

CrystalView Plus USB

ENHANCED CAT5 KVM EXTENDER

INSTALLATION AND OPERATIONS MANUAL



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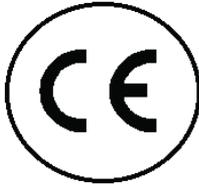
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This equipment is in conformity with the protection requirements of the following Council Directives:

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

EN55022: Class A

EN55024

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System introduction

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

The CrystalView Plus USB is available in a single or dual video model. Serial/Audio features are also an option on all models. The single and dual video models have local and remote access. The local access allows an additional KVM station to be connected to the Local Unit.

The CrystalView Plus USB system consists of two Units, a Local Unit and a Remote Unit. The Local Unit connects to your CPU with one or two video sources or to a Rose switch. The Remote Unit connects to a USB keyboard, one or two video monitors and a USB mouse. The Local and Remote Units are connected together with industry standard CAT-5, CAT-5e, or CAT-6 shielded or unshielded, solid core twisted-pair cable terminated with RJ45 connectors. All models can extend the distance from the CPU up to 1,000 feet. CAT-x cable can be ordered from Rose Electronics in 25-1,000 foot lengths.

Using the CrystalView Plus USB to remotely access your computer has several applications that make it convenient for the users. You can locate your computers in a secure area and access them from other unsecured areas. Computers used in hazardous industrial environments can be accessed remotely, keeping the users safe and unexposed to any hazards.

Features

- Available in single and dual video models
- Extend a KVM station from a CPU using a single CAT-x cable. (Up to 650 feet at resolutions of 1600 x 1200 @ 60Hz, 1,000 feet for the resolutions of 1280 x 1024 @ 75Hz.)
- Supports Serial, and full stereo audio
- Operates as a full-speed composite USB device, compatible with any USB 1.1 or 2.0 host
- Supports a maximum of 7 USB HID devices including USB hubs
- The CrystalView Plus USB uses a microprocessor to emulate the keyboard and mouse for plug and play operation. 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
- Integrated skew compensation adjusts all colors
- Low frequency (LF) and high frequency (HF) equalization adjustments for optimum video tuning
- Compatible with Rose Electronics family of KVM switches such as ServeView Pro, UltraView Pro 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
- The computers video is displayed on both the local and remote KVM stations monitors except in the private mode
- Local or Remote KVM station can inhibit the other
- Serial and Bi-directional full stereo audio options. Stereo audio can be transmitted in either direction across the CAT-x link simultaneously
- Many serial devices like a Touchscreen can plug directly into the Remote Unit
- Status indicator LEDs on each RJ45 connector
- Surge protection on each RJ45 port
- All settings and video tuning performed from the remote unit and saved in flash memory
- Remote unit is flash upgradeable
- Rack mount kits available in 19", 23" and 24" sizes

Compatibility

Computers	PCs with standard USB keyboards and USB mice
Monitors	VGA to UXGA HV, Composite, Sync-on-green,
Keyboards	USB type keyboard.
Mouse	USB Wheel mouse
Serial Devices (Serial/Audio model only)	Touchscreens, Graphic Tablets, Serial printers/plotters, Computer terminals Serial mice, Other standard asynchronous serial devices.
Audio Devices (Serial/Audio model only)	Compatible sound cards Amplified or non-amplified microphone Amplified computer stereo speakers Other audio devices that transmit/receive signals less than 5 volts peak-to-peak.
USB Devices (7 maximum HID ONLY)	Composite keyboard/mouse devices PS/2 to USB converters USB Hubs

Package contents

The package contents consist of the following:

- The CrystalView Plus USB Units as ordered
- Power adapter for Remote Unit. (Auto-switching transformer)
- Gender changer (factory installed)
- Installation and operations manual.

Video, serial, audio and CAT-x cables are usually ordered separately.

Rose Electronics web site

Visit our web site at www.rose.com for additional information on the CrystalView Plus USB 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 CrystalView Plus USB, single and dual video models.

Dual video Local models



Figure 1. Dual Video (Local models)

Connectors:

Front

- RJ45 (2) CATx cable connection (front panel)

Rear

- HD15F CPU video connection.
(2) to CPU Video card / (2) to local monitors
- USB USB Type B

NOTE: The CrystalView Plus USB is available with single or dual video, Local KVM access, and serial / audio options

Dual video Remote model



Figure 2. Dual Video (Remote models)

Connectors:

Front

- RJ45 CATx cable connection (front panel)

Rear Remote

- HD15F (2) KVM video connection.
- USB (4) USB Type A
Keyboard / mouse / USB device or hub connections
- Power 5V power adapter connector

Cables

Local Unit to CPU cables

Video - HD15MM cable for each CPU video output (1 or 2)
USB – Standard USB Type B to Type A

Remote Unit to KVM station cable

The USB keyboard, video monitor, and USB mouse cables on the remote KVM station can connect directly to the CrystalView Plus USB Remote unit

Stereo speakers and a microphone can also connect directly to the remote unit's audio ports.

Local Unit to Remote Unit cable

The Local Unit is connected to the Remote Unit with up to 1,000 feet of standard CAT-x UTP/STP “solid core” cable terminated with RJ45M connectors. Rose Electronics cable part number CAB-08UTPnnn. The unit uses two CAT-x cables from the local unit to the remote unit.

Serial cable

To connect the Local Unit to the CPUs DB9 serial port, you can use a standard DB9MF serial 1:1 (DTE-DCE) cable. The Remote Units “SERIAL” port is wired as DTE (the same as the CPUs serial port). To connect a serial printer or other DTE devices to the Remote Unit, you will need a Null-modem (crossover) cable between the Remote Unit and the device. Select Xon/Xoff software flow control on the printer and PC. A serial Touchscreen can be directly connected to the Remote unit's serial port.

Audio cable

CrystalView Plus USB models with the audio option are configured with two 3.5mm stereo audio jacks on both the Local and Remote Unit. Standard 3.5mm stereo audio cables can be used to connect between the Local Unit's “LINE IN” connector and a sound card's “LINE OUT” connector. The Remote Units “LINE OUT” connects to a pair of powered computer speakers.

If you want to use a microphone on the remote unit, there are two ways to set this up:

1. Method #1
 - a) Connect the "LINE OUT" connector on the local unit to the "MIC" input on the CPU's sound card
 - b) Connect a microphone to the remote unit's "LINE IN" connector
 - c) Adjust the sound card to provide an additional +20dB of amplification.
2. Method #2 (use the Remote unit for additional amplification)
 - a) Remove the Remote unit's power and cover and locate the jumper labeled "MIC" and connect a jumper across the pins
 - b) Replace the Remote unit's cover and restore power
 - c) Connect a non-powered microphone to the Remote unit's "LINE IN" connector and the Local unit's "LINE OUT" to the CPU's sound card's "MIC IN" connector.

NOTE: If you are using a powered microphone, connect it directly to the "LINE IN" connector on the remote unit and connect the Local unit's "LINE OUT" connector to the sound card's "LINE IN" connector (DO NOT INSTALL THE "MIC" JUMPER)

The video performance will vary with different cable types. The CrystalView Plus USB makes it easy to adjust the skew and video compensation with simple keyboard commands.

Installation

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

Installation of the CrystalView Plus USB consists of three easy steps.

1. Connect the cables to the equipment.
2. Applying power.
3. Adjust the video channels (if needed).

More advanced users can refer to Appendix E for a quick installation and video compensation adjustment guide.

For systems that only require running Video through the CrystalView Plus USB with no keyboard or mouse or use extended cable lengths between the local unit and a computer or KVM switch, supplemental power should be supplied to the Local Unit. The Local Unit gets its power from the USB port of the CPU. Rose Electronics can supply a power transformer that connects to the Local Unit to provide this power. This power transformer can be ordered from Rose Electronics (P/N TFR-05D400FSUB)

When installing the CrystalView Plus USB, locate the Local unit as close as possible to the CPU. Keep the USB and video 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 Plus USB in a CPU rack with the optional rack shelf kit. When mounting in a rack, follow the instructions in Appendix C and Appendix D and assure that the operating temperature of the Local and Remote Units do not exceed the maximum ratings. Provide adequate air circulation to assure that the maximum operating temperature is not exceeded.

Wherever the CrystalView Plus USB Local and Remote Units are located, they should be on a secure surface and free from obstructions and objects that may cause damage to the units.

Connecting the cables

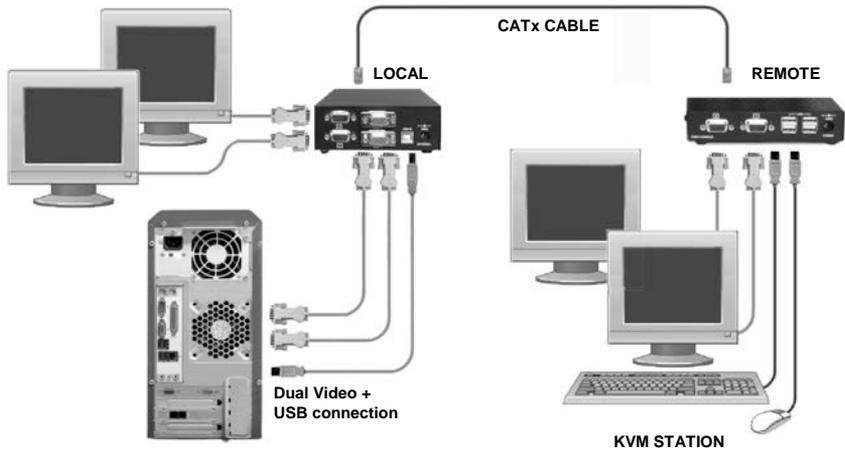


Figure 3. Dual Video Connections

Local unit to CPU cabling

Use standard HD15MM cables to connect the primary and secondary video outputs from the video card to the local unit's HD15F connectors. A type A to Type B USB cable connects from the computer to the units Type A connector. Connect a primary and secondary monitor to the HD15F connectors for local viewing of both video signals. For local access to the computer, connect a USB keyboard and USB mouse to any available USB port on the computer.

Remote Unit to KVM Station cabling

The USB keyboard and USB mouse connect directly to the CrystalView Plus USB remote unit. The primary and secondary video monitors also connect directly to the unit.

Serial/audio models

For the serial/audio models, connect the serial DB9M port on the CPU to the DB9F serial connector on the CrystalView Plus USB using a DB9F to DB9M serial cable.

The line out of the CPU's sound card connects to the Line in port on the CrystalView Plus USB. The line in connects to the CrystalView Plus USB line out port.

Connect to the remote unit a pair of stereo speakers to the line out port, a microphone to the line in port, and a compatible serial device to the DB9 connector.

Serial port

The serial port is a DB9F on the local unit and DB9M on the remote unit. The serial port on the remote unit is the same as the DB9M serial connector on your computer. Serial devices such as Touchscreens can connect directly to the serial port on the remote unit

Audio ports

A set of powered computer speakers can connect directly to the CrystalView Plus USB remote unit's line level audio out connector. A powered or non-powered microphone can connect to the Line level audio in (MIC) connector.

If you are using a non-powered microphone on the Remote Unit, install the "MIC" jumper, if needed, to provide additional amplification.

DO NOT INSTALL THE "MIC" JUMPER IF USING A POWERED MICROPHONE.

Applying power (All models)

Plug in the power adapter to a 100/240-volt source and to the power connector on the Remote Unit. Only use the power adapter provided with the CrystalView Plus USB. Boot up the connected CPU and wait for it to completely boot-up. The Local Units power is supplied from the CPUs USB port. If additional power is required at the local unit due to extended cable lengths or only passing video through the CrystalView Plus USB, connect the optional +5V DC power adapter to the local units +5V DC power jack.

With power applied, you should see the primary and secondary video on the remote unit's monitors. Verify that the keyboard and mouse connected to the remote unit function properly. The video can be fine tuned to correct for patch panels and cable differences with simple keyboard commands. Table 1 shows the keyboard commands and key sequences used to initiate the command.

Keyboard commands

Note: Use only the numeric keys above the keyboard to initiate the keyboard commands from the remote unit. Do not use the numeric keypad.

NOTE: All keyboard commands are initiated from the Remote unit. Before any keyboard command can be issued, the unit must be in the command mode and a channel selected.

Command	Key Sequence
Command Mode	[L-Ctrl] + [L-Shift] + [F10]
Exit Command Mode and save	[ESC]
Exit Command Mode without saving	[L-Shift] + [ESC]
Select Channel 1 or 2	[1] / [2]
Select Channel 0	[0] (select all channels)
Reset EQ & Delay values	[L-Ctrl] + [Home]
Next Assisted EQ setting	[L-Ctrl] + [PgUp]
Previous Assisted EQ setting	[L-Ctrl] + [PgDn]
Increase RED delay	[R] + [R-arrow]
Decrease RED delay	[R] + [L-arrow]
Increase Green delay	[G] + [R-arrow]
Decrease Green delay	[G] + [L-arrow]
Increase Blue delay	[B] + [R-arrow]
Decrease Blue delay	[B] + [L-arrow]
Toggle RED delay	[L-Ctrl] + [R]
Toggle GREEN delay	[L-Ctrl] + [G]
Toggle BLUE delay	[L-Ctrl] + [B]
Reset EQ values	[L-Ctrl] + [End]
Increase LF EQ (Course)	[L] + [Up Arrow]
Decrease LF EQ (Course)	[L] + [Dn Arrow]
Increase LF EQ (Fine)	[L] + [R-Arrow]
Decrease LF EQ (Fine)	[L] + [L-Arrow]
Increase HF EQ (Course)	[H] + [Up Arrow]
Decrease HF EQ (Course)	[H] + [Dn Arrow]
Increase HF EQ (Fine)	[H] + [R-Arrow]
Decrease HF EQ (Fine)	[H] + [L-Arrow]
Reset keyboard and mouse	[F1]
Send NULL mouse byte	[F3]
Reset to factory defaults	[L-Ctrl] + [F9]
Toggle Unit Private Mode	[Scroll Lock]

Table 1. Keyboard Commands

Keyboard command descriptions

Command mode – [L-Ctrl] + [L-Shift] + [F10]

Entering the command mode sends the remote units keyboard instructions to the CrystalView Plus USB Local unit instead of the connected computer. In the command mode, the yellow LED on the remote units RJ45 connector for channel 1 will light indicating that the unit is in the command mode. The keyboard status LEDs (Num lock, Caps Lock, and Scroll Lock) will flash indicating which channel is selected. The Command mode automatically times out after 30 seconds of inactivity, saves all settings, and returns the keyboard to normal functions.

Number of keyboard status LED flashes	Video channel selected
1	Channel 1 (Default, all models)
2	Channel 2
Slow flashes	Channel 0 (All channels)

Table 2. Channel select

Exit Command mode and save – [Esc]

Pressing the Esc key while in the command mode will save all configuration changes made and exit the command mode.

Exit Command mode without saving – [L-Shift] + [ESC]

Pressing the left shift key and the Esc key while in the command mode will exit the command mode without saving any configuration changes.

Select Channel 1 – [1]

Pressing 1 while in the command mode selects channel one and all configuration adjustments apply to channel 1 only. Keyboard status LEDs flash once.

Select Channel 2 – [2]

Pressing 2 while in the command mode selects that channel and all configuration adjustments apply to the selected channel only. Keyboard status LEDs flash twice for channel 2.

Select Channel 0 – [0] (Dual video model only)

Pressing 0 (zero) while in the command mode selects all channels and all configuration adjustments are applied to all channels.

This is especially helpful if all cable lengths and types used for all channels are the same.

Reset EQ & Delay values – [L-Ctrl] + [Home]

Issuing this command resets the LF and HF equalization and the red, green, and blue delay values for the selected channel.

Next Assisted EQ setting – [L-Ctrl] + [PgUp]

This command resets the LF and HF equalization settings, then each time the command is issued, incrementally steps through a table of preset LF and HF equalization values for different cable lengths in 25m increments from 0 to 375m. After finding the best setting, fine tuning of the HF and LF equalization may be needed. Perform the fine tuning after adjusting for any color skew.

Previous Assisted EQ setting – [L-Ctrl] + [PgDn]

This command decreases the LF and HF equalization settings by 25m. Use this command in conjunction with the Next Assisted EQ setting command to obtain the best setting for the select channel.

Increase RED delay – [R] + [R-Arrow]

Each time this command is issued, the RED video component is delayed an incremental step from 0 to 42ns max. in 2.8 ns steps.

Decrease RED delay – [R] + [L-Arrow]

Use this command along with the increase RED delay to properly align the RED video component.

Increase GREEN delay – [G] + [R-Arrow]

Each time this command is issued, the GREEN video component is delayed an incremental step from 0 to 42ns max. in 2.8 ns steps.

Decrease GREEN delay – [G] + [L-Arrow]

Use this command along with the increase GREEN delay to properly align the GREEN video component.

Increase BLUE delay – [B] + [R-Arrow]

Each time this command is issued, the BLUE video component is delayed an incremental step from 0 to 42ns max. in 2.8 ns steps.

Decrease BLUE delay – [B] + [L-Arrow]

Use this command along with the increase BLUE delay to properly align the BLUE video component.

Toggle RED delay – [L-Ctrl] + [R]

Each time this command is issued, the RED video component delay is toggled between 0 and 19ns.

Toggle GREEN delay – [L-Ctrl] + [G]

Each time this command is issued, the GREEN video component delay is toggled between 0 and 19ns.

Toggle BLUE delay – [L-Ctrl] + [B]

Each time this command is issued, the BLUE video component delay is toggled between 0 and 19ns.

(Refer to Figure 6 for LF and HF adjustments)

Reset EQ values – [L-Ctrl] + [End]

Issuing this command will reset the HF and LF equalization values for the selected video channel to zero. Color delay values are not affected.

Increase LF EQ (Course) – [L] + [Up Arrow]

Use the Increase LF EQ adjustment to remove black smears to the right of large objects.

Decrease LF EQ (Course) – [L] + [Dn Arrow]

Use the Decrease LF EQ adjustment along with the Increase LF EQ to obtain the sharpest image.

Increase LF EQ (Fine) – [L] + [R-Arrow]

Use the Increase LF EQ adjustment to remove black smears to the right of large objects.

Decrease LF EQ (Fine) – [L] + [L-Arrow]

Use the Decrease LF EQ adjustment along with the Increase LF EQ to obtain the sharpest image

Increase HF EQ (Course) – [H] + [Up Arrow]

Use the Increase HF EQ adjustment to sharpen the image.

Decrease HF EQ (Course) – [H] + [Dn Arrow]

Use the Decrease HF EQ adjustment along with the Increase LF EQ to obtain the sharpest image.

Increase HF EQ (Fine) – [H] + [R-Arrow]

Use the Increase HF EQ adjustment to sharpen an image.

Decrease HF EQ (Fine) – [H] + [L-Arrow]

Use the Decrease HF EQ adjustment along with the Increase LF EQ to obtain the sharpest image.

Reset keyboard and mouse – [F1]

Pressing the [F1] key while in the command mode will reset the keyboard and mouse, and then exit the command mode. Use this command if the keyboard or mouse lock up or the mouse does not initialize properly.

Send NULL mouse byte – [F3]

Pressing the [F3] key while in the command mode will send a NULL byte to the system and then exits the command mode. Use this command to re-synchronize an out of sync mouse. This command may need to be issued several times to re-sync the mouse.

Reset to factory defaults – [L-Ctrl] + [F9]

The reset to factory default command will reset the HF and LF equalization values, all color delay values and all configurations for all channels back to the original factory defaults and then exit the command mode.

Toggle Unit Private Mode – [Scroll Lock]

CrystalView Plus USB models with local KVM access have a private mode available which can inhibit the local unit's monitor. When the remote unit issues this command, it blanks the monitor and prevents the other unit from being used until the private mode command is issued again. To indicate that a unit is in the private mode, the scroll lock LED will slowly flash. To cancel the private mode, enter the Command Mode and press the Scroll Lock key again.

Local unit Keyboard commands

To initiate a local unit keyboard command, first press the "HOT-KEY" then the command. The default "HOT-KEY" is the right control key. To change the default "HOT-KEY" from the right control key to the left control key, enter the Command mode and press [F7]. This toggles the "HOT-KEY" from the right control key to the left control key. When the [F7] key is pressed, the "HOT-KEY" change is saved and the unit exits the Command mode and returns to normal operation.

The remote user can start a session by pressing the "HOT-KEY" (right control key), then the scroll lock key. When the remote unit is in the private mode, the Scroll Lock LED on the local unit flashes and all three LEDs on the remote unit will illuminate. The local monitor is blanked.

Adjusting the video

All video adjustments are performed from the remote unit. Make sure all connections are in place and the video from the computer(s) connected to the local unit are powered up and operating properly.

An online test card has been developed for assisting in the video skew and color delay adjustments. If possible, display this test card on the remote unit to adjust. The online location of the test card is:

<http://www.rose.com/htm/crvtestcard.htm>.

If displaying the test card is not possible, display some text in a large font on a white background. Also open a windows application and check the text in the tool bars and icons on the desktop for clarity and correct colors.

The RED, GREEN, and BLUE delay for a selected channel can be adjusted to obtain the clearest image. If possible, use the on-line test card to perform the skew adjustments. (See Figure 5)

First enter the Command mode ([L-Ctrl] + [L-Shift] + [F10]) then select a channel to adjust [1, 2 or 0) and then display the test card. The color skew adjustment lines on the test card are equally divided into RED, GREEN, and BLUE. If the colors on the line are not aligned, adjust the skew by increasing the color delay for the faster color(s). Refer to the example in Figure 4.

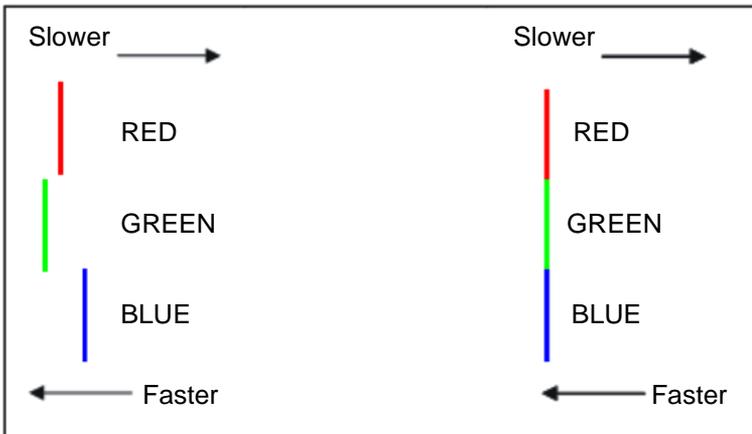


Figure 4. Color skew delay compensation

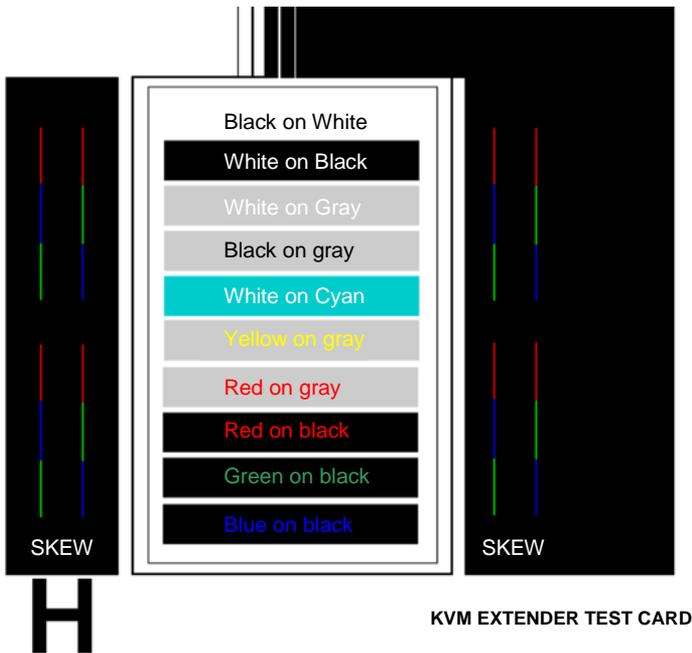


Figure 5. Video Test Card

To begin adjusting the LF and HF equalization, display the text card as shown in Figure 5. Observe the “H” in the lower left corner of the test card. Compare it with the example shown in Figure 6 and adjust the LF or HF equalization to obtain sharp clean image edges.

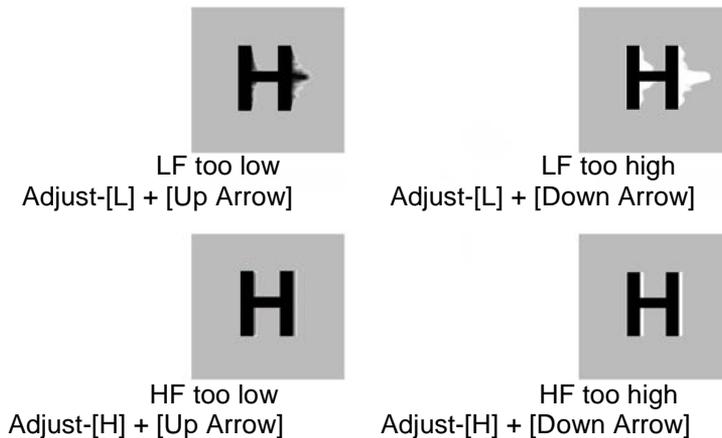


Figure 6 HF / LF adjustment guide.

In summary, adjusting the video consists of:

1. Enter the Command Mode
2. Select the video channel to adjust
3. Display the test card or a created straight line graphic that is equally divided into three color parts, RED, GREEN, and BLUE
4. Adjust the RED, GREEN, and BLUE delay to align the three colors
5. Observe the “H” in the lower left corner of the test card or display some text on a white background.
6. Adjust the LF and HF Equalization to eliminate smearing or bright streaks
7. Save the settings
8. On the dual and quad models, select the next video channel to adjust and perform steps 3 – 7 on this and all other channels.

When you enter the “Command Mode” to adjust a channel's video, the yellow LED on the Rj45 connector for channel one will light (Not blink). When you are adjusting the video, keyboard commands are directed to the CrystalView Plus USB remote unit. Mouse activity is temporarily halted until you exit the command mode. When you select a channel to adjust the video, the status LEDs on the keyboard will blink, indicating which channel is selected.

(See Table 2)

Operating instructions- All units

Once the Remote and Local Units are connected and configured, the Remote KVM station's keyboard, video monitors and mouse will function as if it were directly connected to the CPU. All applications, upgrades and PC configurations can be performed normally.

Each RJ45 connector on the remote unit has two LEDs. The left LED is yellow, the right one is green. The green LED on all channels will flash if a video signal is being received from the local unit. If no video signal is being received, the green LED will remain "ON". The yellow LED on channel one only will flash indicating that the keyboard and mouse are active. The video from all sources will always display on their respective monitor unless the unit is in the private mode (Dual and Quad models only).

Operating instructions

KVM Switching

The CrystalView Plus USB allows for an additional KVM station to be connected to the Local Unit. The CPU can be operated from either the Remote or Local KVM station but not simultaneously. The Local Unit is active during boot-up. To activate the Remote KVM station, simply press any key on the Remote KVM stations keyboard or move the mouse. To activate the Local KVM station, press any key on the Local KVM station's keyboard or move its mouse. Both the local and remote monitors will display the current computer activity unless a unit is in the private mode.

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

Private mode

The private mode feature will blank the video monitor on the Local Unit. To enter the private mode, execute the command shown in Table 3.

Unit	Command
Remote	[L-Ctrl] + [L-Shift] + [F10] / [Scroll Lock]

Table 3. Private mode commands

DDC Emulation

The CrystalView Plus USB local unit emulates a universal monitor (both channels) and communicates with the graphic card that it is capable of all standard video resolutions and refresh rates, including several wide screen modes. This emulation ensures that the majority of graphic cards and monitors will operate correctly.

If the default DDC information does not provide the required graphic mode needed, the DDC information from the remote monitors can be read and stored in the local unit. The DDC emulation can also be disabled but this is not recommended and would only be required in special applications.

To obtain the DDC information from the remote monitor(s) and save this information to the local unit, perform the steps shown below.

Transferring DDC information

To transfer the DDC information from the remote monitor(s);

1. Install and power up the system
2. Connect the monitor to transfer the DDC information to "Monitor 1" connector on the remote unit.
3. Enter the command mode [L-Ctrl] + [L-Shift] + [F10]
4. Select the video channel to apply the DDC setting to <1>, <2>, or <0> (both channels)
5. Press <left Ctrl + D> to read the DDC information from the monitor and apply it to the selected video channel on the local unit. The remote keyboard LED's will flash twice, indicating the transfer was successful.
6. Re-boot the connected computer

Keyboard Language ID

Setting the keyboard language ID is not normally needed, but some operating systems (such as Solaris) require a language ID to determine the keyboard layout. The language ID is read from the keyboard used to issue the command mode.

1. Enter the command mode [L-Ctrl] + [L-Shift] + [F10]
2. Press the key combination [L-Ctrl] + [F3]

After issuing these commands, the remote unit will exit the command mode and the local unit will reconnect to the PC with the language ID obtained from the keyboard issuing the commands. You will be unable to use the keyboard and mouse for a short duration. If any problems occur, simply disconnect and re-connect the local unit's USB cable.

USB Descriptor Transfer

The local unit emulates a standard USB keyboard and mouse. This emulation is normally sufficient for general KVM use. To support non-standard (device specific) features such as multimedia keyboards, the USB descriptor from these non-standard USB devices can read and saved to the local unit. At present, the descriptor transfer is limited to support for multimedia keyboards. Check with technical support for any additional USB devices that may have been added.

To transfer the USB descriptor:

1. Enter the command mode [L-Ctrl] + [L-Shift] + [F10]
2. Press the key combination [L-Ctrl] + [F4]

After issuing these commands, the remote unit will exit the command mode and the local unit will reconnect to the PC as a USB device with the transferred descriptors. You will be unable to use the keyboard and mouse for a short duration. If any problems occur, simply disconnect and reconnect the local unit's USB cable.

Troubleshooting

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

Image is not sharp / smeared

- Improper video equalization adjustment.
- Check CATx cable connections.
- If you are using an LCD panel, adjust the panel's clock and phase.

Separated colors / colored borders on text and icons

- Improper skew settings, adjust color delays.
- Check CATx cable connections.

No video on remote monitor

- No power applied to local unit.
- Check USB connection on local unit, local unit power is obtained from the CPU USB connection.
- CPUs USB port does not supply adequate power for the local unit, Use an external 5V power adapter.

Monitor goes blank for a few seconds

- Check CATx cable routing to assure it is not routed near power lines or other power sources that can cause interference.
- Check the system grounding.

Incorrect graphic mode on boot-up

- If the CPUs graphic card supports VESA DDC, configure the graphic driver for the exact make and model of the video monitor.
- Transfer the monitor's DDC information to the local unit.

Video is unstable / excess jitter

- If you are using an LCD panel, adjust the panel's clock and phase.
- Power off and on the remote unit.

Only video is required, but no picture appears.

- The probable cause is that power to the Local Unit is not applied. The Local Unit obtains its power from the CPUs USB port. A USB cable must be connected from the Local Unit to the CPU even if no keyboard or mouse is required. A supplementary power supply can be obtained that connects to the Local Units USB connector.

No sound at the Remote Units speakers or headphones.

- Audio cable loose or defective.
- Audio cable in the wrong connector.
- Sound card “Line Out” muted.

No sound at the CPUs speakers when using a Microphone on the Remote Unit.

- Microphone cable in wrong connector.
- Sound card “MIC” input muted.
- Microphone signal not amplified; increase sound card amplification by +20db. Add “MIC” jumper on the Remote Units daughter board to increase signal. Do not add this jumper if the microphone is already a powered microphone.

Serial device does not function

- Serial cable loose or defective.
- Flow control incorrectly set on unit or CPU.
- Connect serial device directly to the CPU’s serial port and check to determine if the problem is a PC or CrystalView Plus USB problem.

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 CrystalView Plus USB, 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 Plus USB 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 Plus USB 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 CrystalView Plus USB.
- 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.

Appendix A. General specifications

Maximum resolution	1600 x 1200 @ 60 Hz (Less than 650 feet / 200M) 1280 x 1024 @ 75 Hz (650 -1,000 feet / 200 – 300M)
Video compatibility	Analog VGA to UXGA, RGB
Video levels	0.7V P-P
Video coupling	DC
Sync type	Separate/composite TTL level Sync on green Sync polarity is preserved.
Keyboard / Mouse	Standard HID keyboards and mice, Hubs
Skew adjustment	2.8ns steps / 42ns max per color
Console lockout period	2-seconds
Serial data	Format: Transparent Signals: TX, RX, RTS, CTS, DTR, DSR Baud rate: 19.2K max
Audio data	Digitized, bi-directional stereo audio Input level: 4.0 V P-P Input impedance: 47K ohms
Local power	From PC USB port (optional +5V adapter)
Remote power	5V, 10W Regulated (auto-sensing 100 – 240 VAC input)
Connectors	Video to PC – HD15M Video to KVM – HD15F Keyboard / mouse: USB Type A Serial: Local unit – DB9F (DCE) Remote unit – DB9M (DTE) Audio – 3.5mm stereo audio jacks Interconnect: CAT-5, 5e, 6
Temp/Humidity	32° F-104° F / 0° C-40° C / 5% to 90% RH

Dimensions	Width In / mm	Depth In / mm	Height In / mm
Local Unit			
Single video	4.88 / 124	4.44 / 113	1.18 / 30
Single video w/serial-audio	4.88 / 124	4.44 / 113	1.73 / 44
Dual video	4.88 / 124	4.44 / 113	1.73 / 44
Dual video w/serial-audio	5.71 / 145	4.44 / 113	1.73 / 44
Remote Unit			
Single video	5.51 / 144	5.94 / 151	1.18 / 30
Single video w/serial-audio	5.51 / 144	5.94 / 151	1.73 / 44
Dual video	5.51 / 144	5.94 / 151	1.18 / 30
Dual video w/serial-audio	5.51 / 144	5.94 / 151	1.73 / 44

Shipping Weight	Lbs / kg
Local Unit / Remote unit	
Single video	4.4 / 2.0
Single video w/serial-audio	4.85 / 2.2
Dual video	4.85 / 2.2
Dual video w/serial-audio	5.29 / 2.4

Appendix B. Parts and cables

Part Number	Description
CRV-DLU1	Local unit - Single video
CRV-DLU2V	Local unit – Dual video
CRV-RU1V	Remote unit – Single video
CRV-RU2V	Remote unit – Dual video
/AUD	Audio & serial option
TFR-05D400FSUB-2.1	Remote / Optional local power supply
CAB-08UTPnnn*	CAT-5 UTP cable**
CAB-D9MFnnn*	DB9M to DB9F (Serial)
CAB-SPMMnnn*	Mini-Phone (3.5mm audio cable)
RM-BR3	Rack Mount shelf

* nnn = length of cable in feet.

** CAT-5 cable available from 25 to 1,000 feet. (7.62 – 300 meters)

Appendix C. Rack mount instructions

The optional rack mount kit includes the following items:

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

To rack mount a single unit, attach the two rack mounting brackets to your Unit with the short flange against the Unit or mount up to three units on the Rackmount shelf. Do not over tighten the screws used to mount the Unit to the mounting brackets or shelf. 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 or the shelf 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 0° C to 40° 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.

Provide a grounded power source to all Units. Pay special attention to overall branch circuit load ratings before connecting equipment to this source. Overloaded circuits are potential fire hazards and can cause equipment failures or poor performance.

Appendix D. Rack mount illustration



Shelf mount bracket for 3 units

Appendix E. Quick Installation/Setup Guide

This appendix provides a quick installation and video compensation guide for experienced users. Refer to the complete installation guide for a more detailed set of instructions.

Install units

1. Connect Remote unit to KVM, serial & audio devices, additional video monitors and power
2. Connect Local unit to Computer or KVM switch
3. Connect Local unit to Remote unit with CAT5, CAT5e, or CAT6 cable
4. Apply power to all equipment

Select video channel to adjust

5. Enter Command Mode then select Channel 1, 2, 0 (all)

Display Video test card

6. <http://www.rose.com/htm/crvtestcard.htm>

Reset selected channel

7. <left Control> + <Home>

Apply Assisted EQ

8. <Left Control> + <Page Up> (Next)
<Left Control> + <Page Down> (Previous)

Adjust Skew

9. Adjust individual color delays until test card's RED/GREEN/BLUE vertical lines are aligned.
<See Table 1 for commands>

Fine tune LF and EQ values

10. <See Table 1 for commands>

Exit Command mode and save

11. <ESC>

NOTES:



Server Management



Solutions

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