CrystalView *fiber*

DIGITAL FIBER KVM EXTENDER

INSTALLATION AND OPERATIONS MANUAL

ROSE ELECTRONICS

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LIMITED WARRANTY

Rose Electronics warrants the CrystalView 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.

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

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FCC/IC STATEMENTS, EU DECLARATION OF CONFORMITY

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 A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

CE DECLARATION OF CONFORMITY

This equipment is in conformity with the Council Directives 89/336/EEC
The Declaration of Conformity is based upon compliance of the product with the following standards:
EN55022: 1998 Class B
EN55024: 1998
IEC61000-4-2: 1998
IEC61000-4-3: 1998
IEC61000-4.4: 1998

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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, 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® CrystalView™ Fiber KVM station extender. The CrystalView Fiber is the result of Rose Electronics commitment to providing state-of-the-art solutions for today's demanding workplace. The CrystalView Fiber has proven to be a valuable investment for any business, big or small, that has a need to access CPUs from extended remote locations.

The CrystalView Fiber system consists of two Units, a transmitter and a receiver. The transmitter connects to your CPU or a Rose switch and the receiver connects to a keyboard, video monitor and mouse or KVM station. The transmitter and receiver are connected together with industry standard fiber optic cable terminated with SC-type connectors.

The CrystalView Fiber is available in two models, the PC model and the Sun model. The PC model is available with local and remote KVM access. The local KVM version allows an additional KVM station to be connected to the transmitter.

Using the CrystalView Fiber to remotely access your computer has several advantages over conventional CAT-5 cable. Using fiber cable, you have the advantage of extending the distance between the transmitter and receiver up to 30,000 feet. In addition, fiber cable is unaffected by electromagnetic interference, keeping your data safe from interference by lightning and over voltage transients. You can locate your computers in a secure remote area and access them safely and securely from other unsecured areas. Computers used in hazardous industrial environments can be accessed remotely, keeping the users safe and unexposed to any hazards.

Features

- Extend a KVM station from a CPU using duplex fiber cable:
  62.5-micron cable for distances up to 600 feet. (MultiMode)
  50-micron cable for distances up to 1,200 feet. (MultiMode)
  9-micron cable for distances up to 30,000 feet. (SingleMode)
- Supports PC and Sun Systems.
- Supports PS/2 and Sun keyboards and mouse.
- The CrystalView uses a microprocessor to emulate the keyboard and mouse. The keyboard and mouse on the Remote Unit do not have to be connected for the PC to boot; only the Local Unit must be connected to the PC.
- Video resolutions up to 1280 x 1024.
- Color Depth settings.
- Compatible with Rose Electronics family of KVM switches such as ServeView, UltraView and UltraMatrix.
- Compatible with Windows, Windows NT, OS/2, UNIX, Linux and other operating systems.
- Fully automatic KVM sharing on a first-come first-serve basis using the local access model.
- On the local access model, the computers video is displayed on both KVM stations monitors.
- Rack mount kits available in 19”, 23” and 24” sizes.

Compatibility

Computers	PCs with standard keyboards and PS/2 mice, 286, 386, 486, Pentium, etc.
Monitors	VGA, SVGA, XGA, RGB (Sync-on-green) 13Bit/24Bit Color Depth (selectable)
Keyboards	PS/2 type keyboards, Sun
Mouse	PS/2, Sun

Package contents

The package contents consists of the following:

- The Local and Remote Units
- Power adapter for Local and Remote units.
- HD15FF gender changer (Included: installed on the Local Unit)
- Installation and operations manual.

CPU and fiber optic 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.

PC model

Figure 1. PC model

Connectors:

Receiver

- HD15F – KVM stations video monitor connection.
- (2) MiniDin-6 – KVM stations keyboard and mouse connection.
- Fiber – SC-type

Transmitter (Local KVM access)

- HD15F – CPU video connection.
- HD15M – KVM stations video monitor connection.
- (4) MiniDin-6 - CPU keyboard and mouse connections / KVM keyboard and mouse connections.
- Fiber – SC-type

Transmitter (No Local KVM access)

- HD15F – CPU video connection.
- (2) MiniDIN-6 - CPU keyboard and mouse connections
- SC-type – Fiber cable connector

Sun model

Receiver

Transmitter

Figure 2. SUN model

Connectors:

Receiver

- HD15F – KVM stations video monitor connection.
- MiniDin-8 – KVM stations keyboard and mouse connection.
- Fiber – SC-type

Transmitter

- HD15M – CPU video connection.
- MiniDin-8 – CPU keyboard and mouse connections.
- SC-type – Fiber cable connector

Optical elements

The MultiMode transceivers are Class 1 laser products and comply with IEC 825-1 and FDA 21 CFR 1040 and 1040.1.1.

The SingleMode transceivers are Class 1 laser products and comply with IEC 60825-1 and FDA 21 CFR 1040.1 and 1040.1.1.

The optical ports of the modules must be terminated with an optical connector or with a dust plug.

CrystalView Fiber cables

Transmitter to CPU cable

CPU cables connect from the transmitter to a CPUs keyboard, video monitor and mouse ports. The type of CPU cable needed depends on the model, PC or Sun.

Receiver to KVM station

The keyboard, video monitor, and mouse cables on a KVM station can connect directly to the receiver or a transmitter with local KVM access.

CrystalView Fiber to Rose switch cable

To connect a transmitter to a Rose switch such as a ServeView, UltraMatrix or UltraView, use a CPU adapter cable, Rose cable part number CAB-CX0606Cnnn.

Transmitter to receiver cable

The transmitter is connected to the receiver with up to 30,000 feet of standard fiber optic cable (SingleMode) terminated with SC type connectors.

Installation

Please refer to the safety section first before proceeding with any installation or configuration of the CrystalView Fiber.

Installation of the CrystalView Fiber consists of four easy steps.

1. Connecting the KVM station(s) and the CPU or Rose switch.
2. Connecting the transmitter to the receiver.
3. Applying power.
4. Adjusting the automatic DPA and color depth setting. (If needed)

When installing the CrystalView Fiber, locate the transmitter as close as possible to the CPU or switch. Keep the CPU cables as short as possible but still give some freedom of movement. Using shorter cables keeps the video noise to a minimum and reduces installation costs. You can mount the CrystalView Fiber in a CPU rack with the optional rack mount kit. When mounting the units in a rack, follow the instructions in Appendix F and Appendix G. Provide adequate air circulation to assure that the maximum operating temperature is not exceeded.

Wherever the transmitter and receiver are located, they should be on a secure surface and free from obstructions and objects that may cause damage to the units.

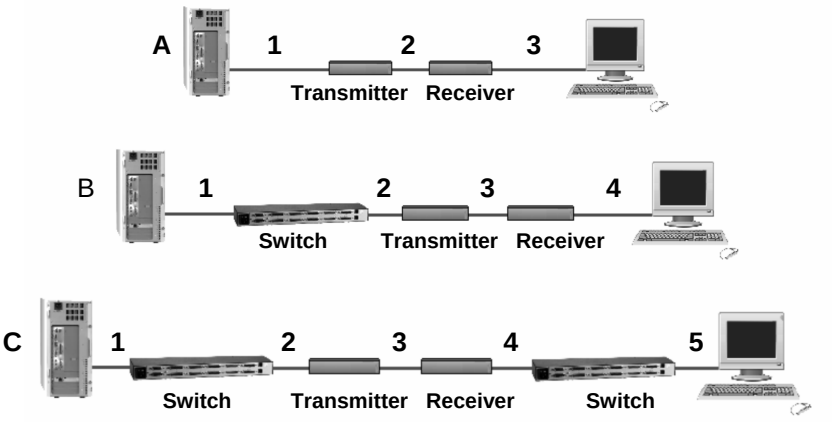


Figure 3. Cabling

(See Figure 1, 2, or 3 for the connector locations for your model)
NOTE: If the transmitter is a PC model with local access, a second KVM station can be connected to the transmitter.

Refer to Figure 4 for the set-up for your system application.

A. 1- Connect the appropriate CPU cable to the keyboard, video monitor and mouse ports on the CPU and to the corresponding ports on the transmitter.
   2- Connect the transmitter to the receiver with fiber cable terminated with SC-type connectors.
   3- Connect the KVM stations keyboard, video monitor, and mouse cables to the corresponding connectors on the receiver.

B. 1- Connect the appropriate CPU cable to the keyboard, video monitor and mouse ports on the CPU and to the appropriate CPU connector on the switch.
   2- Connect the appropriate KVM cable from the KVM port on the switch to the corresponding connectors on the transmitter.
   3- Connect the transmitter to the receiver with fiber cable terminated with SC-type connectors.
   4- Connect the KVM stations keyboard, video monitor, and mouse cables to the corresponding connector on the receiver.

C. 1- Connect the appropriate CPU cable to the keyboard, video monitor and mouse ports on the CPU and to the appropriate CPU connector on the switch.
   2- Connect the appropriate KVM cable from the KVM port on the switch to the corresponding connectors on the transmitter.
   3- Connect the transmitter to the receiver with fiber cable terminated with SC-type connectors.
   4- Connect the appropriate CPU cable from the CPU port on the switch to the corresponding connectors on the receiver
   5-Connect the KVM stations keyboard, video monitor, and mouse cables to the corresponding connector on the receiver.

Transmitter to receiver cabling

Table 1 shows the maximum cable distance for each cable type.

Cable type	Maximum distance
62.5µm MultiMode	650’ / 200m
50µm MultiMode	1310’ / 400m
9µm SingleMode	6.25 miles / 10km

Table 1.Local to Remote cabling

Applying power

Plug in the provided power adapters to a 110/220-volt source and to the power connector on the Local and Remote Unit. Only use the power adapter provided. GND and earth should not be connected. Boot up the connected CPU and wait for it to completely boot-up.

The two LEDs on each side of the fiber cable connector indicate the following:
(Red LED)
Off – no communication errors
Blinking – communication errors occurred

(Green LED)
On – power is on and link connection is locked.
Blinking – Fiber cable not connected or damaged.

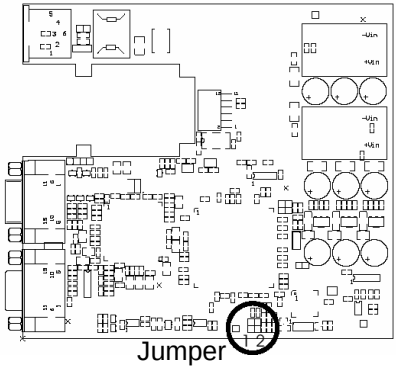
The two LEDs above the DPA pushbuttons indicate the following:
Both LEDs on – system booted correctly.
Only one LED on – unknown video mode being used.

Selection, automatic DPA, Color Depth

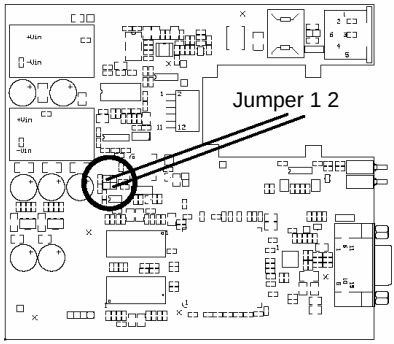
The transmitter and receiver are self-adapting to the screen parameters under most circumstances. The automatic DPA adjustment feature is used when switching to several computers. See Figure 5.

The screen data must be transmitted in a staggered (interlaced) mode. This may be visible in the form of vertical stripes or bars. The interlace can be reduced by changing the color depth to 13 Bit, There is no interlace for screen resolutions up to 1024 x 768 @ 60Hz. Above this resolution, the interlace is 1:2.

The table in Figure 4 shows the jumper setting for changing the automatic DPA and the color depth for the receiver and transmitter.



Receiver



Transmitter

Jumper 1 2	Auto DPA adjustment	Color depth (Receiver)	Color depth (Transmitter)
	OFF	N/A	24 Bit
	OFF	N/A	13 Bit
	ON	24 Bit	24 Bit
	ON	13 Bit (Default)	13 Bit (Default)

Figure 4. DPA / Color depth settings

Operating instructions- All units

Once the transmitter and receiver are connected and configured, the receiver's KVM station or transmitter's local KVM will function as if it were directly connected to the CPU. All applications, upgrades and PC configurations can be performed normally.

Operating instructions – Local KVM access

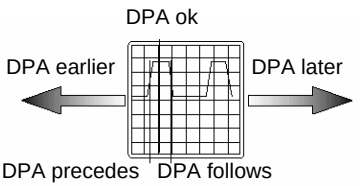
KVM Switching

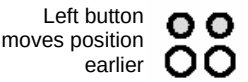
The CrystalView Fiber PC local KVM access version allows an additional KVM station to be connected to the transmitter. The CPU can easily be operated from the receiver or the Local KVM station on the transmitter but they cannot be operated simultaneously. The transmitter is active during boot-up. To activate the receiver's KVM station, simply press any key on the KVM stations keyboard. To activate the transmitter's Local KVM station, press any key on the KVM station's keyboard.

A lockout feature disables activity from a KVM station until the "In Use" KVM stations keyboard and mouse are inactive for more than 2 seconds. After 2 seconds of inactivity, pressing any key on the "Not in Use" KVMs keyboard will activate that KVM station and lockout the other KVM station.

Digital Pixel Alignment

Digitizing the screen is done by reading the color value in the middle of each pixel. Adjusting the DPA offset will move the point of digitizing to earlier or later, so it will be sampled in the middle of each pixel. The middle of the pixel sampling may vary from PC to PC.
To adjust the DPA sampling point:
Press the left pushbutton to move the sample position to earlier.
Press the right pushbutton to move the sample position to later.
Press both, the position is stored in the internal table for the actual resolution and refresh rate.





DPA adjustment switches located on the receiver.

Figure 5. DPA alignment

Troubleshooting

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

PC boots with no error messages but keyboard does not work.

- Cable is loose; re-seat keyboard cable at the CPU and the transmitter.
- Keyboard and mouse cables reversed.
- Try a different model of keyboard. If the new keyboard works, the original one may not be compatible. Some older auto-sensing keyboards may not work with this product.

Wrong or missing characters from those typed.

- Power down and reboot the system.

PC always comes up with a keyboard error message at boot.

- If the system appears to work fine after pressing F1 or ESC, adjust your BIOS setup so that the PC does not test the keyboard.

PS/2 cursor appears on the screen, but mouse doesn't work.

- Cable is loose, re-seat the mouse cable
- Keyboard and mouse cables reversed.
- Try a different model of mouse.
- Power off and on the Unit

System does not detect PS/2 mouse or application cannot find mouse.

- Keyboard and mouse cables reversed.
- Cable is loose; re-seat mouse cable on the CPU and transmitter.
- Reboot PC.

Keyboard and Mouse have locked up.

- Reset PC and the Remote Unit.
- Check power to the Remote Unit.

Monitor occasionally looses sync causing it to go blank for a few seconds.

- This occurs if your electrical power system is very noisy, particularly the ground. Do not run the interconnection cables near power line

Picture on monitor is black and white, not color.

- The video cable was not attached to the PC when it was booted. Reboot the PC.

Microsoft Windows or NT will only boot into low-resolution graphics mode.

- If your graphics card supports VESA DDC (Display Data Channel), configure the graphics driver by explicitly indicating which make and model of monitor you have rather than by using DDC.

No picture

- The Fiber optical cable is not connected at the transmitter and/or the receiver.
- The Fiber optical cable is the wrong adapter. The strand connected to the transmitter (left connector) must run to the receiver (right connector)
- One of more fibers broken. **DO NOT LOOK INTO A FIBERS END DIRECTLY WHILE IT IS CONNECTED TO THE TRANSMITTER OR RECEIVER. EYE HAZARD MAY OCCUR.**
- Wrong fiber type. Fiber cable must be 50µ or 62.5µ at a MultiMode unit and 9µ at a SingleMode device. Other fiber types and poly-fibers are not supported.

Horizontal jittering in picture

- The DPA offset is misaligned. See Figure 5 for adjusting the DPA offset.

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 switch, 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.

Safety

The CrystalView Fiber KVM extender has been tested for conformance to safety regulations and requirements, and has been certified for international use. Like all electronic equipment, the CrystalView Fiber 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.
- This product is a Class 1 laser product. Do not look into a fibers end directly while it is connected to a unit. Eye hazard may occur.
- 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 CrystalView Fiber.
- 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 is 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

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.

Appendix A. General Specifications

Maximum resolution	1280 x 1024 @ 75Hz
Video compatibility	SVGA, VGA, XGA, RGB
Color depth	13 Bit/24Bit (Depending on operating mode)
Keyboard	PS/2
Mouse	PS/2
Console lockout period	2-seconds (Dual version)
Local power	90-240 VAC adapter to 6VDC
Remote power	90-240 VAC adapter to 6VDC
Connectors	Video to PC – HD15M Video to KVM – HD15F Keyboard: MiniDin-6 (PC) / MiniDin-8 (SUN) Mouse: MiniDIN-6 (PC) / MiniDIN-8 (SUN) Interconnect: SC-type
Temp/Humidity	50° F-113° F /10° C-45° C / 5% to 80% RH
Weight	3.3 lbs / 1.5 kg (each unit)
Dimensions	H: 1.75 in / 4.45 cm W: 8.80 in / 22.4 cm D: 6.30 in / 16.0 cm

Laser data

	MultiMode	**SingleMode**
Wave length Output power Output power	850nm 400µW* 70µW**	1300nm <2000µW* <180µW**

* As defined by IEC: 40mm aperture at 10cm.
** As defined by FDA: 7mm aperture at 20cm

Transmitter Electro-Optical characteristics

Launched Power (Avg) into multimode fiber 50 µm or 62.5µm	-5 dBm (-9.5dBm, min)
Center wavelength	850nm

Receiver Electro-Optical characteristics

Sensitivity (Avg. power)	-20dBm (-17dBm max)

Appendix B. Parts and cables

Part Number	Description
CRK-2DFM/PC	PC – MultiMode – Local KVM access
CRK-2DFS/PC	PC – SingleMode – Local KVM access
CRK-1DFM/PC	PC – MultiMode
CRK-1DFS/PC	PC – SingleMode
CRK-1DFM/SUN	Sun – MultiMode
CRK-1DFS/SUN	Sun – SingleMode
CAB-CXV66MMnnn*	PC – Transmitter to CPU
CAB-CX0606Cnnn*	PC – Transmitter to Switch (coax)
CAB-WX0606Cnnn	PC – Transmitter to Switch (Std)
CAB-MD8MMnnn*	Sun – Transmitter to CPU keyboard port
CAB-CXVMMnnn*	Sun – Transmitter to CPU video port
CAB-09SMDFSCnnn**	SingleMode duplex fiber, 09/125µ
CAB-50MMDFSCnnn**	MultiMode duplex fiber 50/125µ
CAB-62MMDFSCnnn**	MultiMode duplex fiber 62.5/125µ
RM-UM19	19” Rackmount kit
RM-UM23	23” Rackmount kit
RM-UM24	24” Rackmount kit

* nnn = length of cable in feet.
** Fiber cable available up to 30,000 feet.

Appendix C. Firmware updates

The CrystalView Fiber firmware may be updated when additional enhancements and improvements are developed.

Contact Rose Electronics technical support for information on firmware updates.

Appendix D. Rack mount instructions

The optional rack mount kit includes the following items:

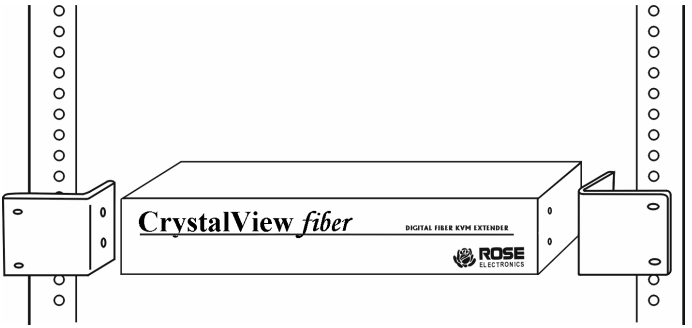
- Two black anodized mounting brackets.
- Four 6 - 32 x 3/8" flat head mounting screws.

To rack mount your CrystalView Fiber, attach the two rack mounting brackets to your Unit with the short flange against the Unit using the four screws provided. Do not over tighten the screws used to mount the Unit to the mounting brackets. Use only the hardware provided, using hardware other than that provided could cause damage to the electronics and/or result in loss of mounting integrity. Secure the mounting brackets to the rack using the appropriate size bolts, nuts and lock washers.

The following guidelines should be observed when installing.

a). Do not exceed the operating temperature of 10° C to 45° C.
b). Do not block power supply vents or restrict airflow.
c). Mechanical loading of the rack should be considered to prevent instability and possible tipping over.
d). Tighten all connectors securely and provide adequate strain relief for all cables.

Appendix E. Rack mount illustration



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