Eco Series Battery Settings for **Victron** Products

OVERVIEW

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

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

Secondary Charge Source

If a Victron Solar Charge Controller is used with a MultiPlus or Quattro, there can be some conflicts when charging due to cable impedances and charger reaction times. In some instances the displayed SoC can get stuck or create a conflict. You may need to set MultiPlus or Quattro 0.3V below the Solar Charge controller.

ESS Mode

If enabling Low SoC Shutdown (for ESS mode only) in Victron Connect on the MultiPlus, ensure any charge controllers are connected via VE Direct cables to a GX System monitor otherwise SoC may be inaccurate and system may or may not shutdown as required.

SoC Drift

State of Charge 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 listed Victron products.

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 Victron whitepaper.

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

Important: Eco4847P is not compatible with PWM controllers

Recommended Minimum Battery Modules for Full Performance of Popular Victron Inverter Chargers

	MultiPlus II 48/3000/35-32	MultiPlus II 48/5000/70-50	MultiPlus II 48/10000/ 140-100	MultiPlus II 48/15000/ 200-100	Quattro 48/8000/ 110-100/100	Quattro 48/10000/ 140-100/100	Quattro 48/15000/ 200-100/100	Multi RS Solar
Eco4840P	3	4	10	12	8	10	12	4
Eco4847P	2	3	7	8	5	7	8	3

General Overview of Settings for Victron

	Eco4840P	Eco4847P
Battery Charge Curve	Fixed	
Capacity	Total Ah Capacity of PowerPlus Energy Battery Bank Installed	
Absorb Voltage	57.6V	55.7V
Absorb Time	4 Hours	2 Hours
Float Voltage Standby (Short Term Float) (Example Solar Application)	57.6V	55.7V
Float Voltage Standby (Long Term Float) (Example UPS Application)	54.4V to 56V	55.2V
Discharge Voltage “LBCO”	48V 0% SoC 49.50V 10% SoC 50.20V 20% SoC	48V 0% SoC 49.50V 10% SoC 50.20V 20% SoC
Max Charge Current	0.5C (C2) / 50% of Overall Battery Capacity	
Peukert Exponent	1.02	
Charge Efficiency	0.96	
SoC When Bulk Finished	95%	
Equalise Stage Voltage	57.6V	55.7V
Equalise Current	10%	
Equalise Time	4 Hours	2 Hours

MultiPlus and Quattro Inverter Chargers

	Eco4840P	Eco4847P
GENERAL		
Enable Battery Monitor	Yes	
Total Battery Capacity	Total Ah Capacity of PowerPlus Energy Battery Bank Installed	
SoC When Bulk Finished	95%	
Charge Efficiency	0.96	
INVERTER		
DC Input Low Shut Down	48V 0% SoC 49.50V 10% SoC 50.20V 20% SoC	
DC Input Low Restart	Set 2V Above Low Battery Shut Down voltage.	
DC Input Low Pre Alarm	Set 1V Above Low Battery Shut Down voltage.	
Low SoC Shutdown	Do Not Use	
CHARGER		
Enable Charger	On	
Charge Current	50% or C2 of Total Battery Capacity	
Absorb Voltage	57.6V	55.7V
Float Voltage Cyclic (Short Term Float) (Example Solar Application)	57.6V	55.7V
Float Voltage Standby (Long Term Float) (Example UPS Application)	54.4V to 56V	55.2V
Repeated Absorb Interval	7 Days	
Repeated Absorb Time	4 Hours	2 Hours
Maximum Absorb Time	4 Hours	2 Hours
Temperature Compensation	Off	
Charge Curve	Fixed	
Battery Type	Lithium – After changing this, go back and check all previously set values.	
Lithium > Yes	Lithium-ion Phosphate	
Battery Charge Curve	Fixed	

	Eco4840P	Eco4847P
ASSISTANT (Off-Grid)		
ESS		
Notes	1. ESS should not be used in off grid systems. 2. If you are using ESS mode, you should be familiar with characteristics and programming requirements of Victron equipment. 3. Ensure battery size is adequate to supply loads in backup mode.	
Country / Grid Code Standard	Select Correct Mode	
Battery System	System uses LiFePO4 with other type BMS	
Battery Capacity	Total Ah Capacity of PowerPlus Energy Battery Bank Installed	
VE Configure Battery Type Selection	Do Not Change Battery Type	
Sustain Voltage	48V	
Voltage Discharge 0.005C	50.2V	
Voltage Discharge 0.25C	49.5V	
Voltage Discharge 0.7C	48V	
Voltage Discharge 2C	46V	
Restart Offset	1.2V	
PV Inverter	These settings are up to the installer	

Multi RS Solar

	Eco4840P	Eco4847P
General	N/A	
Grid	N/A	
BATTERY		
Battery Capacity	Total Ah Capacity of PowerPlus Energy Battery Bank Installed	
Max Charge Current	50% or C2 of Total Battery Capacity	
Battery Preset	User Defined	
Battery Chemistry	Lithium ($LiFePO_4$)	
Expert Mode	ON	
BMS Controlled	OFF	
Shutdown on Low SoC	OFF	
Dynamic Cut-Off	OFF	
Low Battery Shutdown	48V 0% SoC 49V 10% SoC 50.20V 20% SoC	
Low Battery Restart and Alarm	Set 2V Above Low Battery Shutdown	
Charge Detect	52V	52V
Absorption Voltage	57.6V	55.7V
Float Voltage	57.6V	55.7V
Equalisation Voltage	57.6V	55.7V
Storage Voltage	57V	55.2V
Re-Bulk Offset	0.4V	
Absorption Duration	Fixed	
Absorption Time	4hr	2hr
Tail Current	1A	
Repeated Absorption	Every 7 Days	
Repeated Absorption Duration	4hr	2hr
Equalization Current Percentage	0%	
Equalization Stop Mode	Fixed Time	
Equalization Duration	0m	
Temperature Compensation	Disabled	
Low Temperature Cut-Off	0°C	4°C
Peukert Exponet	1.02	
Charge Efficiency Factor	96%	
Discharge Floor	20%	
SoC When Bulk Finished	95%	

Victron Phoenix VE.Direct Inverters

Victron Connect	Eco4840P	Eco4847P
Dynamic Cut-Off	OFF	
Low Battery Shut Down	48V 0% SoC 49.50V 10% SoC 50.20V 20% SoC	48V 0% SoC 49.50V 10% SoC 50.20V 20% SoC
Low Battery Restart and Alarm	Set 2V Above Low Battery Shut Down Voltage.	
Charge Detect	52V	52V

Victron BMV and SmartShunt Settings

	Eco4840P	Eco4847P
Battery Capacity	Total Ah Capacity of PowerPlus Energy Battery Bank Installed	
Charged Voltage	57V	55V
Discharge Floor	20%	
Tail Current	4%	
Charge Detection Time	1 min	
Peukert Exponent	1.02	
Charge Efficiency Factor	96%	
Curent Threshold	0.1A	
Time to go Averaging Period	3 min	

MPPT and Charge Controllers

	Eco4840P	Eco4847P
Battery Voltage	48V	48V
Max Charge Current (C/2)	50% or C2 of Total Battery Capacity	
Charge Enabled	ON	
Battery Preset	User Defined	
Expert Mode	ON	
Absorb Voltage *see note on page 4	57.6V	55.7V
Float Voltage Cyclic (Short Term Float) (Example Solar Application)	57.6V	55.7V
Float Voltage Standby (Long Term Float) (Example UPS Application)	56V	55.2V
Equalisation Voltage	57.6V	55.7V
Re-Bulk Offset	0.4V	
Absorb Duration	Fixed	
Absorb Time	4hr	2hr
Tail Current	1 Amp	
Equalisation Current Percentage	0%	
Auto Equalisation	Disabled	
Temperature Compensation	Off	
Low Temperature Cut Off	0°C	4°C
Note	If a Victron Solar Charge Controller is used with a MultiPlus or Quattro, there can be some conflicts when charging due to cable impedances and in some instances the displayed SoC can get stuck on 95%. You may need to set MultiPlus or Quattro 0.3V below the Solar Charge controller	

GX Systems Controller

	Eco4840P	Eco4847P
SYSTEM SETUP		
Battery Monitor	Select the SoC Source – Recommend checking the relevant product manual.	
DVCC		
DVCC	ON	
Limit Charge Current	ON	
Maximum Charge Current	50% or C2 of Total Battery Capacity	
Note	Recommend all other DVCC settings off unless systems integrator understands implications.	
ESS		
Note	ESS Assistant MUST be installed in MultiPlus or Quattro before activating this function.	
Mode	Read Product Manual – Recommend Optimised (Without battery life for cycling application). Keep batteries charged (for maximum blackout reserve).	
Minimum SoC (Unless Grid Fails) *Optimised Mode	Recommend >30%	
Limit Charge Power	ON	
Maximum Charge Power	50% or C2 of Total Battery Capacity – NB in Watts	

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.