

How To Set Up Fortress Power Lithium Batteries Using Sol-Ark Inverter

Introduction

This integration guide will help set up the charge/discharge parameters of Fortress Power batteries as they relate to Sol-ark inverters, as well as closed-loop communication

Datasheets / Manuals: <https://www.fortresspower.com/resources/>

Email: techsupport@fortresspower.com

Discord Support: <https://discord.gg/kxX6QMjKfW>

Phone: (877) 497-6937 x 2

Hours: 8:30AM - 6:30PM EST

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



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⚠ Remember to press OK when programming with the SolArk LCD screen!

1. Connect communication cables between each battery with canbus terminators at each end. It does not matter which communication port on the battery is used.
2. Program open loop settings. These settings may adjust if establishing closed loop communication.
Do not use %-state of charge controls without establishing closed loop communication.

Batt Setup			
Batt	Charge Discharge Smart Load Wind		
Batt Capacity	105Ah per eFlex 200Ah per LFP-10 360Ah per eVault	<input checked="" type="checkbox"/> Use Batt V charged	
Max A Charge	55A per eFlex 80A per LFP-10 100A per eVault	<input type="checkbox"/> Use Batt % Charged	
Max A Discharge	60A per eFlex 100A per LFP-10 180A per eVault	<input type="checkbox"/> No Battery	
Tempco	-5mV/C/Cell	<input type="checkbox"/> BMS Lithium Batt	04
		<input checked="" type="checkbox"/> Activate Battery	

Batt Setup			
Batt	Charge	Discharge Smart Load Wind	
Start V	50.5V	51.4V	Float V 54.4V
Start %	10%	20%	Absorption V 54.4V
A	55 A per eFlex 80 A per LFP-10 170 A per eVault		Equalization V 55.5V
	<input type="checkbox"/> Gen Charge	<input checked="" type="checkbox"/> Grid Charge	30 days
			0 hours

Batt Setup			
Batt	Charge	Discharge	Smart Load Wind
Shutdown	50V	10%	Batt Resistance 5 mOhms
Low Batt	51.4V	20%	Batt Charge Efficiency 98%
Restart	51.8V	25%	BMS_Err_Stop <input type="checkbox"/>
Batt Empty V	49V		

Start V will turn the generator or grid charge on. It should be lower than the lowest "sell back" setting under grid parameters to avoid nuisance tripping.

Shutdown V will disconnect the battery from the inverter – but the battery BMS will remain powered on. Program an alert to notify the end user to prevent accidental deep discharging.

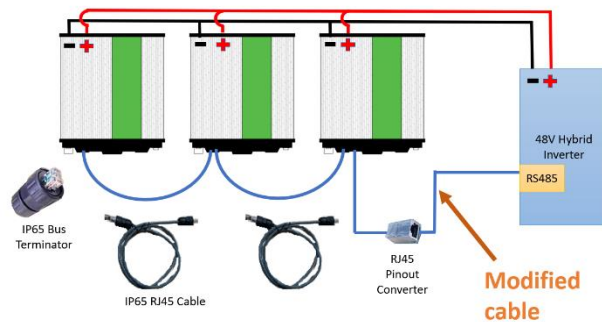
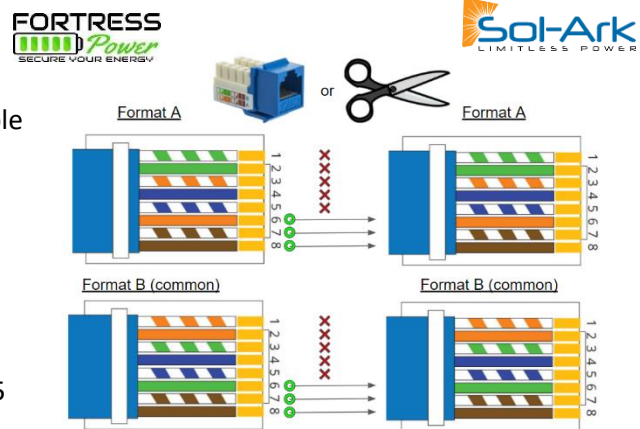
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3. Make the battery-to-inverter communication cable.

eFlex Instructions:

- a) RJ45 pins 6+7+8 correspond to SolArk pins 6+7+8. Physically cut into the ethernet cable jacket and snip the internal wires 1-5, keeping wires 6+7+8. Alternately, use an ethernet keystone. *Up to 15 eFlex can be programmed closed loop with the SolArk inverters.*

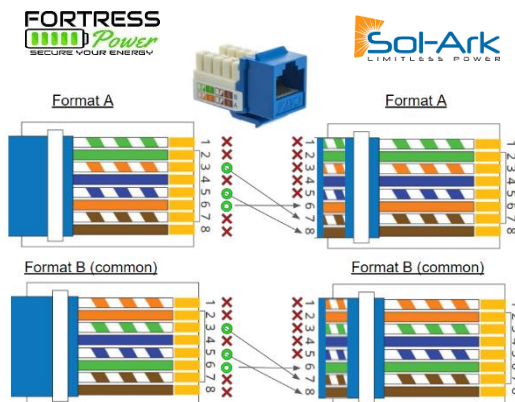
- b) When installing the eFlex, also use the RJ45 pinout converter and an unmodified ethernet cable. It does not matter which side of the communication circuit the modified battery-to-inverter cable goes on.



eVault Instructions (up to two eVault):

- a) eVault RJ45 pins 3+5+6 correspond to SolArk pins 6+7+8. A keystone is recommended to make the crossover. Tool-less ethernet keystones are very useful! *Up to 2 eVaults can be programmed closed loop with the SolArk inverters. Otherwise use Open Loop settings.*

Ex. <https://www.amazon.com/Tool-Less-Keystone-AMPCOM-Self-Locking-Punch-Down/dp/B07JCSPX21/>

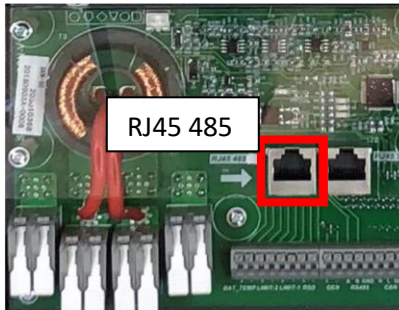


Note: eFlex + eVaults purchased before March 2020 should omit the grounded communication wire #6.

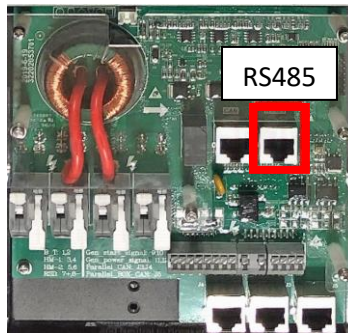
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- Plug the battery-to-inverter data cable onto either end of the battery communication daisy chain, and then into the appropriate data port on the SolArk inverter.

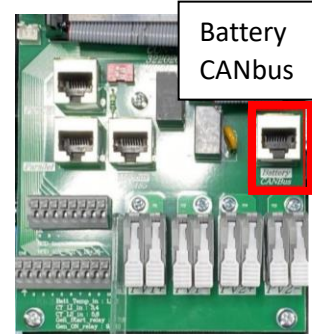
Indoor 8kW
RJ45/485 port



Indoor 12kW
RS485/MOD port



Outdoor 8kW + 12kW
Battery / CANbus port



- Program the closed-loop inverter settings. In the battery set-up menu, select **BMS 04** and **Use %-based controls**. Disabling the BMS alarm is optional. Some settings will adjust automatically.

Batt Setup			
Batt	Charge Discharge Smart Load Wind		
Batt Capacity	105Ah per eFlex 360Ah per eVault	<input type="checkbox"/> Use Batt V charged	
Max A Charge	100A per eFlex 185A per eVault	<input checked="" type="checkbox"/> Use Batt % Charged	
Max A Discharge	100A per eFlex 185A per eVault	<input type="checkbox"/> No Battery	
Tempco	-5mV/C/Cell	<input checked="" type="checkbox"/> BMS Lithium Batt 04	
		<input type="checkbox"/> Activate Battery	

Batt Setup					
Batt	Charge	Discharge Smart Load Wind			
Start V	50.5V	51.4V	Float V	56V	
Start %	10%	20%	Absorption V	56V	
A	100A per eFlex 185A per eVault		Equalization V	56V	
					30 days
	<input type="checkbox"/> Gen Charge	<input checked="" type="checkbox"/> Grid Charge			0 hours

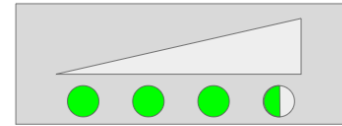
Batt Setup					
Batt	Charge	Discharge	Smart Load Wind		
Shutdown	50V	10%	Batt Resistance	5 mOhms	
Low Batt	51.4V	20%	Batt Charge Efficiency	98%	
Restart	51.8V	25%	BMS_Err_Stop	<input type="checkbox"/>	
Batt Empty V	49V				

Some settings (such as float, absorption, and equalization voltage) will adjust automatically after enabling closed loop communication successfully.

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6. Next steps:

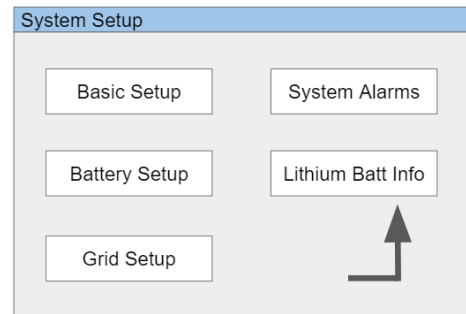
Verify the batteries are charging by looking at the eVault screen and confirming a positive charging amperage or confirming a blinking state of charge indicator light on the eFlex. Parallel batteries may show different levels of amperage when “balancing” for the first time. Parallel batteries should be within 0.5V before commissioning in parallel. It may be necessary to charge or discharge the batteries individually until they are within 0.5V of each other.



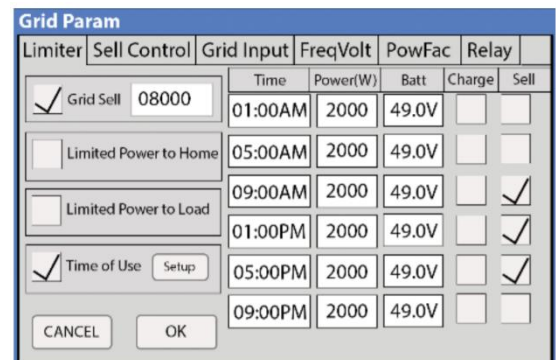
A blinking State of Charge Indicator Light confirms that the eFlex is charging.

If the batteries are resting at 54.4V or showing a 100% SoC, but the status indicator lights are not full, adjust the float and absorb voltage to 55.5V for ~30 minutes under full sun. This will reset the state of charge indicator computer.

Confirm successful closed-loop communication by clicking the lithium battery info button on the SolArk screen. Line #2 will be filled in with battery information (the other fields will be zero).



Program the grid parameter settings as a function of the site-specific electric rate structure and desired level of reserve capacity. Understand how to program these settings before visiting site. A 20% state of charge is around 51.2V-51.4V. A 95% charge is around 53.7V. A 100% charge is 54.4V resting. The default settings of Solark manual show taking the battery down to 49V. This 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.



Limiter	Sell Control	Grid Input	Freq/Volt	Pow/Fac	Relay	
		Time	Power(W)	Batt	Charge	Sell
<input checked="" type="checkbox"/>	Grid Sell	08000				
	Limited Power to Home	05:00AM	2000	49.0V	<input type="checkbox"/>	<input type="checkbox"/>
	Limited Power to Load	09:00AM	2000	49.0V	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		01:00PM	2000	49.0V	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Time of Use	Setup				
		05:00PM	2000	49.0V	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		09:00PM	2000	49.0V	<input type="checkbox"/>	<input type="checkbox"/>

Graphic is not for programming purposes.