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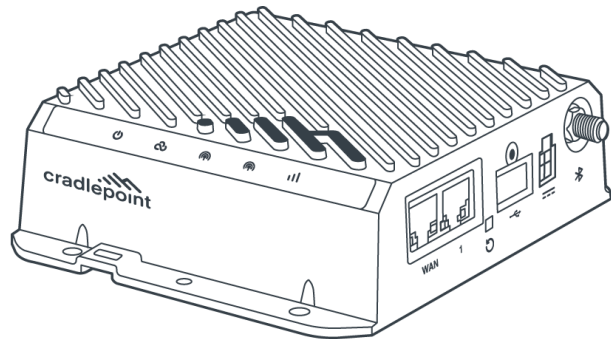


## R920 Series Ruggedized Router Quick Start Guide

🕒 Mar 7, 2023 · Knowledge

### Content

## R920 Series Ruggedized Router Quick Start Guide



### Introduction

This document provides a brief overview of the R920 Series Ruggedized Router, discusses what's inside the box, and provides basic setup and install instructions for the router.

If you find information in this guide that is incorrect, misleading, or incomplete, we would appreciate your comments and suggestions.

**NOTE:** The Verify app includes many of the same instructions with an alternate order. This document supports the Verify app instructions. Use the Navigation section below to locate the topics most applicable to troubleshooting your setup issues. For additional setup support, contact a professional installer or refer to our [Contact Us \(https://cradlepoint.com/about-us/contact-us/\)](https://cradlepoint.com/about-us/contact-us/) page.

## Intended Audience

This article is intended for professional networking hardware installers. It provides basic knowledge and should be used only as a reference guide for installing the R920 Series Ruggedized Router.

Due to the unique nature of each installation, potential for RF exposure, and enhanced separation requirements, customers must have a professional install their hardware. This document is a reference guide and is intended only to provide best practices.

Refer to the [Cradlepoint Product Disclaimer and Limitation of Liability](#) section for further information.

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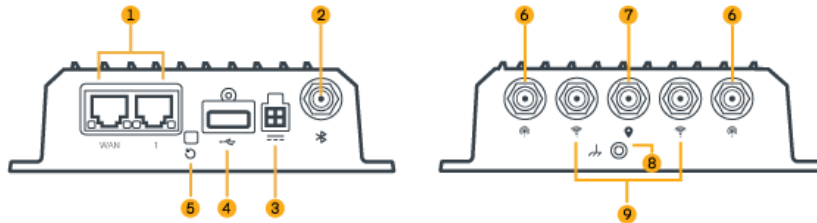
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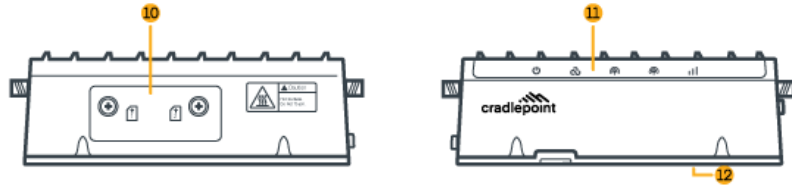
## **R920 Series Ruggedized Router Models**

This document applies to the following R920 Series Ruggedized Router models:

<b>R920 Series</b>	<b>Model</b>
R920-C7A	S5A235A
R920-C7B	S5A236A

### **External device components**





1	Gigabit Ethernet (GbE) Ports
2	Bluetooth Antenna Connector
3	DC Power Port
4	Locking USB 2.0 Port
5	Reset Button
6	Cellular Antenna Connectors (Female SMA)
7	GNSS Antenna Connector
8	Ground Connector
9	Wi-Fi Antenna Connector (Female RP-SMA)
10	SIM Door (SIM Slots behind)
11	LED Panel
12	RX20 Connector (on bottom, not shown)

## **Before You Begin**

Read through the following before you set up your Cradlepoint R920 Series router.

## Location Considerations

The R920 is built for installation in a variety of environments. Cradlepoint recommends having a professional install the R920 router to ensure proper signal reception and usage. The following are best practices for determining the location for the installation:

- Ensure that the mounting surface is flat and clear of any obstructions or objects that may interfere with the antennas, signal reception, or cables.
- Position the device for optimal cellular and Wi-Fi signal reception.
- Avoid mounting in direct sunlight or in locations where it may be exposed to the weather.
- Ensure plenty of airflow for ventilation.
- Keep the device out of reach. It is required that the endpoint be installed behind a locked/gated enclosure to restrict unauthorized access. The R920 is designed to work in elevated ambient temperatures which may cause the surface of the device to become too hot to safely touch.
- Mount in locations compliant with the Safety, Regulatory, and Warranty guide, included in the product shipping box.

**IMPORTANT:** The R920 Series router requires increased separation distances between the Cradlepoint hardware and human beings. The recommended minimum separation distance is listed on the Safety, Regulatory, and Warranty guide included in the shipping box. For assistance with installation or in locating a professional installer, contact [Cradlepoint Sales and Support](https://cradlepoint.com/about-us/contact-us/) (<https://cradlepoint.com/about-us/contact-us/>).

## SIM Card for Wireless Connectivity

A wireless broadband data plan must be added to your Cradlepoint R920 for wireless broadband connectivity. The SIM must be provisioned by the carrier. Contact your carrier for details about selecting a data plan and about the process for provisioning your SIM. To configure the router for failover and failback functionality, refer to the article, [NCOS: Effectively utilizing 2-SIM modems](/s/article/NCOS-Effectively-utilizing-2-SIM-modems) (</s/article/NCOS-Effectively-utilizing-2-SIM-modems>).

## Router Communication and Data Usage

The factory default configuration of the router is set to communicate with Cradlepoint and other resources at regular intervals to access the latest NetCloud OS and modem updates, clock synchronization (NTP), and NetCloud Manager. Such communication may result in data usage and applicable charges regardless of whether the router uses a wired or wireless Internet connect. To

avoid such data usage and potential charges, refer to [Router Communication/Data Usage \(/s/article/router-communication-data-usage\)](#) for more information.

## Required Tools for Setup

Cradlepoint recommends that a professional install the R920 in any environment. However, the following tools may be necessary for setup.

- #0 Philips-head screwdriver (for SIM cover screws)
- #2 Philips-head screwdriver (for mounting screws)
- Mounting tools - Depending on the location of installation, additional mounting tools may be necessary. These tools may include, but are not limited to:
  - Screwdrivers
  - Drill and drill bits
  - Additional screws
  - Zip ties

## **Setup**

Refer to the following for general setup instructions.

### STEP 1: Check box for contents

Prior to having the R920 router installed, open the box and ensure that all items are present. You should have received the following:

Model	Standard orders include	Orders with accessories also include
R920-C7A	<ul style="list-style-type: none"> <li>• [1] R920 Series Ruggedized Router</li> <li>• [1] 3-meter (2x2) Power and GPIO cable</li> <li>• [1] Small accessories kit</li> <li>• [4] M4 screws, nuts, and washers</li> </ul>	<ul style="list-style-type: none"> <li>• [2] Cellular Antennas</li> <li>• [2] Wifi Antennas</li> <li>• [1] Power Supply (PSU)</li> <li>• [3] PSU Clips</li> </ul>
R920-C7B	<ul style="list-style-type: none"> <li>• [1] Mounting template</li> <li>• [1] Getting Started card</li> <li>• [1] Safety, Warranty, and Regulatory guide</li> </ul>	

#### Accessories

To optimize the R920 for Wireless WAN or with failover configuration, you will need at least one activated 4FF-sized SIM card, with an active cellular data plan.

Additional accessories to enhance your router capabilities include, but are not limited to:

Accessory	Part number
USB to RS232 cable	170873-000
RX20 Series Managed Accessory (RX20-MC)	MA-RX20-MC
Antennas	Refer to the <a href="https://cradlepoint.com/products/antennas/">Cradlepoint Antenna (https://cradlepoint.com/products/antennas/)</a> webpage for assistance in locating a Cradlepoint Approved vendor.

See the [R920 Series Ruggedized Router Data Sheet \(https://cradlepoint.com/datasheet/r920-series-ruggedized-router\)](https://cradlepoint.com/datasheet/r920-series-ruggedized-router) for a full listing of available optional accessories.

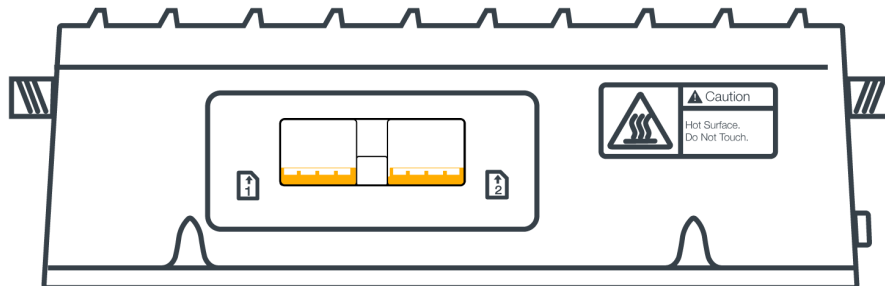
## STEP 2: Remove the SIM door

Unscrew and remove the SIM cover from the router.



## STEP 3: Insert an activated 4FF-sized SIM into the router

- Insert an activated 4FF SIM card into the SIM1 slot (contacts down, notch in). The SIM card will click into place.
- Optionally, insert an active 4FF SIM into the SIM2 slot with the same orientation.



## STEP 4: Reinstall the SIM door

Replace the SIM cover and secure with the SIM door screws.

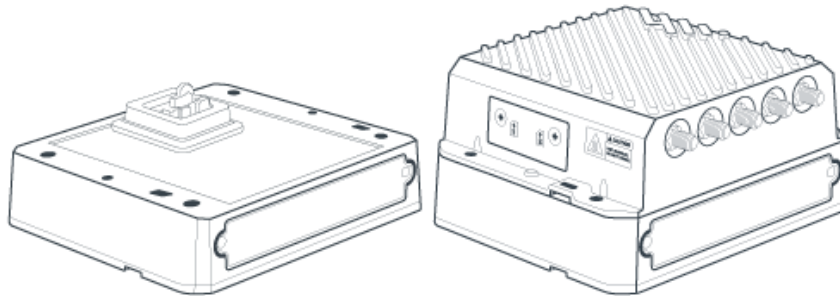




**STEP 5 (OPTIONAL):** Connect to an RX20 Series managed accessory.

Refer to the installation instructions detailed in the [RX20 Series Managed Accessory Quick Start Guide \(/s/article/RX20-Series-Managed-Accessory-Quick-Start-Guide\)](/s/article/RX20-Series-Managed-Accessory-Quick-Start-Guide) and then continue to the next step when the managed accessory is attached.

**IMPORTANT:** The RX20 Series Managed Accessory is for in-vehicle installations only, and must use cabled-out antennas to connect to a modem installed in the unit.



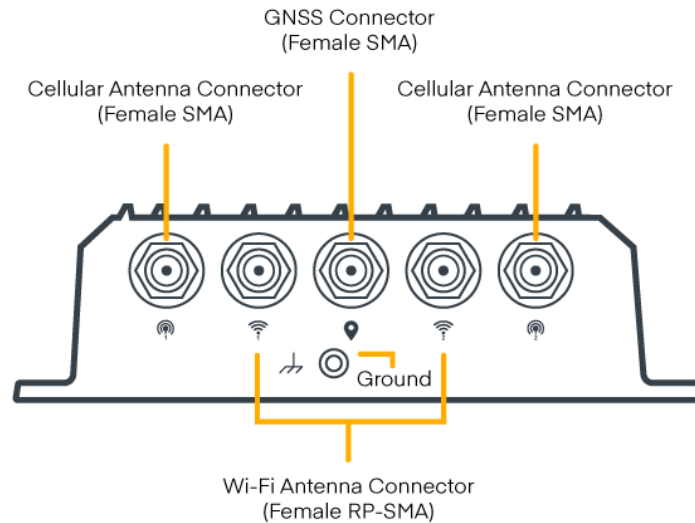
**IMPORTANT:** If the following optional accessory power adapter (and associated line cord) is used to power the R920, then an RX20 **cannot** be attached. These optional accessories are for non-mobile IoT installations only:

Optional Accessory	Part Number
Power Supply, 12 V Small 2x2, 1.5 meters (North America)	170716-001
Power Supply, 12 V Small 2x2, 1.5 meters (Type A-G-C-I)	170717-000

## STEP 6: Attach the antennas

The R920 series router does not include cabled-out antennas. Cabled-out antennas must be purchased separately or through a third-party vendor. Refer to the [Cradlepoint Antenna](https://cradlepoint.com/products/antennas/) (<https://cradlepoint.com/products/antennas/>) webpage for more information and options.

**NOTE:** Only use remote or cabled-out (x-in-1) antennas for in-vehicle installations.



## STEP 7: Mount the router

The R920 series router may be mounted in a number of ways and should be completed by a professional installer.

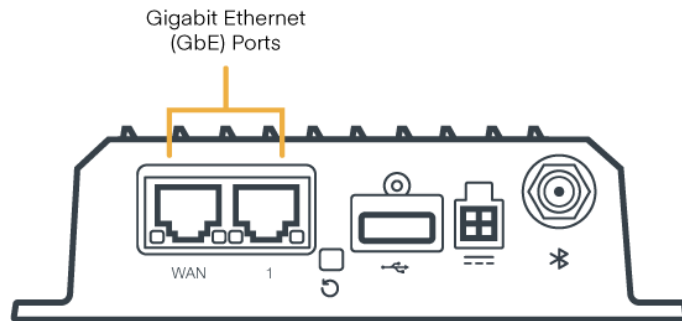
Refer to the following for best practices:

- Use the mounting template to help mark the desired mounting location on the ceiling, wall, kiosk, or vehicle using a pen or marker.
- Ensure the mounting location is away from RF interfering materials and objects such as reflective surfaces, brick and concrete, microwaves, and so on.
- Pre-drill holes for the mounting screws.

- Use anchors and other screw-securing accessories to ensure the device is securely mounted in place.
- Refer to the Location Considerations section of this document.

### STEP 8 (Optional): Connect the Ethernet cable

- If you are using a wired Ethernet WAN connection, connect the Ethernet cable to the WAN port on the R920. Connect the other end to your WAN source.
- If you are using a wireless WAN (using cellular connectivity), power up the router first, access your NetCloud Manager account, and then complete the setup.



### STEP 9: Power up the router

The 4-pin GPIO cable socket is configured to allow for using a 4-wire/GPIO cable to hardwire power for DC connections, or for using GPIO. Refer to the following for pin configuration:

	PIN	Wire Color	Definition	Details
	1	Black	Ground	Ground to the vehicle chassis
	2	Red	Power	VDC battery constant (see note below)
	3	Orange	Input	VDC ignition sensing accessory input General purpose input when not in vehicle
	4	Blue	Output	General purpose output

- Insert the 4-pin end of the power adapter into the 4-pin port on the router, ensuring appropriate alignment of pins as illustrated above.

**NOTE:** The diagram shows looking into the router socket. When making a custom cable, be sure to account for this.

- Connect the wires on the other end to the appropriate fused circuit or power source.

**NOTE:** The DC input steady state voltage powering the R920 can accept a range of 9-36 VDC:

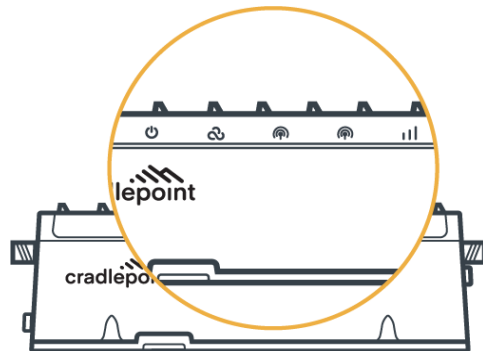
- For 9-12 VDC installations, use a 3 A fuse.
- For >24 VDC installations, use a 2 A fuse.
- Allow 1 minute for the router to run through its bootup sequence.

## STEP 10: Activate the router through NetCloud Manager







Activate your R920 Series Ruggedized Router through NetCloud Manager (NCM). Your router is packaged with NetCloud services and requires that you log into your NetCloud account to activate. Refer to [Getting Started with NetCloud Manager \(https://customer.cradlepoint.com/s/article/Getting-Started-with-NetCloud-Manager\)](https://customer.cradlepoint.com/s/article/Getting-Started-with-NetCloud-Manager) for more information.

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## Understanding LEDs



Refer to the following table for information about LED indicators.

Status Indicator	Behavior	
	<b>POWER:</b> The Cradlepoint R920 must be powered using an approved 9-36 V DC power source.	
		<b>No Light</b> = Not receiving power. Check the power switch and source connection.
		<b>Solid White</b> = Powered on.
	<b>NCM STATE:</b> Detects whether the device is able to connect to NCM.	
		<b>No Light</b> = Unable to connect to NetCloud Manager.
		<b>Solid White</b> = Connected to NetCloud Manager.



**EMBEDDED MODEM STATE:** Indicates information about the integrated modem.

	<b>No Light</b> = Modem not connected. <b>NOTE:</b> You will not be able to see the icon when the modem is not connected.
	<b>Solid Green</b> = Modem has established an active WAN connection.
	<b>Flashing Green</b> = Modem is connecting.
	<b>Solid Yellow</b> = Modem is not active.
	<b>Flashing Yellow</b> = Data connection error. No modem connection possible.
	<b>Solid Red</b> = Carrier reject.
	<b>Blinking Red</b> = No SIM or SIM Door Open.



**MC400 MODEM STATE:** Indicates information about the optional MC400 modem.

	<b>No Light</b> = Modem not connected. <b>NOTE:</b> You will not be able to see the icon when the modem is not connected.
	<b>Solid Green</b> = Modem has established an active WAN connection.
	<b>Flashing Green</b> = Modem is connecting.
	<b>Solid Yellow</b> = Modem is not active.
	<b>Flashing Yellow</b> = Data connection error. No modem connection possible.
	<b>Solid Red</b> = Carrier reject.
	<b>Blinking Red</b> = No SIM or SIM Door Open.



**CELLULAR HEALTH:** Indicates the health of the primary cellular modem's signal.

	<b>No Light</b> = No cellular connection.
	<b>Solid Green</b> = Cellular health is excellent/good.
	<b>Solid Yellow</b> = Cellular health is fair.
	<b>Solid Red</b> = Cellular Health is poor.

## Troubleshooting

If the device takes longer than 5 minutes to connect to the Internet, you may need to log into the local UI of the device to make configuration changes or start the troubleshooting process. You must be physically co-located with the device to do this. If there is no Internet connection, refer to the following:

- [No Internet or Connection Issues \(https://customer.cradlepoint.com/s/article/NCOS-No-Internet-or-Connection-Issues\)](https://customer.cradlepoint.com/s/article/NCOS-No-Internet-or-Connection-Issues)
- [NCOS: How to Configure WAN Interfaces \(https://customer.cradlepoint.com/s/article/NCOS-How-to-configure-WAN-Interfaces\)](https://customer.cradlepoint.com/s/article/NCOS-How-to-configure-WAN-Interfaces)

Once the device connects to the Internet, ensure that desired functionality is working appropriately through NCM.

## Help and Support

- [Cradlepoint Customer Connect Community \(https://customer.cradlepoint.com/s/\)](https://customer.cradlepoint.com/s/)
- [Cradlepoint Support Services \(https://cradlepoint.com/support/\)](https://cradlepoint.com/support/)

## Resources

- [R920 Series Ruggedized Router Data Sheet \(https://cradlepoint.com/datasheet/r920-series-ruggedized-router\)](https://cradlepoint.com/datasheet/r920-series-ruggedized-router)
- [R920 Series Ruggedized Router Webpage \(https://cradlepoint.com/product/endpoints/r920-series/\)](https://cradlepoint.com/product/endpoints/r920-series/)
- [RX20 Series Managed Accessory Quick Start Guide \(https://customer.cradlepoint.com/s/article/RX20-Series-Managed-Accessory-Quick-Start-Guide\)](https://customer.cradlepoint.com/s/article/RX20-Series-Managed-Accessory-Quick-Start-Guide)
- [RX20 Managed Accessory Series Data Sheet \(https://cradlepoint.com/datasheet/rx20-mc/\)](https://cradlepoint.com/datasheet/rx20-mc/)
- [RX20 Managed Accessory Webpage \(https://cradlepoint.com/product/endpoints/r920-series/\)](https://cradlepoint.com/product/endpoints/r920-series/)
- [USB to RS232 Extensibility Cable Quick Start Guide \(https://customer.cradlepoint.com/s/article/USB-to-RS232-Extensibility-Cable-Quick-Start-Guide\)](https://customer.cradlepoint.com/s/article/USB-to-RS232-Extensibility-Cable-Quick-Start-Guide)
- [USB to RS232 Extensibility Cable Data Sheet \(https://cradlepoint.com/datasheet/usb-to-rs232-extensibility-cable/\)](https://cradlepoint.com/datasheet/usb-to-rs232-extensibility-cable/)
- [USB to RS232 Extensibility Cable Webpage \(https://cradlepoint.com/product/endpoints/usb-to-rs232-extensibility-cable/\)](https://cradlepoint.com/product/endpoints/usb-to-rs232-extensibility-cable/)



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