

SKYLINK

Remote Monitoring



Global Voice



Data Connection



Installation Guide

Blue Sky Network 

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SkyLink

Installation Guide

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NOTICE

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REVISION HISTORY

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|---------------|------|----|--|
| 13 April 2021 | 0.0 | MZ | Initial Draft |
| 30 April 2021 | 1.0 | MZ | Final Version Release |
| 17 May 2021 | 1.1 | MZ | Updated terminal/antenna mounting sections |
| 24 June 2021 | 1.2 | MZ | Changed mounting renderings; added note about SIM cards |
| 14 July 2021 | 1.3 | MZ | Added aviation antenna information/diagram |
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INTRODUCTION

This installation guide demonstrates the process of mounting SkyLink to multiple fixed and non-fixed assets, including a vehicle, ship, and/or building, among other rigid objects.

About SkyLink

SkyLink Cloud Services is a performance-driven, cloud-based analytics platform for remote, mobile, and global operations. Leveraging Iridium's satellite technology and local GSM/LTE networks, SkyLink is a powerful dual-mode data management solution unlike any other.

This small-form, multi-stack hardware is designed for any fixed-mount, portable, or mobile application and offers a range of service configurations for mission-focused safety, efficiency, versatility, and affordability. The device can also be utilized with a variety of adapters and accessories to provide the preferred configuration for each user. It is both IP65 Certified and FCC Part 15 & 25 Certified.

Installation Components

Installation components are based on the desired configuration for each unit; the list below describes some of the most common components available in a kit or purchased. All adapter assemblies come with a length of cable that is acceptable for typical installations. If a longer length is needed, you can purchase an extender offered in multiple lengths.

- Dual Mode Data Gateway
- One of the following Iridium-approved Antennas:
 - MARUWA – MHL-1621C
 - High-Profile Maxtena – M1621HCT-HP
 - Low-Profile Maxtena – M1621HCT-LP-SM; M1621HCT-LP-MM
 - Sensor Systems – S67-1575-414
 - SCAN – 65020-000
- SkyLink Mounting Bracket
 - Self-assembly kit
 - Pole Mount (optional)
- One of the following Power Adapters:
 - 12V Cigarette Lighter Adapter
 - 12V DC Power Adapter with Ignition Sense
 - POE Injector (self-assembly kit)
 - AC/DC Power Supply (self-assembly kit)
- 1' Pigtail Ethernet Adapter
- 6' Ethernet Cable (longer length options available)

Please contact us for more information about available accessories and installation kits.

Top Panel Description



The top panel contains a power LED indicator and 2 connectors for an Iridium and cellular antenna. The descriptions below reference the photo above in accordance with the numerical value.

1. Iridium Antenna Connector

- Furthest connector from power LED indicator
- "IRI" etched into connector recess

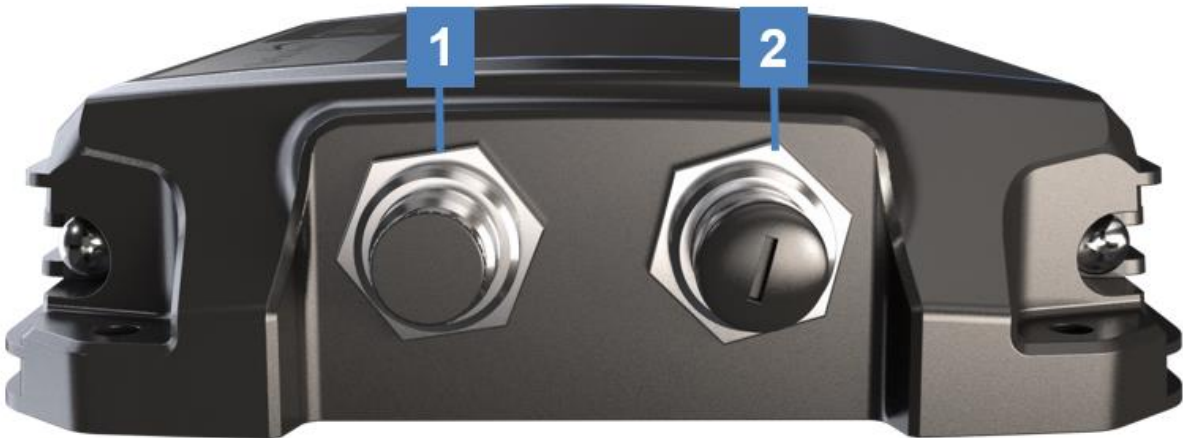
2. Power LED Light

- Green = Initial Power On
- Red = Unit in Bootloader Mode
- Blue Blink = OS is Booting
- Blue Steady = Device is Ready
- Red Blink = Iridium Firmware Upgrade
- Blue Blink = SkyLink Firmware Upgrade

3. Cellular Antenna Connector

- Closest connector to power LED indicator

Bottom Panel Description



The bottom panel contains a power port and a connectivity port that connects to multiple adapters. The descriptions below reference the photo above in accordance with the numerical value.

- 1. Power Port**
 - Connects to the following adapters: 12V Cigarette Lighter, 12V DC Power Supply, POE Injector, or AC/DC Power Adapter
 - Remove connector cap before attaching cable
- 2. Connectivity Port**
 - Connects to USB and RS232 adapters
 - Remove connector cap before attaching adapter

NOTE: See [Appendix B – Cable Diagrams](#) for information regarding cable construction requirements.

SkyLink DC Pigtail Harness

This is the cable you receive if you request the currently labeled 'SL100-IS, SkyLink 10' Power Interface Cable with QuickPosition (QPos).' Below are the specs.

OPERATING PARAMETERS

Electrical

- External power:
 - 10-34 VDC (12V nominal power)
 - POE
- Power consumption

| Function | Color |
|----------|-------|
| +Vin | Brown |
| GND | Green |
| SOS | White |

Back Panel Description

The back panel of the unit contains a label with the following information:

- Model series number
- Part number
- Product serial number
- Iridium IMEI
- WiFi SSID and password
- Required certification notifications
- Power and mechanical specifications
- Scannable QR code to access device WiFi

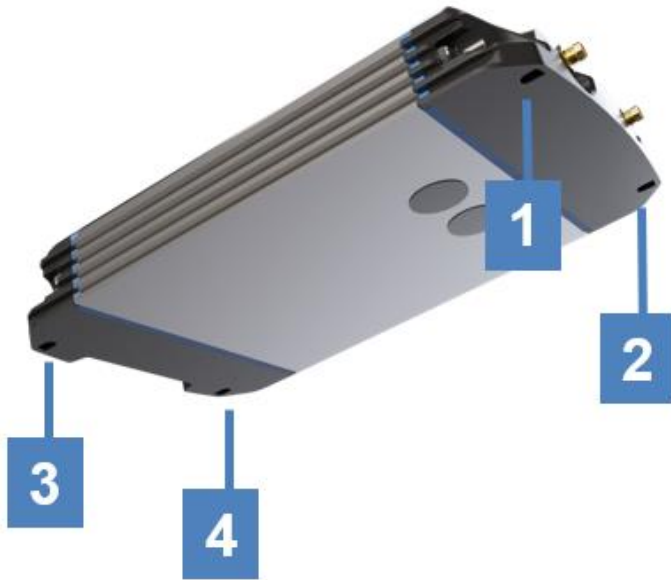
MOUNTING & INSTALLATION

Mounting

The SkyLink device should be securely fastened to a rigid object to ensure optimal functionality. There are three recommended methods for securing the terminal:

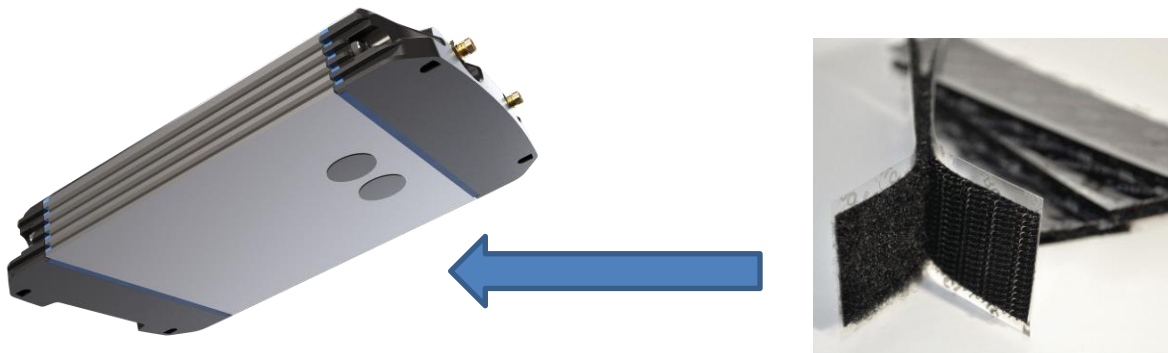
MOUNTING THE UNIT

All four corners of the device contain holes that can be used to affix the unit via straps, ties, or bolts.



MOUNTING WITH ADHESIVE

An adhesive (e.g., Velcro) can be placed on the back panel of the unit and attached to a rigid object.



MOUNTING WITH SKYLINK MOUNTING BRACKET

A universal mounting bracket with vibration dampening is included with your purchase of SkyLink, allowing for the unit to be securely anchored to a fixed structure such as a wall. An optional pole mount can also be purchased with the kit.



SkyLink Mounting Bracket

- For installation on wall, panel, boat, truck
- Use wall anchors (4) in 2" x 2" pattern



Optional Pole Mount

- For vertical pole mount installation (shown). Use V-bolts (4) horizontally in 2" x 2" pattern
- For horizontal pole mount installation (not shown). Use V-bolts (4) vertically in 2" x 2" pattern

Other Installation Equipment

In addition to the equipment described above, the following may be useful to have during installation:



- Screwdriver & Socket Set

Location Requirements

The following must be observed when installing the SkyLink terminal and antennas:

ANTENNAS

NOTE: Certus-certified antennas for SkyLink are required. See the [Antenna Requirements](#) section for a list of approved antennas.

The Iridium Certus Maxtena HP, SCAN, and MARUWA antennas are designed to be ground-plane independent and are certified for use 1m above the ground plane and should be mounted as such. Other antennas such as Maxtena LP and Sensor Systems are designed to be ground-plane mounted, but their certification is pending the antenna test data approval.

NOTE: To avoid exposure to antenna radiation, personnel should maintain a safe distance of 30 cm. (11.8 in.) minimum from the antenna while the unit is operating.

- The antenna should be mounted in an area that prevents close exposure to its radiation.
- The antennas should be mounted with an unobstructed, clear view of the sky to avoid connection and/or data speed issues.
- When possible, distance antennas from large metallic objects in the field of view.
- Place antennas as far away from other antennas (e.g., radar, magnetic compasses, HF antennas) as possible to avoid interference.

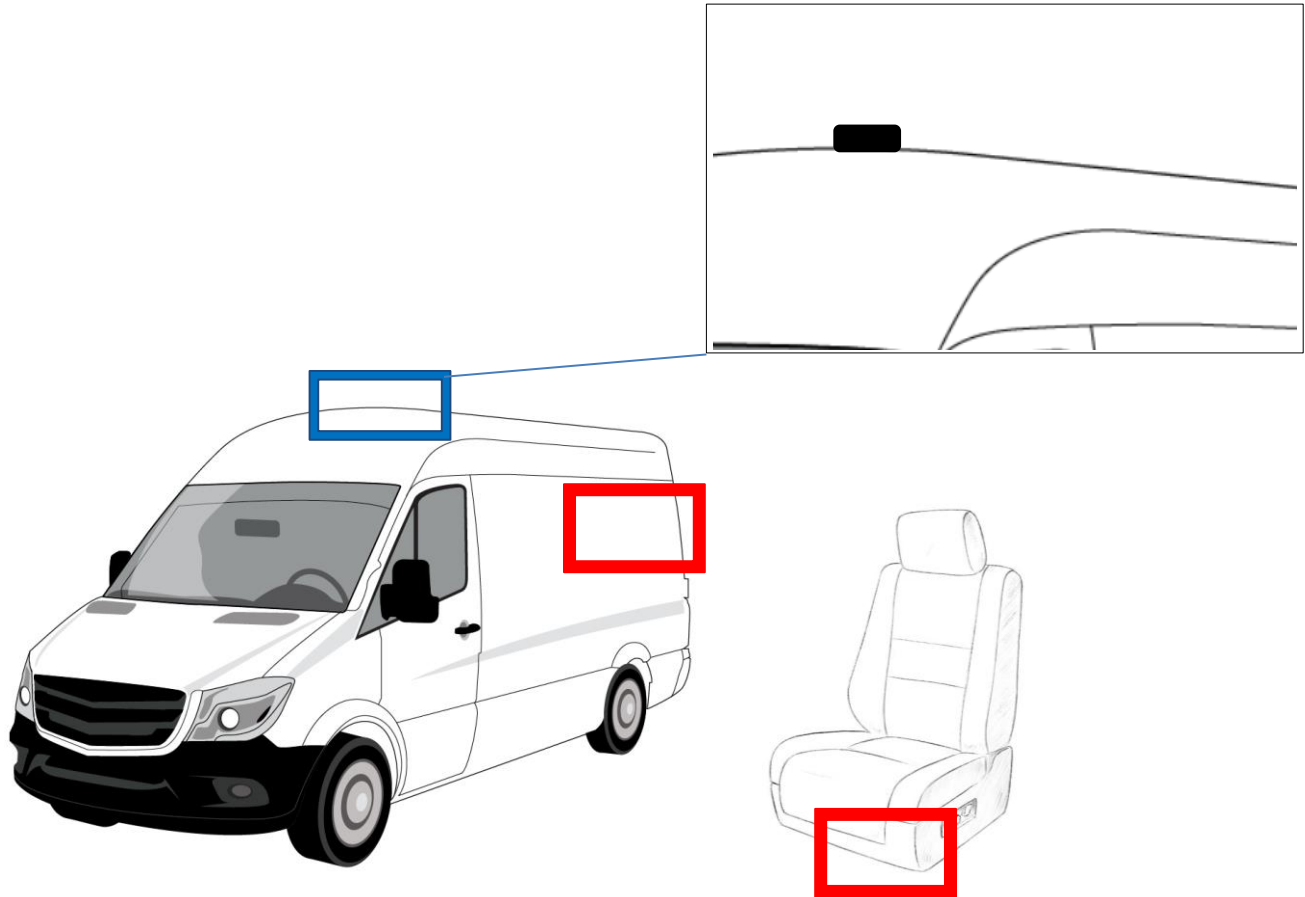
SKYLINK TERMINAL

- The terminal should be securely fastened to the rigid object to ensure proper antenna and device functioning.
- The terminal should not be placed in a location where it may become a hazard to the asset during operation (e.g., placing the unit in a location that prevents free operation of gear selector, steering wheel, or airbags in a vehicle) or in the event of a crash.
- Care should be taken to route cabling and wires through locations where they will not be damaged by operator use of the asset (e.g., routing cables through driver footwell in a vehicle).

Location Suggestions

For the following diagrams, location suggestions for SkyLink are in **RED** and for the antenna in **BLUE**. Each section also includes a brief description of the location suggestions.

VEHICLE



SkyLink

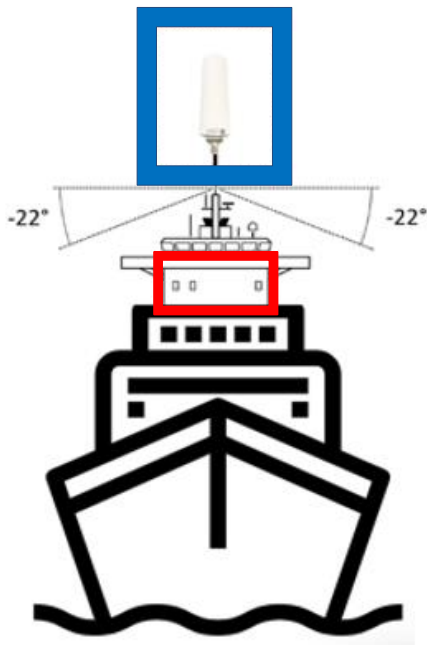
- Under driver or passenger seat
- In trunk of vehicle

Antenna

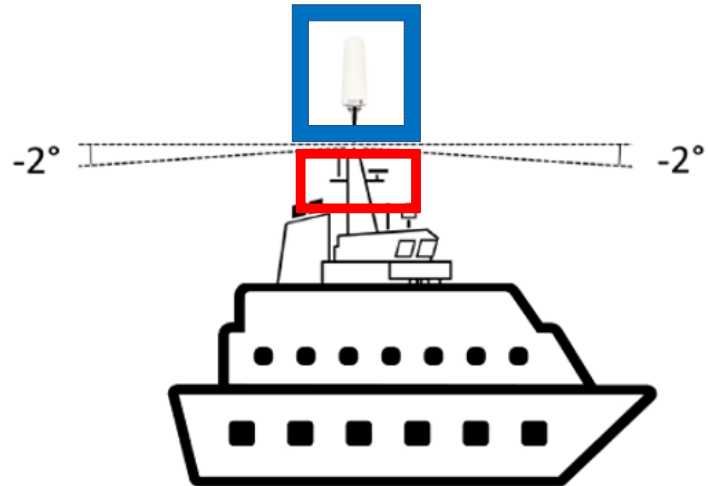
- On roof of vehicle

NOTE: No ground plane is required for Maxtena antennas per antenna manufacturer.

SHIP

**SkyLink**

- In bridge of ship
- On pole mount attached to mast

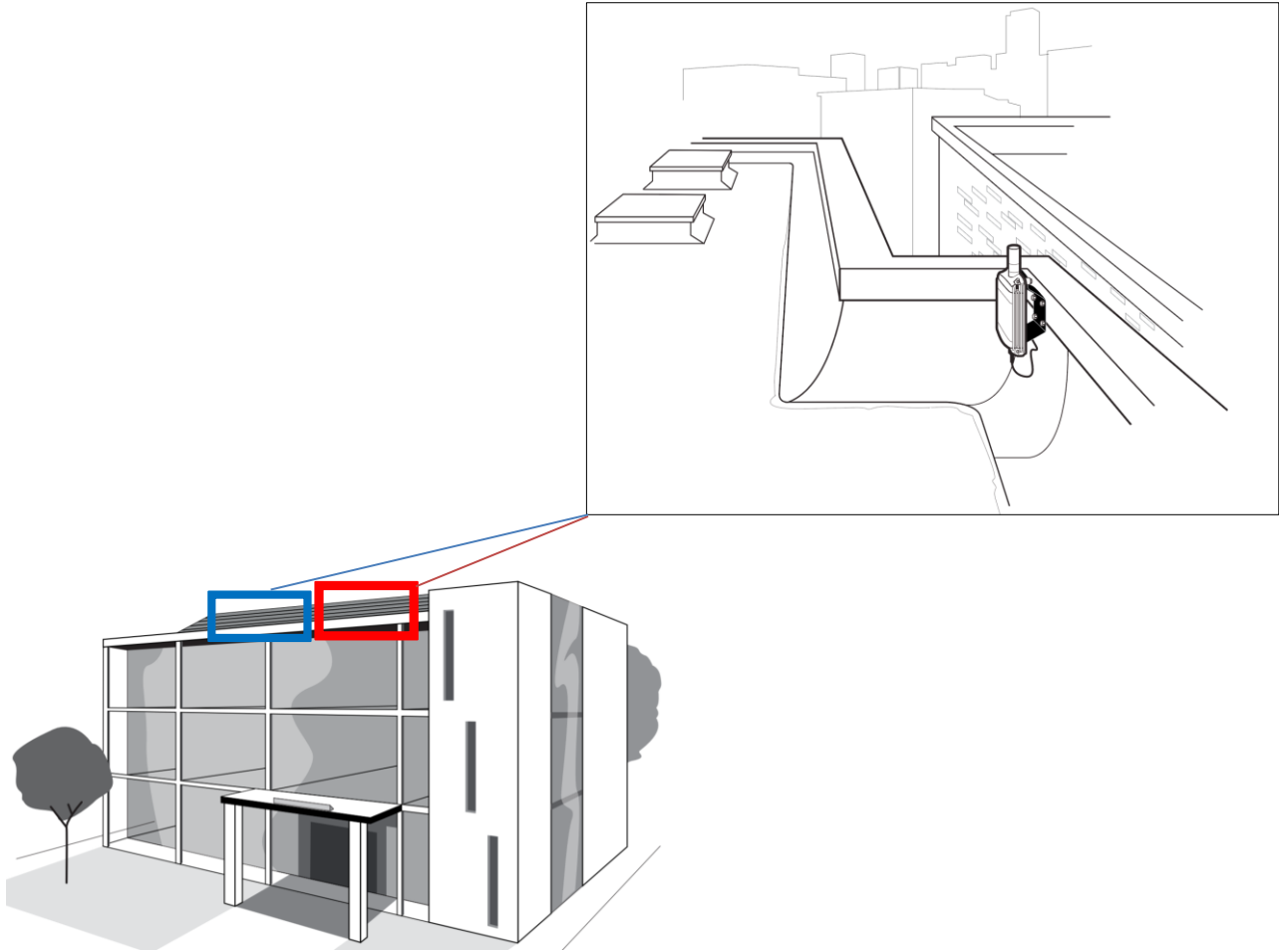
**Antenna**

- On mast

NOTE: The following must be observed when mounting the antenna on a ship:

- Antennas should be placed as far away from other antennas (e.g., radar, magnetic compasses) as possible.
- If mounting to a metal mast, the antenna should be placed above it; otherwise, it should be mounted to a wood or RF transparent fiberglass mast.
- A clear view of +/-22° below the horizontal plan is needed to provide full functionality under extreme roll conditions.
- A clear view of +/-2° below the horizontal plan is needed to provide full functionality under extreme pitch conditions.

BUILDING



SkyLink

- On roof

NOTE: The terminal should not be placed in a room when using the MARUWA antenna while it is directly connected to the terminal.

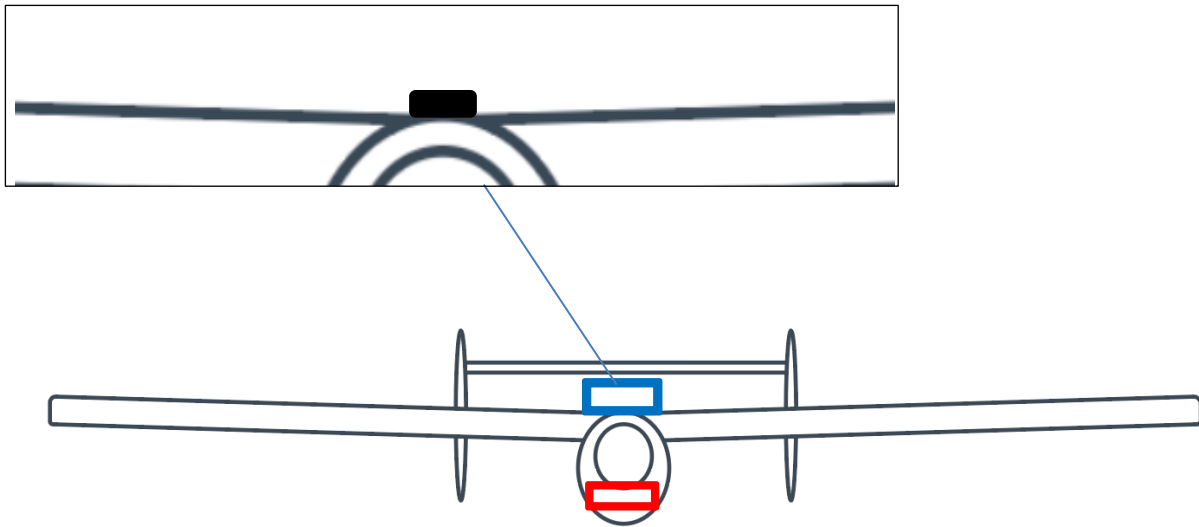
Antenna

- On roof

NOTE: Ensure that the antenna is placed in an unobstructed, full view of the sky to mitigate connectivity and/or data speed issues.

AIRCRAFT/UAV

NOTE: For more detailed information, please see the SkyLink 7100 Installation Guide.



- **SkyLink**
• Installed internally

- **Antenna**
• On fuselage

EQUIPMENT SETUP

Step 1 – Install Cellular & Iridium SIM Cards

NOTE: If you purchased your SkyLink device through Blue Sky Network, the unit will come with cellular and Iridium SIM cards already installed.

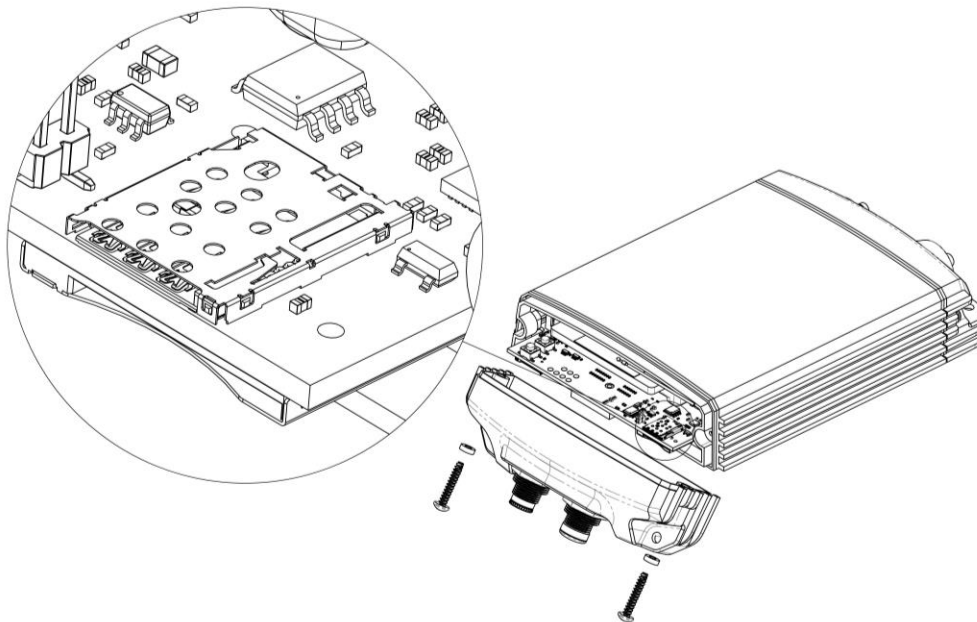
To install your cellular and Iridium SIM cards:

1. Carefully remove the entire bottom panel of the unit by unscrewing the Phillips screw on each side of the panel.



2. Insert SIM cards located behind connectivity port, taking care to ensure wires remain tucked in.

NOTE: A micro SD slot is also present behind the connectivity port. Ensure that the SIM cards are placed into the correct holders and not the micro SD slot. If the device does not work after installing the SIM cards, they may be in the wrong slots.
3. Re-attach bottom panel by re-screwing Phillips screws.



Step 2 – Attach Cellular & Iridium Antennas

CELLULAR ANTENNA

The SkyLink device uses an LTE extender antenna that connects directly to the cellular antenna connector located on the top panel of the unit.



IRIDIUM ANTENNAS

The SkyLink device utilizes Iridium antennas with both direct and non-direct connection to the unit. Use the Iridium antenna connector located on the top panel (“IRI” will be etched into the connector’s recess).

NOTE: All antennas should be positioned in a location where they have an unobstructed, full view of the sky. Please see [Location Requirements](#) for a full list of considerations.

There are multiple Iridium antennas that can be used with your SkyLink device:

Direct Connection – MARUWA



Connect the MARUWA antenna directly to the Iridium connector located on the top panel of the unit.

Non-Direct Connection – High-Profile Maxtena, Low-Profile Maxtena, SCAN, Sensor Systems, & MARUWA

High-Profile Maxtena

- Uses up to 1.5dB loss (12' LMR240 cable)



SCAN

- Uses up to 1.6dB loss (13' LMR240 cable)



Low-Profile Maxtena

- TBD



Sensor Systems

- Uses up to 2.0dB loss (18' LMR240 cable)



MARUWA

- Max acceptable cable loss: 1.0dB (i.e., <5' LMR240 cable)



Connect the BSN-provided cable to the respective antenna, then attach the other end to the Iridium antenna connector.

ANTENNA REQUIREMENTS

Listed below are the Iridium antenna requirements for the SkyLink device. Please contact us if you have any questions or need an antenna.

MARUWA Antenna (MHL-1621C)

- Passive antenna
- Frequency: 1621.0 MHz
- Impedance: 50 ohms
- Polarization: RHCP
- Operating temperature: -40°C to +85°C
- SMA male connector

High-Profile Maxtena (M1621HCT-HP)

- Passive antenna
- Frequency: 1616-1626 MHz
- Impedance: 50 ohms
- Polarization: RHCP
- Operating temperature: -40°C to 85°C
- TNC female connector

Low-Profile Maxtena (M1621HCT-LP-SM; M1621HCT-LP-MM)

- Passive antenna
- Frequency: 1616-1626 MHz
- Impedance: 50 ohms
- Polarization: RHCP
- Operating temperature: -40°C to 85°C
- TNC female connector

SCAN Antenna (65020-000)

- Passive antenna
- Frequency: 1616-1626.5 MHz
- Impedance: 50 ohms
- Polarization: RHCP
- Operating temperature: -40°C to 70°C
- N-female connector

Sensor Systems Antenna (S67-1575-414)

- Passive antenna
- Frequency: 1616-1626.5 MHz
- Impedance: 50 ohms
- Polarization: RHCP
- Operating temperature: -55°C to +70°C
- TNC female connector

Step 3 – Attach Power

Depending on your purchase, your kit will include one of the following power adapters:

- 12V Cigarette Lighter
- 12V DC Power Supply with Ignition Sense
- POE Injector
- AC/DC Power Adapter

NOTE: Some adapters, such as the POE Injector, may require connection to an additional cable that will be included in your kit. Please see the question, “*My kit came with a POE power source. What is it and how do I use it?*” in the FAQ section of the SkyLink User Guide if you need further assistance.



To power on the device, remove the connector cap from the power port located on the bottom panel of the unit. Connect the power cable into the port and the adapter into the appropriate power source (e.g., a wall or vehicle outlet).

Confirm Unit Status

To confirm the status of the unit, use the power LED indicator located on the top panel of the device. It will show green, followed by red, then flashing blue as it boots. A steady blue LED indicates that the unit is ready to use.

Power Off Unit

When you want to turn the unit off, simply unplug the power adapter from the power port located on the bottom panel. The power LED indicator will show green and slowly fade. Once the indicator is completely dark (approximately 60 seconds), the unit has turned off.

Step 4 – Attach Adapters

Listed below are the most common adapters that can be connected to your SkyLink device for additional functionality:

- **USB Adapter**
NOTE: An FXS or FXO adapter needs to be plugged into the USB adapter in order to use a POTS phone or phone system. Use an FXS adapter to connect a POTS phone to SkyLink and an FXO adapter to connect a phone system.
- **RS232 Adapter**
NOTE: RS232 cables for SkyLink are proprietary and available only from Blue Sky Network. The SkyLink RS232 cable kit comes with a DB9F connector and conforms to the RS232 standard pinout for a DB9. Please contact sales@blueskynetwork.com or your reseller to purchase.

These will either be included in your kit, depending upon your selection, or can be purchased.



To attach the adapter, remove the connector cap from the connectivity port located on the bottom panel of the unit. Connect the cable into the port and the adapter into the appropriate device (e.g., modem, POTS adapter, etc.).

Step 5 – Complete Setup

Congratulations on successfully installing your SkyLink device! To complete the unit setup, including configuring your settings, please see the SkyLink User Guide.

APPENDIX A - TROUBLESHOOTING

If you are unable to activate your SkyLink device, please contact Blue Sky Network Technical Support and we will be happy to help!

- 1) Check to ensure the antennas on your device are functioning and attached to the appropriate connectors located on the top panel. The Iridium antenna should be attached to the connector that is furthest from the power LED indicator. It has "IRI" etched into the connector recess.
- 2) Ensure the SkyLink LED illuminates. If the power LED indicator is stuck on red, this is an indication of a hardware issue. Remove the power cable from the power port and wait approximately 60 seconds, until the power LED indicator fades from green to dark. Once unit has completely shut down, reapply power. If device continues to display red, please contact us for technical support.

The power LED indicator located on the top panel will cycle through multiple colors as it loads. Please see the [Top Panel Description](#) section to read about each color in the cycle and their meaning.

APPENDIX B – CABLE DIAGRAMS

Cable diagrams can be created for specific installations upon request. Please do not hesitate to contact us if you have a need for more extensive diagrams.

Blue Sky Network can make cables too! If you would like, we can produce cables based on your installation needs. Please contact us for more detail.

*Placeholder for diagrams

SUPPORT

Blue Sky Network is committed to providing the highest level of service and support. If you have any questions or concerns, please feel free to contact us by email or phone; contact information is available at the bottom of this page. For self-help, please visit <https://blueskynetwork.com/support>.

Thank you for choosing Blue Sky Network!



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