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Introduction
Introduction

SolarEdge’s StorEdge Solution can be used for various applications that enable energy independence for system owners, by utilizing a battery to store power and supply power as needed. The StorEdge Solution is based on and managed by the StorEdge Inverter with Backup (referred to as “StorEdge inverter” or “inverter” throughout the document) for both PV and battery management, and is compatible with the Tesla Powerwall Battery.

This document describes the main operating modes and applications of the StorEdge Solution with Backup.

NOTE
The StorEdge inverter requires CPU version 3.18xx and above. If an upgrade is required contact SolarEdge support for an upgrade file and instructions.

StorEdge Operation Modes

Backup Power with Smart Energy Management

Use some of the stored energy for backup power and the rest for smart energy management applications (detailed below). The StorEdge inverter monitors the grid, and when there is a power outage, it automatically switches to backup mode, disconnecting from the grid and supplying power to backed-up loads.

Figure 1: Backup with Smart Energy Management
**Backup Power Only**

Use stored energy for backup power only. The StorEdge inverter monitors the grid, and when it is down it automatically switches to backup mode, disconnecting from the grid and supplying power to backed-up loads. In cases where battery charging from the grid is permitted, this mode can be used without PV modules.

![Backup Power Only Diagram](image)

**Figure 2: Backup power only**

**Smart Energy Management Only**

Use stored energy for smart energy management applications (detailed below). In cases where battery charging from the grid is permitted, this mode can be used without PV modules.

![Smart Energy Management Only Diagram](image)

**Figure 3: Smart Energy Management only**
In addition to these three modes, the StorEdge inverter can be used without a battery as a PV inverter with no StorEdge applications.

NOTE
For configuring the inverter when not using any StorEdge applications, refer to Appendix E - StorEdge Inverter without a Battery.

NOTE
The StorEdge inverter requires CPU version 3.18xx and above. If an upgrade is required contact SolarEdge support for an upgrade file and instructions.

All modes can be used together with the export limitation application. For details on export limitation, refer to http://www.solaredge.com/files/pdfs/export_limitation_application_note_NA.pdf.

Smart Energy Management Applications

Two of the main Smart Energy Management applications are described in this document:

- **Maximize self-consumption** – the battery is automatically charged and discharged to meet consumption needs and reduce the amount of electricity purchased from the grid.

- **Charge/discharge profile programming** – the system operates according to a configurable charge/discharge profile, for example for time of use arbitrage (charge the battery from PV/grid when tariffs are low and discharge it when tariffs are high).

System Components

The StorEdge Solution with Backup comprises the following components:

- **StorEdge Inverter with Backup** – the single phase StorEdge inverter manages battery and system energy in addition to its traditional functionality as a DC-optimized PV inverter. The inverter connects to the battery through fuses and supplies 12V to the battery for thermal control.

  NOTE
  The StorEdge inverter requires CPU version 3.18xx and above. If an upgrade is required contact SolarEdge support for an upgrade file and instructions.

  A **revenue grade StorEdge Inverter with Backup** is available. It includes a built-in revenue grade meter that measures inverter production.

  NOTE
  When using a revenue grade StorEdge inverter:
  - The built-in meter is pre-configured as **Meter 1** and as a **Production** meter.
  - The **Prot** and **##** in the Communication status screen will increase by 1. For example, if there is an internal meter, an external meter and a battery, the screen should display Prot=03 and ##=03.

- **Auto-transformer** – The auto-transformer is used for phase balancing in case of backup power: it supplies the inverter’s 240V output to the 120V backed-up loads. It is not required if the system is working in Smart Energy Management mode.

- **SolarEdge Electricity Meter** – the meter is used by the inverter for import/export or consumption readings, and manages the battery charge/discharge accordingly for Smart Energy Management applications; the meter readings are displayed in the SolarEdge monitoring portal. The meter is optional for Backup Power only mode.

- **Battery Pack for Daily Cycle Applications** – a DC-coupled battery designed to work with the StorEdge solution

- **Backed-up loads panel** – loads that should be supplied with backup power in case of a power outage should be wired through a separate load panel. In systems with multiple StorEdge inverter, a backed-up loads panel is required for each inverter.

- **Optional: RS485 Expansion Kit** – the kit is used for systems with more than one SolarEdge inverter or systems with a third party controller, and provides an additional RS485 port within the inverter for connection.

System Operating Modes and Configurations

There are various StorEdge system configurations, suitable for different PV systems user needs.

Some system configurations have multiple StorEdge inverters. The inverters are connected to each other with RS485 and appear under a single site in the monitoring portal.
The next chapters describe each of these configurations for each of the three modes described above, and the required system setup via the inverter LCD and internal buttons and via the monitoring portal (where applicable).

- **Backup Power with Smart Energy Management - System Configurations**, page 5.
- **Backup Power Only - System Configurations**, page 18.
- **Smart Energy Management Only - System Configurations**, page 27.

**Related Documentation**

For detailed installation and configuration instructions of the system components, refer to the following installation guides:


**Backup Power with Smart Energy Management - System Configurations**

In this mode, some of the battery energy is reserved for backup power and the rest can be used for Smart Energy Management applications. In case of a power outage, the inverter automatically switches to backup mode, disconnecting from the grid and supplying power to backed-up loads.

The configurations described in this section are the following:

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1 Additional capacity and power with one inverter will be supported in H2 2016 and will require new battery and inverter hardware.
For configurations with more than one SolarEdge inverter, the inverters are connected to each other with RS485, with one inverter configured as the master and connected to the SolarEdge monitoring server. An RS485 Expansion Kit is installed in the inverter for connection of the meter on a second RS485 bus.

**System Connection**

The following diagram illustrates the connection of the system components when using the basic configuration for backup power with Smart Energy Management: one StorEdge inverter, one auto-transformer, one meter and one battery. For enlarged segments of this diagram, refer to Appendix D – Detailed System Connection.

**NOTE**

Install the GFDI (Ground-Fault Detector Interrupter) in accordance with applicable local standards and directives.

![Diagram](image)

**Figure 4: Backup Power with Smart Energy Management - Basic Configuration**

The following diagram shows the RS485 termination switch location on the inverter communication board (SW7) and on the RS485 Expansion Kit (RS485 module).

![Diagram](image)

**Figure 5: RS485 termination switch location**
The following diagram illustrates the connection of the system components when using two batteries. In this case, an external fused combiner box is needed. For enlarged segments of this diagram, refer to Appendix D – Detailed System Connection.

![Diagram of Backup Power with Smart Energy Management - Two-Battery Configuration]

Figure 6: Backup Power with Smart Energy Management - Two-Battery Configuration
Basic Configuration

This configuration is based on one of each of the StorEdge components and is suitable for most residential systems.

To configure the meter and the battery:

1. Terminate the battery connected on the RS485 bus:

2. Set the battery’s dip switches to ID 24: Move all dip switches to position 0 (to the right):

3. Make sure the wiring is connected according to the diagram above.

4. Upgrade the inverter firmware using the card supplied with the StorEdge Inverter. This will also configure the meter and the battery.
5 Check the Communication status screen and verify that the battery and the meter are properly connected and configured:
   Prot – Displays how many devices are communicating with the inverter on the RS485-1 bus.
   ## – Displays how many devices are configured to communicate with the inverter on the RS485-1 bus.

![Communication status screen]

6 If Dev is not MLT, the system is not pre-configured and requires full configuration. Proceed with step 9 below. Otherwise, proceed with steps 6-8.
   - If ## < 02, the meter and/or the battery are not configured correctly. Check the configuration. Proceed with step 9 below.
   - If Prot < 02, the meter and/or the battery is not communicating correctly. Check the configuration and wiring connection.
   - If Prot = 02 – the battery and meter are configured and communicating properly. Proceed with step 7 below.

7 Set the meter CT rating to the correct value in order to complete the meter setting. Select Communication  RS485-1 Conf  Meter 2. The meter configuration screen is displayed. Configure the meter:

8 Set the CT value that appears on the CT label: CT Rating  <xxxxA> (use the up/down arrows to set each character, press Enter to set the character and move to the next one, long press on Enter to set the value)

9 Select Communication  RS485-1 Conf  Device Type  Multi-devices. A list of devices is displayed.

10 Select Meter 2. The meter configuration screen is displayed. Configure the meter:

11 Select Device Type  Revenue Meter

12 Set the CT value that appears on the CT label: CT Rating  <xxxxA> (use the up/down arrows to set each character, press Enter to set the character and move to the next one, long press on Enter to set the value)

13 Select Meter Func. and select the function according to the meter CT(s) location:
   - Export + Import: meter CT(s) at grid connection point (as shown in Figure 7: Backup Power with Smart Energy Management - Basic configuration)
   - Consumption: meter CT(s) at load consumption point

14 Select Battery 1. The battery configuration screen is displayed. Configure the battery:

15 Select Device Type  Battery Pack

To setup Backup Power:

1 To Enable backup capability:
   - Enter Setup mode to display the main menu:

   ![Main menu]

   - From the main menu, select Backup Conf.
   - Select Backup and set it to Enable.
To set a minimum battery charge level, so that the battery will always have energy stored in case backup power is needed, do the following:

- Select Power Control ➔ Energy Manager ➔ Storage Control. The following is displayed:

  ![Backup RSVD<%PV>]

- Select Backup RSVD and set the required level as percentage of the battery capacity. Set %PV according to user requirement.

After configuring the meter, the battery and backup power, proceed with Smart Energy Management application configuration for maximize self-consumption or for charge/discharge profile programming.

- **To set up Maximize Self-consumption:**

- **To set up Charge/Discharge Profile Programming:**
  2. Profile loading can be done remotely from the monitoring portal or locally from the inverter using a micro-SD card. Refer to Appendix A – Creating a Charge/Discharge Profile on page 32 for information on creating a charge/discharge profile file.
  3. For remote loading:
     - In the monitoring portal, click the Admin icon and select the Energy Manager tab.
     - Select Set profile from server and from the drop down list select a profile. If no available profile is suitable, contact SolarEdge support.
     - Press Save and in the pop-up window select Yes to apply the profile. The profile will be loaded to the inverter upon next connection (normally within 5 minutes; if communications are down it will be uploaded when communications are restored)

**NOTE**

If the system is connected to the server with a GSM modem and with a SolarEdge data plan, loading can take place up to 4 hours after applying from portal.

For local loading using a micro-SD card:

- Select Energy Manager ➔ Set Calendar.
- Insert the card with the profile file to the slot on the inverter communication board.
- Select Load SD.

If the charge/discharge profile includes battery charge from the AC grid, this must be enabled, either from the inverter or as part of the profile file. Refer to the Appendix A – Creating a Charge/Discharge Profile for information on enabling this as part of the file.

**NOTE**

Use battery charge from AC grid only if permitted by local regulations.

- **To enable from the inverter:**
  1. Select Energy Manager ➔ Storage Control.
2 Select AC Charge ➔ Enable.
3 Select AC Charge Lim ➔ Limit Type and set one of the limits:
4 Set %PV to enter a limit as a percentage of year-to-date energy production.
5 Set kWh to enter a fixed annual energy limit.

▶ To verify communication:

After connecting and configuring a communication option, perform the following steps to check that the connection to the monitoring server has been successfully established.

1 Turn on the AC to the inverter by turning ON the circuit breaker on the main distribution panel.
2 Wait for the inverter to connect to the SolarEdge monitoring portal. This may take up to two minutes.
   A status screen similar to the following appears on the LCD panel:

   \[
   V_{ac} [V] \quad V_{dc} [V] \quad P_{ac} [w]
   \]
   \[
   233.6 \quad 361.2 \quad 2700.6
   \]
   \[
   S_{OK}: 010 / 010 \quad \text{<S_OK>}
   \]
   
   S_OK: Indicates that the connection to the SolarEdge monitoring portal is successful.
   If S_OK is not displayed and/or errors are displayed on the LCD, refer to Errors and Troubleshooting in http://www.solaredge.com/files/pdfs/products/inverters/se-single-and-three-phase-inverter-user-manual-na.pdf.
3 For additional verification, refer to Appendix C – Verifying StorEdge Functionality on page 35.
Large Residential PV Systems

For residential sites with large PV systems, a StorEdge inverter and a SolarEdge single phase inverter may be installed together. The StorEdge inverter manages the battery and functions as a PV inverter, and the second inverter is used for production of the additional PV power. During power outages, the StorEdge inverter provides power to backed-up loads, and the second inverter remains shut down until the grid is back.

An RS485 Expansion Kit (available from SolarEdge) is installed in the inverter connected to the battery.

---

**Figure 9: Backup Power with Smart Energy Management - Large residential PV systems**

- **To configure inverter RS485 Communication:**
  1. Install the RS485 Expansion Kit in the StorEdge inverter.
  2. Connect the StorEdge inverter RS485 Expansion port the second inverter’s RS485-1 port using an RS485 twisted pair cable. Terminate both sides. From the StorEdge inverter:
  4. Select Protocol ➔ Master
  5. Select Slave Detect. Verify that the inverter reports the correct number of slaves.

  The second inverter does not require communication configuration.

- **To configure the system:**
  1. Configure the meter, battery and backup power of the StorEdge inverter as described in the Basic Configuration on page 8.

- **To set up Smart Energy Management:**
  After configuring the meter, battery and backup power, proceed with maximizing self-consumption or charge/discharge profile programming on StorEdge inverter as described in the Basic Configuration on page 10.

- **To verify communication:**
  Verify communication as described in the Basic Configuration on page 11.
Additional Capacity with Two Batteries

For sites where additional battery capacity is needed (for example, to enable backed-up loads to be powered from the battery for longer periods), two batteries may be connected to a single StorEdge inverter. In this configuration, only one battery operates at any given time – i.e. the two batteries provide additional capacity only, not additional power.

The DC connection of the two batteries to the StorEdge Inverter is done in parallel through an external fused combiner box (not provided by SolarEdge), with a fuse rating of 12A/600V.

The control and thermal connection of the second battery is daisy chained to that of the first battery.

To configure the system:

For battery RS485 settings:
- Battery 1 is not terminated with ID: 24 and
- Battery 2 is terminated with ID: 25

1. Terminate the battery which is connected last on the RS485 bus (battery 2), and make sure the other battery (battery 1) is not terminated:
   - Battery 1 - Unterminated battery:
   - Battery 2 - Terminated battery:
2. Set the dip switches of Battery 2 to ID 25: Move dip switch 1 to position 1 (to the left), move dip switches 2 and 3 to position 0 (to the right).

3. Configure the meter, Battery 1 and backup power as described in the Basic Configuration on page 8.

4. Configure Battery 2:

5. Select Communication ➔ RS485-1 Conf ➔ Device Type ➔ Multi-devices. A list of devices is displayed.

6. Select Battery 2. The battery configuration screen is displayed.

7. Configure the battery: Select Device Type ➔ Battery Pack.
   Battery 2 is pre-configured to Tesla with device ID 25.

   ► Set up Smart Energy Management

   After configuring the meter, battery and backup power, proceed with maximizing self-consumption or charge/discharge profile programming as described in the Basic Configuration on page 10.

   ► Verifying Communication:

   Verify communication as described in the Basic Configuration on page 11.
Additional Capacity and Power

For sites where additional capacity and power are needed (for example, to enable more backed-up loads to be powered simultaneously), two StorEdge inverters and two batteries may be installed\(^2\). Each battery connects through a separate StorEdge Inverter, and each inverter manages the battery and the PV connected to it. Backed-up loads are connected to each inverter through separate load panels and auto-transformers. The inverter connected to the meter operates as the system manager. An RS485 Expansion Kit (available from SolarEdge) is installed in each of the inverters.

---

\(^2\) Additional capacity and power with one inverter will be supported in H2 2016 and will require new battery and inverter hardware.

---

To configure RS485 Communication:

1. Install an RS485 Expansion Kit in each inverter.
2. Connect inverter 1 RS485 Expansion port to inverter 2 RS485 Expansion port using an RS485 twisted pair cable. Make sure to terminate both sides.
4. Configure inverter 1 RS485 Expansion port:
   - Select Communication → RS485-E Conf → Enable. Press Enter to continue.
   - Select Protocol → Master
   - Select Slave Detect on inverter 1. Verify that the inverter reports the correct number of slaves.
To configure the system:

1. Configure the meter, battery and backup power of inverter 1 as described in the Basic Configuration on page 8.
2. Configure the battery and backup power of inverter 2 as described in the Basic Configuration on page 8.
3. Make sure that the meter is not configured on inverter 2:
   - Select Communication ➔ RS485-1 Conf ➔ Device Type ➔ Multi-devices.
   - Select Meter2 ➔ Meter Type ➔ None.

To set up Smart Energy Management:
After configuring the meter, battery and backup power, proceed with maximizing self-consumption or charge/discharge profile programming as described in the Basic Configuration on page 10. Repeat this configuration for each of the inverters.

To verify communication:
Verify communication of both inverters as described in the Basic Configuration on page 11.

AC Coupling using a non-SolarEdge Inverter
For sites with an already installed PV system with a non-SolarEdge inverter, the StorEdge inverter can be AC-coupled to the existing inverter, i.e. the StorEdge inverter used to manage the battery is connected to the AC output of the existing inverter and charges the battery using the PV power produced by the non-SolarEdge inverter. In this configuration StorEdge inverter charges the battery using the PV power produced by a non-SolarEdge inverter.

NOTE
The meter is used for Smart Energy Management and does not measure the non-SolarEdge inverter production. The production and self-consumption information in the monitoring portal does not take into account this production.

Figure 12: Backup Power with Smart Energy Management - AC Coupling using a non-SolarEdge Inverter

To configure the meter and the battery:
Configure the meter, battery and backup power as described in the Basic Configuration on page 8.
To set up Smart Energy Management:
After configuring the meter, battery and backup power, proceed with maximizing self-consumption or charge/discharge profile programming as described in the Basic Configuration on page 10.

To verify communication:
Verify communication as described in the Basic Configuration on page 11.

AC Coupling without a PV System
For backup power with charge/discharge profile programming a StorEdge system may be installed without a PV system. In this case, the battery is charged from the AC grid only.

**NOTE**
For maximizing self-consumption a PV system is required.

- **To configure the system:**
  1. Configure the meter, battery and backup power as described in the Basic Configuration on page 8.
  2. After configuring the meter, battery and backup power, proceed with charge/discharge profile programming as described in the Basic Configuration on page 10.

- **To verify communication:**
  Verify communication as described in the Basic Configuration on page 11.
Backup Power Only - System Configurations

In this mode, stored energy is used for backup power only. In case of a power outage, the inverter automatically switches to backup mode, disconnecting from the grid and supplying power to backed-up loads.

A backup power only system can be upgraded to support Smart Energy Management applications by installing a SolarEdge Electricity Meter and reconfiguring the system as described in Backup Power with Smart Energy Management - System Configurations on page 5.

The configurations described in this section are the same as the configurations described above; system diagrams and configuration details are for backup power only (for full descriptions of each configuration refer to Table 1: Backup Power with Smart Energy Management Configurations page 5):

- Basic Configuration
- Large Residential PV Systems
- Additional Capacity with Two Batteries
- Additional Capacity and Power
- AC Coupling using a non-SolarEdge Inverter

System Connection

The following diagram illustrates the connection of the system components when using the basic configuration for backup power only: one StorEdge inverter, one auto-transformer and one battery. For enlarged segments of this diagram refer to Appendix D – Detailed System Connection on page 45.

*NOTE*

Install the GFDI (Ground-Fault Detector Interrupter) in accordance with applicable local standards and directives.

---

**Figure 14: Backup Power only - Basic Configuration**
The following diagram illustrates the connection of the system components when using two batteries. In this case, an external fused combiner box is needed. For enlarged segments of this diagram refer to Appendix D – Detailed System Connection on page 45.

**Figure 15: Backup Power only – Two Battery Configuration**
Basic Configuration

This configuration is based on one of each of the StorEdge components, other than the SolarEdge Electricity Meter, and is suitable for most residential systems.

To configure the system:

1. Terminate the battery connected on the RS485 bus:

2. Set the battery’s dip switches to ID 24: Move all dip switches to position 0 (to the right):

3. Make sure the wiring is connected according to the diagram above.

4. Upgrade the inverter firmware using the card supplied with the StorEdge Inverter. This will also configure the battery.

5. Configure Meter 2 to None:
   - Select Communication ➔ RS485-1 Conf ➔ Device Type ➔ Multi-devices.
   - Select Meter2 ➔ Meter Type ➔ None.

6. Check the Communication status screen and verify that the battery is properly connected and configured:

7. If Dev is not MLT, the system is not pre-configured and requires full configuration. Proceed with step 10 below.
8 If \( \# \neq 01 \) or Prot \( \neq 01 \), the battery and/or meter are not configured or communicating correctly. Check the configuration. Check the wiring connection. Proceed with step 10 below.

9 If \( \# = 01 \) and Prot = 01 – the battery is configured and communicating properly. Skip steps 10 to 13 below and proceed with set up backup power only as described below.

10 Select \textbf{Communication \rightarrow RS485-1 Conf \rightarrow Device Type \rightarrow Multi-devices}. A list of devices is displayed.

11 Configure Battery 1:

12 Select Battery 1. The battery configuration screen is displayed.

13 Configure the battery: \textbf{Device Type \rightarrow Battery Pack}

\textbf{To set up Backup Power Only:}

1 Enter Setup mode to display the main menu.

2 From the main menu, select \textbf{Power Control}. A menu similar to the following is displayed:

3 Select \textbf{Energy Manager}. The following screen is displayed:

4 Select \textbf{Energy Ctrl}.

5 Select \textbf{Backup only}. The Energy Manager screen changes to display the following:

\textbf{Verifying Communication:}

After connecting and configuring a communication option, perform the following steps to check that the connection to the monitoring server has been successfully established.

1 Turn on the AC to the inverter by turning ON the circuit breaker on the main distribution panel.

2 Wait for the inverter to connect to the SolarEdge monitoring portal. This may take up to two minutes. A status screen similar to the following appears on the LCD panel:

3 For additional verification, refer to Appendix C – Verifying StorEdge Functionality on page 35.

**Large Residential PV Systems**

For residential sites with large PV systems, a StorEdge inverter and a SolarEdge single phase inverter may be installed together. The StorEdge inverter manages the battery and functions as a PV inverter, and the second inverter is used for production of the additional PV power. During power outages, the StorEdge inverter provides power to backed-up loads, and the second inverter remains shut down until the grid is back.

An RS485 Expansion Kit (available from SolarEdge) is installed in the inverter connected to the battery.

![Figure 17: Backup Power Only - Large residential PV systems](image)

**To configure inverter RS485 communication:**

1. Install the RS485 Expansion Kit in the inverter connected to the battery (SolarEdge inverter in Figure 17: Backup Power Only - Large residential PV systems).
5. Select Slave Detect. Verify that the inverter reports the correct number of slaves.
6. SolarEdge standard Inverter does not require communication configuration.

**To configure the system:**

1. Configure the StorEdge inverter battery and backup power as described in the Basic Configuration page 20.
To verify communication:
Verify SolarEdge inverter communication as described in the Basic Configuration on page 21.

Additional Capacity with Two Batteries
For sites where additional battery capacity is needed (for example, to enable backed-up loads to be powered from the batteries for longer periods), two batteries may be connected to a single StorEdge Inverter.

In this configuration, only one battery operates at any given time – i.e. the two batteries provide additional capacity only, not additional power.

The DC connection of the two batteries to the StorEdge Inverter is done in parallel through an external fused combiner box (not provided by SolarEdge), with a fuse rating of 12A/600V.

The control and thermal connection of the second battery is daisy chained to that of the first battery.

Configure the System:
1. Terminate the battery which is connected last on the RS485 bus (battery 2), and make sure the other battery (battery 1) is not terminated:

   **Battery 1 - Unterminated battery:**

   **Battery 2 - Terminated battery:**
2 Set the dip switches of Battery 2 to ID 25: Move dip switch 1 to position 1 (to the left), move dip switches 2 and 3 to position 0 (to the right).

3 Configure Battery 1 and backup power as described in the Basic Configuration on page 20.

4 Configure Battery 2:

5 Select Communication ➔ RS485-1 Conf ➔ Device Type ➔ Multi-devices. A list of devices is displayed.

6 Select Battery 2. The battery configuration screen is displayed.

7 Configure the battery: Select Device Type ➔ Battery Pack.
   Battery 2 is pre-configured to Tesla with device ID 25.

► To verifying communication:

Verify communication as described in the Basic Configuration of page 20.
Additional Capacity and Power

For sites where additional capacity and power are needed (for example, to enable more backed-up loads to be powered simultaneously), two StorEdge inverters and two batteries may be installed\(^1\). Each battery connects through a separate StorEdge Inverter, and each inverter manages the battery and the PV connected to it. Backed-up loads are connected to each inverter through separate load panels and auto-transformers. The inverter connected to the meter operates as the system manager. An RS485 Expansion Kit (available from SolarEdge) is installed in each of the inverters.

![Diagram of Additional Capacity and Power](image)

**Figure 19: Additional capacity and power**

To configure RS485 Communication:

1. Install an RS485 Expansion Kit in each inverter.
2. Connect inverter 1 RS485 Expansion port to inverter 2 RS485 Expansion port using an RS485 twisted pair cable. Make sure to terminate both sides (see Figure 5).
3. Configure inverter 2 RS485 Expansion port: Select Communication \(\rightarrow\) RS485-E Conf \(\rightarrow\) Enable.
4. Configure inverter 1 RS485 Expansion port:
   - Select Communication \(\rightarrow\) RS485-E Conf \(\rightarrow\) Enable. Press Enter to continue.
   - Select Protocol \(\rightarrow\) Master.
5. Configure inverter 2 an RS485 Expansion port:
   - Select Communication \(\rightarrow\) RS485-E Conf \(\rightarrow\) Enable. Press Enter to continue.
   - Make sure that the connection is configured to Slave. Select Protocol \(\rightarrow\) Slave
   - Establish communication between inverter 1 and inverter 2:
     - Select Slave Detect on inverter 1. Verify that the inverter reports the correct number of slaves. It needs to be done before configuring slave inverters.

---

\(^1\) Additional capacity and power with one inverter will be supported in H2 2016 and will require new battery and inverter hardware.
To configure the inverters:
Configure the battery and backup power of both inverters as described in the Basic Configuration on page 20.

To verify communication:
Verify communication of both inverters as described in the Basic Configuration on page 21.

AC Coupling using a non-SolarEdge Inverter
For sites with an already installed PV system with a non-SolarEdge inverter, the StorEdge inverter can be AC-coupled to the existing inverter, i.e. the StorEdge inverter used to manage the battery is connected to the AC output of the existing inverter and charges the battery using the PV power produced by the non-SolarEdge inverter.

NOTE
The non-SolarEdge inverter production is not measured. The production information in the monitoring portal does not take into account this production.

To configure the system:
1. Configure the battery and backup power of the StorEdge inverter as described in the Basic Configuration on page 20.

To verify the communication:
Verify communication as described in the Basic Configuration on page 21.
Smart Energy Management Only - System Configurations

In this mode stored energy is used for Smart Energy Management applications only:

- **Maximize self-consumption** – the battery is automatically charged and discharged to meet consumption needs and reduce the amount of electricity purchased from the grid.
- **Charge/discharge profile programming** – the system operates according to a configurable charge/discharge profile, for example for time of use arbitrage (charge the battery from PV/grid when tariffs are low and discharge it when tariffs are high).

A Smart Energy Management only system can be upgraded to support backup power by installing an auto-transformer and connecting backed-up loads through a separate panel, and reconfiguring the system as described in *Backup Power with Smart Energy Management - System Configurations* on page 5.

Configuration is done as described in the *Backup Power with Smart Energy Management - System Configurations* chapter, without setting up backup power. System diagrams are shown below.

System Connection

The following diagram illustrates the connection of the system components when using the basic configuration for Smart Energy Management only: one StorEdge inverter, one meter and one battery. For enlarged segments of this diagram refer to *Appendix D – Detailed System Connection* on page 53.

![Diagram of System Connection](image)

Figure 21: Smart Energy Management only - Basic Configuration
The following diagram illustrates the connection of the system components when using two batteries. In this case, an external fused combiner box is needed. For enlarged segments of this diagram, refer to Appendix D – Detailed System Connection on page 53.

**Basic Configuration**

This configuration is based on one of each of the StorEdge components, other than the auto-transformer, and is suitable for most residential systems.
Large Residential PV Systems

For residential sites with large PV systems, a StorEdge inverter and a SolarEdge single phase inverter may be installed together. The StorEdge inverter manages the battery and functions as a PV inverter, and the second inverter is used for production of the additional PV power.

An RS485 Expansion Kit (available from SolarEdge) is installed in the inverter connected to the battery.

![Figure 24: Smart Energy Management only - Large residential PV systems](image)

Additional Capacity with Two Batteries

For sites where additional battery capacity is needed (for example, to enable loads to be powered from the battery for longer periods), two batteries may be connected to a single StorEdge Inverter.

In this configuration, only one battery operates at any given time – i.e. the two batteries provide additional capacity only, not additional power.

The DC connection of the two batteries to the StorEdge Inverter is done in parallel through an external fused combiner box (not provided by SolarEdge), with a fuse rating of 12A/600V.

The control and thermal connection of the second battery is daisy chained to that of the first battery.

![Figure 25: Smart Energy Management only - Additional capacity with two batteries](image)
Additional Capacity and Power

For sites where additional capacity and power are needed (for example, to enable loads to be powered for longer periods and/or to enable more loads to be powered simultaneously), two StorEdge inverters and two batteries may be installed. Each battery connects through a separate StorEdge Inverter, and each inverter manages the battery and the PV connected to it. The inverter connected to the meter operates as the system manager. An RS485 Expansion Kit (available from SolarEdge) is installed in each of the inverters.

The system can be upgraded to work in backup mode.

Figure 26: Smart Energy Management only - Additional capacity and power

*Additional capacity and power with one inverter will be supported in H2 2016 and will require new battery and inverter hardware.*
**AC Coupling using a non-SolarEdge Inverter**

For sites with an already installed PV system with a non-SolarEdge inverter, the SolarEdge inverter can be AC-coupled to the existing inverter, i.e. the StorEdge inverter used to manage the battery is connected to the AC output of the existing inverter.

**NOTE**

The meter is used for Smart Energy Management and does not measure the non-SolarEdge inverter production. The production and self-consumption information in the monitoring portal does not take into account this production.

![Diagram of AC Coupling using a non-SolarEdge Inverter](image)

*Figure 27: Smart Energy Management only - AC Coupling using a non-SolarEdge Inverter*

**AC Coupling without a PV System**

For charge/discharge profile programming a StorEdge system may be installed without a PV system. In this case, the battery is charged from the AC grid only.

**NOTE**

For maximizing self-consumption a PV system is required.

![Diagram of AC Coupling without a PV System](image)

*Figure 28: Smart Energy Management only - AC coupling without a PV system*
Appendix A – Creating a Charge/Discharge Profile

A charge/discharge profile is created from a yearly calendar, repeated for 20 years as long as no profile changes are made. The yearly calendar is divided into segments, with one of seven charge/discharge modes assigned to each segment.

**Charge/Discharge Modes**

<table>
<thead>
<tr>
<th>Mode</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>No battery charging/discharging; can be used to extend battery lifetime by minimizing the number of shallow discharges (for example at nighttime or during the winter).</td>
</tr>
<tr>
<td>CHARGE_EXCESS_PV</td>
<td>Charge battery with PV power, which is not self-consumed.</td>
</tr>
<tr>
<td>CHARGE_FULL_PV</td>
<td>Charge battery with all available PV power until it is full, and only then use PV power for self-consumption; useful when import rate is low.</td>
</tr>
<tr>
<td>CHARGE_FULL_PV_AC</td>
<td>Charge battery with all available PV power and with grid power until it is full, and only then use PV power for self-consumption; useful when import rate is very low.</td>
</tr>
<tr>
<td>DISCHARGE_MAXIMIZE_FEED_IN</td>
<td>Discharge battery until the inverter reaches its AC limit; useful when export rate is high.</td>
</tr>
<tr>
<td>DISCHARGE_MINIMIZE_PURCHASED</td>
<td>Discharge battery only for self-consumption, not for export to the grid.</td>
</tr>
<tr>
<td>MAXIMIZE_SELF_CONSUMPTION</td>
<td>Charge/discharge battery as needed to maximize self-consumption.</td>
</tr>
</tbody>
</table>

**Creating a Profile**

To create a profile file that can be loaded to the inverter through the monitoring portal or locally, download the template from [www.solaredge.com/files/excel/charge-discharge-profile-programming-template.xlsx](http://www.solaredge.com/files/excel/charge-discharge-profile-programming-template.xlsx).

Use the template to create daily profiles, and then weekly profiles combined from the daily profiles.

**NOTE**

Creating profiles directly in the monitoring portal is expected to be supported during Q2 2016.

**To fill out a profile template:**

1. Select the Day Types tab. In this table you can create up to 20 different daily profiles:
2. In column B enter a description (optional) for the daily profile (e.g. winter weekday, summer weekend)
3. In column C select from the dropdown menu a default charge/discharge mode for that day type; this mode will be used at times of the day where no other mode is defined
4. In columns D-G you may define a different charge/discharge mode for a segment of the day:
   - In column D enter a description (optional) for the segment
   - In column E enter the start time of the segment
   - In column F enter the end time of the segment; a segment can be any 15 min multiple, from 15 min to 24 hours
   - In column G select from the dropdown menu a default charge/discharge mode for that segment
5. In columns H onwards you can define up to 7 additional segments for the day type
6. Select the Week Plans tab. In this table you can create up to 13 weekly profiles to be used in different periods throughout the year:
7. In column B enter a description (optional) for the weekly profile (e.g. winter 1, winter 2)
8. In column C enter the start date of the period when the weekly profile should be used
9. In column D enter the end date of the period when the weekly profile should be used
10. In columns E-K enter the daily profile that should be used for each day of the week during the defined period (Sunday profile in column E, Monday profile in column F etc.)
11. In row 15 enter a default weekly profile; this profile will be used at times when no period was defined
12 Optionally select the Exceptions tab. In this tab you can define dates that should have a specific daily profile instead of the profile defined for the relevant period. For example, if you defined a weekly profile for a period from Dec. 15 to Jan. 15 but want the system to have different daily profile for New Years, define it here:

13 In column A enter a description (optional) for the day
14 In column B enter the date
15 In column C enter the daily profile to be used on that day
16 Optionally select the Global settings tab. In this tab you can enable battery charge from the AC grid; this can also be done locally from the inverter LCD.

17 In row 2 select from the drop down menu one of the following options:
   • ENABLE: allow unlimited charging from the grid
   • FIXED_LIMIT: to allow charging from grid with a fixed annual energy limit
   • PERCENT_OF_PROD: to allow charging from grid with a percentage of year-to-date energy production limit
18 If limited charging was selected, in row 3 enter the limit:
   • Enter a limit in kWh if FIXED_LIMIT was selected
   • Enter a limit in % if PERCENT_OF_PROD was selected
19 Send the excel file to SolarEdge support and note if you would like to load the profile from the monitoring or if you would like to receive a file to be loaded to the inverter locally.
Appendix B - System Behavior Example

In this example the StorEdge system uses maximize self-consumption mode with zero export limit. The inverter is connected to L1 and L2 in a split phase home. It supplies loads connected to L1 and to L2 load and exports excess PV power to the grid.

The produced PV power is 2kW, and there is 2kW load on L1 and a 1kW load on L2. The StorEdge system supplies 3kW to the loads – including 1kW from the battery - and exports 0kW to the grid.

The meter measures 4.16A on L1 to the grid and senses 120VAC with positive phase between L1 and Neutral, therefore the power import on L1 is 4.16A x 120V = 0.5kW. On L2 the meter measures also 4.16A from the grid and senses 120VAC with negative phase between L2 and Neutral, therefore the power export on L2 is 4.16A x 120V = 0.5kW. Total export power is 0.5kW - 0.5kW = 0kW. Due to the load imbalance between L1 and L2 there is an 8.33A current on the neutral wire between the home and utility transformer.

![Power Production Flow Diagram](image-url)
Appendix C – Verifying StorEdge Functionality

After system installation and configuration is completed, verify that the system is properly operating:

**To verify the meter:**

1. Make sure other power sources (e.g. non-SolarEdge PV inverter) are not producing power.
2. Verify the AC is ON.
3. Check the meter (installed in export or consumption position, CT arrows point to the grid):
4. Turn the inverter ON/OFF switch to OFF.
5. Connect loads on one of the measured phases.
6. Press the external LCD light button to display the Import or Consumption meter status screen, and check that the import or consumption power is greater than zero:

   ![Import Meter](image)

   - **Status:** <OK/Error>
   - **Power [W]:** xxxxx.x
   - **Energy [Wh]:** xxxxx.x

7. Press the LCD light button to display the Export meter status screen, and check that the Export power is equal to zero. If it is not equal to zero check the CT direction on all connected phases.

**To verify Maximize Self-consumption:**

1. Verify the inverter ON/OFF switch is ON.
2. Turn on as many loads as needed so that consumption will be greater than the inverter’s maximum AC power. In the inverter LCD check that the Meter status screen is displaying import power greater than zero.
3. Press the inverter LCD light button to display the Smart Energy Management and the Battery status screens, and check that:
   - **State** = Discharging (assuming consumption > PV production, inverter maximum AC power > PV production)
   - **PWR > 0**

**To verify battery charging:**

1. While the PV modules are exposed to sunlight, verify that the battery is charging properly:
2. Minimize consumption by turning off all the load circuit breakers, except for the inverter.
3. In the inverter LCD check that the Meter status screen is displaying import power close to zero.
4. Press the external LCD light button to display the Battery status screen, and check that:
   - **State** = Charging
   - **SOE** percentage is increasing
   - **PWR > 0**

**To find additional troubleshooting:**

Appendix D – Detailed System Connection

Backup Power with Smart Energy Management

Basic Configuration

The following diagram illustrates the connection of the system components when using the basic configuration for backup power with Smart Energy Management: one StorEdge inverter, one auto-transformer, one meter and one battery. The next diagrams are enlarged segments of this diagram.
Figure 30: Backup Power with Smart Energy Management - Basic Configuration

Notes
Note 1: Recommended Fuses in StorEdge Inverter:
- 12A 60VDC Quick-Acting: 10 x 38 mm Solar Midget Fuses (Example: Littelfuse 971060102)

Note 2: Auto-transformer connection:
- 6ft max
- Vertical mounting only (conduit connection from the bottom)
- Use 10 AWG wire for grounding

Note 3: Battery connection:
- 35ft max
- Distance larger than 5ft requires installation of external DC safety switch on the battery side
- Control [B, A+] must be twisted pair

Note 4: Install type B 2-pole 25A main circuit breaker to ensure the 25A phase limit imbalance is maintained at all times.
Figure 31: Backup Power with Smart Energy Management - Basic Configuration, Battery - StorEdge Inverter Connection
Figure 32: Backup Power with Smart Energy Management - Basic Configuration, Main Distribution Panel – Backed-up Loads Distribution Panel Connection
<table>
<thead>
<tr>
<th>Note</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Note 1</strong></td>
<td>Recommended StorEdge inverter fuses: 12A/600VDC Quick-Acting, 10 x 38 mm Solar Midget Fuses (Example: Littelfuse P/N 0SPF012)</td>
</tr>
</tbody>
</table>
| **Note 2** | Auto-transformer connection:  
- 6ft max  
- Use 10 AWG wire for grounding |
| **Note 3** | Battery connection:  
- 35ft max  
- Distance larger than 5ft requires installation of external DC safety switch on the battery side  
- Control [B-,A+] must be twisted pair |
| **Note 4** | GFDI in backed-up loads distribution panel:  
- Install the GFDI (Ground-Fault Detector Interrupter) in accordance with applicable local standards and directives. |
Two-Battery Configuration

The following diagram illustrates the connection of the system components when using two batteries. In this case, an external fused combiner box is needed. The next diagrams are enlarged segments of this diagram.

Figure 33: Backup Power with Smart Energy Management - Two-Battery Configuration
Figure 34: Backup Power with Smart Energy Management - Two-Battery Configuration, Batteries – StorEdge Inverter Connection
Figure 35: Backup Power with Smart Energy Management - Two-Battery Configuration, Main Distribution Panel – Backed-up Loads Distribution Panel Connection
### Table 4: Notes for Backup Power with Smart Energy Management - Two-Battery Configuration Diagram

<table>
<thead>
<tr>
<th>Note</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Note 1** | Recommended StorEdge inverter fuses:  
- 12A 600VDC Quick-Acting, 10 x 38 mm Solar Midget Fuses  
(Example: Littelfuse P/N 0SPF012) |
| **Note 2** | An external fused combiner box is needed to support two batteries |
| **Note 3** | Auto-transformer connection:  
- 6ft max  
- Use 10 AWG wire for grounding |
| **Note 4** | Battery connection:  
- 35ft max  
- Distance larger than 5ft requires installation of external DC safety switch on the battery side  
- Control [B-,A+] must be twisted pair |
| **Note 5** | Use a twin-wire ferrules to daisy chain the thermal wiring |
| **Note 6** | GFDI in backed-up loads distribution panel:  
Install the GFDI (Ground-Fault Detector Interrupter) in accordance with applicable local standards and directives. |
Backup Power only

Basic Configuration

The following diagram illustrates the connection of the system components when using the basic configuration for backup power only: one StorEdge inverter, one auto-transformer and one battery. The next diagrams are enlarged segments of this diagram.

Figure 36: Backup Power Only - Basic Configuration
Figure 37: Backup Power Only - Basic Configuration, StorEdge inverter - Battery Connection
Appendix D – Detailed System Connection

Figure 38: Backup Power Only - Basic Configuration, Distribution Panel – Backed-up Loads Panel Connection

Notes:
1. Notes
2. Notes
3. Notes
4. Notes

- Main Distribution Panel
- Connection to utility meter
- Neutral bus-bar
- Main Breaker
- CB
- L1
- L2
- 3/4" Conduit
- 3/4" Conduit
- Battery switches settings:
  - Type B for main circuit breakers
- Inverter AC Backup [L1, L2, N]
- Inverter AC Grid [L1, L2, N]
- 6 AWG (4-20 AWG)
- 1" Conduit
- 40A CB
- CB
- L1
- L2
- N
- BU
- BU_L1
- BU_L2
- BU_N
- BU_L1
- BU_L2
- BU_N
- N_BU
- L1_BU
- L2_BU
- L1_Grid
- L2_Grid
- Notes 1

To the backed-up loads
Table 5: Backup Power Only - Basic Configuration notes

<table>
<thead>
<tr>
<th>Note</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note 1</td>
<td>Recommended StorEdge inverter fuses: 12A 600VDC Quick-Acting, 10 x 38 mm Solar Midget Fuses (Example: Littelfuse P/N 0SPF012)</td>
</tr>
</tbody>
</table>
| Note 2 | Auto-transformer connection:  
- 6ft max  
- Use 10 AWG wire for grounding |
| Note 3 | Battery connection:  
- 35ft max  
- Distance larger than 5ft requires installation of external DC safety switch on the battery side  
- Control [B-,A+] must be twisted pair |
| Note 4 | GFDI in backed-up loads distribution panel:  
- Install the GFDI (Ground-Fault Detector Interrupter) in accordance with applicable local standards and directives. |
Two Battery Configuration

The following diagram illustrates the connection of the system components when using two batteries. In this case, an external fused combiner box is needed. The next diagrams are enlarged segments of this diagram.

---

**Figure 39: Backup Power Only – Two Battery Configuration**

---
**Figure 40: Backup Power Only – Two Battery Configuration, – Batteries - StorEdge Inverter –Connection**
Backup Neutral bus maintained at all times

Note

Recommended Fuses in StorEdge Inverter

- Main: 6, 25, 12, 6, 4
- Install type B Battery connection
- Auto StorEdge Inverter 10, 600 A CB

- Supports double power and double capacity
- L 5, 12, x 38, 2
- Two Battery Configuration, SPF
- Phase limit imbalance is
- littelfuse P
- Two Battery Configuration, SPF

Backup Power Only

Connect to utility meter

Main Distribution Panel

Neutral bus-bar

- Main Breaker
- L1, L2
- CB
- CB
- CB
- CB
- CB
- CB
- CB
- CB
- CB
- CB
- CB
- CB
- CB
- CB
- CB
- 40A CB
- 40A CB

3/4” Conduit
Inverter AC Backup [L1, L2, N], 6 AWG (4-20 AWG)

1” Conduit
Inverter AC Grid [L1, L2, N], 6 AWG (4-20 AWG)

Bu_L1
Bu_L2
Bu_N

To the backed-up loads

Type B for main circuit breakers

- 25A CB
- 25A CB
- 20A CB
- 20A CB
- 20A CB
- 20A CB

N_BU
L1_BU
L2_BU

12A

Fuses

BAT IN

StorEdge Inverter

Figure 41: Backup Power Only – Two Battery Configuration, Distribution Panel – Backed-up Loads Panel Connection
### Table 6: Backup Power Only – Two Battery Configuration notes

<table>
<thead>
<tr>
<th>Note</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Note 1** | Recommended StorEdge inverter fuses in:  
- 12A 600VDC Quick-Acting, 10 x 38 mm Solar Midget Fuses  
  (Example: Littelfuse P/N 0SPF012) |
| **Note 2** | External fused combiner box is needed to support two batteries |
| **Note 3** | Auto-transformer connection:  
- 6ft max  
- Use 10 AWG wire for grounding |
| **Note 4** | Battery connection:  
- 35ft max  
- Distance larger than 5ft requires installation of external DC safety switch on the battery side  
- Control [B-, A+] must be twisted pair |
| **Note 5** | Use a twin-wire ferrules to daisy chain the thermal wiring |
| **Note 6** | GFDI in backed-up loads distribution panel:  
Install the GFDI (Ground-Fault Detector Interrupter) in accordance with applicable local standards and directives. |
Smart Energy Management Only

Basic Configuration

The following diagram illustrates the connection of the system components when using the basic configuration for Smart Energy Management only: one StorEdge inverter, one meter and one battery. The next diagrams are enlarged segments of this diagram.

Figure 42: Smart Energy Management Only - Basic Configuration
Appendix D – Detailed System Connection

Figure 43: Smart Energy Management Only - Basic Configuration, - StorEdge Inverter – Battery Connection
Figure 44: Smart Energy Management Only - Basic Configuration, Main Distribution Panel - Electricity Meter Connection

Notes 1:
- Recommended Fuses in StorEdge Inverter:
  - 12 A 600 VDC Quick Acting, 10 x 38 mm Solar Midget Fuses (Example: littelfuse P/N SPF012)

Notes 2:
- Battery connection:
  - 35 ft max
  - Distance larger than 5 ft requires installation of external DC safety switch on the battery side
  - Control \([B-A]\) must be twisted pair

RS485-1 Terminations
- Move up the left switch
- Battery switches settings:
<table>
<thead>
<tr>
<th>Note</th>
<th>Description</th>
</tr>
</thead>
</table>
| Note 1 | **Recommended StorEdge inverter fuses:**  
  - 12A 600VDC Quick-Acting, 10 x 38 mm Solar Midget Fuses  
    (Example: Littelfuse P/N 0SPF012) |
Two Battery Configuration

The following diagram illustrates the connection of the system components when using two batteries. In this case, an external fused combiner box is needed. The next diagrams are enlarged segments of this diagram.

Figure 45: Smart Energy Management Only – Two Battery Configuration
**Figure 46: Smart Energy Management Only – Two Battery Configuration, Batteries - StorEdge Inverter Connection**
Note 1

3 Meter AC [L1, L2, N], 12–16 AWG
8 ft twisted pair supplied with the CT
RS485
SolarEdge
Meter

Main Distribution Panel

Connection to utility meter

1/2” Conduit

1” Conduit

RS485 [A, B, G], 24 AWG (16–24 AWG), Shielded twisted pair, 600V insulated

Inverter AC Grid [L1, L2, N], 6 AWG (4–20 AWG)

Fuses

SolarEdge Inverter*

12A

BAT

IN

Note 1

RS485-1 Terminations

Move up the left switch

Figure 47: Smart Energy Management Only – Two Battery Configuration, - Main Distribution Panel - Electricity Meter Connection
# Table 8: Smart Energy Management Only – Two Battery Configuration Notes

<table>
<thead>
<tr>
<th>Note</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note 1</td>
<td>Recommended StorEdge inverter fuses:</td>
</tr>
<tr>
<td></td>
<td>• 12A 600VDC Quick-Acting, 10 x 38 mm Solar Midget Fuses</td>
</tr>
<tr>
<td></td>
<td>(Example: Littelfuse P/N 0SPF012)</td>
</tr>
<tr>
<td>Note 2</td>
<td>External fused combiner box is needed to support two batteries</td>
</tr>
<tr>
<td>Note 3</td>
<td>Battery connection:</td>
</tr>
<tr>
<td></td>
<td>• 35ft max</td>
</tr>
<tr>
<td></td>
<td>• Distance larger than 5ft requires installation of external DC safety</td>
</tr>
<tr>
<td></td>
<td>switch on the battery side</td>
</tr>
<tr>
<td></td>
<td>• Control [B-,A+] must be twisted pair</td>
</tr>
<tr>
<td>Note 4</td>
<td>Use a twin-wire ferrules to daisy chain the thermal wiring</td>
</tr>
</tbody>
</table>
Appendix E - StorEdge Inverter without a Battery

The StorEdge inverter can be used without a battery as a PV inverter with no StorEdge applications. The system can be upgraded to support StorEdge applications by adding the remaining system components.

Figure 48: StorEdge inverter without a battery

► To connect and configure the system:

StorEdge inverter installation and AC and DC connections should be done as described in the StorEdge inverter manual supplied with it. StorEdge inverter configuration should be done according to the SolarEdge Installation Guide http://www.solaredge.com/files/pdfs/products/inverters/se-single-and-three-phase-inverter-user-manual-na.pdf.

SolarEdge Support Contact Information

If you have technical queries concerning our products, please contact us:

<table>
<thead>
<tr>
<th></th>
<th>USA and Canada (+1) 510 498 3200</th>
<th>Worldwide (+972) (0)73-2403118</th>
<th>Fax (+1) 530 273-2769</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><a href="mailto:support@solaredge.us">support@solaredge.us</a></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>