RESCUE 42

miniNSD™ AiO
Owner's Manual

For the initial system setup guide refer to page 12.

Quick Start Steps

Follow these steps to deploy the miniNSD AiO to provide LTE service utilizing Starlink as primary backhaul.

1. Optionally prior to deployment, download the Starlink app on a smartphone, login, and use the tool to check for obstructions.

2. Place the miniNSD AiO 3 feet or higher off the ground if possible. Do not deploy the miniNSD directly on hot surfaces. Take caution when operating with inlet air temperatures above 113°F.

3. Connect an external power source using the AC or DC ports for sustained operation (Figure 1, Red).

4. Open both Fan ports on the sides of the case (Figures 1 & 3, Blue).

Figure 1

5. Ensure the following (Figure 2):
   a. Batteries are connected (Red).
   b. Battery switch is in the ON/Reset position (Yellow).
   c. WAN Source is set to satellite icon (Green).

Figure 2

6. Press the MAIN, RADIO, and SAT power buttons (Figure 3, Red).
7. Use the viewport to ensure four solid green lights are displayed (Figure 3, Green). This process may take several minutes.
    a. Call #48 from a Verizon phone to verify LTE connection. Compare the Cell ID on the placard to the voice prompt to confirm the radio is transmitting.
8. It is recommended to remove the lid while using the Starlink terminal.

Figure 3

Welcome to the miniNSD™ community. We thank you for your support and hope you enjoy our excellent products, documentation, and customer service. If there are any questions regarding your product or the contents of this manual, please call the Rescue 42 toll-free at:

(888) 427-3728

The purpose of this Owner's Manual is to provide explanations and procedures for operating, maintaining, and troubleshooting a miniNSD AiO.

miniNSD™ is a Trademark of Rescue 42, Inc. Starlink® is Registered Trademark of Space Exploration Technologies Corp. Verizon is a registered trademark of Verizon Trademark Services LLC.

All rights reserved. Reproduction by any means, electronic or mechanical, including photocopying, recording or by any information storage and retrieval system or translation in whole or part is not permitted without written authorizations from Rescue 42, Inc. Rescue 42 may change the contents without notice and without incurring obligation.

Copyright ©2025 Rescue 42, Inc.

Table of Contents

Warnings & Safety 7

Notes 9

- Symbols 9
- Definitions 9

Overview 10

- Case 10
- Antenna Deck 11
- Storage Area 11

Initial System Setup 12

- Recommended Actions 13

Deployment Scenarios 14

- LTE Broadcast with Satellite Backhaul 14
- LTE Broadcast with Terrestrial Backhaul 15
- Wired Ethernet and Wi-Fi Hotspot with LTE Backhaul 15
- Wired Ethernet and Wi-Fi Hotspot with Satellite Backhaul 15

System Recovery 16

Flight Preparation 16

Component Breakdown 17

- Exterior Case 17
- Antenna Deck 24
- Service Area 30

Wireless & Networking 36

- Logging in to the Cradlepoint 36
- Standard Configuration 36
- Status Monitoring 38
- Wi-Fi Calling 39
- Cradlepoint LEDs 40
- SIM Card Install 41

Starlink Mini 41

- Activating Starlink Service 41
- Starlink App 42
- Deploying Starlink 43
- Starlink Wi-Fi 43

Network Extender Radio 44

- Radio Updates 44
- Powering the Radio 44
- Closed Subscriber Group Configuration 45
- Local Radio Access 47

Specifications 50

- Serial Number 50
- Physical Properties 50
- Charger 50
- Batteries 50
- Battery Monitor 50
- Fuses 51

Maintenance 52

Cleaning 52
Storage 52
Battery Equalization 52
Battery Replacement 53
Function Checks..... 53
Troubleshooting..... 54
Warranty 55
Serial Numbers..... 56

STOP!

READ THESE WARNINGS BEFORE USING THE MININSD

Failure to follow these instructions or heed these warnings may cause damage to the miniNSD, property, cause bodily injury or death, and void the warranty.

Warnings & Safety

- You are always responsible for damage to a miniNSD, other property, injury, or death caused by incorrect use of a miniNSD.
- Always make sure that all lid latches and pins are fully engaged prior to transporting.
- Do not drill, weld, or modify any part of a miniNSD. Never alter or replace a component on the miniNSD with any part except one supplied by Rescue 42, Inc.
- Never use a miniNSD that is damaged in any way.
- miniNSD components are finished to prevent rust. As with any metal equipment, we recommend keeping the unit clean, dry, and free of dirt and debris when not in use.
- It is recommended that the unit be stored indoors when not in use.
- It is recommended to secure the unit if left unattended using a standard cable locking system if it does not interfere with the function and safety.
- **Prop 65 WARNING** This product contains chemicals known to the State of California to cause cancer or birth defects or other reproduction harm. For more information visit www.P65Warnings.ca.gov.

Toll Free: (888) 427-3728

Ext. 4 for Tech Support

Business: (530) 891-3473

Fax: (530) 891-9255

E-Mail: info@rescue42.com

Web: www.rescue42.com

Rescue 42, Inc.

P.O. Box 1242

Chico, CA 95927-1242

Contact Rescue 42, Inc. for a

Physical/Shipping Address

For the most up to date Owner's Manual and additional resources visit our website:

Revision History

Version	Description	Date
A	Initial Release	2025-01-17

Notes

Symbols

Manual Reference

Indicates that the reader should consult the relevant section of this Owner's Manual for information on a particular part, assembly, or procedure.

Indicates warnings that must be followed to avoid damage to the miniNSD unit, personal injury, or death.

System Identifiers

AC Power

Battery

Battery Disconnected

 DC Power

Satellite

WAN Network

Definitions

- AiO – All-in-One
- GPIO – General Purpose Input/Output
- IP – Internet Protocol
- LAN – Local Area Network
- NCM – NetCloud Manager
- NSD – Network System Deployable
- SIM – Subscriber Identity Module
- WAN – Wide Area Network

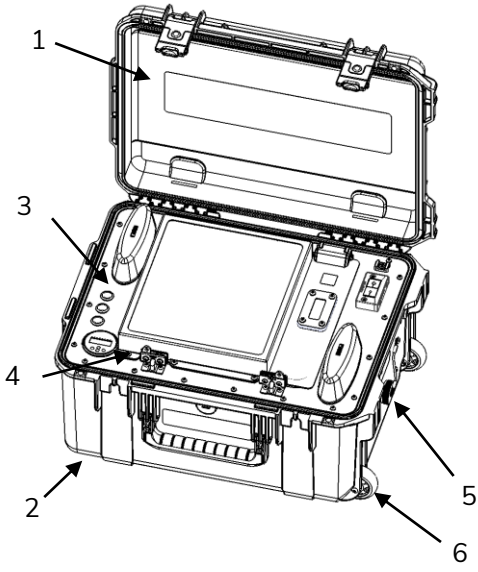
Overview

The miniNSD AiO contains communications and power management components to provide satellite internet, LTE access, and a Wi-Fi Hotspot when and where you need it.

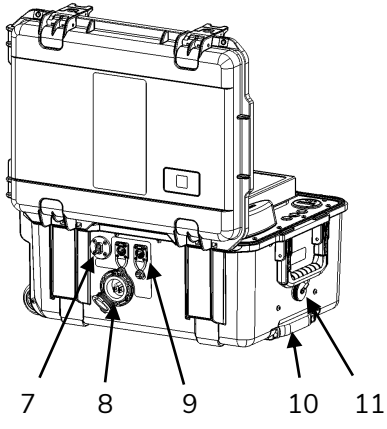
Case

The Case is a modified NEMA 3 rated water-resistant enclosure. It includes wheels and a stowable handle to make transport easier. On the exterior of the Case, fan ports, Ethernet, and incoming power have water resistant covers.

⚠ Ensure **both** fan port plugs are removed before powering the system to prevent fan damage.



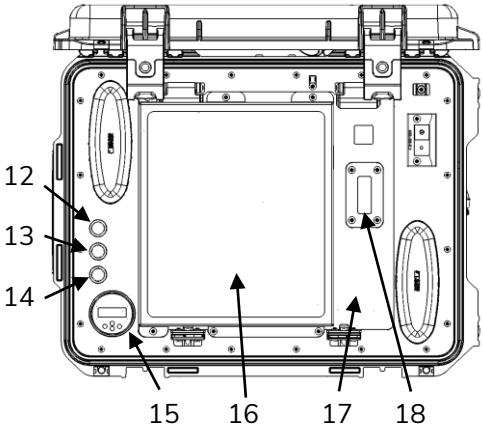
1. Lid
2. Base
3. Antenna Deck
4. Service Door
5. Fan Port with plug
6. Rolling Wheels



7. 12V DC Input
8. 120V AC Inlet
9. Ethernet Bulkheads (LAN & WAN)
10. Stowable Handle
11. Fan Port with plug

Antenna Deck

The antenna deck secures the two multi-antennas that serve the Cradlepoint and the LTE Radio. This space serves as the main user surface with operational instructions, radio status light viewport, and power buttons.

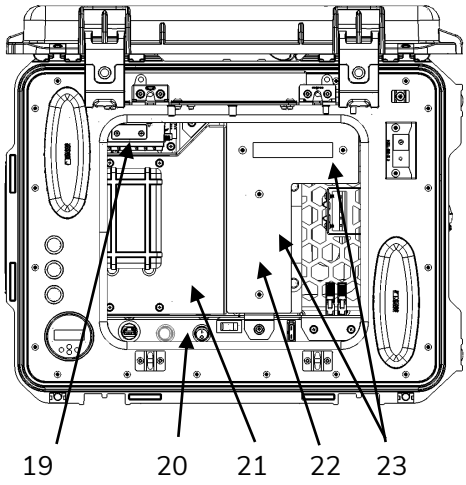


12. MAIN Power Button
13. RADIO Power Button
14. SAT Power Button
15. Battery Monitor
16. Starlink Mini Terminal
17. Operation Instructions
18. Radio Status Light Viewport

Storage Area

Beneath the Service Door is the water-resistant Service Area that provides access to the Circuit Breaker Panel, Cradlepoint router, Storage Area, and Battery Box.

⚠ Federal law mandates the Batteries be removed from the Battery Box and carried in carry-on luggage for commercial airline transport.



19. Cradlepoint Router
20. Circuit Breaker Panel
21. Storage Area & Accessories*
22. Information Placard
23. Batteries (Under Lid)

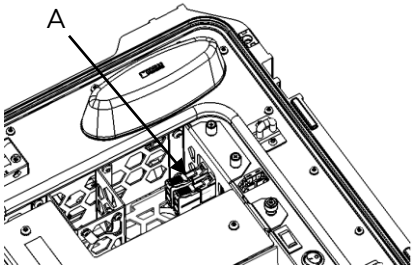
*Accessory cables not shown.

Initial System Setup

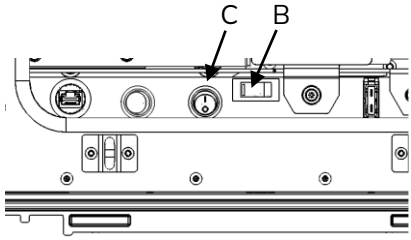
Follow these steps to prepare your unit for deployment from the shipped state.

We recommend a full system deployment to familiarize yourself with the case after completing the initial setup.

1. Open the Service Door and locate the Battery Box.
2. Connect the Battery harnesses to the bulkhead connectors on the Battery Box wall (A).



3. Toggle the Battery Circuit Breaker (B) to the ON position.
   a. This is notated by 'RESET' on the switch.
4. Toggle Audible Alarm Switch (C) to the "I" position.



5. Connect external AC power source using Bulkhead port at Case rear.
6. Charge unit completely until Battery Monitor synchronizes to the full state (takes approximately 1.5 hours).
   a. Install VictronConnect App for full feature set of battery management, see page 27.
7. The Cradlepoint router is preconfigured for the miniNSD. If other networking changes are required consult your IT staff or personnel familiar with using Cradlepoint routers.
8. Activate Starlink data plan through your preferred vendor or Starlink directly.
   a. KIT # for activation can be found on the Information Placard on the Battery Door.
9. Proceed to deployment of the miniNSD.

Recommended Actions

The following steps are recommended to keep the Cradlepoint router secure.

When the miniNSD Cradlepoint gets online it will sync with NetCloud Manager and update its configuration if any changes have been made. Refer to page 36 for connecting to NetCloud Manager.

Changing the Wi-Fi Password

1. Ensure miniNSD Cradlepoint is online.
2. Log into your organization's Cradlepoint Net Cloud Manager.
3. Match your routers information to one in your device list.
4. Edit the devices configuration:
   a. Browse to the 2.4 GHz Wi-Fi radio settings. (Networking → Local Networks → Wi-Fi Radio #1).
   b. Select the edit option for the Enabled Wi-Fi Name
   c. Enter a new WPA password.
   d. Click the Commit Changes button at the bottom of the window.
5. Record and report this password to your organization as appropriate.

Changing the Cradlepoint Admin Password

This is a requirement by Cradlepoint if logging in locally to the router for the first time.

1. Ensure miniNSD Cradlepoint is online.
2. Log into your organization's Cradlepoint Net Cloud Manager.
3. Match your routers information to one in your device list.
4. Edit the devices configuration:
   a. Browse to Router Security. (System → Administration → Router Security).
   b. Select and Edit the Admin User.
   c. Input a new Admin password and confirm it before saving.
   d. Click the Commit Changes button at the bottom of the window.
5. Record and report this password to your organization as appropriate.

Deployment Scenarios

The miniNSD is not just a cell site, there are many different scenarios in how the unit can operate to provide communication pathways for User Access.

The source connecting a device to the Internet is called WAN (Wide Area Network) or backhaul. The pathways the miniNSD uses to communicate with the user are called LAN (Local Area Network) or User Access.

Choosing a Deployment Location

⚠ Do not place the miniNSD on hot surfaces such as asphalt or pavement. Ambient temperatures near the ground can exceed the operating range and may overheat the miniNSD.

⚠ Keep the miniNSD elevated off the ground for better cooling.

The miniNSD should be deployed on a flat stable surface. The miniNSD will need to see the sky to obtain a GPS location.

The LTE and Wi-Fi Antennas perform best without obstructions such as trees, mountains, buildings, or tall vehicles. Clear line of sight in all directions will prevent signal loss.

LTE Broadcast with Satellite Backhaul

Steps to set up the miniNSD to provide LTE service with satellite backhaul.

1. Place miniNSD in an area with a clear view of the sky.
2. Open both Fan Ports.
3. Connect an external power source using the Power Ports on the rear of the case for sustained operation.
4. Depress the MAIN, SAT, and RADIO Power Buttons on the Antenna Deck.
5. Use Viewport to ensure the Network Extender is transmitting with four green lights.
6. It is recommended to remove the lid while using the Starlink terminal.

LTE Broadcast with Terrestrial Backhaul

If in an area where terrestrial backhaul is available that is not the same carrier as the LTE Radio, it can be used to backhaul the LTE Radio.

1. Place miniNSD within range of a backhaul source.
   a. LTE of a different carrier
   b. Wi-Fi as WAN
   c. Ethernet
2. Open both Fan Ports.
3. Connect an external power source to the Case using the Bulkhead ports on the rear for sustained operation.
4. Depress only the MAIN and RADIO Power Buttons on the Antenna Deck.
5. Use Viewport to ensure the radio is transmitting with four green lights.
6. Close the lid.

Wired Ethernet and Wi-Fi Hotspot with LTE Backhaul

This scenario requires an active SIM card to be present in the Cradlepoint to connect to the carrier's network.

1. Place miniNSD within range of LTE backhaul.
2. Open both Fan Ports.
3. Connect an external power source to the Case using the Bulkhead Ports on the rear for sustained operation.
4. Depress the MAIN Power Button on the Antenna Deck.
5. Connect downstream devices to the Wi-Fi or hardwired through the LAN port.
6. Close the lid.

Wired Ethernet and Wi-Fi Hotspot with Satellite Backhaul

1. Place miniNSD in an area with a clear view of the sky.
2. Open both Fan Ports.
3. Connect an external power source using the Power Ports on the rear of the case for sustained operation.
4. Depress only the MAIN and SAT Power Buttons on the Antenna Deck.
5. Connect downstream devices to the Wi-Fi or hardwired through the LAN port.
6. It is recommended to remove the lid while using the Starlink terminal.

System Recovery

The following steps must be completed to return the miniNSD to a transportable state after deployment. For information on storing the miniNSD refer to page 52.

1. Ensure the MAIN, RADIO. and SAT Power buttons on the Antenna Deck are in the OFF position.
2. Reinstall both Fan Ports.
3. Disconnect the backhaul source to the WAN ethernet port.
4. Disconnect the external power source.
5. Dry the Antenna Deck of any standing water and check felt lining inside the case for any moisture. See Water Inspection Port on page 35.
6. Ensure all Accessories, refer to page 31, are in the Service Area. Close and latch Service Door.
7. Close Case Lid and press firmly on the Latches.

Flight Preparation

Refer to FAA website: https://www.faa.gov/hazmat/packsafe/lithium-batteries for instructions on how to transport batteries.

If further reduction is needed to lower case weight, the accessories, and battery box lid can be removed and placed in carry-on luggage.

Steps to prepare the miniNSD for flights on commercial airlines.

1. Open the Service Door and identify Breaker Panel within the Storage Area.
2. Toggle the Battery Breaker to the OFF position.
3. Remove the Battery Box lid.
4. Disconnect Batteries from the Battery Box and remove.
5. Replace the Battery Box lid.
6. Close and latch the Service Door.
7. Close the Case Lid and press firmly on the Latches.
8. Place the batteries in carry-on luggage.

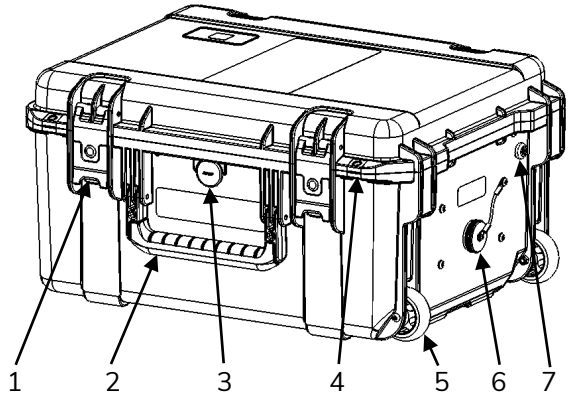
Component Breakdown

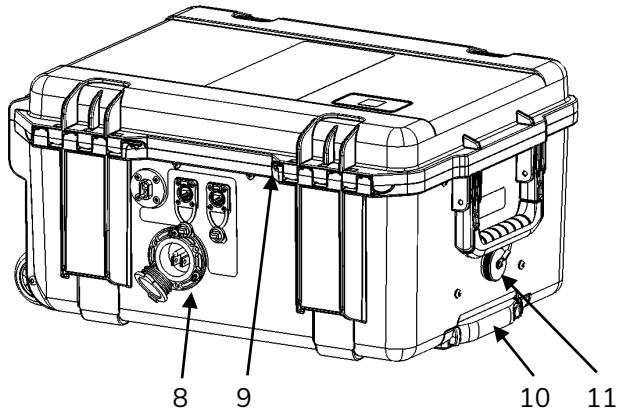
There are three main areas of the miniNSD Case. The Exterior, Antenna Deck, and Service Area. The following pages will break down each component of those areas and explain their functionality.

Exterior Case

The Case of the miniNSD houses all the electronic equipment. It is secured with two reinforced latches.

1. Case Latch (2x)
2. Foldable Handle (2x)
3. Pressure Vent
4. Lock Point (2x)
5. Luggage Wheels
6. Fan Port Inlet
7. Drain Plug
8. Ethernet & Power Ports
9. Lid Pins (2x)
10. Luggage Handle
11. Fan Port Outlet





Case Latches

⚠ Do not submerge the case in water.

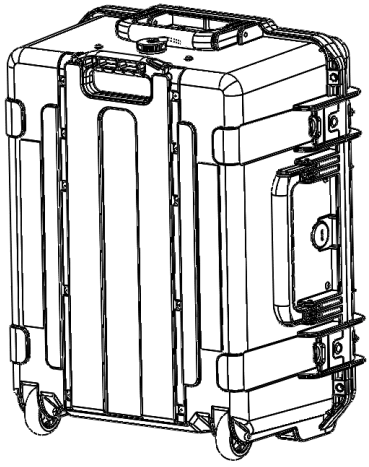
The case has two latches that secure the Lid to the Base and create a watertight seal.

Latches can be opened by pulling against the small locking lever on the inside of the latch.

Close the latches by firmly pressing the lever toward the Base.

Wheels & Luggage Handle

The case has integrated wheels and an expandable Luggage Handle for easy transport.



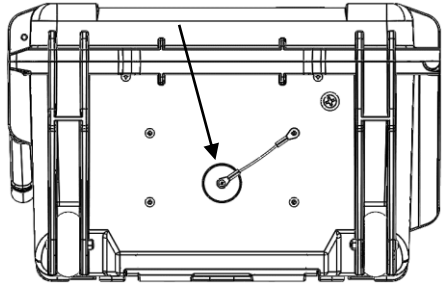
Transporting

1. Rotate the case up with wheels on the ground.
2. Press the red button on the handle and extend upward.
   a. There are two height positions for the handle.
3. Collapse handle by pressing red button when done transporting.

Fan Ports

⚠ Both fan ports must be open during system operation. Failure to do so may damage internal equipment.

⚠ Elevate the case off the ground



to reduce ambient air intake temperatures from hot surfaces.

The temperature inside the Case can be viewed on the Battery Monitor.

The case has two Fan Ports to air cool the system. The right fan port is the intake. The left fan port is the exhaust.

Both fans will automatically turn on with the Main Power button.

Airflow direction is from right (intake) to left (exhaust) when looking at the front of the unit.

Opening Fan Ports

⚠ Always ensure the Fan Plug gasket is in place prior to threading them into the Case. Without them water can penetrate the Case.

The fan port plugs thread into a nut the Case. Twist counterclockwise to remove, and clockwise to install. They are attached to the case to avoid being misplaced.

Fan Port Filter

ⓘ Check Fan Port Filter before each deployment. Clear any obstructions prior to use or overheating may occur.

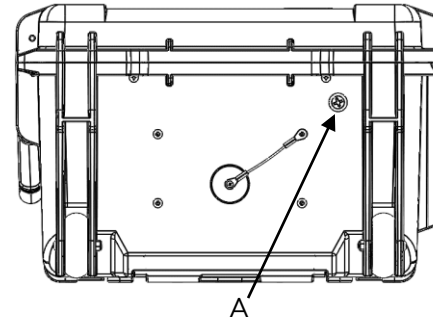
Behind the Fan Port Plugs is a small mesh filter to keep out large particles from blocking the airflow. The filter is reusable and can be washed if impacted with dust. Dry completely before reinstalling.

Drain Port

ⓘ Use a Phillips #3 or larger screwdriver or damage to the drain port may occur.

In the event water does find a pathway into the case, you can drain excess water through the Drain Port.

Located on the wheel side of the Case is a large nylon screw. This screw is the Drain Plug (A) for the Case.



Draining Water

ⓘ In the event the Case collected water internally with the Service Door closed, it is recommended to reach out to Rescue 42 for appropriate diagnosis and repair.

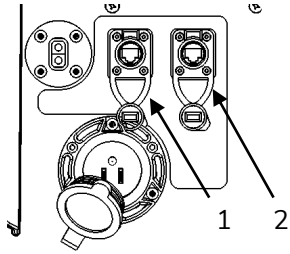
1. Toggle the Battery Circuit Breaker to the OFF position.
2. Check for standing water inside the case. Check through the Water Inspection Port (refer to

page 35) or inside Service Area on the absorbent felt lining on Case wall.

3. Remove Drain Plug from case.
4. Slowly tilt the case towards the wheel side until standing on edge.
5. Allow water to drain completely.
6. Tilt case back down and reinstall the Drain Plug.
7. Store the unit in a dry warm environment for at least 24 hours with the Lid and Service Door open.
   a. The felt lining through water inspection port should be dry to the touch before proceeding.
8. Toggle the battery circuit breaker to ON position.
9. Connect external AC power.
10. Open both Fan Ports and depress the Main power button. Allow the system to run until dry.
11. Complete a full deployment verifying functionality.

Ethernet Ports

There are two Ethernet ports on the rear of the Case. These ports can feed IP (Internet Protocol) either into or out of the miniNSD.



1. WAN Inlet
2. LAN Outlet

The Ethernet Ports are specialized rugged connectors. They accept standard RJ45 cables as well as a waterproof style connector for all element use. One of each style cable is included in the Storage Area.

WAN Inlet

The WAN Source switch on the Control Panel must be switched to the network icon to make this port operational. See page 32.

The WAN Inlet is to be used to feed IP into the miniNSD, it is commonly referred to as backhaul. This IP source will be used in the default configuration as the top priority Internet source.

LAN Outlet

The LAN Outlet is used to feed downstream devices IP such as laptops or other devices.

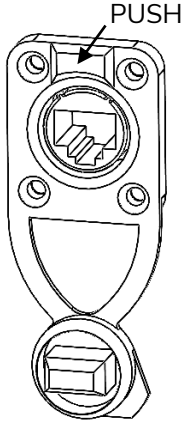
Connecting Waterproof Cable

To connect the waterproof style cable, orient the connector correctly and press it into the bulkhead until it locks into place.

Disconnecting Waterproof Cable

⚠ Failing to push the release button above the Ethernet Port may cause damage to the port or connected plug.

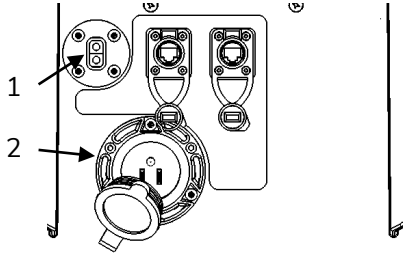
To remove the waterproof connector, you must push the Ethernet Port button just above the connector indicated with an embossed 'PUSH' and then pull the connector out.



Power Ports

ℹ If both AC and DC power is provided to the Case, the Case will utilize the AC power source as primary.

There are two Power Entry ports on the back side of the Case.



1. DC Power Inlet
2. AC Power Inlet

Acceptable Power Sources

The miniNSD can handle a multitude of different power sources.

AC – 120V / 60Hz

- Shore power (Standard 120V)
- Generator Power
- Solar Panel(s)

DC – 12-14.6V

- Vehicle Charge Harness
- External Batteries
- Solar Panel(s)

Connecting AC Power

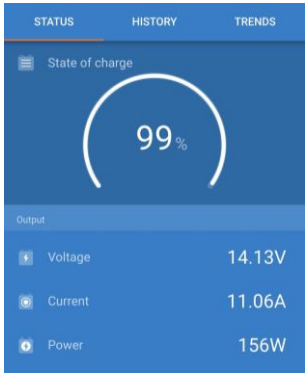
⚠ Electric shock hazard present if the system is not properly powered. If unsure always consult a qualified electrician.

ⓘ AC Power goes directly to the internal charger.

External AC Power is the preferred method for long duration operation of the miniNSD. It will power the unit and charge the batteries to full capacity.

Powering from AC

1. Open the cover to AC Inlet port.
2. Fully insert the Power Cable into the AC Inlet on the rear of the Case.
3. Verify charging with Battery Monitor (refer to page 27) showing voltage above 13.5V and a positive Amperage A indicating current going into the batteries.



Depowering from AC

1. Disconnect the AC Inlet Power Cable.
2. Replace cover over receptacle with the attached plug.

Connecting DC Power

⚠ Electrical hazard. Do not connect any voltage greater than 14.6VDC.

⚠ Do not short bare wire terminals. Electrical shock hazard.

⚠ Do not use any DC harnesses not provided by Rescue 42. There is risk of incorrect circuit protection and cable polarity.

The miniNSD includes a 12VDC charging / power inlet. This allows external DC sources to power the unit including the transporting vehicle, external battery bank, solar array, etc.

Included in the Storage Area is a charging harness that connects to a common automotive auxiliary power outlet, or battery clamps for direct battery connection.

The connector utilized for 12VDC power is known as a 2-pole flat SAE power plug.

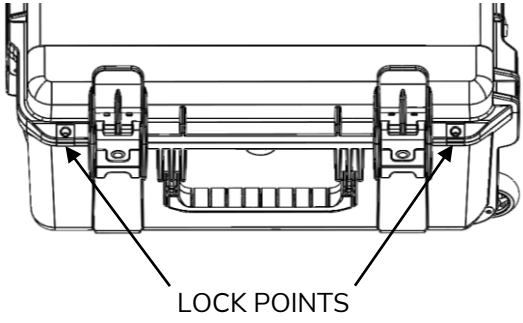
Powering from DC

⚠ Vehicle must be able to provide 10A continuous power through Auxiliary power plug otherwise use the battery clamps directly to the vehicle's battery.

1. Select the harness depending on DC source available.
   a. Auxiliary power plug
   b. Battery clamps
2. Connect the harness to the extension cable.
3. Connect the opposite end of the extension cable to the DC Inlet port on the rear of the Case.

Lock Points

The case includes two reinforced locations around the periphery of the Case. These can be used to either lock the Case directly or with the use of a cable style lock to fasten it to a secure object.



Locks are not provided but can easily be added to increase security of the Case.

Lid Pins

The lid of the case is designed to be removable to free it from being an obstruction to the Starlink Mini terminal. While the Starlink terminal may operate through the lid of the case, it is recommended to remove the lid to clear any chance of it being an obstruction.

Lid Pin Removal

🛈 It is recommended to reinsert the loose pins back into the case for storage while the lid is removed.

1. Open two case latches.
2. Grab lid pin and pull inward to slide pin free.
3. Repeat for second pin.

Lid Pin Installation

🛈 Light motion of the lid or pressing down on lid into place may ease the pin insertion.

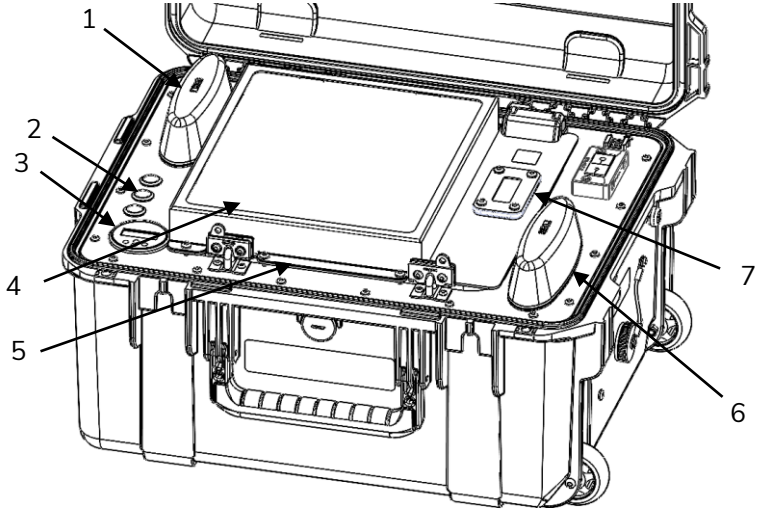
1. Set lid in place aligning tabs in grooves.
2. Slide pin through holes grabbing case and lid together.
3. Fully insert the pin.
4. Repeat for other side.

Antenna Deck

The Antenna Deck is the exposed area under the case lid. This area is designed to withstand water and the elements when the Service Door is in the closed position.

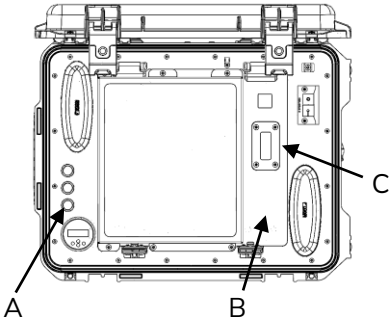
This space serves as the main user surface with operational instructions, radio status light viewport, and power buttons.

1. Cradlepoint Antenna
2. Power Buttons
3. Battery Monitor
4. Service Door
5. Starlink Mini Terminal
6. Radio Antenna
7. Radio Light Viewport

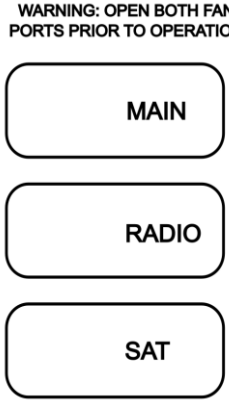


Labeling

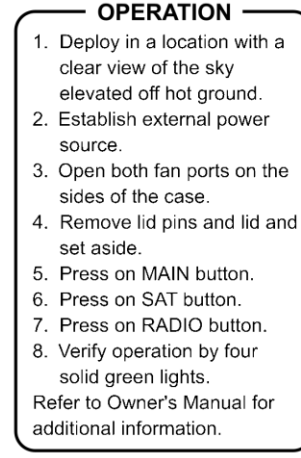
The labeling on the antenna deck covers power button callouts (A), how to quickly get your unit up and running (B), and Radio LED callouts (C).



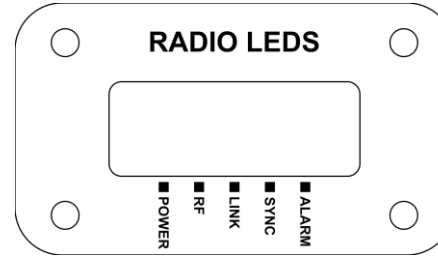
- Power Button Callout (A)



- Operation (B)



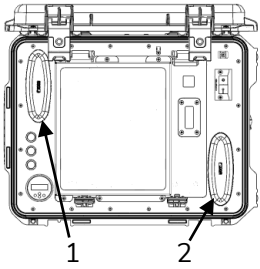
- Radio LED Callouts (C)



Antennas

The antenna deck has antennas for LTE, Wi-Fi, and GPS connectivity.

1. 5-in-1 Antenna for the Cradlepoint Router
2. 3-in-1 Antenna for the LTE Radio



The 5-in-1 antenna contains two Wi-Fi 2.4/5Ghz, two LTE connected to integrated modem, and one GPS. All these leads go directly to the Cradlepoint router.

The 3-in-1 antenna contains two LTE connections and one GPS antenna. All these leads go directly to the LTE Radio.

Power Buttons

There are three buttons that control the operation of the miniNSD.

The buttons will illuminate when in the depressed ON state.

Main Power

The Main Power Button controls power for the entire system. Depressing the button ON powers all 12VDC components such as the Cradlepoint and cooling fans.

Radio Power

This button will not function without the MAIN Power Button also being ON.

The LTE Radio Power Button controls the power to the LTE Radio.

Satellite Power

This button will not function without the MAIN Power Button also being ON.

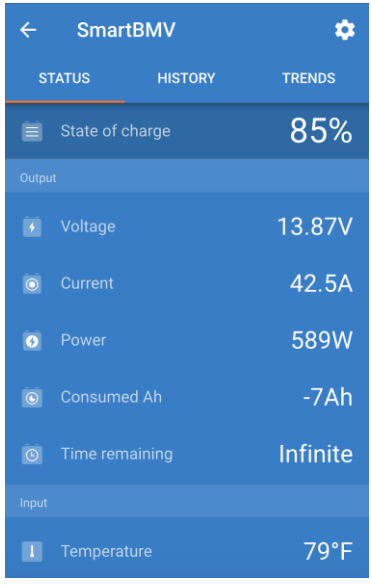
The Starlink will not feed Internet to the system unless the WAN Source switch is set to the Satellite icon, refer to page 32.

The SAT Power Button controls the power to the Starlink Mini Terminal.

Battery Monitor

The Battery Monitor gives a complete look at the status of the Batteries. This includes whether the system is charging from an outside source, operating from the batteries, alarm state conditions, temperature, and state of charge.

If the batteries are disconnected from the monitor, the battery monitor may need to be resynced by fully charging the unit before showing the correct state of charge. It will retain the state of charge information only if the setting “Keep SoC” is enabled.



The included Battery Monitor is a Victron Energy BMV-712 Smart Unit, which has Bluetooth capabilities and can be accessed remotely via the “VictronConnect” cell-phone app.

GET IT ON Google Play

Download on the App Store

Google Play and the Google Play logo are trademarks of Google LLC. Apple and the Apple Logo are registered trademarks of Apple Inc.

VictronConnect has a full monitoring system which checks for alarms and errors. As soon as an alarm or error is reported, the alarm/error and its description are shown on the live data page.

Alarms and errors are only shown on the device when the app is active. They will not alert from the background.

The Battery Monitor comes preprogrammed for the miniNSD. For default programmable settings refer to Specifications section on page 50.

For more detailed information and capabilities of the Battery Monitor refer to Victron Energy and related documentation.

Resetting the Bluetooth PIN Code

It is not recommended to change the default PIN code.

In the event the PIN code is changed from the default (000000) and forgotten, follow these steps to reset it.

1. Open Victron Connect app and load the Device List.
2. Click the three-dots menu next to the product and select 'Reset PIN Code'.
3. Enter the PUK code.
   a. This can be found on the product sticker inside the Battery Box compartment.

Alarm

There is an Audible Alarm Switch inside the Service Area and if switched off will disable the audible alarm during an alarm state. Refer to page 32 for its location. It is recommended to leave this switch in the 'I' position unless actively addressing the alarm condition.

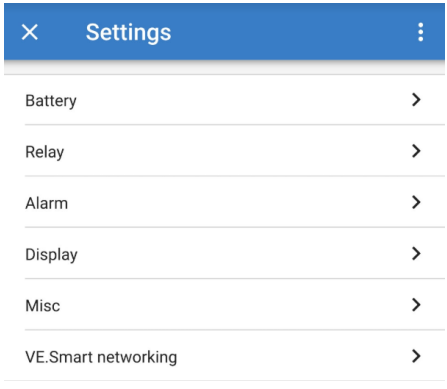
The alarm system notifies users audibly that there is a fault condition with the miniNSD regarding the power system. The Alarm is controlled by the Battery Monitor alarm state which includes:

- Low/high voltage
- Low/high temperature
- State of charge

The Alarm Buzzer is located inside the Case. The Audible Alarm is the same for all alarm states.

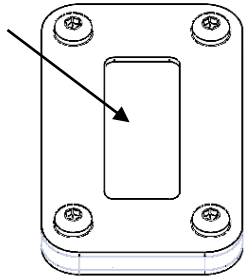
The alarm settings are meant to provide a window of time to address the problem prior to losing system power or damage from excessive temperature. This time window will vary depending on battery load.

The settings for the Alarm should be identical for both Alarm and Relay sections under Settings. The Alarm section aligns to the monitor itself that will beep and flash during an alarm. The Relay Alarm section will trigger the much louder audible alarm.



Radio Light Viewport

Water can pool inside the viewport. Always be sure to remove this with a soft cloth prior to storage.



The Viewport on the Antenna Deck gives a clear line of sight to the status lights on the LTE Radio. When the Radio is powered on there will be five indicator lights as called out on the label.

Refer to the LTE Radio section for on page 45 for more information.

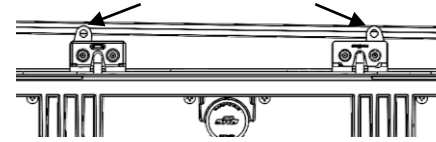
Service Door

The Service Door should remain closed during use to avoid water from entering the internal area of the Case.

The Service Door protects the Service Area compartment from water intrusion. It is secured with two compression latches.

Opening the Service Door

1. Actuate the rounded feature outward on both latches simultaneously.
2. Lift Hatch Door open.



Closing the Service Door

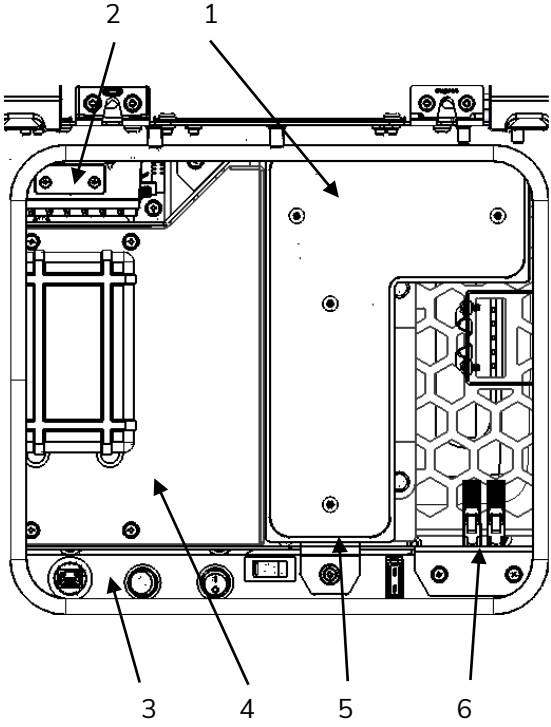
1. Press the antenna firmly downward until latches secure in the closed position.

Service Area

⚠ The Service Area is not protected from the elements. Use caution when opening the Service Door in adverse weather conditions.

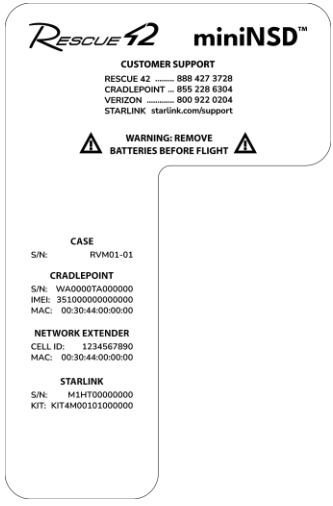
Located in the Service Area will be the included accessories, Information Placard, Control Panel, Batteries, and the Cradlepoint router.

1. Information Placard
2. Cradlepoint Router
3. Control Panel
4. Storage Area & Accessories
    a. Cables
    b. Storage box
5. Battery Box & Lid
6. Battery Connections



Information Placard

The Information Placard is attached to the Battery Box Lid. The Battery Box Lid is removable if needed for better visibility.

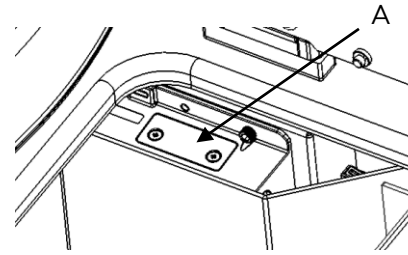


Information on the placard includes customer support phone numbers, serial numbers, MAC addresses, and other pertinent information.

Cradlepoint Router

If needed for SIM card activation, the IMEI is located on the information placard.

The Cradlepoint router is mounted for easy access to the SIM card door (A).



The router controls all the networking pathways from backhaul to Wi-Fi access of the miniNSD. For detailed information of the routers operation and settings refer to the Wireless & Networking section on page 36.

Storage Area Accessories

The open Storage Area holds accessories including cabling, storage box, and quick starts.

Standard accessories included are:

- Waterproof 10 ft ethernet cable
- 10 ft ethernet cable
- AC Charge Cable
- AC Charge Cable Splitter
- DC Charge Cable
- DC Clamp Cable
- DC Extension Cable
- Storage Box
  - Mini screwdriver
  - Spare fuses

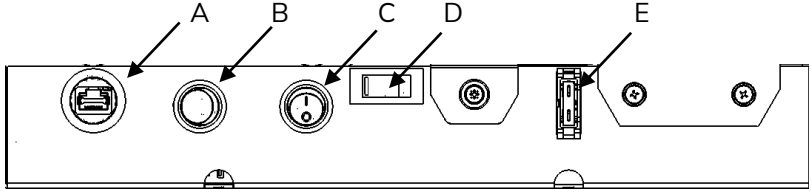
Control Panel

Local Maintenance Terminal Port

This ethernet port (A) is connected to the LMT (Local Maintenance Terminal) port on the LTE Radio. This port is available to access the radios Web GUI to check on radio status, configuration, or alarms. For more information see Network Extender Radio section on page 44.

WAN Source Switch

This WAN Source Switch (B) will select what Ethernet source is to be supplied to the Cradlepoint Router. The two available options are the Starlink Terminal or the WAN Inlet bulkhead on the rear of the case.



These are depicted with a graphic of Network connection to the left for the bulkhead inlet, and a satellite to the right for Starlink service.

Audible Alarm Switch

The Audible Alarm Switch (C) will disable the alarm tone when the alarm is activated. Default for this position is in the ON or 'I' position. Disabling the Audible Alarm should only be done when actively addressing the alarm condition reason.

For information on how the Alarm activates refer to the Battery Monitor section on page 27.

Battery Disconnect

The Battery Disconnect toggle switch (D) is a circuit breaker. It protects the wiring from the miniNSD internal system to the batteries.

If the breaker trips it will click into the OFF, or right position.

The Battery Disconnect should be left in the ON/'RESET' position to the left for normal use and storage. It should only be toggled off when removing batteries or for flight.

System Fuses

⚠ Never attempt to repair a blown fuse until the cause has been identified and properly repaired. Never replace a fuse with a substitute of another color or amperage rating, this could lead to a

circuit overload, resulting in a fire within the miniNSD.

Information on the type of fuse can be found in the specifications section on page 51.

The system has one fuse, a 10 amp (E). The fuse protects all the 12V DC loads including the power buttons, Cradlepoint, LTE Radio, Starlink, and cooling fans.

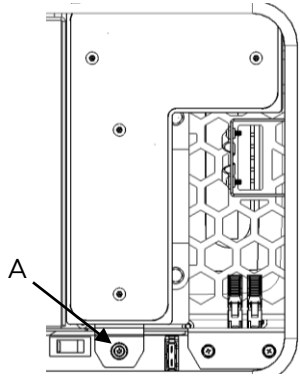
Additional fuses are installed inline in the DC charging cable harnesses.

Battery Box Lid

The Battery Box Lid secures the batteries in place.

Removing the Battery Box Lid

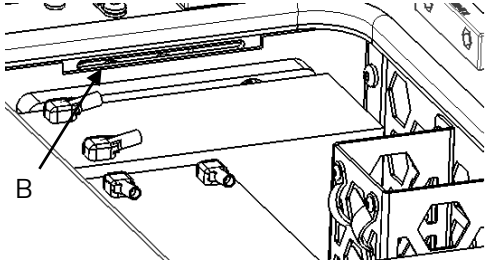
1. Rotate the thumbscrew (A) counterclockwise until free.
2. While holding the thumbscrew, lift the Lid up while sliding the tab out of the battery wall slot (B).



Installing the Battery Box Lid

⚠ Do not pinch battery cables with Battery Box Lid.

1. Align the batteries in the fully seated position.
2. Slide the Battery Box Lid tab into the slot (B) of the battery wall.
3. Close the Lid completely.



4. Secure the Lid in place by rotating the thumbscrew (A) clockwise until tight.

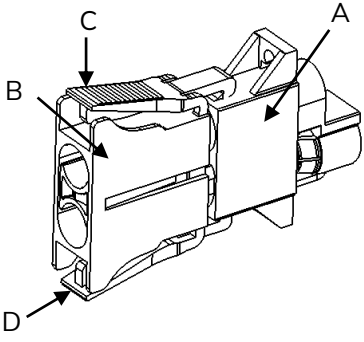
Labeling

The labeling in the Battery Box area and on each Battery reminds users the Batteries need to be removed for flights and informs them on the specifics of how the Batteries comply with FAA regulations.

Battery Connections

Two bulkheaded connectors (A) are provided in the Battery Box to mate with the quick release connectors (B) of the Batteries. To install, firmly press connectors together. To remove, depress lock tabs (C & D) while pulling the connector (B) away from the bulkhead (A).

The connectors are keyed and will only connect in one orientation to prevent a reverse polarity connection.



Batteries

⚠ Replacement batteries must be sourced from Rescue 42.

Two removeable batteries are provided to support the miniNSD during power interruptions. They are prewired with quick release connectors for easy removal and installation.

They are lightweight lithium-ion batteries that can be completely discharged many times without damage to the battery.

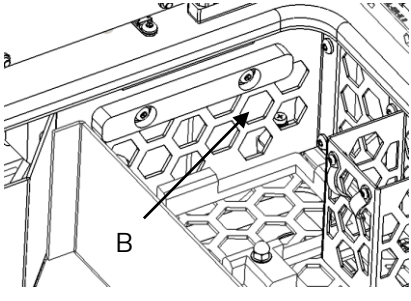
Water Inspection Port

⚠ If the deployable has been operated in a wet environment it must be checked prior to storing. The risk of electrical damage or mold growth can occur.

The Water Inspection Port (B) allows a person to check with a finger or two into the case to check if the felt lining is wet.

If excess water is present to the point that it pools and is not wicked in the absorbent felt lining of the case, follow the drain process on page 19.

If the absorbent felt lining is damp you must dry the unit as much as possible and then power and run the unit in a warm dry environment until fully dry. Only the MAIN power button needs to be on for this process.



Wireless & Networking

All network operations and access are handled through the Cradlepoint router through its NetCloud OS (NCOS) or NetCloud Manager (NCM) interface.

Logging in to the Cradlepoint

There are two ways of logging into the router for status updates and/or configuration changes.

Local Access

If physical access to the Cradlepoint is available, it can be logged into over Wi-Fi or a direct ethernet connection through an available LAN port.

Open a web browser and browse to http://192.168.70.1/

Factory default login credentials for the router are included with the miniNSD. Username is *admin* and the password is the Cradlepoint serial number.

Cloud Access

Cloud access is managed through Cradlepoint's NCM. Login at cradlepointecm.com using NCM account credentials.

If the router has not yet been loaded into the NCM account, it will need to be registered. Log into NetCloud OS (NCOS) locally and click on the NetCloud Logo . Click the Register Router button, enter the NetCloud username and password, then click the Register Router button in the Register Router with NetCloud dialog.

To make and sync changes to the router through NCM the router must be online and connected to the internet.

It is recommended to make networking configuration changes to the router through NCM. This guarantees a successful sync between local and cloud configurations. In the event of any discrepancy, NCM will be the driving setting over any local changes.

Standard Configuration

The Cradlepoint router comes with some settings preconfigured that are required for miniNSD operation.

In the event of a factory reset on the router these settings must be reapplied. A JSON file from Rescue 42 can be provided to import to a router via NCM to make all these configuration changes automatically.

Networking

The standard configuration of the networking ports is one (1) WAN and one (1) LAN port. The WAN port is connected to a selectable port that can be changed between the WAN Inlet from the case bulkhead or from the Starlink terminal. See WAN Source switch on page 32. The LAN port is connected internally to a 5-port gigabit switch. This switch splits IP feed to the LAN bulkhead on the case and to the LTE radio.

The default IP address from Cradlepoint factory is 192.168.0.1. This is modified to 192.168.70.1 to avoid common problems with network connections between routers using the same address.

Client Data Usage is enabled to allow for monitoring individual device data usage for quick identification of excessive network usage.

An IP address of 192.168.70.2 is reserved under the DHCP server for the LTE radio to allow easy remote connection from the Cradlepoint network. See page 47 for more information.

Connection Manager

External to the Cradlepoint router is the WAN Selector Switch that will change between Starlink and case bulkhead WAN Inlet. The selection is what feeds the WAN port on the router.

The Connection Manager screen allows for full prioritization of backhaul traffic. Standard miniNSD configuration is from the top-down prioritization:

WAN > Wi-Fi as WAN > LTE

Hardwired Ethernet WAN is first in the list. The most common backhaul source that will be plugged in is the Starlink Mini terminal when the WAN Source switch is set to satellite.

WAN Verify for all sources is enabled and set to Active DNS to verify connection is established before relying on it for active IP backhaul.

All connection states are changed to Standby. This reduces the amount of down time required to transition between backhaul connections.

A static route is set up to direct Starlink App traffic to the WAN

profile. Destination 192.168.100.0 with gateway 192.168.100.1 is forwarded to the Ethernet WAN profile.

Wi-Fi

Modify the Wi-Fi Channel Selection Schedule to Daily, DTIM to 2, and channel width to 20 MHz. These settings apply to the 2.4GHz Radio. The 5GHz radio is default set to disabled to avoid additional Wi-Fi networks and prioritize the 2.4GHz that provides the best range.

System

Under Administration > GPS, Enable GPS and GPS Keepalive.

GPIO configuration is modified for proper power cycling of the Cradlepoint and alarm state monitoring.

The router is wired directly to the battery and uses an ignition sense wire (MAIN Power Button) to listen for when the router should power on. This feature allows the router to perform a safe shutdown procedure when the miniNSD is depowered. The router will remain on for 2 minutes after shutdown. This is controlled by GPIO '2 on power cable (in)' and set to Ignition Sensing.

Status Monitoring

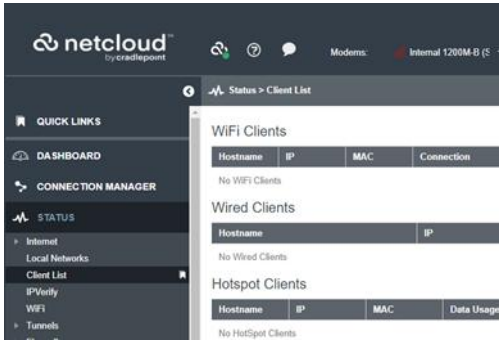
Monitoring user activity is only available for devices connected via Wi-Fi. There is no management for devices connected to the LTE Radio.

In the event the network appears to be operating sluggishly, check for heavy data users on the Wi-Fi network by using Client Monitoring. This will show the amount of data being used by specific devices. Tools to manage these devices include kicking the user off the network, forcing them to re-sign in, and blocking the user completely.

Managing Users Locally

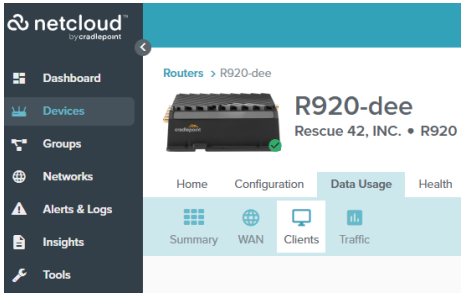
To view current data usage by each individual client, go to Status > Internet > Client Data Usage.

To manage the clients, take note of which user to kick or block and go to Status > Client List.



Managing Users Through Cloud

1. Login to NCM.
2. Click Devices from the left menu.
3. Click router to be managed.
4. Click the Data Usage tab.
5. Click Clients.
6. At bottom of this screen all connected clients can be viewed with an easy option to block or unblock.



Wi-Fi as WAN Configuration

Wi-Fi as WAN uses an outside Wi-Fi network as its Internet source, such as NSD's, buildings, or other deployables.

These steps are to be followed with the Cradlepoint router online and connected to NetCloud. If the router is not already online, connect locally to the router and omit steps 1 and 12.

1. Login to NCM.
2. Access the router's setup pages.
3. Click NETWORKING > Wi-Fi as WAN.
4. Select Wi-Fi Radio #1 for 2.4 GHz, or #2 for 5GHz networks.
5. Select Wi-Fi as WAN under Wi-Fi Client Mode.
6. Click Save.
7. Under Saved Profiles click Add.
8. Type in the SSID of the network to connect too.
9. Check Enabled box.
10. Type in the WPA Password.
11. Click Save.
12. Commit Changes.

Wi-Fi Calling

It might be needed to enter or confirm an address for emergency services prior to using Wi-Fi Calling.

By enabling Wi-Fi Calling on cellular devices it can make phone calls and text messages in an area with little or no cellular coverage.

Turning on Wi-Fi Calling may differ from phone to phone and carrier to carrier. Check with the mobile carrier for the official way to enable Wi-Fi Calling on a particular phone.

Cradlepoint LEDs

Understanding the LEDs on the front of the router can give a good sense of the status of the router.

POWER:

- No Light = Not receiving power. Check the power source connection.
- Solid White = Powered on.

NCM STATE: Detects whether the device is able to connect to NetCloud Manager.

- No Light = Unable to connect.
- Solid White = Connected to NetCloud Manager.

SIGNAL STRENGTH: Blue LED bars indicate the active modem's signal strength.

- No Light = No cellular connection.
- Solid Green = Cellular health is excellent/good.
- Solid Yellow = Cellular health is fair.
- Solid Red = Cellular health is poor.
- Solid Red = Carrier reject.

EMBEDDED MODEM:

- No Light = Modem not connected.
- Solid Green = Modem has active connection.
- Flashing Green = Modem is connecting.
- Solid Yellow = Modem is not active.
- Flashing Yellow = Data connection error and no modem connection possible.
- Flashing Red = No SIM or SIM Door Open.

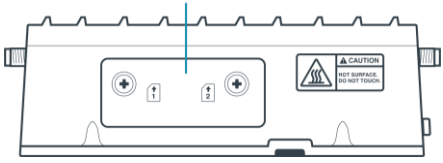
SIM Card Install

A valid SIM card is required to connect to LTE backhaul through the router. Only 4FF nano SIM cards work. The use of adapters is not recommended.

The modem cover must be replaced, or the modem will not power on.

Embedded Modem

1. Unscrew and remove the SIM card door from the front of the router.



2. Insert the card into SIM1 slot, metal contacts down and the notch in. It will click into place.
3. Insert a secondary SIM card into the SIM2 slot if applicable.
4. Replace the SIM card door and secure it with screws.

Starlink Mini

This information is provided as general guidance. These should be considered guidelines that were correct at the time of writing but may change without notice.

The Starlink Mini is a compact, portable kit able to provide high-speed, low latency internet on the go.

Activating Starlink Service

Starlink Portal access is known to change frequently. Please use the following as a reference and reach out to Starlink Support if assistance is required.

Starlink may change plan names without notice. Select the business mobile priority or the top-tier data plan with mobility to retain the highest level of service.

The terminal does not come activated with Starlink service. This must be purchased separately. Follow the below steps to activate a data plan for the Starlink terminal.

Service Activation via Starlink

1. Navigate to starlink.com/activate.
2. Enter the Starlink identifier.
   a. Either the KIT # or terminal serial # from the Information Placard will work.
3. Select whether this is a New or Existing account.
4. Enter address and then select service type.
   a. It is recommended to select the highest tier priority data with mobility for optimal service.
5. Continue checkout process.

Service Activation via Reseller

There are many VARs (Value Added Resellers) that sell Starlink service. To activate service through a VAR you will need to provide the KIT number or terminal serial number. Both can be found on the Information Placard.

If purchasing through a VAR they will provide all account management, billing, and support exclusively and not through Starlink.

Starlink App

The app is available for both iOS and Android.

The Starlink app allows you to check for obstructions, change settings, receive updates, and contact Starlink support. The app has important system status information and troubleshooting data in the event of any communication problems.

Checking for Obstructions

It is best to use the app to check for obstructions prior to deployment of the Starlink. This will give the best chance of reliable service.

1. Open Starlink app at desired deployment location.
2. In app select “Check for Obstructions”.
3. Follow the on-screen prompts to scan the sky and determine the obstruction percentage.
4. Follow app recommendations if the unit should be relocated.

Deploying Starlink

⚠ The Starlink Dish is designed to operate flat looking directly up to the sky. Keep the Service Door closed and do not operate the terminal angled on the hinges.

1. Place the deployable on an elevated stable surface area with a clear view of the sky.
2. Open both Fan Ports and remove the Lid.
3. Connect an external power source to the Case using the Bulkhead port on the Case for sustained operation.
4. Press both the MAIN Power and SAT Power Buttons on the Antenna Deck.
5. Allow the system to get online and established.
6. Check for connectivity.
7. Connect downstream devices.

Starlink Wi-Fi

It is recommended for devices to connect to the Cradlepoint Wi-Fi network over Starlink's. There are many more client management controls available through NCM.

The Starlink Mini terminal produces its own Wi-Fi network when powered on. This will be a secondary access point in addition to the Cradlepoint Wi-Fi.

This Wi-Fi network is helpful to connect to when troubleshooting the Starlink terminal is needed.

Starlink has a cloud portal available, or through your VAR if purchased separately, to manage the Wi-Fi network with advanced features such as hidden SSID, preventing unwanted local configuration changes, and more. Refer to Starlink's web portal and how-to guides for more information.

Network Extender Radio

The information in this section is subject to change. For the most up-to-date details, always refer to the manufacturer's manuals.

The 4G LTE Network Extender 3 for Enterprise radio comes pre-configured, provisioned, and integrated into the Verizon network.

Note to the operator:

- Any device can access the miniNSD's Wi-Fi signal and place a Wi-Fi call.

Radio Updates

The radio requires periodic updates and will need to be deployed using a reliable Internet source every month. The updates are automatic upon bootup and connection to the network.

Powering the Radio

Upon powering the miniNSD the RADIO button must be pressed to power the radio.

Powering Cellular Radio

1. Deploy the unit outside with unobstructed view of the sky for GPS.
2. Press MAIN button to the ON position.
3. Backhaul is established.
   a. This could be Satellite, LTE, WAN, or Wi-Fi as WAN.
4. RADIO button pressed to the ON position.
5. Four solid green lights indicate correct radio operation.
   a. The alarm LED should be off.
   b. This can take 30-60 minutes the first time the radio turns on.
6. Confirm connection with a Verizon phone by calling #48. This will prompt whether you are, or are not, under network extender coverage.
   a. Some phones may show a home icon when connected.

LED Light Codes

After having turned on the LTE Radio and waiting roughly 10 minutes, the 4 LED lights on the Network Extender should be all solid green. If the lights are not solid green, follow the troubleshooting section to check for common setup issues.

The sequence of LEDs during a normal startup are as follows: Power LED ON -> Sync LED ON -> Link LED ON -> RF LED ON

LED	Description
Power	OFF: Power not detected. ON: Powered. Flashing: Unit booting or firmware upgrading.
RF	OFF: Not transmitting or receiving. ON: Transmitting and Receiving.
Link	OFF: Ethernet link down. ON: Ethernet link up.
Sync	OFF: No GPS synchronized. ON: GPS synchronized. Flashing: Lost GPS synchronization.
Alarm	OFF: No alarms detected. Flashing: Critical system alarm.

No GPS Signal

If the Sync LED is off and Alarm LED is solid red, this indicates no GPS signal.

Closed Subscriber Group Configuration

CSG (closed subscriber group) modes must be configured using the Verizon tools and configuration steps. CSG modes cannot be configured through Network Extender Web GUI.

A Network Extender can only be associated with one CSG. A CSG is a group of up to 1,000 Verizon wireless numbers.

CSG functionality requires a CSG capable mobile phone, a Verizon post-pay subscriber account, and a Profile-07 or newer SIM card. For more information reach out to a Verizon representative.

The CSG functionality of the radio provides the ability to have three different access modes for clients to connect: Open, Hybrid, and Closed.

These advanced modes can provide additional access restrictions to connecting via LTE which can help preserve limited resources for critical individuals in a congested environment.

Verizon Network Extender Portal

All Network Extenders tied to the business account will be shown, creating a single portal to manage multiple radios.

To access Verizon's Network Extender Portal, follow these steps.

1. Login to Verizon MyBiz account.
2. Navigate to Network Extender Product Portal.
   a. Found under Manage -> Product Portals -> View All.
   b. Click Go for Network Extender.

CSG Modes

Open Mode

- Default, out of the box.
- Any Verizon UE within vicinity can attach to the open Network Extender.

Hybrid Mode

- CSG subscribed members have priority over non-members.
- Non-CSG subscribed members are allowed service only if resources are not used up by CSG members.

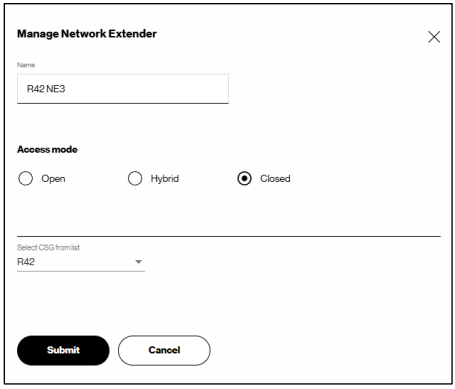
Closed Mode

- Network Extender resources are exclusively reserved for CSG subscribed numbers.

Changing CSG Modes

Changing between modes can be completed by the following:

1. Access Network Extender Portal.
2. From the Devices tab, identify Network Extender to by altered.
3. Expand radio information by clicking the '+' symbol.
4. Click Manage.
5. Select Access mode.
   a. If Hybrid or Closed mode also select CSG.



6. Click Submit.
7. Power on or reboot Network Extender if powered.

Updating CSG

A number can only be associated with up to 10 closed subscriber groups.

An Excel import can be completed to load many phones at one time. Download the template provided by Verizon, fill out to completion, and upload.

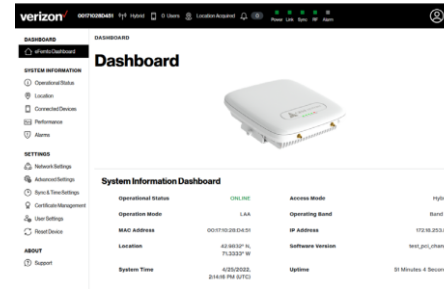
1. Access Network Extender Portal.
2. From the CSG tab, click on Group Name to be modified or select Create New at the top.
3. Follow actions to add or remove wireless numbers from CSG.

Local Radio Access

Consult Network Extender User Guide for more complete information about Web GUI, configuration, and troubleshooting.

Web GUI Access

The local web GUI (graphical user interface) is available to view current operational status of the radio, total connected devices, alarms, and adjust settings.



Accessing Web GUI

There are two methods to access the Web GUI of the Network Extender. The first is easier to access if connected to the same local network. The second is a direct connection to the radio.

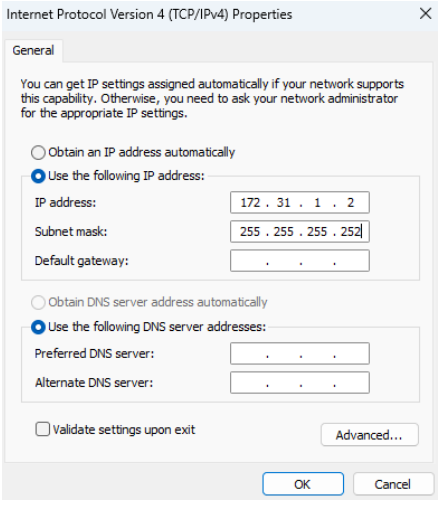
Method 1: Local Network

The Network Extender comes with a reserved IP address to make connecting easier. If this reservation has been removed the IP address of the Network Extender may have changed.

1. Press MAIN and RADIO buttons to ON position.
2. Connect to local Cradlepoint network.
   a. Via Ethernet LAN or Wi-Fi
3. Open a web browser and navigate to https://192.168.70.2/
   a. If prompted by security check, click continue/proceed to navigate to the address.

Method 2: LMT Port

1. Press MAIN and RADIO buttons to ON position.
2. Connect ethernet cable from laptop to LMT Port in Service Area.
3. Configure TCP/IPv4 settings for the ethernet port on the laptop.
   a. Set IP to 172.31.1.2
   b. Set subnet mask to 255.255.255.252
   c. Leave rest of the fields blank.



4. Open a web browser and navigate to https://172.31.1.1/
   a. If prompted by security check, click continue/proceed to navigate to the address.

Logging in to Web GUI

The default password is reconfigured at Rescue 42. If this password is changed or forgotten the device must be factory reset to regain access. Follow factory radio password elements to log in.

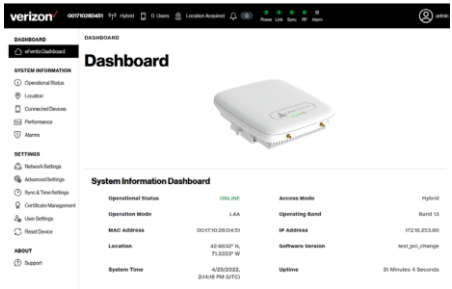
From the Welcome Page, enter the default username and password.

User:
admin
Password:
Rescue42!

Web GUI Features

Primary features of the Web GUI gives you an overview of the operational status of the radio, CSG mode it is operating under, total connected devices, changing transmit power, and checking on any alarms.

The dashboard is the first page you will see upon logging in. It will show information such as operational status, CSG access mode, uptime, and location.

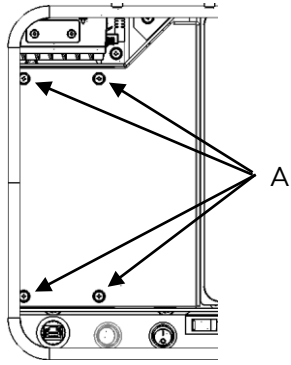


Factory Reset

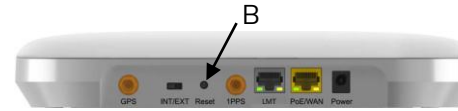
A cell phone camera can be a helpful tool to locate the reset button.

In the event the radio must be factory reset, whether for a password related reason or at the direction of Verizon, follow these steps to access the reset button.

1. Open the Service Door and empty the contents of the Storage Area.
2. Using screwdriver unfasten the four screws (A) holding down the Storage area bottom.



3. Remove Storage Area wall plate.
4. Access the reset button hole (B) on the Network Extender utilizing a small screwdriver or insulated tool.
5. With the radio powered on, MAIN and RADIO buttons in ON position, press the reset button for 10 seconds.
6. Allow the Network Extender to reset and reboot and proceed to login using credentials below.



Factory Default Login Credentials

User:

admin

Password:

VzWNetExtender3@ + last six digits of the MAC

Ex: VzWNetExtender3@213DA5

The last six digits of the MAC must be UPPER case. The MAC can be found on the Information Placard. Upon logging in with this password it will force a new password to be set.

Specifications

This section covers the miniNSD in all possible configurations. Some features may not be included on all miniNSDs.

Serial Number

The Serial Number for each miniNSD product can be found on the Information Placard on the Battery Lid. The Serial # for the case is the Primary Serial given by Rescue 42. This miniNSD Serial must be included in any contact with Rescue 42 regarding the unit.

Physical Properties

Shipping freight:

- Dimensions: 32” x 32” x 27”
- Weight: 85 lbs

Shipping boxed:

- Dimensions: 24” x 18” x 12”
- Weight: 61 lbs

Physical:

- Dimensions: 23” x 18” L x 11.5”
- Weight:
  - Fully loaded: 57.5 lbs
  - Stripped down: 49.1 lbs

Charger

The Charger unit is programmed from the factory. There are no configurable options on the charger.

The charger is large enough to charge the batteries and run the system simultaneously.

Batteries

The batteries included are a special high current discharge that can handle the inrush loads that happen during system powering.

Voltage	12.8VDC
Amp Hours	2x 7Ah (14 total)
Dimensions (LxWxH)	7.8” x 6.5” x 6.8”
Chemistry	$LiFePO_4$
Charge Temperature	-4 to 113°F (-20 to 45°C)
Storage Temperature	14 to 113°F (-10 to 45°C)

Battery Monitor

The Battery Monitor default settings have been modified from their factory original to operate with the batteries in the miniNSD. In the event of settings loss refer to this chart to revert to defaults for the miniNSD.

Changing Settings – Bluetooth

Using the VictronConnect app, refer to page 27, for easy and fast setup.

1. Pairing procedure using Bluetooth, using the default PIN code 000000.
2. Settings can be modified by selecting the Gear icon in the top right.
3. Settings will sync automatically and can be verified by a green check after the setting is changed.

miniNSD Default Settings

Setting	Value
Battery Capacity	14 Ah
Charged Voltage	13.6 V
Tail Current	4.0%
Charged Detection	3 min
Puekert Exponent	1.05%
Charge Efficiency Factor	99%
Current Threshold	0.10A
Time to Go Avg Period	3 min
Relay Mode	DFLT
Auxiliary Input	Temperature Sensor
Low Voltage Alarm & Relay	12.3 On 12.4 Off
High Voltage Alarm & Relay	15.4 On 15.3 Off
High Temp Alarm & Relay	130°F On 129°F Off
State of Charge (SoC) Alarm & Relay	15% On 16% Off

Fuses

Case

The automotive style fuse located in the Service Area is an ATO / ATOF type found at most automotive parts retailers. Never replace the fuse with one of a different amperage rating.

DC Cabling

The accessory plug uses an AGC glass tube fuse built into the plug.

The DC clamps utilize an inline ATO / ATOF fuse on the positive line.

Fuse Ratings

Fuse	Setting Name	Value
ATO/F	Case	10A
ATO/F	Battery Clamp Harness	20A
AGC	Accy Plug Harness	15A

Maintenance

Read these instructions carefully and then thoroughly inspect the equipment to become familiar with it before trying to perform maintenance.

Cleaning

⚠ Do not directly spray the miniNSD with water. Handwash with a damp rag.

It is recommended to clean the miniNSD of dirt and debris after each use. A damp shop rag will usually suffice but it is recommended to use a chamois or soft terry cloth to eliminate water spotting and scratching.

Fan Port Filter

Check the fan filters before each deployment. If obstructions are present, wash the filters with water and allow them to dry fully before reinstalling.

Filters can be removed with fingertips and pulled out. Install by pressing back into fan plug opening.

Storage

Do not store the unit when wet, dry off all components fully before storing.

Store in a covered, cool, dry location.

For optimal preparedness, leave the miniNSD plugged into shore power to keep the system fully charged. The battery circuit breaker must be in the ON position.

Battery Equalization

Having a system that operates with two batteries in parallel means they should be equalized annually for optimum battery life.

The process of equalization is charging each battery individually.

1. Toggle battery circuit breaker to the OFF position.
2. Disconnect one battery from the bulkhead wall connector.
3. Toggle breaker to ON position.
4. Charge battery 1 completely with AC power to the miniNSD.
5. Note voltage of battery 1 from the Battery Monitor.
6. Repeat steps 1-5 for battery 2.
7. The voltage difference should be no more than 0.2V between the two batteries.
8. Toggle circuit breaker to OFF position.
9. Reconnect both batteries to miniNSD.

Battery Replacement

⚠ Only replace batteries with identical size and type from Rescue 42.

⚠ Equalize batteries prior to installation.

1. Switch off battery circuit breaker.
2. Remove the battery and disconnect the connector from the case.
3. Remove Battery.
4. Reinstall in reverse order.

Function Checks

It is recommended to perform a full system function check every month.

Performing routine function checks will improve familiarity with the unit and ensure it is up to date and operating correctly.

Things to check during a function check include:

- Cradlepoint
  - Wi-Fi Active
  - LTE & SAT backhaul
  - NCOS & Modem firmware updates
- Starlink
  - Operation
  - Updates
- LTE Radio
  - Connectivity
- Power delivery
  - External AC power
  - External DC power
  - Internal Batteries
- Cooling fans
- Ethernet ports functional
  - WAN and LAN
- Accessory Parts Check
  - Refer to page 31.
- App updates
  - Cradlepoint
  - Starlink
  - Victron Connect

Troubleshooting

Symptom	*Possible Cause*	*Solution*
System is not turning on	Battery is dead	Charge the system
	Battery circuit breaker in open state	Turn battery circuit breaker to ON/Reset position.
	Main power control fuse blown	Find reason for blown fuse and repair then replace fuse
System is not charging from AC	AC Source not good	Connect to known good AC source
	Battery circuit breaker is in the open state	Turn the battery circuit breaker to ON
The Radio does not get four green lights	No backhaul is available	Connect and verify backhaul is present at the miniNSD.
	Cannot acquire GPS	Move the miniNSD to a new location with a better view of the sky.
	Other problem	Consult manufacturer's owner manual for further troubleshooting steps.
System alarm activated	State of charge is low	Charge the system.
	Over Battery Monitor temperature alarm limit	Elevate the unit off hot ground to decrease air inlet temperature and move unit to a shaded area
		Make sure fan plugs are open, fans are moving air, and filters are not clogged

Warranty

We warranty this product to the original purchaser to be free from defects in materials and workmanship for one year from the date of purchase. Please note that all warranty claims must be accompanied by an original proof of purchase in the form of a purchase receipt or invoice and a written detailed description of the defect. Any product or part found to be defective within that period will be replaced without charge provided that: (1) the product was not misused or overloaded; (2) no alterations or modifications were made; (3) its failure resulted from a defect in material or workmanship and not from normal wear expected in the use of this product; (4) the product or part is delivered, freight prepaid to Rescue 42, Inc. Please contact Rescue 42, Inc. at (888) 427-3728 / (530) 891-3473 to get a return authorization number prior to return. Manufacturer's only obligation shall be to replace such products or parts proved to be defective.

Rescue 42, Inc.

P.O. Box 1242

Chico, CA 95927-1242

Toll Free: (888) 427-3728

Business: (530) 891-3473

Fax: (530) 891-9255

E-Mail: info@rescue42.com

www.rescue42.com

(Contact Rescue 42, Inc. for a Physical/Shipping Address)

No warranty is given for Rescue 42 products outside of the United States.

This warranty is expressly made in lieu of any and all other warranties, express or implied, including the warranties of merchantability and fitness for a particular purpose. Rescue 42's sole liability to any purchaser is limited to the remedy set forth above. In no event will Rescue 42 be liable for any lost profits, lost sales or for any consequential, direct, indirect, incidental, special or exemplary or punitive damages or for any other damages of any kind or nature.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations may not be applicable. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

Serial Numbers

miniNSD Components		
Item Description	**Serial #**	**MAC Address**
Case		
Battery Charger		
Battery Monitor		
Cradlepoint		
Radio		
Cradlepoint Settings		
Default Password		
SSID		
IMEI		
MEID		
Starlink		
Kit #		
Terminal		

www.Rescue42.com
888-427-3728

miniNSD Resources

31105-A