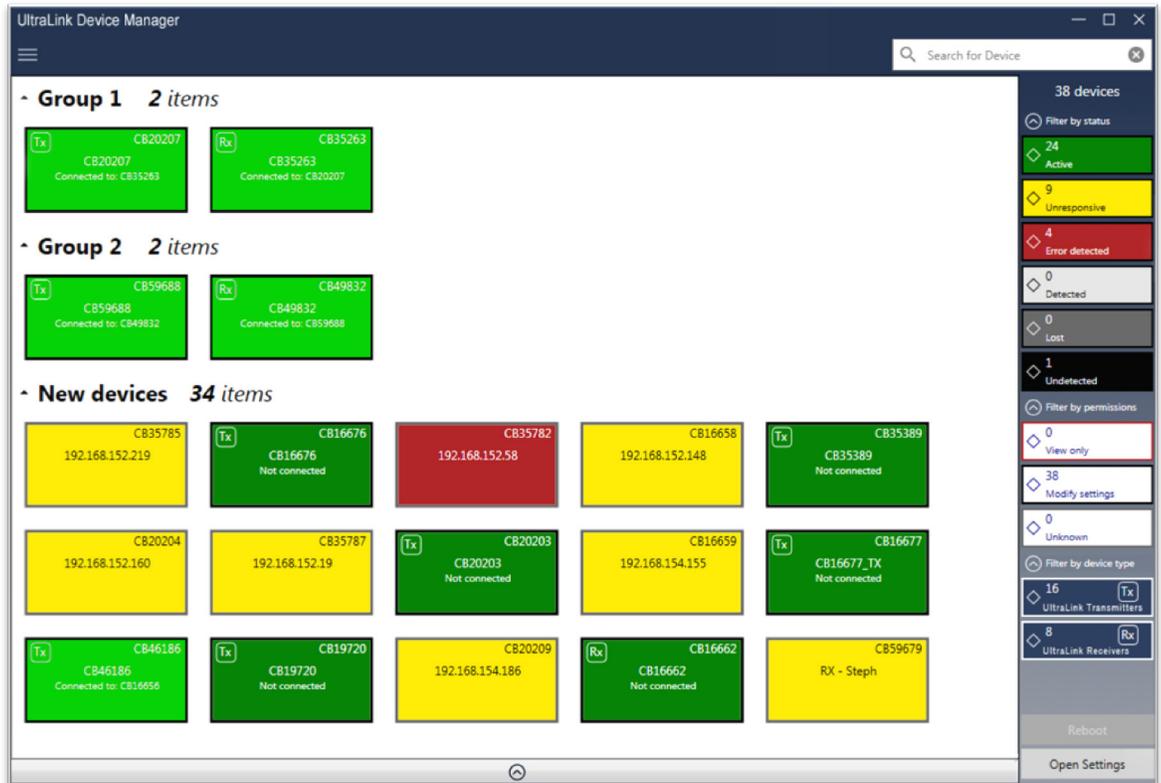# UltraLink E-Series Device Manager

Software for Management of UltraLink E-Series

Installation
and
Operation Manual

10707 Stancliff Road
Houston, Texas 77099

Phone: (281) 933-7673
tech-support@rose.com

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INTRODUCTION

Disclaimer

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System Introduction

Thank you for choosing the UltraLink E-Series Device Manager, a software tool that simplifies management of the UltraLink E-series KVM IP System. It contains a wide variety of functions for maintaining UltraLink E-Series systems, consisting of local Transmitters, remote Receivers, and connections between them. The Transmitter and Receiver devices can be assigned to groups so that they can be simultaneously managed. Transmitters and Receivers can be connected or disconnected with a mouse-click. User accounts with password protected access rights can be created.

Detailed information windows show which devices in the system are active, and the connections established between them. Device status is displayed in coded colors for rapid overview.

Features

- Transmitter and Receiver devices are automatically detected, but can also be manually added
- Names can be assigned to devices for easy identification
- Devices can be grouped to filter views and make managing them easier, applying the same settings to multiple units simultaneously
- EDID can be chosen to allow using different kinds of displays
- Allows creating and establishing connections between Transmitters and Receivers, forming one-to-one, many-to-one, one-to-many, or many-to-many configurations
- Users and User Groups can be created in Device Manager; user rights can be managed directly through the software or using Microsoft Active Directory Services
- Audio, video and USB are AES-encrypted for increased security
- Color-coded view shows all devices and their connection status
- Receiver OSD provides user login and connection capability
- Programmable keyboard shortcuts in the Receiver to quickly do tasks, such as switching to a different transmitter, or displaying the OSD

System Requirements

The UltraLink E-Series Device Manager Software has the following system requirements.

- Supported UltraLink E-Series Hardware:
    - The 2-port and 4-port PCIe transmitter cards (ULE-TXC2 / ULE-TXC4)
    - The 2-port transmitter and receiver standalone units (ULE-TXA2 / ULE-RXA2)
    - The 4-port transmitter and receiver standalone units (ULE-TXA4 / ULE-RXA4)

- Supported Operating Systems:
    - Windows® Server® 2016
    - Windows® 10 (64-bit)
    - Windows® Server® 2008 R2
    - Windows® 7

Note:
On Windows® Server® 2016 and Windows® Server® 2008 R2, the SSDP Discovery service, network discovery, and file sharing must be enabled.

- To assign an initial IP address to the devices, a DHCP (Dynamic Host Configuration Protocol) server is required.
- Make sure all Transmitter and Receiver devices are using the latest version of the product firmware. Also, all devices must use the same version of the firmware package. The version of the firmware package must also match the version of the Device Manager software package.

INSTALLATION

Installing the UltraLink Device Manager software

The UltraLink E-Series devices must be connected before configuring the Device Manager software. For more information on the connection setup of your product, see the UltraLink E-series hardware manual.

Whenever the connection setup is changed, make sure the correct connectors are used and that all connectors are properly fastened. Also, don't change connections while the Transmitter and Receiver are turned on.

To install the software for your UltraLink E-Series product, run the installation program for your software package on any computer connected to the network. Follow the on-screen instructions.

Accessing the UltraLink Device Manager software interface (Windows 7/10)

- Windows 10 or 7 – Easiest way is to type ultralink into the search bar and choose the ultralink app
- Optionally add an icon to our taskbar or desktop

Note:
Only one copy of the Device Manager needs to be installed.

Getting started

This section describes the main menu and basic functions of UltraLink Device Manager. It also provides an overview of your system environment and devices.

Device Manager - main interface
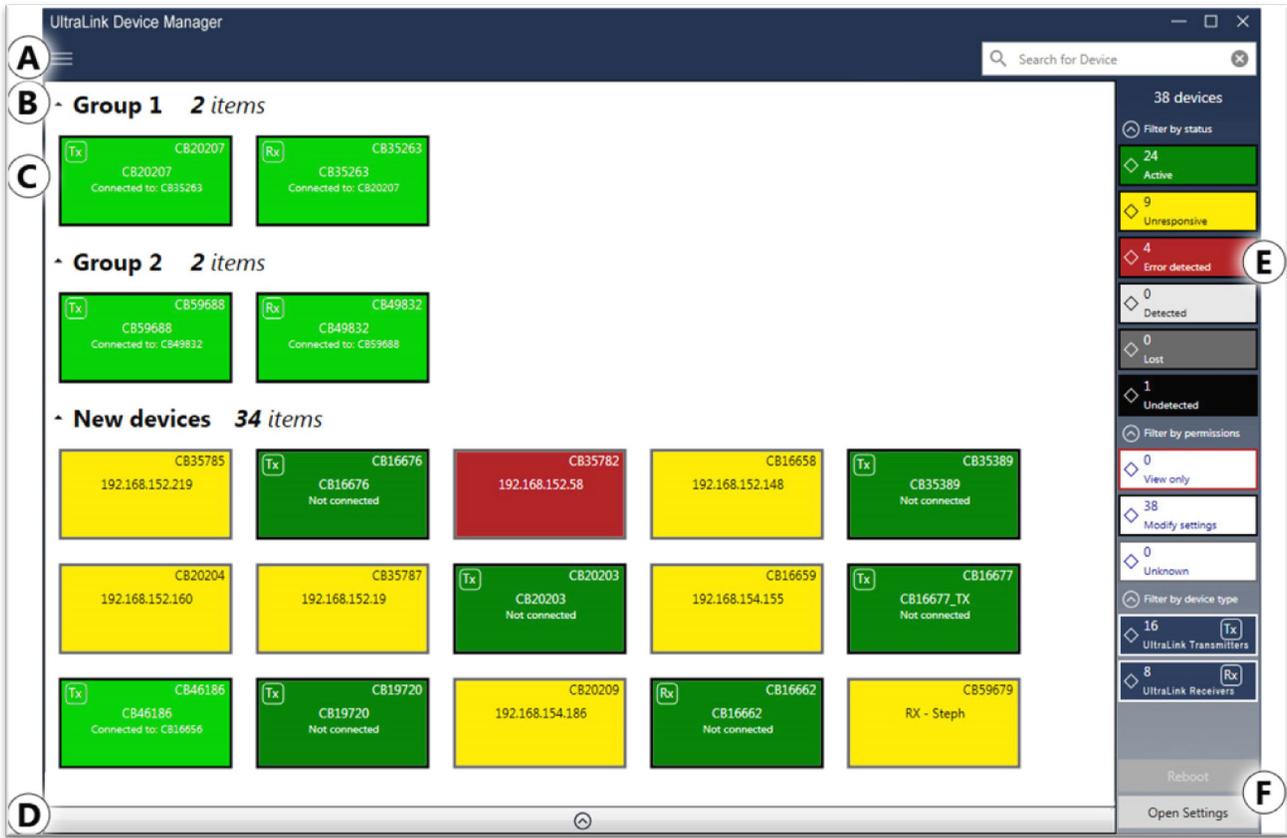
Figure 1. Device Manager tile layout

Item	Name	Description
A	**Main menu**	The Device Manager main menu contains options for managing users and passwords (see Device Manager – main menu).
B	**Device groups**	The groups of devices in the system are depicted as colored tiles and sorted into groups (see Understanding Device Manager Layout).
C	**Device tiles**	The Transmitter and Receiver devices in the system installation are depicted as colored tiles (see Understanding Device Manager Layout).
D	**Information dashboard**	The dashboard provides information for a device (such as the device type, serial number, firmware version, name, IP address, date, time, and status). For more information, see Opening the information dashboard.
E	**Device filtering**	The devices are filtered by status, user privileges, and type. You can also choose to show more or less information on device tiles (see Filtering the device tiles).
F	**Basic functions**	These buttons provide the basic functions for the Device Manager software (see Device Manager – basic functions).

Table 1. Main menu layout

Device Manager – main menu

Selection	Description
Log In / Log Out	Log into or log out of the UltraLink E-Series device.
Manual device discovery	The Device Manager automatically detects and adds new devices to the system. If devices aren't automatically detected, they can be manually added (see Discovering Devices Manually).
Connection broker	Set and manage the connections between the Transmitter and Receiver devices (see *Using the Connection Broker*).
Change password	Change the password for the devices (see Changing the device password).
Manage users	Create and manage the users for the UltraLink system (see Managing Users and Passwords).
About	Provides information specific to this installation of the Device Manager software (such as the version).

Table 2. Main menu selections

Device Manager – shortcut menu

To access the shortcut menu, right-click the device tile. The menu items available will vary depending on the device and setup. The menu items include the following.

Selection	Description
Reboot	Click this to reboot the device. This keeps all of the device settings, including the IP address and password. After the device reboots, allowed connections are restored.
Multi-device settings	Select multiple receiver (Rx) device tiles, and then click this menu item to see the settings for those devices. To modify the settings, enable **Modify settings**.
Attempt Wake	Click this to wake up a Transmitter that is asleep.
Open settings	Click this to see the settings for the device. This opens the last page accessed.
Remove lost devices	Click this to remove a device that's listed as **Lost** (dark grey) or **Undetected** (black).
Move to group	To create a new tile group, right-click a tile, select **Move to group > Create a new device group**, and then enter a new **Name**. The tile is then moved to that new group (see Device groups).

Table 3. Main menu - shortcuts

Device Manager – basic functions

The following buttons provide basic functions for managing the Device Manager software.

Selection	Description
Reboot	Click this to reboot the device. This keeps all of the device settings, including the IP address and password.
Apply / Cancel	Click **Apply** for your changes to take effect. Click **Cancel** to discard any changes that weren't applied.
Back	Click this to return to the main interface.
Open settings	Select a device tile, and then click this to see the settings for that device. This opens the last page accessed.
Multi-device settings	Select multiple receiver (Rx) device tiles, and then click this to see the settings for those devices. To modify the settings, enable **Modify settings**.
Undo Changes	Click this to undo the last changes made.

Table 4. Main menu basic functions

Understanding Device Manager Layout

In the Device Manager, UltraLink devices are depicted as colored tiles and sorted into groups. To understand the status of your devices, see Understanding the status of the devices.
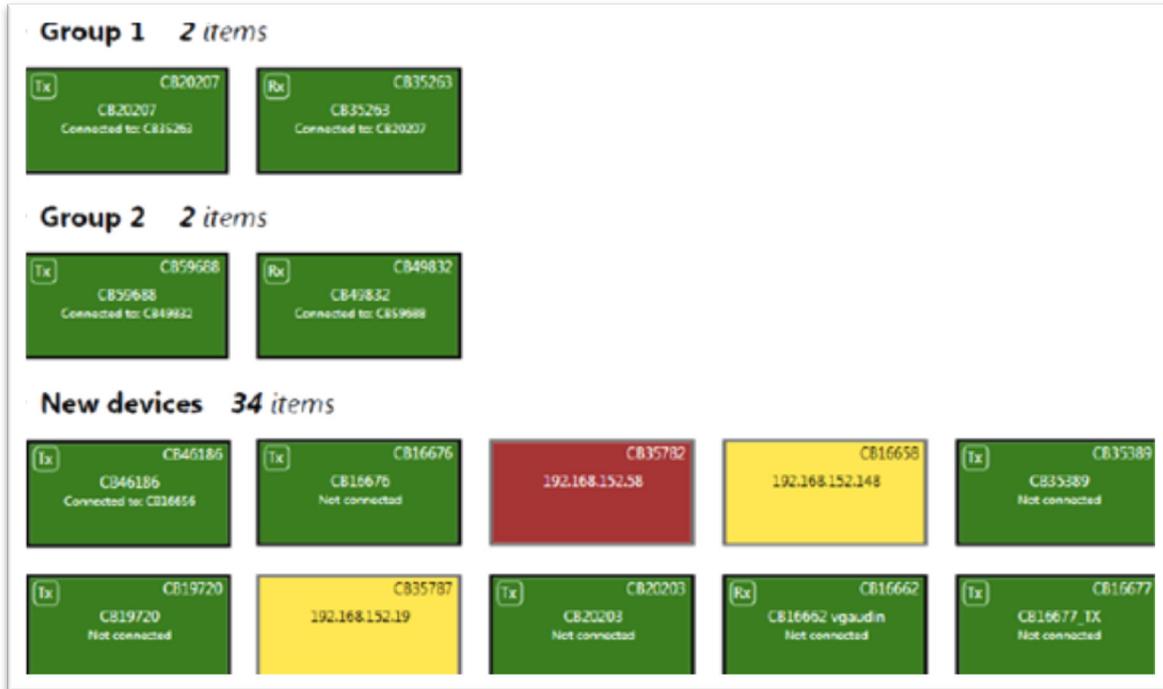
Figure 2. Device Manager – device groups

Device groups

When the Device Manager is started for the first time, or whenever a new device is detected, the device or devices are added to the **New devices** group. These devices can then be sorted into groups.

Managing device groups

- To collapse or expand the tile list under a group, click the **Up/Down arrow** to the left of the group name.
- To create a new tile group, right-click a tile, select **Move to group → Create a new device group** and then enter a new **Name**. The tile used to create the new group moves to that new group.
- To reorder the groups, right-click next to the group name and then select a location for that group in the group list.
- To rename a group, double-click the group name, and then enter a new name for the group.
- To undo a group, drag the tiles out of that group and into a blank area.

Device tiles

The tile provides the following information about your device

Figure 3. Device tile information

Item	Description		
A	Device type identified by icon	Tx	TX - Transmitter device
		Rx	RX – Receiver device
B	Device serial number		
C	Device name, device serial number, or IP address, depending on the status of the device. It also indicates if the device is **Connected** to a device (and the name of the connected device or user name), or **Not connected** to a device.		
D	Device status (tile color and border color). For more information, see <u>Understanding the status of the devices</u>.		

Table 5. Device tile details

Managing the device tiles
- To reorder the tiles, drag a tile to a new location.
- To move a tile to a different group, drag the tile to a new group. This can also be accomplished by right-clicking the tile and selecting a group.
- To access the settings of a device, select a device, and then click **Open settings**.
- To rename a device, click **Open settings**, and then enter a new **Name** for that device.
- To delete a device that's lost or undetected, click the **Delete** icon ⊗. This can also be done by right-clicking the tile and clicking **Remove lost devices**.

Filtering the device tiles

The devices can be filtered by status, privileges, and device type. The number at the top indicates the total number of devices. The number in the colored tile indicates the number of devices with that status.

To filter the devices, click the appropriate tile. Multiple tiles can be selected to view devices with different statuses. While filtering is in effect, at least one tile is highlighted.
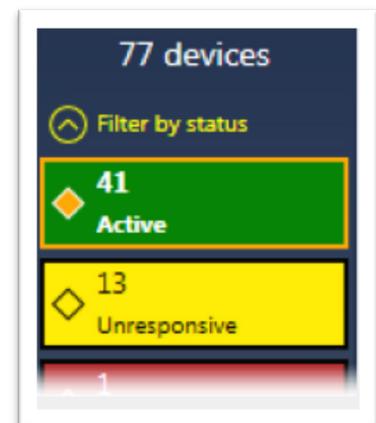
Figure 4. Filtering device tiles

Showing Details

Click this to determine how much information to show on the device tile in the Device Manager main interface. To show only the device name (except when the device is selected or when hovering over it with the mouse), click **Show less details**. To show all device information (including the device name, serial number, and status), click **Show more details**.

Opening the information dashboard

To see the current status and information of a device, select the device and then click the **Down Arrow** at the bottom of the Device Manager main interface window. This opens an information dashboard.

Figure 5. The information dashboard

The dashboard provides the **Details** (such as the device type and software information, telemetry, detected monitors, and inputs) of a device and streaming **Statistics** for each monitor connected to that device.

Understanding the status of the devices

Depending on the status of a device, the color of the tile changes.

Tile color		Description
	Active (Green)	Device is active and working properly. It also indicates if the device is **Not connected** to another device.
	Connected (Bright Green)	Connection between a Transmitter device and Receiver device is allowed. It also indicates if the device is **Connected** to another device and the name of the device it's connected to. For more information on setting an allowed connection between devices, see Using the Connection Broker.
	Unresponsive (Yellow)	Device is unresponsive
	Error detected (Red)	Device has encountered an error. The status and information of the device can't be updated by Device Manager. To fix this, try rebooting your device.
	Detected (Light Grey)	Device is present on the network but isn't initialized. When a device is present on the network, the IP address appears on the tile.
	Lost (Dark Grey)	Device was once detected but can no longer be detected by Device Manager. When a device is no longer detected, the tile lists the last known IP address of that device. **Transmitter only** – If the Transmitter is **Lost**, and it can't be rebooted, it may be asleep. To wake up the Transmitter, right-click the device tile and then click **Attempt wake**.
	Undetected (Black)	Device can't be detected by the Device Manager. When a device is no longer detected, the tile lists the last known IP address of that device. To remove the tile of a device that's no longer needed, select the tile and click the **Delete** icon ( ).

Table 6. Device tile status

SETUP

Depending on the user access privileges to a device, the color of the tile border changes.

Tile appearance		Description
	View only (Red border)	Device can be accessed and the settings of the device can be viewed but not modified. To modify the settings, a valid user name and password is required. The devices must be configured with the user name and password.
	No administrator (Red dotted border)	Device can be accessed, and the settings of the device can be viewed, but not modified. To modify the settings, the user must take ownership of that device (see Basic Setup - *Take ownership of a device*).
	Unknown (Grey border	Device can be accessed but no password was created. You will be prompted for a password when you click **Apply**. Once a password is provided, the status becomes **View only**.
	Modify settings (Black border)	Device can be accessed and the settings can be modified (a valid password has been provided).

Table 7. Device tile change of status

System Setup

The quick setup checklist provides an overview of the steps needed to quickly configure the Device Manager software and devices.

Before beginning

- *Before* configuring UltraLink Device Manager software, make sure the product is connected and that all the Transmitter and Receiver devices are turned on and have power. For more information on connection setup, see the UltraLink E-series user manual

- Make sure all the Transmitter and Receiver devices are using the latest version of the product firmware. Also, all devices on a network must use the same version of the firmware package. The version of the firmware package must match the version of your Device Manager software package.

- Make sure latest version of Device Manager software is installed on a separate computer (see Installing the Device Manager software).

- Make sure all of the devices are detected and listed in the main interface. For more information, see Discovering Devices Manually.

Basic Setup

Follow the steps below in sequence to set up a Transmitter or Receiver device in the Device Manager.

1. Log into the Device Manager
   a. In the Device Manager main menu, click **Log in**.
   b. Specify whether logging in as a **Local user** or a **Domain user**:
      - **Local user** – Enter user name and password.
      - **Domain user** – Enter user name, the domain name of the server, and network password.
   c. When done, click **Apply**. For more information, see Logging in and out of Device Manager.
2. Take ownership of a device
   If the status of a device is **No device administrator**, the user must **Take ownership** of that device.

a. From the main interface, select the Transmitter or Receiver devices to be managed (these devices must be without an administrator). Click the **Take ownership** (🛡) icon in the upper right corner of a device tile and then click **Yes**.

b. To see only these devices in the **Connection broker**, move them to one or more groups. For more information, see *Managing Users and Passwords*.

3. Allow device connections

    a. From the main menu, select **Connection broker**.

    b. Make sure all of the UltraLink E-Series devices are detected and listed in the main interface. For more information, see *Discovering Devices Manually*.

    c. If a device group was created, click **Filter by group**, select the group, and then click **Close**.

    d. Click the ✓ icon to allow the connection between the Transmitter and Receiver devices.

    e. Click **Apply**. For more information, see Using the Connection Broker.

4. Manage the users

    a. From the main menu, select **Manage users**.

    b. Click **Add user** and then enter a user name. Specify if it's a **Local user** or a **Domain user**.

    c. When done, click **OK**.

    d. Click the **Add** (⊕) icon for each device a user is to be added to. Adding a user to a device enables the user to log into a Receiver and connect to a Transmitter. To allow the connection to a Transmitter, the connection must also be allowed in the **Connection broker** (see *Allowing a connection between devices*). To view the users and connections allowed for a device, select that device next to **Display users for** when assigning privileges.

    e. Repeat steps b through d for each user to be added.

    f. When you're done, click **Apply**. This creates a **Local users summary** and generates a device password for each local user.
To copy the summary to the clipboard, click **Copy to clipboard (▢)**.

    g. To close the dialog box, click **OK**. For more information, see *Managing Users and Passwords*.

Using Quick Setup

Use the quick setup checklist to quickly configure the software and devices.
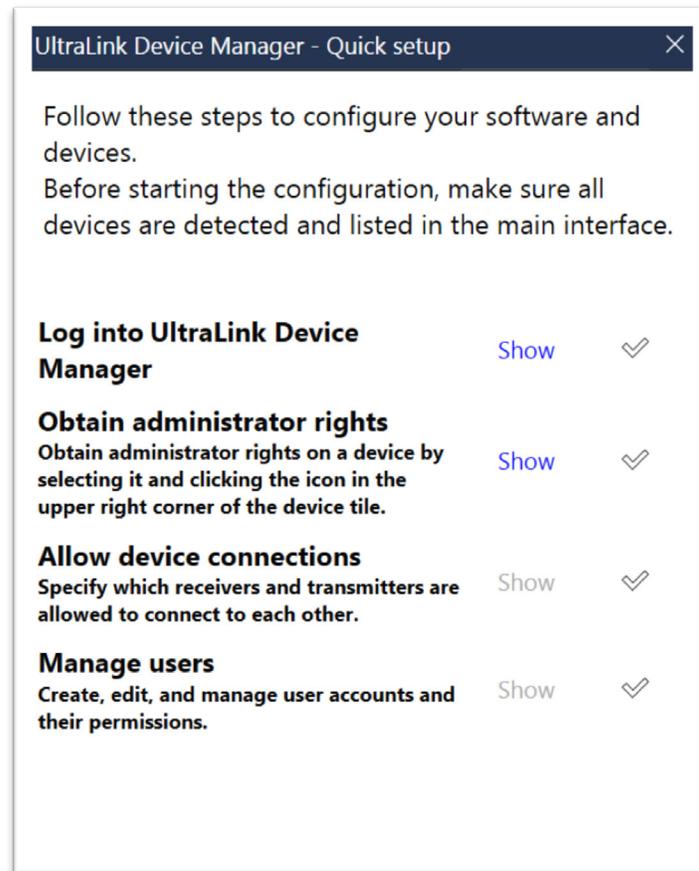
Figure 6. Device Manager software– quick setup display

To use the quick setup checklist:

1. The **quick setup** checklist launches automatically the first time the Device Manager software is opened. The quick setup checklist can also be accessed from the Device Manager main menu by selecting **Quick setup**.

2. Make sure all the devices are detected and listed in the main interface (see *Discovering Devices Manually*).

3. Once all the devices are detected, start the setup by clicking **Show** next to the first item in the list. Once that item is configured, a black checkmark appears (✔).

4. Repeat step 3 for each item in the list.

OPERATION

Logging in and out of Device Manager

To log into Device Manager:

1. From the Device Manager main menu, click **Log in**.

2. Specify **Local user** or **Domain user**:

    a) **Local user** – Enter user name and password.

    b) **Domain user** – Enter user name, the domain name of the server, and your network password.

3. When done, click **Apply**.

4. To log out, click **Log out** from the main menu of Device Manager.

For more information, see *User Access*.

User Access

This section describes the types of users that are supported by the Device Manager, and their access privileges.

UltraLink E-Series Administrator

The UltraLink E-Series administrator:

- Creates device administrators for each device.
- Edits and manages user accounts (Local users and Domain users), and their privileges.
- Allows device connections between Transmitters and Receivers.

Local Users

Local users are defined by the UltraLink E-Series administrator and managed through Device Manager.

To obtain a local user name and device password for a local user (or if the user name or device password has been forgotten), contact the UltraLink E-Series administrator. To change the current password, see the next section.

Changing the device password (local users only)

If the status of a device is **View only**, the device password must be changed to match the user's current password. To update the user's password, click **Change password** from the Device Manager's main menu.

To change the device password to match the current password, select the device tile and click the **Update password** icon ( ) in the upper right corner of the device tile. Enter a valid device password, and then click **OK**.

If the device password is successfully changed, the status of the device is updated to **Modify settings**. If the status of the device remains **View only**, contact the administrator of that device to change the user's settings. For more information, see *Understanding the status of the devices*.

Notes:

- Don't change the password of a local user while a connection is enabled (for example, while a user is logged into the OSD). Changing a password while a connection is enabled will prevent a user from accessing and using the OSD.
- Passwords are case-sensitive and must contain at least 6 alphanumeric characters.

Domain Users

Domain users are defined by your network administrator and managed through an Active Directory® network. The UltraLink E-Series' software and hardware use Active Directory to authenticate the user name and password of domain users.

The Device Manager supports user groups. A domain user who's also part of a user group is granted the highest privilege available (as a user group member or as an individual user). For more information, contact the network administrator.

To obtain a user name and password for a domain user (or if the domain user name or password has been forgotten), contact the network administrator.

Discovering Devices Manually

The Device Manager automatically detects and adds new devices to the system environment. If devices aren't automatically detected, Device Manager can scan one or more specific IP addresses or a range of IP addresses for available devices.

Scanning one or more IP addresses

1. From the Device Manager menu, select **Manual Device Discovery**.
2. Select **Scan a list of IP addresses**.
3. Enter the IP address of the device to be added.
4. Click **Add to list**.
5. Repeat steps 3 and 4 for all the addresses to be added to the list.
6. When done, click **Scan list**.

If new devices are found at the IP addresses provided, they are added to the **New devices** group.
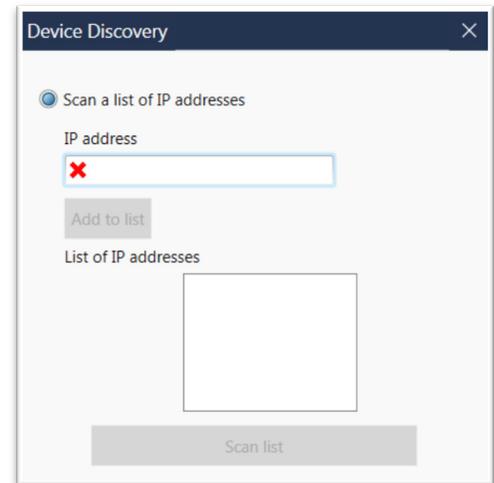
Figure 7. Scanning for an IP addresses

Scanning a range of IP addresses

1. From the Device Manager menu, select **Manual Device Discovery**.
2. Select **Scan a range of IP addresses**.
3. Enter the starting and ending IP addresses of the range to be scanned.
4. Enter the subnet mask to use when scanning for IP addresses. For more information on the subnet mask to use, contact the network administrator.
5. Click **Scan range**. If the starting or ending addresses are invalid, the **Scan range** button is disabled.

If a new device is found, that device is added to the **New devices** group.
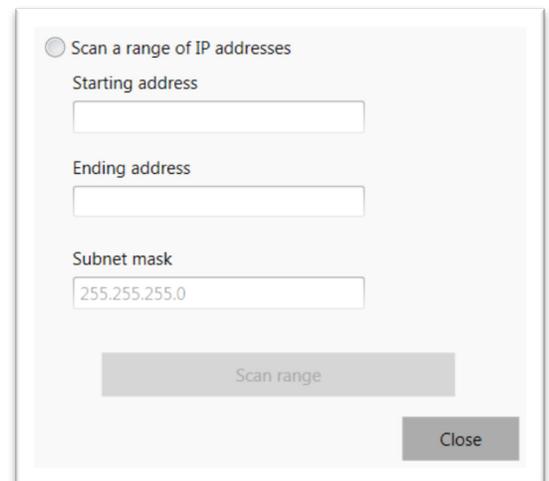
Figure 8. Scanning for a range of IP addresses

Using the Connection Broker

The connection broker provides a grid view of the UltraLink E-Series Transmitter and Receiver devices in the system. Use the connection broker to set and manage the permissions for allowing connections between your transmitter and receiver devices.
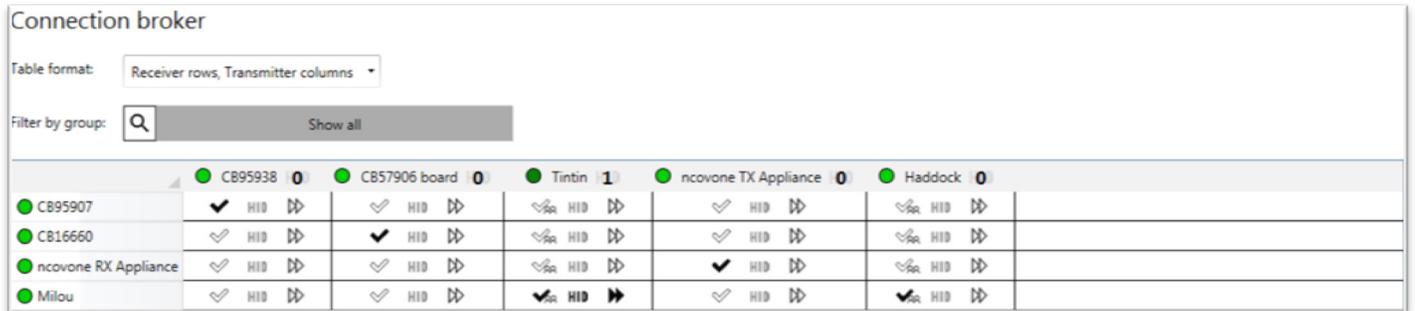
Figure 9. The connection broker grid

Understanding the icons

Icon	Description
✔	Connection between a Transmitter and Receiver is allowed.
✓	Devices are available, but a connection between a Transmitter and Receiver hasn't been allowed.
HID	Reserve USB HID (Human Interface Device). This enables reservation of the USB port so that previously connected devices (keyboard or mouse) can connect more quickly. When this is enabled, the number of HID devices will be listed. The maximum number of USB reservations supported is 16.
HID	USB HID hasn't been reserved.
✔₈₈	Shared connection with a guest is allowed.
?	Devices may be unresponsive, lost, or undetected.
!	Conflict has been detected between a Transmitter and Receiver.
➤➤	Fast switching between Transmitters is enabled.
▷▷	Fast switching between Transmitters hasn't been enabled.

Table 8. The connection broker icons

Allowing a connection between devices

1. From the main menu of the Device Manager, select **Connection broker**.
2. If a device group was created, click **Filter by group**, select the group, and then click **Close**.
3. Click the ✓ icon to allow the connection between the Transmitter and Receiver devices.
4. 4. When done, click **Apply** to apply the changes.

Filtering by group

The devices can be filtered by group. To filter the groups, select the groups to be viewed, and then click **Close**. To select all the groups, click **Select all**.

Managing Users and Passwords

To be able to access and use a device, a user must be added to that device and given privileges.
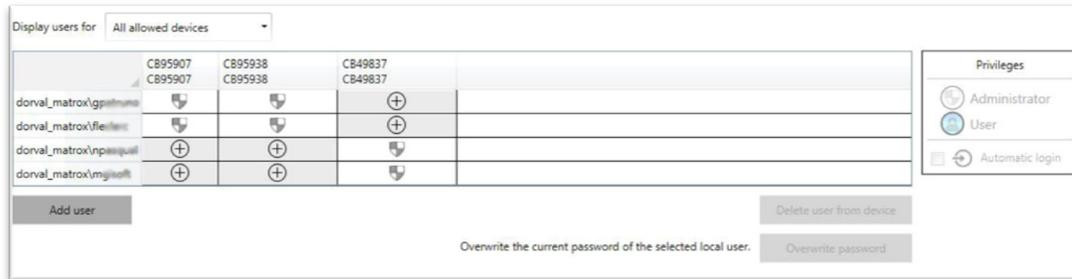
Figure 10. Users Grid

Adding Users

To add a user to a device:

1. 1 Click **Add user** and then enter a user name. Specify if a Local user or a Domain user is being added.

2. When done, click **OK**.

3. Click the **Add** (⊕) icon for each device for which the user is to be added. Users can log into a Receiver and connect to a Transmitter. To be able to connect to a Transmitter, that connection must also be allowed in the Connection broker (see *Allowing a connection between devices*).

   When granting privileges, only the users and the connections allowed for a device can be viewed by selecting that device next to **Display users for**.

4. Repeat step 1 to step 3 for each user to be added.

5. When done, click **Apply**. This creates a **Summary of the local users created** and generates a device password for each local user.

   To copy the summary to the clipboard, click **Copy to clipboard** (🗇).

6. To close the dialog box, click **OK**.

Deleting Users

To delete a user from a device:

1. Select the user to be deleted and then click **Delete user from device**.

2. When done, click **Apply**.

Overwriting a password (local users only)

To overwrite the password of a local user:

1. Select the user whose password is to be overwritten and then click **Overwrite password**.

2. Enter the new password, confirm the password entered, and then click **Change**.

3. When done, click **Apply**.

Granting Privileges

You can grant device **Administrator** (🛡) or **User** (👤) privileges to a user.

If **Automatic login** (⟳) is allowed for a device, this is also displayed. For more information, see *Logging in Automatically (Local Users Only)*).

Logging in Automatically (Local Users Only)

To automatically log a local user into the On-Screen Display (OSD), select the **Automatic login** permission.

TRANSMITTER AND RECEIVER SETTINGS

Transmitter Settings

This section describes how to view, configure, and manage the settings of an UltraLink E-Series Transmitter.

Sharing

This option is used to select if and how to share the Transmitter with a guest.

Guest connections	• **No guest allowed** – Don't allow guest connections.
	• **Guest allowed (without USB devices)** – Allow guest connections. The first user connected to the system has control of keyboard and mouse. Guest connections can connect to the system, but don't have control of USB devices (no keyboard or mouse).
	• **Guest allowed (with USB devices)** – Allow guest connections. Guest connections have control of keyboard and mouse.
Show name of connected user	Show the name of the user connected to the device.
Show previews in OSD when a user is connected	Show a monitor preview in the On-Screen Display (OSD) when a user is connected to the selected Transmitter.

Table 9. Transmitter Sharing Option

EDID

EDID management enables selection of EDID settings to be used by the input connectors on the UltraLink E-Series Transmitter device.
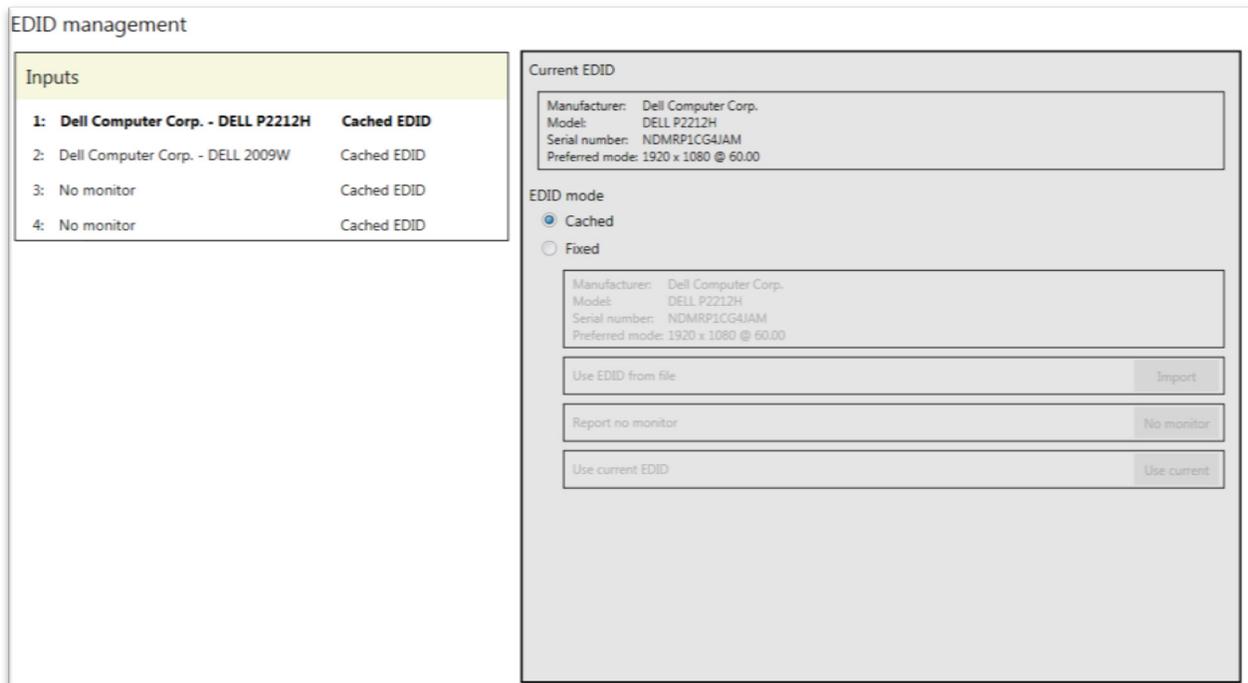
Figure 11. Transmitter EDID Management

The UltraLink E-Series Transmitter has two options for the **EDID** source: **Cached** and **Fixed.** They control where the Transmitter picks the EDID from if a monitor isn't connected to an output connector on the Receiver (for example, if the monitor was disconnected).

If a monitor is connected to an output connector on the Receiver, the Transmitter will use the EDID settings of that monitor.

If a monitor isn't connected to an output connector on the Receiver, the Transmitter picks the EDID based on the **EDID** setting as follows.

- If **Cached** mode is enabled, the Transmitter uses the EDID settings of the monitor that was last connected to that output connector.
- If **Fixed** mode is enabled, no EDID is applied. The EDID can be loaded from a file or completely disabled.

To avoid unwanted changes to the source computer's video output, it is recommended that a fixed EDID is used on all Transmitter inputs (including inputs not connected to the system).

Using the EDID from a file

The EDID settings must be exported before they can be imported. For more information, see *Exporting EDID Settings to a File*.

1. From the list, select the monitor (output) to be used.
2. Make sure the output is set to use a **Fixed** EDID.
3. Next to **Use EDID from file**, click **Import**.
4. Browse to the location where the EDID file has been saved, and it (*.bin*).
5. Click **Apply** for the changes to take effect.

Reporting no monitor

When using the following resolutions, make sure the Transmitter reports only the monitors supported as listed in the table below.

Resolution	Number of Monitors Supported
3840 × 2160 @ 60 Hz	1 (connector 4)
3840 × 2160 @ 30 Hz	2
1920 × 1200 @ 60 Hz	3
1920 × 1080 @ 60 Hz (or lower)	4

Table 10. Special Resolutions and Number of Monitors Supported at Transmitter

The Transmitter must report the other monitors as disconnected (no monitor). Follow the steps below to configure the Transmitter to report the monitors that are disconnected.

1. From the list, select the monitor (output) that's not used by the Transmitter. Make sure the output is set to use a **Fixed** EDID.
2. Next to **Report no monitor**, click **No monitor**.
3. Repeat steps 1 to 3 for each monitor (output) that's not used by the Transmitter.
4. Click **Apply** for your changes to take effect.

Using the current EDID

1. From the list, select the monitor (output) whose EDID is to be used.
2. Make sure the output is set to use a **Fixed** EDID.
3. Next to **Use current EDID**, click **Use current**.
4. Click **Apply** for the changes to take effect.

Streaming

This contains the streaming and encryption settings for the device. The options are listed in the table below.

Option	Description
Encrypt A/V stream	Secure the stream. This option is enabled by default.
Encoding quality	Set the level of encoding (**Low**, **Typical**, **High**, or **Very high**). The default is **Typical**. For a private Wide Area Network (WAN) deployment, set the quality to **Low**.
Routing scheme	• **Unicast** – When selecting unicast, the destination IP address of the stream can be specified. • **Multicast** – Enter the **Multicast address** of the stream. Using multicast may require additional network configuration to support the transmission protocol (some network switches and routers can block multicast signals). This is the default. For more information, contact the network administrator
Multicast address	If **Multicast** is selected, enter the **Multicast address** (for each port) of the stream.

Table 11. Streaming Options

Note - Selecting a routing scheme:

- **Unicast** – Unicast establishes a direct connection between a Transmitter and a Receiver.
- **Multicast** – A single stream is received by all the Receivers connected to the same multicast address. When transmitting to multiple Receivers, a Transmitter that's properly configured for multicast transmission uses less bandwidth.

Exporting the UltraLink E-Series stream addresses (for a display wall)

To use the UltraLink E-Series with a display wall product, the UltraLink E-Series stream addresses must be exported. This enables the display wall to connect to your Transmitter device. Follow the steps below to export the stream addresses:

1. Click **Export stream addresses**.
2. Browse to the location where you want to save your file.
3. When prompted, enter a **File name** and then click **Save**.

Network

This contains the network settings (**LAN1** and **LAN2**) for the connection and IP address of the device.

Note:

When the IP address or the method of assigning an IP address to a device changes, the device must be rebooted for the changes to take effect.

Enabling Link Redundancy

Use the **Enable link redundancy** option to ensure network availability in case of network cable or switch failure. When enabled, when a network cable or switch failure occurs, the device will automatically switch to a secondary network path. Depending on the network, switching may take up to 5 seconds.

This option must be enabled on both Transmitter and Receiver devices.

Note:

Before enabling this option, make sure the devices are on the same subnet and connected to a switch. If multiple switches are used, they must be connected to each other. For more information on connecting the UltraLink E-Series device, see Appendix B - Setting Up Link Redundancy.

Dynamic IP addressing

By default, Dynamic IP address (DHCP) is used. The Device Manager automatically detects all the connected UltraLink E-Series devices in the same subnet as the controller system through the UPnP (Universal Plug and Play) protocol.

Static IP addressing

Once the Device Manager has detected a device, a static IP address can be manually assigned to the device through the **Network** settings of the product. When doing so, the following must be specified.

Address type	Description
IPv4 address	An IP address between 192.168.0.0 and 192.168.255.255 (recommended). Assigning an IP address within the subnet of the network is recommended.
IPv4 netmask	The netmask defining group of IP addresses in the subnet. By default, the subnet mask is 255.255.255.0.
IPv4 gateway	The gateway is often the same as the IP address, but the last byte may be 0 or 1.
DNS servers	The address of the DNS (Domain Name System) server or servers. If multiple addresses are entered, separate each address with a space.

Table 12. IP address settings

Maximum Transmission Unit

The Maximum Transmission Unit (MTU) range supported is 1280 to 1500. The default is set to 1500. For a private Wide Area Network (WAN) deployment, it is recommended that its value is initially set to 1400 while configuring the units, and then adjusted as needed.

Date and time

Use this to update the date, time, and time zone of the Transmitter device. For more information, see *Adjusting the Date and Time of the Device*.

More Options

Option Name	Option Description
Power recovery policy	Set up the option to start up the device after a power loss. • **Never start** – Never turn on your device after a power loss. • **Always start** – Always turn on the device after a power loss. • **Restore last state** – Always turn on and restore the last state of the device after a power loss.
Power button control	Enable the **Disable shutdown** option to prevent the device from being manually shut down
Reboot control	Turn on the **Enable force reboot** option to remotely force a reboot of your device if it stops responding.
Wake-on-LAN control	Turn on the **Enable Wake-on-LAN** option to remotely wake up a device
Advanced display modes	UltraLink E-Series 4-port devices only – Turn on the **Enable advanced display modes** option to support the following display modes: • 1× 3840×2160@60Hz + 1× 1920×1080@60Hz • 1× 3840×1440@60Hz + 1× 1920×1080@60Hz • 4× 2560×1600@60Hz • 4× 1920×1200@60Hz
Logs	• **Download device logs** – Download the log files. This file contains information on the devices. This information is used by Rose Technical Support for debugging purposes. • **Erase device logs** – Erase the log files created for the devices.
Audits	Download the audit file. This file contains information on the user interactions with the devices. This information is used by the UltraLink E-Series administrator.
Troubleshooting	The following options are useful for troubleshooting the devices: • **Audio** – Turn on the **Disable audio** option to disable the audio on the 3 device. The device will reboot for this change to take effect. • **Debug configurations** – Get help and troubleshooting information for the configuration. For more information, contact Rose Technical Support.
Locate transmitter card	**Transmitter card only** – To see where the Transmitter card is located, turn on the **Enable LED to locate card** option. The card can be identified by a red LED light on the bracket of the card.

Table 13. Additional Transmitter Options

Note:
Depending on the UltraLink E-Series product, certain options may not be available.

Receiver Settings

This section describes how to view, configure, and manage the settings of an UltraLink E-Series Receiver.

Connection

This enables remotely connecting a Receiver to a Transmitter, disconnect a Transmitter, and switching connections.

Figure 12. Connection status window

Connection status of the Receiver

This shows the name and IP address of the Transmitter device connected to the Receiver. Depending on the connection settings of the Transmitter, this may also show the name of the user connected to the Transmitter device (see *Sharing*).

To stop this connection, click **Disconnect**.

Connection settings for the Transmitter

This shows the Transmitter devices that are available to be connected to the Receiver, based on the connections specified in the connection broker.

For information on setting an allowed connection between a Receiver device and a Transmitter device, see *Using the Connection Broker*.

Switch	If already connected to a Transmitter, select the new Transmitter for connection to the Receiver, and then click **Switch**.
Connect	If not yet connected to a Transmitter, select the new Transmitter for connection to the Receiver, and then click **Connect**.

Table 14. Connection Options

Selected outputs

Select the monitors to use when connecting to a Transmitter. The outputs represent the physical connections on the Transmitter. For example, to use a 4K resolution, disable outputs 1, 2, and 3, and select only output 4 (connector 4).

If an output is not to be used, click that output. When the output is disabled, the monitor icon (🖥) turns black (🖥). A disabled output means that monitor won't be used when connecting to a Transmitter.

Monitors

This lists the monitors currently connected to the Transmitter device. This also enables exporting the EDID settings of the connected monitors to a file.

Monitor Power Saving

Enable **Allow monitors to enter power saving mode** to turn off the display after *x* minutes of inactivity. When done, click **Apply**.

Monitor connections

Optimizing video mode compatibility

Different monitor models can support different video parameters (such as resolutions, formats, or EDID). In a setup with multiple displays, the image quality or performance of different displays may vary. The **Optimize video mode compatibility with monitors** option can improve image quality of the displays and optimize monitor compatibility with the device. This option is enabled by default.

Aggregator mode: Behavior of unused monitors

Aggregator mode only – Select how to manage the monitors that are part of the layout but not in use (for example, if the monitor layout is made up of 4 monitors, but only 2 monitors are currently being used). The unused monitors can be kept awake or forced into standby mode.

Put monitors in standby	Force all monitors not used in the monitor layout into standby mode.
Keep monitors awake	Keep all monitors not used in the monitor layout awake.

Table 15. Options for Unused Monitors in Aggregator Mode

Exporting EDID Settings to a File

1. Select a monitor whose EDID is to be exported and then click **Export.**
2. Save the EDID file (*.bin*) to a folder or directory.
3. When prompted, click **OK**.

USB

USB device management options enable viewing and authorization of the USB devices which can connect to the Receiver.
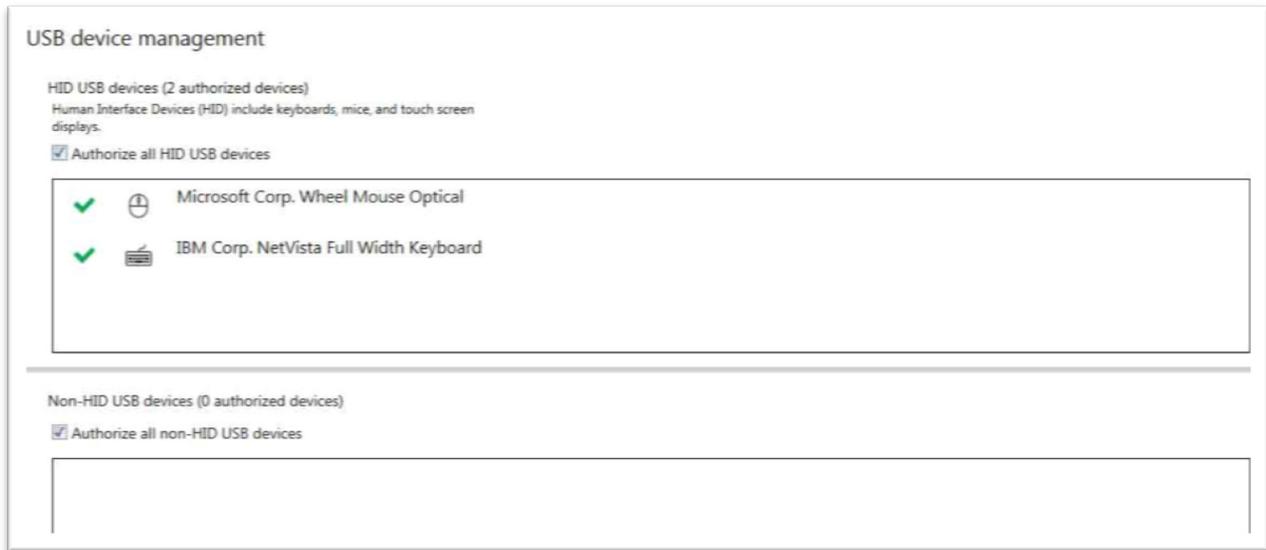
Figure 13. USB Device Management

Authorizing USB devices

To authorize all HID (Human Interface Devices) USB devices, enable **Authorize all HID USB devices**. To authorize all non-HID USB devices, enable **Authorize all non-HID USB devices**.

A USB device that's authorized is identified as ✔. It also indicates if a USB device is currently **Connected** or **Disconnected**. A USB device can be manually blocked from being connected. To manually block a USB device, disable the option, and then click the ✔ icon next to the selected device. A device that's blocked is identified as ⊘.

Audio

This contains the audio settings for the device.
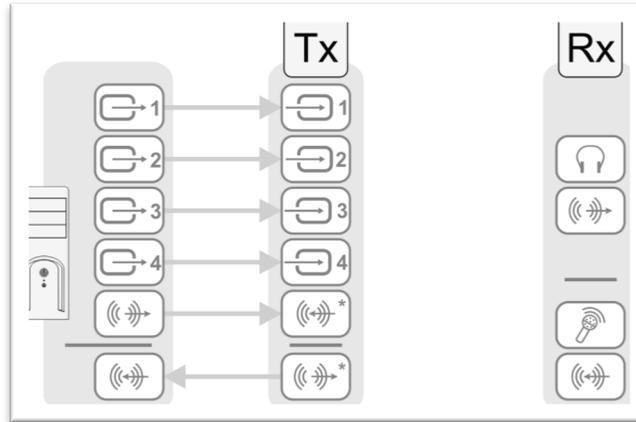
* Four-port device with four video sources from system and unique transmitter connection shown.
The Line In and Line Out connectors are not present on UltraLink E-Series transmitter cards.

Figure 14. Audio Connections

Preventing changes through the OSD

Users can also configure audio settings through the on-screen display (OSD). To prevent this, turn on the **Prevent the user from modifying the following audio settings using the OSD** option.

Configuring audio settings

Depending on the connection type (to a unique transmitter or to multiple transmitters), select the audio setting as follows.

- **Headphone audio source** – Select the Transmitter audio source for the headphones.

- **Line Out audio source** – Select the Transmitter audio source for the Line Out connector.

- **Microphone or Line In audio source** – Select the Transmitter audio input for the Microphone or Line In device from the Receiver.

For more information on selecting the proper audio settings, see *Configuring audio settings*.

Transmitter Discovery

This enables detection of and connection to devices that are on multiple subnets, a WAN network, or a unicast-only network.

Discovery status of transmitters

This shows the name and IP address of the Transmitter device connected to the Receiver.

IP address to scan

Enter the IP address for the device to be scanned. When done, click **Add to list** → **Apply**.

Network to scan

Enter the CIDR (Classless Inter-Domain Routing) subnet mask for the network to scan. When done, click **Add to list** → **Apply**.

Network

This contains the network settings (**LAN 1** and **LAN 2**) for the connection and IP address of the device.

Note:
When the IP address or the method of assigning an IP address to a device changes, the device needs to be rebooted for the changes to take effect.

Enabling Link Redundancy

Use the **Enable link redundancy** option to ensure network availability in case of network cable or switch failure. When enabled, when a network cable or switch failure occurs, the device will automatically switch to a secondary network path. Depending on the network, switching may take up to 5 seconds.

This option must be enabled on both Transmitter and Receiver devices.

Note:
Before enabling this option, make sure the devices are on the same subnet and connected to a switch. If multiple switches are used, they must be connected to each other. For more information on connecting the UltraLink E-Series device, see *Appendix B - Setting Up Link Redundancy*.

Dynamic IP addressing

By default, **Dynamic IP address (DHCP)** is used. The Device Manager automatically detects all the devices in the same subnet as the controller system through the UPnP (Universal Plug and Play) protocol

Static IP addressing

Once the Device Manager has detected a device, a static IP address can be manually assigned to the device through the **Network** settings of the product. When doing so, the following must be specified.

Address type	Description
IPv4 address	An IP address between 192.168.0.0 and 192.168.255.255 (recommended). Assigning an IP address within the subnet of the network is recommended.
IPv4 netmask	The netmask defining group of IP addresses in the subnet. By default, the subnet mask is 255.255.255.0.
IPv4 gateway	The gateway is often the same as the IP address, but the last byte may be 0 or 1.
DNS servers	The address of the DNS (Domain Name System) server or servers. If multiple addresses are entered, separate each address with a space.

Table 16. IP address settings

Maximum Transmission Unit

The Maximum Transmission Unit (MTU) range supported is 1280 to 1500. The default is set to 1500. For a private Wide Area Network (WAN) deployment, it is recommended that its value is initially set to 1400 while configuring the units, and then adjusted as needed.

Date and time

Use this to update the date, time, and time zone of the Transmitter device. For more information, see *Adjusting the Date and Time of the Device*.

RS232

Enable this to virtualize an RS232 (or serial) connection.
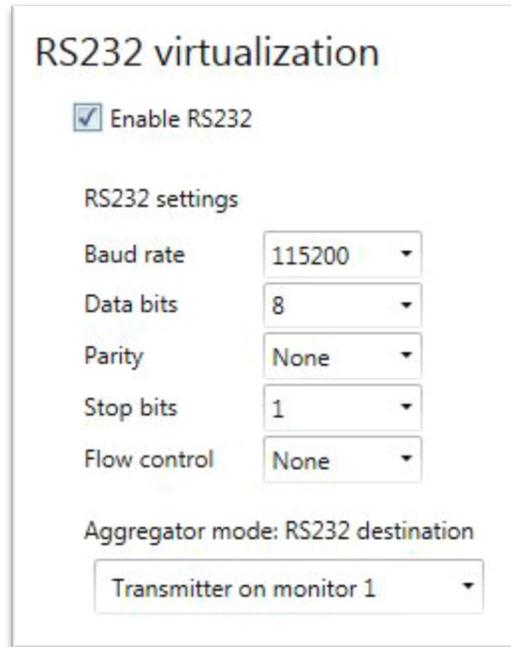
Figure 15. RS232 Virtualization on the Receiver

Enabling RS232 virtualization

To enable RS232, turn on the **Enable RS232** option and then click **Apply**.

Configuring the RS232 settings

Setting	Description
Baud rate	The speed, in bits per seconds (or baud), used for the RS-232 connection. The default is 115200
Data bits	The number of bits per block of data transmitted. The default is 8.
Parity	The type of parity bits (**None, Odd**, or **Even**) used for the data transmitted. The default is **None.**
Stop bits	The number of bits used to identify the end of a data block. The default is 1.
Flow control	The signal type (**None** or **RTS/CTS**) used to pause and resume data transmission. The default is **None**.

Table 17. Configuring the RS-232 connection

Aggregator mode: RS232 destination

Aggregator mode only – Choose the transmitter for RS232 communication.

Keyboard Shortcuts

Keyboard shortcuts provide a way to quickly do certain tasks in the Receiver, such as switching to a different Transmitter, bringing up the **On-Screen Display (OSD)**, or accessing the **Dynamic sources** tab directly to enable switching between sources.

Keystroke combinations can be assigned in the **Keyboard shortcut customization** screen. This screen appears when **Keyboard shortcuts** is selected in the settings screen for a Receiver. The settings screen can be opened by either right-clicking the Receiver tile and selecting **Open settings** or by double-clicking the Receiver tile.

Note:
A standalone key must be used with a modifier key (Alt, Shift, or Ctrl).

Accessing the on-screen display (OSD)

The default shortcut key for this is [Scroll Lock]. Follow the steps below to assign a new key combination for accessing the on-screen display (OSD).

1. Next to **Switch USB to Display X**, click the edit box.

2. Press a key combination (for example, [Left Ctrl] + [Left Shift] + [F10]). Repeat this for each **Display** (for example, 1, 2, 3, and 4) in your monitor layout.

3. Click **Apply**.

Aggregator mode: Accessing Dynamic sources

The default shortcut key for accessing the Dynamic sources tab directly on the OSD is [Right Shift] + [Scroll Lock]. Follow these steps to assign a new key combination.

1. In the **Aggregator mode: Dynamic sources** section of the **Keyboard shortcut customization** screen, click the edit icon next to **Keyboard shortcut** to clear the previous information. You can also click the edit box and press [Backspace] or [Delete].
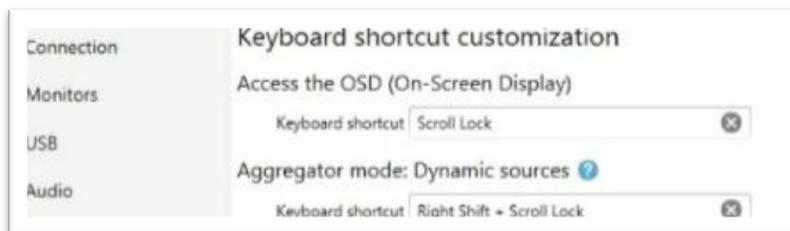
Figure 16. Keyboard Shortcut Customization Screen

2. Press a key combination (for example, [Ctrl] + [F10]).

3. Click **Apply**.

Aggregator mode: USB switching

Aggregator mode only – By default, the mouse can be used to switch between sources while using aggregator mode.

Keyboard shortcuts can also be used to switch sources. By default, keyboard shortcuts for switching are assigned. Follow the steps below to change a key combination for USB switching.

1. Next to **Switch USB to Display X**, click the edit box.
2. Press a key combination (for example, [Left Ctrl] + [Left Shift] + [F10]). Repeat this for each **Display** (for example, 1, 2, 3, and 4) in the monitor layout.
3. Click **Apply**.

To use only the keyboard shortcuts (no mouse) to switch sources, enable **Use only keyboard shortcuts (no mouse) for USB switching**.

Switching transmitters

Follow the steps below to assign a key combination for switching to a transmitter.

1. From the list of Transmitters, select a Transmitter.
   Note: The devices can be filtered by group. To filter the groups, select the groups to be viewed and then click **Close**. To select all the groups, select **Select all**.
2. Click the edit box next to the Transmitter.
3. Press a key combination (for example, [Ctrl] + [F10]).
4. Repeat steps 1 to 3 for each transmitter and when done, click **Apply**.

Removing keyboard shortcuts

To remove a keyboard shortcut, click the **Delete** (⊗) icon. It can also be done by clicking the edit box and pressing [Backspace] or [Delete]. Then, click **Apply**.

More Options

Setting	Description
Power recovery policy	Set up the UltraLink E-Series device to start up after a power loss. • **Never start** – Never start the device after a power loss. • **Always start** – Always start the device after a power loss. • **Restore last state** – Always start and restore the last state of the device after a power loss.
Power button control	To prevent the device from being manually shut down, enable the **Disable shutdown** option.
Reboot control	To remotely force a reboot of the device if it stops responding, turn on the **Enable force reboot** option.
Wake-on-LAN control	To remotely wake up a device, enable the **Enable Wake-on-LAN** option.
OSD (on-screen display) control	Select the level of control a user has for managing information in the on-screen display (OSD): • **Full control** – Allows a user to connect to or disconnect from a Transmitter through the on-screen display (OSD) or keyboard shortcuts. Also, it allows a user to create or change layouts in aggregator mode. • **Full control, less details** – Allows a user to connect to or disconnect from a Transmitter through the on-screen display (OSD) or keyboard shortcuts. Also, it allows a user to change layouts in aggregator mode. Fewer details are provided in the OSD. • **No control** – Gives a user no control in the on-screen display (OSD). Fewer details are provided in the OSD. To hide the overlay messages but keep the monitor information in the top left-hand of the display, enable the **Hide overlay messages (except monitor identification information)**.
Default OSD keyboard settings	Select the language of the Keyboard connected to the Receiver. This sets the default keyboard language to be used in the on-screen display (OSD).
Logs	• **Download device logs** – Download the log files. This file contains information on the UltraLink E-Series devices. This information is used by Rose Technical Support for debugging purposes. • **Erase device logs** – Erase the log files created for the devices. If a Receiver is connected to multiple Transmitters, the device logs of the Receiver and all of its connected devices can be downloaded.
Audits	Download the audit file. This file contains information on the user interactions with the devices. This information is used by the UltraLink E-Series administrator. If a Receiver is connected to multiple Transmitters, the device logs of the Receiver and all of its connected devices can be downloaded.
Troubleshooting	The following options are useful for troubleshooting the devices: • **Audio** – To disable the audio on the device, turn on the **Disable audio** option. The device will reboot for this change to take effect. • **Debug configurations** – Get help and troubleshooting information for the system configuration. For more information, contact Rose Technical Support.

Table 18. Additional Receiver Settings

Note:
Depending on the UltraLink E-Series product, certain options may not be available.

MISCELLANEOUS SETTINGS

Importing and Exporting Device Settings

This enables backing up (exporting) and restoring (importing) the settings specific to an UltraLink E-Series Transmitter or Receiver.
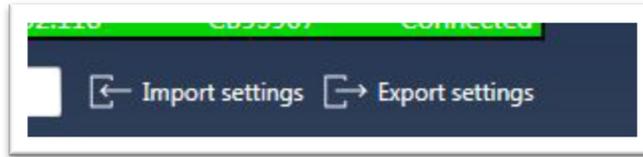
Figure 17. Importing and Exporting Device Settings

Exporting

Follow the steps below to export the device settings.

5. Click **Export settings**.

6. Browse to the location where the ".backup" device file is to be saved.

7. When prompted, enter a **File name**, and then click **Save**.

Importing

Follow the steps below to import the device settings.

1. Click **Import settings**.

2. Browse to the location where the device backup file was saved.

3. Select the device file ("TX.backup" for a Transmitter or "RX.backup" for a Receiver) to be imported and then click **Open**.

Adjusting the Date and Time of the Device

Use this to update the date, time, and time zone of the UltraLink E-Series device.
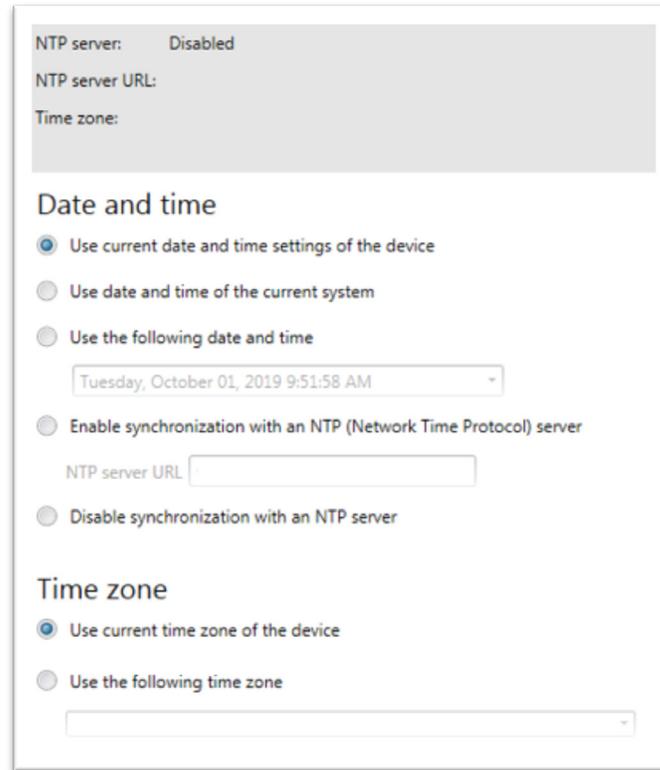
Figure 18. Date and Time Settings

The box at the top lists the current time settings. The Device Manager updates this information every two seconds.

Note:
After applying new settings, it may take some time for the changes to take effect.

Setting the Date and Time

The following options are used to set the date and time for the device.

Option	Description
Use current date and time settings of the device	Keep the current date, time, and NTP (Network Time Protocol) synchronization settings for the devices. This is the default.
Use date and time of the current system	Use the date and time of the controller system to update the devices. This setting uses the time zone of the controller system. If your controller system and the device are using different time zones, the date and time will differ. This setting disables synchronization with an NTP server.
Use the following date and time	Use the date and time specified to update the devices. This setting doesn't use the time zone of your controller system. The arrow keys can be used to change to the date and time specified. This setting disables synchronization with an NTP server.
Enable synchronization with an NTP server	Use an NTP server to update the date and time for the device at regular intervals. You must provide a server URL even if one is already stored on the device. For more information on using NTP, contact a network administrator.
Disable synchronization with an NTP server	Stop using an NTP server to update the date and time for the device. Disabling NTP keeps the current date and time of the device, but it won't update the devices at regular intervals.

Table 19. Options for Setting the Date and Time

Setting the Time Zone

Select the time zone to be used for the device. When using an NTP server, it is recommended that the time zone of the device is set.

Option	Description
Use current time zone of the device	Use the time zone currently set for the devices. This is the default.
Use the following time zone	Change the time zone for the devices to the one selected. Changing the time zone may adjust the date and time for a device.

Table 20.Options for setting the Time Zone

Notes and limitations

General

- Windows Server 2016 and Windows Server 2008 R2 – The SSDP Discovery service, network discovery, and file sharing must be enabled.

Network

- When transmitting in multicast, it is recommended that a router with multicast addressing support and switches with IGMP v2 support are used.

- Slow response from certain routers may cause a slow device detection in Device Manager.

- Windows 10/7 – If the controller system doesn't have access to a DNS (Domain Name System) server, or if response from its DNS server is slow, the Device Manager may take a long time to start up (several minutes). To avoid this delay, configure the controller system to use a fixed IP address (such as local host 127.0.0.1) as its DNS server.

Advanced Display Modes

- The Advanced display modes feature is supported only on UltraLink E-Series 4-port devices. If Advanced display modes is enabled, and the system setup is made of a combination of 4-port and 2-port devices, limitations may be encountered.

Date and Time

- The Device Manager updates the date and time information of the device every two seconds.

Troubleshooting

What to do if a problem is encountered

Follow the steps below to troubleshoot if problems are encountered with the UltraLink E-Series product.

- Make sure the device is properly installed, the correct connectors are used, and that all connectors are properly fastened. For more information on the connection setup of the product, see the UltraLink E-Series hardware manual.

- Review the documentation provided with the product, including the information in this section, to see if the problem is already addressed. For information on the Device Manager software features and options, see the help file included with the Device Manager software.

- If the problem persists, contact Rose Electronics

Common problems and solutions

This section addresses common problems that could hinder usage of the devices.

Problem:	The Device Manager is not starting or device is not discovered on the network
Cause	The product may not be properly installed or connected or may be on a different subnet.
Solution	Verify the connection and status LEDs on the product. Also, make sure the product is properly connected, and that all connectors are properly fastened.
Cause	Windows Server 2016/2008 R2 only – The Windows SSDP Discovery service may be disabled on the system
Solution	Make sure the SSDP Discovery service is enabled on the system 1. **Windows Server 2016/2008 R2** – From the **Start** screen, click **All Programs > Administrative Tools > Services**. (Administrator rights may be needed to access Windows services.) 2. Double-click SSDP Discovery. 3. Next to Startup type, select Manual or Automatic. 4. Click **OK**.
Cause	Network discovery and file sharing may not be enabled on the system

Solution	Enable network discovery and file sharing on the system
	1. **Windows 10/7** –
	  • **Windows 10** – Click **Start > Settings > Network & Internet > Ethernet**.
	  • **Windows 7** – Click **Start > Settings* > Control Panel> Network and Internet***.
	2. Click **Network and Sharing Center > Change advanced sharing settings**.
	  (* Depending on the version and configuration of Windows, this part of the step may not be necessary.)
	3. Under the current profile, make sure the following options are selected:
	  • **Turn on network discovery**
	  • **Turn on file and printer sharing**
	4. If changes are made to the current profile settings, click **Save changes**.

Cause	The Device Manager software being used may not be the latest version, or the firmware may be out of date.
Solution	Make sure all software is up to date
Cause	The firewall for the system or for the network may be enabled and may prevent communication with the devices.
Solution	Make sure the firewall is properly configured to allow the necessary communication between the controller system and the devices. For more information, see *Firewall Requirements*.

Problem	**Can't access the UltraLink E-Series device through the Device Manager (listed as 'View Only')**
Cause	The device may be a recent addition to the environment and has no password.
Solution	Try changing the password for that device (see *Managing Users and Passwords*).
Solution	Contact the UltraLink E-Series administrator to obtain the device password, and then change the device password (see *Managing Users and Passwords*).

Problem	**No picture or output at all**
Cause	The monitor may not be properly connected (the connectors aren't properly fastened or the monitor power cable isn't firmly in place) or may have been disconnected
Solution	Make sure the correct connectors are being used, that all connectors are properly fastened, and that all power cables are firmly in place.

Problem	**The Device Manager may be slow to start (several minutes)**
Cause	The controller system may not have access to a DNS (Domain Name System) server
Solution	Configure the system to use a fixed IP address (such as local host – 127.0.0.1) as the DNS server. 1. **Windows 10/7** - • **Windows 10** – Click **Start > Settings > Network & Internet > Ethernet**. • **Windows 7** – Click **Start > Settings* > Control Panel > Network and Internet* > Network and Sharing Center**. *(* Depending on the version and configuration of Windows, this part of the step may not be necessary*.) 2. Click **Change adapter settings**. 3. Double-click the icon for the network adapter (such as **Local Area Connection** or **Ethernet**). 4. Click **Properties > Yes***. *(* Depending on the version and configuration of Windows, this part of the step may not be necessary*.) 5. Double-click **Internet Protocol Version 4 (TCP/IPv4).** 6. Select **Use the following DNS server addresses**. 7. Next to **Preferred DNS server**, enter **127.0.0.1**. 8. Click **OK > OK > Close**

Problem	**The Device Manager stops responding**
Cause	The Device Manager software or device may have encountered an error
Solution	Try closing and then restarting the Device Manager software
Solution	Restart the controller system.

Problem	**The device tile is listed as unresponsive (yellow device tile)**
Cause	The network may be slow, causing a delay in the response time from the device.
Solution	Wait a few minutes and then make sure the status of the device was properly updated
Cause	The Device Manager software or device may have encountered an error.
Solution	Try closing and then restarting the Device Manager software.
Solution	If the device status is still listed as initializing, click **Reboot** to reboot the device.
Solution	Try a configuration reset of the device. For more information, see your product user manual.

Problem	Poor image quality or display flickering occurs (skipping or dropping frames)
Cause	High network traffic may be degrading the quality of the stream.
Solution	Make sure the network equipment supports the bandwidth required.

Problem	No sound or sound is distorted
Cause	The audio source connector on the device may be disabled
Solution	Enable the audio source. (See *Audio*).
Cause	Audio cables may be loose, or the audio output device may not be properly connected.
Solution	Make sure that the correct connectors are used, all connectors are properly fastened, and that all power cables are firmly in place. For more information, see the product user manual.

Table 21. Troubleshooting guide

Safety

The UltraLink E-Series system, like all electronic equipment, should be used with care. To protect yourself from possible injury and to minimize the risk of damage to the products, read and follow these safety instructions.

- Follow all instructions and warnings marked on the products.
- Except where explained in this manual, do not attempt to service the products yourself.
- Do not use the products near water.
- Assure that the placement of the products 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 the products.
- Keep objects that might damage the products and liquids that may spill, clear from the products. 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 the products. Always unplug the products 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.

Maintenance and Repair

The products do 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 products 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 – Part Numbers

Part Numbers

Part number	Product description
ULE-RXA2	UltraLink E-Series Receiver unit, 2xDisplayPort 1.1, 4xUSB-A, audio 3.5mm, resolution up to 1920x1200@60Hz (2-ports), or 2560x1600@60Hz (1-port), 1xRS232(M), 1xRJ45, 1xSFP
ULE-RXA4	UltraLink E-Series Receiver unit, 3xDisplayPort 1.1 and 1xDisplayPort 1.2, 6 USB type-A, audio 3.5mm resolution up to 4K/60 4:4:4, 1xRS232(M), 1xRJ45, 1xSFP
ULE-TXA2	UltraLink E-Series Transmitter unit, 2xDisplayPort 1.1, 1xDisplayPort 1.1 (local), 1xUSB-B2.0 (input), 2xUSB type-A (local), resolution up to 1920x1200@60Hz, 1xRS232(M), 1xRJ45, 1xSFP
ULE-TXA4	UltraLink E-Series Transmitter unit, 3xDisplayPort 1.1 and 1xDisplayPort 1.2, 1xDisplayPort 1.1 (local), 1xUSB-B2.0 (input), 2xUSB type-A (local), resolution up to 3840×2160 4:4:4, 1xRS232, 1xRJ45, 1xSFP
ULE-TXC2	UltraLink E-Series PCIe Transmitter card, 2xMini DisplayPort 1.1, 1xUSB 2.0 Type Mini-B, resolution up to 1920x1200@60Hz, 1xSFP
ULE-TXC4	UltraLink E-Series PCIe Transmitter card, 3xMini DisplayPort 1.1, 1xMini DisplayPort 1.2, 1xUSB 2.0 Type Mini-B, resolution up to 4K/60, 3840×2160 4:4:4, 1xSFP
ULE-UDM/xxx	UltraLink E-Series Device Manager software where xxx is version number
RM-ULE2	Rack-mount shelf (for 2 units) and mounting kit

Table 22. UltraLink E-Series Part Numbers

Appendix B - Setting Up Link Redundancy

Setting up Link Redundancy

Link redundancy ensures that the UltraLink E-Series devices continue to work in case of a network cable or switch failure.

Connection setup guidelines

The following provides a basic outline for how to connect UltraLink E-Series Transmitters and Receiver to support link redundancy.
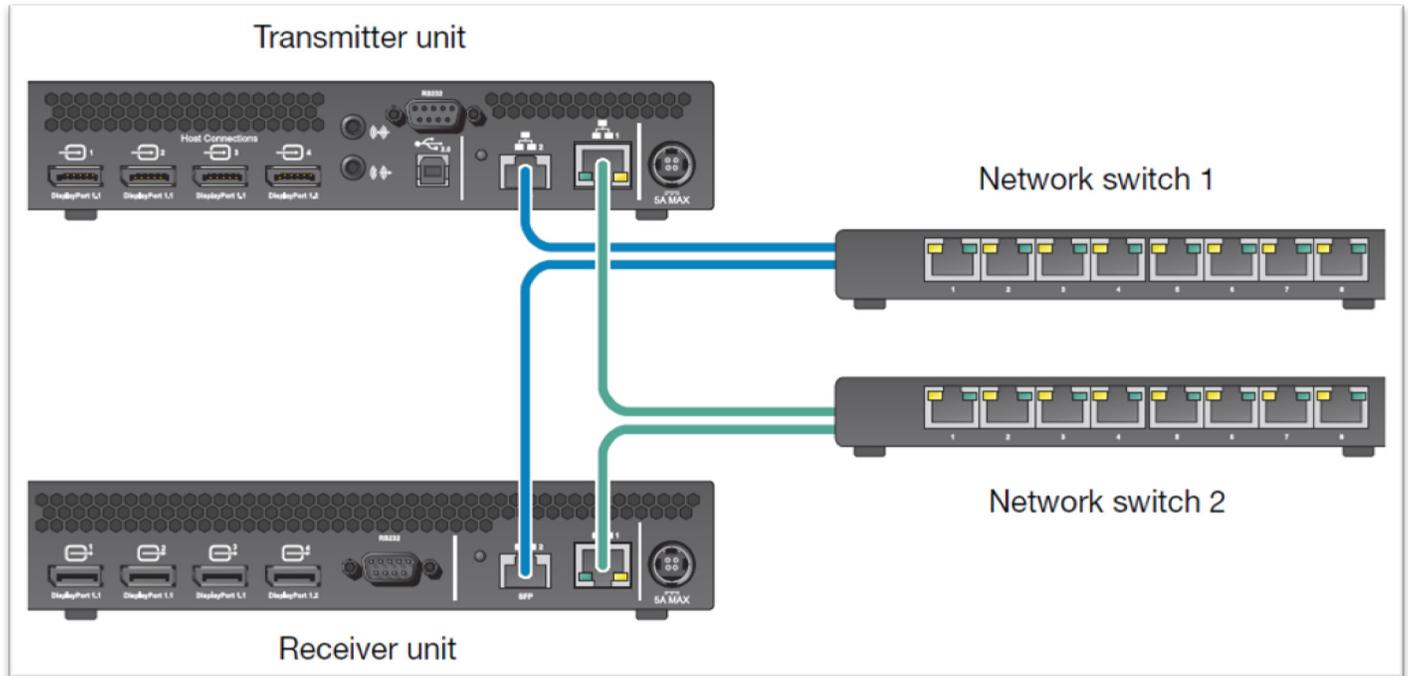
Figure 19. Connecting Transmitters and Receivers to Support Link Redundancy

Note:
Link Redundancy is only supported on the UltraLink E-Series Transmitter and Receiver units. It is not supported on the standalone Transmitter cards.

- Make sure the UltraLink E-Series units are all on the same subnet.
- Connect each Transmitter and Receiver unit to a managed network switch pair. Make sure to connect LAN1 to network switch 1 and connect LAN2 to network switch 2.
- Make sure the LAN1 and LAN2 connectors are connected before enabling the Link redundancy feature.

Enabling Link Redundancy

Follow these steps to enable link redundancy.

1. Connect the second network cable to the device.
2. Turn on the **Enable link redundancy** option in the Device Manager software:
   - **Networked mode** – Select the device, click **Network**, and then enable the **Enable link redundancy** option.
   - **Point-to-point mode** – In the OSD, click **More options**, and then enable the **Enable link redundancy** option.
3. The devices will automatically reboot for the changes to take effect.

Disabling Link Redundancy

Follow these steps to disable link redundancy.

1. Disconnect the second network cable.

2. Make sure that the devices are detected on the network.

3. Turn off the **Enable link redundancy** option in the Device Manager software:

   - **Networked mode** – Select the device, click **Network**, and then disable the **Enable link redundancy** option.

   - **Point-to-point mode** – In the OSD, click **More options**, and then turn off the **Enable link redundancy** option.

Configuring Audio Settings

Note:
It is recommended that the system's Windows® audio settings are reviewed to know which DisplayPort output is configured to use audio.

Receiver Output

Audio source from Transmitter	Standard Mode - When Receiver connects to a unique Transmitter unit	Aggregator Mode - When Receiver connects to multiple Transmitter units
No audio	No audio available on the receiver output.	No audio available on the receiver output.
Digital audio 1*	Audio originates from the audio portion of the A/V signal of **DisplayPort 1** on the transmitter unit.	Audio originates from the digital A/V signal displayed on **monitor 1** of the receiver.
Digital audio 2*	Audio originates from the audio portion of the A/V signal of **DisplayPort 2** on the transmitter unit.	Audio originates from the digital A/V signal displayed on **monitor 2** of the receiver.
Digital audio 3*	Audio originates from the audio portion of the A/V signal of **DisplayPort 3** on the transmitter unit.	Audio originates from the digital A/V signal displayed on **monitor 3** of the receiver.
Digital audio 4*	Audio originates from the audio portion of the A/V signal of **DisplayPort 4** on the transmitter unit.	Audio originates from the digital A/V signal displayed on **monitor 4** of the receiver.
Analog audio (Follows USB)†	Audio originates from the **Line In** connector of the transmitter.	Audio originates from the **Line In** connector of the transmitter unit where the keyboard and mouse are active.
Analog audio, Line In 1	Audio originates from the **Line In** connector of the transmitter.	Audio originates from the **Line In** connector of the transmitter unit providing the video stream for **monitor 2** on the receiver unit.
Analog audio, Line In 2	Audio originates from the **Line In** connector of the transmitter.	Audio originates from the **Line In** connector of the transmitter unit providing the video stream for **monitor 2** on the receiver unit.
Analog audio, Line In 3	Audio originates from the **Line In** connector of the transmitter.	Audio originates from the **Line In** connector of the transmitter unit providing the video stream for **monitor 3** on the receiver unit.
Analog audio, Line In 4	Audio originates from the **Line In** connector of the transmitter.	Audio originates from the **Line In** connector of the transmitter unit providing the video stream for **monitor 4** on the receiver unit.

* In aggregator mode, the A/V signal may come from a transmitter input other than the monitor on which it's displayed (for example, monitor 1 shows a stream that comes from input 3 of a transmitter).

† In aggregator mode, the audio source switches from one transmitter to another when the mouse moves to a monitor showing an image from a different transmitter.

Table 23. Receiver Audio Output Options

Receiver Input

Audio source from Receiver	Standard Mode - When Receiver connects to a unique Transmitter unit	Aggregator Mode - When Receiver connects to multiple Transmitter units
No audio	No audio available on the **Line Out** connector of the Transmitter.	No audio available on any of the **Line Out** connectors of the Transmitter.
Microphone	Audio from the **Microphone** connector of the Receiver unit is sent to the **Line Out** connector of the Transmitter unit	The **Microphone** signal from the Receiver unit is sent to a transmitter following the destination option chosen (see *Receiver Audio Destination*).
Line In	Audio from the **Line In** connector of the Receiver unit is sent to the **Line Out** connector of the Transmitter unit	The **Line In** signal from the Receiver unit is sent to a Transmitter following the destination option chosen (see *Receiver Audio Destination*).
Automatic detection	Audio from the **Microphone** connector of the Receiver unit is sent to the **Line Out** connector of the Transmitter unit. If no cable is present on the **Microphone** connector of the Receiver unit, but a cable is present on the **Line Out** connector, the signal of the **Line Out** connector is sent to the **Line Out** connector of the Transmitter unit.	Audio from the **Microphone** connector of the Receiver unit is used. If no cable is present on the **Microphone** connector of the Receiver unit, but a cable is present on the **Line In** connector, the signal of the **Line In** connector is used. The signal is then sent to a Transmitter following the destination option chosen (see *Receiver Audio Destination*).

Table 24. Receiver Audio Input Options

Receiver Audio Destination

Receiver Audio Destination	Standard Mode - When Receiver connects to a unique Transmitter unit	Aggregator Mode - When Receiver connects to multiple Transmitter units
Monitor 1	Audio from the selected audio source of the Receiver (**Microphone** or **Line In**) is sent to the **Line Out** connector of the Transmitter.	Audio from the selected audio source of the Receiver (**Microphone** or **Line In**) is sent to the **Line Out** connector of the Transmitter unit that provides the video stream to **monitor 1**.
Monitor 2	Audio from the selected audio source of the Receiver (**Microphone** or **Line In**) is sent to the **Line Out** connector of the Transmitter.	Audio from the selected audio source of the Receiver (**Microphone** or **Line In**) is sent to the **Line Out** connector of the Transmitter unit that provides the video stream to **monitor 2**.
Monitor 3	Audio from the selected audio source of the Receiver (**Microphone** or **Line In**) is sent to the **Line Out** connector of the Transmitter.	Audio from the selected audio source of the Receiver (**Microphone** or **Line In**) is sent to the **Line Out** connector of the Transmitter unit that provides the video stream to **monitor 3**.
Monitor 4	Audio from the selected audio source of the Receiver (**Microphone** or **Line In**) is sent to the **Line Out** connector of the Transmitter.	Audio from the selected audio source of the Receiver (**Microphone** or **Line In**) is sent to the **Line Out** connector of the Transmitter unit that provides the video stream to **monitor 4**.

Table 25. Receiver Audio Destination Options

Appendix D – Firewall requirements

Firewall Requirements

The following are the firewall requirements for the UltraLink E-Series devices.

Device Manager Software

The following are the firewall requirements for the controller system.

Network port	Type	Inbound	Outbound	Functionality
53	TCP	—	Yes	**DNS**: DNS requests
443*	TCP	—	Yes	**HTTPS:** Device Manager commands
1900*	UDP	Yes	Yes	**UPnP:** Microsoft SSDP for discovery of UPnP devices **Note:** ICMP must be enabled (ping)

(*) = minimum requirements

Table 26. Firewall Requirements for the Device Manager Software

UltraLink E-Series Firmware Updater

The following are the firewall requirements for a system running the UltraLink E-Series firmware updater.

Network port	Type	Inbound	Outbound	Functionality
20,21	TCP	—	Yes	**FTP:** File upload
22*	TCP	Yes	Yes	**SSH:** Firmware update
443*	TCP	—	Yes	**HTTPS:** Authentication
1900*	UDP	Yes	Yes	**UPnP:** Microsoft SSDP for discovery of UPnP devices

(*) = minimum requirements

Table 27. Firewall Requirements for the UltraLink E-Series Firmware Updater

UltraLink E-Series Devices

The following are the requirements for a firewall present on a network with UltraLink E-Series devices.

Network port	Type	Inbound	Outbound	Functionality
20,21	TCP	Yes	—	**FTP:** File upload
22*	TCP	Yes	Yes	**SSH:** Firmware update
69	UDP	—	Yes	**DHCP:** DHCP client
123	UDP	Yes	Yes	**NTP:** Network time protocol
161	UDP	Yes	Yes	**SNMP**: Network management (public community string)
443*	TCP	Yes	—	**HTTPS:** Device Manager commands and firmware updater authentication
1900*	UDP	Yes	Yes	**UPnP:** Microsoft SSDP for discovery of UPnP devices
Ephemeral*	UDP	Yes	Yes	**RTP/RTCP:** Audio and video streams and control
12000	TCP	Yes	Yes	**RS232:** RS232 virtualization
80	TCP	Yes	—	**Transmitter unit:** Publishing of desktop thumbnails
80	TCP	—	Yes	**Receiver unit:** Retrieving of desktop thumbnails
3240	TCP	Yes	—	**Receiver Unit:** USB IP
3240	TCP	—	Yes	**Transmitter Unit:** USB IP
6804 – 6816	TCP	Yes	—	**Transmitter Unit:** Audio Back Channel Control
6804 – 6816	TCP	—	Yes	**Receiver Unit:** Audio Back Channel Control
8884	TCP	Yes	—	**Receiver Unit:** Control Channel
8884	TCP	—	Yes	**Transmitter Unit:** Control Channel
8886	UDP	Yes	—	**Transmitter Unit**: Audio Back Channel
8886	TCP	—	Yes	**Receiver Unit**: Audio Back Channel
8809 – 8872	TCP	Yes	—	**Receiver Unit:** A/V Streams Control
8809 – 8872	TCP	—	Yes	**Transmitter Unit:** A/V Streams Control
9223 – 9254	UDP	Yes	—	**Receiver Unit:** Multicast A/V Streams
9223 – 9254	UDP	—	Yes	**Transmitter Unit:** Multicast A/V Streams
11900	UDP	Yes	—	**Transmitter unit:** SSDP unicast M-SEARCH requests for UPnP discovery and presence monitoring for out-of-subnet and WAN devices
11900	UDP	Yes	—	**Receiver unit:** SSDP unicast M-SEARCH requests for UPnP discovery and presence monitoring for out-of-subnet and WAN devices
12346 - 12752; 13414 – 13719	UDP	Yes	—	**Receiver unit:** Unicast A/V streams
12346 - 12752; 13414 – 13719	UDP	Yes	—	**Transmitter unit:** Unicast A/V streams

(*) = minimum requirements

Table 28. Network Firewall Requirements for UltraLink E-Series Devices

Accessing Windows firewall settings

Note:

Administrator rights may be needed to modify the Windows Firewall settings. For more information, see Windows documentation or contact the system administrator.

Windows 10

1. Click **Start > Settings > Network & Internet > Ethernet > Windows > Firewall**.

2. In the left panel, click **Advanced Settings**.

Windows 7

1. Click **Control Panel > Network and Internet* > Network and Sharing Center**. (* Depending on your configuration, these steps may be unnecessary.)

2. In the left panel, click **Windows Firewall > Advanced Settings**.

Adding rules to the Windows Firewall Settings

1. Windows 10 – Click Start > Settings > Network & Internet > Ethernet > Windows Firewall.
   Windows 7 – Click **Control Panel > Network and Internet* > Network and Sharing Center***. (* Depending on your configuration, these steps may be unnecessary.)

2. **Windows 10** – In the left panel, click **Advanced Settings**.
   Windows 7 – In the left panel, click **Windows Firewall > Advanced Settings**.

3. Click Inbound Rules.

4. In the Actions panel, click New Rule. Configure the new rule with the following settings:

   - **Rule** – Select **Custom**.

   - **Program** – Select **All programs**.

   - **Protocol and Ports** – Next to **Protocol,** select **TCP**. Next to **Local port**, select **Specific ports**. For the port number, enter **445.** Next to **Remote port**, select **All Ports**.

   - **Scope** – Under the remote IP address, add the IP range to use for the Transmitter. A range (such as 192.168.1.0/24) or a single IP address (such as 192.152.168.62) can be used.

   - **Action** – Select **Allow the connection**.

   - **Profile** – Select the network location of your system (**Domain, Private,** or **Public**).

   - **Name** – Enter the name for your rule (such as UltraLink Extender – TCP rule).

5. In the **Actions** panel, click **New Rule**. Configure the new rule with the following settings:

   - **Rule type** – Select **Custom**.

   - **Program** – Select **All programs**.

   - **Protocol and Ports** – Under **Protocol type**, select **ICMPv4**.

   - **Scope** – Under the remote IP address, add the IP range you want to use for your transmitter. You can use a range (such as 192.168.1.0/24) or a single IP address (such as 192.152.168.62).

   - **Action** – Select **Allow the connection**.

   - **Profile** – Select the network location of your system (**Domain**, **Private**, or **Public**).

   - **Name** – Enter the name for your rule (such as *UltraLink – ICMPv4 rule*).

For more information on configuring the Windows firewall, see a network administrator.