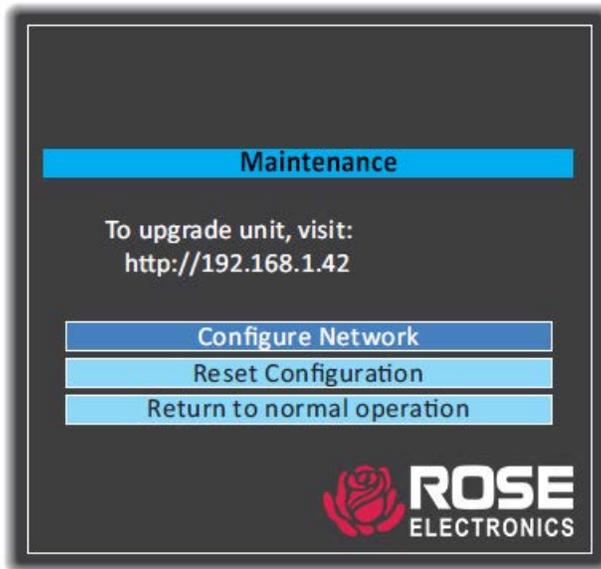


Figure 64. Recovery Button Menu

Click the Reset Configuration option. The Unit will be returned to its factory settings and will perform a reboot.

Appendix D - Networking Considerations

Thanks to its robust security UltraLink 2 HDMI offers considerable flexibility integrating it into an existing network structure. The UltraLink 2 HDMI is designed to reside either on an internal network, behind a firewall/router, or with its own direct Internet connection.

Positioning UltraLink 2 HDMI in the network

Every network setup is different and great care needs to be taken when introducing a powerful device such as the UltraLink 2 HDMI into an existing configuration. A potential cause of problems lies in clashes with firewall configurations. For this reason the UltraLink 2 HDMI is designed to be intelligent, flexible and secure. With the minimum of effort the UltraLink 2 HDMI can reside either behind the firewall or alongside it with its own separate Internet connection.

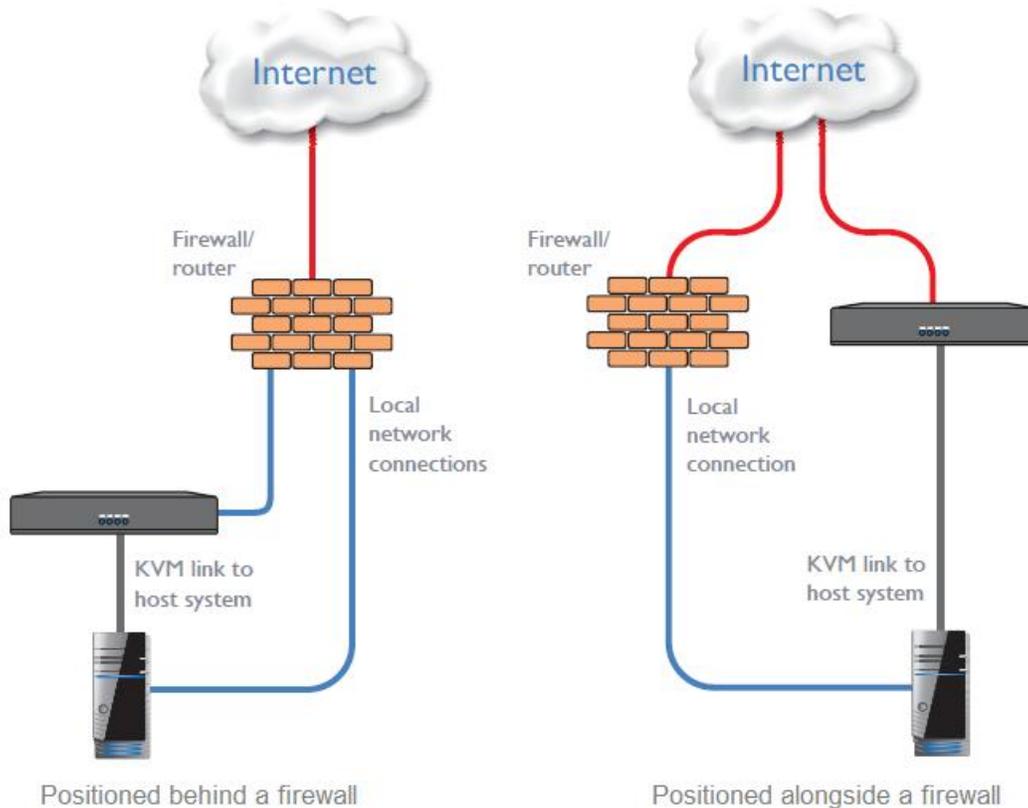


Figure 65. Network Firewall Location and UltraLink 2 HDMI

Placing UltraLink 2 HDMI behind a router or firewall

The use of IP ports is possible point of contention between the UltraLink 2 HDMI and a firewall. Every port through the firewall represents a potential point of attack from outside, so it is usual to minimize the number of open ports. The UltraLink 2 HDMI usually uses two separate port numbers, but there are easily changeable and can even be combined into a single port.

IMPORTANT: The correct configuration of routers and firewalls requires advanced networking skills and intimate knowledge of the particular network. Rose Electronics cannot provide specific advice on how to configure network devices. It is strongly recommend that these decisions are made by qualified professionals.

Port settings

UltraLink 2 HDMI uses two ports to support two types of viewer: port 80 for access through a web browser and port 5900 for access made using the VNC Viewer. When these port numbers are used, VNC Viewers and web browsers will locate the UltraLink 2 HDMI correctly using only its network address. The firewall must be set up to transfer traffic requesting those port numbers through to UltraLink 2 HDMI.

When a web server is also on the local network

Port 80 is the standard port used by web (HTTP) servers. If the UltraLink 2 HDMI is situated within a local network that also includes a web server or any other device serving port 80 then to use the web browser interface from outside the local network environment, the HTTP port number of the UltraLink 2 HDMI must be changed.

If the HTTP port is changed to anything other than 80, then each remote browser user will need to specify the port address as well as the IP address. For instance, if the HTTP port is set to '8000' and the IP address is '192.168.47.10' then browser users would need to enter the following, with a single colon between the address and the port:

```
http://192.168.47.10:8000
```

The firewall/router would also need to be set to transfer all traffic to the new port number through to the UltraLink 2 HDMI.

Changing the VNC port number

If the VNC port number is changed to anything other than 5900, each VNC viewer user must specify the port address as well as the IP address. For instance, if the VNC port is set to '11590' and the IP address is '192.168.47.10' then VNC viewer users must enter the following, with a double colon between the address and the port:

```
192.168.47.10::11590
```

The firewall/router would also need to be set to transfer all traffic to the new port number through to the UltraLink 2 HDMI.

Addressing

When the UltraLink 2 HDMI is situated within the local network it must be given an appropriate local IP address and IP network mask. This is achieved most easily using the DHCP server option which will apply these details automatically. If a DHCP server is not available on the network, then these settings must be applied manually in consultation with the network administrator.

The firewall/router would also need to be set to route incoming traffic for port 5900 or port 80 through to the local address being used by UltraLink 2 HDMI.

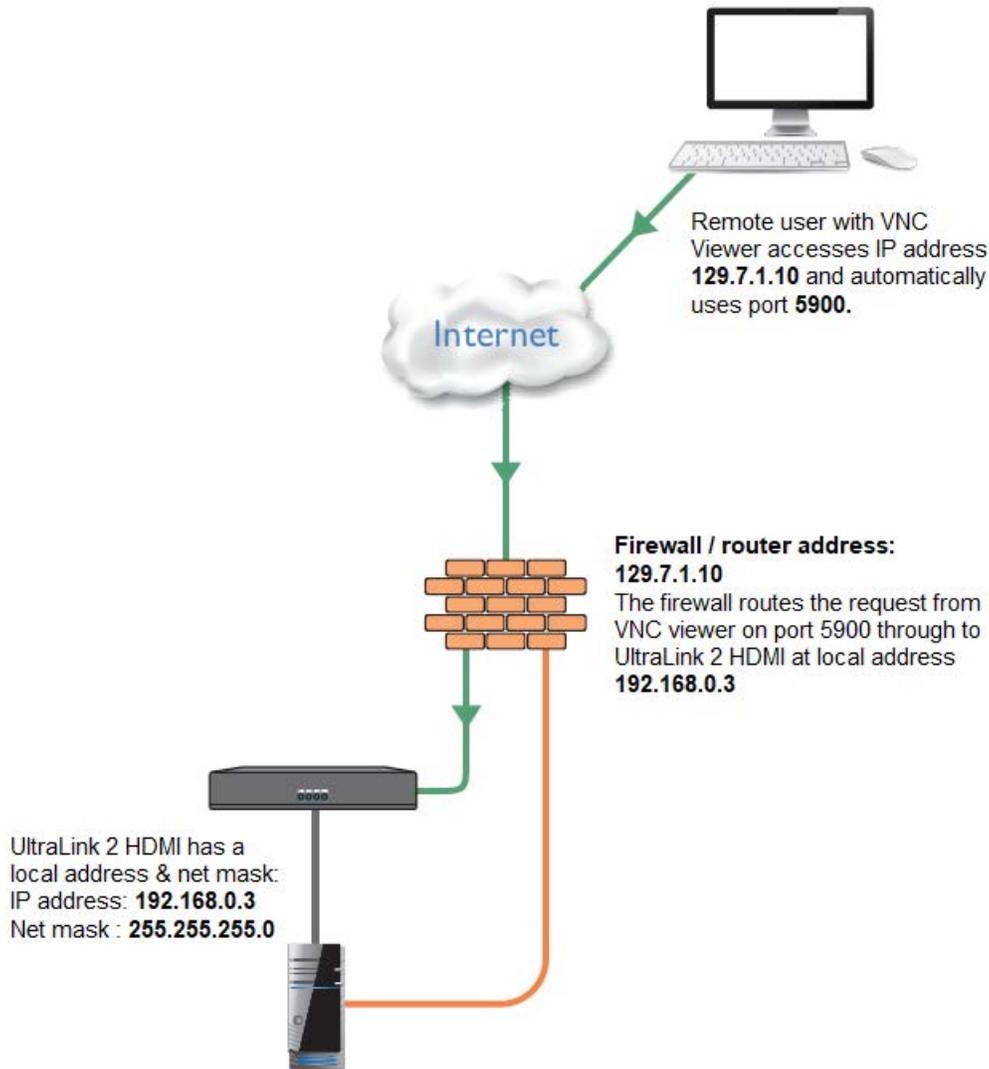


Figure 66. Internet Access When Positioned Behind a Firewall

When UltraLink 2 HDMI is accessible from the Internet, sufficient security measures must be employed.

To discover a DHCP-allocated IP address

Once a DHCP server has allocated an IP address, it must be discovered in order to access the UltraLink 2 HDMI via a network connection. To discover the allocated IP address:

1. Within the Network Configuration menu, set the 'Use DHCP' option to 'Yes' and select 'Save'. Once the page is saved, UltraLink 2 HDMI will contact the DHCP server and obtain a new address.
2. Enter the Network Configuration menu again, and the new IP address and network mask will be displayed.

DNS addressing

As with any other network device, UltraLink 2 HDMI can be accessed using a name rather than an IP address. This can be achieved in two ways:

- For small networks that do not have a DNS server, edit the 'hosts' files on the appropriate remote systems. Using the hosts file, you can manually link the UltraLink 2 HDMI address to the name.
- For larger networks, declare the IP address and required name to the DNS server of the local network.

The actual steps required to achieve either of these options are beyond the scope of this document.

Placing UltraLink 2 HDMI alongside the firewall

UltraLink 2 HDMI is designed to be secure. It uses a sophisticated 128-bit public/private key system that has been rigorously analyzed and found to be highly secure (a security white paper is available upon request). Therefore, it is possible to position UltraLink 2 HDMI alongside the firewall and control a computer that is also IP connected within the local network.

IMPORTANT: If you make the UltraLink 2 HDMI accessible from the public Internet, care should be taken to ensure that the maximum security available is activated. It is strongly advised that encryption be enabled and strong passwords be used. Security can be further improved by restricting client IP addresses and using a non-standard port number for access.

Ensuring sufficient security

The security capabilities offered by UltraLink 2 HDMI are only effective when they are correctly used. An open or weak password or unencrypted link can cause security loopholes and opportunities for potential intruders. For network links in general, and direct Internet connections in particular, you should carefully consider and implement the following:

- Ensure that encryption is enabled.
- Ensure that secure passwords are used with at least 8 characters and a mixture of upper case, lower case and numeric characters.
- Reserve the admin password for administration use only and use a non-admin user profile for day-to-day access.
- Use the latest VNC Viewer.
- Use non-standard port numbers.
- Restrict the range of IP addresses that are allowed to access the UltraLink 2 HDMI to only those that are needed.
- Do NOT Force VNC protocol 3.3.
- Ensure that the computer accessing the UltraLink 2 HDMI is clean of viruses and spyware and has appropriately configured and up-to-date firewall and anti-virus software loaded.
- Avoid accessing the UltraLink 2 HDMI from public computers.

Security can be further improved by using the following suggestions:

- Place the UltraLink 2 HDMI behind a firewall and use port the numbers to route the VNC network traffic to an internal IP address.
- Review the activity log from time to time to check for unauthorized use.
- Lock server consoles after they have been used.

A security white paper that gives further details is available upon request from Rose Electronics.

Ports

In this configuration there should be no constraints on port numbers because the UltraLink 2 HDMI will probably be the only device at its IP address. Therefore, maintain the HTTP port as 80 and the VNC port as 5900.

Addressing

When the UltraLink 2 HDMI is situated alongside the firewall, it will require a public static IP address, that is, one provided by the Internet service provider.

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