

CrystalView Exact

DisplayPort 1.2a and USB 3.1 CAT6a/7 Extender

Installation and Operation Manual



LIMITED WARRANTY

Rose Electronics® warrants the CrystalView Exact Extender to be in good working order for one year from the date of purchase from Rose Electronics or an authorized dealer. Should this product fail to be in good working order at any time during this one-year warranty period, Rose Electronics will, at its option, repair or replace the Unit as set forth below. Repair parts and replacement units will be either reconditioned or new. All replaced parts become the property of Rose Electronics. This limited warranty does not include service to repair damage to the Unit resulting from accident, disaster, abuse, or unauthorized modification of the Unit, including static discharge and power surges.

Limited Warranty service may be obtained by delivering this unit during the one-year warranty period to Rose Electronics or an authorized repair center providing a proof of purchase date. If this Unit is delivered by mail, you agree to insure the Unit or assume the risk of loss or damage in transit, to prepay shipping charges to the warranty service location, and to use the original shipping container or its equivalent. You must call for a return authorization number first. Under no circumstances will a unit be accepted without a return authorization number. Contact an authorized repair center or Rose Electronics for further information.

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IF THIS PRODUCT IS NOT IN GOOD WORKING ORDER AS WARRANTED ABOVE, YOUR SOLE REMEDY SHALL BE REPLACEMENT OR REPAIR AS PROVIDED ABOVE. IN NO EVENT WILL ROSE ELECTRONICS BE LIABLE TO YOU FOR ANY DAMAGES INCLUDING ANY LOST PROFITS, LOST SAVINGS OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF OR THE INABILITY TO USE SUCH PRODUCT, EVEN IF ROSE ELECTRONICS OR AN AUTHORIZED DEALER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, OR FOR ANY CLAIM BY ANY OTHER PARTY.

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR CONSUMER PRODUCTS, SO THE ABOVE MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE.

DECLARATIONS OF CONFORMITY

The product safety of the devices is proven by their compliance with the following standards:

This is to certify that, when installed and used according to the instructions in this manual, the units listed and described here are shielded against the generation of radio interferences in conformity with the following European standards:

- EN 55024
- EN 55032
- EN 61000



- FCC. This equipment has been found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.
- CAN/CSA-ICES-003 Issue 6. (Class B digital apparatus)
- RoHS. This device complies with Directive 2011/65/EU and Directive 2015/863/EU of the European Parliament on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS 2, RoHS 3).
- WEEE. The manufacturer complies with the EU regulations on the collection and recycling of all waste electrical and electronic equipment (WEEE).

TABLE OF CONTENTS

Contents

Disclaimer	1
System Introduction	1
Features	1
Package Contents	2
Additional Items Required	2
Application Examples	2
Transmitter Unit	3
Receiver Unit	4
Installation Considerations	5
Cabling Requirements	5
USB Device Software	5
Installing the Extender Units	6
Transmitter Installation	6
Receiver Installation	6
Connecting the Transmitter to the Receiver	6
Checking the Installation and Connecting USB devices	7
Ethernet Pass-Through Channel	7
RS-232 Pass-Through Channel	7
Extender Mounting Options	8
Transmitter and Receiver Mounting Options	8
Option 1: CrystalView Exact Mounting Kit	8
Option 2: Direct Surface Mounting	9
Troubleshooting	10
Compatibility	13
Safety	14
Maintenance and Repair	15
Technical Support	15

Figures

Figure 1. CrystalView Exact CAT6a/7 extender – typical installation	5
Figure 2. CrystalView Exact Transmitter and Receiver Connections	6
Figure 3. Ethernet LAN Connections	7
Figure 4. RS-232 Connections	7
Figure 5. Mounting Bracket Installation	8

Tables

Table 1. Transmitter Indicators and Connectors	3
Table 2. Receiver Indicators and Connectors	4

Appendices

Appendix A — Specifications	16
Appendix B — Supported Video Resolutions	17

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 Rose Electronics' CrystalView Exact extender. The CrystalView Exact extends Ultra HD DisplayPort video and USB 3.1, 2.0 and 1.1 up to 330 feet (100 meters) over a single CAT6a/7 cable. Four USB devices can be directly connected to the remote Receiver, including up to three self-powered USB hubs for additional device support.

Pass-through connectors are also provided for Ethernet 100/1000 Mbps networks, allowing network enabled devices at the remote Receiver to be connected to a network at the Transmitter. The RS-232 pass-through channel adds to the extender's versatility, supporting remotely connected RS-232 devices and control interfaces.

The CrystalView Exact system consists of a Transmitter, a Receiver, and up to 330 feet (100 meters) of industry standard CAT6a/7 cable. The Transmitter connects to a DisplayPort video source and its USB host. For USB 3.1 SuperSpeed support (up to 5Gbps), the CrystalView Exact Transmitter should be connected directly to a USB 3.1 Gen 1/2 host.

The instructions in this manual assume a general knowledge of computer installation procedures, familiarity with cabling requirements, and some understanding of USB device operation.

Features

- Supports DisplayPort 1.2a with embedded 2 Channel 16/24-bit linear PCM audio
- Ultra HD resolutions up to 3840×2160@60Hz
- YCbCr 4:4:4 and RGB color to 10 bits per channel
- Provides simultaneous, transparent USB extension for USB 3.1, 2.0, and 1.1 devices
- When used with USB 3.1 Gen 1/2 hosts, allows SuperSpeed data rates up to 5Gbps
- Four USB 3.1 Receiver ports, each supplying up to 1.2 Amp (6W)
- Powered USB hubs can be used to support up to 30 devices
- Uses a single CAT6a/7 cable up to 330 feet long (100 meters)
- Ethernet 100/1000 pass-through channel for remote connection of network enabled devices
- Bidirectional RS-232 channel supports serial devices and controllers at baud rates to 115,200
- True plug and play; no software drivers required
- Works with all major operating systems: Windows®, MAC OS™, Linux® and Chrome OS™
- DisplayPort Multi-Stream Transport and DisplayPort Dual-Mode are not supported.

Package Contents

The package contents consist of the following:

- Transmitter unit
- Receiver unit
- DisplayPort cables (2)
- USB 3.1 Gen 1 cable (1)
- RS-232 mating connectors (2)
- 24V DC 1A power adapter for the Transmitter unit
- 24V DC 2.71A power adapter for the Receiver unit
- AC power cables (2)
- Installation & Operation Manual

Additional Items Required

- CAT6a/7 cable, preferably solid core shielded (STP) or foiled (FTP) cable, terminated according to T568A or T568B

All references to CAT6a/7 cable in this document refer to solid-core cable and represent the minimum CAT6a/7 specification requirements. Use of UTP/STP/FTP patch-cables may reduce the recommended cable extension distances.

Application Examples

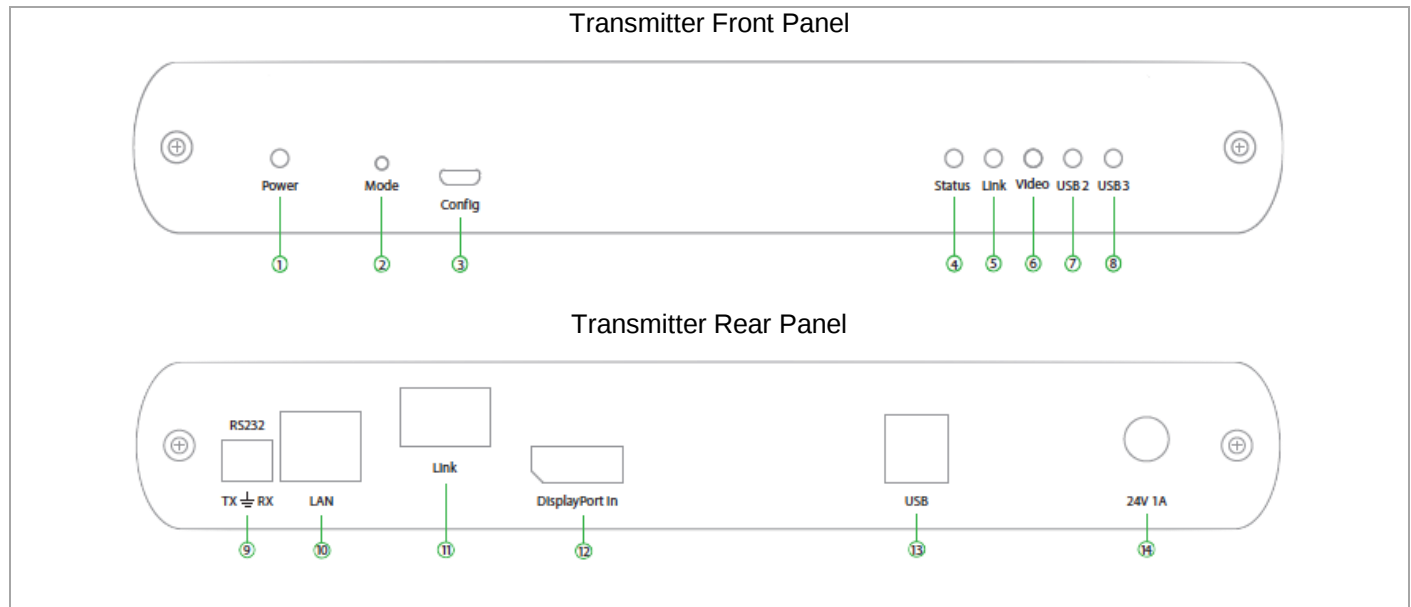
The CrystalView Exact is ideal for use in applications that require Ultra HD video coupled with USB 3.1 equipment such as conferencing cameras, or in computer room or industrial environments where USB devices need to be connected remotely from a host PC.

- Medical and imaging environments
- Video production and digital signage environments
- Industrial control
- Interactive whiteboard
- Extended connection for Ethernet network devices
- Boardroom and conferencing presentations utilizing USB 3.1 videoconferencing cameras
- Extension of multiple types and speeds of USB devices

SYSTEM OVERVIEW

Transmitter Unit

The Transmitter is connected to the host device using the supplied DisplayPort and USB 3.1 Gen 1 cables. Power for the Transmitter is provided by the included 24V DC 1A power adapter. Power and status indicators are conveniently located on the front panel for user reference. The EDID of the Receiver's DisplayPort monitor is copied to the Transmitter and remains until a different display is connected to the Receiver, or until is power cycled to the Transmitter.

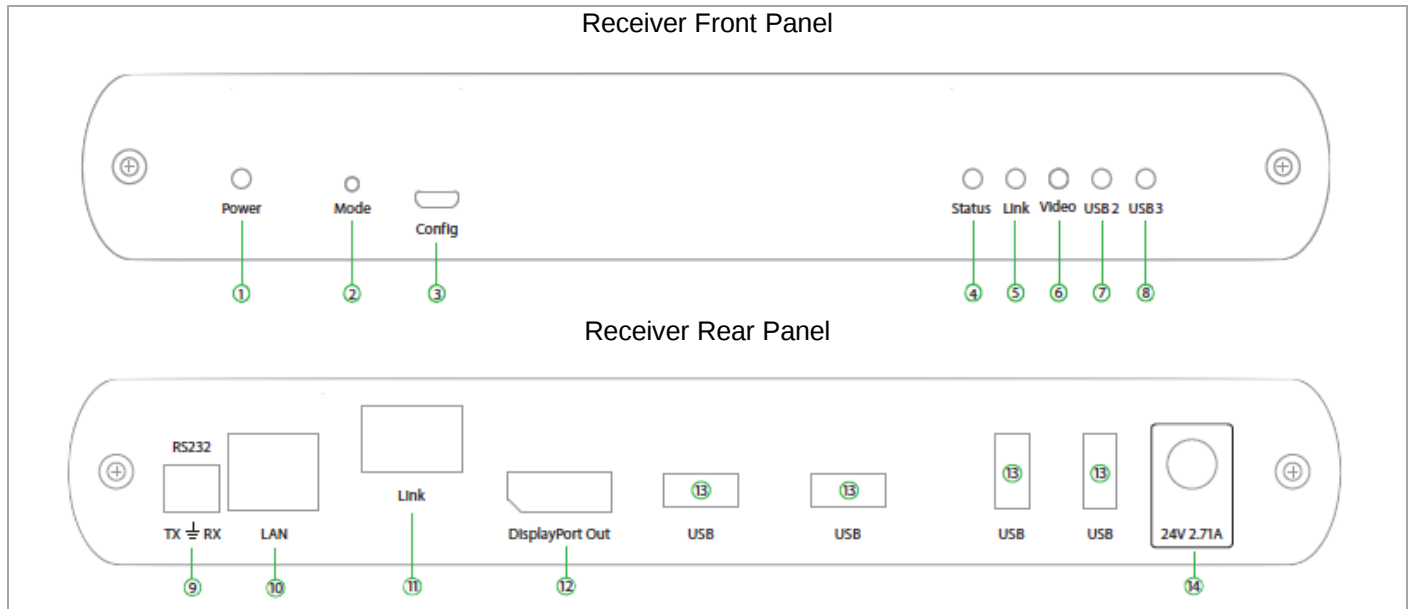


Item	Label	Description
1	Power	DC Power indicator
2	Mode	Reserved for engineering use
3	Config	Reserved for engineering use
4	Status	On continuously indicates normal function, blinking indicates booting. Blinking with Link, Video, USB 2, and USB 3 indicators signals a temperature warning
5	Link	On continuously when linked to a Receiver
6	Video	On continuously when a DisplayPort video signal is established through the system
7	USB 2	On continuously when an active USB 2.0 connection is established through the system. Blinks when a USB 2.0 connection is established, but suspended/asleep
8	USB 3	On continuously when an active USB 3.1 connection is established through the system. Blinks when a USB 3.1 connection is established, but suspended/asleep
9	RS232	Terminal block for passing RS-232 signals at up to 115200 baud to a computer's serial port
10	LAN	RJ45 connector for passing 100/1000 Mbps Ethernet signals to the Receiver
11	Link	RJ45 connector for CAT 6a/7 cabling to connect the Transmitter to the Receiver
12	DisplayPort In	DisplayPort female connector. Connect to DisplayPort 1.2a source
13	USB	USB 3 Type B female receptacle. Connect to a USB 3.1 host port on a computer.
14	24V 1A	Locking connector for the included 24VDC, 1A power adapter

Table 1. Transmitter Indicators and Connectors

Receiver Unit

The Receiver unit has a connector for a DisplayPort monitor, and four USB 3.1 Type A connectors. The USB ports work with any type of USB device, 3.1, 2.0 or 1.1. Additional devices may be connected by attaching up to three self-powered USB hubs to the Receiver unit. Ethernet enabled devices can be connected to the RJ45 LAN connector. RS-232 devices can be connected to the RS-232 terminal block.



Item	Label	Description
1	Power	DC Power indicator
2	Mode	Reserved for engineering use
3	Config	Reserved for engineering use
4	Status	On continuously indicates normal function, blinking indicates booting. Blinking with Link, Video, USB 2, and USB 3 indicators signals a temperature warning
5	Link	On continuously when linked to a Transmitter
6	Video	On continuously when a DisplayPort video signal is established through the system
7	USB 2	On continuously when an active USB 2.0 connection is established through the system. Blinks when a USB 2.0 connection is established, but suspended/asleep
8	USB 3	On continuously when an active USB 3.1 connection is established through the system. Blinks when a USB 3.1 connection is established, but suspended/asleep
9	RS232	Terminal block for passing RS-232 device signals at up to 115200 baud to the Transmitter
10	LAN	RJ45 connector for receiving a 100/1000 Mbps Ethernet connection from the Transmitter
11	Link	RJ45 connector for CAT 6a/7 cabling to connect the Receiver to the Transmitter
12	DisplayPort Out	DisplayPort female connector. Connect to DisplayPort 1.2a display
13	USB	USB 3 Type A female receptacles accept all USB devices.
14	24V 2.71A	Locking connector for the included 24VDC, 2.71A power adapter

Table 2. Receiver Indicators and Connectors

INSTALLATION

Installation Considerations

Cabling Requirements

The CrystalView Exact extender requires the use of at least Category 6a cabling in order to reach 330 feet (100m) of extension distance. No more than 33 feet (10m) of patch cable should be used. The remaining 295 feet (90m) should be solid core CAT6a or CAT7 premise cabling. When planning an installation, first determine the path of the link cable and whether shielded or foiled cable are appropriate. Unshielded (UTP) cable can be used if the cable run meets the following requirements:

- The cable is not bundled with other cables
- The cable is run loosely with other CATx cables
- The cable is not placed close to sources of interference, such as power lines and radios
- The cable is not looped or coiled

If any of these requirements cannot be guaranteed, shielded (STP) or foiled (FTP) cabling should be used. When terminating cables, ensure the matching RJ45 connector is used for the cable type. For example, if CAT6a cable is used, CAT6a compatible RJ45 connectors must be used. Otherwise, the benefits of using higher grade cabling may not be realized. When installing, ensure the cable is installed away from, or isolated from potential sources of interference such as electrical power wiring, fluorescent lighting and radio or walkie-talkie signals.

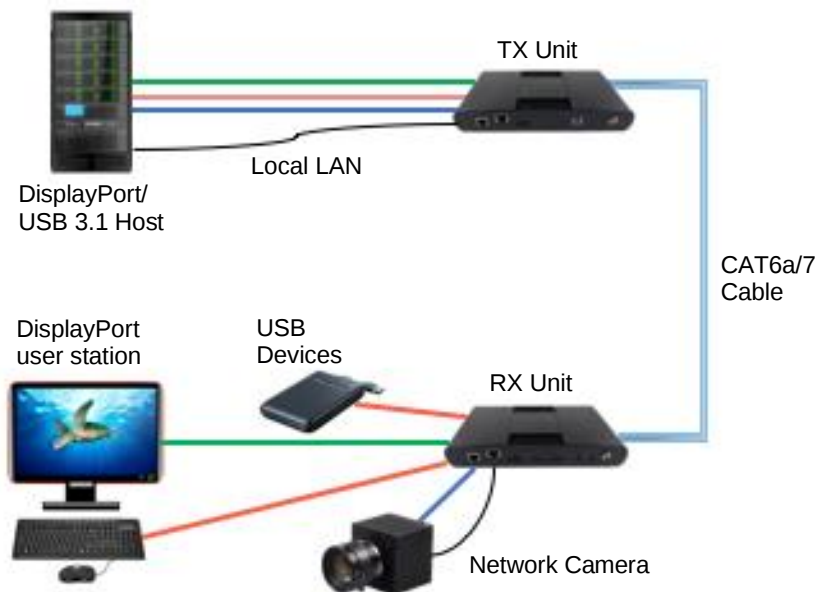


Figure 1. CrystalView Exact CAT6a/7 extender – typical installation

USB Device Software

Some USB devices require software installation for proper operation. Install any required software and test all USB devices directly connected to the computer for proper operation. Then proceed with installation of the CrystalView Exact extender.

Installing the Extender Units

Transmitter Installation

- Place the Transmitter unit near the computer.
- Insert the power cord into the 24V 1A power adapter and connect the cord to an AC outlet.
- Connect the power adapter to the Transmitter.
- Connect the supplied USB 3.1 Gen 1 cable between the Transmitter's USB Type B connector and a USB 3.1 Type A port on the computer.
- Connect one of the supplied DisplayPort 2.1a cables between the DisplayPort source and the Transmitter's DisplayPort In connector.

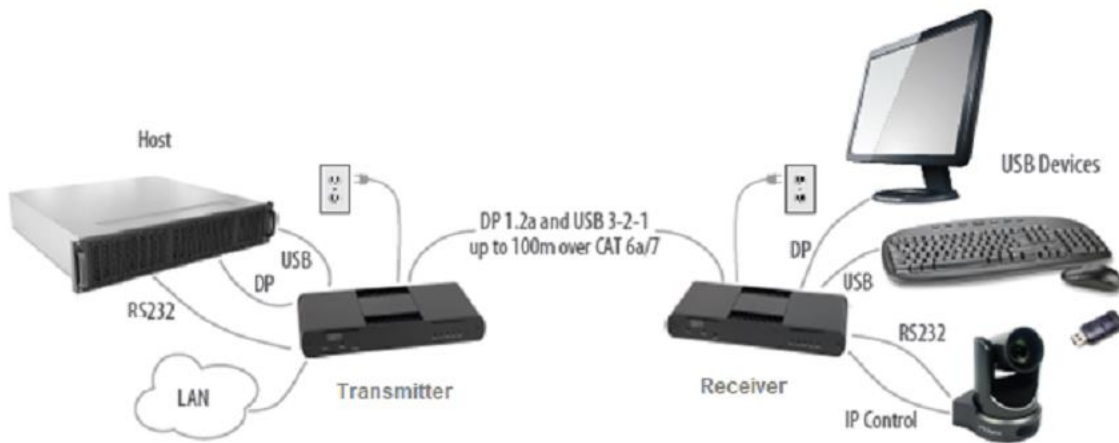


Figure 2. CrystalView Exact Transmitter and Receiver Connections

Receiver Installation

- Place the Receiver unit near the DisplayPort display and the USB devices.
- Insert the power cord into the 24V 2.71A power adapter connect the cord to an AC outlet.
- Connect the power adapter to the Receiver.
- Connect the supplied DisplayPort 2.1a cable between the DisplayPort device and the Receiver unit.

Connecting the Transmitter to the Receiver

With Surface Cabling:

- Plug one end of the CAT6a/7 cable into the Link port on the Transmitter.
- Plug the other end of the CAT6a/7 cable into the Link port on the Receiver.

With Premise Cabling:

- Plug one end of a CAT6a/7 patch cord into the link port on the Transmitter.
- Plug the other end of the patch cord into a CAT6a/7 information outlet near the Transmitter.
- Plug one end of a second CAT6a/7 patch cord into the link port on the Receiver.
- Plug the other end of the second patch cord into a CAT6a/7 information outlet near the Receiver.

Checking the Installation and Connecting USB devices

- Verify that the Power, Status, Link, USB 2 and USB 3 LED indicators on the Transmitter and Receiver are on. If the Link LEDs are off, the cabling between the Transmitter and Receiver may be defective or installed improperly.
- Verify that the Video LED indicators on the Transmitter and Receiver are on and that the display has video.
- To confirm that CrystalView Exact has been correctly installed, users of Windows 7, 8.1, or 10, should open Device Manager and expand the entry for Universal Serial Bus controllers by clicking the “+” sign. Two separate instances of “Generic SuperSpeed USB Hub” should be included in the list.
- MacOS users should open the System Profiler. In the left-hand column, under Hardware, select “USB”. In the right-hand panel there should be two instances of “Hub” under USB SuperSpeed Bus.
- Connect USB devices to the Type A connectors on the Receiver and verify that they operate correctly.

Ethernet Pass-Through Channel

The CrystalView Exact provides a 100/1000 Mbps Ethernet pass-through channel that can be used for connecting network devices, such as cameras, to the LAN from a remote location. Connect any network device or access port to the RJ45 LAN port with up to 330ft (100m) of standard CAT5e, CAT6, or CAT7 cable.



Figure 3. Ethernet LAN Connections

RS-232 Pass-Through Channel

CrystalView Exact also offers an RS-232 channel for passing RS-232 signals between serial devices connected to the three wire terminal block connectors at the Transmitter and Receiver. The channel supports data rates up to 115,200 baud. Connect the device TX, RX, and Ground lines to the terminal block mating connectors and plug them into the RS-232 terminal blocks.

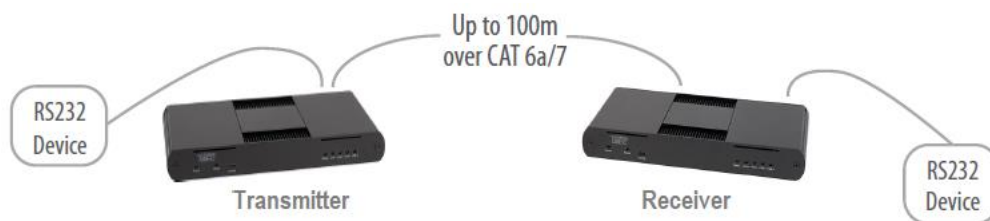


Figure 4. RS-232 Connections

Extender Mounting Options

Transmitter and Receiver Mounting Options

The bottom of the chassis includes four pre-drilled holes for optional mounting. Based on your requirements, choose from two available mounting options.

- CrystalView Exact Mounting Kit (purchased separately)
- Direct Surface Mounting (Using your own rack shelf or tray)

Option 1: CrystalView Exact Mounting Kit

1 kit required to mount each Transmitter or Receiver chassis

Kit Contents

2 mounting brackets

4 (M3) locking washers

4 (M3 x 10mm) Phillips screws

Mounting bracket installation guide (see *diagram below*)

Using a Phillips screwdriver, fasten and secure the provided screws, locking washers and brackets into place.

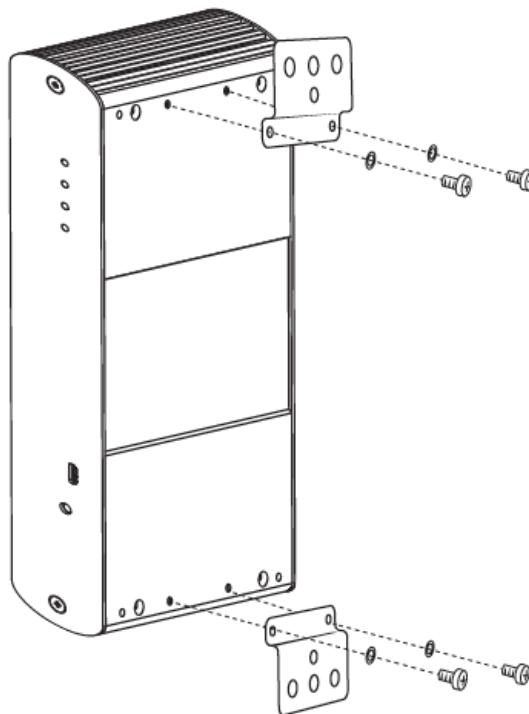
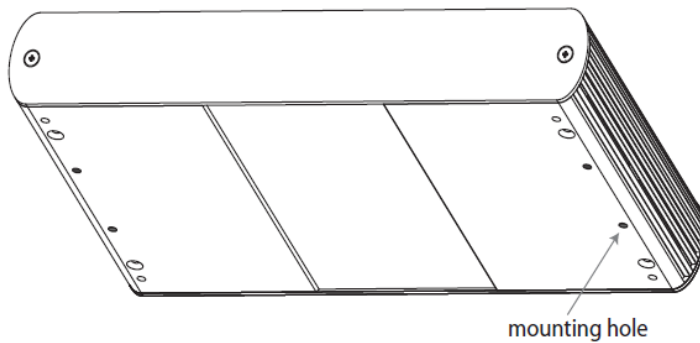


Figure 5. Mounting Bracket Installation

When the brackets have been secured onto the extender chassis, it can be mounted onto a surface.

Option 2: Direct Surface Mounting

Use the the four pre-drilled holes bottom of the enclosure for directly mounting the extender chassis to your own rack shelf or rack tray.



Distance between the enclosure mounting holes:
1.66" x 8.09" (42.0mm x 205.5mm)

1. Mark the center point of each of the four holes on your mounting surface.
2. Hardware recommendation: M3 locking washers and M3 screws (4 of each per extender). Screw length will depend on the thickness of the mounting surface.
3. Drill through each of the four-hole markings on the mounting surface using a 5/32" (3.97mm) drill bit.
4. Align the bottom chassis holes with the holes on the mounting surface.
5. Place a locking washer on each of the four screws and use a screwdriver to fasten the extender chassis into place.
6. Do not exceed a screw depth of 0.4" (10mm) into the chassis or damage may occur.

TROUBLESHOOTING

Troubleshooting

The following table provides troubleshooting tips. The topics are arranged in the order in which they should be executed in most situations. If you are unable to resolve the problem after following these instructions, please contact Technical Support for further assistance.

PROBLEM	CAUSE	SOLUTION
All LEDs are off on the Transmitter and/or Receiver.	▪ The Transmitter and/or Receiver is not receiving power from the AC power adapter.	▪ Ensure that the AC power adapter is properly connected to the Transmitter and/or Receiver. ▪ Check that the AC adapter is connected to a live source of AC power. Check that the Transmitter and/or Receiver's Power LED is illuminated.
Power LED is on, Status LED is off.	▪ The unit has malfunctioned and requires reprogramming.	▪ Contact Technical Support for assistance.
Link LEDs on the Transmitter and Receiver are off.	▪ There is no connection between the Transmitter and Receiver.	▪ Ensure that no more than 330ft (100m) of CAT6a/7 cabling is connected between the Transmitter and Receiver. ▪ Connect a short patch cable between the Transmitter and Receiver. Recheck the link status. If the Link LED is now solid on, the previous cable is defective or not capable of supporting the link.
Link LEDs on the Transmitter and Receiver are solid on, but the USB 2 and USB 3 LEDs are off.	▪ The host computer is not powered on. ▪ The Transmitter is not connected to a computer. ▪ The host computer does not support USB Hubs. ▪ The unit is malfunctioning.	▪ Disconnect all USB devices from the Receiver. ▪ Disconnect Transmitter from the host computer. ▪ Disconnect AC adapters from Transmitter and Receiver. ▪ Reconnect the Transmitter to the host computer. ▪ Reconnect the AC adapters to the Transmitter and Receiver. ▪ Check that the Transmitter and Receiver have enumerated as USB hubs in Windows Device Manager, MacOS System Profiler or using "lsusb" command in a Linux Terminal. ▪ If the problem is not resolved, contact Technical Support.
The USB 2 LED is solid on, but the USB 3 LED is off.	▪ The Transmitter is not connected to a USB 3.1 port. ▪ The Transmitter is connected to a USB 3.1 port using a USB 2.0 cable. ▪ The USB 3.1 cable connecting the Transmitter to the host computer is defective. ▪ The host computer's USB 3.1 controller has malfunctioned.	▪ Ensure that the Transmitter is connected to a USB 3.1 port on the host computer. ▪ Ensure that the included USB 3.1 Gen 1 cable is being used between the host computer and Transmitter. ▪ Cold boot the host computer. ▪ Replace the USB 3.1 Gen 1 cable with a different cable. ▪ If the problem is not resolved, contact Technical Support.

PROBLEM	CAUSE	SOLUTION
The USB 3 LED is solid on, but the USB 2 LED is off.	▪ The USB cable connecting the Transmitter to the host computer is defective. ▪ The host computer's USB 2.0 controller has malfunctioned. ▪ The host computer does not support USB 2.0.	▪ Ensure that the included USB 3.1 Gen 1 cable is being used between the host computer and Transmitter. ▪ Cold boot the host computer. ▪ Replace the USB 3.1 Gen 1 cable with a different cable. ▪ If the problem is not resolved, contact Technical Support.
Both the Transmitter and Receiver are working, but the USB 2 or USB 3 LEDs on the Transmitter and Receiver are blinking.	▪ The Transmitter and/or Receiver is in suspend mode. For a variety of reasons, the host computer may place the Transmitter or Receiver into suspend mode. Typically, it is because there are no USB devices attached, the USB device is asleep, or the host computer is in a sleep state or hibernating.	▪ Recover/resume the operating system from sleep or hibernate modes (refer to your operating system's documentation). ▪ Connect a USB device to the Receiver. ▪ Use the connected device. ▪ If the problem persists, contact Technical Support.
All LEDs on both the Transmitter and Receiver are solid on, but the USB device is not operating correctly, or is detected as an "Unknown Device" in the operating system.	▪ The USB device is malfunctioning. ▪ The computer does not recognize the USB device. ▪ The application software for the USB device is not operating. ▪ The USB extender is malfunctioning.	▪ Disconnect the Transmitter from the computer. ▪ Connect the USB device directly to the host computer. ▪ If the device does not operate as expected, consult the user documentation for the device. ▪ Update the host computer BIOS, chipset or USB controller drivers from the manufacturer's website. ▪ If the device operates as expected when directly connected to the computer, connect another device to the extender and reconnect it to the host computer. ▪ If the second device does not operate, the extender may be malfunctioning. Contact Technical Support for assistance. ▪ If the second device operates as expected, then the first device may not be compatible with this extender. Contact Technical Support.

PROBLEM	CAUSE	SOLUTION
A USB 3.1 device is not enumerating as USB 3.1, or the operating system is notifying the user that the device can "Perform Faster if connected to a USB 3.1 port".	▪ The USB device is malfunctioning. ▪ The computer does not recognize the USB device. ▪ The application software for the USB device is not operating. ▪ The USB 3.1 port on the computer is malfunctioning. ▪ The USB extender is malfunctioning.	▪ Disconnect the Transmitter from the computer. ▪ Connect the USB 3.1 device directly to the host computer. ▪ If the device does not operate as expected as a USB 3.1 device, consult the user documentation for that device or try a different USB port on the host computer. ▪ Update the host computer BIOS, chipset or USB controller drivers from the manufacturer's website. ▪ If the device operates as a USB 3.1 device when directly connected to the computer, connect another USB 3.1 device to the extender and reconnect it to the host computer. ▪ If the second device does not operate as a USB 3.1 device, the extender may be malfunctioning. Contact Technical Support for assistance. ▪ If the second device operates as a USB 3.1 device as expected, the first device may not be compatible with this extender. Contact Technical Support.
The Link LEDs on the Transmitter and Receiver units are solid on, but the Video LED is off.	• The source device is not powered on or asleep. • The Transmitter is not connected to a DisplayPort source. • The Receiver is not connected to a DisplayPort sink, or the sink is turned off. • The source and sink have negotiated an unsupported resolution or refresh rate. • The extender system is malfunctioning.	• Disconnect the DisplayPort connections from the sink and source. • Disconnect the AC adapters from the Transmitter and Receiver units • Cold boot the host computer/DisplayPort source. • Reconnect the DisplayPort connection from the Transmitter to the DisplayPort source. • Reconnect the DisplayPort connection from the Receiver to the DisplayPort sink. Ensure the sink is on. • Reconnect the AC adapters to the Transmitter and Receiver units • If the problem is not solved, contact Technical Support.
All LEDs are flashing, and the system is operational.	▪ Unit is or was operating at an unsafe temperature.	▪ Check ambient temperature. Ensure temperature does not exceed 122°F (50°C). Power cycle the unit to reset LED indicators.
All LEDs are flashing, and the system is not operational.	▪ Unit has exceeded safe operating temperature.	▪ Remove external sources of heat or change location of the unit. ▪ Power cycle the unit to return to operation.
LEDs are scrolling left to right, starting with Status.	▪ Unit is programming.	▪ Wait for the unit to finish programming.

PROBLEM	CAUSE	SOLUTION
The Link and Video LEDs are solid on, but there is no video on the DisplayPort sink	• The DisplayPort sink device is malfunctioning. • The DisplayPort source is malfunctioning. • The Receiver is not connected to a DisplayPort sink.	• Disconnect the DisplayPort connections from the sink and source. • Disconnect the AC adapters from the Local and Remote Extenders. • Restart the host computer/ DisplayPort source. • Connect the sink directly to the source using supplied DisplayPort cables and ensure it operates properly. • If the sink does operate directly connected to the source, try connecting another sink device through the extender system. • Reconnect the DisplayPort cable from the Local Extender to the DisplayPort source. • Reconnect the DisplayPort cable from the Receiver connection to the DisplayPort sink. • Reconnect the AC adapters to the Transmitter and Receiver. • If the problem is not solved, contact technical support.

Compatibility

The CrystalView Exact is compliant with DisplayPort 1.2a, USB 2.0 and USB 3.1 Gen 1 specifications. However, there is no guarantee that all DisplayPort and USB devices or hosts will be compatible as there are a number of different characteristics that may impact the operation of DisplayPort and USB devices over extended distances.

PRODUCT SAFETY

Safety

The CrystalView Exact extender, 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 installing your product consult the appropriate section 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

Part numbers	Description	
CLK-1DTXU321DP	CrystalView Exact, KVM Extender Set, DisplayPort 1.2a, USB 3.1 Gen 1	
CRV-SLDTXU321DP	CrystalView Exact, KVM Transmitter, DisplayPort 1.2a, USB 3.1 Gen 1	
CRV-SRDTXU321DP	CrystalView Exact, KVM Receiver, DisplayPort 1.2a, USB 3.1 Gen 1	
RM-UD/CRK321	Rackmount "L" bracket kit for Transmitter or Receiver (Not for 19" rack)	
Chassis dimensions		
Dimensions, W x D x H	9.1" x 5.4" x 1.3" (232.1 x 137.3 x 33.0 mm)	
Weight, Transmitter	2.03 lbs (920g)	
Weight, Receiver	2.18 lbs (990g)	
Power		
Transmitter power adapter	100-240VAC input, 24VDC 1A output, with locking jack	
Receiver power adapter	100-240VAC input, 24VDC 2.71A output, with locking jack	
Interconnect cable		
Cable category	CAT6a/7 solid core, UTP, STP or FTP, depending on installation environment	
Cable termination	RJ45, using TIA/EIA T568A or T568B	
Maximum length	330 feet (100m) (Use of patch cable may reduce the maximum length)	
Video		
Input	1 x DisplayPort 1.2a	
Output	1 x DisplayPort 1.2a	
Maximum resolution	3840×2160@60Hz - all supported resolutions at 60Hz (see Appendix B)	
Color	YCbCr 4:4:4 and RGB color to 10 bpc	
Audio	Two channel DisplayPort Audio	
USB		
USB device support	USB 3.1 Gen 1, USB 2.0, USB 1.1	
USB speeds	SuperSpeed 5Gbps, high-speed, full-speed, low-speed	
USB bandwidth	Up to 5Gbps	
USB host compatibility	xHCI (USB 3.1), EHCI (USB 2.0) and OHCI/UHCI (USB 1.1)	
USB hub support	Up to three self-powered USB hubs	
Maximum USB devices	30	
Current per USB device	Up to 1.2 Amp (6W)	
Connectors/LEDs	Transmitter	Receiver
DisplayPort connector	1 x DisplayPort 1.2a	1 x DisplayPort 1.2a
USB connector	1 x USB 3.1 Gen 1 Type B	4 x USB 3.1 Gen 1 Type A female
Link cable connector	1 x RJ45 Link port	1 x RJ45 Link port
Network pass through	1 x RJ45 100/1000 Ethernet port	1 x RJ45 100/1000 Ethernet port
RS-232 serial port	1 x 3-pin terminal block	1 x 3-pin terminal block
LED Indicators	Power, Status, Link, Video, USB 2, USB 3	Power, Status, Link, Video, USB 2, USB 3
Environmental		
Temperature	Operating: 32°F to 122°F (0°C to 50°C) Storage: -4°F to 158°F (-20°C to 70°C)	
Humidity, relative	Operating: 20% to 80% non-condensing Storage: 10% to 90% non-condensing	
Approvals	FCC Part 15 Class B, CE Class B, ICES-003 Class B, EMC EN55024, EN55032 and EN61000, RoHS2 (CE), WEEE	

APPENDICES

Appendix B — Supported Video Resolutions

CrystalView Exact supports the following video resolutions at 60Hz

640x480	800x600	1024x768	1280x720	1280x768	1280x1024
1280x800	1360x760	1360x768	1440x900	1600x900	1680x1050
1920x1080	1920x1200	2560x1080	2560x1440	2560x1600	3440x1440
3840x2160					

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