



How To Set Up Fortress Power Lithium Batteries Using ~~Schneider~~ Ark ~~Inverter~~ Equipment

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Introduction

This integration guide will help set up the charge/discharge parameters of Fortress Power batteries as they relate to ~~Sol-ark~~ Schneider inverters, as well as the setup of closed-loop communication between the eFlex 5.4 and ~~the Sol-ark~~ Schneider. For any additional help, please contact techsupport@fortresspower.com



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How To Set Up Fortress Power Lithium Batteries Using Schneider Ark Inverter Equipment

Open Loop Settings for Fortress Batteries with Schneider

Inverters

BatteryCharger Setting > Custom Setting	
	80% DoD, 6000 cycles 90% DoD, 3000 cycles
Battery Type	Custom
Charge Cycle	2StgNoFloat
Bulk Voltage	54.4 V 54.6 V
Battery Capacity	eFlex: 105AH per battery LFP-10: 200AH per battery eVault: 360AH per battery
Max Bulk Current Charge Rate	eFlex: 55A per battery LFP-10: 50A per battery eVault: 100A per battery LFP-10: 750A per battery
Max A-Discharge Rate Current	eFlex: 60A per battery LFP-10: 80A per battery eVault: 150A per battery LFP-10: 80A per battery
Battery Capacity	eFlex: 105AH per battery eVault: 360AH per battery LFP-10: 200AH per battery
Max Charge Rate Percentage Max Charge Rate	eFlex: 6055A per battery eVault: 100A per battery LFP-10: 7500A per battery Divided by Total Inverter DC Amperage
Default Battery Temperature	Warm
Use Battery-charged Recharge Volts	Select 51.35
Use Batt % charged-Grid Support Volts**	-5354.0
No Battery Absorb Volts	-54.4
BMS-Lithium-Batt-01-Absorb Time	-1 Hour
Active Battery Charge Block Start	-Default
Charge Block Stop	Default
Charge Advanced Settings > Inverter Settings	
Start V Low Battery Cut Out Voltage	51.7V / 30% 48V

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Inverter Equipment**

A	eFlex:55A per battery LFP-10: 50A per battery eVault:100A per battery	eFlex:60A per battery LFP-10: 80A per battery eVault:150A per battery
Float-V/LBCO Hysteresis	54.4 V±2.0V	
Absorption V	54.4 V	54.6 V
Equalization-V/LBCO Delay	55-55±10 Sec	
High Battery Cut Out Voltage	eFlex: 61V eVault: 61V LFP-10: 63V±30 days	
Search Watts	0 hours-Default	
Search Delay	Default	
Discharge		
Shutdown	51.4V / 20%	
Low-Batt	51.7V / 30%	50.7V / 10%
Restart	51.9V / 25%	
Batt Resistance	5mOhms	
Batt Charge Efficiency	98%	



Please reassess capacity and charge/discharge current settings, when Fortress battery quantities change.

****The Parameter Setting for Grid-tie Sell Mode:**

In a DC coupled system, **Grid Support** or **Enhanced Grid Support** mode supplies PV power to the loads and sells surplus power to the grid. This mode of operation keeps the batteries as completely charged as possible. **The Enhanced Grid Support only works with lead acid batteries, please disable it when you use Fortress batteries.**

Grid Support Mode is used for the systems with DC Sources not communication over Xanbus.

Advanced Setting > Inverter Settings	
Charger	Enabled
Enhanced Grid Support	N/A
Grid Support	53V
Recharge Volts	51.3 V
Sell Mode	Enabled
Max Sell Amps**	PV array size ÷ 240V ÷ total inverter output kW
Advanced Setting > Charger Setting	
Recharge Volts	51.3 V

** For example, if the system has a 10 KW PV array and 2 of XW+ 5848 inverters, the Max Sell Amps per inverter will be 10,000W/240V/2 = 21A

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Open Loop Settings with Schneider Charge Controllers

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

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Advanced Setting > Charger Setting	
Battery Type	Custom
Custom Setting	
	80% DoD, 6000 cycles 90% DoD, 3000 cycles
Charge Mode	3 Stage
Eqlz Support	Disabled
Bulk Voltage	54.4 V 54.6 V
Absorb Voltage	54.4 V 54.6 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 LFP-10: 200AH per battery
Max Charge Rate Percentage*	eFlex:55A per battery eFlex: 60A per battery eVault:100A per battery eVault:150A per battery LFP-10: 70A per battery LFP-10: 80A per battery
	Divide by total CC amp output Divide by total CC amp output
Charge Cycle	Warm
Recharge Volts	51.3 V
Absorb Time	1 Hour
Default Battery Temperature	Warm
Battery Voltage (Auto-detected)	48V

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Setting up Closed-Loop Communication between eFlex 5.4 and Schneider XW Pro ~~Ark~~

All Fortress Power batteries work in open-loop communication mode—that is, with voltage detection. However, closed-loop communication between the eFlex 5.4 and the Schneider inverter improves the efficiency of a lithium battery. The following is a guide to setting up closed-loop communication between the eFlex 5.4 and the Schneider inverter.

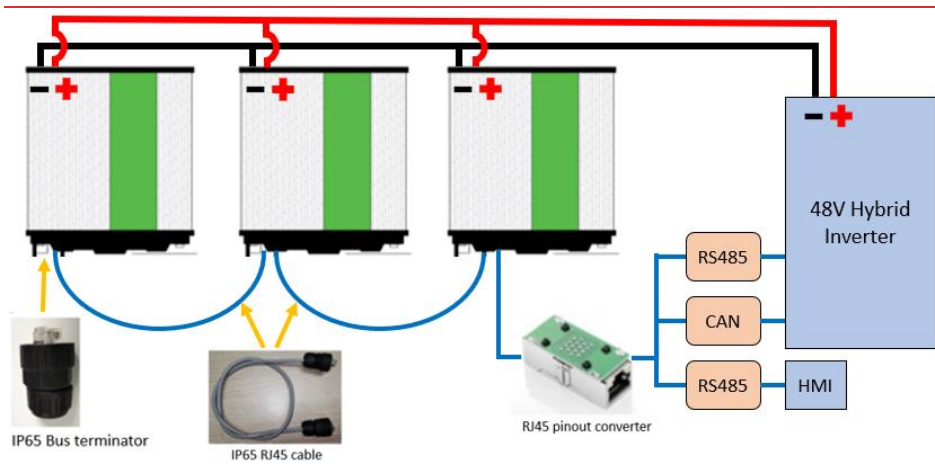
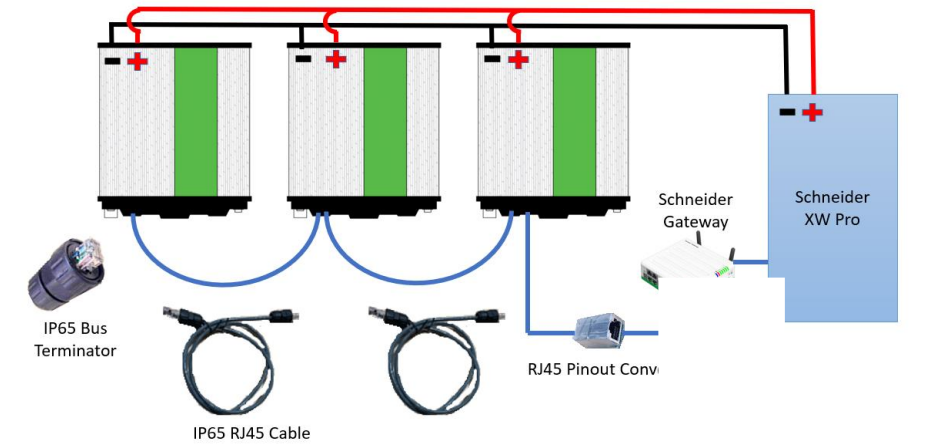
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How To Set Up Fortress Power Lithium Batteries Using ~~Schneider-Ark~~
~~Inverter~~Equipment



Connecting the eFlex to the ~~Sol-ark~~Schneider inverter

1. Connect a CAT6 cable into the eFlex and then into the RJ46 pinout converter. ([Exhibit A](#)).



How To Set Up Fortress Power Lithium Batteries Using ~~Schneider~~ Ark ~~Inverter~~ Equipment

2. Using another CAT6 cable, cut off one end and connect pin 7+8 (brown-white + brown) and connect the pin 7 (brown-white) to port 18 and pin 8 (brown) to port 20 on the Conext Gateway (Exhibit B).
3. Power on the eFlex and Schneider as usual and connect to the Conext Insight. Navigate to the devices -> Inverter\Charger -> Configuration -> Advanced Charger settings should be set to Lithium ion battery with an charge cycle set to external BMS. Grid Support settings should be set to state of charge control Battery Management System settings should be set to Fault on Loss of BMS Status and loss of State of Charge information. (Exhibit C)
4. Navigate to the Schneider Devices -> BMS Menu -> Battery Bank 1 -> Apply Make sure the BMS is associated with Battery Bank 1 by clicking "Apply" (Exhibit D)

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Appendix

~~This data can also be monitored remotely using Sol-ark's monitoring software and wifi module. For remote monitoring using Sol-ark the wifi module, please refer to the guide on the Sol-ark website.~~

How To Set Up Fortress Power Lithium Batteries Using Schneider Ark
Inverter Equipment

Appendix

Exhibit A



Exhibit B

RJ45 pinout
connector From



From eFlex Can/RJ485
 Gateway Port 18 brown-white RJ45 Pin 7
 Gateway Port 20 – brown RJ45 Pin 8

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How To Set Up Fortress Power Lithium Batteries Using ~~Schneider~~ Ark ~~Inverter~~ Equipment

Exhibit C

InsightLocal Version: v1.09 | Build number: 418 | Connect Gateway

Dashboard **Devices** Events Setup About

Device Overview Inverter/Charger: KW9848-216 Charge Selection
Inverter/Chargers Status Performance Events Configuration Diagnostics Firmware Grid Codes
Charge Controllers
Other Devices

Basic Advanced

- Controls
- Inverter Settings
- Charger Settings
- AC Settings
- Grid Support
- Generator Support
- Auxiliary Relay
- Multisync Configuration
- Associations
- Advanced Features
- Advanced Device Settings
- Battery Management System Settings
- Device Instance
- Modbus Settings

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Inverter Equipment**

Charger Settings

Battery Type: Li-Ion

Battery Bank Capacity: 210 Ah

Maximum Charge Rate: 100 %

Charge Cycle: External BMS

Recharge Voltage: 51.5 V

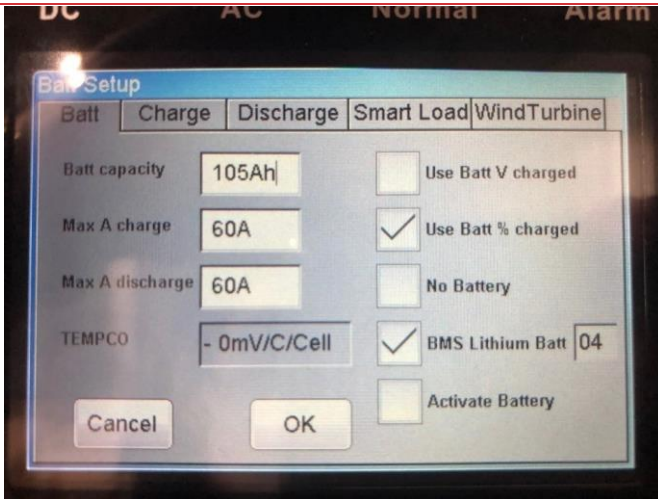
Apply Reset

Note: 105 Amp hours per EFLEX

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Note: Battery Bank Capacity

53V

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Grid Support

Grid Support	<input checked="" type="checkbox"/>	Enabled	Sell Block End	12:00 AM
Grid Support Voltage	<input type="text" value="53"/>	V	SoC Grid Forming Limit	<input type="text" value="80"/>
Maximum Sell Scale Percentage	<input type="text" value="100"/>	%	EPC Enable	<input type="checkbox"/> Disabled
Maximum Sell Amps	<input type="text" value="10"/>	A	State of Charge Control	<input checked="" type="checkbox"/> Enabled
Load Shave	<input type="checkbox"/>	Disabled		
Load Shave Amps	<input type="text" value="48"/>	A		

Battery Management System Settings

Fault on loss of BMS status information	<input checked="" type="checkbox"/>	Enabled	Discharge Overcurrent Offset	<input type="text" value="62.9"/>	A
BMS Status Lost Fault Trip time	<input type="text" value="200"/>	s	Discharge Overcurrent Trip Time	<input type="text" value="2"/>	s
Charge Voltage Limit (BMS status lost)	<input type="text" value="55"/>	V	DC Undervoltage Offset	<input type="text" value="3"/>	V
Discharge Voltage Limit (BMS status lost)	<input type="text" value="51.4"/>	V	DC Undervoltage Trip Time	<input type="text" value="10"/>	s
Charge Current Limit (BMS status lost)	<input type="text" value="55"/>	A	DC Overvoltage Offset	<input type="text" value="1"/>	V
Discharge Current Limit (BMS status lost)	<input type="text" value="60"/>	A	DC Overvoltage Trip time	<input type="text" value="5"/>	s
Charge Overcurrent Offset	<input type="text" value="10"/>	A	Fault on loss of State of Charge information	<input checked="" type="checkbox"/>	Enabled
Charge Overcurrent Trip Time	<input type="text" value="600"/>	s			

Note: Enable Fault on loss of BMS Status / State of Charge Information

Apply Reset

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How To Set Up Fortress Power Lithium Batteries Using ~~Schneider~~ Ark ~~Inverter~~ Equipment

Exhibit D

InsightLocal Conext Gateway

Dashboard **Devices** Events Setup About

Device Overview
Inverter/Chargers
Charge Controllers
Other Devices

Other: BMS 0 Change Selection
Status Configuration

BMS_DEV

Device Association: House Battery Bank 1

Note: Be sure to click apply!

Apply Reset

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54.90 V	-1.00 A	28.0 C	100%	0Ah			
56.0V	44.8V	30A	65A	0x00	0x00		
1	0.00 V	0.00 A	0.0 C	0.0%	0.0V	0.0A	0 00
2	54.90 V	-1.90 A	28.0 C	100.0%	56.0V	30.0A	0 00
3	0.00 V	0.00 A	0.0 C	0.0%	0.0V	0.0A	0 00
4	0.00 V	0.00 A	0.0 C	0.0%	0.0V	0.0A	0 00
5	0.00 V	0.00 A	0.0 C	0.0%	0.0V	0.0A	0 00
6	0.00 V	0.00 A	0.0 C	0.0%	0.0V	0.0A	0 00
7	0.00 V	0.00 A	0.0 C	0.0%	0.0V	0.0A	0 00
8	0.00 V	0.00 A	0.0 C	0.0%	0.0V	0.0A	0 00
9	0.00 V	0.00 A	0.0 C	0.0%	0.0V	0.0A	0 00
10	0.00 V	0.00 A	0.0 C	0.0%	0.0V	0.0A	0 00
11	0.00 V	0.00 A	0.0 C	0.0%	0.0V	0.0A	0 00
12	0.00 V	0.00 A	0.0 C	0.0%	0.0V	0.0A	0 00
13	0.00 V	0.00 A	0.0 C	0.0%	0.0V	0.0A	0 00