



SP PRO Series 2i Advanced Multiphase Installation Note

SP PRO Series 2i Advanced Multiphase Installation

Introduction

This instruction will show how to install the Selectronic SP PRO Series 2i in an (Advanced Multiphase) AMP Three Phase configuration or AMP Split Phase configuration.

If you have SP PRO Series II inverters you must purchase one Comms Card 2017 Universal Kit (stock code 005295) for each SP PRO Series II. Install the Comms Card 2017 into each SP PRO Series II inverter before proceeding with this installation note.

NOTE: The Advanced Multiphase configuration is not suitable for SP PRO Series I inverters.

Preparation

- This document needs to be read in conjunction with the SP PRO Instruction Manual and SP LINK instruction manual (both found in SP LINK Help menu).

Summary of steps

The following is a summary of the steps required to complete the installation.
Once the installation is completed, use the below points as a check list:

Installation step	Pages
1 Install the SP PROs according to the SP PRO installation manual.	3-5
2 Install and Configure Batteries (DC Power is required to the SP PRO to complete the process)	
3 Connect SP PRO multiphase SYNC cables and terminators	6
4 Create the configuration for SP PRO using the Site Configuration Wizard in SP LINK	7, 8
5 Connect to SP PRO L1 via SP LINK, assign the inverters to each phase and save configuration	9
6 Test system function	10



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Extra information when updating an SP PRO Series II Multiple Phase system to Advanced Multiphase:

When updating an existing split phase or three phase system, follow the instructions in this manual with consideration for the following points:

1. Only SP PRO Series II can be updated to Advanced Multiphase.
1. Purchase one Comms Card 2017 Universal Kit (stock code 005295) for each SP PRO Series II. Install the Comms Card 2017 into each SP PRO Series II.
2. The 800A (or 600A) System SoC current shunt is not required in an Advanced Multiphase configuration. Unless there are thermal issues, the existing shunt may be left in the system. There is no need to disconnect the sense wires as the SP PRO will be configured to ignore this shunt.
3. Each SP PRO must be set to factory defaults before proceeding with the new Advanced Multiphase configuration.
4. The existing configuration cannot be used once the system has been updated to Advanced Multiphase. A new configuration must be created using the Site Configuration Wizard. Any additional configuration settings can be added after the configuration is created by the wizard.



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Installation

The SP PRO units must be installed as per the installation instructions in the user manual. Special attention needs to be paid to the minimum spacing between the SP PROs as outlined in the **Preparation** section of the installation manual (page 11).

Place the supplied Phase labels (L1, L2 and L3) on the top righthand corner of each SP PRO. This will help to identify each inverter during system commissioning and testing.

AC Wiring

The SP PRO Three Phase AC wiring layout is shown in Figure 1. Attention must be paid to the Neutral conductor and connection through to the loads. The neutral conductor connecting to the loads must be maintained such that operation of any external SP PRO isolators would not alter the bonding between Neutral and Earth.

AC Source Neutral connections from L1, L2 and L3 must be connected together at the same common point.

AC Load Neutral connections from L1, L2 and L3 must be connected together at the same common point.

Three phase circuits which have loads that cannot tolerate a phase failure must be protected by a Phase Failure Relay (not supplied).

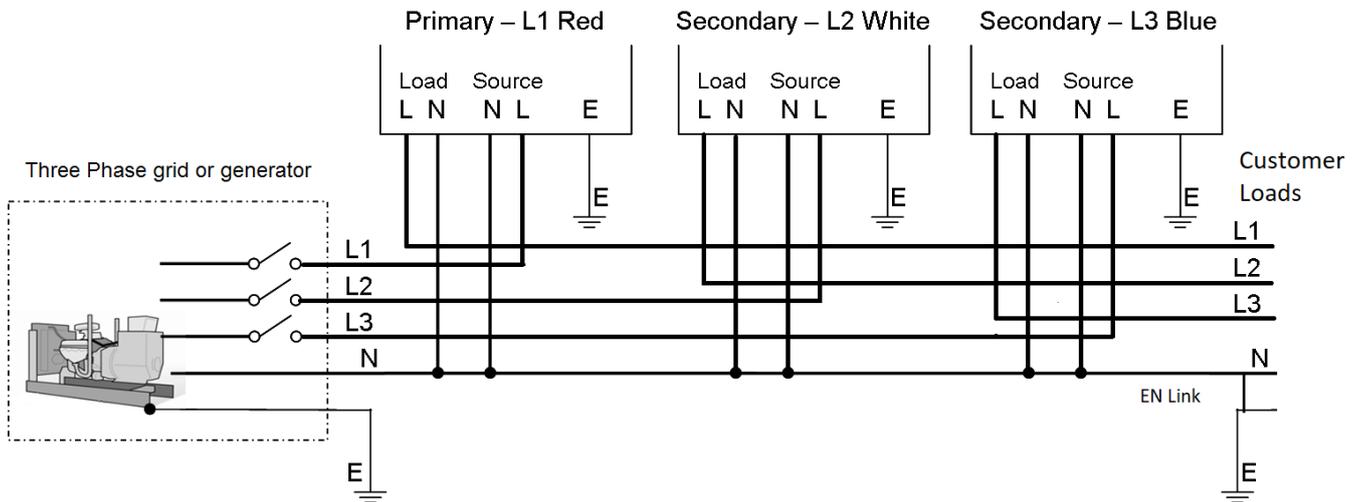


Figure 1: SP PRO Three Phase AC wiring layout
NOTE: for Split phase only 2 SP PROs are used (L1 Primary and Split Secondary)



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Main DC Wiring

The SP PRO Three Phase main DC wiring diagram is illustrated in Figure 2.

Attention must be taken to ensure that the cabling is rated to carry the current for the segment in which it is installed.

All DC cabling between the battery bank and battery protection must be a minimum of 3 off 70mm² V90HT cables or equivalent. After the DC battery protection and the current shunt the cables can be split into 3 circuits, each a minimum of 70mm² V90HT cables. Each circuit is protected by a 250A HRC fuse or DC circuit breaker.

All DC cabling must be protected at the battery bank by suitable 630A fuses.

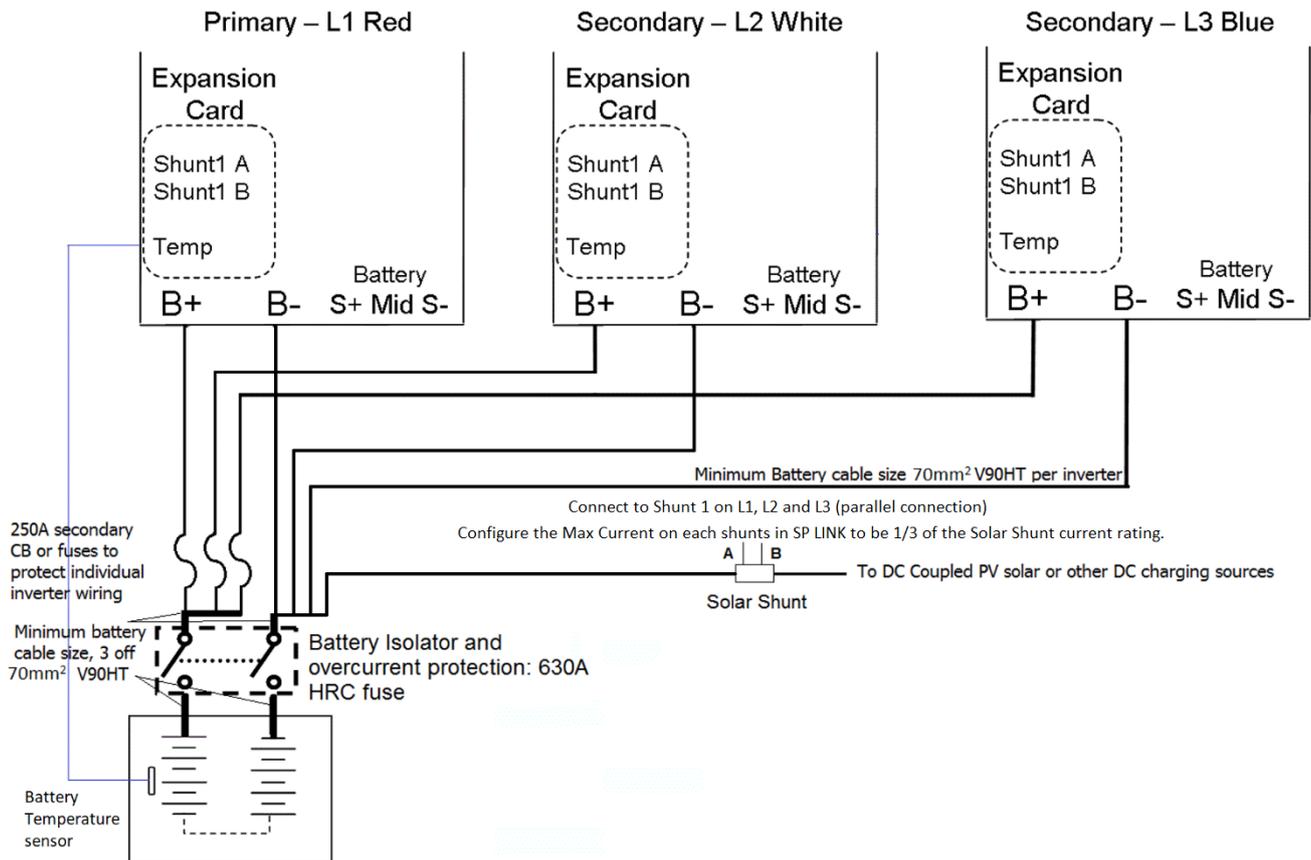


Figure 2: SP PRO Three Phase main DC wiring layout

NOTE: for Split phase only 2 SP PROs are used (L1 Primary and Split Secondary)



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Pre-charge and Midpoint Wiring

The SP PRO Three Phase DC pre-charge and midpoint wiring layout is shown in Figure 3.

The pre-charge wiring is wired as a bus arrangement and connected to the battery via a common connection for all three phases. This will allow all three SP PROs to be pre-charged together.

The Midpoint wiring need only be connected to L1. L1 carries out the battery sense and midpoint readings for the entire system.

The pre-charge and midpoint wiring must be protected by suitable fuses or circuit breakers

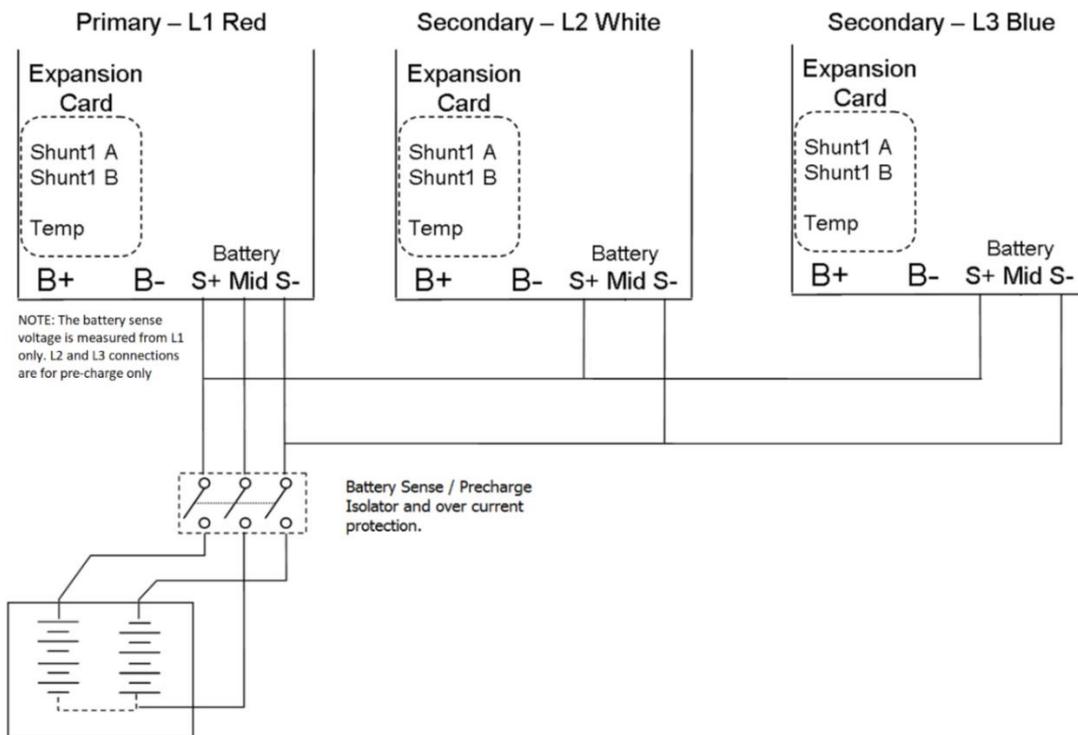


Figure 3: SP PRO Three Phase DC pre-charge and midpoint wiring layout
NOTE: for Split phase only 2 SP PROs are used (L1 Primary and L2 Split Secondary)

Pre-charge with managed battery system

When installing a managed battery system such as BYD lithium, the pre-charge wiring maybe required. Please check the battery installation note for verification. In this case the midpoint connection (Mid) is not required. (See document *IN0051_xx 005293 Installation of Managed Batteries*)

DC Start-up and shutdown procedure when Pre-charge is installed

Start-up

- Turn on the Battery Sense / Pre-charge isolator (See Fig 3). Wait until the SP PRO comes on.
- Turn on the Battery Isolator (see Fig 2)

Shutdown

- Turn off the Battery Isolator
- Turn off the Battery Sense / Pre-charge isolator



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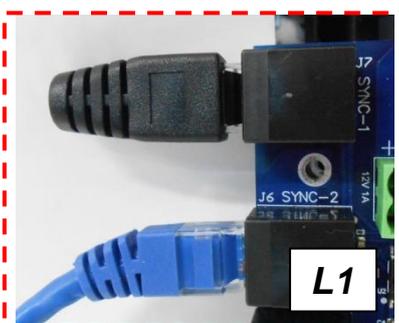
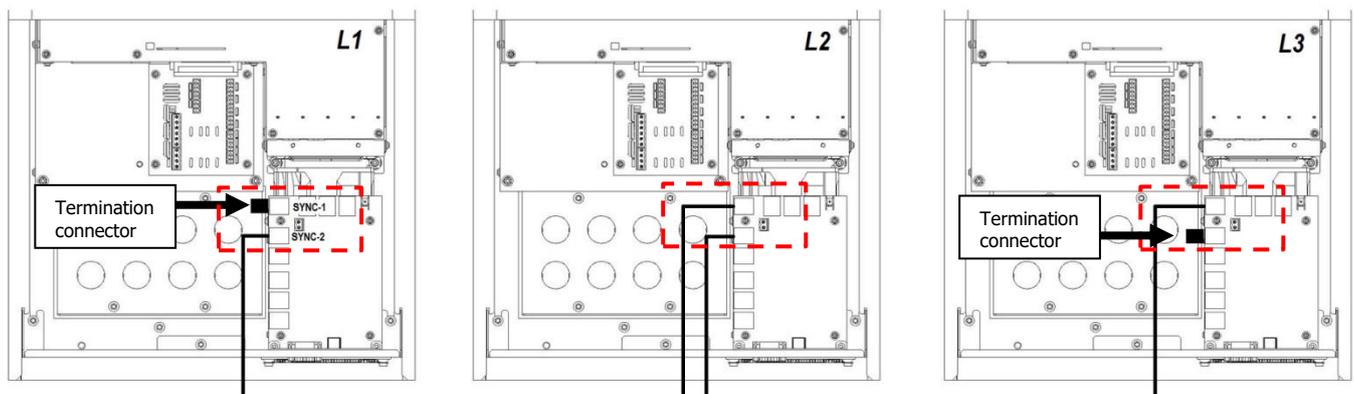
SP PRO SYNC Connection

Each SP PRO must be interlinked via its SYNC interface. With reference to the diagram below (*SYNC interface interconnections*) connect each SP PRO together via either SYNC1 or SYNC 2 connection using the supplied network type cables. Only two cables are required to connect the three SP PRO units. Both SYNC1 and SYNC 2 connection points are the same and either can be used.

Note: Termination connectors must be fitted to any unused SYNC connectors, or the SP PRO will not communicate properly with the other SP PROs in the system.

The SP PRO SYNC connectors are designed to interface with multiple SP PROs in a daisy chain arrangement via the "SYNC-1" and "SYNC-2" connectors on the Advanced comm card.

1. Connect one of the two provided Termination connectors to "SYNC-1" for SP PRO 1 (L1).
2. Using a network patch lead, connect "SYNC-2" from SP PRO 1 (L1) to "SYNC-1" of the SP PRO 2 (L2).
3. Using another patch lead, connect the "SYNC-2" from SP PRO 2 (L2) to "SYNC-1" of the SP PRO 3 (L3) and so on until all inverters in the system are connected.
4. Connect the second Termination connector to the final SP PRO in the system.



SYNC connection of the SP PRO is now complete

NOTE: for Split phase only 2 SP PROs are used (L1 Primary and Split Secondary)



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SP PRO Configuration

The Site Configuration Wizard is used to create a Multiphase configuration for the SP PRO. All communications and configuration are carried out by the L1 SP PRO. Once the system is configured, communication directly to the L2 or L3 SP PROs through their serial or USB ports is not possible.

1. Make sure the USB lead is connected between the L1 SP PRO and PC.
2. Make sure the DC power is present at all of the SP PROs.

Wait until the front panel LEDs are stable.

Note:

During the SP PRO power up, the front panel display cycles through three stages. First, all LEDs turn green from bottom up, second, all LEDs turn red from bottom up and third, some LED's will be flashing while the battery LEDs are ON solid green. The third stage is what is referred to as stable.

3. Start Selectronic SP LINK.



Selectronic
SP LINK

4. Select "Site Configuration Wizard" and step through the wizard to setup the system to suit the appropriate application.

 Easy Start Guide

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[Site Configuration Wizard...](#)

Creates a new site connection, helping you to configure basic settings.

[Open Existing Site File...](#)

This will open in advanced configuration.

[Advanced Configuration](#)

A new blank site and configuration.

[Firmware Update...](#)

Quick connect via a USB cable, to update firmware only.

Recent Sites:

482byd-3c8w2

[C:\Site files\482byd-3c8w2\482byd-3c8w2.SPLS](#)

482 PV inverters

[C:\...files\482 PV inverters\482 PV inverters.SPLS](#)

1202-C38

[C:\Site files\1202-C38\1202-C38.SPLS](#)

SPMC241-Keepalive

[C:\...les\SPMC241-Keepalive\SPMC241-Keepalive.SPLS](#)

120V byd

[C:\Site files\120V byd\120V byd.SPLS](#)

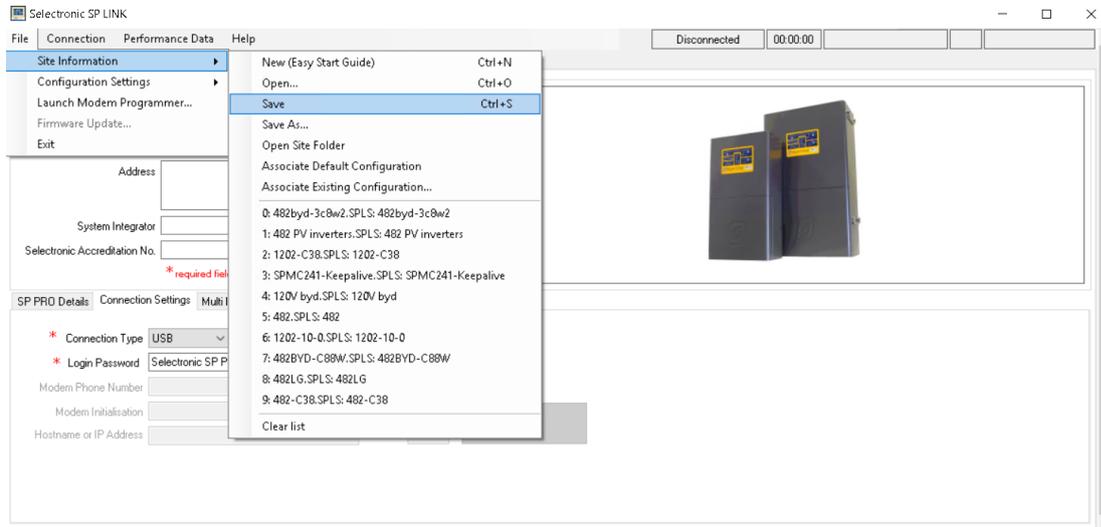
Do not show Easy Start Guide on startup

Note: For more information with the "Site Configuration Wizard", right click on the page and a help guide will appear.

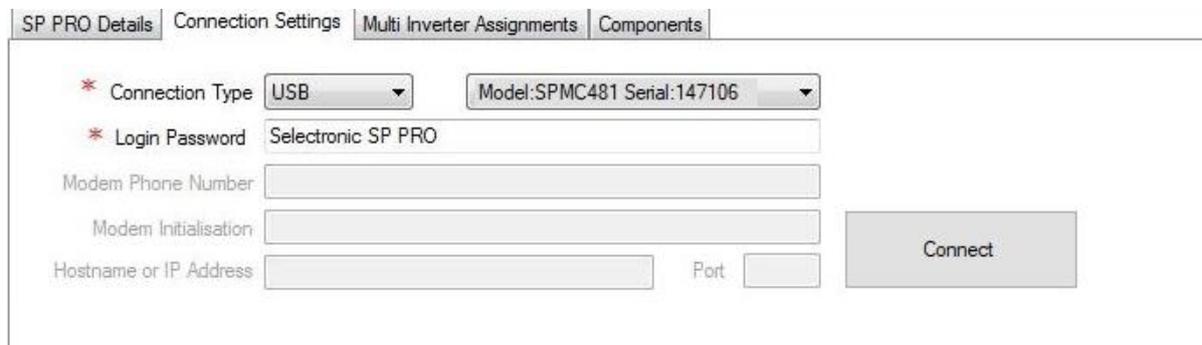


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When all settings have been configured in "Site Configuration Wizard", from the menu bar, select File > Site Information > Save. This is to save the created site.



5. SP LINK will automatically detect when the SP PRO is ON and the USB cable is connected. Click "Connect" to connect to the SP PRO.





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6. Select the "Multi Inverter Plan" tab. Drag and drop the serial numbers in the Unassigned Inverters box to L2 or L3, as appropriate.

Hint: To identify an inverter, double click on a serial number and the battery LEDs on the associated inverter will flash RED for 3 seconds.

7. Once the inverters are assigned, click "Save Assignments". The default settings passcode is 74.

8. At the Configuration Settings tab, click the "Configure SP PRO" button. The default settings passcode is 74.

SP PRO Configuration is now complete



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Operation of the SP PRO

Once the SP PRO units are installed and configured correctly, the system is controlled by the SP PRO 1 (L1). The L2 and L3 SP PROs will follow the operational mode of L1 automatically.

The ON buttons on L2 and L3 are disabled. The ON button on L1 turns all inverters ON/OFF.

1. In SP LINK, navigate to "Data view > Multi Phase". All SP PROs connected in the system will provide real time readings from each phase.

The screenshot shows the 'Multi Phase' data view in the SP LINK software. The interface is organized into a grid of data points for three phases (L1, L2, L3) and a split phase. The 'L1' tab is selected, and the 'Multi Phase' menu item is highlighted in the top navigation bar. The data points include:

- System:** Battery Voltage (57.4 V), Battery SoC (95.0%), Battery Charger Stage (Absorb), AC Load Frequency (50.0 Hz), AC Source Status (AC Source in Tolerance), AC Source Frequency (50.0 Hz), Output Mode (Idle).
- DC Total:** Battery Current Total (-0.9 A), DC Coupled Solar Total.
- DC on L1:** Battery Current L1 (-0.3 A), DC Coupled Solar L1.
- DC on L2:** Battery Current L2 (-0.3 A), DC Coupled Solar L2.
- DC on L3:** Battery Current L3 (-0.3 A), DC Coupled Solar L3.
- DC on Split:** Battery Current Split, DC Coupled Solar Split.
- AC Total:** Load Power Total (0.17 kW), Source Power Total (-0.57 kW), Inverter Power Total (0.00 kW).
- AC on L1:** Load Power L1 (0.29 kW), Load Voltage L1 (246.7 V), Source Power L1 (-0.20 kW), Source Voltage L1 (247.5 V), Inverter Power L1 (0.00 kW).
- AC on L2:** Load Power L2 (0.01 kW), Load Voltage L2 (246.6 V), AC Source Power L2 (-0.19 kW), AC Source Voltage L2 (247.5 V), AC Inverter Power L2 (0.00 kW).
- AC on L3:** Load Power L3 (0.01 kW), Load Voltage L3 (249.2 V), AC Source Power L3 (-0.17 kW), AC Source Voltage L3 (250.1 V), AC Inverter Power L3 (0.00 kW).
- AC on Split:** Load Power Split, AC Source Power Split, AC Inverter Power Split.
- AC Coupled Solar:** AC Coupled Solar Total (0.91 kW), Capacity Total (20.00 kW), AC Coupled Solar on L1 (0.91 kW), Target Power L1 (0.0%), AC Coupled Solar on L2, Target Power L2, AC Coupled Solar on L3, Target Power L3, AC Coupled Solar on Split, Target Power Split.

2. SP LINK can also provide individual information for each SP PRO on different phases. Select L1 or L2 or L3 in SP LINK, to display each SP PRO's distinct information.

The screenshot shows the 'Inverter' data view in the SP LINK software for phase L1. The 'L1' tab is selected, and the 'Inverter' menu item is highlighted in the top navigation bar. The interface displays detailed information for the selected SP PRO unit:

- Inverter:** SP PRO Model (SPMC482-AU), Control Board Serial (117300), Comms Card Serial (186684), SP PRO Ratings (48V DC, 7.5kW, 240V AC), Control Board Revision (20), Comms Card Revision, SP PRO Serial Number (118101), Control Board Mod Status, Comms Card Mod Status, SP PRO Revision (21), Power Board 1 Serial (115763), Comms Card SW Version (2.00), SP PRO Mod Status (1), Power Board 1 Revision (3), Software Version (11.00 M4), Power Board 1 Mod Status, String Inverters Supported (Fronius), Power Board 2 Serial (115746), Grid Connect SW Version (2.00), Power Board 2 Revision (3), SP PRO Total Run Time (20199.0 h), Power Board 2 Mod Status.
- Factory Set Options:** Country (Australia), Power Control Mode (Enabled), SP LINK Login Password Not Required (Enabled).
- Component Life:** (Component's rated life consumed so far), Power Board 1 Capacitors (1.5%), Power Board 2 Capacitors (1.5%), Fan (0.1%).

Additional information

Selectronic web site – <http://www.selectronic.com.au> or contact the Selectronic Sales Team.