LiFe and Eco Series Battery Settings for **SMA** Sunny Island

OVERVIEW

Settings listed are only applicable to battery charge and discharge. All other settings are the responsibility of the systems integrator.

It is the responsibility of the integrator to have a full understanding of SMA products prior to programming and it is preferred that they have attended the manufacturer's training or integration courses should they be available.

It is highly recommend that a system Current Sensor (current shunt) is installed for more accurate SoC monitoring. Follow SMA requirements for installation and setting up.

SoC Error

SMA Sunny Island inverters can have up to a 8% (±4%) SoC error. Please take this into consideration when determining system shut downs and generator start/stop triggers.

Temperature Sensor

SMA Sunny Islands no longer come supplied with a temperature sensor and need to be purchased separately. If one is not being used, you can attach a 2k ohm resistor to the battery temperature sensor input terminals to remove the alarm.

Secondary Charge Source

If a DC Solar Charge Controller is used with a Sunny Island, there can be some conflicts when charging due to cable impedances. In some instances the displayed SoC on the Sunny Island may not reach 100%.

If the DC Solar Charge Controller is the main charging source, then you may need to set the DC Solar Charge Controller 0.3V higher than the Sunny Island, and the Sunny Island set down by the same amount.

SoC Drift

State of Charge ("SoC") drift happens when the product that is calculating SoC builds up an accumulative error. This error is generally due to tolerance of components that measure voltage and current, and algorithms used to calculate the SoC. Most products will reset its accumulative error when the system gets to 100% SoC or float.

It is important that a well-designed battery storage system reaches float stage as regularly as possible, preferably every one to two days to reset SoC drift.

SoC drift can be addressed in many ways.

Examples:

1. Sufficient solar sized to charge batteries to float on the winter equinox.
2. Backup source installed (grid or generator) to allow charging of batteries during extended bad weather or high load events.

How many batteries do I need?

The table below outlines the required quantity of batteries to achieve the full performance of the Sunny Island. The battery quantity is not compulsory, however it's highly recommended as a minimum to reduce possible battery trips due to over current.

For AC coupled systems, a minimum ratio of 2.5kWh (battery) to 1kW (solar inverter) applies. See SMA whitepaper.

When adding new batteries to an existing system, take time to record all settings before following specific Sunny Island instructions to commission as a new system.

Always consult and read the manufactures documentation before designing, installing and programming their devices.

Important: LiFe4838P and Eco4847P are NOT compatible with PWM charge controllers.

Recommended Minimum Battery Modules

Sunny Island	LiFe4833P	LiFe4838P	Eco4840P	Eco4847P
4.4M	2	2	2	2
6.0H	4	4	4	4
8.0H	4	4	4	4

Settings for Sunny Island 4.4M, 6.0H and 8.0H-12 and 13

Sunny Island	LiFe4833P	LiFe4838P	Eco4840P	Eco4847P
Basic Configuration	**Installation Assistant**			
Battery Type	VRLA (Valve Regulated Lead Acid)			
Nominal Battery Voltage	48V			
Nominal Battery Capacity	Total Ah Capacity of PowerPlus Energy Battery Bank Installed			
Device Configuration	**Charge**			
Maximum Charging Current	Max - 0.5 (C2) – 50% of total Ah Capacity Installed			
Time for Boost Charge	4 Hours	2 Hours	4 Hours	2 Hours
Time for Equalisation Charge	4 Hours	2 Hours	4 Hours	2 Hours
Time for Full Charge	4 Hours	2 Hours	4 Hours	2 Hours
Discharge Cut Off Voltage	48V			
Maximum Discharge Current	Leave Default			
Cell Charge Nominal Voltage for Boost Charge	2.40V	2.33V	2.40V	2.30V
Cell Charge Nominal Voltage for Full Charging	2.40V	2.35V	2.40V	2.32V
Cell Charge Nominal Voltage for Equalisation Charge	2.40V	2.35V	2.40V	2.32V
Float Voltage Cyclic (Short Term Float) (Example Solar Application)	2.40V	2.35V	2.40V	2.32V
Float Voltage Standby (Long Term Float) (Example UPS Application)	2.26V to 2.33V	2.33V	2.26V to 2.33V	2.31V
Cycle Time Full Charge	7			
Cycle Time Equalisation Charge	28			
Battery Temperature Compensation	0°			
Automatic Equalisation Charge	Disable (set to off)			
Voltage Setpoint with Deactivated BMS	57.6V	56.4V	57.6V	55.8V
	Protection mode			
Start time A	Leave Default if Unknown			
Start time B	Leave Default if Unknown			
End time A	Leave Default if Unknown			
End time B	Leave Default if Unknown			
Limit of Battery State of Charge A	Recommend 30%			
Limit of Battery State of Charge B	Recommend 25%			
Limit of battery state of Charge C	Recommend 20%			

Setting for Sunny Island 4.4M, 6.0H and 8.0H-11 and older models

Sunny Island	LiFe2433P	LiFe4833P	LiFe4838P	Eco4840P	Eco4847P
Basic Configuration					
BatTyp	VRLA (Valve Regulated Lead Acid)				
BatVtgLst	24V	48V	48V	48V	48V
BatCpyNom	Total Ah Capacity of PowerPlus Energy Battery Bank Installed				
222# Chargemode					
Enter Installer Mode					
222.01 BatChrgCurMax (Maximum battery charging current in A)	Max – 0.5 (C2) – 50% of Total Ah Capacity Installed				
Enter Expert Mode					
222.02 AptTmBoost (Absorption time for boost charge)	240min	240min	120min	240min	120min
222.03 AptTmFul (Absorption time for full charge)	4h	4h	2h	4h	2h
222.04 AptTmEqu (Absorption time for equalisation charge)	4h	4h	2h	4h	2h
222.05 CycTmFul (Cycle time of full charge)	7 days				
222.06 CycTmEqu (Cycle time of equalisation charge)	28 days				
222.07 ChrgVtgBoost (Cell boost charge voltage)	2.4V	2.4V	2.33V	2.4V	2.30V
222.08 ChrgVtgFul (Cell full charge voltage)	2.4V	2.4V	2.35V	2.4V	2.32V
222.09 ChrgVtgEqu (Cell equalisation voltage)	2.4V	2.4V	2.35V	2.4V	2.32V
222.10 ChrgVtgFlo (Cell float voltage)	2.4V	2.4V	2.35V	2.4V	2.32V
222.11 BatTmpCps (Battery temperature compensation)	0°C				
222.12 AutoEquChrgEna (Automatic equalisation charge)	Disable				
222.13 BatChrgVtgMan	57.6V	57.6V	56.4V	57.6V	55.8V
223# Protection					
223.01 BatPro1TmStr (Start time protection mode 1)	Recommend Default				
223.02 BatPro1TmStp (Stop time protection mode 1)	Recommend Default				
223.03 BatPro2TmStr (Start time protection mode 2)	Recommend Default				
223.03 BatPro2TmStp (Stop time protection mode 2)	Recommend Default				
223.05 BatPro1Soc (Protection mode 1)	Recommend 30%				
223.06 BatPro1Soc (Protection mode 2)	Recommend 25%				
223.07 BatPro1Soc (Protection mode 3)	Recommend 20%				

Installers should ensure an adequate system design is carried out at all times. PPE accepts no responsibility for underperforming system designs. As part of our continued improvement process, settings are subject to change without notice and are correct at time of publishing.