



ADVANCED ENERGY

Lithium Ion Battery

LYNK Edge Card Sol-Ark User Manual

PN: 950-0016-SLRK

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1. Safety

1.1 Warnings, Cautions and Notes

▲ WARNING

Death or Injury

▲ CAUTION

Equipment Damage

▲ NOTE

Additional Information

1.2 General Warnings

▲ WARNING

HAZARD OF ELECTRICAL SHOCK AND FIRE

- Connect LYNK to only Safety Extra Low Voltage (SELV) circuits and power sources.
- All wiring must be completed by qualified personnel to ensure compliance with applicable installation codes and regulations.

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

▲ CAUTION

HAZARD OF EQUIPMENT DAMAGE

- Do not install LYNK outdoors.
- Do not connect any port of the LYNK to a network with power over Ethernet (PoE) or to a public telecommunication network.
- Do not run CAT5 cables or other cables connected to LYNK through conduit that could be exposed to lightning strikes.

Failure to follow these instructions can damage equipment.

2. Documentation

This User Manual provides information about the integration of Discover AES Lithium batteries with Sol-Ark devices in a closed-loop configuration using the AES LYNK Communication Gateway with installed AES LYNK Edge Card for Sol-Ark. AES battery can be use in Energy Storage System (ESS) for self consumption, grid backup and off-grid applications. These instructions apply to an off-grid application.

Note that in a Sol-Ark networked system the charging variables will be managed automatically by the AES Battery Management System (BMS) and the Sol-Ark device. Discharging variables are managed by the set up of the Sol-Ark inverter.

Sol-Ark Reference Documents:

- Sol-Ark 12K Install Guide & Owner's Manual
- Sol-Ark 8K Install Guide & Owner's Manual

Discover Reference Documents:

- Discover Energy 808-0004 42-48-6650 data sheet
- Discover Energy 808-0005 44-24-2800 data sheet
- Discover Energy 808-0027 44-48-3000 data sheet
- Discover Energy 805-0015 AES LiFePO₄ battery 44-24-2800 42-48-6650 manual
- Discover Energy 805-0025 AES LiFePO₄ battery 44-24-3000 manual
- Discover Energy 805-0017 AES LYNK Communication Gateway manual

Visit discoverbattery.com for the most recent version of published documents.

Certain configuration, installations, service, and operating tasks should only be performed by qualified personnel in consultation with local utilities and/or authorized dealers. Qualified personnel should have training, knowledge, and experience in:

- Installing electrical equipment
- Applying applicable installation codes
- Analyzing and reducing hazards involved in performing electrical work
- Installing and configuring batteries

No responsibility is assumed by Discover for any consequences arising out of the use of this material.

Read AES battery manual and safety instructions before installing the battery.

Read Sol-Ark manuals for guidance on product features, functions, parameters and how to use the product safely.

3. Overview

3.1 System Overview

The AES LYNK Communication Gateway unlocks the full potential of a Discover AES LiFePO₄ battery by enabling the internal Battery Management System (BMS) to optimize the charge and discharge configurations of the world's best inverter/chargers and solar charge controller systems in a closed loop configuration.

AES LiFePO₄ batteries must be set up to work with power conversion and monitoring devices in either an open-loop or closed loop configuration. AES LiFePO₄ battery charge and discharge settings in an open-loop configuration are set up manually through the controller for the power conversion device at the time of installation. This is commonly referred to as a 'lead acid drop-in replacement' configuration. In a closed-loop configuration the battery charge and discharge rates and settings are dynamically controlled by the BMS of the AES LiFePO₄ battery over a connection with the power conversion devices in the network.

To connect with the communication network of a specific brand of inverter charger or solar charge controller, the LYNK Communication Gateway requires an AES LYNK Edge Card with the appropriate communication port.

3.2 Minimum Battery Capacity

Battery charge and discharge rates are managed automatically by the AES LiFePO₄ battery and Sol-Ark device. Using very large solar arrays with battery banks that are too small can exceed the operating limits of the battery to charge and possibly lead to the BMS triggering over-current protection. Battery capacity must be sized to accept the maximum charge current of the system, or the charging devices must be curtailed to charge below the operating limit of the installed batteries. This value is derived by adding together the charge capacities of all inverter/chargers and solar charge controllers in the system. Additionally, battery peak capacity must be sized to support the surge requirements demanded by the load attached to the inverter. Match the sum of all inverter peak power values with the sum of all battery peak battery current values.

Model	Inverter Peak* (92% Efficiency at 48V)	Charger*	Solar Charger*	Single Phase Minimum 42-48-6650	Single Phase Minimum 44-48-3000
Sol-Ark 8K (120 V)	417 Adc	190 Adc	250 Adc	2	5
Sol-Ark 12K (120V)	417 Adc	190 Adc	250 Adc	2	5

Model	Inverter Peak* (92% Efficiency at 48V)	Charger*	Solar Charger*	Single Phase Minimum 42-48-6650	Single Phase Minimum 44-48-3000
Sol-Ark 8K (240 V)	208 Adc	190 Adc	250 Adc	2	5
Sol-Ark 12K (240V)	208 Adc	190 Adc	250 Adc	2	5

* As published in the Sol-Ark User Manual

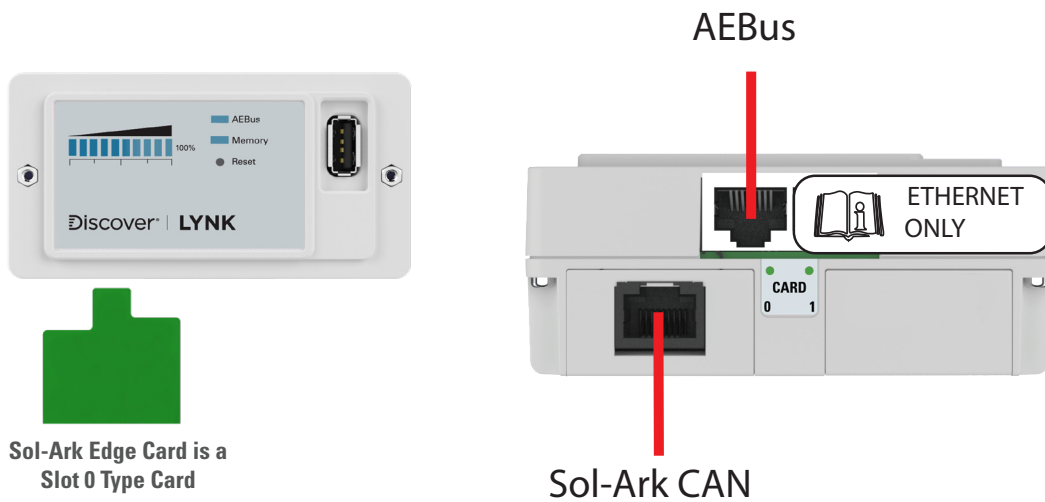
4. Installing and Connecting LYNK to the Sol-Ark Network

4.1 Installing the LYNK Edge Card

The LYNK Edge Card for Sol-Ark is a Slot 0 Type which only inserts into the left side slot on the bottom of the LYNK Communication Gateway.

▲ NOTE

- The LYNK Edge Card type to be used is determined by the brand of power conversion equipment.
- If LYNK Edge Card is in the wrong slot, it will not function.
- If LYNK Edge Card is not firmly seated, it will not function.



▲ CAUTION

HAZARD OF EQUIPMENT DAMAGE

- Do not plug the AEBus RJ-45 cable terminator into the 10/100 Ethernet port of the LYNK.
- Do not connect a CAT5 cable from the 10/100 Ethernet port of the LYNK to the WAN or MODEM port of a network router.
- Turn OFF all devices before connecting cables or inserting an Edge Card.

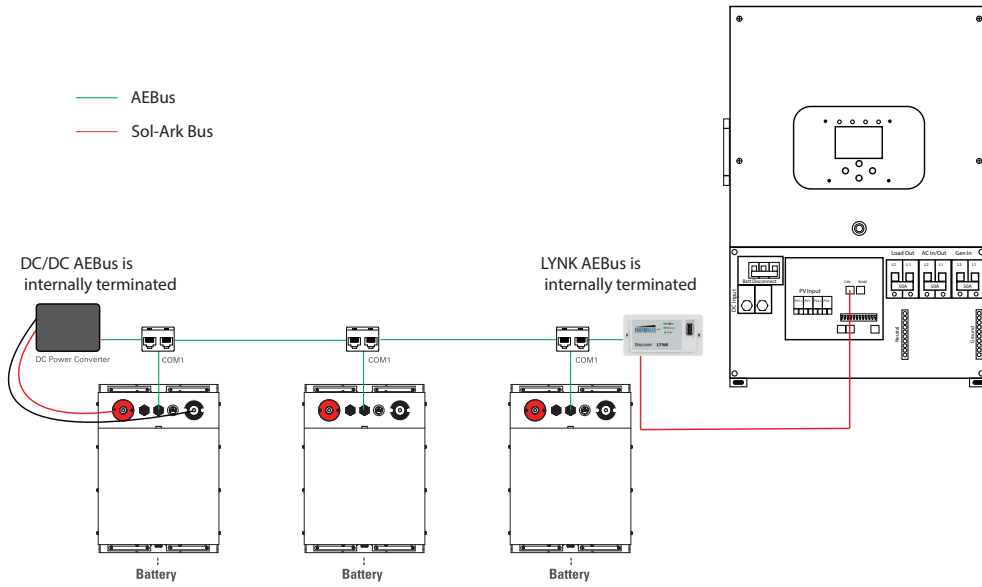
Failure to follow these instructions can damage equipment.

▲ NOTE

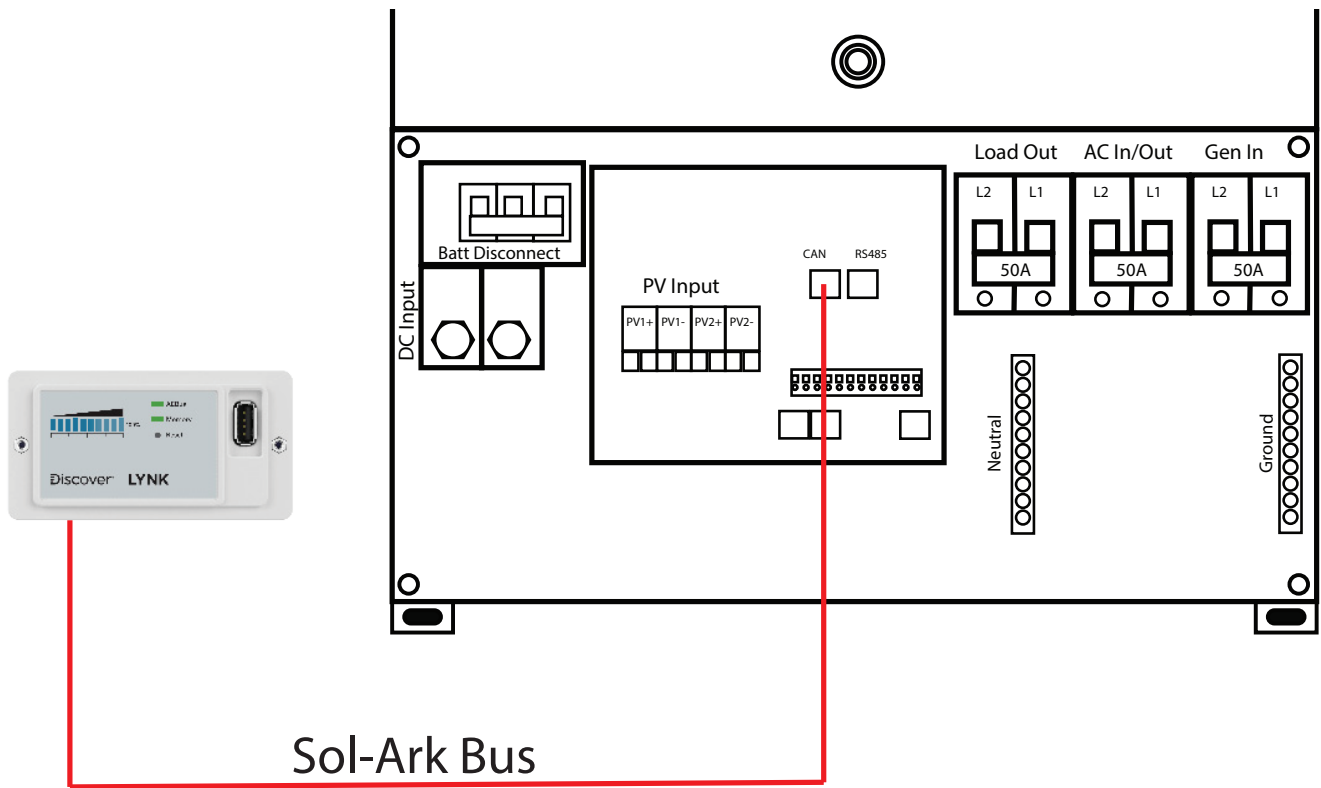
- Power electronics are not AEBus devices and should not be connected to AEBus.

4.2 Connecting LYNK to the Sol-Ark Network

Before connecting LYNK to the Sol-Ark Network ensure that the firmware for all Sol-Ark devices is up to date.



Insert one end of a CAT5 communication cable into the Sol-Ark Edge Card port and the other end into the Sol-Ark inverter CAN port.



5. System Setup

Turn on the inverter and navigate to the "BATT" tab in the Basic Setup Menu and ensure that BMS Lithium Battery is enabled with a check mark and displays 00**.

Batt	Charge	Discharge	Smart Load	
Batt Capacity	400Ah		<input type="checkbox"/>	Use Batt V charged
Max A Charge	40A		<input checked="" type="checkbox"/>	Use Batt % Charged
Max A discharge	60A		<input type="checkbox"/>	No Battery
TEMPCO	-5mV/C/Cell		<input checked="" type="checkbox"/>	BMS Lithium Batt 00
<input type="button" value="CANCEL"/>		<input type="button" value="OK"/>		<input checked="" type="checkbox"/> Activate Battery

** Refer to the most recently published Sol-Ark manual to verify BMS Lithium Battery number remains 00.