CrystalView Pro *fiber*™

DVI/VGA FIBER KVM EXTENDER

INSTALLATION AND OPERATIONS MANUAL
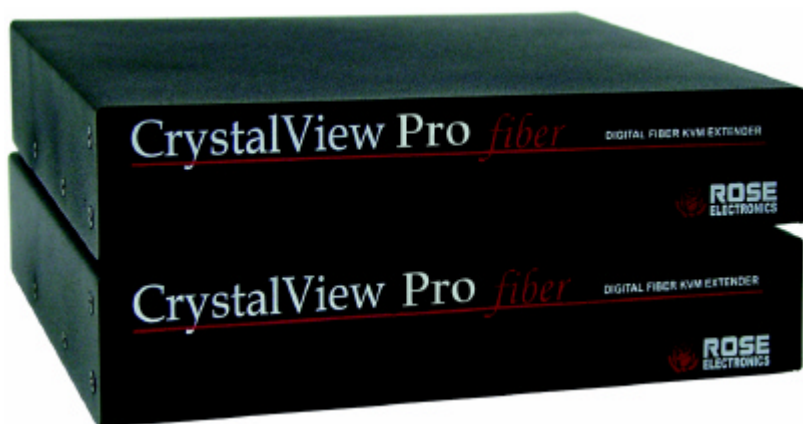
ROSE ELECTRONICS

10707 Stancliff Road   Houston, Texas 77099
Phone: (281) 933-7673   Internet: WWW.ROSE.COM

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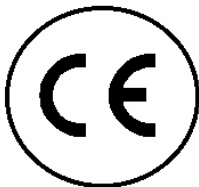
This equipment is in conformity with the Council Directives 89/336/EEC
The Declaration of Conformity is based upon compliance of the product with the following standards:
EN55022:Fiber-STP   1999 class B
EN55022 UTP   1999 class A
EN55024:
    IEC61000-4-2: 2001
    IEC61000-4-3: 2001
    IEC61000-4-4: 2001
    IEC61000-4-5: 2001 (Cat5 device only)
EN61000-3-2   2001
EN61000-3-3   2002

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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.

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System introduction

Thank you for choosing the Rose Electronics® CrystalView Pro Fiber™ KVM station extender. The CrystalView Pro Fiber is a very versatile KVM extender. It supports the latest digital DVI as well as analog VGA. All combinations of DVI and VGA monitors and video cards are supported. With this flexibility, you can connect a VGA video card to a DVI monitor, or a DVI video card to a VGA monitor.

The modular architecture design of the CrystalView Pro Fiber provides the flexibility to support PS/2 and SUN connections and different cable types such as CAT-5, MultiMode fiber and SingleMode fiber. A serial port can be added to support Touch-Screen and stereo audio. USB, parallel port and other custom interfaces can also be added.

The 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 either CAT-5 or industry standard multimode or singlemode fiber optic cable. The receiver can be up to 33,000 feet from the transmitter using singlemode fiber cable.

The CrystalView Pro Fiber is available in several models, the PC model, the Sun model and a USB model. The PC model is available with transmitter and receiver KVM access. The transmitter KVM version allows an additional KVM station to be connected to the transmitter unit.

Using the CrystalView Fiber to remotely access your computer has several advantages over conventional CAT-5 cable. Using fiber cable, you can extend the distance between the transmitter and receiver up to 33,000 feet. In addition, fiber cable is unaffected by electromagnetic interference, keeping your data safe from interference by lightning and over voltage transients. Computers used in hazardous industrial environments can be accessed remotely, keeping the users safe and unexposed to any hazards.

Features

- Perfect image quality at resolutions up to 1600 x 1200 using CAT-5 or Fiber optic cable
- Extend a KVM station from a CPU using:
  CAT-5 for distances up to 330 feet (100m)
  Fiber (62.5-µm Multimode) for distances up to 600 feet (200m)
  Fiber (50-µm Multimode) for distances up to 1,310 feet (400m)
  Fiber (9-µm Singlemode) for distances up to 33,000 feet (10km)
- Supports PC and Sun Systems.
- Supports PS/2, Sun, and USB keyboards and mouse.
- The CrystalView uses a microprocessor to emulate the keyboard and mouse. The keyboard and mouse on the receiver do not have to be connected for the PC to boot; only the transmitter Unit must be connected to the PC.
- On-screen display for adjusting brightness, contrast, saturation, pixelclock, phase, and other parameters
- 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 transmitter access model.
- On the transmitter 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, Sun, Unix, Linux (all operating systems)
Monitors	Digital DVI Analog VGA, SVGA, XGA, RGB (Sync-on-green)
Keyboards	PS/2 type keyboards, Sun, USB
Mouse	PS/2, Sun, USB

DVI or VGA

The CrystalView Pro Fiber is designed to work with any combination of VGA and DVI video cards and monitors. The ideal configuration is using a DVI video card, a TFT monitor and DVI video cables. With this configuration, no adjustments are needed. A set-up procedure may be needed if you are using a VGA video card and a TFT, DVI monitor or a DVI video card and a VGA monitor. The installation section of this manual describes these procedures for different combinations of equipment and cables.

Package contents

The package contents consists of the following:
- The transmitter and receiver Units
- Power adapter for transmitter and receiver units.
- Installation and operations manual.

CPU adapter cables 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

Receiver

Transmitter (Local KVM access)

Transmitter (No local KVM access)

Shown with serial and audio options

Figure 1. PC model

Connectors:
Receiver unit
- DVI-1 – DVI/VGA – KVM stations video monitor connection.
- (2) MiniDin-6 – KVM stations keyboard / mouse connection.
- Fiber – SC-type
- 4-pin square – Power
- RJ11 – Programming
- DB9 – Serial data input
- (2) 3.5mm stereo audio input/output

transmitter unit (With Local KVM access)
- DVI-1 – DVI/VGA – CPU video connection.
- DVI-1 – DVI/VGA – KVM stations video monitor connection.
- (4) MiniDin-6 – (2) CPU keyboard and mouse connections / (2)KVM keyboard and mouse connections.
- Fiber – SC-type
- 4-pin square – Power
- RJ11 – Programming
- DB9 – Serial data input
- (2) 3.5mm stereo audio input/output

transmitter unit (No Local KVM access)
- DVI-1 DVI/VGA – CPU video connection.
- (2) MiniDIN-6 – CPU keyboard and mouse connections
- Fiber – SC-type
- 4-pin square – Power
- RJ11 – Programming
- DB9 – Serial data input
- (2) 3.5mm stereo audio input/output

Sun model

Receiver

Transmitter

Figure 2. SUN model

Connectors:
Receiver
- DVI-1 – KVM stations video monitor connection.
- MiniDin-8 – KVM stations keyboard and mouse connection.
- Fiber – SC-type
- 4-pin square – Power
- RJ11 – Programming

Transmitter
- DVI-1 – CPU video connection.
- MiniDin-8 – CPU keyboard and mouse connections.
- Fiber – SC-type
- 4-pin square – Power
- RJ11 – Programming

USB model

Receiver

Transmitter

Figure 3. USB model

Connectors:
Receiver
- DVI-1 – KVM stations video monitor connection.
- USB – KVM stations keyboard and mouse connection.
- Fiber – SC-type
- 4-pin square – Power
- RJ11 – Programming

Transmitter
- HD15M – CPU video connection.
- USB – CPU keyboard and mouse connections.
- SC-type – Fiber cable connector
- 4-pin square – Power
- RJ11 – Programming

Rack model

The rack models consist of 1 to 10 independent units mounted in a single rack mountable chassis. Each unit is individually configured and connected to a corresponding remote or local unit.
Transmitters and receivers can be installed in the same chassis.

OPTICAL ELEMENTS / CABLES

Optical elements

The MultiMode models are Class 1 laser products and comply with IEC 825-1 and FD 21 CFR 1040.10 and 1040.11.

The SingleMode models are Class 1 laser products and comply with IEC 60825-1 and FDA 21 CFR 1040.10 and 1040.11.

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

Cables

Transmitter unit 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, Sun, or USB.

Receiver to KVM station cable

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 Pro 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 unit to Receiver unit cable

Depending on your model and distance need, the transmitter is connected to the receiver with:
- Up to 330 feet of Cat-5 cable
- Up to 650 feet of 62.5μ fiber optic cable (Multimode)
- Up to 1310 feet of 50.0μ fiber optic cable (Multimode)
- Up to 33,000 feet of 9.0μ fiber optic cable (Singlemode)

ON-SCREEN DISPLAY (OSD)

Device Control - OSD

The on-screen display provides an easy way to define the following parameters:
1. Input select, graphic source, VGA or DVI
2. Scale mode, fixed screen resolution/scale mode
3. Brightness/contrast/Back level
4. Colors
5. Color temperatures
6. Color depth
7. Image, pixelclock, phase, screen position
8. Tools, reset to factory defaults
9. Auto configuration
10. Save all settings

To access the OSD feature, press the CTRL, Shift, and I key.

Ctrl   Shift ⇑   I   (Initialize the On-screen display)

When the OSD is active, the keyboard LED will blink, the mouse is inactive, and only the following keyboard keys are active.

Valid Key	Function	Action
Esc	Menu selection	Close the OSD, release keyboard and mouse
	Adjusting parameters	
	Common function on all menus	Back to menu selection
	Menu selection	Select menu function
	Adjusting parameters	Accept selection/Start function
←	Menu selection	Previous menu selection
	Adjusting parameters	Decrease selected parameter
→	Menu selection	Next menu selection
	Adjusting parameters	Increase selected parameter

Value bar is displayed to increase/decrease values

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Contrast

Select graphic source menu

The Input Select menu is the first menu to display when the OSD is activated. This menu allows you to select the graphic source type. This is typically the video card type, VGA or DVI. Use the left or right arrow keys to select VGA or DVI and press [Enter}. The actual graphic source is displayed with a check mark.
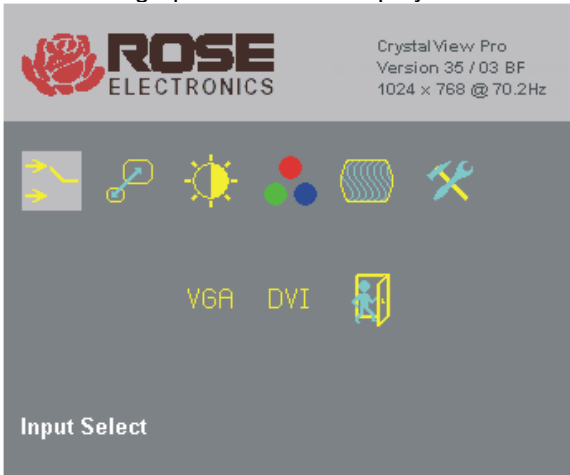

Figure 4. Input select menu

The Scale mode menu allows you to set a fixed resolution at the receiver or use the resolution sent from the transmitter.
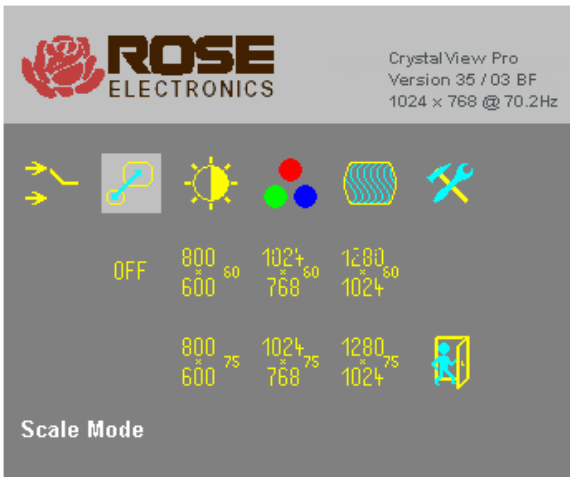

Figure 5. Scale mode menu

The receiver will always generate an exact reproduction of the source signal if the Fixed Resolution setting is set to "OFF".

The fixed resolution setting should be used if the monitor resolution on the receiver is not capable of displaying the resolution sent by the transmitter. If the transmitter is connected to a KVM switch with several CPUs with different video resolutions, setting the receiver to a fixed resolution eliminates the need for the receiver to adjust to the sent resolution when switching between CPUs. The received image will display faster when switching between CPUs if you use a fixed resolution setting on the receiver. Refresh rates of 60Hz are best for LCD displays; 75Hz for CRT's.

Use the arrow keys to select the needed fixed resolution setting and refresh rate, then press [Enter] to accept the new setting.

The brightness / contrast menu enables you to adjust:

Brightness   Contrast   Back level

Figure 6. Brightness/Contrast menu

Use the arrow keys to select the brightness, contrast, or back level Icon and press [Enter]. The adjustable scroll bar will display. Use the left and right arrow keys to increase or decrease the values.

The color and color temperature menu can automatically calibrate for the best color parameters or they can be set manually. Use the left and right arrow keys to select the needed ICON and press [ENTER].
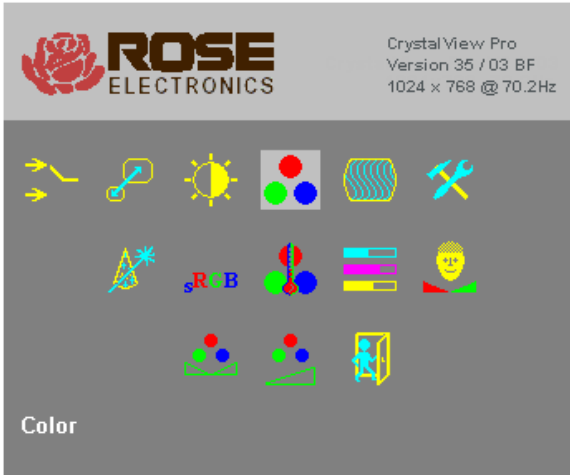
Figure 7. Color / Color temp menu

The automatic calibration adjusts for the best color parameters

sRGB Standard RGB selection

Select color temperature provides two options;

Direct setup of each RGB color, also changes CMY colors

4200k Color temperature selections 4200K, 5000K, 6500K, 7500K, 9300K

Direct setup of each CMY color, also changes RGB colors

Adjusts flesh and skin tones

Adjust Hue

Adjust saturation

Back to menu selection

 The image selection allows re-positioning of the image and for manually adjusting the number of pixels per line (pixelclock) and manually adjusting the phase. This option is only available with a VGA source. No adjustments are needed for a DVI source.
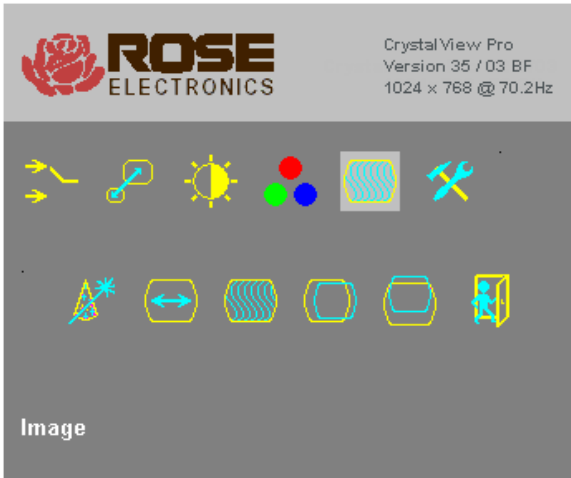
Figure 8. Image menu

	Select to automatically detect the number of pixels per line and the best phase.
	Select to manually adjust the number of pixels per line (Pixelclock)
	Select to manually adjust for the best phase.
	Select to manually adjust the horizontal screen position
	Select to manually adjust the vertical screen position
	Select to return back to the main menu

 The tools selection allows you to adjust the OSD position, reset to factory defaults, adjust sharpness, and other parameters.
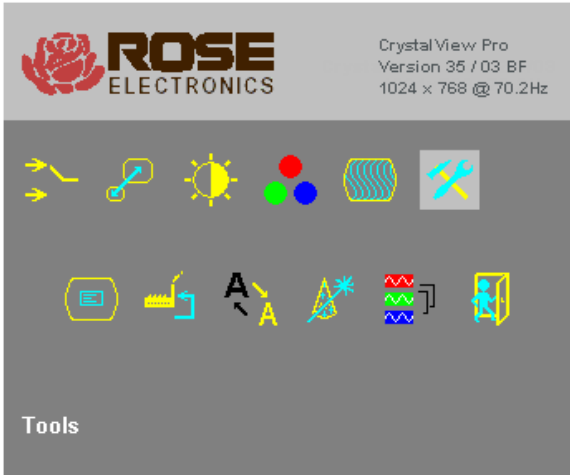
Figure 9. Tools menu

   Manually adjust the OSD

   Manually adjust the Horizontal OSD position

   Manually adjust the vertical OSD position

   OSD size – Select single or double size

   Reset to factory defaults

   Manually adjust sharpness (Only effective on fixed scaling). If you select fixed scaling to keep the resolution fixed when switching to different CPUs, some characters may not be sharp. This function allows you to enhance the sharpness in three steps for fixed scaled images.

Auto-detect the number of pixels and automatically adjust the phase when switching to different CPUs with different resolutions. (See note)

Auto-detect the number of pixels per line and best phase after each change in resolution.

No auto-detection of pixels and phase

Color depth of the source screen picture

Low color mode: This mode allows high frame rates, select for fast screen changes (i.e. video)

Transmitting on CAT-5 with 5 bits/color = 15 bits total = 32768 colors.
Transmitting of fiber with 6 bits/color = 18 bits total = 262144 colors.

High color mode: This mode allows for low frame rates only, select for exact picture display (i.e. medical)

Transmitting on CAT-5 with 7 bits/color = 21 bits total = 2.1M colors.
Transmitting of fiber with 8 bits/color = 24 bits total = 16.78M colors.

Note: Automatic detection of the number of pixels per line and the best phase after switching to a different CPU will ensure a properly adjusted screen picture but this process will increase the time it takes to display the screen picture. If the screen picture needs to be displayed faster and some decrease in sharpness is acceptable, or you are connected to a single CPU or server, deselect this function.

On some menu settings, the save settings display will appear after making any changes. Use the left or right arrow key to select Yes or No and press enter to save the changes made.

Figure 10. Save menu

Installation

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

NOTE: If your CPU uses a DVI video card and the KVM station's monitor is a TFT (flat panel) DVI monitor, pixelclock and phase adjustments should not be needed. Refer to the set-up section for mixed VGA and DVI equipment installation. The CrystalView Pro Fiber's design does not support plug & play or a private mode on the local KVM access models.

When installing the CrystalView Pro 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 VGA cables keeps the video noise to a minimum and reduces installation costs. You can mount the CrystalView Pro Fiber in a CPU rack with the optional rack mount kit. When mounting the units in a rack, follow the instructions in Appendix D and Appendix E. Provide adequate air circulation to assure that the maximum operating temperature is not exceeded.

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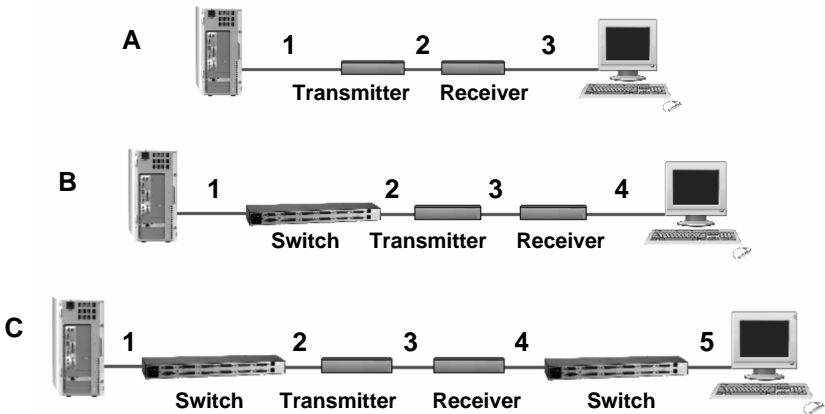

Figure 11. Typical cabling configurations

(See Figure 1, 2, or 3 for the connector locations for your model)

NOTE: Using a PC model with local access, a second
         KVM station can be connected to the transmitter.

Refer to Figure 11 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 cable defined for your system (CAT-5 or Fiber optic)
   3- Connect the KVM stations keyboard, video monitor, and mouse cables to the corresponding connectors on the receiver unit.

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 cable defined for your system (CAT-5 or Fiber optic)
   4- Connect the KVM stations keyboard, video monitor, and mouse cables to the corresponding connector on the receiver unit.

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 cable defined for your system (CAT-5 or Fiber optic).
   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, monitor, and mouse cables to the corresponding connector on the receiver unit.

## Transmitter to Receiver cabling

Cable type	Maximum distance
CAT-5	330' / 100m
62.5µm MultiMode	600' / 200m
50µm MultiMode	1,300' / 400m
9µm SingleMode	33,000' (6.25 miles) / 10km

Table 1.transmitter to receiver cabling

SET-UP instructions (Mixed DVI and VGA)

The following set-up instructions are for systems that use a mixture of VGA and DVI products. Systems with DVI video cards, DVI monitors and use DVI cables normally do not require any set-up.

Set-up consists of adjusting the pixelclock first, then adjusting the phase. To properly do this, an appropriate image must be displayed on the monitor. This image should be a simple 8 x 8 pixel image with altering black and white stripes (4 black and 4 white stripes)
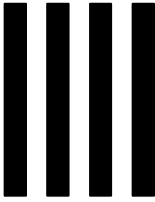
You can create this image using a graphics package that can create a picture 8 pixels wide by 8 pixels high. Create 4 black columns 1 pixel wide by 8 pixels high and 4 white columns 1 pixel wide and 8 pixels high. Save this image in the Windows folder as Burst.bmp (C:\WINDOWS\BURST.BMP)

The recommended procedure for setting the pixelclock and phase is to use the OSD, auto-detect feature. To do this, perform the following:

1. Assign the "Burst.bmp" image you created as your Windows background, and a Tiled display. The desktop should show fine black and white vertical stripes over the total desktop background.
2. Make all connections (CPU to transmitter, transmitter to receiver, and receiver unit to KVM station.)

    (Note: The Remote monitor should not be a TFT flat-panel monitor, it should be a VGA monitor. The CrystalView Pro Fiber digitizes the signals and the TFT monitor also digitizes the signal. Digitizing the signals twice will product invalid results using auto-detect. Once the pixelclock and phase are adjusted, a TFT monitor can be connected.)
3. Start the OSD (CTRL + Shift + I)
4. Select Automatic detection of the number of pixels per line and the best phase" then press Enter to start the auto-detect procedure (See Figure 9).

If the background image's black and white stripes are sharp and without jitter or smearing when the auto-detect function completes, no further adjustments are needed. If there is smearing or jitter, the pixelclock and phase must be adjusted manually.

Pixel clock set correctly	Pixel clock set incorrectly
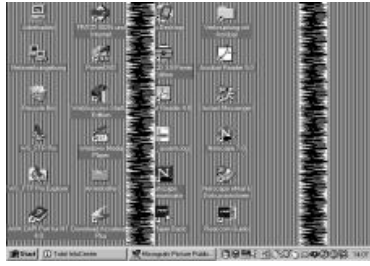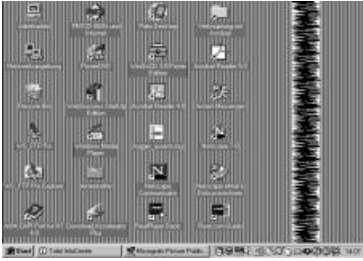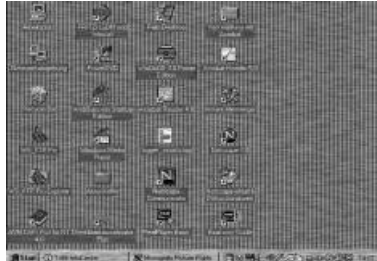
Pixel clock set incorrectly	Phase set incorrectly

Figure 12. Pixelclock/Phase examples

If one or more **vertical** areas have smeared lines, the pixelclock needs adjusting. If there is **horizontal** noise lines, flicker or smearing with a zebra-pattern, the phase needs adjusting. (See Figure 8)

First, manually adjust the pixelclock. Start the OSD and select the "IMAGE" icon. Next, select the "Manually adjust the number of pixels per line" icon, then press enter. Use the left and right arrow keys to modify the pixelclock until all vertical stripes have disappeared. Press enter when the adjustment is complete.

Next, manually adjust the phase setting. Select "Manually adjust the best phase", then press enter. Use the left and right arrow keys to modify the phase until all horizontal noise lines, and any flicker or smearing with a zebra-pattern has disappeared. Press enter when the adjustment is complete.

When the pixelclock and phase are adjusted, you can remove the background image and replace it with your original.

Applying power

Plug in the provided power adapters to a 110/220-volt source and to the power connector on the transmitter and receiver Unit. Only use the power adapter provided. GND and earth should not be connected. Mount ferrite rings in the DC lines to protect against electromagnetic interference. 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, communication status
- Off – no communication errors
- Slow blinking – one or more communication errors occurred over a 60-minute period.
- Fast blinking – Several communication errors occurred over a 60-minute period.
Green LED, Link status
- On – power is on and link connection is locked.
- Blinking – Fiber cable not connected or damaged.

The two LEDs next to the power connector indicate the following:
- Both LEDs on – system booted correctly.
- Only one LED on – unknown video mode being used.

Operating instructions

Once the transmitter and receiver units are connected and configured, the KVM station will function as if it were directly connected to a CPU or KVM switch. All applications, upgrades and PC configurations can be performed normally. If your transmitter is connected to a KVM switch, refer to the switches manual for the proper method of switching to different CPU ports.

Operating instructions – Local KVM access

The CrystalView Pro Fiber with local KVM access allows an additional KVM station to be connected to the transmitter. The CPU or KVM switch can easily be operated from the remote KVM station or the local KVM station but not simultaneously. The transmitter is active during boot-up and the connected CPUs video is displayed on both the transmitter and remote KVM stations monitor. To activate the receiver's KVM station, simply press any key on the KVM stations keyboard. To activate the transmitters KVM station, press any key on the KVM station's keyboard.

Frame Rates

Normally the data rate of a DVI video card is much higher than the transfer rate of the CrystalView pro fiber modules, consequentially, not every frame of the graphic card is transferred. Stating with a recognized VS-signal, the next complete frame generated by the graphic card is digitized (VGA only) and temporally stored, transmitted to the receiver using the available net data rate and displayed. Images generated by the graphic card during the transfer are discarded (frame dropping). The resulting frame rate is approximately 15 fps. Reducing the screen resolution will increase the frame rate, increasing the screen resolution will decrease the frame rate.

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.

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 receiver Unit.
- Check power to the receiver Unit.

No picture
- The Fiber optical cable is not connected at the transmitter and/or the receiver unit.
- One of more fibers broken. **DO NOT LOOK INTO A FIBERS END DIRECTLY WHILE IT IS CONNECTED TO THE TRANSMITTER OR RECEIVER UNIT. 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
- Phase adjustment incorrect Manually or auto-detect the phase setting. (See Figure 8)

Smeared characters
- Pixelclock adjustment incorrect. Manually or auto-detect the pixelclock setting (See Figure 8)

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 unit, 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 Pro 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 Pro 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	VGA – 1600 x 1200 @ 60Hz DVI – 1600 x 1200 @ 60Hz
Video compatibility	DVI, SVGA, VGA, XGA, RGB
Keyboard	PS/2 / SUN / USB
Mouse	PS/2 / SUN / USB
transmitter power	90-240 VAC adapter to 6VDC / app. 8W
Receiver power	90-240 VAC adapter to 6VDC / app. 9.5w
Connectors	Video to PC – DVI-1 Video to KVM – DVI-1 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	850nm	1300nm
Output power	<400µW*	<2000µW*
Output power	<70µW**	<180µW**
Beam divergence	12°	4°

 * as defined by IEC: 50mm 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)
Launched Power (Avg) into singlemode fiber 9 µm	-3 dBm (-11dBm, min)
Center wavelength (multimode) Center wavelength (singlemode)	850nm 1300nm

Receiver Electro-Optical characteristics

Sensitivity (Avg. power multimode)	-20dBm (-17dBm max)
Sensitivity (Avg. power singlemode)	-22dBm (-20dBm max)

Appendix B. Parts and cables

Part Number	Description
CRK-2DFMPDVI	PC – MultiMode – Local KVM access
CRK-2DFSPDVI	PC – SingleMode – Local KVM access
CRK-1DFMPDVI	PC – MultiMode
CRK-1DFSPDVI	PC – SingleMode
CRK-1DFMSDVI	Sun – MultiMode
CRK-1DFSSDVI	Sun – SingleMode
CRK-1DFMUDVI	USB – MultiMode
CRK-1DFSUDVI	USB – SingleMode
NOTE: Part number with /AUD suffix includes audio support	
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 Pro 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

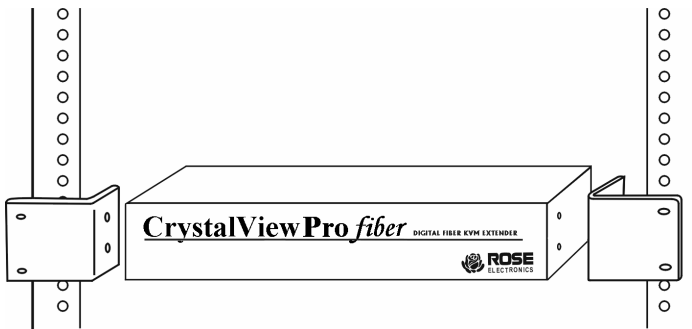The optional rack mount kit includes the following items:
- Two black anodized mounting brackets.
- Four 6 - 32 x 3/8" flat head mounting screws.

To rack mount your CrystalView Pro 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

Server Management

Solutions