Fortress Power – Schneider XW Pro Inverter Guide

Fortress Power Lithium Batteries Using Schneider Insight

Schneider XW Pro and Insight Home Facility or Gateway support operating Fortress Power batteries in closed loop communication mode. It is best practice to have the inverters programmed in the open loop settings before setting up closed loop communication. For any additional help, please contact techsupport@fortresspower.com

1. Table of Contents

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1. Introduction

Battery Datasheets / Manuals: See "Downloads" section of individual product pages
Email: techsupport@fortresspower.com
Discord Support: https://discord.gg/kxX6QMjKFw
Phone: (877) 497-6937 x 2
Hours: 9:00AM - 6:00PM EST – Use Discord for After Hours / Weekends
Warranty Submittal: https://www.fortresspower.com/warranty/

Join Our Discord Chat

Step 1 – Getting Started. Turn each battery on individually while unpacking the batteries and note the voltage of each battery as well as the serial numbers. The batteries must be within +/- 0.5V of each other before commissioning. Turn off the batteries and install in parallel. Install the battery-to-battery communication cables and proceed with system commissioning.

Pro tip: If the battery voltages are significantly different, wire the batteries in parallel without communication cables and only turn on the lowest voltage battery. Use the inverter or external charger to charge the battery to the voltage of the 2nd lowest battery. Turn the 2nd battery on and charge the battery bank to the 3rd lowest battery voltage. Repeat until all batteries are at the same voltage. Keep total charging voltages under 15A per battery during this process**.**

Pro tip: If the batteries are just slightly outside the +/- 0.5V range, you can avoid using an inverter or an external charger to balance the batteries by only turning the lowest voltage batteries on (ONLY if within 0.5V relative to each other) and allowing those batteries to balance. Repeat this process with the highest voltage batteries. This brings the lowest and highest voltage battery towards to the middle of the group.

Pro tip: It is not usually necessary to apply a firmware update to Fortress batteries during system commissioning, but our installer firmware update tool can help speed up commissioning times.

Step 2 – Update Schneider Firmware

Please refer to Schneider's step-by-step guide for the commissioning of a system with 1 XW Pro hybrid inverter, 1 MPPT charge controller, and a Gateway/InsightHome/InsightFacility.
https://solar.schneider-electric.com/xw-pro-commissioning-guide/

The first step is to download the latest firmware of all your devices – it is strongly recommend doing so before heading to the site. Find your products in the table below and visit its product page to download the firmware. Scroll down to the Downloads section and click on Firmware. The firmware file is contained in a ZIP file.
Unzip downloaded files and extract the .epkg or .xfo file into the root directory of a USB drive.

2. Communication Settings

Step 1: Hardware Integration

eFlex 5.4kWh

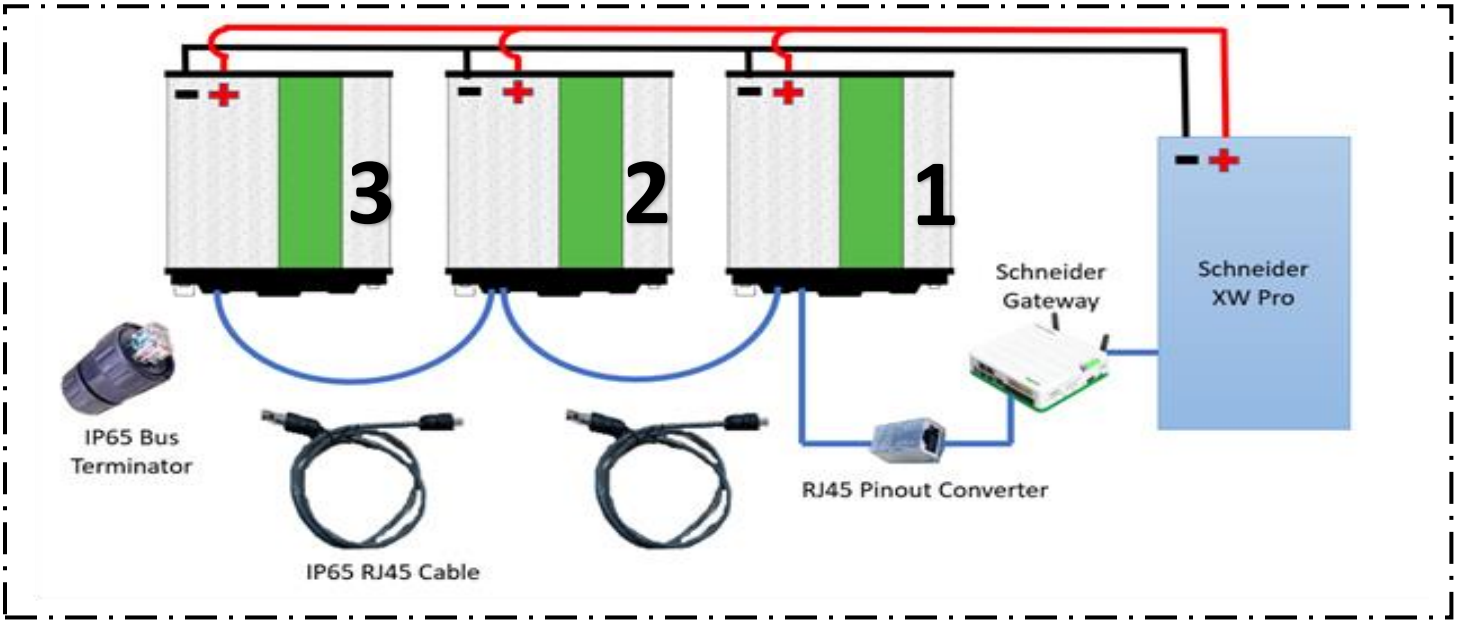

IMAGE 2.1: EXAMPLE OF COMPLETE HARDWARE SETUP BETWEEN 3 EFLEX 5.4KWH AND SCHNEIDER XW PRO. THE SAME CONFIGURATION APPLIES TO INSTALLATIONS OF 1 BATTERY TO 15 BATTERIES CONNECTED IN PARALLEL

******Important! Before paralleling each battery, make sure the voltage difference between them is less than 0.5v from one another. Pairing batteries with voltages above 0.5v may damage parts of your battery due to over surge current. If the battery/ies have voltage differences use the inverter or charge controller to charge the battery/ies up to the desired voltage. Otherwise, place the terminator in one of the communication ports and the communication cable in another.***

1. While batteries are off, connect the communication cables from one battery to another (RS485 ports are common) and end communication with terminator on battery 3 as referred on ***Image 2.1***. Insert the remaining cable from battery 1 to the Rj45 Pinout Converter to terminate the CAN communication from battery to battery.
2. Plug a Format B Ethernet Cable (***not included***) to the other side of the Rj45 Pinout Converter.
3. Cut and strip the end of the Format B cable and connect wire 7 (brown/white) to port 9 of the Insight Home (18 on the Gateway & Insight Facility) and wire 8 (brown) to port 11 of the Insight Home (20 on the Gateway) as described in ***Image 2.2*** & ***Image 2.3***
4. Turn battery #1 first and wait 5 seconds, then proceed turning battery #2 on, wait 5 seconds, finalize turning battery #3 on.

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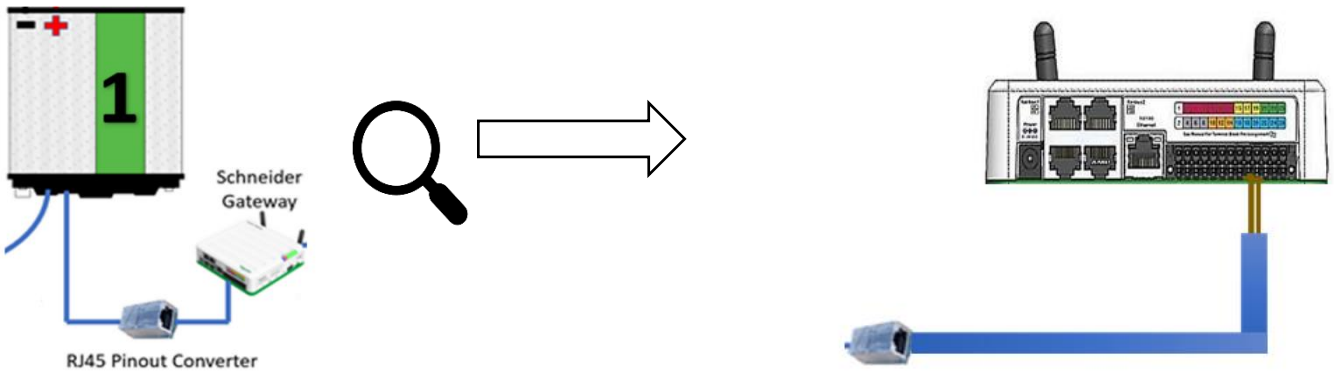
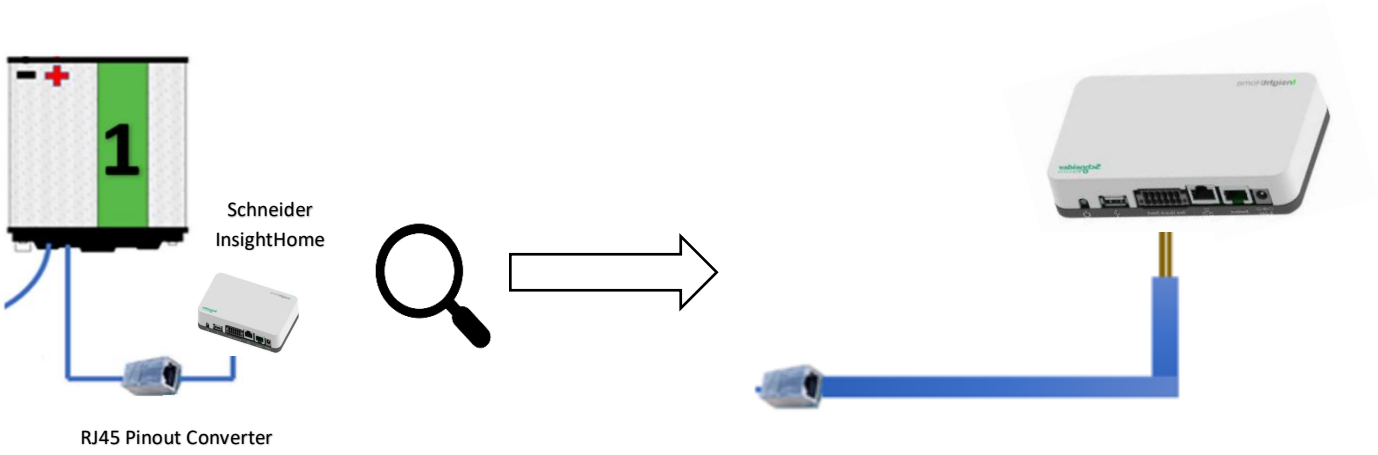


From Battery	eFlex5.4kWh	eVault Classic & Max 18.5kWh
Gateway/Insight Facility port 18	brown-white, (wire 7)	green-white (wire 3)
Gateway/Insight Facility port 20	brown, (wire 8)	blue-white (wire 5)

IMAGE 2.2: CONNECTION WITH THE MODIFIED CABLE AND INSERTED TO THE PINOUTS 18 & 20 OF THE GATEWAY/INSIGHT FACILITY



From Battery	eFlex5.4kWh	eVault Classic & Max 18.5kWh
InsightHome port 9	brown-white (wire 7)	green-white (wire 3)
InsightHome port 11	brown, (wire 8)	blue-white (wire 5)

IMAGE 2.3: CONNECTION WITH THE MODIFIED CABLE AND INSERTED TO THE PINOUTS 9 & 11 OF THE INSIGHT HOME

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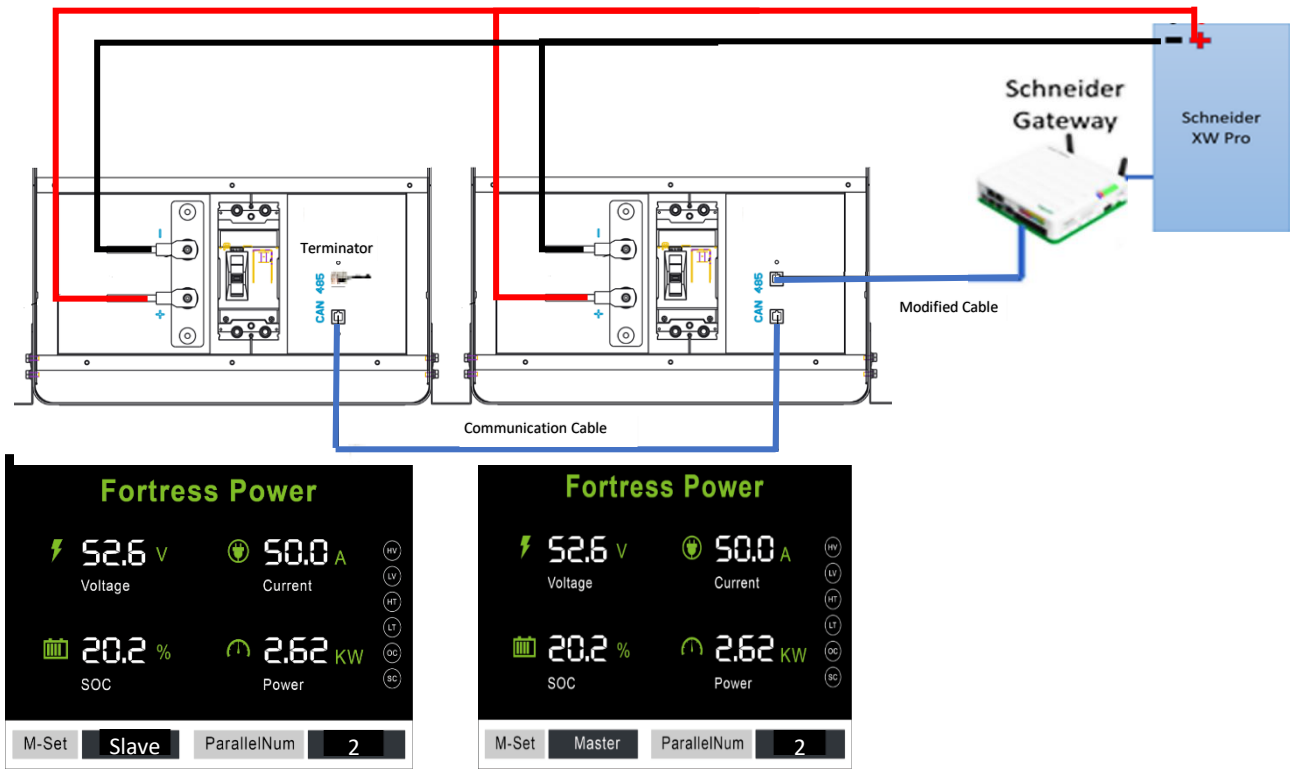
eVault Classic 18.5kWh



From Battery	eFlex5.4kWh	eVault Classic & Max 18.5kWh
InsightHome port 9	brown-white (wire 7)	green-white (wire 3)
InsightHome port 11	brown, (wire 8)	blue-white (wire 5)

IMAGE 2.4: EXAMPLE OF COMPLETE HARDWARE SETUP BETWEEN 2 EVAULT CLASSIC 18.5KWH AND SCHNEIDER XW PRO.

*****Closed loop is only compatible for up to 2 batteries connected in parallel. Make sure that each battery are updated to firmware version 7.7. Important! Before paralleling each battery, make sure the voltage difference between them is less than 0.5v from one another. Pairing batteries with voltages above 0.5v may damage parts of your battery due to over surge current. If the battery/ies have voltage differences use the inverter or charge controller to charge the battery/ies up to the desired voltage. Otherwise, place the terminator in one of the communication ports (Both TX and RX are common ports) and the communication cable in the other. Set Battery to Master 1.**

1. To pair both batteries, turn them on pressing the pushbutton for about 10 seconds and set both batteries to Slave with Parallel Number 2. Turn them off. While batteries are off, connect the communication cables from one battery to another (RS485 ports are common) and end communication with a terminator to the battery that you will choose to be the Slave.

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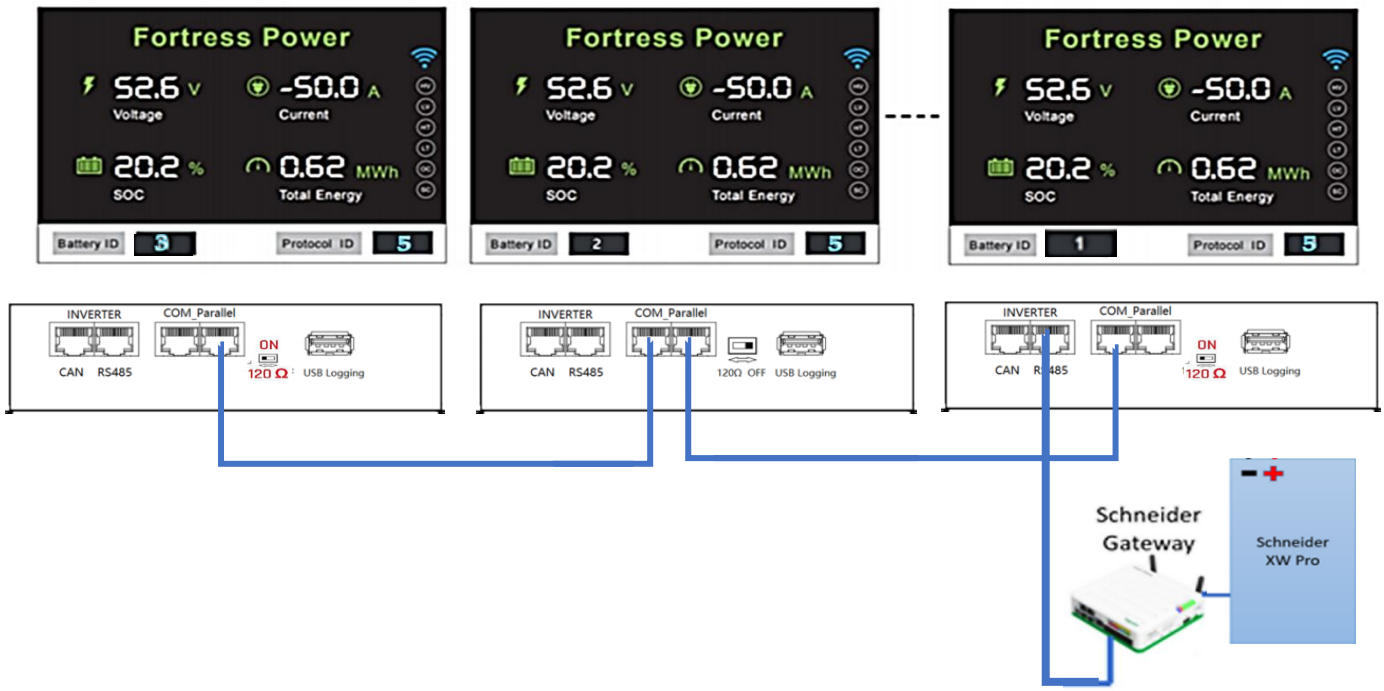
2. Turn Both batteries on. Set one of the batteries to Master. Note: The Master battery will communicate directly with the inverter. If paralleling is successful, you should hear a clicking sound on both batteries after this step. Insert the remaining Format B Ethernet cable from the Master battery to the Gateway/Insight Home/Insight Facility.
3. Cut and strip the end of the Format B cable and connect wire 3 (green/white) to port 9 of the Insight Home (18 on the Gateway & Insight Facility) and wire 5 (blue/white) to port 11 of the Insight Home (20 on the Gateway) as described in ***Image 2.4***.

eVault Max 18.5kWh



From Battery	eFlex5.4kWh	eVault Classic & Max 18.5kWh
InsightHome port 9	brown-white (wire 7)	green-white (wire 3)
InsightHome port 11	brown, (wire 8)	blue-white (wire 5)

IMAGE 2.5: EXAMPLE OF COMPLETE HARDWARE SETUP BETWEEN 3 EVAULT MAX 18.5KWH AND SCHNEIDER XW PRO.

*****Closed loop is compatible for up to 20 batteries connected in parallel. Make sure that each batteries are updated to the latest firmware version. Important! Before paralleling each battery, make sure the voltage difference between them is less than 0.5v from one another. Pairing batteries with voltages above 0.5v may damage parts of your battery due to over surge current. If the battery/ies have voltage differences use the inverter or charge controller to charge the battery/ies up to the desired voltage.**

If using only one battery, set the battery ID to 0, Protocol to 5. Turn the terminator switch to 120ohms and place the communication cable into the RS485 port. Turn the battery off then on and confirm Battery ID 0, Protocol 5.

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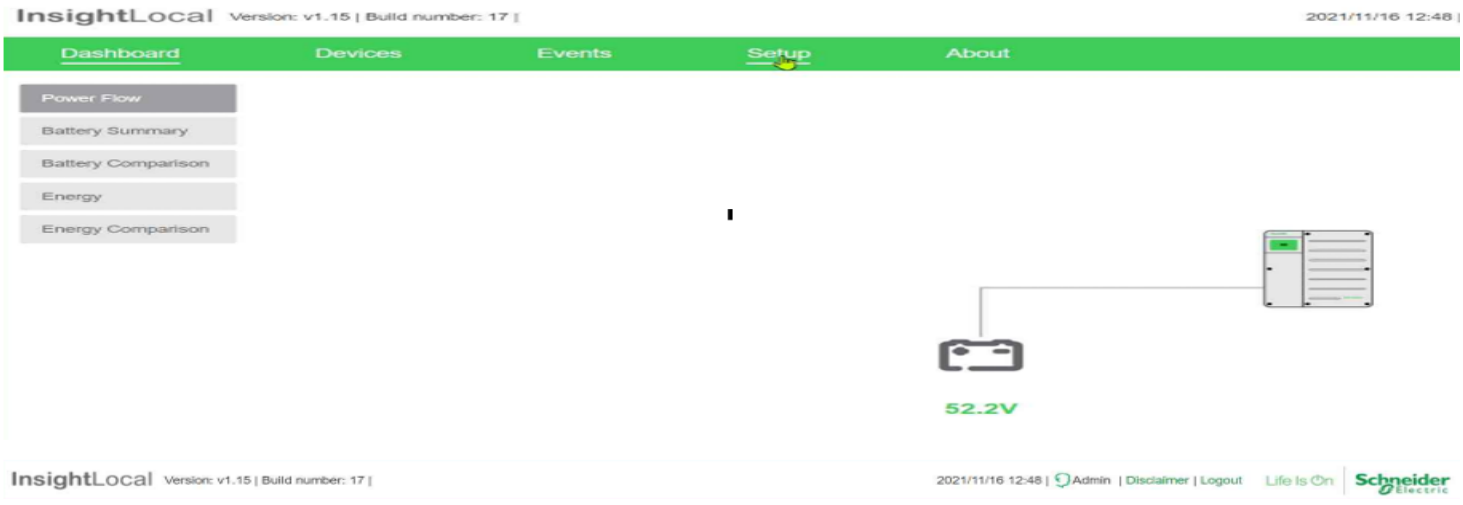
1. For multiple batteries: turn off or open eVault MAX breaker. Turn on the battery: record voltage, set the battery ID and protocol as described below. If the battery voltages are not within 0.5V, the battery that is not in the range should be charged or discharged.
2. When paralleling multiple batteries, you need to choose which battery will be the master and which will be the slaves. You do this by Setting the Master battery ID to 1 and set the rest in chronological order as describes in **Image 2.5**. If the install is only a single eVault set battery ID to 0.
3. Set the protocol ID to 5 on all batteries. This identifies the Schneider communication protocol.
4. Turn off all batteries. Take note to identify which battery is Master Battery 1
5. Place the communication cable on the Comm Parallel ports between each battery. The first and last battery in the communication string need to have the termination set to 120 ohms, the other batteries termination is set off.
6. Turn on all batteries except master Battery 1. Batteries should have green run light on and red BMS light blinking.
7. Turn on Master Battery 1. Batteries should parallel within 5 minutes. To confirm that each battery is properly commissioned, each battery's status light must be solid green.
8. The batteries are ready to supply power to the inverter(s). For a single eVault Battery install the power on sequence is different from multiple batteries. For a single evault the last step is to turn on the battery to take advantage of the pre-charge resistor. So for a single battery install with the battery off make (turn on) the battery connection all the way to the inverter including the inverter breaker then turn on the battery. For multiple batteries the last connection made is the inverter battery breaker.
9. Cut and strip the end of the Format B cable and connect wire 3 (green/white) to port 9 of the Insight Home (18 on the Gateway & Insight Facility) and wire 5 (blue/white) to port 11 of the Insight Home (20 on the Gateway & Insight Facility) as described in ***Image 2.5.***
10. Connect the other end of the Format B Ethernet Cable onto the eVault MAX Identified as ID 1, Rs485 port.

Step 2: Software Integration

*****Follow these steps to successfully integrate the battery's BMS to the XW PRO.**



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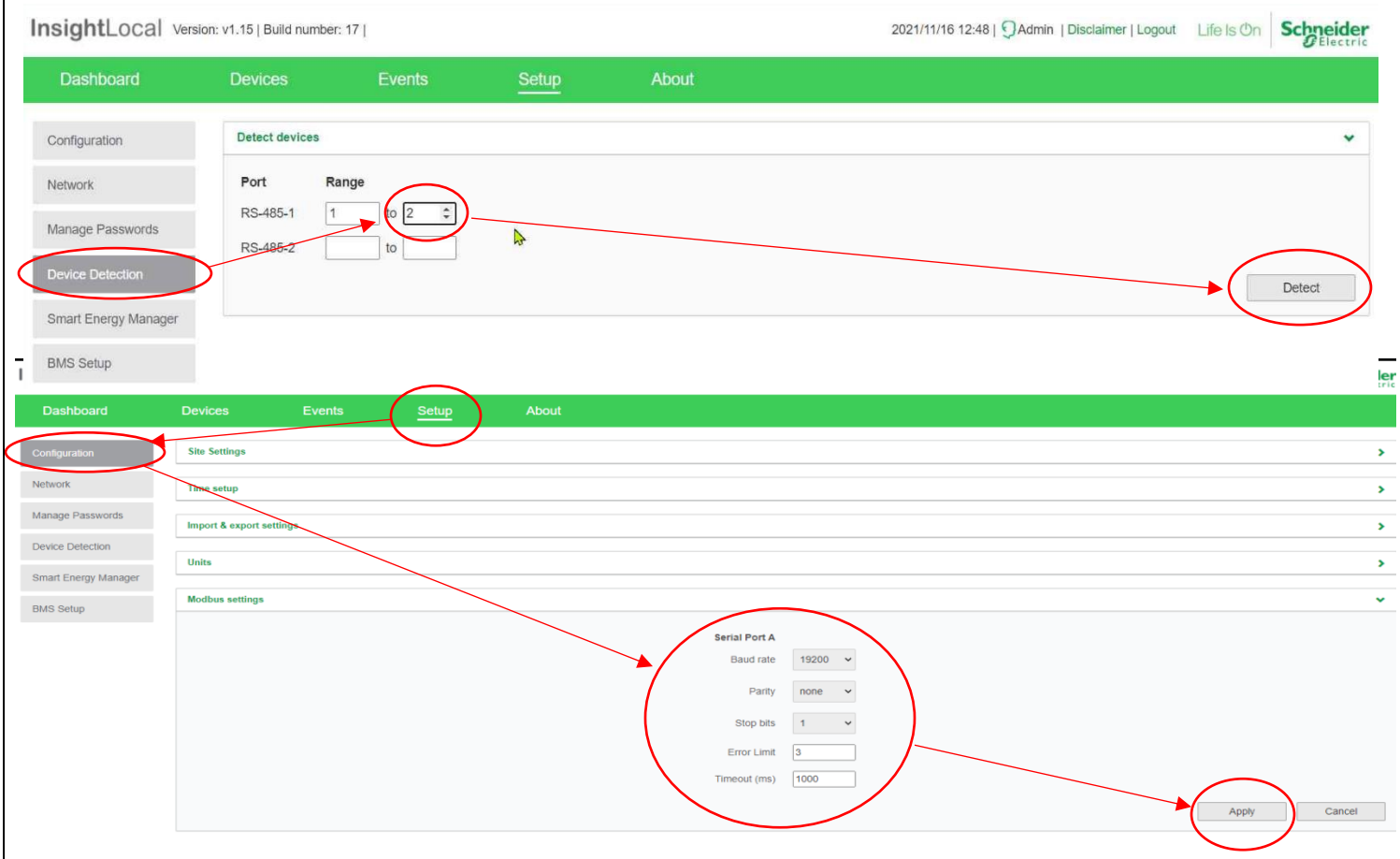
*****Note: Choose a 19200 BAUD Rate for the eVault Max. Otherwise use a 9600 BAUD Rate for the eFlex and the eVault Classic.**



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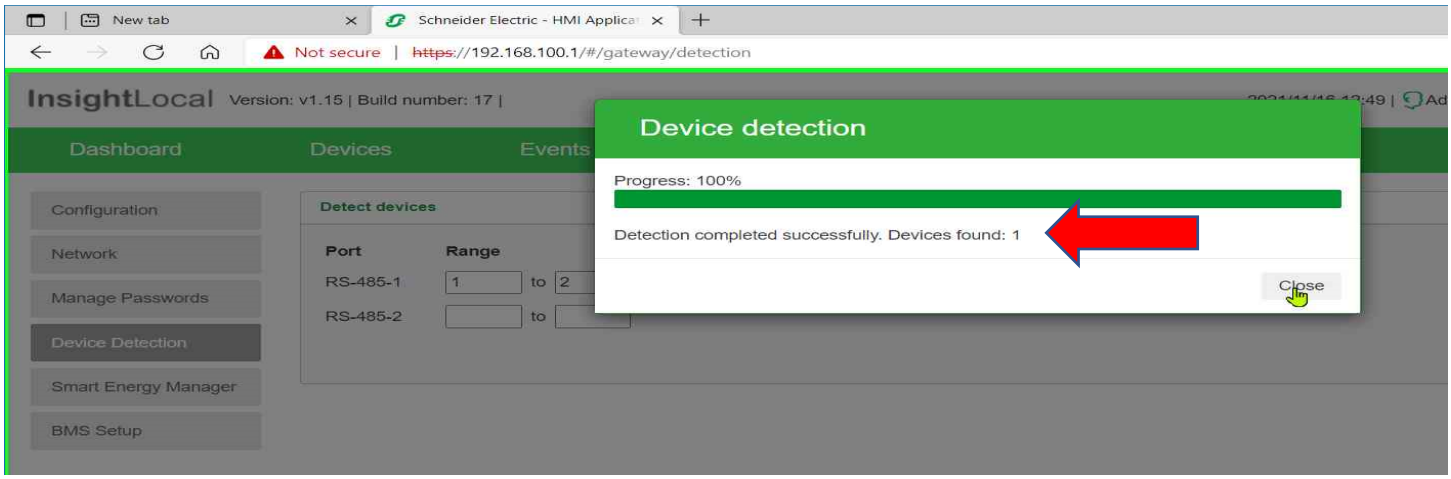

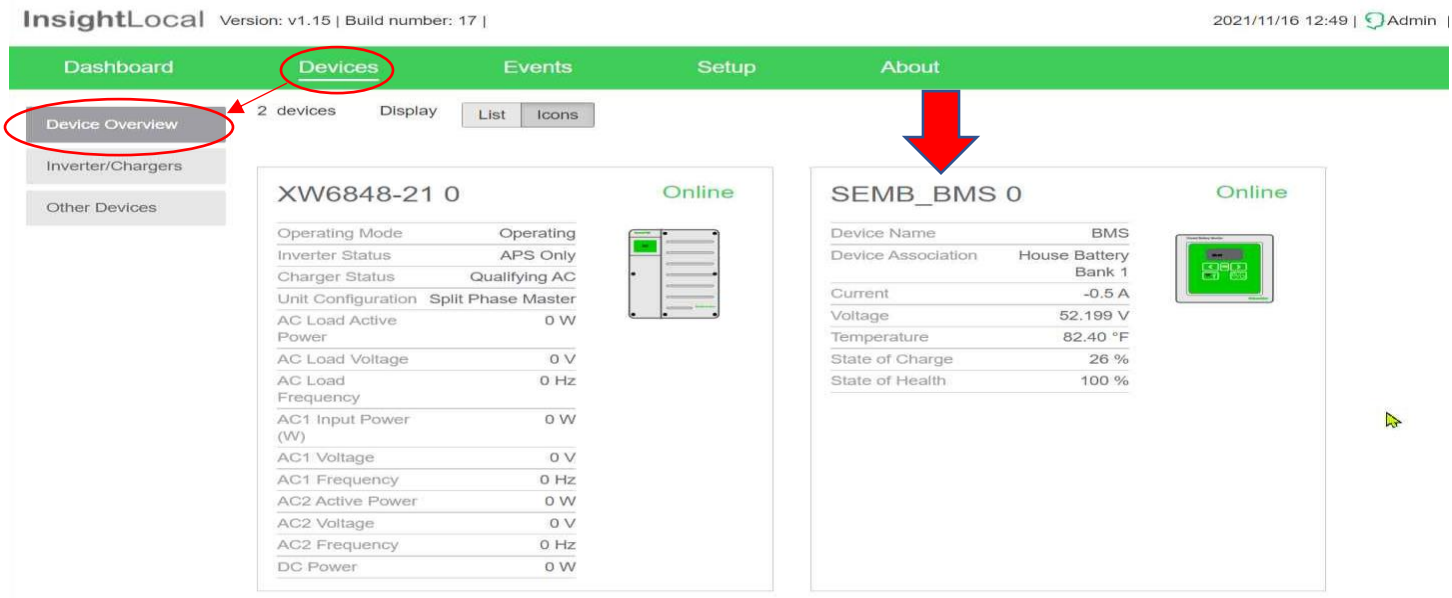

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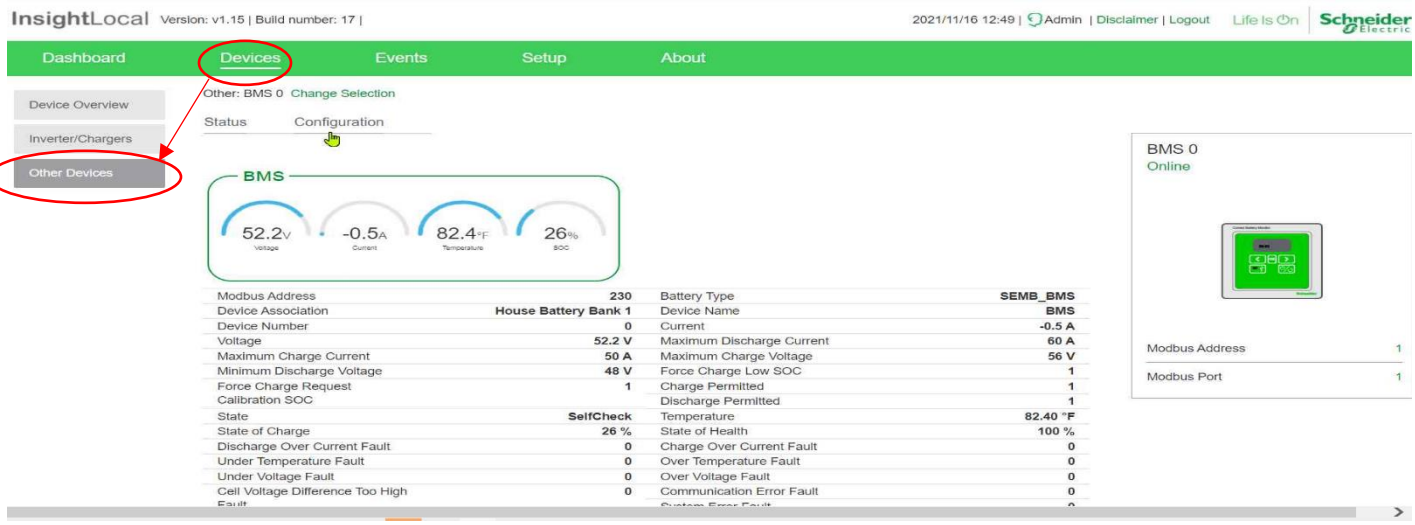
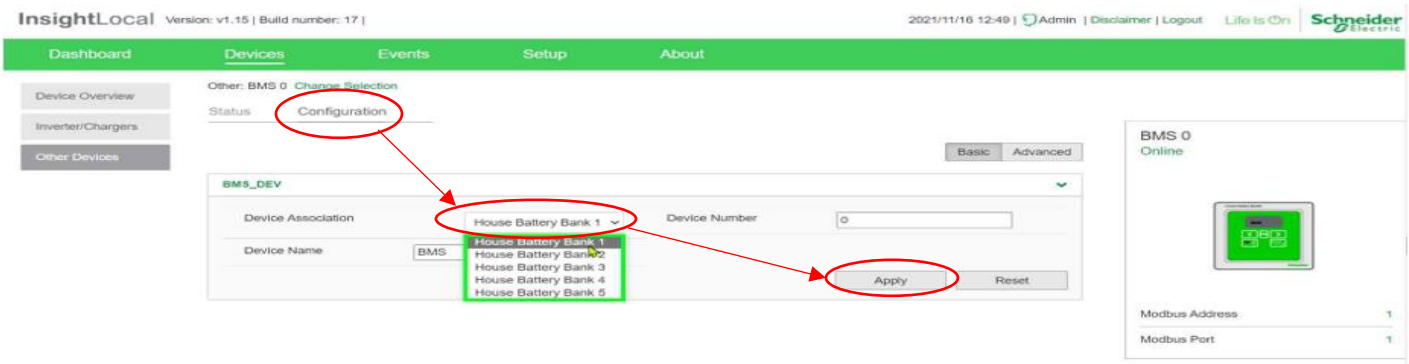
To confirm that the BMS was successfully integrated into the inverter you will see the image of the battery's BMS on the devices section along with the battery's internal information/parameters.





Associate the Battery/'s as House Battery Bank 1

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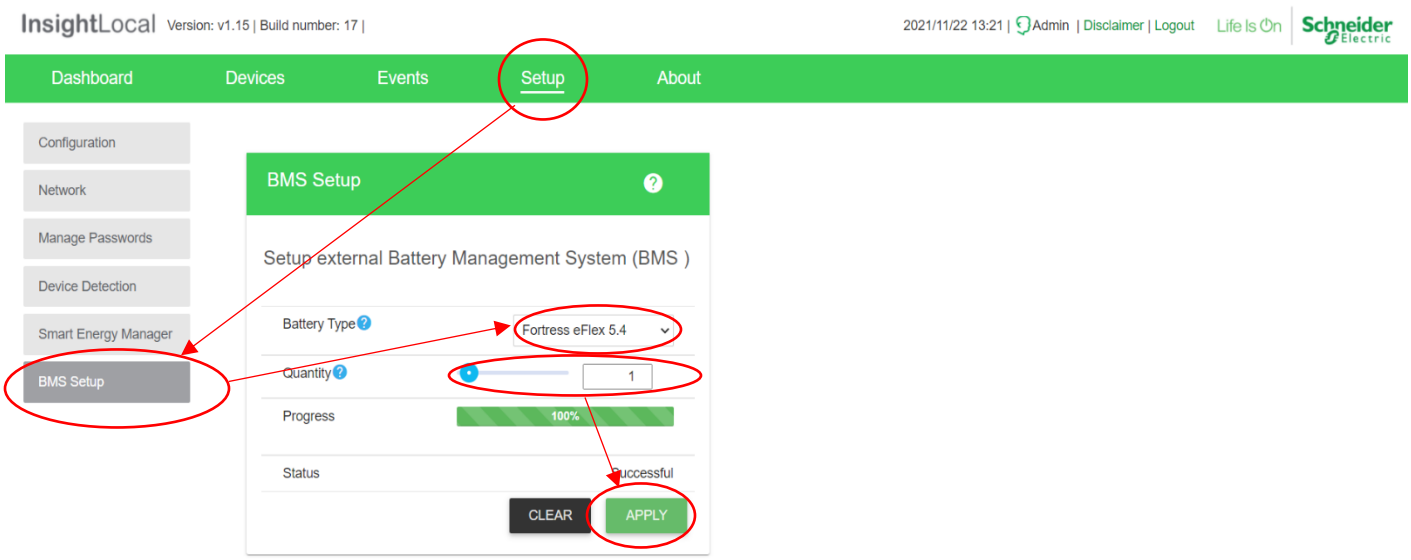

Under the Setup section >BMS setup choose the battery profile that you are using and the quantity. This will automatically configure your charging settings. **Note this will not exempt you from manually programming these settings on the Battery Management Systems section.**

Advanced Setting > Inverter Settings	
Charger	Enabled
Advanced Setting > Charger Setting	
Recharge Volts	52 V

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3. Closed Loop Battery Commissioning

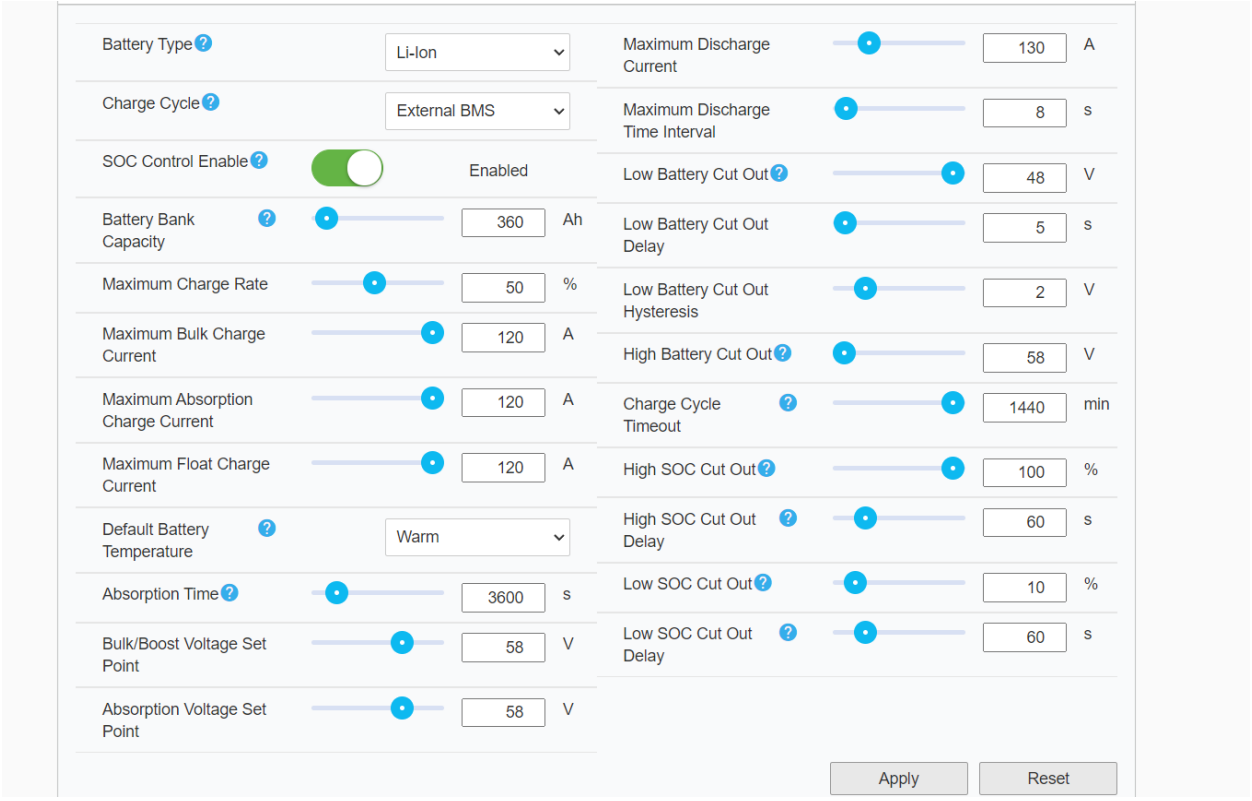
The following uses the Schneider Commissioning Guide with Fortress values

https://solar.schneider-electric.com/xw-pro-commissioning-guide/

XW Pro Inverter

Schneider Guide Step 5 XW Pro battery charging configuration

- In InsightLocal, Click on **Devices** in the menu
- On the left-hand side menu bar, click on **Inverter/Chargers**
- Click on the inverter icon
- Click on **Configuration**
- Click on the **Advanced** button
- Click on **Battery Settings**
- Select Battery Type/Capacity -
- For customer battery type, refer to the battery manufacturer's manual to find the correct information for maximum charge voltage/current



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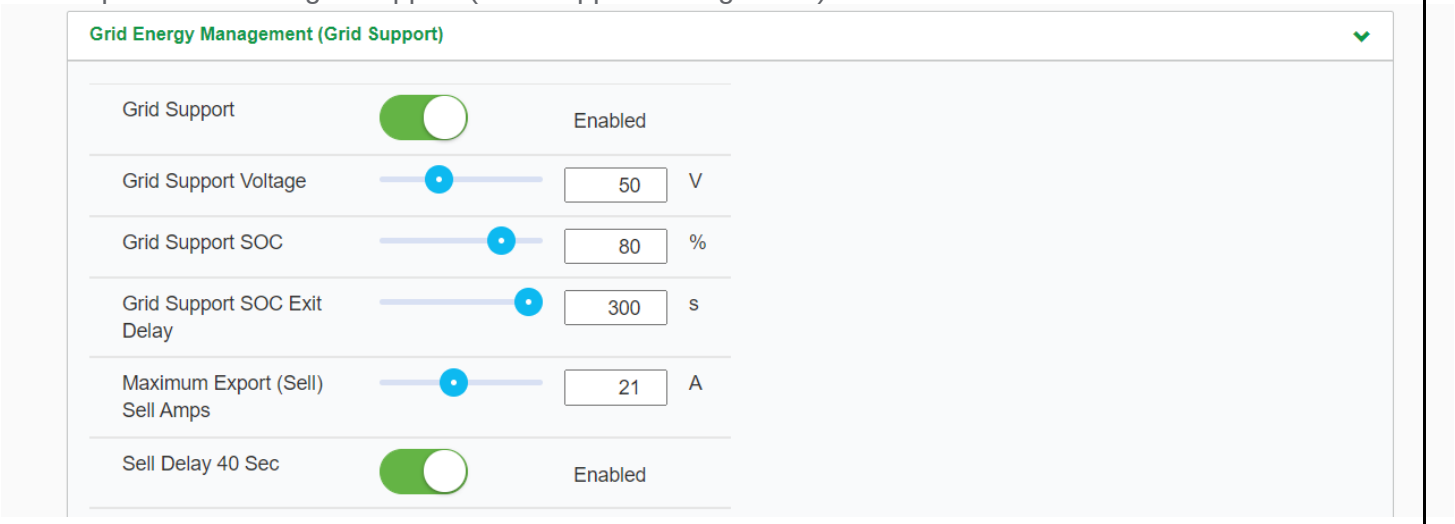
Select system type

Set up your XW Pro according to your system design. Below are common system types. Please click on a tab to see each setting. To zoom the setting, please click on the image.

- **Grid Exporting**
- **Self-Consumption**
- **Off-Grid**
- **Backup**

On the same page, scroll down to the next menu to Grid Energy Management
Here are a few key settings.

- Grid Support Enable = Enabled
- Maximum Export(Sell) Amps > Set according to maximum expected PV power, except when setting up for enhanced grid support (Grid Support Voltage = 64)



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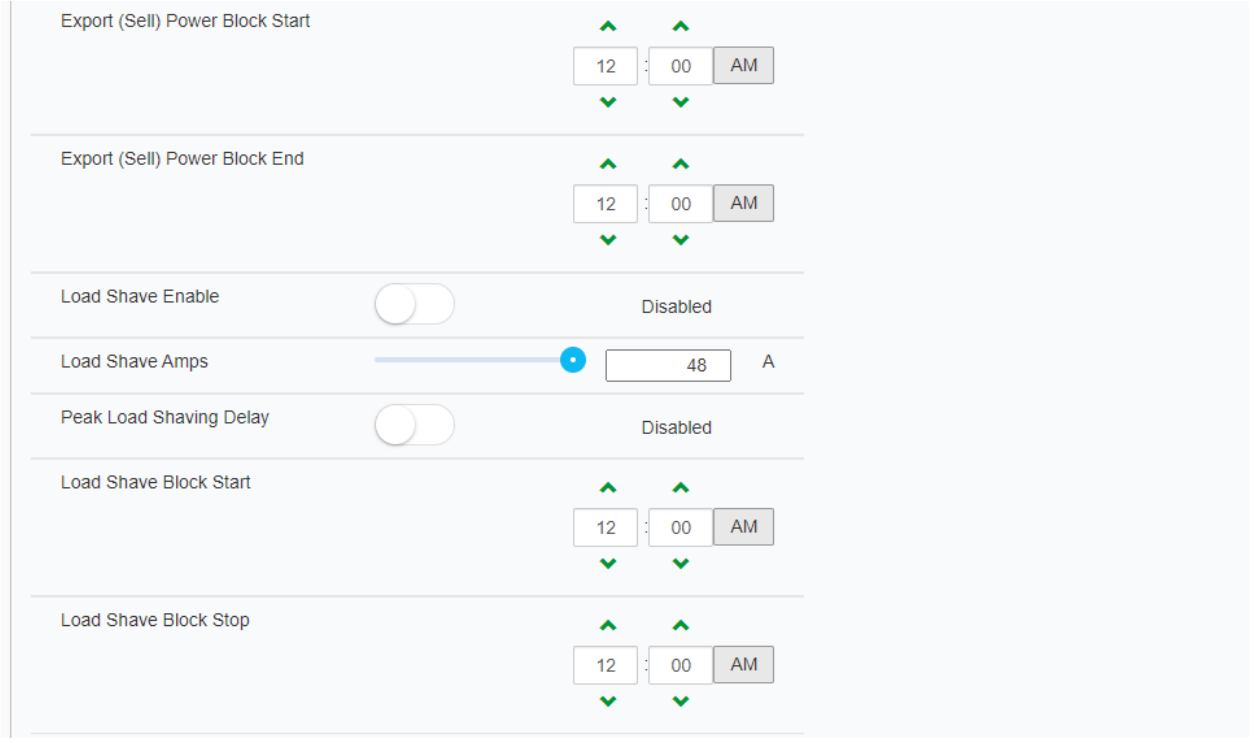

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Charge Controler Setup

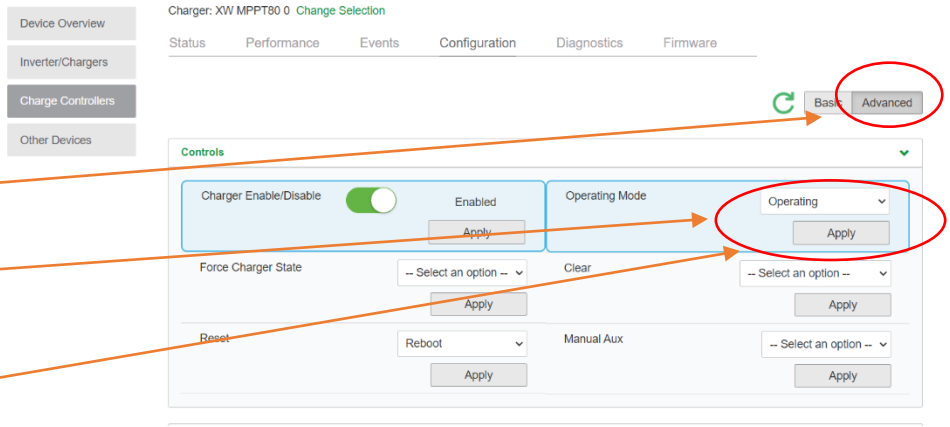
Setup charge controller

Select

Advanced

Operating Mode: Standby then Apply

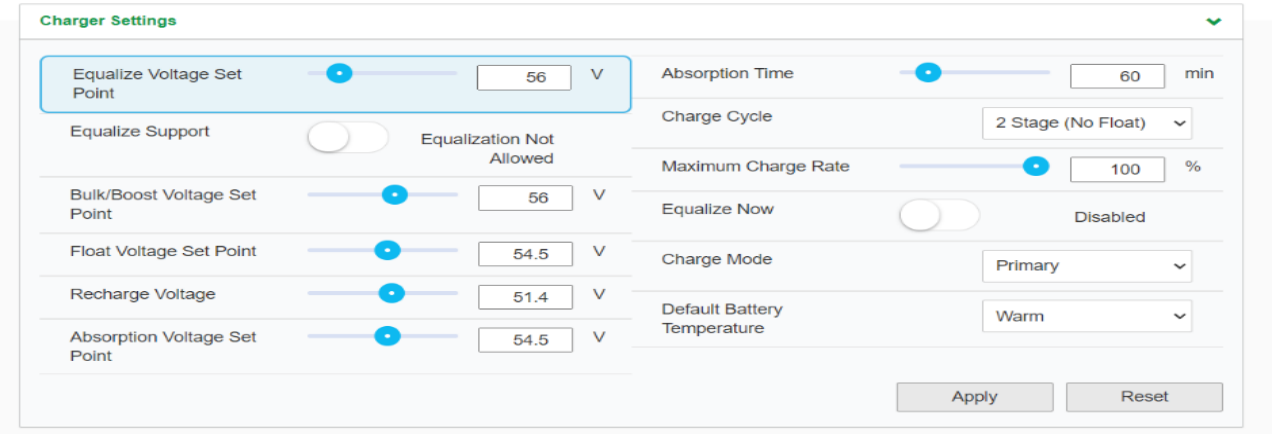
When done changing you change back to Operating then apply



values

Schneider Guide Step 6 MPPT Charge Controller battery charging configuration

1. In InsightLocal, Click on **Devices** in the menu
2. On the left-hand side menu bar, click on **Charge Controllers**
3. Click on the charge controller icon
4. Click on **Configuration**
5. Click on the **Advanced** button
6. Click on **Charger Settings**
7. Select Battery Type/Capacity



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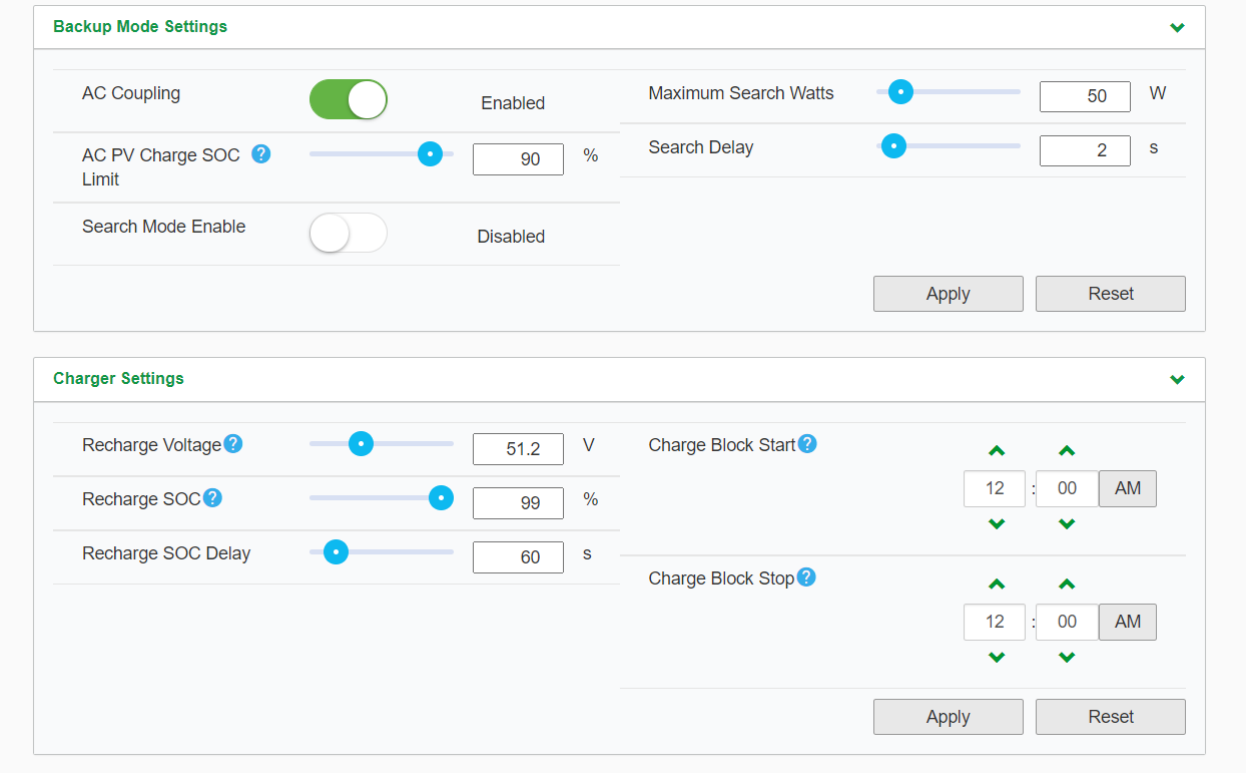

4. Open Loop Settings

******All Open Loop Settings are programmable with a SCP, Insight Local or/and Insight Cloud. Disregard the communication cable that would go from battery to inverter.***

Settings for Fortress Batteries with Schneider Inverters

Charger Setting > Custom Setting	
	80% DoD, 6000 cycles
Battery Type	Custom
Charge Cycle	2StgNoFloat
Bulk Voltage	54.4 V
Max Bulk Current	eFlex:55A per battery eVault:100A per battery eVault MAX 150 per battery LFP-10: 70A per battery
Max Discharge Current	eFlex: 60A per battery eVault & eVault MAX: 160A per battery LFP-10: 100A per battery
Battery Capacity	eFlex: 105AH per battery eVault & eVault MAX: 360AH per battery LFP-10: 200AH per battery
Max Charge Rate Percentage (%)	eFlex:60A per battery eVault:100A per battery eVault MAX 150 per battery LFP-10: 70A per battery Divided by Total Inverter DC Amperage
Default Battery Temperature	Warm
Recharge Volts	51.3
Grid Support Volts**	53
Absorb Volts	54.4
Absorb Time	1 Hour
Charge Block Start	Default
Charge Block Stop	Default
Advanced Settings > Inverter Settings	
Low Battery Cut Out Voltage	48V (50V if allowed)
LBCO Hysteresis	2.0V
LBCO Delay	5 Sec
High Battery Cut Out Voltage	61V (58V if allowed)
Search Watts	Default
Search Delay	Default

Settings with Schneider Charge Controllers

******Parameter Setting for Fortress Batteries with Schneider XW+ & XW Pro MPPT 60/80***

Advanced Setting > Charger Setting	
Battery Type	Custom
Custom Setting	
	80% DoD, 6000 cycles
Charge Mode	3 Stage
Eqlz Support	Disabled
Bulk Voltage	54.4 V
Absorb Voltage	54.4 V
Absorb Time	60 minutes
Float Voltage	54.4 V
Battery Temperature Compensation	0mV/C
Battery Capacity	eFlex: 105AH per battery eVault & eVault MAX: 360AH per battery LFP-10: 200AH per battery
Max Charge Rate Percentage*	eFlex:55A per battery eVault:100A per battery eVault MAX: 150A per battery LFP-10: 70A per battery Divide by total CC amp output
Charge Cycle	Warm
Recharge Volts	53 V
Absorb Time	1 Hour
Default Battery Temperature	Warm
Battery Voltage (Auto-detected)	48V

Note: The charge controllers can be set to a 3 stage charging cycle, but the inverter should be kept in a 2 stage charging cycle. Doing so, as well as setting the charge controller recharge voltage to be greater than that of the inverter recharge voltage, will prioritize charge controller charging over the inverter charging. Inverter charging is a grid/generator charge which has a lower priority than solar charge controller charging.

5. Additional Options

Generator Settings (Applicable to all Mode Settings)

20% state of charge is approximately 51.2V-51.4V.

95% charge is approximately 53.7V. A 100% charge 54.4V.

NOTE: Voltages are open circuit resting measurement. The settings that would discharge the battery down to 49V, is too low for Fortress batteries. Fortress batteries should only be intentionally discharged down to 20% SoC or 51.4V and then be recharged by available charging sources.