



# USB Rover<sup>®</sup> 2850

2-port USB 1.1 40m Cat 5 Extender

## User Guide



Thank you for purchasing the USB Rover® 2850,  
2-port USB 1.1 40 m (131 ft) Cat 5 Extender

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 B and EN 55024.

**IC Statement**

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

**Environmental Statement**

This product is RoHS compliant and conforms to the requirements of Directive 2002/95/EC.

**Safety Statements**

This product conforms to the standards set out by the CPSIA.


This product has a flammability rating of V-1.

# Contents

<b>Introduction .....</b>	<b>4</b>
Product Contents.....	4
Requirements.....	4
About the USB Rover® 2850.....	4
Local Extender (LEX) and Remote Extender (REX) Descriptions .....	5
<b>Installation Guide .....</b>	<b>6</b>
Installing the LEX .....	6
Installing the REX.....	6
Connecting the LEX to the REX.....	7
Connecting a USB device .....	7
<b>Troubleshooting .....</b>	<b>8</b>
<b>Specifications.....</b>	<b>9</b>
<b>Contacting Technical Support .....</b>	<b>10</b>
<b>Warranty Information .....</b>	<b>10</b>
<b>Obtaining Warranty Service .....</b>	<b>11</b>
<b>Technical Glossary .....</b>	<b>12</b>

## 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 symbol emphasizes additional information that could be useful.

 CAUTION symbol indicates important information about an operational requirement.

## Product Contents

Packaged with:

- LEX (Local Extender)
- REX (Remote Extender)
- 2m (6 ft) USB A-B Cable
- Quick Start Guide and Warranty Information


## Requirements

 To complete the installation you will require the following items that are not included:

- USB compatible computer (host computer) with a USB compliant operating system
- USB 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 Cat 5e and represent the minimum cable requirement.**

## About the USB Rover® 2850

 The USB Rover® 2850 enables users to extend USB devices up to 40m (131 ft). Extension distances of up to 85 meters may be achievable with some Low-Speed HID devices, such as keyboards and mice.

## Local Extender (LEX) Description

The LEX connects to the host computer using the supplied USB A-B Cable.



ITEM	TYPE	DESCRIPTION
1	Link Port (RJ45)	Accepts RJ45 connector for Cat 5 cabling.
2	Device Port (USB Type B)	Used to connect the LEX to the host computer.

## Remote Extender (REX) Description

The REX provides two downstream USB Type A ports for standard USB devices. Additional devices may be connected by connecting USB hubs.



ITEM	TYPE	DESCRIPTION
1	Link Port (RJ45)	Accepts RJ45 connector for Cat 5 cabling.
2	2 Device Ports (USB Type A)	Connects to USB1.1/2.0 device(s).

## Installation Guide



### Preparing your site

- ! The maximum extension length is reduced by 13.2m (43.3 ft) for each USB hub added between the host computer and the end device.
- ! Extender systems cannot be daisy chained. An extender system can have only one LEX and one REX.

1. Determine where the host computer is to be located and set up the computer.
2. Determine where you want to locate the remote USB device(s).
3. Ensure the cable run (including patch cables) between the host computer and USB device(s) is no greater than 40m.

### Installing the LEX

1. Place the LEX near the host computer.
2. Plug the supplied USB cable into the LEX and into an available USB port on the computer.

### Installing the REX

1. Place the REX near the USB device(s) at the desired remote location.


## Connecting the LEX to the REX

### Surface Cabling

1. Plug one end of the Cat 5 cable into the Link port (RJ45) on the LEX.
2. Plug the other end of the Cat 5 cable into the Link port (RJ45) on the REX.

### Premise Cabling

1. Plug one end of a Cat 5 patch cord into the Link port (RJ45) on the LEX.
2. Plug the other end of the patch cord into the Cat 5 information outlet near the host computer.
3. Plug one end of a second Cat 5 patch cord into the Link port (RJ45) on the REX.
4. Plug the other end of the second patch cord into the Cat 5 (RJ45) information outlet near the USB device.

 The information outlets at the LEX and REX must be directly connected to each other with Cat 5 cabling. There cannot be a switch or router in between the information outlets.

### Connecting a USB Device

1. On the host computer, install any software required to operate the USB device. If necessary, refer to the documentation for the USB device(s).
2. Connect the USB device(s) to the device port(s) on the REX.

## Troubleshooting

The following table provides troubleshooting tips. The solutions 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 (techsupport@icron.com) 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 USB device is not operating.</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></ol>
The USB device is detected as an "Unknown Device" in the operating system.	<ul style="list-style-type: none"><li>• The host computer or USB device may not be capable of supporting extreme distances.</li><li>• The USB device's timing does not conform to the USB 1.1 specification.</li></ul>	<ol style="list-style-type: none"><li>1. Connect the LEX to REX using a short cable.</li><li>2. Unplug the LEX from the host and wait 15 seconds. Then plug the LEX back into the host.</li></ol>
The operating system reports that a power surge occurred or that the USB device is using too much power.	<ul style="list-style-type: none"><li>• The Host is not providing enough power to the Extender.</li></ul>	<ol style="list-style-type: none"><li>1. Connect the LEX to a different USB port on the host.</li><li>2. Connect a self-powered USB hub between the REX and the USB device.</li></ol>



## Specifications

Range	40m (131 ft) over Cat 5e (or better) cable. Up to 85m (279 ft) may be achieved with Low-Speed HID devices such as a keyboard or mouse.
USB device support	Hi-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	XHCI (USB 3.0), EHCI (USB 2.0) and OHCI/UHCI (USB 1.1)
Maximum current available to USB device at REX unit	400mA shared between devices when LEX is supplied with 800mA
LEX	
USB connector	1 x USB Type A
Link connector	1 x RJ45
Dimensions	85mm x 55mm x 22mm (3.34" x 2.17" x 0.87")
Enclosure	Black ABS
REX	
Link connector	1 x RJ45
USB connector	1 x USB Type A
Dimensions	85mm x 55mm x 22mm (3.34" x 2.17" x 0.87")
Enclosure	Black ABS
Environmental	
Operating temperature range	0°C to 50°C (32°F to 122°F)
Storage temperature range	-20°C to 70°C (-4°F to 158°F)
Operating humidity	20% to 80% relative humidity, non-condensing
Storage humidity	10% to 90% relative humidity, non-condensing
Regulatory testing	FCC Part 15 Class B, CE Class B, ICES-003 Class B ESD (EN61000) Criteria A, EFT (EN61000) Criteria A
Environmental	RoHS
Safety	CPSIA, Flammability V-1
Warranty	3 years

## Contacting Technical Support

If you are experiencing problems not resolved by following the steps listed in the Trouble Shooting section, contact **Technical Support** ([techsupport@icron.com](mailto:techsupport@icron.com)) and provide the following information:

- Host computer make and model
- Operating system installed (e.g. Windows XP, Mac OS X, Windows 7 etc.)
- Part number and serial number for both the LEX and REX
- Make and model of all USB device(s) attached to the extender
- 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 the Licensee, its customers, and end users.

The Warranty does not include repair of failures caused by: misuse, neglect, accident, modification, operation outside of a normal operating environment, failure caused by servicing 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 non-infringement of third-party rights with respect to the hardware.

No 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 of 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 products or services, 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.

## **Obtaining Warranty Service**

To obtain warranty service and help us serve you better, please provide the following information with your warranty request:

- Host computer make and model
- Operating system installed (e.g. Windows XP, Mac OS X, Windows 7 etc.)
- Part number and serial number for both the LEX and REX
- Make and model of all USB device(s) attached to the extender
- Description of the installation
- Description of the problem

Contact Icron Technologies Corporation within the warranty period for a Return Material Authorization (RMA) number. Please note that Icron Technologies Corporation will not accept returns without an RMA number. Ensure the product is packaged appropriately for safe shipment and mark the RMA number on the outside of the package. The package must be sent prepaid to Icron Technologies Corporation. It is highly recommended that the package be insured and shipped via a trackable shipping method. The repaired or replaced item(s) will be returned at Icron Technologies Corporation's expense no later than thirty days after receipt the defective product.

Address the returned product to:

RMA Coordinator  
Icron Technologies Corporation  
4664 Lougheed Highway, Suite 221  
Burnaby, BC Canada  
V5C 5T5

## **Contacting Sales**

Email: [sales@icron.com](mailto:sales@icron.com)  
Tel: +1 604 638 3920

## **Contacting Technical Support**

Email: [techsupport@icron.com](mailto:techsupport@icron.com)  
Tel: +1 604 638 3920

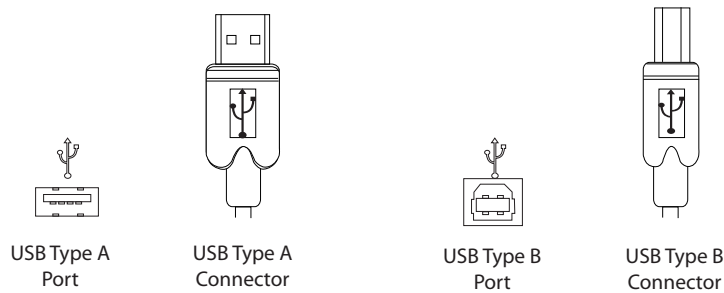
# Technical Glossary

## 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. Cat 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 LEX and REX unit. You may use either the T568A (Table 1) or 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.

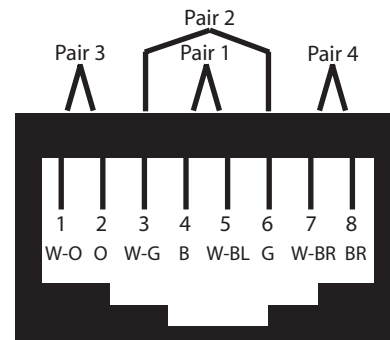
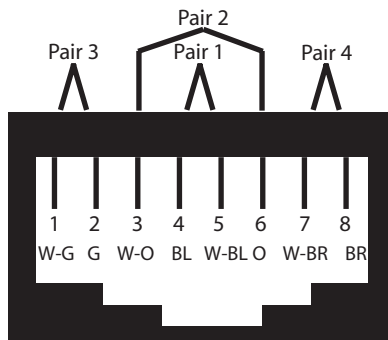
## RJ45 Pin Positioning

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



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