

Unpack Batteries + Check Voltage

1. Unpack the batteries and turn each battery on by itself.
2. Note the voltage of each battery and serial number. The serial numbers are useful during warranty submittal.
3. The batteries must be within $\pm 0.5V$ of each other before commissioning. Groups of 4 batteries or more may require a narrower voltage range to commission properly.
4. Turn off the batteries and install them in parallel.

Notes

If the battery voltages are significantly different, one technique is to finish battery installation and only turn on the lowest voltage battery using the pushbutton. Charge the battery, and when the charging voltage is $\sim 0.2V$ above the resting voltage of the next lowest battery, turn it on too. Proceed until all batteries are turned on and at the same voltage level. If the batteries are below 51V, keep charging amperages below 10A per battery.

If the batteries are slightly more than $\pm 0.5V$ from each other, turning on the highest voltage batteries only will reduce their voltages, and turning on the lowest voltage batteries only will lower the highest voltage. Likewise, turning on the lowest voltage batteries as a group will raise the lowest voltage. Then, all the batteries can be turned on within a 0.5V difference.

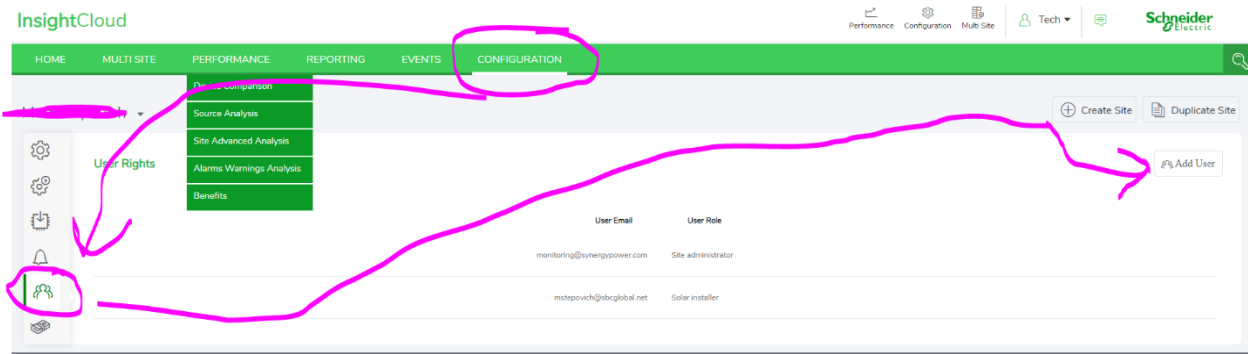
Use of the Fortress firmware update tool can help speed up commissioning times. Fortress installers should request a firmware update tool by filling out a support ticket at <https://support.fortresspower.com>

Schneider Monitoring w/Fortress

Schneider has an online monitoring system called the Insight Local and the Insight Cloud.

Two steps are needed to share your system with Fortress:

- 1) Register the site to the Insight cloud and then share the plant ***including full admin/manager permissions*** with techsupport@fortresspower.com.



2) Submit the system warranty and then include (or later, fill out a support ticket) with the Insight Local username and password.

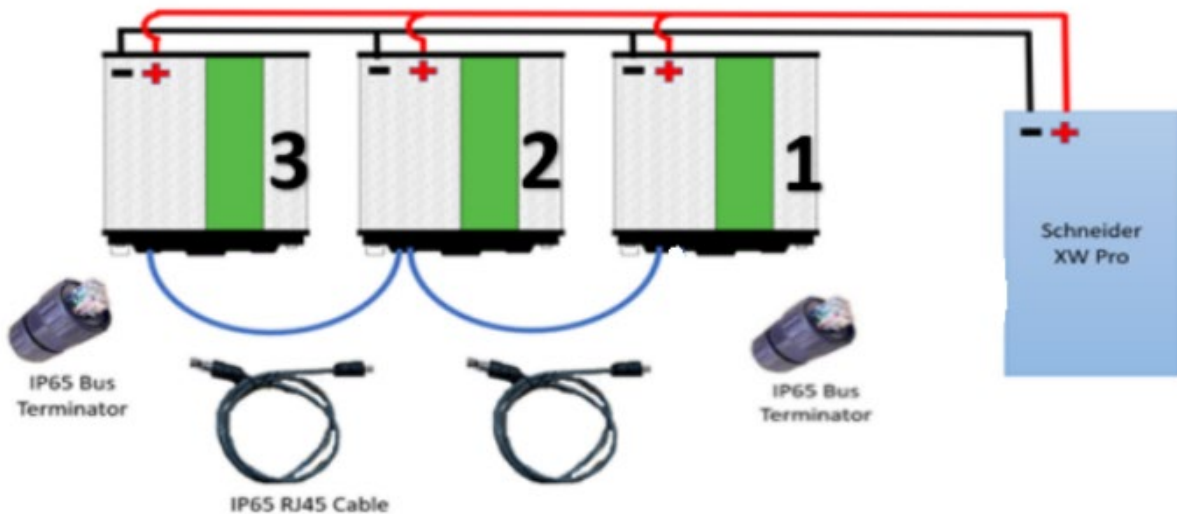
Warranty Submittal: <https://www.fortresspower.com/warranty/>

Support Portal: <https://www.fortresspower.com/support/>

Battery-Battery Connection

Note:

The eFlex communication ports are bi-directional and exactly the same - it does not matter which port you use to connect to other batteries.



1. While batteries are off. Install the battery-battery communication cables. *Do not over tighten the IP65 weatherproof cap that covers the Ethernet port.*
2. Install the IP65 Bus terminator (including the stand-alone Ethernet plug) into one end of the communication circuit on the first and last battery.
3. Proceed turning batteries on and in sequence starting with Battery 1/Master.

Note: The RJ45 pin-out converter is not a simple female-female RJ45 connector! It includes a terminating resistor similar to the other end of the battery communication circuit, but also passes through the inverter communication.

Running on 1 eFlex

Running any Schneider Inverter with 1 eFlex is not compliant with Fortress minimum sizing standards.

If operating with one eFlex, please adjust the following settings:

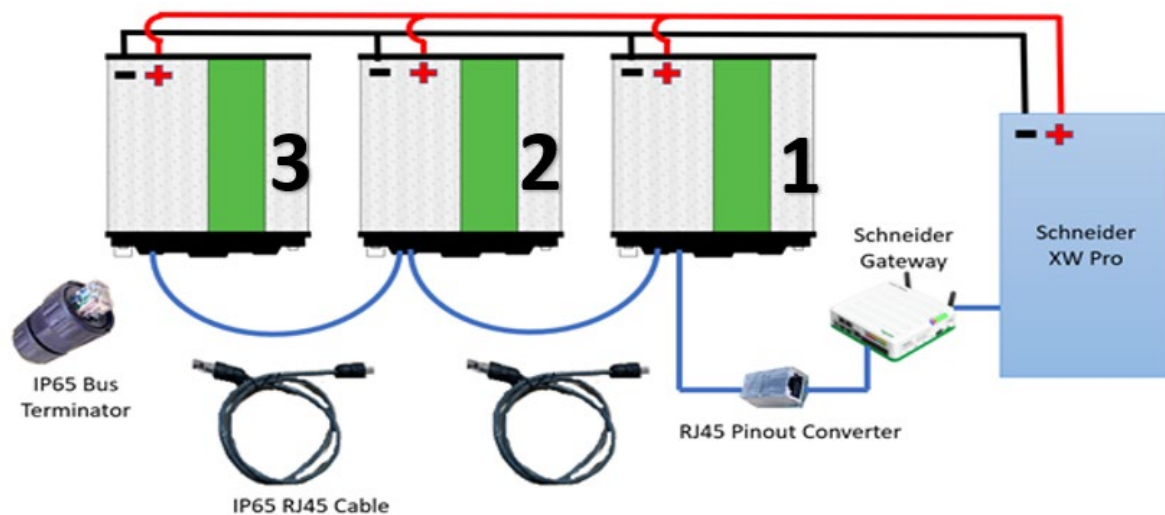
In the Batt Setup Menu, adjust amperage as follows:

If waiting on a repair -> change charge/discharge amps to 60A.

Reminder: Charge deeply discharged eFlex at 10A when recovering below 49V.

Battery-Inverter Connection

The eFlex communication ports are bi-directional and exactly the same - it does not matter which port you use to connect to other batteries or the inverter.

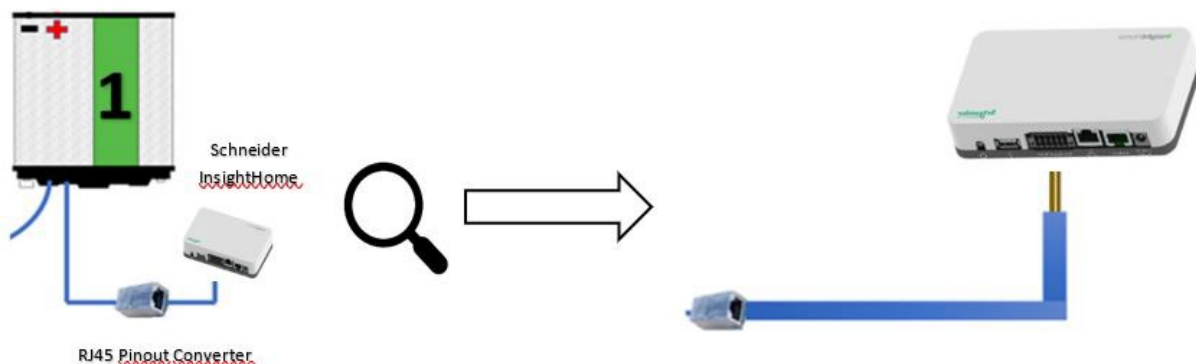


1. While batteries are off. Install the battery-battery communication cables. *Do not over tighten the IP65 weatherproof cap that covers the ethernet port.*
2. Install the IP65 Bus terminator (including the stand-alone ethernet plug) into one end of the communication circuit.

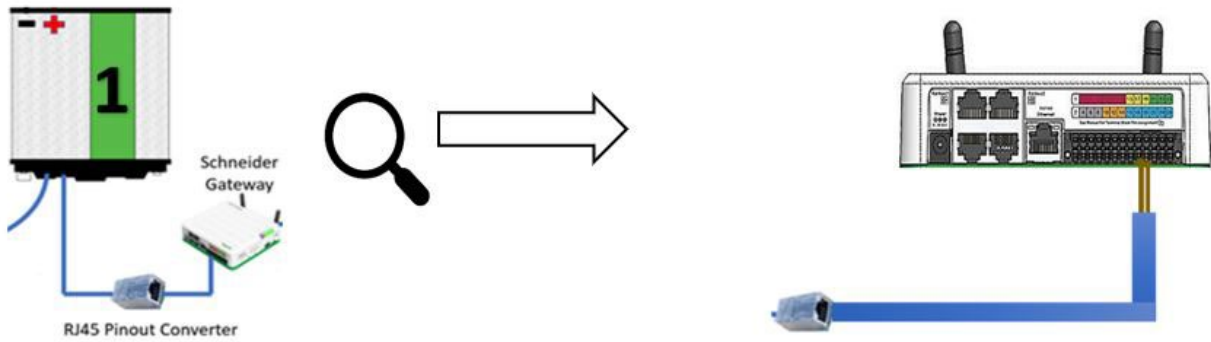
3. Install a ethernet cable into one end of the battery communication circuit to land on the RJ45 pinout converter. The cable on the other side of the RJ45 pinout converter will need to be cut and modified before connecting to the Schneider Insight Home/Gateway. If not using a battery-inverter communication circuit, install an IP65 Bus Terminator instead.
4. User will need an extra LAN Ethernet cable to make connection. Cut and strip the green, brown-white, and brown cables. and proceed to connecting it to the Schneider Insight Home/Gateway ports. Follow the Chart/Images below.
5. Proceed turning batteries on and in sequence starting with Battery 1/Master.

Note: The RJ45 pinout converter is not a simple female-female RJ45 connector! It includes a terminating resistor similar to the other end of the battery communication circuit, but also passes through the inverter communication.

| From eFlex5.4kWh | Insight Home |
|-------------------------|----------------------|
| InsightHome port 7 | green, (wire 6) |
| InsightHome port 9 | brown-white (wire 7) |
| InsightHome port 11 | brown, (wire 8) |



| From eFlex5.4kWh | to Gateway/Insight Facility |
|-------------------------|----------------------------------|
| green, (wire 6) | Gateway/Insight Facility port 16 |
| brown-white, (wire 7) | Gateway/Insight Facility port 18 |
| brown, (wire 8) | Gateway/Insight Facility port 20 |



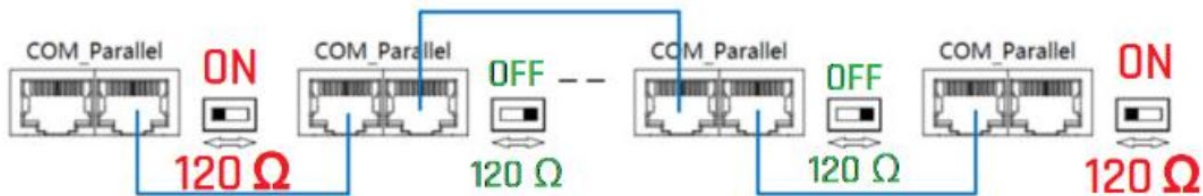
Battery- Battery Connection

The eVault MAX uses canbus to communicate from battery to battery.
This occurs over the COM_Parallel ports.
The ports are bidirectional.

Canbus communication requires resistor termination to function without blips.
Fortunately, the eVault MAX has internal canbus resistors!
Terminate these resistors by using the dipswitches in the upper service cabinet within the battery.

The dip switches should be in the ON position for the batteries at the end of the communication circuit.
The dip switches should be in the OFF position for the batteries in the middle of the communication circuit.

Example - 4 batteries with end battery dipswitch ON and middle battery dipswitches OFF



| Number of Batteries | Dipswitch Order |
|---------------------|-----------------|
| 1 | ON |

| | |
|---|-----------------------|
| 2 | ON, ON |
| 3 | ON, OFF, ON |
| 4 | ON, OFF, OFF, ON |
| 5 | ON, OFF, OFF, OFF, ON |

Note: the eVault MAX can parallel up to 20 battery units in closed loop communication.

Battery Touch Screen

The eVault has a touch screen. The bottom corners of the eVault are touch interactive.



Battery ID, bottom left

Protocol ID, bottom right

Battery ID

Number each battery 1,2,3,4,5.... until the end of the battery circuit.
Except, if only installing one eVault MAX, number the battery "0".

Protocol ID

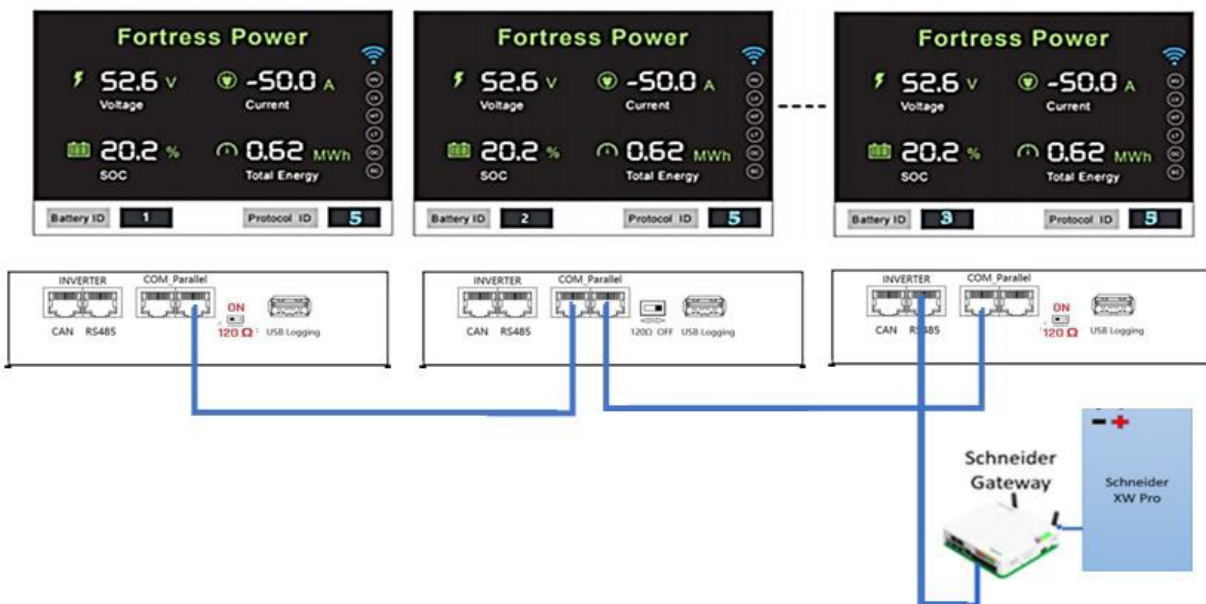
1 = Sol-Ark / Any inverter
2 = SMA

- 3 = Reserved
- 4 = Victron
- 5 = Schneider

Battery -Inverter Connection

If using only one battery, make sure the battery ID is set to 0. Turn the terminator switch to 120ohms and place the communication cable into the RS485 port. Finally switch to protocol 5.

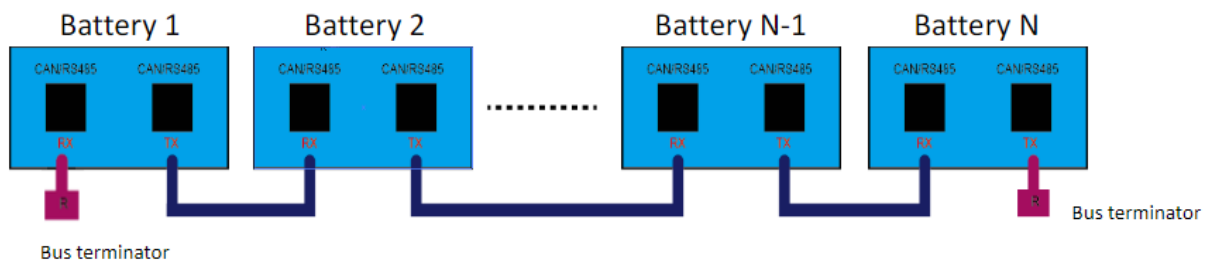
1. When paralleling multiple batteries, choose which battery will be the master and which will be the slave. You can do this by Setting the Master battery ID to 1 and set the rest in chronological order.
2. Place the communication cable on the Comm Parallel ports between each battery. To confirm that each battery is properly commissioned, each battery's status light must be solid green.
3. Switch the protocol ID to 5 on all batteries.
4. Place the remaining Format B Ethernet Cable onto the Rs485 port.
5. Cut and strip the end of the Format B cable
 1. connect wire 3 (green/white) from the battery to port 9 of the Insight Home (18 on the Gateway & Insight Facility)
 2. connect wire 5 (blue/white) from the battery to port 11 of the Insight Home (20 on the Gateway).
 3. connect wire 6 (green) from the battery to port 7 of the Insight Home (16 on the Gateway).



| From eVault MAX 18.5kWh | to Gateway/Insight Facility |
|--------------------------------|------------------------------------|
| green, (wire 6) | Gateway/Insight Facility port 16 |
| green-white, (wire 3) | Gateway/Insight Facility port 18 |
| blue-white, (wire 5) | Gateway/Insight Facility port 20 |

Battery-Battery Connection

It does not matter which battery communication ports are used for battery-battery or battery-inverter communication. The eVault communication ports are bi-directional and accomplish the same functions, regardless of labeling. In other words, you can connect the battery-battery communication cables in any communication ports between batteries, and plug the inverter into either side of the battery-battery communication chain.



One eVault battery:

It is not necessary to use the canbus terminator. Either port can connect to the inverter communication circuit.

One or two eVault batteries:

Place the included canbus terminator on both ends of the communication circuit. Remove one of the canbus terminators to wire any battery-inverter communication circuit.

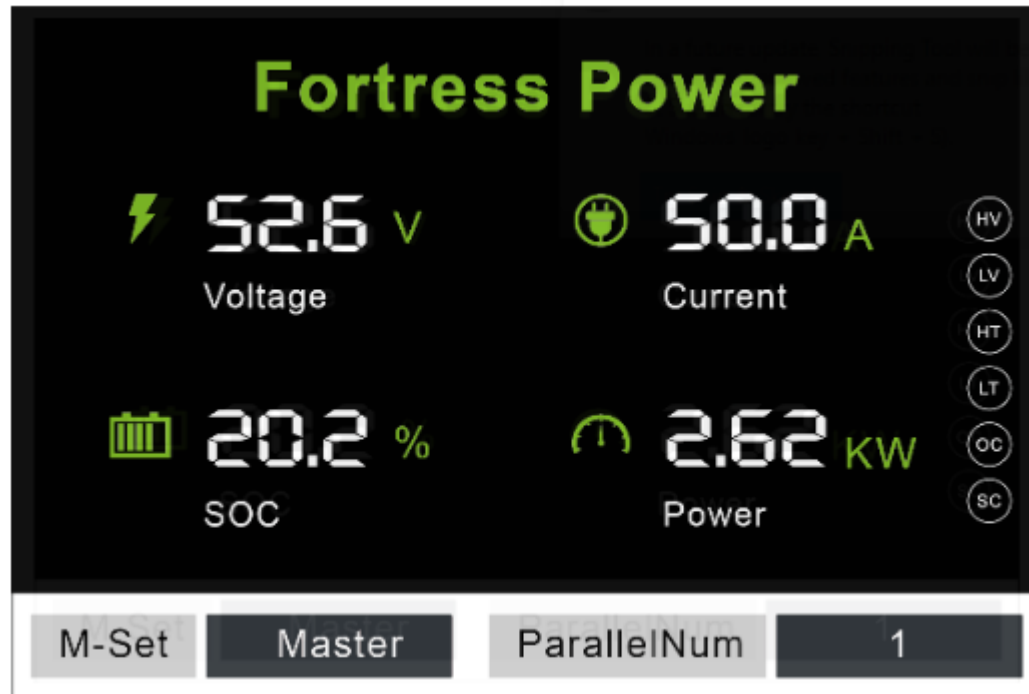
Three or more batteries:

Place the included canbus terminator on both ends of the communication circuit and do not wire the battery-inverter communication circuit. Operate the battery in "voltage mode" using "open loop" settings.

Battery Touch Screen

Programming the eVault LCD

The eVault has a touch screen. The bottom corners of the eVault are touch interactive.



The bottom left corner of the LCD toggles between the "master" and "slave" status of the battery.

The bottom right hand corner of the screen establishes battery number.

One eVault battery:

Designate the battery as "master" with Parallel Num "1"

Two or More eVault batteries:

Designate either end of the battery circuit as "master" with Parallel Num "X" where X is the total number of batteries installed.

Designate the other batteries as "slave" with Parallel Num "X" where X is the total number of batteries installed.

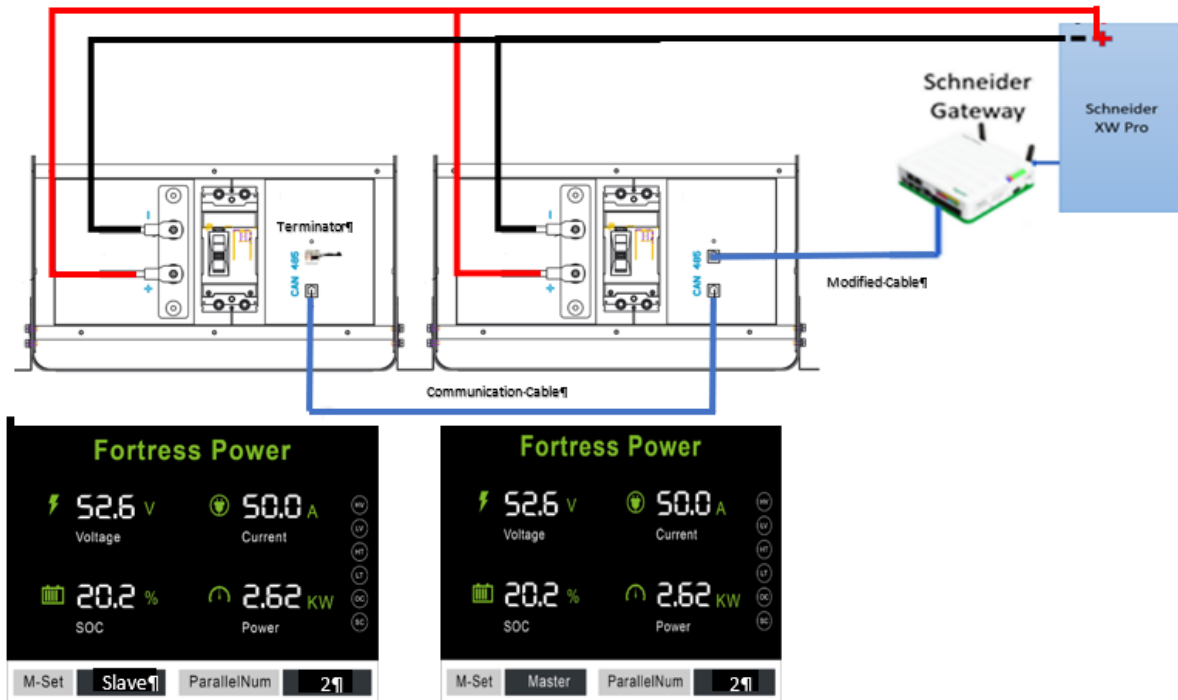
Notes:

1) If running multiple batteries in "Master - 1" mode, please charge all batteries to the same voltage prior to removing the communication cables and running as independent master batteries.

2) When paralleling multiple batteries, one battery may get "stuck" by not opening its relay contactors and flowing amperage in or out of the battery. Toggle the battery

between master and slave modes until it clicks on, and then leave in the appropriate master or slave mode. After the battery unsticks, power down and then power back up the battery banks using the push button if convenient.

Battery-Inverter Connection



*****Closed loop is only compatible for up to 1 battery. Make sure that each battery is updated to firmware version 7.7.Important! 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 push-button 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.
2. Turn Both batteries on. Set one of the batteries to Master.. If paralleling is successful, you should hear a clicking sound on both batteries after this step.

Note: The Master battery will communicate directly with the inverter Insert the remaining Format B Ethernet cable from the Master battery to the Gateway/Insight Home/Insight Facility.

Battery/Inverter Integration

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

Note: You can integrate the battery's BMS with other Schneider Models using a Gateway or an Insight Home/Facility but will not achieve Closed Loop.

The screenshot shows the 'BMS Setup' page in the InsightLocal interface. On the left is a navigation menu with options: Configuration, Network, Manage Passwords, Device Detection, Smart Energy Manager, and BMS Setup. The main area is titled 'Modbus settings' and contains a 'Serial Port A' configuration section. This section includes dropdown menus for 'Baud rate' (set to 19200), 'Parity' (set to none), and 'Stop bits' (set to 1). It also has input fields for 'Error Limit' (set to 3) and 'Timeout (ms)' (set to 1000). At the bottom right of this section are 'Apply' and 'Cancel' buttons.

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

The screenshot shows the 'Detect devices' page in the InsightLocal interface. The left navigation menu is the same as in the previous screenshot. The main area is titled 'Detect devices' and contains a table with two rows. The first row is for 'RS-485-1' with a 'Port' of '1' and a 'Range' of '2'. The second row is for 'RS-485-2' with empty 'Port' and 'Range' fields. A yellow mouse cursor is pointing at the 'Range' field of the second row. A 'Detect' button is located at the bottom right of the table.

The screenshot shows a 'Device detection' modal window overlaid on the 'Detect devices' page. The modal has a green header and a progress bar that is at 100%. Below the progress bar, it says 'Detection completed successfully. Devices found: 1'. A 'Close' button is at the bottom right of the modal. The background page is dimmed.

Dashboard **Devices** Events Setup About

2 devices Display List Icons

Device Overview
Inverter/Chargers
Other Devices

XW6848-21 0 Online

| | |
|----------------------|--------------------|
| Operating Mode | Operating |
| Inverter Status | APS Only |
| Charger Status | Qualifying AC |
| Unit Configuration | Split Phase Master |
| AC Load Active Power | 0 W |
| AC Load Voltage | 0 V |
| AC Load Frequency | 0 Hz |
| AC1 Input Power (W) | 0 W |
| AC1 Voltage | 0 V |
| AC1 Frequency | 0 Hz |
| AC2 Active Power | 0 W |
| AC2 Voltage | 0 V |
| AC2 Frequency | 0 Hz |
| DC Power | 0 W |

SEMB_BMS 0 Online

| | |
|--------------------|----------------------|
| Device Name | BMS |
| Device Association | House Battery Bank 1 |
| Current | -0.5 A |
| Voltage | 52.199 V |
| Temperature | 82.40 °F |
| State of Charge | 26 % |
| State of Health | 100 % |

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

Dashboard **Devices** Events Setup About

Device Overview
Inverter/Chargers
Other Devices

Other: BMS 0 Change Selection
Status Configuration

BMS

52.2v Voltage -0.5A Current 82.4°F Temperature 26% SOC

| | | | |
|--|----------------------|---------------------------|----------|
| Modbus Address | 230 | Battery Type | SEMB_BMS |
| Device Association | House Battery Bank 1 | Device Name | BMS |
| Device Number | 0 | Current | -0.5 A |
| Voltage | 52.2 V | Maximum Discharge Current | 60 A |
| Maximum Charge Current | 50 A | Maximum Charge Voltage | 56 V |
| Minimum Discharge Voltage | 48 V | Force Charge Low SOC | 1 |
| Force Charge Request | 1 | Charge Permitted | 1 |
| Calibration SOC | | Discharge Permitted | 1 |
| State | SelfCheck | Temperature | 82.40 °F |
| State of Charge | 26 % | State of Health | 100 % |
| Discharge Over Current Fault | 0 | Charge Over Current Fault | 0 |
| Under Temperature Fault | 0 | Over Temperature Fault | 0 |
| Under Voltage Fault | 0 | Over Voltage Fault | 0 |
| Cell Voltage Difference Too High Fault | 0 | Communication Error Fault | 0 |
| | | System Error Fault | 0 |

BMS 0 Online

Modbus Address 1
Modbus Port 1

Dashboard **Devices** Events Setup About

Device Overview
Inverter/Chargers
Other Devices

Other: BMS 0 Change Selection
Status Configuration

Basic Advanced

BMS_DEV

Device Association: House Battery Bank 1
Device Name: BMS
Device Number: 0

Apply Reset

BMS 0 Online

Modbus Address 1
Modbus Port 1

Associate the Battery's as House Battery Bank 1

Configuration

Network

Manage Passwords

Device Detection

Smart Energy Manager

BMS Setup

BMS Setup

Setup external Battery Management System (BMS)

Battery Type ? Fortress eFlex 5.4

Quantity ? 1

Progress 100%

Status Successful

CLEAR APPLY

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.**

Universal Parameter Settings (Closed Loop)

To modify device settings, Go to >Devices>Select Device> Configurations. For each setting, please input the following closed and open loop settings in case the battery loses communication with the inverter. To view all features, click on Advanced rather than Basic

Battery Settings

Battery Type?

LI-Ion

Charge Cycle?

External BMS

SOC Control Enable?

Enabled

Battery Bank Capacity?

105AH per eFlex
360AH per eVault

Ah

Maximum Charge Rate

(Recommended charge per battery / maximum inverter DC charge) = x 100

%

Maximum Bulk Charge Current

55A per eFlex
100A per eVault, 140A per eVault Max

A

Maximum Absorption Charge Current

55A per eFlex
100A per eVault, 140A per eVault Max

A

Maximum Float Charge Current

55A per eFlex
100A per eVault, 140A per eVault Max

A

Default Battery Temperature?

Warm

Absorption Time?

3600

s

Bulk/Boost Voltage Set Point

56.2

V

Absorption Voltage Set Point

56

V

Maximum Discharge Current

60A per eFlex
170A per eVault, 170A per eVault Max

A

Maximum Discharge Time Interval

8

s

Low Battery Cut Out?

48

V

Low Battery Cut Out Delay

10

s

Low Battery Cut Out Hysteresis

2

V

High Battery Cut Out?

61

V

Charge Cycle Timeout

1440

min

High SOC Cut Out?

98

%

High SOC Cut Out Delay

2

s

Low SOC Cut Out?

10

%

Low SOC Cut Out Delay

60

s

Apply

Reset

Charger Settings

Recharge Voltage?

51.3

V

Recharge SOC?

20

%

Recharge SOC Delay

60

s

Charge Block Start?

12

00

AM

Charge Block Stop?

12

00

AM

Apply

Reset

Battery Management System Settings

BMS Communication Loss Triggers Fault or Warning

Warning

BMS Communication Loss Trip Time

60

s

SOC Communication Loss Triggers Fault or Warning

Warning

SOC Communication Loss Trip Time

7

s

Comms Lost Battery Charge Voltage Limit

54.4

V

Comms Lost Battery Discharge Voltage Limit

51.4

V

Comms Lost Battery Charge Current Limit

30

A

Comms Lost Battery Discharge Current Limit

60

A

Charge Overcurrent Offset?

10

A

Charge Overcurrent Trip Time?

900

s

Discharge Overcurrent Offset?

20

A

Discharge Overcurrent Trip Time?

900

s

Overvoltage Offset?

2

V

Overvoltage Trip Time?

5

s

Undervoltage Offset?

1

V

Undervoltage Trip Time?

10

s

Apply

Reset

Settings for MPPT chargers

Charger Settings

Equalize Voltage Set Point

56 V

Equalize Support

Equalization Not Allowed

Bulk/Boost Voltage Set Point

54.4 V

Float Voltage Set Point

54.4 V

Recharge Voltage

53 V

Absorption Voltage Set Point

54.4 V

Absorption Time

60 min

Charge Cycle

3 Stage

Maximum Charge Rate

Recommended charge per battery /maximum DC charge) = x 100

Equalize Now

Disabled

Charge Mode

Primary

Default Battery Temperature

Warm

Apply

Reset

Universal Parameters Settings (Open Loop)

**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: 160A per battery eVault MAX: LFP-10: 100A per battery |
| Battery Capacity | eFlex: 105AH per battery eVault: 360AH per battery eVault MAX: 360AH per battery LFP-10: 200AH per battery |
| Max Charge Rate Percentage (%) | eFlex:55A 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: 360AH per battery 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

Important Note

Please Note, that these are recommended parameters for specific Mode Settings. Modes such as Off Grid and Back up require other additional modification aside from this document. Please reference [XW Pro Commissioning Guide - Schneider Electric Solar \(schneider-electric.com\)](https://www.schneider-electric.com) under Select System type. Make sure that you program the correct Region Settings on your inverter. Finally state the correct Time Zone settings under the Setup section.

Off-Grid

Settings for Inverter

Controls

Operating Mode

Operating

Apply

Reset

Reboot

Apply

Clear

-- Select an option --

Apply

Backup Mode

Enabled

Apply

Force Charger State

-- Select an option --

Apply

Charger

Enabled

Apply

Auxiliary Output Control

-- Select an option --

Apply

Configurations

Sell Enable/Disable

Disabled

Apply

Reset

Charger Settings

Recharge Voltage

51.3

V

Recharge SOC

20

%

Recharge SOC Delay

60

s

Charge Block Start

12

00

AM

Charge Block Stop

12

00

AM

Apply

Reset

Settings for MPPT chargers

Charger Settings

| | |
|---|---|
| <div> <div>Equalize Voltage Set Point</div> <div> <input type="range"/> <input type="text" value="56"/> V </div> </div> | <div> <div>Absorption Time</div> <div> <input type="range"/> <input type="text" value="60"/> min </div> </div> |
| <div> <div>Equalize Support</div> <div> <input type="checkbox"/> <div>Equalization Not Allowed</div> </div> </div> | <div> <div>Charge Cycle</div> <div> 3 Stage </div> </div> |
| <div> <div>Bulk/Boost Voltage Set Point</div> <div> <input type="range"/> <input type="text" value="54.4"/> V </div> </div> | <div> <div>Maximum Charge Rate</div> <div> Recommended charge per battery /maximum DC charge) = x 100 </div> </div> |
| <div> <div>Float Voltage Set Point</div> <div> <input type="range"/> <input type="text" value="54.4"/> V </div> </div> | <div> <div>Equalize Now</div> <div> <input type="checkbox"/> <div>Disabled</div> </div> </div> |
| <div> <div>Recharge Voltage</div> <div> <input type="range"/> <input type="text" value="53"/> V </div> </div> | <div> <div>Charge Mode</div> <div> Primary </div> </div> |
| <div> <div>Absorption Voltage Set Point</div> <div> <input type="range"/> <input type="text" value="54.4"/> V </div> </div> | <div> <div>Default Battery Temperature</div> <div> Warm </div> </div> |

Apply

Reset

AC Coupling, Back Up

Controls

Operating Mode

Operating

Apply

Reset

Reboot

Apply

Clear

-- Select an option --

Apply

Backup Mode

☒

Enabled

Apply

Force Charger State

-- Select an option --

Apply

Charger

☒

Enabled

Apply

Auxiliary Output Control

-- Select an option --

Apply

Configurations

Sell Enable/Disable

☐

Disabled

Apply

Reset

***Note: If DC Coupled, disable AC Coupling

Backup Mode Settings

AC Coupling

Enabled

Maximum Search Watts

50 W

AC PV Charge SOC Limit

90 %

Search Delay

2 s

Search Mode Enable

Disabled

Apply

Reset

Charger Settings

Recharge Voltage

53 V

Recharge SOC

85 %

Recharge SOC Delay

60 s

Charge Block Start

12 00 AM

Charge Block Stop

12 00 AM

Apply

Reset

*** Note: Disable Grid Selling since Pv is directly connected to meter.

Grid-Tied Export

Controls

Controls

Operating Mode

Operating

Apply

Force Charger State

Apply

Reset

Reboot

Apply

Charger

Enabled

Apply

Clear

Apply

Auxiliary Output Control

Apply

Backup Mode

Enabled

Apply

Configurations

Sell Enable/Disable

Enabled

Apply

Reset

Charger Settings

Recharge Voltage

51.3

V

Recharge SOC

20

%

Recharge SOC Delay

60

s

Charge Block Start

12

00

AM

Charge Block Stop

12

00

AM

Apply

Reset

Grid Energy Management (Grid Support)

Grid Support

Enabled

Grid Support Voltage

64

V

Grid Support SOC

99

%

Grid Support SOC Exit Delay

60

s

Maximum Export (Sell) Sell Amps

0

A

Self-Consumption (Zero Grid Export)

Controls

Operating Mode

Operating

Apply

Force Charger State

Apply

Reset

Reboot

Apply

Charger

☒

Enabled

Apply

Clear

Apply

Auxiliary Output Control

Apply

Backup Mode

☒

Enabled

Apply

Configurations

Sell Enable/Disable

☒

Enabled

Apply

Reset

Charger Settings

Recharge Voltage

51.3 V

Recharge SOC

20 %

Recharge SOC Delay

60 s

Charge Block Start

12

00

AM

Charge Block Stop

12

00

AM

Apply

Reset

Grid Support

☒

Enabled

Grid Support Voltage

51.7 V

Grid Support SOC

25 %

Grid Support SOC Exit Delay

60 s

Maximum Export (Sell) Sell Amps

0 A

Sell Delay 40 Sec

☐

Disabled

Generator Settings

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 assuming an open circuit resting measurement. The settings that would discharge the battery down to 49V, are 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.

Firmware Updates

Firmware updates are rarely needed. Most firmware updates solve a minor issue - major firmware updates typically are adding compatibility with new-to-market hardware or to accommodate developments in battery-inverter communication.

Most of our installers use the firmware update tool to confirm proper system commissioning or unlock batteries from their protective modes during a deep discharge.

To update the battery firmware, please visit <https://www.fortresspower.com/firmware>. Solar contractors should visit <https://www.fortresspower.com/support> and request a firmware update tool.

If you cannot determine the instructions, we are happy to assist you with a remotely - there are things we can do before you visit site to make your site visit much easier, and we can also assist you onsite (preferably scheduled in advance).

Firmware update tools are available for sale

at <https://www.fortresspower.com/products/firmware-update-tool/>

However, we recommend end users wait for the [Fortress Guardian Hub](#) instead of buying the firmware update tool.

Voltage to % Chart

The voltage curve of lithium is very flat from the bottom 20% of the battery to the top 80% of the battery, at which point it becomes rather steep at both ends. It is very easy to tell when a battery is moving towards the bottom or top of its range - the middle bit is hard to guess because it will fluctuate with load. Here is a very loose approximation of Fortress battery voltage and state-of-charge:

| Resting Voltage | % State of Charge (SoC) |
|-----------------|-------------------------|
| 48V | 0 |
| 51V | 10 |
| 51.5V | 20 |
| 52V | 30 |
| 52.3V | 40 |
| 52.4V | 50 |
| 52.5V | 60 |

| | |
|-------|-----|
| 52.8V | 70 |
| 53.2V | 80 |
| 53.7V | 90 |
| >54V | 100 |