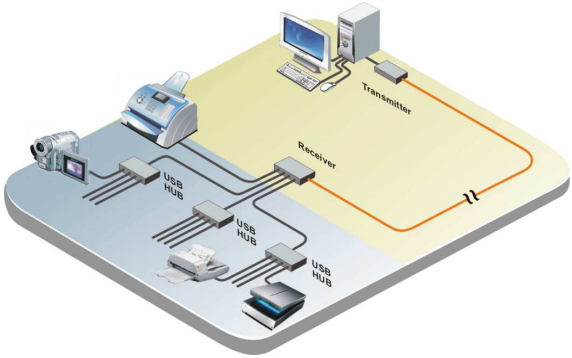
ROSE.COM

INSTALLATION AND OPERATIONS MANUAL

Part Number CLK-4U2FM-500M
CLK-4U2FS-10KM



ROSE ELECTRONICS

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WWW.ROSE.COM

LIMITED WARRANTY

Rose Electronics® warrants the CrystalLink™ USB 2.0 Fiber 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.

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 WARRANTIED 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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Rose Electronics Part # MAN-CRL-USB2-F
Printed In the United States of America - Revision

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 B 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 B 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 B 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	2007 Class B
EN61000-3-2	2006
EN61000-3-3	2003
EN55024	1998+A2:2003

IC Statement

This Class B digital apparatus complies with Canadian ICES-003

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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 2.0 Fiber extender. The CrystalLink USB 2.0 Fiber extender is the result of Rose Electronics commitment to providing state-of-the-art solutions for today's demanding workplace. The CrystalLink USB 2.0 Fiber has proven to be a valuable investment for any business, big or small, that has a need to access and extend their USB 1.1 or 2.0 peripherals from a remote location. This location can be up to 1640 feet (500m-Mulitmode model) or 6 miles (10 km-Singlemode model).

The receiver unit's USB port connects to your USB peripheral. 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 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 USB port on the receiver to your USB device, connect the transmitter to the receiver with Singlemode or Multimode fiber cable (depending on your model), connect the provided power adapter to the transmitter and receiver and power on the system.

The USB devices will function normally as if they are directly connected to your computer's USB port even though they are up to 6 miles away.

NOTE: The provided 5V, 3.0A power adapter connects to the receiver. An optional 5V, 0.5A power adapter connects to the transmitter unit if the host PCs USB port does not supply the needed power.

Features

- Supports USB 1.1 (low and full speed) and USB 2.0 (high-speed)
- Supports USB 2.0 and USB 1.1 host computer systems (EHCI / USB 2.0 – OHCI/UHCI USB 1.1)
- Extends USB devices up to 1640 feet (500m-Mulitmode model) or 6 miles (10 Km-Singlemode model).
- Four USB port on the receiver unit
- Standard USB hubs can be used to increase the number of connected USB devices (up to 14 devices, including 3 USB hubs.
- Up to 500 ma of power is available at each USB port for powering high-power USB devices
- Transmitter and receiver have an optional earth ground connection point
- 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 2.0 transmitter and receiver units
- Power adapter for the remote unit. (Auto-switching transformer)
- Installation and operations manual CD.

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 out web site at www.rose.com for additional information on the CrystalLink USB 2.0 Fiber 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 2.0 Singlemode and Multimode Fiber extender.

CrystalLink USB 2.0 Fiber model

Transmitter

Indicator LEDs

- Power
- Link
- Host
- Activity

Connectors

Power* - 5V 0.5A DC
USB - Type B
Link – Fiber Duplex LC

* Receiver power is optional

Power LED (Blue)	On when power is supplied from the computer's USB port, Off when no power is supplied
Host LED (Green)	On when installed properly
Link LED (Green)	On when a link between the transmitter and receiver is established, Off when no link is detected
Activity LED (Amber)	Blinks when data is transmitted

Receiver

Indicator LEDs

Power
Link
Host
Activity

Connectors

Power - 5V DC
USB - Type A
Link – Fiber Duplex LC

Power LED (Blue)	On when power is supplied from the computer's USB port, Off when no power is supplied
Host LED (Green)	On when installed properly
Link LED (Green)	On when a link between the transmitter and receiver is established, Off when no link is detected
Activity LED (Amber)	Blinks when data is transmitted

Cables

The only cable(s) needed are the fiber cables to connect the transmitter to the receiver (Singlemode or Multimode, depending on your model)

Figure 1 outlines the basic installation of the CrystalLink USB 2.0 Fiber extender. The installation steps below are a guide to properly install the units and cabling.

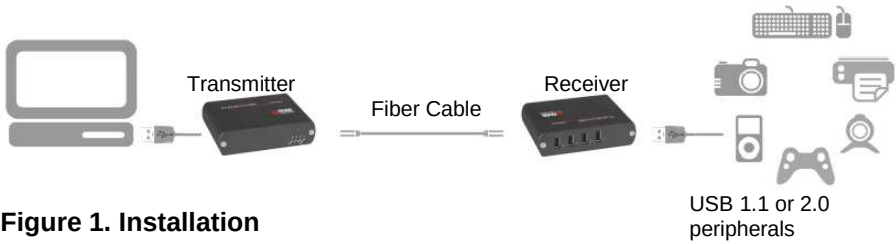

Figure 1. Installation

Before you install the CrystalView USB 2.0 Fiber extender, it is recommended that you pre-plan you system layout, consisting of the placement of the computer, the routing of the fiber cabling, and the location of the USB device(s).

1. Connect the transmitters USB Type A cable connector to an unused USB port on the computer.
2. Connect the provided power adapter to the power jack on the receiver unit. Use only the furnished power adapter. Other power adapters may cause permanent damage to the receiver unit and void the warranty.
3. Connect the fiber optical cable to the transmitter's and receiver's Duplex LC connectors.
4. Connect the provided power adapter to a 100/240 V AC 50 – 60 Hz power source.
5. Install any required software to operate the USB device(s).
6. Connect the USB peripheral to the USB Type A connector on the receiver unit.

Verifying the installation

1. Check that the USB device is detected and installed properly in the operating system.
2. Verify that the CrystalView USB 2.0 extender has installed correctly by opening the Device manager and expand the USB controller section (click on the + sign). You should see the unit listed as a Generic USB Hub.
3. Verify the Power, Host, and Link LEDs are on and the Activity LED is blinking. If any LED is off, check the cabling.

Operating Instructions

Operating your CrystalLink USB 2.0 Fiber extender is no different than having your USB peripherals directly connected to your computer's USB port.

Any compatible USB 1.1 or 2.0 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 1 USB device needs 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 the receiver port receives a max current of 500ma to the USB hub or 125ma per hub port.
UP to 14 USB devices, including additional USB hubs can be connected to the receiver unit. Powered USB hubs may be need if several high powered USB devices are connected.

Troubleshooting Guide

The troubleshooting section is used as a guide to understanding the capabilities of the CrystalLink USB 2.0 Fiber extender and for general troubleshooting. If you have any problems or questions concerning the installation, operation or usage of the CrystalLink USB 2.0 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 is securely connected to the transmitter and receiver RJ45 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 2.0 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 2.0 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 2.0 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 provided power adapter.
- 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 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

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 2.0 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

Max distance	1640 feet (500m) using 50/125µm Multimode 902 feet (275m) using 62.5/125µm Multimode 6 miles (10km) using 9.0 µm Singlemode
USB device support	High-speed devices (480 Mb/s) (USB 2.0) Full speed devices (12 Mb/s) (USB 2.0 & 1.1) Low speed devices (1.5 Mb/s) (USB 2.0 & 1.1)
USB hub support	Any single chain can include up to 4 USB hubs plus one Receiver
USB host support	EHCI (USB 2.0) and OHCI/UHCI (USB 1.1
Maximum USB devices Supported (Incl. USB Hubs)	14 USB Devices including any additional USB hubs connected to the receiver.
AC adapter	Input: 100/240 V AC, 50 – 60 Hz Output: 5 V DC, 1.5 A **Use only the AC adapter provided**
Power available to USB devices at receiver unit	500 mA per USB port
USB connectors	Receiver - 4-USB Type A Transmitter – 1 USB Type B
Link connectors	Duplex LC
Dimensions (Transmitter / Receiver	W-3.94” x D-2.99” x H-1.02” 100mm x 76 mm x 26 mm
Shipping weight	2.0 lbs (0.9kg)
Power consumption	500 mA Maximum (Transmitter) 0.5 – 2.5A (Receiver)
Receiver weight	0.05 kg (0.11 lbs)
Power consumption	Approx. 500 mA (No Load). 1A (Full load)
Operating temperature	32℉ – 122℉ (0℃ – 50℃)
Regulatory testing	FCC Class B, IC Class B, CE Class BA
ESD rating	EMC EN-61000-4-2 4kV Contact, 8kV Air

Appendix B. Part Numbers and Cables

Part Number	Description
CLK-4U2FM-500M	USB 2.0 MM Fiber Transmitter/Receiver Kit
CLK-4U2FS-10KM	USB 2.0 SM Fiber Transmitter/Receiver Kit

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