

# USB 1.1 RV1850

1-port USB 1.1 85m\* Cat 5e Extender System

## User Guide



**←EXTREME→**  
**USB®**

\* Up to 40m for all USB devices; 85m is achievable for most low-speed HID USB devices

Thank you for purchasing the USB 1.1 RV1850 Extender.

Please read this guide thoroughly.

This document applies to Part Number: 01-00366.

**FCC Radio Frequency Interference Statement Warning**

This device complies with FCC Part 15 Subpart B.

**CE Statement**

The product meets European Standard EMC EN 55022 Class A and EN 55024.

**IC Statement**

This Class A digital apparatus complies with Canadian ICES-003.

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## Introduction

The instructions in this guide assume a general knowledge of computer installation procedures, familiarity with cabling requirements, and some understanding of USB devices.

 NOTE emphasizes additional information that could be useful.


 CAUTION symbol indicates important information about an operational requirement.

## USB 1.1 RV1850 Product Contents

Your RV1850 package contains:

- Local Extender
- Remote Extender
- Quick Start Guide


## Requirements

 To complete the installation, you will also require the following items that are not included with the product:

- USB 1.1 or 2.0 compatible computer (host computer) with a USB compliant operating system
- USB 1.1 or 2.0 compatible device(s)
- Cat 5e Unshielded Twisted Pair (UTP) cable with two RJ45 connectors (if using surface cabling), or Cat 5e cabling with two information outlets and two Cat 5e patch cords with RJ45 connectors (if using premise cabling)

**All references to Cat 5e cable in this document refer to solid core and represent the minimum requirement.**

## About the USB 1.1 RV1850

 The USB 1.1 RV1850 enables users to extend USB devices up to 40 meters or 131 feet. Extension distances up to 85 meters may be achievable with low-speed HID devices such as keyboards and mice.

The RV1850 includes the ExtremeUSB® suite of features:



- Transparent USB extension
- True plug and play; no software drivers required
- Works with all major operating systems: Windows®, Mac OS X®, and Linux®

## Local Extender Description

The local extender connects to the computer using the upstream USB Type A connector.



ITEM	TYPE	DESCRIPTION
1	Link Port (RJ45)	Accepts RJ45 connector for Cat 5e cable (or better).
2	Device Port (USB Type A)	Used to connect the local extender to the host computer.

## Remote Extender Description

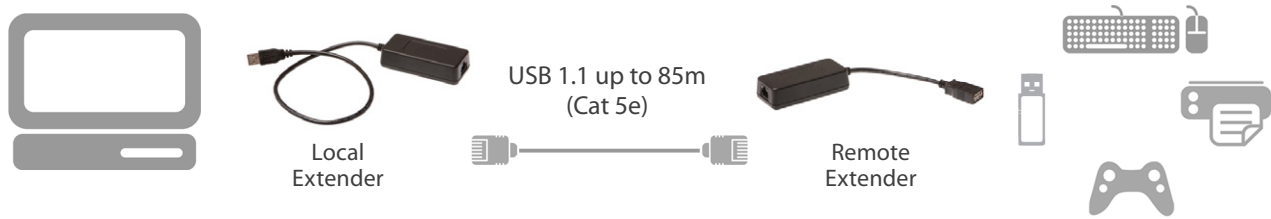
The remote extender provides one downstream USB Type A port for a standard USB device. Additional devices may be connected by attaching USB hubs.



ITEM	TYPE	DESCRIPTION
1	Link Port (RJ45)	Accepts RJ45 connector for Cat 5e cable (or better).
2	Device Port (USB Type A)	Accepts USB device(s).

## Installation Guide

Before you can install the product, you need to prepare your site:



1. Determine where the computer is to be located and set it up.
2. Determine where you want to locate the remote USB device(s).
3. If you are using surface cabling, the product supports a maximum distance of 85m.

OR

- ! If you are using premise cabling, ensure Cat 5e cable is installed between the two locations, with Cat 5e information outlets located near both the computer and the USB device(s), and the total length, including patch cords is no more than 85m.

### Installing the Local Extender

1. Place the local extender near the computer.
2. Plug the USB cable from the local extender into an available USB 2.0/1.1 Type A Port on the computer.

### Connecting the Local Extender to the Remote Extender

- ! Extension length is reduced for each USB hub added to the system. There is a 13.2 meter (43.3 feet) reduction in extension distance for each USB hub added to the system. This includes hubs added on the local extender or remote extender side.
- ! The extender system cannot be daisy chained together with additional extender systems. A system can have only one local extender and one remote extender.

### With Surface Cabling

1. Plug one end of the Cat 5e cable (not included) into the Link port (RJ45) on the local extender.
2. Plug the other end of the Cat 5e cable into the Link port (RJ45) on the remote extender.

## With Premise Cabling

1. Plug one end of a Cat 5e patch cord (not included) into the Link port (RJ45) on the local extender.
2. Plug the other end of the patch cord into the Cat 5e information outlet near the host computer.
3. Plug one end of the second Cat 5e patch cord (not included) into the Link port (RJ45) on the remote extender.
4. Plug the other end of the second patch cord into the Cat 5e information outlet near the USB device.

## Installing the Remote Extender

1. Place the remote extender unit near the USB device(s) in the desired remote location.
2. Plug in your USB Device.

## Connecting a USB Device

1. Install any software required to operate the USB device. Refer to the documentation for the USB device as required.
2. Connect the USB device to the USB port on the remote extender.

## Checking the Installation



Check if the USB device is detected by your operating system.

To open System Profiler in Mac OS X:

Open Finder, select Applications, then open the Utilities folder and double click on the System Profiler icon.

To open Device Manager in Windows 2000 or XP:

Right click "My Computer" then select: Properties >> Hardware tab >> Device Manager

To open Device Manager in Windows Vista or Windows 7:

Open the Start menu, right click on "Computer" then select: Manage >> Device Manager

To open Device Manager in Windows 8:

Right click on the lower left bottom corner of your screen, then select: Device Manager

## Troubleshooting

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.

<b>PROBLEM</b>	<b>CAUSE</b>	<b>SOLUTION</b>
The USB device does not operate correctly.	<ul style="list-style-type: none"><li>• The USB device is malfunctioning.</li><li>• The computer does not recognize the USB device.</li><li>• The application software for the device is not operating.</li><li>• The extender is malfunctioning.</li></ul>	<ol style="list-style-type: none"><li>1. Un-install and re-install the driver for the USB device.</li><li>2. Update the driver for the USB device.</li><li>3. Directly connect the USB device to the Host to verify the USB device operates correctly.</li><li>4. Contact Technical Support.</li></ol>
The USB device is detected as an "Unknown Device" in the operating system.	<ul style="list-style-type: none"><li>• The USB device's timing is outside of the USB 1.1 specification.</li><li>• The extender is malfunctioning.</li></ul>	<ol style="list-style-type: none"><li>1. Connect the remote extender to the local extender using a patch cable.</li><li>2. Unplug the local extender from the host and wait 15 seconds. Then plug the local extender back into the host.</li><li>3. Contact Technical Support.</li></ol>
The USB devices is detected as using too much power in the operating system.	<ul style="list-style-type: none"><li>• The USB device needs more power than the extender can support.</li><li>• The Host is not providing enough power to the extender.</li></ul>	<ol style="list-style-type: none"><li>1. Connect the local extender to a different USB port on the Host.</li><li>2. Connect a self powered USB hub between the remote extender and the USB device.</li></ol>



## Specifications

Range	131 feet (40 meters) over solid core Cat 5e (or better) cable. Up to 85m may be achieved with low-speed HID devices such as a keyboard or mouse.
USB Device Support and Throughputs	High-speed devices (USB 2.0): 12Mbps Full-speed devices: 12Mbps Low-speed devices 1.5Mbps
USB Hub Support	Any single chain can include up to 3 USB hubs depending on which USB devices are being extended. Extension distance will be reduced with each hub added to the system.
USB Host Support	EHCI (USB 2.0) and OHCI/UHCI (USB 1.1)
Maximum Current Available to USB Device at Remote Extender	400mA when local extender is supplied with 700mA
LOCAL EXTENDER	
USB Connector	1 x USB Type A
Link Connector	1 x RJ45
Dimensions	85 mm x 40 mm x 22 mm (3.34" x 1.57" x 0.87")
REMOTE EXTENDER	
Link Connector	1 x RJ45
USB Connector	1 x USB Type A
Dimensions	85 mm x 40 mm x 22 mm (3.34" x 1.57" x 0.87")
ENVIRONMENTAL	
Operating Temperature Range	32°F to 122°F (0°C to 50°C)
Storage Temperature Range	-4°F to 158°F (-20°C to 70°C)
Operating Humidity	20% to 80% relative humidity, non-condensing
Storage Humidity	10% to 90% relative humidity, non-condensing
COMPLIANCE	
EMC	FCC (Class A), CE (Class A)
Environmental	RoHS2 (CE)
Safety	CPSIA, Flammability V-1
SUPPORT	
Warranty	3-year

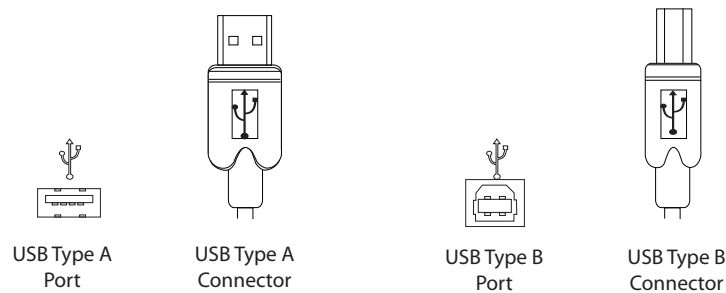
## Technical Glossary

### Category 5e (Cat 5e) Network Cabling

Category 5e cable is commonly also referred to as Cat 5e. This cabling is available in either solid or stranded twisted pair copper wire variants and as UTP (Unshielded Twisted Pair) or STP (Shielded Twisted Pair). UTP cables are not surrounded by any shielding making them more susceptible to electromagnetic interference (EMI). STP cables include shielding over each individual pair of copper wires and provides better protection against EMI.

### USB Cables

USB cables have two distinct connectors. The Type A connector is used to connect the cable from a USB device to the Type A port on a computer or hub. The Type B connector is used to attach the USB cable to a USB device.



### RJ45

The Registered Jack (RJ) physical interface is what connects the network cabling (Cat 5e) to the local extender and remote extender. You may use either the T568A scheme (Table 1) or the T568B scheme (Table 2) for cable termination as the extender uses all four pairs of the cable. RJ45 connectors are sometimes also referred to as 8P8C connectors.

### RJ45 Pin Positioning

Table 1 - T568A Wiring

PIN	PAIR	WIRE	CABLE COLOR
1	3	1	WHITE/GREEN
2	3	2	GREEN
3	2	1	WHITE/ORANGE
4	1	2	BLUE
5	1	1	WHITE/BLUE
6	2	2	ORANGE
7	4	1	WHITE/BROWN
8	4	2	BROWN

Table 2 - T568B Wiring

PIN	PAIR	WIRE	CABLE COLOR
1	2	1	WHITE/ORANGE
2	2	2	ORANGE
3	3	1	WHITE/GREEN
4	1	2	BLUE
5	1	1	WHITE/BLUE
6	3	2	GREEN
7	4	1	WHITE/BROWN
8	4	2	BROWN

