

# CrystalLink USB3.1 Fiber Dual Port

USB3.1 Fiber Optic 2-port Extender up to 5Gbps

## Installation and Operation Manual



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## **LIMITED WARRANTY**

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Rose Electronics® warrants the CrystalLink USB3.1 Fiber Dual Port 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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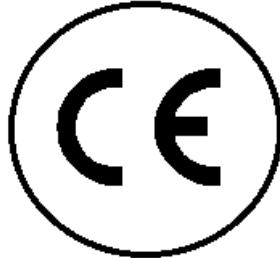
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# **DECLARATIONS OF CONFORMITY**

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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 accordance with the application of Council Directives 2014/30/EU and 2014/30/EU, as well as these standards:

- EN 55022: 2010/AC:2011 (Class B)
- EN 55024:2010 + A1:2015
- EN 61000



This equipment has been found to comply with the limits for a Class A 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.

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

- CAN/CSA-ICES-003 Issue 6

The manufacturer complies with the EU Directive 2012/19/EU on the prevention of waste electrical and electronic equipment (WEEE). The device labels carry a respective marking.

These devices comply with Directive 2011/65/EU of the European Parliament and of the council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS 2, RoHS II). The device labels carry a respective marking.

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# INTRODUCTION

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## Disclaimer

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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

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Thank you for choosing the Rose Electronics CrystalLink USB3.1 fiber optic extender. This product enables users to extend beyond the standard 10ft (3meter) cable distance limit for USB 3.1 peripheral devices. With the CrystalLink USB3.1, certain USB3.1 devices can be located up to 100 meters from the computer.

The CrystalLink USB3.1 supports only USB3.1 devices. USB2.0 and USB1.1 devices will not function through this extender.

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

Please note that previous documentation may have referred to this product as being USB 3.0 compliant. The USB standards committee has renamed USB 3.0 to USB 3.1 gen 1. The names USB 3.0 and USB 3.1 gen 1 are synonymous. In keeping with the progression of the standards, we are following this convention.

## Features

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- Extends USB3.1 devices beyond the standard 10ft (3 meter) cable limit for USB3.1 peripherals, up to 330ft (100m) over fiber optic cable
- Integrated 2-port hub provides support for 2 different USB3.1 peripherals in industrial environments
- Uses standard 50/125µm multimode fiber cable terminated with one duplex LC type connector
- Fiber cable ensures high-speed (up to 5Gbps) transmission, electrical isolation, high reliability, and transmission security
- Secure USB device connection using USB and power locking connectors
- Works with AIA USB3 Vision™ compliant devices
- Plug-and-Play installation, no configuration, driver installation or set-up required
- Supports all major operating systems: Windows®, Mac OS X®, and Linux®
- The receiver unit requires a 24VDC power adapter (included). The transmitter unit is USB interface powered

## Package Contents

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The package contents consist of the following items:

- CrystalLink USB3.1 transmitter and receiver units
- One USB3.1 cable, 6ft (2.0m)
- External power supply (remote unit only)
- Power cable
- User Manual

### Unpacking.

The equipment comes with the standard parts shown in package content. Check and make sure they are included and in good condition. If anything is missing, or damaged, contact your supplier immediately.

## Additional Items that may be required

---

- USB3.1 compatible computer (host computer) with a USB3.1 compliant operating system
- USB3.1 compatible device
- 2-strand 50/125µm multimode (MMF) fiber optic cable with Duplex LC connectors
- Mounting bracket for control desk, table-top or wall mount.

The mounting bracket may be ordered separately from Rose Electronics

*All references to USB3.1 cables in this document refer to the maximum recommended distances for the cable type. Maximum recommended cable distances should not be exceeded.*

# MODELS

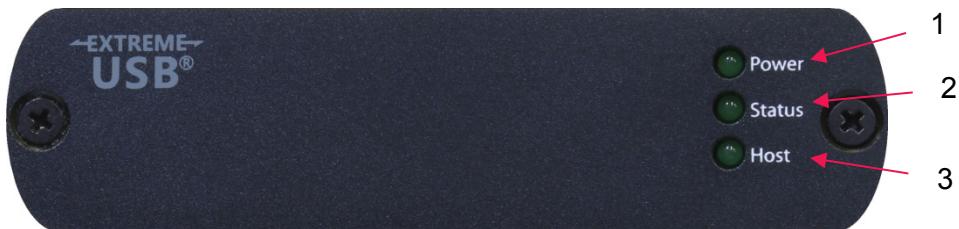
## CrystalLink USB3.1 Fiber Extender Models

The CrystalLink USB3.1 fiber extender enables users to locate high-speed USB device(s) up to 330 feet (100 meters) from the computer.

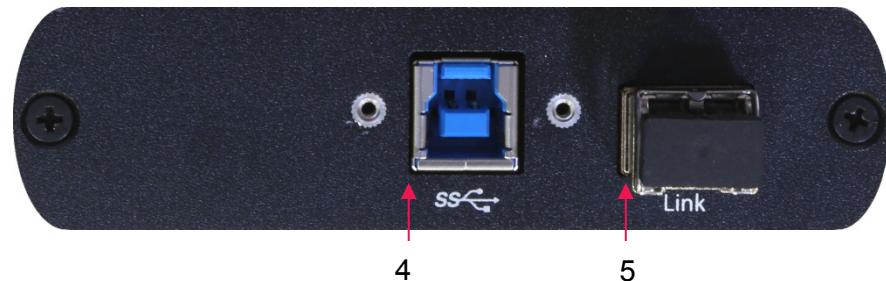
### Transmitter Unit

The transmitter connects to the host device using the supplied USB3.1 cable. Power for the transmitter unit is provided by the host computer. Power and status LED's are conveniently located on the front panel for user reference.

Transmitter unit – front panel view



Transmitter unit – rear panel view



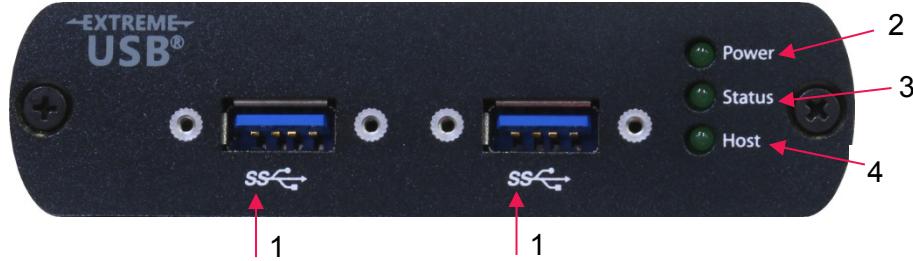
Item	Type	Description
1	Power ON	Unit is powered correctly
	Power OFF	Unit is not powered or not powered correctly
2	Status blinking (1Hz)	Waiting for connection to receiver
	Status ON	Transmitter and receiver are linked and operating normally
	Status OFF	Fault detected, power cycle required
3	Host ON	SuperSpeed host detected on upstream facing port
	Host OFF	SuperSpeed host not detected
	Host Blinking	SuperSpeed host is suspended
4	USB3.1 Type B Port	Used to connect the transmitter unit to the host computer. Port accepts locking or non-locking USB 3.1 Type B connectors.
5	Link Port	Extension link Duplex LC fiber optic transceiver port.

Figure 1. transmitter unit – LED's and connectors

## Receiver Unit

The receiver unit has two USB3.1 Type-A ports for connecting up to two USB3.1 devices. The receiver is powered directly by the included 24VDC power supply, delivering 900mA of current per USB port.

Receiver unit – front panel view



Receiver unit – rear panel view



Item	Type	Description
1	USB3.1 Type A Ports	Used to connect USB 3.1 device(s) to the receiver unit. Ports accept locking or non-locking USB 3.1 Type A connectors.
2	Power ON	Unit is powered correctly
	Power OFF	Unit is not powered, or not powered correctly
3	Status Blinking	Waiting for connection to transmitter
	Status ON	Transmitter and receiver are linked, and operating normally
	Status OFF	Fault detected, power cycle required
4	Host ON	SuperSpeed host detected on upstream facing port
	Host OFF	SuperSpeed host not detected
	Host Blinking	SuperSpeed host is suspended
5	Power Port	Connects to the locking AC power supply. Required on the receiver unit for correct operation.
6	Link Port	Extension link duplex transmitter LC fiber optic transceiver port.

Figure 2. receiver unit – LED's and connectors

# INSTALLATION

## Installation

Unpack the CrystalLink USB3.1 extender and check the contents of the package.

If the product is to be permanently mounted, first test the extension to confirm the system is working correctly by using a short fiber optic link cable. Power on the USB3.1 device, then the receiver, followed by the PC. Check to confirm the full operation of the USB3.1 device.

Once the extension has been verified, then attach the mounting brackets as required and proceed with the full system installation.

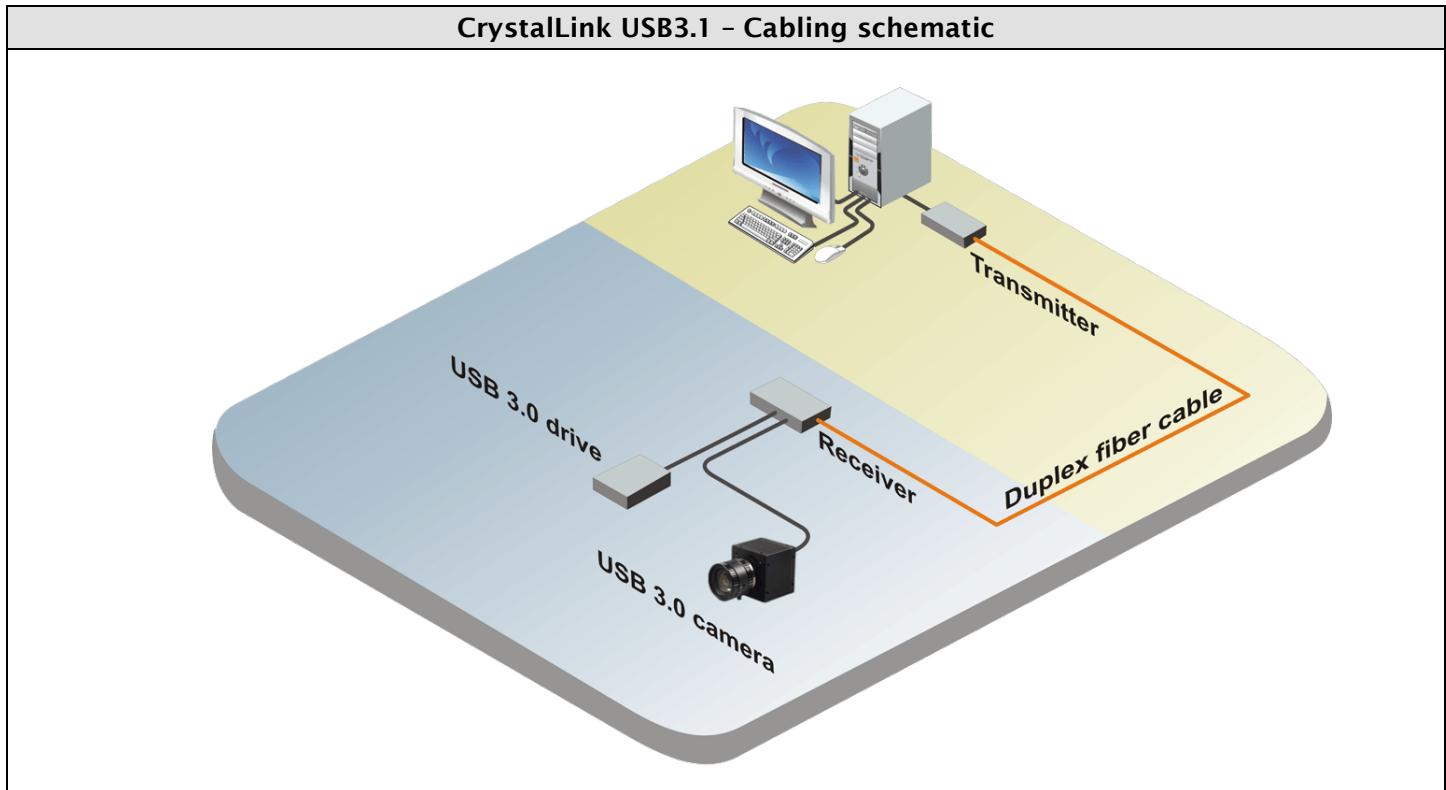


Figure 3. CrystalLink USB3.1 cabling layout diagram

## Preparing Your Site

Before you can install the CrystalLink USB3.1 extender, you need to prepare your site:

- Determine where the computer is to be located and set up the computer.
- Determine where you want to locate the USB3.1 device(s).
- Ensure fiber optic cabling is in place, prepared, properly terminated, and within the maximum distances as defined for the cabling standard used.

## Fiber Optic Link Cabling

The transmitter and receiver units are interconnected by multimode fiber optic cabling. This cabling must be:

- 50/125µm multimode fiber (MMF)
- Terminated with Duplex LC connectors

The following maximum distances are achievable depending on the application and cabling standard:

- Using OM3 fiber optic cable, up to 330ft (100 meters) is achievable with USB 3.1 cameras, and up to 165ft (50 meters) for all other applications.
- Using OM2 fiber optic cable, up to 50m is achievable for all applications.

These maximum distances include any fiber patch cords or patch panel interface.

Up to 165ft (50 meters) with USB3.1 storage type devices and up to 330ft (100 meters) is achievable when using USB3.1 bulk traffic cameras. For Microsoft Kinect applications, please use the Rose USB3.1 active extension cable.

If premise cabling will be used for the installation, then the distances provided above must be met when measuring from Transmitter to Receiver, inclusive of the premise cabling and the patch cables. All cables must meet the ratings specified. Patch cables must be terminated with Duplex LC connectors

## Setting Up Your Computer

The CrystalLink USB3.1 does not support suspend modes of operation. As such, your computer should be configured to not go into “suspend mode” or to “suspend” the USB ports.

To check the suspend mode settings on your computer:

### Windows (7/8/8.1/10)

To disable “suspend” settings on your computer, please follow these steps:

Open Control Panel, then open Power Options:

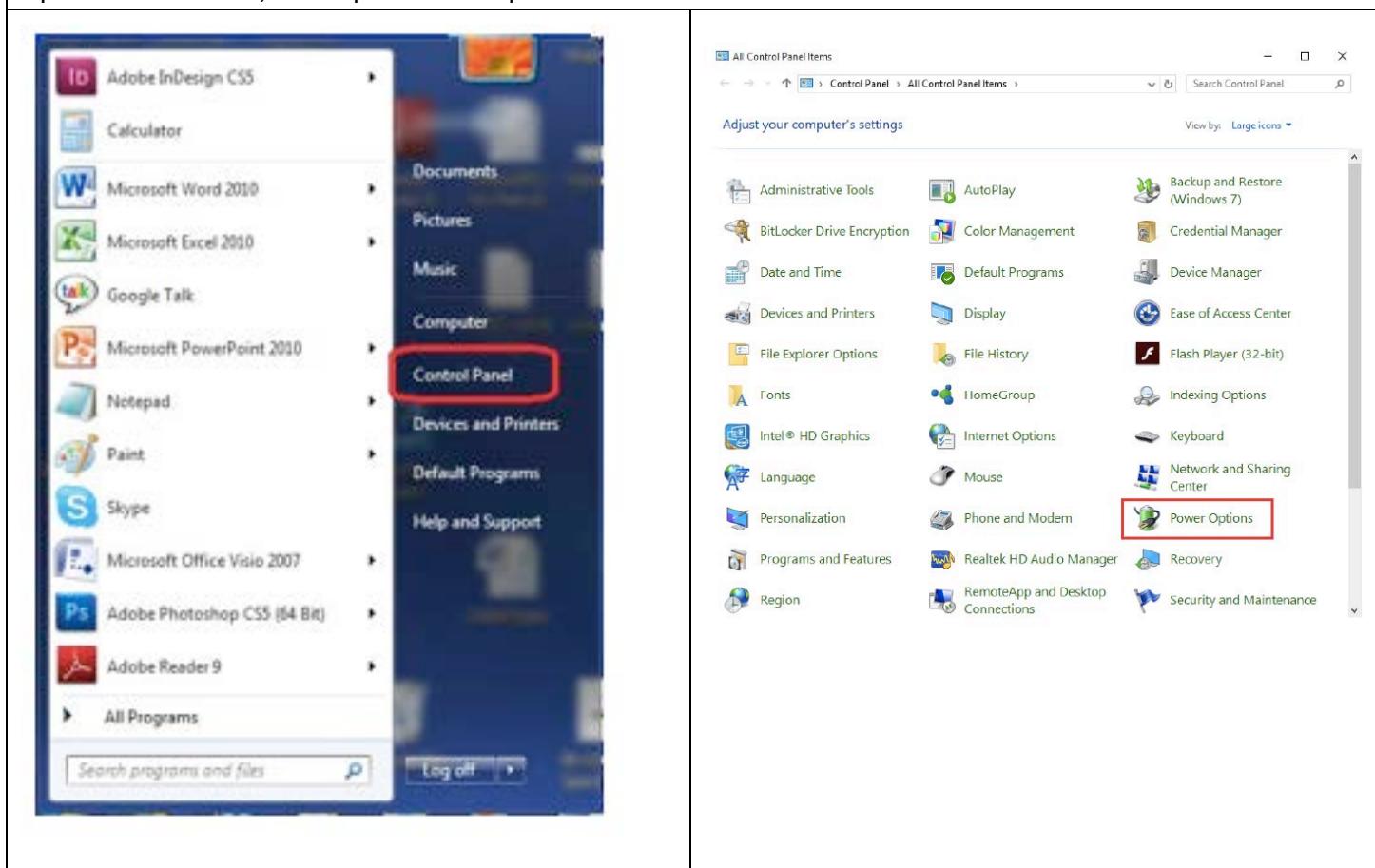
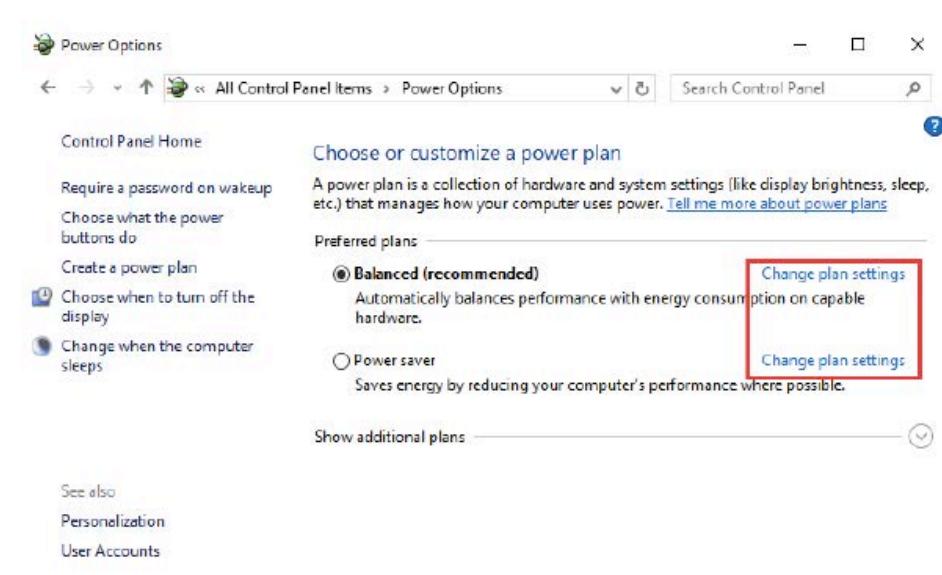
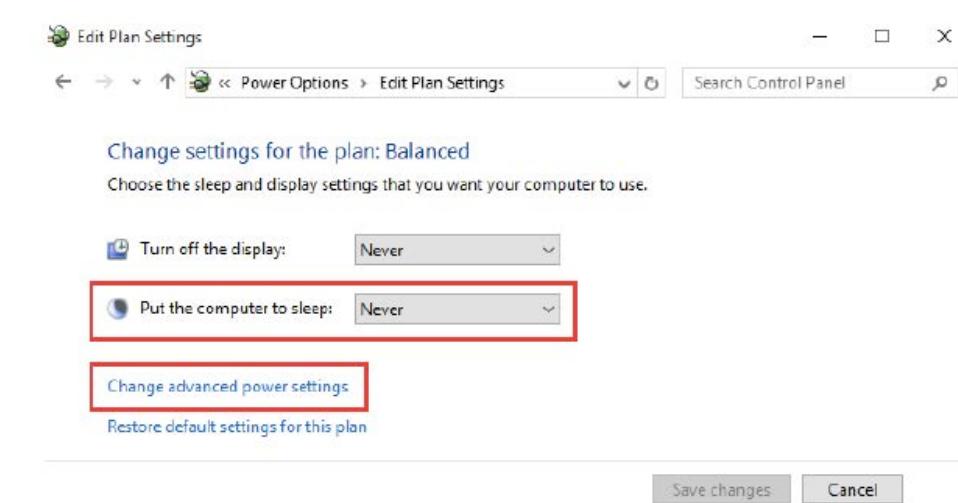


Figure 4. Changing Suspend Mode settings on a Windows PC

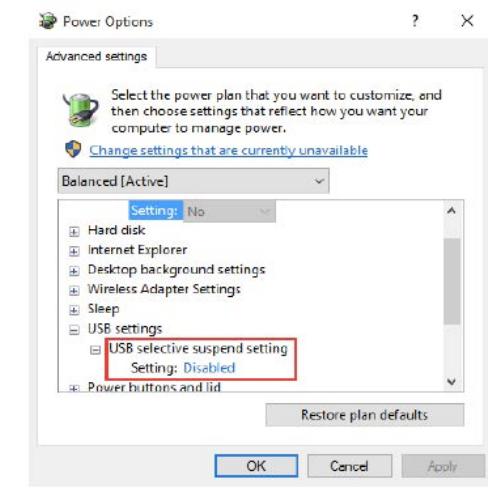
## Click on "change plan settings"



## Select "Never" for "put the computer to sleep" for all the configurations presented.



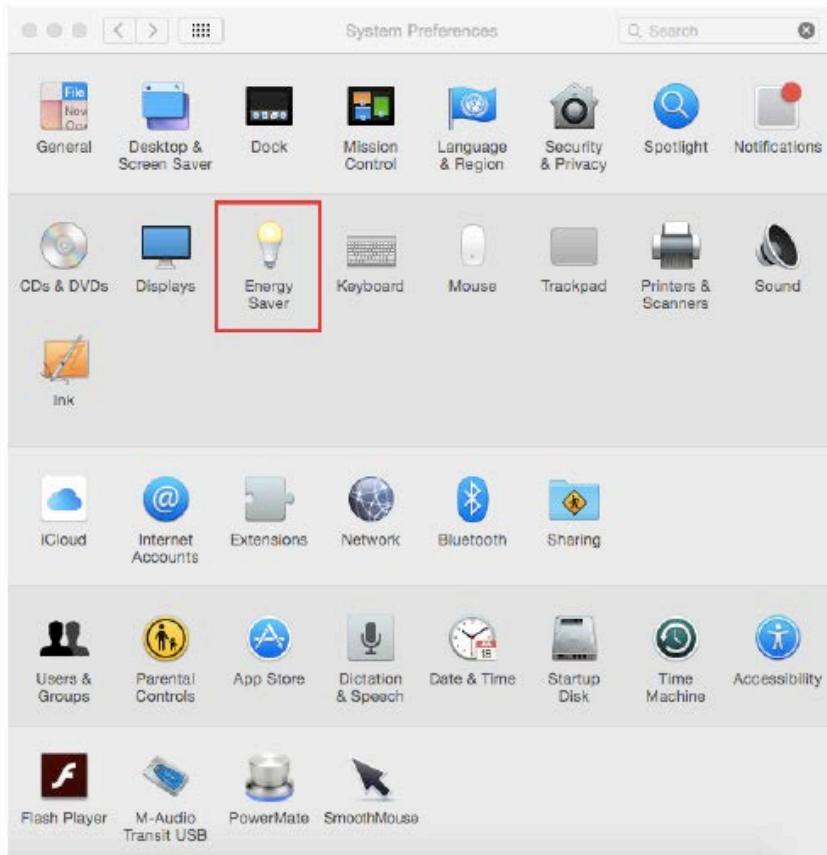
## Expand USB settings, then expand USB selective suspend setting, then select Disabled



## MAC (OS-X)

To disable “suspend” settings on your computer, please follow these steps:

Open “System Preferences” and select “Energy Saver”.



For both Battery and Power Adapter power settings, move slider bar to “Never” for “Computer Sleep”



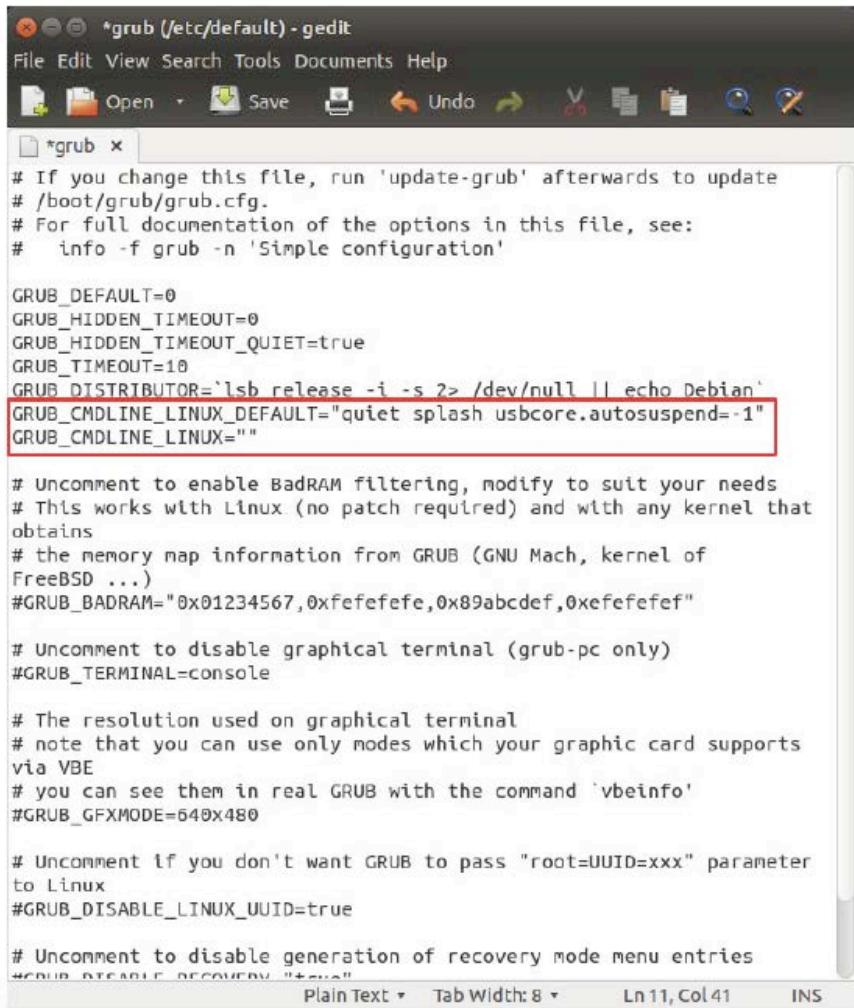
Figure 5. Changing Suspend Mode settings on a MAC computer

## Linux (Ubuntu 14.04)

To disable “suspend” settings on your computer, please follow these steps:

Edit “/etc/default/grub” as root.

Append “usbcore.autosuspend=-1 (without quotations) to the GRUB\_CMDLINE\_LINUX\_DEFAULT Variable



```
*grub (/etc/default) - gedit
File Edit View Search Tools Documents Help
Open Save Undo Redo Find Replace Selection
*grub x
# If you change this file, run 'update-grub' afterwards to update
# /boot/grub/grub.cfg.
# For full documentation of the options in this file, see:
#   info -f grub -n 'Simple configuration'

GRUB_DEFAULT=0
GRUB_HIDDEN_TIMEOUT=0
GRUB_HIDDEN_TIMEOUT_QUIET=true
GRUB_TIMEOUT=10
GRUB_DISTRIBUTOR='lsb_release -i -s 2> /dev/null || echo Debian'
GRUB_CMDLINE_LINUX_DEFAULT="quiet splash usbcore.autosuspend=-1"
GRUB_CMDLINE_LINUX=""

# Uncomment to enable BadRAM filtering, modify to suit your needs
# This works with Linux (no patch required) and with any kernel that
# obtains
# the memory map information from GRUB (GNU Mach, kernel of
# FreeBSD ...)
#GRUB_BADRAM="0x01234567,0xefefefef,0x89abcdef,0xefefefef"

# Uncomment to disable graphical terminal (grub-pc only)
#GRUB_TERMINAL=console

# The resolution used on graphical terminal
# note that you can use only modes which your graphic card supports
# via VBE
# you can see them in real GRUB with the command 'vbeinfo'
#GRUB_GFXMODE=640x480

# Uncomment if you don't want GRUB to pass "root=UUID=xxx" parameter
# to Linux
#GRUB_DISABLE_LINUX_UUID=true

# Uncomment to disable generation of recovery mode menu entries
#GRUB_DISABLE_RECOVERY="true"
```

Figure 6. Changing Suspend Mode settings on a Linux computer

## Connecting a USB3.1 Device

1. Install any software required to operate the USB device(s). Refer to the documentation for the USB device(s), as required.
2. Connect the USB device to the device port on the receiver unit. If you are using a USB3.1 Vision compliant locking USB cable, then you can use the locking knobs to lock the cable to the port on the receiver unit.
3. Check that the device is detected and installed properly in the operating system.

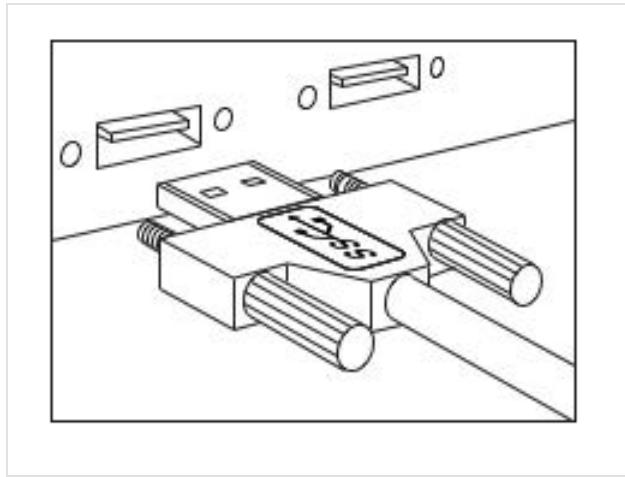


Figure 7. USB3.1 connector interface

## Installing the Receiver Unit

1. Place the receiver unit near the USB device(s).
2. Plug the power adapter into a suitable AC outlet.
3. Connect the power adapter to the receiver unit and twist the connector to lock the power connector into the receiver unit.

## Installing the Transmitter Unit

1. Place the transmitter unit near the computer.
2. Connect the fiber optic link cable to the transmitter and the receiver.
3. Install the supplied USB3.1 cable between the transmitter and a USB3.1 port on the host computer.

## Installing with Surface Cabling

1. Plug one end of the fiber optic cabling (not included) into the link port on the transmitter unit.
2. Plug the other end of the fiber optic cabling into the link port on the receiver unit.

## Installing with Premise Cabling

1. Plug one end of a fiber optic patch cord (not included) into the link port on the transmitter unit.
2. Plug the other end of the patch cord into the fiber optic information outlet near the host computer.
3. Plug one end of the 2<sup>nd</sup> fiber optic patch cord (not included) into the link port on the receiver unit.
4. Plug the other end of the 2<sup>nd</sup> patch cord into the fiber optic information outlet near the USB device.

**The CrystalLink USB3.1 will not operate on a USB2.0 port or with a USB2.0 device; please ensure you connect to a USB3.1 port. USB3.1 ports are blue and USB 2.0 ports are typically white or black.**

## Checking the Installation (for PC users)

1. On the local and remote extender units, check that the Power, Status, and Host LEDs are on and solid.
2. If the Host or Status LEDs are permanently off, then the cabling between the local and remote extender units may not be installed properly or is defective.
3. For Windows users, open Device Manager to confirm that the CrystalLink USB3.1 has installed correctly.
4. Expand the entry for Universal Serial Bus controllers by clicking the [+] sign. If the CrystalLink USB3.1 has been installed correctly, you should find it listed as two [SuperSpeed Hubs], or [3.1 Hubs].

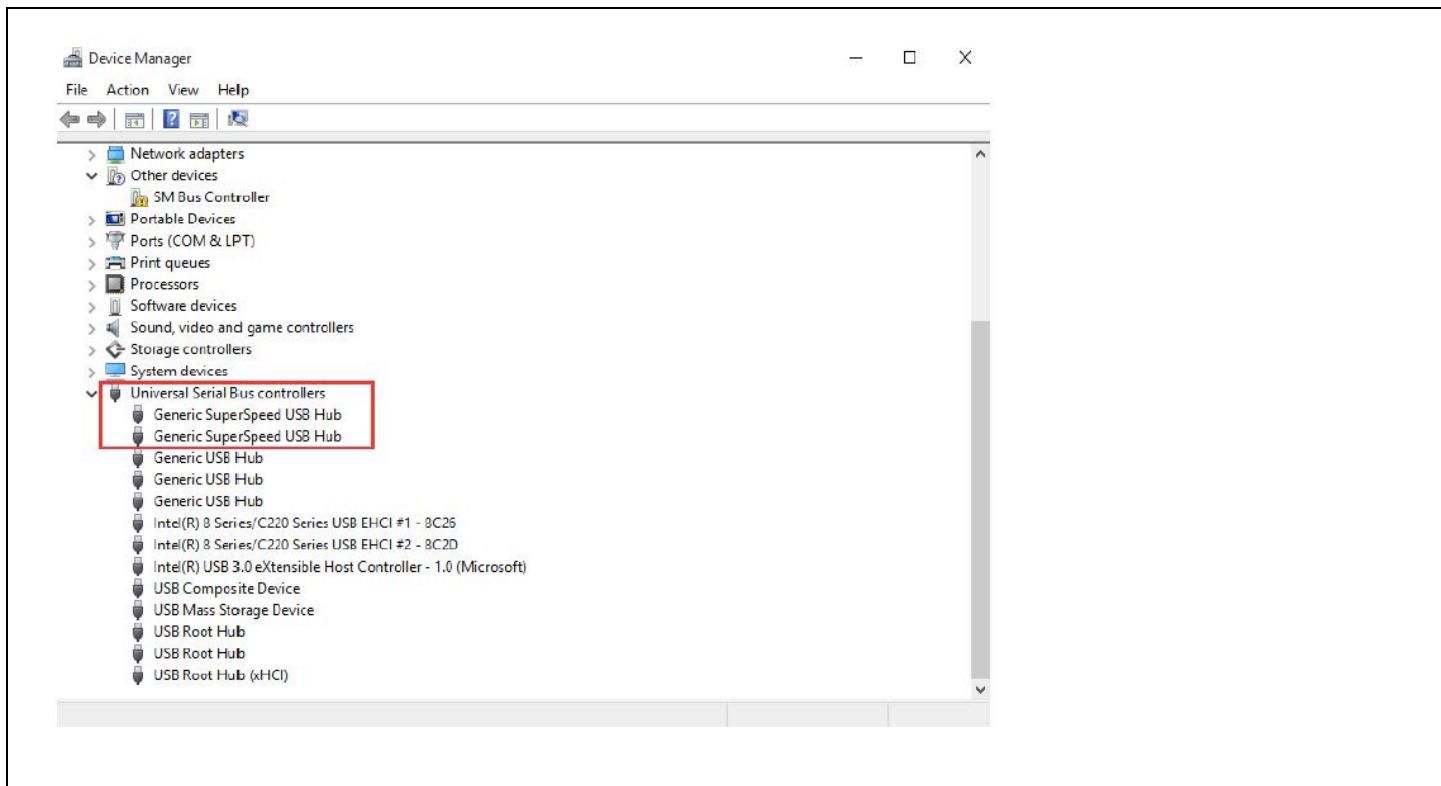


Figure 8. Installation check for PC users

## Checking the Installation (for MAC users)

1. For Mac OS X users, open the System Profiler to confirm that the CrystalLink USB3.1 has installed correctly.
2. In the left-hand column under Hardware, select "USB" and inspect the right-hand panel.
3. If the CrystalLink USB3.1 has been installed correctly, you should find it listed as a [Hub] under the USB SuperSpeed Bus.

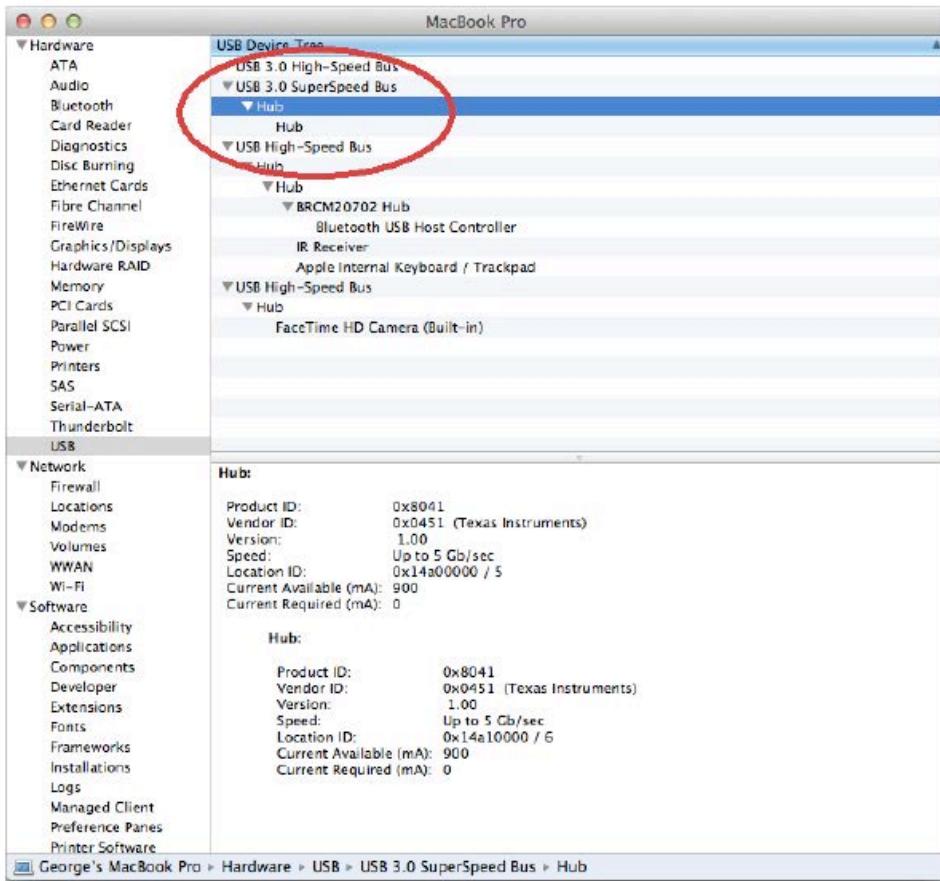


Figure 9. Installation check for MAC users

## Checking the Installation (for Linux users)

1. For Linux users, plug in a USB 3.1 device into the Remote Extender.
2. Open a terminal and run the [ lsusb ] command.
3. The extender should show up as a USB3.1 hub device with a Vendor ID of 0000h and Product ID of 0000h.
4. If the CrystalLink USB3.1 is not detected correctly or fails to detect, please consult the Troubleshooting section in this guide.

## Compatibility

The CrystalLink USB3.1 complies with USB3.1 specifications governing the design of USB devices. However, Rose Electronics does not guarantee that all USB3.1 devices are compatible with the CrystalLink USB3.1, as there are a number of different configurations that may impact the operation of USB3.1 devices over extended distances.

## Transmitter and Receiver Mounting Options

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

- USB Extender Mounting Kit (Purchased separately - USB Mounting Kit - Black)
- USB Extender Direct Surface Mounting (Using your own M3 screws to your pre-drilled surface)

### Option 1: CrystalLink USB3.1 Extender Mounting Bracket Kit

Contents:

2 mounting brackets

4 (M3) locking washers

4 (M3 x 5mm) Phillips screws

Mounting bracket installation guide (see diagram below)

1 kit is required to mount each transmitter chassis or receiver chassis

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

### Option 2: CrystalLink USB3.1 Extender Mounting Plate

The bottom of the enclosure features four pre-drilled holes for optional surface mounting with a spacing of 42.0mm x 77.0mm. Drill four holes into your surface and mount it using proper length M3 screws.

Note: Do not exceed a screw depth of 3/16" (4.7625mm) into the chassis or damage may occur

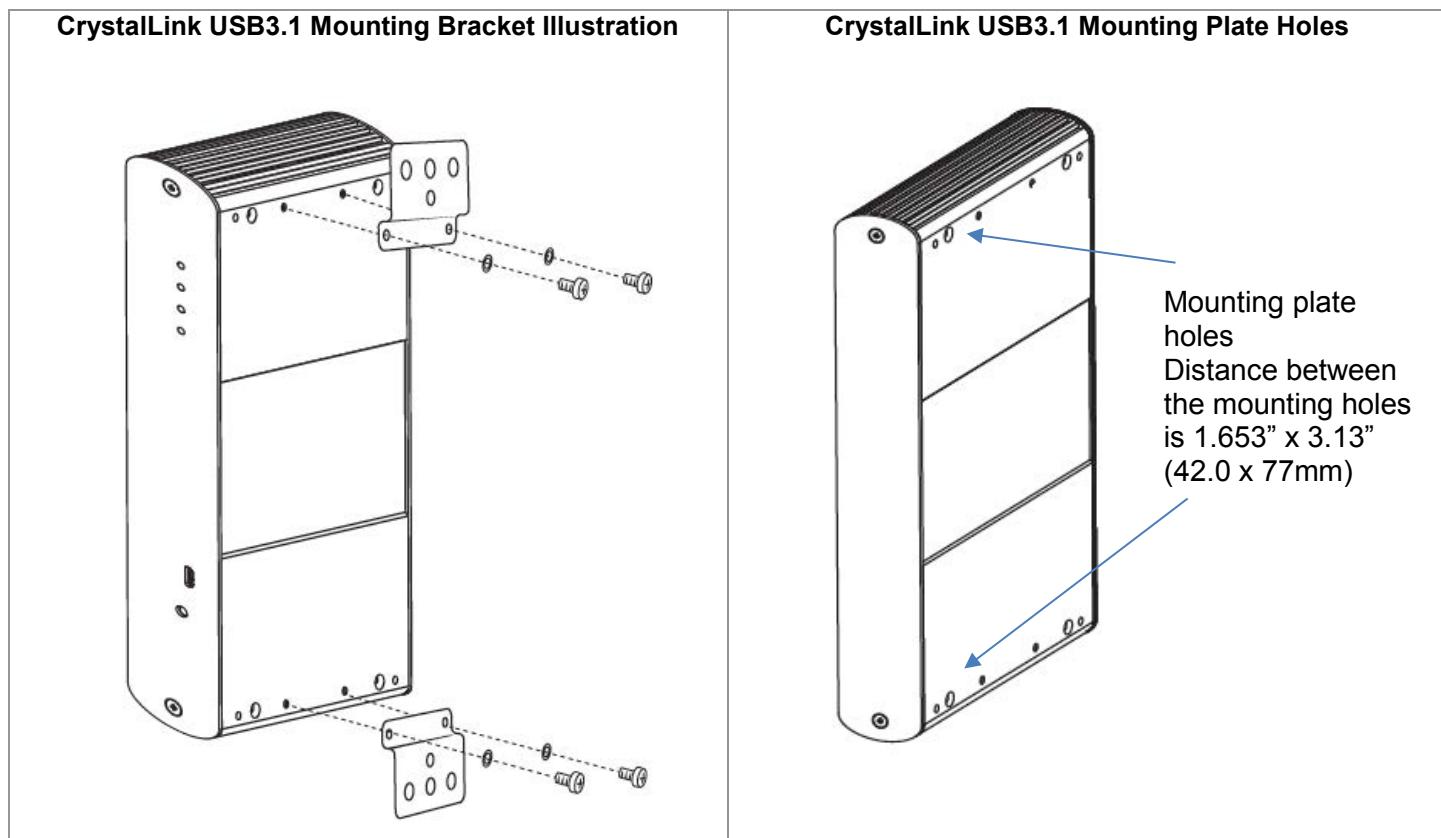


Figure 10. Chassis mounting options

# 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 on local extender are off.	<ul style="list-style-type: none"><li>▪ The local extender is not receiving power from the USB port.</li></ul>	<ul style="list-style-type: none"><li>▪ Ensure that the USB connection between the local extender and host computer is properly installed.</li><li>▪ Move the USB connector to another USB port on the host computer.</li></ul>
All LEDs on local extender are off.	<ul style="list-style-type: none"><li>▪ The remote extender is not receiving power from the AC adapter.</li></ul>	<ul style="list-style-type: none"><li>▪ Ensure that the AC power adapter is properly connected to the remote extender.</li><li>▪ Check that the AC adapter is connected to a live source of electrical power.</li></ul>
Status LEDs on both the local and remote extender units are blinking.	<ul style="list-style-type: none"><li>▪ There is no connection between the local and remote extender units.</li><li>▪ The local extender is not connected to a USB3.1 port.</li><li>▪ The host computer does not support USB3.1.</li></ul>	<ul style="list-style-type: none"><li>▪ Ensure that the host computer supports USB3.1, refer to your computer's manual for confirmation.</li><li>▪ Ensure the remote extender is connected to a USB3.1 port. The centre of the port connector should be blue. Another color, such as black usually indicates a USB2.0 port.</li><li>▪ Ensure that a LC multimode fiber optic cable is connected between the local and remote extender units.</li><li>▪ Connect a fiber optic patch cord between the local and remote extender units. Recheck operation of the system.</li></ul>
Host LED is blinking on one or both units.	<ul style="list-style-type: none"><li>▪ The computer went into suspend, hibernate or sleep mode.</li><li>▪ The computer tried to suspend the USB3.1 port that is connected to the local extender.</li></ul>	<ul style="list-style-type: none"><li>▪ Follow the steps in "Setting up your computer" on to disable suspend modes on your computer. Refer to your operating system's manual for additional instructions if necessary.</li><li>▪ Power cycle the remote extender and the devices connected to the remote extender.</li><li>▪ Power cycle the local and remote extender, and the devices connected to the remote extender.</li></ul>

Host LED on Transmitter/Receiver units are off.	<ul style="list-style-type: none"> <li>▪ The host computer is not powered on.</li> <li>▪ The transmitter unit is not connected to the computer.</li> <li>▪ The transmitter unit is not connected to a USB3.1 host</li> <li>▪ The CrystallLink USB3.1 is malfunctioning.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Disconnect all USB devices from the receiver unit.</li> <li>▪ Disconnect the transmitter unit from the computer.</li> <li>▪ Disconnect the receiver unit from the AC power adapter.</li> <li>▪ Reconnect the transmitter unit to the computer.</li> <li>▪ Reconnect the receiver unit to the AC power adapter.</li> <li>▪ In the Universal Serial Bus controllers section of Device Manager, check that the CrystalLink USB3.1 is recognized as two "SuperSpeed Hubs or two 3.1 Hubs</li> <li>▪ It may be recognized as [SuperSpeed Hub], or [3.1 Hub] or by other names, depending on the operating system and driver installed.</li> </ul>
All LEDs on both the local and remote extender units are on but the USB device does not operate correctly or is detected as an "Unknown Device" in the operating system.	<ul style="list-style-type: none"> <li>▪ The USB device is malfunctioning.</li> <li>▪ The computer does not recognize the USB device.</li> <li>▪ The application software for the device is not operating.</li> <li>▪ The extender is malfunctioning.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Disconnect the CrystalLink USB3.1 from the computer.</li> <li>▪ Connect the USB device directly to the USB port on the computer.</li> <li>▪ If the USB device does not operate properly consult the user documentation for the device.</li> <li>▪ Update your system BIOS, chipset, or USB Host controller drivers from your System/Mother board manufacturer's website.</li> <li>▪ If the USB device operates properly when directly connected to the computer, connect another device (of a different type) to the CrystalLink USB3.1.</li> <li>▪ Connect the CrystalLink USB3.1 to the computer.</li> <li>▪ If the second USB device does not operate, the CrystalLink USB3.1 may be malfunctioning. Contact Technical Support for assistance.</li> <li>▪ If the second USB device does operate properly, the first device may not be compatible with the CrystalLink USB3.1.</li> </ul>
There are issues with the Microsoft Kinect and the CrystalLink USB3.1.	<ul style="list-style-type: none"> <li>▪ This extender is not fully compatible with the Kinect.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Consider using the Rose USB3.1 active extension cable.</li> </ul>

Figure 11. Troubleshooting procedures

# **SAFETY**

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## **Safety**

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The CrystalLink USB3.1 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**

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## **Maintenance and Repair**

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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**

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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](mailto:TechSupport@rose.com)

Web: [www.rose.com](http://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-2U3FMB-100M	CrystalLink USB3.1 Fiber Extender
RM-UD/CLK-USB	Rackmount "L" bracket for mounting TX or RX unit on a shelf, under desk, or flat surface. (Not for 19" rack)
Chassis Dimensions (W x D x H) and Weight	
Dimensions	3.94 × 2.99 × 1.02-inch, (100 × 76 × 26 mm)
Power Requirements	
Power Source	Transmitter: powered from the host device using the USB cable Receiver: 100-240VAC, 24VDC, 1A locking connector, 2.5mm center-positive Receiver unit supplies 900mA for each USB3.1 port
USB Specification	
USB Device Support and Throughput	USB3.1 up to 5Gbps (this unit is not backward compatible with USB2.0/USB1.1)
USB Host Support	xHCI Controllers (Intel, AMD, Renesas, NEC, Fresco, AsMedia)
Fiber Cable	
Fiber Cable Distance	2-strand 50/125µm multimode Multimode OM2 Cable: Up to 165ft (50 meters) Multimode OM3 Cable: Up to 165ft (50 meters) for storage devices and up to 330ft (100 meters) for USB3.1 cameras
Controls	
Status LED's	Transmitter and receiver: Power, Status, and Host LED's
Connectors	
Transmitter	1 × USB3.1 Type-B locking connector per AIA USB3 Vision™ specification 1 × Duplex LC fiber connector
Receiver	2 × USB3.1 Type-A locking connector per AIA USB3 Vision™ specification 1 × Duplex LC fiber connector 1 × 24VDC locking power connector
Environmental	
Operating Temp	32°F to 122°F (0°C to 50°C)
Storage Temp	-4°F to 158°F (-20°C to 70°C)
Operating Humidity	10-90% relative, non-condensing
Approvals	FCC (Class B) and CE (Class B) certified, RoHS2 compliant

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