Power ⊞™

LiFe and Eco Series Battery Settings for Morningstar products

MORNINGSTAR
World's Leading Solar Controllers & Inverters

OVERVIEW

Settings listed are only applicable to battery charge.

It is the responsibility of the integrator to have a full understanding of Morningstar 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 the Morningstar solar charge controller is used with another charger, there is a possibility a conflict can be created between charger sources, and you may need to set the secondary charger ~0.3V below the primary charger.

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 rest SoC drift and at least every seven days to fulfill the warranty restrictions on the battery.

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.

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

Please Note: These settings are for LiFe4838P batteries with serials after LXXXX6000 only, please contact PowerPlus Energy support for legacy settings.

LiFe4838P batteries with serials prior to LXXXX6000 <u>are not</u> compatible with LiFe4838P batteries with serials after LXXXX6000.

Recommended settings for optimal integration

Legacy* Morningstar controllers are always programmed with 12V nominal voltage setpoints and use a multiplier (X2 for 24V) and (X2 for 48V) systems. The GenStar MPPT controller must be programmed using the system nominal voltage settings. Therefore, all settings are shown with 12V, 24V and 48V voltage setpoints.

Commissioning

When powered up for the first time, the GenStar controller must be commissioned via the built-in digital display. Refer to section 3.5 of the GenStar MPPT operation manual for more information about commissioning.

Host Device Local Meter Display Commissioning Steps:

1. Select Language
2. Enable Ethernet Writes (allows control commands and custom programming over Ethernet)
3. Select System Voltage (12V, 24V or 48V)
4. Set the UTC Time (Universal Time)
5. Set the Local Time Offset for the time zone
6. Select NO for BMS Block
7. Select Battery Charging Profile (8 - LiFePO4 High: Absorption Voltage = 14.2V, 28.4V, 56.8V)
8. Battery Load (LVD) Profile (6 - LiFePO4 Low: LVD = 12.5V, 25V, 50V)
9. Select NO for RTS Required?
10. Reboot controller after commissioning

After commissioning, the GenStar the settings need to be custom programmed. There is a link to download Configuration Files with the settings indicated the end of this document. Transfer the files to the GenStar SD card to upload the settings to the controller. Settings can be manually adjusted after commissioning with the built-in digital display or with the LiveView webpage.

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

* Legacy Morningstar controllers include the SunSaver MPPT, ProStar, ProStar MPPT, TriStar and TriStar MPPT models.

Recommended settings (based on 12V nominal values) for optimal integration

	12V	24V	48V
Note	Morningstar controllers are programmed using 12V nominal voltage setpoints with MSView software. The controllers use a multiplier of 2 for 24V batteries and 4 for 48V batteries.		
Critical Settings			
Absorption Voltage	14.4V	28.8V	57.6V (55.72V for LiFe4838P model only)
Absorption Time	Arbitrary Value (regulation voltage maintained indefinitely throughout charging cycle)		
Temperature Compensation	0.0V / C° (Disabled)		
Float/Float Voltage/Timeout	Not Enabled		
Equalize	Not Enabled		
Battery HVD/High Voltage Disconnect/Reconnect	Enable – 14.8V / 14.00V,	Enable – 29.6V / 28V	Enable – 59.2V / 56V
Load Low Voltage Disconnect (LVD)	High (~90%DoD*) = 12.6V Medium (~95% DoD*) = 12.4V Low (~100% DoD*) = 12V	High (~90%DoD*) = 25.2V Medium (~95% DoD*) = 24.8V Low (~100% DoD*) = 24V	High (~90%DoD*) = 50.4V Medium (~95% DoD*) = 48.2V Low (~100% DoD*) = 48V
Load Low Voltage Reconnect (LVR)	@12V Nominal = 1V above LVD or 13.4V Maximum		
Delay Before Load LVD	1min (Possibly longer for cold temperatures or higher LVD settings)		
Optional Recommended Settings			
Absorption Ext	Not Enabled		
Low Battery Temperature Foldback	Optional (100% High limit = 1 C°, 0% Low limit = 0 C°)		
Battery Service Reminder	Not Enabled (Monitor battery health using Morningstar 'ReadyShunt' shunt meter/coulomb counter)		
Float Cancel	Not enabled		
Max Regulation Limit	Not enabled		
Battery Current Limit	0.5 C		
Load Current Compensation	Disabled		
Load HVD/High Voltage Disconnect/Reconnect	Enable / 15.00V / 14.60V (Can be used to protect loads from voltage spikes in the event of battery failure during charging operation)		

Battery Charge LED Indications (Not intended for accurate SoC measurement)

LED Transitions	4/8/16 Cell		
	12V	**24V**	**48V**
🟢 Green Only	> 13.35	> 26.7	> 53.4
🟢🟡 Green – Yellow	13.2	26.4	52.8
🟡 Yellow Only	13.05	26.1	52.2
🟡🔴 Yellow – Red	12.95	25.9	51.8
🔴 Red Only	< 12.95	< 25.9	< 51.8

Communications required for programming Custom Settings

Monitoring, control, setup and firmware updates for the GenStar MPPT controllers are provided with the built-in meter display and the local LiveView HTML pages (Ethernet). See Section 4.0 Configuration of the GenStar MPPT manual for setup instructions.

Settings profiles can be saved and loaded to and from the internal SD card only. See the link below for configuration files with the settings above for 12V, 24V and 48V that can be transferred to an SD card. It is very important to select the file that corresponds to the nominal voltage of the battery – WARNING: Always select the correct voltage files for the system.

*LVD DoD is based on a discharge rate of .2C at 25ºC. In general, the DoD will be higher with higher discharge rates and lower temperatures or lower with lower discharge rates and higher temperatures. It is important proper LVD settings are high enough to prevent an undervoltage cutoff due to self-consumption of the equipment. An overvoltage cutoff may be caused during voltage regulation if there are imbalanced cell voltages or disconnecting very large loads. This can be a nuisance or cause a problematic voltage surge. If this occurs the absorption voltage settings can be reduced.

IMPORTANT: PowerPlus Energy and Morningstar Corporation are separate companies with unaffiliated ownership. Neither party make any warranties explicit or implied with this information. Morningstar makes no representation/assumption of liability regarding the charging requirements for any type of battery or model. Information presented may be based on information provided by other parties. Performance may vary depending on use conditions and application.

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.