AC Couple Application

Revision History

- Version 1.0- Mar 29th, 2024
- Version 2.0-April 23rd, 2024
- Version 3.0-Auguest 23rd, 2024 add firmware requirements

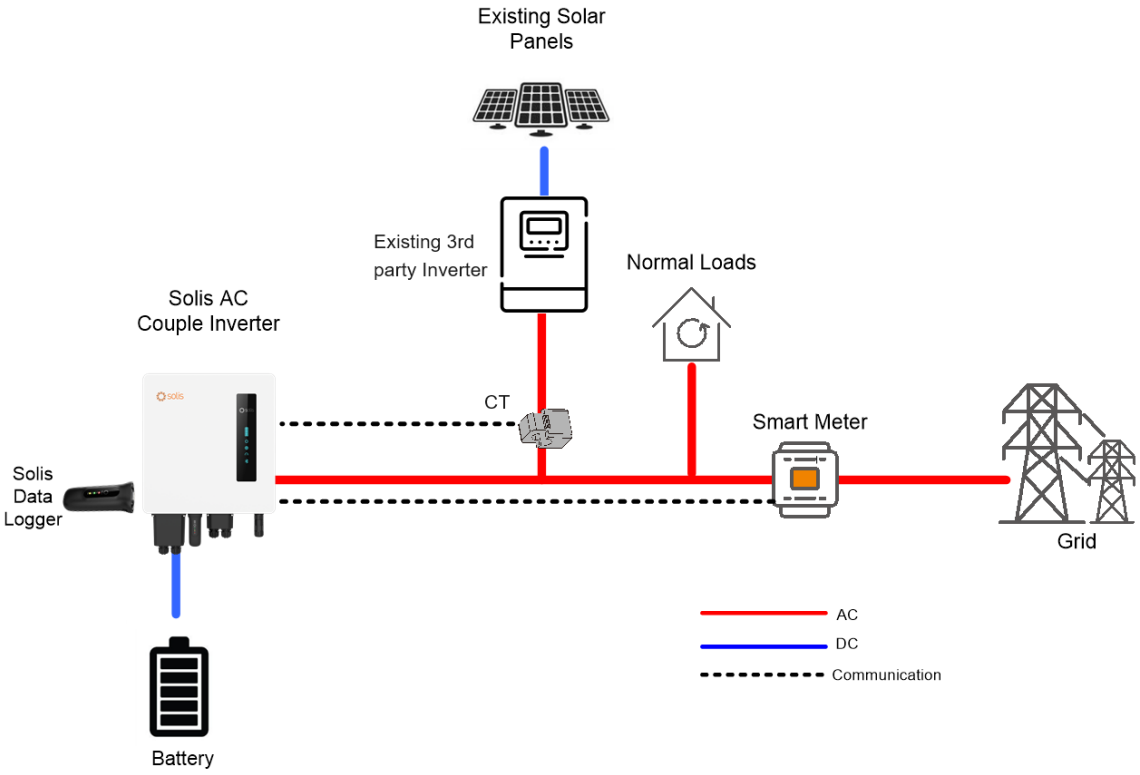
Scope

This document describes how to add battery storage systems to existing PV sites using Solis hybrid/AC coupled inverters. The existing inverter doesn't have to be a Solis inverter.

There are 3 scenarios:

- Scenarios 1: existing PV + AC coupled inverter
- Scenarios 2: existing PV + Hybrid inverter
- Scenarios 3: existing PV + S6 Hybrid inverters with frequency shift

Scenario 1: existing PV + AC coupled inverter



This configuration is suitable for customers with existing PV system who need battery, no extra panels needed.

In this case, it is recommended to install a Solis AC Coupled inverter with one import/export meter located at grid side and one CT clamped at existing inverter's AC output to collect the generation data.

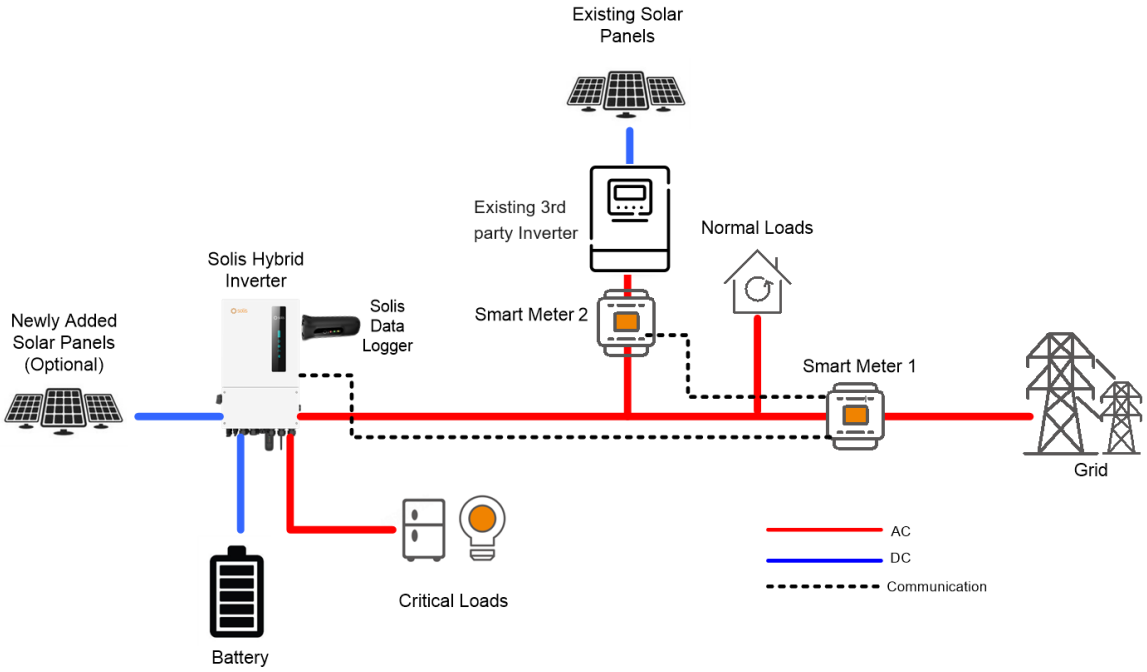
Supported Solis hybrid inverter models:

- RAI-3K-48ES-5G
- S5-EA1P3K-L
- S6-EA1P(3-6)K-L

How to setup Export limitation

- Zero Export control is not feasible since there is no communication between Solis inverter and the existing inverter. When battery is full, Solis inverter is not able to control the production of existing PV inverter to meet Zero export requirement.
- Export control is possible when the limit is higher than the existing PV inverter power rating. For example, when a 5kw Solis hybrid inverter + battery system is added to a 5kw existing PV site, we can set Zero export on hybrid inverter to meet the requirement.

Scenario 2: existing PV + Hybrid inverter



This configuration is suitable for customers with existing PV who need battery and PV connected to Solis inverter.

In this case, it is recommended to install a Solis Hybrid inverter with one import/export meter located at the grid side and the other meter at existing PV inverter's output to collect external production.

Supported Solis hybrid inverter models:

- S5-EH1P(3-6)K-L
- S6-EH1P(3-6)K-L-AU
- S6-EH1P(3-8)K-L-PLUS
- S6-EH3P(5-10)K-H-AU

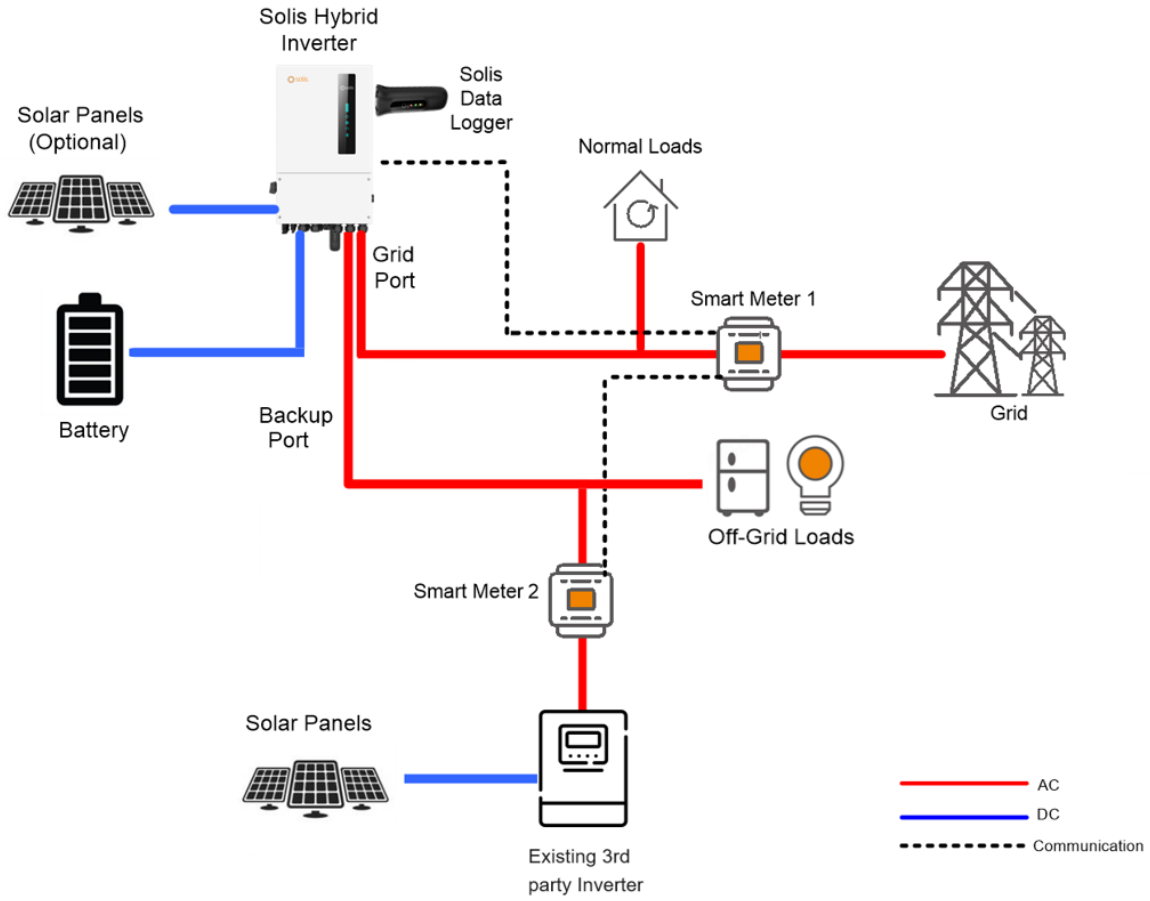
Requirements for dual meter installation:

- Supported meter models: SDM120CT (Eastron single phase); SDM630MCT (Eastron three phase)
- 2 meters are daisy chain connection. Meter 1 installed at grid connection point to measure import/export power, Meter 2 at PV inverter's AC output to capture the PV production.
- Modbus addresses for both meters need to be different. This value is by default set to 1 so leave meter 1 as it is and set meter 2's address to 2. Three Phase Eastron meter can be configured on meter screen directly. Single Phase Eastron meter needs to be configured with a software on a laptop. Meter needs to be connected to laptop USB port via a RS485 to USB converter.
- On Solis hybrid inverter, the meter installation setting needs to be selected as "Grid+PV inverter"

- Firmware requirements for dual meter setup:
- Datalogger -> the latest eg.111fd
- S5-EH1P(3-6)K-L : HMI 3exx or 4B03
- S6-EH1P(3-6)K-L-AU: HMI EE03, DSP 0A03

How to setup Export limitation ->Same as Scenario 1

Scenario 3: existing PV + S6 Hybrid inverters with frequency shift function



This configuration is suitable for customers who need the existing PV system functioning during power outage.

In this case, Solis S6 Hybrid inverter needs to be installed, and dual meter configuration is recommended.

Please refer to the above scenarios for meter configuration and export limitation settings.

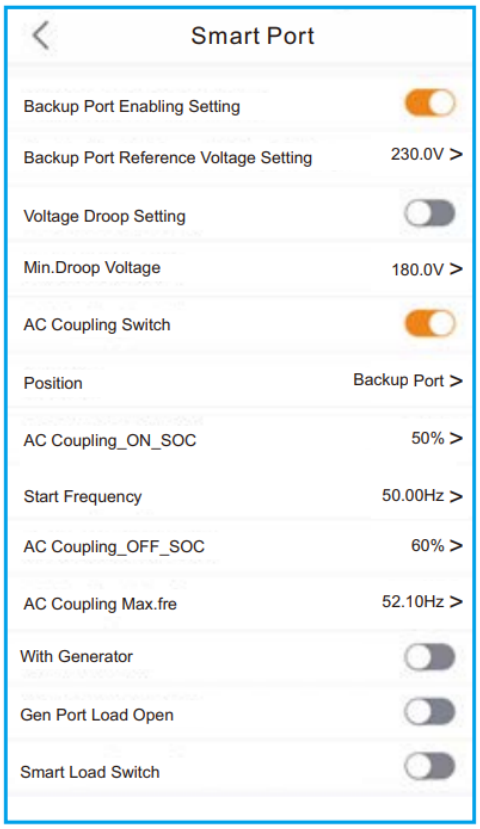
System Wiring

- The existing 3rd party inverter's AC output needs to be connected to Solis Hybrid inverter's backup port so that it can remain functioning during grid outage.
- When running in off-grid mode, the hybrid inverter can adjust frequency to control the PV inverter's generation.
- When the grid is restored, the PV inverter will transmit power to the grid through Solis hybrid inverter from the backup port to the grid port.

Configuration on SolisCloud APP

- Please find the settings under ***Smart Port*** page. See below screenshot.
- turn on ***AC Coupling switch***, set the position as ***Backup port***.

- ***AC_Coupling_OFF_SOC***: the grid-tie inverter's production will drop to 0 when battery SOC rise to this value.
- ***AC_Coupling Max.fre***: the grid-tie inverter's production will drop to 0 when the system frequency reaches this value. Default value 52Hz.



Supported Solis hybrid inverter models:

- S6-EH1P(3-6)K-L-AU
- S6-EH1P(3-8)K-L-PLUS (to be released soon in Australia)
- S6-EH3P(5-10)K-H-AU

Requirements of the existing PV inverter

- downstream PV inverter needs to support Freq-Watt response function.
- The PV inverter's max output power must be smaller than the Solis hybrid inverter power rating.