Rolls S48-100LFP STACK-LV Battery Installation Guide

BATTERY ENGINEERING

	Recommended installation procedures for Rolls S48-100LFP STACK-LV Energy Storage Systems.

ES	Para ver la versión en español, haga clic aquí. O consulte nuestro sitio web: rollsbattery.com	
	Pour accès à la version française, cliquer ici. Ou consultez notre site web : rollsbattery.com	FR

ROLLS S48-100LFP STACK-LV

Rolls S-Series S48-100LFP STACK-LV 51.2-volt Lithium Iron Phosphate (LFP/$LiFePO_4$) Energy Storage System (ESS) batteries are designed for use in larger-scale, 48V (51.2V nominal) systems, for grid-connected backup and Off-Grid purposes.

Rolls S48-100LFP STACK-LV batteries are designed to scale in parallel capacity only at this voltage level, with communication between batteries and to externally connected equipment.

This manual provides detailed instructions for safe and proper installation, operation, and care specifically of Rolls S48-100LFP STACK-LV batteries. Please read carefully to clearly understand the operating instructions and any potential safety risks prior to installation.

Failure to install or use this battery as instructed may result in damage to the product that may not be covered under the manufacturer warranty. See warranty terms & conditions for full details.

Note: This manual offers installation, charging and troubleshooting guidance for the Rolls S48-100LFP STACK-LV battery only.

See Rolls S24-2800LFP & S48-6650LFP ESS Battery Operating Manual for usage instructions specific to Rolls S24-2800LFP ESS and S48-6650LFP ESS (Energy Storage System) models.

See Rolls R-Series & S-Series Drop-in LFP Battery Operating Manual (Grey and Red plastic cases, BCI sizes) manual for usage instructions specific to Rolls R-Series & S-Series drop-in LFP models.

See Rolls S48-100LFP ESS Battery Operating Manual (19” Rack Mount batteries) for usage instructions specific to Rolls R-Series & S-Series drop-in LFP models.

VERSION HISTORY/CHANGELOG

Rev.	Changelog	Author/Editor	Date
1.0	Release Version	Jordan Torrealba	2025/10/15

This document is **NOT APPLICABLE** to the following models			
S-Series LFP (S_ _-_ _ _LFP)	**G-Series LFP** (G_ _-_ _ _LFP)	**R-Series LFP** (R_ _-_ _ _LFP)	**48V LFP ESS Models** S48-100LFP ESS

	Warning Electrical shock hazard. Do not open. No user serviceable parts inside. Unauthorized access, servicing, or tampering of individual modules will void the manufacturer's warranty. Maintenance may only be carried out by authorized personnel under the guidance of Rolls Battery.
	Warning WARNING: To Reduce the Risk of Injury, read all instructions
	Warning For indoor use only – "Suitable for use in residential dwelling units where permitted."

Nominal voltage of an LFP battery differs from equivalent lead-acid batteries.

LFP Battery	Lead-Acid Battery
Cell Voltage = 3.2V	Cell Voltage = 2.0V
Battery Nominal Voltage 51.2V (16 cells)	Battery Nominal Voltage 48V (24 cells)

WARNING: Explosion, Electrocution, Or Fire Hazard

- A battery can present a risk of electric shock, burns from high short circuit current, fire, or explosion.
- Ensure cables are properly sized for the system current and cable runs are as short as possible, reducing line inductance and voltage spikes, which can damage the BMS or external equipment.
- Ensure adequate airflow around batteries and that they are clear of debris.
- Never smoke or allow a spark or flame near the batteries.
- Always use insulated tools.
- Avoid dropping tools onto batteries or other exposed electrical parts.
- Cold temperatures can be especially damaging to batteries after even a single low temperature event.
    - Never charge a Rolls S48-100LFP STACK-LV battery below 0°C (32°F).
    - Never discharge a Rolls S48-100LFP STACK-LV battery below -20°C (-4°F).
- Never charge a battery with a deformed or bulging case.
- Do not expose Rolls S48-100LFP STACK-LV batteries to ambient temperatures exceeding 60°C (140°F) during operation, and do not store for extended periods of time above 45°C (113°F).
- Do not incinerate or expose to open flames.
- If a battery must be decommissioned/removed, always open the breaker first, then remove the grounded terminal from the battery. Make sure all devices are disconnected.
- When installing, leave adequate clearance between battery systems, walls and other electrical devices consistent with local code requirements.
- When replacing batteries, use the same make, model & quantity of batteries.
- Do not mix old and new batteries on the same DC bus after the first year of installation.
- Avoid any fall or collision during the installation process.
- Do not dismantle or remove the battery components.
- Battery maintenance & servicing must be carried out by qualified personnel only under the guidance of Rolls Battery. Unauthorized access, servicing, or tampering of individual modules will void the manufacturer's warranty.

Contents

ROLLS S48-100LFP STACK-LV 2

VERSION HISTORY/CHANGELOG 3

PRODUCT DESCRIPTION 7

REAR PANEL FEATURES 7

INSTALLATION 8

- PRECONDITIONS FOR INSTALLATION 8
  - UL9540A Compliance 9
- COMPONENTS 9
- PREPARATION AND BASE INSTALLATION 11
- CHASSIS GROUNDING 13
- SINGLE BATTERY INSTALLATION 13
- PARALLEL BATTERY ESS INSTALLATION 14
- CAN BUS & RS-485 PARALLEL PACK ADDRESSING 14
- CONNECTING THE LINK UP AND LINK DOWN PORTS 15
- BUSBAR CONNECTIONS 15
  - SYSTEM CURRENT LIMITS 16
  - BUSBAR CONNECTIONS – *Even* Number of Modules 17
  - BUSBAR CONNECTIONS – *Odd* Number of Modules 19
- EXTERNAL CABLE CONNECTION 21
- TERMINAL TORQUE 21
- MANUAL BALANCING 21

BATTERY OPERATION 22

- VERIFICATION OF CONNECTIONS 22
- FIRST START 23
- FINAL INSTALLATION, LEVELLING AND FASTENING 24

Appendix A: Inverter Compatibility List & DIP Table 26

- Inverters with Full Support 26
- Inverters with Basic Support 27
- DIP Table: 27

Appendix B: Emergency Considerations 28

Appendix C: Rolls LFP Desktop V2 & Rolls LFP Connect App Guide 29

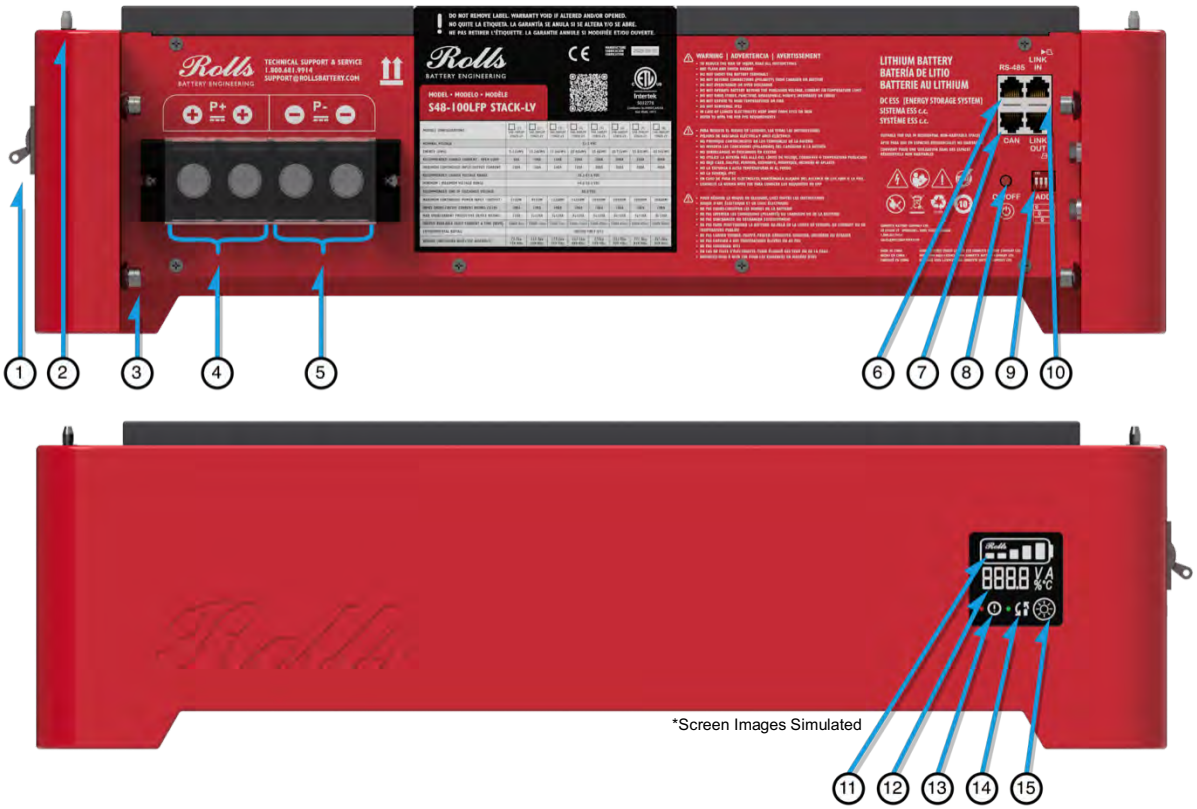
  - Communication Setup 29

Setup Using Rolls LFP Desktop V2 29
Setup Using Rolls LFP Connect App Protocol Setting Wizard 31
Appendix D: Rolls Inverter-Specific Guides 33
CERTIFICATION INFORMATION 34
UL 1973 Compliance 34
UL 9540 Compliance 34
UL 9540A Compliance 34
BATTERY CURRENT OPERATING LIMITS 34
Maximum Battery and ESS Operating Limits 34
Sol-Ark Inverter Connection Guide 35
Overview – Sol-Ark 35
UL 9540 Compliance 35
Minimum Battery Capacity – Sol-Ark 35
ROLLS S48-100LFP STACK-LV CLOSED LOOP INTEGRATION WITH SOL-ARK EQUIPMENT 36
CAN COMMUNICATION 40
LUXPOWERTEK and EG4 Inverter Connection Guide 41
Overview – LUXPOWERTEK + EG4 41
UL 9540 Compliance 41
Minimum Battery Capacity – LUXPOWERTEK + EG4 41
ROLLS S48-100LFP STACK-LV CLOSED LOOP INTEGRATION WITH LUXPOWERTEK EQUIPMENT 42
Victron Energy Inverter Connection Guide 51
Overview - Victron 51
UL 9540 Compliance 51
Minimum Battery Capacity - Victron 51
ROLLS S48-100LFP STACK-LV CLOSED LOOP INTEGRATION WITH VICTRON EQUIPMENT 52
Growatt Inverter Connection Guide 57
Overview - Growatt 57
UL 9540 Compliance 57
Minimum Battery Capacity - Growatt 57
ROLLS S48-100LFP STACK-LV CLOSED LOOP INTEGRATION WITH GROWATT EQUIPMENT 58

PRODUCT DESCRIPTION

Rolls S48-100LFP STACK-LV series Energy Storage Systems (ESS) are a series of stackable ESS modules. These batteries are intended for installation in systems requiring between 5kWh and 40kWh of storage per DC system, with up to 400A (20kW) discharge capability. Larger systems should take advantage of AC coupling to combine ESS systems on the AC bus.

REAR PANEL FEATURES



Rear Panel Features		Front Panel Features
1. External Breaker	6. RS-485 Communication	11. Display SOC Indicator
2. Assembly Locator Pin	7. CAN BUS Communication	12. Volt/Current/Temp Display
3. Rear Panel Mount	8. BMS On/Off Button	13. Display Alarm Indicator
4. Positive Terminal (2xM8)	9. DIP Address Switch	14. Display RUN Indicator
5. Negative Terminal (2xM8)	10. LINK IN/LINK OUT Ports	15. Display On/Off Button

INSTALLATION

This section describes installation steps and considerations for your Rolls S48-100LFP STACK-LV product.
Rolls S48-100LFP STACK-LV batteries should be installed on a flat surface which can bear the weight of the units (see datasheet) and should not be installed without proper fixturing.

Note: Only trained electrical power system technicians (or equivalent) should install the device. Before installing or removing the battery, make sure that the system is disconnected from any power source and that the battery device is turned off. Distribution cabling needs to be handled carefully with reasonable protective measures to avoid shorting or inadvertent connection during maintenance and operation.

PRECONDITIONS FOR INSTALLATION

Several conditions are required for installation of the Rolls S48-100LFP STACK-LV battery modules and ESS system. Refer to the label on the battery for additional warnings and requirements.

Note: Always fully comply with all relevant NEC, CEC, NFPA, and OSHA standards, as well as all federal, state, provincial, and local building and electric codes.

When installing this system, consult your local building, fire and installation codes to confirm if you require specific smoke and/or fire alarms.

Environment Temperature Absolute Limits: -20°C - 55°C
Relative Humidity 0-95% (non-condensing)

Installed on non-flammable surface. When installing this system, consult your local building, fire and installation codes to confirm if you require specific smoke and/or fire alarms.

Ensure the installation complies with local and National code requirements for separation distances to walls and other ESS (BESS) systems. Generally, this is 3 ft between ESS (BESS) modules, and the minimum distances from the rear or sides to walls is 50 mm.

ESS for indoor residential are only intended to be installed in attached or detached garages, sheds, enclosed utility closets, basements, storage or utility spaces within dwelling units and are not intended for installation in habitable spaces and living spaces in dwelling units.

NOTE: In Canada, CSA C22.1 limits the indoor installation of residential ESS to a garage, a free-standing structure or storage building.

ESS Should be protected from corrosive chemicals and any liquid exposure.
There is no additional routine maintenance needing to be performed on the batteries themselves. If the batteries become dirty or grimy, wipe as you would an appliance.

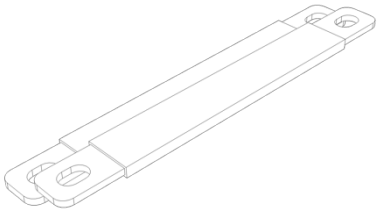
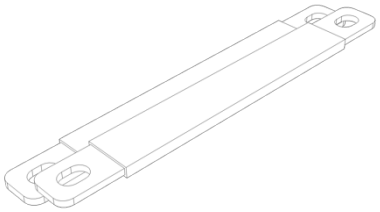
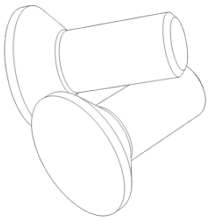
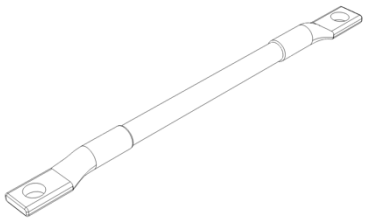
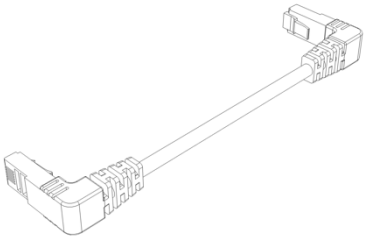
UL9540A Compliance

This device complies with UL9540A Test Method for Evaluating Thermal Runaway Fire Protection in Battery Storage Systems:

Test Organization: Intertek
Report Number: 241212104GZC-001
Date Issued: 6 July 2025

COMPONENTS

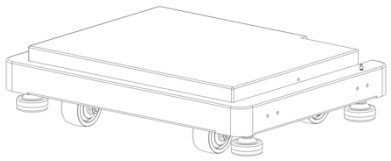
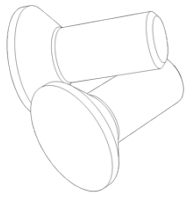
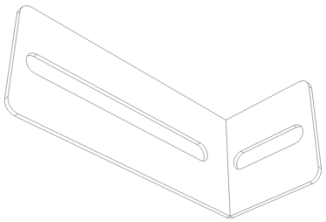
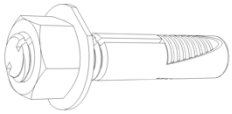
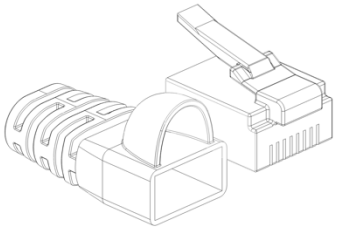
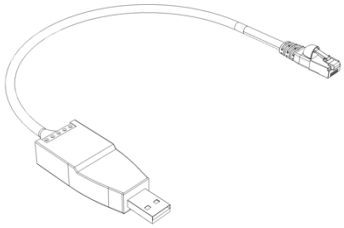
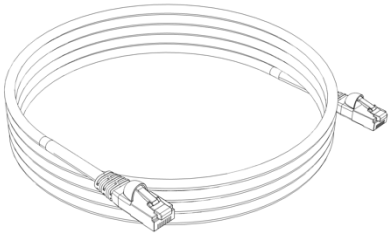
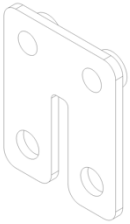
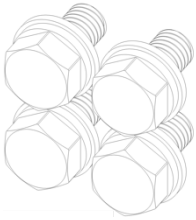
The following components are included with the **S48-100LFP STACK-LV:**

S48-100LFP STACK-LV		
		
Module 51.2V 100Ah (QTY 1)	**Positive (Red) Busbar** 200A ea. Tin Plated Copper (QTY 2)	**2x Negative (Black) Busbar** 200A ea. Tim Plated Copper (QTY 2)
		
Module Fixing Screws M5x12mm (QTY 2)	**Chassis Ground Cable** 8 AWG Ground Cable (QTY 1)	**Communication Cable** 155mm Parallel Comm Cable (QTY 1)

TOOLS FOR ASSEMBLY (NOT INCLUDED)			
SCREWDRIVER Cross/Philips Head ⊕	**TORQUE WRENCH** METRIC SOCKET SET	**WRENCH** METRIC/ADJUSTABLE	**DRILL BIT** 10mm for Anchor [OPTIONAL]

Note: When pairing with some inverter models it may be necessary to make or alter the communication cable. Rolls recommends crimping using the supplied housing. Soldering or wire nuts may also be used.

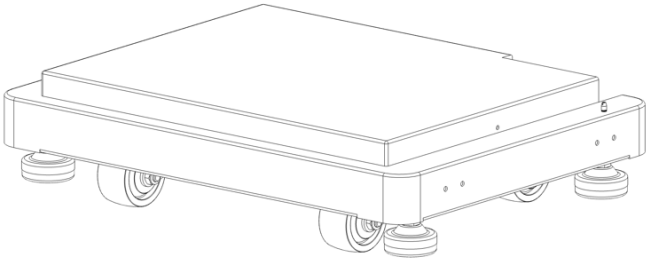
The following components are included with the **LFP STACK BASE+TOP ASSEMBLY:**

LFP STACK BASE+TOP ASSEMBLY		
		
BASE (QTY 1)	**COVER** (QTY 1)	**MODULE FIXING SCREWS** M5x12mm Phillips Countersunk Screws (QTY 2)
		
ANTI-TILT BRACKET (QTY 1)	**BRACKET MOUNTING SCREW** M8x12mm Phillips HEX bolt w/coil + flat washer (QTY 1)	**EXPANSION BOLT** M8x100mm SS Expansion Bolt (QTY 1)
		
RJ45 HOUSING & SHEATH RJ45 (PLUG) (QTY 2)	**RS-485 TO USB CONVERTER CABLE** LINK to USB (QTY 1)	**EXTERNAL COMM CABLE** 2m RJ45 Comm Cable (QTY 1)
		
BUSBAR COMBINER Tin Plated Copper Busbar Combiner (QTY 2)	**EXTERNAL LUG BOLTS** M8x16mm HEX Bolt w/ Lock + Flat Washer (QTY 4)	

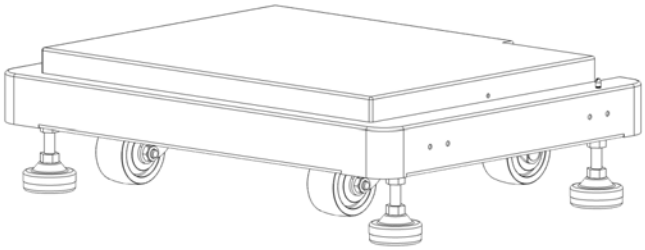
PREPARATION AND BASE INSTALLATION

Note: The following instructions outline the installation of 4 modules. Deviations based on more or fewer modules are noted where relevant.

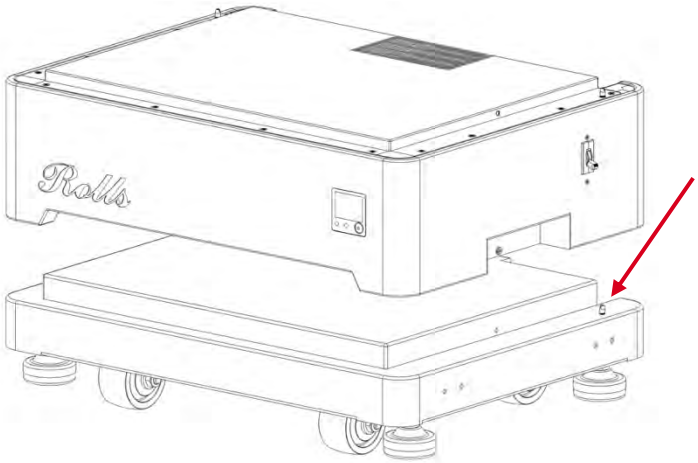
1. Locate the BASE UNIT where it will be installed. The ESS system, once the battery modules are installed will be too heavy to roll up most inclines, and cannot be rolled over bumps, stairs, cables, or other obstacles. Ensure that the unit is installed at its final position, or close enough to it that it can be rolled without obstruction.



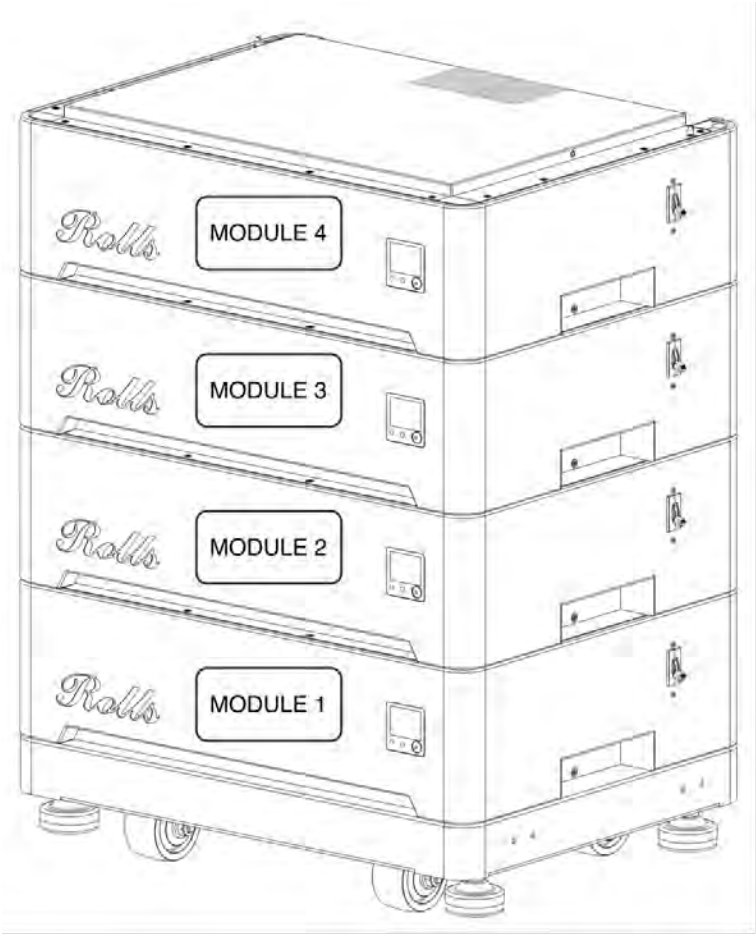
2. Ensure you have adequate access to the rear of the unit for installation.
3. Extend the levelling feet.
    a. You may lock the levelling feel in place by tightening the top bolt against the bottom frame now, or later. These instructions will prompt you to do so again before commissioning is complete.



4. Place the first module [MODULE 1] on the BASE directly, ensure the bottom frame locator pin is lined up with the receiving hole on [MODULE 1].

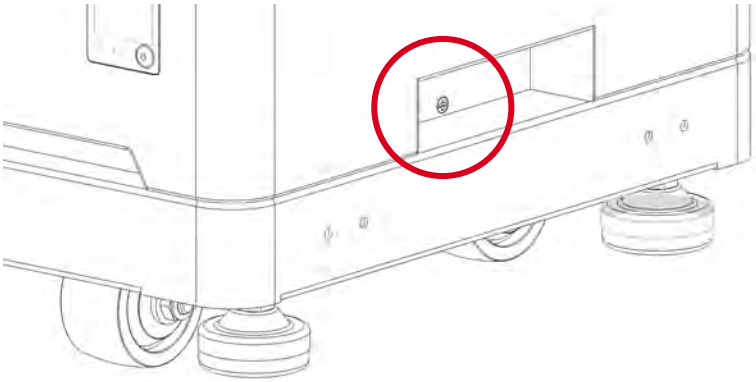


5. Repeat this step for all modules in order. The graphic shows 4, however you may have anywhere from 1 to 8 modules.



6. Place the TOP piece on top of the final module, in this example, that is denoted as [MODULE 4] because it is the 4th module.
    a. More modules should be placed above 4, up to 8, or stopping before 4, as necessary.
    b. Ensure the *"ROLLS"* logo is facing the front, as shown in the diagram. (Ensures proper clearance for the rear terminals).

7. Fasten each of the modules to the module below it using the included M5x12mm Phillips countersunk screws in the holes on the side of the unit, at the handle.

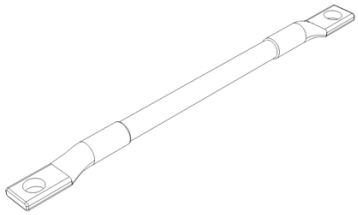


8. Remove the rear panel from each unit and save for installation later.

CHASSIS GROUNDING

In addition to the negative terminal connections, attaching a chassis ground cable is also required. Each chassis ground is included in the box with the battery module. The fasteners for the ground are in the bolt holes for the pre-cleaned terminals. The terminals are clearly marked on the right side of the rear panel of the unit. The fasteners may be removed and reinstalled with the included grounding cable.

Ground cables should be **torqued to 4-5Nm**. Do not over torque these connectors.



When connecting the chassis ground for the lowest unit (BATTERY 1), ensure that you do not block the other grounding terminal on the BASE with the lug you are installing.

Before completion, the bottom grounding terminal should be connected to the system, or earth ground via an appropriately marked cable of at least 8AWG or equivalent.

SINGLE BATTERY INSTALLATION

For single battery installation, connect the positive and negative terminal of the battery pack to the positive and negative terminal of the system bus with the appropriately sized red and black cable, respectively. If you intend to connect more than 1 unit in parallel, Rolls requires the use of the included communication cables and included busbar or other external busbar capable of delivering the maximum ESS current.

PARALLEL BATTERY ESS INSTALLATION

Rolls S48-100LFP STACK-LV batteries may be combined in parallel to increase system capacity and power delivery. Rolls S48-100LFP STACK-LV batteries can support up to 8 battery packs in parallel and is certified to UL 9540, UL1973 and tested to the unit level standard of UL 9540A under the following product names:

- S48-200LFP STACK-LV
- S48-300LFP STACK-LV
- S48-400LFP STACK-LV
- S48-500LFP STACK-LV
- S48-600LFP STACK-LV
- S48-700LFP STACK-LV
- S48-800LFP STACK-LV

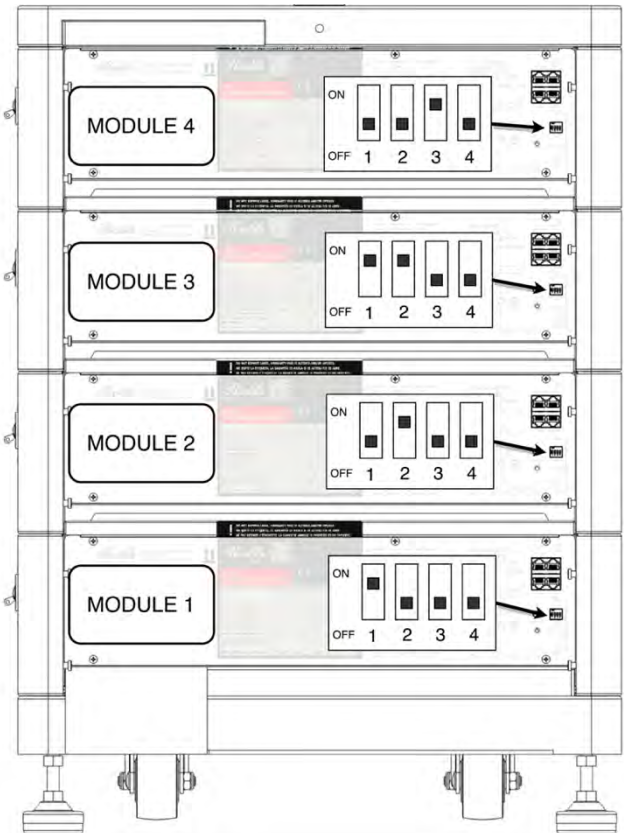
Each battery module is supplied with 2 positive and 2 negative 200A busbars. Included with the **LFP STACK BASE+TOP ASSEMBLY** are two additional busbar COMBINERS, each having 2x M8 holes and 2xM8 threaded inserts, to join the dual terminals and attach external cabling. Please refer to the installation instructions for recommended installation orders. Busbars must always be installed completely parallel to the terminal or mating busbar to avoid potential high resistance contacts.

CAN BUS & RS-485 PARALLEL PACK ADDRESSING

When multiple battery packs are connected in parallel, they are required to have inter-battery communication configured.

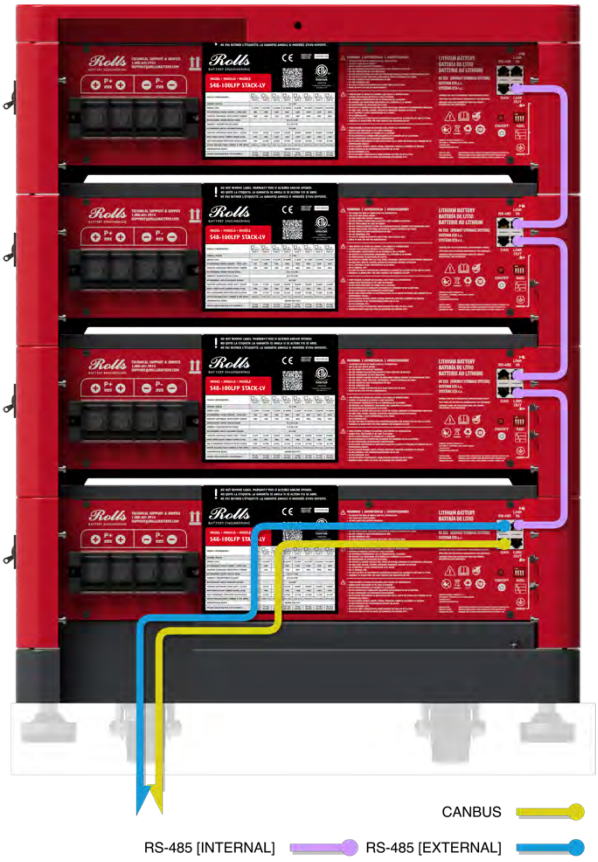
Set the DIP switches on the rear of the units to address them as follows, for additional units (up to 8, refer to the DIP table in Appendix B: DIP Table):

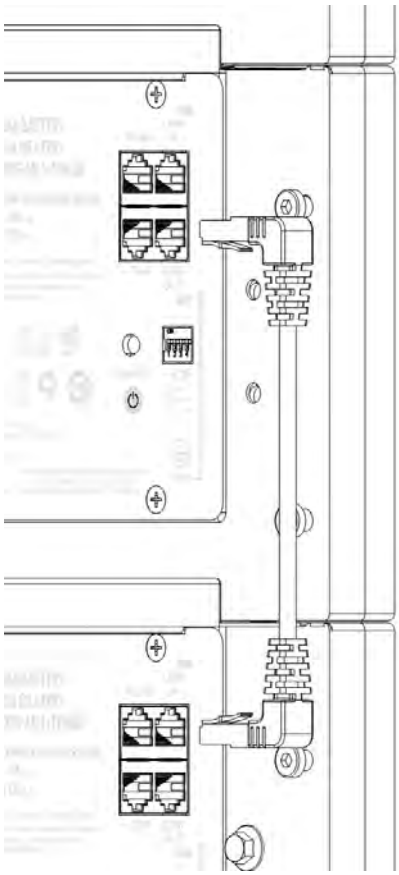
To streamline the installation and reduce the length of external communication cabling, we recommend setting the bottom battery as MODULE 1.



CONNECTING THE LINK UP AND LINK DOWN PORTS

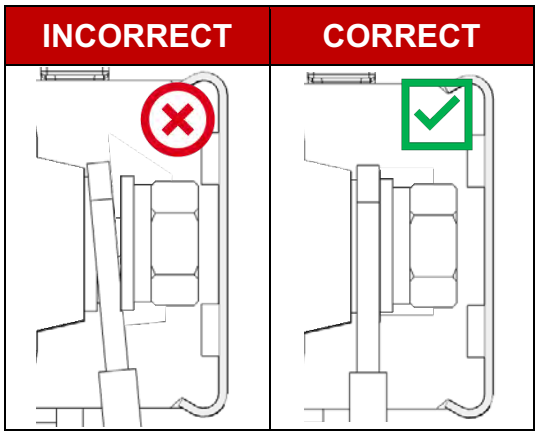
The “LINK IN” and “LINK OUT” ports must be connected via the included cables. A description of the connections is below, according to the right-angle orientation of the cables, only one connection orientation is possible.





BUSBAR CONNECTIONS

Always ensure that busbars are installed parallel to the terminal. Installing busbars at an angle will cause a high resistance contact, regardless of proper torque. Busbars must always be layered as per the following instructions.



SYSTEM CURRENT LIMITS

The following table highlights the maximum current rating for different system configurations.

CONFIGURATION MAXIMUM CURRENT REFERENCE								
MODEL	S48-100LFP STACK-LV	S48-200LFP STACK-LV	S48-300LFP STACK-LV	S48-400LFP STACK-LV	S48-500LFP STACK-LV	S48-600LFP STACK-LV	S48-700LFP STACK-LV	S48-800LFP STACK-LV
Modules	1	2	3	4	5	6	7	8
Capacity (Ah)	100	200	300	400	500	600	700	800
400A Busbar Configuration (Double Busbar per Terminal)								
Max Charging Current	100A	160A	240A	320A	400A	400A	400A	400A
Max Discharging Current	100A	160A	240A	320A	400A	400A	400A	400A
C-Rate	1.0C	0.80C	0.80C	0.80C	0.80C	0.67C	0.57C	0.50C

Note: Factory settings for current limits in closed loop communication are based on a 400A Busbar configuration (busbars are included in packaging). Refer to firmware update instructions online or contact support if a 200A closed loop configuration is required.

Note: Refer to the Communication Interface section for the parallel communication cable and external CAN/RS-485 connections.

WARNING: Series connection of Rolls S48-100LFP STACK-LV batteries is NOT supported. Connecting batteries in series will directly lead to BMS failure under numerous conditions, risking cell health, user safety, and will void the product warranty.

BUSBAR CONNECTIONS – *Even* Number of Modules

NOTE: Depending on the number of modules, a different busbar connection order is recommended to accommodate the stacked busbar and placement of busbar combiners, and to ensure all connections are secure. Please follow the appropriate guidelines for your configuration.

These detailed instructions below outline the steps required to install positive and negative terminal connections from the top of the module stack to the bottom, reducing the amount of bolting and unbolting if an incorrect order is used. You may choose to install the busbars in the order you prefer. However, it is required that the busbar combiners and external connections are staggered, and that busbars are properly installed parallel to the terminals with no angled busbar connections in the system.

Note: *Torque terminals after all busbars have been installed.*

Even Numbered Configurations: Positive Terminals

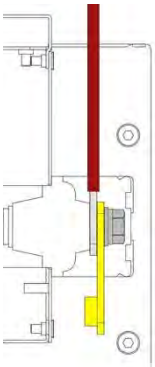
Before Starting Connection

- Double check that all module side-mounted breakers are in the **OFF** position.
- To begin installing terminal busbars, first remove all positive & negative terminal bolts from each MODULE.

Depending on the number of modules to be installed, follow the steps outlined below for installation of positive terminal busbars.

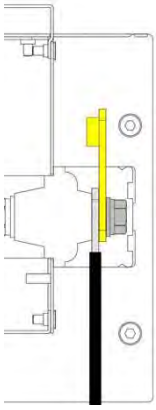
# Modules	Initial Step	Next Steps
8 Modules	Install two positive busbars between MODULE 8 and MODULE 7, fixing only the bolts on MODULE 8. Do not torque.	Proceed to steps 1-7 below
6 Modules	Install two positive busbars between MODULE 6 and MODULE 5, fixing only the bolts on MODULE 6. Do not torque.	Proceed to steps 3-7 below
4 Modules	Install two positive busbars between MODULE 4 and MODULE 3, fixing only the bolts on MODULE 4. Do not torque.	Proceed to steps 5-7 below
2 Modules	Install two positive busbars between MODULE 2 and MODULE 1, fixing only the bolts on MODULE 2. Do not torque.	Proceed to step 7 below

1. Place the two *positive* busbars between MODULE 7 and MODULE 6 **in front of** the busbars for MODULE 7.
    a. Tighten the bolts on the busbars on MODULE 7. Do not torque. You should have 2 busbars stacked on each *positive* terminal of MODULE 7.
2. Place the two *positive* busbars between MODULE 6 and MODULE 5 **behind** the previously placed busbars.
    a. Tighten the bolts on the busbars on MODULE 6. Do not torque. You should have 2 busbars stacked on each *positive* terminal of MODULE 6.
3. Place the two *positive* busbars between MODULE 5 and MODULE 4 **in front of** the existing busbars on MODULE 5.
    a. Tighten the bolts on the busbars on MODULE 5. Do not torque. You should have 2 busbars stacked on each *positive* terminal of MODULE 5.
4. Place the two *positive* busbars between MODULE 4 and MODULE 3 **behind** the previously placed busbars.
    a. Tighten the bolts on the busbars on MODULE 4. Do not torque. You should have 2 busbars stacked on each *positive* terminal of MODULE 4.
5. Place the two *positive* busbars between MODULE 3 and MODULE 2 **in front of** the existing busbars on MODULE 3.
    a. Tighten the bolts on the busbars on MODULE 3. Do not fully torque. You should have 2 busbars stacked on each *positive* terminal of MODULE 3.
6. Place the *positive* busbars between MODULE 2 and MODULE 1 **behind** the previously placed busbars.
    a. Tighten the bolts on the busbars on MODULE 2. Do not fully torque. You should have 2 busbars stacked on each *positive* terminal of MODULE 2.
7. Finally, before installing the bolts on MODULE 1, affix one busbar COMBINER **in front of** the *positive* busbars on MODULE 1. (as shown in the illustration)



Step 7

Even Numbered Configurations: Negative Terminals



Connect the ***Negative*** busbars following the same sequencing as busbars as outlined above, working from the top module to the bottom, beginning with the busbar COMBINER installed **in front of** the two *negative* busbars on the top MODULE (8, 6, 4, or 2).
(as shown in the illustration)

Follow torquing directions in TERMINAL TORQUE and external connector instructions in EXTERNAL CABLE CONNECTION when connecting external equipment.

BUSBAR CONNECTIONS – *Odd* Number of Modules

NOTE: Depending on the number of modules, a different busbar connection order is recommended to accommodate the stacked busbar and placement of busbar combiners, and to ensure all connections are secure. Please follow the appropriate guidelines for your configuration.

The detailed instructions below outline the steps required to install positive and negative terminal connections from the top of the module stack to the bottom, reducing the amount of bolting and unbolting if an incorrect order is used. You may choose to install the busbars in the order you prefer. However, it is required that the busbar combiners and external connections are staggered, and that busbars are properly installed parallel to the terminals with no angled busbar connections in the system.

Note: *Torque terminals after all busbars have been installed.*

Odd Numbered Configurations: Positive Terminals

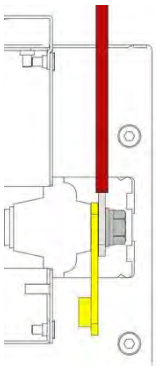
Before Starting Connection

- Double check that all module side-mounted breakers are in the **OFF** position.
- To begin installing terminal busbars, first remove all positive & negative terminal bolts from each MODULE.

Depending on the number of modules to be installed, follow the steps outlined below for installation of positive terminal busbars.

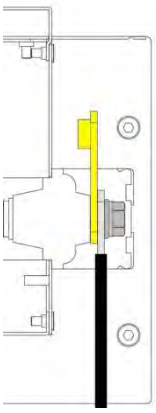
# Modules	Initial Step	Next Steps
7 Modules	Install two positive busbars between MODULE 7 and MODULE 6, fixing only the bolts on MODULE 7. Do not torque.	Proceed to steps 1-6 below
5 Modules	Install two positive busbars between MODULE 5 and MODULE 4, fixing only the bolts on MODULE 5. Do not torque.	Proceed to steps 3-6 below
3 Modules	Install two positive busbars between MODULE 3 and MODULE 2, fixing only the bolts on MODULE 3. Do not torque.	Proceed to steps 5-6 below
1 Module	Install a busbar COMBINER plate on the positive terminal connections and repeat for the negative terminal connections.	Torque all terminal connections

1. Place the two *positive* busbars between MODULE 6 and MODULE 5 **in front of** the busbars for MODULE 6.
    a. Tighten the bolts on the busbars on MODULE6. Do not torque. You should have 2 busbars stacked on each *positive* terminal of MODULE 6.
2. Place the two *positive* busbars between MODULE 5 and MODULE 4 **behind** the previously placed busbars.
    a. Tighten the bolts on the busbars on MODULE 5. Do not torque. You should have 2 busbars stacked on each *positive* terminal of MODULE 5.
3. Place the two *positive* busbars between MODULE 4 and MODULE 3 **in front of** the existing busbars on MODULE 4.
    a. Tighten the bolts on the busbars on MODULE 4. Do not torque. You should have 2 busbars stacked on each *positive* terminal of MODULE 4.
4. Place the two *positive* busbars between MODULE 3 and MODULE 2 **behind** the previously placed busbars.
    a. Tighten the bolts on the busbars on MODULE 3. Do not torque. You should have 2 busbars stacked on each *positive* terminal of MODULE 3.
5. Place the two *positive* busbars between MODULE 2 and MODULE 1 **in front of** the existing busbars on MODULE 2.
    a. Tighten the bolts on the busbars on MODULE 2. Do not fully torque. You should have 2 busbars stacked on each *positive* terminal of MODULE 2.
6. Finally, before installing the bolts on MODULE 1, affix one busbar COMBINER **behind** the *positive* busbars on MODULE 1. (as shown in the illustration)



Step 6

Odd Numbered Configurations: Negative Terminals



Connect the ***Negative*** busbars following the same sequencing as *positive* busbars outlined above, working from the top module to the bottom, beginning with the busbar COMBINER installed **behind** the two *negative* busbars on the top MODULE (7, 5, or 3).

Follow torquing directions in TERMINAL TORQUE and external connector instructions in EXTERNAL CABLE CONNECTION when connecting external equipment.

EXTERNAL CABLE CONNECTION

All external cable connections should be adequately sized, insulated, and undamaged. The cable connectors should be clean and properly mated with the battery terminals to ensure a snug connection. Terminal connections should be torqued to the recommended specification below. Although Rolls S48-100LFP STACK-LV batteries do not require maintenance, routine inspection of cabling and terminal connections is recommended.

AMPERAGE	25	30	40	55	75	95	130	150	170	195	260
WIRE GAUGE	14	12	10	8	6	4	2	1	1/0	2/0	4/0

Note: Undersized cables may lead to cable and/or battery damage, charging issues, terminal heating, or fire. The above table is only meant to provide a quick reference, **ALWAYS** consult with the manufacturer's specification for conductor current and temperature.

TERMINAL TORQUE

Terminal connections must be properly torqued. Rolls S48-100LFP STACK-LV battery terminals using M8 fasteners should be torqued to **4-6 Nm**.

DO NOT OVERTORQUE: If a terminal is damaged, do not attempt to repair the terminal. Do not use the battery if the recommended torque specification cannot be met.

Note: Each of the four terminals on the S48-100LFP STACK-LV module has a maximum current limit of 200A. For all installations, code compliance, and adherence to certifications, installation of the four (4) supplied busbars, connected on the two (2) positive terminals & two (2) negative terminals, per battery, is required.

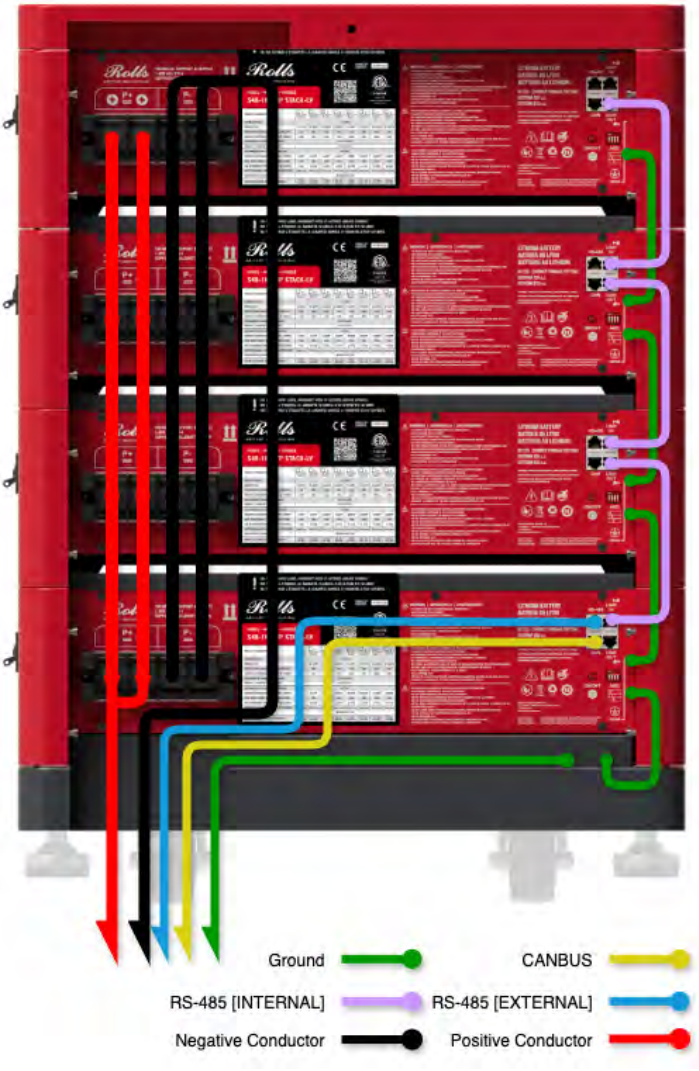
MANUAL BALANCING

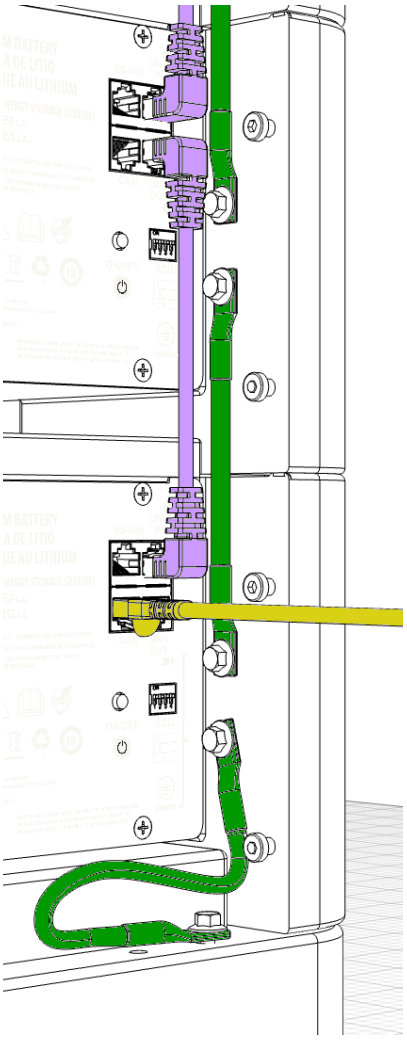
If an imbalance is present between connected batteries, this may cause a large inrush current between batteries after they are finally energized in parallel. To avoid performance problems if batteries are unable to connect to the system:

1. Individually, or in groups based on voltage and state of charge, charge each battery by one of two means:
    a. Leave batteries you do not wish to charge off and with disconnected breakers when charging batteries individually.
    b. Following the one stage charge recommendations.
    c. Following the automatic recommendations based on the connected closed loop inverter system.
2. Once they have been individually charged, continue with the connection steps as listed above.

BATTERY OPERATION

VERIFICATION OF CONNECTIONS



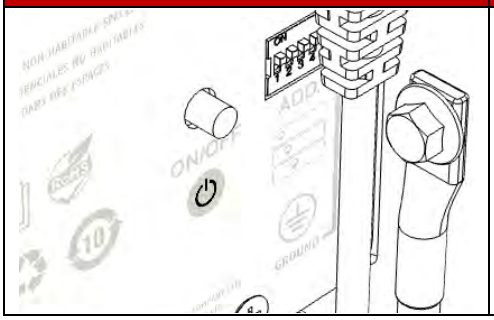
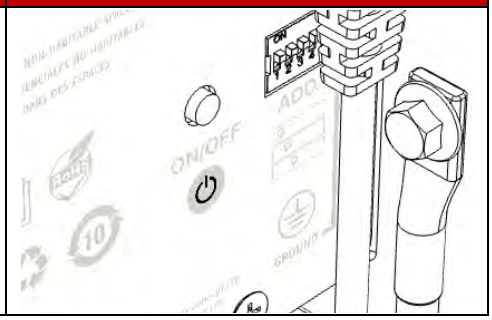


Verify that all inter-battery connections and external communication cables are securely installed.

FIRST START

After you have verified the inter-battery connections, terminal torque, chassis grounding, inter-battery and external communications, and external connections are made, the batteries may be powered on. The following steps should be taken to ensure a safe first start:

1. With the external breaker **OFF**, verify the reported state of charge and open circuit voltage (OCV) of the battery displayed from the BMS on the screen on the front of the unit (see MANUAL BALANCING above). Leave the side-mounted breaker **OFF** for this step and wake the battery from a storage state by pressing the ON/OFF button on the rear of the device.

BMS in OFF Position	BMS in ON Position
	

Once the BMS boots up and the screen is illuminated, verify the following:

   a. The recommended deviation in open circuit voltage (OCV) is 0.03V (reported as the lowest decimal available on the screen). If the deviation exceeds 0.03V, we recommend conducting a manual balancing before initial connection.
   b. The recommended deviation in state of charge (SOC) is 5% reported from the display. If the deviation exceeds 5%, we recommend conducting a manual balancing before initial connection.

2. Once the state of charge and open circuit voltages have been verified, turn the BMS of each unit **OFF** (see illustration above).

3. With the BMS **OFF**, verify proper torque and double-check the polarity (positive versus negative) of external input & output connections one last time. Connecting batteries to external equipment in reverse polarity may damage external equipment.
   a. If any additional current limits may need to be set to protect external equipment, these should also be verified at this time.

4. With the BMS **OFF**, switch the side-mounted breakers of each module to the "**ON**" position, (up).

5. Beginning at the bottom of the stack [MODULE 1], turn each BMS **ON** via the button on the rear of the module. (see illustration above)

6. When the relays on each BMS are turned on, the system is now energized. Ancillary equipment will turn on following this energizing of the system. If the side-mounted breakers or BMS on the module(s) trip after installation, please refer to the screens on the module(s), mobile app, or troubleshooting via the PC software.

FINAL INSTALLATION, LEVELLING AND FASTENING

1. If it is not already in place, move the unit to its final location against a wall or other secure structure. Refer to PRECONDITIONS FOR INSTALLATION
    a. Release the levelling feet as necessary.

2. Lower the levelling feel so that they bear the weight of the unit.
    a. Ensure that the ESS is level by adjusting the feet appropriately.
    b. Lock the levelling feet in place by tightening the locking nut against the nut on the Base.

3. Attach the Anti-tilt Bracket.

   To secure the ESS, the Anti-tilt Bracket should be fastened to a solid structure such as brick/concrete block or other.

   a. Fasten the Anti-tilt Bracket loosely to the top of the ESS in the rear or side position (see illustration below) using the supplied M8x12mm Bracket Mounting Screw.
   b. Position the Anti-tilt Bracket against the wall.
   c. Drill a hole in the wall to install the supplied M8x100mm Expansion Bolt or secure to the Anti-tilt Bracket to the wall with other hardware of your choosing.
   d. Secure the Anti-tilt Bracket to the wall by tightening the M8x100mm Expansion Bolt.
   e. Tighten the M8x12mm Bracket Mounting Screw to the top of the ESS to secure.

   Note: Alternative hardware may be used to secure the Anti-tilt Bracket to a wall. Additionally, two M8 threaded inserts are located on each side of the Base to allow fastening the ESS to the floor. (Hardware not included)

4. Last, ensure all module side-mounted breakers are in the **OFF** position (down) as shown in images before continuing with any electrical work.

5. Finally, reinstall the rear panels onto the rear of each unit as they arrived.

Appendix A: Inverter Compatibility List & DIP Table

Compatibility details and the communication standard used for compatible inverters are provided below. All inverters, when set with proper voltage and current setpoints for charge and discharge, may be used with Rolls S48-100LFP STACK-LV batteries. This list refers to inverters capable of reading battery data over CAN bus or RS-485 from connected batteries. Please refer to the Rolls LFP Desktop V2 PC Software instructions for details on how to update these communication protocols. Inverters often use the existing protocols of other brands to ease support and compatibility – refer to the inverter manufacturer's support for more details as an unlisted inverter may use a standard protocol.

Inverters with Full Support

Inverter Brand		Type	Protocol Selection in Rolls LFP Desktop V2	Baud
Deye	Deye	CAN	PYLONTECH	500K
Goodwe	GOODWE	CAN	PYLONTECH	500K
Pylontech	PYLONTECH	CAN	PYLONTECH	500K
SMA	SMA	CAN	SMA	500K
Sol-Ark	Sol-Ark	CAN	PYLONTECH	500K
Solis	solis	CAN	SOLIS	500K
Victron Energy	victron energy	CAN	VICTRON ENERGY (DEFAULT)	500K
Deye	Deye	RS-485	PYLONTECH	9600
LuxPowerTek	LUXPOWERTEK	RS-485	LUXPOWERTEK	9600
Pylontech	PYLONTECH	RS-485	PYLONTECH	9600

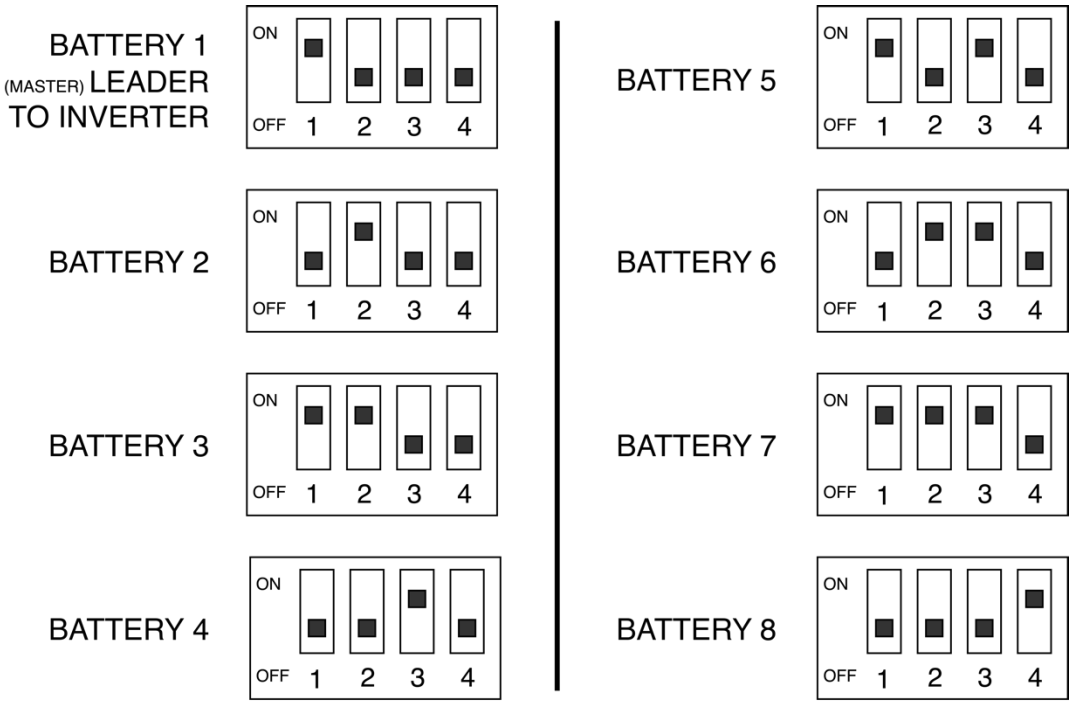
Note: *Certain inverter manufacturers may choose not to read alarm status from the battery. This does not impact the battery safety nor the regulatory requirements for installation.*

Inverters with Basic Support

Inverter Brand		Type	Protocol Selection in Rolls LFP Desktop V2	Baud
Megarevo	MEGAREVO	CAN	MEGAREVO	500K
Must	MUST®	CAN	MUST	500K
TBB Power	TBB POWER	CAN	PYLONTECH	500K
INHENERGY	INHENERGY	RS-485	INHENERGY	9600
Growatt	GROWATT	RS-485	GROWATT	9600
Voltronic	Voltronic Power Advancing Power	RS-485	VOLTRONIC	9600

Note: *These inverters will support the basics of communication for safety and regulatory requirement. However, they may not implement or display the full scope of available information. Support may vary by version and product line.*

DIP Table:



Appendix B: Emergency Considerations

In the event of fire in the building or adjacent building to Rolls LFP batteries, such as a structural or electrical fire, the following procedures should be followed. Personal safety is the top priority. The local authorities should be notified, and the area should be immediately evacuated. Call 911, or your local emergency number, and notify the professionals of the presence of the Lithium Iron Phosphate lithium battery system and its location.

To decommission after a fire event, use proper PPE including:

- Gloves
- Mask or respirator
- Safety glasses

1. Ensure all module side-mounted breakers are in the **OFF** position.
    a. Ensure all connected components like MPPTs, inverters, or hybrid inverters and their other power sources are also **OFF**.
    b. Ensure all in-line breakers, or other breakers are **OFF.**
2. Verify a voltage reading of 0V at the terminals with a multimeter.
3. Disconnect all cabling from the batteries.
4. Separate and dispose of batteries and other materials per local regulatory requirements.

Water is an acceptable and effective extinguishing agent for Rolls LFP batteries. The Balance of System equipment used in conjunction with the Rolls batteries may require specialized extinguishers such as FM-200 or CO2 suppression systems.

Rolls Technical Support team may be contacted at: 1.800.681.9914

Appendix C: Rolls LFP Desktop V2 & Rolls LFP Connect App Guide

Communication Setup

Rolls S48-100LFP STACK-LV batteries are configured for Victron Energy systems by default via CAN bus. Other inverters will require setting the proper protocol in software. The BMS CAN bus protocol may be properly reconfigured using **Rolls LFP Desktop V2** software on a PC, or via the **Rolls LFP Connect App** on a mobile phone.

Setup Using Rolls LFP Desktop V2

The following steps are physically performed on the Rolls LFP Batteries and a PC with Preinstalled **Rolls LFP Desktop V2**.

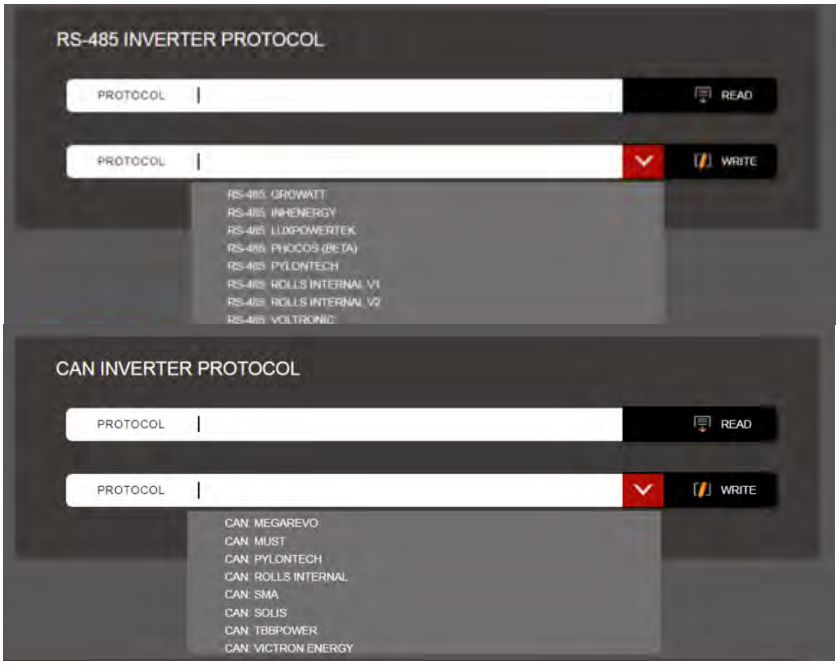
1. Connect the **LINK OUT** port on battery **MODULE 1** with the PC using the RS-485 to USB Converter Cable supplied with the **LFP STACK BASE+TOP ASSEMBLY**.
2. Open **Rolls LFP Desktop V2** software on the PC.

3. Refresh and select the correct port number from the drop-down.

***Note**: To quickly identify the correct port number, physically disconnect and reconnect the RS-485 to USB Converter Cable to the PC. The port will disappear and reappeared after reconnection. If you experience issues with connectivity, please verify that you have installed the correct UBS CH341SER driver. Link to the correct driver is here* and at the QR code to the right. ⟶

4. Select **MODULE 1** as shown above.
5. Click **CONNECT**. The battery status information will now be shown on the Real Time Monitoring tab.

6. Go to the **Inverter Protocol Settings** tab.
7. Select the required **CAN bus or RS-485** protocol from the respective drop-down menus for each standard.



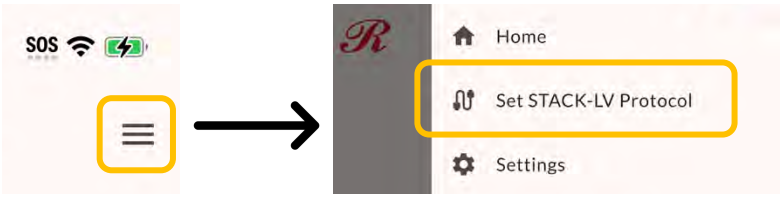
***Note**: Please ensure that the external communication cable is properly connected to either the RS-485 or CAN bus port on the rear of the device.*
***Note**: When reading the protocol from the ESS system, the field will only populate for the protocol type which is set. If you find you cannot read the protocol with CAN bus or RS-485, try with the other button.*

8. Click **Write**. This will apply the **requested protocol** to the battery.
9. Wait for confirmation shown in the notification screen below.
10. Click **Read** above the drop-down that was set. You should now see the **requested protocol** appear as the selected Inverter type.

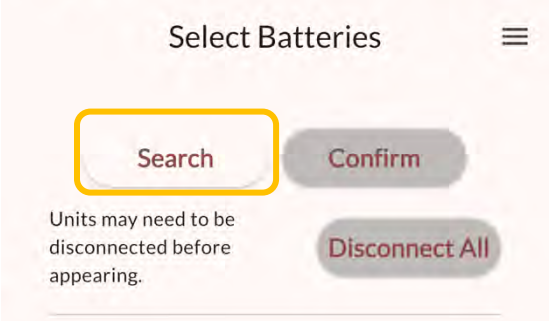
Rolls LFP Desktop V2 setup process is now complete.

Setup Using Rolls LFP Connect App Protocol Setting Wizard

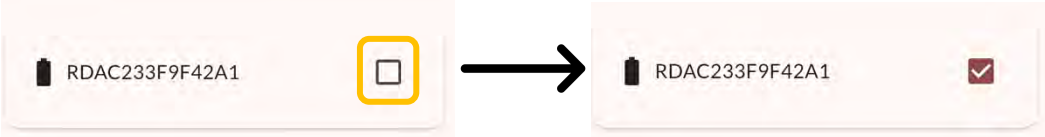
1. From the main screen of the device, select the three lines in the top right to go into the side menu. There, select **Set Stack LV Protocol** from the menu.



2. You will then be prompted to select relevant batteries which will be set to the inverter protocol. Start by searching for nearby batteries by sitting **Search**. If you find that a battery you anticipate being there does not show up. Try selecting **Disconnect All** in case the request to disconnect the battery from the mobile device was unsuccessful. Then, hit **Search** again.

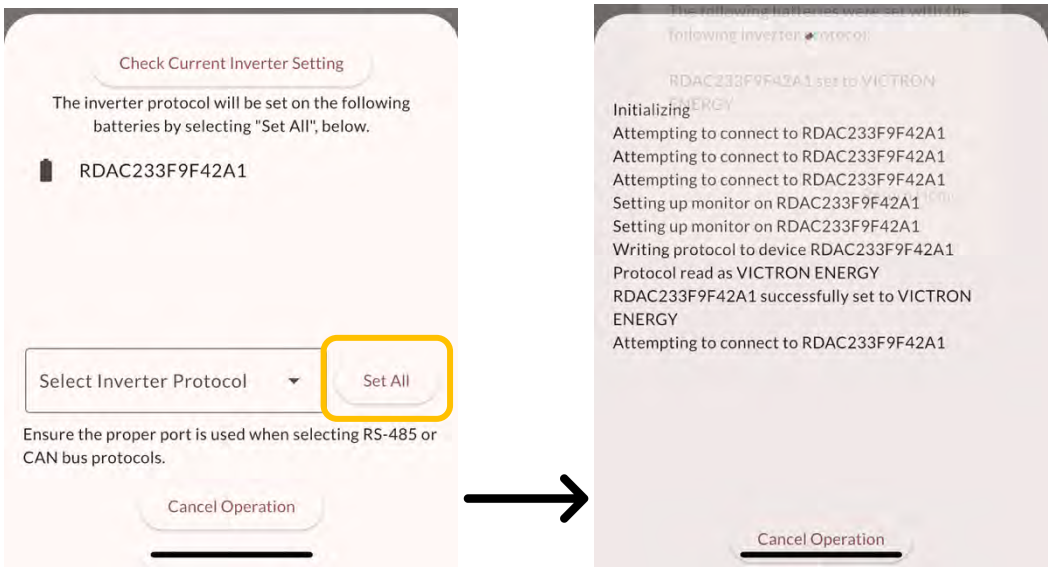


3. Once the batteries you would like to set appear in the found batteries section you may then check the box beside each to set them in bulk or individually. The most important one to set is always the unit set to **MODULE 1** which will connect to the external **RS-485** or **CAN bus** required by the inverter.



4. Hit confirm to move on to the next screen, which will allow you to check the current inverter settings of those inverters, or set a new protocol.

5. To set a new protocol, simply select the relevant protocol from the **Select Inverter Protocol** list, being mindful of whether it is an **RS-485** or **CAN bus** protocol, then hit **Set All** to set.



6. You'll be asked to confirm that you are setting the proper number of batteries to the proper inverter protocol.
7. You will then be shown a status screen as the mobile device attempts to connect, configure the Bluetooth connection, and write the protocol of each requested battery module, before finally being confirmed that the protocol write has been successful. Lastly, you will receive a confirmation screen which details which inverters were properly set and which ones may have failed or require setting again.

8. Once the setup wizard has completed, you'll be taken to the start screen of the app.

Rolls LFP Connect setup process is now complete.

Appendix D: Rolls Inverter-Specific Guides

WARNING | ADVERTENCIA | AVERTISSEMENT

To Reduce the Risk of Injury, read all instructions
ARC FLASH AND SHOCK HAZARD
DO NOT short the battery terminals
DO NOT reverse connections (polarity) from charger or battery
DO NOT overcharge or over discharge
DO NOT operate battery beyond the published voltage, current or temperature limit
DO NOT drop, strike, puncture, disassemble, modify, incinerate or crush
DO NOT expose to high temperatures or fire
DO NOT submerge. IP52. Not certified for installations with salt spray, nor in marine environments.
IN CASE OF LEAKED ELECTROLYTE KEEP AWAY FROM EYES OR SKIN
REFER TO NFPA 70E FOR PPE REQUIREMENTS

_____

Para reducir el riesgo de lesiones, lea todas las instrucciones
PELIGRO DE DESCARGA ELÉCTRICA Y ARCO ELÉCTRICO
NO provoque cortocircuito en los terminales de la batería
NO invierta las conexiones (polaridad) del cargador o la batería
NO sobrecargue ni descargue en exceso
NO utilice la batería más allá del límite de voltaje, corriente o temperatura publicado
NO deje caer, golpee, perfore, desmonte, modifique, incinere ni aplaste
NO la exponga a altas temperaturas ni al fuego
NO la sumerja. IP52. No certificado para instalaciones con niebla salina, ni en ambientes marinos.
EN CASO DE FUGA DE ELECTROLITO, MANTÉNGALO ALEJADO DEL ALCANCE DE LOS OJOS O LA PIEL
CONSULTE LA NORMA NFPA 70E PARA CONOCER LOS REQUISITOS DE EPP

_____

Pour réduire le risque de blessure, lisez toutes les instructions
RISQUE D'ARC ÉLECTRIQUE ET DE CHOC ÉLECTRIQUE
NE PAS court-circuiter les bornes de la batterie
NE PAS inverser les connexions (polarité) du chargeur ou de la batterie
NE PAS surcharger ou décharger excessivement
NE PAS faire fonctionner la batterie au-delà de la limite de tension, de courant ou de température publiée
NE PAS LAISSER tomber, frappé, percer, démonter, modifier, incinérer ou écraser
NE PAS exposer à des températures élevées ou au feu
NE PAS immerger. IP52. Non certifié pour les installations exposées aux embruns salins, ni dans les environnements marins.
EN CAS DE FUITE D'ÉLECTROLYTE, TENIR ÉLOIGNÉ DES YEUX OU DE LA PEAU
REPORTEZ-VOUS à NFPA 70E POUR LES EXIGENCES EN MATIÈRE D'ÉPI

	Warning Electrical shock hazard. Do not open. No user serviceable parts inside. Unauthorized access, servicing, or tampering of individual modules will void the manufacturer's warranty. Maintenance may only be carried out by authorized personnel under the guidance of Rolls Battery.
	Warning WARNING: To Reduce the Risk of Injury, read all instructions
	Warning For indoor use only – "Suitable for use in residential dwelling units where permitted."

CERTIFICATION INFORMATION

UL 1973 Compliance This device complies with ANSI/CAN/UL 1973:2022 Ed.3 **Test Organization**: Intertek **Report Number**: 241213059GZC-001 **Date Issued**: 4 June 2025	
UL 9540 Compliance This device complies with UL 9540:2023 Ed.3 **Test Organization**: Intertek **Report Number**: 241212095GZU-001 **Date Issued**: 9 July 2025	
UL 9540A Compliance This device complies with ANSI/CAN/UL 9540A:2025 Ed.5 **Test Organization**: Intertek **Report Number**: 241212104GZC-001 **Date Issued**: 6 July 2025	

BATTERY CURRENT OPERATING LIMITS

Maximum Battery and ESS Operating Limits

Different system configurations will change the acceptable operating limits. The Energy Storage System (ESS) should not be operated outside these operating limits. The Battery Management System (BMS) will open its internal switch and disconnect the battery in charge and/or discharge if any of these limits are exceeded. Repeated operation outside of posted limits will void your warranty.

CONFIGURATION MAXIMUM CURRENT REFERENCE								
MODEL	S48-100LFP STACK-LV	S48-200LFP STACK-LV	S48-300LFP STACK-LV	S48-400LFP STACK-LV	S48-500LFP STACK-LV	S48-600LFP STACK-LV	S48-700LFP STACK-LV	S48-800LFP STACK-LV
Modules	1	2	3	4	5	6	7	8
Capacity (Ah)	100	200	300	400	500	600	700	800
400A Busbar Configuration (Dual Positive & Dual Negative Busbars)								
Max Charging Current	100A	160A	240A	320A	400A	400A	400A	400A
Max Discharging Current	100A	160A	240A	320A	400A	400A	400A	400A
C-Rate	1.0C	0.80C	0.80C	0.80C	0.80C	0.67C	0.57C	0.50C

***Note**: Intentional bypassing of a BMS to operate a battery outside its maximum and minimum limits voids warranty and may lead to safety concerns. Refer to the Manual and Label for a full list of operating limits.*

Sol-Ark Inverter Connection Guide

Overview – Sol-Ark

This document provides information on the integration of Rolls **S48-100LFP STACK-LV** – **S48-800LFP STACK-LV** ESS with Sol-Ark Hybrid Inverters via CAN bus & RS-485. The integration covers, but is not limited to, the following components.

Sol-Ark Reference Docs:	Rolls LFP STACK-LV Reference Documents:
• 5K-1P-N Hybrid Inverter • 5K-2P-N Hybrid Inverter • 8K-2P-N Hybrid Inverter • 12K-2P-N Hybrid Inverter • 15K-2P-N Hybrid Inverter	• ROLLS S48-100LFP STACK-LV DATASHEET • ROLLS S48-100LFP STACK-LV BATTERY OPERATING MANUAL

Refer to www.rollsbattery.com for the most recent version of these documents.

The following guide references instruction from the inverter manufacturer. Always verify these settings against current versions of the manufacturer's documentation and any additional settings necessary for other system components. Rolls Battery accepts no responsibility for any damage or issues that may occur from the use of this material.

UL 9540 Compliance	
This device complies with UL 9540:2023 Ed.3 **Test Organization**: Intertek **Report Number**: 241212095GZU-001 **Date Issued**: 9 July 2025	

Minimum Battery Capacity – Sol-Ark

Using large solar arrays with ESS that are too small may exceed the operating limits of the ESS which would potentially trigger BMS over-current protection. Battery capacity must be sized to accommodate the maximum charge current of the system, or the charging devices must be adjusted to limit charge output below the operating limit of the installed batteries. This value is determined by summing the charge capacities of all inverter/chargers and solar charge controllers in the system. Additionally, the ESS must be sized with a peak current limit that supports the surge requirements demanded by the DC loads (including inverter). Ensure that the sum of peak currents of all devices on the DC bus is less than or equal to the sum of the ESS peak current values.

Model	Peak Discharge Current (DC)	Cont. Charge/Discharge Current (DC)	Single Phase Minimum
5K-1P-N	144 A (10s)	120 A	S48-200LFP STACK-LV
5K-2P-N	144 A (10s)	120 A	S48-200LFP STACK-LV
8K-2P-N	222 A (10s)	185 A	S48-300LFP STACK-LV
12K-2P-N	222 A (10s)	185 A	S48-300LFP STACK-LV
15K-2P-N	330 A (10s)	275 A	S48-500LFP STACK-LV

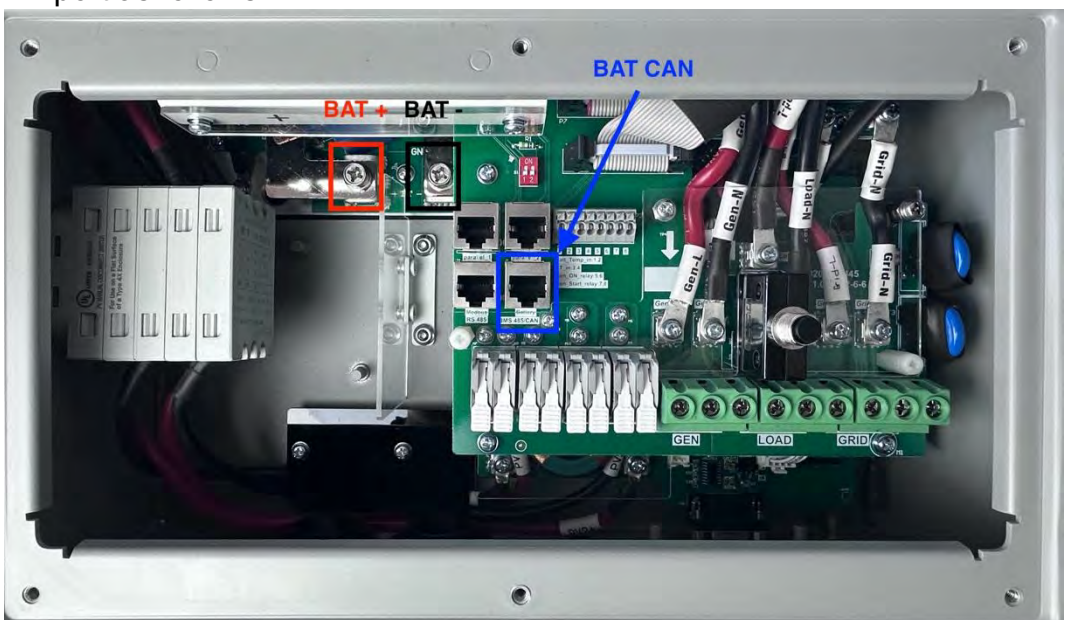
ROLLS S48-100LFP STACK-LV CLOSED LOOP INTEGRATION WITH SOL-ARK EQUIPMENT

NOTE: Before proceeding, please ensure the S48-100LFP STACK-LV - S48-800LFP STACK-LV internal physical connection steps have been followed as per the S48-100LFP STACK-LV Battery Installation Guide above.

This guide outlines the setup process to connect Rolls S48-100LFP STACK-LV batter(ies) with the Sol-Ark 5K-1P-N inverter, following Sol-Ark Installation Guide and User Manual (V1.3).

The following steps are physically performed on the system devices or related to their interconnectivity.

1. Activate the BMS in each S48-100LFP STACK-LV batter(ies) by pressing the **on/off** button. The screen and **RUN** light will be on.
2. Ensure all S48-100LFP STACK-LV batteries are properly interconnected via Link in/out ports and set up properly for DIP switch addresses before connecting the external CAN bus communication connections.
   Refer to **Appendix B** in S48-100LFP STACK-LV Battery Installation Guide.
3. Connect the battery **MODULE 1** CAN port to the Sol-ark inverter BMS 485/CAN port as follows:

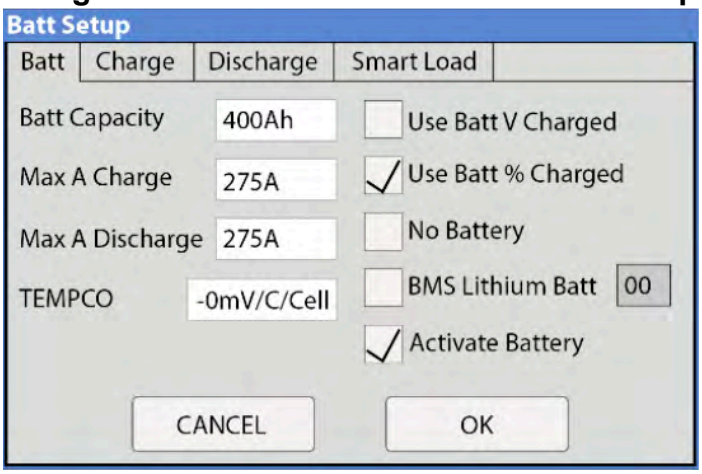


NOTE: ***Sol-Ark 5K-1P-N*** *model shown for reference. For other models, please refer to the applicable Sol-Ark installation guide.*

NOTE: The EXTERNAL COMM CABLE supplied with the **LFP STACK BASE+TOP ASSEMBLY** is **NOT** directly compatible with Sol-Ark inverters as the RJ45 connector pin positions vary. For compatibility with Sol-Ark inverters, the cable may be cut and re-assembly with the RJ45 connector pin repositioned as referenced in CAN COMMUNICATION below.

The following setup steps are performed on the display of the Sol-Ark 5K-1P-N device:

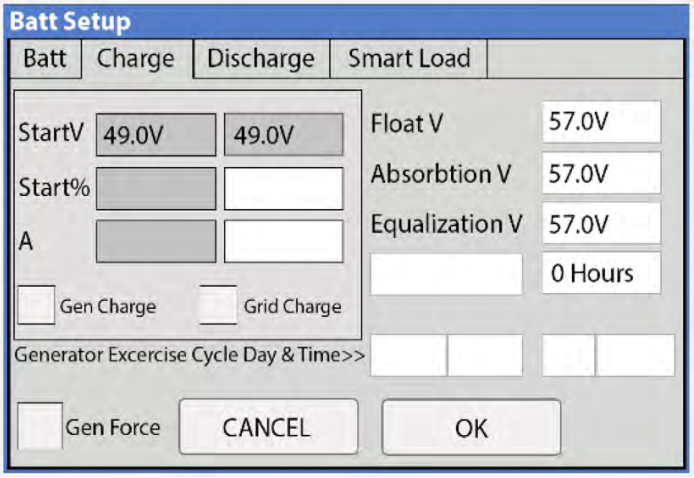
4. Turn on the Sol-Ark Device by push the **ON/OFF** button in the side→ Go to **Device Settings** on the main screen → Select **Batt Setup** Page.



   a. On the **Batt tab**: Enter *Batt Capacity*, *Max A Charge*, *Max A Discharge* values based on the ESS model listed in Maximum Battery and ESS Operating Limits**.** (Example shown is 400Ah)
   b. Check **<u>Use Batt % Charged</u>**, **<u>BMS Lithium Batt 00</u>** (ensure default value of 00 remains selected), and **<u>Activate Battery</u>** as shown above.

NOTE: If *Use Batt V Charged* is checked, this will be overwritten to *Use Batt % Charged* by the BMS when completing closed loop communication.

   c. Verify inputs on this page.
5. Click **OK** to register. You will then be redirected to the Settings Page.
6. Select **Battery Setup** → Go to **Charge** tab



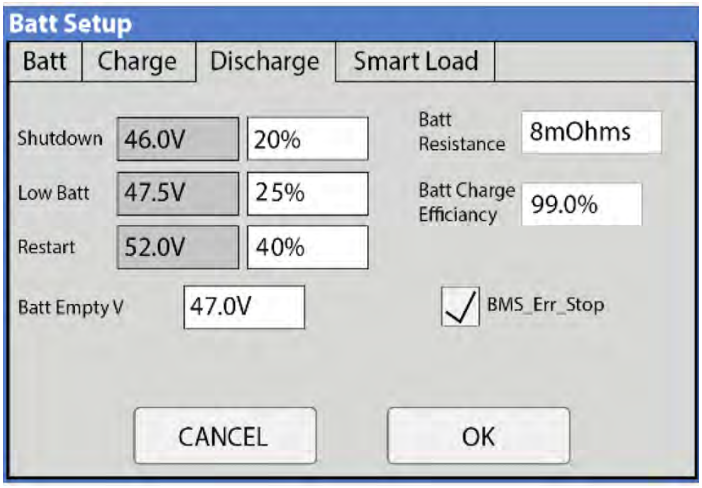
   a. Check **Grid Charge**
   b. Enter the battery **Max Charging Current Value** (See <u>BATTERY CURRENT OPERATING LIMITS</u>) based on your ESS model in Amps.
   c. Enter **57.0 V** for *Float V*, *Absorption V*, and *Equalization V* as shown above.

d. Enter **0** *Hours* to turn off the *Equalization* setting as this is not applicable for lithium batteries.

NOTE: These are boundary conditions. In closed loop communication the BMS will control these values during operation.

e. If you wish to use a generator to charge the battery, check **Gen Charge** and input the **Start%** as the SOC setpoint to initiate the generator. Preferred **Generator Exercise Cycle Day & Time** may also be entered. Refer to the inverter manual for recommendations.
f. Verify inputs on this page.
g. Click **OK** to register. You will be redirect to the Setting Page.

1. Select **Batt Setup** → Go to the **Discharge** tab



For Grid-tied Systems:

a. *Shutdown: Battery voltage or % at which the inverter will shut down to protect the battery from an over discharge situation.*
Rolls recommends **20%** for best cycle life. A value as low as 0% may be entered for extreme conditions.
b. *Low Batt: Low battery voltage or % (battery symbol on the home screen will turn yellow. Stopping point for TOU.*
Rolls recommends **25%.**
c. *Restart: Battery voltage or % at which AC output will resume conversion DC to AC after reaching "shutdown" voltage.*
Rolls recommends **40%**. You shall enter a lower number under extreme conditions.
d. *Battery Empty V: Sets the empty voltage and associates this voltage to 0% charge. This value determines the lowest % SOC limit.*
Enter ***44.6V***
e. Check **BMS_Err_Stop** as shown above, this will enable inverter to fault on the loss of battery communications.
f. Click **OK** to register. You will then be redirected to the Settings Page.

For Off-Grid Systems:

To ensure reliable power availability and protect the battery from constant deep discharge in situations where charging may be delayed or insufficient, a more conservative SOC limit is required as follows:

a. *Shutdown: Battery voltage or % at which the inverter will shut down to protect the battery from an over discharge situation.*
   Rolls recommends **20%** for best cycle life. A value as low as 0% may be entered for extreme conditions or to compensate for extended periods with (for example) limited solar resource but should be avoided by proper system sizing.
b. *Low Batt: Low battery voltage or % (battery symbol on the home screen will turn yellow. Stopping point for TOU.*
   Rolls recommends **25%**
c. *Restart: Battery voltage or % at which AC output will resume conversion DC to AC after reaching "shutdown" voltage.*
   Rolls recommends **40%**. You shall enter a lower number under extreme conditions. However, please read the inverter manual before making such a change.
d. *Enter Battery Empty V: Sets the empty voltage and associates this voltage to 0% charge. This value determines the lowest % SOC limit.*
   Enter ***44.6V***
e. Check **BMS_Err_Stop** as shown above, this will enable inverter to fault on the loss of battery communications.
f. Click **OK** to register. You will then be redirected to the Settings Page.

To confirm a successful connection:

Select **Li-Batt info**

LiBms:01

Battery Voltage: 51.11 V

Battery Current: -1A

Battery Temp.: 27.3C

SOC = 49% SOH = 100%

Nominal_Cap: 0 Ah

Battery charge Voltage: 57.0V

Charge current limit: 100A

Discharge current limit: 100A

Alarms: 0x00 0x00

Note: If you do not see Battey Status information, please check the BMS communication connection and CAN bus port pinout as outlined in CAN COMMUNICATION section below.

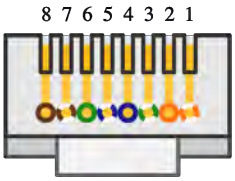
a. Check the battery status information including *Battery Voltage*, *Battery Temp*, and *Discharge current limit*.
b. Check Battery Alarms information. The Sol-Ark display should note *0x00 0x00* for no alarm status from the BMS.
c. Click **Esc** to return until the main screen.

The inverter setup process is now complete.

CAN COMMUNICATION

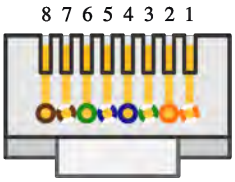
S48-100LFP STACK-LV CAN bus port pinout is shown below.

Plug Pin	Description
1-6	NC
7	Can-H
8	Can-L



Sol-Ark BMS RJ45 CAN bus configuration is shown below.

Plug Pin	Description
4	Can-H
5	Can-L
6	GND (No Support)



LUXPOWERTEK and EG4 Inverter Connection Guide

Overview – LUXPOWERTEK + EG4

This document provides information on the integration of Rolls **S48-100LFP STACK-LV – S48-800LFP STACK-LV** ESS with LUXPOWERTEK Hybrid Inverters via RS-485 communication. The integration covers, but is not limited to, the following components:

LUXPOWERTEK Reference Docs:	Rolls LFP STACK-LV Reference Docs:
SNA Series: • SNA US 6K Off-GridInverter • EG4 6000 XP Off-Grid Inverter LXP Series: • LXP-LB-US 8K/10K Hybrid Inverter • LXP-LB-US 12K Hybrid Inverter	• ROLLS S48-100LFP STACK-LV DATASHEET • ROLLS S48-100LFP STACK-LV BATTERY OPERATING MANUAL

Refer to www.rollsbattery.com for the most recent version of these documents.

The following guide references instruction from the inverter manufacturer. Always verify these settings against current versions of the manufacturer's documentation and any additional settings necessary for other system components. Rolls Battery accepts no responsibility for any damage or issues that may occur from the use of this material.

UL 9540 Compliance	
This device complies with UL 9540:2023 Ed.3 **Test Organization**: Intertek **Report Number**: 241212095GZU-001 **Date Issued**: 9 July 2025	

Minimum Battery Capacity – LUXPOWERTEK + EG4

Using large solar arrays with ESS that are too small may exceed the operating limits of the ESS which would potentially trigger BMS over-current protection. Battery capacity must be sized to accommodate the maximum charge current of the system, or the charging devices must be adjusted to limit charge output below the operating limit of the installed batteries. This value is determined by summing the charge capacities of all inverter/chargers and solar charge controllers in the system. Additionally, the ESS must be sized with a peak current limit that supports the surge requirements demanded by the DC loads (including inverter). Ensure that the sum of peak currents of all devices on the DC bus is less than or equal to the sum of the ESS peak current values.

Model	Continuous Charge/Discharge Current (DC)	Single Phase Minimum
SNA US 6K	125/140 A	S48-300LFP STACK-LV
EG4 6000 XP	125/140 A	S48-200LFP STACK-LV
LXP-LB-US 8K	167 A	S48-200LFP STACK-LV
LXP-LB-US 12K	250 A	S48-400LFP STACK-LV

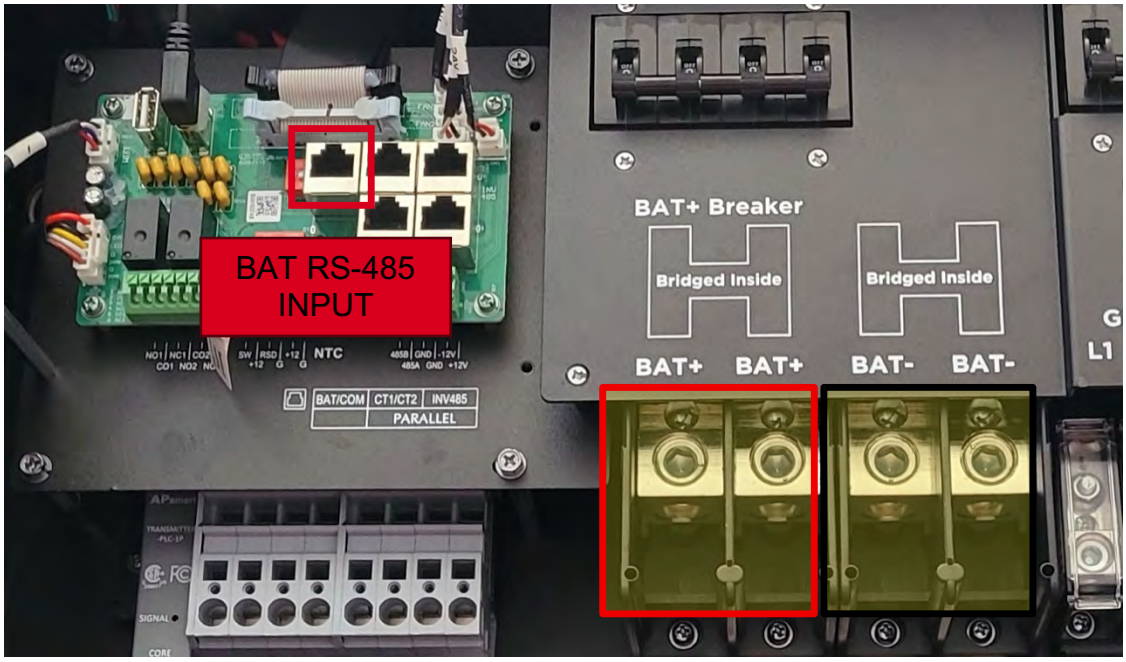
ROLLS S48-100LFP STACK-LV CLOSED LOOP INTEGRATION WITH LUXPOWERTEK EQUIPMENT

NOTE: Before proceeding, please ensure the S48-100LFP STACK-LV - S48-800LFP STACK-LV internal physical connection steps have been followed as per the S48-100LFP STACK-LV Battery Installation Guide above.

LXP Series

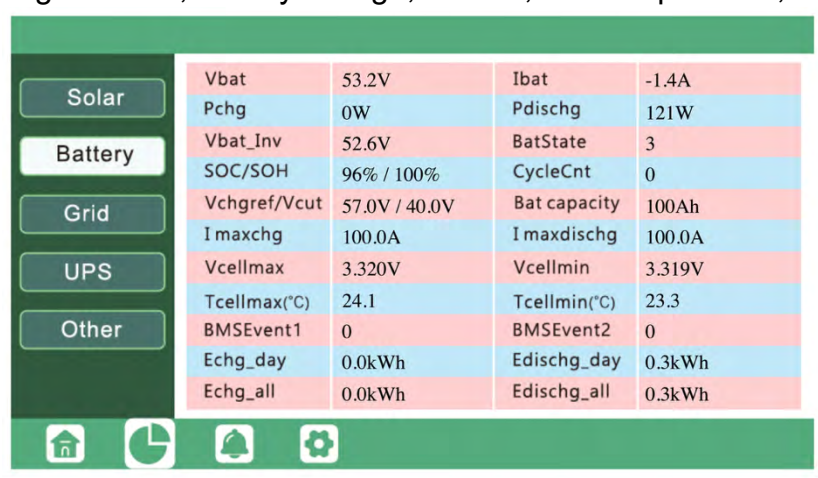
This guide outlines the setup process to connect Rolls S48-100LFP STACK-LV batter(ies) with the LXP-LB-US 12K inverter firmware version: FA1.0, following LXP-LB-US-12K-User-Manual-2025.4.14-1 (UM-LXPUS02001E01). If your current product version varies, refer to the LUXPOWERTEK website or contact LUXPOWERTEK for additional support and information.

1. Ensure the S48-100LFP STACK-LV BMS is activated by pressing the on/off button. The screen and RUN light will be on.
2. Ensure all S48-100LFP STACK-LV batteries are properly interconnected via Link in/out ports and set up properly for DIP switch addresses before connecting the external CAN bus communication connections.
   Refer to **Appendix B** in S48-100LFP STACK-LV Battery Installation Guide.
3. Connect the battery **MODULE 1** RS-485 port to the inverter BAT COM port using a straight cable



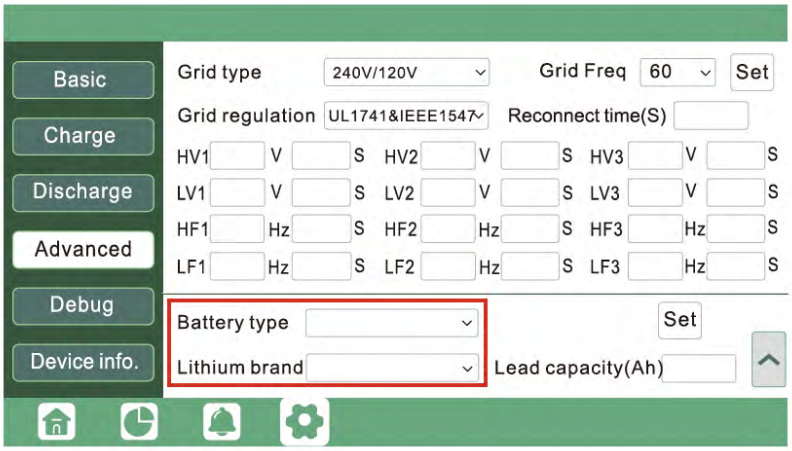
NOTE: The EXTERNAL COMM CABLE supplied with the **LFP STACK BASE+TOP ASSEMBLY** or any straight ethernet cable is directly compatible with LUXPOWERTEK LXP inverter models using RS-485. For further pinout details, please reference at CAN COMMUNICATION below.

4. The inverter is automatically configured out of the box for compatibility, simply connect the battery as above, wait several minutes for startup, and verify connectivity by selecting the ◔ icon and selecting **Battery**. The readout should show battery parameters such as requested charge and discharge current, battery voltage, current, and temperature, etc.

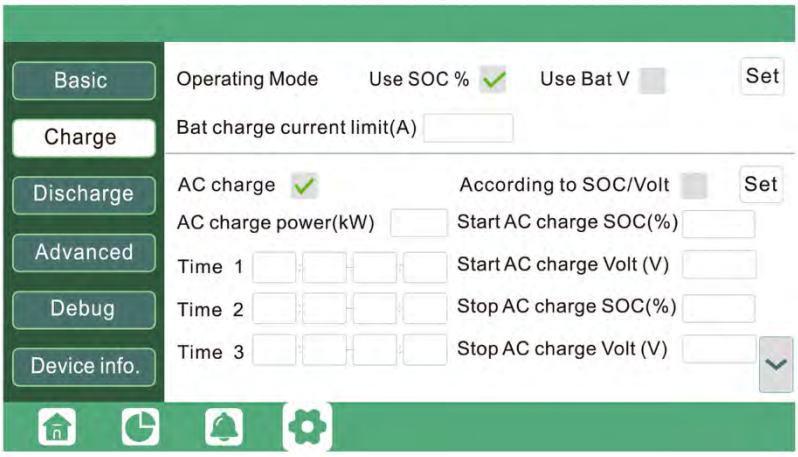


NOTE: *Screen shown with settings typical of single module ESS (S48-100LFP STACK-LV) setup. This capacity is considered too low for the LXP-LB-US-12K inverter.*

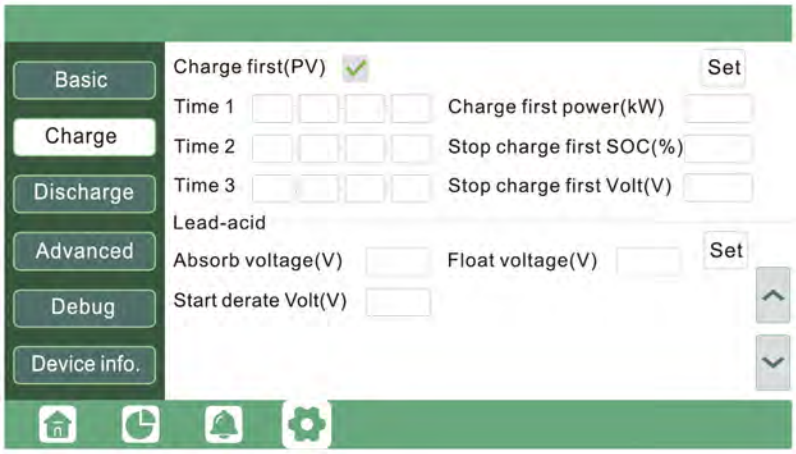
5. If the battery needs to be reconfigured, select the ⚙ icon, then **Advanced**, then ⌄ in the bottom right. Ensure **Battery type** is set to *2:Lithium*, and **Lithium brand** is set to *6: Lithium_6*. If necessary, correct these values and hit **Set** to confirm.



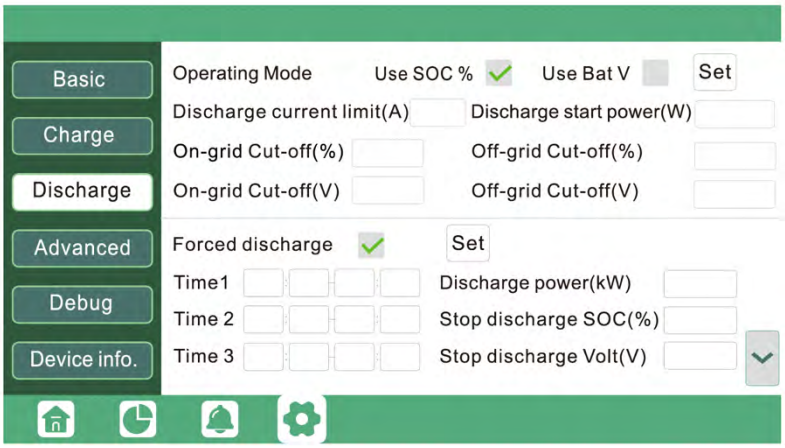
6. After hitting the **Charge** menu, users may set the **Bat charge current limit (A)** based on their system configuration.
   Note: *A more conservative limit may be used in cold climates or to maximize cycle life.*



7. Then, users may set the backup parameters by hitting ⌄ in the bottom right. Under the "Lead-Acid" Menus to *57.0V* for **Absorb voltage(V)** and **Float voltage(V)**, then hit **Set**.



8. After hitting the **Discharge** menu, users can then set the **Discharge current limit (A)** based on their system configuration. *A more conservative limit may be used in cold climates or to maximize cycle life.*
9. Users may set the cut-off parameters by ensuring that "Use SOC%" is checked, then setting "Lead-Acid" Menus to *20.0%* for **On-grid Cut-off(%)** and **Off-Grid Cut-off(%)**, for best cycle life. Then hit **Set** to confirm these values.



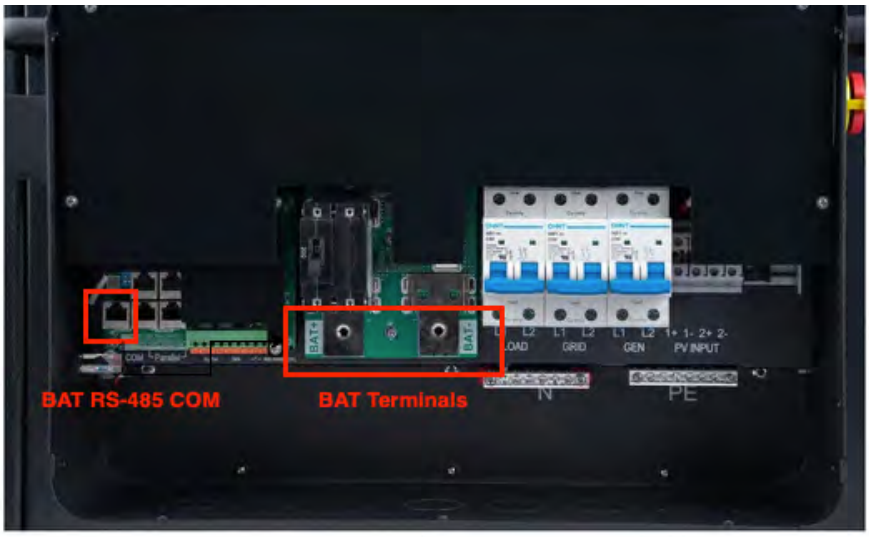
10. Users may choose to update configuration parameters in **Charge** and **Discharge** menus, including charge priority, grid charge, time or use and load shedding, generator start and stop, etc. Refer to the LXP-LB-US-12K-User-Manual for the full scope of setup options.

SNA Series

This guide outlines the setup process to connect Rolls S48-100LFP STACK-LV batter(ies) with the EG4 6000 XP (SNA US 6K) inverter, following EG4 6000 XP OFF-GRID INVERTER User Manual (V1.6.9). If your current product version does not align with this document, refer to the EG4 or LUXPOWERTEK website or contact EG4 or LUXPOWERTEK for additional support and information.

The following steps are physically performed on the system devices or related to their interconnectivity.

1. Activate the BMS in each S48-100LFP STACK-LV batter(ies) by pressing the **on/off** button. The screen and **RUN** light will be on.
2. Ensure all S48-100LFP STACK-LV batteries are properly interconnected via Link in/out ports and set up properly for DIP switch addresses before connecting the external CAN bus communication connections.
   Refer to **Appendix B** in S48-100LFP STACK-LV Battery Installation Guide.
3. Connect the battery **MODULE 1** RS-485 port to the inverter BAT COM port:

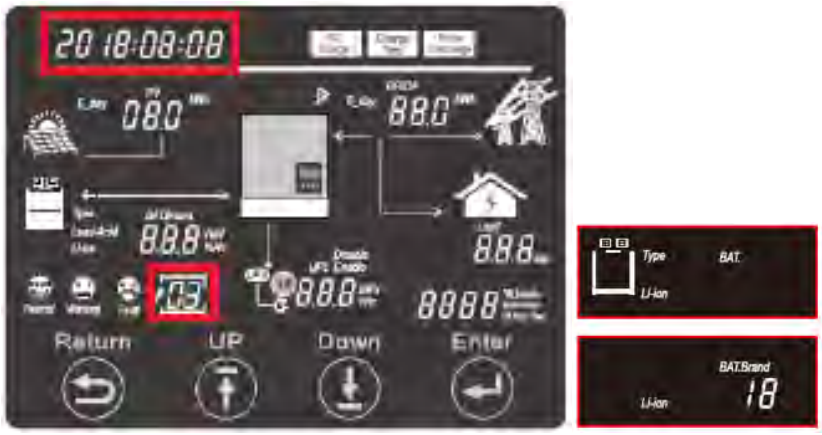


NOTE: ***EG4 6000 XP*** *model shown for reference. For other models, please refer to the applicable EG4 or LUX Power installation guide.*

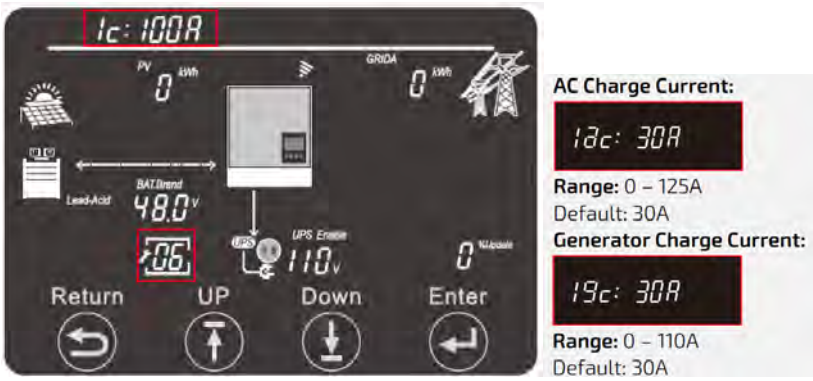
NOTE: The EXTERNAL COMM CABLE supplied with the **LFP STACK BASE+TOP ASSEMBLY** or any straight ethernet cable is directly compatible with EG4 and LUX Power SNA inverter models. For compatibility check with EG4 or LUX Power SNA inverters, please reference at CAN COMMUNICATION below.

The following setup steps are performed on the display of the device:

4. Turn on the Device → Go to Device Settings list on the Main screen by pressing the **Enter button for 3s**→ Select Battery page *[3]* → push **Enter**.

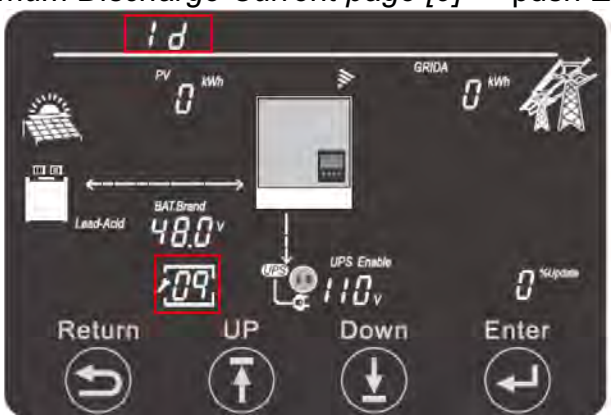


   a. Select batteries type as *Li-ion* → push **Enter**.
   b. Select **06** for *BAT.Brand* → push **Enter**.
   c. Push **Enter** again. You will be redirected to the Settings list.
5. Select 1C: Maximum Charge Current page *[6]* → push **Enter**



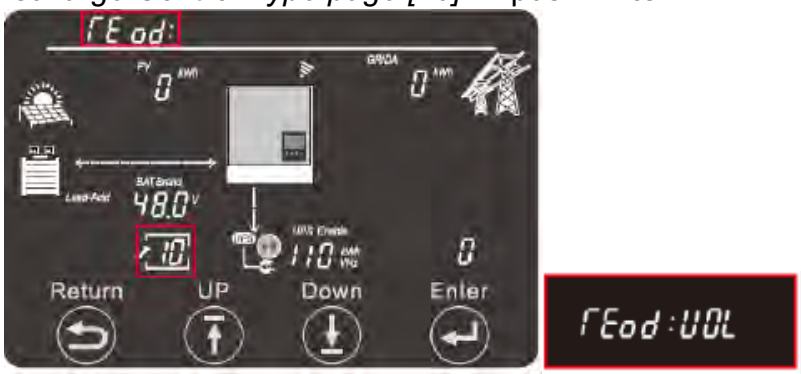
   a. Set *Total Charge Current (**1c**)* based on your Rolls Battery Model, and the max charge current value. (see BATTERY CURRENT OPERATING LIMITS)
   b. Push **Enter** to register the *Total Charge Current* value.
   c. Set *AC Charge Current (**1ac**)* to your desired AC charge limit.
   Rolls recommend set AC Charge Current to the same as the *Total Charge Current (**1c**)*.
   d. Push **Enter** to register the AC Charge Current value.
   e. If you wish to use a generator to charger your Rolls battery, set *Generator Charge Current (**1gc**)* based on the generator current input. If you don't have a generator set to 0.
   f. Push **Enter** to register the *Generator Charge Current*.
   g. Push **Enter** again. You will then be redirected to the Settings list.

6. Select 1d: *Maximum Discharge Current page [9]* → push **Enter**



   g. Set *Total Discharge Current (**1d**)* based on your Rolls Battery Model, and the max discharge current value. (see BATTERY CURRENT OPERATING LIMITS)
   h. Push **Enter** to register Total Discharge Current value.
   i. Push **Enter** again. You will then be redirected to the Settings list.

7. Select: *Discharge Control Type page [10]* → push **Enter**



   a. Select **VOL** as the trigger for battery discharge
   b. Push **Enter** to register.
   c. Push **Enter** again. You will then be redirected to the Settings list.

8. Select: *CutOFF Voltage/SOC [11]* → push **Enter**

   a. Select *Cutoff VOL*.
   b. Enter **44.6** V.

c. Push **Enter** to register.
d. Push **Enter** again. You will then be redirected to the Settings list.

9. Select: Eod: *Battery Discharge Cutoff [12]* → push **Enter**

a. Enter *End of Discharge Cutoff Voltage*.
Rolls recommended to Enter **47.0 V**. *Users may choose to alter this per their own requirements.*
b. Push **Enter** to register.

Note: *Eod values will set the lower end of your battery discharge range.*

c. Push **Enter** again. You will then be redirected to the Settings list.

10. Select: *AC Charge Setting [14]* → push **Enter** (If you have an Off-Grid system, please skip this step).

Note: *This inverter offers 4 types of AC charging configuration, which are charge by Time, Voltage, SOC, Voltage and Time, SOC and Time. If you are on TOU set up, you should choose Voltage and Time or SOC and Time configuration.*

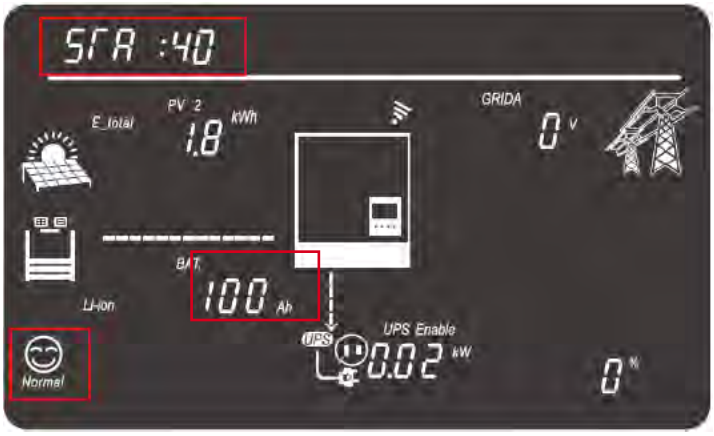
Note: *If you wish to limit your AC charging time using the Time configuration, please consult your local installer or utility provider for the optimal charging period. The following instructions will not demonstrate the Time configuration.*

a. Select *AcCh: VOL*→ push **Enter**
b. Enter **55.2** V for AC Start Charging Voltage.
c. Push **Enter** to register.
d. Enter **57.0** V for AC End Charging Voltage.
e. Push **Enter** to register.

Note: *AcCh End values will set the Upper end of your battery charge range.*

f. Push **Enter** again. You will then be redirected to the Settings list.

11. Push **Return** to go back to Main Screen.



a. You should see a *Status Code :40* on the top right screen, indicating battery Off-Grid mode during this setup.
b. You should see *Normal system status* at this time.
c. Push **Down** until you can read battery status information, include *voltage, SOC, and capacity*.

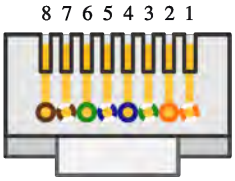
Note: *if you cannot read the battery status information, please recheck the wiring, port connection, BAT.Brand setup on the inverter.*

The inverter setup process is now complete.

CAN COMMUNICATION

S48-100LFP STACK-LV RS-485 pinout is shown below.

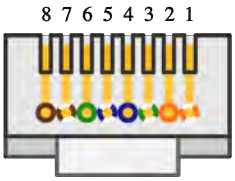
Plug Pin	Description
1	RS-485-B
2	RS-485-A
3-8	(No Support)



Note: *The RS-485 pinout above enables connection to a LUXPOWER LXP or SNA; or EG4 inverter using a normal ("straight") ethernet cable.*

LUX Power SNA and EG4 inverters BAT COM port configuration is shown below.

Plug Pin	Description
1	RS-485-B
2	RS-485-A
4	CAN-H
5	CAN-L



Victron Energy Inverter Connection Guide

Overview - Victron

This document provides information on the integration of Rolls **S48-100LFP STACK-LV – S48-800LFP STACK-LV** ESS with Victron Inverters via CAN bus and RS-485 communication. The integration covers, but is not limited to, the following components.

Victron Reference Docs:	Rolls LFP STACK-LV Reference Docs:
• MultiPlus Inverter/Charger 2000VA 120V • MultiPlus-II Inverter/Charger 120V • MultiPlus-II Inverter/Charger 230V • MultiPlus-II GX Inverter/Charger	• ROLLS S48-100LFP STACK-LV DATASHEET • ROLLS S48-100LFP STACK-LV BATTERY OPERATING MANUAL

Refer to www.rollsbattery.com for the most recent version of these documents.

The following guide references instruction from the inverter manufacturer. Always verify these settings against current versions of the manufacturer's documentation and any additional settings necessary for other system components. Rolls Battery accepts no responsibility for any damage or issues that may occur from the use of this material.

UL 9540 Compliance	
This device complies with UL 9540:2023 Ed.3 **Test Organization**: Intertek **Report Number**: 241212095GZU-001 **Date Issued**: 9 July 2025	

Minimum Battery Capacity - Victron

Using large solar arrays with ESS that are too small may exceed the operating limits of the ESS which would potentially trigger BMS over-current protection. Battery capacity must be sized to accommodate the maximum charge current of the system, or the charging devices must be adjusted to limit charge output below the operating limit of the installed batteries. This value is determined by summing the charge capacities of all inverter/chargers and solar charge controllers in the system. Additionally, the ESS must be sized with a peak current limit that supports the surge requirements demanded by the DC loads (including inverter). Ensure that the sum of peak currents of all devices on the DC bus is less than or equal to the sum of the ESS peak current values.

Model	Peak Discharge Current (DC)*	Continuous Charge/Discharge Current (DC)	Single Phase Minimum
MultiPlus 48/2000/25	92 A for 2 minutes	25/53 A	S48-100LFP STACK-LV
MultiPlus-II 120V 48/3000/35-50	145 A for 2 minutes	35/79 A	S48-200LFP STACK-LV
MultiPlus-II 120V 48/5000/70-95	237 A for 2 minutes	70/132 A	S48-300LFP STACK-LV
MultiPlus-II 230V 48/3000/35-32	145 A for 2 minutes	35/79 A	S48-200LFP STACK-LV
MultiPlus-II 230V 48/5000/70-50	237 A for 2 minutes	70/132 A	S48-300LFP STACK-LV
MultiPlus-II 230V 48/8000/110-100	395 A for 2 minutes	110/211 A	S48-500LFP STACK-LV
MultiPlus-II GX 48/3000/35-32	145 A for 2 minutes	35/79 A	S48-200LFP STACK-LV
MultiPlus-II GX 48/5000/70-50	237 A for 2 minutes	70/132 A	S48-300LFP STACK-LV

*Peak discharge is calculated based on the maximum power output at the inverter normal output voltage, find more details at Victron Overload of Inverters information.

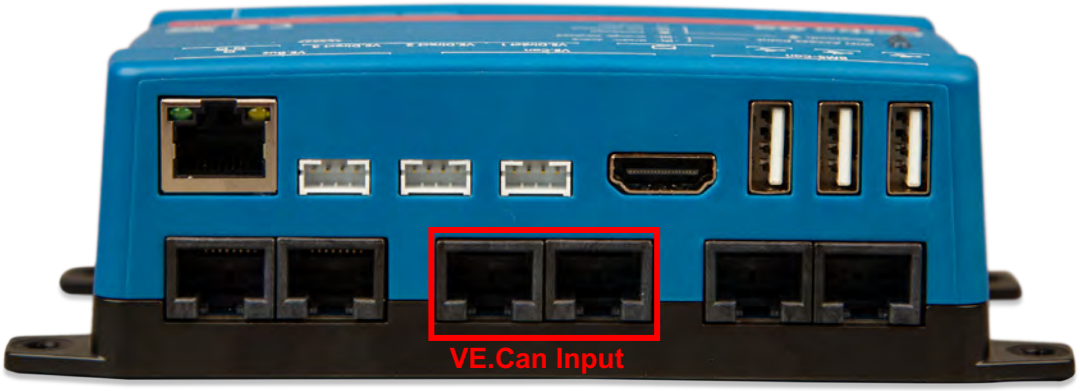
ROLLS S48-100LFP STACK-LV CLOSED LOOP INTEGRATION WITH VICTRON EQUIPMENT

NOTE: Before proceeding, please ensure the S48-100LFP STACK-LV - S48-800LFP STACK-LV internal physical connection steps have been followed as per the S48-100LFP STACK-LV Battery Installation Guide above.

This guide **ONLY** outlines the setup process when connecting Rolls S48-100LFP STACK-LV batter(ies) with the MultiPlus-II 48/3000/35-50 120V inverter (Firmware 556) following the MultiPlus-II 120V Manual (Rev 12-05/2025). A Victron GX module is required for closed loop integration.

The following steps are physically performed on the system devices or related to their interconnectivity.

1. Activate the BMS in each S48-100LFP STACK-LV batter(ies) by pressing the **on/off** button. The screen and **RUN** light will be on.
2. Ensure all S48-100LFP STACK-LV batteries are properly interconnected via Link in/out ports and set up properly for DIP switch addresses before connecting the external CAN bus communication connections.
   Refer to **Appendix B** in S48-100LFP STACK-LV Battery Installation Guide.
1. Connect the battery **MODULE 1** CAN port to the VE.Can port on a GX device such as Cerbo-S GX as shown on the next page:



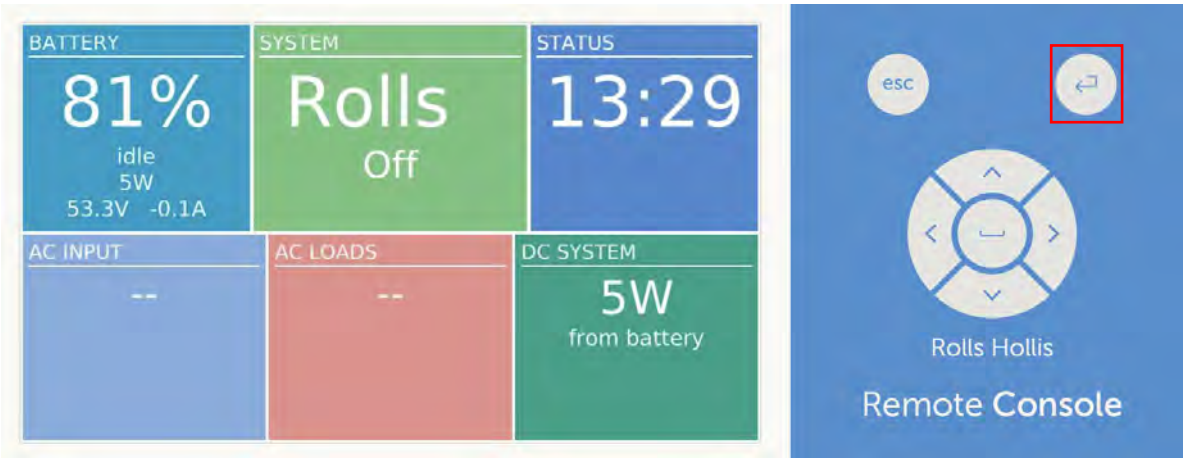
NOTE: For MultiPlus-II GX devices, you can find the VE.Can port on the bottom of the device.

NOTE: ***MultiPlus-II 48/3000/35-50 120V*** *model shown for reference. For other models, please refer to the applicable Victron installation guide.*

NOTE: The EXTERNAL COMM CABLE supplied with the **LFP STACK BASE+TOP ASSEMBLY** and any other straight ethernet cable is directly compatible with Victron inverter models. For compatibility check with Victron inverters, please reference at CAN COMMUNICATION below.

NOTE: The following setup steps may be performed though the VictronConnect Software interface or the VRM – Remote Management Portal , please follow the VictronConnect manual to setup the control interface before continuing the following process.

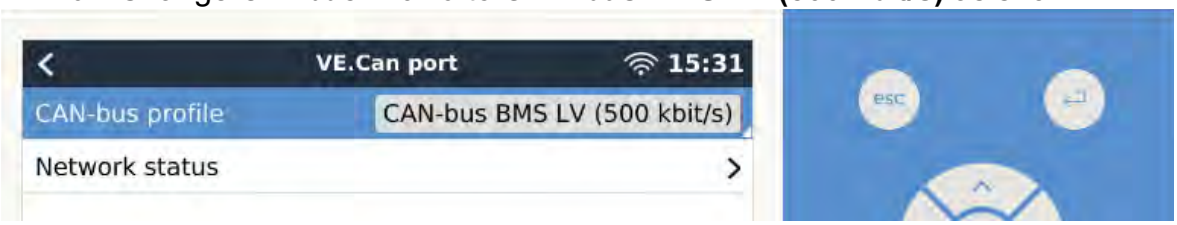
2. There are several ways to control Victron Systems remotely, including via VRM as detailed here: Open up *Victron Connect Software/App* → Select **VRM Tab** → Logon to *VRM online portal* → Select **Remote Console**.



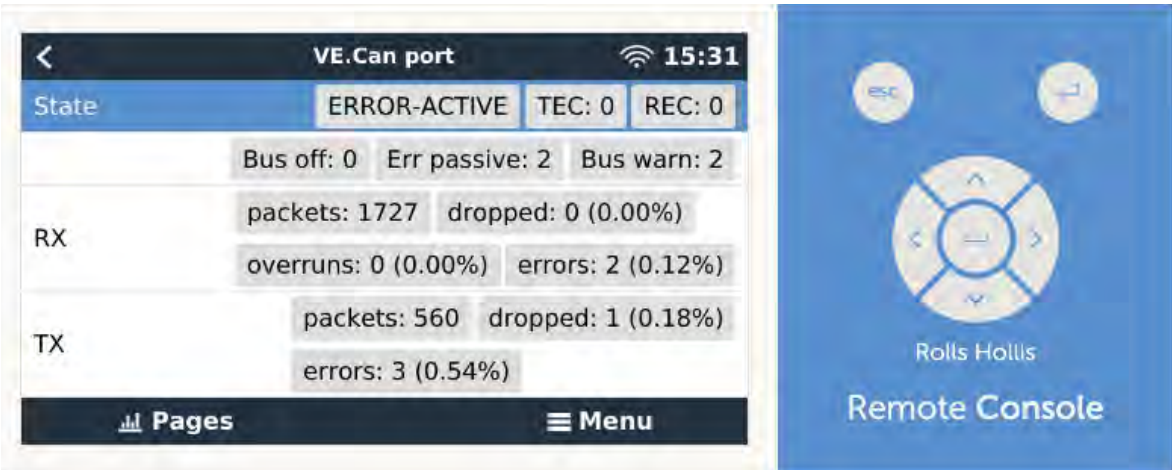
a. Click on the **Return** button to go to the *Device List* Page.

b. Select **Settings → Services → VE.Can port → CANbus Profile**.

c. Change *CANbus Profile* to **CAN-bus BMS LV (500 kbit/s)** as shown:



d. Select Network status → packets should be coming through as shown:



e. Click **Return** button to go back to the *Device List Page*.

3. Rename Storage Device under *Name*

   a. Find battery listed above inverter → **Select Battery** → **Device** → **Name** → Rename to preferred name.
   b. Click **Return** button to go back to the *Device List* Page.

4. Ensure battery operational parameters were properly read off from the BMS

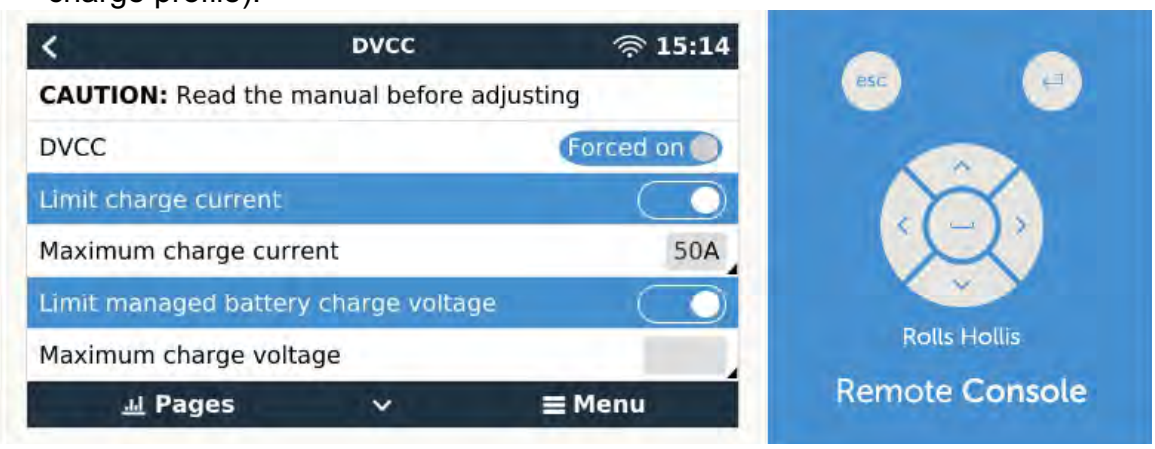
   a. Select **Battery Name** → **Parameters** → check the following parameters.
   b. Parameters show on the screen should match with the summarized table below:

Table 1: CVL, CCL, DCL Setpoints for Victron DVCC Systems. (Data is truncated to exclude transient conditions).

	SOC	0%	1-20%	20-99%	99%	100%
Single Battery	CVL	55.4 V	55.4 V	55.4 V	55.4 V	54.08 V
	CCL	100 A	100 A	100 A	10 A	10 A
	DCL	0 A	100 A	100 A	100 A	100 A
	SOC	**0%**	**1-20%**	**20-99%**	**99%**	**100%**
N-module ESS	CVL	55.4 V	55.4 V	55.4 V	55.4 V	54.08 V
	CCL	80 A*N < 400 A			10 A*N	10 A
	DCL	0 A	80 A*N < 400 A			

   c. Click **Return** button to go back to the Device List Page.

5. [OPTIONAL] *Limit Charge Profile* (skip this step is you don't wish to limit the charge profile).



   a. **Select** *Settings → DVCC*.
   b. Turn on **Maximum charge current** → set the limit to your desired value.

Note: Limiting to a charge current of 0.5C provides a good balance of performance and lifespan. You may skip this step if you don't wish to limit the charge current.

   c. Turn on **Limit managed battery charge voltage** → set the limit to your desired value

Note: If issues occur with battery balancing, reducing the charge voltage between 55.0-57.0V may help.

   d. Click **Return** button until go back to the Main Page.

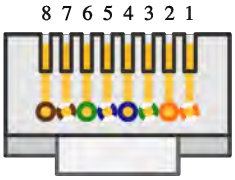
6. After a few minutes, the DVCC entry within the DVCC page should automatically be switched on.
   a. If it is not, please ensure proper setpoints are being transmitted as in Table 1. If so, you can enable *DVCC* by selecting the toggle switch.

The inverter setup process is now complete.

CAN COMMUNICATION

S48-100LFP STACK-LV CAN pinout is shown below.

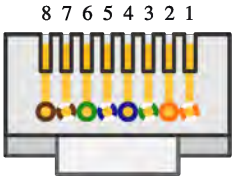
Plug Pin	Description
1-6	NC
7	Can-H
8	Can-L



Note: The CAN bus pinout above enables connection to a Victron inverter using a normal ("straight") ethernet cable.

Victron inverter VE.Can port configuration is shown below.

Plug Pin	Description
3	GND
7	Can-H
8	Can-L



Growatt Inverter Connection Guide

Overview - Growatt

This document provides information on the integration of Rolls **S48-100LFP STACK-LV – S48-800LFP STACK-LV** ESS with Growatt Inverters via CAN bus communication. The integration covers, but is not limited to, the following components.

Growatt Reference Docs:	Rolls LFP STACK-LV Reference Docs:
• SPF 3000TL LVM-US • SPF 3500TL LVM-US • SPF 3500 US • SPF 5000 US • SPF 3000T HVM-G2 • SPF 6000T HVM-G2 • SPE 6000 US • SPE 8000 US • SPE 10000 US • SPE 12000 US • SPH 8000TL-HU-US(B) • SPH 10000TL-HU_US • SPH 10000TL-HU_US(B)	• ROLLS S48-100LFP STACK-LV DATASHEET • ROLLS S48-100LFP STACK-LV BATTERY OPERATING MANUAL

Refer to www.rollsbattery.com for the most recent version of these documents.

The following guide references instruction from the inverter manufacturer. Always verify these settings against current versions of the manufacturer's documentation and any additional settings necessary for other system components. Rolls Battery accepts no responsibility for any damage or issues that may occur from the use of this material.

UL 9540 Compliance	
This device complies with UL 9540:2023 Ed.3 **Test Organization**: Intertek **Report Number**: 241212095GZU-001 **Date Issued**: 9 July 2025	

Minimum Battery Capacity - Growatt

Using large solar arrays with ESS that are too small may exceed the operating limits of the ESS which would potentially trigger BMS over-current protection. Battery capacity must be sized to accommodate the maximum charge current of the system, or the charging devices must be adjusted to limit charge output below the operating limit of the installed batteries. This value is determined by summing the charge capacities of all inverter/chargers and solar charge controllers in the system. Additionally, the ESS must be sized with a peak current limit that supports the surge requirements demanded by the DC loads (including inverter). Ensure that the sum of peak currents of all devices on the DC bus is less than or equal to the sum of the ESS peak current values.

Model	Peak Discharge Current (DC)*	Continuous Charge/Discharge Current (DC)	Single Phase Minimum
SPF 3000TL LVM-US	125 A (5 Sec)	62.5 A	S48-200LFP STACK-LV
SPF 3500TL LVM-US	146 A (5 Sec)	72.9 A	S48-200LFP STACK-LV
SPF 3500 US	146 A (5 Sec)	72.9 A	S48-200LFP STACK-LV
SPF 5000 US	208 A (5 Sec)	104.2 A	S48-300LFP STACK-LV
SPF 3000T HVM-G2	188 A (5 Sec)	62.5 A	S48-300LFP STACK-LV
SPF 6000T HVM-G2	375 A (5 Sec)	125 A	S48-500LFP STACK-LV
SPE 6000 US	150 A (5 Sec)	125 A	S48-200LFP STACK-LV
SPE 8000 US	200 A (5 Sec)	166.7 A	S48-300LFP STACK-LV
SPE 10000 US	250 A (5 Sec)	208.3 A	S48-400LFP STACK-LV
SPE 12000 US	300 A (5 Sec)	250 A	S48-400LFP STACK-LV
SPH 8000TL-HU-US(B)	250 A (5 Sec)	166.7 A	S48-400LFP STACK-LV
SPH 10000TL-HU_US	300 A (5 Sec)	200A	S48-400LFP STACK-LV
SPH 10000TL-HU_US(B)	300 A (5 Sec)	200A	S48-400LFP STACK-LV

*Peak discharge is calculated based on single device surge/overload power capability for 5 seconds. For more details, refer to the user manual for the specific Growatt model.

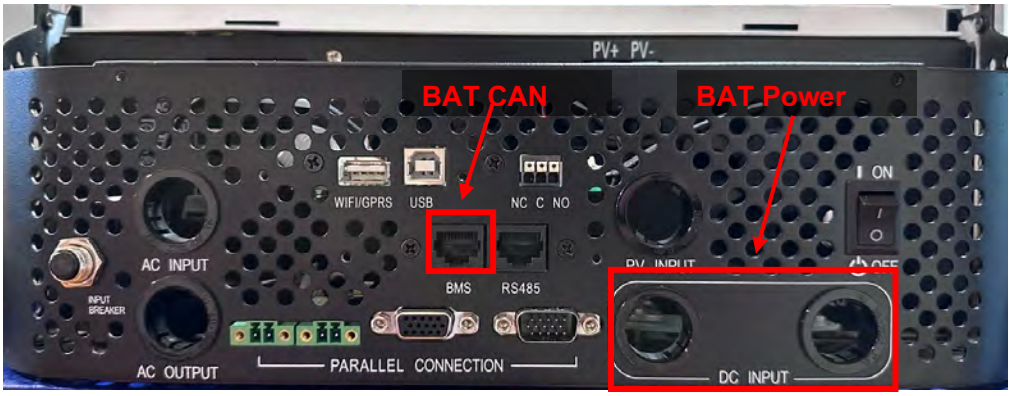
ROLLS S48-100LFP STACK-LV CLOSED LOOP INTEGRATION WITH GROWATT EQUIPMENT

NOTE: Before proceeding, please ensure the S48-100LFP STACK-LV - S48-800LFP STACK-LV internal physical connection steps have been followed as per the S48-100LFP STACK-LV Battery Installation Guide above.

This guide ONLY outlines the setup process when connecting Rolls S48-100LFP STACK-LV batter(ies) to with the SPF 3000TL LVM-US inverter (Firmware 24.10,24), following Growatt User Manual (Rev 1.0).

The following steps are physically performed on the system devices or related to their interconnectivity.

1. Ensure the S48-100LFP STACK-LV BMS is activated by pressing the on/off button. The screen and RUN light will be on.
2. Ensure all S48-100LFP STACK-LV batteries are properly interconnected via Link in/out ports and setup properly for DIP switch addresses before external CAN bus communication connections. See the Appendix B in the S48-100LFP STACK-LV Battery Installation Guide.
3. Connect the battery **MODULE 1** CAN port to the **CAN Terminals** on the Auxiliary Terminal Block as showing below:



NOTE: The EXTERNAL COMM CABLE supplied with the **LFP STACK BASE+TOP ASSEMBLY** cable is NOT directly compatible with Growatt inverter Auxiliary Terminal Block. Please reference at CAN COMMUNICATION below to recut the inverter side of the RJ45 connector pin out.

4. **Turn on** the inverter and the battery.

Note: *A battery communication fault alarm will be triggered at first time start, this is normal and processed with the following steps.*

a. Push and hold the **ENTER** button under the screen for 3 seconds to enter the setting page.
5. Push the **DOWN** button under the screen unit reach setting page *05*→ Push the **ENTER** button to select *Battery Type*

a. Push the **DOWN** button until the battery type is set to *LI*.
b. Push the **Enter** button to confirm.

The screen will reach to setting page *36* automatically to set communication protocol.

c. Push the **DOWN** button until the communication protocol is set to *L52* **(Pylon CAN)**.
d. Push the **Enter** button to confirm.
e. Push the **ESC** button to return to the setting page.

6. Push the **UP** button under the screen unit reach setting page *12*→ Push the **ENTER** button to set the *lower end of battery SOC operation limit.*

Note: *Skip this step if you set the Output source to Utility first or SUB priority in Setting page 1 via Output priority. The minimum state of charge available for Growatt systems is 6%.*

a. Push the **DOWN** button until the desired lowest battery SOC level before switch to utility when its available for grid-tied system, this will also be the battery shut down SOC level for Off-Grid systems.

For Grid-tied Systems (*Solar first* or *SBU priority*): Solar provides power to load first, if solar is not sufficient to power all the connected load battery will discharge to meet the load needs, if the battery drops to this pre-set SOC level or the low-level warning (send by rolls battery BMS), the utility will power the load.

Rolls recommends **20 %**

For Off-Grid Systems (*Solar first*): Solar provides power to load first, if solar is not available or sufficient battery will discharge to meet the load needs, if the battery drops to this pre-set SOC level or the low-level warning (send by rolls battery BMS), the inverter will shut down at this point until solar or the generator changes the battery over the *Upper end of the SOC operation limit*.

Rolls recommends **30 %**

b. Push the ESC button to return to the setting page.

7. Push the **DOWN** button under the screen unit reach setting page *13*→ Push the **ENTER** button to set the *Upper end of battery SOC operation limit.*

Note: Skip this step if you set the Output source to Utility first or SUB priority in Setting page 1 via. Output priority.

Push the **Up** button until the desired highest battery SOC level before switch to the battery mode, all connected loads will be powered by solar and battery in this mode.

For Grid-tied Systems (*Solar first* or *SBU priority)*:
Rolls recommends **40-45 %**.

Note: For Grid-tied system, if the utility changes the battery to the pre-set value above, the inverter will switch to battery mode regardless of if utility is still available, and the charging process will be terminated.

For Off-Grid Systems (*Solar first*):
Rolls recommends **40-45 %**.

Caution: For Off-Grid systems, if the battery is not charged to the set value above, the inverter will not switch to battery mode to enable discharge. To avoid this, ensure the charge source is appropriately sized, or lower this value to accommodate less than ideal conditions.

a. Push the **ESC** button to return to the setting page.

8. Push the **DOWN** button under the screen unit reach setting page 21→ Push the **ENTER** button to set the *DC cut-off SOC limit.*

a. Push the **Down** button until the desired lowest battery SOC level before inverter cut-off battery energy supply.
For Grid-tied Systems: Rolls recommends **20 %**
For Off-Grid Systems: Rolls recommends **20-25 %**

Note: For Off-Grid systems, Rolls do not recommend setting the lower end SOC limit (step 6) same as the DC cut-off SOC limit, in case for over discharge the battery when no additional energy source to support the base load for the system.

b. Push the ESC button to return to the setting page

9. Push **ESC** to return to the *System Status Page*.

a. Push the **DOWN** button until reach the battery status Page.

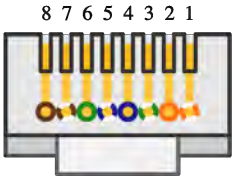
b. Check Battery voltage and SOC read out is correct.

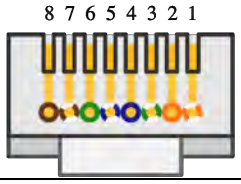
10. The inverter setup process is now complete.

CAN COMMUNICATION

S48-100LFP STACK-LV CAN pinout is shown below.

Plug Pin	Description
1-6	NC
7	Can-H
8	Can-L



Growatt SPF 3000TL LVM-US CAN pinout is shown below.

Plug Pin	Description
4	Can-H
5	Can-L