CrystalView Mini USB

INSTALLATION AND OPERATIONS MANUAL

ROSE ELECTRONICS

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LIMITED WARRANTY

Rose Electronics® warrants the CrystalView™ Mini USB to be in good working order for one year from the date of purchase from Rose Electronics or an authorized dealer. Should this product fail to be in good working order at any time during this one-year warranty period, Rose Electronics will, at its option, repair or replace the Unit as set forth below. Repair parts and replacement units will be either reconditioned or new. All replaced parts become the property of Rose Electronics. This limited warranty does not include service to repair damage to the Unit resulting from accident, disaster, abuse, or unauthorized modification of the Unit, including static discharge and power surges.

Limited Warranty service may be obtained by delivering this unit during the one-year warranty period to Rose Electronics or an authorized repair center providing a proof of purchase date. If this Unit is delivered by mail, you agree to insure the Unit or assume the risk of loss or damage in transit, to prepay shipping charges to the warranty service location, and to use the original shipping container or its equivalent. You must call for a return authorization number first. Under no circumstances will a unit be accepted without a return authorization number. Contact an authorized repair center or Rose Electronics for further information.

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NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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Rose Electronics Part # MAN-CRVM-USB
Printed In the United States of America - Revision 1.4

FEDERAL COMMUNICATIONS COMMISSION AND INDUSTRY CANADA RADIO-FREQUENCY INTERFERENCE STATEMENTS

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

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

EUROPEAN UNION DECLARATION OF CONFORMITY

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:	1998
EN55024:	1998
EN61000-3-2:	2001
EN61000-3-3:	2000
EN60950-1:	2000

TABLE OF CONTENTS

Contents

Figures

Tables

Appendices

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 ™ Mini USB enhanced KVM station extender. The CrystalView Mini USB is the result of Rose Electronics commitment to providing state-of-the-art solutions for today's demanding workplace. The CrystalView Mini 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 Mini USB is available in a single or dual video model with Serial/Audio options. The single and dual video models have both Local and Remote access capability. This allows a KVM station to be connected to the Remote and Local Unit. Access to the connected computer or KVM switch can be performed by a Local user or a Remote user. Access is simultaneous with no lockout of the local or remote user.

The CrystalView Mini USB system consists of two Units, a Local Unit and a Remote Unit. The Local Unit connects to your computers keyboard, monitor and mouse ports or to a Rose KVM switch. The Remote Unit connects to a keyboard, video monitor and 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 with up to 150 feet. CAT-x cable can be ordered from Rose Electronics in 25-1,000 foot lengths.

Using the CrystalView Mini 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

- Single and Dual Video support
- Video resolutions up to 1600 x 1200 @ 75hz
- Extended distance up to 150 feet (50m) over standard CATx cabling
- USB 2.0 (low/full speed only) compliant
- 4-port USB hub on the Remote unit
- DDC emulation on all video channels ensures compatibility with most multi-head graphics cards
- Local video output on all video channels. Allows dual access when a Local USB keyboard and mouse are connected to the CPU directly or through a externally powered USB hub
- Status LED indicators located on each RJ45 port
- Over voltage protection prevents the units from operating if incorrect PSU power is applied
- Surge protection on each RJ45 port
- Serial port option enables a serial device to be extended at up to 19.2K Baud
- Bi-directional stereo audio option provides high-quality, 16-bit digitized audio
- Local unit is powered by the USB port connection. For video only applications, an optional 5V PSU is required
- Remote unit is powered by a 5V PSU power adapter
- Rack mount option

Compatibility

Computers (4-USB ports/hub)	PCs with USB keyboard / mouse or
Monitors	VGA to UXGA, Separate or composite sync Emulated DDC for each video channel
Keyboards	USB keyboard.
Mouse	USB mice
Serial Devices (Serial/Audio model only)	Touchscreens, Graphic Tablets, Serial printers/plotters, Computer terminals, 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.

Package contents

The package contents consist of the following:

- The CrystalView Mini USB Units as ordered
- Power adapter for Remote Unit. (Auto-switching transformer)
- Installation and operations manual.

CPU, serial, audio and CAT-x cables are usually ordered separately. If the package contents are not correct, contact Rose Electronics or your reseller, so the problem can be quickly resolved.

Rose Electronics web site

Visit out web site at www.rose.com for additional information on the CrystalView Mini 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 Mini USB, single and dual video models and Serial/Audio models.

CrystalView Mini USB Models

Front - Single Video Model

Dual Video Model

Remote

Local

Rear - Single Video Model

Single Video Model with Serial/Audio

Remote

Local

Rear - Dual Video Model

Dual Video Model with Serial/Audio

Remote

Local

Figure 1. Models

Connectors

Front panel (All models)

RJ45	(1) Single Video models, (2) Dual Video models

Rear panel (Single Video / Serial & Audio models)

Remote

Video	HD15F
USB	Type A (4-port hub)
Audio	(2) 3.5mm audio jacks (Serial/Audio model only)
Serial	DB9M (DTE, Serial/Audio model only)
Power	+5VDC adapter connector

Local

Video In	HD15M
Video Out	HD15F
USB	Type B
Audio	(2) 3.5mm audio jacks (Serial/Audio model only)
Serial	DB9F (DCE, Serial/Audio model only)
Power	Optional +5VDC adapter connector

Rear panel (Dual Video / Serial & Audio models)

Remote

Video Out	HD15F
USB	Type A (4-port hub)
Audio	(2) 3.5mm audio jacks (Serial/Audio model only)
Serial	DB9M (Serial/Audio model only)
Power	+5VDC adapter connector

Local

Video In	(2) HD15M
Video Out	(2) HD15F
USB	Type B
Audio	(2) 3.5mm audio jacks (Serial/Audio model only)
Serial	DB9F (Serial/Audio model only)
Power	Optional +5VDC adapter connector

Typical Application

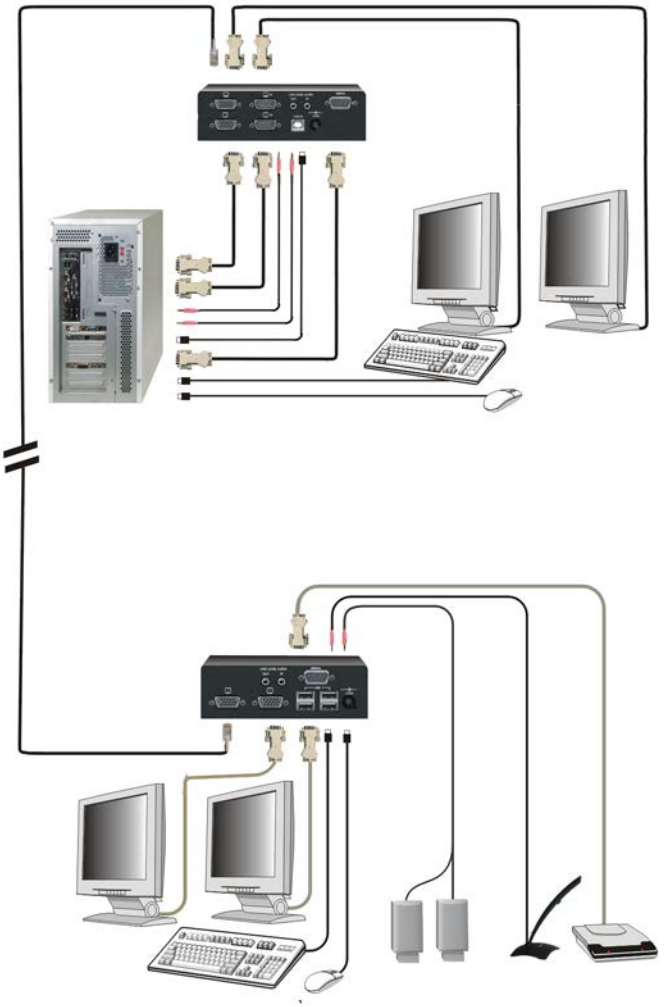


Figure 2. Typical Application

Cables

CrystalView Mini USB Local Unit to CPU cable

A HD15M to HD15F cable is used to connect from the Local Unit to a CPUs video port. If Local viewing is needed, connect a monitor to the HD15F video out port on the Local unit. The Serial/Audio models use two male-to-male 3.5mm audio cable and a DB9MF serial cable. These connect directly from the Local unit to the appropriate PC ports.

CrystalView Mini USB Remote Unit to a KVM station

The majority of Remote unit installations do not require any additional cables. The Remote monitor connects directly to the HD15F connector. If your Remote monitor is a flat panel TFT monitor, **you must adjust the clock and/or phase** manually or using the auto-adjust feature of your monitor. Connect the USB keyboard and mouse to the USB type A ports.

Using the serial/audio models, amplified speakers connect directly to the "Line Level Audio" OUT connector and a microphone connects directly to the "Line Level Audio" IN connector. Serial devices such as Touch Screens connect directly to the Remote unit's DB9M connector.

CrystalView Mini USB Local Unit to Remote Unit

The Local and Remote units connect together using up to 150 feet (50 meters) of CATx cable terminated with RJ45 connectors. Depending on the environment (office, manufacturing, high EMF areas) use UTP, STP, or FTP CATx cable.

NOTE: Patch panels, USB hubs, and additional USB devices attached to the units will reduce the maximum CATx cable distance. Typically, each USB hub or USB device connected will reduce the distance by approximately 30 feet (10m).

Installation

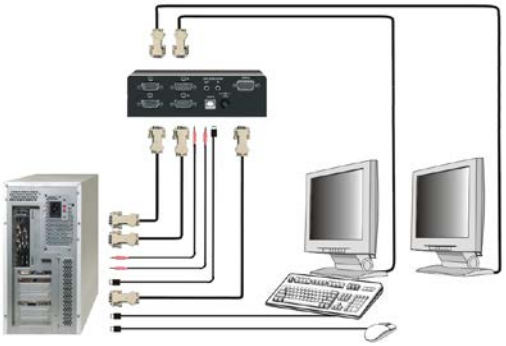
Please refer to the safety section first before proceeding with any installation or configuration of the CrystalView Mini USB.

Installation of the CrystalView Mini USB consists of five easy steps.

1. Connect interface cables from the Local unit to a computer
2. Connect the Remote keyboard, mouse, monitor, speakers, microphone, serial device, and other USB devices to the Remote unit.
3. Set the CATx cable distance dip switches (if needed)
4. Connect Local unit to Remote unit with CATx cable
5. Connect the power adapter to the Remote unit and applying power

More advanced users can refer to Appendix C for a quick installation and cable length setting guide.

Step 1 - Connect interface cables from the Local unit to a computer



Cable Connections:

1. HD15MF cables
2. USB Keyboard & Mouse
3. USB Type A to B
4. Primary monitor
5. Secondary monitor
6. Audio
7. Serial device

Figure 3. Local to CPU (Dual video model)

The basic cable connections between the Local unit and a CPU are shown in Figure 3. For single video models, only one HD15MF cable is needed between the Local unit and the CPU and the secondary monitor is not present. For non serial/audio models, no audio or serial cables are used. If only video is being transmitted, an auxiliary power adapter will be needed. Power for the Local unit is obtained from the CPUs USB ports.

NOTE: Adding a bus-powered USB hub between the Local Unit and CPU is not recommended.

Step 2 - Connect the Remote equipment to the Remote unit.

Equipment Connections:

1. Primary monitor & Secondary monitor
2. USB Keyboard and Mouse
3. Serial devices
4. Powered stereo speakers
5. Microphone

Figure 4. Remote to KVM (Dual video, serial/audio model)

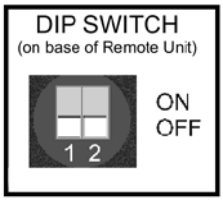
The basic connections between the Remote unit and a KVM station are shown in Figure 4. The secondary video monitor, serial device, speakers, and microphone only apply to the dual video, serial and audio models. An internal pull-up resistor provides bias for condenser microphones. Additional + 17dB microphone amplification can be added by opening the remote unit and connecting a jumper across the pins labeled “MIC”.

NOTE: A power adapter (included) is needed to provide power to the Remote unit. To avoid damage to the Remote unit, use only the power adapter supplied.

Step 3 - Set the CATx cable distance dip switches

Set the Dip switch located on the bottom of the Remote unit to the following for the CATx cable distance needed:
Switch 1 Off = Video channel 1 15 -75’
Switch 1 On = Video channel 1 75 – 150’
Switch 2 Off = Video channel 2 15-75’
Switch 2 On = Video channel 2 75 – 150’

Switch 1 = Video 1 – Switch 2 = Video 2



Step 4 - Connect Local unit to Remote unit with CATx cable

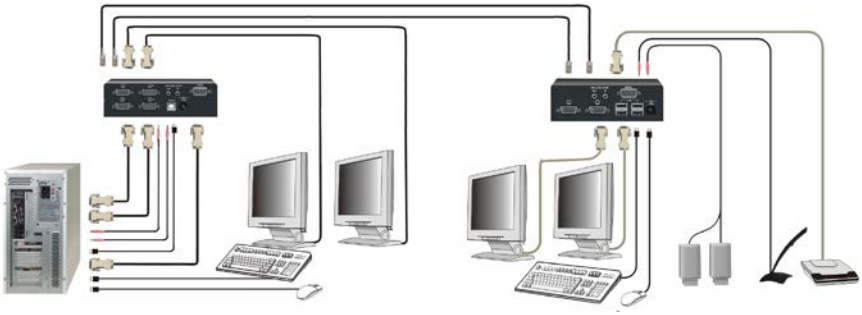


Figure 5. Local to Remote unit

Connect up to 150' of CAT5, CAT5e, CAT6, or CAT7 cable between the RJ45 connector on the Local unit and the RJ45 connector on the Remote unit. Two cables are required for dual video and/or serial and audio models.

Note: CATx cable from RJ45 port #1 carries the primary video, keyboard, and mouse signals.

CATx cable from RJ45 port #2 carries the secondary video, serial and audio signals.

Step 5 – Apply power

Connect the power adapter to the Remote unit's power jack. Apply power to the monitors and computer. Power for the Local unit is obtained from the computer's USB ports. If only video is being transmitted and no USB connections are made, a Local power adapter (optional) must be used.

With power applied to all units and devices, the Remote monitor should display the computers video.

Operating Instructions

Operating your equipment using the CrystalView Mini USB extender is no different than having your equipment connected directly to a computer. The only difference is you can be up to 150 feet away. Applications can be executed, data updated, computer maintenance performed, or anything normally performed locally can now be done remotely.

Upon power up, the Local and Remote monitors will display the computer's video. Accessing the computer can be performed from the local or remote station. Assess to the computer is performed simultaneously from both the local and remote KVM stations.
NOTE: Local and Remote keyboard and mouse activity, if performed simultaneously, may produce intermixed results.

The Local and Remote units' RJ45 connectors have a Yellow and Green LED in the upper left and right corner of the connector (see Figure 6). The following table explains the LED status and functions.

Status	Yellow LED*	Green LED
OFF	No data transferred Not connected Power not applied to Remote unit	Remote unit not powered Over-voltage condition
ON	USB hub functioning properly	Remote unit powered

* Yellow LED is only active on the primary Interconnect 1 connector.

Table 1. RJ45 LED functions

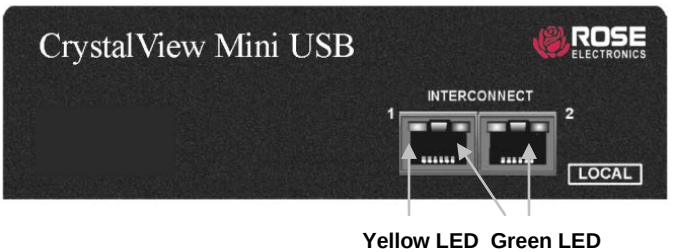


Figure 6. Dual Video front view

Serial Interface - Set Up and Operation

No setting up or user adjustments are required for connecting a serial device. The Remote unit's serial port is wired as DTE - the same as that on a PC. To connect a serial printer or other DTE (rather than DCE) device to the Remote unit, you will need a Null-Modem crossover cable between the Remote unit and the printer. Select Xon/Xoff software flow control on the printer and PC.
A serial touch screen may be plugged directly into the Remote unit.

The extender's serial interface transmits/receives six signals (3 signals in each direction). Four of these signals are used for hardware handshaking (in addition to TX & RX).
It is possible to configure the serial interface to handle up to three simple 2-wire (Tx/Rx only) serial links. To do this, you will need to construct a custom breakout cable. Please contact Technical Support for further information.

Audio Interface - Set Up and Operation

The audio interface is line-level and is designed to take the output from a sound card (or other line-level) source and be connected to a set of powered speakers at the other end of the link. Stereo audio may be transmitted either way across the link (simultaneously). No setup is required unless a microphone is connected to the Remote unit.
Connect the extender as follows:

- The line-level output from your sound card connects to 'Line In' on the Local unit.
- Connect 'Line Out' on the Remote unit to a set of powered speakers.
- A microphone may be plugged into the 'Line In' connector on the Remote unit.

There are two ways of setting up a microphone:

- The Local unit's 'Line Out' connection should normally be wired to the microphone input (Pink) on your sound card. The sound card should then be set up to provide additional amplification (+17dB). This is the preferred connection method.
- Alternatively, the Remote unit itself can provide microphone amplification. To set this, open up the Remote unit and locate the jumper labeled 'MIC' on the daughter board. Connect this jumper across the pins. The Local unit's 'Line Out' connection should then be wired to 'Line In' (Blue) on your sound card.

If your microphone is already amplified, follow the second method but DO NOT install the amplification jumper in the Remote unit.

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 Mini 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 Mini USB has been tested for conformance to safety regulations and requirements, and has been certified for international use. Like all electronic equipment, the CrystalView Mini 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.
- Provide proper ventilation and air circulation.
- Keep connection cables clear of obstructions that might cause damage to them.
- Use only power cords, power adapter and connection cables designed for this Unit.
- 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.
- Do not use liquid or aerosol cleaners to clean this Unit. Always unplug this Unit from its electrical outlet before cleaning.
- Do not use to link between buildings.
- If the building has 3-phase AC power, try to ensure that equipment connected to the Local and Remote units is on the same phase.
- Try not to route the CATx link cable alongside power cables.
- Ensure that the monitor connected to the Remote unit is connected to power ground and does not use an isolated power supply.
- Ensure that the system connected to the Local unit is connected to power ground.
- The Remote unit and power adapter can get warm. Do not obstruct the airflow or ventilation holes to the units.
- This product is not suitable for use in isolated medical environments.
- Unplug this Unit and refer servicing to a qualified service center if any of the following conditions occur:
  - The 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.

Appendix A. General Specifications

CrystalView Mini USB	
Resolution	1600 x 1200 @ 75Hz
Video compatibility	VGA to UXGA, RGB
Video I/O	0.7V P-P
Video compensation	2-stage
Video Coupling	DC
Sync I/O	Separate / Composite TTL level Sync polarity is preserved
Vesa DDC	Emulated DDC for each video channel
Keyboard	USB (Computer / KVM)
Mouse	USB (Computer / KVM)
USB	USB 2.0 compliant (low/full speed only) Local unit appears as a self-powered USB 1.1 hub to the CPU Remote unit contains integral USB 1.1, 4-port hub
Extension Distance	150 feet (50m)
Serial Baud rate	19.2K Baud
Data format	Transparent
Signals	TX, RX, RTS, CTS, DTR, DSR
Audio	BI-directional stereo, 16-bit, 38.4kHz, 47Ω
Audio level	4V P-P max
Power	Local unit – 5V (Supplied from CPUs USB port Remote unit – 5V PSU (Over / under voltage protection (> 5.6V / < 4.3V)
Dimensions	Width: 5.9in / 145mm Depth: 4.3in / 110mm Height: 1.7in / 44mm
Weight	6.6 lbs (2.0Kg)
Environmental	Operating Temp: 32°F – 104°F (0°C - 40°C) Storage Temp: -22°F - 149°F° (-30°C - 65°C) Humidity: 5% - 90% non-condensing
Approval	Europe: CE

Appendix B. Parts and Cables

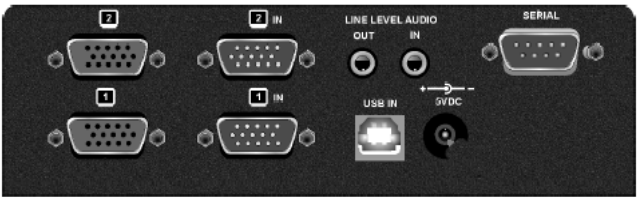
Part Number	Description
CRK-M2U1V	Single Video KVM Extender units
CRK-M2U2V	Dual Video KVM Extender units
CRK-M2U1V/AUD	Single Video KVM Extender units w/serial-audio
CRK-M2U2V/AUD	Dual Video KVM Extender units w/serial-audio
RM-BR3	Rack mount kit
CAB-USBABnnn	USB Type A to Type B
CAB-DB9MFnnn	Serial DB9M to DB9F
CAB-SPMMnnn	Audio 3.5 mm
CAB-CXVMFnnn	Primary video - HD15M to HD15F
CAB-CXVMFnnn	Secondary video - HD15M to HD15F
CAB-08C5UTPnnn	CAT5 unshieded twisted pair
CAB-08C6UTPnnn	CAT6 unshieded twisted pair
CAB-08C7UTPnnn	CAT7 unhieded twisted pair
CAB-08C5STPnnn	CAT5 shieded twisted pair
CAB-08C6STPnnn	CAT6 shieded twisted pair
CAB-08C7STPnnn	CAT7 shieded twisted pair

nnn = cable length in feet

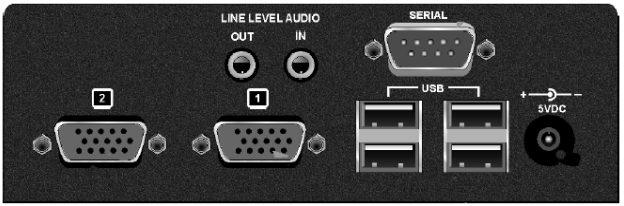
Appendix C. Quick Start Guide

The following procedure is designed to provide easy installation for the CrystalView Mini USB extender.

Step 1 – Connect the Local unit to a CPU's video, USB, audio and serial ports. Connect a Local monitor(s) to the Video out (HD15F)

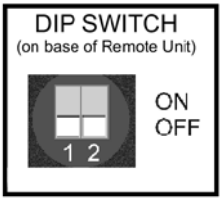


Step 2 – Connect the Remote unit to a USB keyboard, mouse / monitor, audio, serial devices, and other USB devices. Video 1 port connects to the CPU's primary video port; Video 2 connects to the CPU's secondary video port. Connect the 5V power supply.



Step 3 – Set the Video distance dip switches.

Set the Dip switch located on the bottom of the Remote unit to the following for the CAT5 cable distance needed:
Switch 1 Off = Video channel 1 15-75'
Switch 1 On = Video channel 1 75 – 150'
Switch 2 Off = Video channel 2 15-75'
Switch 2 On = Video channel 2 75 – 150'
Switch 1 = Video 1 – Switch 2 = Video 2



Step 4 – Connect the Local and Remote units together with up to 150' of CATx cable.
NOTE: Cable length must match DIP switch settings

Step 5 – Power up equipment
A- CPU / Local monitor
B- Remote unit
C- Remote monitor, audio and serial devices

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