

### RaVolt Standard Sol-Ark Settings/Setup for Powersync Batteries

- Confirm the most recent software version is currently installed on the Sol-Ark by referencing this location on the sol-ark website
- Please be sure to follow the order of settings in this document when first setting up a Sol-Ark. Sol-ark battery setup should be done in Open Voltage % mode (w/ PV turned off) prior to setting into LI-Batt mode.
- Be sure to hit the “OK” button on each tab in order to save the changes made to the settings before moving on to the next

### Battery Setup

Ah = Batt qty \*100  
(ex: 3 batt = 300Ah)

Batt	Charge	Discharge	Smart Load	Wind Turbine
Batt Capacity	400Ah		<input type="checkbox"/> Use Batt V Charged	
Max A Charge	100A		<input checked="" type="checkbox"/> Use Batt % Charged	
Max A Discharge	200A		<input type="checkbox"/> No Battery	
TEMPCO	-0mV/C/Cell		<input type="checkbox"/> BMS Lithium Batt	00
			<input checked="" type="checkbox"/> Activate Battery	
CANCEL		OK		

**Batt Setup**

Batt	Charge	Discharge	Smart Load
StartV	49.0V	49.0V	Float V 56V
Start%	30%	10%	Absorbion V 56.8
A	40A	100A	Equalization V 55V
<input type="checkbox"/> Gen Charge	<input checked="" type="checkbox"/> Grid Charge	30 Days	0.0 Hours
Generator Exercise Cycle Day & Time>>			Mon 08 :00 20min
<input type="checkbox"/> Gen Force	CANCEL		OK

**Batt Setup**

Batt	Charge	Discharge	Smart Load
Shutdown	46.0V	2%	Batt Resistance 7 mOhms
Low Batt	47.5V	7%	Batt Charge Efficiency 99.0%
Restart	52.0V	25%	<input type="checkbox"/> BMS_Err_Stop
Batt Empty V	48.0V		
CANCEL		OK	

**Batt Setup**

Batt	Charge	Discharge	Smart Load
<input type="checkbox"/>	Use gen input as load output	<input type="checkbox"/>	For AC Coupled Input to Gen
<input type="checkbox"/>	On Grid always on	High Frz	62.00Hz
Smart Load OFF Batt			
51.0V	80%	<input type="checkbox"/>	AC couple on load side
Smart Load ON Batt			
54.0V	90%		
Solar Power(W)			
500W			
		CANCEL	OK

Now that the open voltage settings are correct please go back into the Batt tab to set the batteries into LI-Batt mode as shown below

**Batt Setup**

Ah = Batt qty \* 100  
(ex: 3 batt = 300Ah)

Batt	Charge	Discharge	Smart Load	Wind Turbine
Batt Capacity	400Ah	<input type="checkbox"/>	Use Batt V Charged	
Max A Charge	100A	<input type="checkbox"/>	Use Batt % Charged	
Max A Discharge	200A	<input type="checkbox"/>	No Battery	
TEMPCO	-0mV/C/Cell	<input checked="" type="checkbox"/>	BMS Lithium Batt	00
		<input checked="" type="checkbox"/>	Activate Battery	
		CANCEL	OK	

Do not adjust the wind turbine tab unless given specific instructions to do so

### Basic Setup

Do not enable Grid Peak Shaving Unless specifically requested by customer

Basic Setup

Display

Time

Advanced

Factory Reset

Parallel

☒ Solar Arc Fault ON

☐ Clear Arc\_Fault

ARC parameters

030000

045000

000400

000050

000390

000055

238094

Gen Limit Power

15000W

Load Limit Power

15000W

☐ Grid peak-shaving

Power

15000W

☐ Auto detect Home Limit Sensors

CT ratio

2000

CANCEL

OK

UPS Time

0ms

Basic Setup

Display

Time

Advanced

Factory Reset

Parallel

Brightness

☐ Beep

Auto Dim

☒ 6005

Auto Dim must be enabled for warranty purposes

CANCEL

OK



**Basic Setup**

Confirm Date & Time are accurate. Do not enable seasons at this time

Display	Time	Advanced	Factory Reset	Parallel
<input checked="" type="checkbox"/> AM/PM	Year	Month	Day	
	2021	10	26	
<input checked="" type="checkbox"/> Time Sync	Hour	Minute	Second	
	PM 03	04	15	
<input type="checkbox"/> Seasons	Season 1	Season 2	Season 3	
	Start M-D 1 - 1	4 - 1	8 - 1	
	End M-D 4 - 1	8 - 1	12 - 1	
CANCEL OK				

**Basic Setup**

Do Not adjust this tab

Display	Time	Advanced	Factory Reset	Parallel
<input type="checkbox"/> Factory Reset	<input type="checkbox"/> System selfcheck			
<input type="checkbox"/> Lock out all changes	<input type="checkbox"/> Test Mode			
<input type="checkbox"/> Lock Grid Charging & Limited				
CANCEL		OK		

**Do Not adjust the Parallel tab at this time. Directions for Parallel tab are located in Basic setup Part 2 and must be completed after settings confirmation**

### Grid setup/Limiter

Grid Mode: Grid Tied = UL1741SB  
 Off-Grid = General Standard

Grid Param		Grid Selection	Connect	IP	F(W)	V(W)/V(Q)	P(Q)/P(F)
Grid Mode		3/3					
<div style="border: 1px solid red; padding: 2px; display: inline-block;">General Standard</div>		Grid Reconnect Time <div style="border: 1px solid red; padding: 2px;">60s</div>					
Grid Frequency		Power Factor <div style="border: 1px solid gray; padding: 2px;">1.000</div>					
<input type="checkbox"/> 50Hz <input checked="" type="checkbox"/> 60Hz		Fixed Q <div style="border: 1px solid gray; padding: 2px;">0%</div>					
<input type="checkbox"/> Single Phase		Q Response <div style="border: 1px solid gray; padding: 2px;">105</div>					
<input checked="" type="checkbox"/> 120/240V Split Phase		Output V <div style="border: 1px solid red; padding: 2px;">120/240V</div>					
<input type="checkbox"/> 120/208V 3 Phase		Output V+ <div style="border: 1px solid gray; padding: 2px;">+0V</div>					
		CANCEL		OK			

Do Not adjust this tab if system is connected to Grid.  
 Settings below for off-grid install ONLY!

Grid Param		Grid Selection	Connect	IP	F(W)	V(W)/V(Q)	P(Q)/P(F)
		<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p style="text-align: center;">Reconnect</p> <p>Grid Vol High <div style="border: 1px solid red; padding: 2px;">265V</div></p> <p>Grid Vol Low <div style="border: 1px solid red; padding: 2px;">185V</div></p> <p>Grid Hz High <div style="border: 1px solid red; padding: 2px;">65Hz</div></p> <p>Grid Hz Low <div style="border: 1px solid red; padding: 2px;">55Hz</div></p> <p>Reconnect Ramp rate <div style="border: 1px solid gray; padding: 2px;">60s</div></p> </div> <div style="width: 48%;"> <p style="text-align: center;">Normal connect</p> <p>Grid Vol High <div style="border: 1px solid red; padding: 2px;">263V</div></p> <p>Grid Vol Low <div style="border: 1px solid red; padding: 2px;">187V</div></p> <p>Grid Hz High <div style="border: 1px solid red; padding: 2px;">65Hz</div></p> <p>Grid Hz Low <div style="border: 1px solid red; padding: 2px;">55Hz</div></p> <p>Normal Ramp rate <div style="border: 1px solid gray; padding: 2px;">60s</div></p> </div> </div>					
		CANCEL		OK			

DO NOT ADJUST THIS PAGE UNLESS SPECIFICALLY  
INSTRUCTED TO DO SO

### Grid Param

Grid selection	Connect	IP	F(W)	V(W)/V(Q)	P(Q)/P(F)
Over Voltage U>(10 min. running mean)					239.2V
HV3	249.6				
HV2	249.6V	--	0.16s		
HV1	249.6V	--	13.00s		
LV1	183.0V	--	21.00s		
LV2	145.6V	--	2.00s		
LV3	104.0V				
HF3	62.00Hz				
HF2	62.00Hz	--	0.16s		
HF1	61.50Hz	--	299.00s		
LF1	58.50Hz	--	299.00s		
LF2	57.00Hz	--	0.16s		
LF3	57.00Hz				
CANCEL					OK

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### Grid Param

Grid selection	Connect	IP	F(W)	V(W)/V(Q)	P(Q)/P(F)
Over frequency		Droop F	40%PE/Hz	<input checked="" type="checkbox"/> F(W)	
Start freq F	60.50Hz	Stop freq F	60.50Hz		
Start delay	0.00s	Stop delay	0.00s		
Under frequency		Droop F>	40%PE/Hz		
Start freq F>	59.50Hz	Stop freq F>	59.50Hz		
Start delay F>	0.00s	Stop delay F>	0.00s		
CANCEL					OK

DO NOT ADJUST THIS PAGE UNLESS SPECIFICALLY  
INSTRUCTED TO DO SO

### Grid Param

Grid selection	Connect	IP	F(W)	V(W)/V(Q)	P(Q)/P(F)
		<input type="checkbox"/> V(W)		<input type="checkbox"/> V(Q)	
Response_T		P1:100%		Lin:20.0%	
V1:109.0%		P1:100%		Lout:5.0%	
V2:110.0%		P2: 50%		V1:90.0%	
V3:111.0%		P3: 0%		Q1:43%	
V4:112.0%		P4: 0%		V2:94.0%	
				Q2: 0%	
				V3:106.0%	
				Q3: 0%	
				V4:110.0%	
				Q4: -43%	
CANCEL		OK			

DO NOT ADJUST THIS PAGE UNLESS SPECIFICALLY  
INSTRUCTED TO DO SO

### Grid Param

Grid selection	Connect	IP	F(W)	V(W)/V(Q)	P(Q)/P(F)
		<input type="checkbox"/> P(Q)		<input type="checkbox"/> P(F)	
P1:20%		Q1: 20%		Lin:50.0%	
P2:100%		Q2: 20%		Lout:100.0%	
P3:100%		Q3: 20%		V1:50%	
P4:100%		Q4: 20%		F1:1.000	
				V2:100%	
				F2:0.800	
				V3:100%	
				F3:0.800	
				V4:100%	
				F4:0.800	
CANCEL		OK			



**Grid Param**

Limiters Other

☐ Grid Sell 15000

☒ Limited Power to Home

☐ Limited Power to Load

☒ Time of Use Setup

CANCEL OK

Time	Power(W)	Batt	Charge	Sell
01:00AM	9000	50%	✓	
05:00AM	9000	30%	✓	
09:00AM	9000	50%	✓	
12:00PM	9000	99%	✓	
05:00PM	9000	50%	✓	
09:00PM	9000	99%	✓	

Do Not enable Grid Sell without a grid connection AND interconnection agreement w/ utility

Settings shown for "standard" OFF-GRID install. See TOU settings doc for variations for different scenarios

**Grid Param**

Limiters Other

☒ GEN connect to Grid Input

Zero Export Power 10W

☒ Batt First ☐ Load First

CANCEL OK

Only for OFF-Grid Systems

Confirm that BATT FIRST is selected

### **Basic setup Part 2**

Now that we are sure our inverters are correctly configured we can set the into parallel mode if applicable (2+ inverter installs only). Make sure that the parallel tab ModBus designation is set correctly on each inverter **PRIOR TO SETTING THEM INTO PARALLEL MODE.**

Do Not set inverters into parallel mode until after basic setup has been completed and confirmed

### Basic Setup

Display	Time	Advanced	Factory Reset	Parallel
<input type="checkbox"/> Parallel	<input checked="" type="radio"/> Master <input type="radio"/> Slave	Modbus SN 00	<input checked="" type="radio"/> Phase A <input type="radio"/> Phase B <input type="radio"/> Phase C	
<input type="checkbox"/> Meter > Grid	<input type="checkbox"/> Meter > Load			
Meter Select No Meter	Meter Select No Meter			
CANCEL		OK		

only for 2+ inv installs

Mod Bus:  
Master inv = 01  
Slave inv = 02,03,etc.

DO NOT adjust phases unless 208V install

### **RaVolt Standard Sol-Ark Settings/Setup for PYTES Batteries**

- Confirm the most recent software version is currently installed on the Sol-Ark by referencing this location on the sol-ark website
- Please be sure to follow the order of settings in this document when first setting up a Sol-Ark. Sol-ark battery setup should be done in Open Voltage % mode (w/ PV turned off) prior to setting into LI-Batt mode.
- Be sure to hit the “OK” button on each tab in order to save the changes made to the settings before moving on to the next

### **Battery Setup**

- Batt Capacity: 100Ah per unit
- Max A Charge/Discharge: 185A is the max amps that Sol-Ark 8K/12K mode supports and the corresponding number is 275A for 15K mode. Fill in the max amps or (50A\*unit numbers) which is lower. (For example, if there are three Pytes E-BOX batteries and one 12K Sol-Ark inverter in a system. The max amps of 12K is 185A and three batteries can support 150A(50\*3). So the number should fill in is 150A.)
- Select “Use Batt% Charged”.
- Enable “BMS Lithium Batt” and set its value to “00”.
- Turn on “Activate Battery”.
- Note that enabling BMS Lithium Batt 00 will adjust some values and make other values unadjustable (like the temperature coefficient above). Just ignore those values - the BMS is in control

**Batt Setup**

Batt | Charge | Discharge | Smart Load

Batt Capacity: 100Ah per unit

Max A Charge: 275A

Max A Discharge: 275A

TEMPCO: -0mV/C/Cell

Use Batt V Charged: ☐

Use Batt % Charged: ☒

No Battery: ☐

BMS Lithium Batt: 00

Activate Battery: ☒

CANCEL OK

**Batt Setup**

Batt | Charge | Discharge | Smart Load

StartV: 49.0V

Start%: 30%

A: 40A

Float V: 55.6V

Absorption V: 56V

Equalization V: 56V

30 Days: 0.0 Hours

Gen Charge: ☐ Grid Charge: ☒

Generator Exercise Cycle Day & Time: Mon 08 :00 20min

Gen Force: ☐ CANCEL OK

Charge Settings in Batt Setup (from Image above)

- Start%: 15%
- A: Same as the Max A Charge in Batt Setting
- Float V: 55.6V
- Absorption V: 56V
- Equalization V: 56V

Discharge Settings in Batt setup (from image below)

- Shutdown: 5%
- Low Batt: 8%
- Batt Empty: 47.5V

Batt Setup			
Batt	Charge	Discharge	Smart Load   Wind
Shutdown	51V	5%	Batt Resistance 5 mOhms
Low Batt	51.4V	8%	Batt Charge Efficiency 98%
Restart	51.8V	25%	BMS_Err_Stop <input type="checkbox"/>
Batt Empty V	47.5V		

Once all settings detailed above have been programmed or confirmed to be pre-set please follow the instructions in the image below to confirm inverter-battery communication is functioning correctly.

Click Here for Setup Menus

System Setup 1/25/2021 03:05:27 PM Mon.

Basic Setup

Battery Setup

Grid Setup

System Alarms

Lithium Batt Info

Sol-Ark 8k/12k-P  
- ID: ##### SD  
- COMM: ####  
- MCU: Ver####

Header data appears here 56V 185A etc....

```

1: 0000000000000000
2: Battery Data appears here when successful
3: 0000000000000000
4: 0000000000000000
.....
16: 0000000000000000

```