

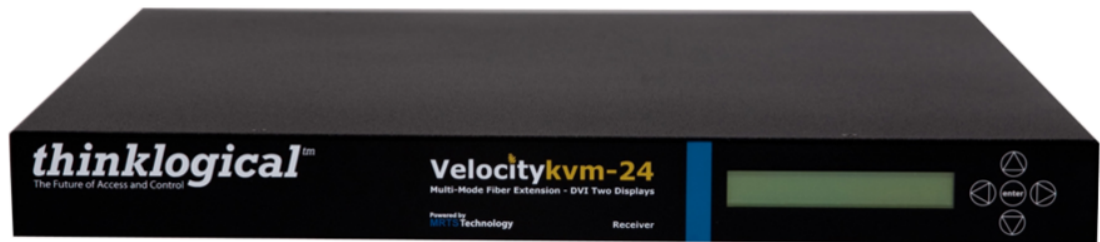
thinklogical[®]

A **BELDEN** BRAND

Velocitykvm

Fiber-Optic Extension Systems

Velocitykvm-4, 5, 8, 24, 28, 34, 35 & 38
Single & Dual-Link/Single & Multi-Mode



PRODUCT MANUAL

Rev. F, October 2021

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Subject: VelocityKVM Fiber-Optic Extension Product Manual
Revision: F, October 2021



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PREFACE

About Thinklogical A BELDEN BRAND



thinklogical®
A BELDEN BRAND
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Thinklogical, a Belden Brand, is the leading manufacturer and provider of fiber-optic and CATx video, KVM, audio, and peripheral extension and switching solutions used in video-rich, big-data computing environments.

Thinklogical offers the only fiber-optic KVM Matrix Switches in the world that are accredited to the Common Criteria EAL4, TEMPEST SDIP 24 Level B, and NATO NIAPC Evaluation Scheme: GREEN and the U.S. DoD DISA JITC UCR 2013 APL information assurance standards. And Thinklogical Velocity products are the first system with both KVM and video matrix switching capabilities to be placed on the Unified Capabilities Approved Product List (UC APL) under the Video Distribution System (VDS) category.

Thinklogical products are designed and manufactured in the USA and are certified to the ISO 9001:2015 standard.



Thinklogical is headquartered in Milford, Connecticut and is owned by Belden, Inc., St. Louis, MO (<http://www.belden.com>). For more information about Thinklogical products and services, please visit <https://www.thinklogical.com>.

Note and Warning Symbols

Throughout this document you will notice certain symbols that bring your attention to important information. These are **Notes** and **Warnings**. Examples are shown below.



Note: Important Notes appear in blue text preceded by a yellow exclamation point symbol, as shown here.

A note is meant to call the reader's attention to **helpful** information at a point in the text that is relevant to the subject being discussed.



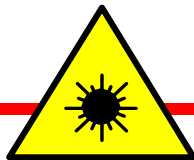
Warning! All Warnings appear in red text, followed by blue text, and preceded by a red stop sign, as shown here.

A warning is meant to call the reader's attention to **critical** information at a point in the text that is relevant to the subject being discussed.

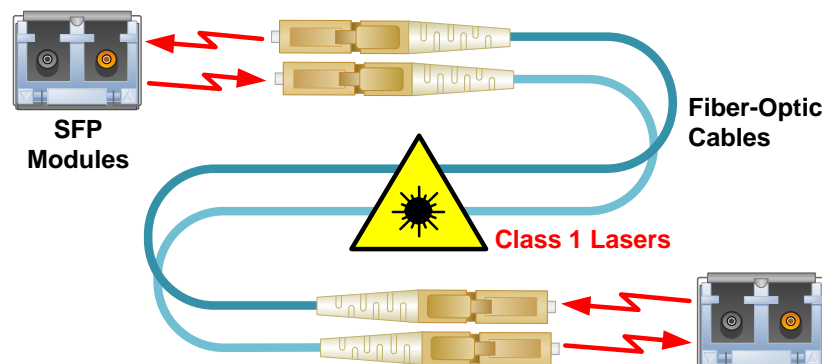
**READ THE INSTRUCTIONS THOROUGHLY
BEFORE STARTING ANY PROCEDURE!**

Class 1 Laser Information

TLX Extenders and Matrix Switches, like all Thinklogical fiber-optic products, are designed and identified as **Class 1 LASER products**. This means the maximum permissible exposure (MPE) cannot be exceeded when viewing the laser with the naked eye or with the aid of typical magnifying optics (e.g. magnifying glass, eye loupe, etc.).



CLASS 1 LASERS do not require any special precautions under conditions of normal use.



INTRODUCTION

The Logical Solution

VelocityKVM Fiber-Optic Extension Systems are designed for high performance visual applications that require video as well as peripheral support. The system allows users, via fiber-optic cable, to station and operate video monitors and peripherals up to 40 kilometers away from the controlling computer, securely and without loss of resolution. The VelocityKVM system is designed to support PS2, full duplex stereo audio, serial (RS-232) and USB 1.0 (HID).

Available options include:

- **Single-Mode** or **Multi-Mode** Optics
- **USB HID only** (eliminates USB 2.0 for added security)
- **No Router Mode** available or supported on some models (See pg. 13)
- **Separate Data Paths** for keyboard/mouse (See *Appendix E*, pg. 60)
- **Separate Audio Paths** (See *Appendix E*, pg. 60)
- **Multi Path** (Multiple Video Paths) (See *Appendix E*, pg. 60)
- **RS-422** serial port for controlling broadcast equipment
- **Automatic Fail-Over** (See *Appendix C*, pg. 57)
- **Professional Audio** TOSLINK, AES and S/PDIF plug-in modules (pg. 12)

VelocityKVM products are ideally suited for a wide range of applications in the broadcast and post-production field, as well as command/control centers, universities, large scale digital signage and other commercial KVM applications.

See **Option Configuration Diagrams** (pgs. 10-12) and **Appendix A, Complete Line of Thinklogical's VelocityKVM Extenders** (pg. 45).

Theory of Operation

Powered by
MRTS Technology

MRTS Technology 6.25 Gbps. Allows Full Frame Rate Transmission of Uncompressed DVI

Powered by Thinklogical's cutting edge, patented **MRTS (Multi-Rate Transmission System) Technology**, this KVM extension system transports every frame of a DVI or RGB video stream seamlessly with no compression or dropped frames. In addition, all high-speed peripherals function with no latency.

The VelocityKVM Extension System has a simple transmitter/receiver design which allows for ease of installation and straight-forward deployment. Incorporating standard SFP+ transceivers, the transmitter and the receiver can be connected by a multi-mode or single-mode fiber optic cable. The transmitter unit connects to a CPU with the supplied peripheral cables. Local video, keyboard and mouse ports are available on the transmitter and the receiver unit provides connections to the user interface devices.

The Fiber Extension System

Each system includes a transmitter and a receiver connected by fiber optic cables. The transmitter connects to the source computer with standard cables and the receiver provides connections to the user interface devices. **Standard VelocityKVM Extenders support PS2, full duplex stereo audio, serial (RS-232), USB HID and USB 2.0.**

Why Fiber?

In heavy-volume, metropolitan area networks, the limit on how much bandwidth or data that can be carried across a copper line can become a bottleneck for enterprise access and ultimately, for revenue. **Fiber Optic Cable alleviates this problem by offering substantially greater bandwidth.**

Multi-Mode Fiber

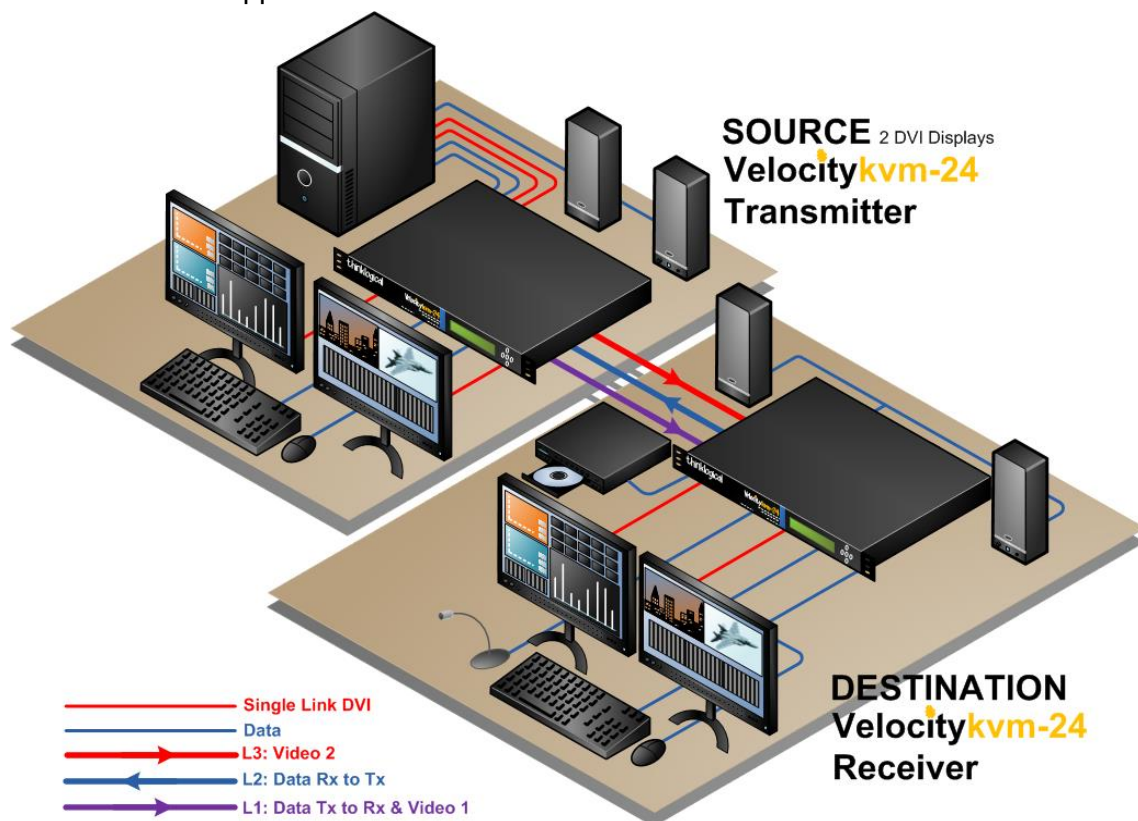
Transmission Distance (up to 350m using 50/125µm fiber)

Multi-mode is designed for transmission distances such as those found within a single building or facility and thus, is ideal for multi-channel television broadcast systems. Multi-mode may be used to send video signals from room to room or floor to floor. The Multi-Mode VelocityKVM Extender allows video and peripheral transmission distances up to 350 meters using 50/125µm fiber, making it an ideal solution for in-house applications.

Single-Mode Fiber

Transmission Distance (up to 40 kilometers)

Single-mode is designed for long distance transmissions and thus, is ideal for multi-channel broadcast systems. Single-mode may be used to send video signals from workstation to workstation, from building to building, or from studio to transmitter (STL) with a video resolution of 1920 x 1200. Using 9µm fiber with SM/UPC connectors, the Single-Mode VelocityKVM Extender allows video and peripheral transmission distances up to 40 kilometers, (25 miles) making it an ideal solution for metropolitan area networks and most other applications.



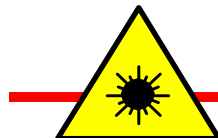
Advanced Top-Quality Video Transmission

Fiber optic cable has emerged as a logical solution for next-generation signal routing. The VelocityKVM product family harnesses this capability and ensures long distance, error-free transmission with no frame or bit dropping and complete immunity to interference. The result is **no degradation of the video or peripheral signal whatsoever.**

System Features

Each VelocityKVM Fiber system includes the following features:

- Supports all single-link DVI video resolutions (VelocityKVM-5 analog RGB resolutions as well).
- Supports all Dual-Link DVI resolutions (VelocityKVM-8, -28, -38).
- 6.25 Gbps signal transmission via fiber optic cable; No RF interference.
- Requires one to five fiber optic cables, depending on model and application.
- Flawless image quality with no frame dropping.
- Local KVM connections on transmitter.
- Additional video output(s) on the receiver.
- Extends KVM, audio and serial signals up to 350 meters using 50/125µm multi-mode fiber and up to 1000 meters using type OM4 fiber.
- Extends KVM, audio and serial signals up to 40 kilometers using single mode optics.
- USB HID compliant, 4-port hub.
- BNC Stereo Emitter (3D)
- Full duplex stereo audio
- USB 2.0 compliant (high speed 480 Mbps, 4 port hub).
- (Optional) IEEE1394 FireWire 9-pin hub (Requires 2 additional fiber optic cables.)
- (Optional) Automatic Fail-Over (see Pg. 57)
- (Optional) Separate Data Paths for keyboard/mouse
- (Optional) RS-422 serial port for controlling broadcast equipment
- (Optional) No Router Mode
- DDC2B/EDID complaint.
- Fully compatible with all Thinklogical VX and MX Routers and TLX Matrix Switches
- Full keyboard and mouse emulation through the transmitter
- Simple plug and play
- Thinklogical's VelocityKVM Extenders are designed and identified as Class 1 Laser products.



CLASS 1 LASERS do not require any special precautions under conditions of normal use.

VelocityKVM Extender Options

VelocityKVM Extenders come with a variety of peripheral device options that include or eliminate several types of USB and FireWire, Network ports and Separate Data Paths.

The examples on pgs. 10-12 are shown with the VelocityKVM-24 Tx and Rx with LC-type connectors. All extender models follow the same format for all connector types and option configurations.

The options include combinations of such features as:

- USB HID, USB 2.0 and/or FireWire
- Separate data paths
- 10/100 NIC Network ports
- Professional audio plug-in modules (TOSLINK, AES, S/PDIF)



Note: Thinklogical will no longer support the hardware required for USB 1.1. Thinklogical will continue software support for all USB 1.1 units. Contact support@thinklogical.com.

Options Part Numbering

Each model's part number indicates included features. See pgs. 10-12 for the full line of VelocityKVM Extender options. Also see pg. 48 for more on numbering formats.

VEL-WR0M04-SCTX:

VelocityKVM 1 DVI Display Transmitter with USB HID, USB 2.0 and redundant, multi-mode fiber paths



VEL-WR0M04-SCTX: **VEL** indicates the Velocity line of extenders. The part number's leading **W** indicates USB HID and USB 2.0 only (USB 1.1 is not supported). This is the standard USB configuration for our Velocity line. **R** indicates redundant fiber paths. **0** is a place holder. **M** indicates Multi-Mode optics. **04** designates our 1 DVI Display model. **SC** indicates SC-Type fiber connectors. **TX** indicates that this unit is a Transmitter.

VEL-H0DM24-LCRX:

VelocityKVM 2 DVI Display Receiver with USB HID only and separate multi-mode data fiber paths



VEL-H0DM24-LCRX: **VEL** indicates the Velocity line of extenders. The part number's leading **H** indicates the USB HID Only option (USB 2.0 is not supported). **0** is a place holder. **D** indicates Separate Data Paths. **M** indicates Multi-Mode optics. **24** designates our 2 DVI Display model. **LC** indicates LC-Type fiber connectors. **RX** indicates that this unit is a Receiver.



Note: USB HID ports are not compatible with USB 2.0 ports. USB HID connections at the Transmitter will only work with USB HID connections at the Receiver. Likewise with USB 2.0.

VelocityKVM Extender Options W, WD, WR, K & KD

(Examples below are shown on the VelocityKVM-24 Tx and Rx. All extender models follow the same format for option configurations.)

TRANSMITTERS

RECEIVERS

VEL-W00M24-LCTX

VEL-W (Standard Extender model: USB 2.0, USB HID)

VEL-W00M24-LCRX



VEL-W0DM24-LCTX

VEL-WD (Separate Data Paths, USB 2.0, USB HID)

VEL-W0DM24-LCRX



VEL-WR0M24-LCTX

VEL-WR (Redundant Fiber-Optics, USB 2.0, USB HID)

VEL-WR0M24-LCRX



VEL-K00M24-LCTX

VEL-K (Network Ports, USB HID, USB 2.0)

VEL-K00M24-LCRX



VEL-K0DM24-LCTX

VEL-KD (Separate Data Paths, Network Ports, USB HID, USB 2.0)

VEL-K0DM24-LCRX



VelocityKVM Extender Options E, ED, H, HD & U Series

(Examples below are shown on the VelocityKVM-24 Tx and Rx. All extender models follow the same format for option configurations.)

[TRANSMITTERS](#)

VEL-E00M24-LCTX



VEL-E (USB 2.0, USB HID, FireWire, no USB 1.1)

VEL-E00M24-LCRX



[RECEIVERS](#)

[RECEIVERS](#)

VEL-E0DM24-LCTX



VEL-E0DM24-LCRX



VEL-ED (Separate Data Paths, USB 2.0, USB HID, FireWire, no USB 1.1)

VEL-H00M24-LCTX



VEL-H (USB HID, no USB 2.0)

VEL-H00M24-LCRX



VEL-H0DM24-LCTX



VEL-HD (Separate Data Paths, USB HID, no USB 2.0)

VEL-H0DM24-LCRX



VelocityKVM-U models with the USB 1.1 option
(Supported for existing systems. Not recommended for new designs.)

VEL-U00M24-LCTX



VEL-U (USB 1.1, USB 2.0, USB HID)

VEL-U00M24-LCRX



VEL-U0DM24-LCTX



VEL-UD (Separate Data Paths, USB 1.1, USB 2.0, USB HID)

VEL-U0DM24-LCRX



VEL-UR0M24-LCTX



VEL-UR (Redundant, USB 2.0, USB HID, USB 1.1)

VEL-UR0M24-LCRX



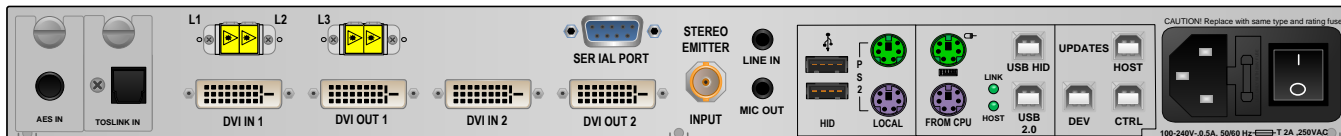
VelocityKVM-24P DVI 2 Display/KVM Professional Audio Extender Option

The **VelocityKVM-24P Professional Audio** option includes six audio modules with each unit. Any two types will fit at once into each transmitter and each receiver unit. The modules include TOSLINK IN, AES IN, S/PDIF IN, TOSLINK OUT, AES OUT and S/PDIF OUT.

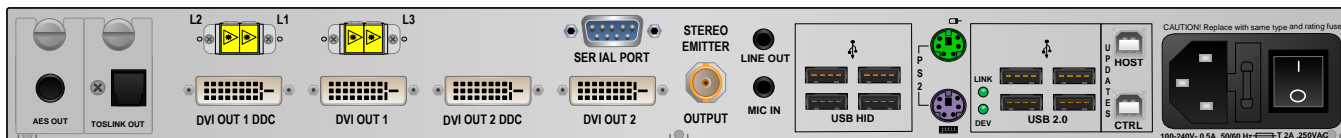
The **VelocityKVM-24A Professional Audio** option includes the same features as the -24P but eliminates USB 2.0 for increased security (USB HID only).

VEL-24P DVI 2 Display/KVM Professional Audio Extender

Transmitter **VEL-P00M24-LCTX**



Receiver **VEL-P00M24-LCRX**



VelocityKVM-24P Professional Audio Modules included with each unit



Also available:

VEL-24A DVI 2 Display/KVM Professional Audio Extender with USB HID only
Transmitter: VEL-A00M24-LCTX, Receiver: VEL-A00M24-LCRX

No Router Mode

Switching Thinklogical Extenders without a Matrix Switch Router

The **No Router Mode** on many Velocity Receivers allows hot-key strokes to switch KMASS (**K**eyboard, **M**ouse, **A**udio, **S**erial, **S**tereo 3D) data control and video sources when directly connected to multiple Velocity Transmitters. Do not use No Router Mode when connecter to a router.

All Velocity receivers that support redundancy and/or selectable KMASS can support **No Router Mode**. This allows users with a direct connection between one Receiver and multiple Transmitters to switch video sources and KMASS control with **hot-key strokes** such as Alt/Alt, Shift/Shift, etc. (See pg. 16)

KVMA Mode (Vel-4R, Vel-24R Receivers)

Vel-4 Redundant and Vel-24 Redundant Receivers use KVMA mode: *Video and KMASS are switched between two sources.* The user only sees the video for the CPU being controlled.

KMA Mode (Vel-24, Vel-34, Vel-35 Receivers)

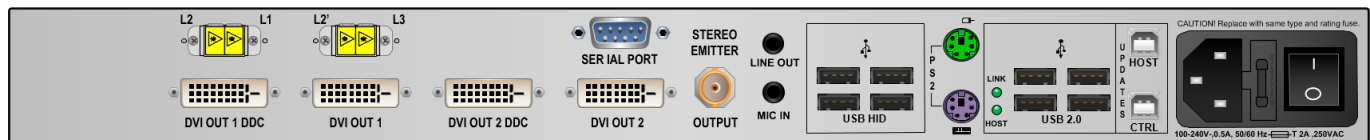
Units that switch KMASS, but not video, are in KMA mode: *Video does not change, just the source that the user is controlling.*

KM Mode (Vel-24, Vel-34, Vel-35 Receivers)

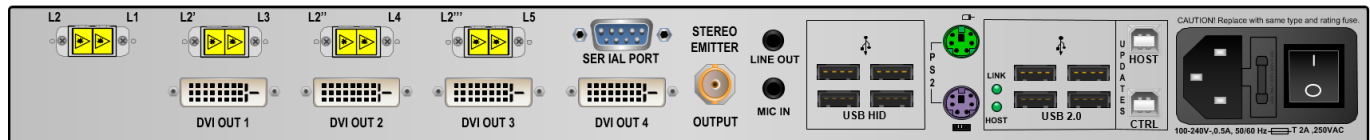
Units that do not switch video or Audio are in KM mode. In KM mode, *Audio is received on the primary L1 fiber only.* (Note that in all modes, the back-channel always handles full KMASS.)

The **No Router Mode** option can be enabled on the Receiver's front panel. When No Router Mode is enabled, out of band (OOB) should be disabled. **Non-redundant Receiver models that support No Router Mode include Vel-24, Vel-34, Vel-35.** (The menu option on the front panel's LCD will display NA or not be displayed at all if the **No Router Mode** feature is not supported.)

VEL-24 Rx No Router Mode



VEL-34 Rx No Router Mode



VEL-35 Rx No Router Mode



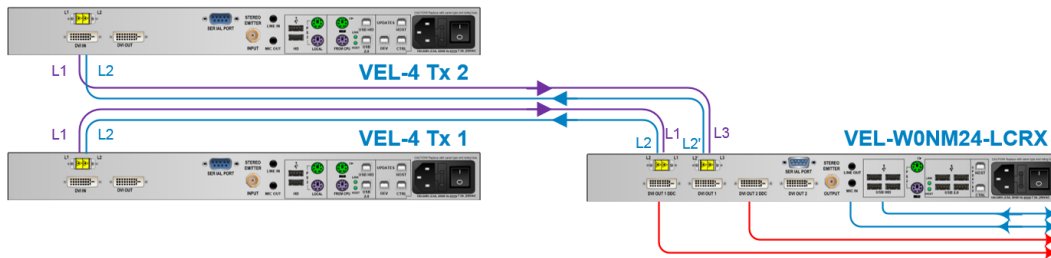
DDC Differences

A Transmitter gets its DDC table from the Receiver. Typically, the Transmitter and Receiver tables match, but in the KM and KMA modes, there will be a mismatch. A Vel-4 Transmitter uses DDC Table 1, a Vel-24 Transmitter uses Tables 1 and 2, etc. A Vel-34 Receiver will return 4 DDC tables to a Transmitter. When a Transmitter is connected to L4 or L5 on the Receiver, it uses the DDC table for the monitor on L1 and L3. *Thinklogical therefore recommends using all the same type of monitors.*



Note: To avoid a DDC mismatch, Thinklogical recommends using all the same type of monitors in **No Router Mode**.

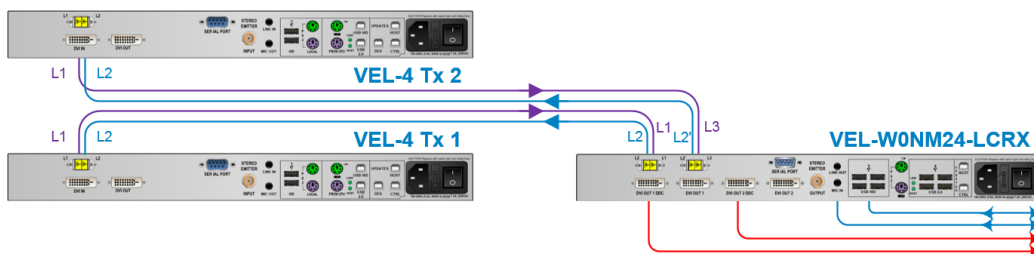
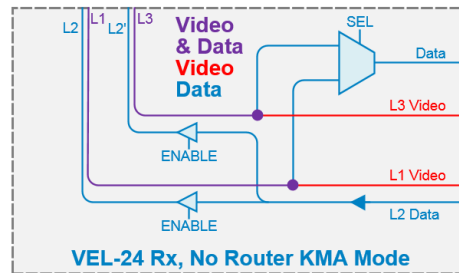
VEL-24 No Router Mode VEL-W0NM24-LCRX



KMA Mode

VEL-24 Rx switching KMASS data between Tx1 and Tx2.

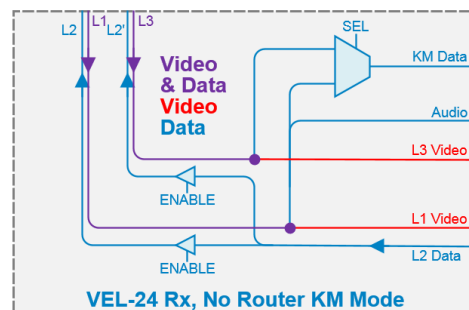
- Source 1 and 2 Videos remain the same.
- Keyboard, Mouse, Audio, Serial and Stereo returns are switched between sources.



KM Mode

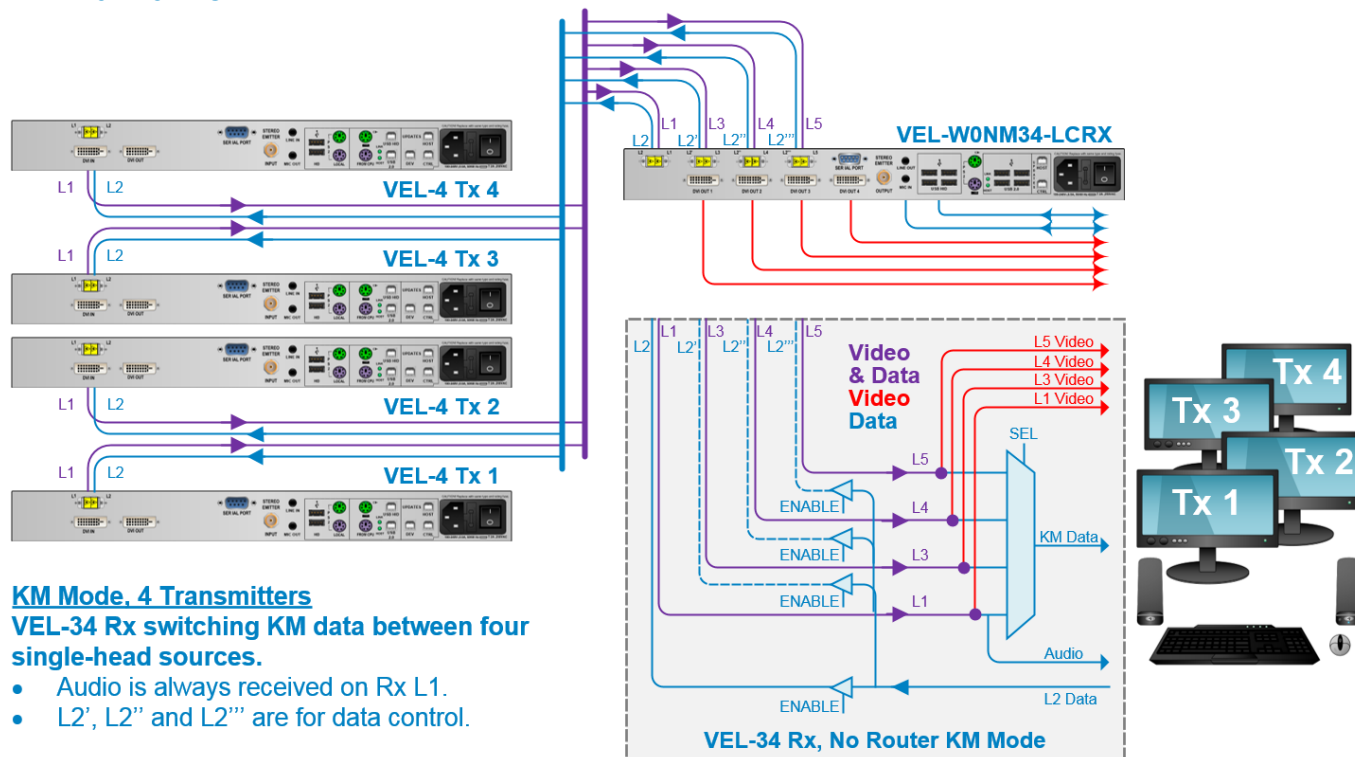
VEL-24 Rx switching KM data between Tx1 and Tx2. Audio is always received on Rx L1.

- Source 1 and 2 Videos remain the same.
- Audio is always received on L1.
- Keyboard, Mouse, Serial and Stereo returns are switched between sources.



VEL-34 No Router Mode

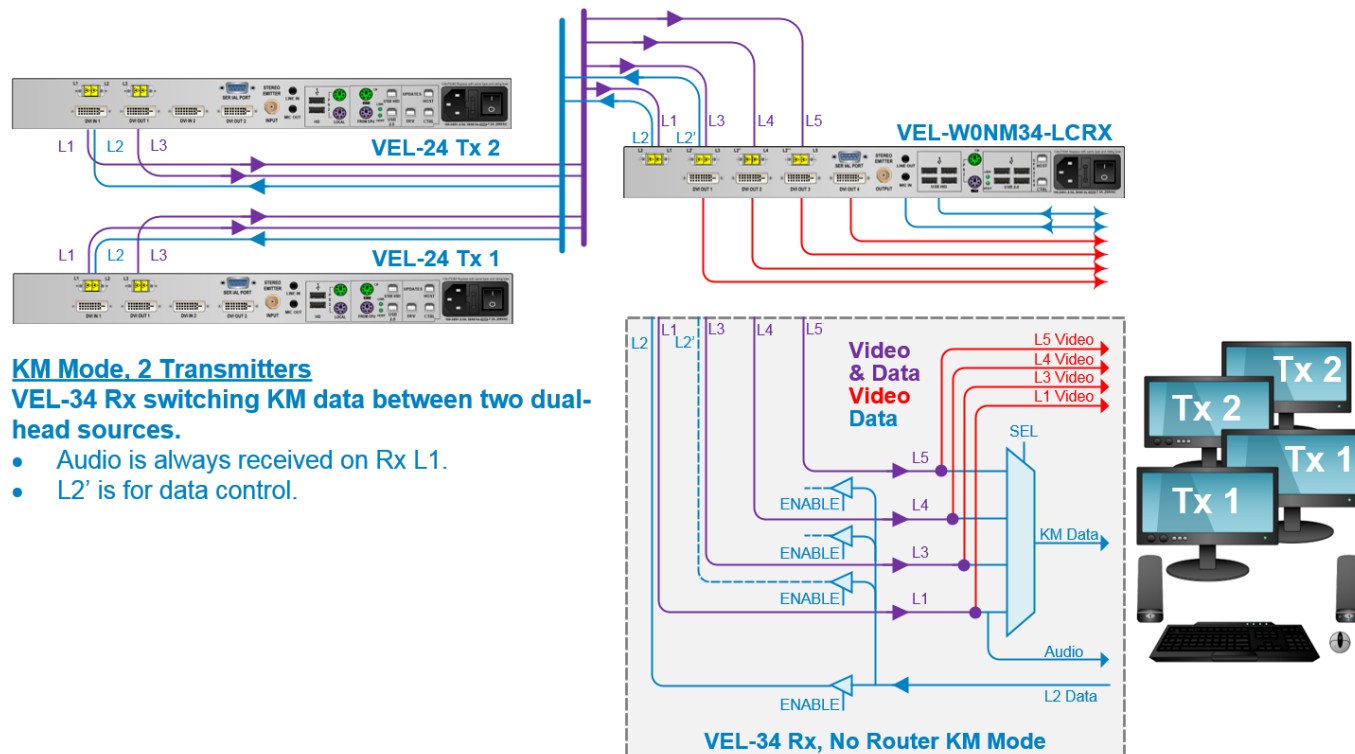
VEL-W0NM34-LCRX



KM Mode, 4 Transmitters

VEL-34 Rx switching KM data between four single-head sources.

- Audio is always received on Rx L1.
- L2', L2'' and L2''' are for data control.

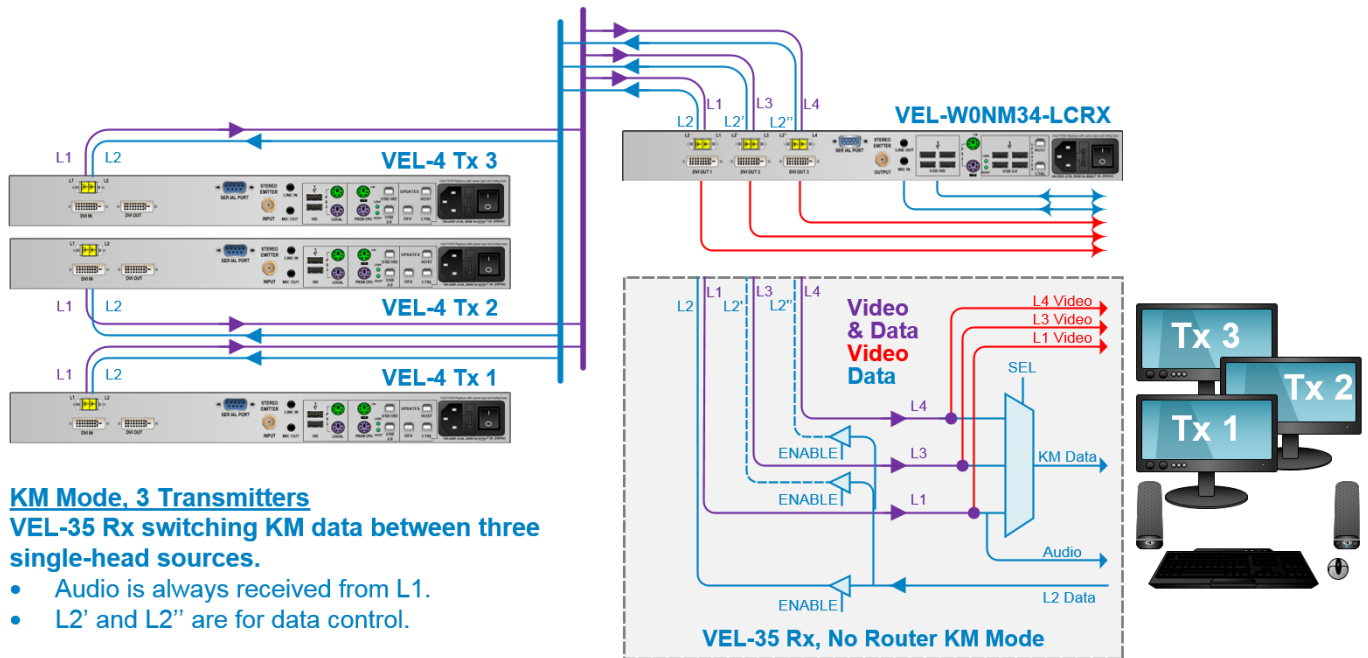


KM Mode, 2 Transmitters

VEL-34 Rx switching KM data between two dual-head sources.

- Audio is always received on Rx L1.
- L2' is for data control.

VEL-35 No Router Mode VEL-W0NM35-LCRX



KM Mode, 3 Transmitters

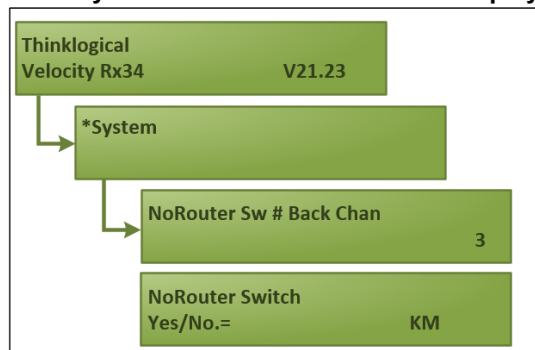
VEL-35 Rx switching KM data between three single-head sources.

- Audio is always received from L1.
- L2' and L2'' are for data control.

Using Hot-Keys

VelocityKVM Receivers that support *No Router Mode* have default Hot-Keys already installed. At Turn-on, the unit ID will be displayed.

VelocityKVM-34 Tx Front Panel LCD Display



Description

⏴	Displays current revision (Scroll down once to access the *System menu.)
⏴	Scroll left once for the No Router Mode menu
enter	3 indicates the number of Back channels. Press enter to scroll between available selections 2, 3 or 4. (Vel-35 selections include 2 or 3. Vel-24 has no selections.)
⏴	Scroll left once for the No Router Mode selection menu. Scroll up or down to select KM or KMA. (KVMA is supported on Vel-4 Redundant & Vel-24 Redundant Rx only). Press enter to select.

- Ensure OOB (Out of Band) is off when in *No Router Mode*.
- Do not use *No Router Mode* when connected to a router.

Default Hot-Key Strokes (These numeric values are fixed for *No Router Mode*):

11 = **Ctrl/Ctrl** (Display 1) 88 = **Gui/Gui** (Display 4)
 22 = **Shift/Shift** (Display 2) 55 = **Scroll Lock/Scroll Lock** (Scroll up)
 44 = **Alt/Alt** (Display 3) 77 = **Scroll down** (No default key)

For more information on using hot-key strokes, see *Appendix G: Flex Keys*, pg. 65.

Technical Specifications

Thinklogical VelocityKVM systems are designed to the following specifications:

PHYSICAL	
Copper Connectors	<p>TRANSMITTER</p> <p>Video System 4, 8 DVI-D (2); System 24, 28, 34, 38 DVI-D (4); System 35 DVI-D (3); System 5 DVI-I (2)</p> <p>Audio MIC/Line 3.5mm Jack</p> <p>Serial Port DB9 Female</p> <p>Stereo Emitter 50Ω BNC</p> <p>IEEE 1394* 9-Pin FireWire (optional)</p> <p>USB HID USB B</p> <p>USB 2.0 USB B</p> <p>USB Local Kybd. USB A</p> <p>USB Local Mouse USB A</p> <p>PS2 Keyboard MiniDIN 6 Female</p> <p>PS2 Mouse MiniDIN 6 Female</p> <p>PS2 Local Kybd. MiniDIN 6 Female</p> <p>PS2 Local Mouse MiniDIN 6 Female</p> <p>Firmware Updates USB B (3)</p> <p>Fiber Connectors LC, SC or ST</p>
	<p>RECEIVER</p> <p>Video System 4, 8, 28, 38 DVI-D (2); System 24, 34 DVI-D (4), System 35 DVI-D (3); System 5 DVI-I (2)</p> <p>Audio MIC/Line 3.5mm Jack</p> <p>Serial Port DB9 Male</p> <p>Stereo Emitter 50Ω BNC</p> <p>IEEE 1394* 9-Pin FireWire (optional)</p> <p>USB HID USB A (4)</p> <p>USB 2.0 USB A (4)</p> <p>PS2 Keyboard MiniDIN 6 Female</p> <p>PS2 Mouse MiniDIN 6 Female</p> <p>Firmware Updates USB B</p> <p>Fiber Connectors LC, SC, or ST</p>
Electrical Cables (supplied with transmitters)	<p>CBL000009-002MR, DVI-D M to M: -4, -5, -24(2), -28, -34(4), -35(3)</p> <p>CBL000022-002MR, HD15 to DVI-A: -5</p> <p>CBL000023-002MR, DVI-D Male to Male, Dual-Link: -8, -28, -38(2)</p> <p>KIT-000005-R, Audio Kit, 6FT: 1 each</p> <p>KIT-000005-R Audio Kit contains the following:</p> <p>CBL000006-006FR 6 pin MiniDIN Male to Male Cable, 6FT (2)</p> <p>CBL000015-006FR USB A-B Cable, 6FT (2)</p> <p>CBL000016-006FR 3.5mm Male to 3.5mm Male Plug, 6FT (2)</p> <p>CBL000017-006FR DB9 Male to DB9 Female Cable, 6FT (1)</p> <p>CBL000018-006FR BNC Male to BNC Male Cable, 50Ω, 6FT (1)</p>
Video Resolution	<p>All Single-Link DVI Resolutions: System 4, 5, 24, 34, 35</p> <p>All Dual-Link DVI Resolutions: System 8, 38</p> <p>Single & Dual-Link DVI Resolutions: System 28</p>

Optical Cable (Not supplied)	Multi-mode Fiber Type: 50 or 62.5 μ m Single-mode Fiber Type: SM/UPC, 9 μ m
Optical Distance	Up to 65 meters with Type OM1 Up to 350 meters with Type OM2 Up to 650 meters with Type OM3 Up to 1000 meters with Type OM4
Chassis Dimensions	Height: 1.72" (4.4 cm), Depth: 14.22" (36.19 cm) Width: 17.49" (44.5 cm)
Weights	Weight: 11 lbs 4.99 kg) each Shipping Weight: 27 lbs (12.25 kg) Transmitter and Receiver
ENVIRONMENTAL	
Temperature	Operating: 0° to 50°C (32°F to 122°F) Ambient Storage: -20°C to 70°C (-4°F to 158°F)
Humidity	Operating: 5% to 95%, non-condensing Storage: Unlimited
Altitude	Operating: Thinklogical components are rated to 1000m max. elevation. Max. operating temp. de-rates by 3% for every 330m > 1000m Storage: Unlimited
ELECTRICAL	
Alarm Relay Contacts	Maximum DC: 1A at 30VDC Maximum AC: 0.3A at 125VAC Contact resistance max.: .1Ω
Input rating	100-240VAC, 1.5A, 50-60Hz
Max. DC Power Consumption	<i>Equal to max. output of a <u>single</u> Power Supply.</i>
THERMAL	Heat load (BTU/HR): <i>Equal to DC Power consumption x 3.412</i>
REGULATORY	US/Canada EN 90650, FCC 47 CFR Part 15, ICES, CE
WARRANTY	One year from date of shipment. Extended warranties available.

TABLE 1: Technical Specifications

VELOCITY UNBALANCED AUDIO SPECIFICATIONS	
AUDIO SAMPLING RATE: 46.875kHz	
TRANSMITTER:	RECEIVER:
Line In Impedance: 10k Ω	Line Out Impedance: 560 Ω
Line In (max): 2.5V p/p (0.884Vrms, 1.15dBu)	Line Out (max) into 1K ohms: 3V p/p (1.06Vrms, 2.72dBu)
Mic Out Impedance: 300 Ω	Mic In Impedance: 5k Ω
Mic Out (max): 0.45V p/p (0.159Vrms, -13.75dBu)	Mic In (max) : 0.24V p/p (0.085Vrms, -19.2dBu)

TABLE 2: Velocity Unbalanced Audio Specifications

VelocityKVM-5 Supported RGB Resolutions

Active Resolution		Total Lines	Vertical Freq (Hz)	Horizontal Freq (kHz)	Pixel Clock Freq (MHz)	Video Standard
Pixels	Lines					
640	448	472	66	31.2	25	Honeywell
640	480	525	60	31.5	25.175	Industry Standard
640	480	520	72	37.9	31.5	VESA
640	480	500	75	37.5	31.5	VESA
640	480	509	85	43.3	36	VESA
720	400	449	70	31.5	28.32	Industry Standard
800	600	625	56	35.1	36	VESA
800	600	628	60	37.9	40	VESA
800	600	666	72	48.1	50	VESA
800	600	625	75	46.9	49.5	VESA
800	600	631	85	53.7	56.25	VESA
1024	768	800	50	40	53.44	Folsom
1024	768	806	60	48.4	65	VESA
1024	768	800	75	60	78.75	VESA
1024	768	808	85	68.7	94.5	VESA
1280	720	750	50	37.5	74.25	Folsom
1280	720	750	60	45	74.25	CEA-861-E
1280	800	828	60	49.7	83.46	VESA GTF
1280	1024	1066	50	52.8	89.55	Folsom
1280	1024	1066	60	64	108	VESA
1280	1024	1082	60	64.8	108.88	Discreet
1280	1024	1066	75	80	135	VESA
1280	1024	1072	85	91.1	157.5	VESA
1280	1024	1063	96	102	163.277	SGI Onyx2
1366	768	795	60	47.7	85.5	VESA GTF
1400	1050	1090	50	54.5	94.61	Folsom
1400	1050	1080	60	64.8	120.78	VESA CVT-RB
1400	1050	1089	60	65.3	121.75	VESA
1400	1050	1099	96	105.4	164.5	SGI Stereo
1440	900	932	60	55.8	106.4	VESA GTF
1440	900	934	60	55.9	106.5	VESA DMT
1600	1200	1250	60	75	162	VESA
1680	1050	1089	60	65.3	146.25	VESA DMT
1920	1080	1125	25	28.12	74.25	Folsom
1920	1080	1125	50	56.25	148.5	Folsom
1920	1080	1125	60	67.5	148.5	CEA-861-E

TABLE 3: Velocity 5 RGB Resolutions

HARDWARE

Contents

When you receive your Thinklogical VelocityKVM Extender®, you should find the following items:

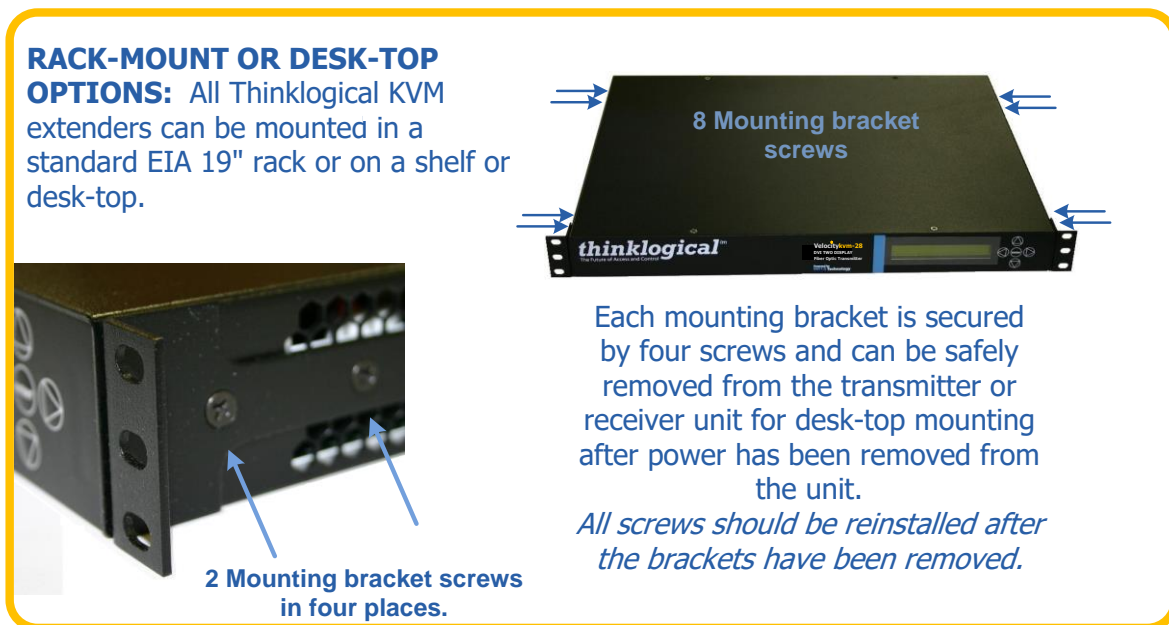
- VelocityKVM Extender Transmitter
- VelocityKVM Extender Receiver
- AC power cord, PWR-000006-R (International connections may differ) – Qty 2
- VelocityKVM Extender Cables
 - ✓ Video Cable, 2 Meters – See Technical Specs, pg. 17
 - ✓ Audio Cable Kit (8 pcs.), 6 Feet, KIT-000005-R – Qty 1
- VelocityKVM Extender Product Manual CD
- Product Quick Start Guide

All physical connections to the product use industry-standard connectors.

Desktop or Rack Mount Device

You may choose to place your unit on a shelf or desktop (rubber feet included), or rack-mount it using the supplied mounting brackets (EIA 19" rack mountable). The front panel should be visible and unobstructed so that the front panel buttons and LCD display are accessible. All connections are made to the rear of the chassis. The VelocityKVM Extender chassis does not need to be opened or accessed. The sturdy metal case allows units to be stacked as needed.

RACK-MOUNT OR DESK-TOP OPTIONS: All Thinklogical KVM extenders can be mounted in a standard EIA 19" rack or on a shelf or desk-top.



8 Mounting bracket screws

2 Mounting bracket screws in four places.

Each mounting bracket is secured by four screws and can be safely removed from the transmitter or receiver unit for desk-top mounting after power has been removed from the unit.

All screws should be reinstalled after the brackets have been removed.

Mounting Bracket Removal

Cooling

The VelocityKVM Extender System uses **two DC fans** to move air horizontally through the chassis. For **Transmitters**, the fans will not turn on unless the internal temperature exceeds 40°C. For **Receivers**, the fans will always run at low power to keep the unit's temperature within range and to reduce ambient noise.



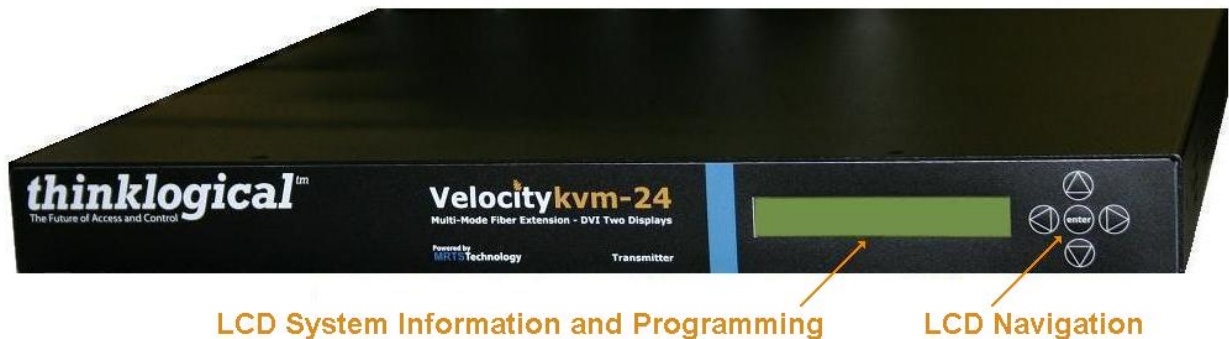
Note: Be sure to leave a minimum of 2" ventilation space on both sides of the units, especially if the units are being stacked.

2 Fans per Chassis



Front Panel Display and Buttons

The front-panel LCD display should be visible and accessible for system setup. The front panel buttons are used to configure special video settings and to review existing VelocityKVM Extender configurations. More detailed information on the Front Panel can be found in the **Front Panel Usage** section (Pg. 30).



LCD System Information and Programming

LCD Navigation

VelocityKVM-24 Extender Front Panel LCD Display

Connecting the VelocityKVM Extender

Types of Connections

All physical connections to the product use industry-standard connectors. Non-supplied cables that may be needed are commercially available. All connections are found on the rear of the unit.

Fiber Cable

Fiber-optic cables run between the Transmitter unit (near your CPU) and the Receiver unit (near your desktop devices). The standard multi-mode fiber optic cables must be 50 or 62.5µm, terminated with LC, ST or SC- type fiber optic connectors. Single-mode fiber optic cables must be 9µm, UPC (**Ultra Physical Contact**), terminated with LC, ST or SC- type fiber optic connectors. Be careful not to kink or pinch the fiber optic cable as it is being installed and keep all bend radii to no less than 3 inches (76.2mm).

It is the standard VelocityKVM convention that fiber L1 carries data (PS2, USB, audio, serial, etc.) and video signal 1 (DVI or RGB) from the transmitter to the receiver. If a back-channel is required, fiber L2 carries data from the receiver to the transmitter. If additional video channels are required, they are carried from transmitter to receiver via fibers L3, L4 and L5, depending on the extender model. (See Pg. 57 for additional fiber configurations used with the Fail-Over option.)

Transmitter

The transmitter unit connects to the computer at the DVI In port using a DVI-D male-to-male cable (CBL000009-002MR for single-link and/or CBL000023-002MR for dual-link) which is supplied with the system. The connections to the VelocityKVM Extender Transmitters can be viewed in detail in the REAR PANEL VIEW section of this manual beginning on Pg. 23.

Receiver

The receiver unit connects to a video monitor using a DVI-D male-to-male cable. Peripherals connect with their own standard cables. The connections to the VelocityKVM Extender Receivers can be viewed in detail in the REAR PANEL VIEW section of this manual.

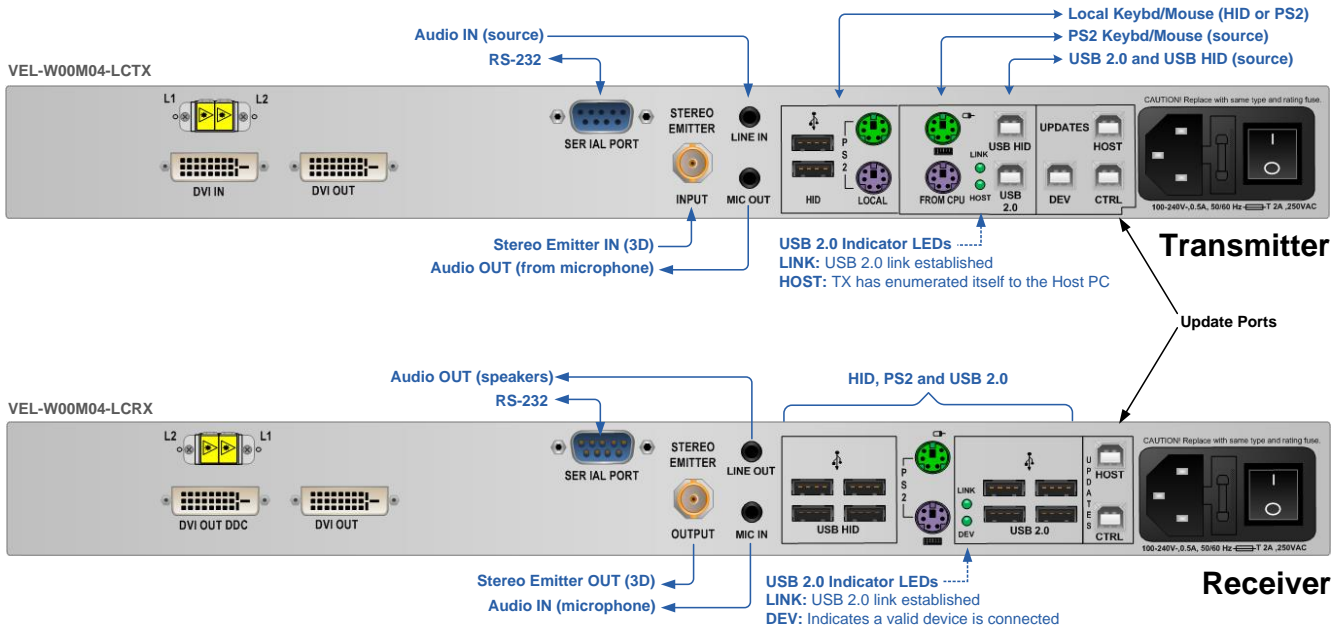
Receiver Serial Port

The Tx has a DB9F connector and is wired as a DCE (Data Communications Equipment) device. The Rx has a DB9M connector and is wired as a DTE (Data Terminal Equipment) device. The Tx connects to the computer and the Rx connects to a touch screen, tablet, tape controller, etc., using a DB9 Male to DB9 Female Cable (CBL000017-006F is supplied in KIT-000005-R and is provided with the system). An RS422 option for controlling broadcast equipment is also available.

Peripheral and Update Ports

The following Transmitter and Receiver rear panel diagrams denote the functions of the various peripheral device ports, including the FireWire and Network options and their LED indicators for all VelocityKVM Extender models. Refer to the **Quick Start Guides** in **Appendix B** for more information.

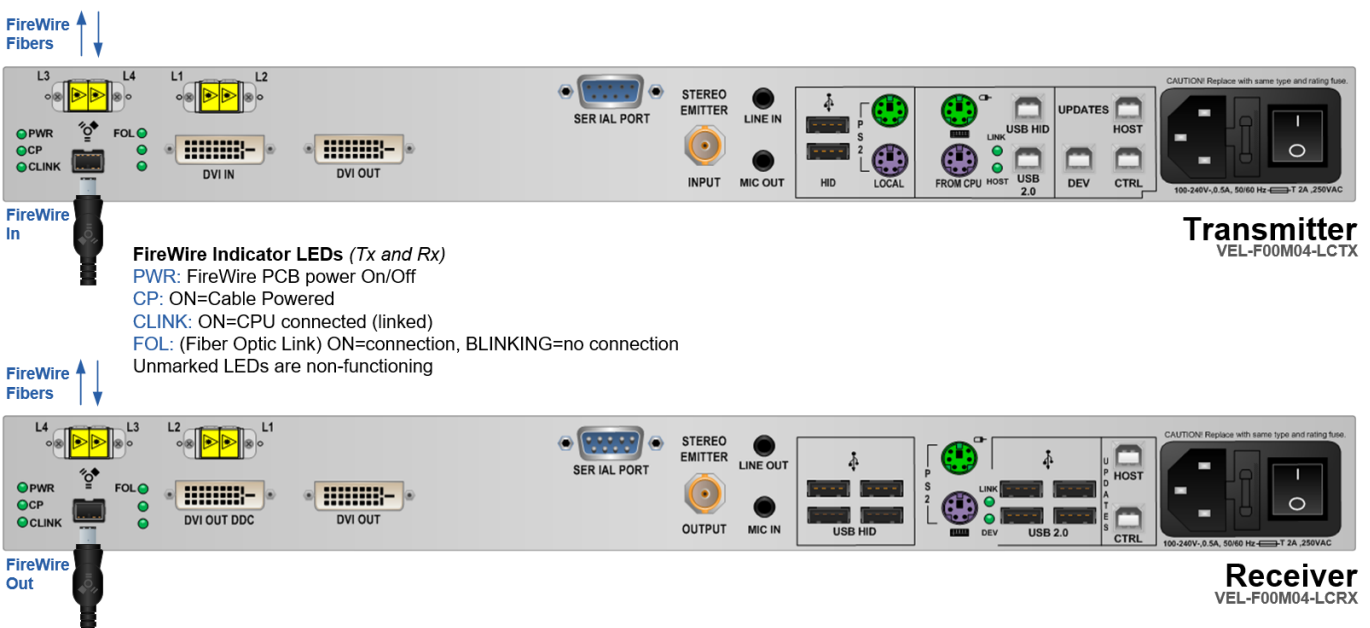
Standard VelocityKVM Transmitters and Receivers: Peripheral and Update Ports, LED Indicators



The Fire Wire Option

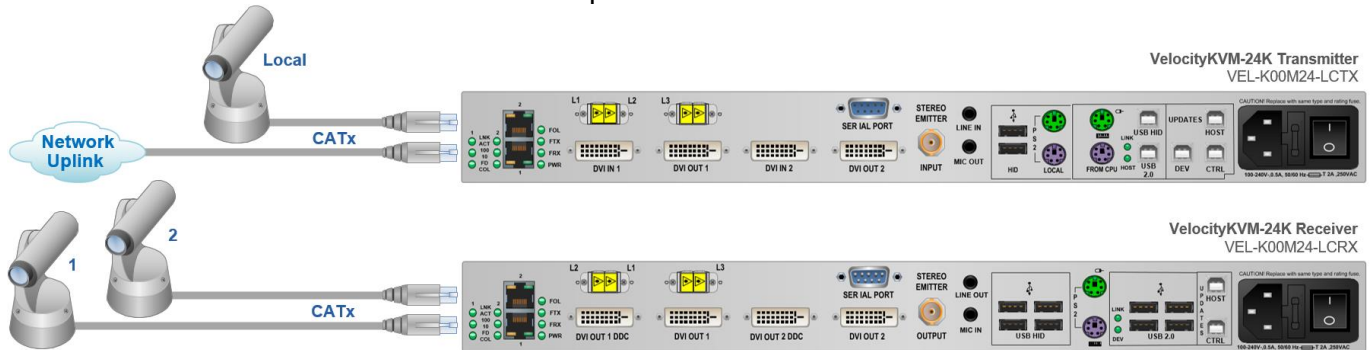
Also known as IEEE 1394, FireWire is a serial bus interface standard for high-speed communications and isochronous real-time data transfer (50 MB of data per second), frequently used with personal computers, digital audio and digital video applications.

Thinklogical products that feature FireWire require 2 additional fiber optic cables.



The Network Option

The Network option extends 10/100 Mbps Ethernet between the Transmitter and the Receiver over fiber. There are two Network Ports on each extender, labeled 1 and 2. A single network can uplink directly to any Network Port on the Transmitter or Receiver with a CATx cable. Up to three 10/100 Mbps Ethernet devices can be connected to the other ports; one locally and two remotely, as shown here. The functions of the Network and Fiber Status LEDs are explained below.



Network Status LEDs:

Column 1=Network Port 1
Column 2= Network Port 2

LNK/ACT:

Lit when link is established.
Flashes when actively transferring data.

10/100:

Lit when speed of link is 100 Mb/sec.
Off when speed of link is 10 Mb/sec.

FD/COL:

Lit when operating in Full Duplex.
Off when operating in Half Duplex.
Blinking indicates Collision.

On the RJ45 Port:

Yellow LED (blinking) = Activity
Green LED = Link

Fiber Status LEDs:

FOL is illuminated when either primary channel (L1 or L3) has a valid return path connection when it is selected.

FTX (on TX) Data is present at the TX input for transmission.

FTX (on RX) Return data is being transmitted from the RX to the TX.

FRX (on TX) Return data is being received from the RX.

FRX (on RX) Data from the TX is reaching the RX.

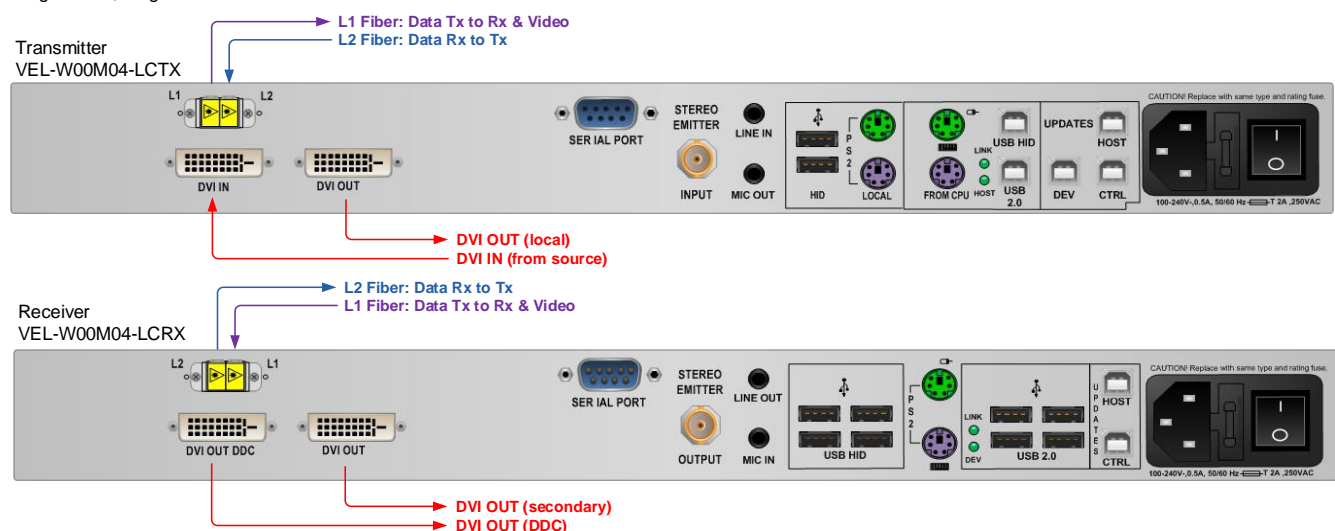
PWR indicates that DC power is present on the Network PCB.

Fiber and Video Ports

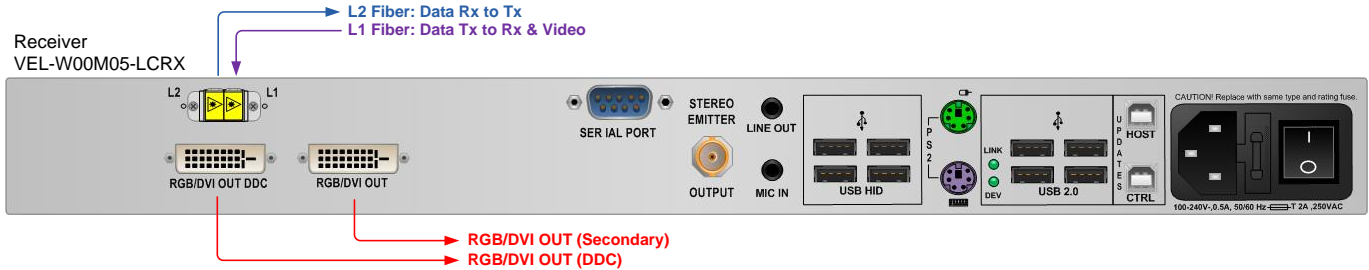
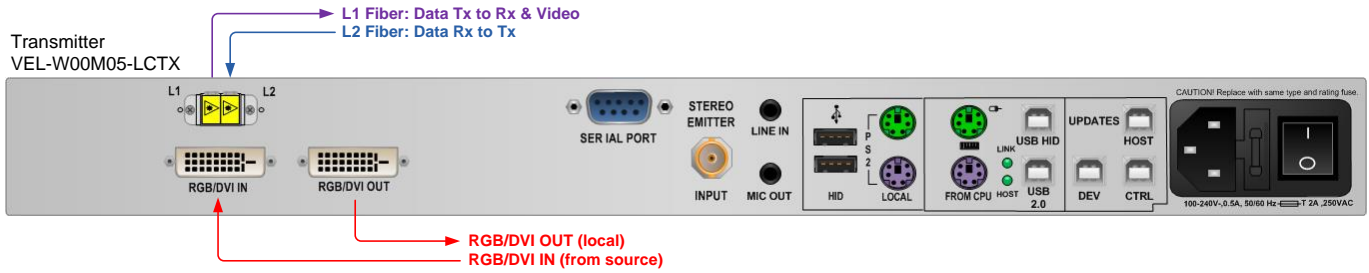
The following transmitter and receiver rear panel diagrams explain the functions of the fiber optic cable input and output ports and the video input and output ports for each of the VelocityKVM Extenders. For the fiber connections, **Optical Fiber L1, which carries both DATA from Tx to Rx and VIDEO, is in purple**, **Optical Fiber L2, which carries DATA from Rx to Tx, is in blue** and **all VIDEO ONLY fibers are in red**. Refer to the **Quick Start Guides in Appendix B (pg. 49-56)** for more information.

Velocity-4 KVM Multi-Mode Extender

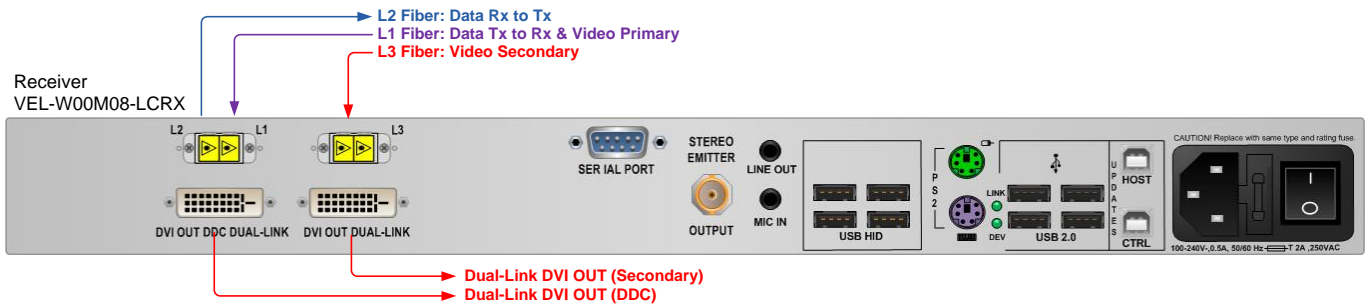
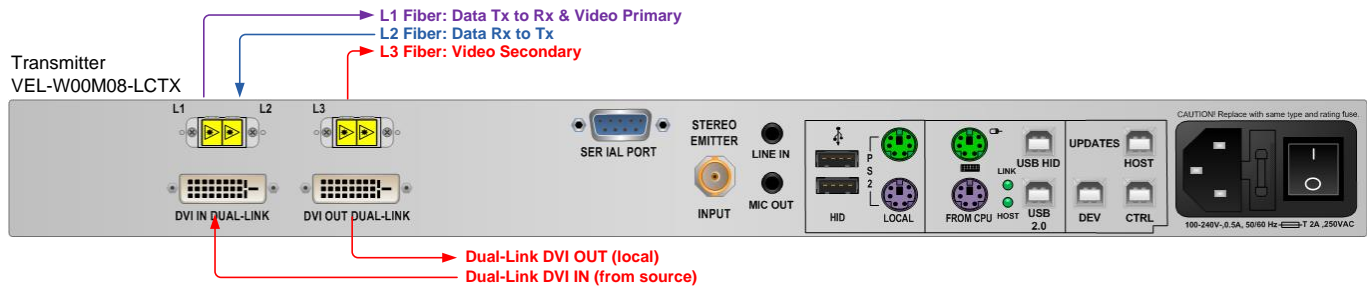
Single-Head, Single-Link DVI



Velocity-5 KVM Multi-Mode Extender
Single-Head, Single-Link RGB/DVI

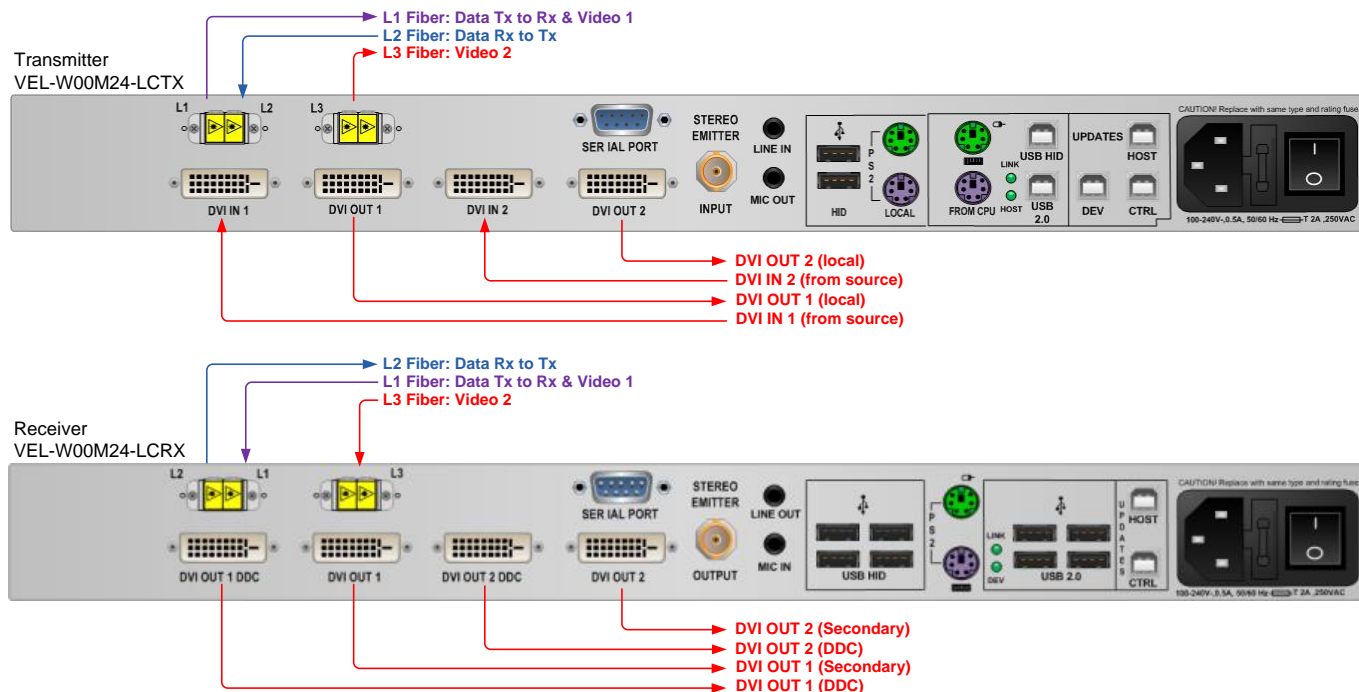


Velocity-8 KVM Multi-Mode Extender
Dual-Link DVI



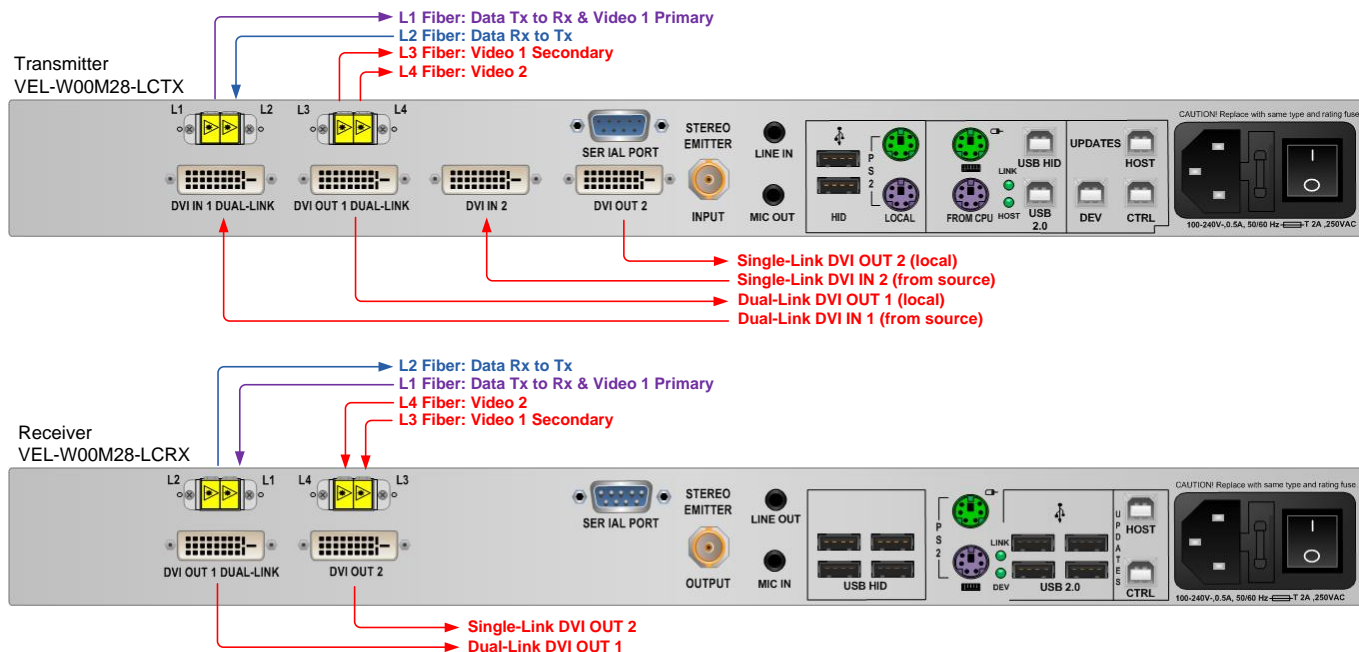
Velocity-24 KVM Multi-Mode Extender

DVI 2 Display



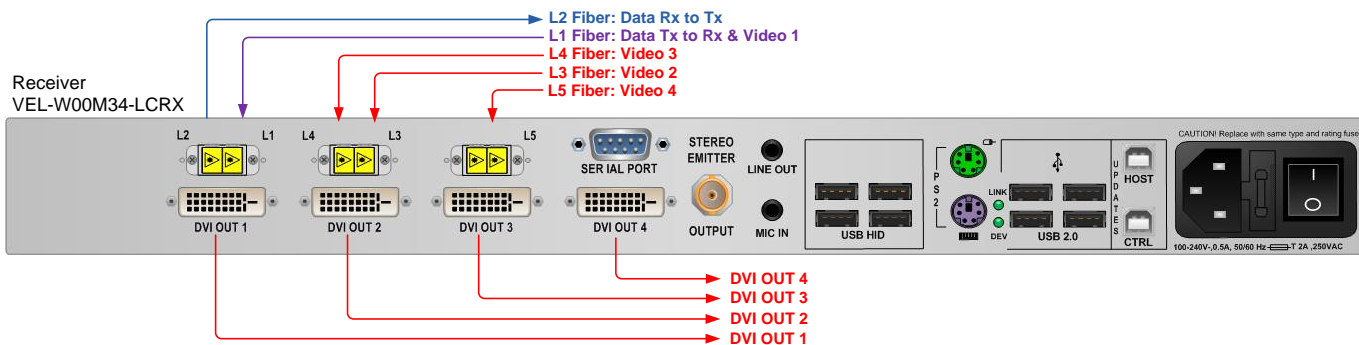
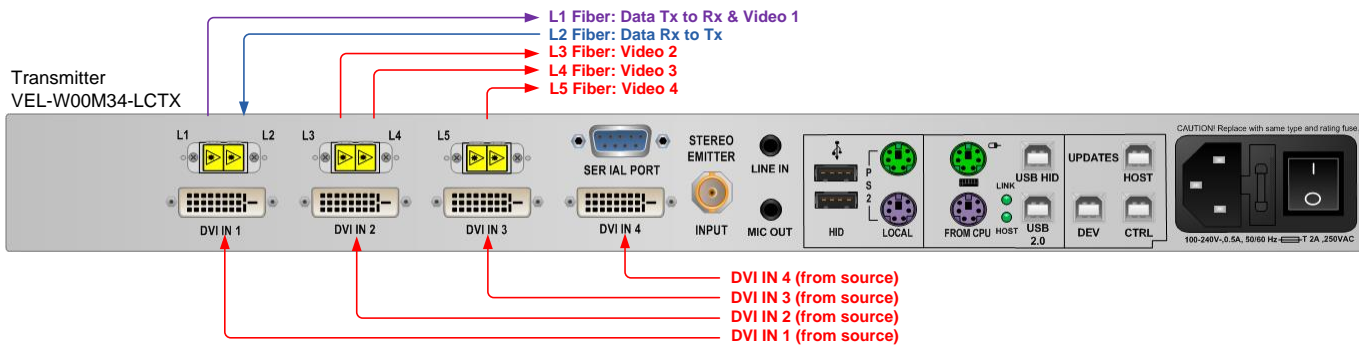
Velocity-28 KVM Multi-Mode Extender

Dual-Link, Single-Link DVI, 2 Display



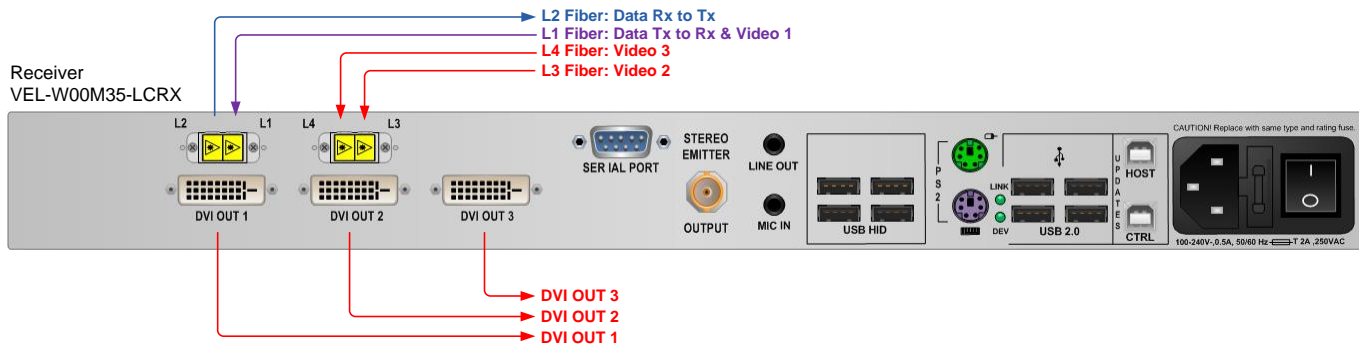
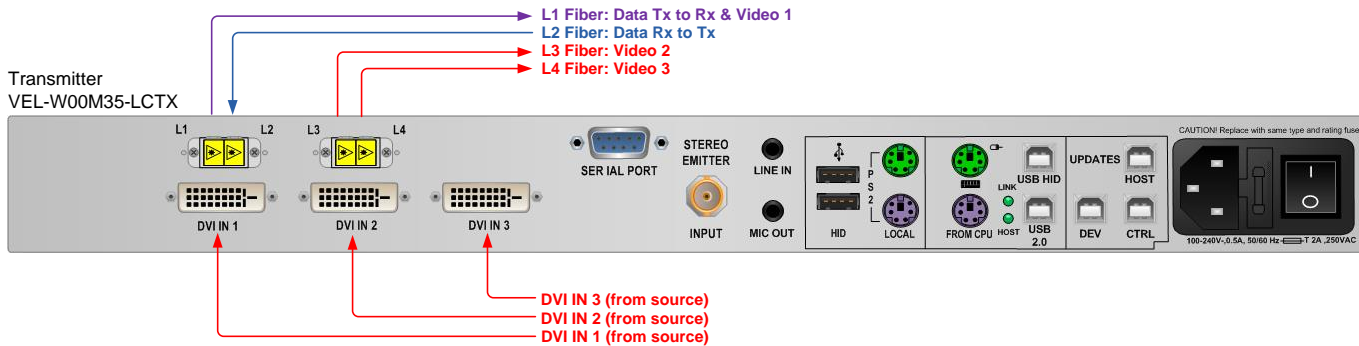
Velocity-34 KVM Multi-Mode Extender

DVI, 4 Display



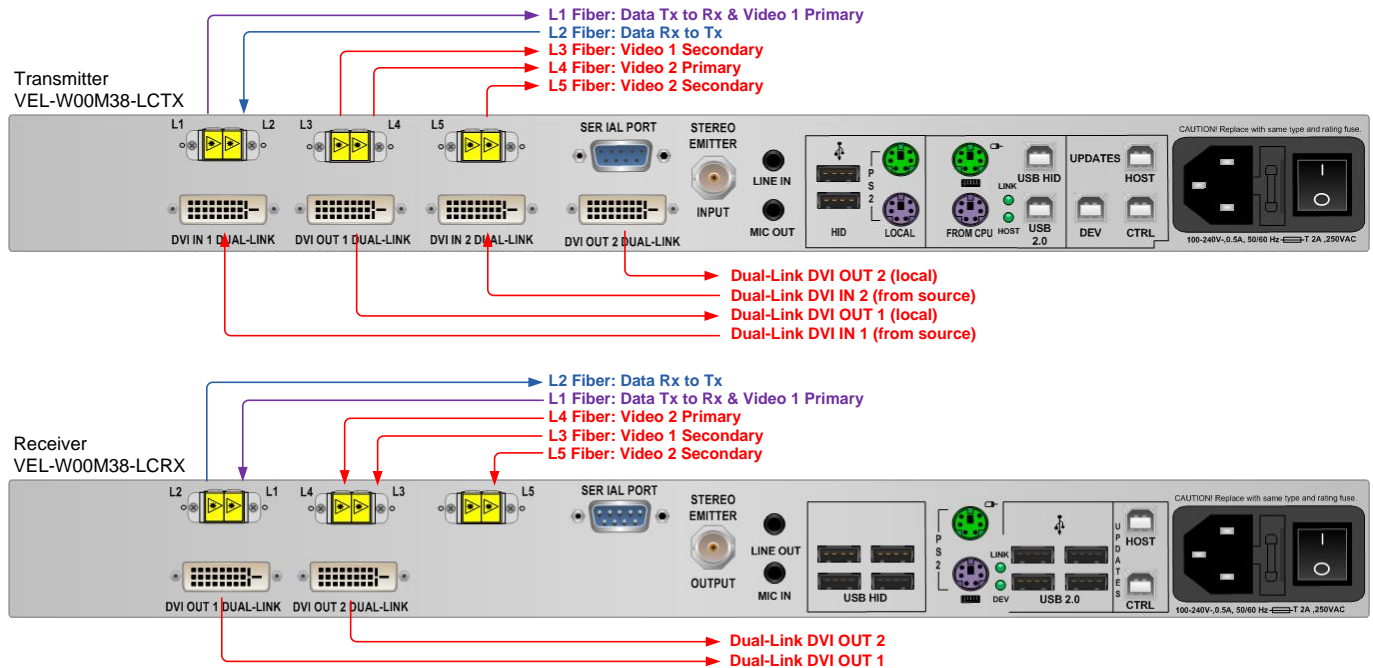
Velocity-35 KVM Multi-Mode Extender

DVI, 3 Display



Velocity-38 KVM Multi-Mode Extender

2 Dual-Link DVI Displays



Cables

Peripheral Cables:

KIT-000005-R Audio Cable Kit (8 pcs.)– Qty 1, all models

- 2 each – 6 pin mini din (6')
- 2 each – USB A-B (6')
- 2 each – 3.5mm to 3.5mm plug (6')
- 1 each – DB9M to DB9F (6')
- 1 each – BNC male to male, 50Ω (6')



KIT-5 Cables (Included)

Video Cables

Depending on the VelocityKVM Extender model, use the following video cables:

Single-link: DVI-D Male Cable, 2 Meters (CBL000009-002MR)

Single-link: DVI-I Male Cable, 2 Meters (CBL000013-002MR)

RGB: HD15 to DVI-A Male Cable, 2 Meters (CBL000022-002MR) - VelocityKVM-5, Qty 1

Dual-link: DVI-D Male Cable, 2 Meters (CBL000023-002MR)

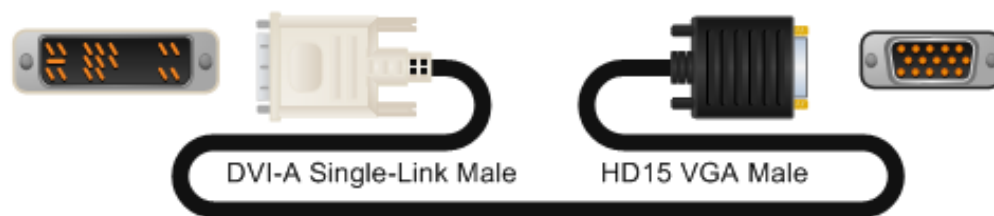
DVI (CBL000009-002MR)



DVI (CBL000013-002MR)



DVI/VGA (CBL000022-002MR)



DVI (CBL000023-002MR)



Installation

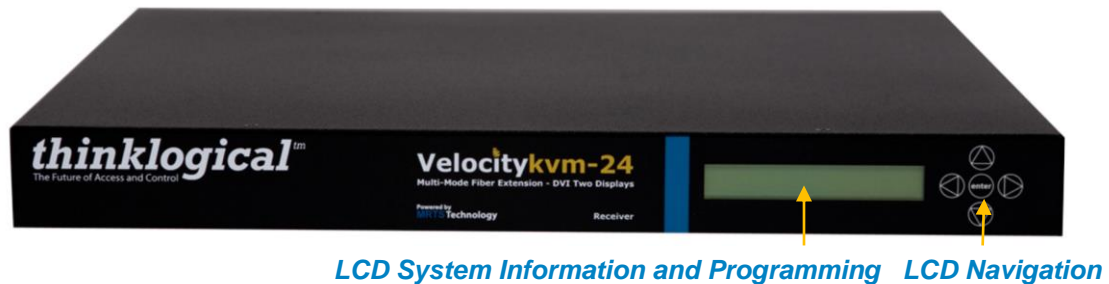
All physical connections to the product use industry-standard connectors. Non-supplied cables are commercially available. All connections are found on the rear of the unit. Refer to the **Quick Start Guides** in **Appendix B** (pgs. 49-56) for more information.

Set-Up

Firmware Updates

Firmware updates are available through Thinklogical. Please call for assistance: **1-203-647-8700**.


Front Panel Usage



Once the system is powered up, the initial Transmitter display is as follows:



The company name is listed on the first line of the display. The model and software version (VXX.XX) of the unit is displayed on the second line.

By pressing the down arrow  you will enter the main menu. **The main root menu items are displayed with an asterisk (*)** as in the System menu (below):



Once a *root menu item is displayed, use the left arrow  or right arrow  to review settings or make allowable changes.

SFP LOS and SFP Des OK Signal

In the ***System** root menu, scrolling right or left will bring you to the **SFP Loss of Signal** and **SFP Des OK Signal** menus.

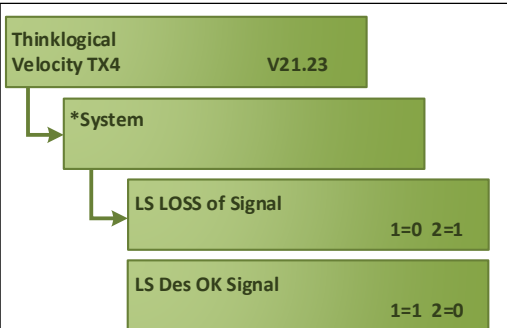


The **SFP Loss of Signal** menu provides confirmation of lost or unused **video signals** at the Receiver and of lost or unused **data-return signals** at the Transmitter. A lost/unused signal will be indicated by a 1 at SFPs on a Receiver and by a 1 at SFP on a Transmitter. If only 2 SFPs are in use, as in a VelocityKVM-24 Receiver, SFPs 9 through 3 will always indicate that no signal is present (1).

The **SFP Des OK Signal** menu provides confirmation that a good **de-serializer signal** is detected at the Receiver and Transmitter SFPs. A good signal will be indicated by a 1 at the SFPs. If only 2 SFPs are in use, as in a VelocityKVM-24, SFPs 9 through 3 will always indicate that no signal is present (0).

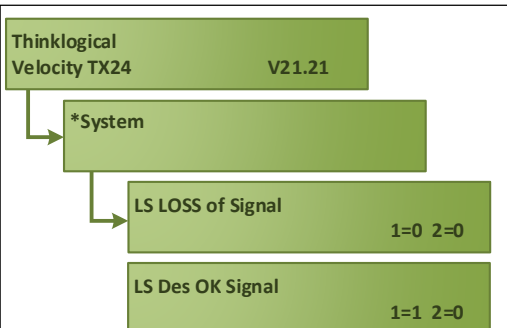


Fiber L1 on the Transmitter and L2 on the Receiver are always transmitting. The SFPs connected to fibers L3, L4 and L5 will not transmit until a video signal is applied to the Transmitter's DVI IN connector.

Velocitykvm Transmitters

EXAMPLE 1:

VelocityKVM-4 Tx Front Panel LCD Display	Modifiable	Description
		<ul style="list-style-type: none">  Displays current revision (Scroll Up or Down to access top level *Menus.)  Scroll Right or Left within the System menu
	NO	1 indicates no signal or loss of signal. Vel-4 TX should read: 1=0 2=1 1 display; Return to Tx L2 , signal received at Rx SFP port L1. No other SFPs used.
	NO	1 indicates de-serializer OK. Vel-4 TX should read 1=1 2=0 1 display; Return to Tx L2 , signal received on Rx SFP port L1. No other SFPs used.

EXAMPLE 2:

VelocityKVM-24 Tx Front Panel LCD Display	Modifiable	Description
		<ul style="list-style-type: none">  Displays current rev. (Scroll Up or Down to access top level *Menus.)  Scroll Right or Left within the System menu
	NO	1 indicates no signal or loss of signal. Vel-24 Tx should read: 1=0 2=1 2 displays, 1 fiber each; Return to Tx L2 , signals received at Rx SFP ports L1 & L3. No other SFPs used.
	NO	1 indicates de-serializer OK. Vel-24 Tx should read: 1=1 2=0 2 displays, 1 fibers each; Return to Tx L2 , signals received at Rx SFP ports L1 & L3. No other SFPs used.

(See corresponding table on the following page.)

The following table shows the expected **SFP Loss of Signal** and **Des OK Signal** indications for each model of a properly connected VelocityKVM Transmitter:

TX EXTENDER	DISPLAY	FIBERS TO TX	EXPECTED VALUES	FIBERS TO RX
MODEL VelocityKVM-4	VIDEO 1 DVI Display (Single Link)	L2	TX SFP LOS 1=0 2=1 TX DES OK signal 1=1 2=0	L1
MODEL VelocityKVM-5	VIDEO 1 DVI/RGB Display (Single Link)	L2	TX SFP LOS 1=0 2=1 TX DES OK signal 1=1 2=0	L1
MODEL VelocityKVM-8	VIDEO 1 DVI Display (Dual Link)	L2	TX SFP LOS 1=0 2=1 TX DES OK signal 1=1 2=0	L1, L3
MODEL VelocityKVM-24	VIDEO 2 DVI Displays (Single Link)	L2	TX SFP LOS 1=0 2=1 TX DES OK signal 1=1 2=0	L1, L3
MODEL VelocityKVM-28	VIDEO 2 DVI Displays (Single Link, Dual Link)	L2	TX SFP LOS 1=0 2=1 TX DES OK signal 1=1 2=0	L1, L3, L4
MODEL VelocityKVM-34	VIDEO 4 DVI Displays (Single Link)	L2	TX SFP LOS 1=0 2=1 TX DES OK signal 1=1 2=0	L1, L3, L4, L5
MODEL VelocityKVM-35	VIDEO 3 DVI Displays (Single Link)	L2	TX SFP LOS 1=0 2=1 TX DES OK signal 1=1 2=0	L1, L3, L4
MODEL VelocityKVM-38	VIDEO 2 DVI Displays (2 Dual Link)	L2	TX SFP LOS 1=0 2=1 TX DES OK signal 1=1 2=0	L1, L3, L4, L5



Note: SFP numbers and fiber counts may vary in older models and for the above models with added options such as Redundant Video, Separate Data Path, etc.

Velocitykvm Receivers

EXAMPLE 1:

VelocityKVM-4 Rx Front Panel LCD Display	Modifiable	Description
		<p>⏴ ⏵ Displays current revision (Scroll Up or Down to access top level *Menus.)</p> <p>⏪ ⏩ Scroll Right or Left within the System menu</p>
	NO	1 indicates no signal/loss of signal. Vel-4 Rx should read: 9-2=1, 1=0 1 display; Signal received at Rx SFP port L1 , return to Tx L2. No other SFPs used.
	NO	1 indicates de-serializer OK. Vel-4 Rx should read 9-2=0 1=1 1 display; Signal received on Rx SFP port L1 , return to Tx L2. No other SFPs used.

EXAMPLE 2:

VelocityKVM-24 Rx Front Panel LCD Display	Modifiable	Description
		<p>⏴ ⏵ Displays current rev. (Scroll Up or Down to access top level *Menus.)</p> <p>⏪ ⏩ Scroll Right or Left within the System menu</p>
	NO	1 indicates no signal or loss of signal. Vel-24 Rx should read: 9-3=1 2,1=0 2 displays, 1 fiber each; Signals received at Rx SFP ports L1 & L3 . Return to Tx L2. No other SFPs used.
	NO	1 indicates de-serializer OK. Vel-24 Rx should read: 9-3=0 2,1=1 2 displays, 1 fiber each; Signals received at Rx SFP ports L1 & L3 . Return to Tx L2. No other SFPs used.

(See corresponding table on the following page.)

The following table shows the expected **SFP Loss of Signal** and **Des OK Signal** indications for each model of a properly connected VelocityKVM Receiver:

RX EXTENDER	DISPLAY	FIBERS TO RX	EXPECTED VALUES	FIBERS TO TX
MODEL VelocityKVM-4	VIDEO 1 DVI Display (Single Link)	L1	RX SFP LOS 987654321 111111110 RX DES OK signal 987654321 000000001	L2
MODEL VelocityKVM-5	VIDEO 1 DVI/RGB Display (Single Link)	L1	RX SFP LOS 987654321 111111110 RX DES OK signal 987654321 000000001	L2
MODEL VelocityKVM-8	VIDEO 1 DVI Display (Dual Link)	L1, L3	RX SFP LOS 987654321 111111100 RX DES OK signal 987654321 000000011	L2
MODEL VelocityKVM-24	VIDEO 2 DVI Displays (Single Link)	L1, L3	RX SFP LOS 987654321 111111100 RX DES OK signal 987654321 000000011	L2
MODEL VelocityKVM-28	VIDEO 2 DVI Displays (Single Link, Dual Link)	L1, L3, L4	RX SFP LOS 987654321 111111000 RX DES OK signal 987654321 000000111	L2
MODEL VelocityKVM-34	VIDEO 4 DVI Displays (Single Link)	L1, L3, L4, L5	RX SFP LOS 987654321 111110000 RX DES OK signal 987654321 000001111	L2
MODEL VelocityKVM-35	VIDEO 3 DVI Displays (Single Link)	L1, L3, L4	RX SFP LOS 987654321 111111000 RX DES OK signal 987654321 000000111	L2
MODEL VelocityKVM-38	VIDEO 2 DVI Displays (2 Dual Link)	L1, L3, L4, L5	RX SFP LOS 987654321 111110000 RX DES OK signal 987654321 000001111	L2



Note: SFP numbers and fiber counts may vary in older models and for the above models with added options such as Redundant Video, Separate Data Path, etc.

Menu Functionality *(Some menu options may not be available on all models.):*

TRANSMITTER:

Display

Modifiable Description

*System

LS Connected	NO	Indicates fiber status from TX to RX. (0=connected).
Tx Ctrl Name	TX	(Tx only) Name entered on TX unit is displayed on RX unit.
Load Defaults	YES	Loads factory default video configurations.
Store Values	YES	Store video configurations.
KM Device	NO	Revision of the VelocityKVM portion that plugs into CPU.
KM Remote Host	NO	Revision of the VelocityVKM Host on the RX unit.
KM Local Host	NO	Revision of the VelocityVKM Host on the TX unit.
TX Control	NO	Revision of the TX unit laser and front panel control.
RX Control	NO	Revision of the RX unit laser and front panel control.
FPGA Version	NO	Revision of the FPGA used for video generation.
Boot Ldr.	NO	Revision of the VelocityKVM boot loader.
Serial Number	NO	2 digits: week, 2 digits: year, 2 to 4 digits unique unit number
Debug Values	YES	Factory Use.
Allow FPGA Update	YES	Select YES to enable update.
Aud/USB Reset En	YES	Enable/disable USB 1.1 reset, lost Tx/Rx link.
LS Des OK Signal	NO	1=Yes 0=No
LS Loss of Signal	NO	Indicates loss of Low Speed signal. (1=not connected).
LS FPGA Ver.	NO	Low Speed Data communication FPGA.
Vid1 FPGA Rev.	NO	Revision of the Video FPGA for Head 1.
Vid2 FPGA Rev.	NO	Revision of the Video FPGA for Head 2.
Vid1 FPGA Type	NO	Type of Video FPGA for Head 1.
Vid2 FPGA Type	NO	Type of Video FPGA for Head 2.
Temp in Celsius	NO	Tb=PCB temp (max=70) Tf=FPGA temp (max=85)
KMASS Card ID	NO	0E = original, OC=So-Dimm
KMASS FPGA Rev.	NO	FPGA used for LS/USB 2.0 Card.
KMASS Device ID	NO	Identification of installed KMASS Device.
Video Card ID	NO	08=single 09=dual head 0A=dual link 0B=RGB 07=Tx
Aux. Card ID	NO	Identification of the Auxiliary Card.
Aux Card FPGA Rev.	NO	Revision of the Auxiliary Card FPGA.
Original KMASS	YES	Option to use previous Interface revisions.
Server Keep Alive	YES	Prevents server from going into sleep-mode.
Server Auto Logout	YES	Set the timer for automatic logout when idle.

*Remote SFP's

SFP_R 1.	NO	Identifies vendor of remote SFP in position 1.
SFP_R 2.	NO	Identifies vendor of remote SFP in position 2.
↓	↓	↓
SFP_R 9.	NO	Identifies vendor of remote SFP in position 9.

*Local SFP's

SFP_L 1.	NO	Identifies vendor of local SFP in position 1.
SFP_L 2.	NO	Identifies vendor of local SFP in position 2.
↓	↓	↓
SFP_L 9.	NO	Identifies vendor of local SFP in position 9.

***DDC**

DDC PROM Emula. Mode	YES	Options are Dynamic, Static and Passthru. In Dynamic mode , the EDID table* of the monitor connected to the RX is read and stored on the TX. After any change in monitor type a new EDID table will be stored on the TX. An EDID table is always presented to the video source, whether the TX is ON or OFF. Static mode is used to maintain the current EDID table regardless of monitor changes at the RX. An EDID table is always presented to the video source, whether the TX is ON or OFF. Passthru mode makes the DDC pins look like direct connection between the TX and RX, allowing the computer to talk directly to the monitor.
Load Default DDC	YES	Loads the default EDID table* into the TX which allows 1024x768 and 1920x1200. This puts the TX into static mode.
Load 1080p	YES	Loads a widescreen version of the EDID table* into the TX. Supported resolutions include 1920x1080 and 1280x720.
Acquire DDC	YES	Gets the EDID table* of the attached display, stores the information on the TX, and puts the TX in static mode.
Force DDC Mode	YES	Used to force a monitor to appear as either digital or analog . Since the Velocity products can convert between analog and digital, sometimes the EDID table* must be modified to match the method of connecting the TX to CPU.

*See *EDID Definitions and DDC Modes* in Appendix F, pg. 64

***Video**

DVI1 Connected.	NO	Verifies connection of DVI 1.
Video 1 cnt.	NO	<i>Thinklogical support use only.</i> Video 1 clock counter.
DVI2 Connected.	NO	Verifies connection of DVI 2.
Video 2 cnt.	NO	<i>Thinklogical support use only.</i> Video 2 clock counter.

VelocityKVM 5 Video Front Panel Menu

TRANSMITTER

Display

* Video

Display	Modifiable	Description
VGA Connected	NO	An indication of whether VGA video is input to the Vis TX.
Resolution input	NO	Active pixels x active lines vertical rate.
Hor. Freq	NO	Horizontal frequency.
Auto Phase	YES	Automatically adjusts the Sampling Phase to the best setting.
PLL Total	YES	Total pixels, 1 line. (Horiz. active pixels + Horiz. blanking pixels).
HSOUT Width	YES	Horizontal sync (Hsync) of video, measured in pixels.
DE Start	YES	Horizontal back porch (Hpb) of video, measured in pixels.
DE Width	YES	Total active pixels in one line.
Line Start	YES	Vertical back porch (Vbp) + Vertical sync (Vsync) of video, measured in lines.
Line Width	YES	The number of visible lines in one frame.
Hsync Period	NO	Used to determine analog video horizontal frequency. Use the following formula to calculate the frequency: $(25 \times 10^6 \times 16) / \text{Hsync Period} = \text{Horizontal Frequency}$
Vsync Period	NO	Total lines in one frame of video = active lines + blanking lines.
ISL Sync Status	NO	<i>Thinklogical support use only.</i> Measures sync selection and sync polarity.
ISL Sync Activity	NO	<i>Thinklogical support use only.</i> Measures sync activity.
Video 1 cnt.	NO	<i>Thinklogical support use only.</i> Video IN pixel clock (in hex).

RECEIVER:

*System

LS Connected	NO	Indicates fiber status from TX to RX (0=connected).
Tx Ctrl Name	TX	(Tx only) Name entered on TX unit is displayed on RX unit.
KM Device	NO	Revision of the VelocityKVM portion that plugs into CPU.
KM Remote Host	NO	Revision of the VelocityVKM Host on the RX unit.
KM Local Host	NO	Revision of the VelocityVKM Host on the TX unit.
TX Control	NO	Revision of the TX unit laser and front panel control.
RX Control	NO	Revision of the RX unit laser and front panel control.
FPGA Version	NO	Revision of the FPGA used for video generation.
Serial Number	NO	2 digits: week, 2 digits: year, 2 to 4 digits unique unit number
Debug Values	YES	Factory Use.
Allow FPGA Update	YES	Select YES to enable update.
SFP Loss of Signal	NO	Indicates loss of SFP signal. (1=not connected).
SFP Des OK Signal	NO	1=Yes 0=No
LS FPGA Ver.	NO	Low Speed Data communication FPGA.
Vid1. FPGA Rev.	NO	Video FPGA revision for Head 1.
Vid1. FPGA Type	NO	Video FPGA type for Head 1.
Temp in Celsius	NO	Tb=PCB temp (max=70) Tf=FPGA temp (max=85)
KMASS Card ID	NO	0E=original, OA= SoDimm
KMASS FPGA Rev.	NO	FPGA used for LS/USB 2.0 Card.
KMASS Device ID	NO	Hardware ID of KMASS Card.
Video Card ID	NO	Hardware ID of Video Card.

*Display	Modifiable	Description
Aux. Card ID	NO	Hardware ID of Auxiliary Card.
Aux. Card FPGA Rev.	NO	FPGA Rev. of Auxiliary Card.
Original KMASS	YES	Option to use previous Interface revisions.
Allow Out Of Band	YES	Allows On-screen Display when used with Routers.*
Alt. HOT Key	YES	Used to modify Out Of Band Hot Key.

*Contact Thinklogical before using this feature as it may impact the fiber channel.

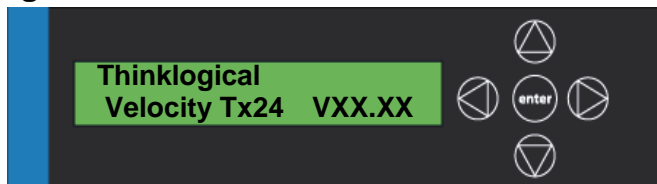
*DDC		
DDC PROM Emula. Mode	YES	Options are Dynamic, Static and Passthru. In Dynamic mode , the EDID table* of the monitor connected to the RX is read and stored on the TX. After any change in monitor type a new EDID table will be stored on the TX. An EDID table is always presented to the video source, whether the TX is ON or OFF. Static mode is used to maintain the current EDID table regardless of monitor changes at the RX. An EDID table is always presented to the video source, whether the TX is ON or OFF. Passthru mode makes the DDC pins look like direct connection between the TX and RX, allowing the computer to talk directly to the monitor.
Load Default DDC	YES	Loads the default EDID table* into the TX which allows 1024x768 and 1920x1200. This puts the TX into static mode.
Load 1080p	YES	Loads a widescreen version of the EDID table* into the TX. Supported resolutions include 1920x1080 and 1280x720.
Acquire DDC	YES	Gets the EDID table* of the attached display, stores the information on the TX, and puts the TX in static mode.
Force DDC Mode	YES	Used to force a monitor to appear as either digital or analog . Since the Velocity products can convert between analog and digital, sometimes the EDID table* must be modified to match the method of connecting the TX to CPU.

*Video		
VGA Connected	NO	An indication of whether VGA video is input to the Vis TX.
Resolution	NO	Active pixels x active lines vertical rate.
Hor. Freq	NO	Horizontal frequency.
Auto Phase	YES	Automatically adjust the Sampling Phase to the best setting.
PLL Total	YES	Total pixels, one line. (Horiz. active pixels + Horiz. blanking pixels).
HsOut Width	YES	Horizontal sync (Hsync) of video, measured in pixels.
DE Start	YES	Horizontal back porch (Hpb) of video, measured in pixels.
DE Width	YES	Total active pixels in one line.
Line Start	YES	Vert. back porch (Vbp) + Vert. sync (Vsync) measured in lines.
Line Width	YES	The number of visible lines.
Hsync Period	NO	Used to determine analog video horizontal frequency. <i>Use the following formula to calculate the frequency:</i> $(25 \times 10^6 \times 16) / \text{Hsync Period} = \text{Horizontal Frequency}$
Vsync Period	NO	Total lines in one video frame = active lines + blanking lines
ISL Sync Status	NO	<i>Thinklogical support use only.</i> Measures sync selection & polarity.
ISL Sync Activity	NO	<i>Thinklogical support use only.</i> Measures sync activity.
Video RX 1 cnt.	NO	<i>Thinklogical support use only.</i> Video IN 1 clock (in hex).

*See *EDID Definitions and DDC Modes* in Appendix F, pg. 64

Saving Changes

Save analog video configurations so that, following power up, the device can recall custom video settings.



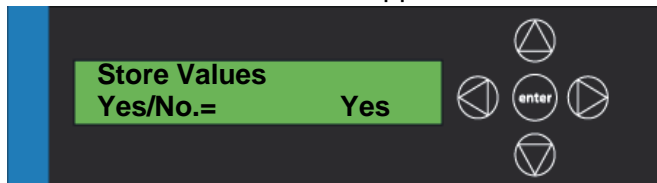
Using the down arrow, scroll down to ***System** as shown below.



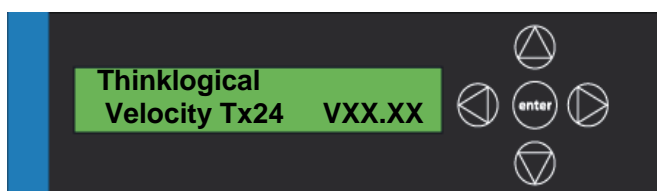
Using the right arrow, scroll right until **Store Values** is displayed as shown below, then press **enter**.



Using the up arrow or down arrow scroll until **Yes** appears as shown below. Then press **enter**.

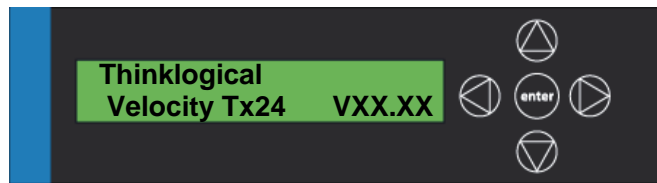


Using the right arrow or left arrow scroll until you return to the ***System** menu option. Using up arrow or down arrow, scroll until you get to the **Thinklogical** screen as shown below.



Restoring Factory Defaults

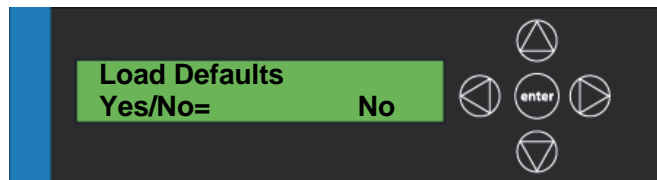
Load the factory default video configurations.



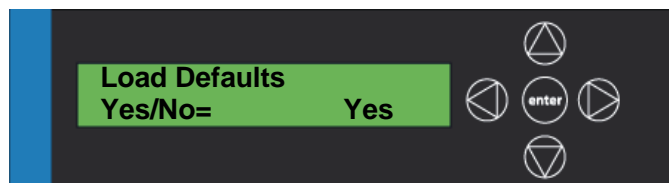
Using the down arrow, scroll down to ***System** (below).



Using the right arrow button, scroll right until **Load Defaults** is displayed (below), then press **enter**.



Using the up arrow or down arrow, scroll until **Yes** appears (below), then press **enter**.



Follow the steps below to save your changes:

Using the down arrow, scroll down to ***System**.

Using the right arrow, scroll right until **Store Values** is displayed, then press **enter**.

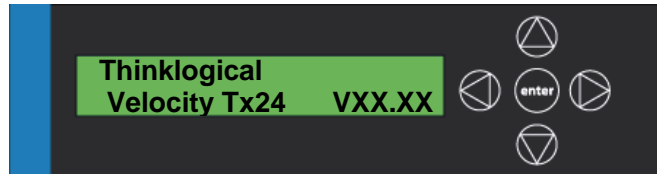
Using the up or down arrow, scroll until **Yes** appears, then press **enter**.

Using the right or left arrow, scroll to return to the ***System** menu option.

Using up or down arrow, scroll until you get to the **Thinklogical** screen.

Naming the Transmitter Unit

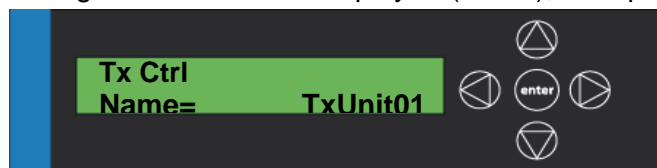
Modify the name of the unit through the Transmitter. The name entered on the Transmitter will display on the Receiver unit.



Using the arrow down button, scroll down to ***System** as shown below.



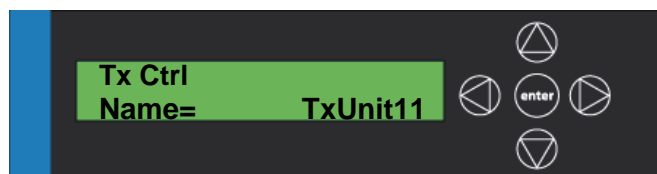
Using the right arrow, scroll right until **Tx Ctrl** is displayed (below), then press **enter**.



Using the right or left arrow, scroll until the blinking cursor is under the letter/number you want to change.



Using the up or down arrow, scroll until you find the appropriate letter/number, then press **enter**. (Holding down the up or down arrow will scroll faster.)



Using the right or left arrow, scroll to return to the ***System** menu option.



Follow these steps to save your changes:

Using the down arrow, scroll down to ***System**.

Using the right arrow, scroll right until **Store Values** is displayed, then press **enter**.

Using the up or down arrow, scroll until **Yes** appears, then press **enter**.

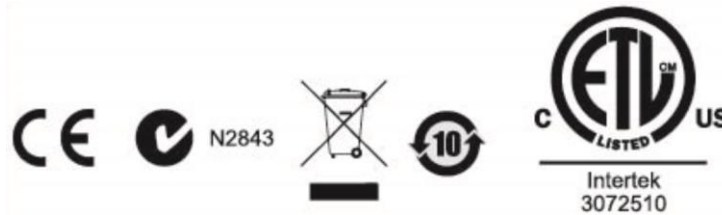
Using the right or left arrow, scroll to return to the ***System** menu option.

Using up or down arrow, scroll until you get to the **Thinklogical** screen.

Regulatory & Safety Compliance

Symbols Found on Our Products

Markings and labels on our products follow industry-standard conventions. Regulatory markings found on our products comply with all required domestic and many international requirements.



Regulatory Compliance

Thinklogical's® products are designed and made in the U.S.A. These products have been tested by a certified testing laboratory and found compliant with the following standards for both domestic USA and many international locations:

North America

Safety

UL 62368-1:2014Ed.2

CSA C22.2#62368-1:2014Ed.2

LASER Safety

CDRH 21 CFR 1040.10

Class 1 LASER Product

Canadian Radiation Emitting Devices Act, REDR C1370

IEC 60825:2001 Parts 1 and 2

Class 1 LASER Product

Electromagnetic Interference

FCC 47CFR Part 15 Subpart B: 2013 Class A

Industry Canada ICES-003: 2016 Ed. 6

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 corrective action.

European Union

Declaration of Conformity

Manufacturer's Name & Address:

Thinklogical, A BELDEN BRAND

100 Washington Street

Milford, Connecticut 06460 USA

Thinklogical's products comply with the requirements of the Low Voltage Directive 2006/95/EC, the EMC Directive 2004/108/EC, the RoHS Directive 2011/65/EU, the WEEE Directive 2012/19/EU and carry the CE marking accordingly.

Standards with Which Our Products Comply

Safety

IEC 62368-1:2014Ed.2+C1

CB Scheme Certificate

Electromagnetic Emissions

CENELEC EN 55022:2010 +AC:2011

Electromagnetic Immunity

EN 55024:2011+A1
CENELEC EN 55032:2015
EN 61000-3-2:2000 Harmonics
EN 61000-3-3:2008 Flicker
EN 61000-4-2:2009 Electro-Static Discharge Test
EN 61000-4-3:2006 A1:2008, A2:2010 Radiated Immunity Field Test
EN 61000-4-4:2004 Electrical Fast Transient Test
EN 61000-4-5:2006 Power Supply Surge Test
EN 61000-4-6:2009 Conducted Immunity Test
EN 61000-4-11:2004 Voltage Dips & Interrupts Test

Supplementary Information

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

- 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 exigences du Règlement sur le matériel brouilleur du Canada.*
- 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 corrective action.
- This equipment has been tested and found compliant 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 in which case the user may be required to make adequate corrective measures at their own expense.
- This Class A digital apparatus complies with Canadian ICES-003 and has been verified as 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.
- The user may notice degraded audio performance in the presence of electro-magnetic fields.

Product Serial Number

Thinklogical products have a unique serial number, which includes a date-code, printed on an adhesive label that is affixed to the unit. The format for the date-code is *2 digits for the month*, dash, *2 digits for the year*, plus *at least four digits for a unique unit number*. For example:

09-210128 indicates the unit was built in the **9th** month of **2021** and is unit number **128**.

Connection to the Product

Connections and installation hardware for our products use industry-standard devices and methods. All wiring connections to the customer equipment are designed to minimize proprietary or customized connectors and cabling. Power connections are made with regionally appropriate power cords and approved methods.

How to Contact Us

Customer Support

Website: <https://www.thinklogical.com>

Check out our website for current products, support documents and useful information about all the products and services we offer, including:

- **Technical Specification Sheets**
- **Quick-Start Guides**
- **Product Manuals** (for viewing online or for download)
- **Chat live with a Technical Service Representative**

Email: <mailto:support@thinklogical.com>

For product support, technical issues or questions, product repairs and request for Return Merchandise Authorization.

Telephone: [1-203-647-8700](tel:1-203-647-8700)

Please contact our expert sales staff in Milford, CT **Monday - Friday from 8:30am to 5:00pm**, Eastern Time Zone. If leaving a voice message, please provide a preferred time to call back.

Fax: [1-203-783-9949](tel:1-203-783-9949)

Please indicate the nature of the fax on your cover sheet and provide contact information.

Product Support

Warranty

Thinklogical warrants this product against defects in materials and workmanship for a period of one year from the date of delivery, with longer terms available at time of purchase on most products. Thinklogical and its suppliers disclaim all other warranties. Please refer to your product invoice for the Warranty Terms & Conditions.

Defect remedy shall be the repair or replacement of the product, provided that the defective product is returned to the authorized dealer within a year from the date of delivery.

If you wish to return your device, contact the Thinklogical authorized dealer where you purchased the device, or if you purchased directly, call Thinklogical at **1-800-647-8700**.

Return Authorization

If you must return a product to Thinklogical directly, please contact us at **1-203-647-8700**. Customer Support will ask you to describe the problem and will issue you a **Return Merchandise Authorization number** (RMA#). Pack the device in its original box, if possible, and return it with the RMA# printed on the outside of the box. **DO NOT return a product to Thinklogical without a Return Merchandise Authorization.**

Our Address

If you have any product issues or questions or need technical assistance with your Thinklogical system, please call us at **1-203-647-8700** and let us help. If you need to write us or return a product, please use the following address:

Please include the Return Merchandise Authorization number: **Thinklogical**, A BELDEN BRAND

**100 Washington Street
Milford, CT 06460 USA
Attn: RMA#**

Appendix A

In the following part number examples, the inclusion of the USB 2.0 option is shown. (This is the **U** immediately following the **VEL-**). If no option is included, the U will be replaced by a **0**. For the FireWire option, this will be an **F** and for the HID option, it will be a leading **H**. See Pg. 48 for more information on part numbering.



Thinklogical's Full Line of VelocityKVM and Video *Multi-Mode* Fiber Extenders

Part Number	Description
VelocityKVM-4 Multi-Mode Fiber Extenders	
VEL-W00M04-LCRX	Velocity KVM Extender Receiver, Single Head Single Link DVI, USB 2.0, KMAS, Multi-mode, LC
VEL-W00M04-LCTX	Velocity KVM Extender Transmitter, Single Head Single Link DVI, USB 2.0, KMAS, Multi-mode, LC
VEL-W00M04-SCRX	Velocity KVM Extender Receiver, Single Head Single Link DVI, USB 2.0, KMAS, Multi-mode, SC
VEL-W00M04-SCTX	Velocity KVM Extender Transmitter, Single Head Single Link DVI, USB 2.0, KMAS, Multi-mode, SC
VEL-W00M04-STRX	Velocity KVM Extender Receiver, Single Head Single Link DVI, USB 2.0, KMAS, Multi-mode, ST
VEL-W00M04-STTX	Velocity KVM Extender Transmitter, Single Head Single Link DVI, USB 2.0, KMAS, Multi-mode, ST
VelocityKVM-5 Multi-Mode Fiber Extenders	
VEL-W00M05-LCRX	Velocity KVM Extender Rx, Single Head Dual Link DVI/RGB, USB 2.0, KMAS, Multi-mode, LC
VEL-W00M05-LCTX	Velocity KVM Extender Tx, Single Head Dual Link DVI/RGB, USB2.0, KMAS, Multi-mode, LC
VEL-W00M05-SCRX	Velocity KVM Extender Rx, Single Head Dual Link DVI/RGB, USB 2.0, KMAS, Multi-mode, SC
VEL-W00M05-SCTX	Velocity KVM Extender Tx, Single Head Dual Link DVI/RGB, USB2.0, KMAS, Multi-mode, SC
VEL-W00M05-STRX	Velocity KVM Extender Rx, Single Head Dual Link DVI/RGB, USB 2.0, KMAS, Multi-mode, ST
VEL-W00M05-STTX	Velocity KVM Extender Tx, Single Head Dual Link DVI/RGB, USB2.0, KMAS, Multi-mode, ST
VelocityKVM-8 Multi-Mode Fiber Extenders	
VEL-W00M08-LCRX	Velocity KVM Extender Receiver, Single Head Dual Link DVI, USB 2.0, KMAS, Multi-mode, LC
VEL-W00M08-LCTX	Velocity KVM Extender Transmitter, Single Head Dual Link DVI, USB 2.0, KMAS, Multi-mode, LC
VEL-W00M08-SCRX	Velocity KVM Extender Receiver, Single Head Dual Link DVI, USB 2.0, KMAS, Multi-mode, SC
VEL-W00M08-SCTX	Velocity KVM Extender Transmitter, Single Head Dual Link DVI, USB 2.0, KMAS, Multi-mode, SC
VEL-W00M08-STRX	Velocity KVM Extender Receiver, Single Head Dual Link DVI, USB 2.0, KMAS, Multi-mode, ST
VEL-W00M08-STTX	Velocity KVM Extender Transmitter, Single Head Dual Link DVI, USB 2.0, KMAS, Multi-mode, ST

Part Number	VelocityKVM-24 Multi-Mode Fiber Extenders
VEL-W00M24-LCRX	Velocity KVM Extender Receiver, Dual Head Single Link DVI, USB 2.0, KMAS, Multi-mode, LC
VEL-W00M24-LCTX	Velocity KVM Extender Transmitter, Dual Head Single Link DVI, USB 2.0, KMAS, Multi-mode, LC
VEL-W00M24-SCRX	Velocity KVM Extender Receiver, Dual Head Single Link DVI, USB 2.0, KMAS, Multi-mode, SC
VEL-W00M24-SCTX	Velocity KVM Extender Transmitter, Dual Head Single Link DVI, USB 2.0, KMAS, Multi-mode, SC
VEL-W00M24-STRX	Velocity KVM Extender Receiver, Dual Head Single Link DVI, USB 2.0, KMAS, Multi-mode, ST
VEL-W00M24-STTX	Velocity KVM Extender Transmitter, Dual Head Single Link DVI, USB 2.0, KMAS, Multi-mode, ST
VelocityKVM-28 Multi-Mode Fiber Extenders	
VEL-W00M28-LCRX	Velocity KVM Extender Receiver, Dual Link, Single Link DVI, USB 2.0, KMAS, Multi-mode, LC
VEL-W00M28-LCTX	Velocity KVM Extender Transmitter, Dual Link, Single Link DVI, USB 2.0, KMAS, Multi-mode, LC
VEL-W00M28-SCRX	Velocity KVM Extender Receiver, Dual Link, Single Link DVI, USB 2.0, KMAS, Multi-mode, SC
VEL-W00M28-SCTX	Velocity KVM Extender Transmitter, Dual Link, Single Link DVI, USB 2.0, KMAS, Multi-mode, SC
VEL-W00M28-STRX	Velocity KVM Extender Receiver, Dual Link, Single Link DVI, USB 2.0, KMAS, Multi-mode, ST
VEL-W00M28-STTX	Velocity KVM Extender Transmitter, Dual Link, Single Link DVI, USB 2.0, KMAS, Multi-mode, ST
VelocityKVM-34 Multi-Mode Fiber Extenders	
VEL-W00M34-LCRX	Velocity KVM Extender Receiver, DVI Four Display, USB 2.0, KMAS, Multi-mode, LC
VEL-W00M34-LCTX	Velocity KVM Extender Transmitter, DVI Four Display, USB 2.0, KMAS, Multi-mode, LC
VEL-W00M34-SCRX	Velocity KVM Extender Receiver, DVI Four Display, USB 2.0, KMAS, Multi-mode, SC
VEL-W00M34-SCTX	Velocity KVM Extender Transmitter, DVI Four Display, USB 2.0, KMAS, Multi-mode, SC
VEL-W00M34-STRX	Velocity KVM Extender Receiver, DVI Four Display, USB 2.0, KMAS, Multi-mode, ST
VEL-W00M34-STTX	Velocity KVM Extender Transmitter, DVI Four Display, USB 2.0, KMAS, Multi-mode, ST
VelocityKVM-35 Multi-Mode Fiber Extenders	
VEL-W00M35-LCRX	Velocity KVM Extender Receiver, DVI Three Display, USB 2.0, KMAS, Multi-mode, LC
VEL-W00M35-LCTX	Velocity KVM Extender Transmitter, DVI Three Display, USB 2.0, KMAS, Multi-mode, LC
VEL-W00M35-SCRX	Velocity KVM Extender Receiver, DVI Three Display, USB 2.0, KMAS, Multi-mode, SC
VEL-W00M35-SCTX	Velocity KVM Extender Transmitter, DVI Three Display, USB 2.0, KMAS, Multi-mode, SC
VEL-W00M35-STRX	Velocity KVM Extender Receiver, DVI Three Display, USB 2.0, KMAS, Multi-mode, ST
VEL-W00M35-STTX	Velocity KVM Extender Transmitter, DVI Three Display, USB 2.0, KMAS, Multi-mode, ST
VelocityKVM-38 Multi-Mode Fiber Extenders	
VEL-W00M38-LCRX	Velocity KVM Extender Receiver, DVI two Dual-link Display, USB 2.0, KMAS, Multi-mode, LC
VEL-W00M38-LCTX	Velocity KVM Extender Transmitter, DVI two Dual-link Display, USB 2.0, KMAS, Multi-mode, LC
VEL-W00M38-SCRX	Velocity KVM Extender Receiver, DVI two Dual-link Display, USB 2.0, KMAS, Multi-mode, SC
VEL-W00M38-SCTX	Velocity KVM Extender Transmitter, DVI two Dual-link Display, USB 2.0, KMAS, Multi-mode, SC
VEL-W00M38-STRX	Velocity KVM Extender Receiver, DVI two Dual-link Display, USB 2.0, KMAS, Multi-mode, ST
VEL-W00M38-STTX	Velocity KVM Extender Transmitter, DVI two Dual-link Display, USB 2.0, KMAS, Multi-mode, ST

Velocitykvm

Single-Mode Fiber Extension

Thinklogical's Full Line of VelocityKVM and Video *Single-Mode* Fiber Extenders

Part Number	Description
VelocityKVM-4 Single-Mode Fiber Extenders	
VEL-W00S04-SCRX	Velocity KVM Extender Rx, Single Head Single Link DVI, USB 2.0, KMAS, Single-mode, SC/APC
VEL-W00S04-SCTX	Velocity KVM Extender Tx, Single Head Single Link DVI, USB 2.0, KMAS, Single-mode, SC/APC
VelocityKVM-5 Single-Mode Fiber Extenders	
VEL-W00S05-SCRX	Velocity KVM Extender Rx, Single Head Dual Link DVI/RGB, USB 2.0, KMAS, Single-mode, SC/APC
VEL-W00S05-SCTX	Velocity KVM Extender Tx, Single Head Dual Link DVI/RGB, USB2.0, KMAS, Single-mode, SC/APC
VelocityKVM-8 Single-Mode Fiber Extenders	
VEL-W00S08-SCRX	Velocity KVM Extender Rx, Single Head Dual Link DVI, USB 2.0, KMAS, Single-mode, SC/APC
VEL-W00S08-SCTX	Velocity KVM Extender Tx, Single Head Dual Link DVI, USB 2.0, KMAS, Single-mode, SC/APC
VelocityKVM-24 Single-Mode Fiber Extenders	
VEL-W00S24-SCRX	Velocity KVM Extender Rx, Dual Head Single Link DVI, USB 2.0, KMAS, Single-mode, SC/APC
VEL-W00S24-SCTX	Velocity KVM Extender Tx, Dual Head Single Link DVI, USB 2.0, KMAS, Single-mode, SC/APC
VelocityKVM-28 Single-Mode Fiber Extenders	
VEL-W00S28-SCRX	Velocity KVM Extender Rx, Dual Link, Single Link DVI, USB 2.0, KMAS, Single-mode, SC/APC
VEL-W00S28-SCTX	Velocity KVM Extender Tx, Dual Link, Single Link DVI, USB 2.0, KMAS, Single-mode, SC/APC
Velocity KVM-34 Single-Mode Fiber Extenders	
VEL-W00S34-SCRX	Velocity KVM Extender Rx, 4 Display DVI, USB 2.0, KMAS, Single-mode, SC/APC
VEL-W00S34-SCTX	Velocity KVM Extender Tx, 4 Display DVI, USB 2.0, KMAS, Single-mode, SC/APC
VelocityKVM-35 Single-Mode Fiber Extenders	
VEL-W00S35-SCRX	Velocity KVM Extender Rx, 3 Display DVI, USB 2.0, KMAS, Single-mode, SC/APC
VEL-W00S35-SCTX	Velocity KVM Extender Tx, 3 Display DVI, USB 2.0, KMAS, Single-mode, SC/APC
VelocityKVM-38 Single-Mode Fiber Extenders	
VEL-W00S38-SCRX	Velocity KVM Extender Rx, Two Dual-link DVI Display, USB 2.0, KMAS, Single-mode, SC/APC
VEL-W00S38-SCTX	Velocity KVM Extender Tx, Two Dual-link DVI Display, USB 2.0, KMAS, Single-mode, SC/APC

VEL-**XXXXXX**-**XXXX**

VEL= Velocity
VEA=Velocity with Separate Audio

TX= Transmitter
RX= Receiver
ST Connector
SC Connector
LC Connector
NK Connector

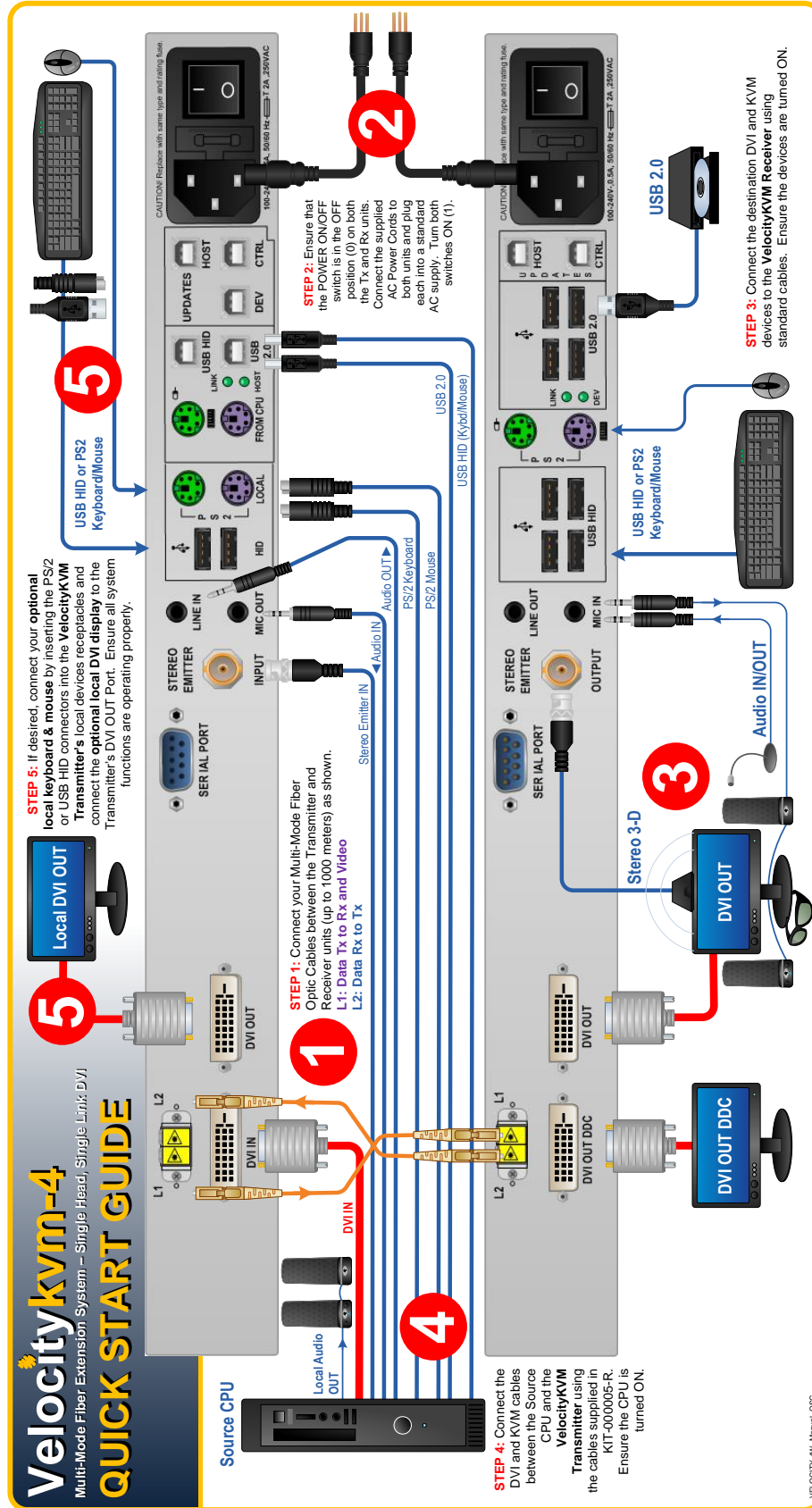
Part Number Reference

Velocity KVM Extenders

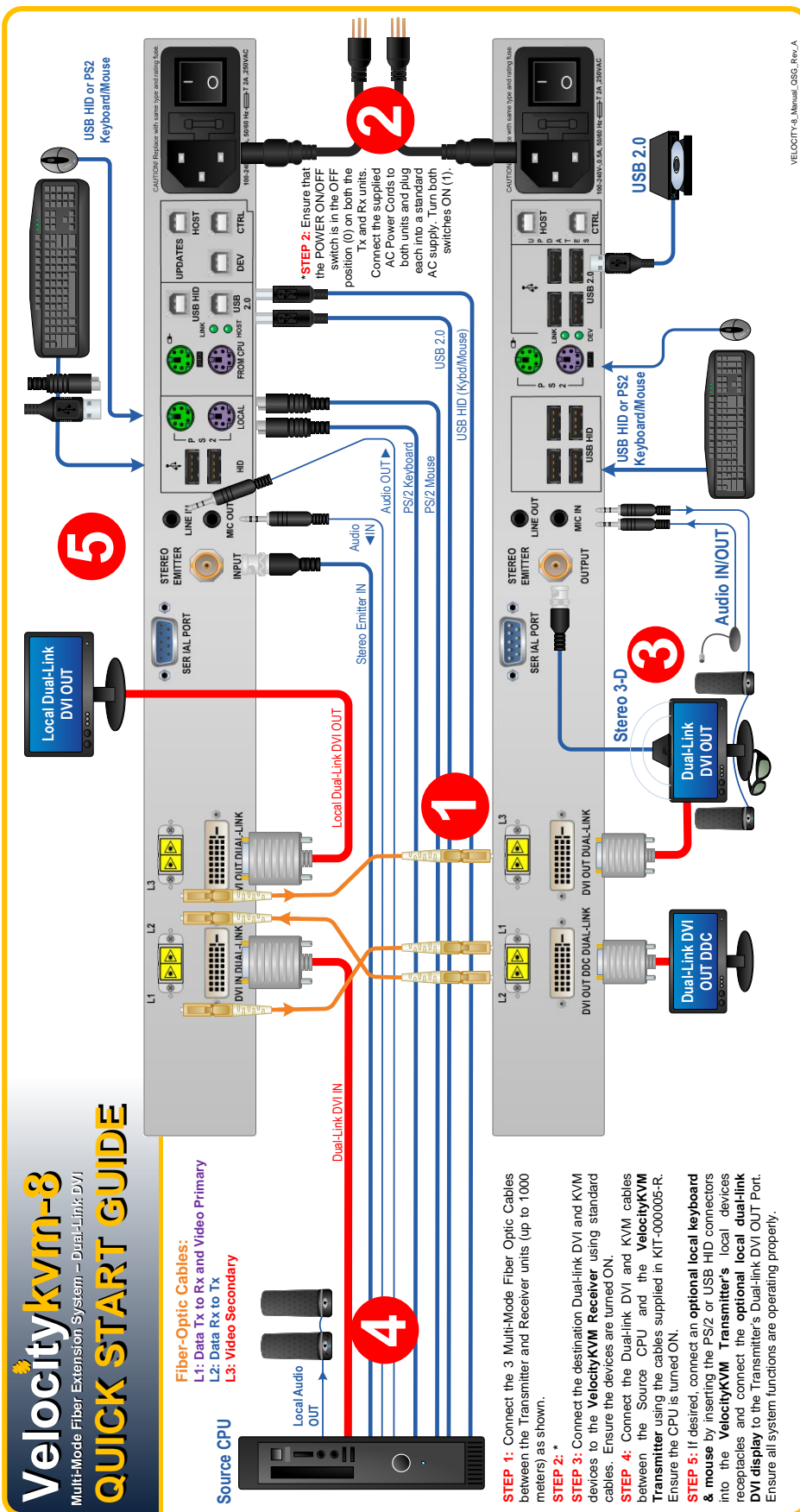
- 000= USB 1.1
- 00D= USB 1.1 with Separate Data Path
- 0R0= USB 1.1 with Redundant Fiber Path
- 0RD= USB 1.1 with Redundant Fiber Path and Separate Data Path
- A00= Professional Audio, HID, No USB 1.1 or USB 2.0
- A0D= Professional Audio, HID, No USB 1.1 or USB 2.0 with Separate Data Path
- AR0= Professional Audio, HID, No USB 1.1 or USB 2.0, Redundant Fiber Path
- ARD= Professional Audio, HID, No USB 1.1 or USB 2.0, Redundant, Separate Data Path
- E00= Firewire with USB 2.0, No USB 1.1
- E0D= Firewire with USB 2.0 with Separate Data Path, No USB 1.1
- F00= Firewire with USB 1.1H00= HID
- H0D= HID with Separate Data Path
- HR0= HID, Redundant
- HRD= HID, Redundant, Separate Data Path
- K00= Network with USB 2.0, HID
- K0D= Network with USB 2.0, HID, Separate Data Path
- KR0= Network with USB 2.0, HID, Redundant Fiber Path
- KRD= Network with USB 2.0, HID, Separate Data Path, Redundant Fiber Path
- N00= Network, USB 1.1
- N0D= Network with Separate Data Path, USB 1.1, HID
- P00= Professional Audio, HID with USB 2.0, no USB 1.1
- P0D= Professional Audio, HID with USB 2.0, no USB 1.1, Separate Data Path
- PR0= Professional Audio, HID with USB 2.0, no USB 1.1, Redundant Fiber Path
- PRD= Professional Audio, HID with USB 2.0, no USB 1.1, Redundant, Separate Data Path
- U00= USB 2.0
- U0D= USB 2.0 with Separate Data Path
- UR0= USB 2.0 with Redundant Fiber Path
- W00= HID with USB 2.0, No USB 1.1
- W0N= No Router Mode, HID with USB 2.0, No USB 1.1
- WR0= HID with USB 2.0 with Redundant Fiber Path, No USB 1.1
- W0D= HID with USB 2.0 with Separate Data Path, No USB 1.1
- WRD= HID with USB 2.0 with Redundant Fiber Path and Separate Data Path, No USB 1.1
- W00= Multipath, HID with USB 2.0, No USB 1.1
- W0D= Multipath, HID with USB 2.0 with Separate Data Path, No USB 1.1
- WRD= Multipath, HID with USB 2.0 with Redundant Fiber Path and Separate Data Path, No USB 1.1
- Z00= Multipath, Professional Audio, HID with USB 2.0, No USB 1.1
- ZR0= Multipath, Professional Audio, HID with USB 2.0 with Redundant Fiber Path, No USB 1.1
- Z0D= Multipath, Professional Audio, HID with USB 2.0 with Separate Data Path, No USB 1.1
- ZRD= Multipath, Professional Audio, HID with USB 2.0 with Redundant Fiber Path and Separate Data Path, No USB 1.1

- 04= 1 DVI (Stand alone)
- 05= 1 DVI/RGB
- 08= 1 DL DVI
- 24= 2 DVI
- 28= 1 DL, 1 SL DVI
- 34= 4 DVI
- 35= 3 DVI
- 38= 2 DL DVI
- M= Multi-Mode
- S= Single-Mode
- X= Multi-Path
- 03= 1 SL DVI
- 06= 1 DL DVI
- 09= 1 RGB
- 10= 1 RGB/DVI
- 12= 1 RGB HV, Comp. Vid.

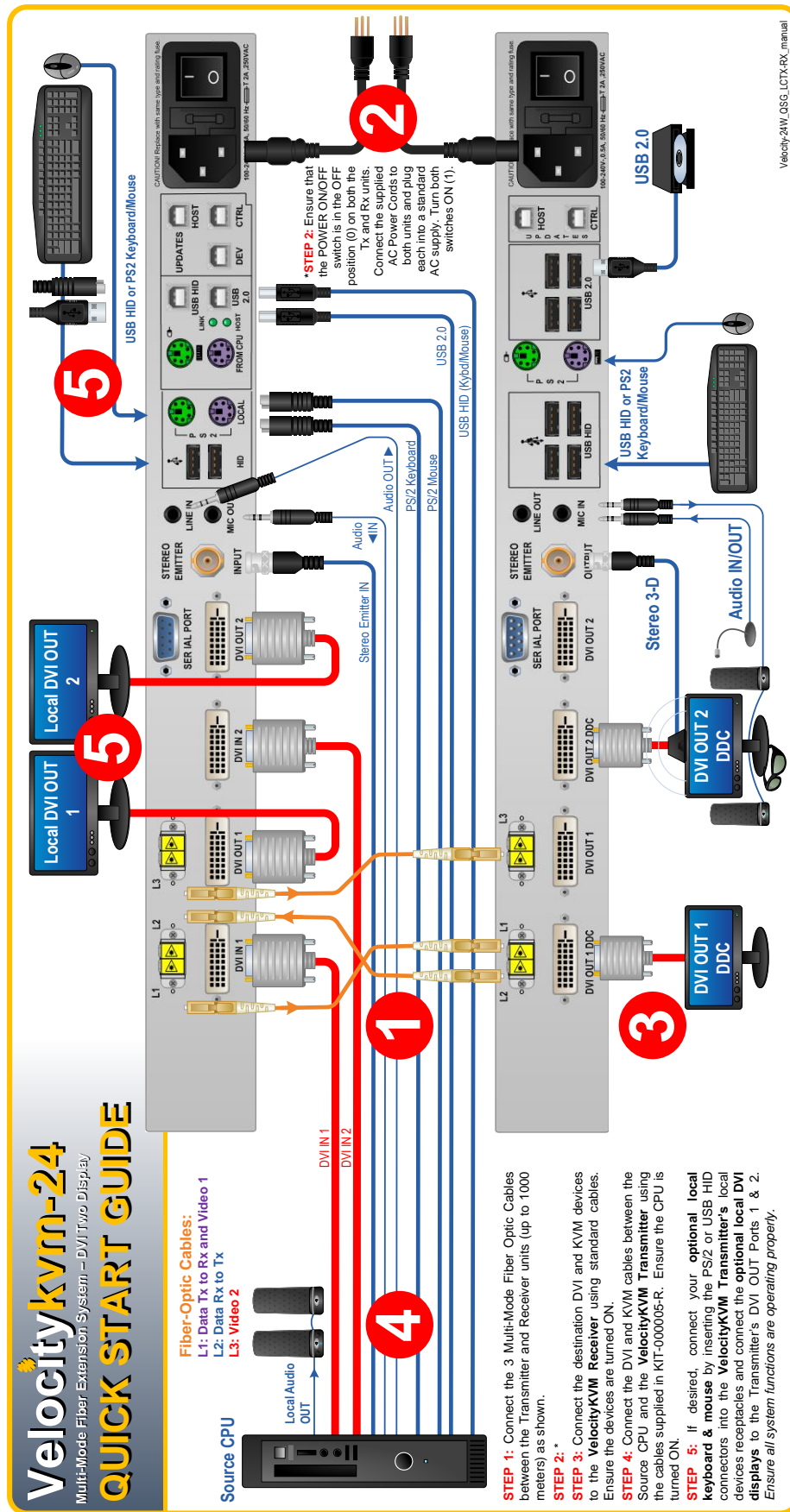
Appendix B- Quick Start Guides



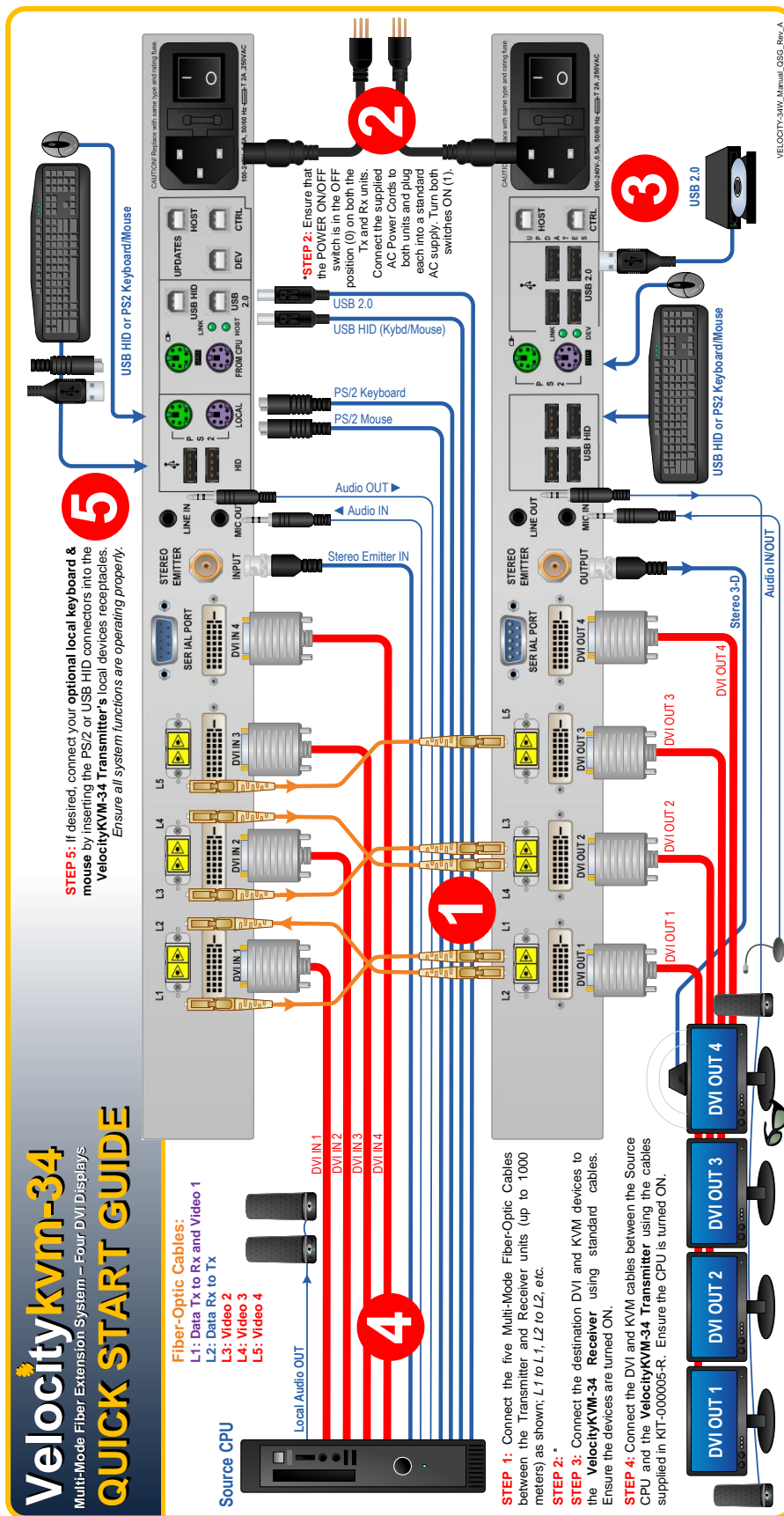
A.B.1 VelocityKVM-4 Quick Start Guide



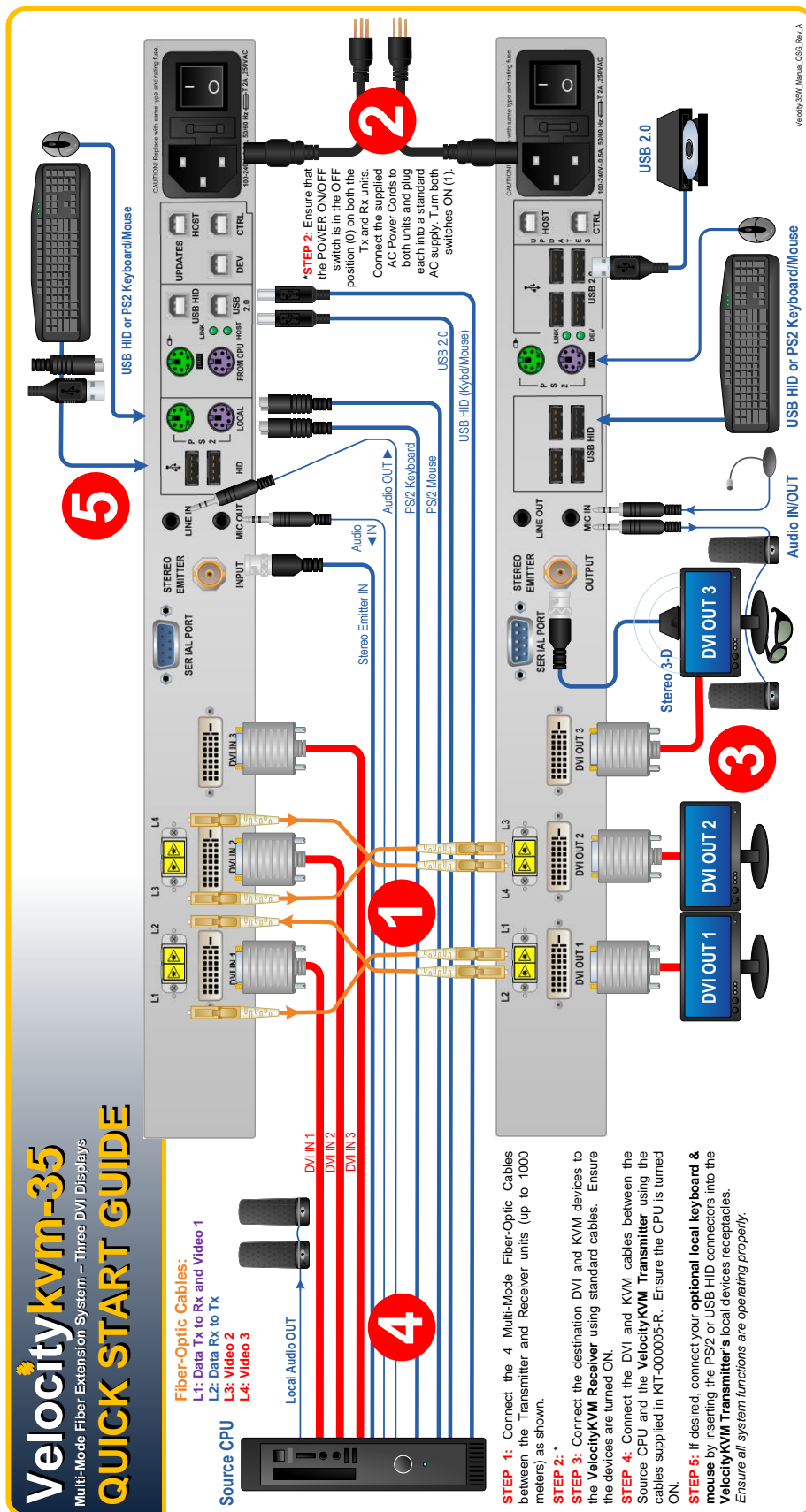
A.B.3 VelocityKVM-8 Quick Start Guide



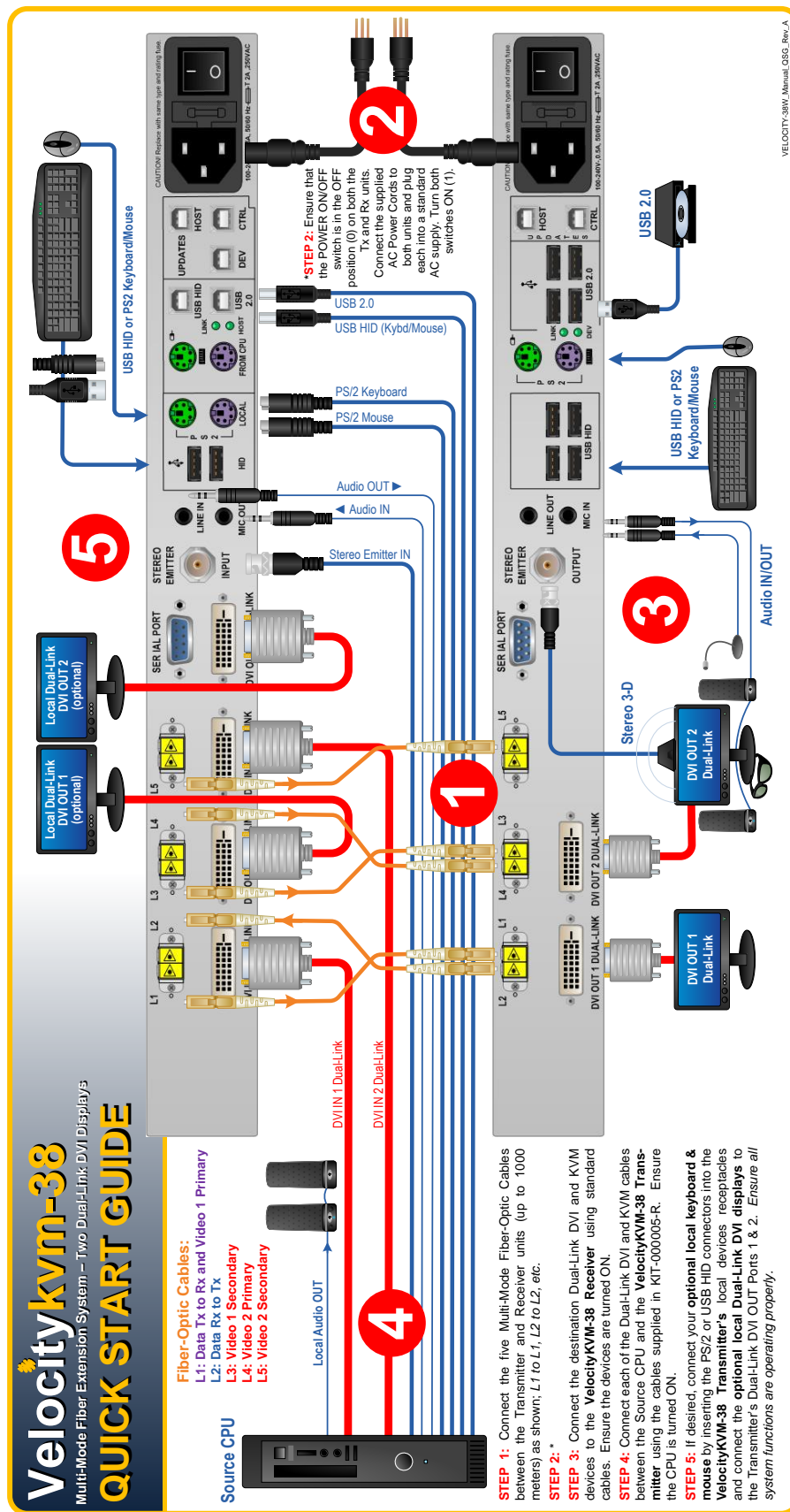
A.B.4 VelocityKVM-24 Quick Start Guide



A.B.6 VelocityKVM-34 Quick Start Guide



A.B.7 VelocityKVM-35 Quick Start Guide



A.B.8 VelocityKVM-38 Quick Start Guide

Appendix C- Automatic Fail-Over Option

For applications in need of an Auto Fail-Over system, Thinklogical offers a solution to meet this need in each of our VelocityKVM models. This option features two separate fiber paths for each signal and the ability to select which of the two paths is the viable path.

The Transmitter and Receiver contain all the same features as the standard VelocityKVM products in addition to offering a redundant fiber connector (L1', L2', etc.) for each standard fiber connector (L1, L2, etc.). All other features function as in our standard VelocityKVM Extenders.

Example: VelocityKVM-24WR Transmitter with Automatic Fail-Over

Fiber Connections

L1 and L1' are redundant outputs, transmitting the same video and KMASS data; L3 and L3' are redundant outputs, transmitting the same video data. The same will apply to any additional video fibers (L4, L4', L5, L5', etc.) used in other models.

L2 and L2' are redundant back-channel KMASS data inputs. There is an internal MUX which selects L2 or L2' data. When the unit is powered on, it will select L2 first (if L2 is active); otherwise, it will select L2' (if L2' is active). It will only switch from L2 to L2' if L2 is inactive and L2' is active. Likewise, it will only switch from L2' to L2 if L2' is inactive and L2 is active.



VelocityKVM-24WR Transmitter (VEL-WR0M24-LCTX)

VelocityKVM-24WR Receiver with Automatic Fail-Over

Fiber Connections

L1 and L1' are redundant video and KMASS data inputs. There is an internal MUX which selects L1 or L1'. When the unit is powered on, it will select L1 first (if L1 is active); otherwise, it will select L1' (if L1' is active). It will only switch from L1 to L1' if L1 is inactive and L1' is active. Likewise, it will only switch from L1' to L1 if L1' is inactive and L1 is active.

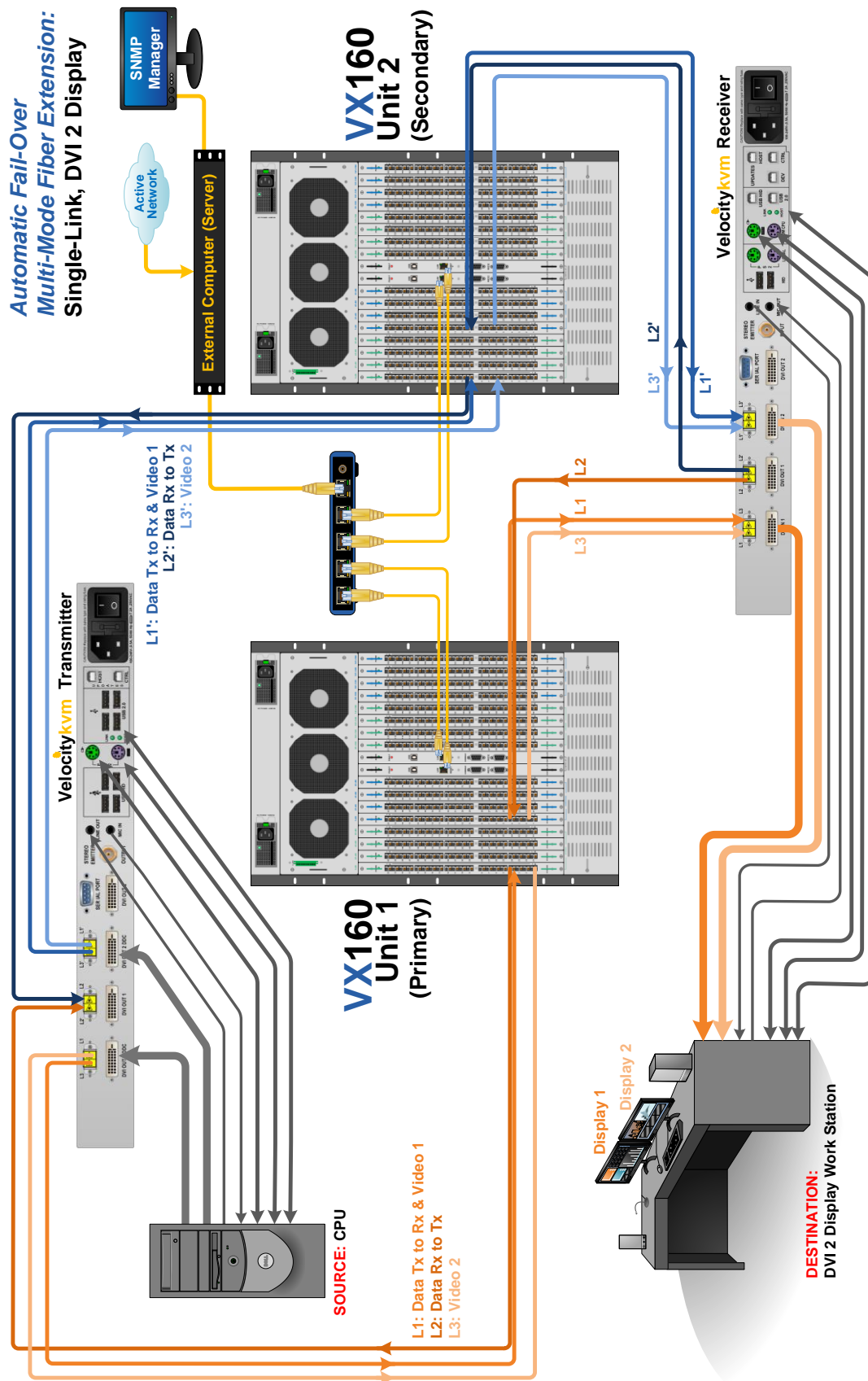
L2 and L2' are redundant outputs, transmitting the same KMASS data.

L3 and L3' are redundant video data inputs. There is an internal MUX which selects L3 or L3'. When the unit is powered on, it will select L3 first (if L3 is active); otherwise, it will select L3' (if L3' is active). It will only switch from L3 to L3' if L3 is inactive and L3' is active. Likewise, it will only switch from L3' to L3 if L3' is inactive and L3 is active. The same will apply to any additional video fibers used in other models.



VelocityKVM-24WR Receiver (VEL-WR0M24-LCRX)

Velocitykvm-24WR Extenders with VX160 Routers



Typical VelocityKVM-24WR and VX160 System with Automatic Fail-Over

Appendix D- Keyboard/Mouse/Audio Control Options

Selectable KMASS/Separate KMASS

Original:

All KMASS data (keyboard, mouse, audio, serial, stereo 3D) sent from the TX unit is on fiber L1 along with the video data.

User RX unit receives all KMASS data on fiber L1 along with video data.

Standard (Selectable KMASS):

The Tx unit is the same as above.

The RX unit can receive KMASS DATA on L1, L3, L4 and L5 along with video data. The RX unit will select one input. Input selection is controlled by the TX unit's L2 back-channel status. If the TX unit is receiving valid data on L2 it will send KMASS data on its L1 fiber and a status signal indicating that it has a good back-channel connection. Note that Audio is always sent on L1.

The RX unit detects valid back-channel status from the TX unit and will use KMASS data from the TX unit with a valid back-channel. If multiple valid back-channels are received, L1 has the highest priority, then L3, etc.

When no Tx has a valid back-channel, L1 is used and audio will still function.

Original (Additional forward KMASS):

Same as above: Selectable KMASS with the addition of a forward KMASS fiber (K1) on TX and RX unit. K1 transfers KMASS data only, not video data. The additional fiber required for K1 can be eliminated if you use a BIDI optical option. K1 and L2 can be combined on one fiber at different wavelengths. Note that L2 can also be referred to as K2 on some units.

At the RX unit, K1 has priority over L1, L3, L4 and L5, but if the RX unit is not receiving data on K1 it will then use L1, etc. for KMASS.

L2 works the same for all unit types. L2 transfers the KMASS data from the RX unit to the TX unit.

Forward KMASS only:

Same as above: Additional forward KMASS, except for the TX unit L1 output. L1 will only output video data. Note that all TX units only output KMASS data on L1 and K1, not L3, L4, or L5.

Conclusion:

Above are the present KMASS options. Other KMASS options can also be possible along with redundancy options.

Selectable KMASS HID, USB 2.0 and Control Options

HID:

Velocity HID will still function with only one connection from the RX unit to the TX unit (L2). It is also possible to control multiple CPU's from one RX unit if the L2 back-channel is connected to the TX units and HID is used. The mouse may act erratically but will still function. Note that L2 should only be connected from one RX unit to one TX unit. A broadcast connection of L2 to multiple units is incorrect and should never be done.

USB 2.0

USB 2.0 will only control one CPU at a time. It requires a full duplex connection to function, typically L1 and L2. If L2 is broadcast to multiple TX units, USB 2.0 will only control one CPU. The CPU controlled by USB 2.0 may be different, depending on what type of Velocity or T-Series extender is used.

Appendix E-

VelocityKVM Extender Series: Separate Data Paths, Separate Audio Paths and Multi-Path Video Options

Thinklogical's® line of **Separate Data Path, Separate Audio Path and Multi-Path Video Options** are designed to accommodate systems that require data transmission security and for systems with a lower video transmission rate, or for systems not transmitting video through a Thinklogical® KVM Matrix Switch.

thinklogical : *Security and Flexibility*

A BELDEN BRAND

- The **VelocityKVM Separate Data Path Extender** allows KMASS data to be transmitted on one fiber and received on another fiber, separate from video data, which is transmitted on a separate, third fiber.
- The **VelocityKVM Separate Audio Path Extender** allows audio signals to be transmitted on one fiber and received on another fiber, separate from Video, USB, PS2, RS-232 and Stereo Emitter data, which are transmitted on two independent fibers
- The **VelocityKVM Multi Video Path Extender** allows one 6.22 Gbps DVI signal to be transmitted across two fibers at a bandwidth of 3.11 Gbps per fiber.



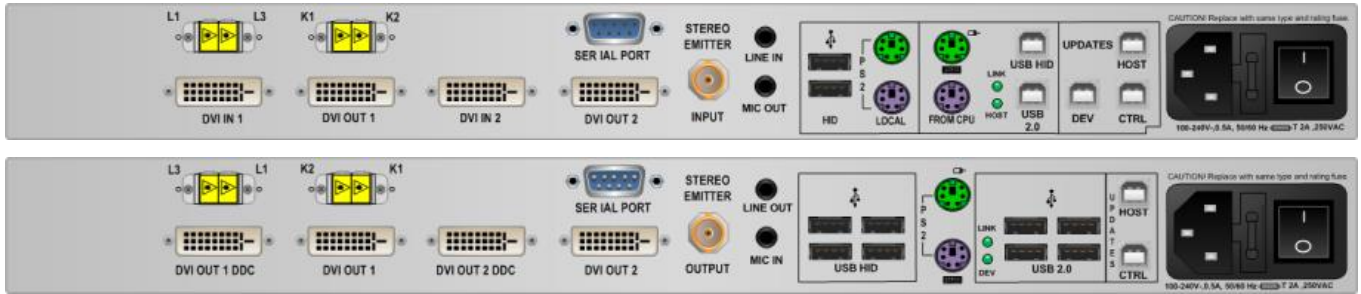
Each of our Separate Data & Audio Path and Multi-Path Video VelocityKVM line of extenders is available with the full complement of options regularly available with all our VelocityKVM extenders, such as RJ45 Network ports and various combinations of USB HID, USB 2.0 and FireWire ports.

On the following pages are examples of the various options available with each of these VelocityKVM Extender models.

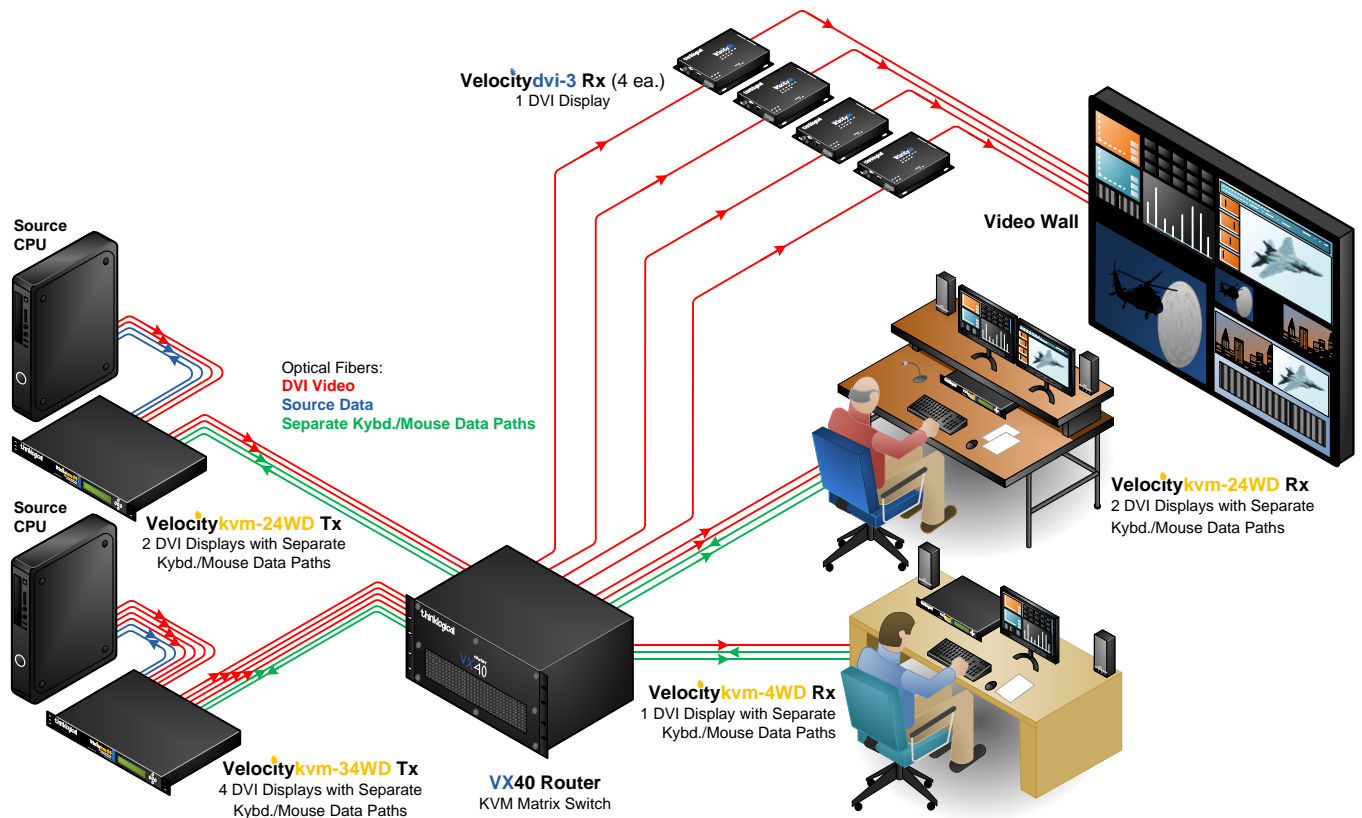
Separate Data Paths Option:

VelocityKVM-24K Extender Transmitter (VEL-W0DM24-LCTX) & Receiver (VEL-W0DM24-LCRX): DVI 2 Display, USB HID, USB 2.0, RS-232 Serial, Stereo Emitter, Audio, Separate Data Paths (*Allows KMASS data to be transmitted on one fiber and received on another fiber, separate from video data, which is transmitted on a separate, third fiber*).

Unlike standard VelocityKVM Extenders, where data and video are transmitted together from Tx to Rx on fiber L1 and back-channel data is transmitted from Rx to Tx on a fiber designated as L2, the Separate Data Path Option keeps video on fiber L1 while data is transmitted from Tx to Rx on a separate fiber designated as K1. The back-channel data is transmitted from Rx to Tx on fiber K2, allowing for greater workstation security and system control.



Separate Data Paths Transmitter (top) and Receiver

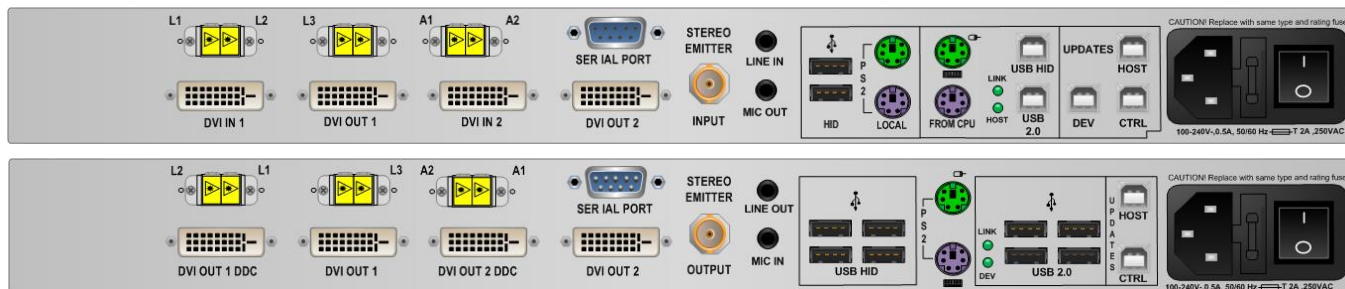


Separate Data Paths Tx to Rx Application

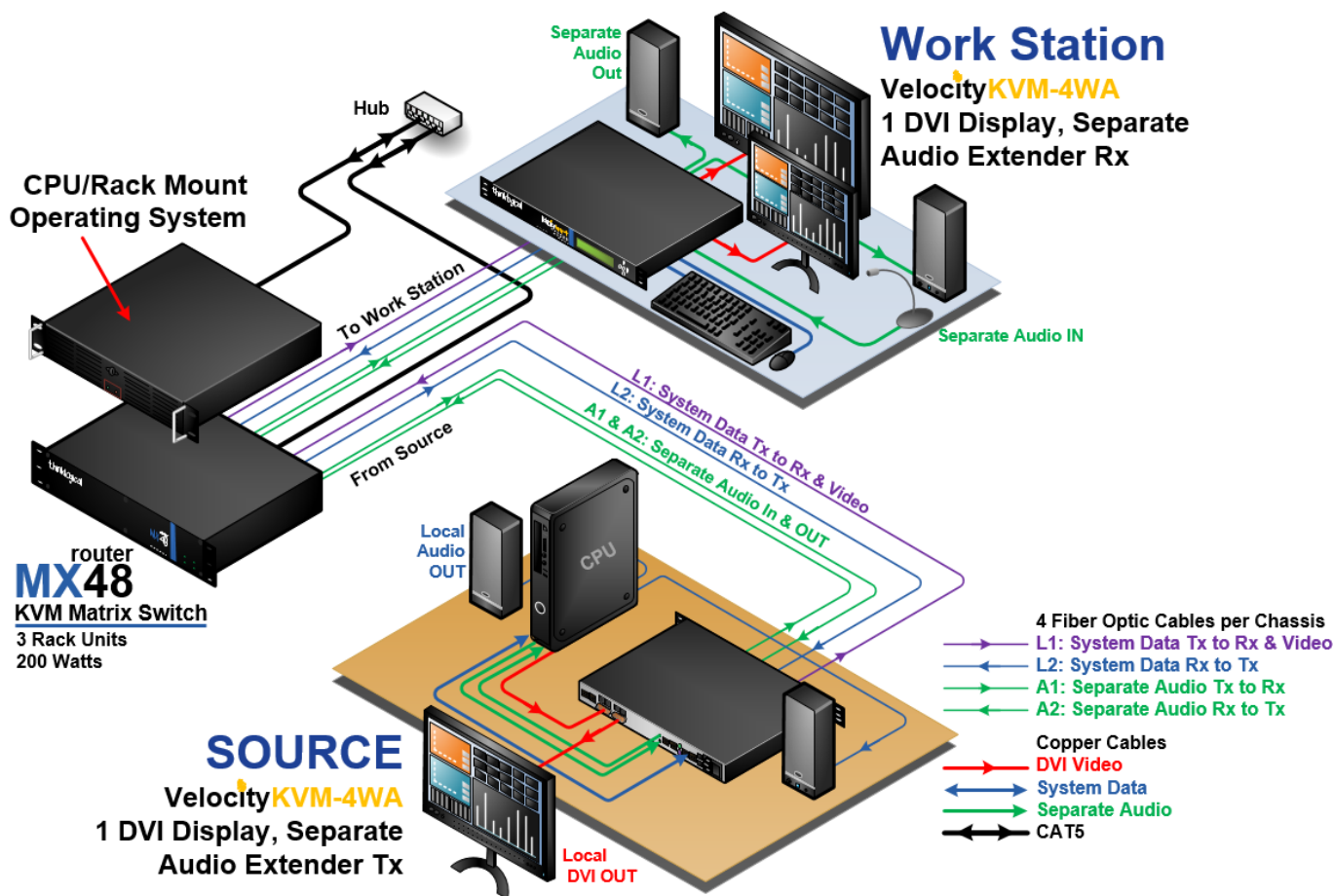
Separate Audio Paths Option:

VelocityKVM-24WA Extender Transmitter (VEA-W00M24-LCTX) & Receiver (VEA-W00M24-LCRX):
DVI 2 Display, USB HID, USB 2.0, RS-232 Serial, Stereo Emitter, Audio, Separate Audio Paths (*Allows audio data to be transmitted on one fiber and received on another fiber, separate from Video, USB, PS2, RS-232 and Stereo data, which are transmitted on two independent fibers*).

The Separate Audio Path Option allows audio signals in and audio signals out to be kept on two independent fibers designated as A1 and A2, allowing for greater workstation security and system control. USB, PS2, stereo emitter and serial data remain on fibers L1 and L2 as in standard VelocityKVM models.



Transmitter (top) and Receiver

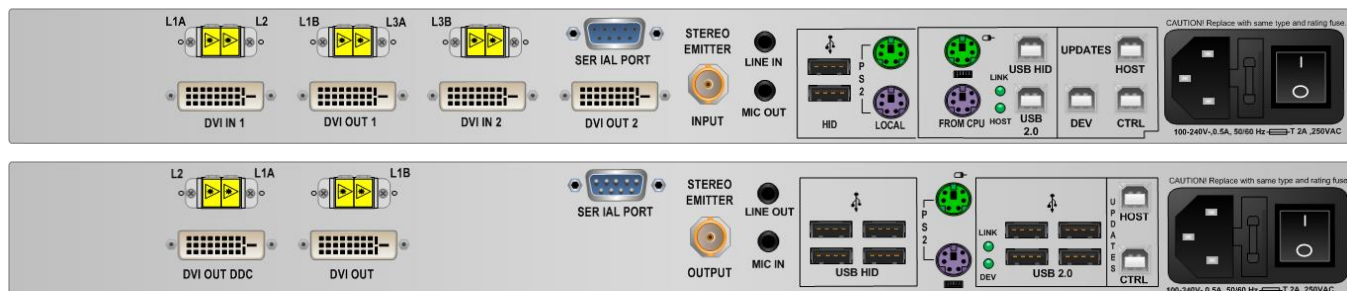


Separate Audio Paths Tx to Rx Application

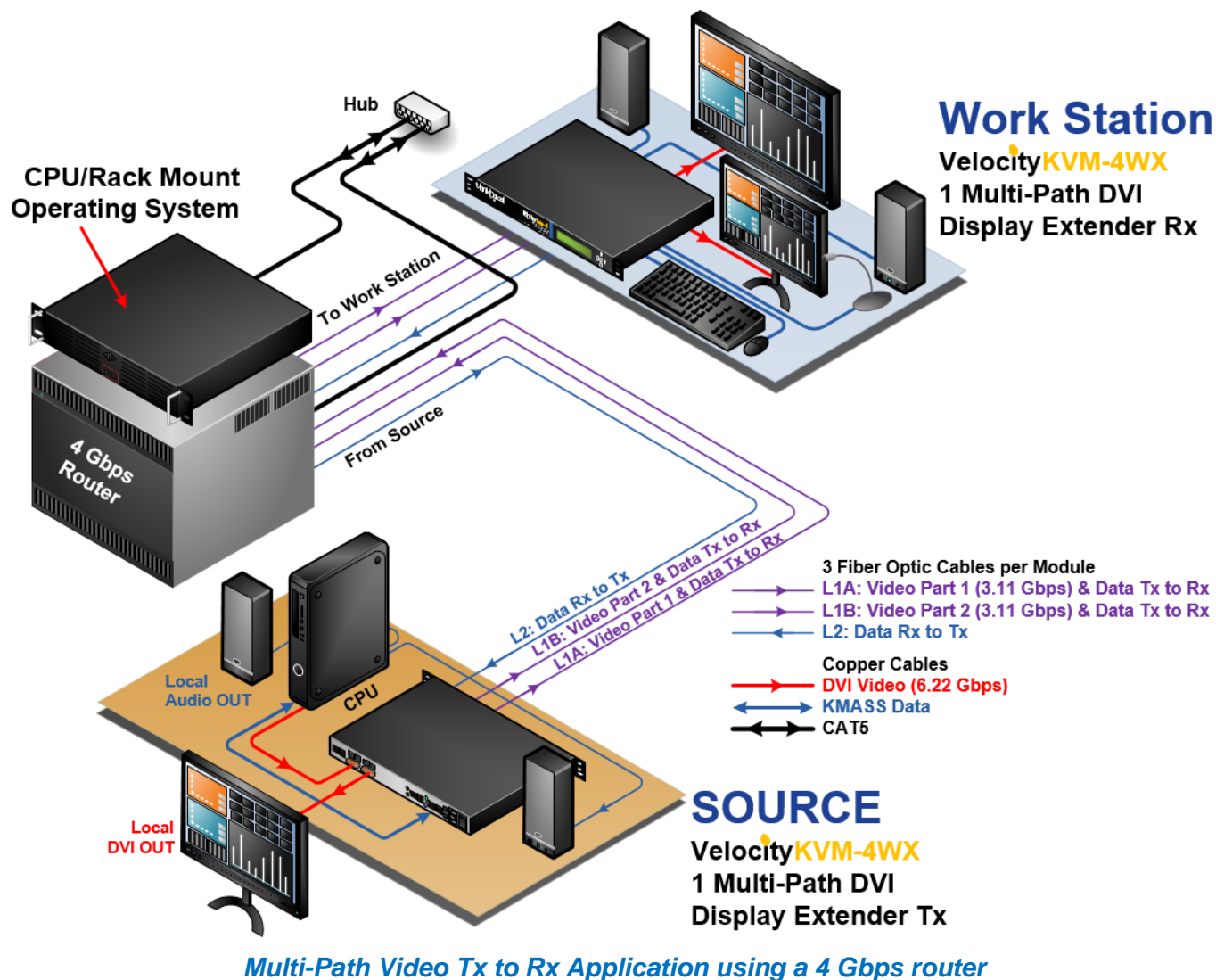
Multi-Path Video Option:

VelocityKVM-4WX Extender Transmitter (VEL-W00X04-LCTX) & Receiver (VEL-W00X04-LCRX):
DVI 1 Display, USB HID, USB 2.0, RS-232 Serial, Stereo Emitter, Audio, Multi-Path Video (Allows one 6.22 Gbps DVI signal to be transmitted across two fibers at a bandwidth of 3.11 Gbps per fiber).

Thinklogical's VX line of KVM Matrix Switch Routers, unlike other routers on the market, supports each 6.25 Gbps bandwidth video connection from our Velocity line of extender products. When a Thinklogical router is not part of your system, the Multi-Path Video option allows two 3.11 Gbps bandwidth video signals to transmit through a 4 Gbps router for increased system flexibility and control.



Transmitter (top) and Receiver



Appendix F: EDID Definition and DDC Modes

Extended Display Identification Data (EDID) is a data structure provided by a digital display to describe its identity (manufacturer's name, product type, serial number, etc.) and capabilities (native timing, frequency range, video and audio formats, etc.) to a video source.

EDID is what enables a modern personal computer to know what kind of monitor is connected.

With this information the CPU and video card can determine what resolutions the monitor is capable of. EDID is defined by a standard published by the Video Electronics Standards Association (VESA). The EDID also includes such information as the phosphor or filter type, timings supported by the display, display size, luminance data and pixel mapping data for digital displays.

Display Data Channel (DDC) is a VESA standard transport medium between a CPU's graphics adapter and monitor used to pass EDID, and can be either **unidirectional or bidirectional**.

A bidirectional bus supports content protection (HDCP) and display calibration software. (*High-bandwidth Digital Content Protection* is a specification used to encrypt and protect digital video and audio signals transmitted between two HDCP-enabled devices.)

Default DDC Modes:

Remote Dynamic Mode

The unit acts as a direct connection between the RX and TX. In this mode DDC data is read at the RX and sent to the TX. Once verified at the TX the information is written into a PROM on the TX and provided to the CPU video card. The RX will not send DDC data to the TX unless a different display is connected to the RX.

Advantage: Allows CPU video card to boot when there is no fiber connection to the RX.

Limitations: No communication link from the CPU to the display. Remote Dynamic prevents the use of HDCP or monitor configuration /color tuning.

Remote Static Mode

Remote Static Mode is a subset of Dynamic Mode in that once a transfer from the RX to the TX is completed successfully, no other transfer will be made unless specifically requested. The DDC data stored in the TX PROM will not change regardless of display changes.

Advantage: Allows the user to acquire and use an EDID table regardless of changes in connection at the RX.

Limitations: No communication link from the CPU to the display. Remote Static prevents the use of HDCP or monitor configuration/color tuning. This may result in no video if a display with lower resolution capability is subsequently connected.

Pass-Thru Mode

The units act as a direct connection between the TX and RX. This mode allows the CPU to communicate directly with the monitor.

Advantage: Allows monitor color tuning.

Limitations: If a monitor is not connected to the RX, most video cards will not boot. Does not work with HDCP compliant modules.

Local Static Mode

Local Static mode operates in the same manner as Remote Static mode, except that the EDID table is read from a monitor plugged into the local port of the TX. The TX will read the DDC from the locally connected monitor until it reads a valid EDID table. The table will then be stored on the TX and presented to the CPU.

Advantages: The TX does not need to be connected to the video card or RX. The EDID table can be loaded before the TX is installed.

Limitations: No communication link from the CPU to the display. This prevents the use of HDCP or monitor configuration/color tuning and may result in loss of remote video if a display with lower resolution capability is connected to the RX.

Default EDID Table

Two EDID Tables are present. One supports resolutions of 1920x1200 and the other supports 1920x1080.

Advantage: Sends a valid EDID table to the CPU to boot the graphics adapter.

Limitations: Default EDID table may not support required resolutions.

Load Default EDID Table					
Feature	Remote Dynamic	Remote Static	Pass-Thru	Local Static	Load Default
Supports HDCP	Yes	Yes	No	Yes	Yes
Supports Monitor calibration	No	No	Yes	No	No
Monitor on Rx side required to boot video	No	No	Yes	No	No
EDID table loaded from Rx	Yes	Yes	No	No	No
EDID table loaded from Tx	No	No	No	Yes	No
EDID table stored in non-volatile memory	Yes	Yes	No	Yes	Yes



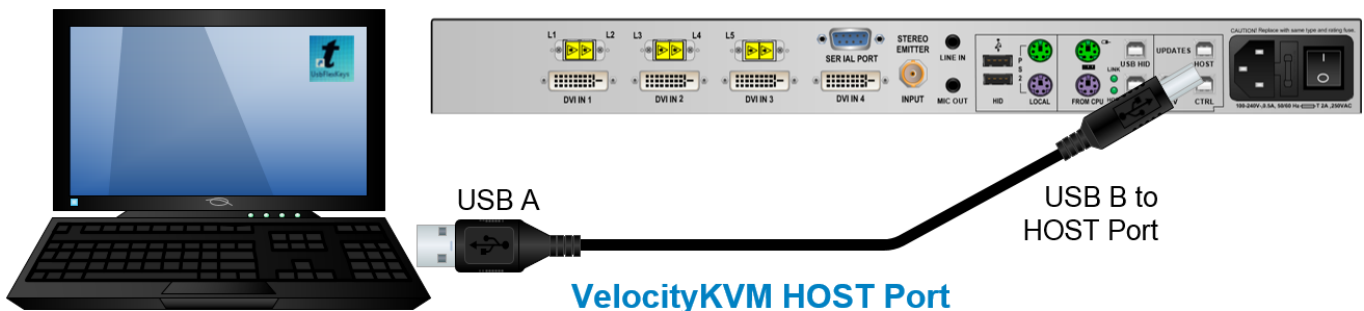
NOTE: Most DVI-D graphics adapters will not boot if a valid EDID table is not received at power up.

Appendix G: Flex Keys

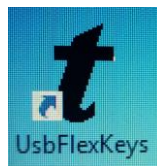
Flex Keys is a Thinklogical Tool featuring a set of default **hot keys** that installs onto a Windows PC. *Flex Keys* also allows the administrator to create unique hot keys to enable actions that are not in Thinklogical's default Hot Key Manager Legend.

Create Unique Flex Key Actions

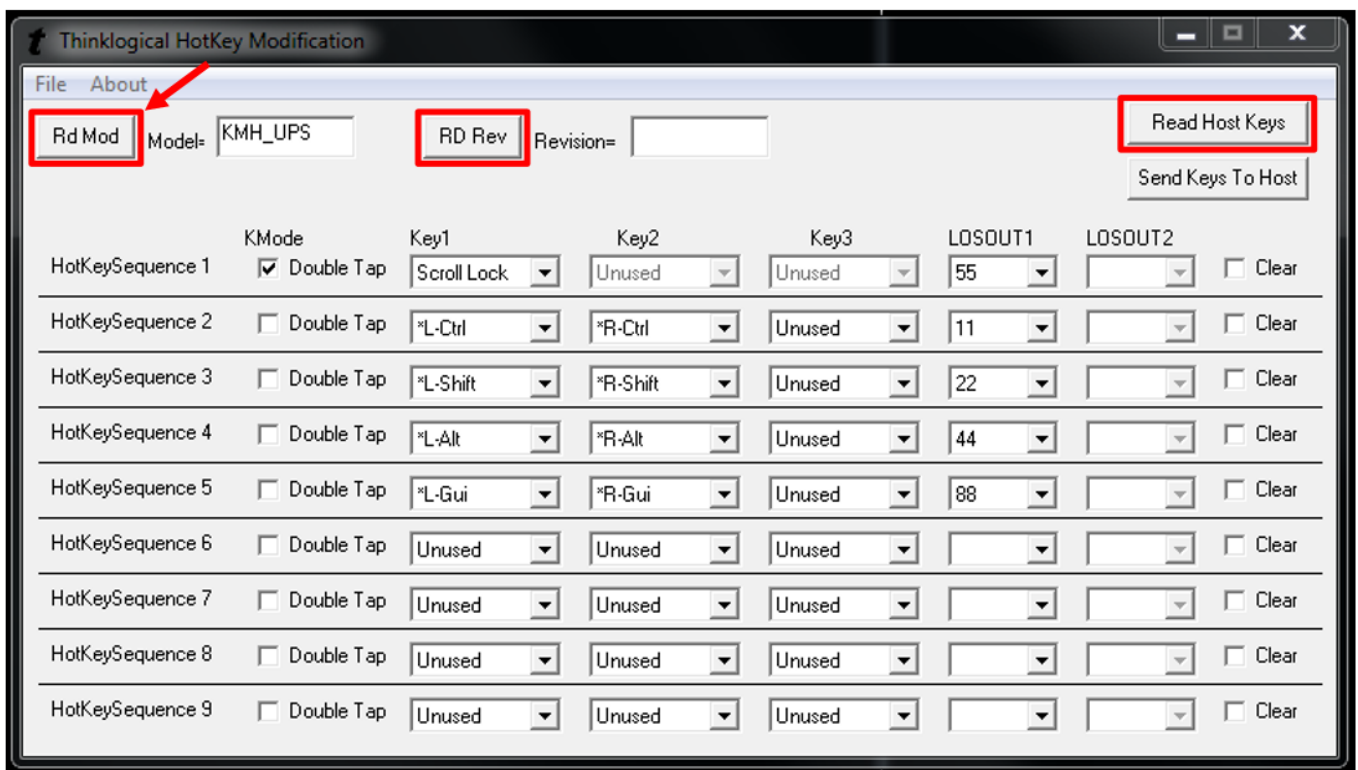
1. Connect the Windows PC to the **HOST** port located on the Receiver. Any changes will be saved to that Receiver.



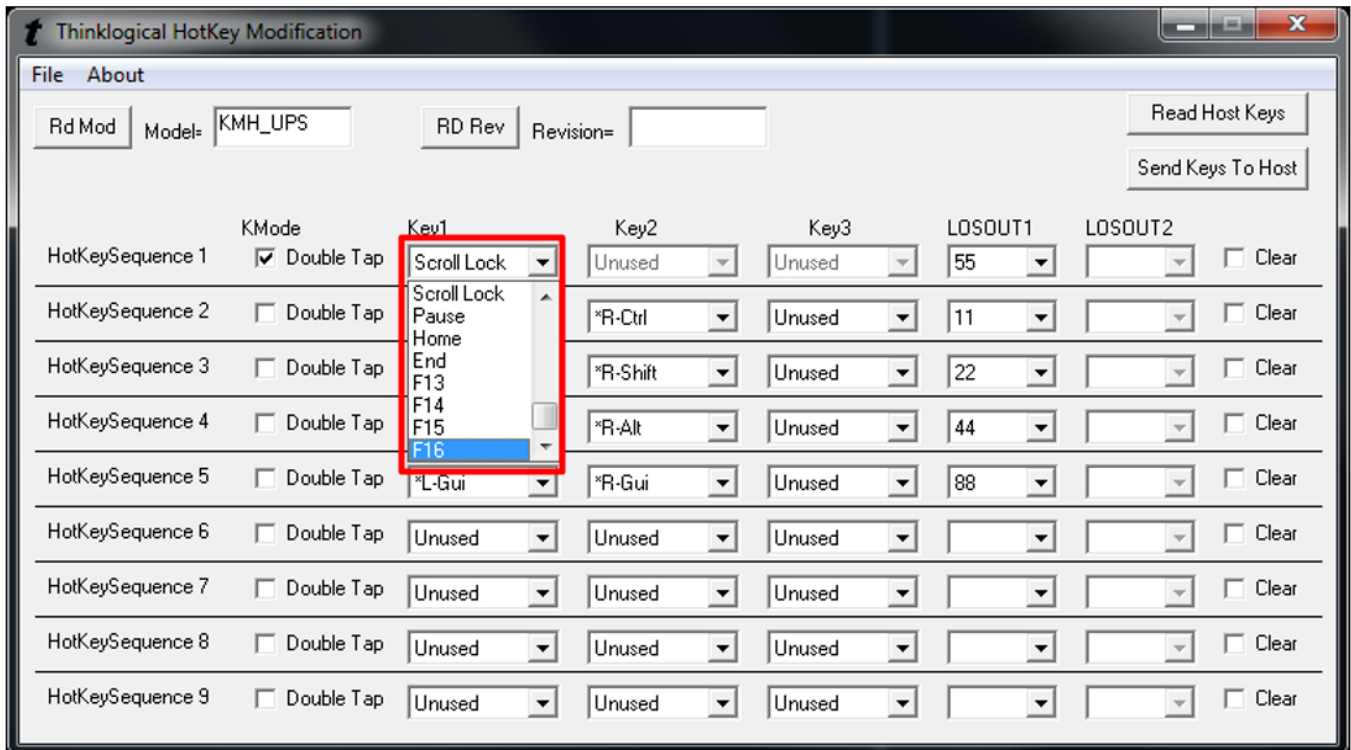
2. Click on the **UsbFlexKeys** icon.



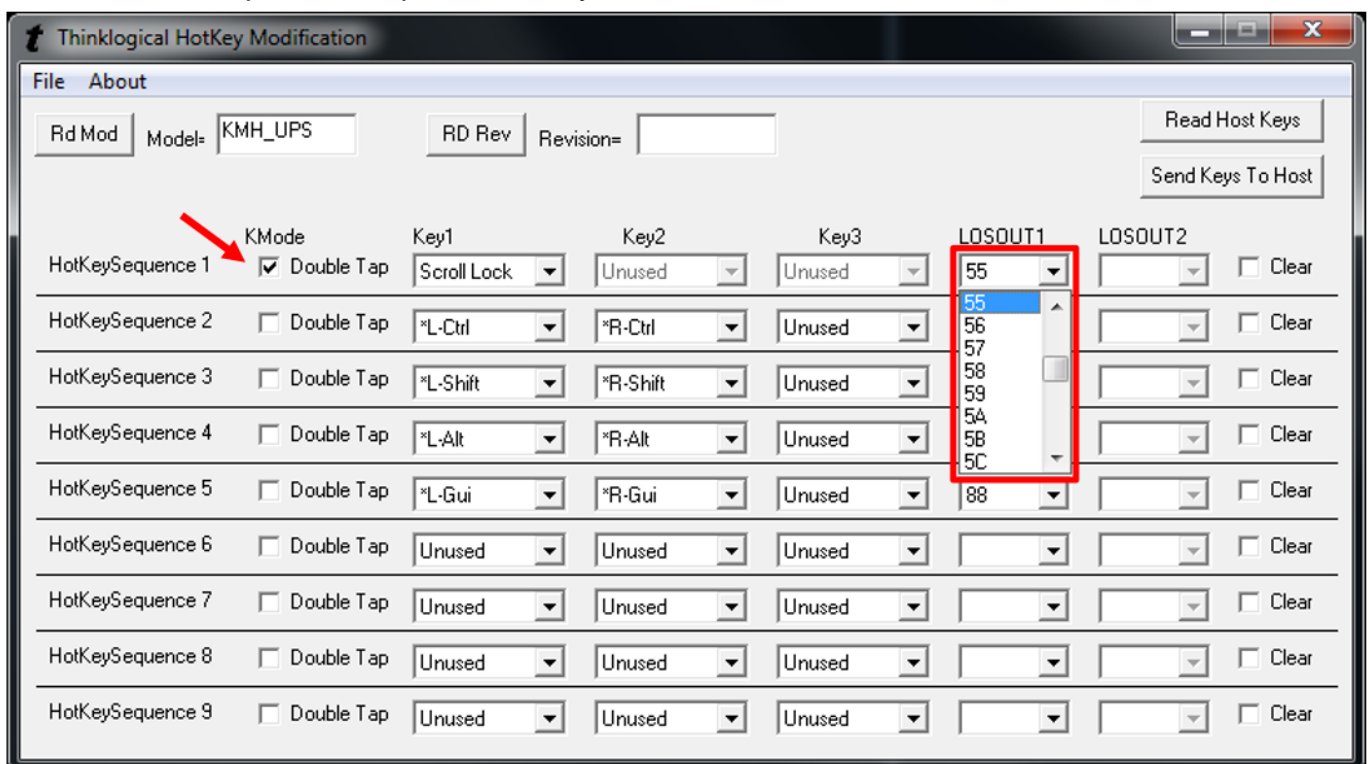
3. The saved HOST or UPDATE settings are read here. Click on *Rd Mod* to establish a connection to the Host.



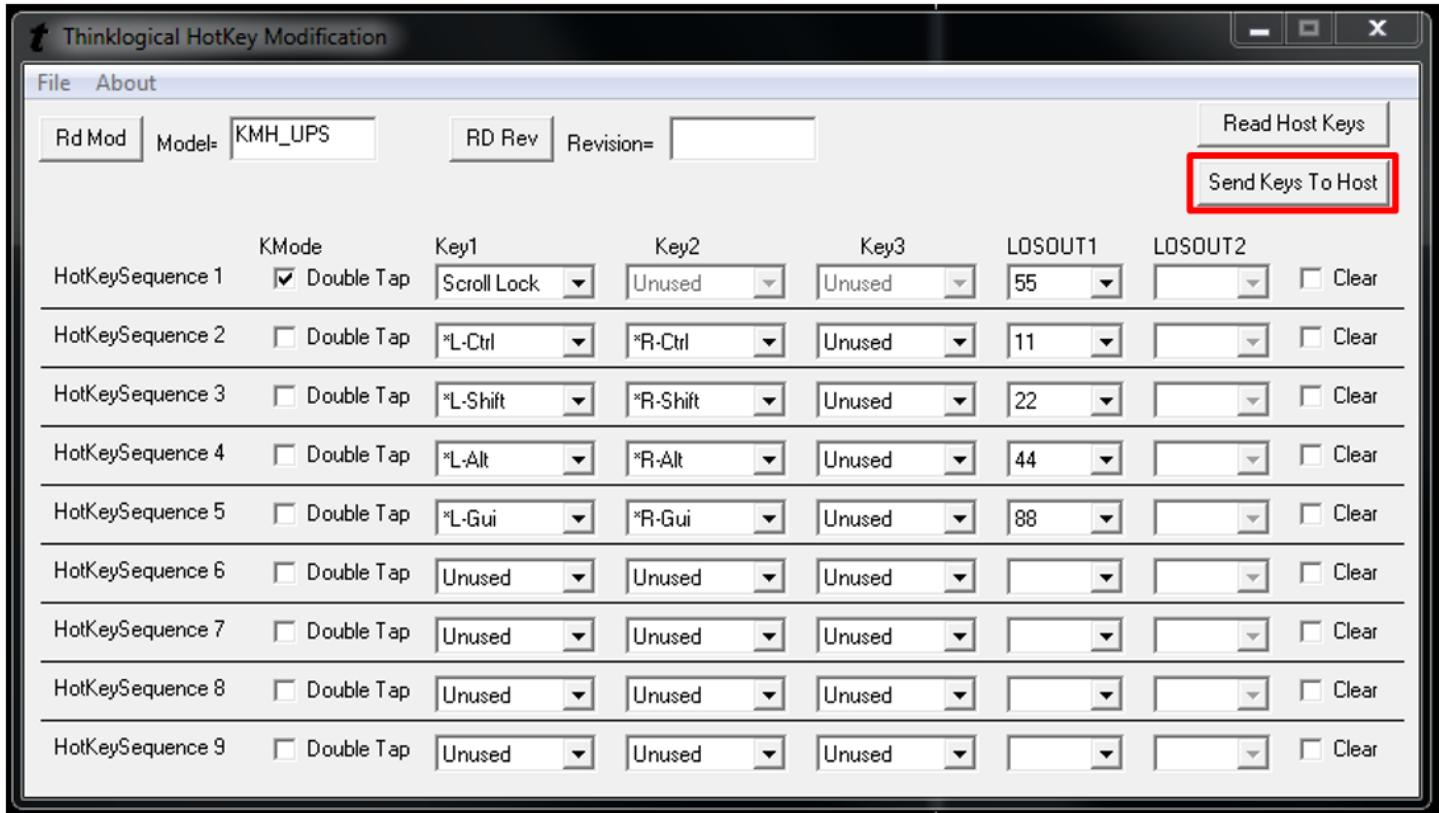
- Left-click on the pull-down menus under *Key1*, *Key2* and *Key3* to select an **action** key. These are the *hot* keys that will be pressed on the keyboard.



- Under LOSOUT1, select the **code** desired or create a unique code for a specific application. Selecting **Double Tap** (as in "Scroll lock/Scroll lock") requires only one key. Non-Double Tap can use a sequence of up to three keys.



6. When the desired settings are selected, click on *Send Keys to Host* to **apply** the new settings.

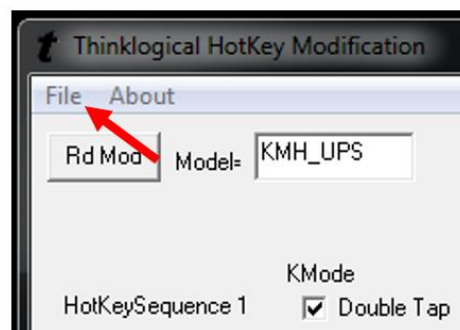


7. To **restore** a Receiver to its **default** settings:

- a. Open Flex Keys without reading the device. (No USB cable to the PC as shown in Step 1.)
- b. Click on *Send Keys to Host*. This will send the default Key Table to the device.
- c. Click on *Rd Mod* to verify that the keys have returned to their default settings.

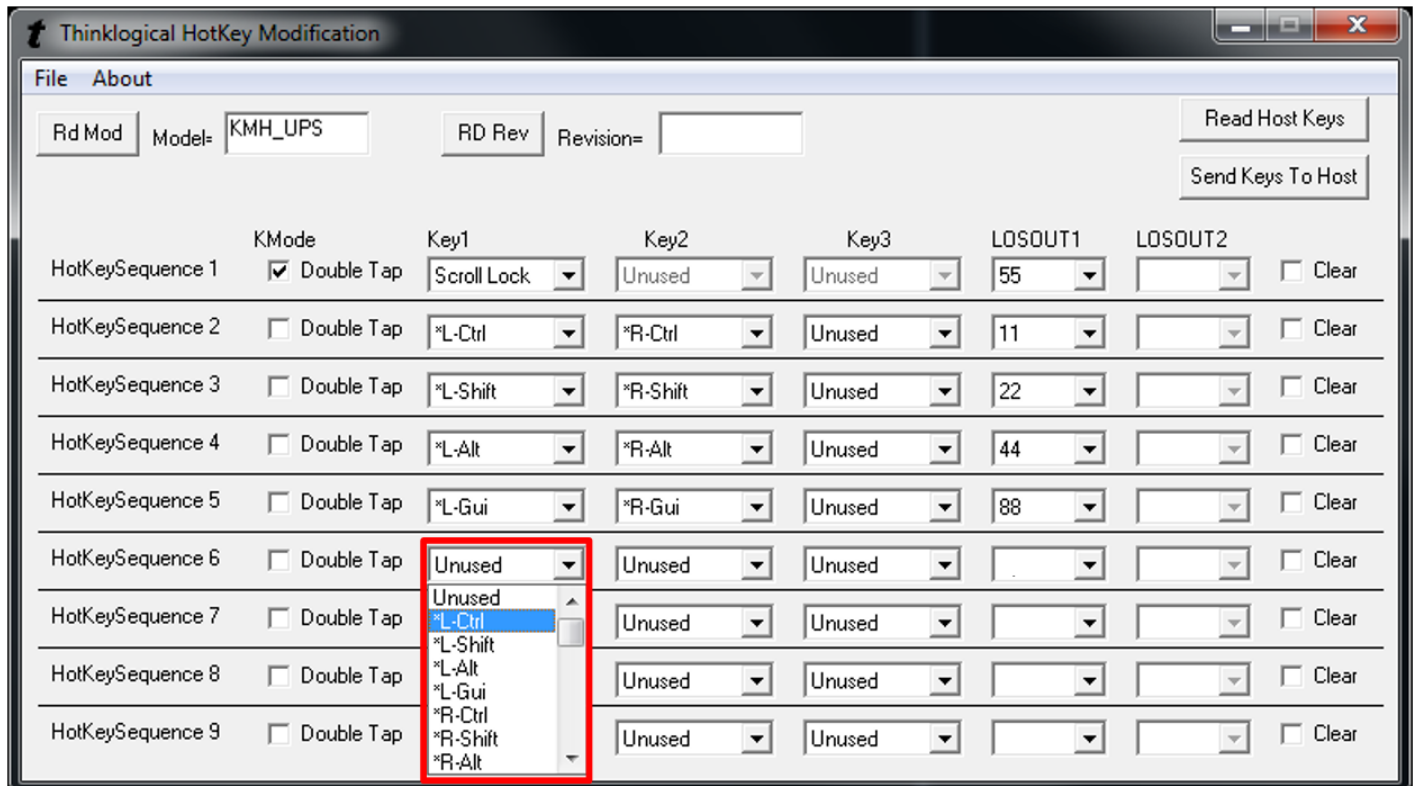
Or:

- a. Click on *File* (Upper left)
- b. Open **default.conf**
- c. Click on **Save**

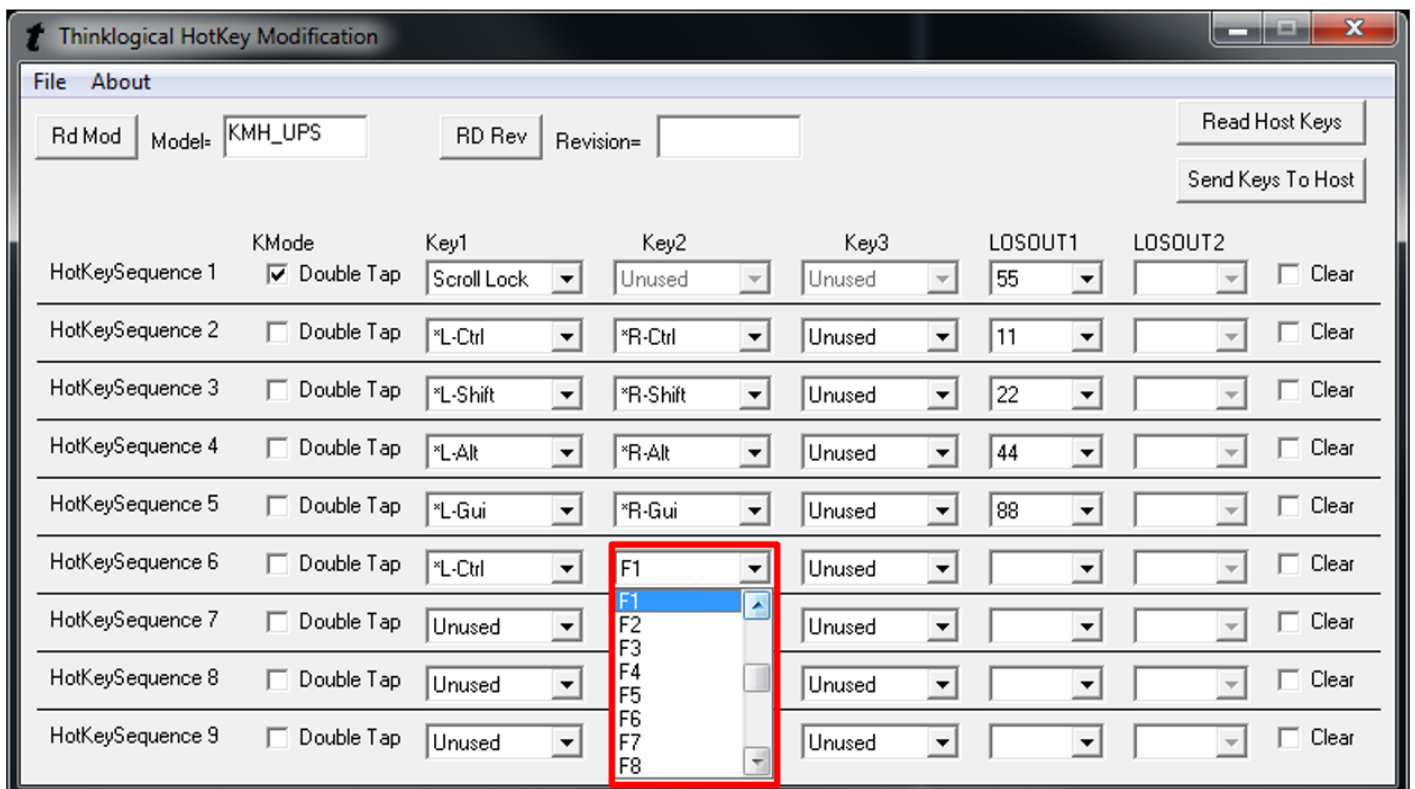


Create Custom Actions

By left-clicking on an “unused” **Key1 drop-down menu**, users can select from a list of key sequences. In this case, *Left Ctrl* is selected for Key 1.

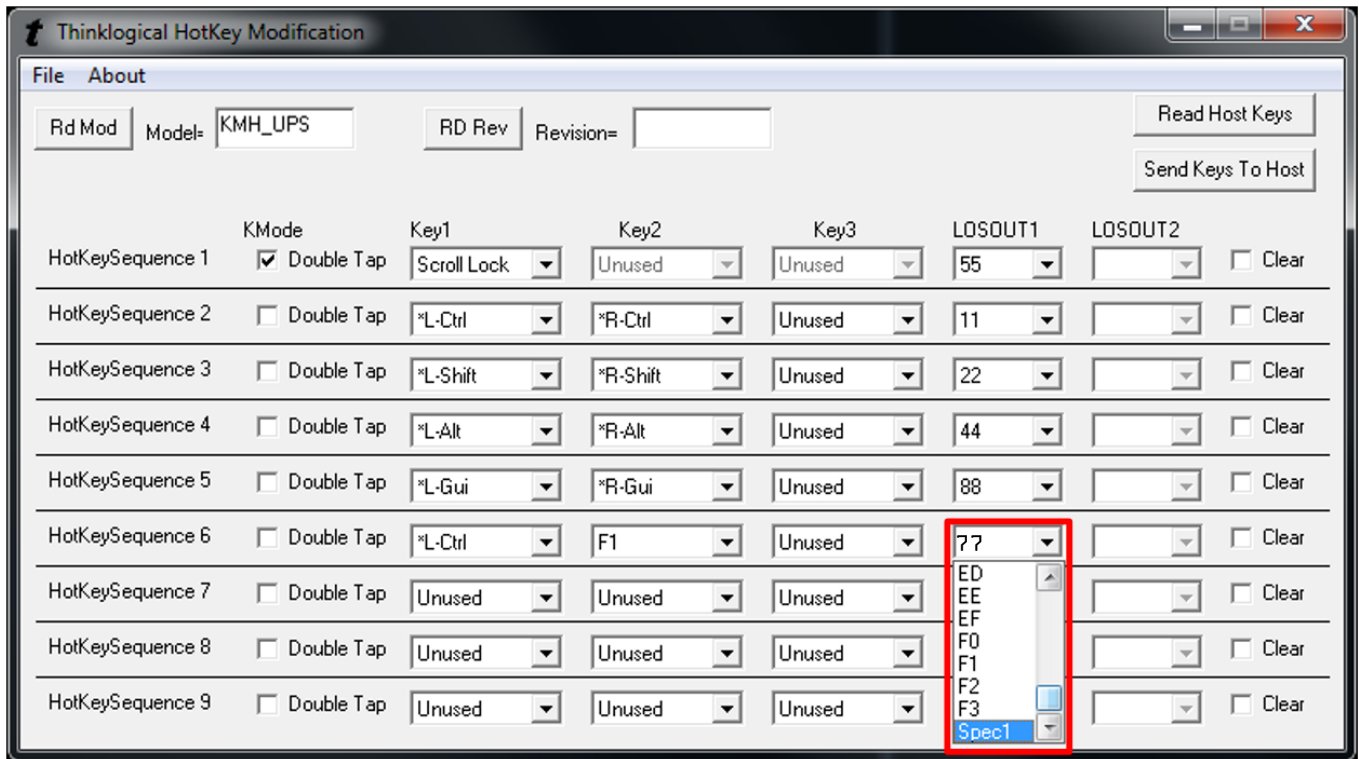


Left-click on the **Key2 drop-down menu** to select the Key 2 sequence. In this case, *F1* is selected for Key 2.



Left-click on the **LOSOUT1** drop-down menu and select from a list of hex values, so that pressing *L-Ctrl* and *F1* will execute the function associated with that value. *Only choose 77 for No Router Mode.*

User's Note: A non-hex value can be entered by scrolling to the bottom of the list and clicking on *Spec1*.



By selecting *Spec1*, the LOSOUT2 value will automatically become *Rd Kb* (Read Keyboard), meaning it will “read” the next thing typed. **The user must now enter a non-hex numerical value, which will become an action associated with *L-Ctrl* and *F1*.** To clear the entries, click the *Clear* box to the right.

User's Note: The only supported **NO Router Mode** values for LOSOUT1 are **55, 11, 22, 44, 88, 77.**

