



SP PRO Solar Hybrid Firmware Upgrade

Attention

Updating the firmware within SP PRO units to support the new Solar Hybrid Control system will remove the previous settings used for tariff optimisation and they will no longer have any effect on the SP PRO operation.

Solar Hybrid Control applies to SP PRO Firmware: 7.0 and later. This Technical Bulletin only applies to the re-configuration of a SP PRO where the firmware is being updated from a firmware revision less than 7.0 to a firmware revision 7.0 or above.

Configuration Settings Affected

Any SP PRO system using the following Configuration Settings will need to be re-configured after an update to Solar Hybrid Control firmware:

- Inverter – Inverter Lockout Schedule 1 – 4
- AC Source – AC Input Capacity Schedule 1 – 4
- AC Source – Charger Lockout Schedule 1 – 4
- AC Source – AC Input Lockout
- AC Source – AC Export Power Limit
- Inputs/ Outputs – Charger Lockout Input
- Inputs/ Outputs – Power Override Input

The ability to perform these functions is retained however they have been redefined into a single Solar Hybrid Control group with eight schedules which contain all of the functionality.

Solar Hybrid Three Phase System

To take full advantage of the new Solar Hybrid settings in a three phase SP PRO configuration, the Battery wiring and shunt sense wiring to the SP PRO inverters will need to be changed.

The new configuration will allow each of the three SP PRO inverters to individually keep track of the battery State of Charge (SoC) and their share of any DC coupled renewable charging source. Each of the three phases is then able to be programmed to the desired Solar Hybrid Schedule whilst allowing, as required, the export of their share of both DC coupled and AC coupled renewable energy (such as PV Solar).

For full details please refer to installation note *IN0016_xx 004573 SP PRO 3 Phase Installation.doc* (xx should be 07 or higher) available on the support page of the Selectronic Web Site <http://www.selectronic.com.au>.

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Solar Hybrid Control Settings

The Solar Hybrid Control settings define when, the amount and to what level the stored battery energy is utilised in conjunction with the connected renewable energy sources to optimise their use. Optimum use of the renewable and stored battery energy gives you control over when and the amount of grid energy if any is required to power the connected loads. The use of the settings below in combination allows this flexibility.

The screenshot shows the 'Solar Hybrid Control' settings page. At the top, there are tabs for 'Inverter', 'Battery', 'Charger', 'AC Source', 'Solar Hybrid Control', 'System', 'Inputs / Outputs', 'Shunts', and 'Expansion Card Wiring Diagram'. Below the tabs, there are eight priority levels (Priority 1 to Priority 8). The main content area is divided into several sections:

- Activation:** Includes 'Enable Date Time Activation' (set to Disabled), 'Active Dates' (Begin Date: 01 Jan, End Date: 31 Dec), 'Active Time' (Day: All, Start Time: 00:00, Stop Time: 00:00), 'Digital Control' (Activation Input: None, Activation Input Edge: Rising, Active Output: None).
- AC Source:** Includes 'Grid Input Limit' (208.3 A), 'Grid Export Limit' (20.8 A), and 'Grid Disconnect' (Disabled).
- Inverter Control:** Includes 'AC Load Support Limit' (208.3 A), 'SoC Support Limit' (60%), and 'Inverter Disconnect' (Disabled).
- Charger Control:** Includes 'Battery Charging' (Charging On), 'Restricted Charge Limit' (208.3 A).
- Charger Override:** Includes 'Battery Charging' (Charging On), 'Override Charge Limit' (208.3 A), 'Start SoC' (55%), and 'Stop SoC' (70%).
- Power Override:** Includes 'Inverter Target' (0.0 A).

PRIORITY 1 TO PRIORITY 8

The Solar Hybrid Control is made up of eight groups of identical settings with each assigned and labelled a priority level from 1 to 8 with priority 1 being the highest. If two or more Priority Schedules are active at the same time, only the highest priority settings will apply.

When a Priority schedule is active, all of the configuration options with the group are active during that time.

ACTIVATION

Activation controls when the limits and controls set for that Priority schedule become operational.

When converting configuration settings that operate over a time frame, set the same times in the Date Time activation as for the original settings.

When converting configuration settings over that operate from a digital input, set the Digital Control Activation Input as for the original settings.

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Date Time Activation

Select the inclusive date range over which you want the Priority Schedule to be activated. By default the range is all year and only require adjustment if part of a year such as summer are required.

Select the days of the week (Mon, Tues, ..., Sat-Sun, Mon-Fri, All) for the schedule to activate. Select the Start Time and Stop Time (in 24 hr format) for the schedule to active. If the Stop Time is earlier than the Start Time then the Stop time is for the following day.

Digital Control Activation

A digital input may also be used to activate the Priority schedule. This input will activate the Priority schedule regardless of the Date Time Activation.

Both Activation types can be used together remembering if one or the other is active then the Priority Schedule will be active.

During Activation, an output can also be energised to signal other devices. Set the Active Output to the Digital Output as required.

Enable Date Time Activation

Enabled

Active Dates

Begin Date

[1 Jan - 31 Dec]

01 Jan

End Date

[1 Jan - 31 Dec]

31 Dec

Active Time

Day

All

Start Time

[00:00 - 23:59]

00:00

Stop Time

[00:00 - 23:59]

00:00

Digital Control

Activation Input

None

Activation Input Edge

Rising

Active Output

None

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Convert Configuration Settings

The information below is to detail how to use your existing settings within the new Solar Hybrid configuration. Please consult the SP LINK User Manual for full details.

INVERTER – INVERTER LOCKOUT SCHEDULE 1 – 4 → SOLAR HYBRID - INVERTER DISCONNECT

- Choose which Priority schedule will activate the Inverter Disconnect.

Original Setting → Solar Hybrid Setting

The screenshot shows the 'Inverter Control' interface. On the left, 'Inverter Lockout' settings for 'Schedule 1' and 'Schedule 2' are shown, both set to 'Disabled'. 'Schedule 1' has a start time of 21:00 and a stop time of 06:00. 'Schedule 2' has a start time of 21:00 and a stop time of 06:00. In the center, 'Enable Date Time Activation' is set to 'Enabled'. Below this, 'Active Dates' are defined with a 'Begin Date' of 01 Jan and an 'End Date' of 31 Dec. 'Active Time' is set to 'All' days, with a 'Start Time' of 00:00 and a 'Stop Time' of 00:00. On the right, 'Inverter Control' settings include 'AC Load Support Limit' at 208.3 A, 'SoC Support Limit' at 60%, and 'Inverter Disconnect' set to 'Disabled'. Green arrows point from the original settings to the new configuration: from 'Schedule 1' and 'Schedule 2' to 'Active Time' and 'Start/Stop Time'; from 'Enable Date Time Activation' to 'Active Dates'; and from 'Inverter Disconnect' to 'Inverter Disconnect'.

- Enable Date Time Activation and Inverter Disconnect
- Set Active Time Day to same as Sched. X Day
- Set Start Time to same as Sched. X Start Time
- Set Stop Time to same as Sched. X Stop Time

Remember:-

- You can have multiple control actions under each Priority schedule.
- If two or more Priority Schedules are active at the same time, only the highest priority settings will apply.

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AC SOURCE – CHARGER LOCKOUT SCHEDULE 1 – 4 → SOLAR HYBRID – CHARGER CONTROL

- Choose which Priority schedule will activate the Charger Lockout.

Original Setting → Solar Hybrid Setting

The screenshot shows the 'Charger Lockout Schedule' section with two schedules, 'Schedule 1' and 'Schedule 2', both set to 'Disabled'. Below this is the 'Enable Date Time Activation' section, which is set to 'Enabled'. Underneath, 'Active Dates' are defined with a 'Begin Date' of '01 Jan' and an 'End Date' of '31 Dec'. The 'Active Time' section is set to 'All' days, with both 'Start Time' and 'Stop Time' set to '00:00'. To the right, the 'Charger Control' section shows 'Battery Charging' set to 'Charging On' and a 'Restricted Charge Limit' of '208.3 A'. Green arrows point from the original settings to the solar hybrid settings.

- Enable Date Time Activation and set Battery Charging to Charging Off or Renewable Only
- Set Active Time Day to same as Sched. X Day
- Set Start Time to same as Sched. X Start Time
- Set Stop Time to same as Sched. X Stop Time

Remember:-

- You can have multiple control actions under each Priority schedule.
- If two or more Priority Schedules are active at the same time, only the highest priority settings will apply.

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AC SOURCE – AC INPUT CAPACITY SCHEDULE 1 – 4 → SOLAR HYBRID – GRID INPUT LIMIT

- Choose which Priority schedule will activate the Grid Input Limit

Original Setting → Solar Hybrid Setting

The screenshot shows the configuration interface for the AC Source and AC Input Capacity Schedules. The 'Original Setting' column shows 'Schedule 1' and 'Schedule 2' both set to 'Disabled'. The 'Solar Hybrid Setting' column shows 'Enable Date Time Activation' set to 'Enabled', 'Grid Input Limit' set to 208.3 A, 'Grid Export Limit' set to 20.8 A, and 'Grid Disconnect' set to 'Disabled'. The 'Active Time' section shows 'Day' set to 'All', 'Start Time' set to 00:00, and 'Stop Time' set to 00:00. The 'AC Source Power' is set to 50 and 3.8 kVA, and 'AC Source P' is set to 50 and 3.8 kVA. The 'Active Dates' section shows 'Begin Date' and 'End Date' both set to [1 Jan - 31 Dec].

- Enable Date Time Activation
- Set Grid Input Limit to same as AC Source Power x
- Set Active Time Day to same as Sched. X Day
- Set Start Time to same as Sched. X Start Time
- Set Stop Time to same as Sched. X Stop Time

Remember:-

- You can have multiple control actions under each Priority schedule.
- If two or more Priority Schedules are active at the same time, only the highest priority settings will apply.

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AC SOURCE – AC INPUT LOCKOUT → SOLAR HYBRID – GRID DISCONNECT

- Choose which Priority schedule will activate the Grid Disconnect

Original Setting → Solar Hybrid Setting

The screenshot shows three panels of settings. The 'AC Input Lockout' panel has 'Lockout' set to 'Disabled', 'Start Time' at '06:00', and 'End Time' at '23:00'. The 'Enable Date Time Activation' panel has 'Enable Date Time Activation' set to 'Enabled', 'Active Dates' from '01 Jan' to '31 Dec', and 'Active Time' from '00:00' to '00:00'. The 'AC Source' panel has 'Grid Input Limit' at '208.3 A', 'Grid Export Limit' at '20.8 A', and 'Grid Disconnect' set to 'Disabled'. Green arrows show the following mappings: 'AC Input Lockout Lockout' to 'Enable Date Time Activation Enabled', 'AC Input Lockout Start Time' to 'Enable Date Time Activation Start Time', 'AC Input Lockout End Time' to 'Enable Date Time Activation Stop Time', 'Enable Date Time Activation Begin Date' to 'Enable Date Time Activation Active Dates', 'Enable Date Time Activation End Date' to 'Enable Date Time Activation Active Dates', 'Enable Date Time Activation Day' to 'Enable Date Time Activation Active Time', 'Enable Date Time Activation Start Time' to 'AC Source Grid Disconnect', and 'Enable Date Time Activation Stop Time' to 'AC Source Grid Disconnect'.

- Enable Date Time Activation
- Set Grid Input Limit to same as AC Source Power x
- Set Active Time Day – No previous setting
- Set Start Time to same as Sched. X Start Time
- Set Stop Time to same as Sched. X Stop Time

Remember:-

- You can have multiple control actions under each Priority schedule.
- If two or more Priority Schedules are active at the same time, only the highest priority settings will apply.

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AC SOURCE – AC INPUT LOCKOUT → SOLAR HYBRID – GRID DISCONNECT

- Choose which Priority schedule will activate the Grid Export Limit

Original Setting → Solar Hybrid Setting

The screenshot shows three panels of settings. The left panel, 'AC Export Power Limit', has 'Independent Limit' set to 'Disabled' and 'AC Export Power' set to 5.0 kW. The middle panel, 'Enable Date Time Activation', has 'Enabled' selected, 'Begin Date' as 01 Jan, 'End Date' as 31 Dec, 'Active Time Day' as 'All', 'Start Time' as 00:00, and 'Stop Time' as 00:00. The right panel, 'AC Source', has 'Grid Input Limit' at 208.3 A, 'Grid Export Limit' at 20.8 A, and 'Grid Disconnect' set to 'Disabled'. Green arrows point from the 'Independent Limit' dropdown to 'Enabled', from the '5.0 kW' value to the '20.8 A' value, and from the 'All' dropdown to the '20.8 A' value.

- Enable Date Time Activation
- Set Grid Export Limit to same as AC Export Power
- Set Active Time Day – No previous setting
- Set Start Time – No previous setting
- Set Stop Time – No previous setting

Remember:-

- You can have multiple control actions under each Priority schedule.
- If two or more Priority Schedules are active at the same time, only the highest priority settings will apply.

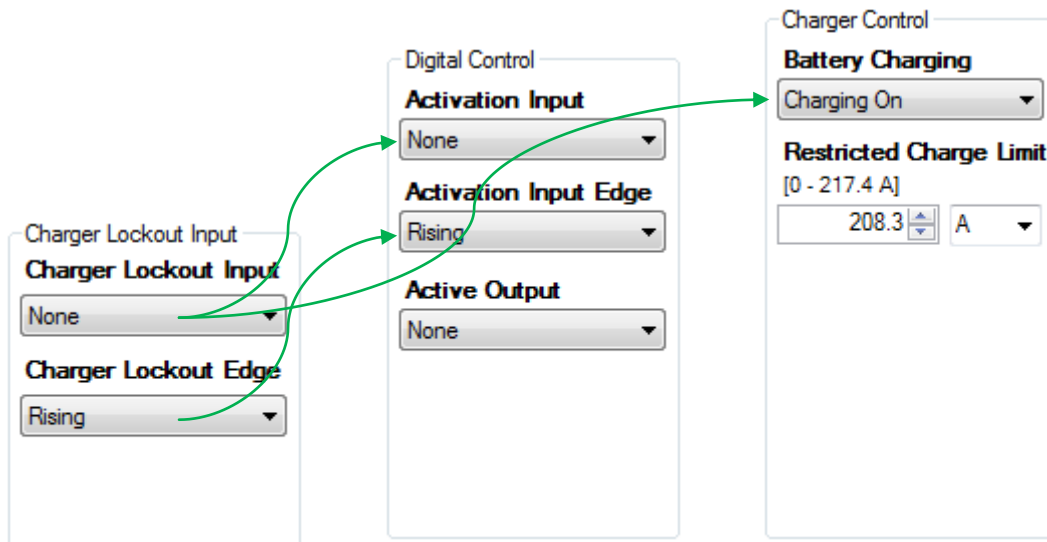
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INPUTS / OUTPUTS – CHARGER LOCKOUT INPUT → SOLAR HYBRID – GRID DISCONNECT

- Choose which Priority schedule will activate the Grid Export Limit

Original Setting → Solar Hybrid Setting



- Set Activation Input to same as Charger Lockout Input
- Set Activation Input Edge to same as Charger Lockout Edge
- Set Battery Charging to Charging Off or Renewable Only

Remember:-

- You can have multiple control actions under each Priority schedule.
- If two or more Priority Schedules are active at the same time, only the highest priority settings will apply.

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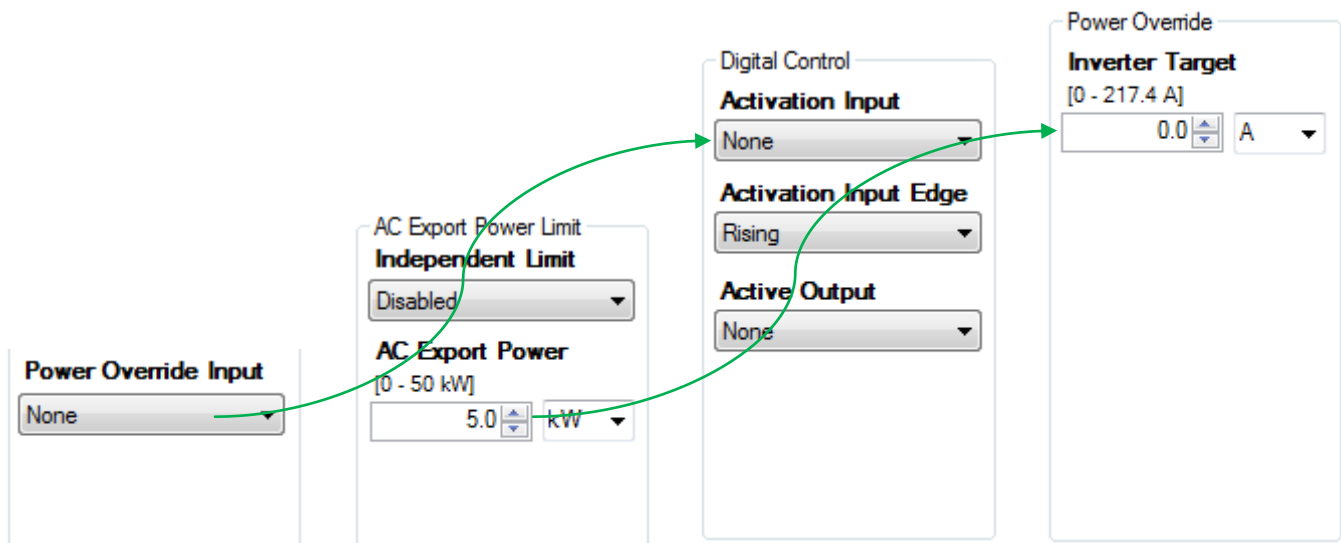


INPUTS / OUTPUTS – POWER OVERRIDE INPUT → SOLAR HYBRID – POWER OVERRIDE

Note: No function within standard SP PRO units. Contact Selectronic for details.

- Choose which Priority schedule will activate the Power Override

Original Setting → Solar Hybrid Setting



- Set Activation Input to same as Power Override Input
- Set Activation Input Edge
- Set Inverter Target to same as AC Export Power

Remember:-

- You can have multiple control actions under each Priority schedule.
- If two or more Priority Schedules are active at the same time, only the highest priority settings will apply.

Additional Information

Selectronic Support Team – support@selectronic.com.au

Selectronic web site – <http://www.selectronic.com.au>