KVM X-TENDER
Product Manual

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At Logical Solutions, we do our best to provide comprehensive information with our products. In the event we have an error or oversight in this document, we're sorry, and we will do our best to address the issue in the next revision (if there is one). If you have any issues or questions about the product or this documentation, please contact our Product Support personnel. However, we cannot be held responsible for typos or unintentional omissions from this manual.

Being a technology company, we are constantly looking for innovative ways to make our products work for the advantage of our customers. It is important to use the product manual that came with your system. If you have any comments or suggestions for the product, please send your comments to our Product Support or our Sales personnel. Please see *Section 4, How to Contact Us,* on page 20.

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1   Introduction

Introducing the Logical Solutions Inc. KVM X-TENDER

1.1 KVM X-TENDER

The Logical Solutions Inc. KVM X-TENDER is a digital fiber optic extension system utilizing only two fibers to assure absolute end-to-end signal integrity, unlike traditional analog extenders. The KVM X-TENDER system consists of a pair of components that allow remote access to entire "desktop" connections to the CPU (video, keyboard, mouse, serial, and audio signals) up to 1000 meters (3280 feet). Each pair consists of a Transmitter unit and a Receiver unit.

Figure 1.1 *Logical Solutions KVM X-TENDER Transmitter Unit shown*

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1.1.1 Models Covered in this User Manual

All models listed below are available with either dual SC- or ST-type connectors:
- VIS-000001: KVM X-TENDER PAIR - 165MHz RGB/DVI
- VIS-000004: KVM X-TENDER PAIR - DVI
- VIS-000005: KVM X-TENDER PAIR - 225MHz RGB/DVI
- VIS-000007: KVM X-TENDER PAIR - DVI/USB
- VIS-000008: KVM X-TENDER PAIR - DUAL LINK

1.2 LASER Information

The KVM X-TENDER system is designed and identified as a Class 1M LASER product.

> **LASER RADIATION**
> **DO NOT VIEW DIRECTLY WITH OPTICAL INSTRUMENTS**
> **CLASS 1M LASER PRODUCT**

In order to avoid possible exposure to laser energy, it is good practice to attach the fiber optic cables prior to applying power to the KVM-X-TENDER. If the fiber optic cable should become disconnected, DO NOT attempt to look into the cable or the panel mounted connector.

1.3 System Features

The KVM X-TENDER is designed for high-resolution video extension applications. Each KVM X-TENDER system includes the following common features:
- Remote access to entire "desktop" CPU connections up to 1000 meters (3280 feet)
- All copper cabling is industry standard
- Requires only 2 multi-mode fibers
- Stand Alone and Rack Mountable (brackets included)
- Digital transmission assures signal integrity
- Supports PS2, Sun Legacy, and USB Keyboard and Mouse (all active)

- Local video, keyboard and mouse at CPU end
- Duplex stereo audio
- RGB supported to 1600 x 1200
- DVI supported to 1920 x 1200
- BNC for stereo graphics emitter
- Front panel programmable for unique video formats
- Universal conversions between DVI and Analog RGB (DVI source to DVI or RGB display; RGB source to DVI or RGB display)
- Universal Keyboard and Mouse conversions (any of the three supported keyboard types will work, regardless of source type)

1.4 Technical Specifications

Each Logical Solutions KVM X-TENDER system is designed to the following specifications

Copper Cable Kits	**KIT-000004 KVM X-TENDER DVI Kit** (supplied with system): (2) CBL-000009-002M DVI-D Male to DVI-D Male Cable, 2 Meters (2) CBL-000022-002M DVI-A Male to VGA (HD15) Male, 2 Meters **KIT-000005 KVM X-TENDER Audio Kit** (supplied with system): (2) CBL-000006-006F 6 pin MiniDIN, Male to Male Cable, 6 Feet (1) CBL-000014-006F 8 pin MiniDIN, Male to Male Cable, 6 Feet (2) CBL-000015-006F USB A-B Cable, 6 Feet (2) CBL-000016-006F 3.5mm Male to 3.5mm Male Plug, 6 Feet (1) CBL-000017-006F DB9 Male to DB9 Female Cable, 6 Feet (1) CBL-000018-006F BNC Male to BNC Male Cable, 50 Ohm, 6 Feet
Operating Temperature and Humidity	0 to 50 °C (32 to 122 °F), 5 to 95% RH, non-condensing
Storage Temperature	-20 to 70 °C (-4 to 158 °F), 10 to 90% RH, non-condensing
Supply Voltage	100-240 VAC, 50-60 Hz, Universal
Power Consumption	Transmitter: Less than 15 Watts, typical Receiver: Less than 15 Watts, typical
Heat Dissipation	<60 BTUs/hour
LASER Output Specifications	Wavelengths are 778, 800, 825, and 850 nanometers Clock frequency range is 25 MHz to 165 MHz Maximum Laser power output in the fiber is 4.0 dBm

Audio	Line In Impedance: 550 Ohm Line Out Impedance: 10K Ohm
Enclosure Dimensions	Approx. 17.25 in x 14.17 in x 1.75 in high (43.82 cm x 35.99 cm x 4.45 cm high)
Weight	Transmitter: 11 lbs (4.99 kg) Receiver: 11 bs (4.99 kg)
Shipping Weight	Pair: 37 lbs (16.78 kg) Transmitter: 23 bs (10.43 kg) Receiver: 23 lbs (10.43 kg)
Shipping Container Dimension	24 in. x 22 in. x 9.5 in high (60.96 cm x 55.88 cm x 24.13 cm high)
AC Power Cable	IEC Power Cable (International connections may differ)
Panel Connectors	*Refer to Appendix B to view the Rear Panels of all KVM X-TENDER Models*
Front Panel Display	Transmitter and Receiver: 2 x 24 Liquid Crystal Display
Optical Cable	Duplex Fiber, multi-mode, 50um or 62.5um, SC- or ST-type connectors (Fiber Cable is either customer-supplied or can be ordered from Logical Solutions)

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2   Product Overview

2.1 Intended Application

The KVM X-TENDER from Logical Solutions permits the placement of a Receiver module (desktop devices) up to 1000 meters (3280 feet) away from the controlling computer without loss of resolution. Traditional copper cables are limited to 10 meters (32.81 feet) in such applications. Each KVM X-TENDER system consists of a pair of electronic units connected by a duplex multi-mode fiber optic cable. The Transmitter unit connects to the computer with suitable cable (PS2/USB/SUN) and the Receiver unit provides the user interface.

Caution

The KVM X-TENDER is a Class 1M LASER product that emits near infrared light.

DO NOT VIEW DIRECTLY WITH MAGNIFYING OPTICAL INSTRUMENTS.

Note

The fiber optic cables should be attached to the KVM X-TENDER prior to powering up the units.

2.2 Increased Security and Efficiency

The ability to remote the CPU away from the user allows more control of the computer environment. Now it is possible to position the desktop devices in virtually any setting while keeping the computer secure in a remote location.

2.3 Mounting the KVM X-TENDER

You may choose to rack mount your KVM X-TENDER or place it on a shelf. The front panel display should be visible and front panel buttons need only be accessible for the initial setup of the system. All connections are made to the rear of the chassis.

2.3.1 Rack Mount or Desktop

The KVM X-TENDER Transmitter and Receiver may either be installed in an EIA-standard 19-inch rack (1U tall), or placed on a shelf or desktop. For shelf use, rubber feet are provided, and the rack mount brackets may be removed. The KVM X-TENDER Transmitter and Receiver chassis' do not need to be opened or accessed. The sturdy metal case allows units to be stacked as required.

> **Note**
>
> Be sure to leave adequate ventilation room on both sides of the units, especially if units are being stacked.

Each rack mount bracket is held on by 4 screws. The brackets may be positioned so that the unit sits forward, flat or recessed in your rack. If the brackets are removed or repositioned, it is not necessary to re-use the extra rack mount screws.

2.3.2 Front Panel Display and Buttons

The front-panel LCD display should be visible and accessible during system setup. It normally shows the current settings and the date/time. The front panel buttons are only used during setup, or to review existing KVM X-TENDER settings.

2.3.3 It's Convection Cooled

The KVM X-TENDER does not require special cooling or ventilation other than what is normally provided in an equipment rack. No fan means that it does not add to the ambient noise in your equipment room. Be sure not to block the air vents on the

sides of the unit, and leave space on both sides. If mounted in an enclosed rack, it is recommended that the rack have a ventilation fan to provide adequate airflow through the unit(s).

2.4 Connecting the KVM X-TENDER

All physical connections to the product use industry-standard connectors. All connections are found on the rear of the Transmitter and Receiver units.

2.4.1 Fiber Cable

A duplex fiber optic cable must be run between the location of the Transmitter unit (near your CPU) and the Receiver unit (near your desktop devices). The standard duplex multi-mode fiber cable must be 50 or 62.5 micron, terminated with an SC, ST, or LC-type connector and no longer than 3280 running feet (1000 meters). Be careful to not kink or pinch the fiber cable as it is being installed, and keep all bend radii to no less than 3 inches (76.2mm).

Note

The KVM X-TENDER has a safety feature that disables the LASER should the fiber cable break or be removed. Therefore, the fiber cable should be connected first, and left in place.

Connect your fiber cable to the fiber connector (SC, ST, or LC) on each KVM X-TENDER unit. Dress the cable so it will not get crushed, pinched or otherwise damaged.

2.4.2 KVM X-TENDER Transmitter

The Transmitter connects to your CPU video port using a DVI-D to DVI-D cable (if CPU has a DVI-I connector) or a VGA (HD15) to DVI-A cable (if CPU has a VGA/HD15 connector). Standard adapters are available from Logical Solutions Inc. and third party suppliers if necessary to make other combinations.

2.4.3 KVM X-TENDER Receiver

The Receiver connects to your display/monitor video port using a DVI-D to DVI-D cable (if monitor has a DVI-D connector) or a VGA (HD15) to DVI-A cable (if

monitor has a VGA/HD15 connector). Standard adapters are available from Logical Solutions Inc. and third party suppliers if necessary to amke other combinations.

2.4.4 AC Power

The KVM X-TENDER has an internal universal Power Supply. Each unit (TX and RX) requires approximately 15W of electrical power. The switching power supply accepts nominal AC input voltage between 100-240 VAC with a frequency range of 50-60 Hz.

A single IEC-type AC power entry module with an integral safety fuse and power switch is found on the rear of the chassis in each unit (TX and RX). The power inlet to the chassis uses a removable IEC-type cordset; one is provided with each unit (one for the TX, one for the RX). Be sure that your AC power source is properly grounded..
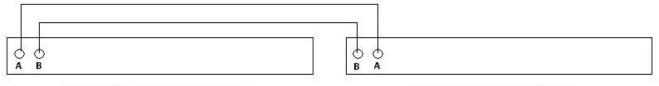
2.5 Order of Installation Events

In order to properly use the KVM X-TENDER system, you must follow this order of events for the initial power-up.

1.   Install and connect your Fiber Optic Cable between the Transmitter and the Receiver units.

Note

Be sure Fiber Optic Cable is positioned as below.

---

2.   Connect the AC Power Cords to both units, and plug them into a suitable power source.
3.   Connect the CPU to the Transmitter unit using the proper DVI cable, and turn it on.

If the CPU has a DVI-D connector: you MUST use the DVI-D cable provided (CBL-000009-002M).

Figure 2.1 DVI-D Female Connector

If the CPU has a VGA (HD15) connector: you MUST use the VGA (HD15M) to DVI-A (F) cable (CBL-000022-002M) provided.

Figure 2.2 VGA (HD15) Female Connector

4. Finally, connect the desktop devices (monitor, keyboard, and mouse) to the Receiver unit using the proper cables, and turn it on.

    If the Monitor has a DVI-D connector: you MUST use the DVI-D cable provided (CBL-000009-002M).

Figure 2.3 DVI-D Female Connector

If the Monitor has a VGA (HD15F) connector: you MUST use the VGA (HD15M) to DVI-A (F) cable (CBL-000022-002M) provided.

Figure 2.4 VGA (HD15) Female Connector

Note

For the allowed configurations of the KVM X-TENDER, please see *Section Appendix A, Allowed Configurations,* on page 23

2.6 Initial Set-Up

This application installs under Microsoft Windows (2000 and XP) and uses the USB port to upgrade the firmware of the KVM Xtender product line.

KNOWN INSTALLATION ISSUES: Microsoft acknowledges that there are issues with certain of the Windows environments installing some programs.

If you experience any difficulties installing this software per the INSTALLATION directions below, please go to the following address:

http://support.microsoft.com/default.aspx?scid=kb;en-us;290887

Select the link that allows you to obtain the VBRun60sp6.exe.
Select Download, and then run.

Install the files to a temporary directory, then run the file that is installed and follow all directions. At this time you will be able to install the Logical Solutions USB Firmware Upgrade program.

2.6.1 Programming Procedure

Place the application setup files in a temporary directory.
The files in the zip bundle are:
KM_Dow1.CAB
KM_Dow2.CAB
ReadMe.txt
setup.exe
SETUP.LST

Run Setup.exe and follow the installation directions.

1.   Program the KVM Xtender Transmitter. Using a USB A-B cable, attach the 'A' end to your Windows-based PC and the 'B' end to the "CNTRL" port of the Tx. Turn the TX ON (if not ON already).

> **Note**
>
> You may see your operating system initialize the USB port by receiving a "Logical Solutions..." or "New hardware found" message.

2.   Open the KM_Download application.

3.   Select "Identify Product." You should see "Logical Visualization TX Control Attached. Use Main_TXCntrl.iic. Version number:xxx"

> **Note**
>
> If you see "Logical Device not found", wait a few seconds for the device to initialize and try "Identify Product" again.

4.   Select "Open File." Highlight "Main_TXCntrl.iic" and click "open." You will see a progress bar that indicates the file is being sent. Do NOT remove the USB cable or power OFF the unit until the upgrade is complete.

5.   When the download is complete, move the USB cable to the "LCL" port and repeat the procedure using the "Main_KMHst.iic file."

6.   When the download is complete, move the USB cable to the "KM to PC" port and repeat the procedure using the "Main_KMDev.iic file."

7.   Remove the USB cable from the KVM Xtender Transmitter and reset the power to complete the update. To verify that all the ports have been updated, reconnect the USB cable and select "Identify Product."

8.   Program the KVM Xtender Receiver. Move the USB cable to the "CNTRL" port and repeat procedure using the "Main_RXCntrl.iic file."

9.   When the download is comlete, move the USB cable to the "KM" port and repeat the procedure using the "KMHst.iic file."

10.   Remove the USB cable from the KVM Xtender Receiver and reset the power to complete the update. To verify that all the ports have been updated, reconnect the USB cable and select "Identify Product."

Contact Logical Solutions with any questions or comments at (203) 647-8700 or support@thinklogical.com

3   Regulatory & Safety

3.1 Safety Requirements

3.1.1 Symbols found on the Product

Markings and labels on the product follow industry-standard conventions. Regulatory markings found on the products comply with requirements.

3.1.1.1 Class 1M LASER Labeling

LASER RADIATION
DO NOT VIEW DIRECTLY WITH OPTICAL INSTRUMENTS
CLASS 1M LASER PRODUCT

3.1.2 Product Serial Number

The KVM X-TENDER products have a unique serial number, imprinted on a small silver label that is placed on the bottom of the chassis. The serial number includes a day-code. The format for the day-code is 2-digits each for the month, the day and four digits for the year, and two or three digits for a unique unit number. This serial number is also found on the original shipping carton.

3.1.3 Connection to the Product

Connections and installation hardware for the product use industry-standard devices and methods. All wiring connections to the customer equipment is done in a fashion to minimize proprietary or customized connectors or cabling. Power connections are made with regionally appropriate power cords and approved methods.

3.2 Regulatory Compliance

The Logical Solutions Inc. KVM X-TENDER products are designed and made in the U.S.A. The KVM X-TENDER products have been tested by a nationally recognized testing laboratory and found to be compliant with the following standards (both domestic USA and many international locations).

3.3 North America

These products comply with the following standards:

Safety

- UL60950 : 2000
- CAN/CSA C22.2 No. 60950-00

LASER Safety

- CDRH 21CFR 1040.10
- Class 1M LASER Product
- Accession Number TBD

Electromagnetic Interference

- FCC CFR47, Part 15, Class A
- Industry Canada ICES-003 Issue 2, Revision 1

3.4 Australia & New Zealand

This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

3.5 European Union

3.5.1 Declaration of Conformity

Manufacturer's Name & Address

Logical Solutions Inc.

100 Washington Street

Milford, Connecticut 06460 USA

Telephone (203) 647-8700

Product Name

- Model: KVM X-TENDER Video Extension System

These products comply with the requirements of the Low Voltage Directive 72/23/EEC and the EMC Directive 89/336/EEC.

3.5.2 Standards With Which the Products Comply

Safety

- IEC60950:1992+A1, A2, A3, A4, A11

LASER Safety

- IEC60825:2001 Parts 1 and 2
- Class 1M LASER Product

Electromagnetic Emissions

- EN55022: 1994 (IEC/CSPIR22: 1993)
- EN61000-3-2/A14: 2000
- EN61000-3-3: 1994

Electromagnetic Immunity

- EN55024: 1998 Information Technology Equipment-Immunity Characteristics
- EN61000-4-2: 1995 Electro-Static Discharge Test
- EN61000-4-3: 1996 Radiated Immunity Field Test
- EN61000-4-4: 1995 Electrical Fast Transient Test
- EN61000-4-5: 1995 Power Supply Surge Test
- EN61000-4-6: 1996 Conducted Immunity Test
- EN61000-4-8: 1993 Magnetic Field Test
- EN61000-4-11: 1994 Voltage Dips & Interrupts Test

3.5.3 Supplementary Information

The following statements may be appropriate for certain geographical regions and might not apply to your location.

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.

Note

This Class A digital apparatus complies with Canadian ICES-003 and has been verified as being compliant within the Class A limits of the FCC Radio Frequency Device Rules (FCC Title 47, Part 15, Subpart B CLASS A), measured to CISPR 22: 1993 limits and methods of measurement of Radio Disturbance Characteristics of Information Technology Equipment.

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigencies du Règlement sur le matérial brouilleur du Canada.

WARNING

This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

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4   How to Contact Us

4.1 Customer Support

Thank You to our Customers for choosing a Logical Solutions product for your application. We appreciate your business and are interested in helping you successfully use our products.

Logical is here to help you. To contact Logical Solutions, use the following telephone numbers and internet-based methods.

4.1.1 Website

Check out our website for current product offerings, support information, and general information about all of the Logical Solutions we offer.

Our internet website offers product information on all current systems, including technical specification sheets and installation guides (for viewing on-line or for download), product diagrams showing physical connections, and other information you might need. We are constantly updating our website, so be sure to "refresh" your browser when visiting the Logical Solutions website to see the most up-to-date information.

Internet: www.thinklogical.com

Note

Most online documents are stored as Adobe Acrobat "PDF" files. If you do not have the Adobe Acrobat Reader needed to view PDF files, visit www.adobe.com for this free download.

4.1.2 E-mail

Logical Solutions is staffed Monday through Friday from 8:30AM to 5:30PM, Eastern Time Zone. We will try to respond to your email inquiries promptly, using the following email addresses for your different needs:

info@thinklogical.com -- Information on Logical Solutions and our products

sales@thinklogical.com -- Sales Department - orders, questions or issues

support@thinklogical.com -- Product support, technical issues or questions, product repairs, requests for Return Authorization, any other issue.

4.1.3 Telephone

Telephone Sales: Contact our expert technically-oriented Sales staff via telephone in Milford, Connecticut, at **(203) 647-8700** or if in the continental US, you may use our toll-free number **(800) 291-3211**. We're here Monday through Friday, 8:30AM to 5:30PM, Eastern Time Zone. Ask for their direct dial phone number when you call!

Telephone Product Support: Contact Product Support via telephone in Milford, Connecticut, at (203) 647-8700. The support lines are manned Monday through Friday, 9AM to 5PM, Eastern Time Zone.

International Sales: Please contact our US Sales staff in Milford, Connecticut, at **(203) 647-8700**. We're here Monday through Friday, 8:30AM to 5:30PM, Eastern Time Zone (same as New York City). If leaving a voice message, please provide a 'best time to call back' so we may reach you at your convenience.

Our switchboard attendant will direct your call during regular business hours. We have an automated attendant answering our main telephone switchboard after regular business hours and holidays. You can leave voice messages for individuals at any time. Our Sales Representatives have direct numbers to speed up your next call to us.

4.1.4 Fax

Our company facsimile number is **(203) 783-9949**. Please indicate the nature of the fax on your cover sheet, and provide return contact information.

4.2 Product Support

Logical Solutions Inc.'s support personnel are available Monday through Friday from 8:30AM to 5:30PM, Eastern Time Zone.

If your application might require assistance at some time outside of our normal business hours, please contact us beforehand and we will do our best to make arrangements to help you with your Logical Solutions products.

4.2.1 Warranty

Logical Solutions Inc.'s products carry a one year warranty, with longer-term warranties available at time of purchase on most products. Please refer to your product invoice for your product's Warranty Terms and Conditions.

For specific details about the product warranties, please contact Sales.

4.2.2 Return Authorization

If, for some reason, you need to return your Logical Solutions product to us, please get a **Return Authorization Number (RA# or RMA#)** from Logical's **Product Support** department <u>before</u> sending the unit in. Return Authorization must include contact information (phone preferred) in the event we have any questions.

After receiving your RA Number, please ship the unit postpaid, with the RA# prominently displayed on the shipping container.

We will contact you about your product once we determine its status.

Products received without Return Authorization and/or Contact information may require additional attention on our part that may delay any desired service or support with your system.

4.2.3 Our Address

If you have any issue with the product, have product questions, or need technical assistance with your KVM X-TENDER system, please call us **(203) 647-8700** and let us help.

If shipping something with an RA#, or if you'd like to write us, we are located at:

Logical Solutions Inc.
100 Washington Street
Milford, CT 06460 USA

Appendix A   Allowed Configurations

Here are the allowed configurations of the KVM X-TENDER (Models VIS-000001 and VIS-000004):

USB Interface to CPU

RX (any subset of the following)	TX
USB Mouse USB Keyboard USB Tablet PS2 Keyboard PS2 Mouse Sun Serial Keyboard/Mouse	USB Cable to CPU (No PS2 or Sun Serial connection)

PS2 Interface to CPU

RX (any subset of the following)	TX
USB Mouse USB Keyboard USB Tablet PS2 Keyboard PS2 Mouse Sun Serial Keyboard/Mouse	PS2 Mouse and Keyboard to CPU (No USB or Sun Serial connection)

SUN Interface to CPU

RX (any subset of the following)	TX
USB Mouse USB Keyboard USB Tablet PS2 Keyboard PS2 Mouse Sun Serial Keyboard/Mouse	Sun Serial Cable to CPU (No USB or PS2 connection)