



On-grid Sunny Island

Presented by Solar Academy Australia

SI On-grid Training Agenda



Battery Inverter

Sunny Island

Flexible. Reliable.
Made in Germany.



SMA Solar Technology

- 1 Introduction
- 2 Hardware Requirements
- 3 Installation and Commissioning
- 4 FAQ
- 5 Questions

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Chapter 1: Introduction

Introduction

How can a Sunny Island help you be more self-sufficient.

The use of the Sunny Island in on grid applications is quite simple.

- On-grid feature has been available since Sunny Island -1 1 series.
- 3 operation modes
 - Self-consumption
 - Self-consumption + Backup
 - Backup Only

SMA Flexible Storage System with Sunny Island

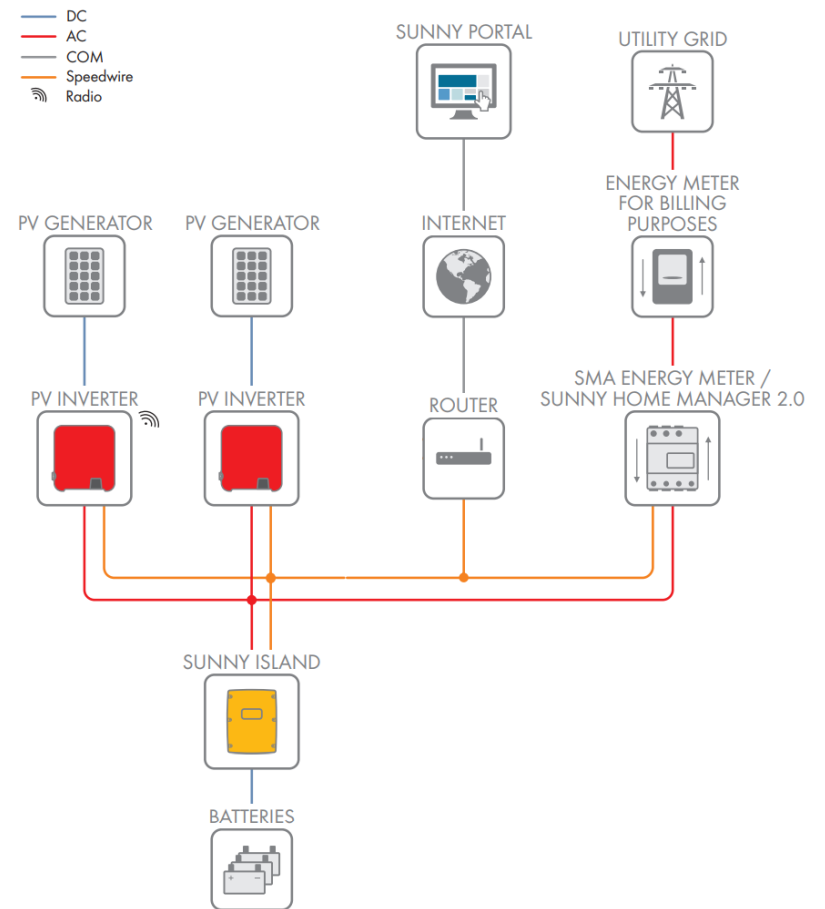
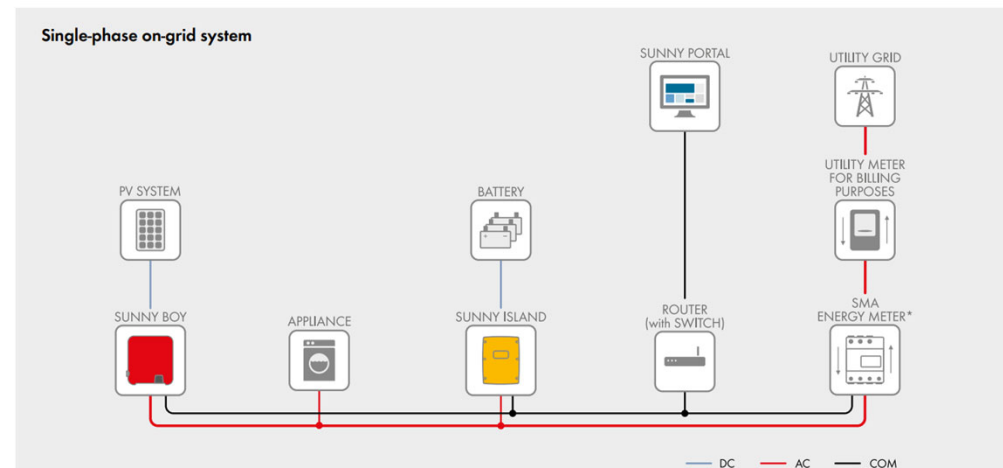


Figure 8: PV system with SMA Flexible Storage System with Sunny Island (example)

What are the different operating modes



- **Self Consumption**
 - Designed to minimise the consumption and feed-in to the grid.
 - Offsets the excess energy not used during the day to be used at other hours of the day.
- **Self Consumption and backup**
 - In addition to self consumption backup is available during a grid outage.
 - External transfer switch required(sold separately by 3rd party manufacturer)
- **Backup only**
 - Inverter only operates during a blackout.
 - External transfer switch required(sold separately by 3rd party manufacturer)

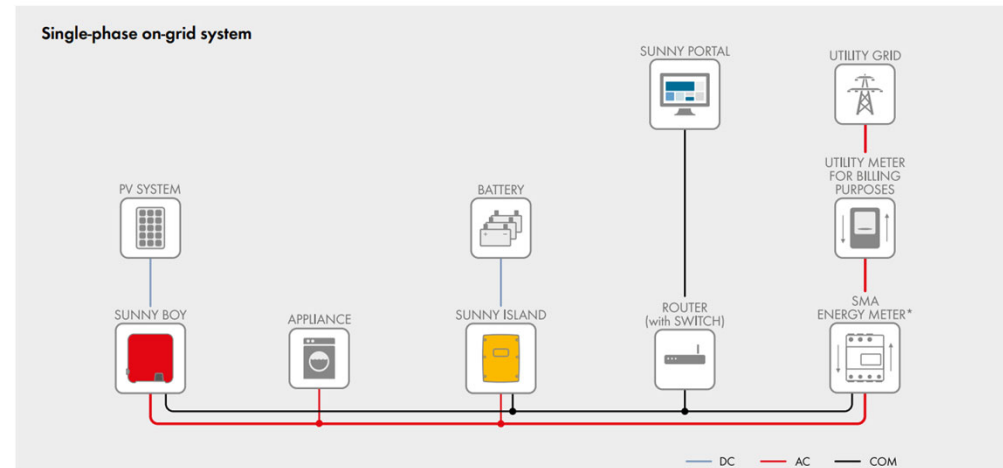


What is self consumption



- **Self Consumption**

- Designed to not export to the grid.
- To reduce the reliance on the grid when battery power is available.
- To reduce excess energy otherwise exported to the grid to be stored for later use.
- Requires a meter at the grid connection point to know when to charge/discharge.

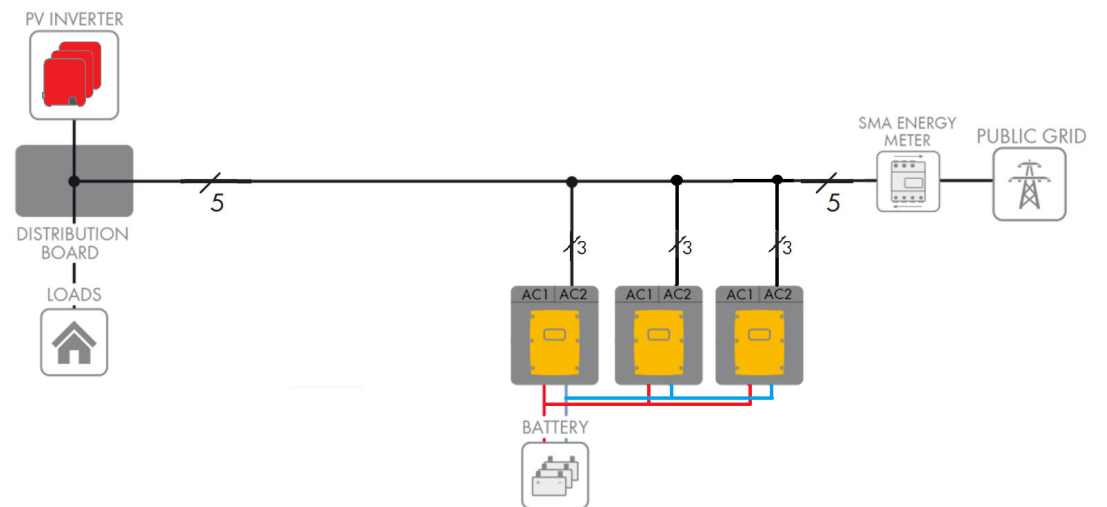


What are the possible configurations

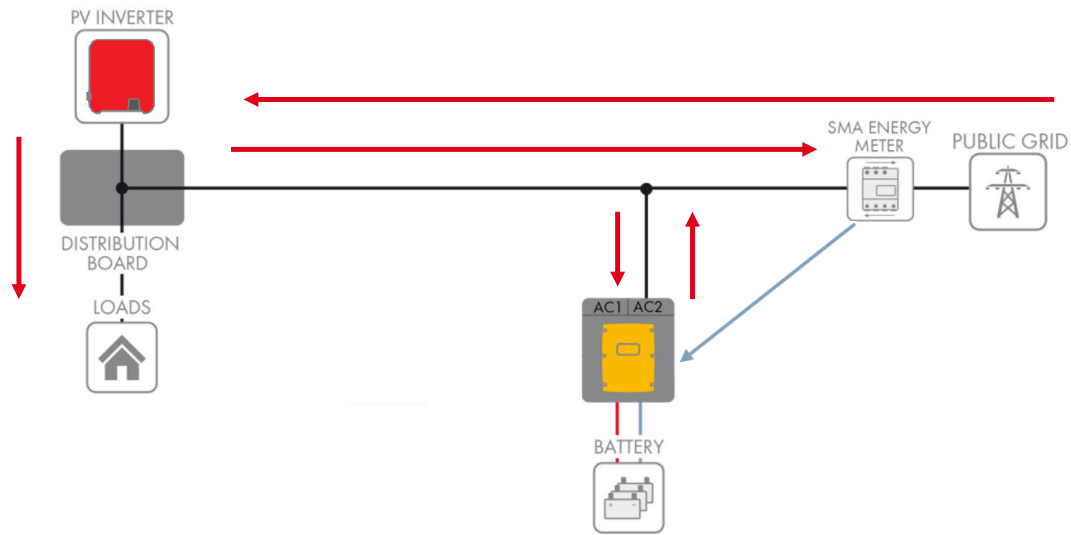


For on-grid there are 2 configurations possible.

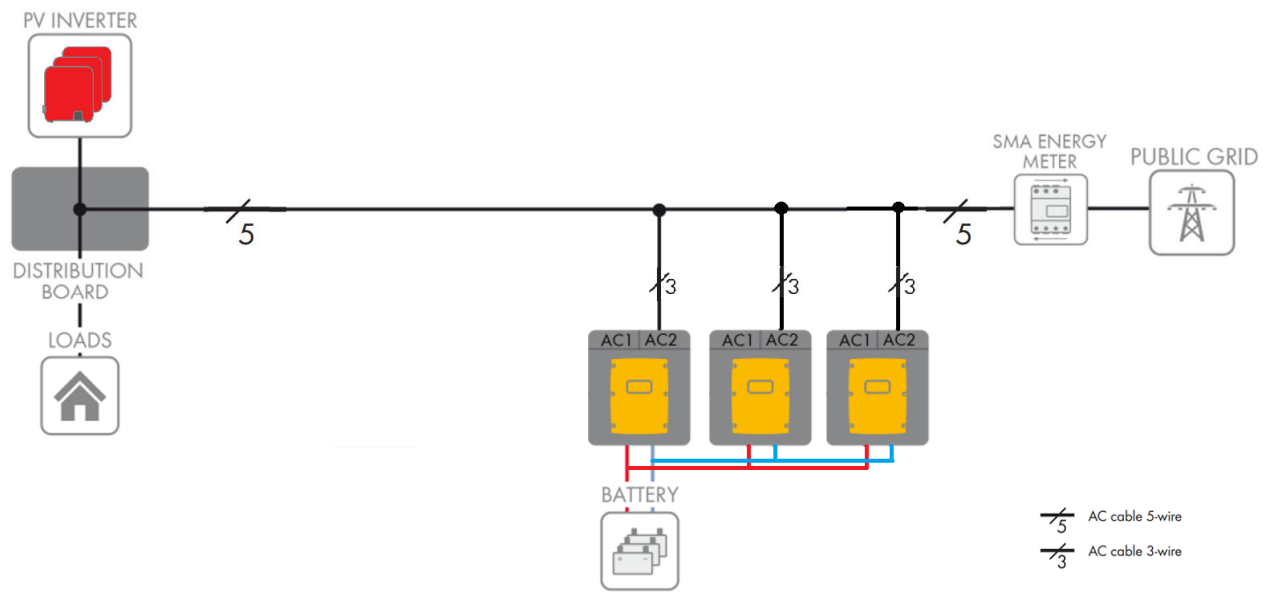
- 1 phase with 1x Sunny Island
- 3 phase with 3x Sunny Island



1 phase with a single Sunny Island



3 phase with a three Sunny Island





Chapter 2: Hardware Requirements

Sunny Island



- 1 phase with 1x Sunny Island
- 3 phase with 3x Sunny Island



Solar Inverter



Self Consumption

- AS/NZS 4777.2:2020 compliant inverter

Backup purposes

- AS/NZS 4777.2:2020 compliant inverter
- Supports FSPC



Battery



Lead Acid (LbA/VbA)

What batteries are compatible

- Majority of Lead Acid Batteries, consult with battery manufacturer for specific charging parameters.
- Lithium batteries – refer to the battery compatibility list.
 - Communication cable is required between Battery BMS and SI.



1. [SI-11/12/13 Battery Compatibility List](#)

Energy Meter



A compatible Meter is required.

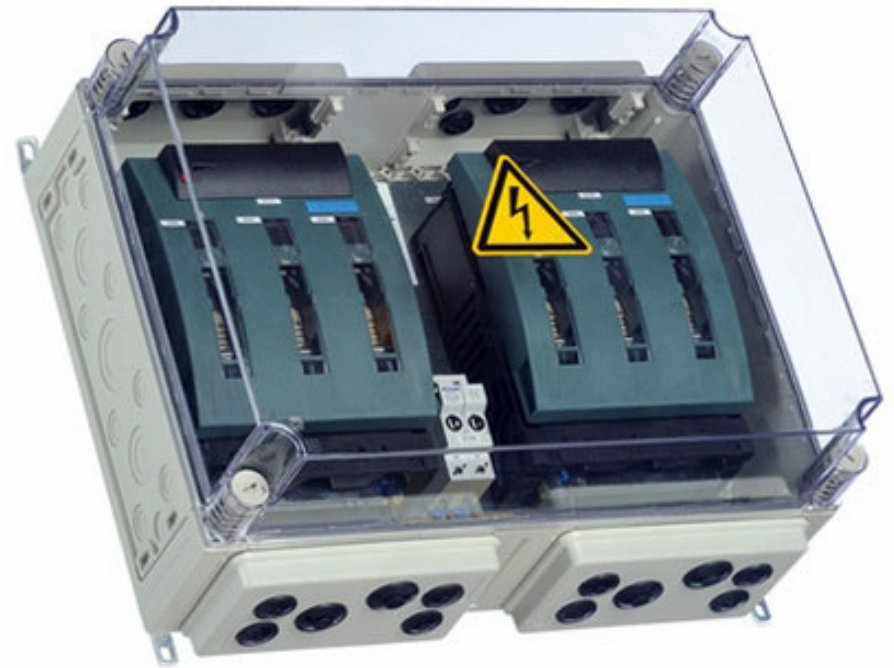
- **Home Manager 2.0** – recommended if you need to export limit and/or advanced control of charging of the SI system.
- **SMA Energy Meter 2.0** – minimum requirement, recommended to connect to the router.



DC Protection



As the Sunny Island does not have a built in DC isolator, make sure that a suitable Fuse/DC isolator is used between the inverter and the battery.



Transfer Switch – Required for Backup



A transfer switch is required to add Backup functionality to the Sunny Island.

- **Can be built with off the shelf components.**
- **SLD is available for creating the Transfer Switch.**
- **Can be purchased from select distributors.**

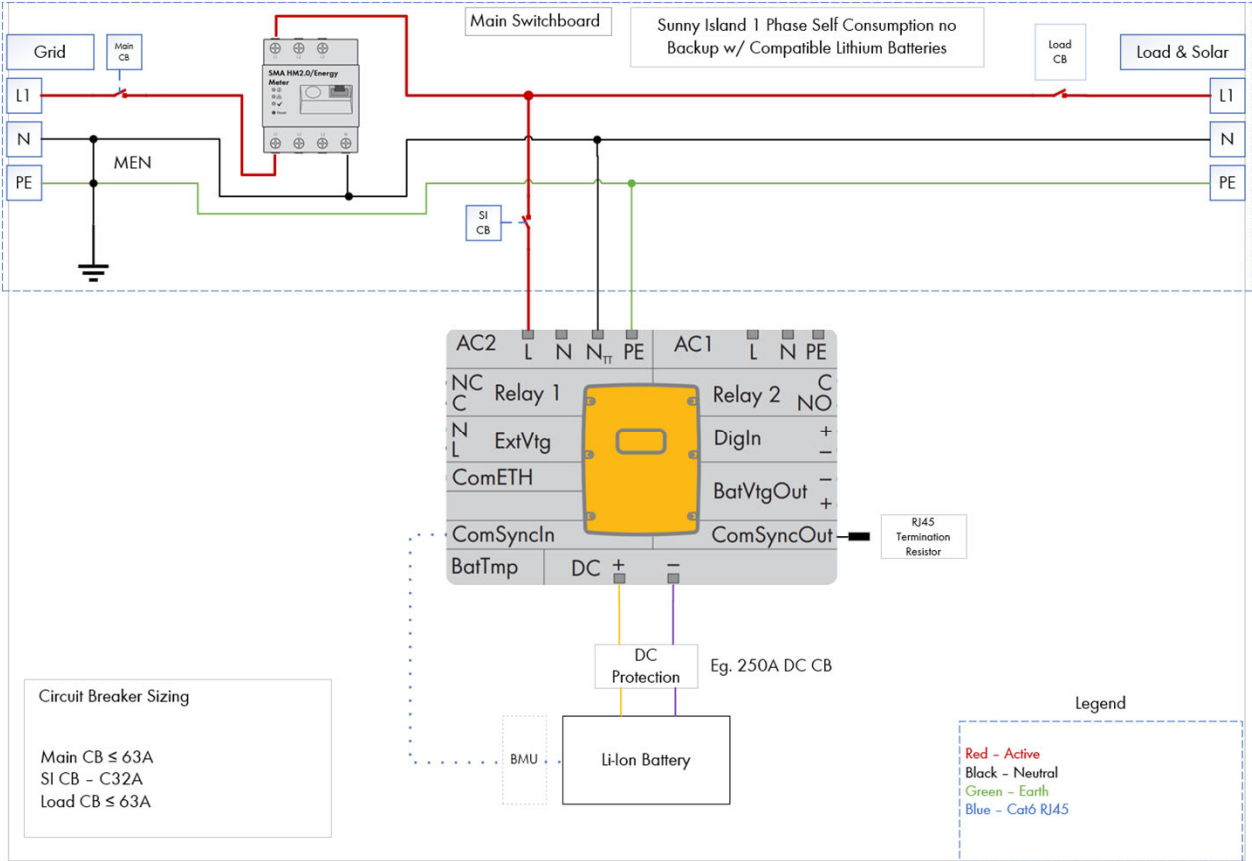




Chapter 3: Commissioning and Settings

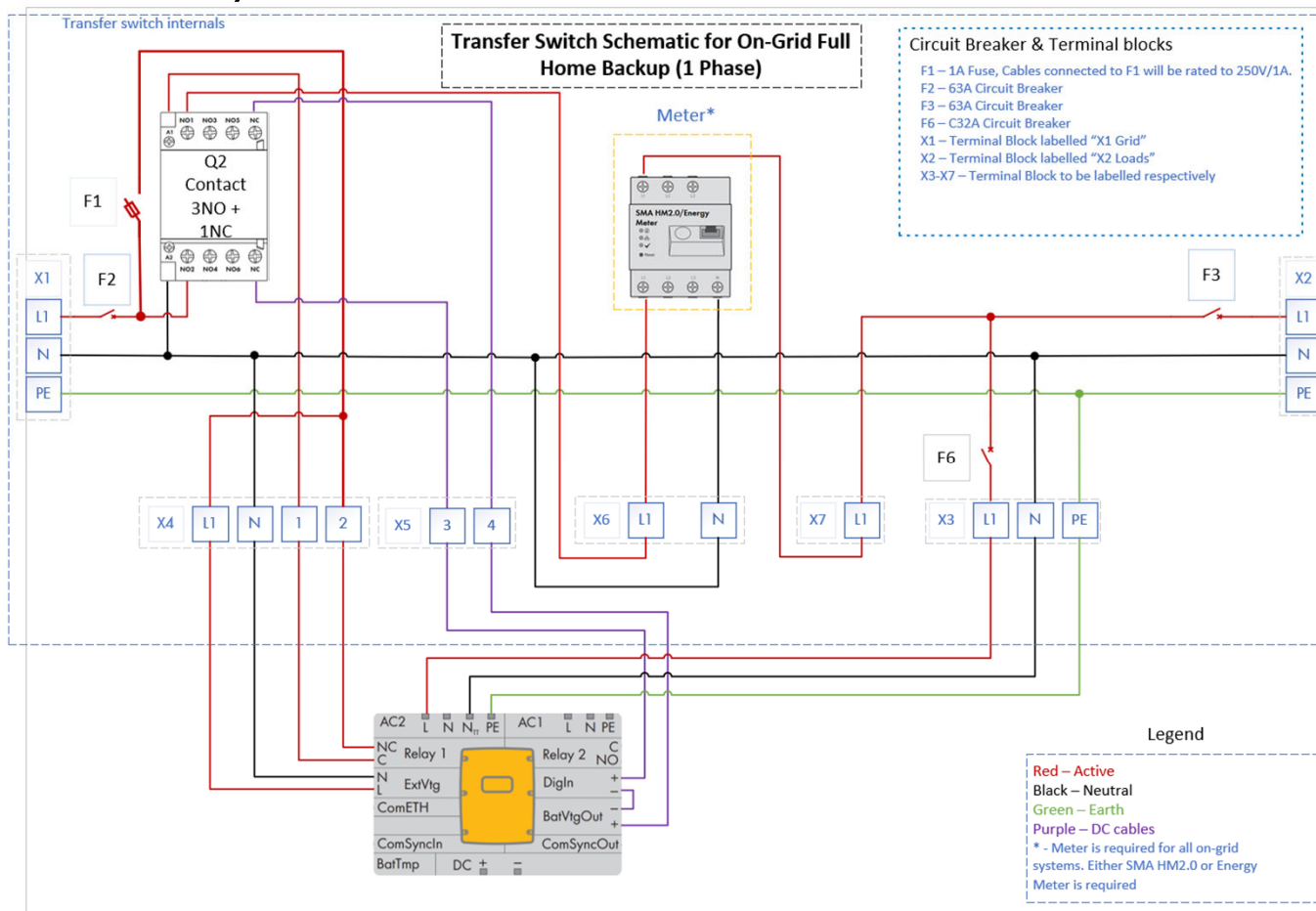


1 Phase Wiring

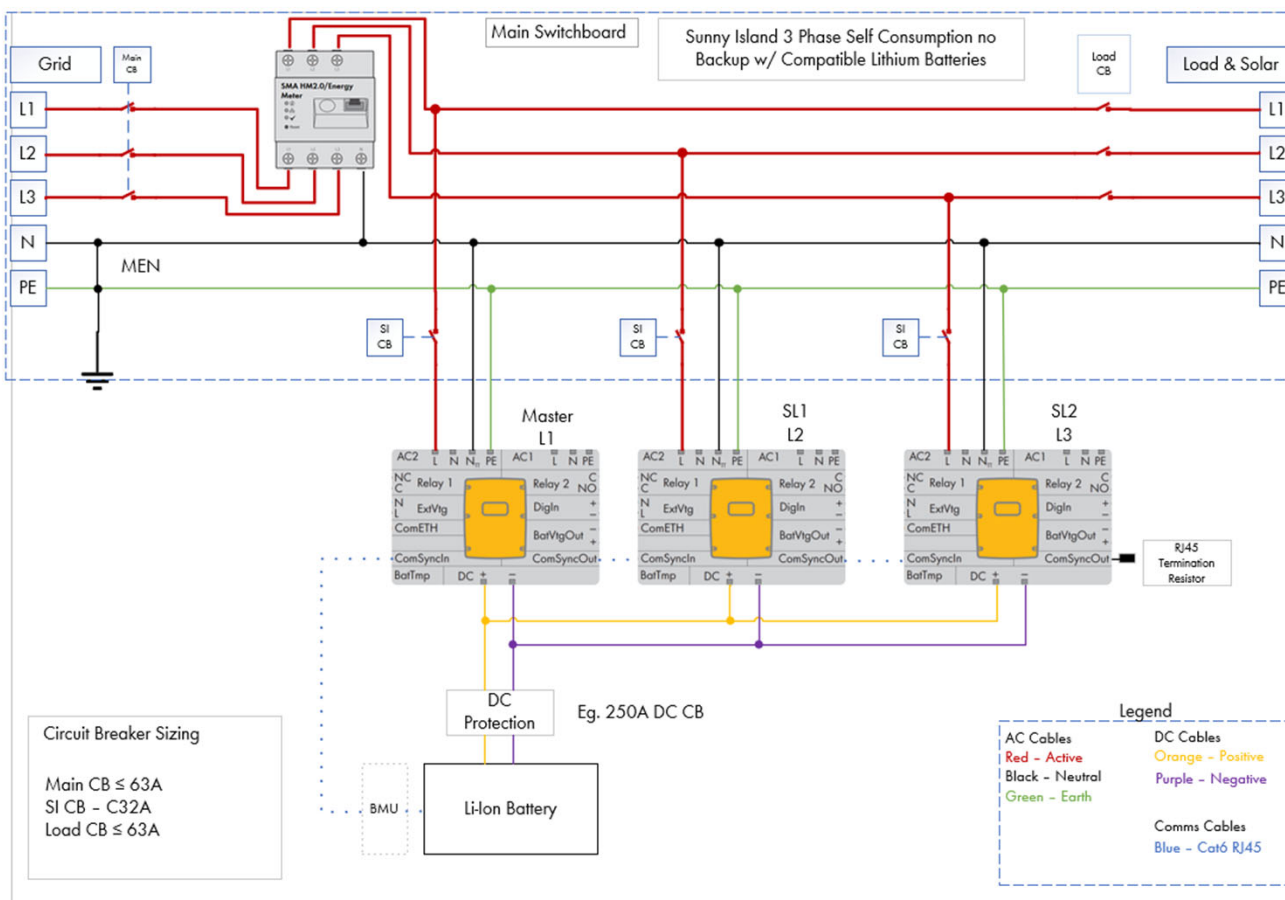




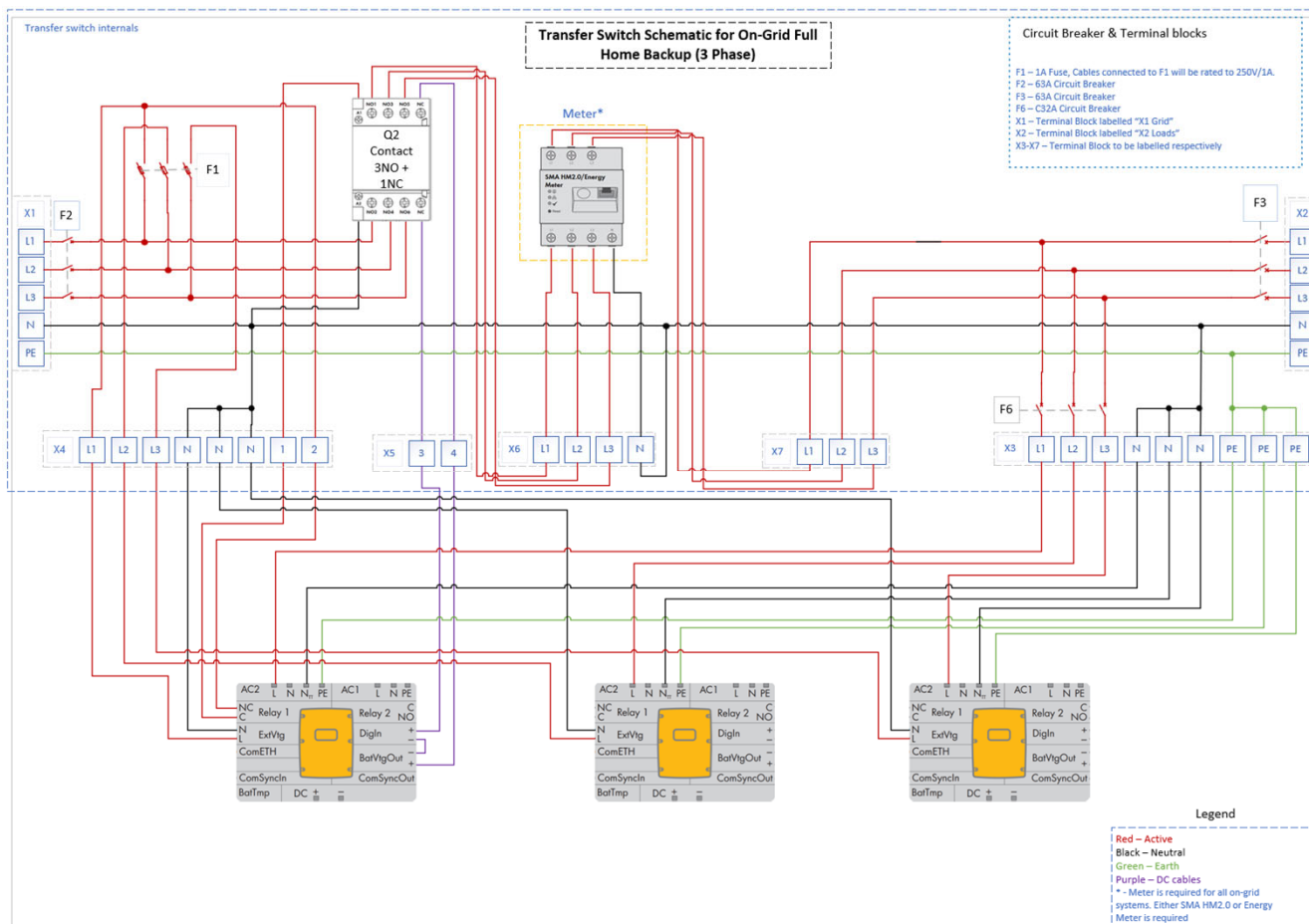
1 Phase with Backup



3 Phase Wiring



3 Phase with Backup



Commissioning






Using the setup assistant

- Log into the Sunny Island (master if more than 1 unit) and select *Configure with Installation Assistant*.
- Follow configuration wizard until step 3.
 - Make sure Meter on Speedwire shows a serial number before continuing.

Configure the energy meter

Selected energy meter

	Name of the energy meter	Serial number	Settings
	Meter on Speedwire		

Commissioning



Using the setup assistant

- Step 4 - Select Application
 - Select Application > *Functions for grid operation*
 - Operation Mode > *Self Consumption Only*
 - Set Country standard > *AS/NZS4777.2:2020 (A, B, C or NZ)*

Select application

Select application
Functions for grid operation

Selecting the Country Data Set

Country standard
[DE] VDE-AR-N4105:2018 Storage up to 4.6 kVA

Back

Operation mode

Self-consumption and backup
Backup only
Self-consumption and backup
Self-consumption only

Set country standard

[AU] AS/NZS 4777.2:2020 Storage Region A
[AT] TOR Generator Type A V1.0:2019
[AU] AS/NZS 4777.2:2020 Storage Region A
[AU] AS/NZS 4777.2:2020 Storage Region B
[AU] AS/NZS 4777.2:2020 Storage Region C
[AU] AS/NZS 4777.2:2020 Storage Region NZ
[BE] Synergrid C10/11:2019 LV Storage ext. Decoup. Protection Device
[BE] Synergrid C10/11:2019 LV Storage int. Decoup. Protection Device
[DE] VDE-AR-N4105
[DE] VDE-AR-N4105:2018 Storage > 4.6 kVA
[DE] VDE-AR-N4105:2018 Storage up to 4.6 kVA
[ES] Orden TED 749:2020 Type A Power generation systems ≤ 100 kW
[EU] EN50549-1:2018 LV
[IT] CEI0-21:2019 System >11.08 kW ext. Decoup. Protection Device
[IT] CEI0-21:2019 System ≤11.08 kW ext. Decoup. Protection Device
[PL] EN50549-1/19-PL: Typ A
[UK] ENA-EREC-G99/1:2018
[UK] ENA-EREC-G99/1:2018

Commissioning



Using the setup assistant

- Step 5 - System Configuration
 - Type > *Single or Three phase*
 - *If 3 phase make sure to select the phase rotation of the slave inverters.*
 - Cluster Type > *Single-Cluster*

System configuration

Type

Single phase

System configuration

Type

Three-phase

System

Single-cluster

Commissioning



Using the setup assistant

- Step 6 & 7 - Grid Management services
 - It is recommended to skip this step as the Sunny Island will not export to the grid and only used for self consumption.

Grid management service configuration

Active power mode Reactive power mode

Connected line conductors Phase L1

Grid connection point regulation
 On Off

Activating Unbalanced Load Limitation
 On Off

Commissioning



Using the setup assistant

- Step 8 - Battery Configuration
 - Make sure to select the right type of battery as this will affect the operation of the Sunny Island.

Battery configuration

Type

Lithium-Ion (Li-Ion) ▼
Flooded lead acid batt. (FLA)
Lithium-Ion (Li-Ion)
Valve Regulated Lead Acid battery (VRLA)

Nominal capacity

166	Ah
(50 Ah ... 10,000 Ah)	

Battery Protection



Self Consumption and Backup parameters

- Battery Protection
- Self Consumption
- Backup Reserve

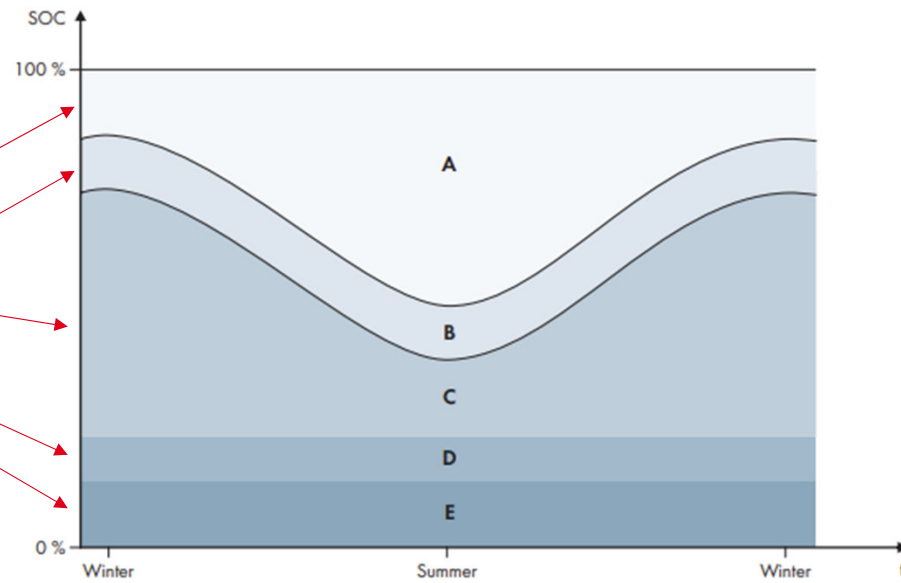
▼ Battery			
▼ Areas of application			
Lower lmt deep disch. protect area prior shutdown	3	%	(3 % ... 20 %)
Minimum width of deep discharge protection area	10	%	(2 % ... 50 %)
Minimum width of backup power area	0	%	(0 % ... 100 %)
Area width for conserving battery state of charge	5	%	(4 % ... 20 %)
Minimum width of self-consumption area	70	%	(0 % ... 100 %)
Most profitable month	June profitable		▼
Season operation active	Yes		▼

Battery Protection



Self Consumption and Backup parameters

- Battery Protection
- Self Consumption
- Backup Reserve





FAQ

What type of batteries can be used?



Lithium Ion

A list of compatible managed lithium batteries are published via the Lithium Ion documentation.

Lead Acid

Includes Flooded and Sealed lead acid batteries.

Due to difference in charging requirements it is critical that you speak with the battery manufacturer for the correct charging parameters before install.

Other battery technology

Not officially supported but some battery manufacturers will be able to provide charging parameters to be entered into the SI.

Limited support and warranty can be provided from SMA.

Why does AS/NZS 4777.2:2020 not appear



Please make sure that FW 3.30.12.R or newer is installed.

Firmware update is performed via the WebUI of the inverter only and will not be pushed from Sunny Portal.

Why does my SI only discharge till x%



The Sunny Island has built in battery protection based on the SOC.

This is designed to prevent deep discharge, default values will be different depending on battery technology & settings.

How to export limit my Sunny Island?



By default the Sunny Island will only use its power for supply loads and will not export to the grid.

Will my Sunny Island be able to do backup?



The Sunny Island requires extra hardware (transfer switch) for it to be able to perform backup.

This is available via selected distributors.

Also it is not an UPS so critical equipment should be installed with a dedicated UPS.

Can you add in a generator for on-grid system?



**We do not support this function as the Sunny Island uses the same input for grid/generator connection.
So when commissioned for on-grid applications the generator cannot be connected.**

Why do you need an Energy Meter?



For on-grid storage we require the energy meter because we need to know how much power is flowing at the grid connection point, this will then allow the Sunny Island to determine if it can charge or discharge.



Q&A

The background of the slide is a vibrant, high-angle photograph of a group of people on a boat. The boat is on a body of water, and the scene is set against a backdrop of lush green trees. The sun is high in the sky, creating a bright, warm atmosphere with lens flare effects. In the foreground, a person is jumping from the boat, their body suspended in mid-air with arms outstretched. Two other people are standing on the boat, looking towards the jumper. The overall mood is one of summer fun and outdoor recreation.

Thank you!

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