# **USB 3-2-1 Raven<sup>™</sup> 3104 Pro**

4-Port USB 3.2, 100m CAT 6a/7 Point-to-Point Extender System

# **User Guide**





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

# 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
USB 3-2-1 Raven 3104 Pro	01-00723	01-00724	01-00725	01-00726	01-00727

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

CAUTION: Cautions provide important information about an operational requirement.

#### **Product Contents**

Your Raven 3104 Pro extender system contains:

- **Local Extender**
- Remote Extender
- USB 3.1 Gen 1 Cable
- Local Extender 24V DC 1A International Power Adapter
- Remote Extender 24V DC 2.71A International Power Adapter
- 2 x Country Specific Power Cables
- **Ouick Start Guide**

#### **Features**

The Raven 3104 Pro incorporates ExtremeUSB-C™ technology, enabling users to extend USB 3.2 beyond the standard 3m cable limit for USB 3.2 peripheral devices. This extender system is composed of two individual units, the Local Extender and the Remote Extender, and has the following key features:

- Up to 100m of extension when directly connected over CAT 6a/7 cable
- Support for new USB 3.2 Gen 1/2 host controllers and devices (up to 5Gbps)
- Supports all device types
- Optimized for camera and video capture devices
- Backwards compatible to USB 2.0 devices

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



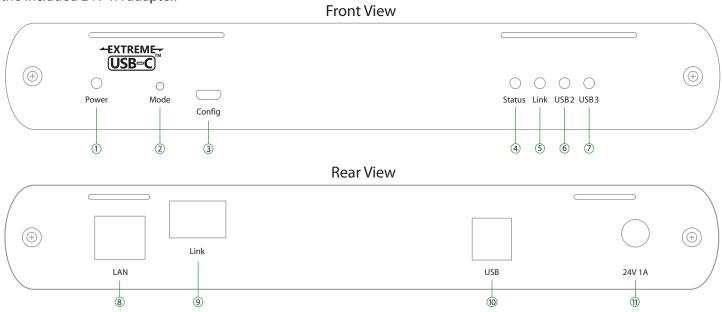
- Transparent USB extension supporting USB 3, 2 and 1
- True plug and play; no software drivers required
- Works with all major operating systems: Windows®, macOS™, Linux® and Chrome OS™



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

# **The Local Extender**

The Local Extender connects to the computer using a standard USB 3.2 Gen 1 cable. Power for this unit is provided by the included 24V 1A adapter.

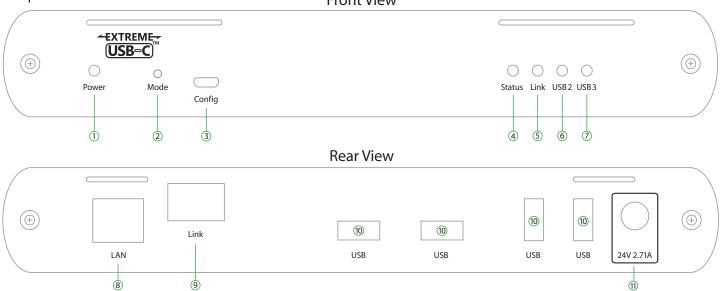


ITEM	TYPE	DESCRIPTION
1	Power LED	LED is SOLID ON when DC is supplied to the extender unit. LED is OFF when no power is supplied by the AC Adapter.
2	Mode	Reserved for manufacturer use.
3	Config	Reserved for manufacturer use.
4	Status LED	LED is SOLID ON when system is functioning normally. LED BLINKS 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 Local Extender is linked to an opposite Remote Extender. LED is OFF when there is no connection between the Local and Remote Extenders.
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 Local Extender to the Remote Extender.
10	USB Host Port	USB 3 Type B receptacle used to connect Local Extender to USB 3 Host computer.
11	DC Power Port	Locking connector for the included power adapter – accepts 24VDC 1A.

### The Remote Extender

The Remote Extender provides USB 3.2 Gen 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 Remote Extender. The Remote Extender is powered by an external AC 24V 2.71A adapter, supplying up to 1.2 Amp (6W) per USB port.

Front 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 Remote Extender is linked to an opposite Local Extender. LED is OFF when there is no connection between the Local and Remote Extenders.
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 Remote Extender to the Local Extender.
10	Device Ports (Type A)	Accepts all USB devices.
11	DC Power Port	Locking connector for the included power adapter – accepts 24VDC 2.71A.

# **Installation Guide**

### **Raven 3104 Pro Category Cabling Guidelines**

The USB 3-2-1 Raven 3104 Pro 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

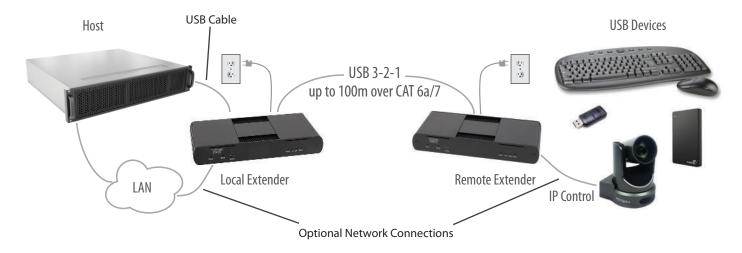


**note** For best performance install the Raven 3104 Pro using Shielded or Foiled CAT 6a/7 cable.

# Requirements for Installing the USB 3-2-1 Raven 3104 Pro 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 Pro 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 Pro 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 Local Extender**

- 1. Place the Local Extender 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 3.2 Gen 1 cable between the Local Extender host port and a USB 3 port on the host computer.

### Connecting the Local Extender to the Remote Extender

#### With Surface Cabling:

- 1. Plug one end of the CAT 6a/7 cable (not included) into the Link port on the Local Extender.
- 2. Plug the other end of the CAT 6a/7 cable into the Link port on the Remote Extender.

#### With Premise Cabling:

- 1. Plug one end of a CAT 6a/7 patch cord (not included) into the Link port on the Local Extender.
- 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 Remote Extender.
- 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 Remote Extender**

- 1. Place the Remote Extender 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 Remote Extender.

# **Checking the Installation**

- 1. On the Local and Remote Extenders, 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 Local and Remote Extenders 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.



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 Remote Extender.
- 3. Check that the device is detected and installed properly in the operating system.

# Compatibility

The USB 3-2-1 Raven 3104 Pro complies with USB 2.0 and USB 3.2 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 Pro 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 Remote Extender
- 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/6/7 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 #10-00621 USB Mounting Kit Black)
- 2. USB Extender Direct Surface Mounting (Using your own hardware, stencil provided on page 11)

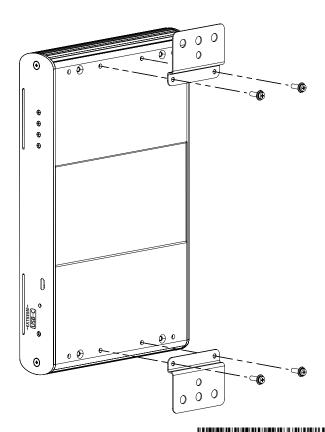
### **OPTION 1: USB Extender Mounting Kit**

#### 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 Local Extender or Remote Extender

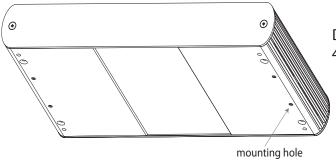
Using a Phillips screwdriver, in the order as illustrated below, secure the provided screws and brackets into place.



Once the bracket mounting is secured onto the extender, 90-01926-B01 ting 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.
- 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.



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

PROBLEM	CAUSE	SOLUTION
The USB 3 LED is SOLID ON, but the USB 2 LED is OFF.	The USB cable connecting     the Local Extender to the host     computer is defective.	Ensure that the included USB 3.1 Gen 1 cable is being used between the host computer and Local Extender.
	<ul><li>2. The host computer's USB 2.0 controller has malfunctioned.</li><li>3. The host computer does not support USB 2.</li></ul>	<ol> <li>Cold boot the host computer.</li> <li>Replace the USB 3.1 Gen 1 cable with a different cable.</li> <li>If the problem is not resolved, contact Technical Support.</li> </ol>
Both the Local and Remote Extenders are working, but the USB 2 or USB 3 LEDs on the Local and Remote Extenders are blinking.	1. The Local and/or Remote Extender is in suspend mode. For a variety of reasons, the host computer may place the the Local/Remote Extender into suspend mode. Typically, it is because there are no USB USB devices attached, the USB device is asleep, or the host computer is in a sleep state or hibernating.	<ol> <li>Recover/resume the operating system from sleep or hibernate modes (refer to your operating system's documentation).</li> <li>Connect a USB device to the Remote Extender.</li> <li>Use the connected device.</li> <li>If the problem persists, contact Technical Support.</li> </ol>
ALL LEDs on both the Local and Remote Extenders are SOLID ON, but the USB device is not operating correctly, or is detected as an "Unknown Device" in the operating system.	<ol> <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> <li>The USB extender is malfunctioning.</li> </ol>	<ol> <li>Disconnect the extender from the computer.</li> <li>Connect the USB device directly to the host computer.</li> <li>If the device does not operate as expected, consult the user documentation for the device.</li> <li>Update the host computer BIOS, chipset or USB controller drivers from the manufacturer's website.</li> <li>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>If the second device does not operate, the extender may be malfunctioning. Contact Technical Support for assistance.</li> <li>If the second device operates as expected, then the first device may not be compatible with this extender. Contact Technical Support.</li> </ol>

PROBLEM	CAUSE	SOLUTION
A USB 3 device is	1. The USB device is	Disconnect the extender from the computer.
not enumerating as USB 3, or the operating system	malfunctioning.  2. The computer does not	Connect the USB 3 device directly to the host computer.
is notifying the user that the device can "Perform Faster if connected to a	recognize the USB device.  3. The application software for the USB device is not operating.	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.
USB 3 port".	4. The USB 3 port on the computer is malfunctioning.	4. Update the host computer BIOS, chipset or USB controller drivers from the manufacturer's website.
	5. The USB extender is malfunctioning.	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.
		6. If the second device does not operate as a USB 3 device, the extender may be malfunctioning. Contact Technical Support for assistance.
		7. If the second device operates as a USB 3 device as expected, the first device may not be compatible with this extender. Contact Technical Support.
All LEDs are flashing and the system is	Unit is or was operating at an unsafe temperature.	1. Check ambient temperature. Ensure temperature does not exceed 50°C (122°F).
operational.		2. Power cycle the unit to remove LED status.
All LEDs are flashing and the system is NOT	Unit has exceeded safe operating temperature.	Remove external sources of heat or change location of the unit.
operational.		2. Power cycle the unit to return to operation.
LEDs are scrolling LEFT to RIGHT, starting with STATUS.	1. Unit is programming.	1. Wait for the unit to finish programming.

# **Specifications**

USB DEVICE SUPPORT  Maximum Throughput  5Gbps  All Traffic Types  All Traffic Types  All Device Types  Maximum Number of Devices and/or Hubs  Up to 30 devices  LOCAL EXTENDER  USB Connector  1 x USB 3 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  Black Anodized Aluminum  Power Supply  100-240V AC Input, 24V 1A DC Output  REMOTE EXTENDER  USB Connector  4 x USB 3 Type A Receptacles  Link Connector  1 x RJ45 "LAN"  Dimensions  137.3mm x 232.1mm x 33.0mm (5.4" x 9.1" x 1.3")  Enclosure Material  Black 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  0°C - 50°C (32"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)	RANGE	
Maximum Throughput  5Gbps  Traffic Types  All Traffic Types  All Device Types  All Device Types  Maximum Number of Devices and/or Hubs  Up to 30 devices  Up to 12 Amp (6W) to each USB port  Environmental  Up to 10-240V AC Input, 24V 1A DC Output  Up to 10-240V AC Input, 24V 1A DC Output  Up to 12 Amp (6W) to each USB port  Up to 12 Amp (6W) to each USB port  Dover Supply  Up to 10-240V AC Input, 24V 2-71A DC Output  ENVIRONMENTAL  Operating Temperature Range  O"C - 50"C (32"F - 122"F)  Storage Temperature Range  O"C - 50"C (4"F - 158"F)  Operating Humidity  10% to 90% relative humidity, non-condensing  COMPLIANCE  ENC  FCC (Class B), CE (Class B)  Environmental  RoHS2/3 (CE)  SUPPORT	Point-to-Point	Up to 100m (328 ft) over CAT6a/7 Cable
Traffic Types All Traffic Types All Device Types All Device Types Maximum Number of Devices and/or Hubs Up to 30 devices  LOCAL EXTENDER USB Connector 1 x USB 3 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 Black Anodized Aluminum Power Supply 100-240V AC Input, 24V 1A DC Output  REMOTE EXTENDER USB Connector 1 x RJ45 "LINK" Network Pass Through: 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 Black 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 0°C - 50°C (32"F - 122"F) Storage Temperature Range - 20"C - 70"C (-4"F - 158"F) Operating Humidity 10% to 90% relative humidity, non-condensing Storage Humidity 10% to 90% relative humidity, non-condensing COMPLIANCE EMC FCC (Class B), CE (Class B) Environmental SUPPORT	USB DEVICE SUPPORT	
Device Types  Maximum Number of Devices and/or Hubs  Up to 30 devices  LOCAL EXTENDER  USB Connector  1 x USB 3 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")  Black Anodized Aluminum  Power Supply  100-240V AC Input, 24V 1A DC Output  REMOTE EXTENDER  USB Connector  4 x USB 3 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")  Black Anodized Aluminum  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")  Black Anodized Aluminum  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  10% to 90% relative humidity, non-condensing  COMPLIANCE  EMC  FCC (Class B), CE (Class B)  Environmental  RoH52/3 (CE)	Maximum Throughput	5Gbps
Maximum Number of Devices and/or Hubs  LOCAL EXTENDER  USB Connector  1 x USB 3 Type B Receptacle  Link Connector  1 x RJ45 "LNK"  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  Black Anodized Aluminum  Power Supply  100-240V AC Input, 24V 1A DC Output  REMOTE EXTENDER  USB Connector  4 x USB 3 Type A Receptacles  Link Connector  1 x RJ45 "LINK"  Network Pass Through:  1 x RJ45 "LINK"  Network Pass Through:  1 x RJ45 "LNM"  Dimensions  137.3mm x 232.1mm x 33.0mm (5.4" x 9.1" x 1.3")  Enclosure Material  Black 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  SUPPORT	Traffic Types	All Traffic Types
LOCAL EXTENDER  USB Connector  1 x USB 3 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")  Black Anodized Aluminum  Power Supply  100-240V AC Input, 24V 1A DC Output  REMOTE EXTENDER  USB Connector  4 x USB 3 Type A Receptacles  Link Connector  1 x RJ45 "LINK"  Network Pass Through:  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  Black 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  FCC (Class B), CE (Class B)  Environmental  ROHS2/3 (CE)	Device Types	All Device Types
USB Connector  1 x USB 3 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  Power Supply  100-240V AC Input, 24V 1A DC Output  REMOTE EXTENDER  USB Connector  4 x USB 3 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  Black 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 (3"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  Touch Long Bush Cellass B)  EMC  FCC (Class B), CE (Class B)  Environmental  RoHS2/3 (CE)	Maximum Number of Devices and/or Hubs	Up to 30 devices
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  Black Anodized Aluminum  Power Supply  100-240V AC Input, 24V 1A DC Output  REMOTE EXTENDER  USB Connector  4 x USB 3 Type A Receptacles  Link Connector  1 x RJ45 "LAN"  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  Black 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  The Completion of the supplementation	LOCAL EXTENDER	
Network Pass Through:  Dimensions  137.3mm x 232.1mm x 33.0mm (5.4" x 9.1" x 1.3")  Black Anodized Aluminum  Power Supply  100-240V AC Input, 24V 1A DC Output  REMOTE EXTENDER  USB Connector  4 x USB 3 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  Black 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  COMPLIANCE  EMC  FCC (Class B), CE (Class B)  Environmental  RoHS2/3 (CE)	USB Connector	1 x USB 3 Type B Receptacle
Dimensions  137,3mm x 232.1mm x 33.0mm (5.4" x 9.1" x 1.3")  Black Anodized Aluminum  Power Supply  100-240V AC Input, 24V 1A DC Output  REMOTE EXTENDER  USB Connector  4 x USB 3 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  Black 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  Tome to 90% relative humidity, non-condensing  COMPLIANCE  EMC  FCC (Class B), CE (Class B)  Environmental  RoHS2/3 (CE)	Link Connector	1 x RJ45 "LINK"
Enclosure Material  Power Supply  100-240V AC Input, 24V 1A DC Output  REMOTE EXTENDER  USB Connector  4 x USB 3 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  Black 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)	Network Pass Through:	1 x RJ45 "LAN"
Power Supply  REMOTE EXTENDER  USB Connector  4 x USB 3 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  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)	Dimensions	137.3mm x 232.1mm x 33.0mm (5.4" x 9.1" x 1.3")
REMOTE EXTENDER  USB Connector  4 x USB 3 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  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)	Enclosure Material	Black Anodized Aluminum
USB Connector  4 x USB 3 Type A Receptacles  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  Black 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  SUPPORT	Power Supply	100-240V AC Input, 24V 1A DC Output
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  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)	REMOTE EXTENDER	
Network Pass Through:  Dimensions  137.3mm x 232.1mm x 33.0mm (5.4" x 9.1" x 1.3")  Enclosure Material  Black 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)	USB Connector	4 x USB 3 Type A Receptacles
Dimensions  137.3mm x 232.1mm x 33.0mm (5.4" x 9.1" x 1.3")  Enclosure Material  Black Anodized Aluminum  Available Current  Up to 1.2 Amp (6W) to each USB port  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)	Link Connector	1 x RJ45 "LINK"
Black Anodized Aluminum  Available Current  Up to 1.2 Amp (6W) to each USB port  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)	Network Pass Through:	1 x RJ45 "LAN"
Available Current  Up to 1.2 Amp (6W) to each USB port  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)	Dimensions	137.3mm x 232.1mm x 33.0mm (5.4" x 9.1" x 1.3")
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)	Enclosure Material	Black Anodized Aluminum
Derating Temperature Range  O°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)	Available Current	Up to 1.2 Amp (6W) to each USB port
Operating Temperature Range  O°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)	Power Supply	100-240V AC Input, 24V 2.71A DC Output
Storage Temperature Range  -20°C – 70°C (-4°F – 158°F)  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)	ENVIRONMENTAL	
Operating Humidity  20% to 80% relative humidity, non-condensing  10% to 90% relative humidity, non-condensing  COMPLIANCE  EMC  FCC (Class B), CE (Class B)  Environmental  RoHS2/3 (CE)	Operating Temperature Range	0°C − 50°C (32°F − 122°F)
Storage Humidity  10% to 90% relative humidity, non-condensing  COMPLIANCE  EMC  FCC (Class B), CE (Class B)  Environmental  RoHS2/3 (CE)  SUPPORT	Storage Temperature Range	-20°C − 70°C (-4°F − 158°F)
COMPLIANCE  EMC FCC (Class B), CE (Class B)  Environmental RoHS2/3 (CE)  SUPPORT	Operating Humidity	20% to 80% relative humidity, non-condensing
EMC FCC (Class B), CE (Class B)  Environmental RoHS2/3 (CE)  SUPPORT	Storage Humidity	10% to 90% relative humidity, non-condensing
Environmental RoHS2/3 (CE) SUPPORT	COMPLIANCE	
SUPPORT	EMC	FCC (Class B), CE (Class B)
	Environmental	RoHS2/3 (CE)
Warranty 2-year	SUPPORT	
	Warranty	2-year

# **Contacting Technical Support**

If you are experiencing problems not referenced in the Troubleshooting section, or require further assistance, contact Technical Support at the company where you purchased this product and include the following information:

- 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 Local and Remote Extender 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

# **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 Local and Remote Extenders. You may use either the T568A scheme (Table 1) or the T568B scheme (Table 2) for cable termination as the Raven 3104 Pro 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

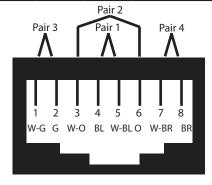


Table 2 - T568B Wiring

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

