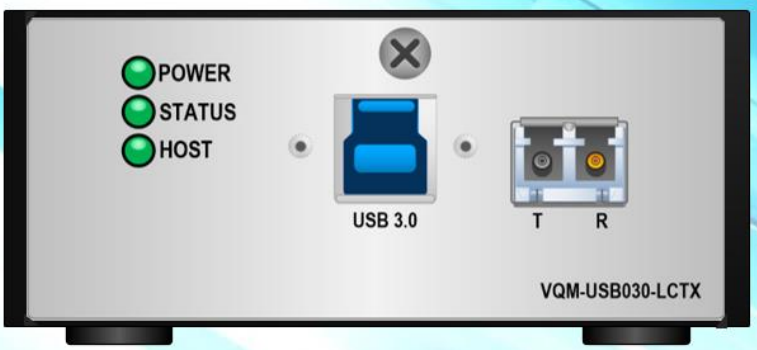
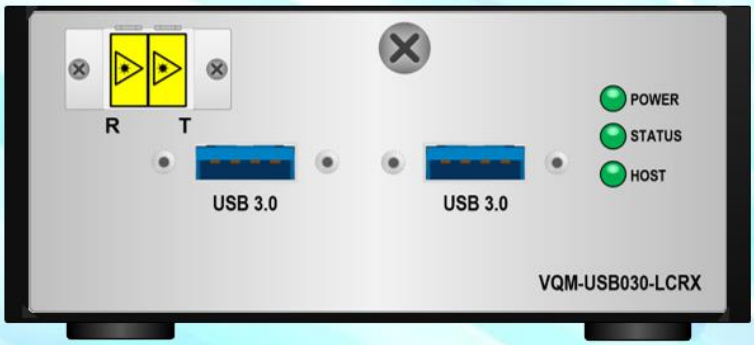
thinklogical®

USB 3.0

EXTENDER PRODUCT MANUAL





USB 3.0 Extension Solutions for use with Thinklogical's Q-Series Fiber-Optic Extension Systems

Thinklogical, LLC®
100 Washington Street
Milford, Connecticut 06460 U.S.A.
Telephone: **1-203-647-8700**
Fax: **1-203-783-9949**
www.thinklogical.com

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Thinklogical, LLC®
100 Washington Street
Milford, Connecticut 06460 U.S.A.
Telephone: 1-203-647-8700

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Thinklogical, LLC®
100 Washington St.
Milford, CT 06460

We, the Thinklogical team, are committed to understanding and exceeding our customers' requirements, the first time and every time.

Thinklogical, LLC is the leading manufacturer and provider of fiber optic and CATx KVM, video, 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.

Governments, entertainment, scientific and industrial customers worldwide rely on Thinklogical's products and solutions for security, high performance, continuous operation and ease of integration. Thinklogical products are designed and manufactured in the USA and are certified to the ISO 9001-2008 standard.

CERTIFIED ISO 9001:2008 COMPANY

Information Assurance

NATO | Common Criteria | TEMPEST | NATO Information Assurance Product Catalogue NIAPC

Thinklogical is headquartered in Milford, Connecticut and is privately held by Riverside Partners, LLC, Boston, MA (http://www.riversidepartners.com). For more information about Thinklogical products and services, please visit www.thinklogical.com.

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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.

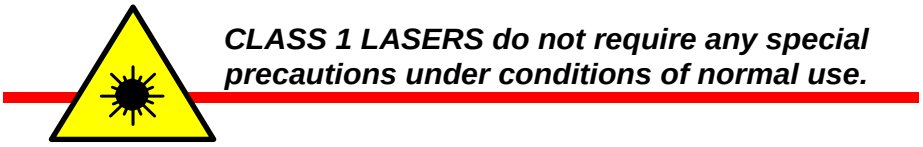
Warning! All Warnings appear in red text, followed by blue text, and preceded by a red stop sign, as shown here.

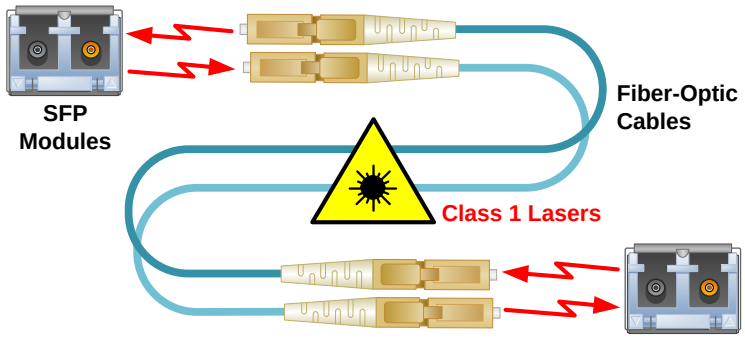
A warning is meant to call the reader's attention to **critical** information at a point in the text that is relevant to the subject being discussed.

BEFORE STARTING ANY PROCEDURE, IT IS RECOMMENDED THAT YOU READ THE INSTRUCTIONS THOROUGHLY!

Class 1 Laser Information

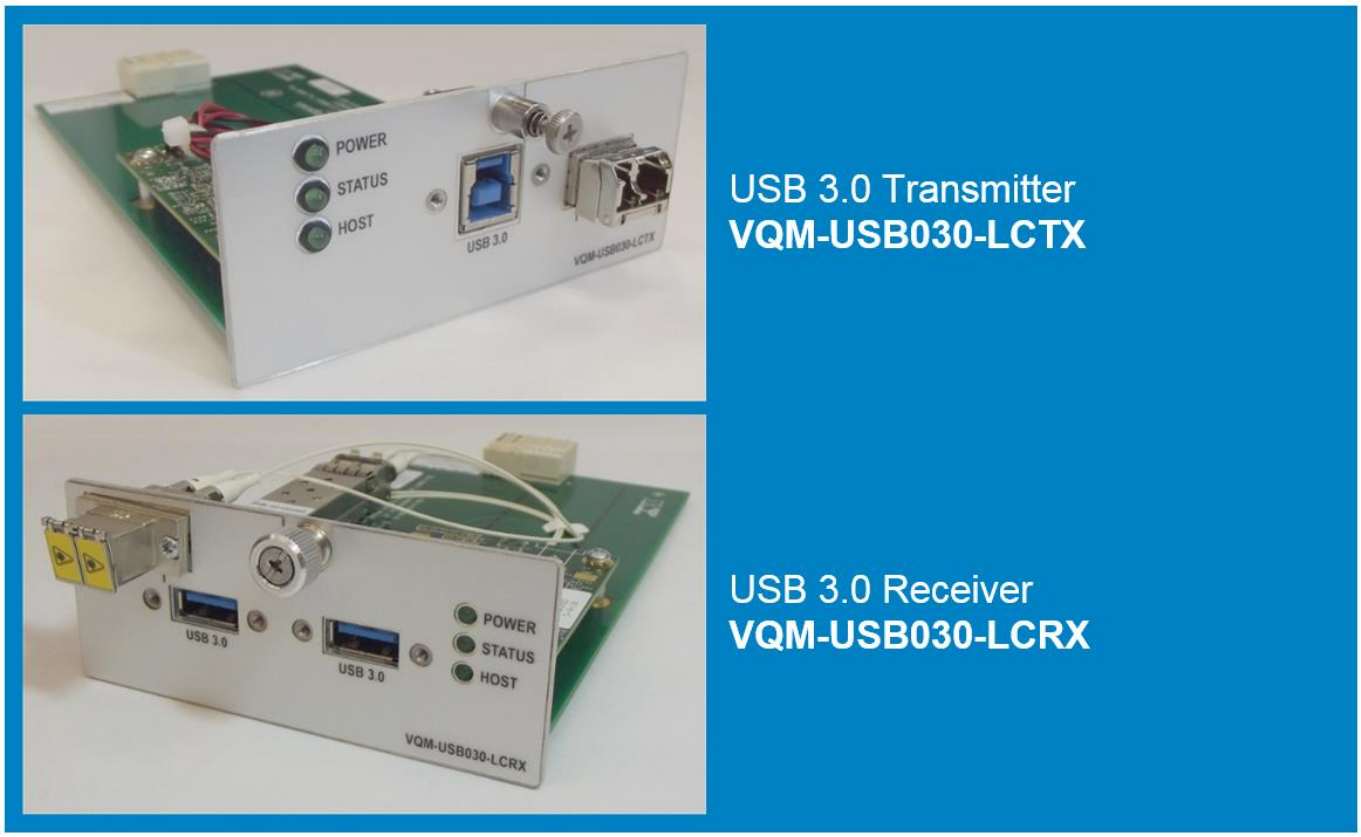
Thinklogical® products are designed and identified as a **Class 1 LASER product.** This means the maximum permissible exposure (MPE) cannot be exceeded when viewing the laser with the naked eye or with the aid of typical magnifying optics (e.g. telescope or microscope).





The Scope of This Document

Thank you for purchasing Thinklogical USB 3.0 Extender products. This Product Manual is intended to provide customers with a full overview of the features, functions, usage and support for Thinklogical's **USB 3.0 Fiber-Optic Extender Transmitter** (VQM-USB030-LCTX) **and Receiver** (VQM-USB030-LCRX) **Q-Series Modules**, capable of transferring data at a rate of up to **5 GB/s, up to 50m** (up to 100m for cameras) away, over a pair of fiber-optic cables.



USB 3.0 is the third major version of the Universal Serial Bus (USB) standard for computer connectivity. Among other improvements, USB 3.0 adds a new transfer mode called SuperSpeed (SS), capable of transferring data at up to ten times as fast as the 480 Mbps (60 MB/s) speed of USB 2.0.

The USB 3.0 Extender is compatible with any Q-Series Chassis, including the Q-1300, Q-2300, Q4300 and T-Q4200.

Introduction

Introducing Thinklogical's newest extension solution for the fastest emerging standard in data transfer yet- USB 3.0 SuperSpeed.

Improvements include higher transfer rates, support for new transfer types, full-duplex data transfers, increased maximum bus power and new power management features.

Q-Series Product Overview

Q-Series System Features

Thinklogical's Q-Series line of KMASS (Keyboard, Mouse, Audio, Serial, Stereo 3D) and Video Modules includes a variety of TX and RX models, including the new USB 3.0 Extender, designed to meet almost any data extension applications. Each module can be used in our stand-alone Q-1300 Chassis or, for more extensive applications, our two-module Q-2300 chassis or our four-module Q-4300 chassis, each of which will support any combination of Transmitters (Tx) and Receivers (Rx).

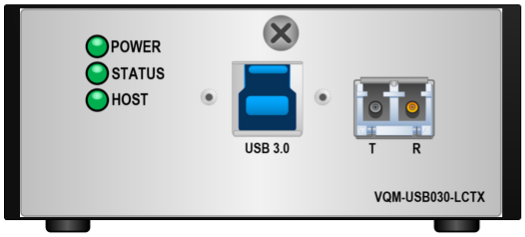
Every Q-Series module is fully compatible with *Thinklogical's* VX and MX Router® product lines.

The Q-Series Chassis

Each Q-Series Chassis provides a framework for mounting, powering, upgrading and interfacing with a variety of modules that perform the functions of a KVM and video distribution system. The Q-4300 chassis supports up to 4 modules, features redundant power supplies, an LCD/button interface and provides convenient upgrade ports for the chassis and modules. Fans mounted inside the chassis provide cooling and all modules and power supplies are hot swappable. The chassis may be rack or desktop mounted. (Please contact a Thinklogical® sales representative for more details.)

Q-4300 Chassis: (VQS-004300) Supports any combination of up to four Q-Series modules. Dual interface and current sharing power supplies. Desktop or 19" rack-mount.

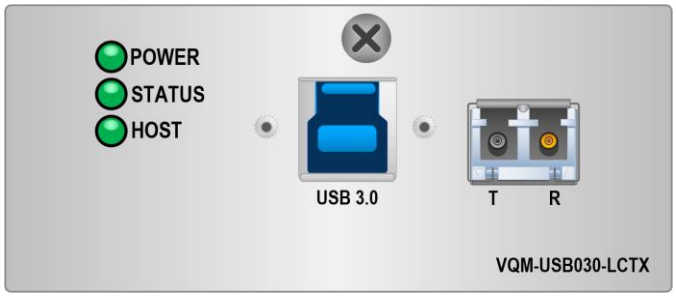
Q-2300 Chassis: (VQS-002300) Supports up to two Q-Series modules. Desktop only.



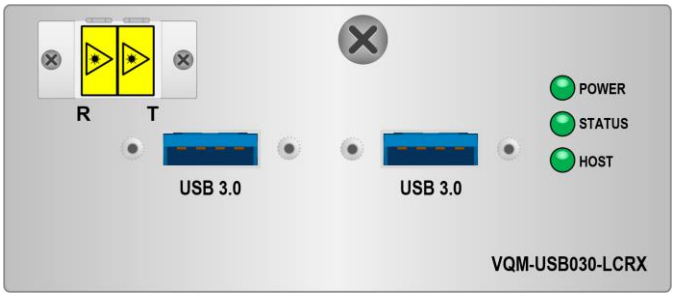
Q-1300 Chassis: (VQS-001300) Supports one Q-Series module. Desktop only.

Operating Features of the USB 3.0 Extender

- **Power, Status and Host indicator LEDs**
- **True plug & play; no software drivers required**
- **5VDC power supply**
- **Works with all major operating systems; Windows®, Linux®, etc.**



USB 3.0 Transmitter **VQM-USB030-LCTX**



USB 3.0 Receiver **VQM-USB030-LCRX**

Advantages of USB 3.0

Speed: **High-bandwidth-device performance improves with USB 3.0 support.** Currently, devices that tax the throughput of USB 2.0 include external hard drives, video capture, webcams, video adapters, multi-channel audio interfaces and Blu-ray burners. High end flash drives can also over-burden USB 2.0 and oftentimes, if multiple devices are connected through a hub, throughput may suffer. **USB 3.0 expands the transfer paths and provides more headroom for devices to deliver a better overall user experience.**

Cable Length: Thinklogical USB 3.0 Transmitter (Tx) and Receiver (Rx) Extenders enable users to extend beyond the approximate three-meter cable limit for USB 3.0 peripheral devices. **Devices can now be located up to 100 meters from the computer**.

Power: The enhancements to *SuperSpeed USB* are not just for higher data rates, but for improving the interaction between device and host computer, including power use and management:

- 80% more power is available for configured devices (900 mA up from 500 mA)

Note: Thinklogical USB 3.0 Extenders are NOT compatible with USB 2.0 or 1.1 systems or devices.

Requirements

Thinklogical's USB 3.0 Extenders require the following items not included with the product:

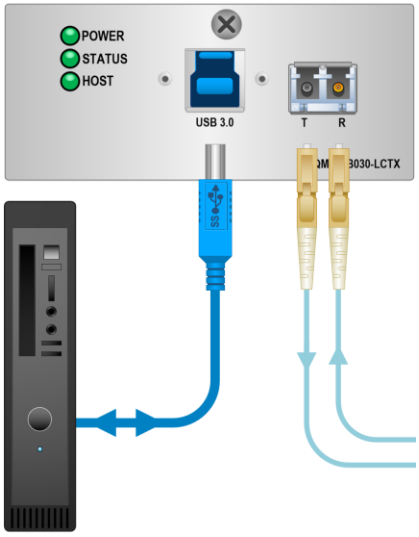
- USB 3.0 compatible host computer and operating system
- USB 3.0 compatible peripheral device(s)
- Two strands of 50/125µm multi-mode fiber-optic cables with LC-type connectors, per transmitter.

Note: Thinklogical USB 3.0 Extenders do NOT support USB 1.1 or USB 2.0. devices. USB 3.0 ports and device connectors are BLUE. Other USB types typically have WHITE or BLACK ports.

Interface Configurations

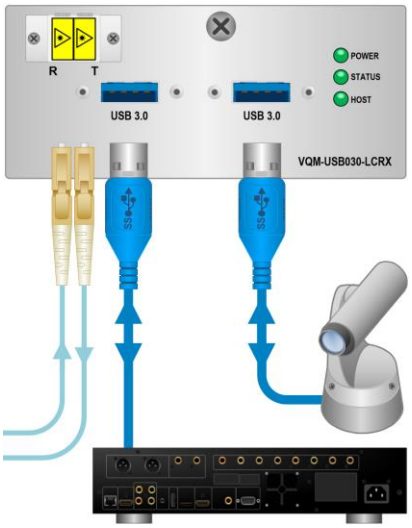
All physical connections to the product use industry-standard connectors. Non-supplied cables that may be needed are commercially available.

All USB 3.0 Transmitter and Receiver Modules are connected to each other via fiber-optic cables. The transmitter connects to the CPU with a supplied USB 3.0 cable. The receiver provides an interface to the USB 3.0 devices.



Transmitter

A USB 3.0 transmitter connects to the CPU/peripheral source through a **USB-B 3.0 connector**. Fiber-Optic Cables connect the Transmitter to the Receiver.



Receiver

A USB 3.0 receiver connects to the peripheral USB devices (storage device, camera, etc.) with **USB-A 3.0 connectors**. Fiber-Optic Cables connect the Receiver to the Transmitter.

Supplied Cables

All **USB 3.0 Transmitter Extenders** will be supplied with a 2 meter USB 3.0 Cable **CBL-000053-002MR.**

USB 3.0 cables and ports are different from lower speed USB cables and ports and can be distinguished by the blue plastic inserts inside the connectors and plugs and by the SuperSpeed "SS" logo.

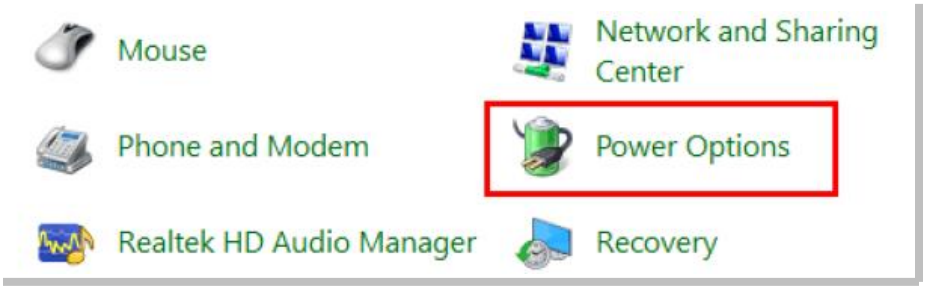
Getting Started

Warning! USB 3.0 does not support SUSPEND modes of operation. As such, your computer should be configured to NOT go into "suspend mode" or to "suspend" the USB ports. Please refer to the following instructions for your operating system.

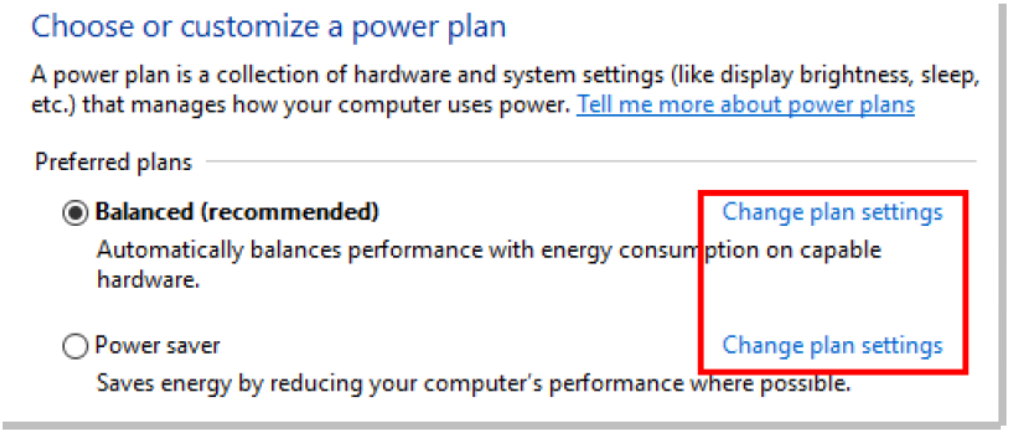
Disable the Computer's SUSPEND Feature

To disable the SUSPEND feature in Windows® (7/8/8.1/10), use the following procedure:

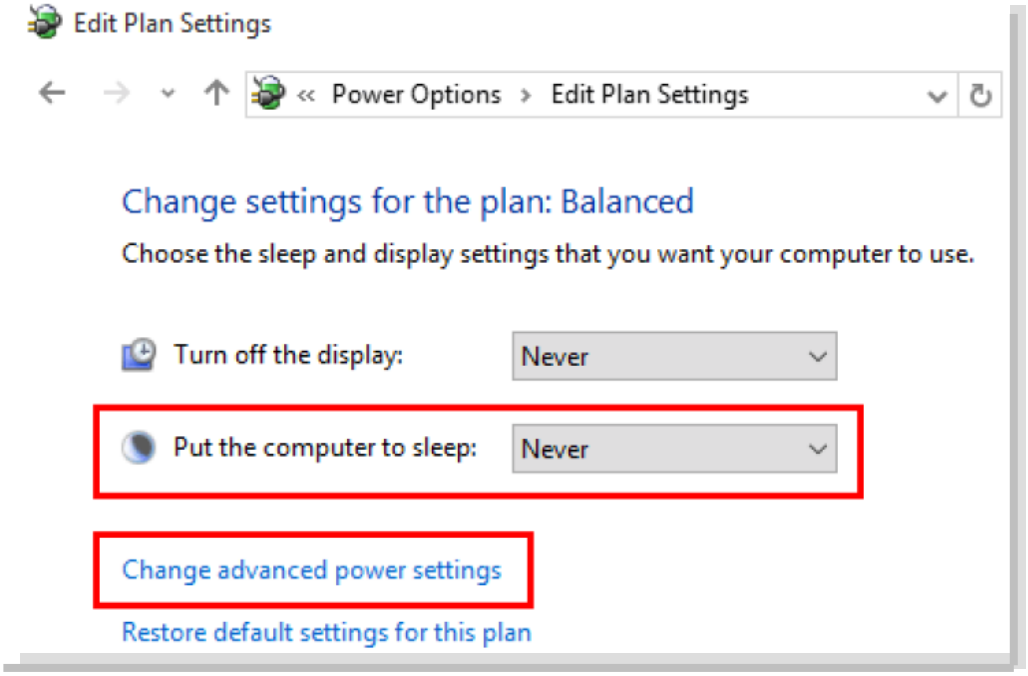
1. For Windows, open the **Control Panel** and select **Power Options**.



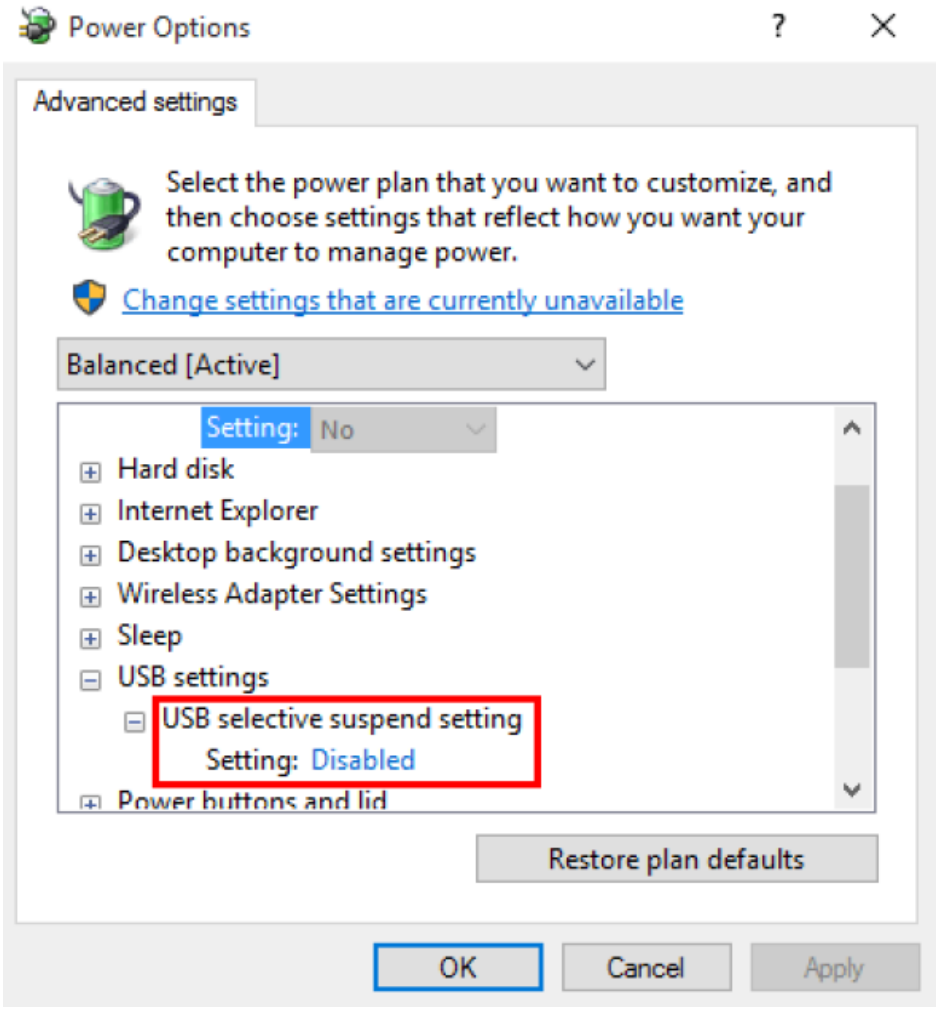
2. For each of the plans listed, click on **Change plan settings**.



3. Select **Never** for **Put the computer to sleep** for all of the configurations presented. Then click **Change advanced power settings**.



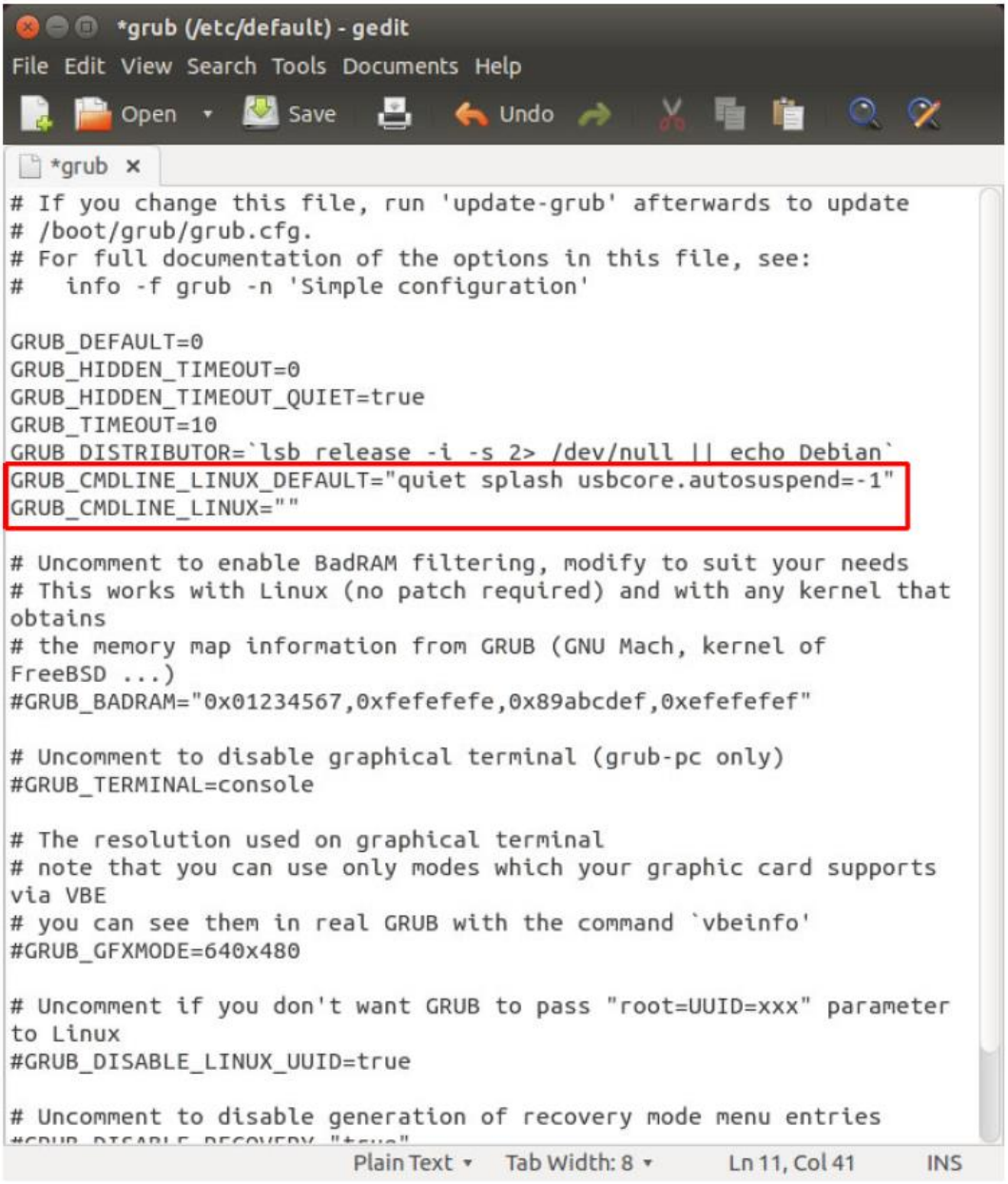
4. Expand **USB settings**.
   Expand **USB selective suspend setting**.
   Select **Disabled** for all options listed.
   Click **OK**



The SUPEND feature will now be disabled.

To disable the SUSPEND feature in Linux® (Example shown for Ubuntu 14.04), use the following procedure:

1. Edit **`/etc/default/grub`** as root
2. Append **`usbcore.autosuspend=1`** to the **`GRUB_CMDLINE_LINUX_DEFAULT`** variable.

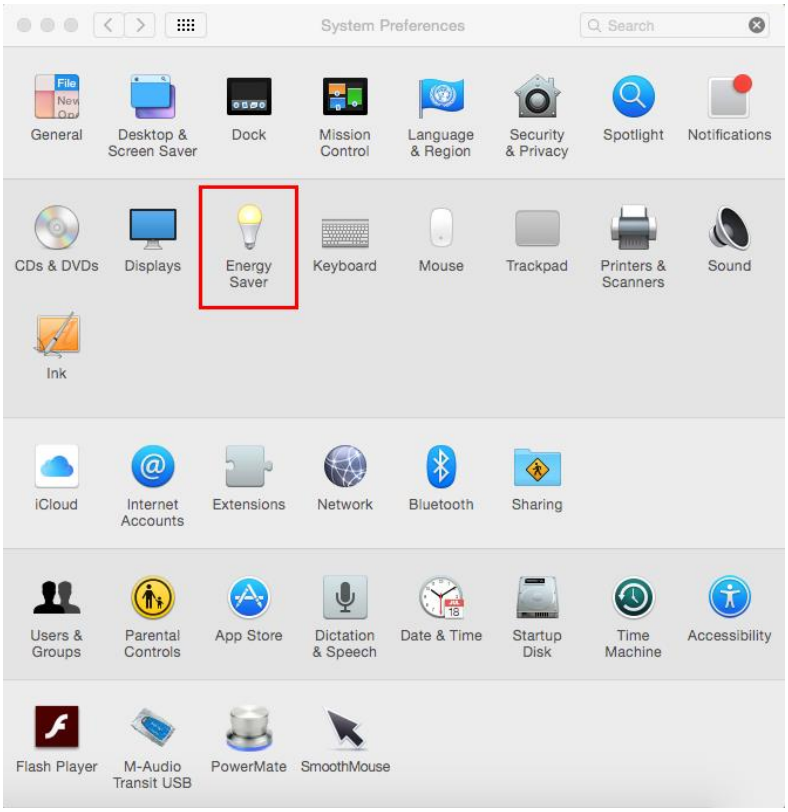


3. Run **`update-grub`** as root.
4. Reboot the host computer.

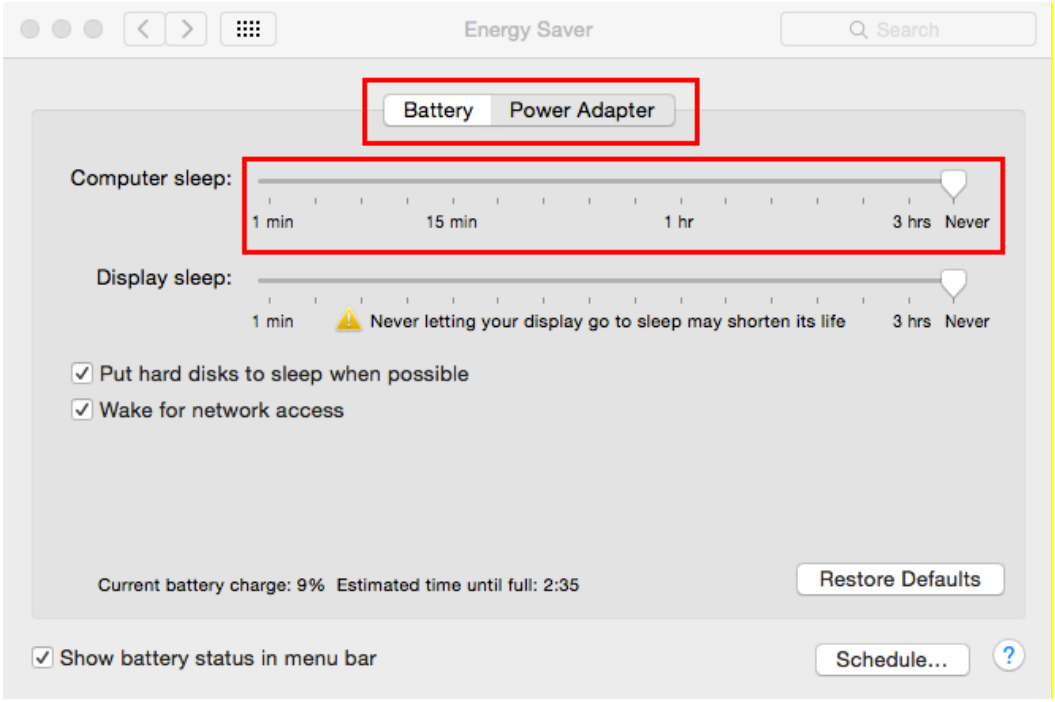
The SUPEND feature will now be disabled.

To disable the SUSPEND feature in OS X (Macintosh), use the following procedure:

1. Open **System Preferences** and select *Energy Saver*.



2. For both the **Battery** and **Power Adapter** power settings, move the slider bar to "Never" for "Computer Sleep".

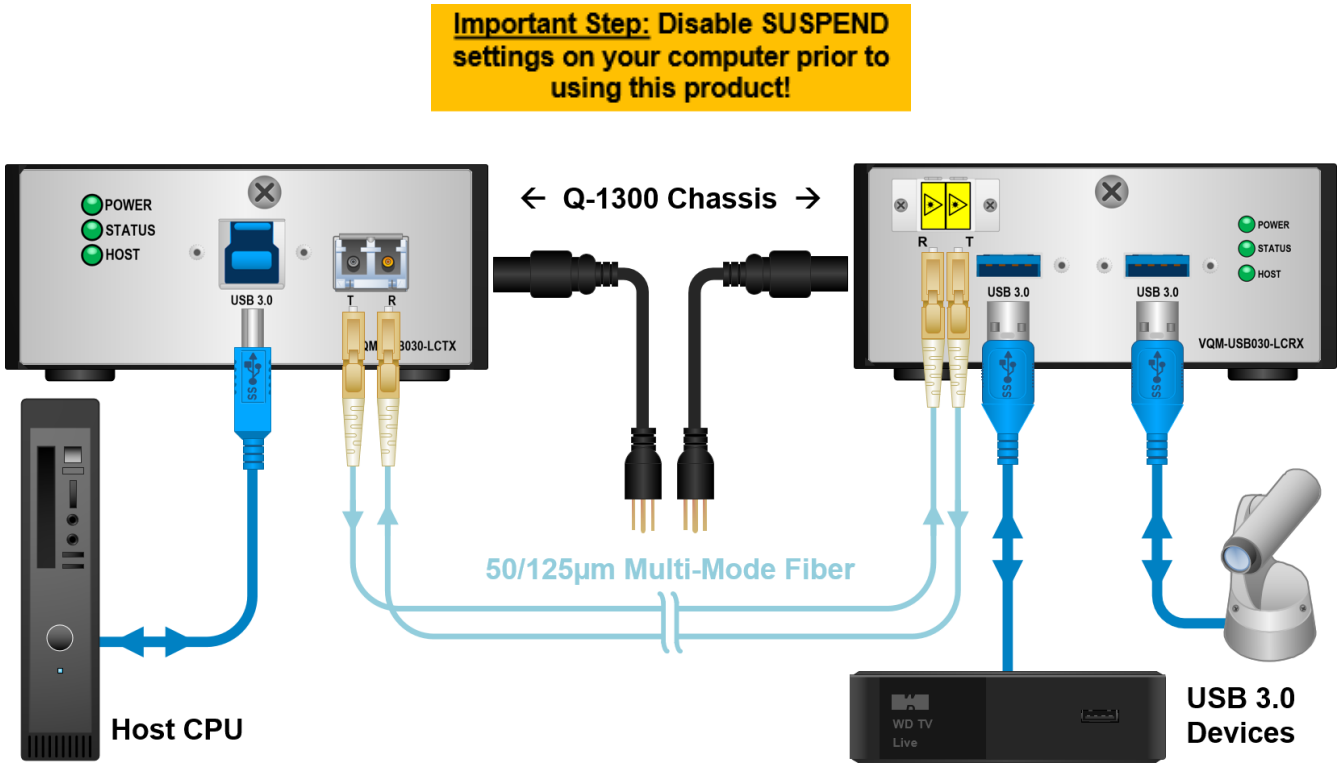


The SUPEND feature will now be disabled.

Installation

All required cables are commercially available. See the **USB 3.0 Extender Quick Start Guide** in Appendix A on pg. 25 for further details.

1. Refer to the USB 3.0 device's documentation and **install any software that may be required** for operation.
2. **Ensure that the host computer's SUSPEND function has been disabled**. (See the "Disable Suspend" instructions for Windows, Linux and OSX beginning on page 9.)
3. **Install each USB 3.0 Transmitter and Receiver Module into a Q-Series Chassis** (Q-1300 Q-2300, Q-4300 or T-Q4200).
4. On each Receiver module, remove the yellow sticker covering the USB 3.0 ports that reads **"Important Step: Disable Suspend settings on your computer prior to using this product!"**
5. On each Transmitter module, remove the yellow sticker covering the USB 3.0 port that reads **"Important Step: Disable Suspend settings on your computer prior to using this product!"**



6. Connect the Receiver to the Transmitter with a pair of **fiber-optic cables**, up to 50 meters long, (100 meters for a camera) with LC connectors. (See Table 1, pg. 14.)
7. Connect **AC power** to the Receiver chassis. If the chassis has a POWER switch, turn it ON.
8. Connect the **USB 3.0 device(s)** to the Receiver with USB 3.0 cables.
9. Connect **AC power** to the Transmitter chassis. If the chassis has a POWER switch, turn it ON.
10. Connect a **USB 3.0 cable from the host computer to the Transmitter**.
11. Ensure that the **device is detected** and the **system is functioning properly**.
12. **It may take up to 30 seconds for a storage device such as an external HDD to become available to the system. In some cases, the drive must be assigned a drive letter in "Administrative Tools > Computer management > Disk Management." Typically, the user must have administrator privileges on the system to do this.**

Transmission Distance and Fiber-Optic Cable Length

The Transmitter and Receiver Extenders are connected by two strands of fiber-optic cable terminated with LC-type connectors. The following maximum distances are achievable, depending upon the application and cabling standards:

TABLE 1

Multi-Mode Fiber Class	Cameras	Storage	Microsoft Kinect
OM2	50m	50m	15m
OM3	100m	50m	15m
OM2 Single Mode	100m	50m	15m

Up to 15m with Microsoft Kinect.
Up to 50m with USB 3.0 storage devices.
Up to 100m when using bulk traffic cameras.

If **premise cabling** is used for the installation, then the above distances must be met when measuring from the Transmitter to the Receiver, including the premise cables and the patch cables. All cables must meet the specified ratings. **Connecting cables must be terminated with LC connectors**.

USB 3.0 Extender Technical Specifications

Power Consumption	**Transmitter: 350 mA @ 5VDC (1.75W)** **Receiver: 350 mA @ 5VDC (1.75W)** **Each USB 3.0 Type A port on the Receiver will supply 900 mA to a connected device for a total of 1800 mA.**
VQM-USB030-LCTX **VQM-USB030-LCRX**	**Dimensions:** **Height:** 1. 592” (40.43mm) **Depth:** 6.366” (161.69mm) **Width:** 3.693” (93.80mm)
Supplied Cables	**Transmitter modules only:** CBL-000053-002MR *USB 3.0, M-M, 2 Meters* **Qty:** 1
Fiber-Optic Cable Distance @ 5 Gbps	**Storage devices: Up to 50 meters** **Cameras: Up to 100 meters**
External Supply Voltage	**Receiver: 5VDC power supplied by Q-Series chassis** **Transmitter is bus-powered. It receives its power from the connected USB 3.0 host**
Operating Temp and Humidity	**0° to 50°C (32° to 122 °F), 20% to 80% RH, non-condensing**
Compliance	**Approvals for US, Canada, and European Union**
Warranty	**12 months from date of shipment. Extended warranties available.**

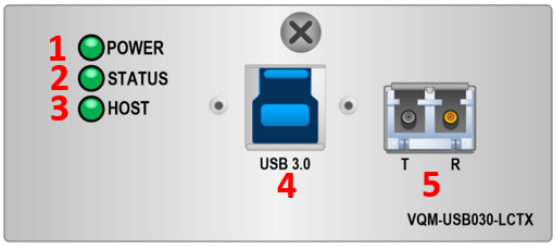
Compatibility

Note: To ensure successful deployment of your Thinklogical USB 3.0 Extender products, please take careful note of the following information regarding compatibility with Thinklogical and other manufacturers' products:

- **Thinklogical USB 3.0 Extenders are NOT compatible with USB 2.0 or 1.1 systems or devices. USB 2.0 and 1.1 devices will not function with this Extender.**
- **USB 3.0 ports and device connectors are BLUE. Other USB types typically have WHITE or BLACK ports.**
- **Thinklogical USB 3.0 Extenders do not support SUSPEND modes of operation. Your computer should be configured to NOT go into "suspend mode" or to "suspend" the USB ports. Please refer to the instructions "Getting Started," beginning on Pg. 9, for your operating system.**
- **When disconnecting a device from the USB 3.0 Extender Receiver, the device must be STOPPED or EJECTED before removal. Failure to do so may result in the USB 3.0 connection being dropped entirely. Connection can usually be restored by re-plugging into the USB 3.0 Extender Transmitter USB Type B port.**
- **Thinklogical's USB 3.0 Extenders comply with USB 3.0 specifications governing the design of USB devices. However, *Thinklogical does not guarantee that all USB 3.0 devices are compatible with this USB 3.0 Extender*, as there are several different configurations that may impact the operation of USB 3.0 devices over extended distances.**
- **USB 3.0 Extender modules that are installed in a chassis that incorporates LCD front panel displays for monitoring system performance and settings (Q-2300, Q-4300 or T-Q4200) do not report any information to the display.**
- **Thinklogical's USB 3.0 Extenders do not utilize any software or firmware that is field updateable.**
- **USB 3.0 Extenders do not require a driver. A properly configured system will recognize it as a native generic USB device.**
- **USB 3.0 Extenders are not interoperable with Thinklogical's 6.25 GB/s *Velocity* products.**

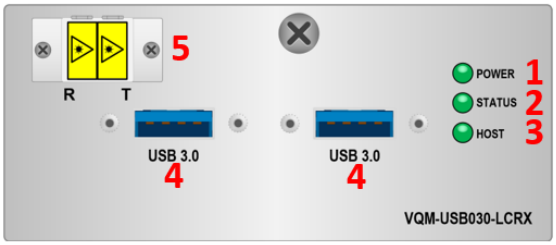
Indicator LEDs and Connection Ports

Transmitter



ITEM	TYPE	DESCRIPTION (Transmitter)
1	Power ON	Unit is properly powered up.
	Power OFF	Unit is NOT properly powered up.
2	Status Blinking	Waiting for Receiver connection
	Status ON	TX and Rx Extenders are linked and operating normally.
	Status OFF	Fault detected. Power-cycle required.
3	Host ON	SuperSpeed Host detected.
	Host OFF	SuperSpeed Host NOT detected.
	Host Blinking	SuperSpeed Host suspended.
4	USB 3.0 Type B Port	Connects the Tx to the Source PC USB.
5	SFP+	Extension link Duplex LC fiber-optic transceiver port.

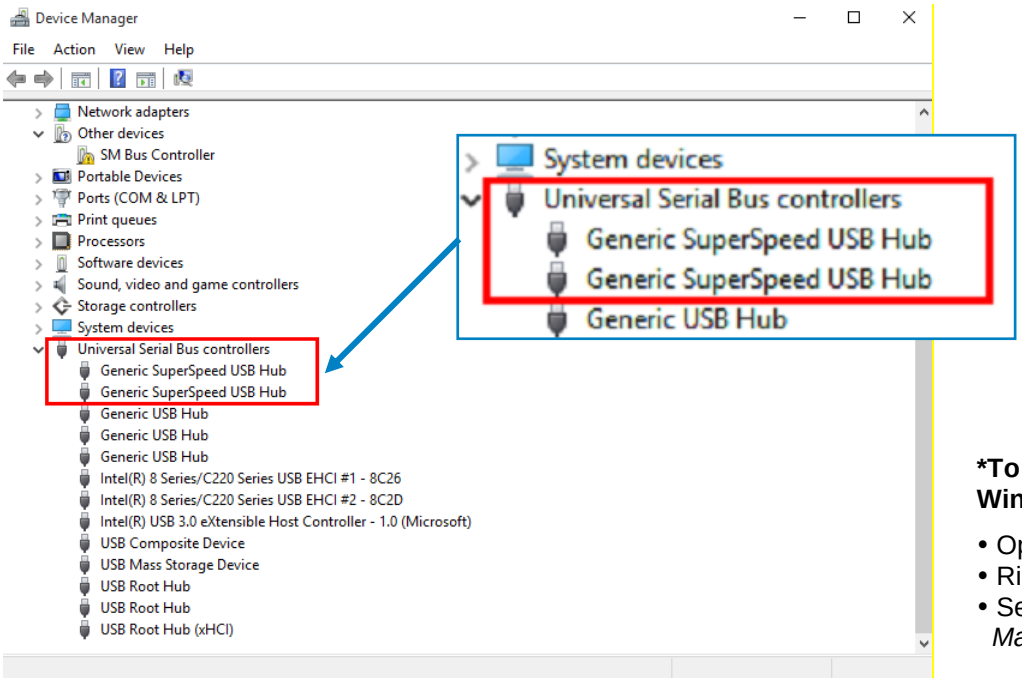
Receiver



ITEM	TYPE	DESCRIPTION (Receiver)
1	Power ON	Unit is properly powered up.
	Power OFF	Unit is NOT properly powered up.
2	Status Blinking	Waiting for connection to the Transmitter
	Status ON	TX and Rx Extenders are linked and operating normally.
	Status OFF	Fault detected. Power-cycle required.
3	Host ON	SuperSpeed Host detected.
	Host OFF	SuperSpeed Host NOT detected.
	Host Blinking	SuperSpeed Host suspended.
4	USB 3.0 Type A Ports	Connects two remote USB 3.0 devices to the Rx.
5	SFP+	Extension link Duplex LC fiber-optic transceiver port.

Verifying Installation

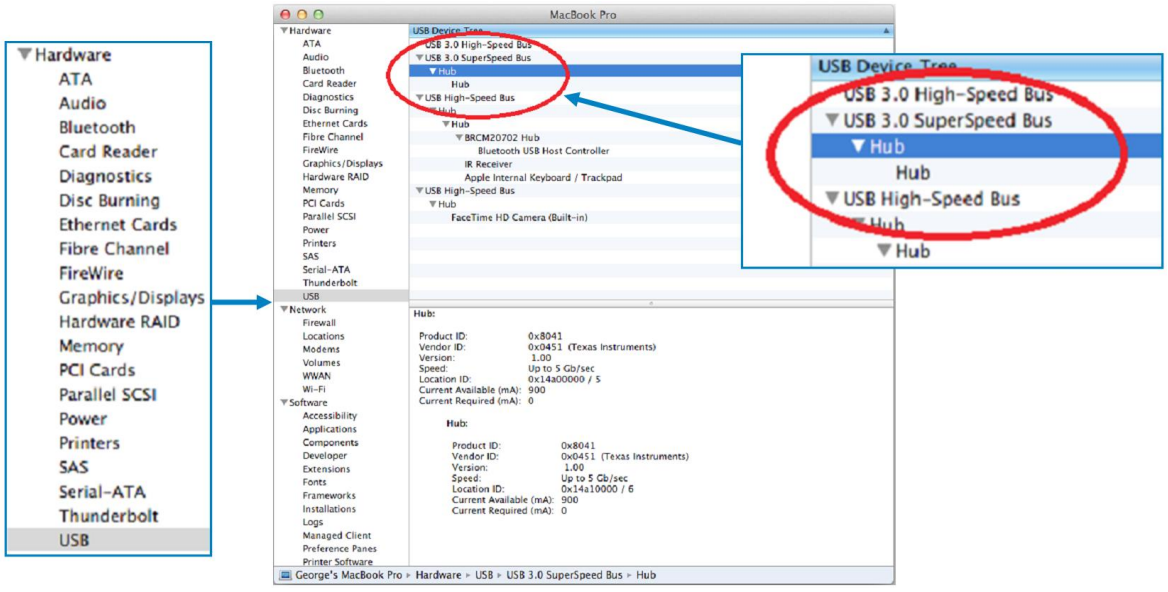
- On the Transmitter and Receiver Extender units, check that the **Power**, **Status**, and **Host** LEDs stay ON. If the Host or Status LEDs stay OFF, then the cabling between the Extenders may not be installed properly or is defective.
- For **Windows** users, open *Device Manager** to confirm that the device has installed correctly. Expand the entry for *Universal Serial Bus controllers* by clicking the "+" sign. If the device has been installed correctly, you will find it listed as two "**Generic SuperSpeed Hubs**" or "**3.0 Hubs**". The specific indication may vary according to the particular operating system, version and chipset being used, but it should be clear that two additional devices are present when the USB 3.0 Extender is connected that are not present when it is not connected.



***To open Device Manager in Windows 7/8/8.1/10:**

- Open the *Start* menu,
- Right-click on "*Computer*"
- Select:
  Manage >> Device Manager

- For **OS X** users, open the *System Profiler* to confirm that the device has installed correctly. In the left column under *Hardware*, select "*USB.*" Inspect the panel on the right. If the device has been installed correctly, you will find it listed as a "**Hub**" under the "**USB 3.0 SuperSpeed Bus.**"



- For **Linux** users, plug a USB 3.0 device into the Receiver Extender. Open a terminal and run the "*lsusb*" command. The Extender should show up as a USB 3.0 hub device with a **Vendor ID of 0000h** and **Product ID of 0000h**.
- If the device is not detected correctly, please consult the **Troubleshooting Guide**, below.

Troubleshooting Guide

The following table provides troubleshooting tips, arranged in the order in which they should be executed in typical situations. If you're still having problems after trying these suggestions, please contact Thinklogical Technical Support (1-203-647-8700) for further assistance. (See pg. 19)

PROBLEM	CAUSE	SOLUTION
All LEDs on Tx are OFF	Tx not receiving Power from the USB Port	• Verify Source PC to Tx USB connection. • Move the USB cable to another USB port on the Source PC.
All LEDs on Tx are OFF	Rx not receiving Power from the AC input	• Ensure proper AC Power adapter connection to the Rx. • Verify proper output from AC source.
Status LEDs on Tx and Rx are BLINKING	• No Tx to Rx connection • Tx not connected to USB 3.0 Port • Source PC does not support USB 3.0	• Ensure an LC multimode fiber-optic cable connects the Tx to the Rx. • Ensure the Tx is connected to a blue USB 3.0 Port. (white or black is typically USB 2.0). • Ensure the Source PC supports USB 3.0 (check the manual). • Verify the integrity of the LC multimode fiber-optic cable connecting the Tx to the Rx or try a replacement cable.
The HOST LED is BLINKING on one or both Extenders	• The Source PC is in SUSPEND, HIBERNATE or SLEEP mode. • The Source PC tried to suspend the USB 3.0 Port connected to the Tx.	1. Follow the steps in "Getting Started," *Disable the SUSPEND Feature*, on pg. 9. 2. Cycle power to the Rx and the devices connected to it. 3. Cycle power to the Tx and Rx and the devices connected to the Rx.
The HOST LED is OFF on both Extenders	• Source PC is not ON. • Tx not connected to Source PC's USB 3.0 Port. • Source PC does not support USB 3.0. • The Tx is malfunctioning.	1. Disconnect all USB devices from the Rx. 2. Disconnect the Tx from the Source PC. 3. Disconnect POWER to the Rx. 4. Reconnect all USB devices to the Rx. 5. Reconnect the Tx to the Source PC. 6. Reconnect POWER to the Rx. • In the "Universal Serial Bus controllers" section of *Device Manager*, check that the Extender is recognized as two "*Superspeed Hubs*" or two "*3.0 Hubs*." (See pg. 17)* • Contact Thinklogical Technical Support (1-203-647-8700) if the problem persists. ** May be recognized by other names, depending on the Operating System and installed drivers.*

PROBLEM	CAUSE	SOLUTION
ALL Tx and Rx LEDs are ON, but the USB device does not operate correctly or is detected as an "Unknown Device."	• The USB device is malfunctioning. • Source PC does not support USB 3.0. • The application software for the device is not operating. • The Tx or Rx is malfunctioning.	1. Disconnect the Tx from the Source PC 2. Connect the USB 3.0 device directly to the Source PC. 3. If the device still does not work, consult the device's user documentation. 4. Update your system BIOS, chipset or USB Host controller drivers from the System/Motherboard manufacturer's website. 5. If the device operates correctly when connected directly to the Source PC, connect a different USB device to the Tx and connect the Tx to the Source PC. 6. If the second device does not operate correctly, the Tx may be malfunctioning. Contact Thinklogical Technical Support (1-203-647-8700) for assistance. If the second device *does* operate correctly, the first device may not be compatible with the Extender.

Before Contacting Technical Support

If you are experiencing problems not referenced in the Troubleshooting Guide, or your equipment is still not working properly, to help us better serve you, **please have the following information ready** before contacting Technical Support at **1-203-647-8700**:

- **Host computer** make and model
- Type of **operating system** installed (e.g. Windows 7, Windows 8, Windows 8.1, Windows 10, OS X, etc.)
- **Part number** and **serial number** of both the Tx and Rx Extender units
- **Make and model** of any USB device(s) attached to the Rx Extender
- Description of the **installation** (Host PC model, transmission media used, and information on the USB devices)
- **Description of the problem**

Regulatory & Safety Compliance

Symbols Found on Our Products

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

Regulatory Compliance

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

North America

Safety
ANSI/UL60950-1: 1st Edition (2003)
CAN/CSA C22.2 No. 60950-1-03

LASER Safety
CDRH 21CFR 1040.10
Class 1 LASER Product

Electromagnetic Interference
US: FCC CFR47, Part 15, Class A
Canada: Industry Canada ICES-003 Issue 2, Revision 1
Europe: EN55022 Class A

Australia & New Zealand

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

European Union

Declaration of Conformity

Manufacturer's Name & Address: **Thinklogical, LLC®**
100 Washington Street
Milford, Connecticut 06460 USA

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

Standards with Which Our Products Comply

Safety

CENELEC IEC 600950-1 2nd Ed. 2005

LASER Safety

IEC60825:2001 Parts 1 and 2
Class 1 LASER Product

Electromagnetic Emissions

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

Electromagnetic Immunity

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

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 exigencies du Règlement sur le matérial brouilleur du Canada.

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

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications in which case the user may be required to take adequate corrective measures at their own expense.

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

Note: The user may notice degraded audio performance in the presence of electromagnetic fields.

Note: If using a keyboard that is noise susceptible, a ferrite ring on the keyboard cable may be needed to comply with Immunity Requirements

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, **05-16**0127 indicates the unit was built in the **5**th month of 20**16**, and is unit number **127**.

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.

Thinklogical Support

Customer Support

Thinklogical® is an engineering company and we will always do our best to ensure that you receive any help you need directly from our most knowledgeable engineers.

We believe that the first line of support comes from the design engineers that developed each particular product.

Therefore, your questions or issues will be handled promptly by our in-house engineers who are most familiar with your products. ***We won't be satisfied until you're satisfied.***

Thank you for choosing Thinklogical® products for your application.

We appreciate your business and are dedicated to helping you successfully use our products.

thinklogical® is always here to help you.

To contact us, please use the following telephone numbers and internet-based methods:

Website

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

Our internet website offers product information on all current systems, including technical specification sheets and installation guides (for viewing online or for download), product diagrams showing physical connections and other information you might need.

Internet: **www.thinklogical.com**

Note: Most online documents are stored as Adobe Acrobat "PDF" files. If you do not have the Adobe Acrobat reader needed to view PDF files, visit *www.adobe.com* for a download.

Email

Thinklogical® is staffed **Monday through Friday from 8:30am to 5:00pm**, Eastern Time Zone. We will always do our best to respond to your email inquiries promptly. Please use one of the following email addresses:

info@thinklogical.com – Information on Thinklogical® and our products.

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

support@thinklogical.com – Product support, technical issues or questions, product repairs and request for Return Authorization.

Telephone

Thinklogical Operator	**1-203-647-8700**
Product & Customer Support:	**1-203-647-8798**
US Commercial & Canada Sales:	**1-203-647-8715**
US Federal Government Sales:	**1-203-647-8716**
Toll Free in the Continental US:	**1-800-291-3211**
International Sales (Europe, Middle East, Africa)**:**	**1-203-647-8704**
International Sales (Asia Pacific, Central & Latin America)**:**	**1-203-647-8734**

Please contact our expert sales staff in Milford, CT. We are here **Monday through Friday from 8:30am to 5:00pm**, Eastern Time Zone. We'll provide a representative's direct dial phone number when you call.

If leaving a voice message, please provide a preferred time to call back so we may reach you at your convenience.

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

Fax

Our company facsimile number is **1-203-783-9949**. Please indicate the nature of the fax on your cover sheet and provide return contact information.

Product Support

Thinklogical's® support personnel are available **Monday through Friday from 8:30am to 5:00pm**, Eastern Time Zone. If your application requires assistance at some time outside of our normal business hours, please contact us beforehand and we will do our best to make any arrangements necessary to help you with your Thinklogical® products. **1-203-647-8798.**

Warranty

Thinklogical, LLC® warrants this product against defects in materials and workmanship for a period of one year from the date of delivery. Thinklogical, LLC® and its suppliers disclaim all other warranties.

Note: Thinklogical, LLC® products carry a one year warranty, with longer term warranties available at time of purchase on most products. Please refer to your product invoice for your products Warranty Terms & Conditions.

Defect remedy shall be the repair or replacement of the product, provided 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, LLC® authorized dealer where you purchased the device, or if you purchased directly, call Thinklogical, LLC at **1-800-291-3211** (USA).

Return Authorization

If you must return a product to Thinklogical® directly, please contact **Customer Support** at: **1-800-291-3211** or **1-203-647-8700**.

If you need to return your Thinklogical® product to us for any reason, please get a

Return Merchandise Authorization Number (RMA#)

from Thinklogical's Product Support Department (1-203-647-8798) before sending the unit in.

Customer Support will ask you to describe the problem and will issue you a **R**eturn **M**erchandise **A**uthorization number (RMA#). Pack the device in its original box, if possible, and return it with the RMA# printed on the outside of the box.

Note: DO NOT return a product to Thinklogical® without a *Return Merchandise Authorization*.

Our Addresses

If you have any product issues or questions or need technical assistance with your Thinklogical® system, please call us at **1-800-291-3211 (USA only)** or **1-203-647-8700** and let us help. If you need to write us or return a product, please use the following address:

Return address for products with Return Material Authorization:

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

PHONE: 1-203-647-8700

Website:	www.thinklogical.com
Facebook:	www.facebook.com/ThinklogicalUSA
LinkedIn:	www.linkedin.com/company/thinklogical
Google+:	http://plus.google.com/u/0/109273605590791763795/about
YouTube:	www.youtube.com/user/thinklogicalNA
Twitter:	@thinklogical

Appendix A: *USB 3.0 Module Quick Start Guide*