ORICA Digital Solutions NAVSTAR

NavStar Control Box
Installation and User Manual

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TABLE OF CONTENTS

LIST OF FIGURES

REVISION HISTORY

Rev.	Revision History	Date	Prepared By	Approved By
A	Initial release	13 November 2024	SM	SG, HW
B	Updates to Appendix A – written instructions for AC connection added. FLP200 firmware update instructions added. Screenshots updated (higher resolution).	23 October 2025	SM	SG, HW

1 Intended Audience

This installation and user manual is for the personnel responsible for installing and/or using the NavStar Control Box.

2 Icons and Conventions Used In This Guide

This guide uses the following icons to call attention to important information.

	**WARNING:** This icon appears when an operating procedure or practice, if not correctly followed, could result in personal injury or loss of life.
	**CAUTION**: This icon appears when an operating procedure or practice, if not strictly observed, could result in damage to or destruction of equipment.
	**NOTE**: This icon appears to highlight specific non-safety related information.

3 Safety

	**WARNING:** Always follow safety precautions and use proper personal protective equipment (PPE) including safety glasses and high-visibility clothing when working in the field with this equipment.

4 Abbreviations and Acronyms

This section lists abbreviations and acronyms used in the document.

Abbreviation or acronym	Definition
GPS	Global Positioning System
GNSS	Global Navigation Satellite System
LTE	Long-Term Evolution
Wi-Fi	Wireless Fidelity
A/C or AC	Alternating Current
D/C or DC	Direct Current
IP	Ingress Protection
NEMA	The National Electrical Manufacturers Association
PC	Personal Computer

5 INTRODUCTION

The NavStar Control Box is a highly versatile and adaptable device, engineered for a variety of applications. It functions as the core component within all NavStar systems, serving as the central hub that connects all devices to the GeoExplorer software.

The NavStar Control Box is crucial for facilitating data communication and managing telemetry options, acting as a gateway for diverse data types including positioning data, data from total stations and prisms, SAA interface data, and more. It supports an extensive array of sensors and configurations, ensuring efficient data transmission to the GeoExplorer software.

It offers flexibility to be powered by either A/C or solar energy and connects to GeoExplorer network via Ethernet, Wi-Fi, or LTE.

Figure 1: Control Box Enclosure Image

5.1 TYPICAL NAVSTAR CONTROL BOX CONFIGURATIONS

> **NOTE**: Please select the configuration of the NavStar Control Box that best meets the individual project's requirements.
>
> Each configuration is highly customizable. For adding functionalities based on project requirements, or information on more configurations, please contact NavStar Geomatics.

5.1.1 GNSS Base Station

A typical order utilizing the GNSS Base Station Control Box configuration would include one high precision GNSS unit (GPM300), along with several GPS-monitoring GMS rovers (GMS700/GMS800). This Control Box configuration is a gateway with the added functionality of being a GPS Base Station. RTK (real-time kinematic) GNSS monitoring technology is utilized to ensure precise and accurate positioning data.

> **NOTE**: The GMS rovers are not included in the GNSS Base Station Control Box setup, but at least one is mandatory for the monitoring system. Typically, several more are used in conjunction with it.

The main components of the GNSS Base Station Control Box configuration are:

- FLP200

  The FLP200 acts as a gateway, facilitating communication and data transfer. It can receive transmissions from the GMS rovers and relay them to GeoExplorer, and broadcast data corrections from GeoExplorer to the GMS rovers. The communication method between the FLP200 and GMS rovers depends on their respective configurations:

  - If both the FLP200 and GMS rovers have terrestrial radios installed, they communicate directly via radio transmissions.
  - If the GMS rovers have LTE radios, the FLP200 and GMS rovers communicate indirectly through the cellular network.

Figure 2: FLP200 Unit

- GPM300
    - The GPM300 functions as a high precision GPS base station, providing accurate positioning data.
    - The GPM300 attaches to the side of the FLP200 and communicates solely through the back 'bus connector' (RS485), acting as the reference node in the system.

Figure 3: GPM300 Unit

- GNSS Antenna

  The GNSS antenna receives signals from GNSS satellites, which are essential for the base station's operation in providing precise positioning data.

Figure 4: GNSS Antenna Unit

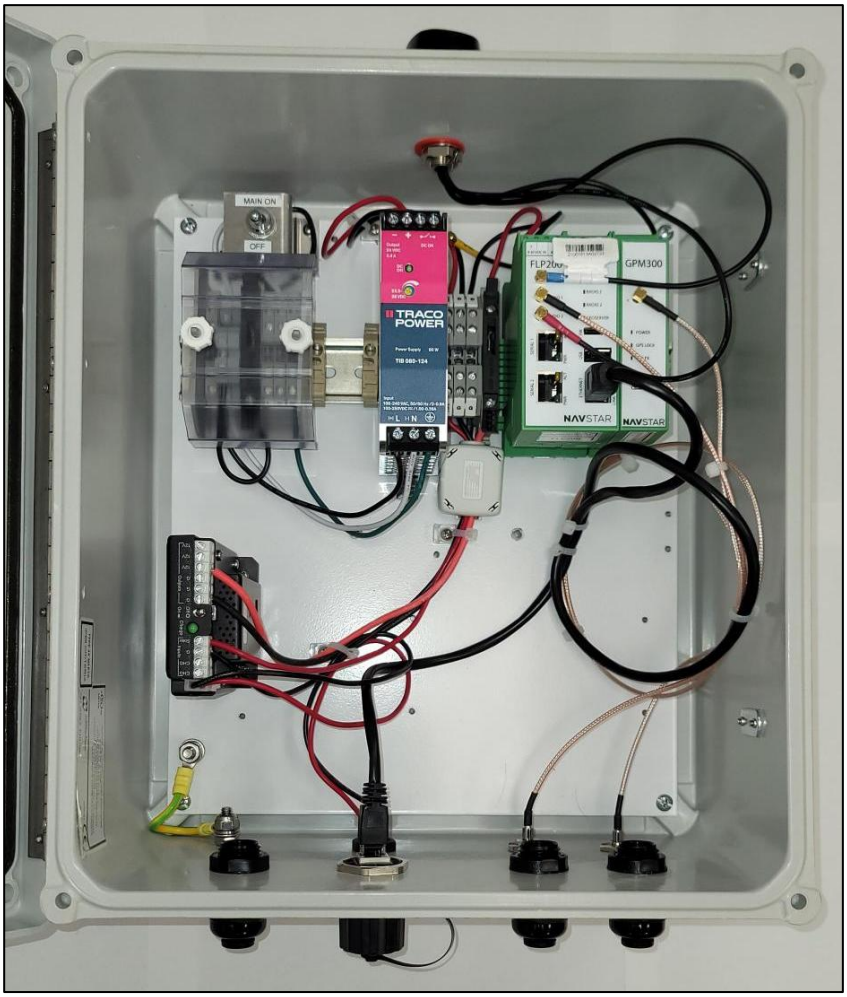


Figure 5: GNSS Base Station Configuration Control Box Internals

5.1.2 Gateway

The NavStar Control Box's Gateway configuration mainly uses the FLP200, essential for managing communication between connected devices and systems. It connects to GeoExplorer via Ethernet, Wi-Fi, or LTE, acting as a central hub for data handling and transfer.

This configuration can function independently or with other setups. For instance, a vibrating wire interface for a piezometer can link to the FLP200-based Gateway to send data to GeoExplorer. In a combined scenario, like with a GNSS Base Station for GPS monitoring, a second Gateway can enhance communication between distant Rovers by relaying data and corrections through GeoExplorer.

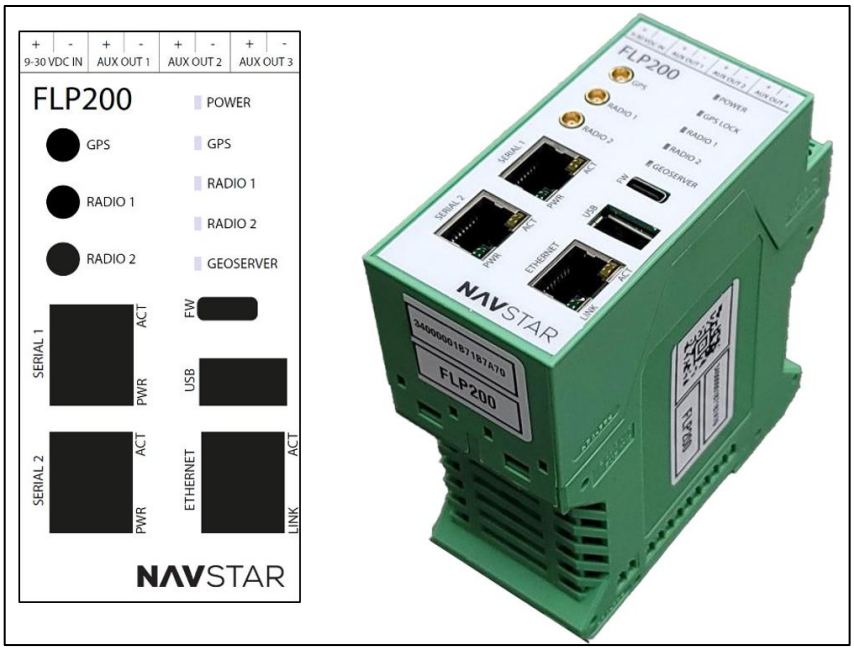


Figure 6: FLP200 Unit and Connection Schematic

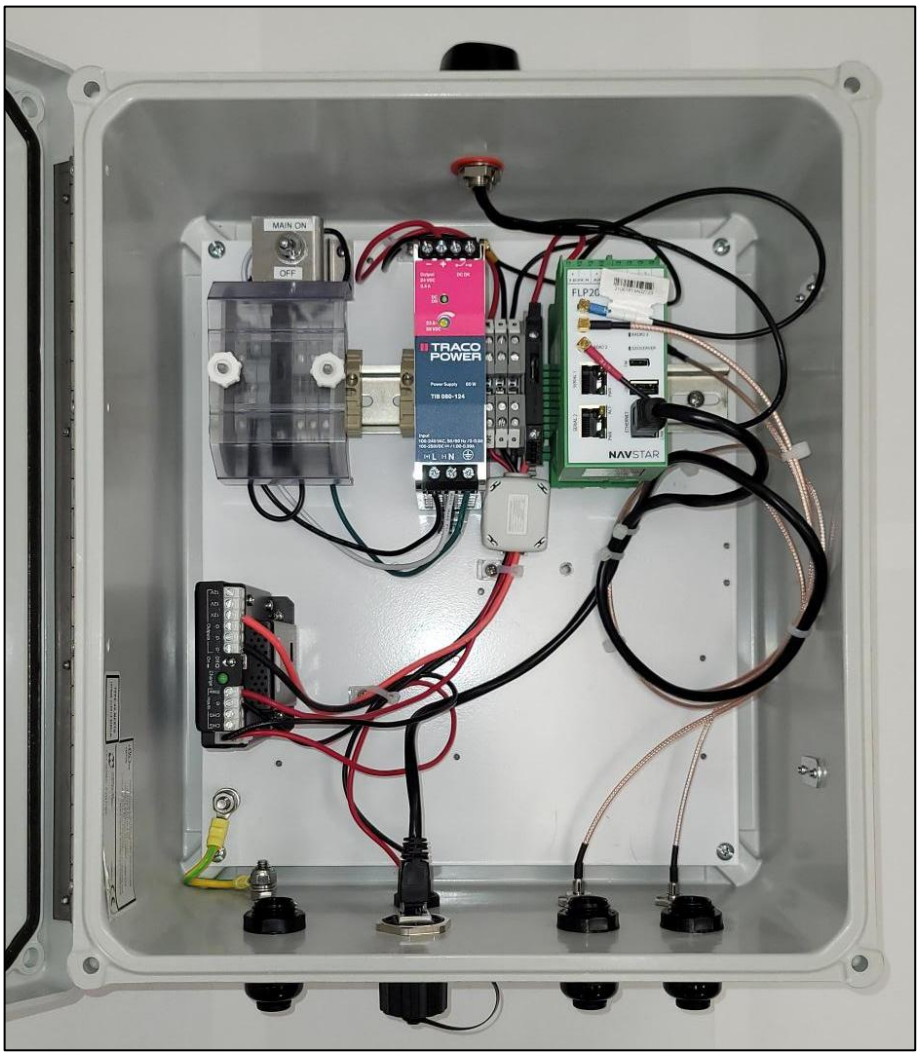
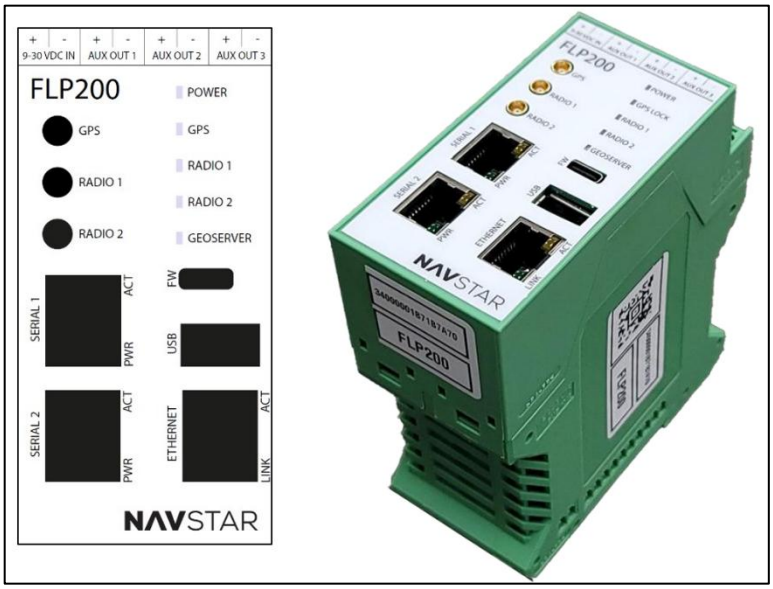


Figure 7: Control Box (Gateway Configuration) Internals

5.1.3 Total Station Control Box

The Total Station Control Box is configured with the FLP200 and utilizes RJ45 to DB9 cables for its serial 1 and serial 2 ports, as illustrated in the schematic diagram below. One serial port is dedicated to the Total Station, while the other is typically allocated for a weather station. The weather station, when used in conjunction with the Total Station, supplies essential data for atmospheric corrections.



This setup permits direct links with equipment, which is useful when devices are in close proximity and can be directly connected, such as in surveying tasks involving total stations and prisms.

The box operates effectively with these connections alone, eliminating the need for additional antennas, thus optimizing it for total station monitoring tasks.

The advancement of remotely controlling these measurements has prompted the development of systems where the total station, directed by GeoExplorer, adjusts to specific angles to measure distances to strategically placed prisms, facilitating the monitoring of landscape deformations.

Additionally, it can function as a gateway to other devices, such as a vibrating wire interface, and can simultaneously operate as a total station while managing data from a vibrating wire interface and serving as a GPS system base station.

The control box employs RJ45 connectors, typically linked with Ethernet, but uniquely adapted for the serial ports through a custom pinout, distinguishing the wiring for each port.

5.1.4 Repeater

The main component of the Repeater Control Box Configuration is the FLL400. This configuration is primarily used when monitoring devices are too far from the Gateway for proper data transmission. The FLL400 extends the transmission range, enhancing the reliability of data broadcast in challenging environments.

NOTE: The FLL400 repeater is typically used only in solar-powered systems. If hard-wired power is available, a gateway would likely be installed instead. Additionally, the repeater is exclusively used in systems with terrestrial radio communication; it is not employed in systems using LTE or Wi-Fi for data transmission.

Figure 8: FLL400 Unit

5.2 FEATURES

- Supports multiple communication and telemetry options
- Available in solar and A/C power options
- IP65 rated for water-ingress and dust protection
- NEMA Type 4X compliant enclosure ensures reliable protection in extreme environments
- Highly versatile and adaptable to changing project requirements
- Simplifies data collection and transmission to GeoExplorer
- Ensures reliable operation in diverse environmental conditions
- Facilitates easy troubleshooting and maintenance

5.3 APPLICATIONS

Some applications of the NavStar Control Box include:

- GNSS Base Station for GPS monitoring
- Gateway for device and system communication management
- Total Station Control Box for precise positioning and data collection
- Repeater to extend the transmission range and enhance data reliability in challenging environments

6 INSTALLATION GUIDELINES

> **NOTE**: Specific installation instructions will depend on the individual project requirements and site conditions.
>
> Please consult the site engineer or contact NavStar support for further instructions.

6.1 PRE-INSTALLATION CONNECTIVITY CHECK

Before installation, verify the Control Box system's functionality by checking power and communication through GeoExplorer. This includes assessing battery voltage and signal levels.

6.2 INSTALLATION CONSIDERATIONS

6.2.1 Unobstructed Sky View for the Base Station

To accurately transmit data, the Base Sation needs to have clear views of the sky, free of obstructions of any kind above 15 degrees from the horizon.

This includes power poles, trees, buildings, rock faces, and other similar obstructions.

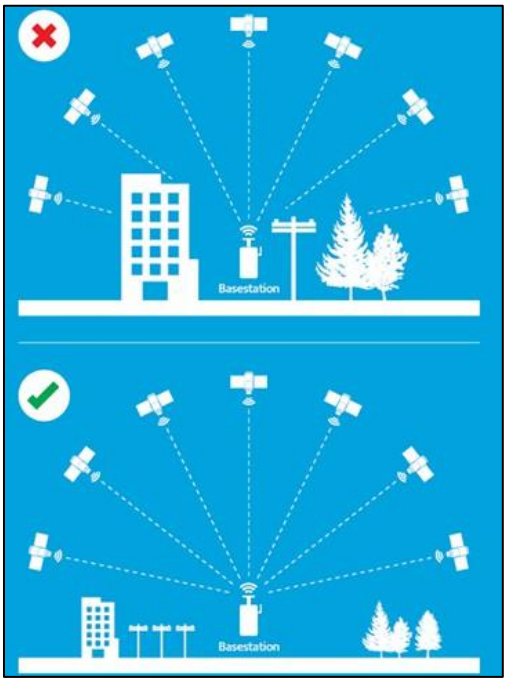


Figure 9: Non-Ideal and Ideal Base Station Sky View

6.2.2 GNSS Antenna (If Using) Installation Notes

The GNSS antenna used with the GNSS Base Station should be as high as possible and free from obstructions. The GNSS antenna should be secure without possibility of vibration or movement. A concrete pillar is the best solution.

Figure 10: GNSS Antenna Example Installation

6.2.3 Radio Antenna (If Using) Installation Notes

The LPWAN radio (region-specific frequency) antenna used with the GNSS Base Station should be as high as possible and free from obstructions. If possible, there would be a “line of sight” view to each of the Rover units. The GNSS antenna should be secure without possibility of vibration or movement. A concrete pillar is the best solution.

CAUTION: This product incorporates pre-certified radio modules and must only be used with the antennas specified in the original certification. Do not use any antenna other than approved antenna types, or with higher gain than specified.

While certain adapters or converters may be used to accommodate approved antenna types, the antenna type itself must not be changed.

No modifications to the RF module or antenna configuration are permitted by the end user.

For further details or clarification, please contact Service before making any changes.

6.2.4 Other Installation Considerations

1. The control box should be mounted securely and off the ground.

   The specific mounting structure is left to the client due to varying installation environments.

2. For its gateway functionality, the antenna should be installed as high as possible with a line of sight to the devices it communicates with.

3. It is essential to check the power and communication levels during installation using GeoExplorer. The control box should be connected to GeoExplorer first to visualize and troubleshoot data points.

6.3 INSTALLATION TOOLS AND COMPONENTS

Before installing the NavStar Control Box system, ensure the following components and tools are present:

- NavStar Control Box unit
- A/C power cable and source (if A/C powered)
- Solar panels with external batteries (if solar powered)
- GNSS antenna (if using the GNSS Base Station configuration)
- *Mounts and stands (if required)
- *Other installation tools and components

***NOTE**: Due to the highly individual nature of the installations, NavStar does not provide specific mounts or stands.

The customer is encouraged to source any additional tools and components required for their installation.

NOTE: For A/C Base Station and Gateway configurations, please refer to Appendix A for instructions on connecting an A/C wire to the Control Box. This does not apply to solar versions.

6.4 EXAMPLE INSTALLATION IMAGES

> **NOTE**: The specifics of the installation can vary depending on project requirements and site conditions.
>
> It is recommended to consult the site engineer for specific details or contact NavStar for more information.
>
> Example photos of typical installations are provided below for general guidance.

Figure 11: Example of Gateway Control Box Configuration Field Installation

Figure 12: Example of GNSS Base Station Control Box Configuration Field Installation

7 POWERING ON THE CONTROL BOX

1. Ensure the Control Box is connected to a power source (A/C or solar).
2. Open the Control Box lid to access the internals.
3. Power ON the Control Box by simply flicking the power switch to the MAIN ON option. The power switch's location can be seen in the figure below:

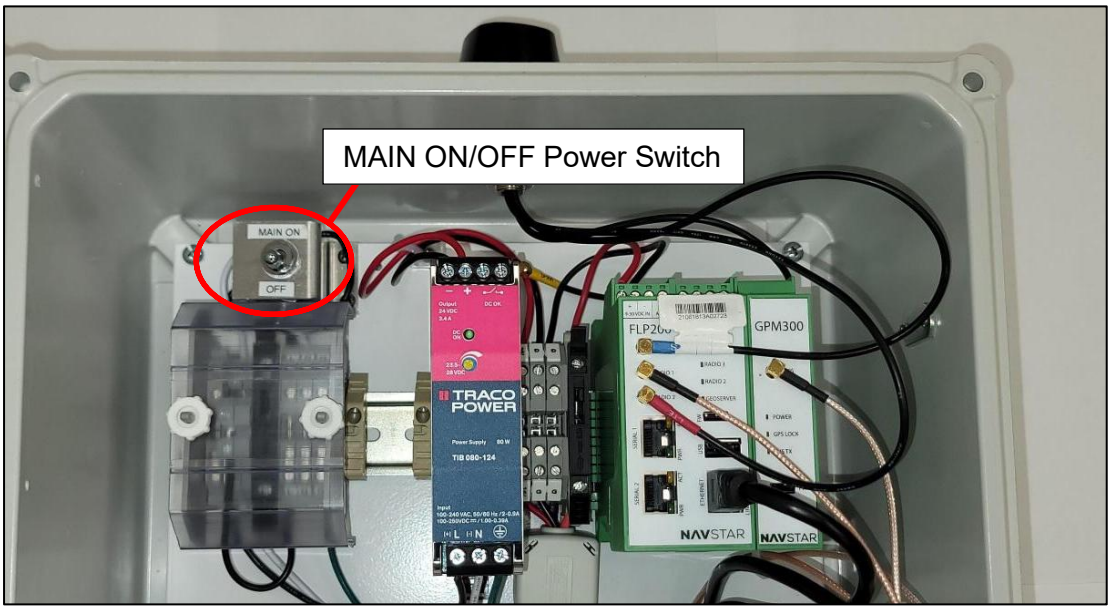


Figure 13: Powering ON the Control Box Using the MAIN ON/OFF Button

4. Close the Control Box lid and secure properly.

8 SWITCHING ANTENNA BASED ON CONNECTIVITY OPTION SELECTED

The NavStar Control Box features a combined Wi-Fi, LTE, and GPS antenna with three separate cables for each connectivity option.

Steps to configure the antenna are based on the selected connectivity option:

- For Basic GPS Connectivity: The 'simple' GPS antenna cable, which mounts to the top of the control box, should always be plugged into the GPS connector on the FLP200 (or FLL400).
- For High Precision GPS (GNSS) Monitoring: The GPS (GNSS) antenna cable should be plugged into the GPM300 (connector labeled GPS).
- For LTE or Wi-Fi connectivity: Depending on which radio module is installed in the FLP200, plug either the LTE or Wi-Fi cable into the Radio 2 connector. Then, select the corresponding option (Radio 2) from the SERVER CONNECTION dropdown menu in the FLP Discovery window.

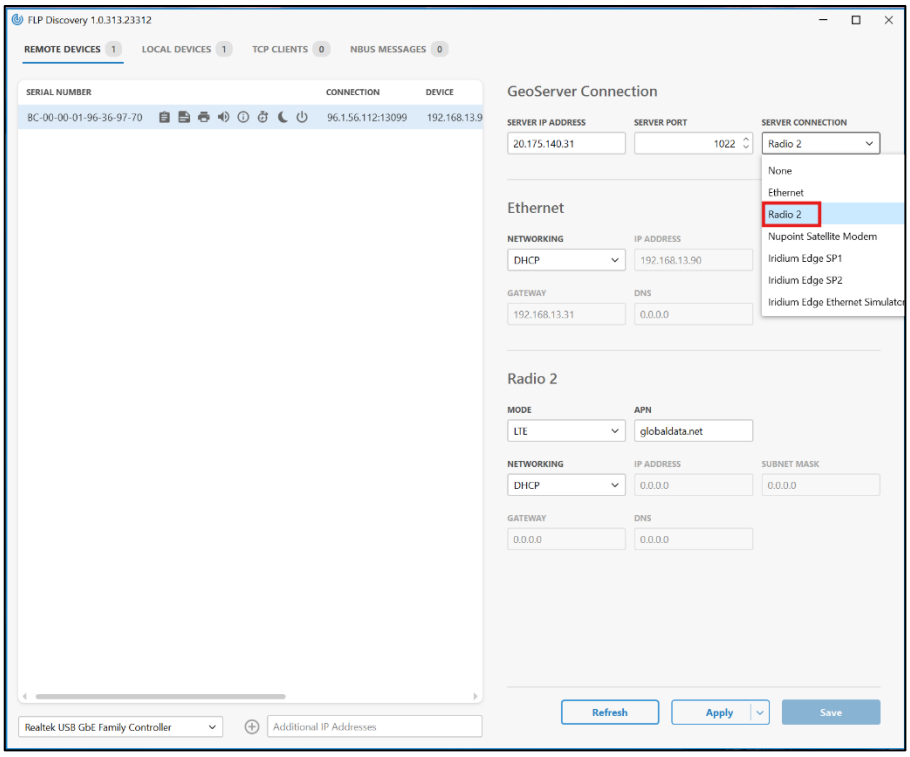


Figure 14: Configuring Connectivity in FLP Discovery

NOTE: If the Control Box is using terrestrial radio communication (e.g., a 900MHz radio module in North America), an external antenna should be plugged into the Radio 1 connector.

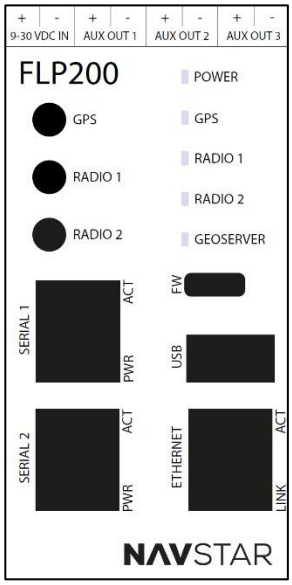


Figure 15: FLP200 Connections Schematic

9 FLP200 CONFIGURATION USING FLP DISCOVERY APPLICATION

NOTE: Each Control Box is shipped with the latest firmware version of the FLP200 installed. However, there are instances when it is necessary to update or restore firmware manually or remotely. Please see Appendix B for further instructions on carrying out firmware updates.

9.1 FLP200 CONFIGURATION VIA ETHERNET

1. Launch the FLP Discovery application. The following window appears.

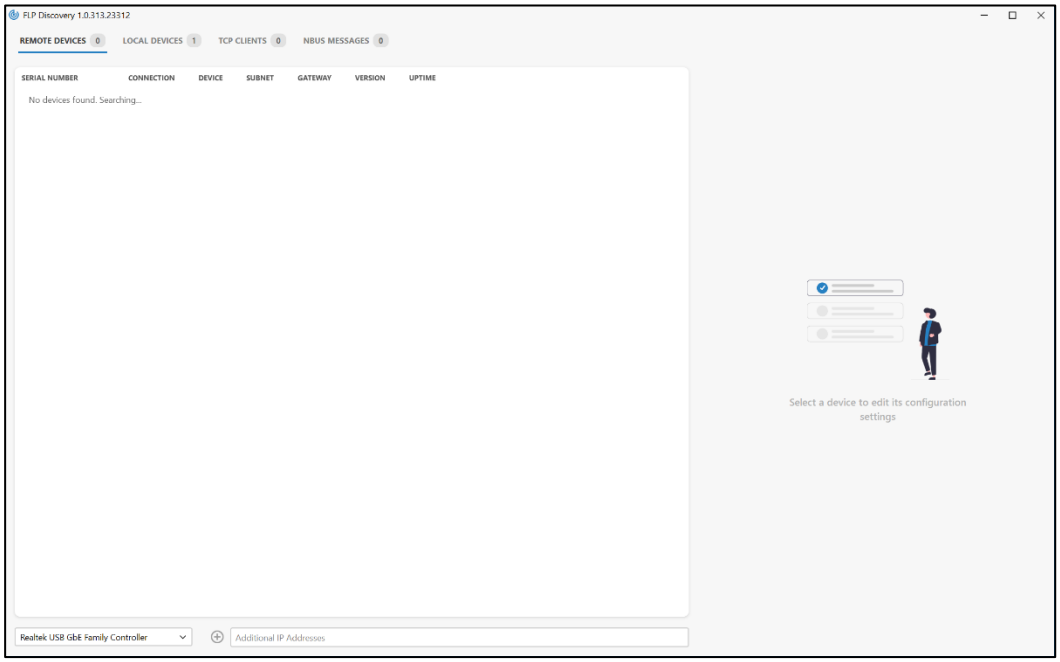


Figure 16: Launching FLP Discovery for FLP200 Configuration via Ethernet

2. Connect a laptop with an Ethernet cable to the Ethernet port on the FLP200 in the Control Box. The device will then pop up in the FLP Discovery window under the REMOTE DEVICES tab.

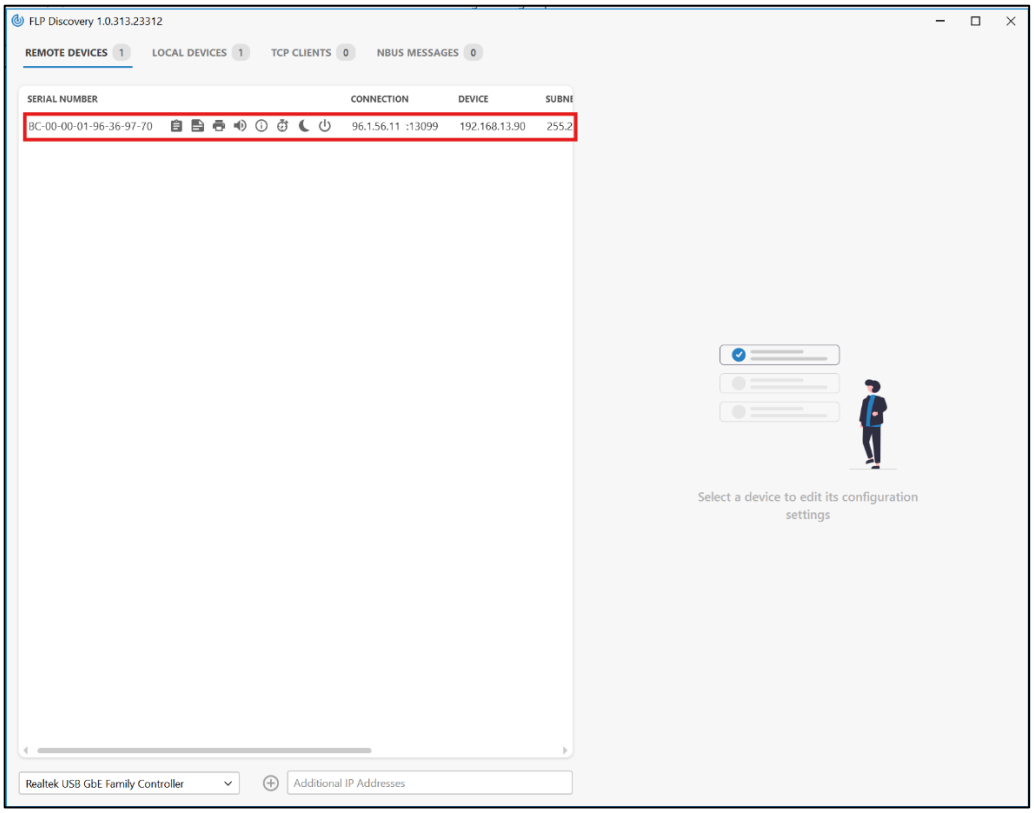


Figure 17: FLP200 for Configuration Visible in the FLP Discovery Window

3. Clicking on the device's serial number will display the GeoServer Connection and Utilities option.

   Set GeoServer Connection: enter the specific Server IP and Port for the user's GeoExplorer project. The default SERVER CONNECTION selection is Ethernet, which can be changed to Radio 2 for Wi-Fi or LTE connectivity.

   Set Networking Parameters: the top half of this box is for setting DHCP or a static IP address. The bottom half is for configuring LTE or Wi-Fi settings if Radio 2 is selected as the connection method.

4. Once all parameters are verified, select Apply to finish the configuration.

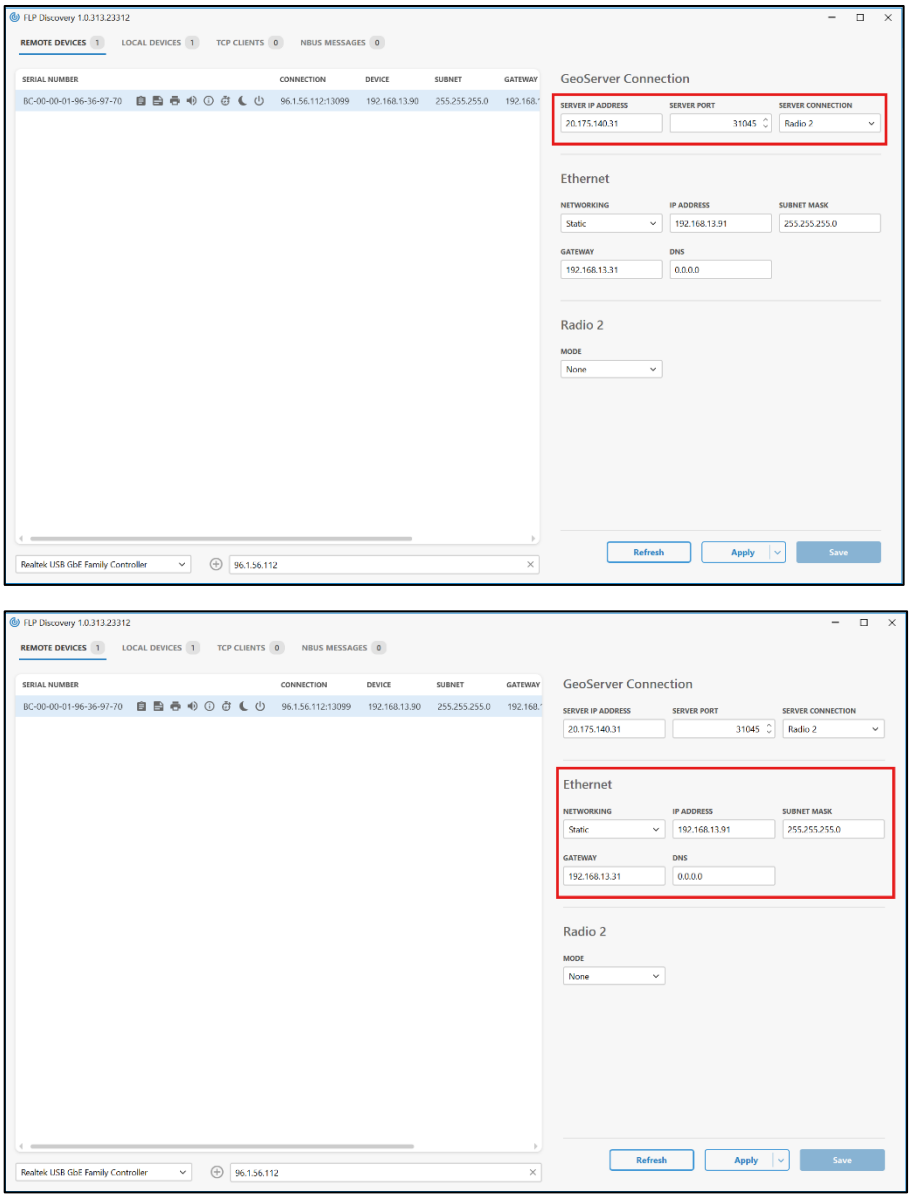


Figure 18: Setting GeoServer Connection (Top Image) and Networking Parameters (Bottom Image)

9.2 FLP200 CONFIGURATION VIA WI-FI

1. To connect via Wi-Fi, install a Wi-Fi module in the FLP and select Wi-Fi from the MODE dropdown menu.

   Also, click on the SERVER CONNECTION dropdown menu to select the Radio 2 option.

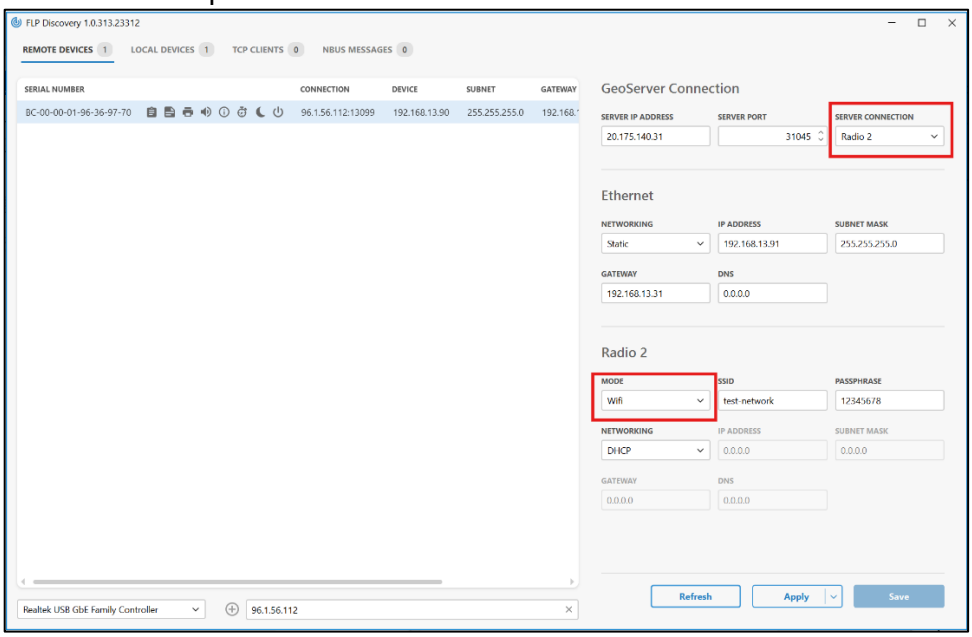


Figure 19: Connecting and Configuring FLP200 via Wi-Fi

2. Enter the SSID, PASSPHRASE and NETWORKING (if applicable), and select **Apply** to finish configuration.

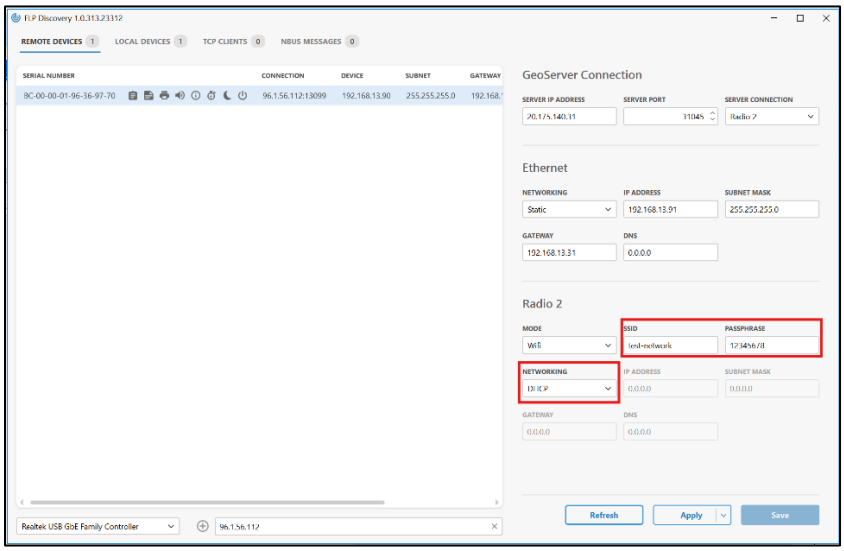


Figure 20: Entering Wi-Fi Configuration Parameters in GeoExplorer

9.3 FLP CONFIGURATION VIA LTE

1. To configure via LTE, install an LTE radio module in the FLP200, and select LTE from the MODE dropdown menu.

   Also, click on the SERVER CONNECTION dropdown menu to select the Radio 2 option.

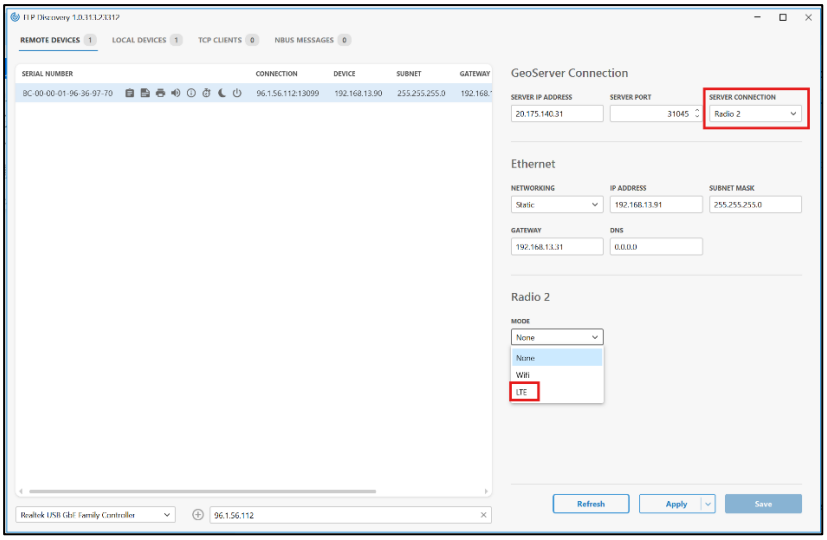


Figure 21: Entering LTE Configuration Parameters in GeoExplorer

2. Enter the APN code for the specific carrier depending on the SIM card that is installed in the radio module.

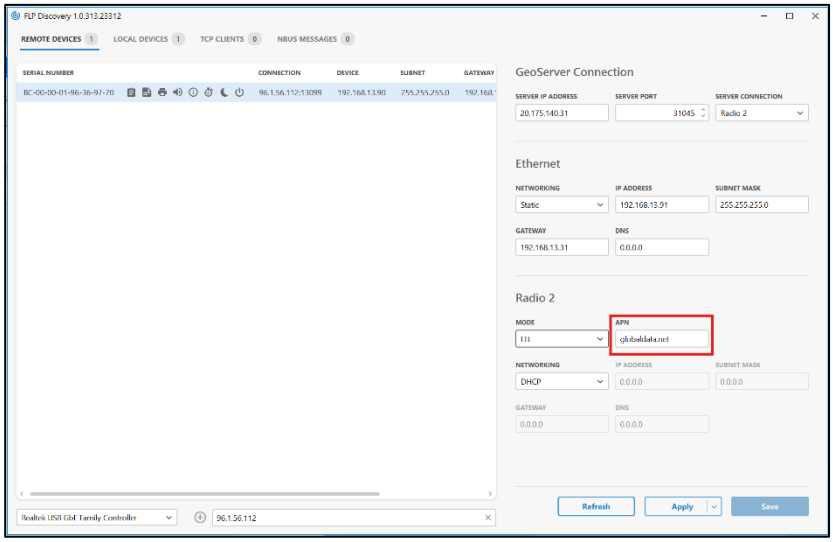


Figure 22: Entering APN Code for the Specific Carrier Per SIM Installed in Radio Module

3. Select Apply to finish configuration.

9.4 Configuring the FLP200 Over a Local Network

Besides connecting via Wi-Fi, LTE, or direct Ethernet, the FLP200 can also be accessed over a local network using the FLP Discovery Application. If the computer and the FLP200 are on the same subnet, the FLP device will automatically be displayed in the application, similar to a direct Ethernet connection.

For discovery across different firewalls or networks, manual entry of the FLP200's IP address may be required. The FLP Discovery Application utilizes the default UDP port 13099 for device search. Ensuring this port is open and not blocked by firewalls is essential for successful device discovery.

10 Device Management and Configuration in GeoExplorer

Once the FLP200 is active on the local network and the SERVER IP and SERVER PORT are configured in the FLP Discovery Application, the connected device will automatically appear in GeoExplorer. Initially, the device will be displayed in the 'default project' within GeoExplorer, particularly in installations where multiple projects are present.

The device can be found in the General window on the right-hand side of the main window, listed under All Sensors. Several diagnostic fields, such as voltage, current, and position, are displayed in this window for monitoring and management purposes.

Figure 23: Device Status and Diagnostics in GeoExplorer Interface

1. Click the Settings icon at the top of the device's diagnostics display to expand setting options.

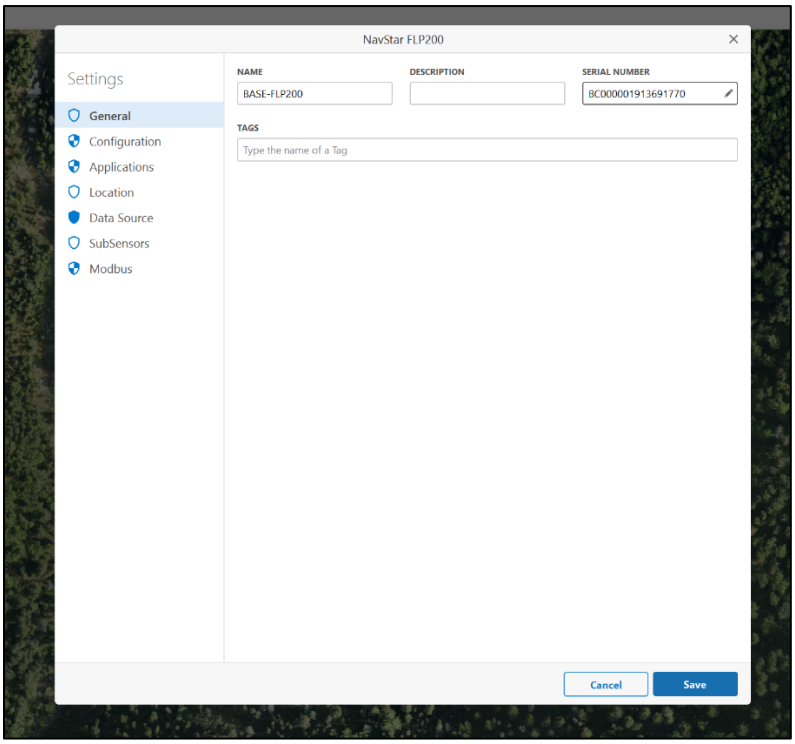


Figure 24: FLP200 Settings

2. In the Applications menu, each connector for the FLP200 with its corresponding options can be viewed and configured, as required.

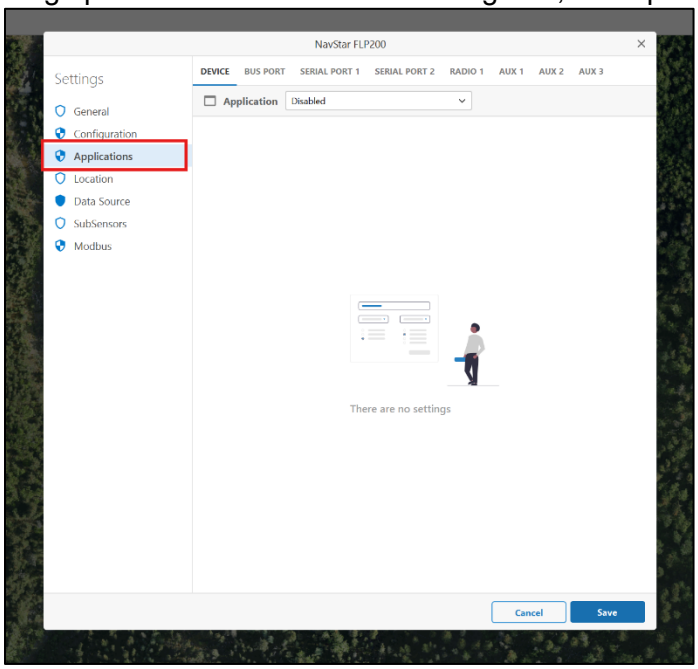


Figure 25: FLP200 Connector Configuration Options

For example, while a more common connection for SERIAL PORT 1 would be a Total Station, the dropdown menu shows that other devices using the RS232 protocol (such as SAA or weather stations) can be connected to the FLP200.

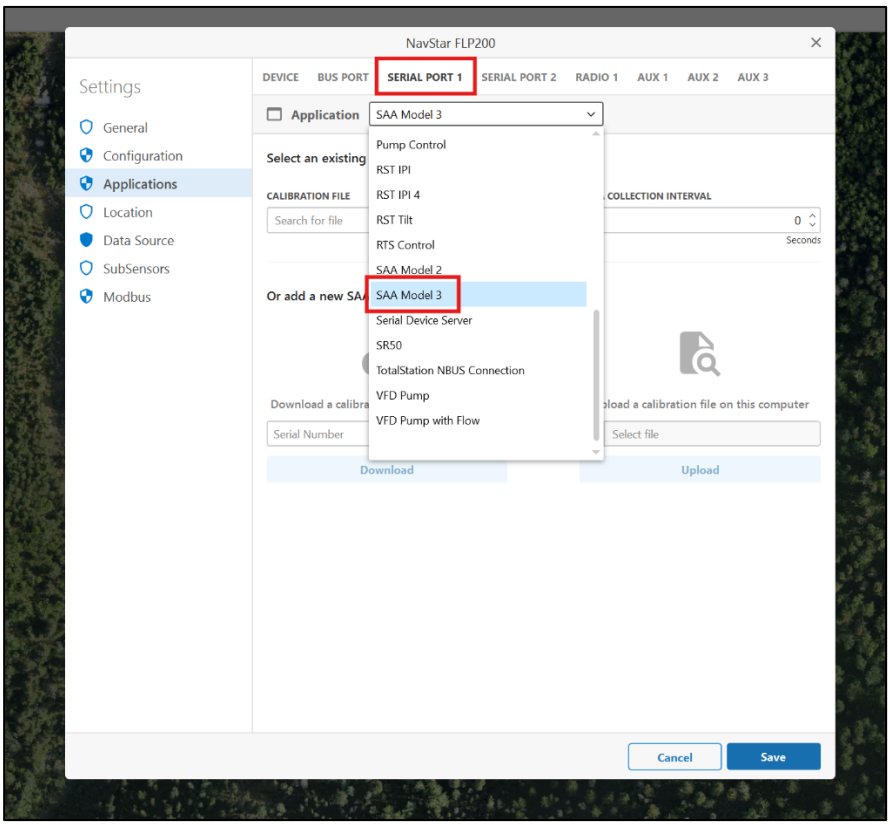


Figure 26: Configuring Devices that Utilize RS232 Protocol

To configure the FLP200 as a GNSS Base Station when the GPM300 is attached, navigate to the BUS PORT menu. This is the method by which the FLP200 is connected to the GPM300.

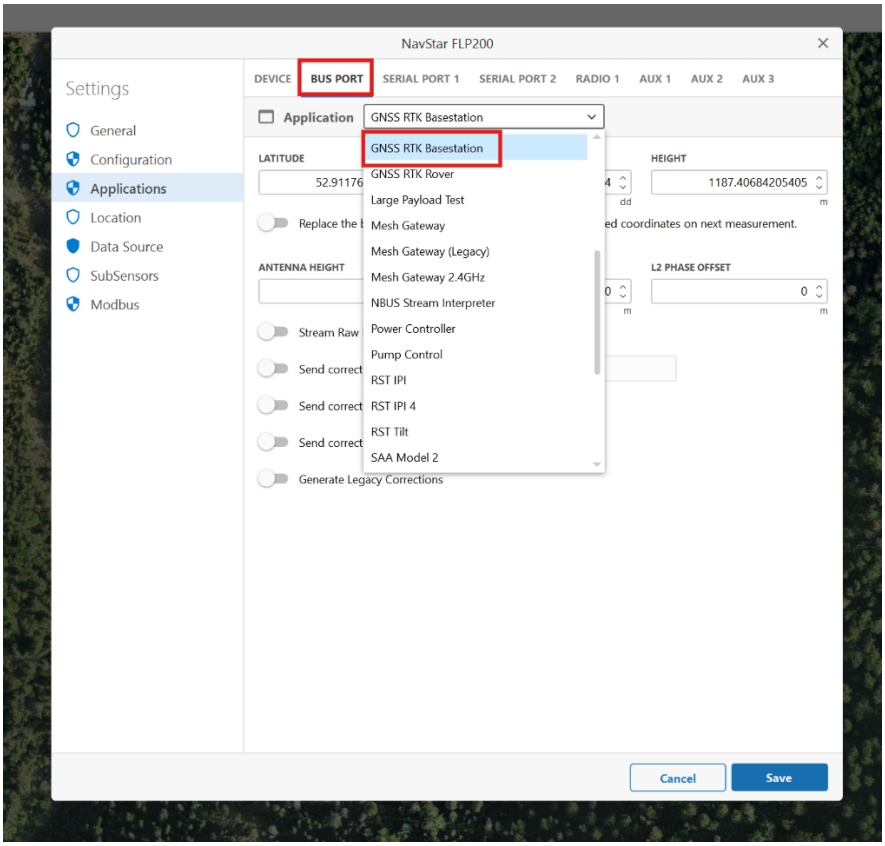


Figure 27: Configuring FLP200 & GPM300 as a GNSS Base Station

11 POST-INSTALLATION CHECKS

- Communication Check: The communication link between the Control Box and GeoExplorer must be verified to confirm proper data transmission. For Ethernet connections (the default and most common method), signal testing is not typically required. For LTE or Wi-Fi connections, direct signal quality checks are not feasible due to the use of external networks. However, the FLP200 unit's diagnostic messages in GeoExplorer can be monitored to assess connection status, power, and other environmental factors, ensuring proper data transmission.

- Diagnostic Messages: Set the control box to send diagnostic messages at regular intervals (e.g., every hour) to monitor its status. If a message is not received within the expected timeframe, it may indicate a communication failure.

- Visual Inspection: Conduct a visual inspection to ensure all components are securely mounted and there are no visible signs of damage or loose connections.

- Data Verification: Use GeoExplorer to verify that data from the control box is being received and logged correctly. This includes checking for any power failures or communication issues that might have occurred.

12 MAINTENANCE

- Alarm Setup for Communication Failures
  Implement alarms that trigger notifications in case of communication failures. This feature is crucial for prompt detection and resolution of issues that may disrupt system operations.

- Monitoring Solar Voltage (if the Control Box is solar powered)
  Regularly review the input voltage data in the FLP200's diagnostic messages to observe the charging and discharging patterns. This monitoring is essential for diagnosing potential failures in the solar panels, which could impact the system's power supply.

13 TROUBLESHOOTING

> **NOTE**: The troubleshooting procedures mentioned here are for the most encountered issues. For additional support, contact NavStar Geomatics.

13.1 COMMUNICATION FAILURES

Configure the FLP 200 device to send diagnostic messages at regular intervals to monitor communication status. Set up an alarm to alert the user if communication fails, indicated by the absence of expected diagnostic messages.

13.2 POWER ISSUES

Monitor the solar voltage chart in GeoExplorer to ensure proper charging and discharging patterns. If the typical curve is absent, it may indicate a failure in the battery or solar panels.

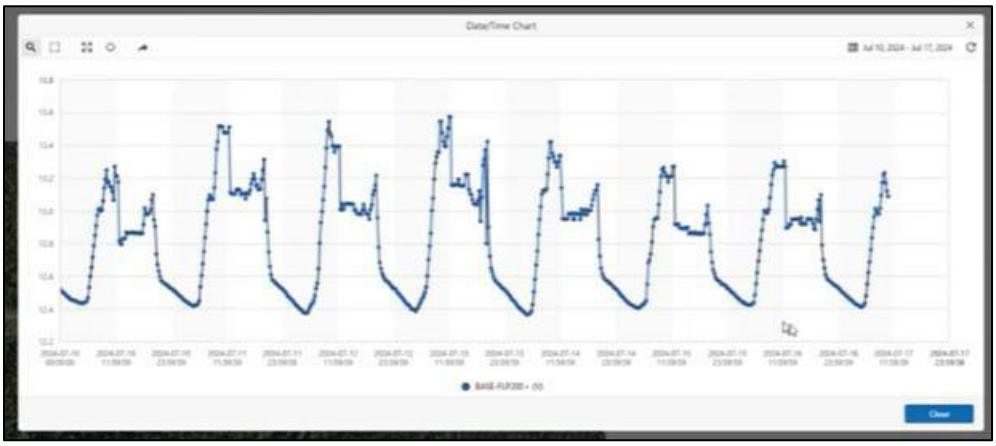


Figure 28: Monitoring Solar Voltage Chart in GeoExplorer

14 PRODUCT SPECIFICATIONS

NOTE: For a complete and up-to-date list of specifications, please refer to the NavStar Control Box product page.

15 SERVICE, REPAIR AND CONTACT INFORMATION

This product does not contain any user-serviceable parts.
Contact RST for product services or repairs.

- For sales information: RST_sales@orica.com
- For technical support: RST_support@orica.com
- Service portal: https://support.rstinstruments.com/support/tickets/new
- Website: www.rstinstruments.com
- Toll free: 1-800-665-5599

RST Instruments' Office

Address: 11545 Kingston Street,
Maple Ridge, BC, Canada V2X 0Z5
Telephone: 604-540-1100
Fax: 604-540-1005
Business hours: 8:00 a.m. to 4:30 p.m. (PST) Monday to Friday, except holidays

APPENDIX A:

NAVSTAR CONTROL BOX A/C CONNECTION INSTRUCTIONS

Follow the steps as outlined below to form A/C connection to the NavStar Control Box.

> **NOTE**: These instructions are specific to the A/C / lead acid battery power supply option of the NavStar Control Box. Do not follow these instructions if your Control Box is solar powered.

1. Unlock the Control Box enclosure's latches and swing open the enclosure lid to expose the internal electronics.

   Ensure that the MAIN power switch (see location in the following image) is set to OFF.

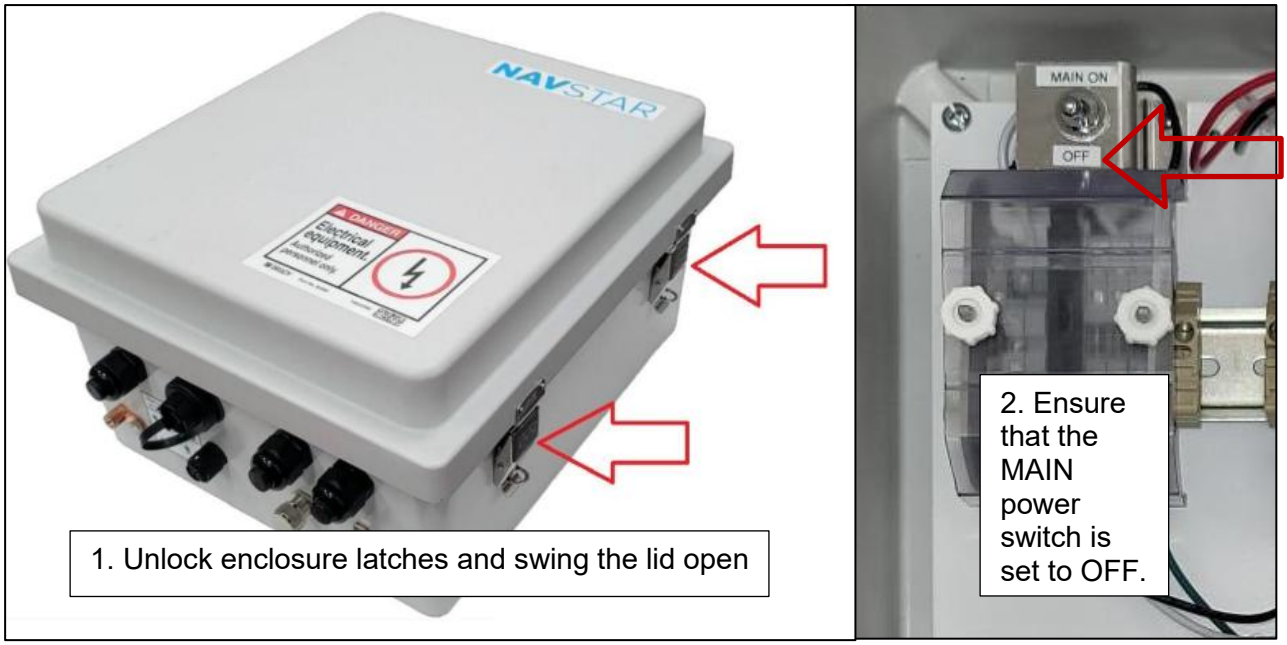


Figure A - 1: Accessing Control Box Internals to Turn OFF MAIN Power Switch

2. Remove the knurled nuts and A/C circuit protective cover from the terminal block segment of the circuitry.

3. Loosen the A/C cable gland and remove the sealing plug.

WARNING: Do not over-loosen the cable gland and cause it to detach completely from the enclosure. If the cable gland is over-loosened, re-tighten the cable gland and plastic hex nut inside the enclosure, and repeat step 3.

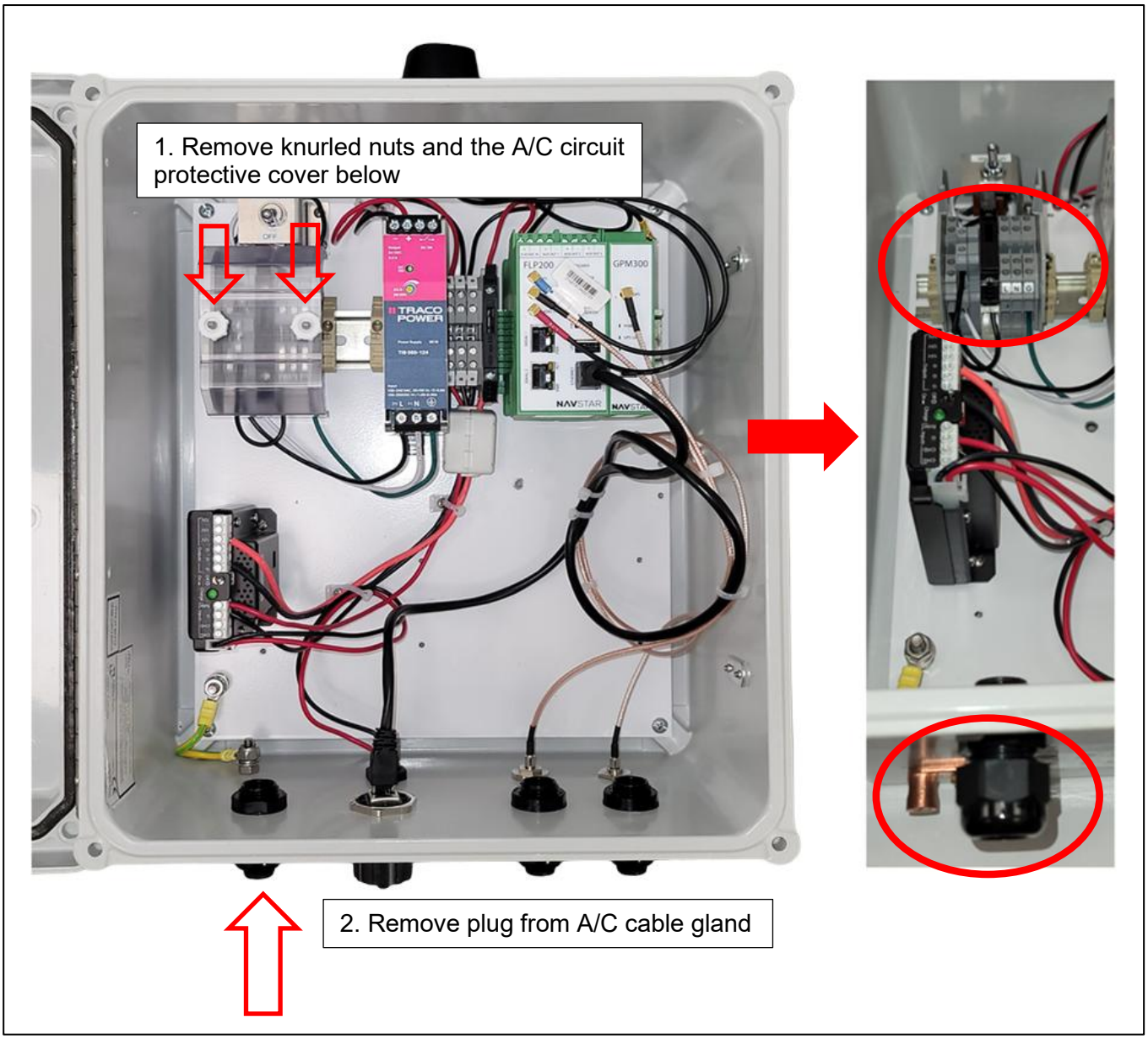
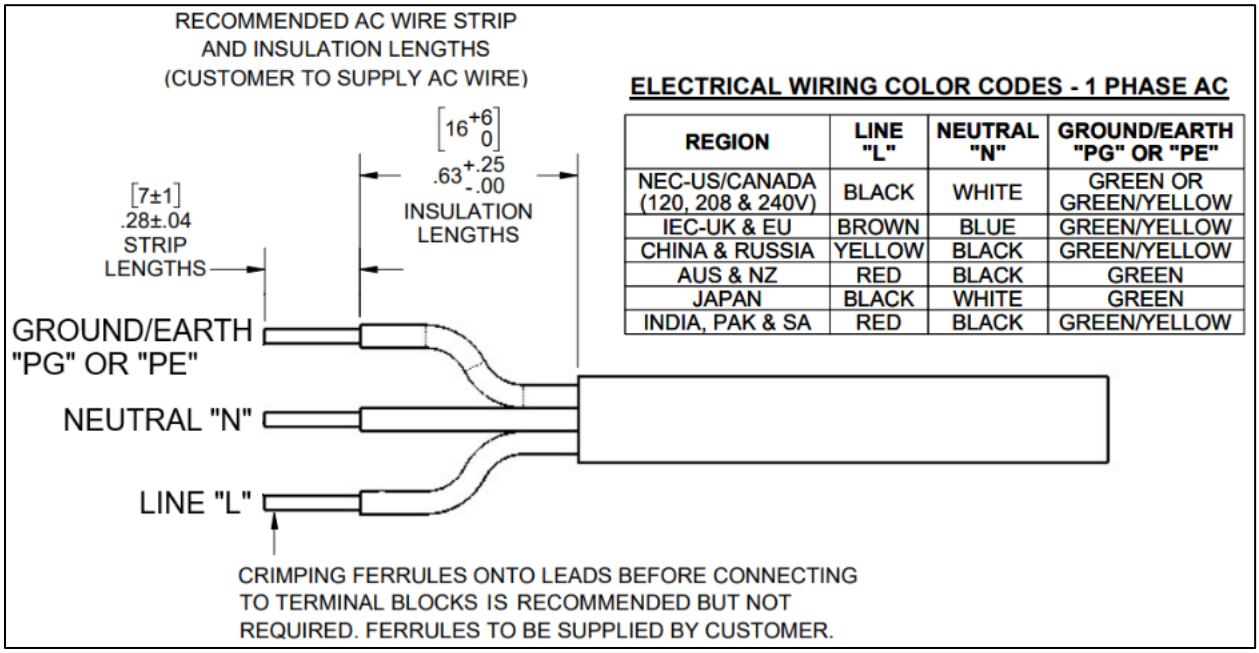


Figure A - 2: Remove Knurled Nuts and Plug from A/C Cable Gland

4. Obtain an A/C power cable and strip the wires and insulation to the lengths as shown below.

5. Note the Region on the Electrical Wiring Color Codes for 1 Phase A/C table as shown below.



ELECTRICAL WIRING COLOR CODES - 1 PHASE AC

REGION	LINE "L"	NEUTRAL "N"	GROUND/EARTH "PG" OR "PE"
NEC-US/CANADA (120, 208 & 240V)	BLACK	WHITE	GREEN OR GREEN/YELLOW
IEC-UK & EU	BROWN	BLUE	GREEN/YELLOW
CHINA & RUSSIA	YELLOW	BLACK	GREEN/YELLOW
AUS & NZ	RED	BLACK	GREEN
JAPAN	BLACK	WHITE	GREEN
INDIA, PAK & SA	RED	BLACK	GREEN/YELLOW

Figure A - 3: Recommended Wire Strip and Insulation Lengths & Electrical Wiring Color Codes

NOTE: RST recommends crimping ferrules onto the leads before connecting them to the terminal blocks. This step is optional but highly recommended.

Please note that ferrules are to be sourced by the customer.

WARNING: DO NOT connect the A/C power cable to any A/C power source. Remove the A/C power cable from the A/C power outlet before proceeding to the next steps.

NOTE: A/C power cable specifications are 85~264VAC / 24-12 AWG Wires.

- It is recommended to use a shielded A/C power cable, but it is not required.
  - If shielded A/C cable is used, ensure the shield (lead wire side) is cut off or not connected to ground to avoid ground loops.

Refer to Figure A – 4 below, and complete the following steps:

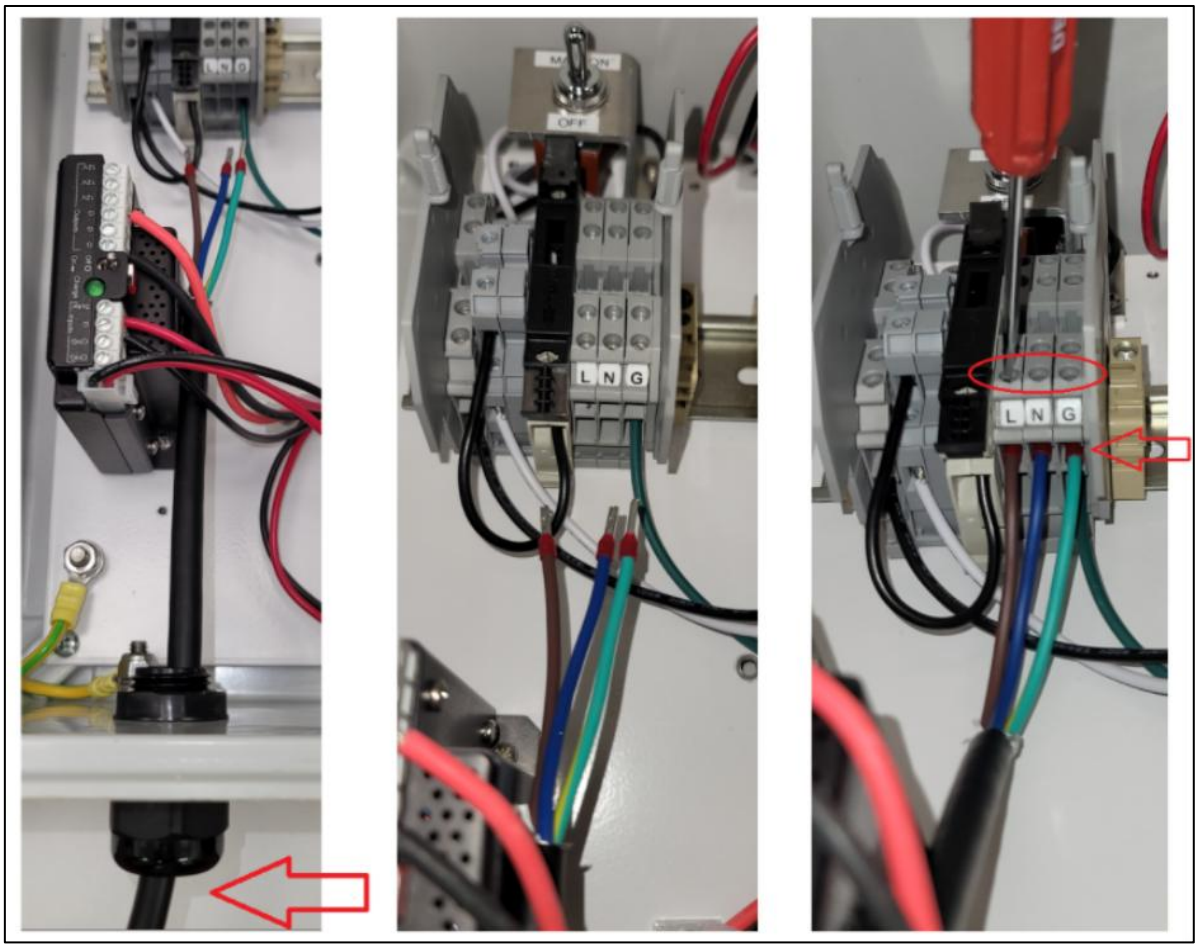


Figure A - 4: A/C Power Connection Steps

6. Feed the A/C power cable through the A/C cable gland of the Control Box.

7. Use a small flat head screwdriver to loosen the terminal block's slotted head fasteners on terminal blocks marked "L", "N" & "G". Recommended flat head screwdriver is 2.4mm [3/32"].

8. Insert the wires onto the top opening of each of the 3 terminal blocks. Insert the appropriate wire colors into the terminal blocks based on the Region's A/C wire color codes.

9. Tighten the slotted head screws to secure the wires inside the terminal blocks. Recommended tightening torque is 0.4 Nm. [3.5 in.lbs]. Gently tug the wires to ensure that they are securely attached to the terminal blocks.

10. It is recommended that the A/C power cable be restrained onto the existing cable tie mount inside the enclosure. RST recommends a Ty-wrap size of 3mm [1/8”] wide.

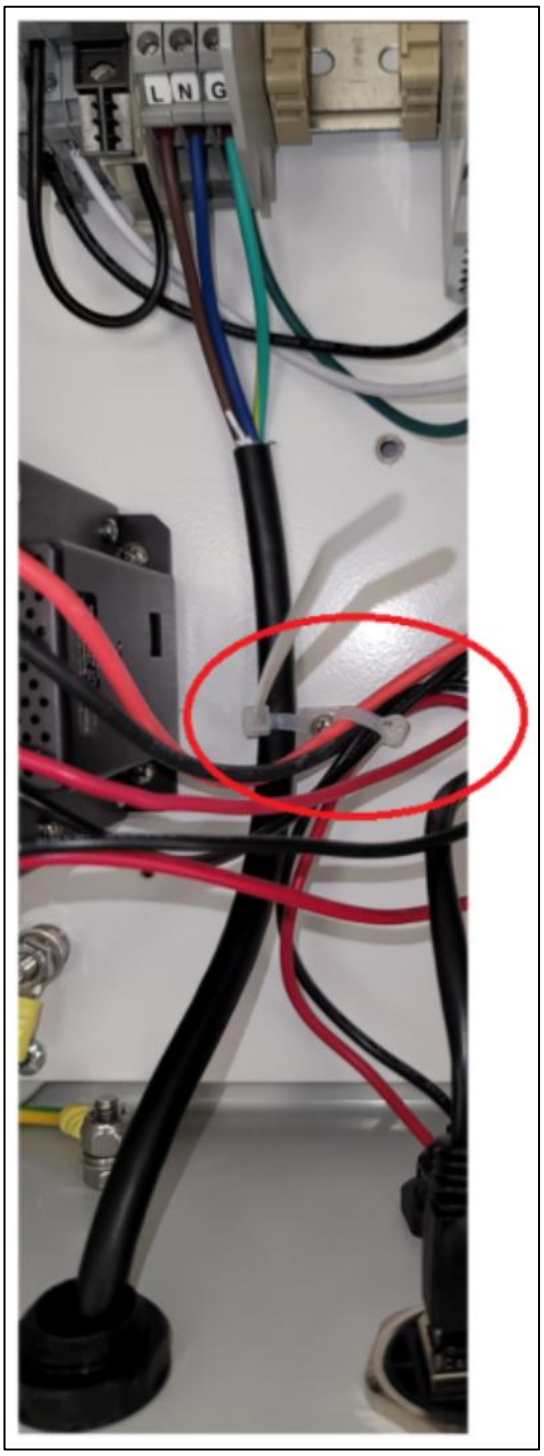


Figure A - 5: Restrain A/C Power Cable onto Cable Tie Mount Inside Control Box Enclosure

11. Tighten the cable gland to secure the A/C power cable in place.

12. Re-install the A/C protective cover and knurled nuts. Tighten the knurled nuts to secure the cover in place. Do not over-tighten.

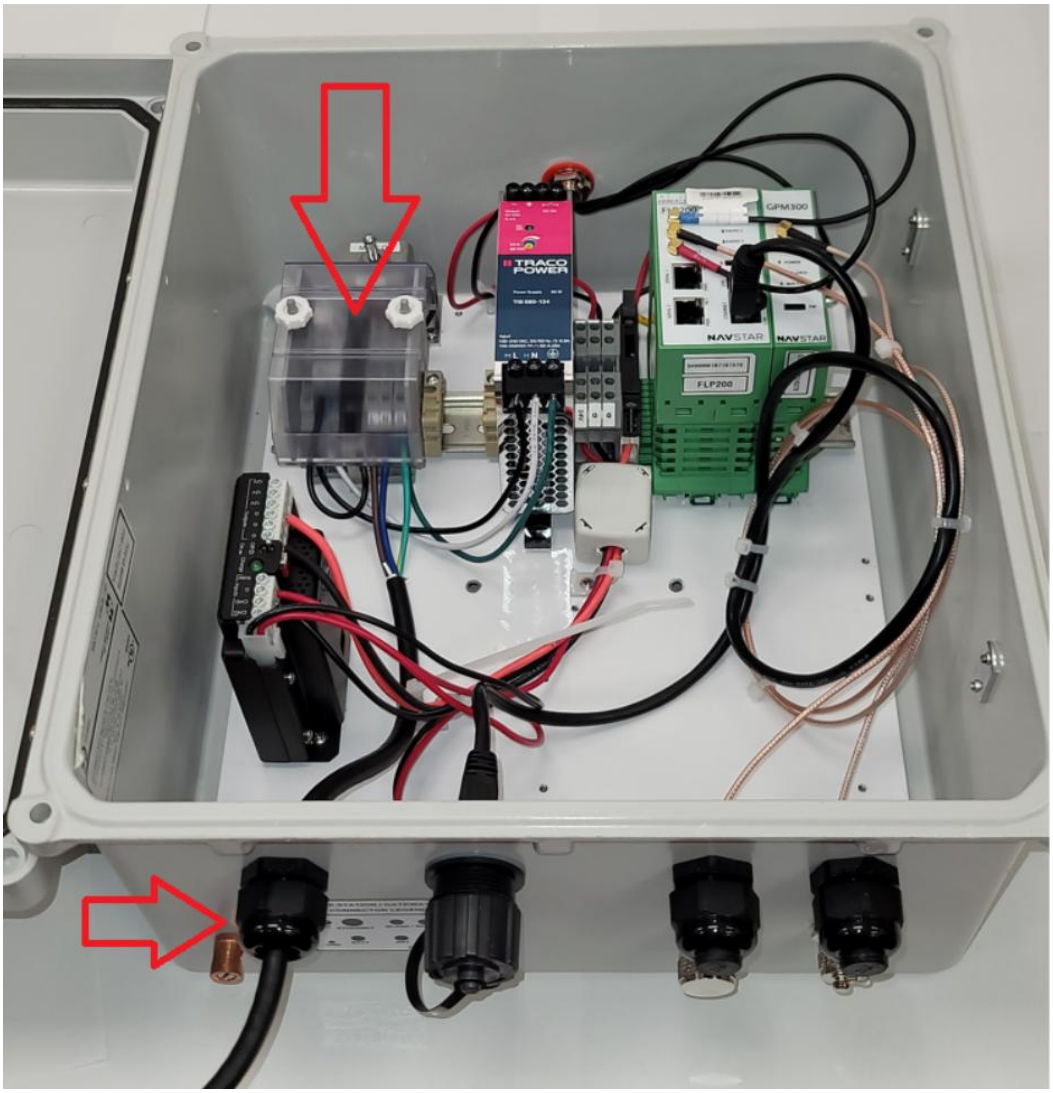


Figure A - 6: Re-Installing the A/C Protective Cover and Cable Gland Cover

APPENDIX B:
FLP200 FIRMWARE UPDATE INSTRUCTIONS

REMOTE UPDATE VIA GEOEXPLORER

1. To remotely update the FLP200 unit's firmware, a .zip file will first need to be obtained from NavStar. Please Submit a ticket at www.navstar.com/support for more information.
2. Under the Systems menu in GeoExplorer, check the box beside the FLP200 being updated (identified by the unique serial number on the unit's identification label). Additionally, make a note of its current application version.
3. Click the Firmware tab (see image below).

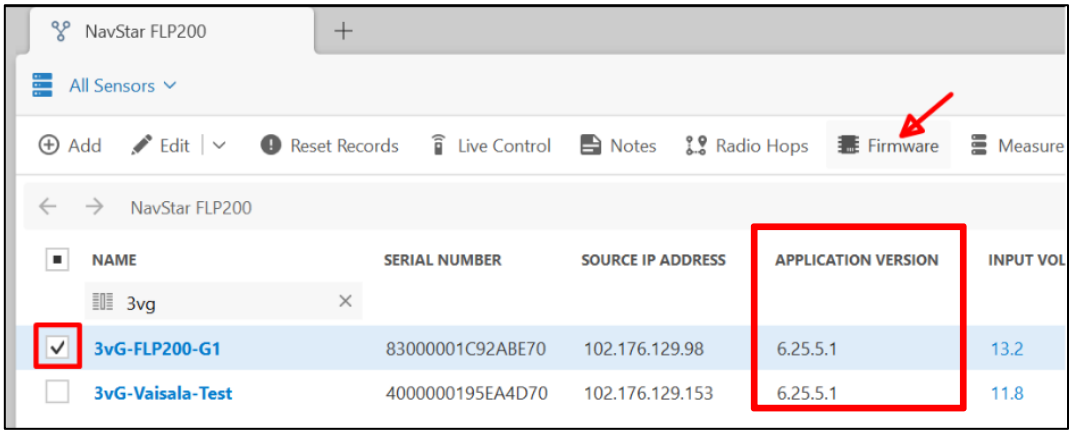


Figure B - 1: Remotely Updating FLP200 Firmware Using GeoExplorer

4. If the desired firmware update is not in the Firmware list, it can be uploaded using the Upload button.

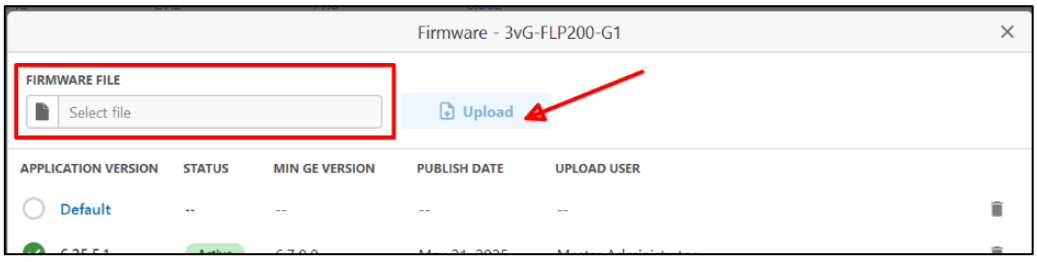


Figure B - 2: Uploading New Firmware Update

5. Select the appropriate firmware from the list and the FLP200 will automatically update to that firmware. Note that after the firmware file is transferred to FLP200, the device will apply the update and reboot.

6. The active firmware is indicated. The Default box can also be checked so that the FLP200 retains its current firmware version.

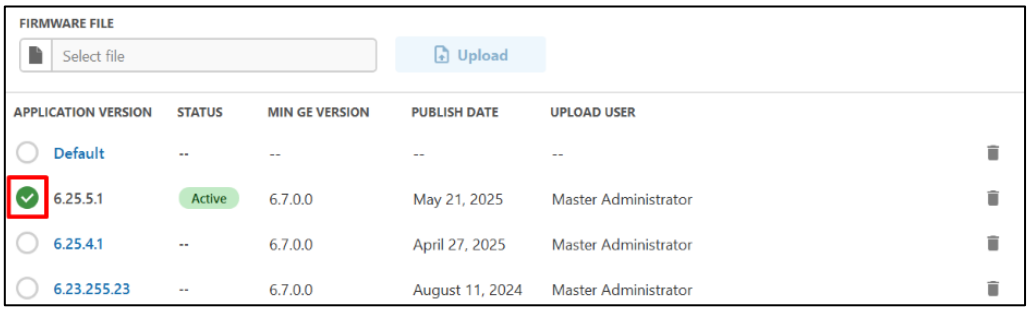


Figure B - 3: Active Firmware Application Version Specified

MANUAL UPDATE VIA GEOEXPLORER

To perform a manual firmware update, the following components and tools are required:

- USB-C cable
- Laptop
- TinyCLR application
- Firmware files (3 files – firmware file .ghi, application file .tca and hex application key .txt)

1. Begin by downloading the following utility onto your laptop or PC: https://ghistorage.blob.core.windows.net/downloads/TinyCLR/Config/TinyCLR-Config-Setup-v2.3.0.1000.msi
2. Plug a USB-C cable from your laptop/PC into the FW port located on the front of the FLP200 unit. Please note that this will also power up the FLP200 (via laptop USB connection).

3. Open the TinyCLR Config window using the TinyCLR application, select SC20260 from the dropdown port menu, and click Connect.

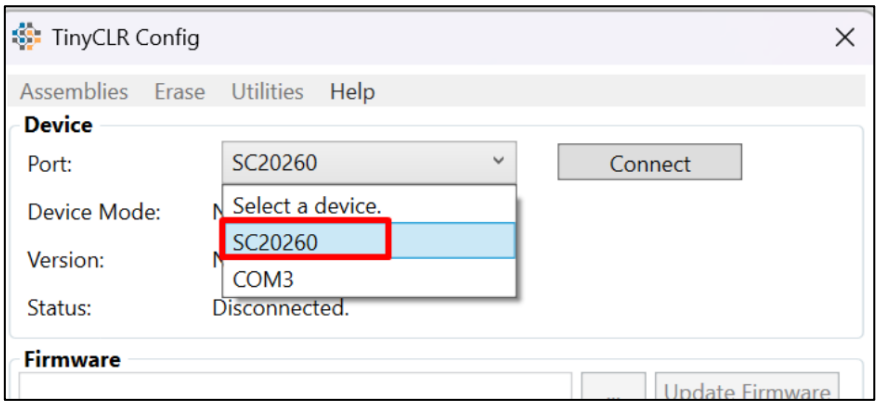


Figure B - 4: Select SC20260 from the Dropdown Port Menu in TinyCLR Config Window

4. Browse the firmware file (.hex file) using the More Options (3 dots) button and click Update Firmware. A confirmation message will appear if the firmware update is successful.

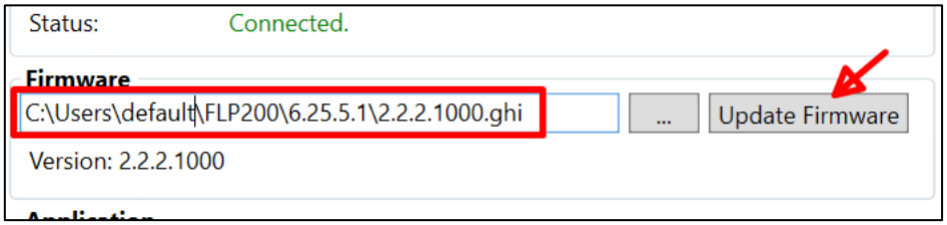


Figure B - 5: Updating Firmware File by Browsing .hex File

5. Reconnect to the SC20260 (repeat Step 3).
6. Copy the hex application key from the .txt file and paste it into the field shown below:

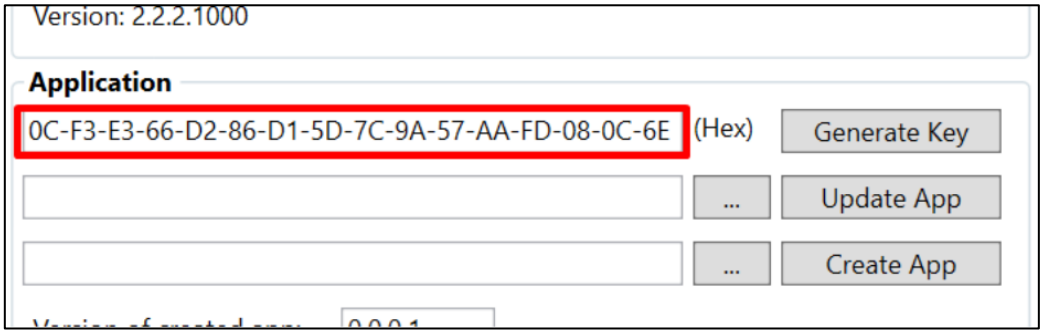


Figure B - 6: Adding the Hex Application Key

7. Browse the application file (.tca) using the More Options button and click Update App.

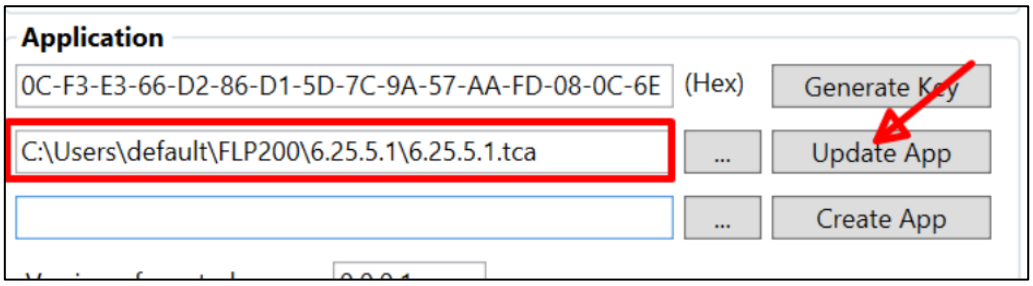


Figure B - 7: Updating the .tca Application File

8. There will be a confirmation message upon completion. The FLP200 is now updated to the indicated firmware/application number and after reinstallation, the application number is visible in GeoExplorer

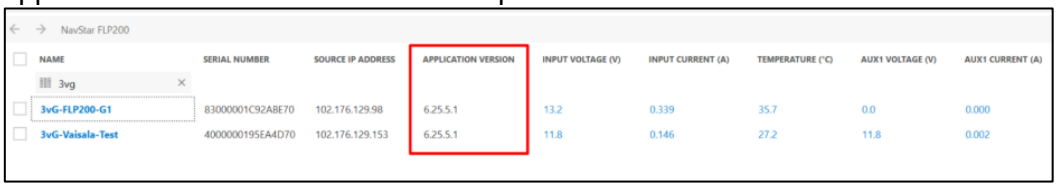


Figure B - 8: Confirm Firmware Update by Checking Application Version

NOTE: Please note that the firmware file name/version number will be different, as the one shown above is only for explanatory purposes.