DISCOVER ENERGY SYSTEMS

885-0151 AES Cabinet Solis Hybrid Inverter (Australia) Integration Guide

Rev C

Table of Contents

AES CAB-106 / 160 / 210 and Solis S6-EH3P (29.9 to 50K)

Document: 885-0151

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1 INTRODUCTION

This guide provides information on integrating the AES CAB-106, CAB-160, and CAB-210 high-voltage battery cabinets (hereafter referred to as AES Cabinet) and the LYNK II Communication Gateway with the Solis S6-EH3P hybrid inverters. It is not a comprehensive step-by-step guide for every possible installation scenario. Each installation may present unique conditions or specific use cases that require custom configurations or adjustments to recommended values. For additional details and advanced configurations, refer to the supporting documents below.

Qualified installers must have the expertise to evaluate and adapt to the specific requirements of the installation site, ensuring the system is configured for optimal performance and safety. The installer must always consider the application's unique aspects and adjust settings accordingly.

Before installation or configuration, review all relevant documentation, including product manuals, application notes, installation guides, and configuration guides.

Solis Documentation

Visit www.solisinverters.au for the latest Solis product manuals, configuration guides, and firmware updates.

Discover Energy Systems Documentation

Visit https://www.discoverenergysys.com for the most recent version of published documents.

- AES Cabinet Outdoor C&I Installation and Commissioning Manual (805-0104)
- AES 210HV Installation and Commissioning Manual (805-0092)
- LYNK II Installation and Operation Manual (805-0033)

Review these documents for the installation and operation of the system.

1.1 Applicable Products

Solis Three-Phase High-Voltage Hybrid Inverters

Solis Inverter Model	Max Power (PV/AC/Battery)	AC Configuration
S6-EH3P29.9K03-H-AU	59.8 / 29.9 / 32.1 kW	3/N/PE, 230 V / 400 V 50 Hz
S6-EH3P30K03-H-AU	60 / 30 / 33 kW	

Solis Inverter Model	Max Power (PV/AC/Battery)	AC Configuration
S6-EH3P40K03-H-AU	80 / 40 / 44 kW	
S6-EH3P50K03-H-AU	100 / 50 / 55 kW	

AES Battery Energy Storage System Cabinets

AES Cabinet	CAB-106	CAB-160	CAB-210
Unit Model Number	SLL03C2-D1P52S1R2-A01	SLL03C2-D1P52S1R3-A01	SLL03C2-D1P52S1R4-A01
Chemistry	$LiFePO_4$ (LFP)		
Nominal Energy	106 kWh	160 kWh	213 kWh
Usable Energy	104 kWh	157 kWh	209 kWh
Nominal Capacity	320 Ah		
Usable Capacity	314 Ah		
Nominal Voltage	332.8 V	499.2 V	665.6 V
Voltage Range	312 - 358.8 V	468 - 538.2 V	582.4 - 738.4 V
Maximum Continuous Current	157 A		

2 AUDIENCE, MESSAGES, WARNINGS, GENERAL SAFETY, PERSONAL PROTECTIVE EQUIPMENT

This section outlines who should perform the installation and commissioning of AES Cabinets (CAB-106, CAB-160, CAB-210) with Solis inverters, along with critical safety warnings, required personal protective equipment (PPE), and guidelines for safely handling high-voltage energy storage systems as per AS/NZS 5139 and the local authority having jurisdiction.

2.1 Audience

Configuration, installation, service, and operating tasks for the AES Cabinet and the inverter system should only be performed by qualified personnel in consultation with local authorities having jurisdiction and with authorized resellers.

Qualified personnel should have training, knowledge, and experience with :

- Installing and commissioning electrical equipment.
- Interpreting and applying national and local electrical codes.
- Identifying, assessing, and mitigating electrical and mechanical hazards.
- Configuring and maintaining energy storage systems, including high-voltage batteries.
- Installing and managing communication systems, such as CAN and Ethernet.
- Configuring relay-activated systems and integrating them with other components.

2.2 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 result in damage to the equipment but not personal injury.

NOTE
Ad hoc information concerning important procedures and features of the battery not related to personal injury or equipment damage.

2.3 General Warnings

⚠ WARNING
ELECTRIC SHOCK AND FIRE HAZARD The battery and the inverter must be installed and operated strictly according to the installation and integration guides. • Ensure proper polarity and secure DC and AC wiring connections to prevent equipment damage or hazards. **Failure to follow these instructions may result in death or serious injury.**

⚠ WARNING
ELECTRIC SHOCK AND FIRE HAZARD Always de-energise the system before performing maintenance or making adjustments. **Failure to follow these instructions may result in death or serious injury.**

⚠ CAUTION

ELECTRIC SHOCK

- Do not touch the energised surfaces of any electrical component in the battery system.
- Before servicing the battery, follow all procedures to fully de-energise the battery system.
- Follow the "Safe Handling Guidelines" below when working with the battery.

Failure to follow these instructions may result in injury.

2.4 Safe Handling Guidelines

Review all instructions and safety information in the product manuals before installing or operating the AES Cabinet and the inverter system. Follow these key safety guidelines:

- Avoid physical damage to the cabinet. Do not drop, crush, puncture, or submerge the cabinet in water or other liquids.
- Only use the system with qualified and compatible components to avoid fire, explosion, or system failure.
- Use a properly rated charging system approved for use with the AES Cabinet.
- Do not exceed the maximum current and voltage ratings specified for the battery cabinet and inverter.
- Avoid short-circuiting the battery or exposing it to metallic objects that could create conductive bridges across the terminals.
- Replace components only with qualified replacements approved for use with the system.
- Recycle or dispose of batteries in accordance with EPA and state environmental regulations.

2.5 Personal Protective Equipment

Follow the PPE selection guidelines outlined in AS/NZS 4836 for working in high-voltage environments.

When handling or working near the AES Cabinet:

Wear Personal Protective Equipment (PPE)

- Arc-rated clothing.
- Insulated gloves rated for high-voltage systems.
- Safety glasses or goggles to protect against potential sparks or debris.
- Fire-resistant clothing, including long-sleeved shirts and pants.
- Non-conductive, anti-slip safety boots.

Remove Conductive Accessories

- Avoid wearing rings, watches, bracelets, necklaces, or metallic jewelry that could create a short circuit or accidental contact with electrical components.

3 SYSTEM OVERVIEW AND DESIGN

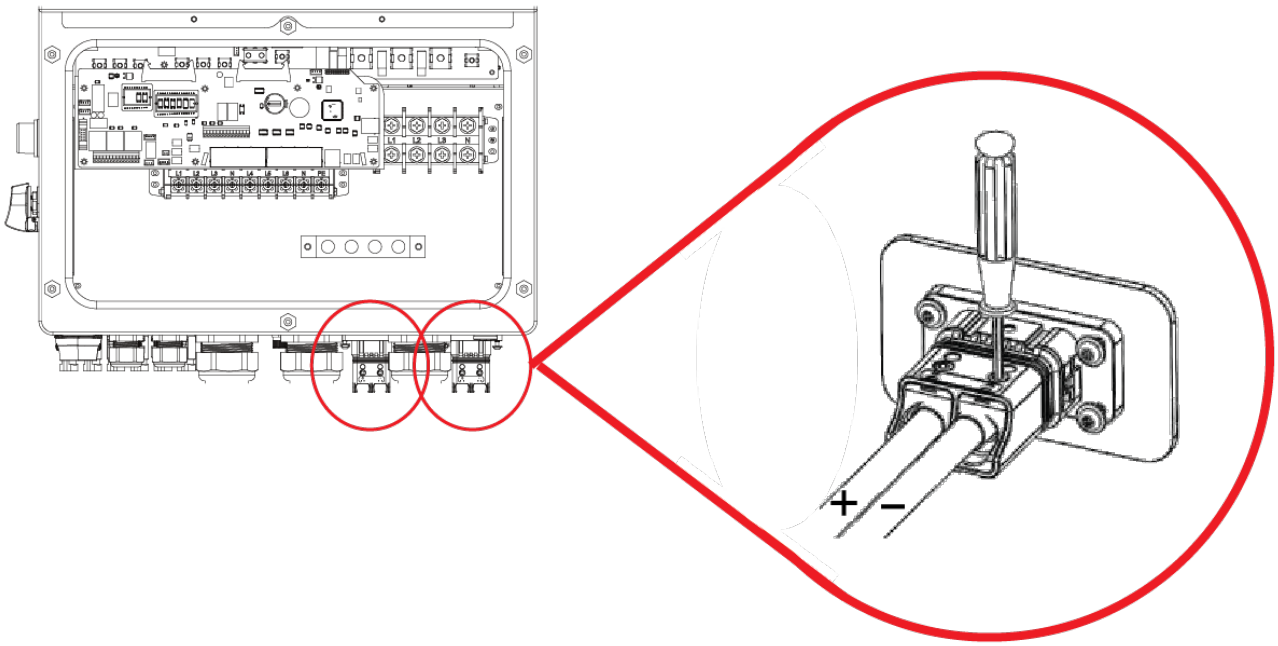
The AES Energy Storage Cabinet integrates with the Solis S6-EH3P hybrid inverter to deliver a scalable, high-performance energy storage solution for demanding applications. The integration leverages advanced battery management, efficient DC distribution, and real-time communication to optimize system operation.

Voltage Compatiblity

The AES Cabinets operate at a nominal voltage of 332, 499, and 665 Vdc, which align with the Solis S6-EH3P inverter's DC battery range (150–800 Vdc). This compatibility supports efficient power delivery with minimal conversion loss.

Dual Battery Terminals

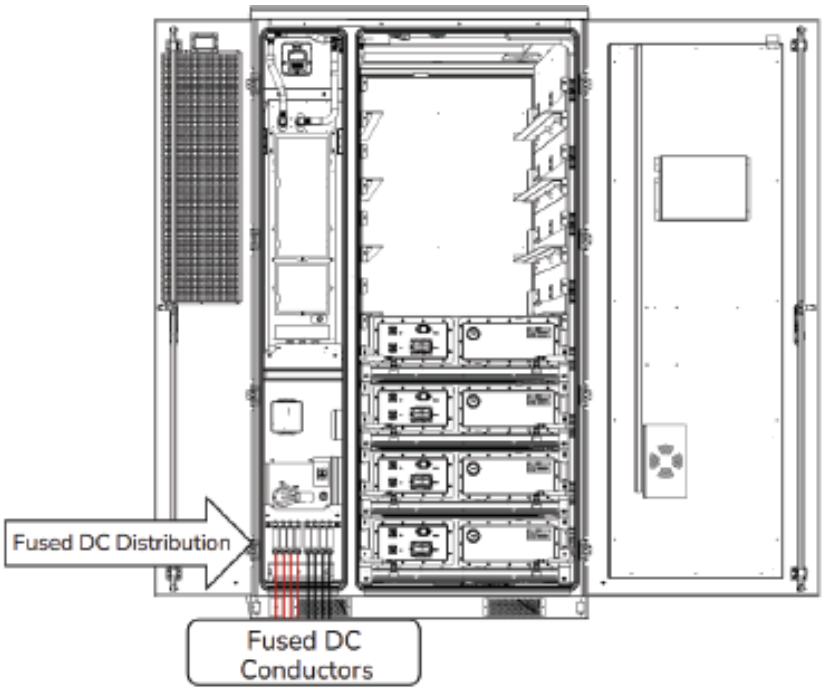
The Solis S6-EH3P inverter features two independent battery input terminals, each rated for 70 Adc (32.1 to 35 kW), for a combined maximum of 64.2 to 70 kW. The AES Cabinet connects to both terminals through its Integrated DC Distribution.



3.1 Integrated DC Distribution

The AES Cabinet includes DC distribution with built-in fuses for a streamlined connection.

- Four positive and four negative fused connections, including 70 A fuses per terminal (replaceable with fuses from 35 A, 40 A, 50 A, 60 A, 70 A, 80 A, 90 A, 100 A, 125 A, and 150 A).
- Use 25 mm^2 (4 AWG) cables to meet Solis S6-EH3P wiring requirements.
- This configuration allows the AES Cabinet to distribute power to multiple DC inputs and/or inverters.



3.2 Capacity and Configuration Options

NOTICE
EQUIPMENT DAMAGE Do not parallel AES Cabinets on the DC bus. Attempting to parallel the DC outputs of individual battery cabinets can result in unbalanced currents, system instability, or potential damage to the equipment. **Failure to follow these instructions may result in equipment damage.**

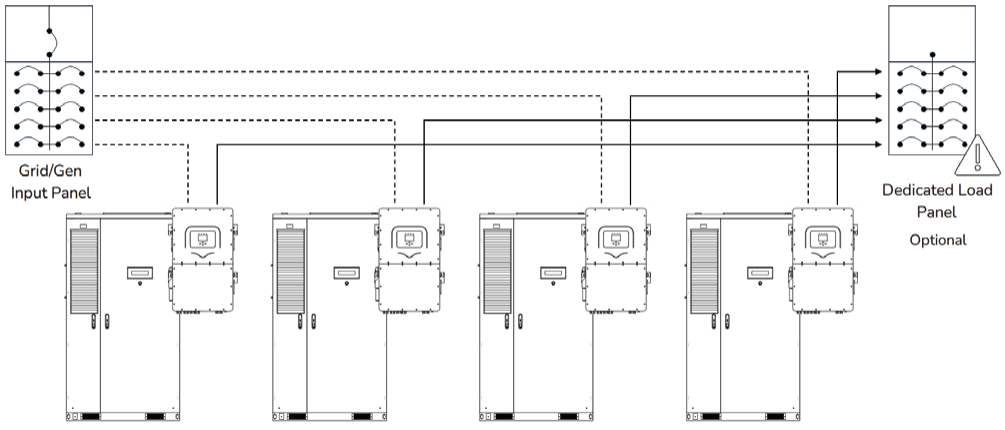
Do Not Parallel Battery Cabinets on the DC Bus

Each AES Cabinet is designed to operate independently and must connect to a dedicated inverter input. Do not combine or parallel the DC outputs of multiple cabinets, as this will result in unbalanced current flow, system instability, and equipment damage.

Parallel Inverters on the AC Bus

System scalability is achieved by paralleling inverters on the AC bus, not by paralleling the batteries. In this design, each inverter has a dedicated battery cabinet, and the inverter AC outputs are synchronized to support larger system loads. This ensures safe, stable, and balanced operation across all components.

Solis S6-EH3P Hybrid inverters offer unlimited scalability on the grid side, allowing the integration of multiple units for high-capacity PV and grid-interactive applications. However, parallel operation on the islanded backup side is limited to **ten** inverters.



Output of Solis Inverters in Backup

Model	1 Unit	2 Units	3 Units	…	9 Units	10 Units
S6-EH3P29.9K-H-AU	43.2 A	86.4 A	129.6 A	…	388.8 A	432 A
S6-EH3P30K-H-AU	43.3 A	86.6 A	129.9 A		389.7 A	433 A
S6-EH3P40K-H-AU	57.7 A	115.4 A	173.1 A		519.3 A	577 A
S6-EH3P50K-H-AU	72.2 A	144.4 A	216.6 A		649.8 A	722 A

NOTE
For detailed instructions on paralleling multiple units, consult the Solis Commercial Three-Phase HV Hybrid Inverter Manual.

Compatible Inverter Models and Specifications

Inverter Model	Max Power (PV/AC/Battery)
S6-EH3P29.9K-H-AU	59.8 / 29.9 / 32.1 kW
S6-EH3P30K-H-AU	60 / 30 / 33 kW
S6-EH3P40K-H-AU	80 / 40 / 44 kW
S6-EH3P50K-H-AU	100 / 50 / 55 kW

When pairing one AES Cabinet with a single Solis inverter, discharge performance is governed by the inverter's battery input rating, which ranges by model from 32.1 kW to 55 kW. The AES Cabinet supports continuous output up to 52 kW, 78 kW, or 104 kW (C/2 rate), so battery performance scales according to inverter limitations.

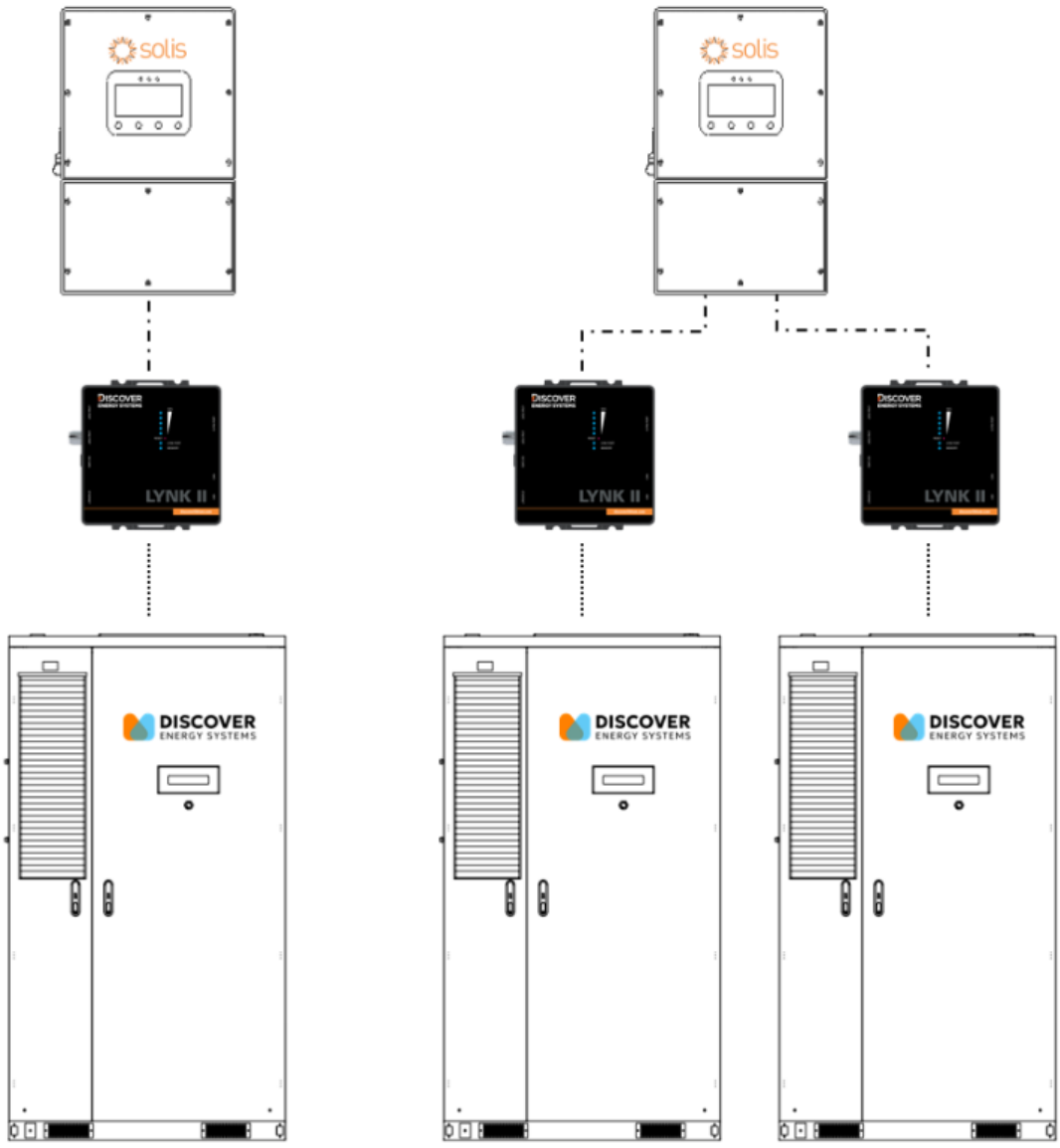
Inverter Model	Max Discharge Power
S6-EH3P29.9K-H-AU	29.9 kW
S6-EH3P30K-H-AU	30 kW
S6-EH3P40K-H-AU	40 kW
S6-EH3P50K-H-AU	50 kW

Systems can be configured with either one battery per inverter or two batteries sharing a single inverter. In all cases, the battery remains within specification. Final system sizing should align with the site's load profile and desired autonomy to ensure optimal performance and value.

Inverter Current and Power Limitation

The Solis S6-EH3P inverter has two battery input terminals, each rated for up to 70 A, for a combined maximum of 140 A. When paired with the AES CAB-104 (332 Vdc nominal), CAB-160 (499 Vdc nominal), or CAB-210 (665 Vdc nominal), actual current is limited by the inverter's 29.9-50 kW power rating, resulting in approximately 22.5-37.5 A per terminal under regular operation.

Managed (closed-loop) CANbus Connection - LYNK II Gateway



The LYNK II Gateway enables real-time, managed (closed-loop) communication between the AES battery cabinet and the Solis inverter. It transmits key battery data such as its state of charge, voltage, current, temperature, and operating limits to the inverter. This allows the inverter to automatically adjust charging and discharging current for safe, efficient, and optimized system performance.

NOTICE
EQUIPMENT DAMAGE Connect the Solis inverter's BMS1 and BMS2 ports only to the CAN port on the LYNK II Gateway using a standard CAT6 or higher cable. Do not connect the inverter's BMS ports directly to the J3 or J4 ports on the AES Cabinet's High Voltage Box, as this may damage the inverter. **Failure to follow these instructions may result in equipment damage.**

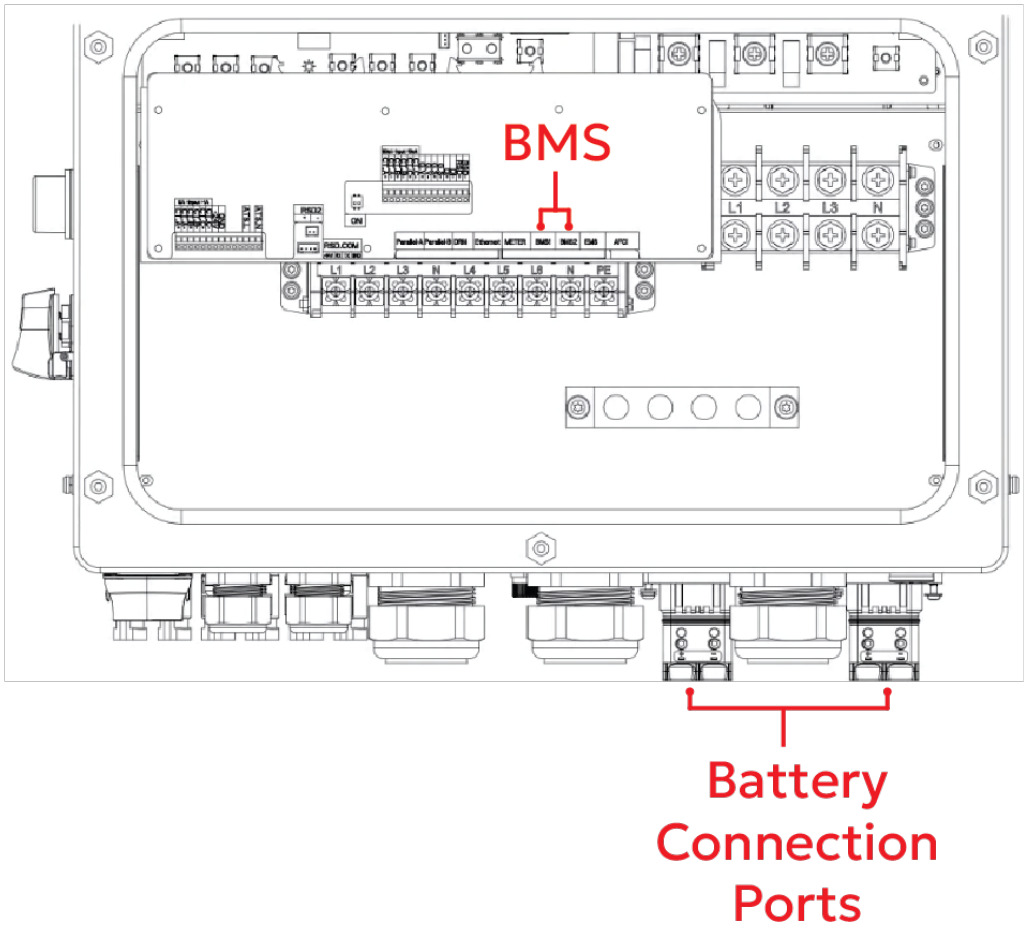
3.3 Managed (Closed-Loop) CANbus Communication

Managed CANbus Communication with the LYNK II Gateway

The **LYNK II Communication Gateway** enables communication between the AES Cabinet and inverters. Using CANbus, the LYNK II Gateway connects the BMS of the battery with the battery BMS ports of the Solis S6-EH3P and automatically:

- **Establishes battery limits** (charge/discharge current, voltage, temperature) so the inverter always operates within safe parameters.
- **Pushes live state-of-charge and operating data** to the inverter for accurate power-flow and alarm handling.
- **Continuously adjusts** the inverter's charge profile in response to real-time cabinet conditions.

System Layout	LYNK II Connections	Result
1 × AES Cabinet **1 × S6-EH3P**	Connect the LYNK II CANout to the inverter BMS 1 (BMS 2 open).	A single, managed (closed-loop) pathway.
2 × AES Cabinet **1 × S6-EH3P**	Utilize one LYNK II per cabinet. Connect the first LYNK II CANout to BMS 1 and the second LYNK II CANout to BMS 2.	The inverter uses each cabinet as an independent battery and shares the power evenly.



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3.4 Interfacing with the AES Cabinet

LYNK ACCESS – Local Commissioning & Diagnostics

LYNK ACCESS software runs on the Windows® OS and connects directly with the AES battery cabinet through the LYNK II Gateway over USB. It provides installers and technicians with live, sub-second visibility of critical operating variables, such as cell voltages, temperatures, contactor state, energy counters, and alarms. It lets them run diagnostics or save data-logged reports without an internet connection.

Use LYNK ACCESS whenever you are on-site and need real-time data, troubleshooting tools or firmware/parameter updates.

LYNK CLOUD - Remote Monitoring & Management

LYNK CLOUD is a secure, browser-based platform that receives encrypted telemetry from each LYNK II Gateway, which requires a wired internet connection. LYNK CLOUD provides 24/7 remote visibility of cabinet performance, state-of-health, and lifetime energy throughput, aggregates multiple sites into fleet dashboards, and issues configurable email notifications for alarms and critical events.
Ideal for O&M teams and asset owners, LYNK CLOUD transforms the AES battery cabinet into a cloud-connected asset for proactive maintenance and performance analytics.

4 SYSTEM CONFIGURATION AND CONNECTIONS

There are three standard inverter-to-cabinet configurations.

- **1 Inverter: 1 Cabinet**
  One S6-EH3P Inverter (29.9-50kW), One AES Cabinet
- **1 Inverter: 2 Cabinets**
  One S6-EH3P Inverter (29.9-50kW), Two AES Cabinets

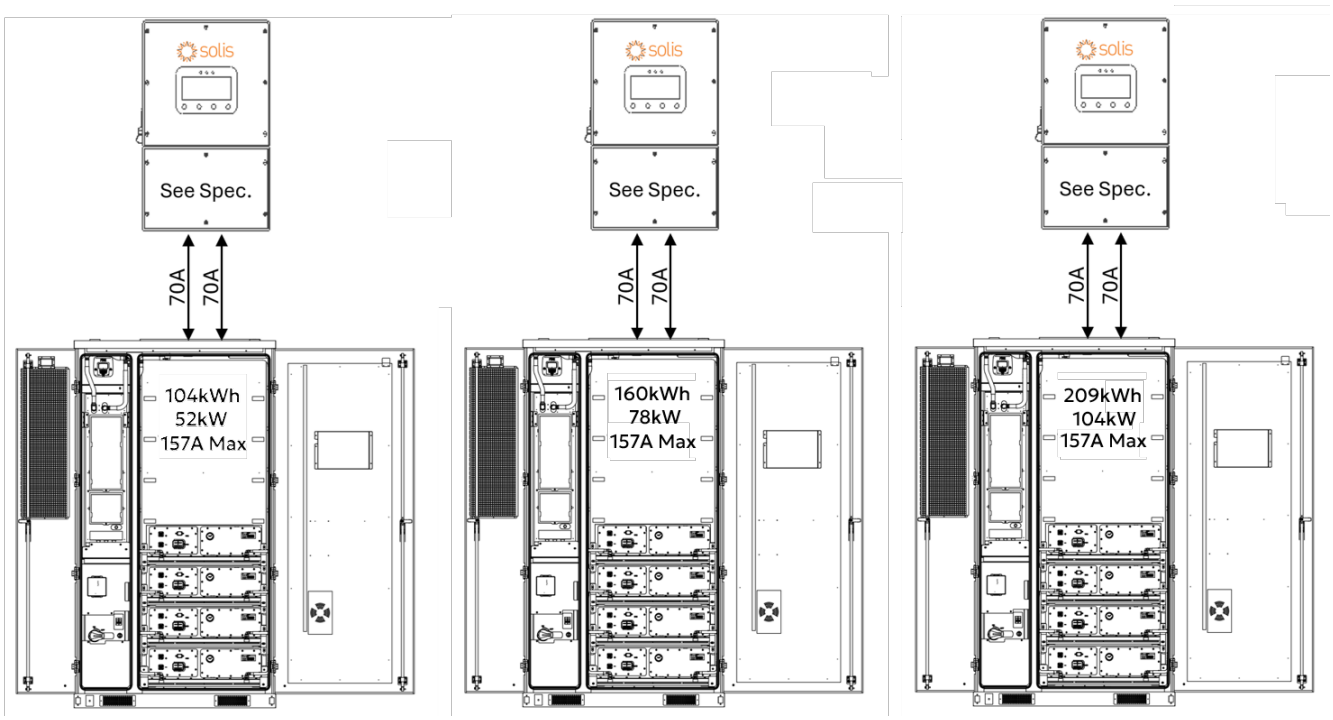
Systems can scale up to **10** Solis S6-EH3P inverters in parallel on the AC bus, supporting up to 299-500 kW of total inverter output.

When designing larger systems, maintain consistent inverter-to-cabinet ratios across the entire installation. For example, if your system starts with a 1:1 ratio (one inverter per cabinet), all additional inverter-cabinet sets should follow the same 1:1 pattern.

NOTICE
UNBALANCED BATTERY HAZARD Mixing ratios within the same system (e.g., combining 1:1 and 1:2 configurations) is not supported, as it can lead to unbalanced load sharing. **Failure to follow these instructions may result in equipment damage.**

4.1 One Inverter, One AES Cabinet

⚠ WARNING
ELECTRIC SHOCK AND FIRE HAZARD Follow AS/NZS 3000 and AS/NZS 5139 Wiring Rules for conductor size, insulation rating (≥1000 Vdc), and torque specs for safe and code-compliant installation. **Failure to follow these instructions may result in death or serious injury.**



CAB-106, CAB-160, and CAB-210 Configurations

When paired with a single Solis inverter, the AES Cabinet's maximum continuous current limit is 157 A, operating within its rated 52 / 78 / 104 kW continuous output limit. Actual discharge performance depends on the inverter model's battery-side power capacity, as shown below.

Full Load Duration

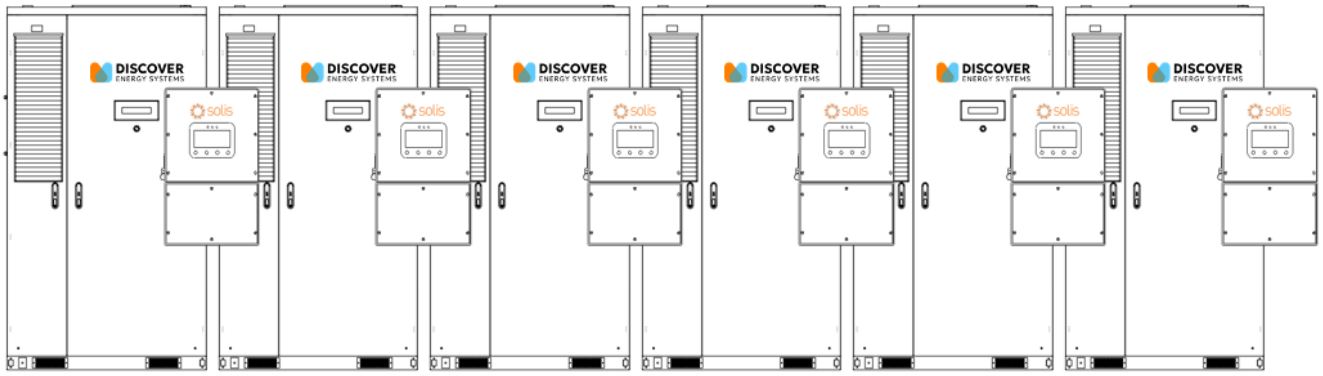
Inverter Model	**Battery Discharge Limit**	**CAB-106**	**CAB-160**	**CAB-210**
		AC Output / Usable Storage / Estimated Runtime		
S6-EH3P29.9K03-H-AU	29.9 kW	29.9 kW / 104 kWh / 3½ hours	29.9 kW / 157 kWh / 5 hours	29.9 kW / 209 kWh / 7 hours
S6-EH3P30K03-H-AU	30 kW	30 kW / 104 kWh / 3½ hours	30 kW / 157 kWh / 5 hours	30 kW / 209 kWh / 7 hours
S6-EH3P40K03-H-AU	40 kW	40 kW / 104 kWh / 2½ hours	40 kW / 157 kWh / 4 hours	40 kW / 209 kWh / 5 hours

S6-EH3P50K03-H-AU	50 kW	50 kW / 104 kWh / 2 hours	50 kW / 157 kWh / 3 hours	50 kW / 209 kWh / 4 hours

** Curtailed by the battery.*

These autonomy estimates assume continuous full-power discharge and operation within safe continuous discharge parameters. Final performance should match the site's energy demand and load profile.

4.1.1 System Scalability – One Inverter, One AES Cabinet



Each Solis S6-EH3P inverter is paired with one AES battery cabinet.

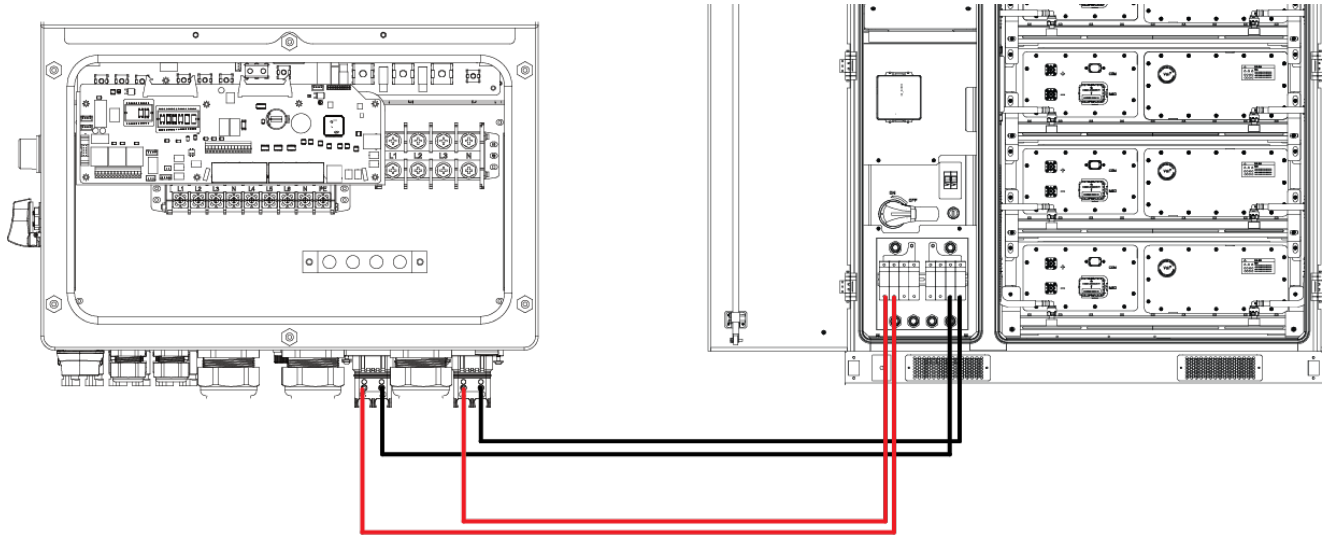
In this setup:

- 104 / 160 / 209 kWh of usable backup energy per inverter
- Discharge power limited by the inverter model (29.9–50 kW)
- Up to ten inverters can be connected in parallel on the backup side, providing 299-500 kW of continuous backup power and approximately 1.04-2.09 mWh of total backup energy (10 × 104 kWh / 10 × 157 kWh / 10 × 209 kWh).

Grid-Tied (Non-Backup) Scalability

The number of inverters or batteries is unlimited for non-backup use. Each inverter runs independently, allowing systems to scale as large as needed for energy shifting, peak shaving, or other grid-interactive applications.

4.1.2 DC Battery Wiring – One Inverter, One AES Cabinet



Each Solis inverter has two battery input terminals, each rated up to 70 A. The AES Cabinet connects using:

- Two positive and two negative 25 mm^2 (#4 AWG) conductors
- Each conductor is protected by a 70 A fuse in the AES Cabinet's built-in DC distribution box

This setup ensures balanced current flow to each of the inverter's internal DC/DC converters and, depending on the inverter model, supports continuous discharge of 29.9-50 kW.

Always follow AS/NZS 3000 Wiring Rules and the local authority having jurisdiction for conductor sizing, 1,000 Vdc insulation rating, and proper torque values. Verify polarity before energising the system.

4.1.3 Communication – One Inverter, One AES Cabinet

In a one-to-one configuration, the AES Cabinet communicates with the Solis inverter through the LYNK II Gateway, enabling real-time, managed (closed-loop) control.

- Use standard CAT6 or higher Ethernet cables, wired in a straight-through configuration with RJ45 plugs on both ends.
- Connect one cable from the LYNK II's CAN port to the Solis inverter's BMS1 port.

- Connect a second cable from the LYNK port on the LYNK II Gateway to the J3/J4 port on the AES Cabinet's High Voltage Box. On most AES Cabinets, a CAT6 cable is already connected to the J3 port on the AES Cabinet's High Voltage Box and is accessible from the LYNK II.

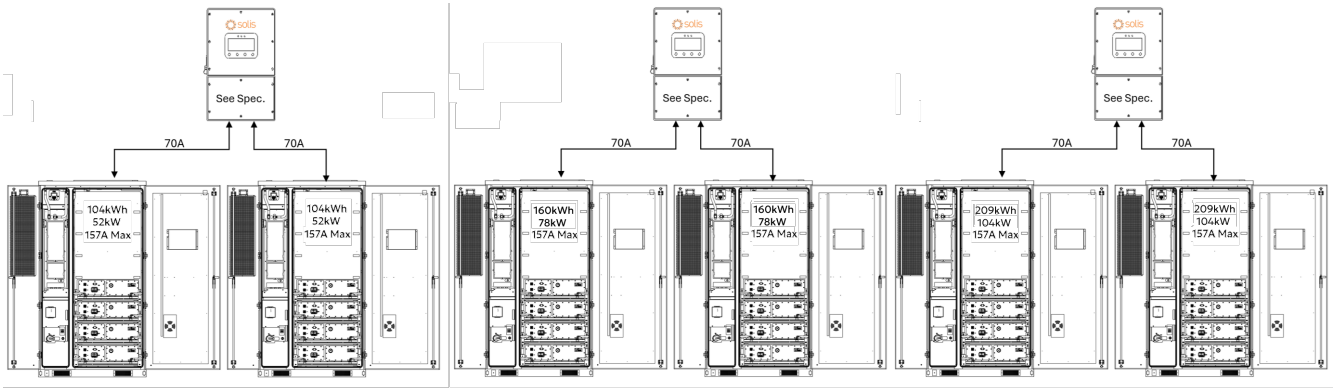
This communication link enables the inverter to receive live battery data, including state of charge, voltage, current, temperature, and charge/discharge limits, for safe, accurate, and optimized operation.

4.2 One Inverter, Two AES Cabinets

⚠ WARNING

ELECTRIC SHOCK AND FIRE HAZARD
Follow AS/NZS 3000 and AS/NZS 5139 Wiring Rules for conductor size, insulation rating (≥1000 Vdc), and torque specs for safe and code-compliant installation.

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



CAB-106, CAB-160, and CAB-210 Configurations

When two AES Cabinets are paired with a single Solis inverter, the AES Cabinet's maximum continuous current limit is 157 A, operating within its rated 209 / 314 / 418 kWh continuous output limit. Actual discharge performance depends on the inverter model's battery-side power capacity, as shown below.

Full Load Duration

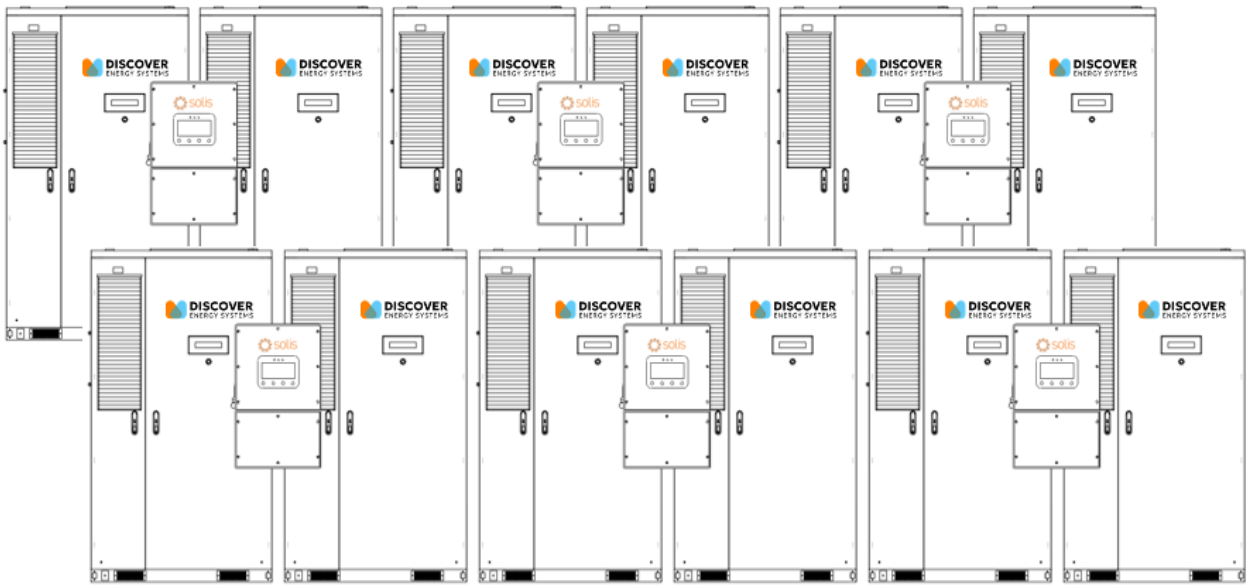
Inverter Model	**Battery Discharge Limit**	**CAB-106**	**CAB-160**	**CAB-210**
		AC Output / Usable Storage / Estimated Runtime		

S6-EH3P29.9K03-H-AU	29.9 kW	29.9 kW / 208 kWh / 7 hours	29.9 kW / 314 kWh / 10½ hours	29.9 kW / 418 kWh / 13½ hours
S6-EH3P30K03-H-AU	30 kW	30 kW / 208 kWh / 7 hours	30 kW / 314 kWh / 10½ hours	30 kW / 418 kWh / 13½ hours
S6-EH3P40K03-H-AU	40 kW	40 kW / 208 kWh / 5 hours	40 kW / 314 kWh / 7½ hours	40 kW / 418 kWh / 10½ hours
S6-EH3P50K03-H-AU	50 kW	50 kW / 208 kWh / 4 hours	50 kW / 314 kWh / 6 hours	50 kW / 418 kWh / 8 hours

** Curtailed by the battery.*

These autonomy estimates assume continuous full-power discharge and operation within safe continuous discharge parameters. Final performance should match the site's energy demand and load profile.

System Scalability – One Inverter, Two AES Cabinets



Each Solis inverter can be paired with two AES battery cabinets, doubling the usable energy per inverter while maintaining discharge power based on inverter size.

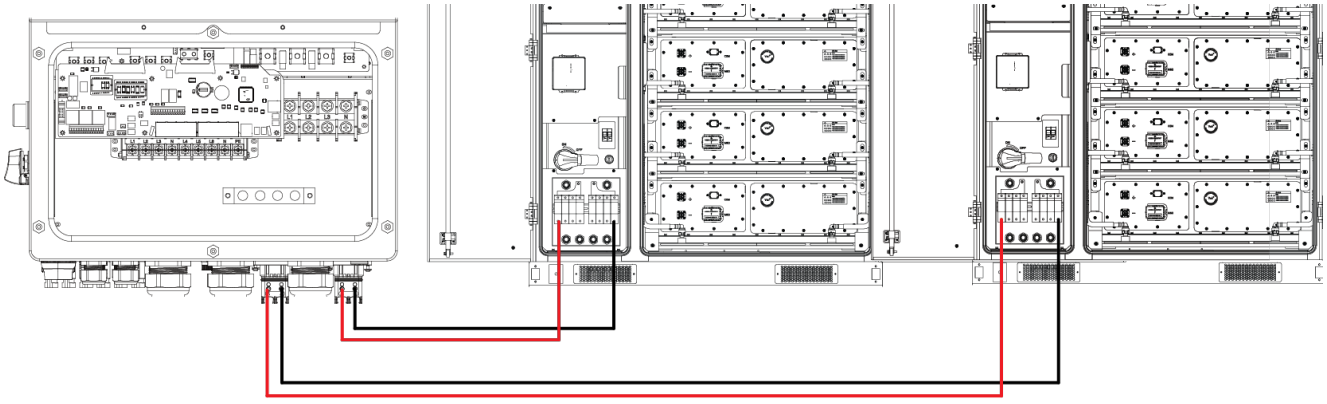
In this setup:

- 209 / 314 / 418 kWh of usable backup energy per inverter (2 × 104 kWh / 2 × 157 kWh / 2 × 209 kWh)
- Discharge power limited by the inverter model (29.9–50 kW)
- Up to ten inverters can be connected in parallel on the backup side, supporting 299-500 kW of backup power and approximately 2.09–4.18 MWh of total backup energy (10 × 209 kWh / 10 × 314 kWh / 10 × 418 kWh).

Grid-Tied (Non-Backup) Scalability

The number of inverters or batteries is unlimited for non-backup use. Each inverter runs independently, allowing systems to scale as large as needed for energy shifting, peak shaving, or other grid-interactive applications.

DC Battery Wiring – One Inverter, Two AES Cabinets



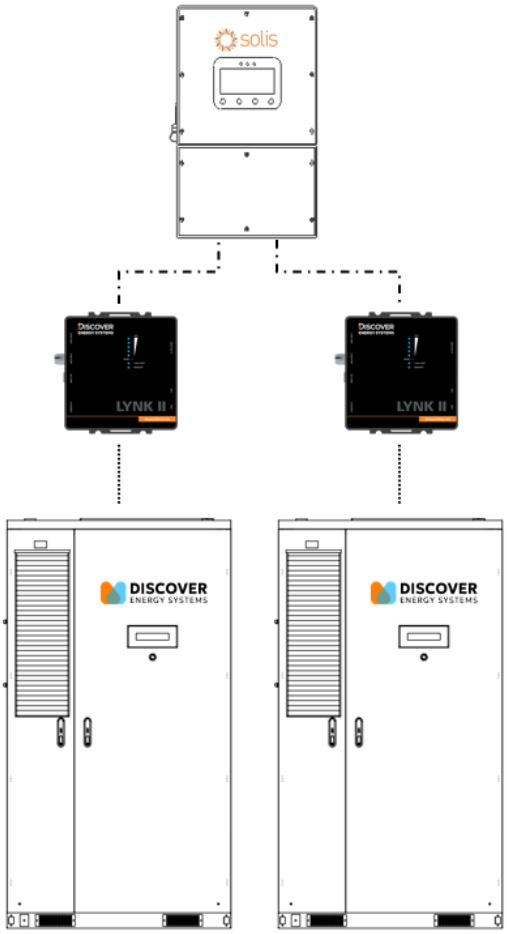
When connecting two AES battery cabinets to a single Solis inverter, each cabinet is wired to a dedicated battery input terminal on the Solis inverter:

- Battery 1 connects to the inverter's BAT1 terminals
- Battery 2 connects to the inverter's BAT2 terminals

The inverter's integrated dual DC/DC converters are independently fused and control each input, allowing the inverter to manage each battery cabinet separately while balancing charge and discharge as needed.

Always follow AS/NZS 3000 Wiring Rules and the local authority having jurisdiction for conductor sizing, 1,000 Vdc insulation rating, and proper torque values. Verify polarity before energising the system.

4.2.1 Communication – One Inverter, Two AES Cabinets



Each AES battery cabinet uses its own LYNK II Gateway for managed (closed-loop) communication with the Solis inverter in a two-to-one configuration. The inverter's two BMS ports (BMS1 and BMS2) allow it to communicate with each battery independently.

- Use standard CAT6 or higher Ethernet cables, wired in a straight-through configuration with RJ45 plugs on both ends.
- Connect one cable from LYNK II #1 CAN port to the Solis inverter's BMS1 port. Connect another cable to LYNK II #1's LYNK port to the J3/J4 port on the AES Cabinet's High Voltage Box. On most AES Cabinets, a CAT6 cable is already connected to the J3 port on the AES Cabinet's High Voltage Box and is accessible from the LYNK II.

- Connect a third cable from LYNK II #2 CAN port to the Solis inverter's BMS2 port. Connect a fourth cable from LYNK II #2's LYNK port to the J3/J4 port on the AES Cabinet's High Voltage Box.

This setup enables the inverter to independently manage and monitor both battery cabinets, receiving real-time data for state of charge, voltage, current, temperature, and charge/discharge limits from each LYNK II Gateway. Two independent LYNK II Gateways ensure precise, safe, and optimized performance across both battery units.

5 INSTALLATION AND WIRING

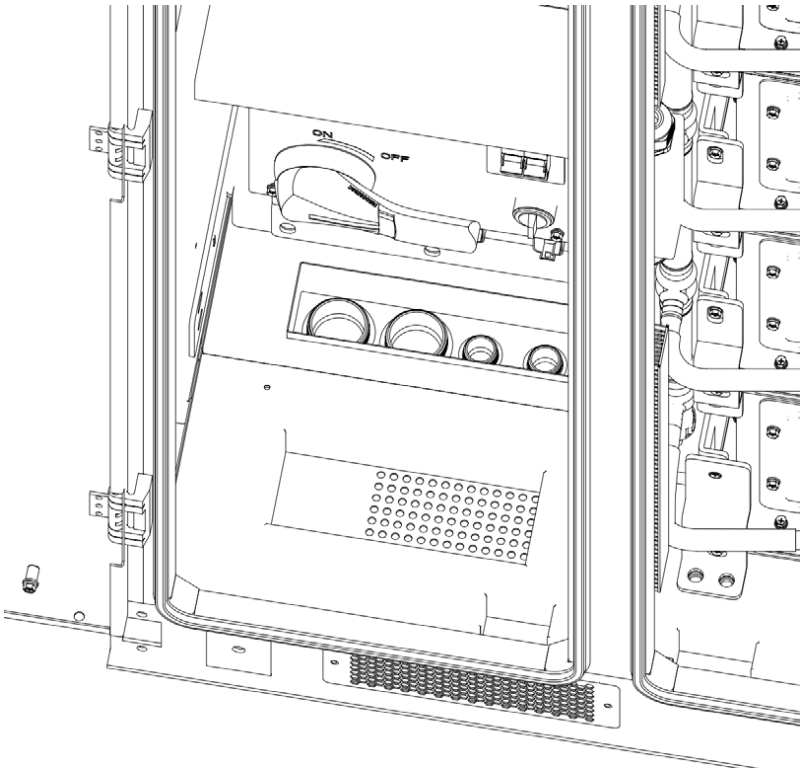
5.1 Location and Mounting Considerations

Inverter Mounting. Follow the Solis inverter installation manual (AUS edition).

Cabinet Mounting. Follow the AES Cabinet Outdoor C&I Installation and Operation or the AES 210HV Installation and Operation Manual.

Separation Distance. The inverter and battery cabinet do not need to be adjacent. The inverter supports up to 25 mm^2 (4 AWG) copper wiring, with a maximum continuous current of less than 50 A per pair of conductors. Ensure the distance between the inverter and cabinet results in a voltage drop of less than 2.5%.

Conduit and Raceways. The AES Cabinet features a bottom-entry path for all wire connections to enter the battery cabinet. Cables route through underground conduits or the wire chase beneath the cabinet for a clean and organized installation.



You can also pass wiring through an entry on the bottom part of the left side wall of the cabinet.

NOTICE
CABINET DAMAGE / VOID WARRANTY • Follow the instructions in the AES Cabinet Outdoor C&I Installation and Operation Manual or the AES 210HV Installation and Commissioning Manual for the installation of wiring and conduit. • For permission to pass wiring and conduit through the sides of the AES Cabinet, please contact a Discover Energy team member for consultation and sign off on any alterations. • Damage resulting from unauthorized changes to the Cabinet will void the warranty. **Failure to follow these instructions may result in equipment damage.**

5.2 Conduit and Cable Routing Guidelines

To reduce electromagnetic interference and ensure safe, reliable operation, use separate conduits for different wiring types:

DC Conductors
Use a dedicated conduit for high-voltage DC wiring between the AES battery cabinet and the inverter.

- Two 50 mm (2") conduit entries are provided for 38 mm (1½" trade size) conduit
- Supports up to eight 25 mm^2 (#4 AWG) current-carrying conductors

230 Vac Connections
Run AC supply wiring to the AC Auxiliary System (UPS and TMS) in a separate conduit.

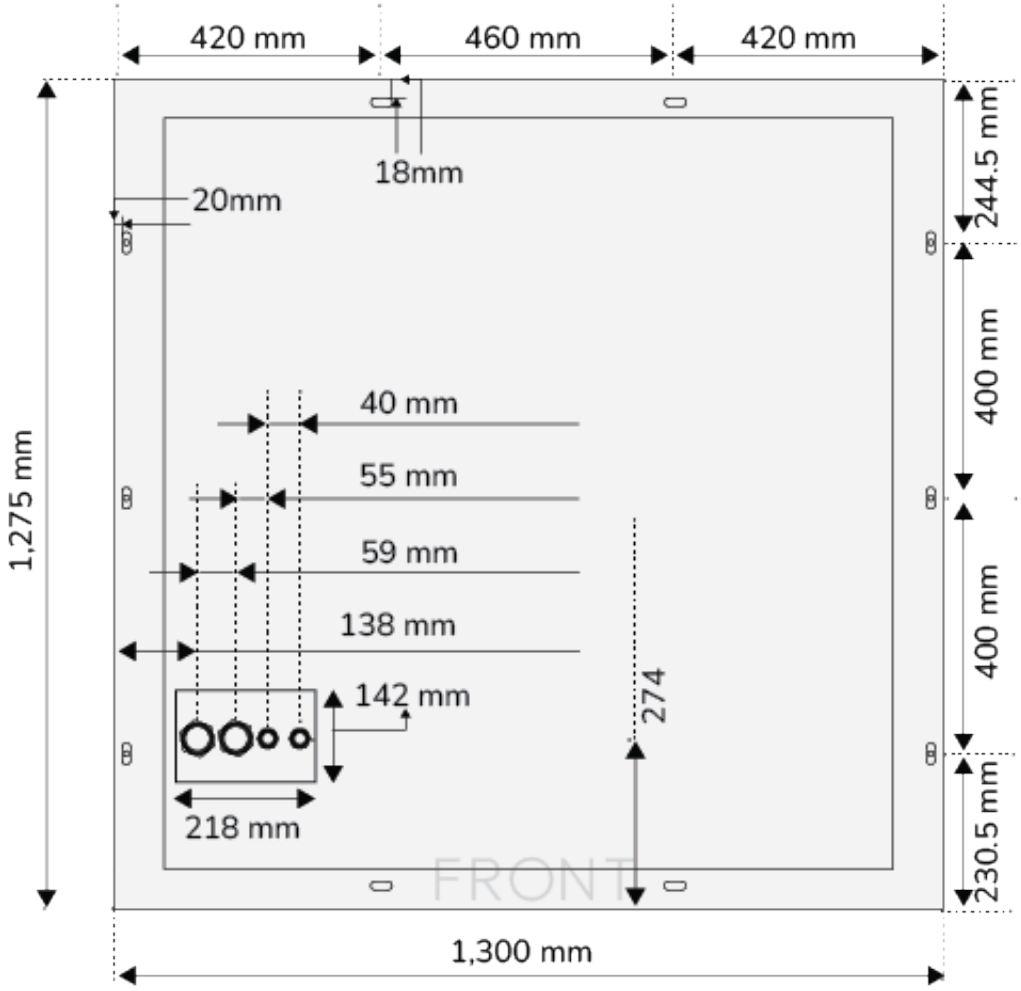
- One 30 mm (1⅛") conduit entry is provided for 20 mm (¾" trade size) conduit
- Supports two 6 mm^2 (#10 AWG) conductors plus ground

Communication Cables
Route CAT6 or higher communication cables in individual conduit to prevent signal interference and ensure stable data transmission.

- One 30 mm (1⅛") conduit entry is provided for 20 mm (¾" trade size) conduit

Best Practices

- Use appropriately sized conduits, rated for environmental exposure, and securely installed.
- Keep DC, AC, and communication lines physically separated
- This enhances system reliability, streamlines service, and facilitates compliance with electrical codes and safety standards.

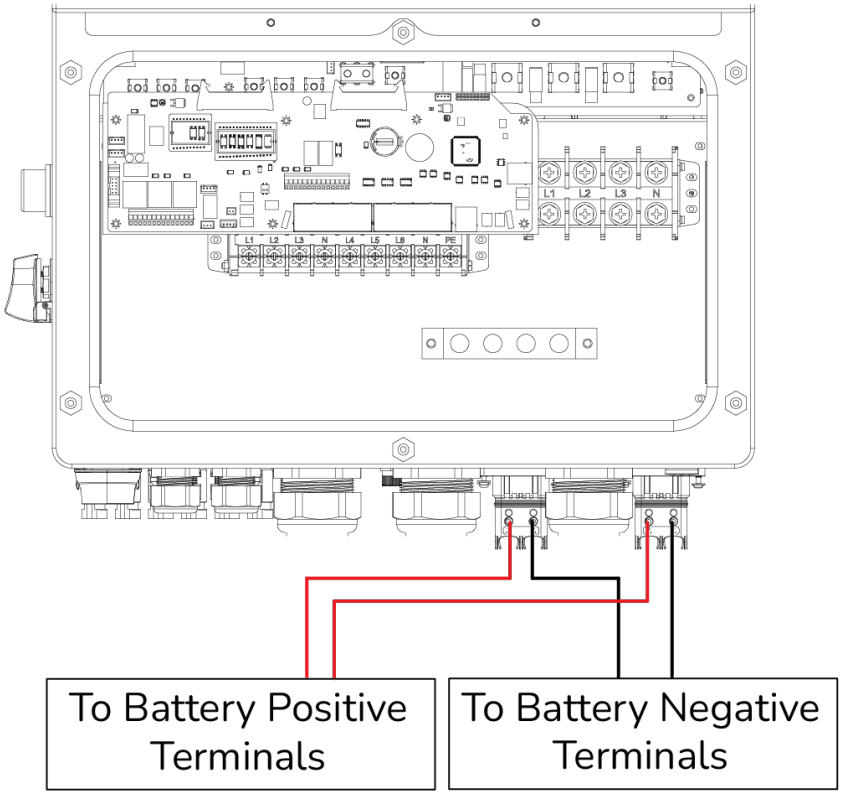


5.3 DC Cable and Wiring

When pairing the AES battery cabinet with a Solis inverter, discharge performance is governed by the inverter's battery input rating, which ranges by model from 32.1 kW to 55 kW. The AES CAB-106 /

CAB-160 / CAB-210 supports continuous output of 52 / 78 / 104 kW (C/2 rate) or approximately 157 Adc.

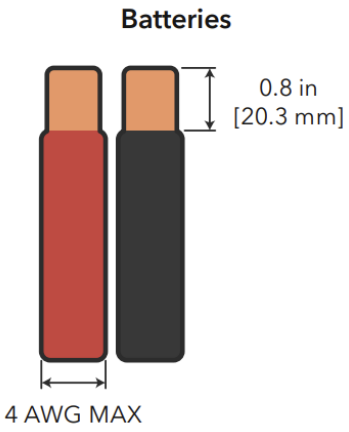
Inverter Model	Max Power Battery
S6-EH3P29.9K03-H-AU	32.1 kW
S6-EH3P30K03-H-AU	33 kW
S6-EH3P40K03-H-AU	44 kW
S6-EH3P50K03-H-AU	55 kW



Properly Rated Cables. Cables for high-voltage DC connections should be rated at least 1 kV to provide a safety margin for the system's maximum battery voltage of 375 Vdc (CAB-106), 575 Vdc

(CAB-160), or 750 Vdc (CAB-210). This enables compliance with AS/NZS 5000 or AS/NZS 3008 for derating calculations.

Inverter Ports	Max. Terminal Rating	Terminal Wire Size Range
Battery Port 1	70 Adc	25 mm^2 (4 AWG)
Battery Port 2	70 Adc	25 mm^2 (4 AWG)



NOTICE

EQUIPMENT DAMAGE

- Confirm the polarity of all DC connections before powering on the system. Incorrect polarity can damage the equipment and void the warranty.
- The AES battery cabinet supports a maximum charge/discharge current of 157 A, or about 78 A per port. Use appropriately sized fuses to maximize charging and discharging energy without compromise.

Failure to follow these instructions may result in equipment damage.

5.4 Auxiliary AC Input Wiring for the HVB and TMS

NOTICE
EQUIPMENT DAMAGE The Auxiliary AC input voltage supplied to the High Voltage Box (HVB) and Thermal Management System (TMS) must not exceed 275 Vac. Overvoltage can damage the equipment and void the warranty. **Failure to follow these instructions may result in equipment damage.**

AC Supply Rating: Use wiring rated for up to 30 A. A 32 A miniature circuit breaker protects the HVB and auxiliary systems.

Voltage Limit: Supply voltage must be single-phase, 200–275 Vac. Do not exceed 275 Vac.

Transformer Use:

- If needed, use a step-down transformer to provide ~230 Vac.
- A transformer can be single-phase or three-phase, but each HVB requires only a single-phase input.
- Minimum transformer size for each cabinet: 5 kVA for single-phase.
- A transformer may serve multiple AES battery cabinets if adequately sized and wired.

NOTE
If a 230 V single-phase source is unavailable, a transformer can step down 277 V or 480 V to 230 V. The transformer should be rated at least 5 kVA per cabinet.

5.5 Communication Wiring

To enable both managed (closed-loop) inverter communication and cloud-based monitoring, the LYNK II Gateway must be connected to:

- The inverter’s BMS port (for real-time battery data exchange)
- An active Internet connection through its Ethernet port (optional, for LYNK Cloud access)

Run CAT6 or higher cables to the cabinet to support both functions.

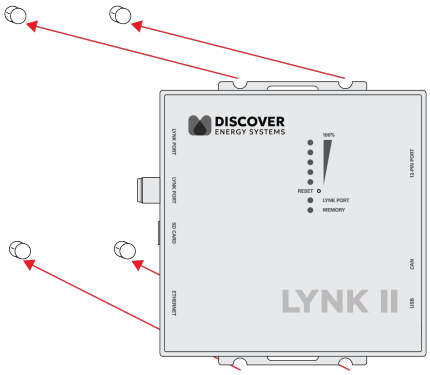
Connection Type	Wire Size	Max Distance
Communication (CAN)	0.34 - 1.5 mm^2 (16 – 22 AWG)	Up to 30 m (100 ft) using 0.25 mm^2 (24 AWG)
Ethernet (LAN)	CAT6 or higher	30 – 120 m (100 – 400 ft) using 0.3 mm^2 (23 AWG)

5.5.1 Cable Requirements

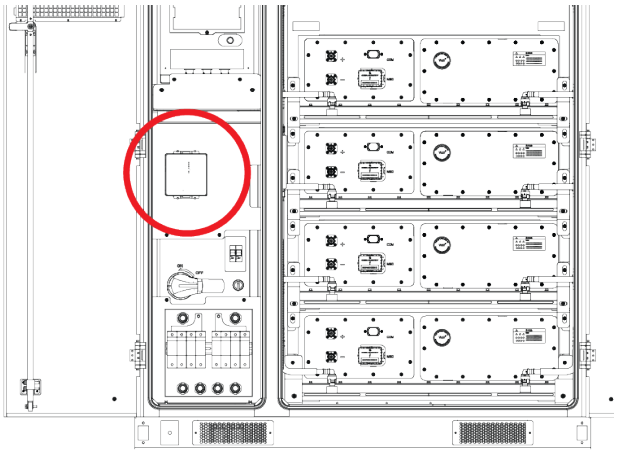
- **Recommended Cable**: Use shielded CAT6 or higher to minimize EMI and ensure reliable data transmission.
- **RJ45 Pinout**: Confirm pin assignments match the inverter's CAN communication spec.

Installation

- Install the LYNK II Gateway into the AES Cabinet, onto the top shield of the High Voltage Box.
    a. In the location reserved for the LYNK II Gateway, unscrew the nuts from the 4 studs.



    b. Mount the LYNK II onto the studs and screw on the nuts.
    c. After the LYNK II is mounted, connect the CAT6 cable located nearby to the LYNK port on the LYNK II Gateway. The other end of the CAT6 cable is connected to the J3/J4 port on the High Voltage Box.



NOTICE

EQUIPMENT DAMAGE

- LYNK communication cables carry voltage over their wires (POE 24V). Connect cables from the J3/J4 ports (LYNK port) to other LYNK ports only.
- Connecting LYNK communication cables to an Ethernet port may damage it.

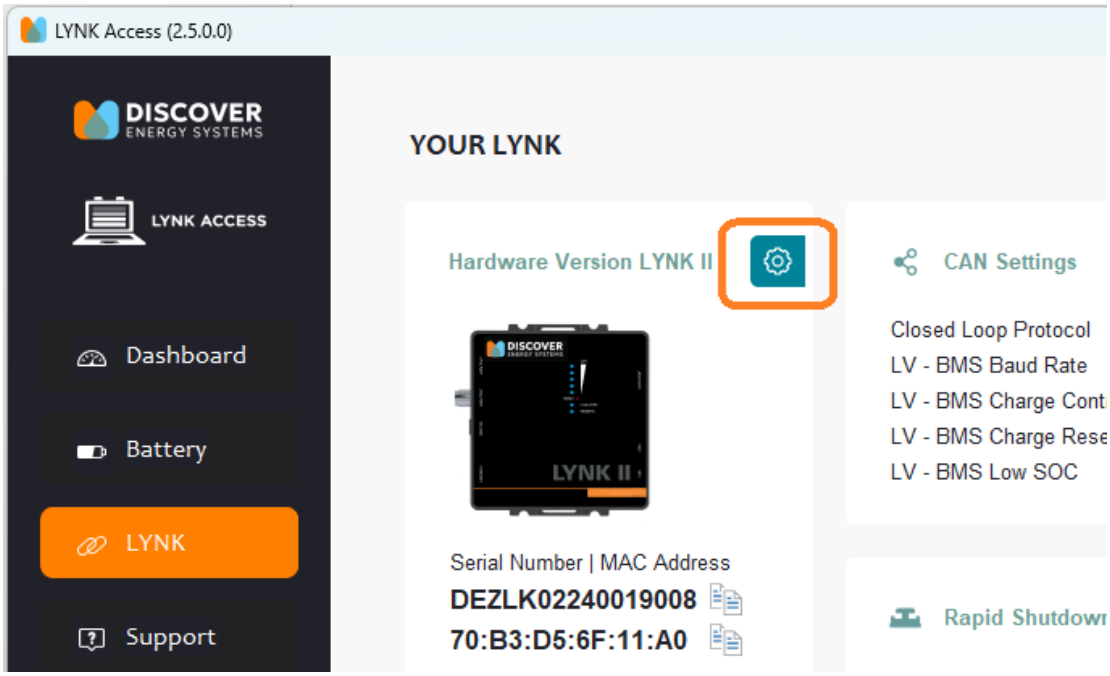
Failure to follow these instructions may result in equipment damage.

- **Inverter Connection**: Connect a CAT6 or higher cable between the LYNK II CAN port and the inverter's BMS port.
- **(Optional) Internet Access**: For your system to use LYNK Cloud, connect a CAT6 or higher cable from the LYNK II Gateway's Ethernet port to a live internet source.
  This setup enables remote monitoring via LYNK Cloud.

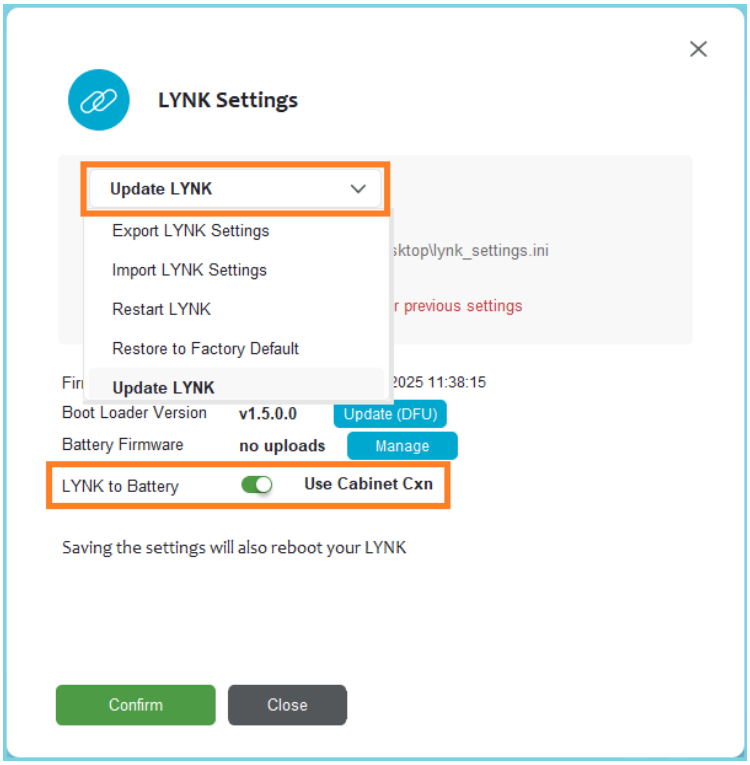
LYNK II Gateway Configuration

Set Up LYNK Communication

1. Connect the LYNK II Gateway to a computer using the USB cable.
2. Launch LYNK ACCESS 2.5.0 or later and update the LYNK II firmware to version 2.5.0 or later.
3. Configure closed-loop communication on LYNK ACCESS.
   a. In the LYNK tile, click on the blue gear icon.

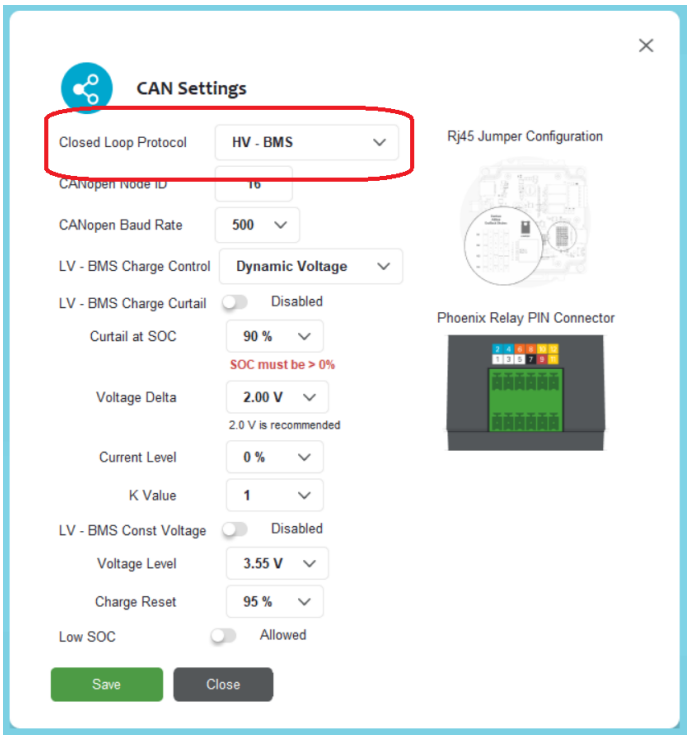


b. In the LYNK Settings dialog box that appears, from the drop-down menu, select **Update LYNK**.



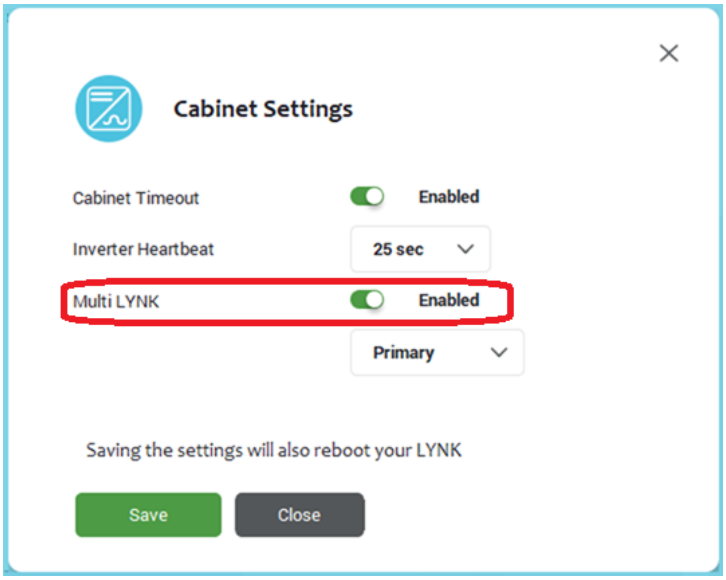
c. Toggle **LYNK to Battery** from **Use AEBus** to **Use Cabinet Cxn** and click **Confirm** to update the LYNK II with the new settings.

Note that the **Closed Loop Protocol** is automatically set to **HV-BMS**.



The default setting will work for most installations. Please reach out to Discover if you are looking to change the default settings.

- When connecting two inverters to one battery cabinet, two LYNK II Gateways are required. Configure the **Cabinet Settings** in both LYNK II Gateways to use the Multi LYNK feature.



One Cabinet, One Inverter

Connect the LYNK II Gateway's CAN port to the inverter’s BMS1 or BMS2 port. Connect the LYNK II Gateway’s LYNK Port to the J3 or J4 port on the battery cabinet’s High-Voltage Box.

One Cabinet, Two Inverters

Each inverter requires a LYNK II Gateway. Connect a BMS port on each inverter to establish a communication interface through the LYNK II Gateway with the AES Cabinet for independent communication.

Connect each LYNK II Gateway's LYNK port to the J3 and J4 ports on the battery cabinet’s High Voltage Box. J3 and J4 are internally paralleled, so it doesn’t matter which LYNK II connects to which port on the battery, as long as each gateway has a dedicated connection.

To attach the second LYNK inside the cabinet just left of the other LYNK II, you could use double-sided mounting tape or industrial Velcro.

Two Cabinets, One Inverter

Each battery cabinet requires a LYNK II Gateway. Connect the CAN Out port of the LYNK II Gateways to the BMS1 and BMS2 ports of the inverter. Then, connect each LYNK II’s LYNK Port to either the J3 or J4 port on each battery’s high-voltage box.

5.6 Earthing

Earthing. Follow AS/NZS 3000 Wiring Rules and the local authority having jurisdiction for earthing all components. Earthing lugs and mounting locations are located on the external corners of the cabinet.

6 COMMISSIONING

NOTE
Commissioning must be performed by a CEC-accredited installer in accordance with AS/NZS 4777.1 and AS/NZS 5139.

Pre-Commissioning Checklist

Verify Inverter Firmware is Up-to-Date

Check and confirm that the latest firmware is installed.

- To see if there is a newer version available:
    - Settings > Device Upgrade

Verify System

- Verify all breakers and isolators (DC and AC) are in the OFF position.

Inspect Connections

- Verify the polarity of all DC connections.
- Verify all AC and communication connections are secure and correct.

Inverter Pre-Commissioning

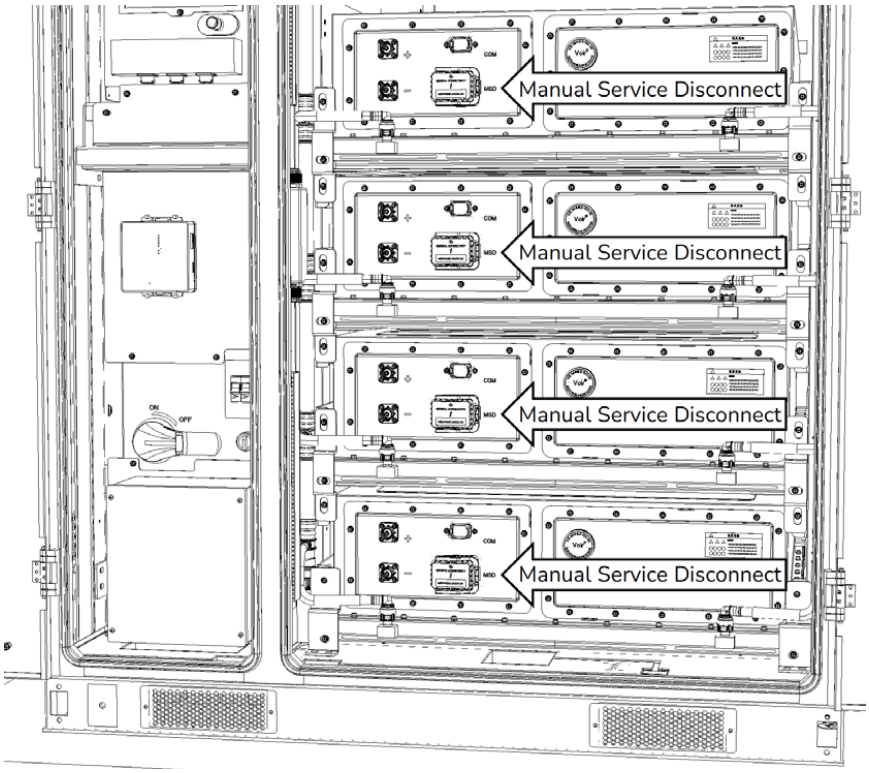
Before starting the system, complete all pre-commissioning checks outlined in the Solis inverter manual. These include:

- Verify all mechanical and electrical connections
- Confirm proper ventilation and secure mounting
- Prepare tools (e.g., multimeter) and the SolisCloud mobile app for setup and monitoring

For complete instructions and app registration steps, refer to the Solis S6-EH3P inverter manual

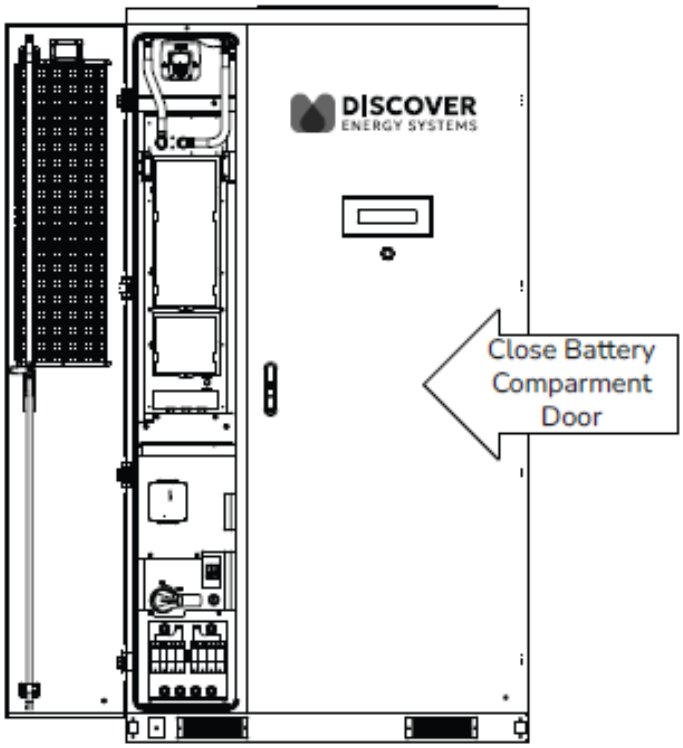
6.1 Cabinet Initiation and Activation

Cabinet Initiation



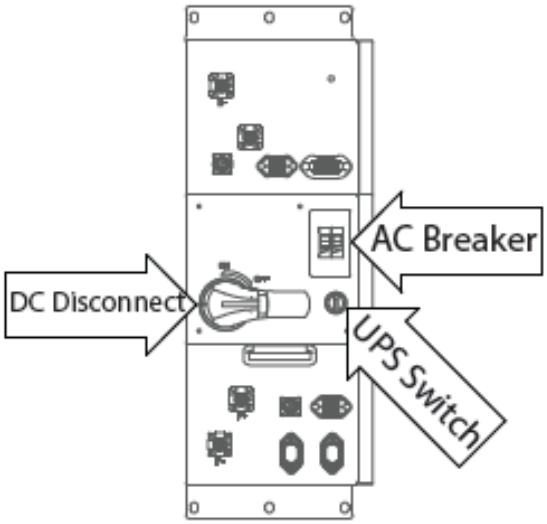
Install the Manual Service Disconnects (MSDs) into each battery pack's designated receptacle. Handle with care to avoid damage, and follow all installation instructions provided.

The MSDs are fuses. Perform a continuity check on them before installation. If any have failed, please get in touch with Discover's product support team to arrange a replacement.



NOTICE
SYSTEM SHUTDOWN The battery compartment door must remain closed during system operation. Opening the door will trigger an alarm and automatically de-energise the system. **Failure to follow these instructions may result in equipment damage.**

Cabinet Activation



Before powering up the inverter with the battery, ensure all covers, enclosures, and access panels are securely closed.

NOTE
Follow these steps, in order, to avoid a pre-charge error.

1. Close the DC Isolator
    - Confirm the AES Cabinet's DC disconnect is in the closed position (ON) and secure.
2. Power on the Auxiliary AC Input Circuit
    - To energise the system, provide power to the Auxiliary AC input through the grid, generator, or backup load panel. If none of these power sources are available, skip to step 3.
    - Close the AC breaker on the HV Box.
3. Blackstart (if applicable)
    - For systems without an initial AC supply, use UPS control to black-start the cabinet (control power energisation).
        - The UPS is for short-term operation only. Promptly restore AUX AC power once available.
4. Cabinet Initialisation
    - The Battery Control Unit (BCU) and LYNK II Gateway will power up and initiate a system initialisation sequence.
        - Ensure the battery side compartment door is closed during the startup process.

- The green LED on the cabinet door flashes to indicate the system is Ready.
- Allow up to 60 seconds for the LYNK/BCU to initialize and check internal systems.

5. Pre-Charge Circuit Activation
    - After initialisation, the BCU engages the pre-charge circuit and provides power to start the inverter.
        - The BCU then closes its main contractors when the pre-charge process is complete, at which point the inverter will have full power.
6. Verify Cabinet Status
    - Confirm that the cabinet indicator LEDs indicate normal operation.
        - On successful startup, the status LED on the cabinet door will be solid green, indicating the system is in operation.
        - If the status LED does not become solid green or error indicators appear:
            - Connect your laptop running LYNK ACCESS to the LYNK II Gateway to diagnose the battery.
            - You can also refer to the troubleshooting section of the AES Cabinet manual for diagnostic steps.
7. If your AC auxiliary power is backed up from the load panel, verify the power to the temperature management system (Step 2).

6.2 Inverter Configuration

NOTE
For system programming and configuration of parallel inverters, follow the procedure outlined in the inverter manual.

1. **Power On the Inverter.** Press the inverter's power switch. If battery power is present, the inverter will begin its startup process and all five indicator lights will illuminate.
2. **Switch On AC and PV Inputs.** Turn on the AC grid input breakers and PV input breakers to energise the system.
3. **Check for Inverter Activation.** If the inverter does not power up, confirm that it is receiving a valid DC input from the battery.

4. **Verify Rapid Shutdown (RSD) Status / PV string isolation in accordance with AS/NZS 5033.** Ensure the Rapid Shutdown (RSD) switch has not been triggered. When triggered, the inverter will remain off and PV string voltages will stay at a safe level.
5. **Keep AC Output Circuits Isolated (if applicable).** If the system uses parallel inverter operation or multi-inverter configuration, keep AC output circuits isolated until parallel configuration is complete.
6. **Wait for Full Inverter Activation.** Allow the inverter to complete its boot sequence before beginning any configuration or system setup.

Inverter Quick Setup Overview

(If there are multiple inverters, repeat this procedure for each inverter.)

When commissioning the inverter for the first time, complete the Quick Setup in the following order:

Inverter Time → Meter Setting → Grid Code → Storage Mode → Battery Model

Inverter Time

Set the current date and time. The default setting will follow your mobile device.

CT / Meter Setting

- Select CT or Meter (Solis supports Eastron 3-phase, auto-detected meters).
- Choose the installation location: Grid side (grid connection point), Load side (load connection point), or Grid+PV.
- Set CT direction: use Forward if the installation is correct; use Reversal if the polarity is reversed.
- Set CT ratio: default is 60. If using a different CT, adjust manually. If using a meter, set the ratio accordingly.

Grid Code

- Select the grid code for your region, Australia A, B, or C, or New Zealand. The applicable options are: 4777-A, 4777-B, 4777-C, and 4777-N.

Storage Mode

Choose the system’s energy flow priority:

- Self-Use, Selling First, or Off-Grid.

NOTE
The load is always the inverter's priority. Self-use mode makes charging the battery the second priority. Selling First mode makes exporting excess PV power the second priority. Only one mode can be active at a time.

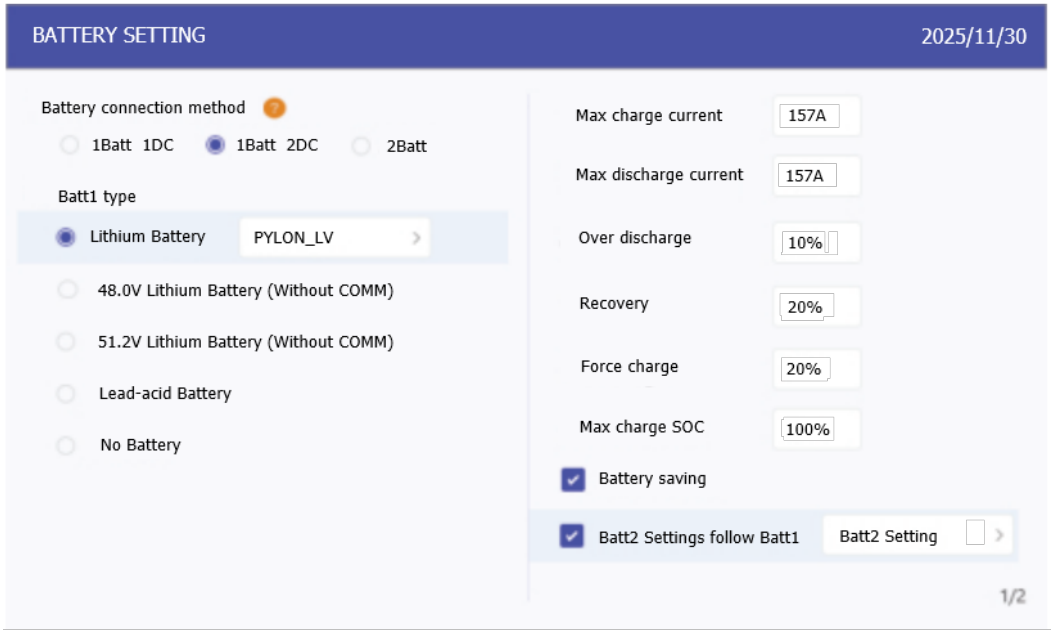
Battery Settings

- Choose the connection method: 1 Batt 2 DC or 2 Batt 1 DC
- Select the battery brand and model. If Discover is not listed, choose General_LiBat_HV
- Set the maximum charge/discharge current: 157 A.
  In a two-inverter-to-one-battery configuration, lower the current on each inverter to 39 A.
- For dual-battery systems using the same settings, enable "Batt2 Settings follow Batt1."

Battery Settings Menu

The Battery Settings menu on the inverter interface enables detailed adjustments to battery parameters. Use these settings to fine-tune charging behavior, protect battery health, and optimize system performance.

The table below outlines the recommended configuration values for settings to ensure safe and efficient operation when using the AES battery cabinet. Adjustments may be made based on project-specific requirements.



Setting	Recommended Value	Notes
Max charge current	157 A	Matches the battery's maximum charge capability (Do not exceed cabinet limits).
Max discharge current	157 A	Keeps battery within safe continuous discharge range.
Over discharge	10-20%	Preserves battery life by avoiding deep discharge.
Recovery	20-30%	Set ~10% above over discharge to avoid cycling instability.
Force charge	10-20%	Same as Recovery. Only active under grid charge priority conditions.
Max charge SOC	100%	Charge to 100% to promote cell balancing in the battery.

NOTE
Dual Inverter, Single Battery Cabinet Applications • When using two inverters with one AES battery cabinet, limiting each inverter's charge and discharge current may be necessary to avoid exceeding the cabinet's capability. • The combined output of both inverters must not exceed 157 A, which is the cabinet's C/2 continuous current limit. If the inverters can deliver more than this combined current, adjust their settings to stay within the battery's safe operating range.

6.3 System Testing

Managed (Closed-Loop) System Check

- Check that the inverter displays battery SOC, voltage, and current to confirm that it is in managed (closed-loop) communication with the cabinet.
- Check for error codes or warnings on the cabinet and the inverter.
- Using LYNK ACCESS, confirm that SOC, voltage, and current values match expected levels.

Inverter PV DC Input. If applicable, close the PV isolators connecting the PV System to the inverters and confirm charging.

AC Loads On. If applicable, close the AC output isolators for the inverter load output and verify that the load is connected. Then, navigate to the Loads screen and verify that the inverter displays the correct power values for the load.

Test Operation

- Simulate charge and discharge cycles by introducing loads or enabling PV input.
- Monitor performance to verify a proper response to load and charging inputs.

6.4 De-energisation (Shutdown) Procedure

De-energise the system before servicing.

To safely de-energise the AES cabinet system and associated inverter, follow the steps below in order:

1. **Activate Emergency Stop (E-Stop) on the Inverter**
    - This immediately turns off the inverter functions and stops charging/discharging operations.
2. **Activate the Emergency Stop (E-Stop) button on the AES Battery Cabinet**
    - This isolates the battery internally by opening the HV contactors.
3. **Open the PV Isolator**
    - Disconnect the DC input from the solar array to the inverter.
4. **Open All AC Isolators**
    - Shut off all AC power sources connected to the system.
    - Open the grid, load, and disconnect any generator AC to isolate the inverter from external power.
    - To disconnect power to the UPS and internal systems, turn off the cabinet auxiliary AC input by opening the HV Box AC breaker.
5. **Open the DC Isolator on the Cabinet's HV Box**
    - Confirm the AES Cabinet's DC isolator is in the open position (OFF).
6. **Open the Inverter's DC Breakers**
    - Disconnect the DC input from the battery to the inverter.
7. **Switch Off the Cabinet UPS (Auxiliary Power)**
    - Rotate the UPS switch inside the cabinet to the left to cut power to the Battery Control Unit (BCU) and LYNK II. This is important as leaving it on will result in dead UPS batteries and make a black start impossible until the batteries are charged.
8. **Verify Complete Shutdown**

- Confirm that all equipment is powered down.
- Check that no LEDs are illuminated, no fans or pumps are running, and no indicators are active on the inverter, cabinet, LYNK, or internal systems.

6.5 Completing the Commissioning and Verification

Document System Settings and Test Results

- Record all configured settings, including voltage, current limits, charge/discharge parameters, and communication settings.
- Log system test results, such as battery health checks and communication verification.
- Maintain this documentation for future reference, troubleshooting, and compliance requirements.
- One way to keep a record of the battery is to generate and store a diagnostic report through LYNK ACCESS software.

User Training

- Provide system users with a thorough overview of operational procedures, safety precautions, and basic troubleshooting steps.
- Demonstrate how to monitor system performance using the inverter or LYNK II interface.
- Ensure users understand alarms, fault codes, and recommended corrective actions.

Operation & Maintenance (O&M) Scheduling

- Establish a preventive maintenance schedule in collaboration with site operators.
- Define periodic inspection intervals for battery health, connections, the thermal management system, and firmware updates.
- Document maintenance procedures and responsibilities to ensure long-term reliability.

Product Registration & Warranty Compliance

- Register the product per the warranty instructions to activate coverage and ensure eligibility for support.
- Verify that all installation documentation is complete and meets warranty requirements.

Additional Support & Troubleshooting

- Refer to the product manuals for detailed system configurations, troubleshooting procedures, and firmware updates.
- Contact technical support for system-specific assistance or if further guidance is required. https://discoverenergysys.com/contact/contact-technical-support

These final steps ensure system reliability, compliance, and ease of future maintenance.