

TLX

UNCOMPRESSED 4K

Matrix Switches & Extenders

Full 60Hz 4K
Video and KVM
Hybrid Switching &
Extension Solutions
over the
Fewest Cables



UNCOMPRESSED 4K

Matrix Switch & Extension Systems

Introducing Thinklogical's newest family of switching and extension solutions, for **uncompressed, high resolution video and KVM systems over fewer cables.**

Hybrid switching solutions (fiber and CATx) start at 12 ports and scale up to 640 ports.

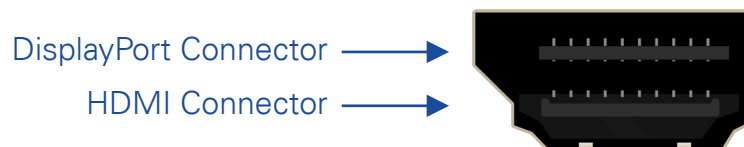
Offering a higher bandwidth solution, the TLX product line provides **10Gbps bandwidth per port**, to preserve signal integrity and provide uncompressed, high resolution video with no artifacts, latency or lost frames.

The TLX product family offers several features to enhance ease of integration.

- Offers a higher bandwidth solution to **address new video resolutions and prepare for future, unknown protocols.**
- Enabled through higher bandwidth, the TLX **reduces system cabling by half.**

Extend and switch:

- **a single display up to 4096x2160 @ 30Hz with full 4:4:4 color depth, over a single fiber or CATx cable**
(or dual displays up to 1920x1200 @ 60Hz with full 4:4:4 color depth)
- **a single display up to 4096x2160 @ 60Hz with full 4:4:4 color depth, over two fibers or CATx cables**
(or dual displays up to 4096x2160 @ 30Hz with full 4:4:4 color depth)
- **dual displays up to 4096x2160 @ 60Hz with full 4:4:4 color depth, over four fibers or CATx cables**
- Dual connector, offering support for both HDMI and DisplayPort, **reduces the number of extenders and converter cables required and enables users to future-proof system designs.**



Connector installed on every Video and KVM extender module.

- Interoperability with Thinklogical's Velocity family of switch and extension solutions, **to ensure an easy upgrade path and a smooth transition** to Thinklogical's next generation solution.



Hybrid Switching Solution for Uncompressed, High Resolution Video & KVM Systems

Thinklogical's TLX Matrix Switches are *high performance, modular, non-blocking switches* for complete, end-to-end switching of video, audio and peripheral signals **over multi-mode or single mode fiber optic cable or CATx cable**. TLX switches are *protocol agnostic*, supporting numerous video, audio and peripheral signals, allowing users to consolidate all of their system switching requirements in a single chassis. TLX Matrix

Switches are ideal for small to large system applications, with switch sizes ranging from **12 ports to 640 ports**. Each port supports **10Gbps** bandwidth, preserving signal integrity to provide *uncompressed, high resolution video* with no artifacts, latency or lost frames. Thinklogical's re-clocking technology ensures that every video and data stream is delivered in perfect synchronization.

(Fiber configurations shown · CATx and Hybrid solutions also available)

The System

Security

Creating physical separation between potential threats (users) and the target (secure data) is essential to a secure system design. Thinklogical's system permits users to **access sources up to 80 kilometers away, with no performance degradation**. System administrators can safeguard sources in a centralized location, while users maintain remote access to the sources without the ability to accidentally or intentionally breach the system (such as downloading sensitive information onto a USB drive).

Partitioned and Restricted Switching

To **protect data between multiple networks**, partitioning allows the switch resources to be divided to support more than one network, and does not allow for switching between networks. Restricted switching allows

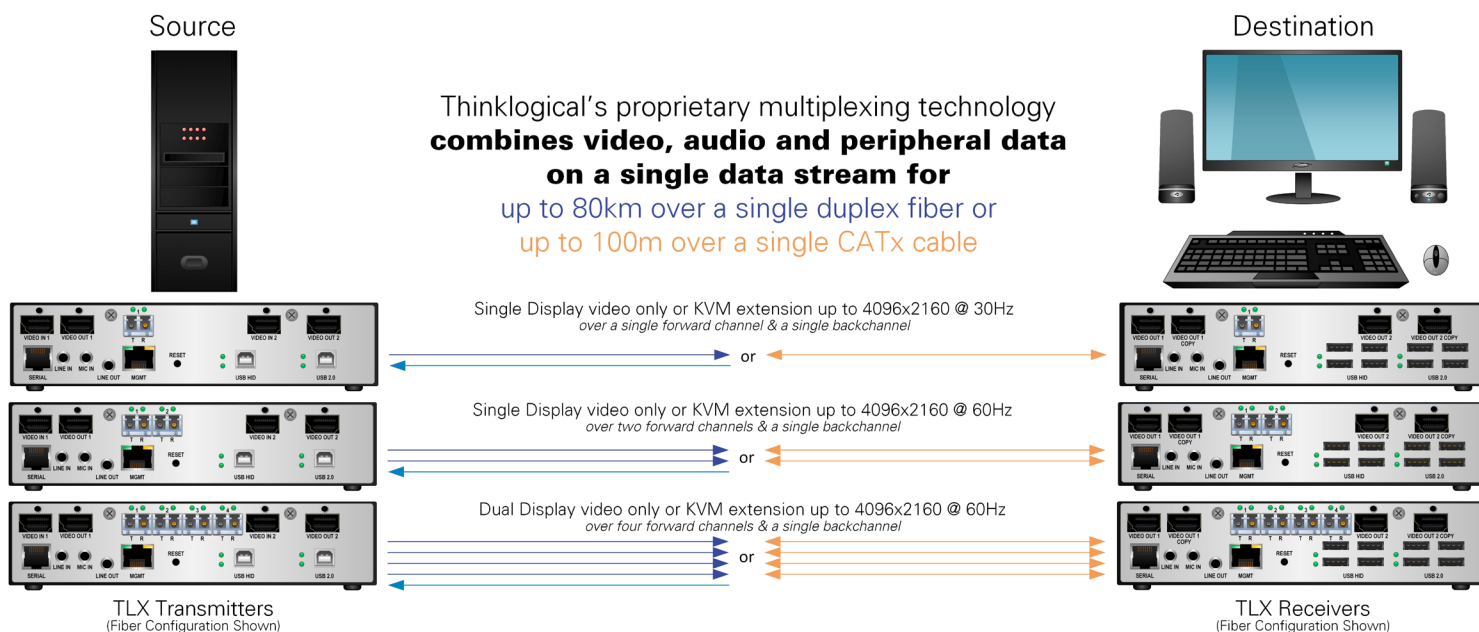
the administrator to manage access on a port-by-port basis. Partitioned and restricted switching are enabled through the switch's firmware, and therefore, a threat would have to physically access the switch to tamper with the settings.

Accreditations

Thinklogical's VX line of switches are the only fiber optic KVM and Video Switches in the world that have achieved accreditation to The Common Criteria EAL4, TEMPEST Level B, and NATO (NIAPC) Green Status, having met stringent criteria that support information assurance directives for military-intelligence secure facilities worldwide. *The TLX switches have been designed to meet these specifications and are expected to achieve these, as well as additional, accreditations.* Learn more at www.thinklogical.com/accreditations.

Resiliency

TLX switches are designed to maximize system uptime. The modular approach of the TLX allows user to **hot-swap all critical system components**, including power supplies, fan trays, control cards, input/output cards and pluggable optics. Furthermore, the system can be easily reconfigured, such as adding additional input/output cards for expansion, without ever powering down the switch or interrupting active signals. **Redundant and current-sharing power supplies** ensure continuous, uninterrupted power to the switch. Matrix switches are also configurable to include **redundant control cards with automatic failover**. Enhanced diagnostics and alarms provide extensive real-time monitoring and diagnostics of critical functions of the switch.



The System

TLX extension systems have a simple transmit and receive design. The TLX Transmitter connects to the source to receive video, audio and peripheral data. Utilizing **Thinklogical's proprietary multiplexing technology the data is transmitted over fiber through 10Gbps SFP+ technology for up to 80 kilometers, or over CATx cable for up to 100m.** At the TLX Receiver, Thinklogical demultiplexes the data stream to deliver uncompressed, high resolution video, audio and peripheral data.

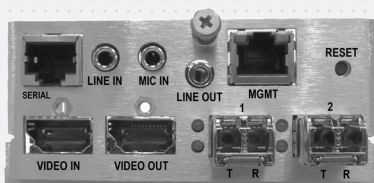
TLX extension systems are exceptionally configurable, to specifically suit the requirements of any application. Extenders are configurable to support **up to 4K video (4096x2160) @ 60Hz, full duplex stereo audio, serial (RS-232), USB HID, USB 2.0 (480Mbps)**

and 10/100/1000 Network. The TLX design offers support for both **HDMI 1.4 and DisplayPort 1.2 connector types in a single extender**, with full support for HDCP content. Additionally, TLX extension systems support embedded audio, with the ability to de-embed audio at the receiver. All extenders are equipped with an additional output for a local display, as well as an Ethernet port for configuration, management and updates. For high-availability applications, extension systems may also be configured to offer redundant fiber paths.

The TLX extension systems are **compatible with a full line of scalable, non-blocking TLX matrix switches**, ranging from 12 ports to 640 ports.

FORM FACTOR

TLX extension systems are available in a modular form factor. The modular extenders are compact and hot-swappable, enabling users to field configure any modular chassis. Additionally, for fiber extenders, the optical modules are also hot-swappable. The modular systems promote system flexibility, scalability and a reduced maintenance effort. Several chassis types are available, and compatible with all modular extenders, providing users with the ability to mix-and-match chassis to reduce the overall footprint of the design. Users can choose from the resilient, rack mount chassis (housing up to four video extenders or up to two KVM extenders in a single rack unit) with redundant and hot-swappable power supplies, or from the more compact, space-saving designs for surface mounting applications.



Video Extender Module (1/4RU)

Configured to support video up to 4096x2160 @ 60Hz, Audio & Serial



Rack Mount Chassis (1RU)

Configurable with up to four video extenders or two KVM extenders with redundant and hot-swappable power supplies
 Compact (1/4RU and 1/2RU) Chassis also available

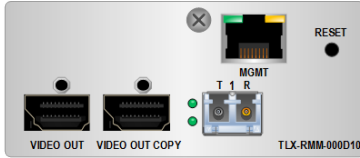
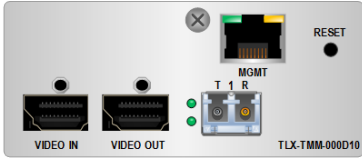
Video Extender Modules

Single Display up to 4096x2160 @ 30Hz

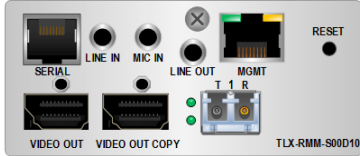
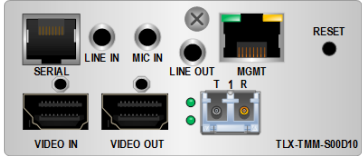
(1/4RU)

Transmitter Modules

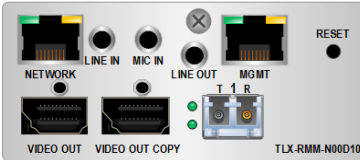
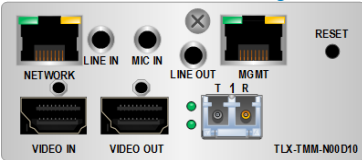
Receiver Modules



with Analog Audio & Serial RS-232



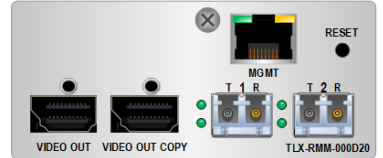
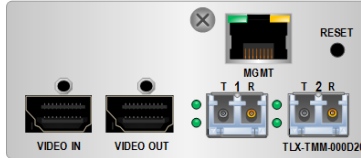
with Analog Audio & Network 10/100/1000



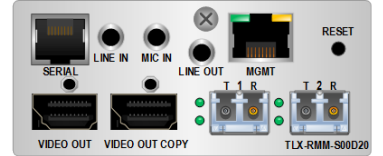
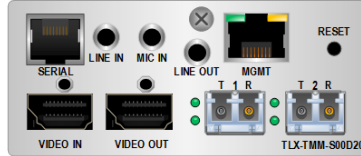
Single Display up to 4096x2160 @ 60Hz

Transmitter Modules

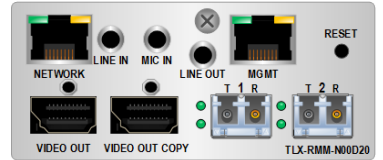
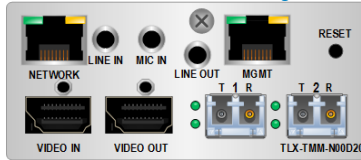
Receiver Modules



with Analog Audio & Serial RS-232



with Analog Audio & Network 10/100/1000

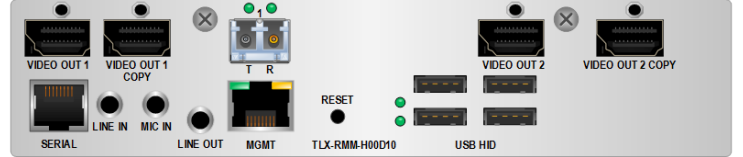
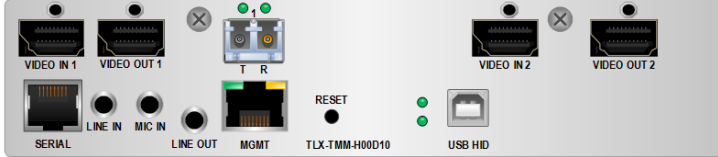


KVM Extender Modules (1/2RU)

Single Display up to 4096x2160 @ 30Hz or Dual Displays up to 1920x1200 @ 60Hz

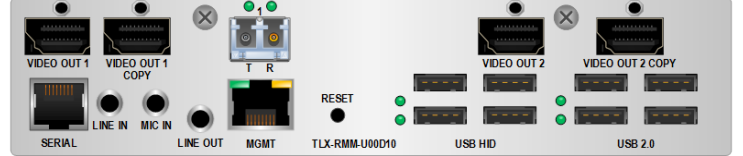
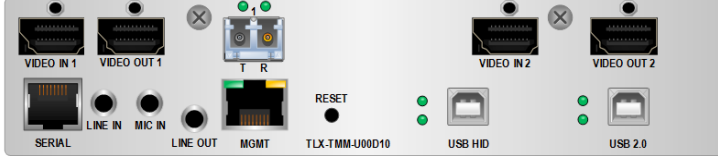
Transmitter Module with Analog Audio, Serial RS-232 & USB HID

Receiver Module with Analog Audio, Serial RS-232 & USB HID



Transmitter Module with Analog Audio, Serial RS-232, USB HID & USB 2.0

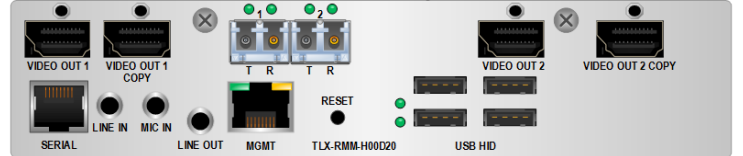
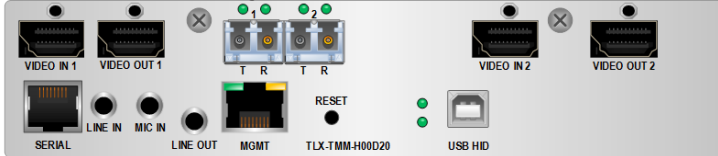
Receiver Module with Analog Audio, Serial RS-232, USB HID & USB 2.0



Single Display up to 4096x2160 @ 60Hz or Dual Displays up to 4096x2160 @ 30Hz

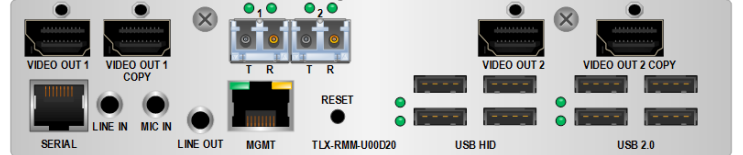
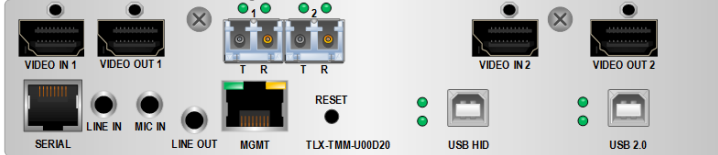
Transmitter Module with Analog Audio, Serial RS-232 & USB HID

Receiver Module with Analog Audio, Serial RS-232 & USB HID



Transmitter Module with Analog Audio, Serial RS-232, USB HID & USB 2.0

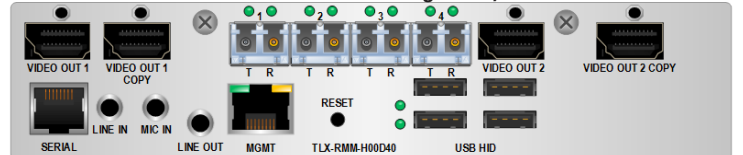
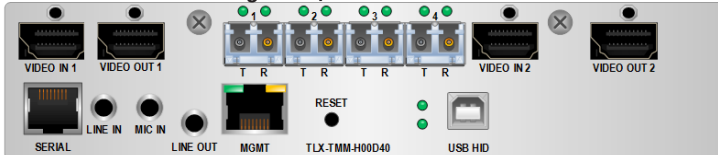
Receiver Module with Analog Audio, Serial RS-232, USB HID & USB 2.0



Dual Displays, each up to 4096x2160 @ 60Hz

Transmitter Module with Analog Audio, Serial RS-232 & USB HID

Receiver Module with Analog Audio, Serial RS-232 & USB HID



Transmitter Module with Analog Audio, Serial RS-232, USB HID & USB 2.0

Receiver Module with Analog Audio, Serial RS-232, USB HID & USB 2.0

