



# USB 2.0 Ranger<sup>®</sup> 2211

Extends USB 2.0 over Cat 5e with Flexible Power  
100 m (330 ft)

## User Guide



Thank you for purchasing the USB 2.0 Ranger® 2211.

Please read this guide thoroughly.

This document applies to, but is not limited to Part Numbers: 00-00315, 00-00316, 00-00317, and 00-00318.

### **FCC Radio Frequency Interference Statement Warning**

This 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.

### **CE Statement**

We, Icron Technologies Corporation, declare under our sole responsibility that the USB 2.0 Ranger 2211, to which this declaration relates, is in conformity with European Standard EN 55022 Class A, EN 61000 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.


 Notes provide additional information that could be useful.

 Caution symbols are followed by very important information about an operational requirement.

## USB 2.0 Ranger 2211 Product Contents

Your Ranger 2211 is packaged with:

- LEX (Local Extender)
- REX (Remote Extender)
- AC Power Adapter (1 country specific power cord)
- USB 2.0 Cable
- Quick Start Guide and Warranty Information

 The Ranger 2211 provides the option to apply power at the local or remote extender. The supplied 24V, 1A power adapter can be connected to either the local or remote extender for normal operation. This option gives added flexibility/convenience for installers who can carry one product for multiple customers.

 **NEVER power BOTH the local extender and remote extender at the same time.**

## 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
- Cat 5e solid core 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)

 This product supports Cat 5e solid core or better cabling (i.e. Cat 6, Cat 7, etc). All references to "Cat 5e" should be read as "Cat 5e or better".

## About the USB Ranger 2211

The USB Ranger 2211 incorporates Icron's patented technology, enabling users to extend beyond the standard 5m cable limit for USB peripheral devices. With the Ranger 2211, USB device(s) can be located up to 100 meters (330 feet) from the computer.

The Ranger 2211 is composed of two individual units: the LEX (Local Extender) and REX (Remote Extender).

 The LEX and REX extenders may be hot to the touch during operation.

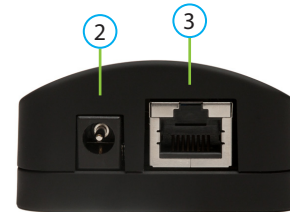
## Local Extender Description

The local extender connects to the computer using a standard USB cable (included). Power for the local extender is provided by the host PC. Power for the remote extender is provided by the 24V AC adapter connected at **either** the local or the remote extender. The local extender delivers power over the Cat 5 extension link to the remote extender when the included power supply is connected to the local extender.

Top View



Left Side



Right Side



ITEM	TYPE	DESCRIPTION
1	Link LED (Green)	Indicates both the local and remote extenders have power and the Cat 5e cable is connected properly.
2	Power Port	The Power Port gives the option to connect power to either the local extender or the remote extender. Connect the supplied 24V, 1A power adapter to <b>either</b> the local extender <b>or</b> remote extender.
3	Link Port (RJ45)	Accepts RJ45 connector for Cat 5e cabling (or better).
4	USB Type B connector	Used to connect the local extender unit to the host computer.

## Remote Extender Description

The remote extender provides a USB Type A port for connecting standard USB devices. The remote extender allows you to connect one USB device directly. Additional devices may be connected by attaching USB hubs to the remote extender. The remote extender is powered **either** directly by the included power supply, or via the Cat 5e link extension cable from the local extender. The USB port delivers 500mA of current to the attached USB device.

Top View



Left Side



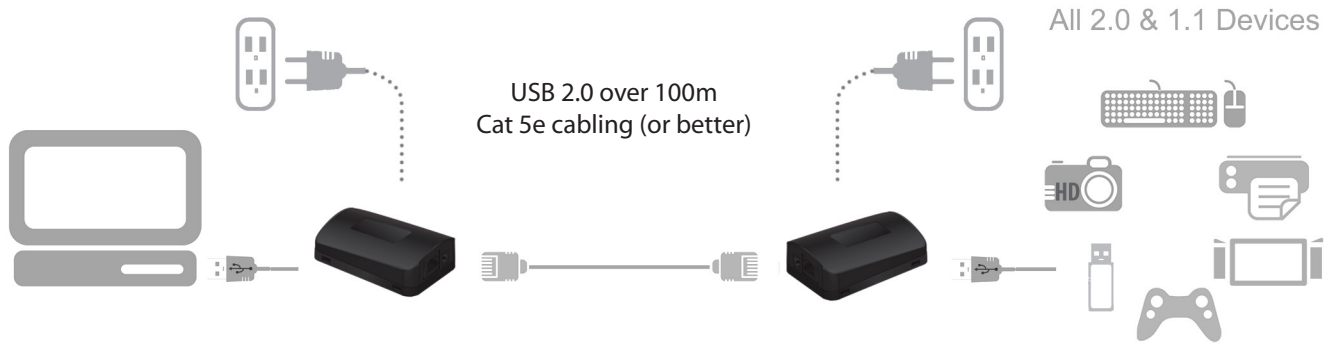
Right Side



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2	Power Port	The Power Port gives the option to connect power to either the local extender or the remote extender. Connect the supplied 24V, 1A power adapter to <b>either</b> the local extender <b>or</b> remote extender.
3	Link Port (RJ45)	Accepts RJ45 connector for Cat 5e cabling (or better).
4	Device Port (USB Type A)	Accepts a USB device.

## Installation Guide

Connect the power adapter to **either** the local or remote extender.



## Mounting the Local Extender or Remote Extender

If mounting is required, the local and remote extenders have two mounting slots on each side for use with cable tie/ziap straps (not included).



## Preparing for Installation

Before you can install the USB Ranger® 2211, 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 USB device(s).
3. If you are using surface cabling, the USB Ranger® 2211 supports a maximum distance of 100m.

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 100m.

## Installing the Local Extender

1. Place the local extender near the computer.
2. Install the supplied USB cable between the local extender and USB port on the host computer.

## Installing the Remote Extender

1. Place the remote extender near the USB device(s) in the desired remote location.

## Installing Flexible Power

1. Connect 24V, 1A supplied AC power adapter to the local **or** remote extender, based on installation requirement.

**!** Use only the AC adapter supplied with the USB Ranger® 2211. Use of substitute adapters may cause permanent damage to the system and will void the warranty.

**!** NEVER plug a power adapter to BOTH local and remote extenders, as this may cause permanent damage to the system and will void the warranty.

## Connecting the Local Extender to the Remote Extender



To ensure proper operation, it is recommended that only solid core Cat 5e or better, Unshielded Twisted Pair (UTP) cabling be used to connect the LEX to the REX. The cabling must have a straight-through conductor configuration with no crossovers and must be terminated with 8 conductor RJ45 connectors at both ends. The combined length of any patch cords using stranded conductors must not exceed 10m.

### With Surface Cabling

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

### With Premise Cabling

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



## Checking the Installation

1. Check that the green Link LED is illuminated on the local and remote extender.
2. For Windows users (2000, XP, Vista, 7), open Device Manager to confirm that the USB Ranger® 2211 has installed correctly. Expand the entry for Universal Serial Bus controllers. If the USB Ranger® 2211 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 USB Ranger® 2211 has installed correctly. In the left hand column under Hardware, select “USB” and inspect the right hand panel. If the USB Ranger® 2211 has been installed correctly, you should find it listed as a “Hub” under the USB High-Speed Bus/USB Bus.
4. If the USB Ranger® 2211 is not detected correctly or fails to detect, please consult the Troubleshooting Guide.



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.

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.

## Connecting a USB Device

1. Install any software required to operate the USB device(s). Refer to the documentation for the USB device(s), as required.
2. Connect the USB device to the device port on the remote extender.
3. Check that the device is detected and installed properly in the operating system.

## Compatibility

The USB Ranger® 2211 complies with USB 1.1 and USB 2.0 specifications governing the design of USB devices. However, Icron Technologies Corporation does not guarantee that all USB devices are compatible with the USB Ranger® 2211, as there are a number of different factors that may impact the operation of USB devices over extended distances.

## 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
USB device is attached but not functioning.	<ul style="list-style-type: none"> <li>• The USB device requires drivers that were not installed.</li> <li>• The USB device does not support USB hubs.</li> <li>• The USB device has malfunctioned.</li> </ul>	<ol style="list-style-type: none"> <li>1. Install the required USB device driver on the computer operating system prior to attaching the USB device into the remote extender. Please see your USB device manufacturer's website for details.</li> <li>2. In the Universal Serial Bus controllers section of Device Manager, check that the USB device is enumerated.</li> <li>3. Contact Technical Support for assistance.</li> </ol>
USB device is attached but not functioning.	<ul style="list-style-type: none"> <li>• Overcurrent condition has occurred because the USB device has drawn more current than can be supplied per USB specification (500mA). Operating systems may generate a status bubble indicating an issue.</li> </ul>	<ol style="list-style-type: none"> <li>1. Power cycle remote extender: Unplug the power adapter from the extender, wait approximately 30 seconds, plug the power adapter into the extender.</li> <li>2. If overcurrent continues to occur, either:               <ol style="list-style-type: none"> <li>(a) the USB device may use more power than the USB specification, or</li> <li>(b) the USB device may be damaged.</li> </ol> </li> <li>3. Consult your USB device documentation and power your USB device with the required power supply.</li> </ol>
Link LED on the local and remote extenders blink intermittently.	<ul style="list-style-type: none"> <li>• The Cat 5 cable connecting the local extender and remote extender is faulty.</li> <li>• Firmware mismatch between the local and remote extenders</li> </ul>	<ol style="list-style-type: none"> <li>1. Ensure the Cat 5 cabling is of decent quality.</li> <li>2. Use a different local and remote extender pair which have the same firmware revision.</li> <li>3. Upgrade the local and remote extender firmware; contact Technical Support for assistance.</li> </ol>

<b>PROBLEM</b>	<b>CAUSE</b>	<b>SOLUTION</b>
Link LED on the local and remote extenders is off.	<ul style="list-style-type: none"> <li>• The remote extender is not receiving power.</li> <li>• The local extender is not receiving power.</li> <li>• The link cable is malfunctioning.</li> <li>• The USB Ranger® 2211 is malfunctioning.</li> </ul>	<ol style="list-style-type: none"> <li>1. Confirm Host PC is on and providing power to local extender.</li> <li>2. Ensure the supplied AC power adapter is properly connected to the local extender <b>or</b> the remote extender.</li> <li>3. Ensure the Cat 5 cabling between the local and remote extenders is properly installed or replace the link cable.</li> <li>4. Check that the AC adapter is connected to a live source of electrical power.</li> <li>5. Contact Technical Support for assistance.</li> </ol>

## NOTES

## Frequently Asked Questions

Please visit Icron's website for answers to FAQs: <http://www.icron.com/faq>

## Specifications

Range	100m (330ft) over Cat 5e (or better) cable
USB device support	High-speed devices (480 Mb/s) (USB 2.0) Full speed devices (12 Mb/s) (USB 1.1) Low speed devices (1.5 Mb/s) (USB 1.1)
USB hub support	Any single chain can include up to 4 USB hubs plus 1 USB Ranger® 2211.
USB host support	EHCI (USB 2.0) and OHCI/UHCI (USB 1.1)
Maximum USB devices supported	14 USB devices or 4 USB hubs with 10 USB devices.
AC adapter	Input: 100/240 V AC, 50 – 60 Hz, 600 mA maximum Output: 24V DC, 1A
AC adapter connector	2.1 mm centre-positive jack
Current available to USB device at remote extender	500 mA
System shipping weight	1.35 lbs. (0.62 kg)
Local Extender	
USB connector	1 x USB Type B
Link connector	1 x RJ45
Dimensions	3.35" x 1.10" x 2.25" (85 mm x 28 mm x 57 mm)
Remote Extender	
USB connector	1 x USB Type A
Link connector	1 x RJ45
Dimensions	3.35" x 1.10" x 2.25" (85 mm x 28 mm x 57 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 (Class A), IC (Class A), CE (Class A) FCC Part 15 Class A, CE Class A, ICES-003 Class A

## **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 two year 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 non-infringement 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.

## Obtaining Warranty Service

To obtain warranty service, you must contact Icron Technologies Corporation within the warranty period for a Return Material Authorization (RMA) number. Icron Technologies Corporation will not accept returns without an authorized RMA number. Be sure you have the serial numbers of the local extender and remote extender before calling. Package the product 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. We recommend that you insure it or send it by a method that provides for tracking of the package. The repaired or replaced item will be shipped to you, at Icron Technologies Corporation's expense, not later than thirty days after Icron Technologies Corporation receives 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

To help us serve you better, please include the following information with your technical support request:

- 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 of both local and remote extenders
- Make and model of any USB device(s) attached to the USB Ranger® 2211
- Description of the installation
- Description of the problem

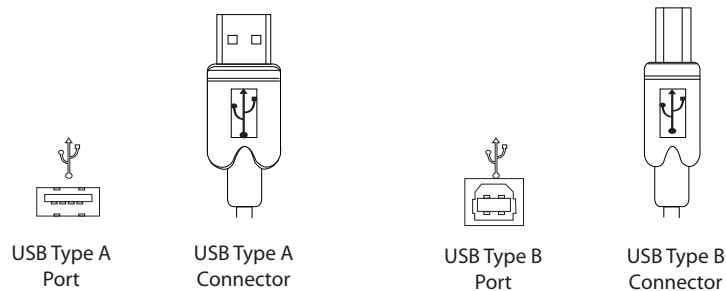
## Technical Glossary

### 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 and remote extender. You may use either the T568A scheme (Table 1) or the T568B scheme (Table 2) for cable termination as the USB Ranger® 2211 uses all four pairs of the cable. RJ45 connectors are sometimes also referred to as 8P8C connectors.

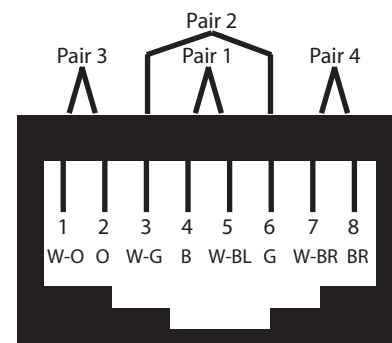
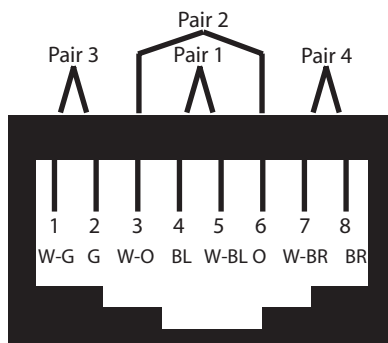
### RJ45 Pin Positioning

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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