



**Battery  
Communications  
Integration  
Guide**

V 2.0

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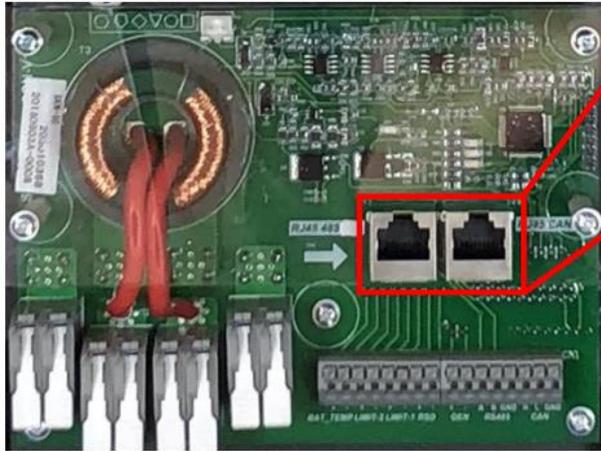
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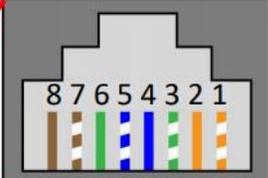
# General Hardware Configurations

## Sol-Ark 8K (Indoor)

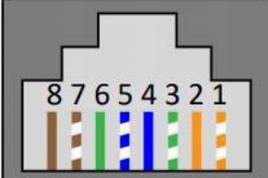
The Sol-Ark 8K can achieve communications through the RJ-45 ports labeled “RJ45\_485” and “RJ45\_CAN” or the terminal connectors for RS-485 and CAN.

The ports are shown in detail below, alongside pin diagrams and detailed pin configurations for each port.





Pin	Function
1	RS-485 B-
2	RS-485 A+
3	GND
4	
5	
6	GND
7	RS-485 A+
8	RS-485 B-

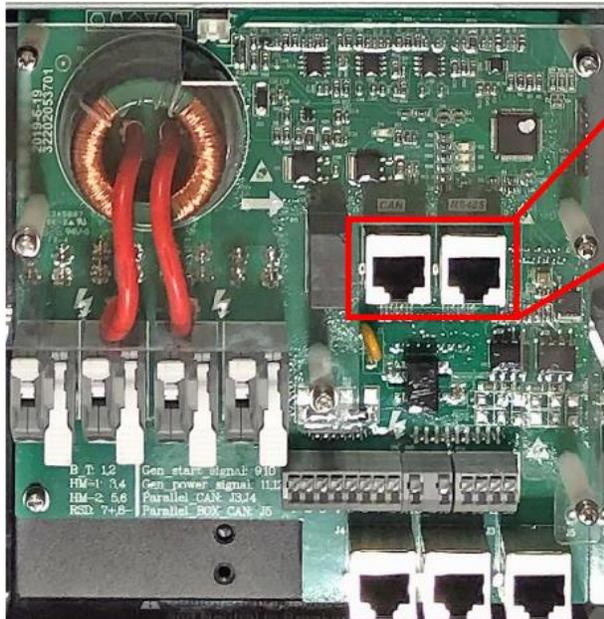


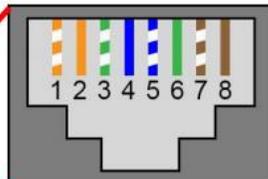
Pin	Function
1	
2	GND
3	
4	CAN Hi
5	CAN Lo
6	
7	
8	

## Sol-Ark 12K (Indoor)

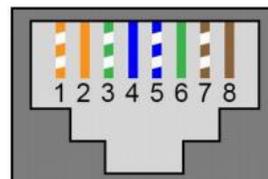
The Sol-Ark 12K can communicate through the RJ-45 ports labeled “RS-485” and “CAN.”

The ports are shown below in detail, alongside pin diagrams and detailed pin configurations for each port.





Pin	Function
1	
2	GND
3	
4	CAN Hi
5	CAN Lo
6	
7	
8	

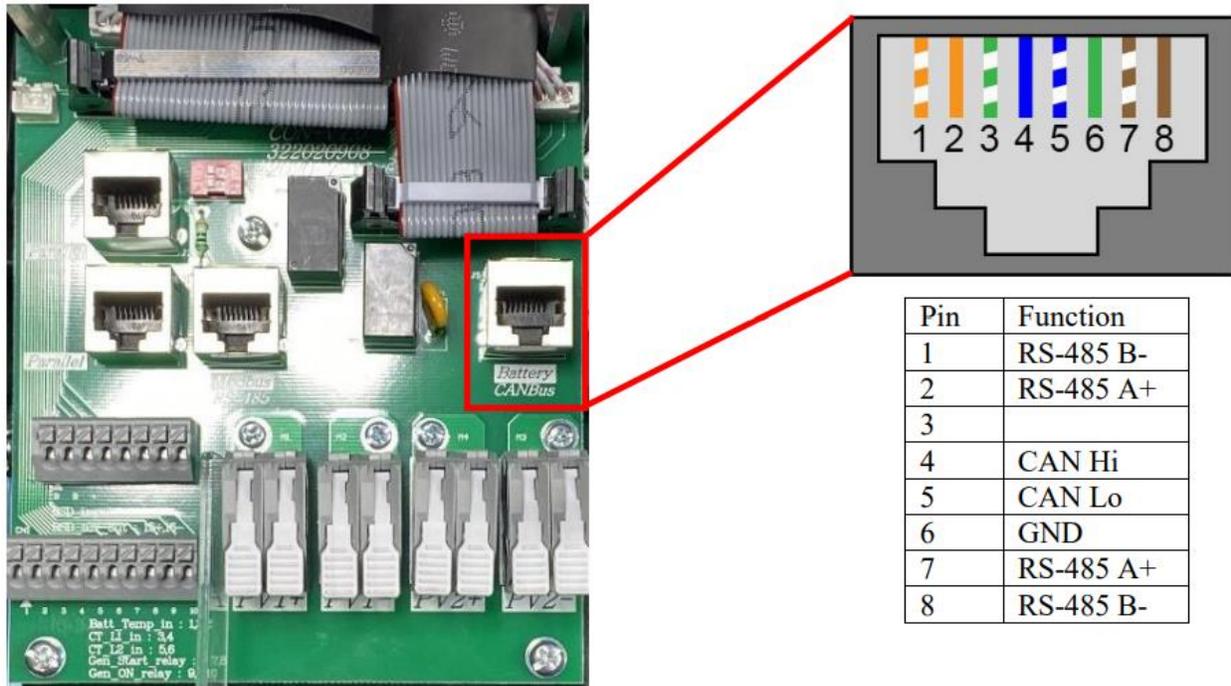


Pin	Function
1	RS-485 B-
2	RS-485 A+
3	GND
4	
5	
6	GND
7	RS-485 A+
8	RS-485 B-

## Sol-Ark 5K / 8K / 12K (Outdoor)

The Outdoor-Rated Sol-Arks achieve communications through a single RJ-45 port labeled “Battery CAN Bus.” This port combines the pin configurations of the RS-485 and CAN port on the indoor-rated 12K.

The port is shown below in detail, alongside a pin diagram and detailed pin configuration.



**NOTE:** The outdoor-rated systems have a “Modbus RS-485” port, which is not for battery communications and is currently not implemented.

## Common Battery Compatibility Chart

Name	Comms
PCC-230 (or any Lead Acid cells)	No
Blue Ion/eGauge	Yes
Fortress eVault 18.5	Yes
Fortress eFlex 5.4	Yes
Discover (using Discover Lynk)	Yes
SimpliPhi AmpliPhi	Yes
StorzPower	Yes
Dyness	Yes
Batrium	In Progress
Orion Jr. 2	In Progress

# Compatible Battery Installation Guide

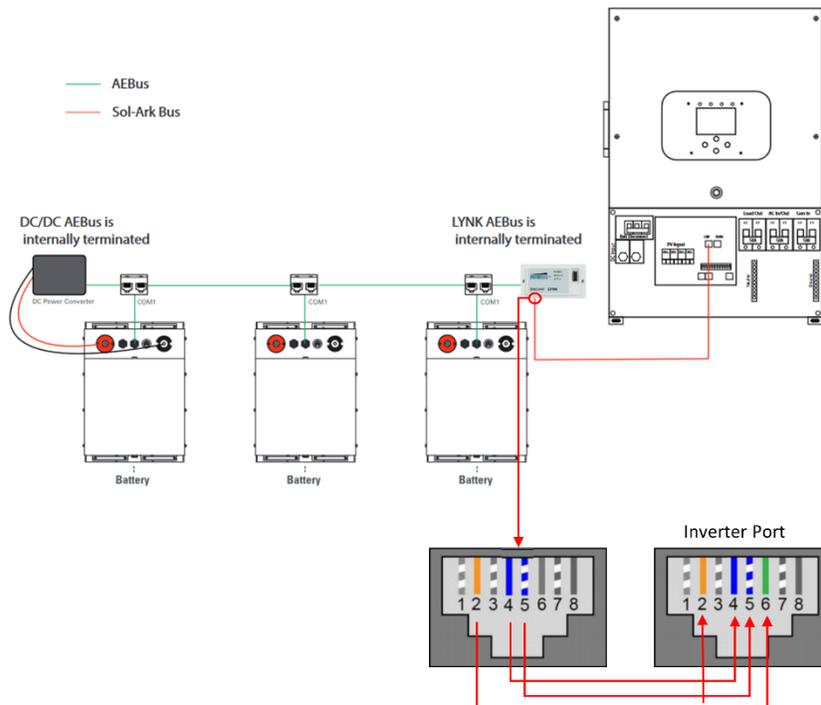
## Discover

You will need the Discover Lynk device to adapt the battery's AEBus to CAN Bus for use with the Sol-Ark. The Lynk will need the proper adapter for the Sol-Ark's pin configuration (Part number 950-0016-SLRK).

- Communications with this battery will require a custom cable (outdoor-rated units only).

## Communications Installation and Setup Instructions

1. Insert the included RJ45 splitters into the AEBus port of each Discover Battery.
2. Connect and link each battery to the next in a chain using RJ45.
3. Connect either end of the chain of the batteries to the AEBus RJ45 port on the Lynk.
4. Connect the 12V power supply to one of the batteries and plug it into the other end of the chain using an RJ45 cable.
5. Connect the Edge Card's RJ45 port to the CAN Bus port of the Sol-Ark.
  - a. For outdoor rated units only, create a custom RJ45 cable that connects pins 4 (solid blue) and 5 (white-blue) through to the same pins on the inverter and connects pin 2 (solid orange) on the LYNK side to pin six (6) on the inverter.
  - b. For indoor-rated units, you may use an off-the-shelf ethernet cable – no custom cable is needed.
6. Enable “BMS Lithium Batt” and set its value to “00.”



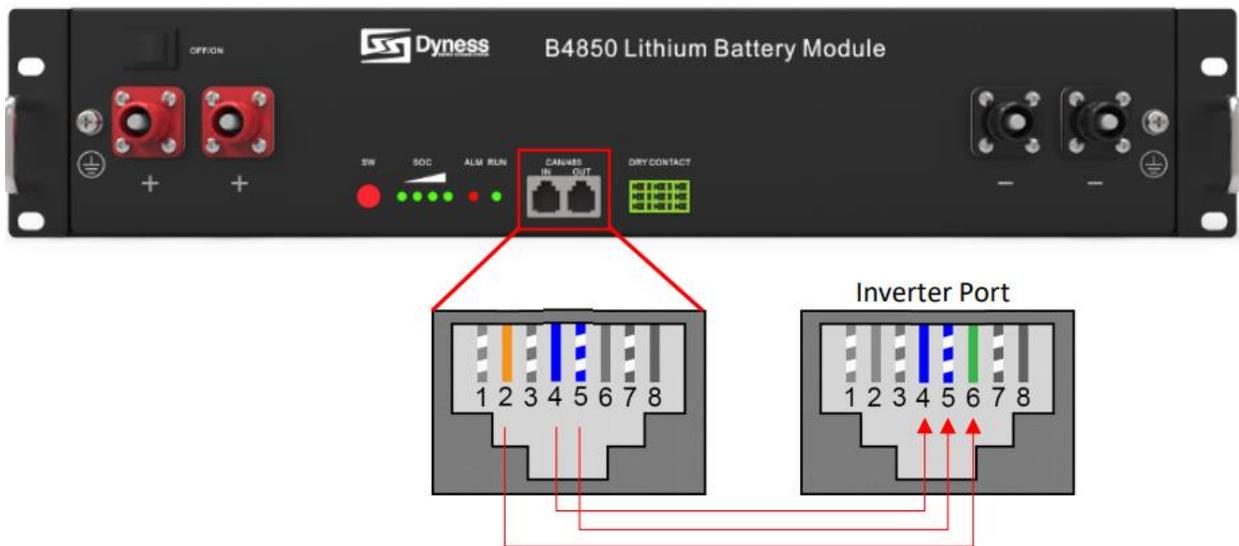
## Dyness

Dyness Batteries do not require additional hardware to establish communications.

- Indoor-Rated inverters will not require a custom cable.
- Outdoor-Rated inverters will require a custom cable.

### Communications Installation and Setup Instructions

1. Ensure correct battery interconnection and connect to the inverter as specified in Dyness' user manual.
2. For outdoor-rated systems only, create a custom RJ45 cable that connects pin two (2) on the battery to pin six (6) on the inverter.
3. Connect one of the batteries to the inverter via the CAN Bus port.
4. Set the switch in position three (3) on the DIP selection switches to the "ON" position for the battery connected to the inverter.
5. Enable "BMS Lithium Batt" and set its value to "00."



## Blue Ion/eGauge

The Sol-Ark will need an eGauge monitoring device, an eGauge USB-485 converter, and a wired internet connection to establish communications with the Blue Ion battery.

- You will need a custom RJ45 cable for this setup.

### Communications Installation and Setup Instructions

1. Connect the Blue Ion to your wired internet connection using the RJ45 port on the back of the unit.
2. Connect the eGauge to a power source.
3. Connect the eGauge to your wired internet connection using the RJ45 port on the unit.
4. Follow instructions from eGauge to set up the device with your Blue Ion battery.
5. Connect the USB-485 to the eGauge.
6. Set up the USB-485 using eGauge's online instructions.
7. Enable Modbus RTU on the eGauge.
8. Connect “D+” on the USB-485 to either pin two (2) or pin seven (7) (2<sup>nd</sup> from the rightmost or leftmost pin).
9. Connect “D-” to either pin one (1) or pin eight (8) (rightmost or leftmost pin) and
10. GND to either pin three (3) (indoor units only) or pin six (6) (outdoor units only).



**NOTE:** eGauge needs to configure your device specifically for use with the Sol-Ark. Please verify this by getting in touch with eGauge support.

11. Plug the RJ45 cable into the “RS-485” (indoor models) or “Battery CAN Bus” (outdoor models) port on the inverter.
12. Enable “BMS Lithium Batt” and set its value to “03.”



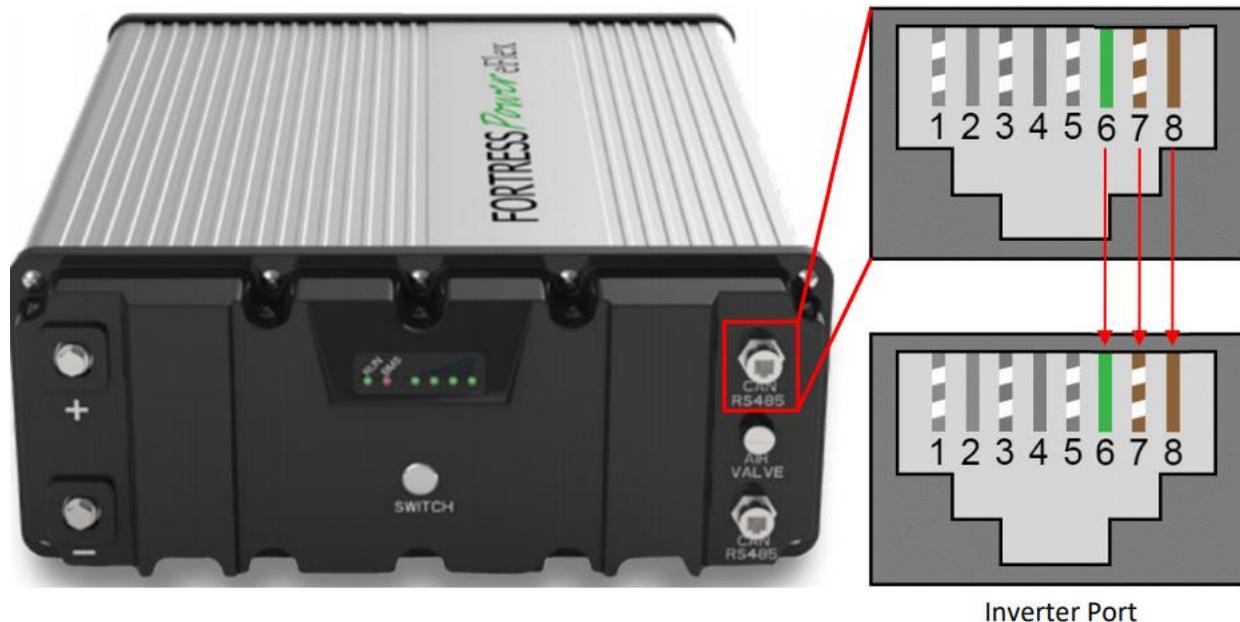
## Fortress eFlex 5.4

No additional hardware is required to establish communication with the eFlex 5.4.

- You will need to make a custom cable for this setup.

### Communications Installation and Setup Instructions

- Connect all batteries using the included RJ45 cables.
- Use the included 120 Ohm termination resistor on either end of the resulting chain.
- Create a custom RJ45 cable where only pins 6 (solid green), 7 (white-brown), and 8 (solid brown) remain connected in their original positions, as shown in the picture below.
  - Using an ethernet cable that is known to work is more accessible and less prone to error. Cut open the cable, and cut the unnecessary wires.**
  - NOTE:** If you are crimping new connectors to create a custom cable, be careful not to over-tighten the crimping tool, as this can recess the connectors and lead to poor or intermittent connection.
- Plug one end of the cable into the CAN/RS485 port on the battery and the other into either the “RS-485” (indoor models) or “Battery CAN Bus” (outdoor models) port on the inverter.
- Enable “BMS Lithium Batt” and set its value to “04.”



## Fortress eVault 18.5

No additional hardware is required to establish communication with the Fortress eVault 18.5 battery.

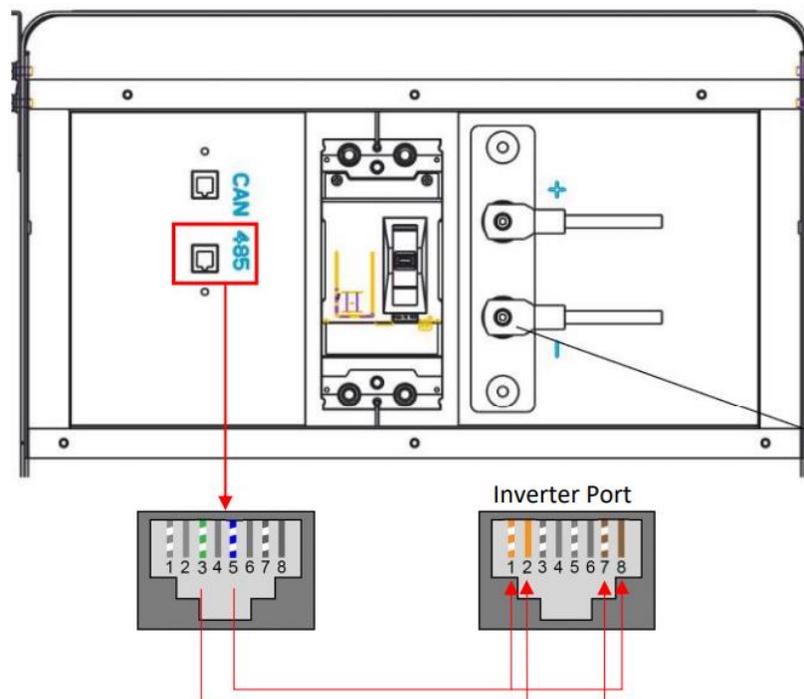
- You will need to make a custom cable for this setup.



**NOTE:** The Fortress eVault can only communicate with the Sol-Ark AFTER a firmware update to the eVault. New eVault units ship with this update; however, older units may need the latest firmware update. To find out if your eVault needs the update and how to perform this update, please get in touch with Fortress Power for details.

### Communications Installation and Setup Instructions

1. If using multiple batteries, designate one as master and the others as slaves per Fortress' setup instructions. If using a single battery, skip to Step 3.
2. Connect the multiple batteries using an ethernet cable (RJ45 cable) as directed in Fortress' setup instructions.
3. Create a custom cable connecting pins three (3) and five (5) ONLY (white-green and white-blue) to the battery.
4. Pin 3 (white-green) can be connected either to pin two (2) or pin (7) on the inverter.
5. Pin 5 (white-blue) can be connected to either pin one (1) or pin eight (8) on the inverter.
  - a. Since the eVault has no ground pin for communications, we recommend unchecking the “BMS\_err\_stop” (under battery setup > discharge tab) so that noise on the communications cable does not cause the inverter to throw a fault.
6. Connect this cable between the Fortress eVault's RS485 port and the “Battery CANBus” port (Outdoor units) or the “RS-485” port (Indoor units).
7. Enable “BMS Lithium Batt” and set its value to “04.”



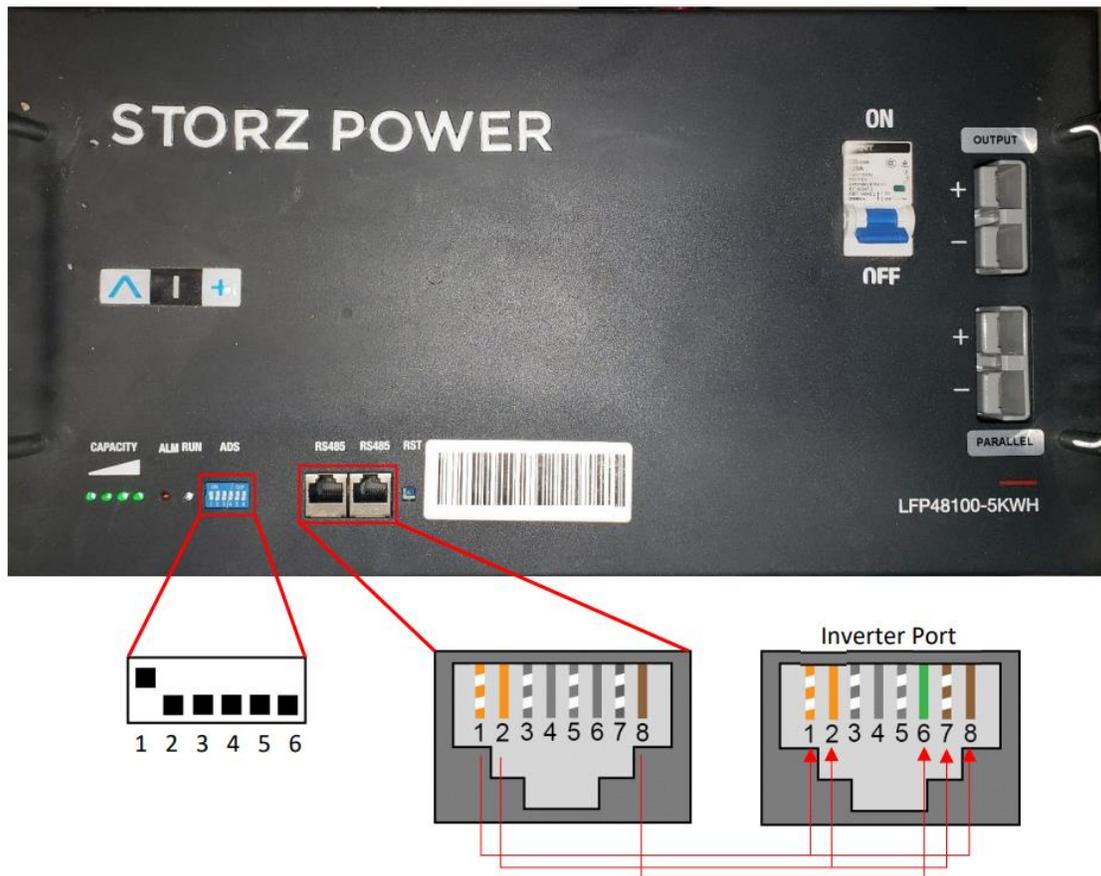
## StorzPower

No additional hardware is required to establish communication with StorzPower Resi+ 48V units.

- You will need to make a custom cable for this setup.

### Communications Installation and Setup Instructions

1. Use the DIP switches on the batteries such that the battery to be connected to the inverter is set as slave 1, and each unit behind it increases the slave ID it has.
  - a. Each DIP switch (1-4) represents a bit in the slave ID value. i.e. [1: ON 2: OFF 3: ON 4: ON] = 1101 (binary) = 13 (decimal).
2. Connect all batteries with the RJ45 cable such that they are all in parallel.
3. Create a custom cable that connects pins 1, 2, and 3 only (white-orange, solid orange, and white-green) to the battery.
4. Pin 1 (white-orange) can be connected to pin one (1) or pin eight (8) on the inverter,
5. Pin 2 (solid orange) can be connected to pin two (2) or pin seven (7) on the inverter, and pin 3 (white green) can be connected to pin 3 (indoor units only) or pin 6 (outdoor units only).
6. Connect this cable between the battery set as slave one (1) and the inverter's "Battery CANBus" (Outdoor models) or "RS-485" (Indoor models) port.
7. Enable "BMS Lithium Batt" and set its value to "01."



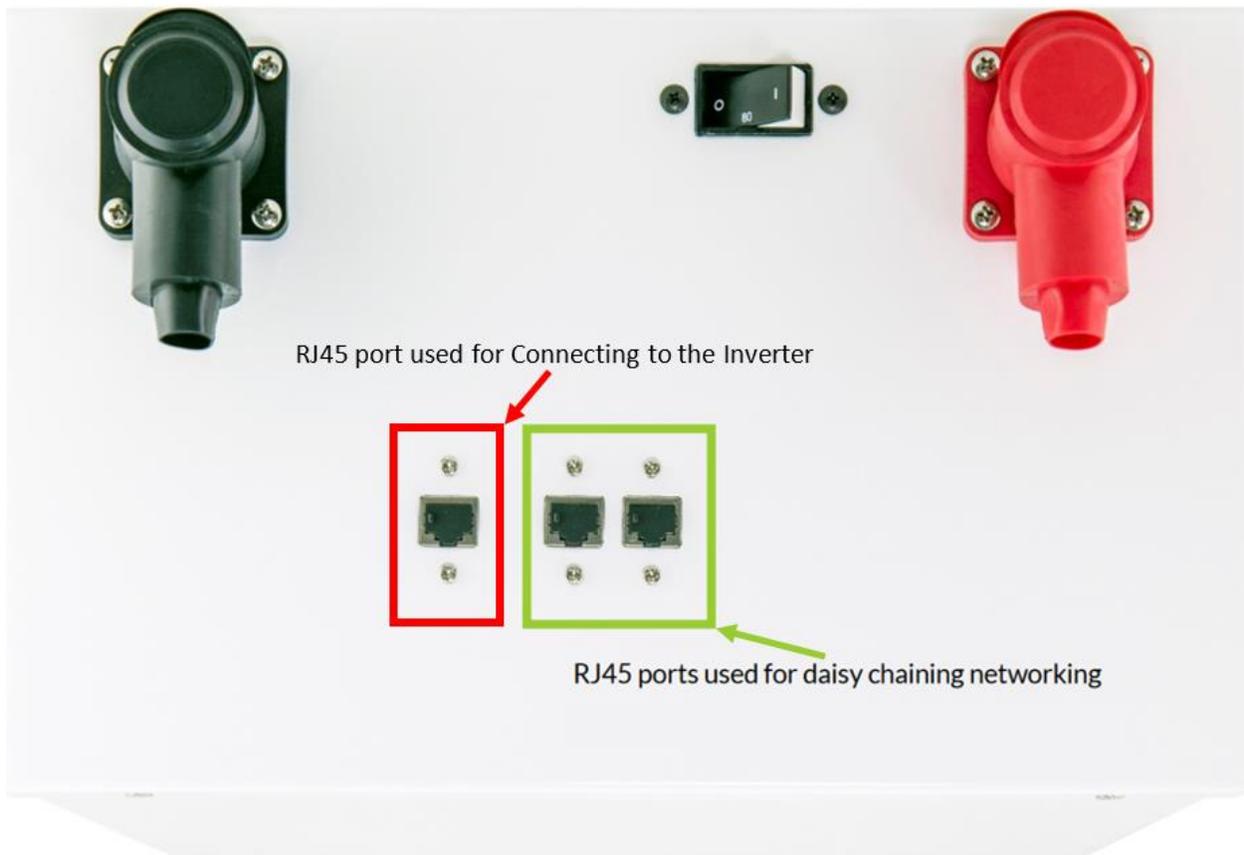
## SimpliPhi AmpliPhi

No additional hardware is required to establish communication with SimpliPhi AmpliPhi units.

- You will not need to make a custom cable for this setup.

### Communications Installation and Setup Instructions

1. Connect all batteries using the included RJ45 cables, using the two ports nearest each other to bridge the batteries together (GREEN in the picture below).
2. Use the included 120 Ohm terminators on both ends of the resulting chain.
3. Use either the battery from the beginning or the end of the chain. Connect an RJ45 cable from the separate RJ45 port (RED in the picture below) to the “CAN” or “Battery CAN Bus” port on the inverter.
4. Enable “BMS Lithium Batt” and set its value to “00.”



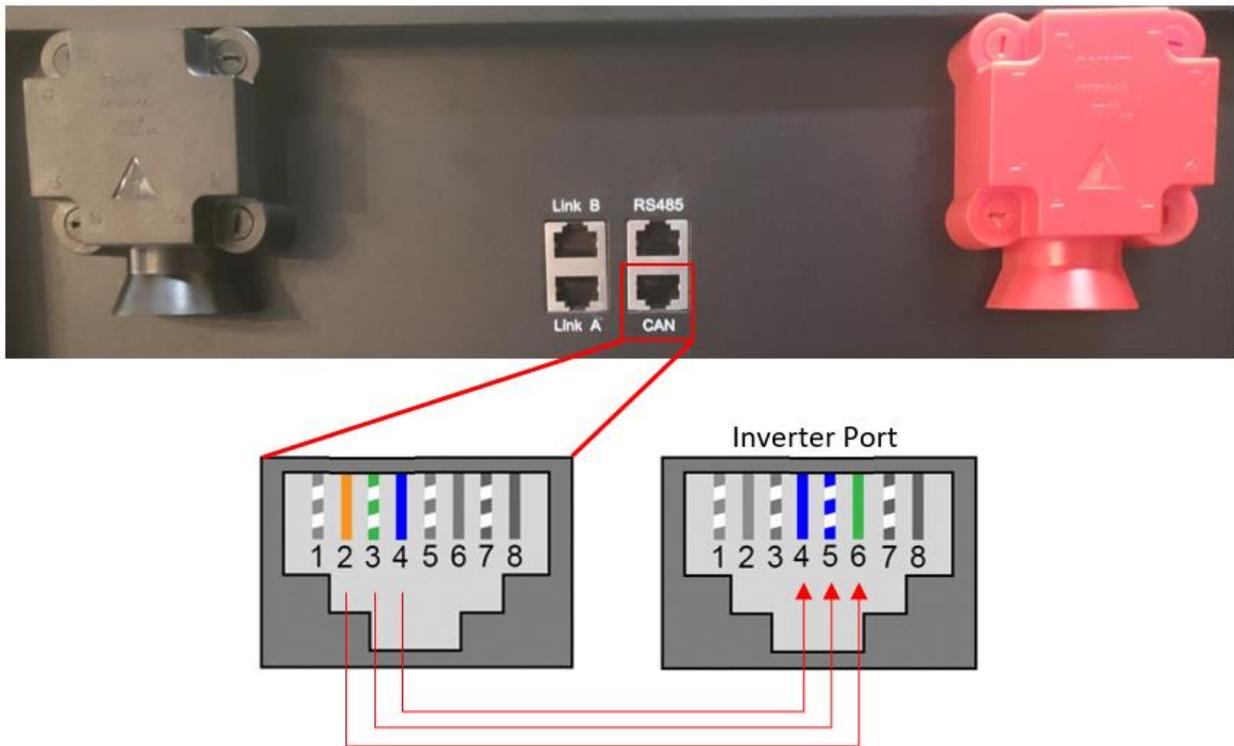
## NuEnergy Lithium

No additional hardware is needed to establish communications with NuEnergy Lithium batteries.

- A custom cable is required to establish communications with the NuEnergy Lithium battery.

### Communications Installation and Setup Instructions

1. Create a custom cable that connects pins 2, 3, and 4 ONLY (solid orange, white-green, and solid blue) to the battery.
2. Pin 2 (solid orange) should connect to pin six (6) on the inverter.
3. Pin 3 (white green) should connect to pin five (5) on the inverter. Pin four (4) (solid blue) should connect to pin four (4) on the inverter.
  - a. On indoor units, leave pin 2 (solid orange) connected to pin two (2) on the inverter instead of pin six (6).
4. Connect the cable to the “CAN” port on the NuEnergy cabinet and the “Battery CAN Bus” port (or the “CAN” port for indoor-only units) on the Sol-Ark.
  - a. The cable is NOT reversible; therefore, keep track of which end of the custom cable connects to the battery and the Sol-Ark.
5. Turn on the battery. Start by flipping the “ON” switch for every battery. Then, press the circular button at the top of the inside of the unit.
6. Enable “BMS Lithium Batt” and set its value to “00.”



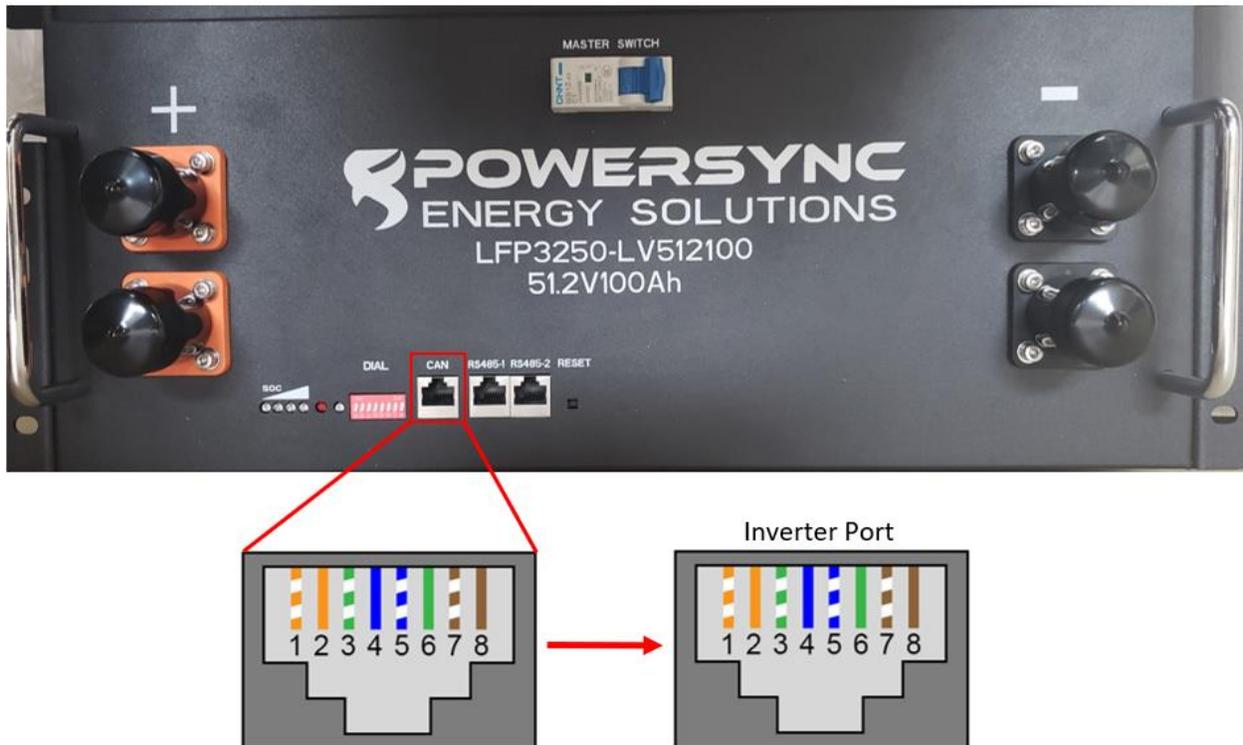
## PowerSync 51.2V Lithium

No additional hardware is required to establish communication with PowerSync 51.2V Lithium batteries.

- You will not need to make a custom cable for this setup.

### Communications Installation and Setup Instructions

1. Set the DIP switches on the battery per the manual and your battery configuration.
2. Connect all batteries with the included short RJ45 cables, connecting each battery via their RS485 ports.
3. Connect the master battery's "CAN" port to the inverter's "Battery CAN Bus" port (or to the inverter's "CAN" port for indoor-only units) using a standard RJ45 ethernet cable.
4. Turn on the batteries using the breaker labeled "Master Switch."
5. Enable "BMS Lithium Batt" and set its value to "00."



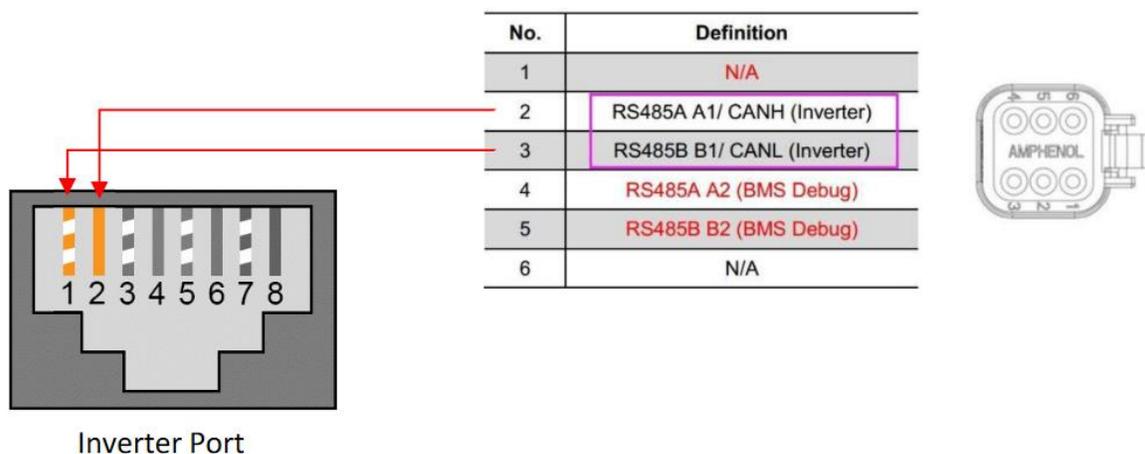
## KiloVault HAB

No additional hardware is required to establish communications with KiloVault HAB batteries.

- You will need to make a custom cable for this setup.

### Communications Installation and Setup Instructions

- Ensure that the batteries are running the latest firmware from KiloVault and that the Sol-Ark communication profile is selected.
  - If unsure, contact KiloVault to verify.
- Set the DIP switches following the KiloVault manual.
  - If only using a single battery, all DIP switches should be “OFF.”
  - If using more than one battery, the battery connected to the inverter should have only DIP switch one (1) turned “ON.” Set DIP switches of all subsequent batteries according to what number they are in the chain (the DIP switches represent the binary number of the battery).
  - A theoretical maximum of 15 batteries can be communicating in parallel at the same time. More than one unit still untested but should work.
- Create a custom cable such that the “Inverter RS485B” wire connects to pin 1 (white-orange) and “Inverter RS485A” connects to pin 2 (solid orange).
- Connect the custom 6-pin connector to the KiloVault’s custom port and connect the custom RJ45 cable to the “Battery CAN Bus” (outdoor units) or “RS-485” (indoor units) port on the inverter.
  - As of 8/2/2021, the KiloVault HAB does not feature a ground connection in its communication port. We recommend first entering all battery settings into the system manually and disabling “BMS\_err\_stop” under “Battery Setup -> Discharge” to avoid errors when communications are lost.**
- Enable “BMS Lithium Batt” and set its value to “05”.



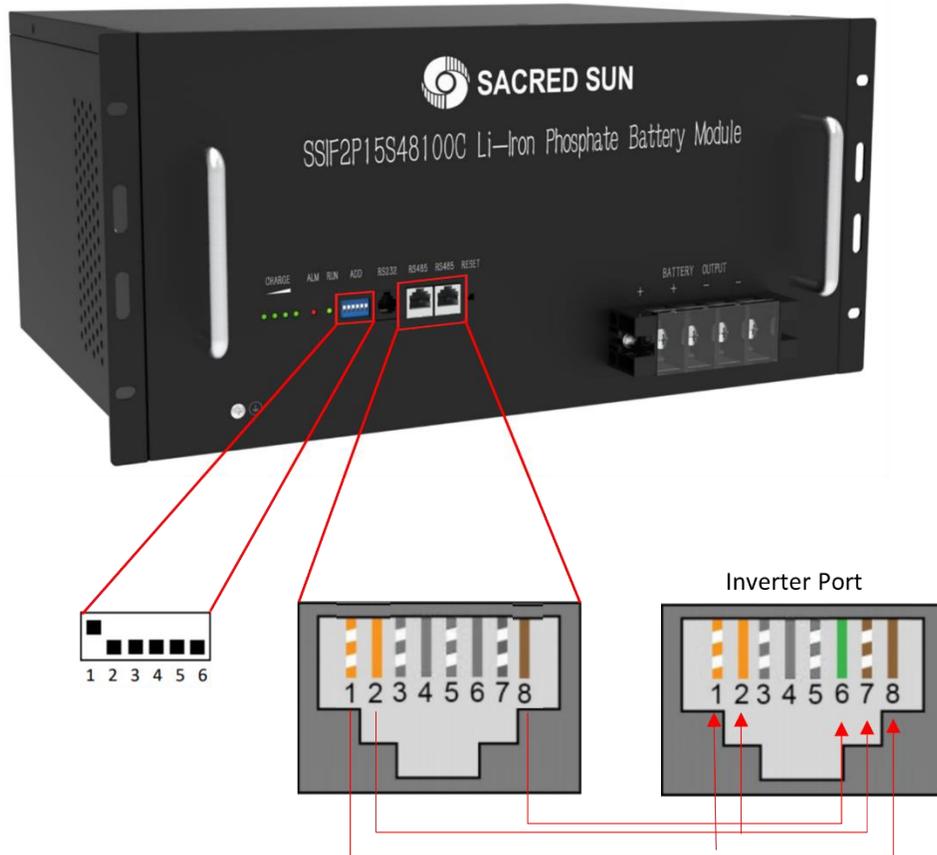
## Sacred Sun LFP

No additional hardware is required to establish communications with Sacred Sun LFP batteries.

- You will need to make a custom cable for this setup.

### Communications Installation and Setup Instructions

1. Use the DIP switches on the batteries such that the battery to be connected to the inverter is set as slave 1, and each unit behind it increases the slave ID it has.
  - a. Each DIP switch (1-4) represents a bit in the slave ID value. i.e. [1: ON 2: OFF 3: ON 4:ON] = 1101 (binary) = 13 (decimal).
2. Connect all batteries with the RJ45 cable such that they are all in parallel.
3. Create a custom cable that connects pins 1, 2, and 3 only (white-orange, solid orange, and white-green) to the battery.
4. Pin 1 (white-orange) can be connected to pin one (1) or pin eight (8) on the inverter,
5. Pin 2 (solid orange) can be connected to pin two (2) or pin seven (7) on the inverter, and pin 3 (white green) can be connected to pin 3 (indoor units only) or pin 6 (outdoor units only).
6. Connect this cable between the battery set as slave one (1) and the inverter's "Battery CANBus" (Outdoor models) or "RS-485" (Indoor models) port.
7. Enable "BMS Lithium Batt" and set its value to "01."



## Changelog Notes

<b>Revision</b>	<b>Changelog</b>	<b>Author / Editor</b>	<b>Date</b>
1.0	Initial creation	William H. / Bernie D.	1/13/21
1.1	Updated Storz & eFlex information	William H. / Bernie D.	2/9/21
1.2	Updated CAN Pinout for Indoor units	William H. / Bernie D.	2/10/21
1.3		William H. / Bernie D.	2/11/21
1.4	Updated Pinouts	William H. / Bernie D.	3/4/21
1.5	Added NuEnergy and PowerSync	William H. / Bernie D.	4/29/21
1.6	Added Fortress eVault	William H. / Bernie D.	5/11/21
1.7	Corrections to StorzPower Pinout	William H. / Bernie D.	7/28/21
1.8	Added KiloVault HAB 7.5	William H. / Bernie D.	8/2/21
1.9	Added Sacred Sun LFP	William H. / Bernie D.	10/5/21
2.0	Corrected Discover LYNK Instructions	William H. / Bernie D.	10/11/21