Step 4: Connect Power

Ignition switch

ACC/ON

Fuse Panel

Accessory (switched)

1A

Ignition (orange)

Battery (constant)

Power (red)

3A

Ground (black)

4-pin Power Connector

Power Harness

Ground (chassis)

Ground (chassis)

Vehicle Battery (12V–24V)

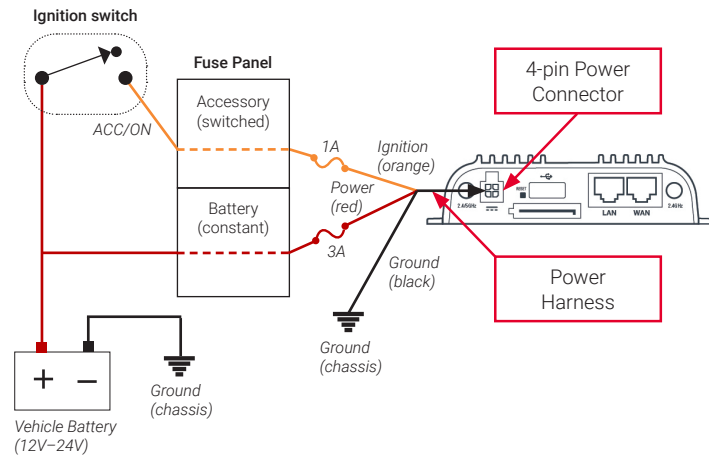> ❗ **IMPORTANT: Power harness wire gauge**
>
> Check the power harness wire gauge - it will be either 22AWG or 24 AWG.
>
> **If the power harness is 24AWG, fold the end of the wire onto itself before crimping in order to create a thicker connection point.**

1. Connect the red wire from the IBR900 power harness to the 3A fuse holder.

    i. Crimp the power harness's red wire on the end of the step down butt splice that has a *red stripe*.

    Step Down Butt Splice

    Red stripe

    ii. Crimp the fuse holder's black wire on the other end of the butt splice.

2. Insert the fuse in the holder, and connect the fuse holder to battery positive.

3. Connect the black wire to chassis ground.

4. Connect the orange wire from the IBR900 power harness to the 1A fuse holder.

    i. Crimp the power harness's orange wire on the end of the step down butt splice that has a *red stripe*.

    ii. Crimp the fuse holder's black wire on the other end of the butt splice.

5. Insert the fuse in the holder, and connect the fuse holder to the ignition (or accessory) switch.

6. Connect the power harness to the router's 4-pin power connector.

Step 5: Connect to Recorder

- Connect the Ethernet patch cable (085-0060) from the IBR900's LAN port to the **recorder's *rear-panel* Ethernet port***.

Step 6: Power on and Test

When power is supplied, the router powers up automatically, as indicated by flashing LEDs (for more information, see "LED Status Indicators", on p.3). If it does not turn on, ensure that the power connector is plugged in and supplying voltage greater than 9V.

To set up AVL (GPS) tracking, video streaming, or to use this device with a video recorder for Wi-Fi download, please contact the Safe Fleet technical support team for further instructions.

Service & Support

If your Smart-Reach 2 device is to be returned for service, please contact the Safe Fleet technical support team, provide the part and/or serial # of your unit, and ask for a **Return Merchandise Authorization (RMA)** number. An **RMA #** allows the support team to better track your product when it comes in for service. Please show the RMA # on the **outside** of the package.

ANY PRODUCT SENT WITHOUT AN RMA # MAY BE REFUSED!

Documentation and Warranty

Information is subject to change without notice. For the latest product details, please visit the Safe Fleet Community. Additional copies of this guide along with other documentation and product warranty can also be found on the Safe Fleet Community.

Safe Fleet Community Web site: https://community.safefleet.net

Scannable QR code linking to Smart-Reach documentation on the Safe Fleet Community.

Technical Support

Phone: 1.844.899.7366 **Email**: PTsupport@safefleet.net

SAFE FLEET

Driving Safety Forward™

Smart-Reach 2 Router Kit
Quick Installation Guide

The Smart-Reach 2 Router (a.k.a. IBR900) kit provides Wi-Fi, cellular, and GPS data to the Safe Fleet® Cloud Applications Suite.

> ℹ️ **NOTE: Device Provisioning and Setup**
>
> Once the router is installed, it must be provisioned to enable features.
>
> To set up AVL (GPS) tracking, video streaming, or to use this device with a video recorder for Wi-Fi download, please contact the Safe Fleet technical support team for further instructions.

> ❗ **IMPORTANT: Professional Installation**
>
> The procedures in this Guide must be performed by a professional installer, with approval from the Safe Fleet technical support team.
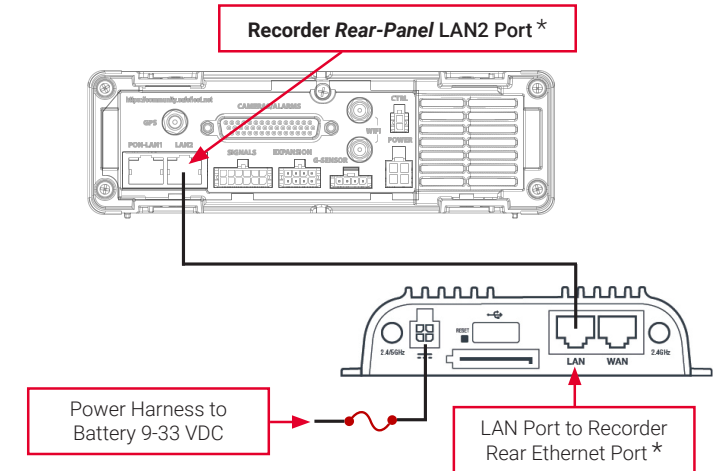
Kit Contents *

- Cradlepoint IBR900 Router (032-1098 or 032-1093†)
    - Includes #8 x ¾" Phillips self-drilling mounting screws (Qty. 4), 9.8ft./3m power harness (4-pin), 3A fuse/holder, 1A fuse/holder, and butt splice connectors (Qty. 2)

    †Ships with the SRC-ROUTER-S-2 kit, which includes preinserted SIM Card Tri-Carrier Global (085-1143) and a data plan.

- Combination Antenna (085-1161)
- LTE Cable Extension (060-1106 - 16ft./5m), *Qty 2*
- WIFI 1 Cable Extension (060-1109 - 16ft./5m), *Qty 2*
- GPS Cable Extension (060-1106 - 16ft./5m)
- Ethernet (CAT5e) Patch Cable (085-0060 - 20-ft/6.1m)

* Actual contents may vary, depending on the kit type purchased.

General Installation (Power and Data)

Recorder *Rear-Panel* LAN2 Port *

Power Harness to Battery 9-33 VDC

LAN Port to Recorder Rear Ethernet Port *

* Rear Ethernet port usage varies by recorder model. *See "Recorders - Rear Ethernet Ports" on page 2*.

Installation Requirements

Router

Location	Avoid exposure to water drips and installation locations with heat, moisture or excessive dust. Do not mount to a plastic panel or other surface that is subject to constant vibration. Choose a secure location to prevent tampering with the device or connections.
Harnesses	Route wiring and cables away from sharp edges that might damage insulation. Avoid sharp bends in cables.
Clearance	Provide sufficient clearance for easy access to connectors. Ensure status lights are visible, and allow for adequate airflow.

Antenna

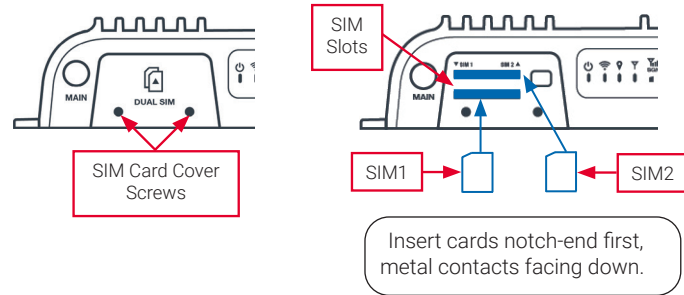| Location	Install on top of the bus, in a location that has the best visibility to the access point antenna - typically in the middle of the roof or front of the bus.
Harness	Avoid bending antenna cables. Excess cable should be coiled and tied off.
	NEVER "dogbone" antenna cable, as this can damage the cable and inhibit RF transmission.

Step 1: Insert the SIM Card

> **ⓘ NOTE: SIM Card may be Preinserted**
>
> **This step is only required if the kit was purchased without a data plan (SRC-ROUTER-2).**
> The SRC-ROUTER-S-2 kit ships with a preinserted SIM card.

1. Use a #0 Phillips screwdriver to remove the SIM card cover.
2. Orient the card(s) as shown. If using only one SIM card, insert it in the lower (SIM 1) slot.
3. Gently slide the SIM cards into the slots until they click into place.
4. Replace the SIM card cover.

SIM Slots

SIM Card Cover Screws

SIM1

SIM2

Insert cards notch-end first, metal contacts facing down.

Step 2: Mount the Router

1. Follow the Installation Requirements on page 1 to find a mounting location and choose an orientation for the router.
2. Use the holes on each side of the device enclosure to mark drilling positions, and drill the four screw holes.
3. Fasten the Smart-Reach Cellular to the mounting surface with the four provided screws.

Recorders - Rear Ethernet Ports

Recorders	Rear Ethernet Ports
DH6. DH8	**LAN2**
NH16v2, NH16, NH16K, TH8, TH6	**MODEM**
DH4, DH4C, TH4C	**POE-LAN**
TH4	**WIFI**
HX/NX	**MODEM**
DXHD	**LAN2 or LAN3**

Step 3: Install the Antenna

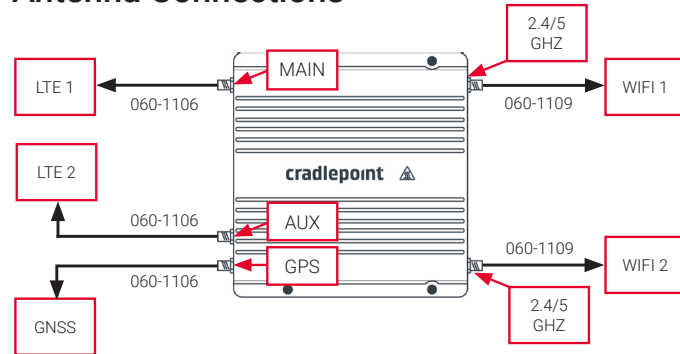Choose a flat mounting location on the vehicle roof, with a maximum panel thickness of 0.3" (7mm).

1. Drill a pilot hole, then increase the hole diameter to 0.71" (18mm).

> **ⓘ NOTE: Mounting Hole Clearances**
>
> Space the mounting hole at least 16" (406.4mm) from other antennas or metallic structures. Ensure there is a 2" (50.8mm) diameter around the hole for the mounting stud, cable routing, and nut-tightening procedure.

2. Clean the area around the hole, removing any burrs.
3. Feed the cables through the panel.
4. Remove the liner from the inner foam gasket, insert the mounting stud through the hole, and position the antenna onto the mounting surface.
5. Slide the mounting washer onto the stud from the underside, add the lock washer and mounting nut, and hand-tighten. Then tighten with a wrench until the antenna is fully-seated (min. torque spec. is 6 ft-lbs/83 kgf-cm).
6. If any area around the antenna base is not fully compressed against the roof, seal completely with silicone (*note: silicone not supplied*).
7. Connect each labeled lead from the antenna pigtail to the corresponding extension cable as shown below.
9. Run the extension cables to the router and attach to the corresponding antenna connectors (finger-tighten only - max. torque spec. is 4 in-lbs/4.6 kgf-cm).
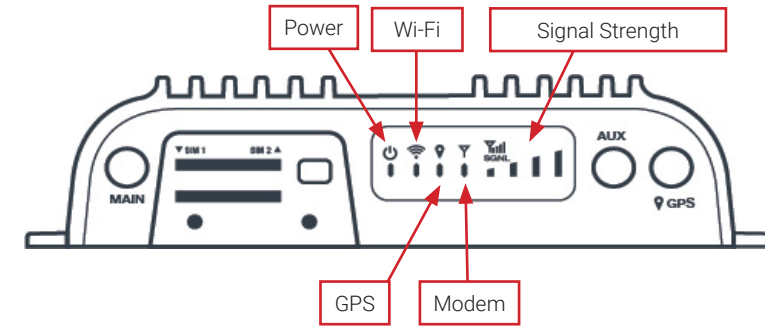
Antenna Connections

LTE 1
MAIN
2.4/5 GHZ
WIFI 1
060-1106
060-1109

LTE 2
cradlepoint
060-1106
AUX
GPS
WIFI 2
060-1106
060-1109
GNSS
2.4/5 GHZ

> **IMPORTANT**: We recommend heat-shrinking connections between the pigtail and extension cables.

🚫 **WARNING**: Do not "dogbone" antenna cables

Fold Here

LED Status Indicators

IBR900 Router - Front Panel

Power   Wi-Fi   Signal Strength

GPS   Modem

The IBR900 router uses LED lights to communicate various status conditions. Use the chart below to verify the status of your router after the boot up cycle.

Power-on the Smart-Reach Cellular (*the SIM card cover must be in place and secured with the screws before the device will power up*). LEDs display operational conditions as indicated.

LED	Color	Condition	Function
Power	n/a	Off	No power. Check power switch/source connection.
	Amber	Solid	Attention required (LED will be amber during bootup sequence (see the Cradlepoint IBR900 online documentation).
	Green	Solid	Powered on, no issues.
		Flashing	Rapid cycling of device power. Check power supply, particularly whether battery is fully-charged and supplying correct voltage.
	Red	Solid	Connection Manager needs adjustment (see the Cradlepoint IBR900 online documentation).
Wi-Fi	n/a	Off	Wi-Fi is not connected
	Green	Solid	Wi-Fi is on and operating normally
	Yellow	Solid	Attention required (upon initial installation, LED will be yellow until the device is registered in NetCloud Manager (see the Cradlepoint IBR900 online documentation).
GPS	n/a	Off	GPS off/no lock
	Blue	Solid	GPS on/locked
		Flashing	GPS obtaining lock
Modem	n/a	Off	Modem not connected
	Green	Solid	Established an active connection
		Flashing	Modem connecting
	Yellow	Solid	Modem not active
		Flashing	Cellular data connection error
	Red	Flashing	Modem is resetting (blinking red with Signal Strength LEDs = SIM door is not installed or modem is off).
Signal Strength (4 LEDs)	Blue	Solid (flashing indicates a half-strength bar)	1 LED - Very weak signal 2 LEDs - Weak signal 3 LEDs - Good signal 4 LEDs - Excellent signal
Other	Red, Green, Yellow, Blue	Several LEDs flashing	Factory reset detected
	Red	2 LEDs flash red for 10 secs.	Error during NCOS (firmware) upgrade