

# LYNK II

(950-0025)

## MORNINGSTAR MANUAL

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READ AND SAVE THESE INSTRUCTIONS

- INTRODUCTION ..... 3**
- 1. AUDIENCE, WARNINGS, MESSAGES, GENERAL SAFETY, PERSONAL PROTECTIVE EQUIPMENT ... 3**
  - 1.1 Audience. .... 3
  - 1.2 Warning, Caution, Notice, and Note Messages. .... 3
  - 1.3 General Warnings ..... 4
  - 1.4 Safe Handling Procedures. .... 4
  - 1.5 Personal Protective Equipment. .... 5
- 2. DOCUMENTATION ..... 5**
- 3. OVERVIEW ..... 6**
  - 3.1 System Overview. .... 6
  - 3.2 Compatibility ..... 7
  - 3.3 Minimum Battery System Capacity ..... 8
- 4. CAN HARDWARE TERMINATION AND CAN OUT PIN CONFIGURATION ..... 9**
  - 4.1 LYNK II CAN Termination ..... 9
  - 4.2 LYNK II CAN Out - RJ45 Pin Assignments for Morningstar Integration ..... 10
- 5. INSTALLING AND CONNECTING LYNK II TO THE MORNINGSTAR NETWORK ..... 11**
  - 5.1 Networking Discover Lithium Batteries with LYNK II ..... 11
  - 5.2 Connecting LYNK II to the Morningstar Network ..... 12
- 6. ENABLING LYNK II TO COMMUNICATE WITH MORNINGSTAR DEVICES ..... 14**
  - 6.1 Setting Morningstar as the LYNK II Communication Protocol ..... 14
- 7. GENSTAR MPPT CONFIGURATION SETTINGS ..... 15**
  - 7.1 Commissioning the GenStar MPPT ..... 15
  - 7.2 Setting up from the Meter Interface ..... 15
  - 7.3 Setting up from the LiveView Web Interface ..... 16
  - 7.4 Verifying the Connection. .... 19
  - 7.5 Open-Loop Configuration ..... 20

# INTRODUCTION

This Application Note provides information about integrating LYNK and AEBus network-enabled Discover Lithium Batteries using the LYNK II Communication Gateway with Morningstar power conversion devices.

## 1. AUDIENCE, WARNINGS, MESSAGES, GENERAL SAFETY, PERSONAL PROTECTIVE EQUIPMENT

### 1.1 Audience

Configuration, installations, service, and operating tasks should only be performed by qualified personnel in consultation with local authorities having jurisdiction and authorized dealers. Qualified personnel should have training, knowledge, and experience in the:

- Installation of electrical equipment
- Application of electrical codes, safety, and installation standards
- Analysis and reduction of hazards involved in performing electrical work
- Installation and configuration of batteries
- Installation and configuration of systems activated by relays

### 1.2 Warning, Caution, Notice, and Note Messages

Messages in this manual are formatted according to this structure.



Additional information concerning important procedures and features of the product. Read all the instructions before installation, operation, and maintenance.



Important information regarding hazardous conditions.

#### **⚠ WARNING**

Important information regarding hazardous conditions that may result in personal injury or death.

#### **⚠ CAUTION**

Important information regarding hazardous conditions that may result in personal injury.

#### **NOTICE**

Important information regarding conditions that may damage the equipment but not result in personal injury.

#### **NOTE**

Ad hoc information concerning important procedures and features unrelated to personal injury or equipment damage.

### 1.3 General Warnings

#### WARNING

##### **ELECTRIC SHOCK AND FIRE HAZARD**

- This equipment must only be installed as specified.
- Do not disassemble or modify the battery.
- If the battery case has been damaged, do not touch exposed contents.
- There are no user-serviceable parts inside.

**Failure to follow these instructions may result in death or serious injury.**

#### WARNING

##### **ELECTRIC SHOCK AND FIRE HAZARD**

Do not lay tools or other metal parts on the battery or across the terminals.

**Failure to follow these instructions may result in death or serious injury.**

#### CAUTION

##### **ELECTRIC SHOCK**

- Do not touch the energized surfaces of any electrical component in the battery system.
- Before servicing the battery, follow all procedures to fully de-energize the battery system.
- Follow the “Safe Handling Procedures” below when working with the battery.

**Failure to follow these instructions may result in injury.**

### 1.4 Safe Handling Procedures

Before using the battery and any power electronics, read all instructions and cautionary markings on all components and appropriate sections of their manuals.

- Use personal protective equipment when working with batteries.
- Do not dispose of the battery in a fire.
- Promptly dispose of or recycle used batteries following local regulations.
- Do not disassemble, open, crush, bend, deform, puncture, or shred.
- Do not modify, re-manufacture, or attempt to insert foreign objects into the battery, immerse or expose the battery to water or other liquids, fire, explosion, or other hazards. If the user suspects damage to the battery module due to water, heat, or other reason, take it to a service center for inspection.
- Only use the battery for the system for which it is specified.
- Do not lift or carry the battery while in operation.
- When lifting a heavy battery, follow the appropriate standards.
- Only lift, move, or mount following local regulations.
- Take care when handling battery terminals and cabling.
- Only use the battery with a charging system that meets specifications. Using a battery or charger that does not meet specifications may present a risk of fire, explosion, leakage, or other hazards.

- Do not short-circuit a battery or allow metallic conductive objects to contact battery terminals.
- Replace the battery only with another battery that has been qualified for the system. Using an unqualified battery may present a risk of fire, explosion, leakage, or other hazards.
- Do not drop the device or battery. If the device or battery is dropped, especially on a hard surface, and the user suspects damage, take it to a service center for inspection.

## **1.5 Personal Protective Equipment**

When handling or working near a battery:

- Use Personal Protective Equipment, including clothing, glasses, insulated gloves, and boots.
- Do not wear rings, watches, bracelets, or necklaces.

## **2. DOCUMENTATION**

This Application Note provides information about integrating LYNK and AEBus network-enabled Discover Lithium Batteries using the LYNK II Communication Gateway with Morningstar power conversion devices.

Before installation and configuration, consult the relevant product documentation, including Manuals, Application Notes, and Installation and Configuration Guides.

### **Morningstar Documentation**

Visit <https://www.morningstarcorp.com> for the most recent version of published documents.

### **Discover Energy Systems Documentation**

Visit <https://www.discoverlithium.com> for the most recent version of published documents, including Discover Lithium battery user manuals and the LYNK II Installation and Operation Manual (805-0033).

### 3. OVERVIEW

This manual provides general settings and is not a comprehensive guide to the programming and configuration of a specific installation. An installation may have unique conditions or use cases that require modification or adaptations. Installers must be capable of reviewing and adapting to the specifics of an installation and its specific use case and optimizing settings where needed.

The key steps required to install and configure the LYNK II Communication Gateway with compatible Discover Lithium batteries and power conversion equipment are as follows:

- Review and confirm equipment compatibility and correct sizing.
- Configure the LYNK II CAN out pins to match the CAN in pins of the power conversion equipment.
- Mount the LYNK II, connect the battery communication network to either the LYNK Port or AEBus Port, and then connect the CAN Out Port to the power conversion equipment's communication network.
- Terminate all networks correctly.
- When commissioning the power conversion equipment, select the Discover Energy Systems battery model and the battery's LVD-LVR Profile.
- Set the LYNK II using LYNK ACCESS software to the correct protocol to enable closed-loop communication between the Discover batteries and the power conversion equipment.
- Set up the closed-loop configuration parameters on the power conversion equipment.
- Set up user preferences and enable the use case using the power conversion control system.

#### 3.1 System Overview

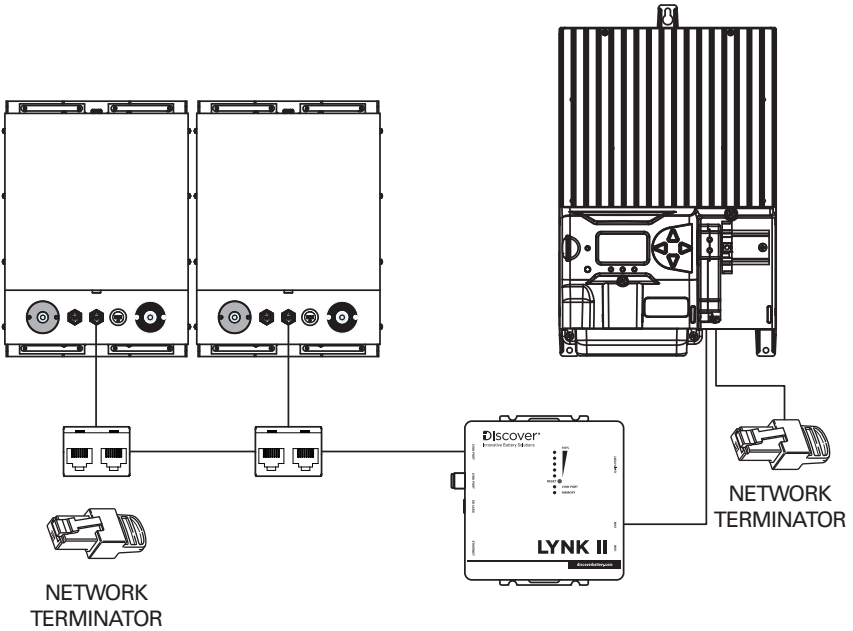
The LYNK II Communication Gateway unlocks the full potential of a Discover Lithium battery by enabling the internal Battery Management System (BMS) to provide real-time data in a closed-loop configuration to other devices. This configuration allows hybrid inverter-chargers and solar charge controller systems to optimize control over the charging process in solar applications. LYNK II also enables the remote monitoring of Discover Lithium battery SOC and data logging of multiple sites using the data monitoring services offered by off-grid inverter systems.

Discover Lithium batteries must be set up to work with power conversion and monitoring devices in either an open-loop or closed-loop configuration.

In an open-loop configuration, charge and discharge settings are set up manually through the controller for the power conversion device at the time of installation.

In a closed-loop configuration, the BMS of the Discover Lithium battery sends the battery status over a network data connection with the power conversion device. Power conversion devices use the Discover Lithium battery BMS data to fine-tune the output of their charger as well as deliver other functional controls based on battery voltage, temperature, and percent State-of-Charge.

If communication between the BMS and Morningstar power conversion device is interrupted, the power conversion device faults after a few seconds and stops the charging process. If communication between the BMS and the Morningstar power conversion device is restored, the fault is cleared and charging continues.



**Figure 1. LYNK II communication with GenStar MPPT using a ReadyBMS Module**

### 3.2 Compatibility

LYNK II Communication Gateway is compatible with the following:

#### Discover Lithium Batteries

To communicate with a LYNK II device, a Discover Energy Systems battery must have a compatible network port, such as a LYNK Port or AEbus Port.

- AES LiFePO<sub>4</sub>: 44-24-2800, 44-48-3000, 42-48-6650
- AES PROFESSIONAL: DLP-GC2-12V, DLP-GC2-24V, DLP-GC2-48V
- AES RACKMOUNT: 48-48-5120, 48-48-5120-H

#### Morningstar Products

GenStar MPPT:

- GS-MPPT-60M-200V
- GS-MPPT-80M-200V
- GS-MPPT-100M-200V

### 3.3 Minimum Battery System Capacity

The Discover Lithium Battery and Morningstar device automatically manages battery charge and discharge rates. Configure the Discover batteries in the GenStar MPPT so that the MPPT can resize the charge current to match the batteries to keep within the operational limit of installed batteries.

For optimal energy usage, battery capacity should accept the maximum charge current of the system. Derive this value by adding the charge capacities of all the solar charge controllers in the system.

<b>Morningstar 48V System</b>	<b>Continuous Max Amps DC <sup>(1)</sup></b>	<b>44-48-3000 Minimum per MPPT <sup>(2)</sup></b>	<b>42-48-6650 Minimum per MPPT <sup>(3)</sup></b>	<b>DLP-GC2-48V Minimum per MPPT <sup>(4)</sup></b>	<b>48-48-5120 Minimum per MPPT <sup>(5)</sup></b>
GS-MPPT-60M-200V	60 A	2	1	3	1
GS-MPPT-80M-200V	80 A	2	1	3	1
GS-MPPT-100M-200V	100 A	2	1	4	2

<sup>(1)</sup> Data based on max amps in GenStar MPPT datasheet, Control #MS-003676 01/30/2022.

<sup>(2)</sup> Discover 44-48-3000 Battery, Max Continuous Charge Current: 57 Adc, as published in Operating Manual (805-0025 Rev C).

<sup>(3)</sup> Discover 42-48-6650 Battery, Max Continuous Charge Current: 130 Adc, as published in Operating Manual For Solar Applications (805-0015 Rev C).

<sup>(4)</sup> Discover DLP-GC2-48V Battery, Max Charge Current (1 hour): 29 A, as published in AES PROFESSIONAL Installation and Operation Manual (805-0027 Rev I).

<sup>(5)</sup> Discover AES RACKMOUNT 48-48-5120 Battery, Max Charge Current (1 hour): 95 A, as published in AES RACKMOUNT Datasheet (885-0040 Rev D).

<b>Morningstar 24V System</b>	<b>Continuous Max Amps DC <sup>(1)</sup></b>	<b>44-24-2800 Minimum per MPPT <sup>(2)</sup></b>	<b>DLP-GC2-24V Minimum per MPPT <sup>(3)</sup></b>
GS-MPPT-60M-200V	60 A	2	2
GS-MPPT-80M-200V	80 A	2	2
GS-MPPT-100M-200V	100 A	2	2

<sup>(1)</sup> Data based on max amps in GenStar MPPT datasheet, Control #MS-003676 01/30/2022.

<sup>(2)</sup> Discover 44-24-2800 Battery, Max Continuous Charge Current: 57 Adc, as published in Operating Manual (805-0025 Rev C).

<sup>(3)</sup> Discover DLP-GC2-24V Battery, Max Charge Current (1 hour): 58 A, as published in AES PROFESSIONAL Installation and Operation Manual (805-0027 Rev I).

<b>Morningstar 12V System</b>	<b>Continuous Max Amps DC <sup>(1)</sup></b>	<b>DLP-GC2-12V Minimum per MPPT <sup>(2)</sup></b>
GS-MPPT-60M-200V	60 A	1
GS-MPPT-80M-200V	80 A	1
GS-MPPT-100M-200V	100 A	1

<sup>(1)</sup> Data based on max amps in GenStar MPPT datasheet, Control #MS-003676 01/30/2022.

<sup>(2)</sup> Discover DLP-GC2-12V Battery, Max Charge Current (1 hour): 115 A, as published in AES PROFESSIONAL Installation and Operation Manual (805-0027 Rev I).



## 4. CAN HARDWARE TERMINATION AND CAN OUT PIN CONFIGURATION

### 4.1 LYNK II CAN Termination

<b>NOTICE</b>
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Disconnect power and all LYNK II Communication Gateway connections before configuring header boards and jumpers.
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Jumpers configure termination for the AEBus and LYNK Network and the CAN Out pin assignments. Follow the [LYNK II Installation and Operation Manual](#) (805-0033) to access and configure the header board with jumpers.

Detailed pin configurations are included in the LYNK II manual and are repeated here for convenience.

<b>NOTE</b>
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The LYNK II Communication Gateway terminates the AEBus and LYNK Network by default. Do not remove the termination jumper inside the LYNK II Communication Gateway unless instructed by Discover Energy Systems.
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## 4.2 LYNK II CAN Out - RJ45 Pin Assignments for Morningstar Integration

CAN signals (CAN H, CAN L, CAN GND) can be assigned to any pin of the RJ45 connector by adjusting the jumpers on the header board.

CAN Out	Header Jumper	RJ45 Pin
CAN L	H2 - 5-7	5
CAN H	H3 - 8-10	4
CAN GND	H4 - 2-4	2

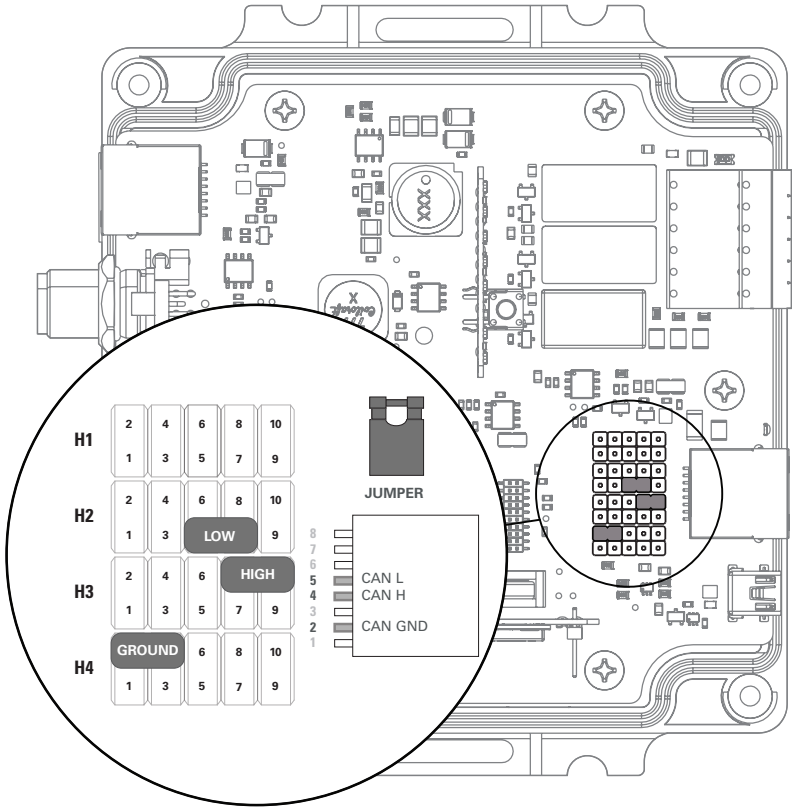


Figure 2. Morningstar Pin Assignments

## 5. INSTALLING AND CONNECTING LYNK II TO THE MORNINGSTAR NETWORK

### 5.1 Networking Discover Lithium Batteries with LYNK II

#### NOTICE

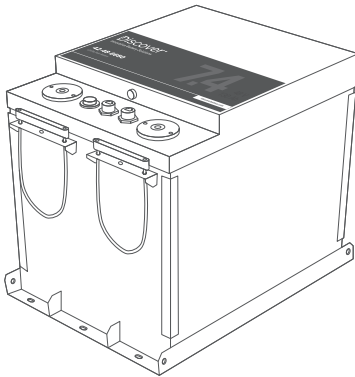
- Turn OFF all devices before connecting cables.
- Do not plug an AEBus RJ45 network cable or terminator into the 10/100 Ethernet port of the LYNK II.
- Do not connect a CAT5 cable from the AEBus, LYNK, or Ethernet ports of the LYNK II to a WAN or MODEM port of a network router.
- Mixing the LYNK Network with other networks may result in equipment malfunction and damage.

#### NOTICE

Unless Discover Energy Systems specifies, do not connect power electronics directly to the LYNK or AEBus network.

Refer to the LYNK II Installation and Operation Manual (805-0033) for instructions on network layouts, connections, and terminators of compatible Discover Lithium battery models. Some key points are repeated here for convenience.

- Connect at least one battery to the LYNK Port on the LYNK II.
- A network of batteries will communicate as one battery.
- May connect no more than one network of batteries to the LYNK II.
- Proper system function requires network termination – some batteries and devices may auto-terminate.
- LYNK II requires power from one of three possible sources (13-90 VDC power supply, a USB device, or an AEBus/LYNK Port-enabled Discover Lithium battery).
- Discover Lithium batteries must be set to ON to supply power and communicate with LYNK II.



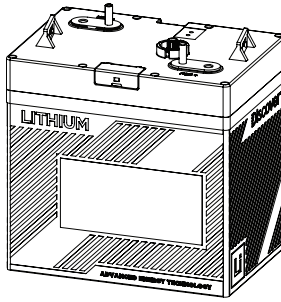
*Figure 3. AES Battery*

LYNK II is internally terminated. AES batteries are not internally terminated. When using LYNK II on an AEBus network, install a terminator opposite the LYNK II at the far end of the battery network.

## NOTE

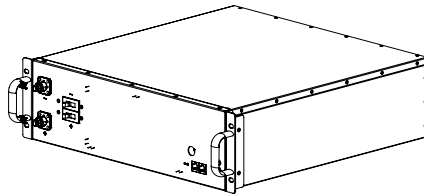
AES LiFePO<sub>4</sub> 48 V batteries sold before Jan 1, 2020, will not supply power to LYNK II using the network cable connection. An external 13-90 VDC power source connected to the Phoenix 12-pin connector on LYNK II is required for the AES LiFePO<sub>4</sub> battery listed below.

- 42-48-6650 with a serial number before DET424820275xxxx



**Figure 4. AES PROFESSIONAL**

Both LYNK II and AES PROFESSIONAL batteries are internally terminated.



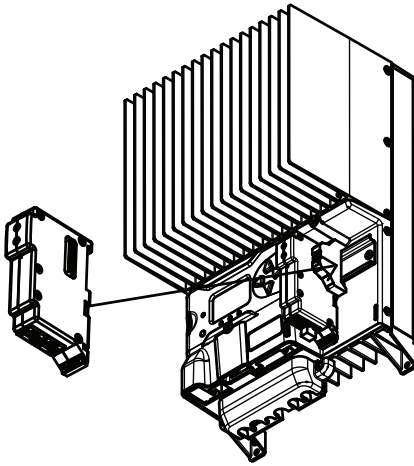
**Figure 5. AES RACKMOUNT Battery Module**

Both LYNK II and AES RACKMOUNT Battery Modules are internally terminated.

## 5.2 Connecting LYNK II to the Morningstar Network

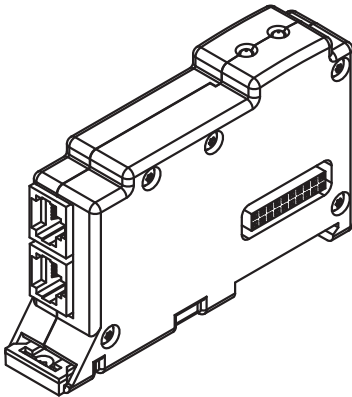
Before connecting LYNK II to the Morningstar network, confirm that the CAN out pins on the LYNK II are configured correctly. Refer to [4. CAN Hardware Termination and CAN Out Pin Configuration](#).

1. On the GenStar MPPT's ReadyBlock rail, install the ReadyBMS module. Refer to Morningstar documentation for installation instructions.



*Figure 6. ReadyBMS module installed to the GenStar MPPT*

2. Insert a terminator into one of the RJ45 receptacles of the ReadyBMS module, and in the other RJ45 receptacle, insert one end of a CAT5 communication cable, and insert the opposite end of the CAT5 cable into the LYNK II CAN out port.



*Figure 7. ReadyBMS RJ45 ports*

## **NOTICE**

- Only one LYNK Gateway device can be connected to the Morningstar network.
- The LYNK II CAN Out is internally terminated. No other termination is required for LYNK II.

## 6. ENABLING LYNK II TO COMMUNICATE WITH MORNINGSTAR DEVICES

When properly connected to a closed-loop network and set to use the Morningstar protocol, LYNK II will transmit real-time parameters from the Discover Lithium battery, including voltage, current, temperature, state of charge, and fault conditions to the Morningstar power conversion device. LYNK II will also transmit charge voltage and current requests from the Discover Lithium battery to Morningstar devices.

LYNK ACCESS software for 64-bit Windows 10 is required to configure LYNK II settings for closed-loop communication with devices on a Morningstar network.

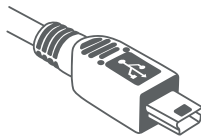
Use Morningstar Live View 2.0 to configure the Morningstar power conversion devices.

If communication between LYNK II and the Morningstar power conversion device is lost for a few seconds, the Morningstar device shows the fault status on its LED, displays a fault number, and stops. The Morningstar power conversion device automatically continues its operation once communication with the LYNK II is re-established.

### 6.1 Setting Morningstar as the LYNK II Communication Protocol

#### The Protocol Configuration Procedure

1. Download the current version of LYNK ACCESS software from the Discover Energy Systems website ([discoverlithium.com](http://discoverlithium.com)) to obtain the most up-to-date suite of available protocol configurations.
2. Connect the 64-bit Windows 10 device running LYNK ACCESS software to the USB port on LYNK II using a USB cable with a Type-B mini-plug. Ensure LYNK II is powered and connected to the correct end of the Morningstar network.



3. Open LYNK ACCESS and select the LYNK tab. Select the blue gear icon in the upper right area of the CAN Settings tile.
4. In the CAN Settings window, select the pre-configured Morningstar protocol from the Closed Loop Protocol drop-down list to complete the closed-loop configuration for LYNK II. Click Save to confirm the configuration.
5. Set up the LYNK II jumpers to specify the CANopen communication port pins. Refer to [4.2 LYNK II CAN Out - RJ45 Pin Assignments for Morningstar Integration](#).

#### NOTICE

Saving configuration changes using LYNK ACCESS will cause the LYNK II to automatically shut down and restart.

## 7. GENSTAR MPPT CONFIGURATION SETTINGS

### 7.1 Commissioning the GenStar MPPT

The following setup prepares the GenStar MPPT for operation or further programming. Initial commissioning, including specifying the battery, is only possible from the meter interface.

1. Connect the batteries to the GenStar MPPT through the LYNK II as per [Figure 1. LYNK II with GenStar MPPT using a ReadyBMS Module.](#)
2. Switch on the battery to power the MPPT controller.  
The Morningstar logo appears on the controller's Meter interface and displays the hardware and software versions. Press the arrows to navigate the menus.
3. Select and confirm the display language.
4. Next, enable or disable **Ethernet Writes** to control remote write operations over Ethernet, as required by the application.
5. Select the **System Voltage** (12V, 24V, or 48V) to match the batteries used by the application.
6. Set the UTCTime (Universal Time)
  - Set the Local Time Offset for the time zone.
7. With the ReadyBMS module installed on the GenStar MPPT, select **Yes** for the Closed Loop BMS.
8. For the **BMS Battery Type**, select **Discover**.
9. Set the **Battery Load Profile** (low voltage disconnect / reconnect) for the MPPT controller. Set the value in brackets if the application requires a larger contingency reserve on the battery.
  - **12 V / 13.2 V** (12.5 / 13.15 V)
  - **24 V / 26.2 V** (25 / 26.3 V)
  - **48 V / 52.8** (50 V / 52.6 V)Consider the self consumption of equipment in the system when setting the Battery Load Profile.
10. Reboot the MPPT and start using it with the batteries.

#### NOTE

Rebooting the MPPT is required to update the MPPT with the edited settings.

### 7.2 Setting up from the Meter Interface

After the GenStar MPPT is commissioned, use the meter interface to configure settings that were unavailable during commissioning.

1. After the MPPT is powered up, touch the down arrow to display the Main Menu.
2. Press the arrow buttons to navigate the menus.
3. **Main Menu > Setup > Installer Password**  
Enter the installer password defined in the GenStar Installation, Operation and Maintenance Manual.

4. **Main Menu > Installer Setup > Charger > Battery Info > Battery Bank Size > Edit (Hold)**

Confirm the size is correctly set as the Rated Capacity (Ah) of the battery times the number of batteries. Change the battery bank size if required.

5. **Main Menu > Installer Setup > Charger > Battery Profile > Presets**

Set the battery profile if required. While you can now begin using the batteries with the system, further configuration may be required. Refer to [7.3 Setting up from the LiveView Web Interface](#).

6. Apply changes, reboot the MPPT, and use it with the batteries.

## NOTE

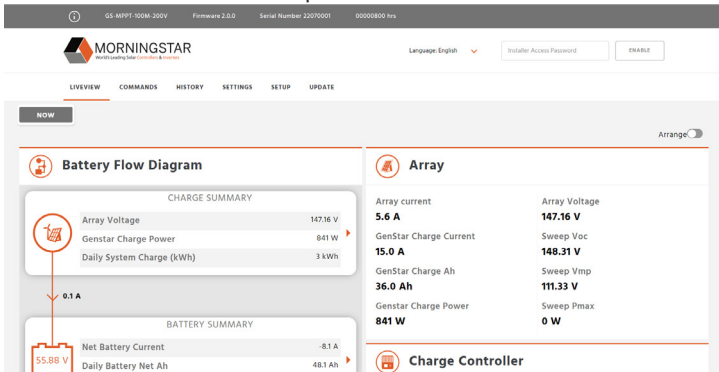
- When editing a value, the property may show "Curr" and "Fact". *Curr* refers to the current value and *Fact* is the factory default value.  
For example:
  - Curr: 130 Ah
  - Fact: 200 Ah
- Rebooting the MPPT is required to update the MPPT with the edited settings.

### 7.3 Setting up from the LiveView Web Interface

Although the GenStar MPPT cannot be commissioned using LiveView, once commissioned and connect to the network, use LiveView to configure settings from a Web interface.

1. After the GenStar MPPT is commissioned, powered ON, and connected to the network, connect to the power conversion device by typing GenStar's IP address into a web browser. (E.g. <http://192.168.1.253>, find the IP address in **Main Menu > SETTINGS > Network**)

The LiveView web interface opens.



**Figure 8. LiveView**

2. In the **Installer Access Password** field, enter the installer password defined in the GenStar Installation, Operation and Maintenance Manual.



### 3. INSTALLER SETUP > Charger > Battery Info > Battery Size

Confirm the size is correctly set as the *Rated Capacity (Ah) of the battery times the number of batteries*. Change the battery size if required.

**Battery Info** ⓘ

Battery Size ⓘ  
 Ah

Battery Current Limit ⓘ  
 A  Disable

Battery Current Limit Requires Shunt

Closed-loop BMS  
 Enabled

RTS Required  
 Disabled

**Figure 9. Battery Info**

### 4. INSTALLER SETUP > Load > Low Voltage Disconnect/Reconnect Profile

Select **Custom** and **Voltage only**.

On this page you can set various conditions for disconnecting the batteries from the equipment. Suggested values are shown in the tables below. Set the value in brackets if the application requires a larger contingency reserve.

**Low Voltage Disconnect/Reconnect Profile** ⓘ

Standard  Custom

Presets:

Low Voltage Disconnect	46.00 V	<input type="text" value="46.0"/> V	<input type="checkbox"/> Disable
Low Voltage Reconnect	50.40 V	<input type="text" value="50.4"/> V	
Load I Compensation	-24 mV/A	<input type="text" value="-24"/> mV/A	
LVD/LSocD Warning Time	10 min	<input type="text" value="10"/> min	
Load HVD	Disabled	<input type="text" value="40.0"/> V	<input checked="" type="checkbox"/> Disable
Load HVR	0.00 V	<input type="text" value="40.0"/> V	
Low SoC Disconnect	N/A	<input type="text"/> %	<input checked="" type="checkbox"/> Disable
Low SoC Reconnect	N/A	<input type="text"/> %	

**Figure 10. Low Voltage Disconnect/Reconnect Profile**

48 V	44-48-3000	42-48-6650	DLP-GC2-48V	48-48-5120
Low Voltage Disconnect	48 V (50 V)			
Low Voltage Reconnect	52.8 V (52.6)			
Load   Compensation	0			
LVD/LSocD Warning Time	1 minute			

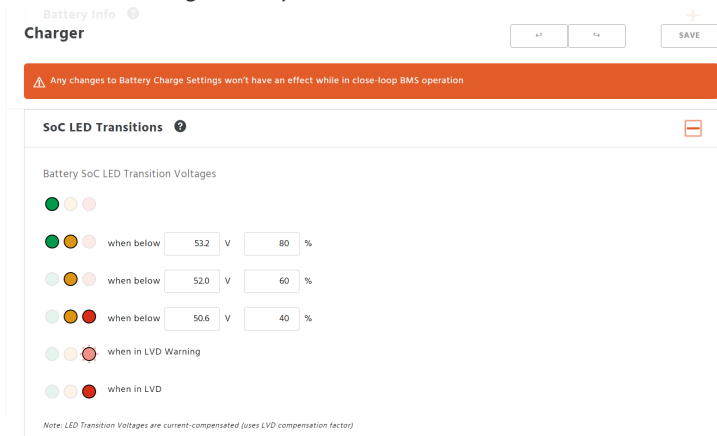
Load HVD	—	—	—	—
Load HVR	—	—	—	—
Low SoC Disconnect	—	—	—	—
Low SoC Reconnect	—	—	—	—

24 V	44-24-2800	DLP-GC2-24V
Low Voltage Disconnect	24 V (25 V)	
Low Voltage Reconnect	26.4 V (26.3 V)	
Load   Compensation	0	
LVD/LSoCD Warning Time	1 minute	
Load HVD	—	—
Load HVR	—	—
Low SoC Disconnect	—	—
Low SoC Reconnect	—	—

12 V	DLP-GC2-12V
Low Voltage Disconnect	12 V (12.5 V)
Low Voltage Reconnect	13.2 V (13.15 V)
Load   Compensation	0
LVD/LSoCD Warning Time	1 minute
Load HVD	—
Load HVR	—
Low SoC Disconnect	—
Low SoC Reconnect	—

5. **INSTALLER SETUP > Charger > SoC LED Transitions**

Available for use with a ReadyBMS module, configure the battery SOC values that trigger changes in the LED on the GenStar MPPT. This could be useful for fast troubleshooting of the system.



**Figure 11. Battery SoC LED Transition Voltages and SoC Percentages**

6. Click the **Save** button.
7. Reboot the MPPT and start using it with the batteries.

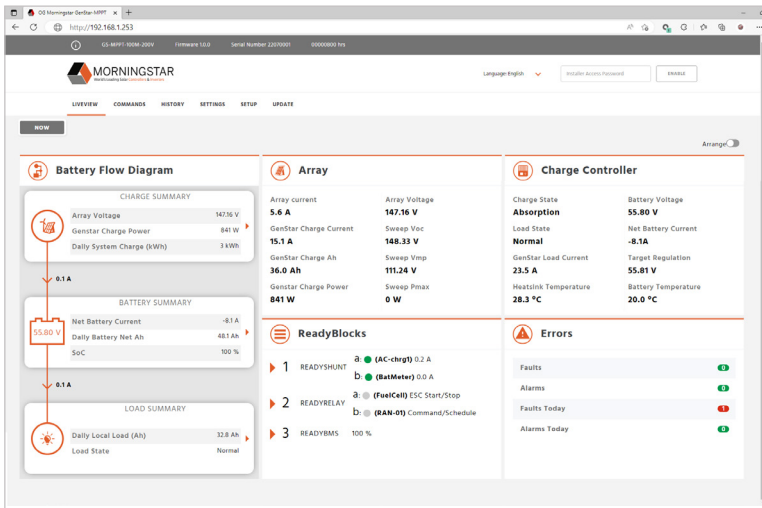
## NOTE

Rebooting the MPPT is required to update the MPPT with the edited settings.

### 7.4 Verifying the Connection

Verify the operation of the batteries and the GenStar MPPT with the Morningstar LiveView web pages.

1. After the GenStar MPPT is configured, powered ON, and connected to the network, connect to the power conversion device from a computer web browser. (E.g. <http://192.168.1.253>, find the IP address in **Main Menu > SETTINGS > Network**)



**Figure 12. LiveView**

2. In the **LIVEVIEW** tab, confirm the connected charge controller, battery measurements, and other connected devices.
3. In the **SETTINGS** tab, review the settings of the charge controller.
4. Additionally, look at the State-of-charge LEDs on the MPPT controller and the COM Indication LED on the ReadyBMS module. After the MPPT controller starts, the LEDs should display green or yellow, and the lower LED on the ReadyBMS module should blink green.
5. If any displays indicate an issue, confirm all the connections (cables and connectors), confirm LYNK II is configured correctly, and confirm the settings on the GenStar MPPT.

## 7.5 Open-Loop Configuration

There may be instances when closed-loop communication is not possible, such as when either the ReadyBMS module or LYNK II Communication Gateway has failed. Whenever possible, use a closed-loop configuration.

When the only option is to use open loop, follow the steps below to reset the MPPT controller and commission it to use open-loop charge settings.

### Reset MPPT Controller

1. From the onboard meter display of the MPPT controller, touch the down arrow to display the Main Menu.
2. Press the arrow buttons to navigate to **Main Menu > Setup > Installer Password**. Enter the installer password defined in the GenStar Installation, Operation and Maintenance Manual.
3. **Commands > Factory Reset**  
Reset the MPPT controller.

### Set Up Open Loop

4. Follow the commissioning steps defined in [7.1 Commissioning the GenStar MPPT](#) to step 6.
5. Set **Closed Loop BMS** to **No**.
6. Set the **Battery Charging Profile** (low voltage disconnect / reconnect) to **6 LiFePO4-Low**.
7. Set the **Battery Load Profile**. Set the value in brackets if the application requires a larger contingency reserve on the battery.
  - **12V / 13.2V** (12.5 / 13.15V)
  - **24V / 26.2V** (25 / 26.3V)
  - **48V / 52.8** (50V / 52.6V)
8. Set **RTS Required** (Remote Temperature Sensor) to **No**.
9. Reboot the MPPT.

### Configuration

10. Power up the GenStar MPPT and confirm it's connected to the network.
11. Connect to the power conversion device by typing GenStar's IP address into a web browser. (E.g. <http://192.168.1.253>, find the IP address in **Main Menu > SETTINGS > Network**)  
The LiveView web interface opens.
12. In the **Installer Access Password** field, enter the installer password defined in the GenStar Installation, Operation and Maintenance Manual.
13. **INSTALLER SETUP > Charger > Battery Info > Battery Size**  
Confirm the size is correctly set as the *Rated Capacity (Ah) of the battery times the number of batteries*. Change the battery size if required.
14. **INSTALLER SETUP > Charger > Battery Charge Settings**  
Configure the battery charging profile. Select **Custom** and set the values as shown in the tables for the battery.

**Battery Charge Settings** ?

Battery Charging Profile

Standard
  Custom

Presets: Custom (0) COPY TO CUSTOM

Absorption Voltage	56.00 V	54.4 V	
Absorption Time	02:30 hrs:min	03 : 00 hrs:min	
Float Voltage	54.80 V	54.0 V	<input type="checkbox"/> Disable
Equalization Voltage	Disabled	40.0 V	<input checked="" type="checkbox"/> Disable
Equalization Time	01:00 hrs:min	00 : 00 hrs:min	
Equalization Interval	Disabled	1 days	<input type="checkbox"/> Disable

**Installer Setup**

**Figure 13. Battery Charge Settings**

48 V	44-48-3000	42-48-6650	DLP-GC2-48V	48-48-5120
Absorption Voltage	54.4 V	54.4 V	55.2 V	55.2 V
Absorption Time	3 hours			
Float Voltage	53.6 V			
Equalization Voltage	Disable			
Equalization Time	—	—	—	—
Equalization Interval	—	—	—	—

24 V	44-24-2800	DLP-GC2-24V
Absorption Voltage	27.2 V	27.6 V
Absorption Time	3 hours	
Float Voltage	26.8 V	27.2 V
Equalization Voltage	Disable	
Equalization Time	—	—
Equalization Interval	—	—

12 V	DLP-GC2-12V
Absorption Voltage	13.8 V
Absorption Time	3 hours
Float Voltage	13.6 V
Equalization Voltage	Disable
Equalization Time	—
Equalization Interval	—

15. **INSTALLER SETUP > Charger > Battery Charge Settings > Installer Setup**

Set the **Temperature Compensation Coefficient** to **Disabled**.

16. Reboot the MPPT and start using it with the batteries.

<b>NOTE</b>
Rebooting the MPPT is required to update the MPPT with the edited settings.