ESS Modes

Application guide

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Solar Energy Business Unit

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1 Introduction

There are ways to setup the Battery Energy Storage System (BESS) modes, as mandated by the upcoming UL3141, which can be implemented through various inverter settings. The four modes which can be set are “No Restriction”, “Import Only”, “Export Only”, and “No Exchange”. Each mode describes the relationship between the ESS and the Area EPS (Electric Power System) and how energy is exchanged between them.

The Primo GEN24 3.8-10.0 208-240 Plus inverter can achieve the ESS modes through combinations of the following features which are implemented at the inverter interface:

- Self-Consumption Optimization.
- Export Limitation.
- Allow battery charging from public grid.
- Allow batter charging from other generators in the home network.

A list of components to achieve the ESS mode are located below:

- Fronius GEN24 Plus inverter
- Fronius Smart Meter WR
- Compatible battery product (i.e, BYD Battery-Box Premium HVM)

Please select one mode from the chapters of this white paper which matches your jurisdiction requirements.

2 Import Only

2.1 Idea

The ESS can only import energy for charging from the utility grid without allowing any exporting of energy to the electric service provider from the Battery Energy Storage System.

2.2 Setup

Follow the below steps to activate the Import Only mode.

a. log in as Technician
b. Go to “Safety and Grid Regulations”
c. select “Export limitation”
d. Turn “Power Control” on
e. Enter the Total DC power of the entire system
f. Set “maximum grid feed in power” to **0%**

g. NO NEED to Turn “Export limit Control (Hard Limit Trip) on to fulfill Import Only mode
h. Set “Reduce inverter power to 0% if meter connection has been lost” to “ON”
i. (Optional) If there are multiple BESS, activate the feature “Limit multiple Inverters (only soft limit)”
j. Navigate to “Device Configuration”
k. Select the battery component.
l. Set “Allow battery charging from the public grid” to “ON”

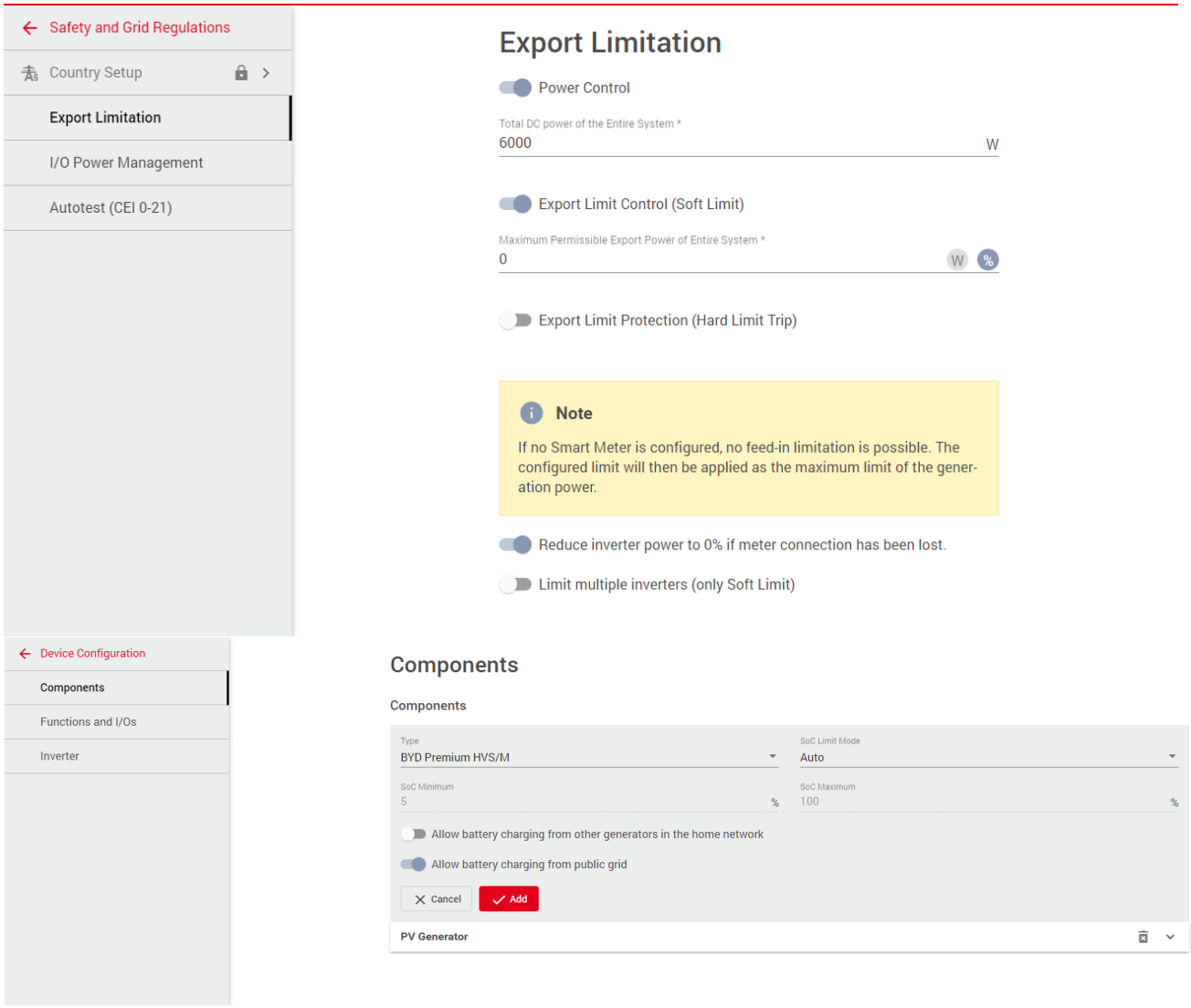


Figure 1: Example of the configuration of the Import Only ESS mode.

3 Export Only

3.1 Idea

The BESS can only Export energy for discharging without allowing any importing of energy from the electric service provider to the Battery Energy Storage System.

3.2 Setup

Follow the below steps to activate the Export Only mode.

a. log in as Technician
b. Navigate to the "Energy Management" Tab and click "Self-Consumption Optimization"
c. Automatic is already selected; select "Manual" instead
d. Select the operation mode "Feed-in"
e. Set "Target value at feed-in point" to **0W**
f. Navigate to "Device Configuration"
g. Select the battery component.
h. Set "Allow battery charging from the public grid" to "OFF"

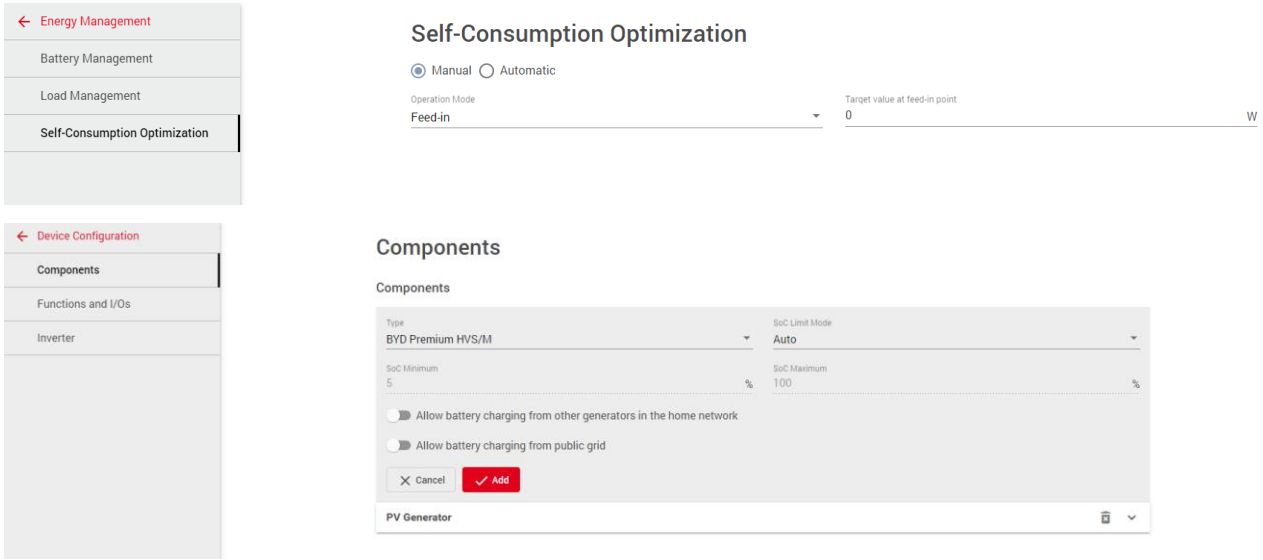


Figure 2: Example of the configuration of the Import Only ESS mode.

4 No Exchange

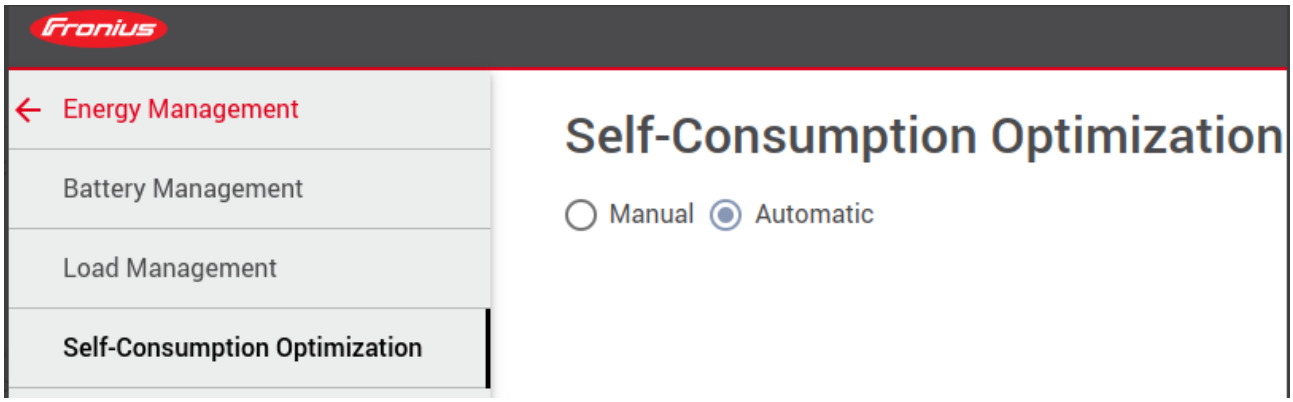
4.1 Idea

The Battery Energy Storage System cannot import or export any energy from or to the electric service provider.

4.2 Setup

Follow the below steps to activate the No Exchange mode.

a. log in as Technician
b. Navigate to the "Energy Management" Tab and click "Self-Consumption Optimization"
c. Select "Automatic"
d. Go to "Safety and Grid Regulations"
e. select "Export limitation"
f. Turn "Power Control" on
g. Enter the Total DC power of the entire system
h. Set "maximum grid feed in power" to **0%**
i. Navigate to "Device Configuration"
j. Select the battery component.
k. Set "Allow battery charging from the public grid" to "OFF"



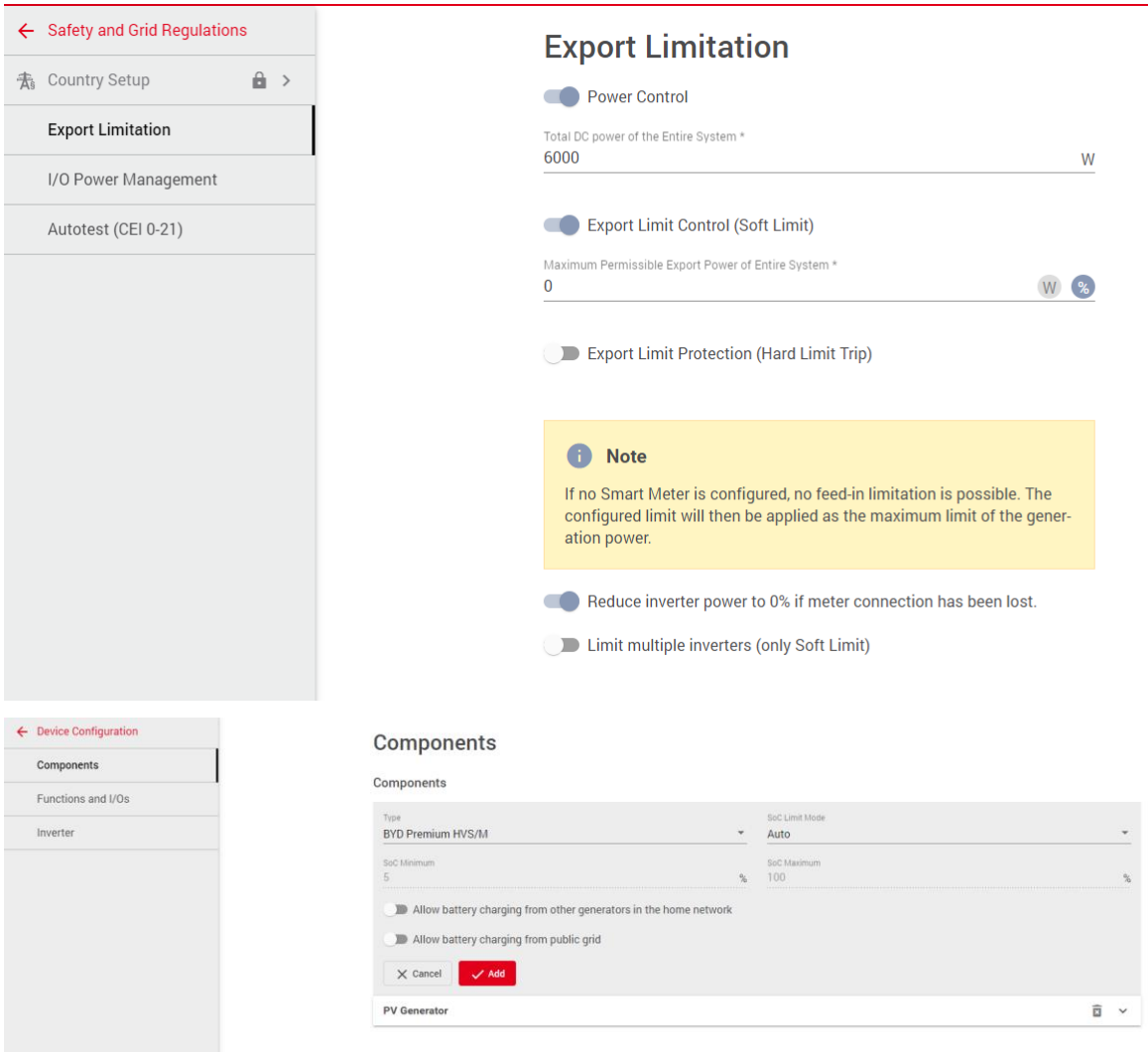


Figure 3: Example of the configuration of the No Exchange ESS mode.

5 No Restriction

5.1 Idea

There are no restrictions on the Battery Energy Storage System for importing/exporting to the electric service provider.

5.2 Setup

Follow the below steps to activate the No Restriction mode.

a. log in as Technician
b. Navigate to the “Energy Management” Tab and click “Self-Consumption Optimization”
a. Select “Automatic”

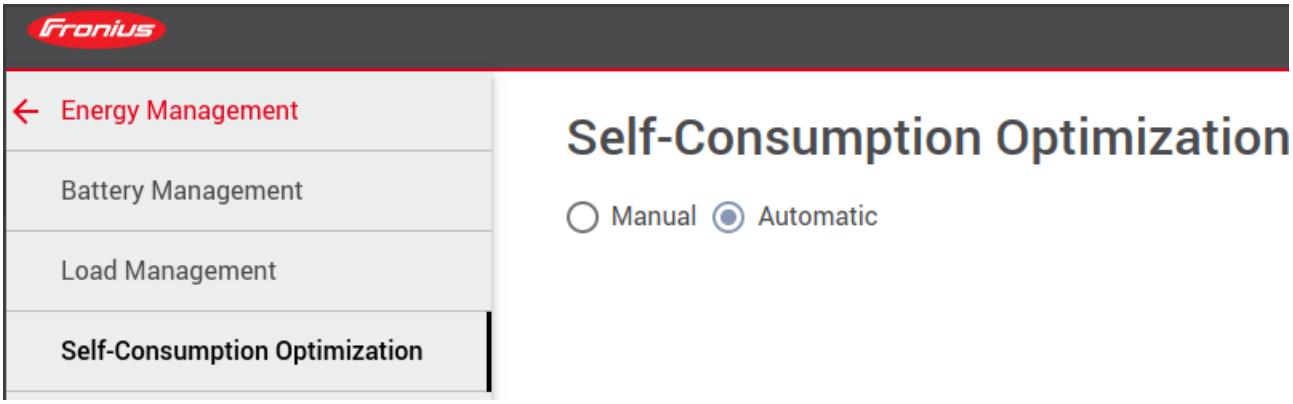


Figure 4: Example of the configuration of the No Restriction ESS mode.

6 Conclusion

If at any time a mistake is made during the setup of the energy storage system, you can factory reset the inverter to revert the settings back to the default settings. Each mode is designed to operate within the parameters of UL3141. If additional settings are adjusted for the inverter which conflicts with the settings of the ESS mode, the ESS mode may not operate as intended. If you require assistance in setting the energy storage system mode or would like additional information, please contact our Fronius Technical support at (219) 734-5500 or pv-support-usa@fronius.com.