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

For additional technical support:

Datasheets / Manuals: https://www.fortresspower.com/resources/
Email: techsupport@fortresspower.com
Discord Support: https://discord.gg/kxX6QMjKFw
Phone: (877) 497-6937 x 2
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⚠️ ***Don't forget 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 before enabling closed-loop BMS control. Do not use %-state of charge controls without establishing closed loop communication. **See Exhibits C, D, and E.**
3. Make the battery-to-inverter communication cable. **See Exhibit A.**
   a. eFlex RJ45 pins 7+8 correspond to SolArk pins 7+8. Cut into the ethernet cable jacket and snip wires 1-5 or use a keystone. ***Up to 15 eFlex can be programmed closed loop with the SolArk inverters.***
   b. eVault RJ45 pins 3+5 correspond to SolArk pins 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/
4. Plug the battery-to-inverter data cable into either side of the battery communication circuit. **See Exhibit B.**
   a. Use the RJ45 /485 port for the 8kW model.
   b. Use the RS485/MOD port for the 12kW indoor model.
   c. Use the CAN/batt port for the 12kW outdoor model.
5. In the battery set-up menu, select **BMS 04** and **Use %-based controls**. We do not use the activate battery setting. Disabling the BMS alarm is optional. See exhibits below.
6. Inspect the closed loop settings and make programming adjustments where necessary.
7. Program the grid parameter settings as a function of the client's electric rate structure and desired level or reserve capacity (site specific).

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Notes:

A. Closed-loop is successful by seeing the battery %-based state of charge on the main screen, as well as a single line of BMS information on the battery info menu. If this communication is not established, please reinspect or remake your data communication cable.

B. Enabling the BMS communication will change Absorb, Float, and Equalization voltages. You may need to adjust other parameters, such as charge/discharge amperage.

C. Some settings are site-specific. Grid-tied installers are welcome to adjust settings based on different use cases.

Exhibit A – Making the Cross-Over Cable (Step 3)

eFlex to SolArk	eVault to SolArk (up to 2 eVault)
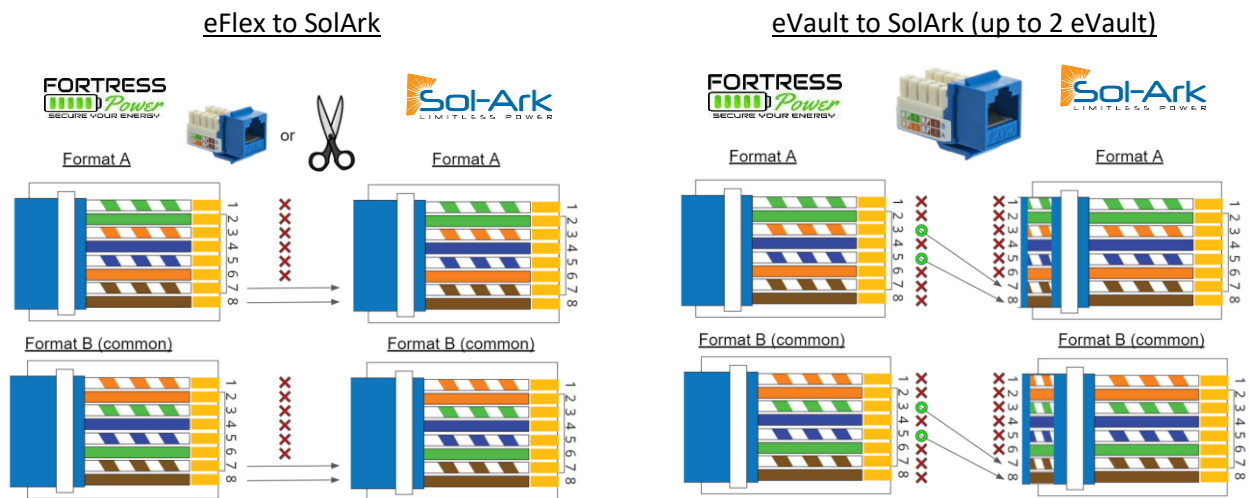
Note: eFlex + eVault modbus communication does not require a grounded communication wire.

Exhibit B – Identifying the Sol-Ark Communication Port

Indoor 8kW – RJ45/485 port   Indoor 12kW – RS485 port   Outdoor 8kW + 12kW Battery / CANbus port
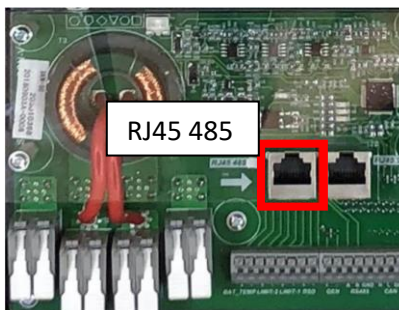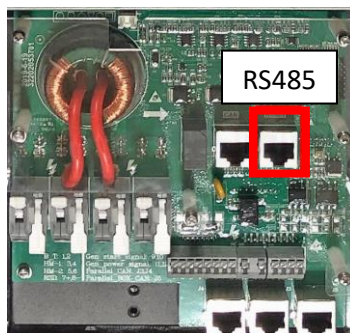
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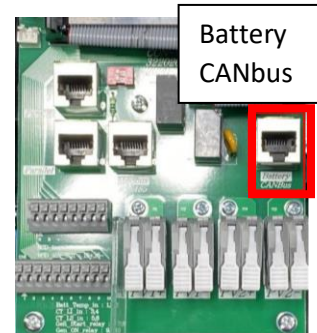
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Exhibit C – Batt Setup > Batt Tab

Open Loop Settings

Batt Setup		
Batt	Charge | Discharge | Smart Load | Wind	
Batt Capacity	105Ah per eFlex / 200Ah per LFP-10 / 360Ah per eVault	☑ Use Batt V charged
Max A Charge	55A per eFlex / 100A per LFP-10 / 100A per eVault	☐ Use Batt % Charged
		☐ No Battery
Max A Discharge	60A per eFlex / 100A per LFP-10 / 180A per eVault	☐ BMS Lithium Batt 04
		☐ Activate Battery
Tempco	-5mV/C/Cell	

Closed Loop Settings

Batt Setup		
Batt	Charge | Discharge | Smart Load | Wind	
Batt Capacity	105Ah per eFlex / 360Ah per eVault	☐ Use Batt V charged
Max A Charge	**100A per eFlex / 185A per eVault**	☑ Use Batt % Charged
		☐ No Battery
Max A Discharge	**100A per eFlex / 185A per eVault**	☑ BMS Lithium Batt 04
		☐ Activate Battery
Tempco	-5mV/C/Cell	

Note: Max Charge and Discharge amperage need to be reprogrammed after enabling closed loop, but do not need to be reprogrammed back to open loop settings if troubleshooting.

Exhibit D – Batt Setup > Charge Tab

Open Loop Settings

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
		Equalization V	55.5V
A	55 A per eFlex / 100 A per LFP-10 / 170 A per eVault		30 days
☐ Gen Charge ☑ Grid Charge			0 hours

Closed Loop Settings

Batt Setup			
Batt	Charge	Discharge | Smart Load | Wind	
Start V	50.5V 51.4V	Float V	56V
Start %	10% 20%	Absorption V	56V
		Equalization V	56V
A	**100A per eFlex / 185A per eVault**		30 days
☐ Gen Charge ☑ Grid Charge			0 hours

Note: Start V or % can be increased to always keep the battery at a more full charge (i.e. net-metering or backup only installations). Off-grid customers usually program the generator as a grid charge. Off grid customers with very low load may elect to set grid/gen charge to 10%-15% instead of 20%.

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Exhibit E – Batt Setup > Discharge Tab

Open Loop Settings   Closed Loop Settings

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 [ ]

Batt Empty V [49V]

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 [ ]

Batt Empty V [49V]

Note: Battery shutdown and empty voltages may be reduced by 1V-2V if site-specific conditions are causing the inverter to shut down prematurely. Current settings are conservative to prevent deep discharging of the battery.

On site? Why not register the product warranty:
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