solar edge

SolarEdge Export Limitation Guide

Europe and APAC
Version 2.0

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Contents

Chapter 1: Introduction

The SolarEdge Smart Energy Management solutions allow increasing the self-consumption of a site. One method used for this purpose is export limitation, which allows installing a larger PV system or a larger inverter without violating grid export (feed-in) limitations.

For export limitation, a SolarEdge device - inverter or a Control and Communication Gateway (CCG) - dynamically adjusts the PV power production in order to ensure that exported power does not exceed a preconfigured limit. To enable this functionality, an energy meter that measures export or consumption must be installed at the site.

To use export limitation, the inverter /CCG communication board firmware (CPU) version must be 2.8xx/3.8xx or higher. If the CPU version is lower, contact SolarEdge support for an upgrade file and instructions (support@solaredge.com).

This document describes system setup considerations and how to configure the system for export limitation.

Terminology

The following terms are used in this document:

- **Export**: The power injected to the grid.
- **Import**: The power purchased from the grid.
- **Export/ Import meter**: A meter that is installed at the grid connection point and reads the energy/power exported/imported to/from the grid.
- **Consumption**: The power consumed by the site.
- **Consumption meter**: A meter that is installed at the load consumption point and reads the energy/power consumed by the site.
- **Self-consumption**: The PV power consumed by the site and not fed into the grid.
- **Production**: The PV power produced by the PV system.
- **Production meter**: A meter that is installed at the inverter output and reads the energy/power produced by the PV system.
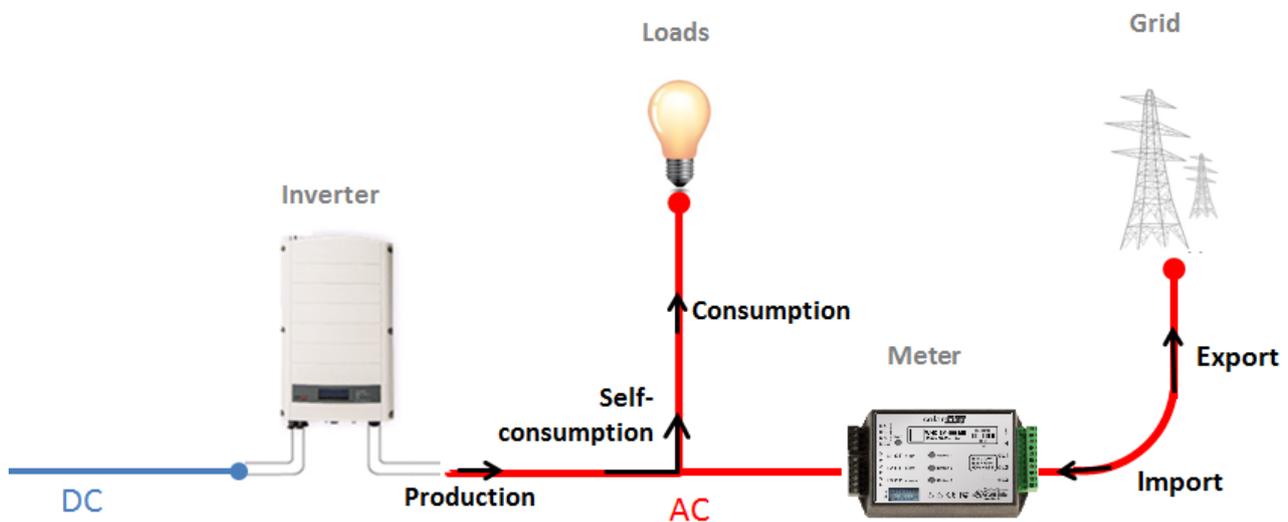

Figure 1: Terminology

Chapter 2: Connection Options

Export limitation is managed either by an inverter or by a CCG, which is the site's smart energy manager. The inverter/CCG reads the exported power from a meter installed at the grid connection point or reads the consumption from a meter installed at the load consumption point, and adjusts PV power production according to the preconfigured limit.
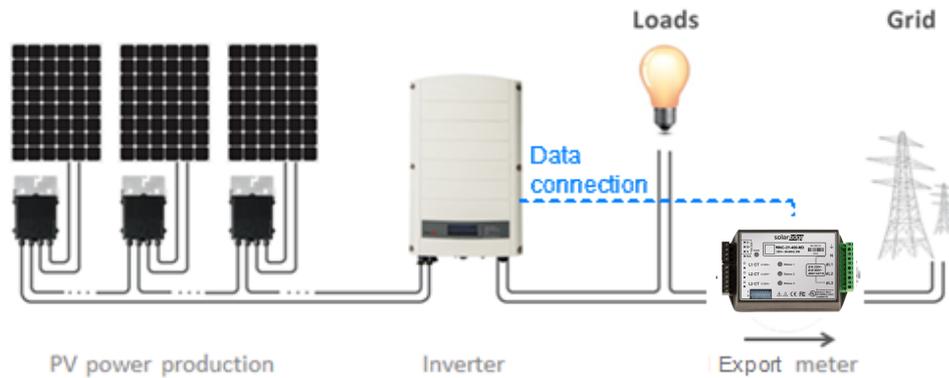

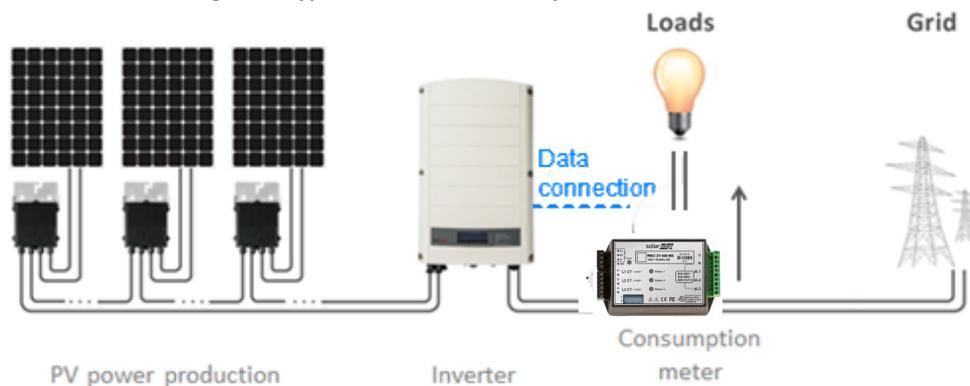**Figure 2: Typical installation with export meter**

Figure 3: Typical installation with consumption meter

The following sections describe meter types, location considerations, meter data displayed in the SolarEdge monitoring portal, and the most common connection scenarios for export limitation.

Meter Types and Installation Considerations

Two types of meters may be used: meters with an RS485 interface, which connect to the RS485 port of an inverter/CCG, and meters with an S0 interface, which connect to the Power Control connector of an inverter/CCG.

Meters with an RS485 interface are faster in response time. They can provide instantaneous power measurement and per phase information. When installed in the export location, RS485 meters provide both export and import data.

Meters with an S0 interface may be easier to utilize when the S0 meter is already available. The precision of S0 meters may be lower and as a result their resolution and response time is undetermined. Also, in case of a communication problem with the S0 meter, the total count will be lost. SolarEdge supports S0 meters that comply with the EN 62053-31 standard; this standard defines pulse duration (T_on) between 30mS and 120mS.

Both types of meters can be installed at the grid connection point (export reading) or at the load consumption point (consumption reading) to allow export limitation.

NOTE

When installing an S0 meter at the grid connection point, make sure that it counts the total positive energy, that is, the energy exported to the grid.

Using an RS485 meter can provide consumption information also when installed at the grid connection point.

The meter should measure all grid phases or consumption phases, that is, when a single-phase inverter is connected to a three-phase grid - a three phase meter is required.

For SolarEdge meter installation, refer to the meter installation guide, available on the SolarEdge website at http://www.solaredge.com/files/pdfs/solaredge-meter-installation-guide.pdf..

For installation of S0 meter, refer to Installation and Configuration of Meters with an S0 Interface.

> **NOTE**
>
> *For installations in Australia*: According to Energex and Ergon Energy Connection Guideline (reference EX BMS4286 Ver 1.1 and EE STNW1170 Ver 1.1), power limiting devices must meet the following:
> - If current transformers or sensors are used, they shall have their terminals sealed.
> - The terminals of the power restricting relay/management system shall also be capable of being sealed to prevent tampering with connections – this could include a Perspex cover or lockable cabinet that the equipment is housed in.
>
> Sealing equipment is not supplied by SolarEdge.

Single Inverter System

In a single inverter system, the meter is connected directly to the RS485 port of the inverter, which serves as the smart energy manager.
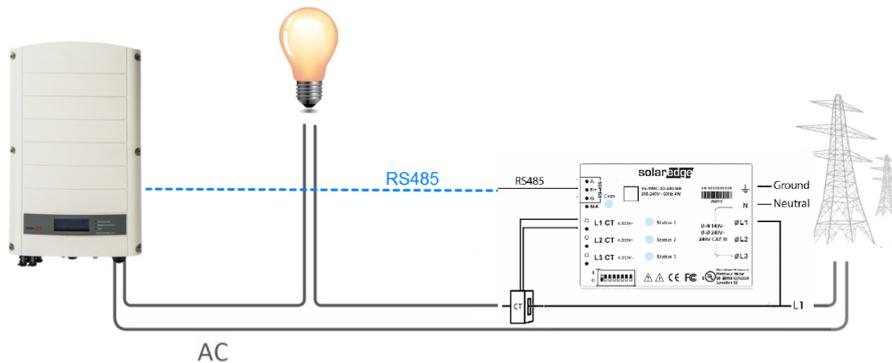
Figure 4: Single-inverter[1] connection with RS485 meter[2]

When using an S0 interface meter, the meter is connected to the inverter via an S0 meter adapter cable (available from SolarEdge) .

Figure 5: Single-inverter connection with S0 meter[2]

---

[1]This figure shows a single phase inverter connection. For three phase inverter 3 CTs are required.

[2]The figures show a system with a meter measuring export, but are applicable to systems with meters measuring consumption as well.

Multiple Inverter System

Multiple Inverter System with RS485 Meter

When using an RS485 meter for multiple inverter export limitation, two options are available:

- The meter is connected to the RS485 port of one of the inverters. This inverter serves as the smart energy manager. In this case, as the inverter's RS485 port is occupied by the meter, use the RS485 Expansion Kit (available form SolarEdge), or ZigBee communication between the inverters.

- The meter is connected to one of the RS485 ports of a CCG. The CCG is the smart energy manager. The CCG's second RS485 port can be used to create an RS485 bus for communication between the inverters. This option is illustrated in *Figure 6*.
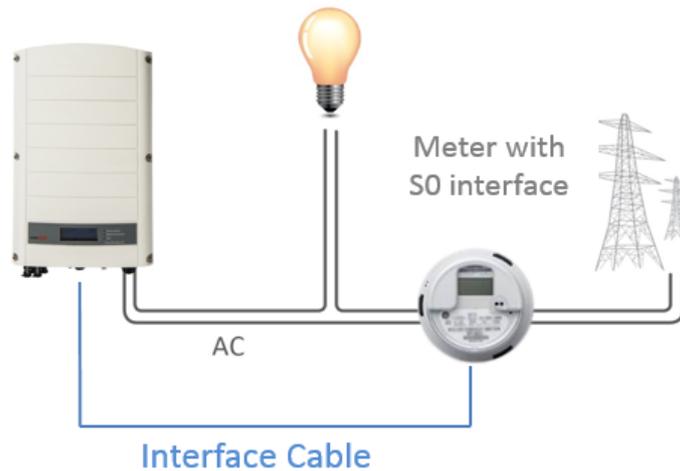

Figure 6: Multi-inverter connection with CCG, RS485 meter and RS485 communications

Multiple Inverter System with S0 Meter

When using an S0 interface meter for multiple inverter export limitation, the meter is connected via an S0 meter adapter cable (available from SolarEdge) to one of the inverters or to a CCG. This inverter or CCG serves as the smart energy manager. RS485 or ZigBee communication can be used between the inverters.
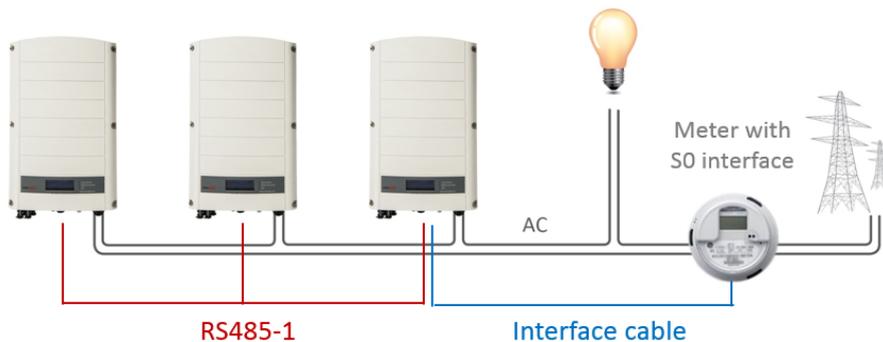

Figure 7: Multi-inverter connection with S0 meter and RS485 communications

Chapter 3: Installation and Configuration of Meters with an S0 Interface

Meters with an S0 interface transmit energy measurements with pulses, using a dry contact relay. The pulses are then counted and represented as kWh values.

When using S0, the response time and accuracy depends on pulse resolution and pace of kWh changes; response time can be up to ~1min.

S0 meters are not provided by SolarEdge. Any meter with an S0 interface and minimum 500 pulses per kWh may be used. The meter connects directly to the smart energy manager (typically an inverter) using an S0 meter adapter cable available from SolarEdge.

The S0 meter adapter cable has an 8-pin connector on one end, which connects to the inverter/CCG, and a 2-pin connector at the other end, which connects to a cable from the meter.

The meter cable is not provided by SolarEdge. Its requirements are:

- Min. 2 wires (twisted pair). A CAT5 cable can be used.
- Wire cross section area: 0.2- 1mm² / 24-18 AWG
- Cable outer diameter range: 2-4mm / 0.08-0.16"
- Max. length: 50m / 164 ft

S0 Meter Installation

▶ **To connect the AC power to the meter:**

For detailed information on how to install the meter and connect the AC side refer to the meter installation manual.

▶ **To connect the meter to the inverter:**

1. Open the inverter cover as described in its manual.
2. Remove the seal from one of the openings in communication gland #2 at the bottom of the inverter and insert the wires from the meter through the opening.
3. Connect the wires from the meter cable to the 2-pin connector of the S0 cable: Connect the Minus (-) wire to the S- pin and the Plus (+) to the S+ pin.
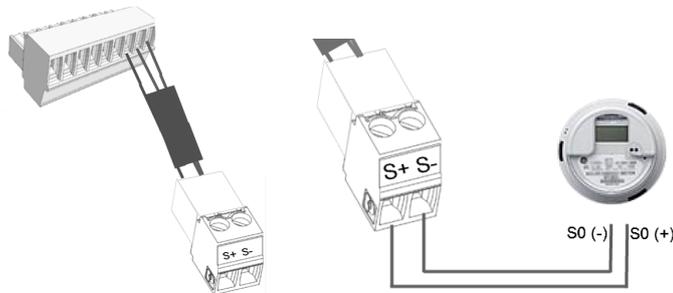
Figure 8: S0 meter connection to the S0 adapter cable

4. Check the S0 adapter cable connections for loose wires, and that S0+ and S0- are not crossed.
5. Connect the 8-pin connector of the S0 cable to the Power Control connector on the inverter communication board.
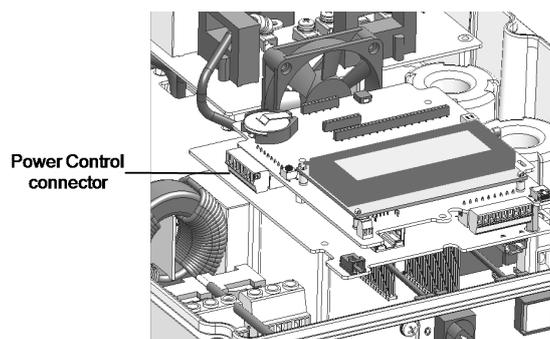
Figure 9: Inverter communication board

S0 Meter Configuration

▶ ### To configure an S0 meter:

1. Enter Setup mode, scroll to the **Communication** menu and select **GPIO Conf**. The GPIO (General Purpose Input Output) Device Type screen is displayed, enabling to select the GPIO configuration options:

```
Device type <RRCR>
```

RRCR: GPIO is configured to work with RRCR

S0 Meter: GPIO is configured to work with S0 meter

2. Select **Device Type ➜ S0 meter**. The following screen is displayed:

```
Device type <MTR>
S0 conf<NONE>
```

3. Select **S0 conf**. The following configuration screen is displayed:

```
Meter Func.<None>
PLS per kWh <1000>
```

4. Select **Meter Func.** and select either **Export** or **Consumption** according to the actual meter location/measurement:

```
Export
Consumption
Import
None
```

5. In the **S0 Conf** menu, select **PLS per kWh**. Enter a value between 250 and 10000 for the number of pulses per kWh reading, according to the installed meter specification.

6. Exit the Setup mode.

Chapter 4: Export Limitation Configuration

This step should be done after installing and configuring a meter.

In a multi-inverter system, the limit is configured in the smart energy manager (the inverter or CCG that is connected directly to the meter).

> **NOTE**
> The smart energy manager is the device connected to the meter. The manager does not necessarily have to be the communication master.

> **NOTE**
> Calculated meter readings (also referred to as "virtual meters"), such as self-consumption, are calculated using the data measured by the meter and the inverters. Virtual meters are only sent when Energy Manager is enabled. If virtual meter information is required, but export limitation is not, the Energy Manager should be enabled without any site limit setting (default).

▶ **To configure export limitation in the SolarEdge device:**

1. Enter Setup mode, scroll down to the **Power Control** menu and select it. A menu similar to the following is displayed:

```
Grid Control <En>
Energy Manager
RRCR Conf.
Reactive Pwr Conf.
Active Pwr Conf.
Phase Balance <Dis>
Wakeup Conf.
P(f)
Advanced
Load Defaults
```

2. Select **Energy Manager**. The available Smart Energy Management options are displayed:

```
Limit Control<Dis>
Energy Ctrl <Dis>
```

3. Select **Limit Control**. The following screen is displayed:

```
Control Mode<Dis>
Site Limit<->
```

4. Select **Control Mode**. the following screen is displayed:

```
Disable
Export Ctrl.
Production Ctrl.
```

5. Select **Export Ctrl.**[1]

6. Select **Site Limit** and enter the limit value at the connection point, in kW. The default value is none (-), which means that the system is not limited.

```
Site Limit[kW]
[kWh]
xxxxxxx.xxx
```

> **NOTE**
> The value you enter here is the overall limit to which the site export will be restricted, whether you use the Total or Per Phase limit control modes (as explained in the next step).

7. In the **Limit Control** menu, select **Limit Mode**. The following is displayed:

```
Total

Per Phase
```

---

[1]Production Control, which limits the system production, may also be selected. For more information, refer to the Production Limitation Application Note.

- **Per Phase**: For three phase grid connections, the inverter sets the limit on each phase to 1/3 of the total site limit. Use this mode if there is a limit on each individual phase.
- **Total**: The Site Limit is the total export power on all the phases combined. Reverse current on one phase will count as negative power and can compensate for another phase.

8. Select one of the limit modes above. The selected mode is displayed in the Limit Control screen as **<PH>** for phase or **<Tot>** for total.

For an example of setting the site limit value, refer to *Appendix B*.

▶ To verify export limitation operation:

1. Press the Enter button or the LCD external button until reaching the Smart Energy Manager status screen, showing the site level data:

```
Site  Limit:      7.0kW
Site  Prod:      10.0kW
Site  Export:     4.0kW
Self-consume:     6.0kW
```

Site Limit: The limit that was defined for the site

Site Prod: The power produced by the site

Site Export: The power that is fed into the grid. This line is displayed only if the control mode is Export

Self-consume: The PV power consumed by the site. This line is displayed only if the control mode is Export

2. Check the Power Control status screen of any inverter:

```
PWR  CTRL:  REMOTE
PWR  Limit:  10.04kW
Cos  Phi:  0.9
Power  Prod:7000W
```

PWR CTRL: The power control status:

- **REMOTE** - Communication with the smart energy manager is confirmed/validated. This status should appear in all inverters.
- **LOCAL** - The power is controlled locally (e.g. by a fixed limit), or this inverter limits the PV power production to its relative portion of the export power limit, as a result of disconnected communication with the smart energy manager. If this status appears, check the communication to the smart energy manager or the communication to the meter.

Cos Phi: The ratio between active to reactive power

Power Prod: The power produced by the inverter

PWR Limit: The inverter maximum output power set by the smart energy manager

Appendix A: Meter Information Displayed in the Monitoring Portal

If your device is connected to the SolarEdge server, you can view the meter's readings in the monitoring portal. Verify that the meter type is set correctly in the Admin page > Logical Layout > Meter details:
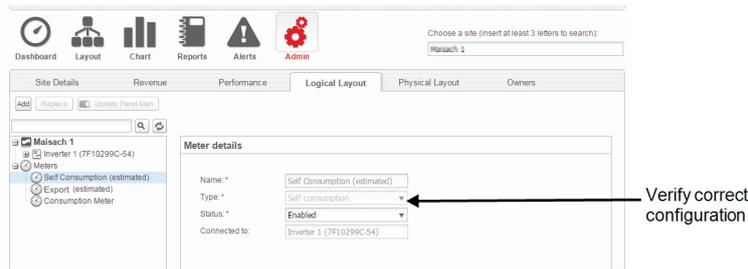

Figure 10: Setting the Meter details in the monitoring portal

Calculated meter readings (also referred to as "virtual meters"), such as self-consumption, are calculated using the data measured by the meter and the inverters.

The data from the inverters and from installed meters is displayed in the Dashboard and Charts tabs of the monitoring portal. The displayed data depends on the meter(s) location: grid connection point (export), or load consumption point (consumption). The following tables detail the displayed information per meter location.

No meter installed:

Data	Displayed in Monitoring Dashboard	Displayed in Monitoring Charts
Production	✔	✔
Consumption	X	X
Self-consumption	X	X
Export	X	X
Import	X	X

Consumption meter:

| Data | RS485 Meter | | S0 Meter | |
	Displayed in Monitoring Dashboard	Displayed in Monitoring Charts	Displayed in Monitoring Dashboard	Displayed in Monitoring Charts
Production	✔	✔	✔	✔
Consumption	✔	✔	✔	✔
Self-consumption	✔ (calculated)	✔ (calculated)	✔ (calculated)	✔ (calculated)
Export	X	✔ (calculated)	X	✔ (calculated)
Import	X	X	X	X

Export meter:

| Data | RS485 Meter | | S0 Meter[1] | |
	Displayed in Monitoring Dashboard	Displayed in Monitoring Charts	Displayed in Monitoring Dashboard	Displayed in Monitoring Charts
Production	✔	✔	✔	✔
Consumption	✔ (calculated)[1]	✔ (calculated)[2]	X	X
Self-consumption	✔ (calculated)	✔ (calculated)	✔ (calculated)	✔ (calculated)
Export	X	✔	X	✔
Import	X	✔	X	X

---

[1]When installing an S0 meter at the grid connection point, make sure that it counts the total positive energy, that is, the energy fed into the grid.
[2]Available from CPU version 2.10xx/3.14xx

Appendix B: Examples of Total and Per Phase Export Limitation

The following examples illustrate the behavior of a system with export limitation when using the **Total** and the **Per Phase** Limit Mode options described in *Export Limitation Configuration* on page 9, step 7.

- **Total**: The Site Limit is the total export power on all the phases combined, that is, the combined production minus the combined consumption, as represented in the formula below. Reverse current on one phase will count as negative power and can compensate for another phase.

$$Export_{Total} = \sum_{x=1}^{3} Production_{phase(x)} - \sum_{x=1}^{3} Consumption_{phase(x)}$$

- **Per Phase**:
  - *For single-phase (split phase) Inverters*: Each phase will be limited to 1/2 of the configured site limit, that is, the export power is the sum of the production minus the consumption of each phase, as represented in the formula below. The division of the limit to the two phases is done internally; the user enters the total site limit.
  - *For three-phase inverters*: Each phase will be limited to 1/3 of the configured site limit, that is, the export power is the sum of the production minus the consumption of each phase, as represented in the formula below. The division of the limit to the three phases is done internally; the user enters the total site limit.

$$Export_{PerPhase} = \sum_{x=1}^{3} (Production_{phase(x)} - Consumption_{phase(x)})$$

The example system has 12kW DC power connected to a three-phase inverter with a maximum AC power of 10kW.

In each example, the Site Limit and Limit Mode configuration are detailed. Each example includes various production and consumption scenarios and details how the export, consumption and import power values are influenced by the conditions. The tables in each scenario detail the following values:

- Potential PV Production
- Consumption (load)
- Production
- Export power
- Self-consumption
- Import power

In addition, the Smart Energy Management status screen is presented with the values applicable to each scenario.

Example 1 - 70% Export Limit, Total Limit Mode

In this example, the system export power limit is set to 70% of max DC power, that is, to 70% x 12kW = 8.4kW, and the **Total** Limit Mode is used.

> **NOTE**
> Systems in Germany complying with the EEG2012 70% limitation would be configured using the Total option.

▶ **To configure this setting:**

1. Enter 8.4 in the **Set Site Limit** screen (refer to *Export Limitation Configuration* on page 9):

```
Set Site Limit
8.4
```

2. Select **Limit Control ➔ Limit Mode ➔ Total**.

Scenario A

PV potential is greater than the loads, which are not distributed evenly across the 3 phases.

The loads are powered from the PV only, and the excess PV power is fed into grid.

PV production is not limited, because the export power is lower than the limit.

	Phase 1 [kW]	Phase 2 [kW]	Phase 3 [kW]	Total [kW]
Potential PV Production	3.33	3.33	3.33	10
Consumption (load)	3	3	0	6
Production	3.33	3.33	3.33	10
Export	Max ($\sum$Production − $\sum$Consumption, 0) = Max(4,0)			4
Self-consumption	Min ($\sum$Production, $\sum$Consumption) = Min(10,6)			6
Import	$\sum$Consumption − $\sum$Self consumption			0

The Smart Energy Manager status screen displays the following:

```
Site Limit:    8.4kW
Site Prod:    10.0kW
Site Export:   4.0kW
Self-consume:  6.0kW
```

Scenario B

PV potential is equal to the loads, which are not balanced across the 3 phases.

The loads are powered from the PV only.

Although on phase 1 the consumption is greater than the production, the difference is compensated for by phase 3, where the production is

greater than the consumption. Therefore, PV production is not limited, because there is no export power.

	Phase 1 [kW]	Phase 2 [kW]	Phase 3 [kW]	Total [kW]
Potential PV Production	2	2	2	6
Consumption (load)	3	2	1	6
Production	2	2	2	6
Export	Max ($\sum$Production − $\sum$Consumption, 0) = Max(0,0)			0 (no export)
Self-consumption	Min ($\sum$Production, $\sum$Consumption) = Min(6,6)			6
Import	$\sum$Consumption − $\sum$Self consumption			0

The Smart Energy Manager status screen displays the following:

```
Site Limit:    8.4kW
Site Prod:     6.0kW
Site Export:   0.0kW
Self-consume:  6.0kW
```

Scenario C

PV potential is lower than the loads, which are not balanced across the 3 phases.

The loads are powered from the PV and from the grid.

PV production is not limited, because there is no export power.

	Phase 1 [kW]	Phase 2 [kW]	Phase 3 [kW]	Total [kW]
Potential PV Production	1.66	1.66	1.66	5
Consumption (load)	3	2	1	6
Production	1.66	1.66	1.66	5
Export	Max ($\sum$Production – $\sum$Consumption, 0) = Max(0,0)			0 (no export)
Self-consumption	Min ($\sum$Production, $\sum$Consumption) = Min(5,6)			5
Import	$\sum$Consumption – $\sum$Self consumption			1

The Smart Energy Manager status screen displays the following:

```
Site Limit:    8.4kW
Site Prod:     5.0kW
Site Export:   0.0kW
Self-consume:  5.0kW
```

Scenario D

PV potential is greater than the loads, which are not balanced across the three phases.

The loads are powered from the PV only, and the excess PV power is fed into grid. In addition, PV production is limited to maintain the export

limit.

	Phase 1 [kW]	Phase 2 [kW]	Phase 3 [kW]	Total [kW]
Potential PV Production	3.33	3.33	3.33	10
Consumption (load)	1	0	0	1
Production	3.13	3.13	3.13	9.4
Export	Max ($\sum$Production – $\sum$Consumption, 0) = Max (8.4,0)			8.4
Self-consumption	Min ($\sum$Production, $\sum$Consumption) = Min (9.4,1)			1
Import	$\sum$Consumption – $\sum$Self consumption			0

The Smart Energy Manager status screen displays the following:

```
Site Limit:    8.4kW
Site Prod:     9.4kW
Site Export:   8.4kW
Self-consume:  1.0kW
```

Example 2 – 0W Export Limit, Per Phase Limit Mode

In this example the system export power limit is set to 0W – no power is fed into the grid, and the Per Phase Limit Mode is used.

> **NOTE**
>
> Systems in Australia complying with zero export regulations would be configured with a Site Limit of 0 and using the Per Phase option.

▶ To configure this setting:

1. Enter 0.0 in the **Set Site Limit** screen (refer to):

```
Set Site Limit
0.0
```

2. Select **Limit Control** ➔ **Limit Mode** ➔ **Per Phase**.

Scenario A

PV potential is lower than the loads, which are distributed evenly across the 3 phases.

The loads are powered from the PV and from the grid.

PV production is not limited, because there is no export power.

	Phase 1 [kW]	Phase 2 [kW]	Phase 3 [kW]	Total [kW]
Potential PV Production	3.33	3.33	3.33	10
Consumption (load)	4	4	4	12
Production	3.33	3.33	3.33	10
Export	0	0	0	0
	Σ [Max (Production – Consumption, 0)] = Σ [Max (-0.66,0) (-0.66,0) (-0.66,0)]			
Self-consumption	3.33	3.33	3.33	10
	Σ [Min (Production, Consumption)] =Σ [Min (3.33,4) (3.33,4) (3.33,4)]			
Import	∑Max(Consumption – Self consumption – Export, 0)			2

The Smart Energy Manager status screen displays the following:

```
Site  Limit:      0.0kW
Site  Prod:      10.0kW
Site  Export:     0.0kW
Self-consume:  10.0kW
```

Scenario B

PV potential is greater than the loads, which are not balanced across the 3 phases.

To maintain a 0W export limit for each phase individually, the production on phase 3 must be limited. Since the three phase inverter is always phase-balanced, the production on phases 1 and 2 is limited accordingly.

	Phase 1 [kW]	Phase 2 [kW]	Phase 3 [kW]	Total [kW]
Potential PV Production	3.33	3.33	3.33	10
Consumption (load)	4	3	1	8
Production	1	1	1	3
Export	0	0	0	0
	Σ [Max (Production – Consumption, 0)] = Σ [Max (-3,0) (-2,0) (0,0)]			
Self-consumption	1	1	1	3
	Σ [Min (Production, Consumption)] =Σ [Min (1,4) (1,3) (1,1)]			
Import	∑Max(Consumption – Self consumption – Export, 0)			5

The Smart Energy Manager status screen displays the following:

```
Site  Limit:      0.0kW
Site  Prod:       3.0kW
Site  Export:     0.0kW
Self-consume:   3.0kW
```

Example 3 – 3kW Export Limit, Per Phase Limit Mode

In this example, the system export power limit is set to 3kW, and the Per Phase Limit Mode is used. This means that exporting power on each phase is limited to 1kW.

NOTE

Systems in Netherlands connected to an AC panel with 3x80A main fuses would be configured using the Per Phase option, with a 55kW Site Limit.

▶ **To configure this setting:**

1. Enter 3.0 in the **Set Site Limit** screen (refer to *Export Limitation Configuration* on page 9):

```
Set  Site  Limit
3.0
```

2. Select **Limit Control** ➔ **Limit Mode** ➔**Per Phase**.

Scenario A

PV potential is lower than the loads, which are distributed evenly across the 3 phases.

The loads are powered from the PV and from the grid.

PV production is not limited, because there is no export power.

	Phase 1 [kW]	Phase 2 [kW]	Phase 3 [kW]	Total [kW]
Potential PV Production	3.33	3.33	3.33	10
Consumption (load)	4	4	4	12
Production	3.33	3.33	3.33	10
Export	0	0	0	0
	Σ [Max (Production – Consumption, 0)] = Σ [Max (-0.66,0) (-0.66,0) (-0.66,0)]			
Self-consumption	3.33	3.33	3.33	10
	Σ [Min (Production, Consumption)] =Σ [Min (3.3,4) (3.3,4) (3.3,4)]			
Import	$\sum$Max(Consumption – Self consumption – Export, 0)			2

The Smart Energy Manager status screen displays the following:

```
Site Limit: 3.0kW
Site Prod: 10.0kW
Site Export: 0.0kW
Self-consume: 10.0kW
```

Scenario B

PV potential is greater than the loads, which are not balanced across the 3 phases

To maintain a 1kW export limit for each phase individually, the production on phase 3 must be limited. Since the three phase inverter is

always phase-balanced, the production on phases 1 and 2 is limited accordingly.

	Phase 1 [kW]	Phase 2 [kW]	Phase 3 [kW]	Total [kW]
Potential PV Production	3.33	3.33	3.33	10
Consumption (load)	4	3	1	8
Production	2	2	2	6
Export	0	0	1	1
	Σ [Max (Production – Consumption, 0)] = Σ [Max (-2,0) (-1,0) (1,0)]			
Self-consumption	2	2	1	5
	Σ [Min (Production, Consumption)] =Σ [Min (2,4) (2,3) (2,1)]			
Import	$\sum$Max(Consumption – Self consumption – Export, 0)			2

The Smart Energy Manager status screen displays the following:

```
Site Limit: 3.0kW
Site Prod: 6.0kW
Site Export: 1.0kW
Self-consume: 5.0kW
```

Scenario C

PV potential is greater than the loads, which are not balanced across the 3 phases.

To maintain a 1kW export limit for each phase individually, the production on phase 3 must be limited. Since the three phase inverter is

always phase-balanced, the production on phases 1 and 2 is limited accordingly.

In this scenario, despite the system production being limited as in the previous scenario, the limitation is less severe because the loads are

more balanced, and this allows increased self-consumption.

	Phase 1 [kW]	Phase 2 [kW]	Phase 3 [kW]	Total [kW]
Potential PV Production	3.33	3.33	3.33	10
Consumption (load)	3	2	2	7
Production	3	3	3	9
Export	0	1	1	2
	Σ [Max (Production – Consumption, 0)] = Σ [Max (0,0) (1, 0) (1, 0)]			
Self-consumption	3	2	2	7
	Σ [Min (Production, Consumption)] =Σ [Min (3,3) (3,2) (3,2)]			
Import	∑Max(Consumption – Self consumption – Export, 0)			0

The Smart Energy Manager status screen displays the following:

```
Site Limit:      3.0kW
Site Prod:       9.0kW
Site Export:     2.0kW
Self-consume:    7.0kW
```

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