

ROSE.COM

INSTALLATION AND OPERATIONS MANUAL



LIMITED WARRANTY

Rose Electronics® warrants the CrystalLink™ USB Fiber 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.

ALL EXPRESS AND IMPLIED WARRANTIES FOR THIS PRODUCT INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO A PERIOD OF ONE YEAR FROM THE DATE OF PURCHASE, AND NO WARRANTIES, WHETHER EXPRESS OR IMPLIED, WILL APPLY AFTER THIS PERIOD. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

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.

NOTE: This equipment has been tested and 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 his own expense.

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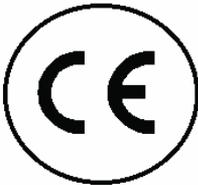
**FEDERAL COMMUNICATIONS COMMISSION
AND INDUSTRY CANADA
RADIO-FREQUENCY INTERFERENCE STATEMENTS**

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

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

EUROPEAN UNION DECLARATION OF CONFORMITY



The Declaration of Conformity is based upon compliance of the product with the following harmonized standards:

EN55022/A1	IEC 801-2
EN50082-1	IEC 801-3
	IEC 801-4

These Class A digital apparatus complies with Canadian ICES-003

TABLE of CONTENTS

Contents	Page #
Disclaimer.....	1
System introduction.....	1
Features.....	2
Package contents	2
Rose Electronics web site	2
About this manual.....	2
CrystalLink USB Fiber model.....	3
Transmitter.....	3
Receiver.....	3
Cables.....	3
Operating Instructions	5
Troubleshooting Guide.....	6
Safety	7
Service Information	9
Maintenance and Repair	9
Technical Support.....	9

Appendices	Page #
Appendix A. General Specifications.....	10
Appendix B. Part Numbers and Cables	10

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, or circuitry of the product 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.

System introduction

Thank you for choosing the Rose Electronics® CrystalLink™ USB Fiber extender. The CrystalLink USB Fiber Extender is the result of Rose Electronics commitment to providing state-of-the-art solutions for today's demanding workplace. The CrystalLink USB Fiber has proven to be a valuable investment for any business, big or small, that has a need to access their USB 1.1 or 2.0 peripherals from a remote location. This location can be up to 6 miles away using singlemode fiber cable (1,650 feet using multimode fiber cable).

The receiver unit provides 4 USB ports for connecting your USB peripherals. The number of peripherals can be increased by using a standard USB hub.

The USB peripherals can be USB 1.1 devices (low-speed or full-speed) or USB 2.0 high-speed devices operating up to 480 Mb/s. The receiver unit can supply up to 500 ma per USB port for driving high-power USB devices.

Plug-and-play installation makes installing the transmitter and receiver simple and easy. Connect the transmitter to the computers USB port, connect the 4 USB ports on the receiver to your USB devices, connect the transmitter to the receiver with up to 6 miles of singlemode fiber cable, connect the power adapters to the transmitter and receiver and power on the system. The USB devices will function normally as if they are directly connected to your computers USB port even though they are up to 6 miles away.

Features

- Supports USB 1.1 (low and full speed) and USB 2.0 (high-speed)
- Extends USB devices up to 33,000 feet (10Km) over singlemode fiber, 1,650 feet (500m) over multimode fiber cable
- 4-USB ports on the receiver unit
- Up to 500 ma of power is available at each USB port for powering high-power USB devices
- Standard USB hubs can be used to increase the number of connected USB devices.
- Plug-and-Play installation , no configuration or set-up needed
- Operating system independent, supports all major operating systems

Package contents

The package contents consist of the following:

- The CrystalLink USB Fiber transmitter and receiver units
- One (1) 6 foot USB type A to type B cable
- Two (2) power adapter for the transmitter and remote units. (Auto-switching transformer)
- Installation and operations manual.

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

Rose Electronics web site

Visit our web site at www.rose.com for additional information on the CrystalLink USB extenders and other products that are designed for data center applications, classroom environments and other applications.

About this manual

This manual covers the installation and operation of the CrystalLink USB Fiber extender.

CrystalLink USB Fiber model

Transmitter



Connectors

USB Type B
Fiber duplex LC
Power (+5VDC)

Indicators

Host LED
Link LED
Power LED

Receiver



Connectors

Power (+5VDC)
(4) USB Type A

Front:

Fiber duplex LC

Indicators

Power LED
Device LEDs (4)

Models available with USB 1.1 or USB 2.0 ports

Cables

CrystalLink USB Fiber Transmitter to computer

USB Type B connector to USB Type A connector

CrystalLink USB Fiber Transmitter to Receiver

Industry standard singlemode or multimode fiber cable with duplex connection with crossover and duplex LC type connectors

CrystalLink USB Fiber Receiver to USB devices

USB devices generally connect directly to the receivers Type A connectors

INSTALLATION

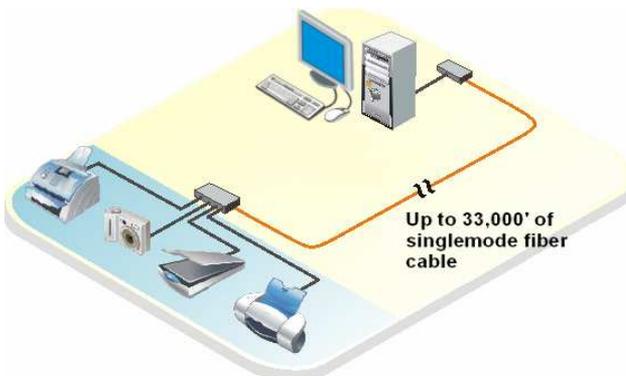
Please refer to the safety section first before proceeding with any installation of the CrystalLink USB Fiber extender.

Installation of the CrystalLink USB Fiber extender consists of following procedures:

1. Connect a USB cable from the transmitter to a computer's USB port using a USB type A to type B cable.
2. Connect the USB peripherals to the receiver.
3. Connect the transmitter to the receiver with up to 33,000 feet of industry standard singlemode fiber cable with fiber duplex LC connectors (1,650 feet using multimode fiber cable)
NOTE: Fiber cable must provide a duplex connection with crossover and terminated with Duplex LC connectors at both ends
4. Connect the power adapters to the transmitter and receiver and applying power.
5. Verify the power LEDs on the transmitter and receiver are on
6. Verify the Link LEDs on the transmitter and receiver are on
7. Verify the Host LED on the transmitter is on
8. Open the Device Manager on the host computers control panel and click on the + next to the Universal Serial Bus controllers. If the CrystalLink USB Fiber extender has been installed correctly, it will be listed as a Generic USB Hub.

NOTE: The host computer must be equipped with an EHCI (USB 2.0) host controller. OHCI/UHCI (USB 1.1) host controllers are not supported.

For Premise cabling, the total fiber cable length, including patch cords must not exceed the maximum cable length specifications for multimode and singlemode fiber cables.



Operating Instructions

Operating your CrystalLink USB extender is no different than having your USB peripherals directly connected to your computer's USB port.

Any compatible USB device can be totally controlled and operated normally with no special configuration or commands. USB printers, digital cameras, scanners, or any compatible USB 1.1 or 2.0 device will function properly. If more than 4 USB devices need to be remotely accessed, you can add a standard USB hub to increase the number of USB devices.

When using a USB hub, keep in mind that each USB port on the receiver can supply up to 500ma of current. Connecting a 4-port USB hub to one of the CrystalLink USB receiver ports supplies a max current to the hub of 500ma or 125ma per hub port.

Troubleshooting Guide

The troubleshooting section is used as a guide to understanding the capabilities of the CrystalLink USB Fiber extender and for general troubleshooting. If you have any problems or questions concerning the installation, operation or usage of the CrystalLink USB Fiber extender that is not covered in this manual, please contact Rose Electronics for technical support.

All LEDs on the transmitter or receiver are off

- Verify that the power adapter is connected to the unit and to a live power source

Link LEDs on the transmitter and receiver are both off

- Verify the fiber cable (with crossover) is securely connected to the transmitter and receiver duplex LC connectors

Host LED on the transmitter is off

- Verify the USB cable from the transmitter to the computer's USB port
- Verify that the computer supports USB hubs
- Verify that the CrystalLink USB Fiber is recognized in the device manager as a Generic USB Hub, if not, contact tech support

All LEDs are on but the USB device does not operate correctly

- Connect the USB device directly to the computer's USB port. If the device functions properly, connect a different type of USB device to the receiver port the non-operating USB device was connected to. If this device does not function, the unit may be malfunctioning, contact tech support. If the device operates properly, the first USB device may not be compatible with the CrystalLink USB Fiber extender. Contact tech support for assistance.

Safety

The CrystalLink USB Fiber extender has been tested for conformance to safety regulations and requirements, and has been certified for international use. Like all electronic equipment, the CrystalLink USB Fiber extender 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 or rack mounted.
- Provide proper ventilation and air circulation.
- Keep power cord and connection cables clear of obstructions that might cause damage to them.
- Use only power cords, power adapter and connection cables designed for this Unit.
- Use only a grounded (three-wire) electrical outlet.
- Use only the power adapter provided with the CrystalLink.
- 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.
- Operate this Unit only when the cover is in place.
- Do not use liquid or aerosol cleaners to clean this Unit. Always unplug this Unit from its electrical outlet before cleaning.
- Unplug this Unit from the electrical outlet and refer servicing to a qualified service center if any of the following conditions occur:
 - The power cord or 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.

Safety and EMC Regulatory Statements

Safety information



Documentation reference symbol. If the product is marked with this symbol, refer to the product documentation to get more information about the product.

WARNING A WARNING in the manual denotes a hazard that can cause injury or death.

CAUTION A CAUTION in the manual denotes a hazard that can damage equipment.

Do not proceed beyond a WARNING or CAUTION notice until you have understood the hazardous conditions and have taken appropriate steps.

Grounding

These are Safety Class I products and have protective earthing terminals. There must be an un-interruptible safety earth ground from the main power source to the product's input wiring terminals, power cord, or supplied power cord set. Whenever it is likely that the protection has been impaired, disconnect the power cord until the ground has been restored.

Servicing

There are no user-serviceable parts inside these products. Only service-trained personnel must perform any servicing, maintenance, or repair.

The user may adjust only items mentioned in this manual.

Service Information

Maintenance and Repair

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

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

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

Technical Support

If you are experiencing problems, or need assistance in setting up, configuring or operating your CrystalLink USB Fiber extender 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.

Appendix A. General Specifications

Link Cable Type / length	Singlemode – 33,000 feet (10km) – 9/125µm Multimode – 1,650 feet (500m) – 50/125µm															
USB Support	High-speed devices (480 Mbps) Full-speed devices (12 Mbps) low-speed devices (1.5 Mbps)															
Host support	EHCI (USB 2.0) only															
Power adapter	(2) 5V DC / 3A															
Power available at each receiver USB port	500 ma per port															
Connectors Transmitter	1 – USB Type B 1 - Duplex LC Fiber 1 – Power adapter connector															
Receiver	4 – USB Type A 1 – Duplex LC Fiber 1 – Power adapter connector															
Indicators Transmitter	1 – Host LED 1 – Link LED 1 – Power LED 1 – Link LED															
Receiver	4 – Device LED 1 – Power LED															
Dimensions / Weight (Transmitter / Receiver)	<table border="0"> <tr> <td></td> <td>Width</td> <td>Depth</td> <td>Height</td> <td>Weight</td> </tr> <tr> <td>(in)</td> <td>4.25</td> <td>3.31</td> <td>1.31</td> <td>0.6 lbs (ea)</td> </tr> <tr> <td>(mm)</td> <td>108</td> <td>84.1</td> <td>33.3</td> <td>0.27kg (ea)</td> </tr> </table>		Width	Depth	Height	Weight	(in)	4.25	3.31	1.31	0.6 lbs (ea)	(mm)	108	84.1	33.3	0.27kg (ea)
	Width	Depth	Height	Weight												
(in)	4.25	3.31	1.31	0.6 lbs (ea)												
(mm)	108	84.1	33.3	0.27kg (ea)												
Environment Operating Temp Humidity	40°F – 104°F (4°C – 40°C) 0% – 80% non-condensing															
Approvals	FCC, CD Class A															

Appendix B. Part Numbers and Cables

Part Number	Description
CLK-4U2FS-30K	USB 2.0 Singlemode Transmitter & Receiver Kit
CLK-4U2FM-1650	USB 2.0 Multimode Transmitter & Receiver Kit
CLK-4U1FS-30K	USB 1.1 Singlemode Transmitter & Receiver Kit
CLK-4U1FM-1650	USB 1.1 Multimode Transmitter & Receiver Kit



Server Management



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