

# Icron USB 3-2-1 Raven™ 3104

4-Port USB 3.1, 100m CAT 6a/7  
Point-to-Point Extender System

## User Guide



Thank you for purchasing the USB 3-2-1 Raven™ 3104.

Please read this guide thoroughly.

This document applies to the following part numbers:

| Model                      | North American System | European System | United Kingdom System | Australia System | Japan System |
|----------------------------|-----------------------|-----------------|-----------------------|------------------|--------------|
| Icron USB 3-2-1 Raven 3104 | 00-00421              | 00-00422        | 00-00423              | 00-00424         | 00-00425     |

### **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, a Maxim Integrated brand, declare under our sole responsibility that the USB 3-2-1 Raven™ 3104, to which this declaration relates, is in conformity with European Standards EN 55024, EN 55032, EN 61000, and RoHS Directive 2011/65/EU + 2015/863/EU.

### **IC Statement**

This Class B digital apparatus complies with Canadian ICES-003 Issue 6.

### **WEEE Statement**

The European Union has established regulations for the collection and recycling of all waste electrical and electronic equipment (WEEE). Implementation of WEEE regulations may vary slightly by individual EU member states. Please check with your local and state government guidelines for safe disposal and recycling or contact your national WEEE recycling agency for more information.

### **Product Operation and Storage**

Please read and follow all instructions provided with this product and operate for intended use only. Do not attempt to open the product casing as this may cause damage and will void warranty. Use only the power supply provided with this product (if applicable). When not in use, product should be stored in a dry location between -20°C and 70°C.

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# Introduction

This guide provides product information for the USB 3-2-1 Raven™ 3104, installation instructions and troubleshooting guidelines. The instructions in this guide assume a general knowledge of computer installation procedures, familiarity with cabling requirements and some understanding of USB devices.



**NOTE:** Notes provide additional information that could be useful.



**CAUTION:** Cautions provide important information about an operational requirement.

## Product Contents

Your Raven 3104 extender system contains:

- LEX (Local Extender)
- REX (Remote Extender)
- USB 3.1 Gen 1 Cable
- LEX 24V DC 1A International Power Adapter
- REX 24V DC 2.71A International Power Adapter
- 2 x Country Specific Power Cables
- Quick Start Guide

## Features

The Raven 3104 incorporates ExtremeUSB-C™ technology, enabling users to extend USB 3.1 beyond the standard 3m cable limit for USB 3.1 peripheral devices. This extender system is composed of two individual units, the LEX and the REX, and has the following key features:

- Up to 100m of extension when directly connected over CAT 6a/7 cable
- Support for new USB 3.1 Gen 1/2 host controllers and devices (up to 5Gbps)
- Supports all Control, Interrupt, and Bulk devices (not recommended for Isochronous devices)
- Backwards compatible to USB 2.0 devices

The Raven 3104 includes the ExtremeUSB-C™ suite of features:



- Transparent USB extension supporting USB 3, 2 and 1
- True plug and play; no software drivers required
- Works with all major operating systems: Windows®, macOS™, Linux® and Chrome OS™



**NOTE:** For best performance install the Raven 3104 using Shielded or Foiled CAT 6a/7 cable.

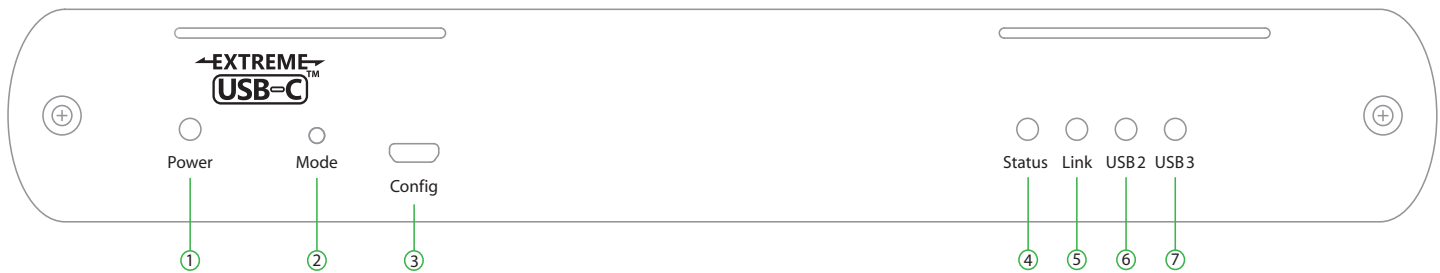


**NOTE:** Contact [Icron Technical Support](#) and fill out an online support ticket requesting Raven 3104 unsupported devices.

## The LEX Unit

The LEX unit connects to the computer using a standard USB 3.1 Gen 1 cable. Power for this unit is provided by the included 24V 1A adapter.

Front View



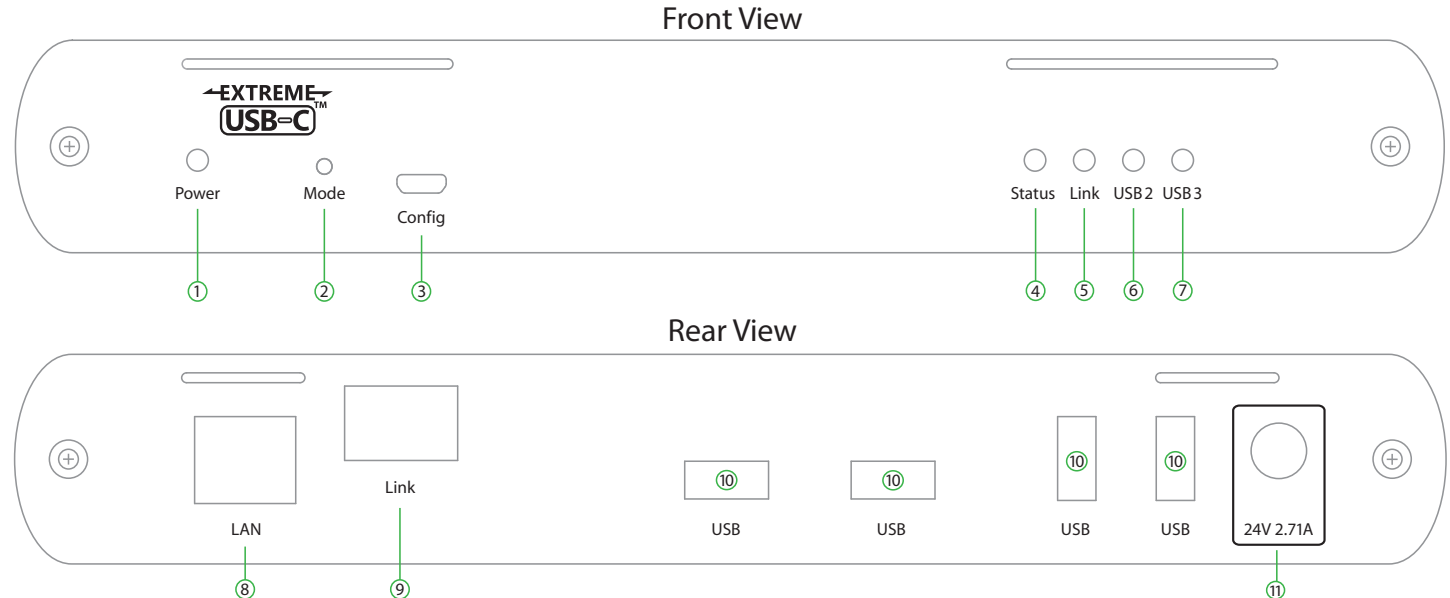
Rear View



| ITEM | TYPE                       | DESCRIPTION                                                                                                                                                                                            |
|------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Power LED                  | LED is SOLID ON when DC is supplied to the extender unit. LED is OFF when no power is supplied by the AC Adapter.                                                                                      |
| 2    | Mode                       | Reserved for manufacturer use.                                                                                                                                                                         |
| 3    | Config                     | Reserved for manufacturer use.                                                                                                                                                                         |
| 4    | Status LED                 | LED is SOLID ON when system is functioning normally. LED BLINKS when system is booting <b>OR</b> to indicate a temperature warning in unison with the LINK, USB 2, and USB 3 LEDs.                     |
| 5    | Link LED                   | LED is SOLID ON when LEX is linked to an opposite REX. LED is OFF when there is no connection between the LEX and REX units.                                                                           |
| 6    | USB 2 LED                  | LED is SOLID ON when an active USB 2 connection is established through the extender system. LED BLINKS when the USB 2 connection is suspended/asleep. LED is OFF when no USB 2 connection is detected. |
| 7    | USB 3 LED                  | LED is SOLID ON when an active USB 3 connection is established through the extender system. LED BLINKS when the USB 3 connection is suspended/asleep. LED is OFF when no USB 3 connection is detected. |
| 8    | LAN Port<br>(100/1000Mbps) | Ethernet pass through channel connects to a network or Ethernet device.                                                                                                                                |
| 9    | Link Port (RJ45)           | Accepts RJ45 connector for CAT 6a/7 cabling to connect the LEX to the REX.                                                                                                                             |
| 10   | USB Host Port              | USB 3 Type B receptacle used to connect LEX to USB 3 Host computer.                                                                                                                                    |
| 11   | DC Power Port              | Locking connector for the included power adapter – accepts 24VDC 1A.                                                                                                                                   |

## The REX Unit

The REX unit provides USB 3.1 Type A ports for standard USB devices and allows you to connect up to four USB devices directly. Additional devices may be connected by attaching up to three USB hubs to the REX. The REX is powered by an external AC 24V 2.71A adapter, supplying up to 1.2 Amp per USB port.



| ITEM | TYPE                    | DESCRIPTION                                                                                                                                                                                            |
|------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Power LED               | LED is SOLID ON when DC is supplied to the extender unit. LED is OFF when no power is supplied by the AC Adapter.                                                                                      |
| 2    | Mode                    | Reserved for manufacturer use.                                                                                                                                                                         |
| 3    | Config                  | Reserved for manufacturer use.                                                                                                                                                                         |
| 4    | Status LED              | LED is SOLID ON when system is functioning normally. LED BLINKS when system is booting <b>OR</b> to indicate a temperature warning in unison with the LINK, USB 2, and USB 3 LEDs.                     |
| 5    | Link LED                | LED is SOLID ON when REX is linked to an opposite LEX. LED is OFF when there is no connection between the LEX and REX units.                                                                           |
| 6    | USB 2 LED               | LED is SOLID ON when an active USB 2 connection is established through the extender system. LED BLINKS when the USB 2 connection is suspended/asleep. LED is OFF when no USB 2 connection is detected. |
| 7    | USB 3 LED               | LED is SOLID ON when an active USB 3 connection is established through the extender system. LED BLINKS when the USB 3 connection is suspended/asleep. LED is OFF when no USB 3 connection is detected. |
| 8    | LAN Port (100/1000Mbps) | Ethernet pass through channel connects to a network or Ethernet device.                                                                                                                                |
| 9    | Link Port (RJ45)        | Accepts RJ45 connector for CAT 6a/7 cabling to connect the REX to the LEX.                                                                                                                             |
| 10   | Device Ports (Type A)   | Accepts all USB devices (not recommended for devices using Isochronous transfers).                                                                                                                     |
| 11   | DC Power Port           | Locking connector for the included power adapter – accepts 24VDC 2.71A.                                                                                                                                |

# Installation Guide

## Raven 3104 Category Cabling Guidelines

The USB 3-2-1 Raven 3104 requires a minimum grade of Category 6a cabling to be used in order to reach 100m (328 ft) of extension distance.



The total distance of 100m also includes the length of the patch cable should one be required. Up to 10m of patch cable can be used, although the remaining 90m distance must consist of solid core premise cabling.

Furthermore, depending upon specific application requirements, it is recommended that installers keep in mind how they intend to pull/route the link cable and whether to use Shielded or Foiled cable where appropriate.

When installing this product, it is appropriate to use Unshielded (UTP) cabling if the cable run installation meets the following requirements:

- The cable is **not** bundled with other cables
- The cable is **run loosely** with other Category cables
- The cable is **not** placed close to sources of interference such as power lines and radios
- The cable is **not** looped or coiled

When installing this product, Foiled (FTP) or Shielded (STP) cabling must be used if the cable run installation requires the following cable run installation:

- The cable is bundled with other cables
- The cable is run tight against other Category cables
- The cable is placed near sources of interference like power lines and radios
- The cable is looped or coiled

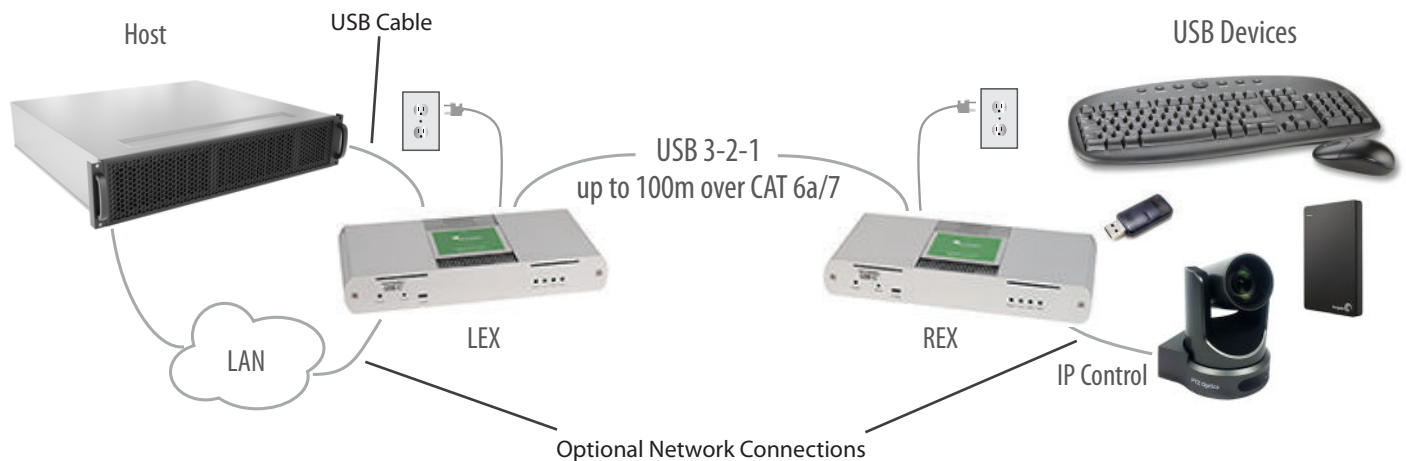


For best performance install the Raven 3104 using Shielded or Foiled CAT 6a/7 cable.

## Requirements for Installing the USB 3-2-1 Raven 3104 System

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

- USB compatible computer (host computer) with a USB compliant operating system
- USB compatible device(s)
- CAT 6a/7 Unshielded Twisted Pair (UTP) cable with two RJ45 connectors (if using surface cabling), or CAT 6a/7 cabling with two information outlets and two CAT 6a/7 patch cords with RJ45 connectors (if using premise cabling), ensuring the total cable length does not exceed 100m.



## Preparing Your Site

Before installing the Raven 3104 extender, you will need to prepare your site:

1. Place the computer where desired and set it up.
2. Ensure to locate your USB device(s) within the cable-length of the computer. If not, adjust the location of your device(s) and/or computer accordingly.



If you are using surface cabling, the Raven 3104 supports a maximum distance of 100m. Install the CAT 6a/7 cabling as desired and terminate it with the appropriate RJ45 ends. If using premise cabling, (in-building network infrastructure), ensure your cabling is installed between the two locations and does not exceed 100m and that it meets CAT 6a/7 specification.



Cable installation is important, particularly if high throughput applications are used. When installing, ensure the cable is installed away from, or isolated from potential sources of interference such as electrical wiring, fluorescent lighting, etc.



When terminating cables, ensure the matching RJ45 connector is used for the cable type. For example, if CAT 6a cable is used, then CAT 6a compatible RJ45 connectors must be used. Otherwise, the benefits of using higher grade cabling may not be realized.

## Installing the LEX Unit

1. Place the LEX unit near the computer.
2. Assemble the 24V 1A power adapter and country specific power cord together and connect them into a suitable AC outlet.
3. Connect the supplied USB 3.1 Gen cable between the LEX host port and a USB 3 port on the host computer.

## Connecting the LEX to the REX

With Surface Cabling:

1. Plug one end of the CAT 6a/7 cable (not included) into the Link port on the LEX.
2. Plug the other end of the CAT 6a/7 cable into the Link port on the REX.

With Premise Cabling:

1. Plug one end of a CAT 6a/7 patch cord (not included) into the Link port on the LEX.
2. Plug the other end of the patch cord into the CAT 6a/7 information outlet near the host computer.
3. Plug one end of the second CAT 6a/7 patch cord (not included) into the Link port on the REX.
4. Plug the other end of the patch cord into the CAT 6a/7 information outlet near the USB device.



Do not exceed more than 10m total of patch cable when using premise cabling.

## Installing the REX Unit

1. Place the REX near the USB device(s).
2. Assemble the 24V 2.71A power adapter and country specific power cord together and connect them into a suitable AC outlet.
3. Connect the power adapter to the REX.

## Checking the Installation

1. On the LEX and REX units, check that the Power, Status, Link, USB 2 and USB 3 LEDs are on. If the Link LEDs are permanently off, then the cabling between the LEX and REX units may not be installed properly or is defective.
2. For Windows users (7, 8, 8.1, 10), open Device Manager to confirm that the extender system has been installed correctly. Expand the entry for Universal Serial Bus controllers by clicking the "+" sign. If the extender system has been installed correctly, you should find two separate instances of "Generic SuperSpeed USB Hub" listed.



To open Device Manager in Windows 7:

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



To open Device Manager in Windows 8, 8.1 or 10:

Right click the Start Menu and then select: Device Manager

3. For macOS users, open the System Profiler to confirm that the extender system has installed correctly. In the left-hand column under Hardware, select “USB” and inspect the right-hand panel. If the extender has been installed correctly, you should find it listed as two separate instances of “Hub” under the USB SuperSpeed Bus.



To open System Profiler in macOS:

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

4. If the extender system is not detected correctly or fails to detect, please consult the Troubleshooting section in this guide.

## 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 REX.
3. Check that the device is detected and installed properly in the operating system.

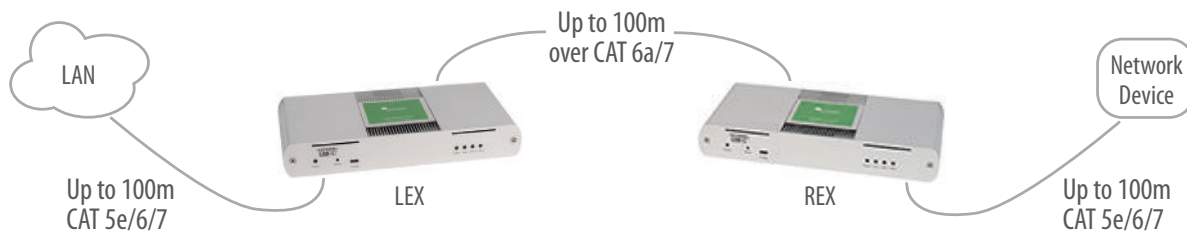
## Compatibility

The USB 3-2-1 Raven 3104 complies with USB 2.0 and USB 3.1 Gen 1 specifications governing the design of USB devices. However, there is no guarantee that all USB devices or hosts will be compatible as there are a number of different characteristics that may impact the operation of USB devices over extended distances.

## Optional Ethernet Pass Through Connection

The Raven 3104 offers a 100/1000Mbps Ethernet pass through connection that can be used for a variety of purposes including:

- Connecting network devices
- Providing remote network access to the same location as the REX unit
- Leveraging existing cabling to provide USB 3-2-1 connectivity without losing network connectivity



Connect any network device or access port into the RJ45 socket label “LAN” using up to 100 meters of standard CAT 5e, 6 or 7 cabling.

# Optional USB Extender Mounting Options

The bottom of the enclosure features four convenient pre-drilled holes for optional mounting. Based on your requirements, choose from two available mounting options:

**1. USB Extender Mounting Kit** (Purchased separately Order Part #10-00620 USB Mounting Kit - Silver)

**2. USB Extender Direct Surface Mounting** (Using your own hardware, stencil provided on page 11)

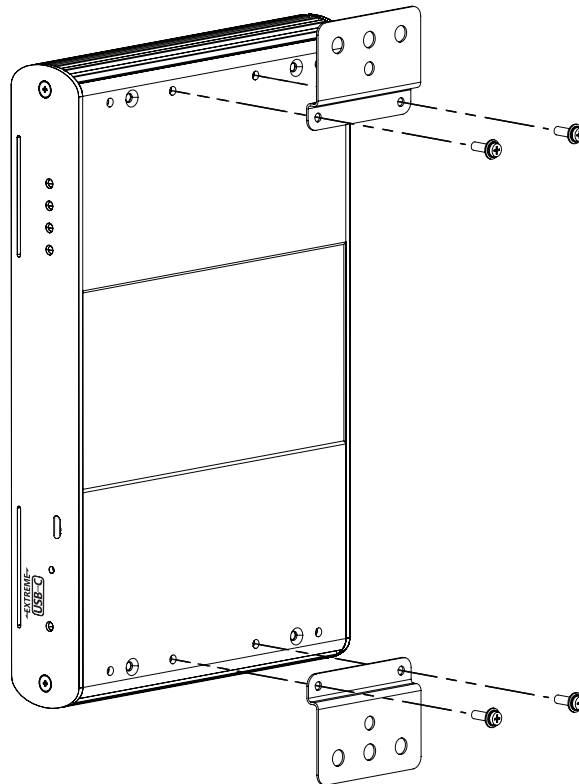
## OPTION 1: USB Extender Mounting Kit

Contents:

- 2 mounting brackets
- 4 (M3) locking washers
- 4 (M3 x 10mm) Phillips screws with split lock washers
- Mounting bracket installation guide (*see diagram below*)

1 kit required to mount per LEX or REX

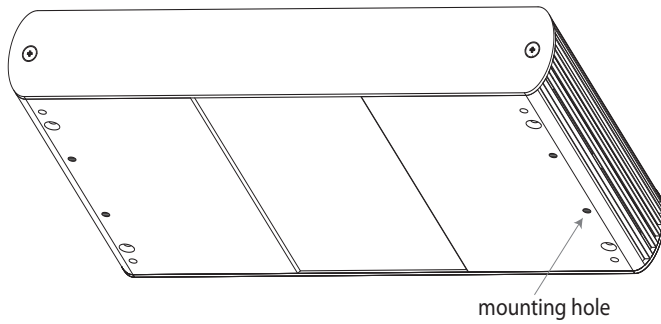
Using a Phillips screwdriver, in the order as illustrated below, secure the provided screws and brackets into place.



Once the bracket mounting is secured onto the extender, it is ready for mounting onto a surface. Please note you will need to provide your own screws to secure the extender using the available slots on each bracket.

## OPTION 2: USB Extender Direct Surface Mounting (using your own hardware)

The bottom of the enclosure features four pre-drilled holes for optional surface mounting.



Distance between the enclosure mounting holes:  
42.0mm x 205.5mm

1. Mark the center point of each of the four holes on your mounting surface either by directly measuring or printing a stencil from [www.icron.com/pdf/R-M-stencil.pdf](http://www.icron.com/pdf/R-M-stencil.pdf).
2. Hardware recommendation: M3 locking washers and M3 screws (4 of each per extender) noting screw length will depend upon thickness of mounting surface.
3. Drill through each of the four-hole markings on the mounting surface using a 3.97mm (5/32") drill bit.
4. Align the bottom enclosure holes to the newly drilled out holes on the mounting surface.
5. Place a locking washer on each of the four screws and using a screwdriver, fasten the extender into place.



**note** Do not exceed a screw depth of 10mm (0.4") into the unit or damage may occur.

### Direct Surface Mounting Measurement Stencil

The stencil illustration pictured below is only 50% of the original size. To access this stencil file (to scale), simply go to: [www.icron.com/pdf/R-M-stencil.pdf](http://www.icron.com/pdf/R-M-stencil.pdf).



# 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 Icron Technologies' [Technical Support](#) for further assistance.

| PROBLEM                                                                          | CAUSE                                                                                                                                                                                                                                              | SOLUTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ALL LEDs are OFF on the LEX and/or REX.                                          | 1. The LEX and/or REX is not receiving power from the AC power adapter.                                                                                                                                                                            | 1. Ensure that the AC power adapter is properly connected to the LEX and/or REX.<br>2. Check that the AC adapter is connected to a live source of AC power. Check that the LEX and/or REX Power LED is illuminated.                                                                                                                                                                                                                                                                     |
| POWER LED is ON, STATUS LED is OFF.                                              | 1. The unit has malfunctioned and requires re-programming.                                                                                                                                                                                         | 1. Contact <a href="#">Technical Support</a> for assistance.                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Link LEDs on the LEX and REX are OFF.                                            | 1. There is no connection between the LEX and REX units.                                                                                                                                                                                           | 1. Ensure that no more than 100m of CAT 6a/7 cabling is connected between the LEX and REX.<br>2. Connect a short patch cable between the LEX and REX. Recheck the link status. If the LINK LED is now SOLID ON, the previous cable is defective or not capable of supporting the link.                                                                                                                                                                                                  |
| LINK LEDs on the LEX and REX are SOLID ON, but the USB 2 and USB 3 LEDs are OFF. | 1. The host computer is not powered on.<br>2. The LEX is not connected to a computer.<br>3. The host computer does not support USB Hubs.<br>4. The unit is malfunctioning.                                                                         | 1. Disconnect all USB devices from the REX.<br>2. Disconnect LEX from the host computer.<br>3. Disconnect AC adapters from LEX and REX.<br>4. Reconnect the LEX to the host computer.<br>5. Reconnect the AC adapters to the LEX and REX.<br>6. Check that the LEX and REX have enumerated as USB hubs in Windows Device Manager, macOS System Profiler or using "lsusb" command in a Linux Terminal.<br>7. If the problem is not resolved, contact <a href="#">Technical Support</a> . |
| The USB 2 LED is SOLID ON, but the USB 3 LED is OFF.                             | 1. The LEX is not connected to a USB 3 port.<br>2. The LEX is connected to the host using a USB 2 cable.<br>3. The USB 3 cable connecting the LEX to the host computer is defective.<br>4. The host computer's USB 3 controller has malfunctioned. | 1. Ensure that the LEX is connected to a USB 3 port on the host computer.<br>2. Ensure that the included USB 3.1 Gen 1 cable is being used between the host computer and LEX.<br>3. Cold boot the host computer.<br>4. Replace the USB 3.1 Gen 1 cable with a different cable.<br>5. If the problem is not resolved, contact <a href="#">Technical Support</a> .                                                                                                                        |

| PROBLEM                                                                                                                                                            | CAUSE                                                                                                                                                                                                                                                                                                                           | SOLUTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The USB 3 LED is SOLID ON, but the USB 2 LED is OFF.                                                                                                               | <ol style="list-style-type: none"> <li>1. The USB cable connecting the LEX to the host computer is defective.</li> <li>2. The host computer's USB 2.0 controller has malfunctioned.</li> <li>3. The host computer does not support USB 2.</li> </ol>                                                                            | <ol style="list-style-type: none"> <li>1. Ensure that the included USB 3.1 Gen 1 cable is being used between the host computer and LEX.</li> <li>2. Cold boot the host computer.</li> <li>3. Replace the USB 3.1 Gen 1 cable with a different cable.</li> <li>4. If the problem is not resolved, contact <a href="#">Technical Support</a>.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Both the LEX and REX extenders are working, but the USB 2 or USB 3 LEDs on the LEX and REX are blinking.                                                           | <ol style="list-style-type: none"> <li>1. The LEX and/or REX is in suspend mode. For a variety of reasons, the host computer may place the LEX/REX into suspend mode. Typically, it is because there are no USB devices attached, the USB device is asleep, or the host computer is in a sleep state or hibernating.</li> </ol> | <ol style="list-style-type: none"> <li>1. Recover/resume the operating system from sleep or hibernate modes (refer to your operating system's documentation).</li> <li>2. Connect a USB device to the REX.</li> <li>3. Use the connected device.</li> <li>4. If the problem persists, contact <a href="#">Technical Support</a>.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| ALL LEDs on both the LEX and REX units are SOLID ON, but the USB device is not operating correctly, or is detected as an "Unknown Device" in the operating system. | <ol style="list-style-type: none"> <li>1. The USB device is malfunctioning.</li> <li>2. The computer does not recognize the USB device.</li> <li>3. The application software for the USB device is not operating.</li> <li>4. The USB extender is malfunctioning.</li> </ol>                                                    | <ol style="list-style-type: none"> <li>1. Disconnect the extender from the computer.</li> <li>2. Connect the USB device directly to the host computer.</li> <li>3. If the device does not operate as expected, consult the user documentation for the device.</li> <li>4. Update the host computer BIOS, chipset or USB controller drivers from the manufacturer's website.</li> <li>5. If the device operates as expected when directly connected to the computer, connect another device to the extender and reconnect it to the host computer.</li> <li>6. If the second device does not operate, the extender may be malfunctioning. Contact <a href="#">Technical Support</a> for assistance.</li> <li>7. If the second device operates as expected, then the first device may not be compatible with this extender. Contact <a href="#">Technical Support</a>.</li> </ol> |

| PROBLEM                                                                                                                                                      | CAUSE                                                                                                                                                                                                                                                                                                                                      | SOLUTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A USB 3 device is not enumerating as USB 3, or the operating system is notifying the user that the device can "Perform Faster if connected to a USB 3 port". | <ol style="list-style-type: none"> <li>1. The USB device is malfunctioning.</li> <li>2. The computer does not recognize the USB device.</li> <li>3. The application software for the USB device is not operating.</li> <li>4. The USB 3 port on the computer is malfunctioning.</li> <li>5. The USB extender is malfunctioning.</li> </ol> | <ol style="list-style-type: none"> <li>1. Disconnect the extender from the computer.</li> <li>2. Connect the USB 3 device directly to the host computer.</li> <li>3. If the device does not operate as expected as a USB 3 device, consult the user documentation for that device or try a different USB port on the host computer.</li> <li>4. Update the host computer BIOS, chipset or USB controller drivers from the manufacturer's website.</li> <li>5. If the device operates as USB 3 device when directly connected to the computer, connect another USB 3 device to the extender and reconnect it to the host computer.</li> <li>6. If the second device does not operate as a USB 3 device, the extender may be malfunctioning. Contact <a href="#">Technical Support</a> for assistance.</li> <li>7. If the second device operates as a USB 3 device as expected, the first device may not be compatible with this extender. Contact <a href="#">Technical Support</a>.</li> </ol> |
| All LEDs are flashing and the system is operational.                                                                                                         | <ol style="list-style-type: none"> <li>1. Unit is or was operating at an unsafe temperature.</li> </ol>                                                                                                                                                                                                                                    | <ol style="list-style-type: none"> <li>1. Check ambient temperature. Ensure temperature does not exceed 50°C (122°F).</li> <li>2. Power cycle the unit to remove LED status.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| All LEDs are flashing and the system is NOT operational.                                                                                                     | <ol style="list-style-type: none"> <li>1. Unit has exceeded safe operating temperature.</li> </ol>                                                                                                                                                                                                                                         | <ol style="list-style-type: none"> <li>1. Remove external sources of heat or change location of the unit.</li> <li>2. Power cycle the unit to return to operation.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| LEDs are scrolling LEFT to RIGHT, starting with STATUS.                                                                                                      | <ol style="list-style-type: none"> <li>1. Unit is programming.</li> </ol>                                                                                                                                                                                                                                                                  | <ol style="list-style-type: none"> <li>1. Wait for the unit to finish programming.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

# Warranty Information

## Limited Hardware Warranty

Icron Technologies Corporation, a Maxim Integrated brand, warrants that any hardware products accompanying this documentation shall be free from significant defects in material and workmanship for a period of **two years from the date of purchase**. Icron'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 is not responsible. Opening the enclosures will void warranty.

## Hardware Remedies

Icron's entire liability and the Licensee's exclusive remedy for any breach of warranty shall be, at Icron'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 expressly disclaims all other merchantability and fitness for a particular purpose and noninfringement of third-party rights with respect to the hardware.

Icron dealer, agent, or employee is not authorized to make any modification extension or addition to this warranty. Under no circumstances will Icron, 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 product or service, even if Icron, its suppliers or licensors have been advised of the possibility of such damages. In no case shall Icron, 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 first contact Icron within the warranty period for a Return Material Authorization (RMA) number. Icron will not accept returns without an authorized RMA number. Prior to contacting Icron, be sure you have recorded the serial numbers of the LEX and REX. 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 package tracking. The repaired or replaced item will be shipped to you, at Icron's expense, not later than thirty days after Icron receives the defective product.

# Specifications

|                                       |                                                 |
|---------------------------------------|-------------------------------------------------|
| RANGE                                 |                                                 |
| Point-to-Point                        | Up to 100m (328 ft) over CAT6a/7 Cable          |
| USB DEVICE SUPPORT                    |                                                 |
| Maximum Throughput                    | 5Gbps                                           |
| Traffic Types                         | All Traffic Types                               |
| Device Types                          | All Device Types                                |
| Maximum Number of Devices and/or Hubs | Up to 30 devices                                |
| LOCAL EXTENDER (LEX)                  |                                                 |
| USB Connector                         | 1 x USB 3.1 Gen 1 Type B Receptacle             |
| Link Connector                        | 1 x RJ45 "LINK"                                 |
| Network Pass Through:                 | 1 x RJ45 "LAN"                                  |
| Dimensions                            | 137.3mm x 232.1mm x 33.0mm (5.4" x 9.1" x 1.3") |
| Enclosure Material                    | Silver Anodized Aluminum                        |
| Power Supply                          | 100-240V AC Input, 24V 1A DC Output             |
| REMOTE EXTENDER (REX)                 |                                                 |
| USB Connector                         | 4 x USB 3.1 Gen 1 Type A Receptacles            |
| Link Connector                        | 1 x RJ45 "LINK"                                 |
| Network Pass Through:                 | 1 x RJ45 "LAN"                                  |
| Dimensions                            | 137.3mm x 232.1mm x 33.0mm (5.4" x 9.1" x 1.3") |
| Enclosure Material                    | Silver Anodized Aluminum                        |
| Available Current                     | Up to 1.2 Amp (6W) to each USB port             |
| Power Supply                          | 100-240V AC Input, 24V 2.71A DC Output          |
| ENVIRONMENTAL                         |                                                 |
| Operating Temperature Range           | 0°C – 50°C (32°F – 122°F)                       |
| Storage Temperature Range             | -20°C – 70°C (-4°F – 158°F)                     |
| Operating Humidity                    | 20% to 80% relative humidity, non-condensing    |
| Storage Humidity                      | 10% to 90% relative humidity, non-condensing    |
| COMPLIANCE                            |                                                 |
| EMC                                   | FCC (Class B), CE (Class B)                     |
| Environmental                         | RoHS2/3 (CE)                                    |
| SUPPORT                               |                                                 |
| Warranty                              | 2-year                                          |

# Contacting Technical Support

If you are experiencing problems not referenced in the Troubleshooting section, contact **Icron Technical Support**:

[www.icron.com/support](http://www.icron.com/support)

Tel: +1 604 638 3939

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 10, macOS 10.14, etc.)
- Part number and serial number for both the LEX and REX units
- Make and model of any USB device(s) attached to this extender system
- Description of the installation such as Host computer model, transmission media used and information about the USB device(s)
- Description of the problem

## Address the returned product to:

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

# Contacting Sales

Email: [IcronSales@MaximIntegrated.com](mailto:IcronSales@MaximIntegrated.com)

Tel: +1 604 638 3920

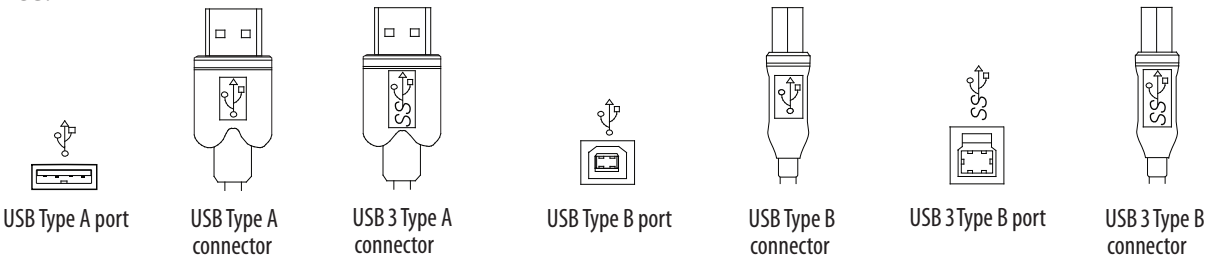
# Technical Glossary

## Category 6a/7 (CAT 6/7) Network Cabling

Category 6a/7 cable is commonly also referred to as CAT 6a or CAT 7. This cabling is available in either solid or stranded twisted pair copper wire variants and as UTP (Unshielded Twisted Pair), FTP (Foiled Twisted Pair) or STP (Shielded Twisted Pair). UTP cables are not surrounded by any shielding making them more susceptible to Electromagnetic Interference (EMI). FTP/STP cables include shielding the copper wires and provide better protection against EMI.

## USB 3 and USB 2.0 Cables

USB cables have two distinct full-sized 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 6a/7) to the LEX and REX units. You may use either the T568A scheme (Table 1) or the T568B scheme (Table 2) for cable termination as the Raven 3104 requires all four pairs of the cable. RJ45 connectors are sometimes also referred to as 8P8C connectors. Note that any give cable must be terminated using the same T568 scheme on both ends to operate correctly.

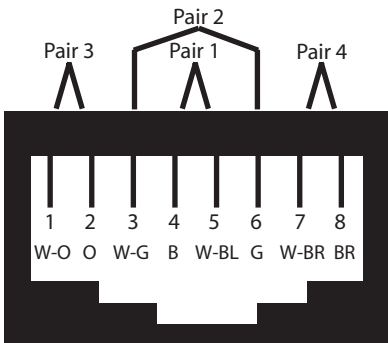
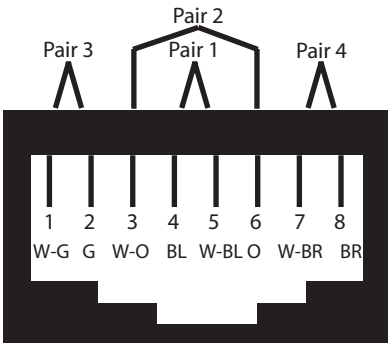
## RJ45 Pin Positioning

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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