Utilizing the SP Pro Battery Inverter with the SRX Solar Charge Controller

This technical note provides guidance on utilizing a current shunt to provide the SP Pro with the solar input current to ensure the State of Charge (SOC) accuracy is maintained when installed with CoolMax SRX Solar Chargers.

Solar Input Current Measurement Using Current Shunt (100-200A)

To allow the inverter to monitor the solar current entering the battery from the SRX Solar Charger and maintain an accurate SOC, a current shunt (generally 100-200A) must be installed in-line between the solar charger and the battery.

The SP Pro is limited to *two shunt inputs*, so if more than two SRX Solar Chargers are utilized, you will need to connect multiple controllers per shunt. Always ensure the shunt is appropriately rated for the potential output of the solar chargers connected to it.

For instance, if two 70A Solar Chargers are charging the battery, they can be paralleled onto a single 200A shunt, and utilize one Shunt Input on the SP Pro.

Implementation Steps

1. Wire the shunt in-line between the Solar Charger and Battery.
2. Connect the shunt sense wires to either the 'Shunt A' or 'Shunt B' input on the SP Pro.
3. Select the appropriate shunt ('Shunt A' or 'Shunt B') in the SP Pro settings via SP Link.
4. Program the chosen shunt to 'Solar Input' and zero the shunt in the 'Service Settings' before use.
5. Ensure that the millivolt per ampere (mV/A) rating in the SP Pro settings matches the specifications of the shunt used. i.e., 50mV/A
6. Confirm Solar Input Current is visible on the SP Link Dashboard when the SRX Chargers are operating.

Voltage-Based SOC Reset

When utilized with DC Coupling, the SP Pro has traditionally needed a Float Switch input to reset it's SOC to 100% when the battery is full.

As the SRX primarily utilizes digital communications like CAN and MODBUS, we don't support this approach and instead recommend a Voltage Offset based approach to reset its SOC to 100% when the battery reaches its Float state.

This is as functionally as effective as a Float Switch and adequately minimizes SOC drift.

In a system where both AC Coupling and an SRX Solar Charger are used, it's essential to determine which device has the charging priority. This decision impacts the voltage settings and the performance of the charging process.

DC Coupling as Primary: If the system is predominantly DC Coupled, set the SP Pro's Charge Voltages (Absorb, Float, etc) 0.2V below the SRX Solar Charger's settings.

AC Coupling as Primary: If the system is predominantly AC Coupled, set the SRX's Charge Voltages (Absorb, Float, etc) 0.2V below the SP Pro's settings.

Common Shunts

Most electrical distributors and wholesalers should stock a suitable shunt, but a few common options are listed below.

Supply Partners (SP Pro Accessories)

Part # 004351 - 100A Current Shunt G3 0.5% (100 Amp 75mV)
Part # 004352 - 200A Current Shunt G3 0.5% (200 Amp 75mV)

Note: 150A shunts are also available from Supply Partners.