Alencon Point of Data Distribution - PODD

Communication device that provides user interaction for controlling and monitoring alternative energy assets and helps generate more energy from a PV or energy storage installation

INSTALLATION, OPERATION AND MAINTENANCE MANUAL FOR THE PODD DEVICE

PM005 Revision 6

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Date and Revision

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1	8563	12/19/18	P. Shivshankaran	HF	Modification to incorporate new features on SPOT V6
2	8564	6/27/19	T. Smiith	HF	Update to new PODD features
3	8565	8/23/19	T. Smith	HF	Added installation instructions
4	8566	11/11/19	T. Smith	HF	Added p installation guide and POE injector guide
5	8567	7/19/21	J. Faber	HF	Integrated both PODD and HUB manuals, with updated features.
6	8568	8/26/21	J. Faber	HF	Remove Global/Local PODD, added E-Stop.
7	8569	10/20/22	J. Faber	HF	Spec sheet updated, power consumption included

1 Contents

2 Table of Figures

3 General Information

All efforts have been made to ensure the accuracy of material provided in this document at the time of release. Items are subject to continuous development and improvements. All specifications and descriptions are subject to change without notice.

3.1 About This Guide

Purpose

This manual provides information about installing, operating, maintaining, and troubleshooting the Alencon PODD device.

Who Should Read this Manual?

This manual should be read by anyone who needs to:

- Understand the product
- Plan the installation
- Install the product
- Commission the product
- Operate the product
- Maintain the product, as necessary

3.2 Glossary

Word(s)/Acronyms	Definition
SPOT	String Power Optimizer and Transmitter
BOSS	Bi-directional Optimizer for Storage Systems
GARD	Ground Arc and Rapid Disconnect
ACE	Alencon Communication Environment A full communication system (including hardware and firmware) designed by Alencon to control power conversion equipment. **Configuration:** • One PODD, directly connected to a network of wired Alencon hardware, running the user interface **NOTE:** Wireless packages are available for both Single and Multi PODD configurations
PODD Site/HUB	The terms PODD Site and HUB (stands for Harvesting Utility Block) are used interchangeably throughout A software application used to monitor, control, and maintain Alencon hardware, available as a webpage. **Features:** • Realtime Data Logging and Telemetry • Alencon Device Control and Configuration • Firmware Upgrades
PODD	Point of Data Distribution The physical networking hardware hosting the website application and supporting Modbus TCP communications.

3.3 Product Warranty

Alencon Systems warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for three years from the date of purchase. Extended warrantees are also available for purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Alencon Systems, or which have been subject to misuse, abuse, accident or improper installation. This warranty does not cover the repair or replacement of any goods which fail as a result of damage in transit, misuse, neglect, accident, act of God, abuse, improper handling, misapplication, modification, improper storage, excessive stress, faulty or improper installation, testing or repair, negligent maintenance or failure to comply with the written instructions for installation, testing, use or maintenance (if any) provided by Alencon Systems. Alencon Systems assumes no liability under the terms of this warranty as a consequence of such events.

Because of Alencon Systems's high quality-control standards and rigorous testing, most of our customers never need to use our warranty service. If an Alencon Systems product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult Alencon Systems for more details. If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered (ie. issues you are encountering in your PV array). Note anything abnormal when the problem occurs.
2. Call Alencon Systems or your licensed Alencon Systems dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your Alencon Systems Technical Support Proffesional. This allows us to process your return more quickly.
4. Carefully pack the defective product (preferably in the original packaging material it was shipped in), a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write down the RMA number

3.4 Technical Support and Assistance

Visit the Alencon Systems web site at www.alenconsystems.com where you can find the latest information about the product. Contact your distributor, sales representative, or Alencon Systems technical support if you need additional assistance. Please have the following information ready before you call:

1. Product name, serial number (label can be found on the PODD enclosure)
2. Description of your peripheral attachments including fusing and cables

3.5 Warnings, Cautions and Notes

	***Warning!***	*Warnings indicate conditions, which if not observed, can cause personal injury!*
	***Caution!***	*Cautions are included to help you avoid damaging hardware or losing data.*
	***Note!***	*Notes provide optional additional information.*

4 PODD Technical Specifications

Data Communications	
Compatible Alencon Products	SPOT, BOSS, CUBE and GARD
Communications Protocol from PODD to Alencon Products	Modbus RTU over RS-485
Cabling – from Alencon Device to PODD	Cat 5e or better, STP, 24AWG or larger, outdoor rated if not indoors or within conduit
Maximum Modbus Cable Length	100 meters from furthest connected Alencon device to PODD, i.e. total length of daisy chain
Maximum number of devices per PODD[1]	32
Communications Protocol with Data Monitoring System (SCADA)	Modbus TCP/IP over Ethernet
Connection with Network	Wired Ethernet 10/100 Base T
Local Data Storage	31 day rolling buffer
Electrical	
Power Supply – Standard	From Alencon product via RS-485 bus over CAT cable as specified above
Power Supply – Option[2]	External 24V via Power over Ethernet (PoE)
Power Consumption	25 W
Mechanical	
Enclosure	IP65
Connectors	3x Laird RJ45-ECS (IP67)
Dimensions (L x W x H)	535 mm x 215 mm x 150 mm
Weight (Includes Back Plate)	7 KG
Operating Temperature	-40°C to 85°C

[1]Devices are defined as follows: 4 devices per SPOT, 4 devices per BOSS, 1 device per GARD, 1 device per CUBE

[2]Must be specified at time of purchase

5 PODD Kit: Component Parts

Alencon will provide a packing list with your shipment. Please make sure to check the packing list matches your order and the items received. Every ACE purchase will include the following components:

5.1 PODD Device – Available with or without wireless capabilities

The physical networking hardware that interfaces with Alencon's devices and hosts the PODD website application. The PODD is housed in a hard plastic enclosure that is Nema 3R weather rated for outdoor use.

Figure 1: Single PODD Device

5.2 PODD Site

Firmware pre-loaded to the PODD that hosts the user interface, accessible through any PC connected to the same network as the PODD.

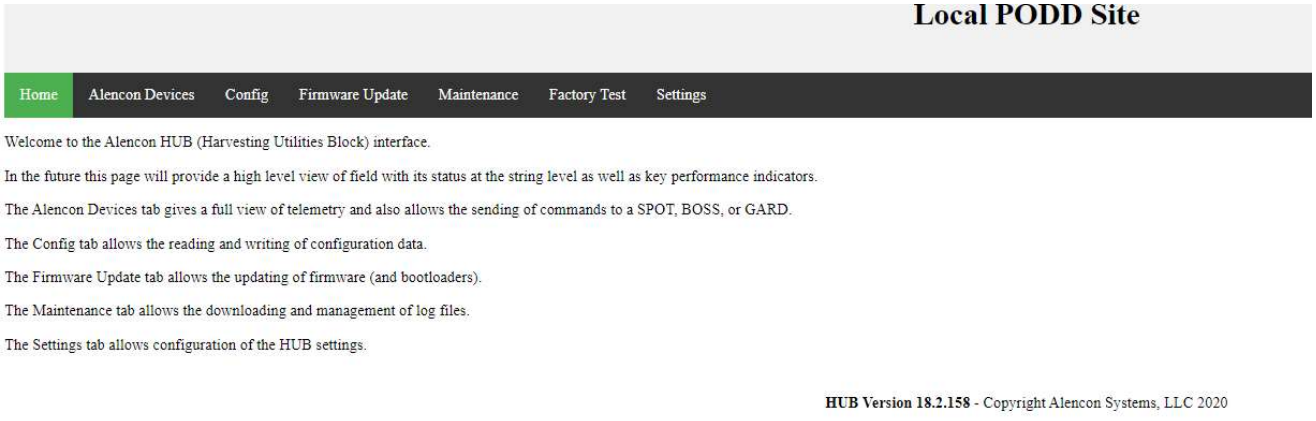

Figure 2: PODD Site, Home Tab

5.3 PoE Supply Kit

A PoE injection dongle and DC power supply for powering the PODD device. More information on how to use can be found in section 8.4.

Figure 3: PoE Supply Kit for use with PODD

5.4 RJ45 Termination Dongle

Terminating resistors for the modbus communications line are used for reduction of noise in the communciation infrastructure. The RJ45 dongle should be installed at the end of the modbus RTU daisy chain (see section 8.3).

Figure 4: RJ45 Termination Dongle

5.5 Customized Communication Package – *Dependent on System Implementation*

Various antennas and cables can be purchased for wireless and wired configurations, respectively. Each communication package will be customized per order to ensure the correct hardware is provided for specific implementations. This includes making sure the correct antenna is supplied depending on where PODDs will be mounted or the specific length and type of cabling needed for installation.

5.6 Ordering Information

Model Number	Description
PODD	Point of Data Distribution device with website UI
Wifi Access Point	Wifi Acccess Point for use with PODD if wireless communucations is being used
Communication Package	Customized package that provides the correct number of antennas and cables needed for installation

6 Alencon Communication Environement (ACE)

The PODD can be used in different configurations, depending on application and communications needs. A full communications system, designed by Alencon, is sometimes referred to as ‘ACE’.

Communications Protocol:
Alencon devices support Modbus RTU communications to the PODD. The PODD converts Modbus RTU to Modbus TCP for external controller or SCADA integration.

Communications Hardware:
All configurations use Cat5e or newer ethernet cables of STP type. Each string of Alencon devices will be terminated with an RJ45 terminator to reduce noise and reflections. More information on wiring and cable spec can be found in section 8.3.

6.1 PODD Configuration

In this configuration, a single PODD is connected to a string of Alencon devices which will supply power and transmit data to the PODD using Modbus RTU. The PODD will also be connected to a local area network and provide a user interface to communicate with the Alencon devices directly.

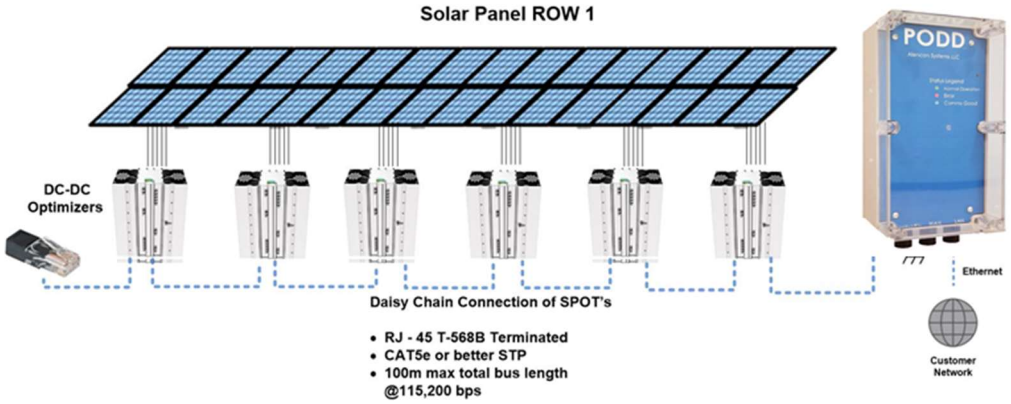

Figure 5: Single PODD configuration with Alencon SPOTs

7 PODD Applications

The PODD is ideal for commercial or utility scale photovoltaic (PV) systems that have Alencon power conversion devices including the SPOT, BOSS, and/or GARD. This section details how each of Alencon's devices can be connected over a network using the PODD.

7.1 SPOT System

Alencon's String Power Optimiziers and Transmitters (SPOTs) have up to four inputs and can accommodate from 4 to 8 strings. Depending on the size and need of a PV array, the SPOTs can be setup with a Single or Multi PODD configuration.

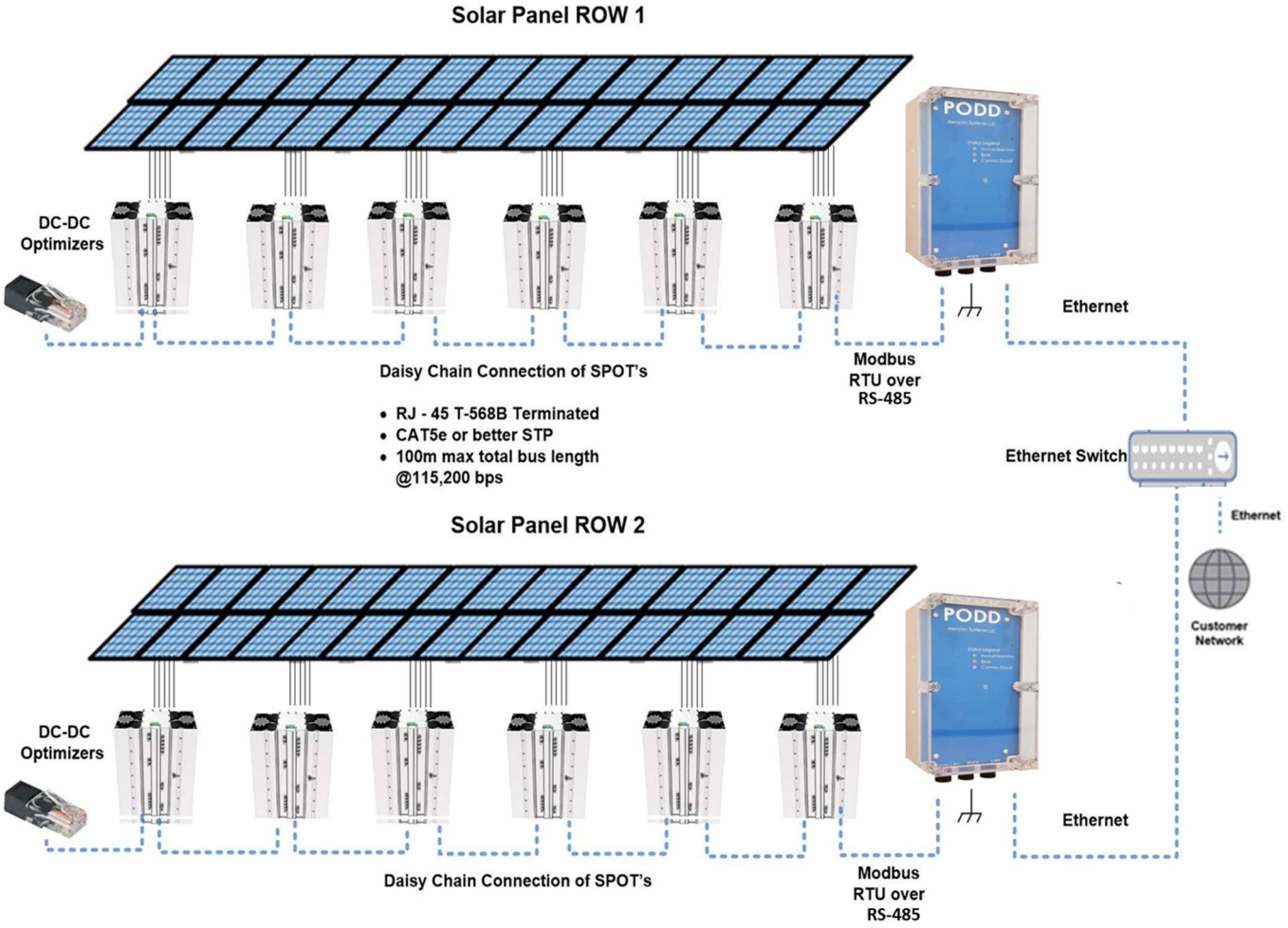

Figure 6: SPOT ACE System Architecture with Multi PODD configuration

7.2 BOSS System

Alencon's Bi-Directional DC-DC Optimizer for Storage Systems (BOSS) controls the charge and discharge of individual battery racks with a galvanically isolated approach. BOSSs are generally co-located and easily daisy chained to a PODD. An example BOSS system architecture using a Single PODD configuration is shown in Figure 10.

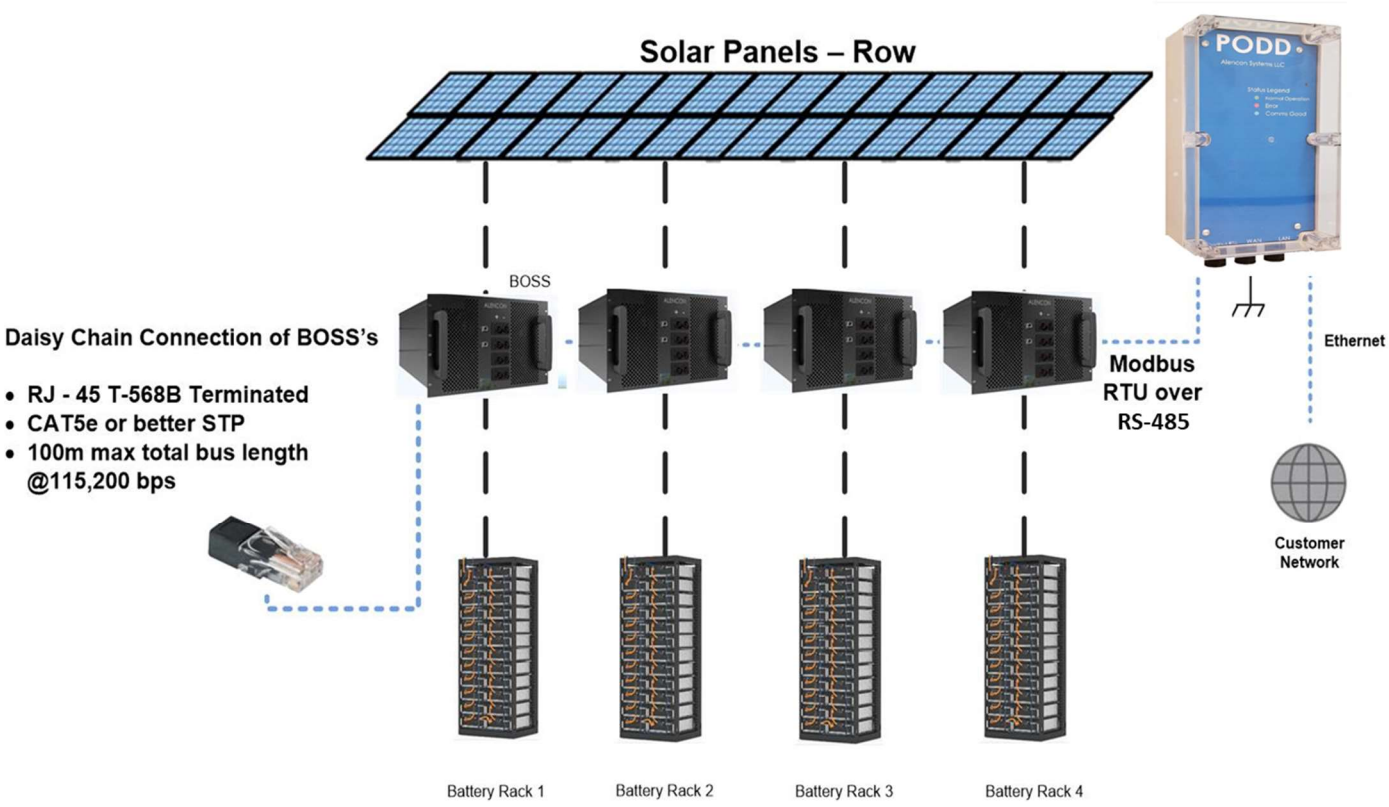

Figure 7: BOSS ACE System Architecture with Single PODD configuration

7.3 GARD System

Alencon's Ground Arc and Rapid Disconnect (GARD) System is a protection device to detect harmful arc and ground faults in PV arrays. These can be configured as stand-alone protection or be paired with other Alencon devices (ie. SPOT or BOSS).

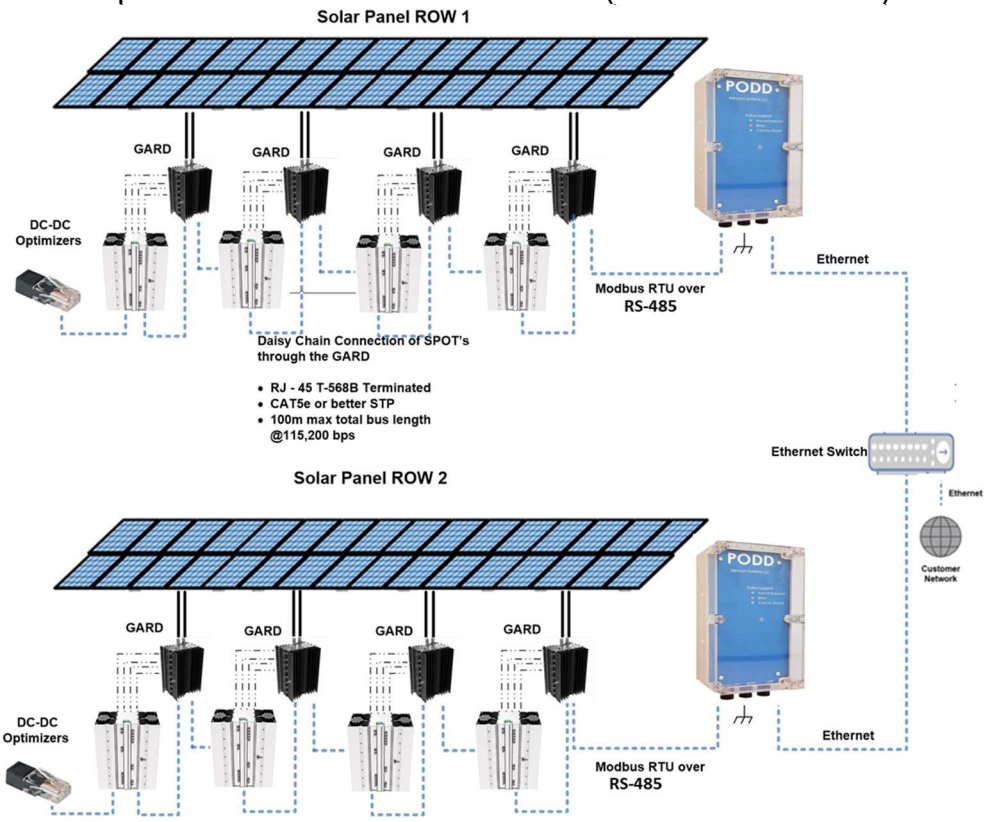

Figure 8: GARD ACE System Architecture (with SPOTs)

NOTE: Each type of device (SPOT, BOSS, and GARD) can have communications daisy-chained with any other type of device and still connected to a Local PODD.

8 PODD Installation

This section provides information on how to install a PODD in the field and access the PODD site user interface.

A single PODD is installed at one end of a daisy chained RS-485 network. The total length of the cabling should not exceed 100 meters. An antenna will be included for the PODD if wireless package is purchased.

8.1 Mounting

Each PODD will be shipped with the mounting bracket already installed.

8.1.1 PODD Mounting Location

PODDs will be mounted on-site near the strings of Alencon devices.

8.1.2 Mounting Parts

The PODD can be easily mounted using standard Unistrut© along with spring loaded channel nuts. The attached hook shaped bracket allows for the PODD to be easily hung on the unistrut and then fastened using a Hex hed screw. Recommended hardware for mounting is as follows:

- Unistrut© – Any typical zinc plated or galvanized steel unistruts
- Strut Channel Nuts with Spring, 13/16" Channel High, 5/16-18 – x2 per PODD
- Hex Head Screw, Grade 8 Steel, 5/16"-18 Thread Size, 1" Long – x2 per PODD

8.1.3 Mounting Procedure

To install the PODD in the field:

1. With the Unistrut© support structure already in place, hang the PODD mounting bracket on the top channel.

Figure 9: Hook shaped PODD mounting bracket on Unistrut© support

2. Next, align the bottom mounting holes on the PODD bracket with the bottom channel and struct channel nuts.

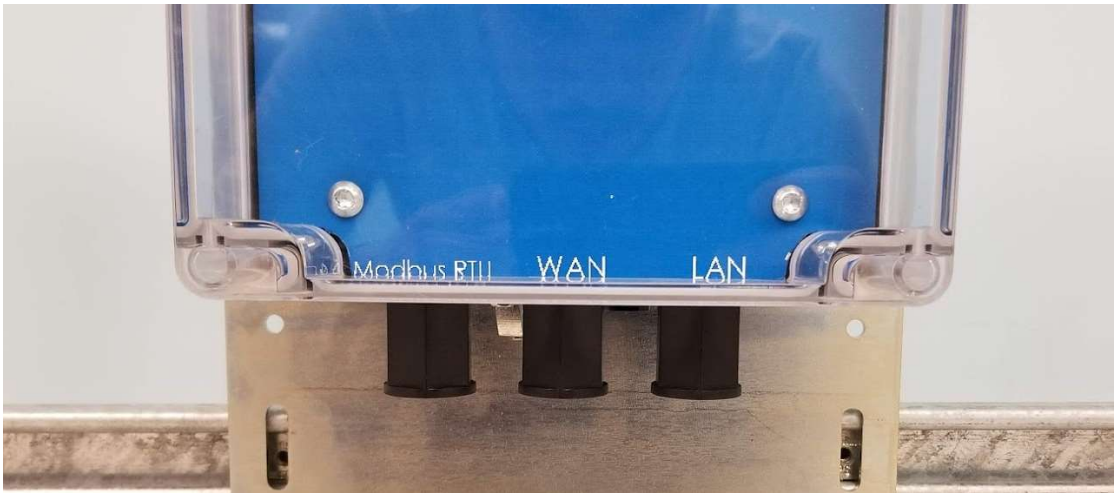

Figure 10: Struct channel nuts alignment with PODD mounting bracket

3. Finally, secure the PODD in place by placing the screws into the stuct channel nuts.

Figure 11: Screw placement in struct channel nuts

8.2 Gounding

The external ground lug is found next to the three RJ45 connectors on the bottom of the PODD. The ground lug can be loosened and tightened with a standard flathead screwdriver. This **MUST** be connected to Earth ground. Not properly grounding the PODD can cause the PODD to malfunction and be damaged.

Figure 12: Ground lug placement

8.3 Wiring

8.3.1 Wiring Specifications

The PODD and connected hardware should all be compatible with the following spec:

- **RS-485 (4 wire) standard** – defines the necessary electrical characteristics of cabling, transmitters and recievers. All Alencon devices, including the PODD, have internal hardware compliant with RS-485.
- **STP Cat5e (or better) cable** – other RS-485 compliant cable types can be used, but Cat5e is most common. Note that Cat5e cables will have a max run length of 100m.
- **RJ45 T-568B connector** – all communications ports on Alencon devices accept male RJ45 connectors as input.

8.3.2 Wiring Configurations

Single PODD Configuration:

- Connect a cable between the Modbus RTU port on the PODD and the Alencon devices. All Alencon devices can be daisy-chained together.
- Connect the RJ45 termination dongle to the final Alencon device on the Modbus RTU daisy chain.
- **For Wired:** Connect a cable between the WAN port on the PODD and a nearby Ethernet switch.
- **For wireless:** Connect the purchased antenna to the adapter on top of the PODD.

8.3.3 PODD Connectors

Each PODD has three ports which are labeled on the bottom of the front mounting plate. To connect a cable to any of these ports:

1. Remove the water proof cap and grommet.
2. Feed the cable though the removed cap and grommet.
3. Replace the cap and grommet, tightening to reseal the port.

Figure 13: Water-proof wiring on the PODD

8.4 Powering

The PODD consumes 25W of power to operate. There are two methods to provide this power, explained below, these methods do not conflict and can both be present on a PODD device at once.

8.4.1 Modbus RTU Power

The PODD is most commonly powered via a 24V signal from the networked Alencon device (SPOT, BOSS, or GARD). Simply connect a Cat5e (or newer) cable between the peripheral device comms port and the PODD ModbusRTU port. PODD should turn on within 2 minutes and green LED indicator will turn on when ready.

8.4.2 Network Side PoE Power

When using the PODD in a lab setup where power from Alencon devices is not readily available, a POE injector is a convenient solution. A POE injector combines a network connection and power into an RJ45 port as seen below.

Figure 14: POE Injector

When using a POE injector to power the PODD, the male end of the POE injector should be connected to a network switch and the female end should be connected (via a Cat5e or better cable) to the WAN port of the PODD. The PODD will take a couple minutes to boot up and the LED indicator will turn green when ready.

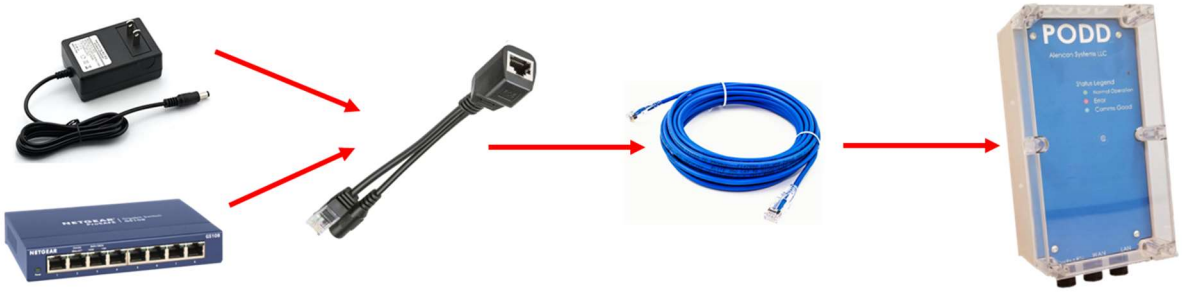

Figure 15: POE Injector with PODD Lab Setup

8.4.3 Indicator LED

The large LED on the PODD front face is used to indicate the status of the PODD:

- OFF – PODD has not turned on or has no input power
- GREEN – Normal Operation (PODD is on and UI is available)
- RED – Error (low input power, UI not frozen, etc.)

8.5 Establishing a Network Connection

PODDs are accessed remotely over your local server using IPv4 addresses. For the initial setup, download a network IP scanner of your choice. A recommended IP scanner is *Angry IP Scanner* which can be downloaded from https://angryip.org/download/. Once installed and opened, your local IP Range should automatically be set. Hit the start button to scan your local network for PODDs.

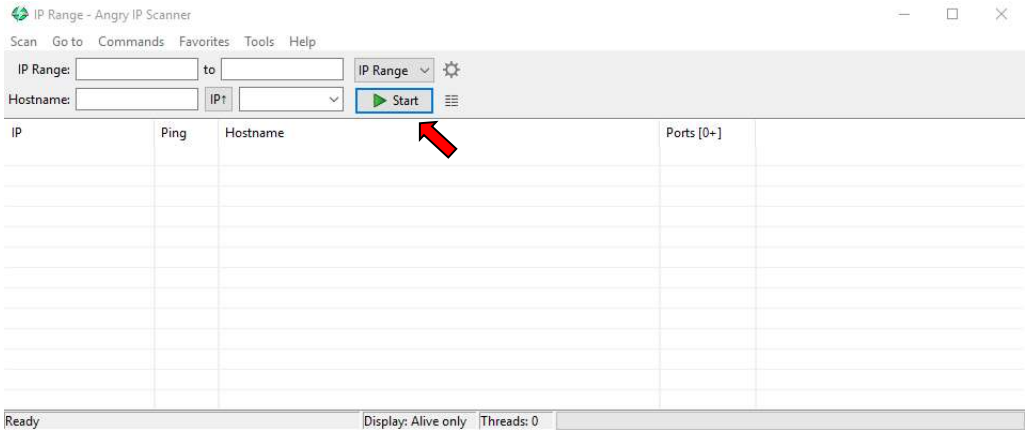

Figure 16: Angry IP Scanner Interface

When a PODD is found, it will appear under the "Hostname" column as PODD-xxxx where the 'xxxx' will be the last four digits of its serial number. Locate the IP address of that PODD and type the IP address followed by **:8888** (ex. *123.456.789.012:8888*) into the url bar of your favorite web browser. The PODD site should be accessible and the PODD install complete.

8.5.1 PODD Setup without Network Connection

Sometimes it is necessary to use a PODD without connecting it to a network, especially if the PODD will be moved around and not be mounted to a specific row of Alencon Devices. To establish a connection with a mobile laptop, connect the PODD's WAN port to the Ethernet port of the laptop. The next step is to find the IP address of the PODD through the PC:

1. First open up the command prompt of your windows machine

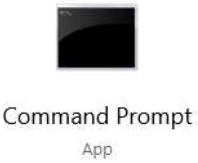

Figure 17: Windows Command Prompt App

2. Locate the serial number of the PODD from its physical label. Look at the last four digits of the serial number and try to ping the PODD through the following command: ‘ping -4 PODD-xxxx’ where the ‘xxxx’ will be the last four digits of its serial number. The PODD IP address should appear

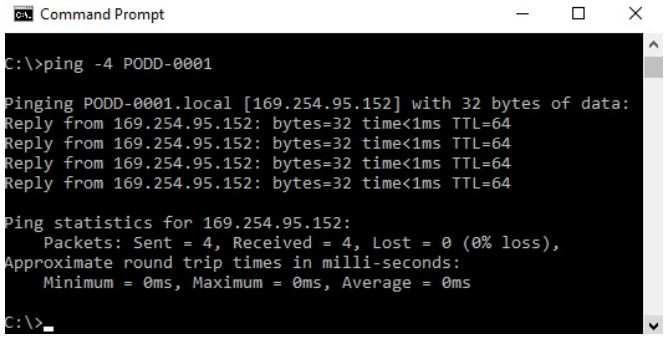

Figure 18: Command to find PODD IP address

3. Locate the IP address of that PODD and type the IP address followed by **:8888** (ex. *123.456.789.012:8888*) into the url bar of any of the following web browsers:
    a. Google Chrome
    b. Microsoft Edge
    c. Apple’s Safari
    d. Mozilla Firefox
4. The PODD site should be accessible and the PODD install complete.

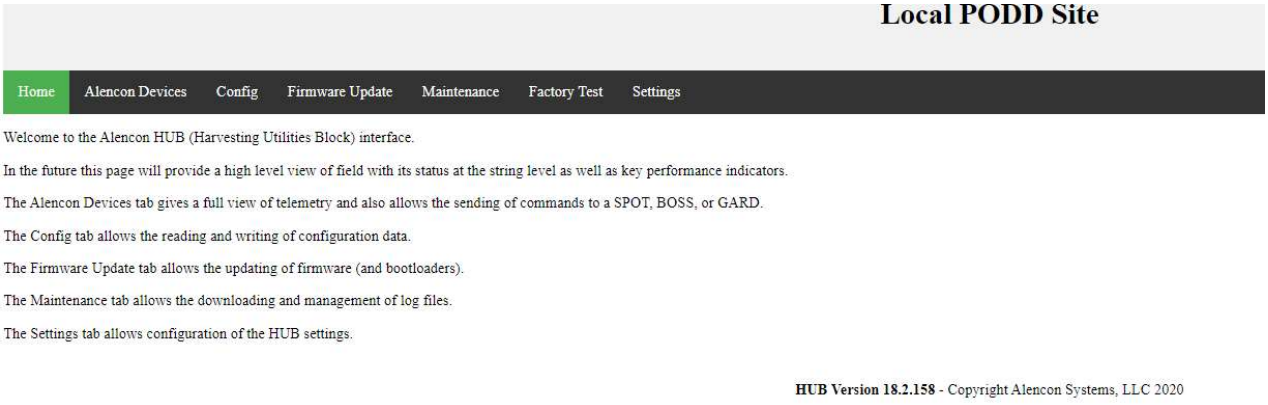

Figure 19: PODD IP address and Port in Web Browser

9 E-Stop

Alencon power devices (SPOT, BOSS, and GARD) can employ an external emergency stop button, that utilizes the PODD and communications cabling to deliver an E-Stop signal. The PODD will have an E-Stop button integrated as part of the enclosure (see figure 19) that when engaged (pushed-in) will automatically force the connected units into Shutdown mode, and when disengaged (pulled-out) will allow the units to operate once more.

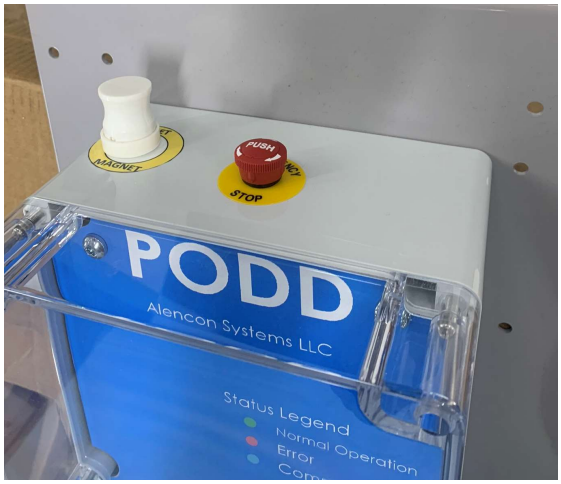

Figure 20: PODD Integrated E-Stop Button

The E-stop button employs a normally closed (NC) switch, so if any disconnect occurs on the line, devices ‘downstream’ from the PODD will go to Shutdown state.

10 Maintenance and Servicing

10.1 General Maintenance

Follow these recommendations to ensure optimal performance of the system.

- Make sure the PODD and mounting bracket are fastened securely
- Make sure that the PODD enclosure is sealed completely
- Do not stress any connectors, wires or antennas

10.2 Magnet Reset

There is a magnetic reset switch placed inside the enclosure on the upper rightside. To toggle this switch, the enclosure **DOES NOT** need to be opened. Look for a utility magnet to be mounted on the PODD enclosure. The magnet reset should be used as a first line troubleshoot when there are issues with the PODD or PODD-Site UI.

To reset the PODD, follow the label and run a magnet down the right side of the PODD enclosure from position 1 to 2. The status LED will turn off to indicate a system reboot is occurring. After a couple of minutes the PODD will turn back on, the green LED indicator will be on, and the PODD site will be accessible.

Figure 21: PODD Reset Magnet and Guide

10.3 PODD Replacement

PODDs come preconfigured from Alencon. If the PODD requires servicing, disconnect and obtain an RMA (return merchandise authorization) number from Alencon Systems technical support. Then following the RMA process, return the defective PODD to Alencon Systems or an authorized Alencon service agent.

11 Mechanical Drawings

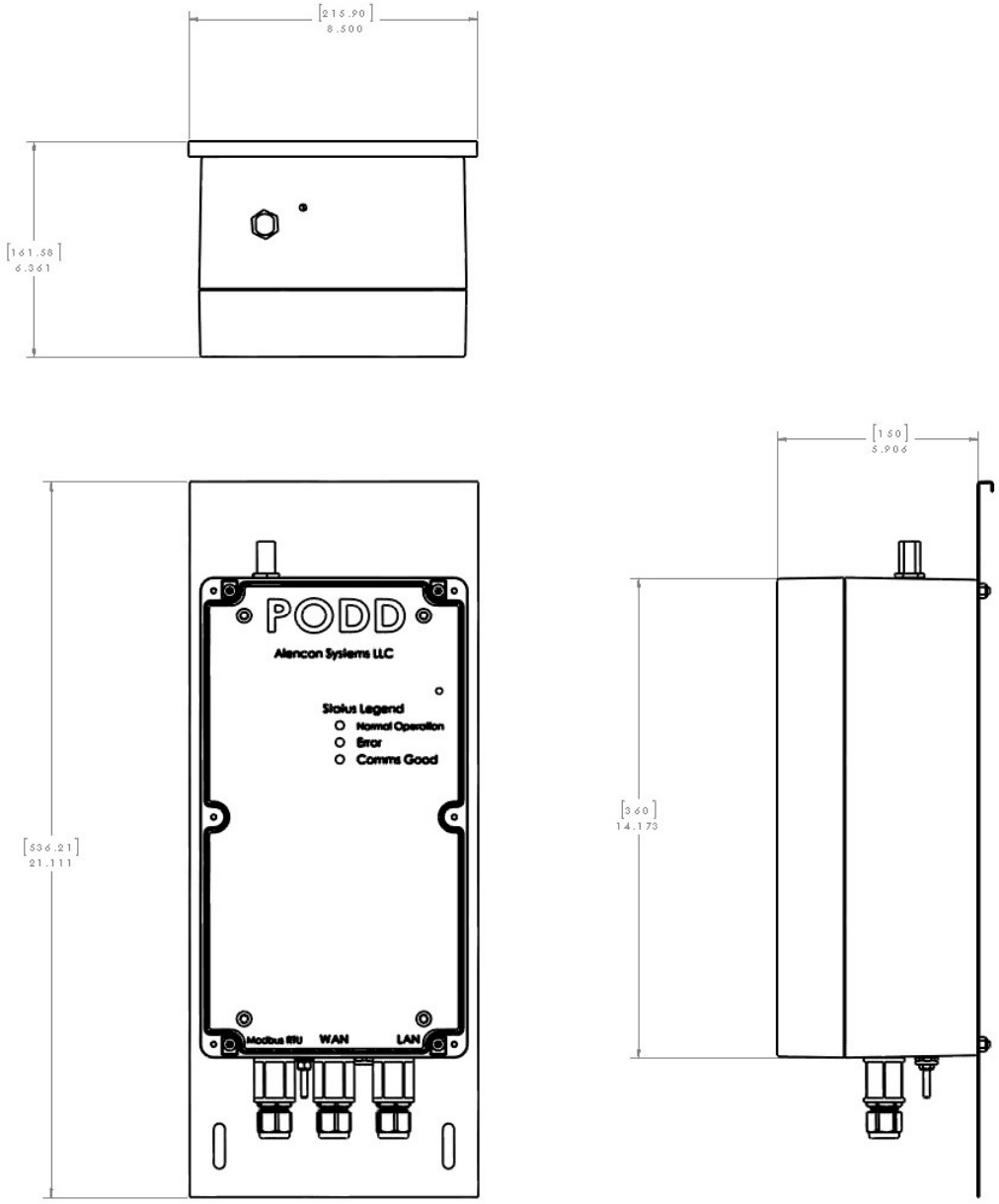

Figure 22: Mechanical Dimensions of the PODD

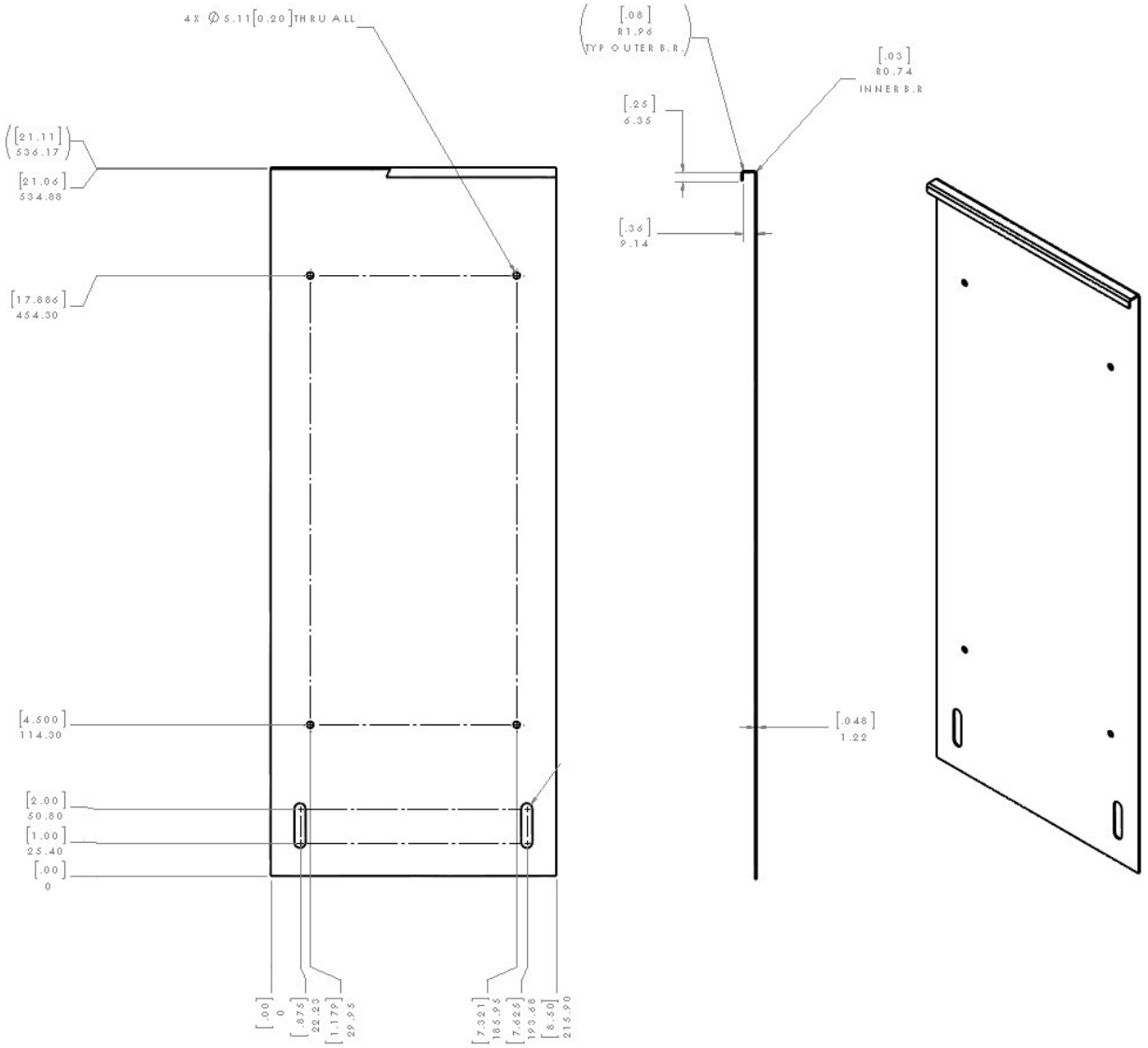

Figure 23: Mechanical Dimensions of mounting bracket

12 PODD Site

Every PODD comes pre-loaded with a website based user interface that is accessible through any PC connected on the same network as the PODD. The software allows interaction from a PC to a given Alencon device (including the SPOT, BOSS or GARD).

12.1 Introduction

This document describes the uses and benefits of the PODD Site application, including the following functionality:

- Telemetry Viewing
- Telemetry Logging
- Command Sending
- Configuration Setting and Retrieval
- Log Message Display
- Firmware Update
- Modbus TCP Server

12.2 Version

This manual is meant for use with PODD Site Version 18 and newer. You can always see the version you are using from the Home screen:

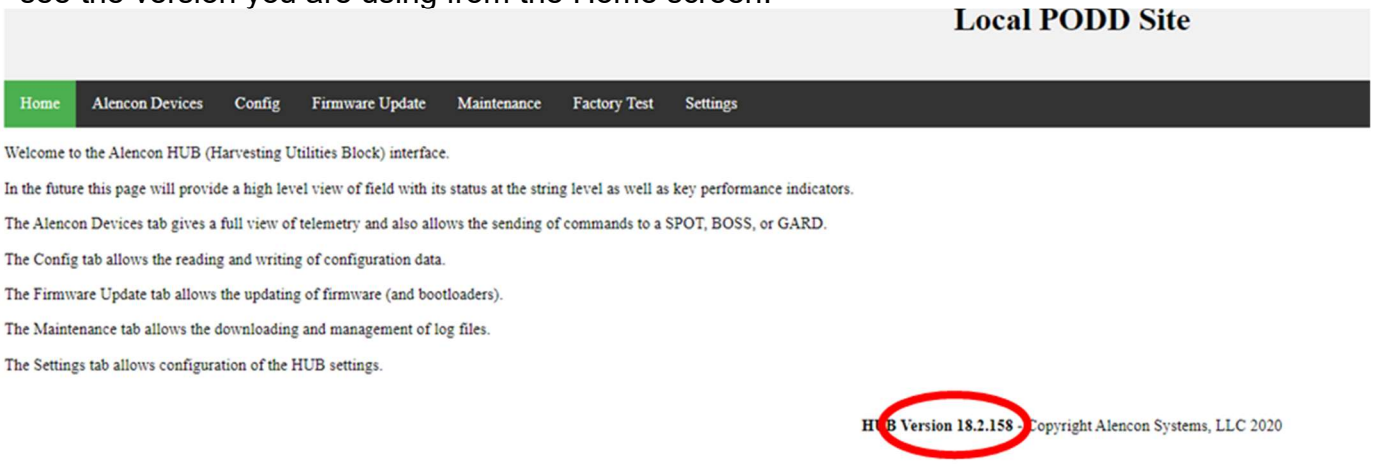

Figure 24: PODD Site Home Screen, Firmware Version Highlighted

12.3 Accessing the PODD Site

The PODD site is accessed from a Windows PC using the IP address of the PODD which can be found by scanning your local network. The detailed explanation of connecting to and accessing the PODD Site can be found in section 8.5 above.

12.4 PODD Site Features

The PODD Site has seven tabs, that can be accessed by clicking on their name along the tab bar at the top of the page:

1. Home
2. Alencon Devices
3. Config
4. Firmware Update
5. Maintenance
6. Factory Test
7. Settings

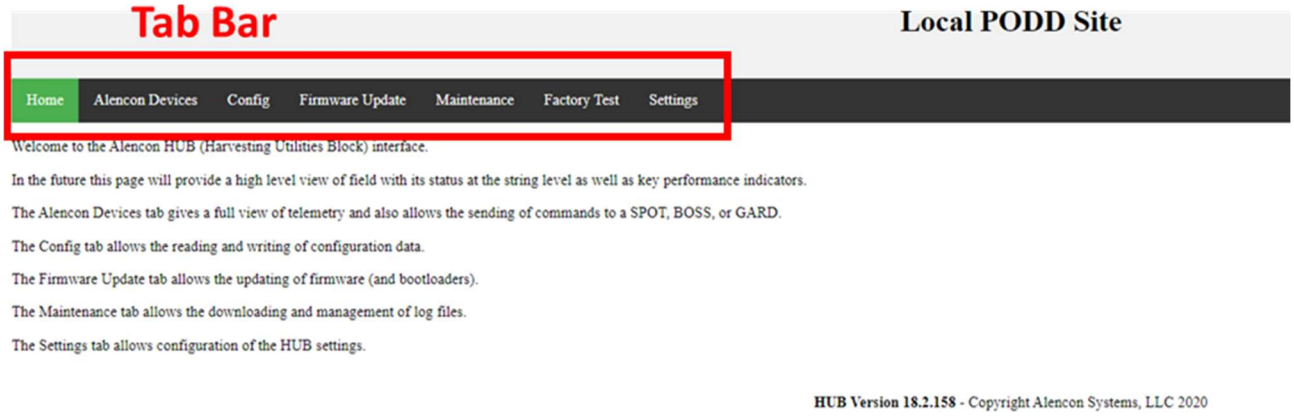

Figure 25: PODD Site, Tab Bar Highlighted

12.5 Alencon Devices Tab

The Alencon Devices tab provides a list view of the Alencon Devices connected to the PODD in the field and their individual DCDC data. The Alencon Devices can be controlled as a field set (Field Broadcast) or independently using commands from the Device Command drop-down menu in the Alencon Devices tab.

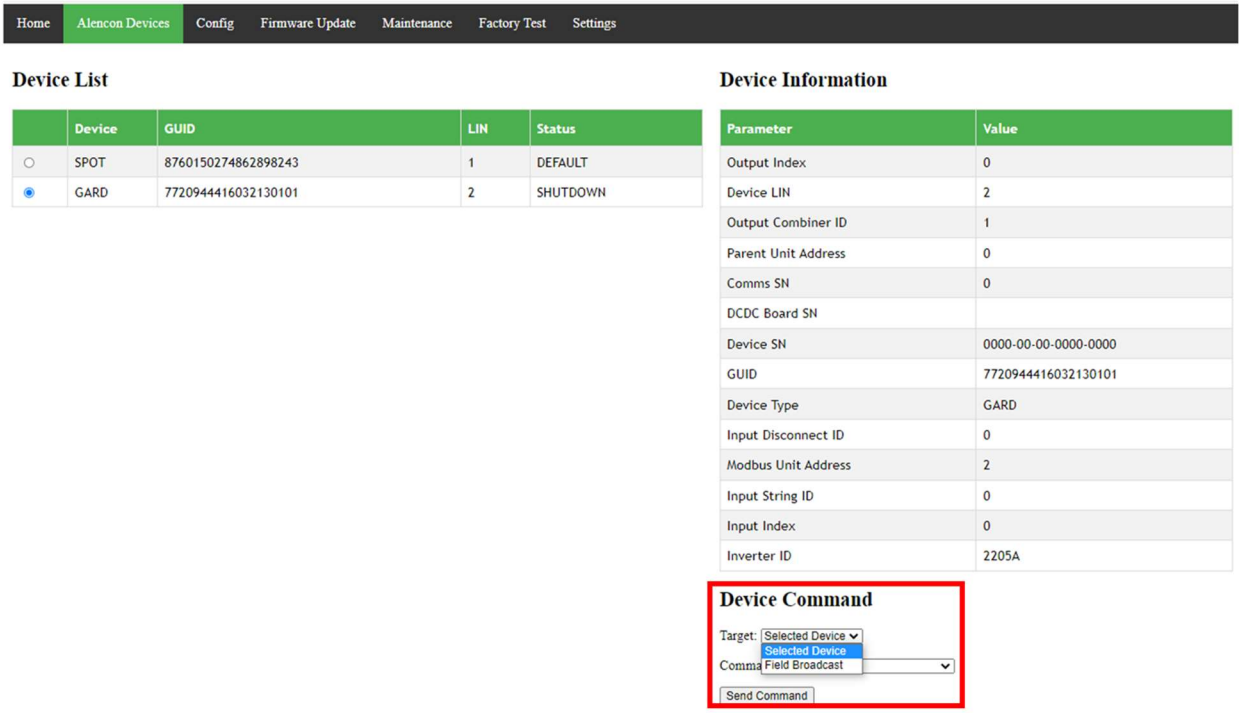

Figure 26: PODD Site, Device Command Section Highlighted

12.5.1 Target Selection

Select the Device to command. The targets available are:

1. Selected Device: Send a command to the individual selected from the device list
2. Field Broadcast: Broadcast the command to all the devices in the list

12.5.2 Command Selection

The PODD Site provides a broad set of operational and diagnostic commands. Do not use unlisted commands unless instructed to do so by Alencon personnel. Failure to do so may damage the Alencon device and void the warranty.

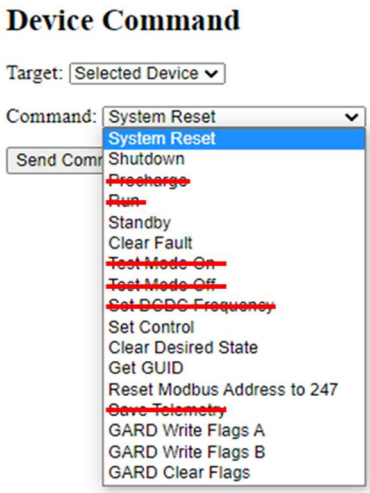

Figure 27: PODD Site, Device Command Options

1. **System Reset** – Restarts the Alencon Device and enables Run if in the Shutdown state.
2. **Shutdown** – Disables power production. The Alencon Device or DCDC must receive a System Reset command to enable Run.
3. **Precharge** – DO NOT USE
4. **Run** – DO NOT USE
5. **Standby** – DO NOT USE. Puts the Alencon Device into STANDBY mode, Run is enabled without a System Reset command.
6. **Clear Fault** - This command clears all error flags on the target selected. Note: It is not necessary to clear faults for the Alencon Device to run.
7. **Test Mode On** – DO NOT USE
8. **Test Mode Off** – DO NOT USE
9. **Set DCDC Frequency** – DO NOT USE
10. **Set Control** – Main control operations for BOSS (and SPOT in some cases). A sub-menu of commands are used to choose the Control Mode, Setpoint, Direction (for BOSS only) and Setpoint Timeout.

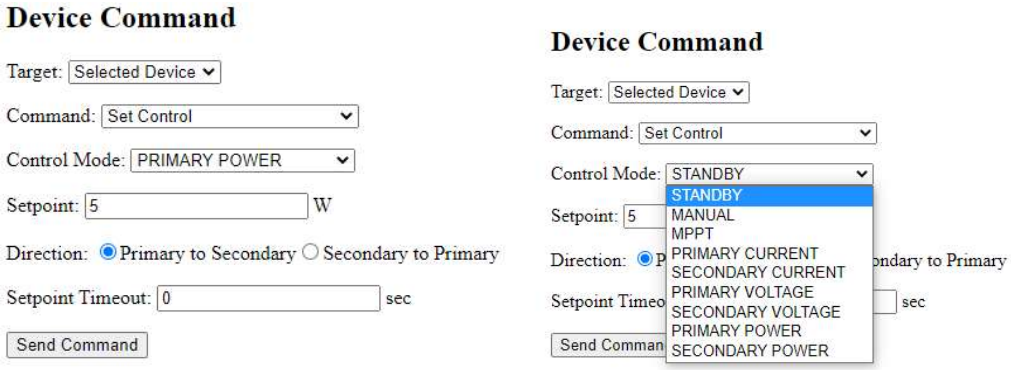

Figure 28: PODD Site, Device Command – Set Control

11. **Reset Modbus address to 247**(Default) – This command resets the Modbus address of the Alencon device within a page to default. The customer would then have to re-define the Modbus addresses of each DCDC using the “metadata” file. The file must be edited using Notepad++ or any other text editors (contact Alencon for training on this).
12. **(Only for GARD) GARD Write flags A, Write Flags B, Clear Flags** – Flags A & B for the GARD are read/write registers that display the status of internal control signals and faults. These specific commands can only be used in “Testmode” – typically for debug and lab tests.

12.6 Config Tab

The Config Tab allows the user to update the configuration on the select Alencon Device. A configuration files is provided to the user in a ‘.factory’ file and it comes pre-loaded on the Alencon Device – i.e. SPOT, BOSS or PODD. This file contains specific parameters for your deployment of Alencon devices. Do not edit these parameters unless asked to do so by Alencon personnel. **Failure to follow these instructions may damage the Alencon Device and will void the warranty**.

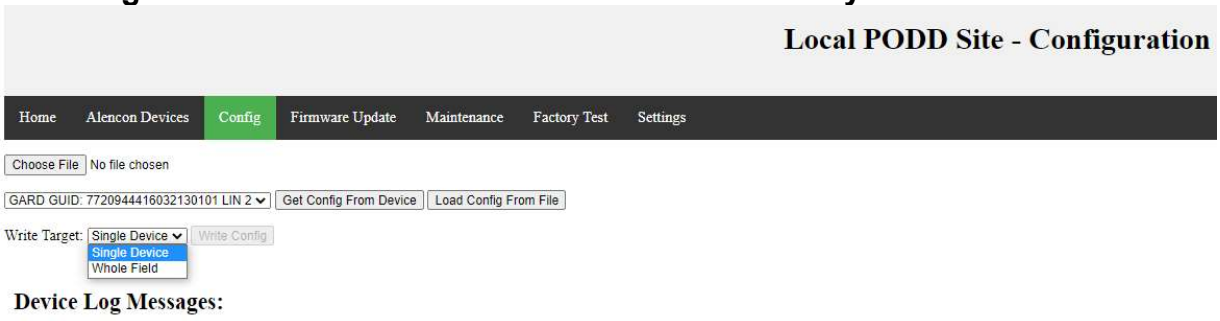

Figure 29: PODD Site, Configuration Tab

The Alencon devices are selected by GUID, a unique identifier of each DCDC. (The Alencon device LIN can be found in the Alencon devices tab). Configuration can be written to the whole field or a single DCDC:

- Single Device: Configures the individual DCDC for the selected GUID
- Whole Field: Configures all DCDCs and communication in the entire field

12.6.1 Steps to Send a Configuration File to the Alencon Device

1. Choose the file you would like to send to the Alencon Device by clicking the **<Choose File>** button. This file has a ‘.factory’ extension. Note: The factory file is a standard json object that is viewable with any text editor.

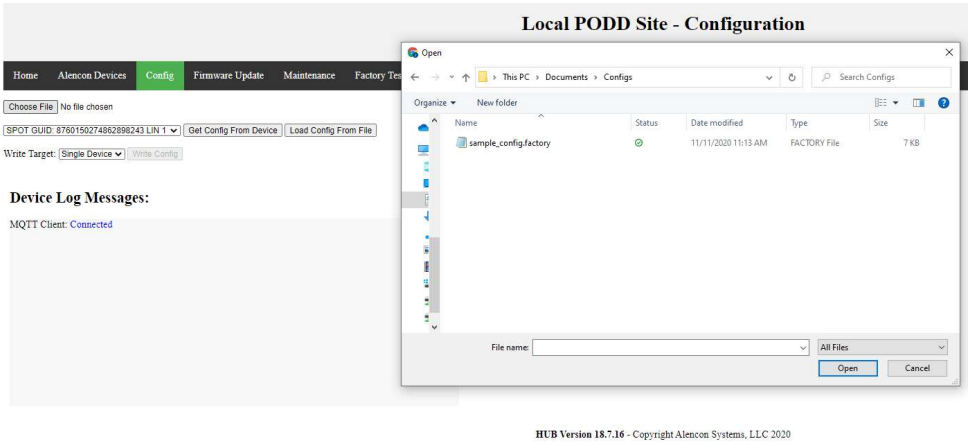

Figure 30: PODD Site, Configuration Tab – Choose File

2. Select the GUID of the target Alencon Device. The LIN to GUID mapping can be found on the Alencon Devices tab.
3. Once you load the config file click **<Load From Config File>** to see the configuration parameters. You will have the option to modify the parameters without editing the file if necessary (only do this if instructed to do so by Alencon).

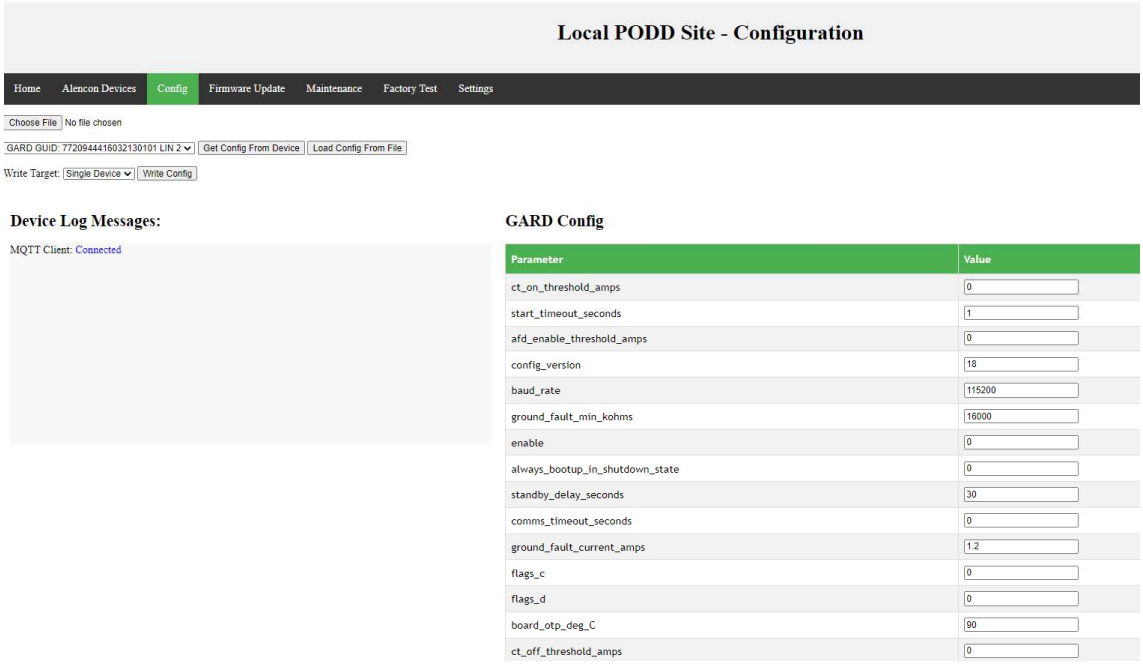

Figure 31: PODD Site, Configuration Tab – Config Data

4. The final step is to send the loaded configuration to the Alencon Device. To do so, click **<Write Config>**.

Figure 32: PODD Site, Configuration Tab – Write Config

5. Look for log messages that confirm the configuration is successfully sent and verified on the device.

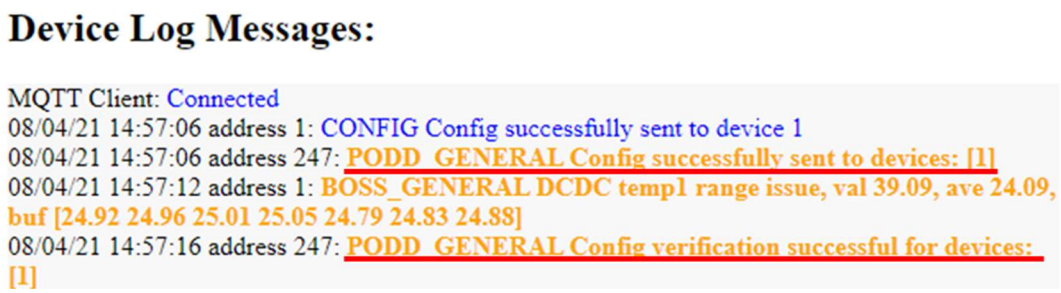

Figure 33: PODD Site – Write Config – Log Messages

12.7 Firmware Update Tab

The Firmware Update tab allows the user to update the firmware installed on the Alencon device over the network.

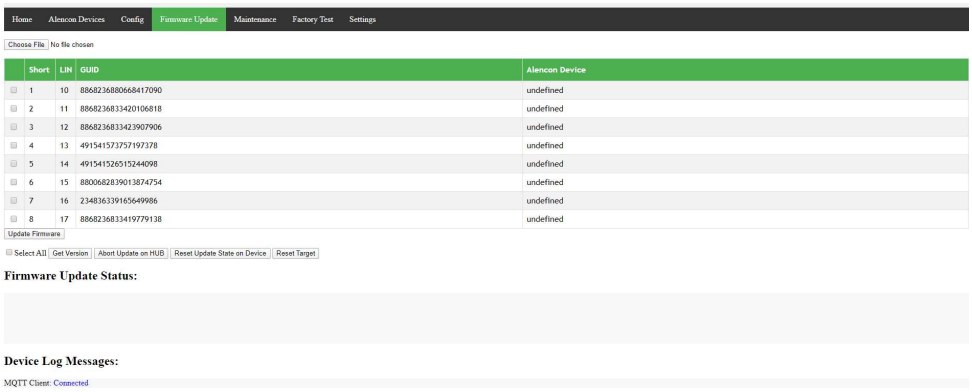

Figure 34: PODD Site, Firmware Update Tab

12.7.1 Steps to Update Firmware on Your Alencon Device

Alencon may release newer firmware versions that fix bugs or add new features. Please follow the below instructions carefully to update your Alencon devices.

You will be provided with a set of files required to update the firmware on your Alencon device if need. ***Alencon recommends that you upgrade all processors and all devices in a field with the same firmware version to ensure compatibility within and between devices.***

Figure 35: PODD Site – Firmware Update

1. Select the devices you wish to upgrade.
2. Click on **<Get Version>** to verify communication is working and check which version is loaded on the device.
3. Click **<Choose File>** and find the corresponding .zip file for the target
4. Click **<Update Firmware>**
5. See the progress bar corresponding to the update process.

12.7.2 Error or Stall Recovery Process

If the firmware update stalls or has an continuous error, follow this procedure carefully to insure a minor error does not become unrecoverable:

1. Click **<Abort Update on HUB>**
2. Copy the SPOT and Firmware LOG Messages to text editor such as Notepad, save, and send to Alencon. This will help diagnose the failure.
3. Click **<Reset Update State on Device>**
4. Retry the update. Contact Alencon if the update fails again.

12.7.3 Firmware Update Status and LOG Messages

The status and log messages provide real time feedback on the update state. The firmware update can be in 1 of 4 states:

1. Idle: Not in the batch update queue
2. Pending: Waiting in the queue
3. Completed: Updated successfully
4. Failed: Update Failed

Figure 36: PODD Site – Firmware Update Status

These messages provide the user the status of the SPOT during the update process and if the update is complete or failed.

12.7.4 PODD Update

The PODD Site itself may have newer firmware versions that fix bugs or add new features. To update the PODD Site firmware:

1. Click **<Choose File>** and find the .zip file containing the proper PODD firmware
2. Click **<Update PODD>** and watch for the progress messages in the device log
3. After the update completes 100%, wait for the PODD to reboot fully
4. Refresh the PODD Site and see the new firmware version verified at the bottom of the webpage

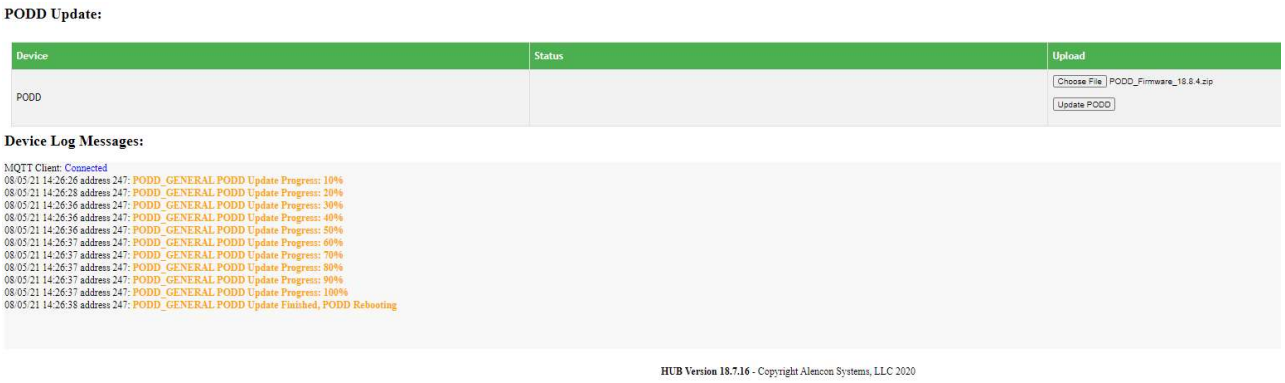

Figure 37: PODD Site – PODD Firmware Update

12.8 Maintenance Tab

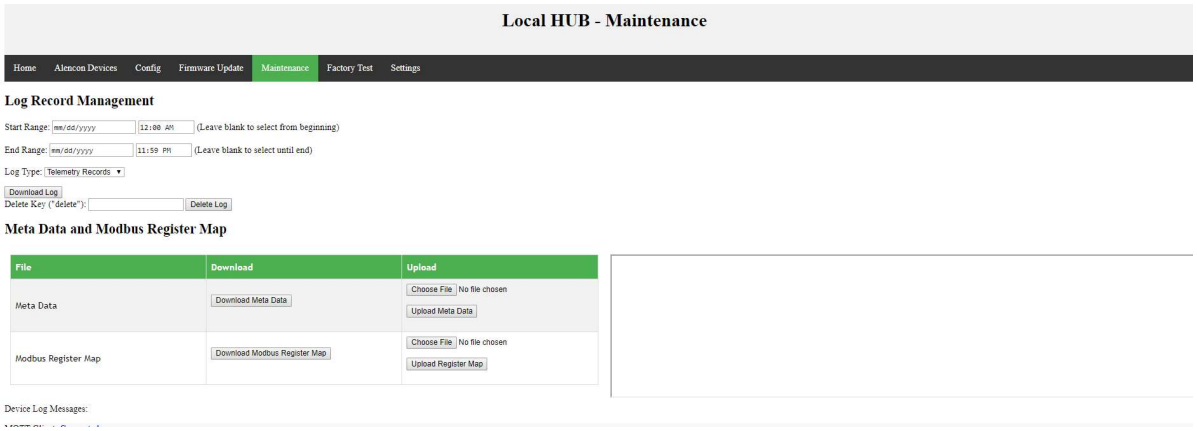

Figure 38: PODD Site, Maintenance Tab

The Maintenace Tab allows for a variety of house-keeping functios:

- Log message and telemetry record retrieval
- Log message and telemetry record deletion
- Metadata update and retrieval
- Modbus Register Map update and retrieval

12.8.1 Log Record Management

Log messages and telemetry are stored in an internal data base. When an export request is made, the database is queried, the records are exported to a csv, and then compressed. This process can take a couple of minutes if the query is large. Please be patient.

It is typically unnecessary to delete records unless instructed to do so by an Alencon representative. The PODD Site internally limits the physical size of the database and the age of all records. These settings are found in the Settings Tab.

12.8.2 Metadata File

The Metadata file describes the mapping of GUID to other associated data such as LIN and Modbus address. This file will need to be updated with the new GUID when ever an Alencon device is replaced. Procedure for this can be found in section 12.11.1

12.8.3 Modbus Register Map

This file defines the mapping of modbus registers to Alencon device's internal data types and scaling. This file will almost never need modification.

12.9 Factory Test Tab

If you have purchased Alencon's protection device i.e. the GARD then the Factory Test tab may be of use otherwise do not use. More information can be found in the GARD user manual.

12.10 Settings Tab

The settings tab contains PODD configuration settings. Alencon personnel will guide you through any settings updates. Click **<Restart HUB>** to reboot the PODD site application.

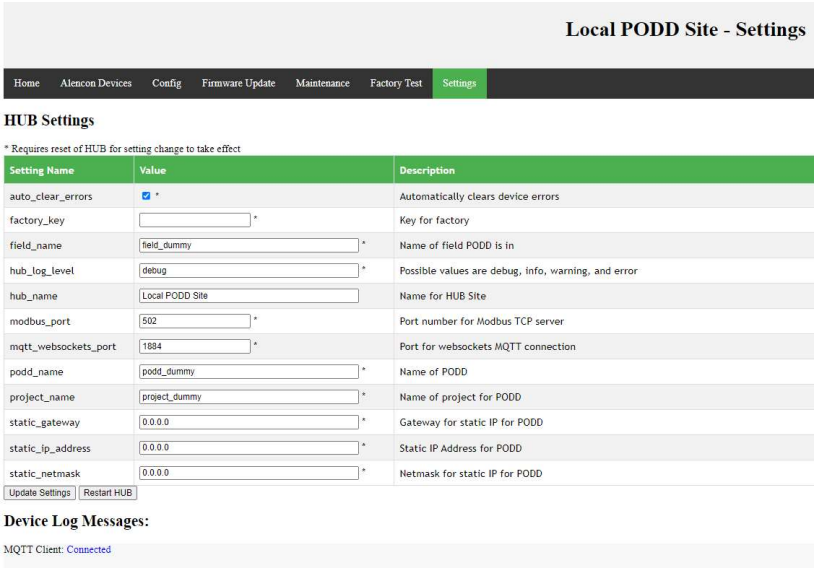

Figure 39: PODD Site, Settings Tab

12.10.1 Setting a Static IP Address

By default, the PODD will have a dynamically assigned IP address, which corresponds to a value of “0.0.0.0” for the parameters “static_gateway”, “static_ip_address”, “static_netmask”.

To set a static IP address:

1. Change parameters to the desired values
2. Click **<Restart HUB>** to reboot the PODD Site. Note: the new values should be recorded in case of an error.
3. PODD Site should now be accessible at the new IP address.

12.11 Device Replacement

When a networked Alencon device is replaced the associated GUID to LIN and Modbus Address mapping on the PODD Site must be updated. The mapping is stored in the Metadata .csv file. Alencon personnel will provide you a new Metadata file corresponding with the replaced device.

12.11.1 How to Update Metadata File

To update the metadata file:

1. Go to the Maintenance tab
2. Click **<Choose File>** and select the newest .csv metadata file
3. Click **<Upload Meta Data>**

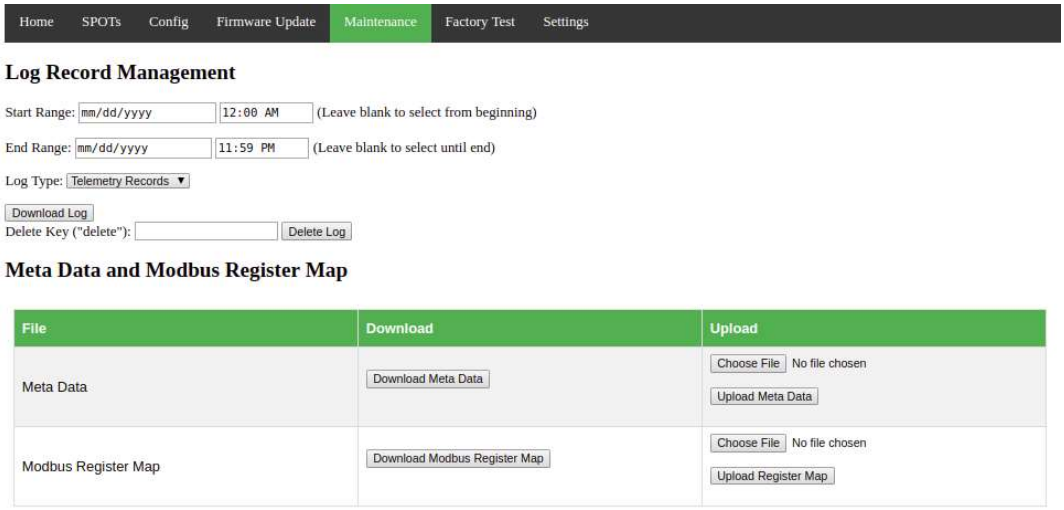

Figure 40: PODD Site, Maintenance Tab

13 DCDC Emulator

For those who wish to use the PODD device in advance of connecting peripheral Alencon devices, an emulator can be installed on the PODD for that purpose.

13.1 DCDC Emulator Functionality

The emulator creates virtual SPOT or BOSS devices (not available with GARD) that communicate through the PODD Site as an actual connected device would, meaning all modbus registers available on the SPOT or BOSS will be accessible.

This is useful for testing the design of an external controller as the virtual DCDC device will receive and respond to commands as an actual device would. DCDC telemetry data will be accessible for reading through modbus TCP connection to the PODD.

The emulator does not mimic the power conversion of a DCDC device, it can't be used to model how a SPOT or BOSS will work to convert power in the customer specific application. Telemetry data values are assigned randomly, within typical ranges.

13.2 DCDC Emulator Enable and Disable

The PODD must be pre-configured for simulation mode by Alencon to run an Emulator. Please make known to your Alencon representative if you would like an emulator and what amount of virtual SPOT/BOSS devices should be included.

To use the PODD with actual Alencon devices, it must be transitioned from simulation to normal mode, please contact Alencon Technical Support to accomplish this.

Appendix A - Safety Precautions

A.1 Degree of Danger Symbols

	***Warning!***	*Warnings indicate conditions, which if not observed, can cause personal injury!*
	***Caution!***	*Cautions are included to help you avoid damaging hardware or losing data.*
	***Note!***	*Notes provide optional additional information.*

Appendix B – Glossary

Word(s)/Acronyms	Definition
ACE	Alencon Communication Environment – a communication system containing hardware and software elements provided by Alencon to control power conversion equipment.
ALS	ALENCON Systems, LLC
BOSS	Bidirectional Optimizer for Storage Systems
BOSS-BOX	Container with (1) to (4) BOSS units and Junction Box
CUBE	Compact Universal Bi-directional Efficient DCDC Converter
DC	Direct Current
ESD	Electrostatic Discharge
ESS	Energy Storage System
FEED	Fused Electrical Disconnect
GARD	Ground and Arc fault Rapid Disconnect
GFDI	Ground-Fault Detection
GND	System Ground Potential
HV / LV	High Voltage / Low Voltage

IP	Internet Protocol
LD	Leak Detector
PODD	Point of Data Distribution
RTU	Remote Terminal Unit. Microprocessor controlled electronic protocol to exchange data with other devices
SCADA	Supervisory Control and Data Acquisition system. Performed by transmitting telemetry data to a master system and by using messages from the master supervisory system to control connected objects
SPOT	String Power Optimizer and Transmitter
SPOT-BOX	Container with (1) to (4) SPOT units and Junction Box
UI	User Interface

Appendix C – Technical Support and Assistance

Visit the Alencon Systems web site at www.alenconsystems.com where you can find the latest information about the product. Contact your distributor, sales representative, or Alencon Systems' technical support if you need additional assistance. Please have the following information ready before you call:

- Product name, serial number, and LIN (all can be located on the product label)
- Description of your peripheral attachments including fusing and cables

For technical support please email: support@alenconsystems.com or call **+1 (215) 816-3366**