ATEN

UEH4102

4-Port USB 2.0 Cat 5 Extender over LAN

User Manual

EMC Information

FEDERAL COMMUNICATIONS COMMISSION STATEMENT:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- ◆ Reorient or relocate the receiving antenna.
- ◆ Increase the separation between the equipment and receiver.
- ◆ Connect the equipment into an outlet on a circuit different from that which the receiver is connected.
- ◆ Consult the dealer/an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

The device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

Suggestion: Shielded twisted pair (STP) cables must be used with the unit to ensure compliance with FCC & CE standards.

KCC Statement
이 기기는 가정용 (B 급) 전자파적합기기로서 주로 가정에서 사용하는것을 목적으로 하며 , 모든 지역에서 사용할 수 있습니다 .
RoHS
This product is RoHS compliant.

User Information

Online Registration

Be sure to register your product at our online support center:

International	http://eservice.aten.com

Telephone Support

For telephone support, call this number:

International	886-2-8692-6959
China	86-400-810-0-810
Japan	81-3-5615-5811
Korea	82-2-467-6789
North America	1-888-999-ATEN ext 4988
	1-949-428-1111

User Notice

All information, documentation, and specifications contained in this manual are subject to change without prior notification by the manufacturer. The manufacturer makes no representations or warranties, either expressed or implied, with respect to the contents hereof and specifically disclaims any warranties as to merchantability or fitness for any particular purpose. Any of the manufacturer's software described in this manual is sold or licensed *as is*. Should the programs prove defective following their purchase, the buyer (and not the manufacturer, its distributor, or its dealer), assumes the entire cost of all necessary servicing, repair and any incidental or consequential damages resulting from any defect in the software.

The manufacturer of this system is not responsible for any radio and/or TV interference caused by unauthorized modifications to this device. It is the responsibility of the user to correct such interference.

The manufacturer is not responsible for any damage incurred in the operation of this system if the correct operational voltage setting was not selected prior to operation. PLEASE VERIFY THAT THE VOLTAGE SETTING IS CORRECT BEFORE USE.

Package Contents

The UEH4102 package consists of:

1 UEH4102L 4-Port USB 2.0 Cat 5 Extender over LAN (Local unit)

1 UEH4102R 4-Port USB 2.0 Cat 5 Extender over LAN (Remote unit)

1 Power Adapter

1 USB 2.0 Type-A to Type-B Cable

1 User Instructions*

Check to make sure that all the components are present and that nothing got damaged in shipping. If you encounter a problem, contact your dealer.

Read this manual thoroughly and follow the installation and operation procedures carefully to prevent any damage to the unit, and/or any of the devices connected to it.

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* Features may have been added to the UEH4102 since this manual was printed. Please visit our website to download the most up-to-date version.

Contents

About this Manual

This User Manual is provided to help you get the most from your system. It covers all aspects of installation, configuration and operation. An overview of the information found in the manual is provided below.

Chapter 1, Introduction, introduces you to the UEH4102 system. Its purpose, features and benefits are presented, and its front and back panel components are described.

Chapter 2, Hardware Setup, describes how to set up your installation. Diagrams showing the necessary steps are provided.

An Appendix, which provides specifications and other technical information regarding the UEH4102.

Conventions

This manual uses the following conventions:

Monospaced	Indicates text that you should key in.
[ ]	Indicates keys you should press. For example, [Enter] means to press the **Enter** key. If keys need to be chorded, they appear together in the same bracket with a plus sign between them: [Ctrl+Alt].
1.	Numbered lists represent procedures with sequential steps.
♦	Bullet lists provide information, but do not involve sequential steps.
→	Indicates selecting the option (on a menu or dialog box, for example), that comes next. For example, Start → Run means to open the *Start* menu, and then select *Run*.
⚠	Indicates critical information.

Product Information

For information about all ATEN products and how they can help you connect without limits, visit ATEN on the Web or contact an ATEN Authorized Reseller. Visit ATEN on the Web for a list of locations and telephone numbers:

International	http://www.aten.com
North America	http://www.aten-usa.com

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Chapter 1
Introduction

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Overview

The UEH4102 4-port USB 2.0 Extender over LAN incorporates patented ExtremeUSB® technology that enables users to extend beyond the standard 5 meter cable limit for USB peripheral devices.

UEH4102 provides true USB 2.0 extension at up to 480 Mbps across a Gigabit Ethernet Local Area Network (LAN). The Local and Remote units are pre-paired with each other through MAC address – no pairing action required during installation.

A true plug-and-play solution, the UEH4102 is compatible with all leading operating systems, and supports all USB peripherals, such as keyboards, mice, interactive white boards, flash drives, hard drives, audio devices, web cameras and any other USB device. The UEH4102 harnesses the full capability of the USB 2.0 standard that provides a durable, reliable and high-quality data communication.

Features

- ◆ Extends USB transmission over a Gigabit Ethernet Local Area Network (LAN)
- ◆ ExtremeUSB® – supports transparent USB 2.0 signals and true plug-and-play (no software or drivers required)
- ◆ Pre-paired networked configuration through MAC Address for simple installation. No pairing action required.
- ◆ Supports automatic connection link between Local and Remote units through DHCP.
- ◆ Up to 100m between extender and switch and between switches over CAT 5e/6/7 cables.
- ◆ Operates with all USB peripherals - flash drives, keyboards, mice, webcams, interactive whiteboards, and more
- ◆ Works with all major operating systems: Windows®, OS X®, and Linux®

Requirements

To complete the installation, the following items (not included with this package) are required:

- USB compatible computer (host computer) with a USB compliant operating system
- USB compatible device
- Cat 5e/6/7 Unshielded Twisted Pair (UTP) cable with two RJ-45 connectors (surface cabling), OR, Cat 5e/6/7 cabling with two information outlets and two Cat 5e/6/7 patch cords with RJ-45 connectors (premise cabling)
- Network must be properly configured in order for full USB 2.0 throughput to be realized and for maximum stability and reliability of your devices.

NOTE:

1. All references to Cat 5e cable in this document represent the minimum requirement. Category 6 or better or STP cable may be substituted.

2. USB 3.0 devices will perform at USB 2.0 speeds if extended through the UEH4102.

3. The cable distance between switches must be no greater than 100m if CAT 5e/6/7 is used as the connection media.

4. Local Extender and Remote Extender to be on the same subnet.

5. Increasing the number of switches between the local and remote extender may reduce the available bandwidth and as a result prevent some devices from functioning properly.

6. Some networks may be configured to block devices with unfamiliar MAC addresses. If this is the case, you will need to provide your network administrator the MAC addresses of the local and remote extender units. These can be found on the label on the bottom of each unit.

<u>Operating Systems</u>

Supported operating systems are shown in the tables, below:

OS		Version
Windows		XP, 7, 8, 8.1, and 10
Linux	RedHat	6.0 and higher
	SuSE	8.2 and higher
Mac		OS 9 and higher

Components

UEH4102L Front View

UEH4102L Rear View
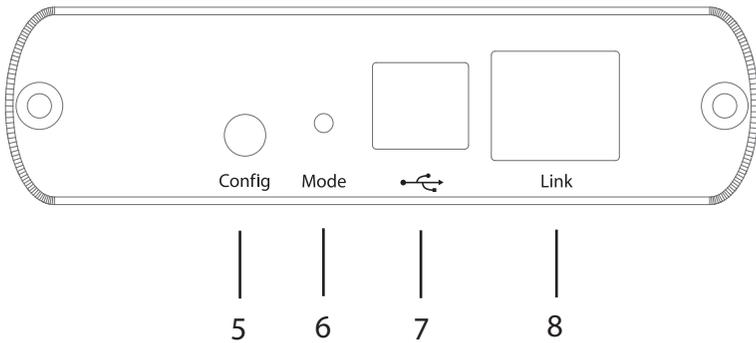
No.	Component	Description
1	Power LED (Blue)	The Power LED lights to indicate the unit is powered.
2	Link LED (Green)	Lights: Connection between the Local and Remote Units is established.
		Blinks slowly: The unit is attempting to establish a link.
		Blinks quickly: The unit is in Pairing Mode.
3	Host LED (Green)	Lights: UEH4102 is properly connected to the host PC.
		Blinks: Extender is in suspended state.
4	Activity LED (Amber)	Lights: Data is being transmitted between the Local and Remote units.
		Dims: Local and Remote units are in suspended mode.
5	Config Port	This port is reserved for use by the manufacturer.
6	Mode Switch	Use this switch to pair extenders.
7	USB Type-B Port	Connects the Local unit to the host computer via USB cable.
8	Link Port	Use a Cat 5e/6/7 cable to connect this port to the Remote unit's Link port.

UEH4102R Front View
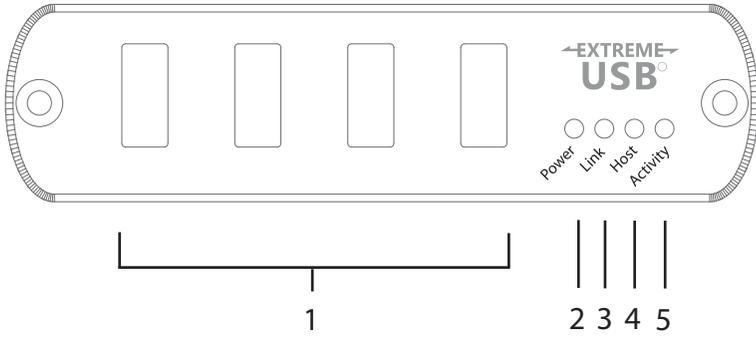
UEH4102R Rear View
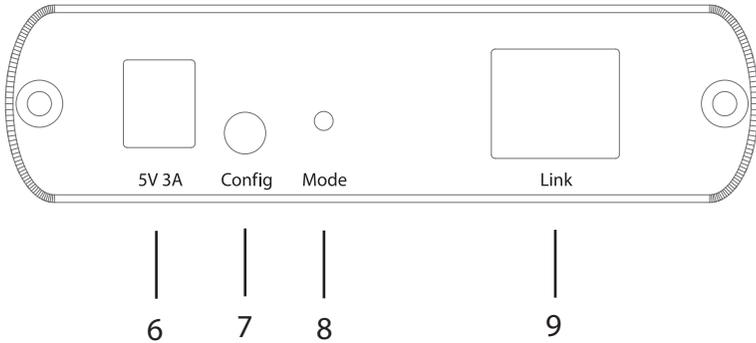
| No.	Component	Description
1	USB Type-A Ports	These four USB Type-A ports connect the peripheral devices to the UEH4102.
2	Power LED (Blue)	The Power LED lights to indicate the unit is powered.
3	Link LED (Green)	Lights: Connection between the Local and Remote Units is established.
		Blinks slowly: The unit is attempting to establish a link.
		Blinks quickly: The unit is in Pairing Mode.
4	Host LED (Green)	Lights: UEH4102 is properly connected to the host PC.
		Blinks: Extender is in suspended state.
5	Activity LED (Amber)	Lights: Data is being transmitted between the Local and Remote units.
		Blinks:
		Dims: Local and Remote units are in suspended mode.
6	Power Jack	The power adapter cable plugs into this jack.
7	Config Port	This port is reserved for use by the manufacturer.
8	Mode Switch	Use this switch to pair extenders.
9	Link Port	Use a Cat 5e/6/7 cable to connect this port to the Local unit's Link port.

Chapter 2
Hardware Setup

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1. Important safety information regarding the placement of this device is provided on page 13. Please review it before proceeding.

2. Make sure that the power to all devices connected to the installation is turned off. You must unplug the power cords of any computers that have the Keyboard Power On function.

Cable Connection

To ensure proper operation, it is recommended that only Cat 5e or better, Unshielded Twisted Pair (UTP) Ethernet cabling is used to connect the Local unit to the Remote unit. The cable must have a straight-through conductor configuration with no crossovers and must be terminated with 8 conductor RJ-45 connectors at both ends. The combined length of any patch cords using stranded conductors must not exceed 10 meters.

To set up your UEH4102 installation, refer to the installation diagram on page 10 (the numbers in the diagrams correspond to the steps below), and do the following:

1. Prepare two CAT 5e/6/7 patch cables (max. 100m) to the UEH4102L/R's rear panel Link port (RJ-45). Connect the other end to a Gigabit Ethernet structure.

2. To power the UEH4102L, connect the included USB 2.0 cable to the USB Type-B port on the rear panel of UEH4102L. Connect the other end to a USB Type-A port of a computer.

3. Use the 4 USB 2.0 ports on UEH4102R to connect additional USB peripheral devices.

4. To power the UEH4102R, plug an AC Adapter power cord into the Power Jack on the rear panel of UEH4102R. Plug the other end into an appropriate power source.

5. Check the front panel LEDs to monitor power, link, host, and activity.

6. Check the host computer to ensure all device drivers and software install correctly.

Installation Diagram
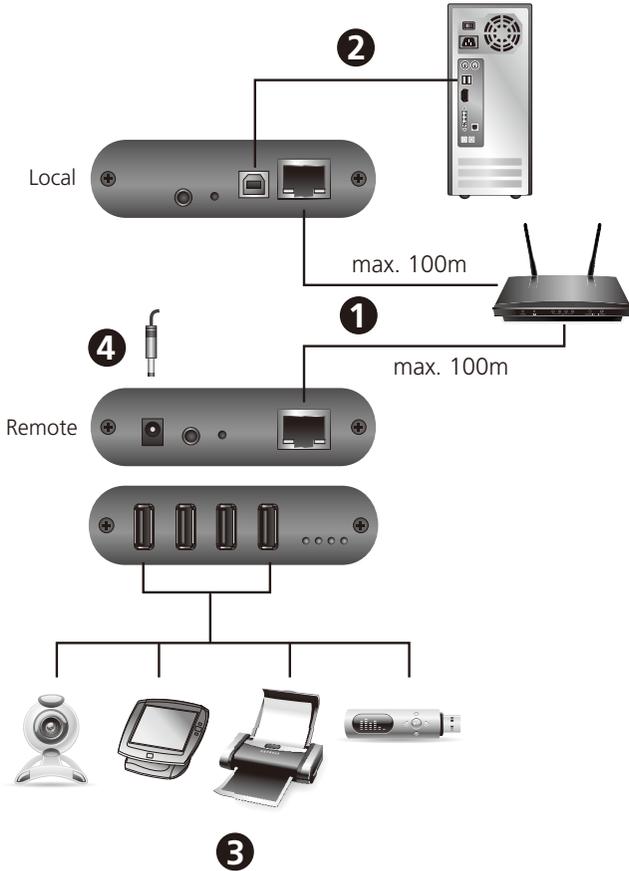
Checking the Installation

After installing the hardware, use the information below to confirm all peripheral devices are connected and working correctly.

1. On the Local (UEH4102L) and (UEH4102R) Remote units, check that the Power, Host, and Link LEDs are on. If the Link LED is blinking, then the network connection between the local and remote extender is not complete or there may be faulty cabling, network components, misconfigured network components, or the local and remote extender may need to be re-paired (see the section *Pairing the Local and Remote Extender* on page 12).

2. For Windows users (XP, 7, 8, 8.1, and 10), open Device Manager to confirm that the UEH4102 has installed correctly. Expand the entry for Universal Serial Bus controllers by clicking the + sign. If the UEH4102 has been installed correctly, you should find it listed as a "Generic USB Hub".

3. For Mac OS X users, open the System Profiler to confirm that the UEH4102 has installed correctly. In the left hand column under Hardware, select "USB" and inspect the right hand panel. If the UEH4102 has been installed correctly, you should find it listed as a "Hub" under the USB High-Speed Bus/USB Bus.

4. If the UEH4102 is not detected correctly or fails to detect, please consult the Troubleshooting Guide.

Note: 1. To open System Profiler in OS X: Open the Finder, select Applications, then open the Utilities folder and double click on the System Profiler icon.

2. To open Device Manager in Windows 10, 8.1, 8, or 7: Left click Start. Type "Device Manager" in the search box and tap Device Manager on the menu.

3. To open Device Manager in Windows XP: On the desktop or in the Start Menu, right-click on My Computer and select Properties. In the System Properties window, click the Hardware tab. In the Hardware tab, click the Device Manager button.

Pairing the Local and Remote Extender

If you purchased a complete system (a local extender and a remote extender package), the UEH4102 extenders are paired out of the box.

If you wish to change the local and remote extender pairings across a network, please do the following:

1. Ensure the local and remote extenders are either directly connected to each other, or are connected to the same subnet on your network.

2. Press the Mode switch on the back of the local extender. The Link LED will start blinking quickly to indicate that the local extender is now in Pairing Mode.

3. Within 10 minutes, press the Mode switch on the back of the remote extender. The Link LED will start blinking quickly to indicate that the remote extender is now in Pairing Mode.

4. The Link LED on both units may start to blink slowly to indicate they are trying to establish a link. If the link is established successfully, the Link LEDs on both units will stay turned on.

Note: 1. After 10 minutes of inactivity in Pairing Mode, the extenders will switch back to its regular mode and reestablish any previous links, if any.

2. To cancel pairing mode, press and hold the Mode switch for less than 10 seconds.

Unpairing an Extender

If, for any reason, an extender needs to have its pairing removed, press and hold the Mode switch for more than 10 seconds.

Appendix

Safety Instructions

- This product is for indoor use only.

- Read all of these instructions. Save them for future reference.

- Follow all warnings and instructions marked on the device.

- Do not place the device on any unstable surface (cart, stand, table, etc.). If the device falls, serious damage will result.

- Do not use the device near water.

- Do not place the device near, or over, radiators or heat registers.

- The device cabinet is provided with slots and openings to allow for adequate ventilation. To ensure reliable operation, and to protect against overheating, these openings must never be blocked or covered.

- The device should never be placed on a soft surface (bed, sofa, rug, etc.) as this will block its ventilation openings. Likewise, the device should not be placed in a built in enclosure unless adequate ventilation has been provided.

- Never spill liquid of any kind on the device.

- Unplug the device from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.

- The device should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.

- The device is designed for IT power distribution systems with 230V phase-to-phase voltage.

- To prevent damage to your installation, it is important that all devices are properly grounded.

- The device is equipped with a 3-wire grounding type plug. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not attempt to defeat the purpose of the grounding-type plug. Always follow your local/national wiring codes.

- Do not allow anything to rest on the power cord or cables. Route the power cord and cables so that they cannot be stepped on or tripped over.

- If an extension cord is used with this device make sure that the total of the ampere ratings of all products used on this cord does not exceed the extension cord ampere rating. Make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.

- To help protect your system from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or un-interruptible power supply (UPS).

- Position system cables and power cables carefully; Be sure that nothing rests on any cables.

- Never push objects of any kind into or through cabinet slots. They may touch dangerous voltage points or short out parts resulting in a risk of fire or electrical shock.

- Do not attempt to service the device yourself. Refer all servicing to qualified service personnel.

- If the following conditions occur, unplug the device from the wall outlet and bring it to qualified service personnel for repair.

    - The power cord or plug has become damaged or frayed.
    - Liquid has been spilled into the device.
    - The device has been exposed to rain or water.
    - The device has been dropped, or the cabinet has been damaged.
    - The device exhibits a distinct change in performance, indicating a need for service.
    - The device does not operate normally when the operating instructions are followed.

- Only adjust those controls that are covered in the operating instructions. Improper adjustment of other controls may result in damage that will require extensive work by a qualified technician to repair.

Technical Support

International

- For online technical support – including troubleshooting, documentation, and software updates: **http://support.aten.com**
- For telephone support, *Telephone Support* on page iii.

North America

Email Support		support@aten-usa.com
Online Technical Support	Troubleshooting Documentation Software Updates	http://www.aten-usa.com/support
Telephone Support		1-888-999-ATEN ext 4988
		1-949-428-1111

When you contact us, please have the following information ready beforehand:

- Product model number, serial number, and date of purchase.
- Your computer configuration, including operating system, revision level, expansion cards, and software.
- Any error messages displayed at the time the error occurred.
- The sequence of operations that led up to the error.
- Any other information you feel may be of help.

Specifications

Function		UEH4102L	UEH4102R
Connectors	USB Port	1 x USB Type-B Female	4 x USB Type-A Female
	Link	1 x Gigabit Ethernet Female	
	Power	N/A	1 x DC Power Jack
USB Specifications		USB 2.0 High/Full/Low Speed	
USB Devices Supported		N/A	4 USB Devices
Network Protocol		10/100/1000BASE-T Ethernet (recommend 1000BASE-T Ethernet for best performance)	
Power Consumption		Bus-Powered	Self-Powered DC 5V, 15W
Environmental	Operating Temp.	0–50°C	0–50°C
	Storage Temp.	-20–70°C	-20–70°C
	Humidity	0–80% RH, Non-condensing	0–80% RH, Non-condensing
Physical Properties	Housing	Metal	Metal
	Weight	0.19 kg	
	Dimensions (L x W x H)	10.00 x 7.60 x 2.60 cm	

Troubleshooting

The UEH4102 complies with USB 1.1 and USB 2.0 specifications governing the design of USB devices. However, ATEN does not guarantee that all USB devices are compatible with the UEH4102, as there are a number of different configurations that may impact the operation of USB devices over extended distances.

Operation problems can be due to a variety of causes. The first step in solving them is to make sure that all cables are securely attached and seated completely in their sockets.

The following table provides troubleshooting tips. The topics are arranged in the order in which they should be executed in most situations. If you are unable to resolve the problem after following these instructions, please contact technical support for further assistance.

Problem	Cause	Solution
All LEDs on Local unit are off.	The Local unit is not receiving enough power from the USB port.	1. Ensure that the USB connection between the local and host computer is properly installed. 2. Move the USB connector to another USB port on the host computer.
All LEDs on the Remote unit are off.	The Remote unit is not receiving power from the AC adapter.	1. Ensure that the AC power adapter is properly connected to the Remote unit. 2. Check that the AC adapter is connected to a live source of electrical power. Check that the Remote power LED is illuminated.

Problem	Cause	Solution
Link LEDs are blinking.	•There is no connection between the local and remote extenders. • Units may not be paired to each other. • Network switches exist on different subnets. • Network switch(es) are blocking traffic from the extenders	1. Ensure both the Local and Remote Extenders are connected together directly or are connected to active network switches. 2. Re-pair the units together. 3. Ensure the network switches can communicate with each other and are on the same subnet. 4. Ensure the network switches are not blocking traffic from the extenders either based on MAC address or due to traffic patterns. 5. Consult with your network administrator.
Link LED on Local unit is on, Host LED on Local unit is off.	◆ The host computer is not powered on. ◆ The Local unit is not connected to the computer. ◆ The computer does not support USB hubs. ◆ The UEH4102 is malfunctioning.	1. Disconnect all USB devices from the Remote unit. 2. Disconnect the Local unit from the computer. 3. Disconnect the Remote unit from the AC power adapter. 4. Reconnect the Local unit to the computer. 5. Reconnect the Remote unit to the AC power adapter. 6. In the Universal Serial Bus controllers section of Device Manager, check that the UEH4102 is recognized as a "Generic USB Hub".
Link LED on the local and the remote extenders are blinking slowly.	• The extenders are paired with each other but have not yet established a link.	1. Wait for a few minutes for the LEDs to go solid. 2. If LEDs do not go solid, contact your network administrator to determine if any traffic is being blocked between the extenders.
My USB device does not work properly.	• The network does not have sufficient bandwidth to support the device.	1. Connect the local and remote extenders directly to each other and try the USB device again.

Problem	Cause	Solution
UEH4102 units were working, but the Host LED on Local/Remote units started blinking.	The Remote unit is in suspend mode. The operating system may put the UEH4102 in suspend mode when the computer is put into a Suspend/Standby state or when no USB devices are attached.	1. Recover/Resume the operating system from Suspend/Standby mode (see your operating system's documentation). 2. Attach a USB device to the UEH4102.
All LEDs on both the Local unit and Remote unit are on, but the USB device does not operate correctly or is detected as an "Unknown Device" in the operating system.	◆ The USB device is malfunctioning. ◆ The computer does not recognize the USB device. ◆ The application software for the device is not operating. ◆ The UEH4102 is malfunctioning.	1. Disconnect the UEH4102 from the computer. 2. Connect the USB device directly to the USB port on the computer. 3. If the device does not operate properly, consult the user documentation for the device. 4. Update your system BIOS, chipset, or USB Host controller drivers from your System/Motherboard manufacturer's website. 5. If the device operates properly when directly connected to the computer, connect another device (of a different type) to the UEH4102. Connect the UEH4102 to the computer. 6. If the second device does not operate, the UEH4102 may be malfunctioning. Contact technical support for assistance. 7. If the second device does operate properly, the first device may not be compatible with the UEH4102.
USB device is attached to Remote USB port but Remote device LED is off.	A USB device must have the appropriate driver installed on the computer operating system.	1. Install the required USB device driver on the computer operating system prior to attaching the USB device to the Remote unit. Please see your USB device manufacturer's website for details. 2. Consult your USB device documentation and power your USB device with the additional, USB device manufacturer supplied, power supply (if available).

Problem	Cause	Solution
USB devices are no longer functioning.	Overcurrent condition has occurred because USB device draws more power than can be supplied per USB specification (500mA).	Power cycle the Remote unit.
LED Host and LINK LEDs on Local/Remote units blink intermittently.	Firmware mismatch between the Local and Remote.	1. Use a different Local/Remote pair which have the same firmware revision. 2. Upgrade the Local/Remote firmware, contact technical support for assistance.

Limited Warranty

ATEN warrants its hardware in the country of purchase against flaws in materials and workmanship for a Warranty Period of two [2] years (warranty period may vary in certain regions/countries) commencing on the date of original purchase. This warranty period includes the LCD panel of ATEN LCD KVM switches. Select products are warranted for an additional year (see *A+ Warranty* for further details). Cables and accessories are not covered by the Standard Warranty.

What is covered by the Limited Hardware Warranty
ATEN will provide a repair service, without charge, during the Warranty Period. If a product is detective, ATEN will, at its discretion, have the option to (1) repair said product with new or repaired components, or (2) replace the entire product with an identical product or with a similar product which fulfills the same function as the defective product. Replaced products assume the warranty of the original product for the remaining period or a period of 90 days, whichever is longer. When the products or components are replaced, the replacing articles shall become customer property and the replaced articles shall become the property of ATEN.

To learn more about our warranty policies, please visit our website:

http://www.aten.com/global/en/legal/policies/warranty-policy/