



USB Rover[®] 1850

Cat 5 USB 1.1 Extender

131 feet (40 meters)

User Guide



Thank you for purchasing the USB Rover® 1850,
Cat 5 USB 1.1 Extender

131 feet (40 meters)

Please read this guide thoroughly.

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.

Product Contents

Packaged with:

- Local Extender
- Remote Extender
- Quick Start Guide and Warranty Information


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 5 Unshielded Twisted Pair (UTP) cable with two RJ45 connectors (if using surface cabling), OR, Cat 5 cabling with two information outlets and two Cat 5 patch cords with RJ45 connectors (if using premise cabling)

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

About the USB Rover® 1850 Cat 5 USB 1.1 Extender

 The USB Rover® 1850 enables users to extend USB devices up to 131 feet or 40 meters. Extension distances up to 85 meters may be achievable with low-speed HID devices such as keyboards and mice.

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 5 cabling (or better). |
| 2 | Device Port (USB Type A) | Used to connect the Local Extender unit to the host computer. |

Remote Extender Description

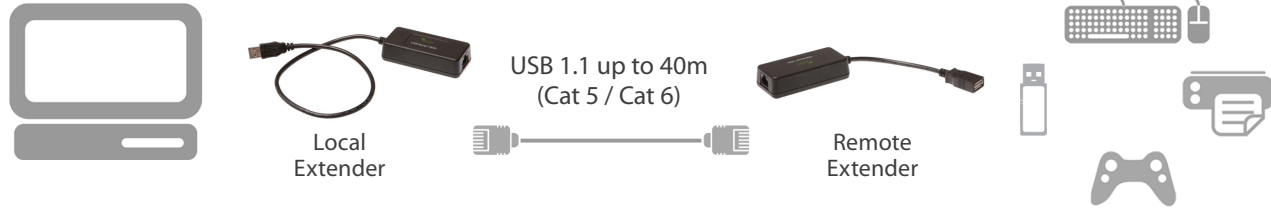
The Remote Extender provides one downstream USB Type A port for a standard USB device. Additional devices may be connected by attaching USB hubs.



| ITEM | TYPE | DESCRIPTION |
|------|--------------------------|---|
| 1 | Link Port (RJ45) | Accepts RJ45 connector for Cat 5 cabling (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 up the computer.
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 40m.

OR

- ! If you are using premise cabling, ensure Cat 5 cabling is installed between the two locations, with Cat 5 information outlets located near both the computer and the USB device(s), and the total length, including patch cords is no more than 40m.

Installing the Local Extender Unit

1. Place the Local Extender unit 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.

Installing the Remote Extender Unit

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

Connecting the Local Extender to the Remote Extender

- ! Extension length is reduced for each USB hub added to the system. There is a 43.3 feet (13.2 meter) 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 cannot be daisy chained together. A system can have only one Local Extender and one Remote Extender.

With Surface Cabling

1. Plug one end of the Cat 5 cabling (not included) into the Link port (RJ45) on the Local Extender unit.
2. Plug the other end of the Cat 5 cabling into the Link port (RJ45) on the Remote Extender unit.

With Premise Cabling

1. Plug one end of a Cat 5 patch cord (not included) into the Link port (RJ45) on the Local Extender unit.
2. Plug the other end of the patch cord into the Cat 5 information outlet near the host computer.
3. Plug one end of the second Cat 5 patch cord (not included) into the Link port (RJ45) on the Remote Extender unit.
4. Plug the other end of the second patch cord into the Cat 5 information outlet near the 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 device port on the Remote Extender unit.

Checking the Installation



Check if the USB device is detected by your Operating System.

To open System Profiler in 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

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.

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

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 keyboard and mouse. |
| USB device support | High-speed devices (USB 2.0) at full-speed (USB 1.1) rates Full-speed devices (USB 2.0 & 1.1) Low-speed devices (USB 2.0 & 1.1) |
| 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 REX unit | 400mA when LEX is supplied with 600mA |
| Local Extender | |
| USB connector | 1 x USB Type A |
| Link connector | 1 x RJ45 |
| Dimensions | 3.34" x 1.57" x 0.98" (85 mm x 40 mm x 25 mm) |
| Remote Extender | |
| Link connector | 1 x RJ45 |
| USB connector | 1 x USB Type A |
| Dimensions | 3.34" x 1.57" x 0.98" (85 mm x 40 mm x 25 mm) |
| 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 |
| Regulatory testing | FCC Part 15 Class A, CE Class A, ICES-003 Class A ESD (EN61000) Criteria A, EFT (EN61000) Criteria A |

Contacting Technical Support

If you are experiencing problems not referenced in Trouble Shooting, you may contact **Technical Support** (techsupport@icron.com) and send the following information:

- Host computer make and model
- Type of Operating System installed (e.g. Windows XP, Mac OS X, Windows 7 etc.)
- Part number and serial number for both the Local Extender unit and Remote Extender unit
- Make and model of any USB device(s) attached to the product
- Description of the installation
- Description of the problem

Warranty Information

Limited Hardware Warranty

Icron Technologies Corporation warrants that any hardware products accompanying this documentation shall be free from significant defects in material and workmanship for a period of up to three years from the date of purchase. Icron Technologies Corporation's hardware warranty extends to Licensee, its customers, and end users.

The Warranty does not include repair of failures caused by: misuse, neglect, accident, modification, operation outside a normal operating environment, failure caused by service of the device by non-authorized servicers, or failure caused by a product for which Icron Technologies Corporation is not responsible.

Hardware Remedies

Icron Technologies Corporation's entire liability and the Licensee's exclusive remedy for any breach of warranty, shall be, at Icron Technologies Corporation's option, either (a) return of the price paid or (b) repair or replacement of hardware, which will be warranted for the remainder of the original warranty period or 30 days, whichever is longer. These remedies are void if failure of the hardware has resulted from accident, abuse, or misapplication.

Limitation of Liability

The hardware warranty set forth in this agreement replaces all other warranties. Icron Technologies Corporation expressly disclaims all other merchantability and fitness for a particular purpose and noninfringement of third-party rights with respect to the hardware.

Icron Technologies Corporation dealer, agent, or employee is authorized to make any modification extension, or addition to this warranty. Under no circumstances will Icron Technologies Corporation, its suppliers or licensors be liable for any costs of procurement or substitute products or services, lost profits, loss of information or data, or any other special, indirect, consequential, or incidental damages arising in any way out of the sale of, use of, or inability to use Icron Technologies Corporation product or service, even if Icron Technologies Corporation, its suppliers or licensors have been advised of the possibility of such damages. In no case shall Icron Technologies Corporation, its suppliers and licensors' liability exceed the actual money paid for the products at issue.

Since some jurisdictions do not allow the limitation of implied warranties of liability for incidental, consequential, special or indirect damages, the above limitation may not always apply. The above limitation will not apply in case of personal injury where and to the extent that applicable law requires such liability.

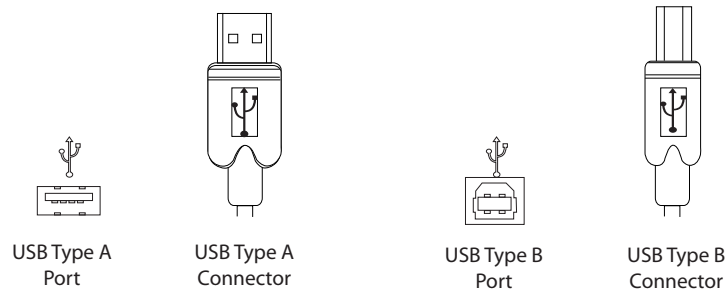
Technical Glossary

Category 5 (Cat 5) Network Cabling

Category 5 cable is commonly also referred to as Cat 5. 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. Category 5 has been superseded by Cat 5e cabling which includes improved data integrity to support high-speed communications.

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 5) to the Local Extender Unit and Remote Extender unit. 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.

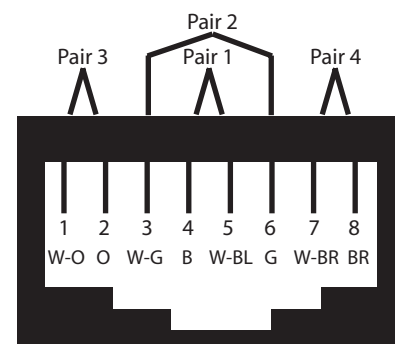
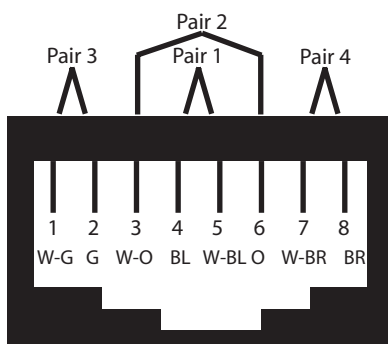
RJ45 Pin Positioning

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 |



Notes: