



## SP PLUS Energy Centre Installation Notes

### Introduction

SP PLUS Energy Centres are a kit of components which provide an easy to install, compliant, On-Grid battery backup system with optional solar export. These notes provide specific installation details on the various kits plus components to help make the most from using an SP PLUS Energy Centre.

### Energy Centre Kit Installation Overview

There are three major parts to each kit:-

- SP PRO Interactive Inverter Charger
- DC Switchboard (shown with Solar Regulator)
- Battery Enclosure



The battery enclosure is floor mounting whilst the DC Switchboard and SP PRO are wall mount. Connections between these three parts have been designed to allow flexibility in positioning of all parts to suit many varied locations.

### INSTALLATION LOCATION

The kit provides short cabling for minimum losses and as such the three parts need to be installed within close proximity of each other. The battery enclosure is suitable for installation outside however the DC Switchboard must be protected from the elements. An ideal location is inside a garage. To minimise space required, install the battery enclosure on the outside wall behind where the DC Switchboard and SP PRO are to be installed.

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The distance to the main AC Switchboard must also be considered. An AC feed into and another AC feed out of the SP PRO are required.

## CHOOSING BACKUP CIRCUITS

Significant rewiring of the installations AC switchboard may be required to split out which circuits are required to be battery backed. The easiest (in a typical domestic application) is to make all circuits (excluding off peak loads like hot water) battery backed as long as this doesn't exceed the 63A feed through capacity of the SP PRO. This eliminates the need to split any circuits out and provides a whole of house energy monitor via SP LINK however the customer will need to manually choose which appliances to turn off during blackouts.

## PLACEMENT OF SP PRO AND DC SWITCHBOARD

Wall Space Dimensions (mm) – 1250(w) x 1000(h).

The DC Switchboard has been designed to minimise cable length and cross-over of DC and AC cabling. The DC Switchboard should be mounted at the same level and to the right of the SP PRO. The minimum recommended width to mount both units is 1250mm. This allows for 250mm clearance either side of the SP PRO.

## ADDITIONAL PARTS TO BE SUPPLIED

Some additional parts are required to be supplied by the installer.

- AC Cabling – sized to suit maximum AC capacity.
- 32mm Conduit
- 25mm Conduit
- Mounting hardware
- Solar panels, cabling and isolators – if required

*Note: DC Switchboard contains sufficient DIN rail space for mounting solar isolators.*

## Installing the Battery Enclosure



*Note: Assembly of Battery Enclosure is covered by separate assembly instructions*

Dimensions (mm) – 765(w) x 755(h) x 525(d).

All sides and top can be removed from enclosure for access. In most cases, only one side is required to be removed to fit and cable batteries.

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## PLACEMENT

The battery enclosure (once fitted with batteries) is quite heavy and must be placed on a solid surface - if to be placed on dirt, two concrete squares are suitable.

Adequate ventilation is required. Air is drawn in from below each side panel and vented out at the top of the front side panel.

*Note: Battery enclosure is only suitable for supplied sealed batteries.*

Batteries are degraded by high temperature. Enclosure to be placed in coolest position and MUST protected from direct sunlight.

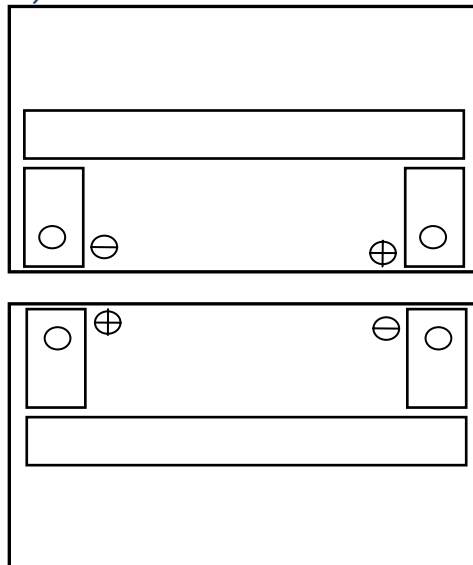
Cable entry is provided on both sides and rear of the enclosure. Position the battery enclosure to minimise cable length to DC switchboard via most appropriate cable entry point.

## BATTERY POSITIONING

The battery enclosure will accept up to 8 batteries. Batteries can be slid into the enclosure from either side.

Batteries should be placed according to the diagram below.

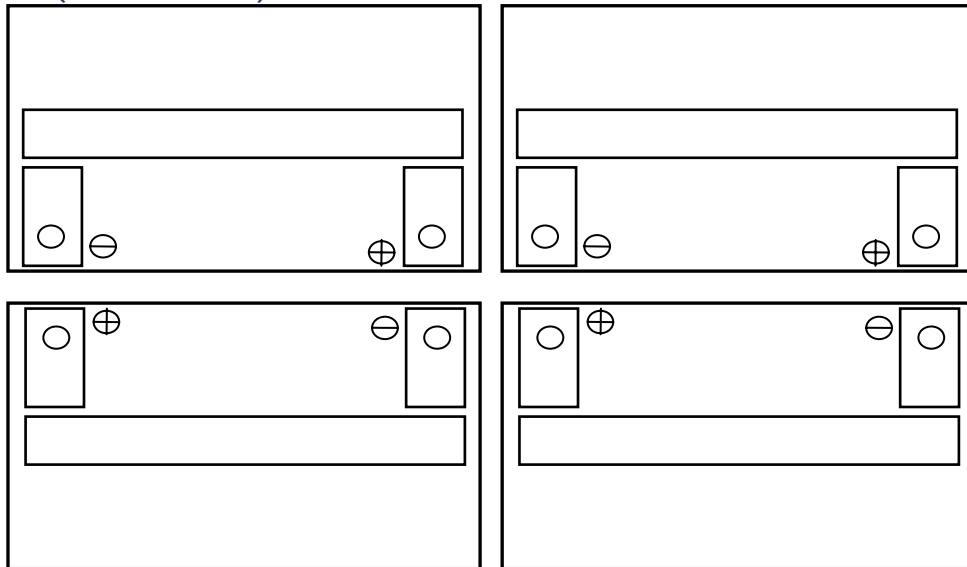
24 VDC 100Ah – (RA12-100A x 2)



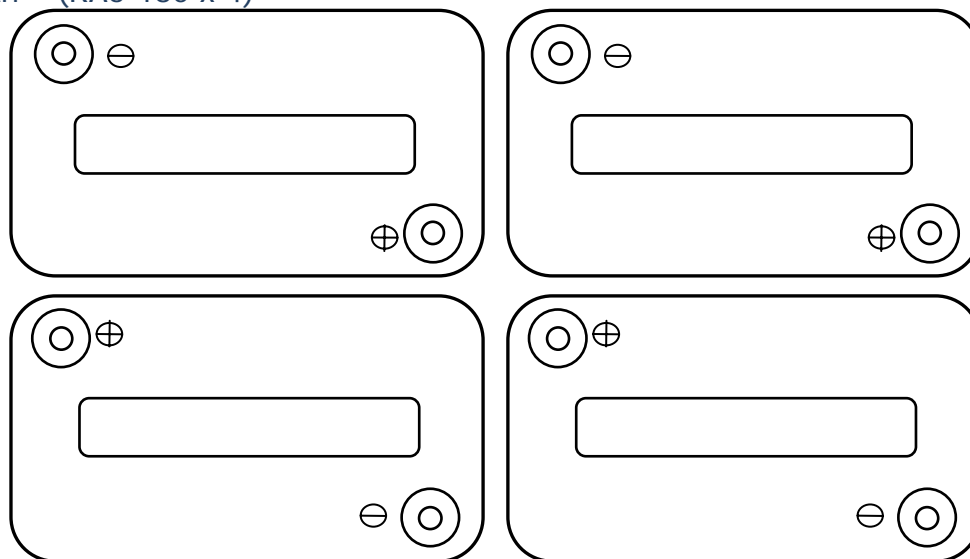
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48 VDC 100Ah – (RA12-100 x 4)



24 VDC 180Ah – (RA6-180 x 4)



48 VDC 180Ah – (RA6-180 x 8)

Repeat 24 VDC 180Ah layout on top and bottom shelf.

*Note: To ensure battery bank cannot be accidentally short circuited, DO NOT fit any battery links at this stage.*

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## Installing the DC Switchboard



Dimensions (mm) – 410(w) x 750(h) x 75(d).

Mounting hole size max – M6

Weight – 17kg (including optional solar regulator)

Tools – 7mm Nut Driver

The DC Switchboard consists of two compartments both with LHS hinged doors for access. The top compartment is for solar combining and switching. The lower half is for the battery fusing and regulator mounting. The lower door, when assembled, can only be opened with the DC fuse switch removed. All wiring is contained within the enclosure.

The DC Switchboard should be mounted allowing for the SP PRO to be mounted ~ 250mm to the left.

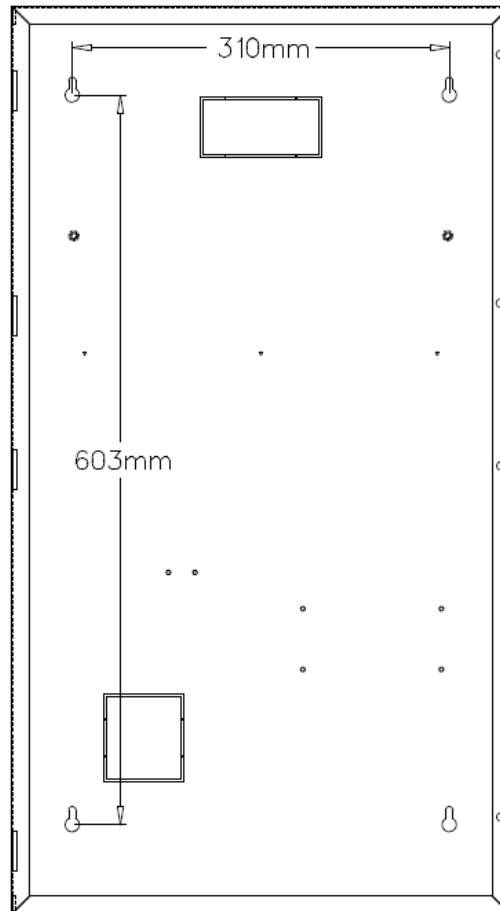
### **CABLE ENTRY**

The DC switchboard has the provision for cables to enter from the rear or top via knockouts. If required, remove knockouts to suit installation.

### **PLACEMENT**

The DC switchboard is to be mounted to a suitable solid surface with no particular temperature requirements. Four key-holed mounting points are provided –

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*Note: Diagram shows square rear cable entry knockouts.*

Affix DC Switchboard using suitable fixing method for the wall construction.

## **SHUNT ASSEMBLY – LOWER COMPARTMENT (SOLAR OPTION ONLY)**

Fit the shunt onto the two mounting studs, securing with the nuts and washers supplied.

## **REGULATOR ASSEMBLY – LOWER DOOR (SOLAR OPTION ONLY)**

Prepare the regulator for mounting onto lower door by removing the rear cable entry knockout (it does require a fair bit of persuasion) and removing both the lower and upper covers.

Remove lower two screws and gland plug on lower door.

Hang regulator onto two upper screws and then fit two lower screws into position. Tighten all screws and refit top cover.

## **Installing the SP PRO**

Install the SP PRO as per the SP PRO installation instructions.

The SP PRO should be mounted ~ 250mm to the left of the DC switchboard

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## Cabling

Tools – 17mm nut driver, 11mm nut driver

Parts – 25mm Flexible Conduit, 32mm Flexible Conduit

The cabling is listed in order to enable easy installation and routing of cables. When both SP PRO and DC Switchboard are mounted as indicated, the interconnecting cables can be fed through the left hand side 25mm cable holes (top to bottom) -

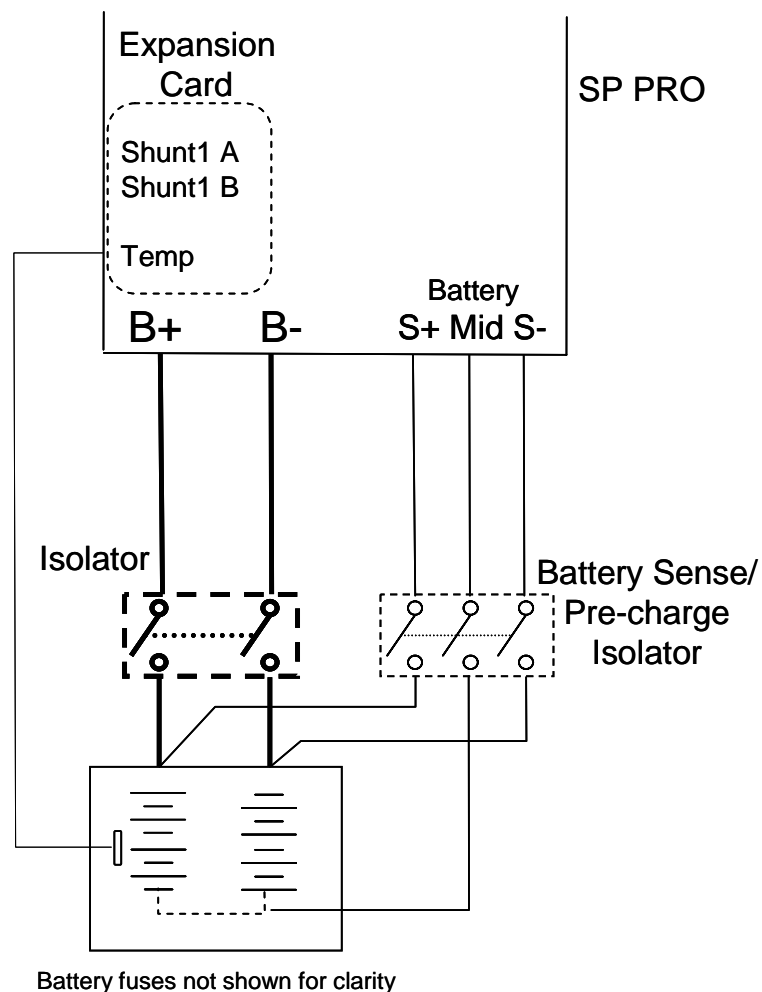
1. DC Sense, Shunt and Temperature
2. Battery Negative
3. Battery Positive

The cabling to the Battery Enclosure can be fed through the lower 32mm cables holes (left to right) -

1. Battery Positive
2. DC Sense, Shunt and Temperature
3. Battery Negative

## DC SENSE CABLING AND BATTERY TEMPERATURE SENSE

Use the following diagram as a guide to install DC cabling.



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## SP PRO to DC Sense Switch

Feed DC Sense cable and battery temperature sensor cable through from SP PRO to top hole of DC Switchboard via conduit and glands.

Solar Option Only: Also feed through shunt sense and regulator float signal cable with above cables.

DC Sense cable should be routed to right hand side of cabinet and up into Upper Compartment and connect into the top of the DC Sense switch.

## DC Sense Switch to Battery Enclosure

Feed DC Sense cable from Upper compartment down through Lower compartment to the right of the DC Switch/Fuse assembly.

Feed DC Sense cable and battery temperature sensor cable through middle lower hole of DC Switchboard to Battery enclosure via conduit and glands.

Solar Option Only: Also feed through regulator temperature sensor cable with above cables.

## **PRIMARY BATTERY CABLING**

### DC Switchboard to SP PRO

Feed B- cable through from middle hole of DC Switchboard to SP PRO via conduit and glands.

Feed B+ cable through from lower hole of DC Switchboard to SP PRO via conduit and glands.

### DC Switchboard to Battery Enclosure

Feed B- cable through from lower holes directly below DC Switchboard to Battery Enclosure via conduit and glands.

Feed B+ cable through from lower holes directly below DC Switchboard to Battery Enclosure via conduit and glands.

## **CABLING - SOLAR OPTION ONLY**

Shunt is supplied with two nuts per each stud connection. Ensure shunt lugs fit directly to body of shunt without any interposed nuts.

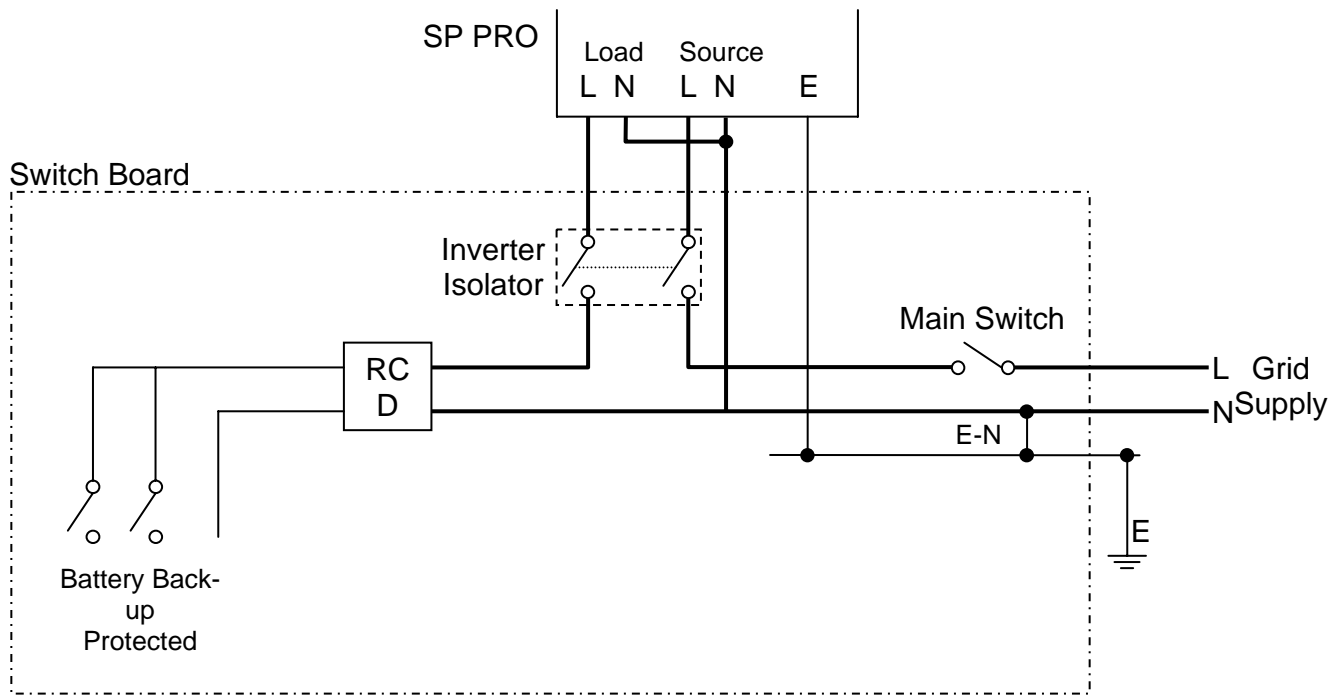


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## AC CABLING

Use the following diagram as a guide to install AC cabling into the existing AC Switchboard.






## Additional Information

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

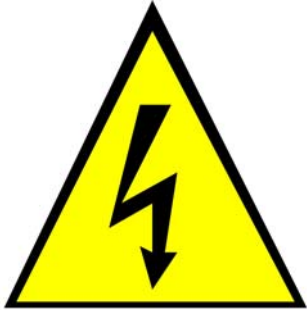
# Shutdown Procedure

## On Grid Shutdown Procedure

Step	Action		Result
1	<ul style="list-style-type: none"><li>Press and hold OUTPUT MODE button.</li></ul>		<ul style="list-style-type: none"><li>Output Mode indicator is now OFF - SP PRO is Idle and will not export or provide any backup supply.</li><li>Charging Mode, Battery and Alarm indicators will remain On.</li><li>Grid (if present) will continue to feed through to AC Load.</li></ul>
2	<p>Solar Isolating Main switch</p> <ul style="list-style-type: none"><li>Switch OFF by pressing levers down.</li></ul>		<ul style="list-style-type: none"><li>Solar is now isolated from battery bank.</li></ul>
3	<p>Battery FUSE Switch</p> <ul style="list-style-type: none"><li>Pull the handle firmly outwards until fuses are clear of housing.</li></ul>		<ul style="list-style-type: none"><li></li></ul>
4	<p>Battery Sense Isolator switch</p> <ul style="list-style-type: none"><li>Switch OFF by pressing levers down</li></ul>		<ul style="list-style-type: none"><li>SP PRO is now isolated from battery bank.</li><li>Charging Mode, Battery and Alarm indicators will turn OFF.</li></ul>
5	<ul style="list-style-type: none"><li>Switch OFF AC Isolator(s) – Source and Load</li></ul>		<ul style="list-style-type: none"><li>AC Source, Transfer and AC Load indicators are now OFF. No supply to AC Load.</li><li>SP PRO is now isolated from grid supply.</li></ul>

**Start up Procedure – Perform opposite action in reverse from 5 to 1.**

## Battery Bank



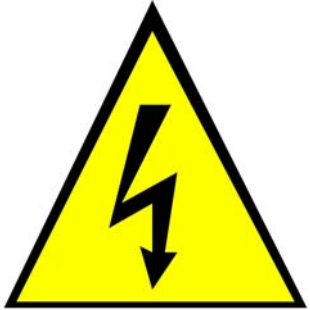
### **WARNING : SPARK HAZARD**

Follow shutdown procedure before connecting or disconnecting any equipment.

Nominal BATTERY VOLTAGE - 24 Volts  
Maximum FAULT CURRENT - 2,150 Amps

Battery Type: Ritar RA12-100

## Battery Bank



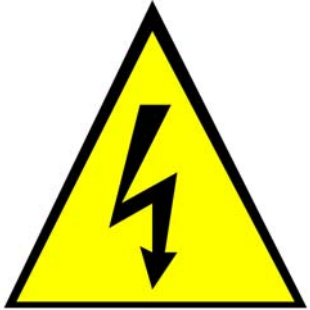
### **WARNING : SPARK HAZARD**

Follow shutdown procedure before connecting or disconnecting any equipment.

Nominal BATTERY VOLTAGE - 24 Volts  
Maximum FAULT CURRENT – 3,330 Amps

Battery Type: Ritar RA6-180

## Battery Bank



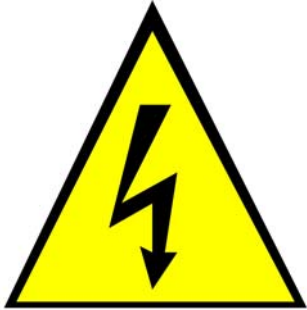
### **WARNING : SPARK HAZARD**

Follow shutdown procedure before connecting or disconnecting any equipment.

Nominal BATTERY VOLTAGE - 48 Volts  
Maximum FAULT CURRENT - 2,150 Amps

Battery Type: Ritar RA12-100

## Battery Bank



### **WARNING : SPARK HAZARD**

Follow shutdown procedure before connecting or disconnecting any equipment.

Nominal BATTERY VOLTAGE - 48 Volts  
Maximum FAULT CURRENT - 3,330 Amps

Battery Type: Ritar RA6-180