



SP Grid - Gen Backup Installation Notes

Introduction

SP Grid – Generator Backup Installation Notes detail the addition of the Expansion Housing and connection to the grid and an automatic backup generator to the SP PRO. The Expansion Housing secures to and extends below the SP PRO unit and contains the additional components required. The expansion housing allows for the bottom and rear cable entry.

This system is suitable for a backup generator which is automatically started and stopped by the SP PRO.

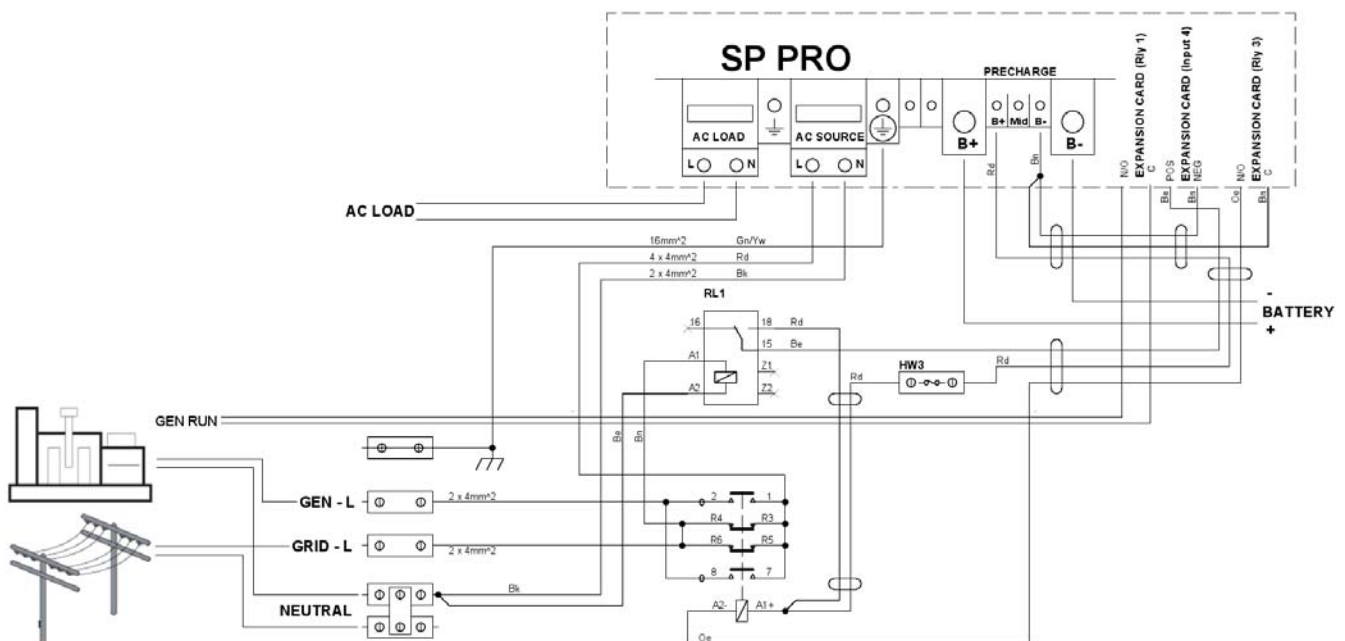
Note: This document needs to be read in conjunction with the SP PRO Instruction Manual

SP GRID – GEN BACKUP MODELS

There is a model for each nominal battery voltage. Ensure you use the correct model to match the system nominal battery voltage.

Wiring Overview

The following is an overview of the internal and external connections which form part of the Grid – Gen Backup Expansion housing.



Note: Diagram is applicable for both 24V and 48V models.

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Installation

The SP PRO unit is installed as per the installation instructions in the user manual.

Additional instructions are listed below against each step.

Step 4

Allow an extra 300mm below the SP PRO to accommodate the expansion housing.

Step 6

Remove gland plate and fan assembly as shown. The gland plate and attached fan are replaced by the expansion housing. Remove gland plate and fan assembly as shown. The gland plate is replaced by the expansion housing. The fan and fan filter are re-used in the expansion housing.

Retain two side screws and loosen internal screws for re-use retaining expansion housing.

Complete following steps before continuing with SP PRO installation.

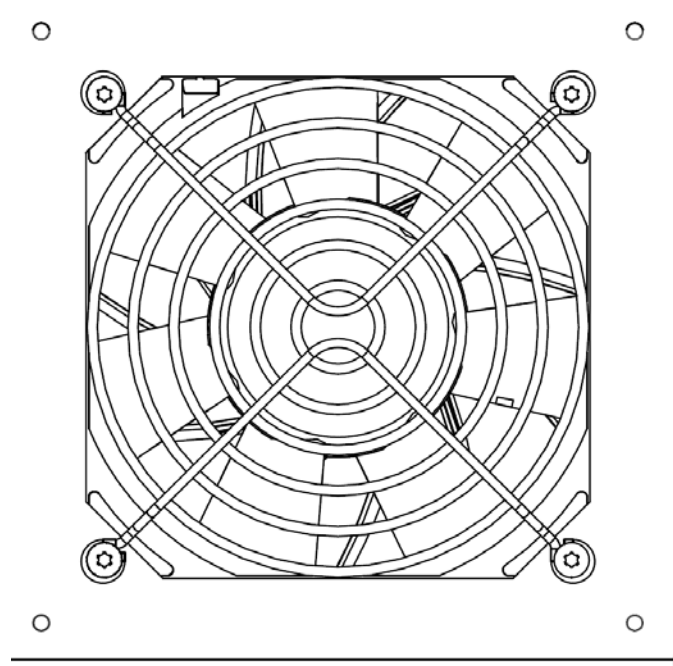
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Fan Refit

The fan and fan filter supplied with the SP PRO need to be re-fitted onto the extension housing.

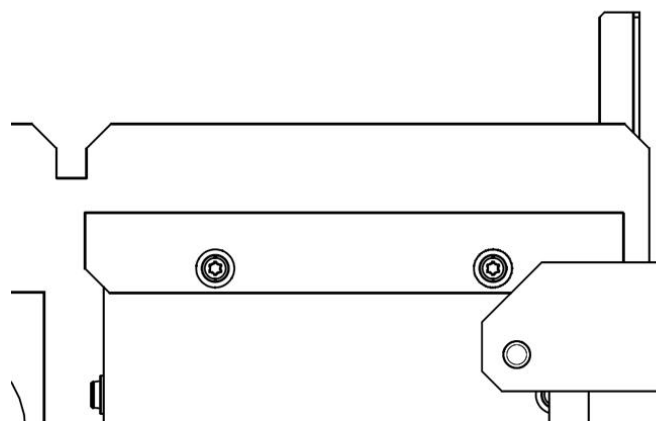
Remove and retain the fan filter and four fan thumb nuts from the gland plate.



SP PRO Gland Plate Showing Fan Guard and screws – Fan filter not shown.

Undo and retain the four fan screws and fan from the gland plate. The fan guard is not required.

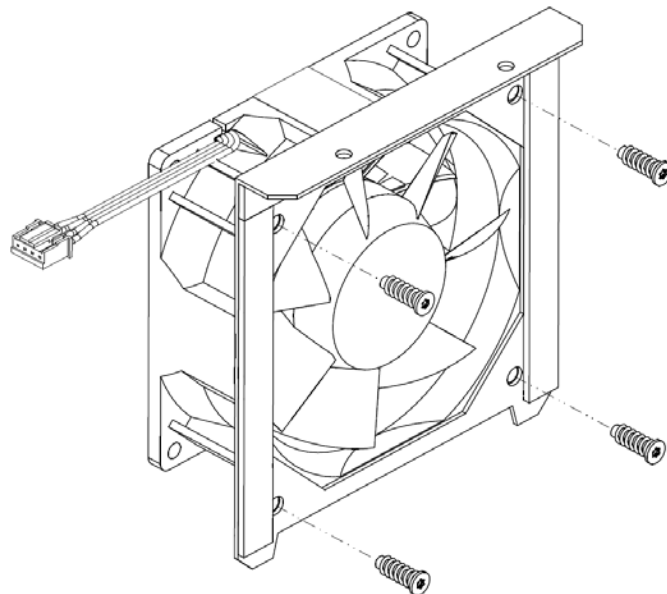
Undo and retain four screws of the front cover of Expansion Housing. Disconnect the front cover Earth wire and remove front cover.



Extension Housing Fan Mounting Plate

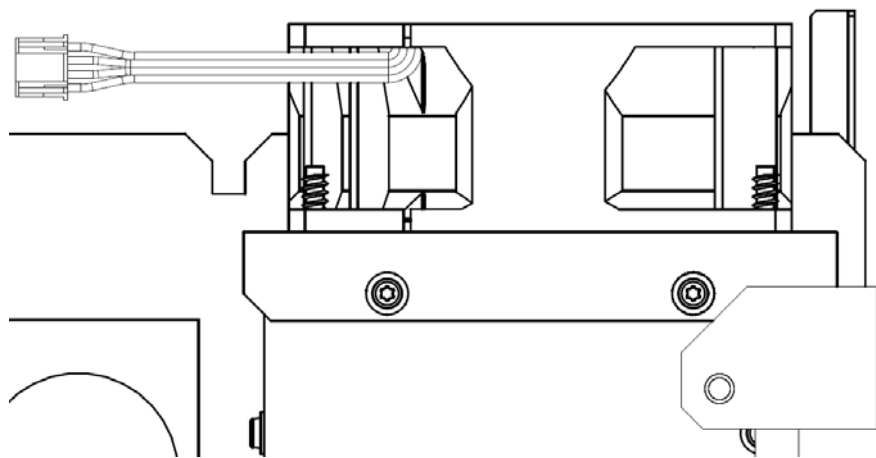
Locate Extension Housing Fan mounting plate. Undo two retaining screws and remove plate.

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Fan mounting showing correct orientation – rotor visible

Fit fan to mounting plate as shown taking care to observe correct fan orientation and cable position.



Fan assembly mounted into Extension Housing

Re-fit Fan Mounting plate into Expansion Housing.

Re-fit Fan Filter to bottom of expansion housing.

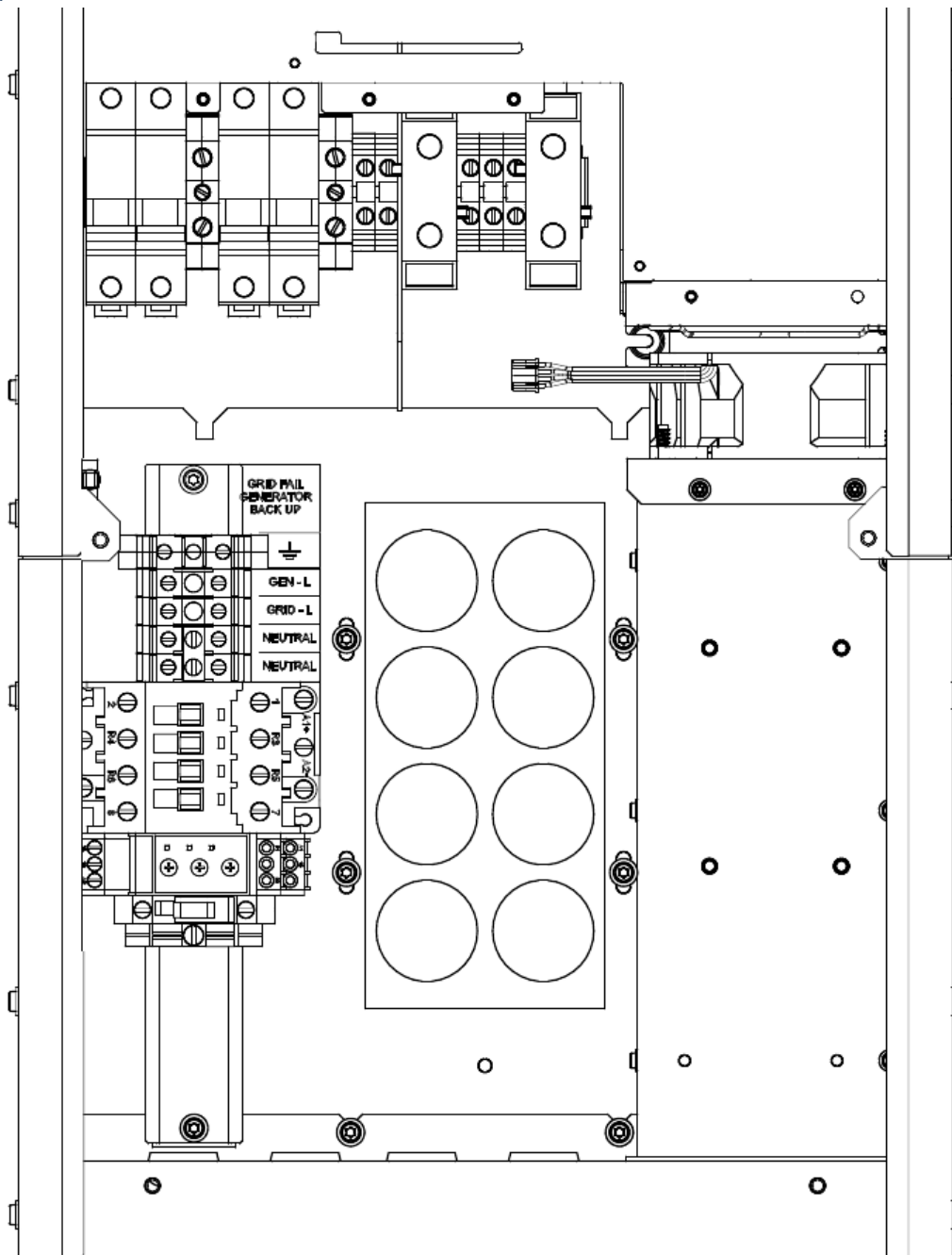
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Install Expansion Housing to SP PRO

Slide top flanges underneath the SP PRO base plate and guide the sides inside the SP PRO cover. The Expansion housing may require to be tipped up slightly to allow the top flange to slide into the internal retaining screws.

Tighten the internal screws and re-fit the two side screws to secure the Expansion Housing to the SP PRO.



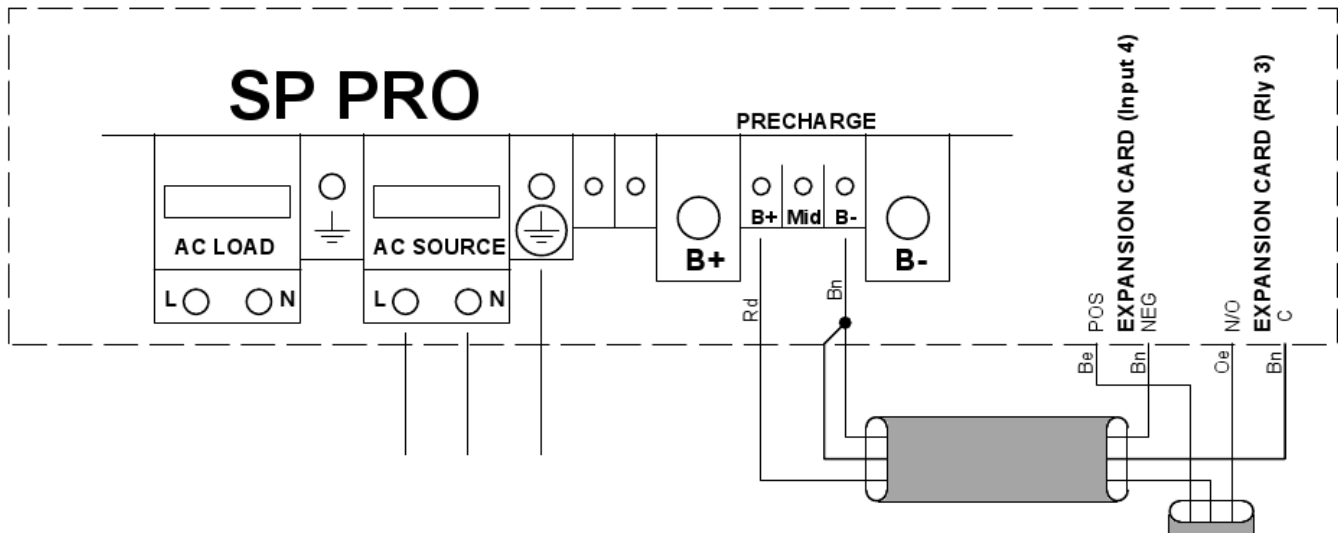
Note: Supplied internal wiring not shown for clarity. Picture shows rear cable entry gland plate and DIN rail for additional equipment

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Expansion Housing Internal Wiring

The expansion housing contains additional internal wiring. Connect as detailed below



AC Source Wiring

- Line (Red cable in black sleeve) -> AC Source L
- Neutral (Black) -> AC Source N
- Earth (Green/Yellow) -> Earth

Control Wiring

- Control Supply (Red) – Precharge B+
- Control Supply (Brown) – Precharge B-
- Control Input (Blue) -> Expansion Card Digital Ctrl In 4 POS
- Control Input (Brown) -> Expansion Card Digital Ctrl In 4 NEG
- Control Negative (Orange) -> Expansion Card Relay 3 NO (Normally Open)
- Control Negative (Brown) -> Expansion Card Relay 3 Common

Note: It may be more convenient to fit Control cabling after all AC and DC wiring completed.

... continue SP PRO Installation

The SP PRO unit is installed as per the installation instructions in the user manual.

Additional instructions are listed below against each step.

Step 7

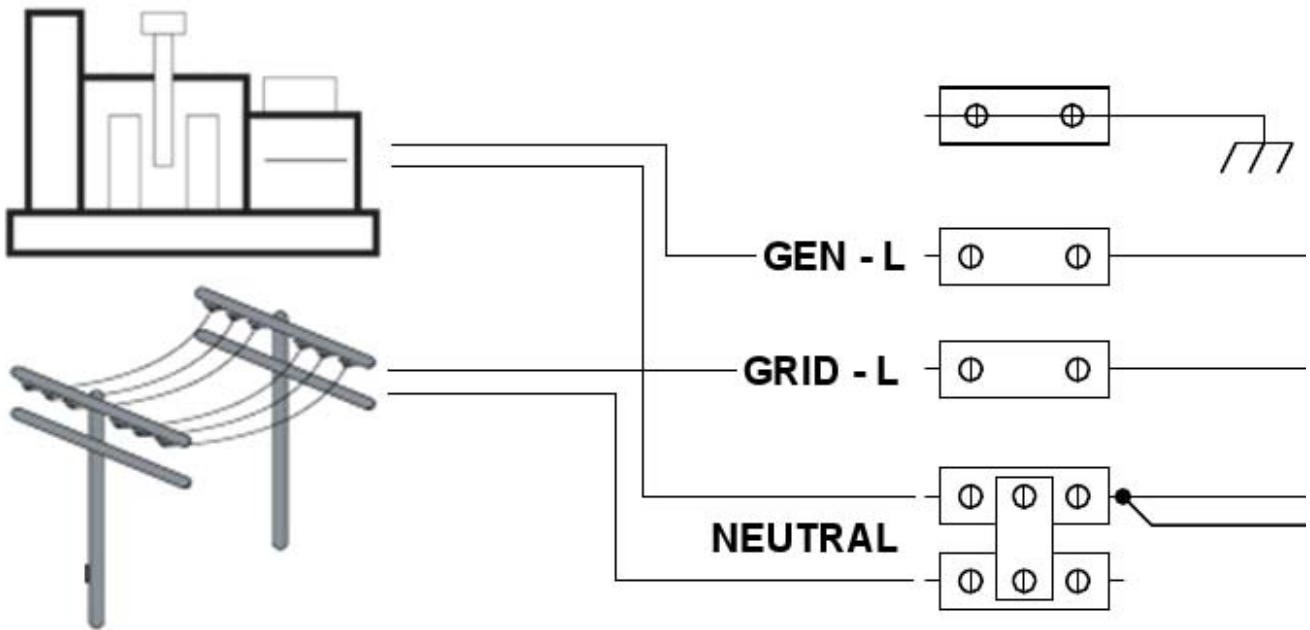
Battery Back Up loads connect into the AC Load L and N terminals within the SP PRO. Only the expansion housing wiring connects into the SP PRO AC SOURCE terminals.

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Grid and Generator AC Wiring

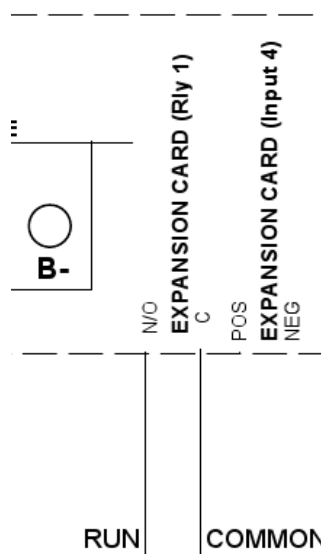
The Grid and Generator is wired into the expansion housing as shown.



Note: AC circuit breakers and Earth Wires not shown for clarity.

Generator Control Wiring

The Generator Run control wiring is wired into the expansion card as shown. This configuration is for a controller that require two wires to be closed to start and run and then opened to stop the generator.



Note: Refer to Tech Note TN0025 for other control options.

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... continue SP PRO Installation

The SP PRO unit is installed as per the installation instructions in the user manual.

Additional instructions are listed below against each step.

Step 8

Once all wiring is completed, connect the front cover Earth wire and refit the expansion housing cover using four screws. SP PRO cover plate removed prior to installation can be refitted and will now secure to the expansion housing front cover.

SP PRO Configuration – Additional Configuration Settings

The following details the additional settings required to activate the Grid / Generator backup hardware installed. This is in addition to settings for grid operation.

AC SOURCE – AC INPUT

The Alternative Source must be set to accommodate the different power limit and voltage/frequency range that the SP PRO will accept when the backup generator is running. The Primary Source settings are shown by way of comparison between grid and backup generator.

- Alternate AC Source Power – maximum power SP PRO will draw from backup generator
- Min, Max AC Voltage – allowable voltage range from generator
- Min, Max AC Frequency – allowable frequency range from generator

Primary Source	Alternate Source	Alternate Source
Min AC Voltage [-1 - -30 %] -6 226 V	Alternate AC Source Power* [0.1 - 50 kW] 2.3 kW	Min AC Voltage* [-1 - -30 %] -10 216 V
Max AC Voltage [1 - 10 %] 10 264 V	Extern. Contactor/CT Disabled	Max AC Voltage* [1 - 10 %] 10 264 V
Min AC Frequency [-1 - -10 %] -1 49.5 Hz	External CT [50 - 250 A] 50 A : 5 A	Min AC Frequency* [-1 - -10 %] -10 45.0 Hz
Max AC Frequency [1 - 10 %] 1 50.5 Hz		Max AC Frequency* [1 - 10 %] 10 55.0 Hz

Note: Default Values shown - Adjust values to suit the backup generator. External CT and Extern. Contactor/CT settings are not used in this configuration.

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AC SOURCE – GENERATOR CONTROLLER SETTINGS

Generator Controller: Enabled

Note: Remaining settings can be adjusted based on specific backup generator requirements. See SP PRO User Manual – Generator Controller Settings for further details.

Generator

Generator Controller*	Pre-synchronised Warm Up Time [0 - 10 min]
Enabled	0
Auto Start Available	Warm Up Time [0 - 10 min]
Assume Always	1
Minimum Runtime [5 - 120 min]	Cool Down Time [0 - 10 min]
10	0

INPUTS / OUTPUTS

The SP PRO must be configured to control the correct inputs and outputs to monitor and switch between the grid and backup generator.

Digital Inputs –

Normal/Alternate AC Input Power Selector: Follow Backup Select

Inhibit Export Input: Follow Backup Select

Note: Low Batt Shut Down Override Input setting is not used in this configuration.

Digital Inputs

Low Batt Shut Down Override Input
None
Normal/Alternate AC Input Power Selector*
Follow Backup Select
Inhibit Export Input*
Follow Backup Select

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Grid Fail Generator Backup –
Grid Fail Backup: Enabled
Grid Available Input: Digital Control Input 4
Backup Select Output: Relay Output 3

Grid Fail Generator Backup

Grid Fail Backup*
Enabled

Grid Available Input*
Digital Control Input 4

Backup Select Output*
Relay Output 3

Generator Outputs –
Generator Run Output – Relay Output 1

The actual generator output type used will depend on what signal is required by the backup generator to start and stop. Refer to generator documentation for details.

Note: Default settings shown. Start Output is not used in this configuration.

Generator Outputs

Generator Run Output
Relay Output 1

Generator Start Output
None

SP PRO Configuration – Automatic Generator Control

The generator will run upon loss of grid supply on the default settings based on low battery voltage or SoC if enabled. If you wish to enhance this operation, consult SP PRO User manual – Generator Automatic Start for full details.

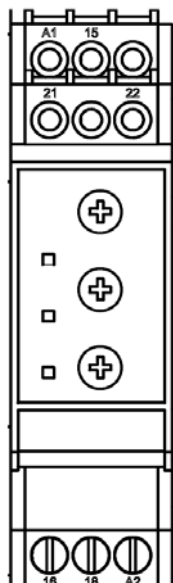
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Reference Information

RL1 - VOLTAGE MONITOR

The internal voltage monitor (RL1) is factory set and should not be adjusted. The factory setting is detailed below:



: + 15 %

: - 8 %

: 3 s

: DIP-switches – under cover –

1 – ON (DEL-REC)

2 – OFF (N.E.)

3 – ON (6 s)

4 – OFF (INHIBIT)

5 – ON (230 VAC)

6 – OFF (230 VAC)

WARNING: Do not open the DIP-switches cover if the Power Supply is ON.

Additional Information

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