

# Operation Manual

## REbus™ Beacon

Part of the Pika Energy Island™



**REbus™ Beacon**

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Serial Number:

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RCP Number:

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Check the resources tab at [www.pika-energy.com](http://www.pika-energy.com) for the latest specifications and manuals.

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## **Table of Contents**

<b>Section 1: Introduction</b>	6
About This Manual	6
Symbols used in this Manual	6
<b>Section 2: Safety Information</b>	7
General Warnings	7
<b>Section 3: About the REbus™ Beacon</b>	8
What is Time-of-Use Billing?	8
How does Beacon work?	8
How does Beacon help me save money?	9
Can I still use my battery for backup power?	9
<b>Section 4: Configuring Beacon</b>	10
<b>Configuring and Running a TOU Schedule</b>	10
Configuration Settings	12
Changing Settings	13
<b>Disabling Beacon</b>	14
<b>Enabling Beacon</b>	15
<b>Temporarily Overriding the TOU Scheduler</b>	16
<b>Disabling the TOU Scheduler in anticipation of a grid outage</b>	17
<b>Reserving Energy for Backup</b>	18
<b>Connecting to the Internet</b>	18
<b>Technical Support Information</b>	18

# **Section 1: Introduction**

## **About This Manual**

This Operation Manual provides instructions for using the REbus™ Beacon, an optional accessory to the Pika Energy Island. If installing Beacon as part of a new Energy Island installation, install and commission all other parts of the system before attempting to use Beacon.

The companion document to this operation manual is the REbus Beacon Installation Manual. Please reference the Installation Manual for information on how to install Beacon.

## **Symbols used in this Manual**

	<b>WARNING:</b> This indicates a fact or feature very important for the safety of the user to prevent injury or death and/or which can cause serious hardware damage if not applied appropriately.
	<b>CAUTION:</b> Presents information to prevent damage to this product
	<b>EARTH GROUND SYMBOL</b>

## **Section 2: Safety Information**

### **General Warnings**



**SHOCK RISK:** HIGH VOLTAGE ELECTRICITY

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**WARNING:** To reduce the risk of injury, read all instructions and caution markings before installing Beacon. Consult installation documentation for all other REbus devices on the system.

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**WARNING:** Beacon must be installed by trained and qualified technicians, and in accordance with all instructions.

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**WARNING:** Electrical installation in the United States shall be done in accordance with all local electrical codes and/or the National Electrical Code (NEC), ANSI/NFPA 70.

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**WARNING:** Electrical installation in Canada shall be done in accordance with all local electrical codes and/or the Canadian Electrical Code.

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**WARNING:** Connecting the Pika Energy Island to the electric utility grid must only be done after receiving prior approval from the utility company and installation completed only by qualified personnel/licensed electrician(s).

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**WARNING:** This equipment is NOT intended for use with life support equipment or other medical equipment or devices.

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**WARNING:** Disconnect all smart batteries and turn their Battery Disconnect switches to OFF before servicing the inverter or touching electrical terminals. Refer to smart battery documentation for complete safety instructions.

## **Section 3: About the REbus™ Beacon**

The REbus™ Beacon is an add-on device for your Pika Islanding Inverter to allow your Energy Island system to manage your energy production and storage over the course of the day. This is called Time of Use energy management. To take advantage of this functionality, your Energy Island must include a REbus compatible smart battery such as a Coral or Harbor from Pika Energy.

Beacon also acts as the internet communications gateway for the Energy Island. Make sure your Beacon has a reliable connection to the internet via ethernet connection to a router. At this time, Pika cannot support Beacon installations that do not have a functioning internet connection.

### **What is Time-of-Use Billing?**

Time-of-use (TOU) billing refers to utility billing policies where the cost of electricity changes based on the time of day. Under a TOU billing plan, electricity may cost relatively little most of the time, during 'off-peak' hours, but the cost can go up two- or threefold during the 'peak' afternoon and evening hours.

TOU policies are becoming more and more common for residential and commercial customers, alike. Often their stated purpose is to more accurately reflect the cost of making and delivering electricity, which varies over the course of the day, seasonally, or according to other factors.

### **How does Beacon work?**

Beacon communicates with the Energy Island system through the Islanding Inverter. Like the other devices in your Energy Island, Beacon is controlled and configured through the Islanding Inverter front control panel.

Beacon implements TOU energy management using a feature called the TOU Scheduler. The scheduler is designed so you can "set it and forget it," much like a programmable thermostat. Once you select a pre-defined schedule, it follows the schedule automatically, changing the system Operational Mode at the correct times every day.

There are several pre-defined schedules available. Choose the schedule that is designed for use with your utility billing plan. You can pause or temporarily override the scheduler, but you should typically have it enabled at all times to maximize your savings.

## How does Beacon help me save money?

Beacon uses the TOU scheduler to help you store solar energy when sunlight is plentiful (during the day) and then use that energy to power your main panel when electricity costs are highest (typically in the late afternoon and evening). This helps you avoid buying electricity from the grid during the most expensive “peak” times.

Most Pika system owners with Time of Use electrical billing can benefit from including Beacon in their system. You can choose the TOU schedule that has been optimized for your particular utility billing plan.

## Can I still use my battery for backup power?

In the event of a grid outage while you are using the TOU scheduler, your Energy Island immediately begins powering your protected loads, just like it would normally.

To make sure you always have some energy available for emergencies, your smart battery retains a certain amount of energy to use for backup purposes, called the Islanding Reserve. You can adjust the size of the Islanding Reserve by adjusting your smart battery settings. Refer to your smart battery’s documentation for details.

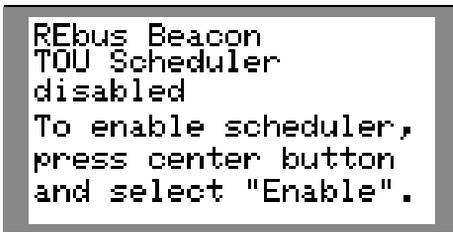
If you are concerned about an impending storm, you may want to make sure your battery is topped up to be ready for an outage. To do this, you can suspend the scheduler at any time and manually put the system in one of the Backup modes to charge the battery. For more details, see “Disabling the TOU Scheduler in anticipation of a grid outage” on page 17.

## Section 4: Configuring Beacon

Your REbus Beacon has a device page that you can view on the inverter front control screen, just like your other Energy Island devices. This page is where you will set your Time of Use (TOU) schedule and modify other settings for Beacon. Refer to the Islanding Inverter Operation Manual for complete instructions on changing system Operational Modes, viewing device pages, and using the inverter controls.

### Configuring and Running a TOU Schedule

To configure the TOU Scheduler, start by navigating to the Beacon device page. The page should look like the figure below.



*Beacon device page.*

From here, press the center button to bring up the device menu as shown below.



*The device menu*

Use the up and down arrows to highlight “Mod. Settings” and press the center button to enter the settings menu.

Access Code:	0
TOU Schedule:	1
Time Zone:	4
Cancel      Commit	

*The Settings menu*

There are three entries in this settings page: the access code, the desired TOU schedule, and the time zone.

Access Code:	57
TOU Schedule:	1
Time Zone:	4
Cancel      Commit	

Access Code:	57
TOU Schedule:	1
Time Zone:	4
Cancel <b>Commit</b>	

*Set the access code, TOU schedule, and time zone*

*Commit your changes once you are done*

The access code is 57. You must enter the access code in order to change the TOU schedule or time zone. Once you enter the access code, it is valid for five minutes. After five minutes, you must enter the code again in order to change the schedule.

## Configuration Settings

Access Code
57

Time Zone	Code
UTC	0
US/Eastern	1
US/Central	2
US/Mountain	3
US/Pacific	4
US/Alaska	5
US/Hawaii	6

Refer to the latest Time of Use Program Guide provided by Pika Energy to select a TOU Schedule.

The Program Guide is available at [www.pika-energy.com](http://www.pika-energy.com).

## Changing Settings

To set the access code, TOU schedule, and time zone, you will need to edit each entry in the Settings menu. To edit an entry in the Settings menu, follow these steps:

1. Use the up and down arrows to highlight the desired entry.
2. Press the center button to enter into edit mode on the entry. The cursor will change from blinking to solid.
3. Use the up and down arrows to edit the entry value. Once the desired value is set, press the center button again to leave edit mode.
4. To commit the changes to all entries and exit the settings menu, press the down arrow until you highlight "Commit". Press the center button, then use the arrows and center button to confirm your choice.

Once you select a schedule and commit your changes, the scheduler will automatically enable and begin operating.

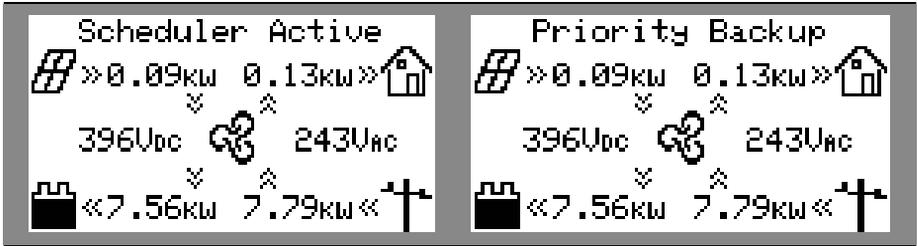
The device status on the REbus Beacon device page now alternates between "running" and the current Operational Mode. An example is shown below.

REbus Beacon TOU Scheduler running Next Change: 1h:37m To: Self Supply Schedule: SDGE	REbus Beacon TOU Scheduler Priority Backup Next Change: 1h:37m To: Self Supply Schedule: SDGE
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*The Beacon device page while the scheduler is running*

Also listed are the next Operational Mode in the schedule, and a countdown until the system changes to that mode. The TOU schedule name is listed at the bottom of the device page.

On the home page, the text above the Power Flow Diagram will alternate between "Scheduler Active" and the correct mode for the current time of day.

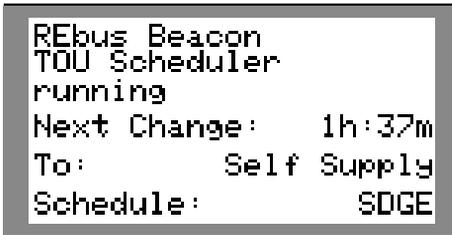


The Home Screen while the scheduler is running

## Disabling Beacon

You can disable the scheduler at any time to suspend its operation. To disable the scheduler:

1. Navigate to the Beacon device page and press the center button to bring up the menu.



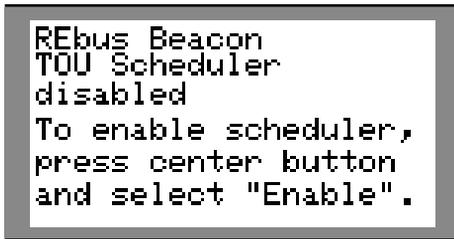
The Beacon device page

2. Highlight "Disable" and press the center button.
3. Arrow sideways to highlight "Confirm" and press the center button.



Highlight "Confirm" and press the center button

The status line on the REbus Beacon device page will now read "Disabled."



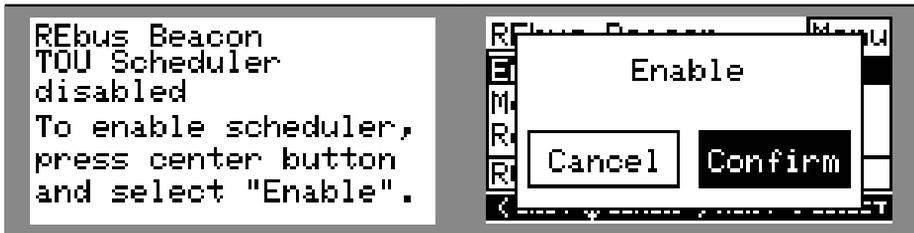
*Beacon is now disabled*

The system will remain in the current Operational Mode until it is changed manually or the scheduler is re-enabled.

## Enabling Beacon

Once you set a TOU schedule, the scheduler will automatically enable itself and begin running. However, if the scheduler has been disabled for any reason, you will need to enable it again to allow it to run. To enable the scheduler:

1. Navigate to the Beacon device page and press the center button to bring up the device menu.



*The Beacon device page*

*Highlight "Confirm" and press the center button*

2. Highlight "Enable" and press the center button.
3. Arrow sideways to highlight "Confirm" and press the center button.

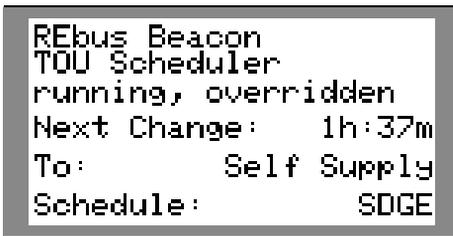
Beacon is now enabled, and the scheduler will begin running the selected TOU schedule.

## Temporarily Overriding the TOU Scheduler

You may temporarily override the scheduler at any time without disabling it. The manual override will apply until the next regularly scheduled Operational Mode change. However, to maximize your savings, it is best not to interrupt the operation of the TOU scheduler.

To temporarily override the scheduler, navigate to the system home page, press the center button, and select your desired temporary Operational Mode. Refer to the Islanding Inverter Operation Manual for complete instructions on how to select an Operational Mode.

To indicate that the scheduler has been overridden, the words “Temporary Override” will display on the home page, alternating with the words “Scheduler Active” and the current Operational Mode. The Beacon device page will also indicate the temporary override with the words “running, overridden”.



*The Beacon device page during a temporary override*

The countdown timer on the Beacon device page will indicate the remaining time until the next mode change. After the next scheduled mode change, the scheduler will resume normal operation.

## Disabling the TOU Scheduler in anticipation of a grid outage

If you are concerned about an impending storm, you may want to make sure your battery is topped up in case there is an outage. To do this, simply disable the scheduler and change the Operational Mode to any of the backup modes, such as Clean Backup or Priority Backup. You can re-enable the scheduler once the incident has passed.

To disable the TOU scheduler and prepare your system for a grid outage:

1. Navigate to the Beacon device page and disable the scheduler. See “Disabling Beacon” on page 14.
2. Navigate to the system home page and change the system Operational Mode to a backup-only mode, such as Priority Backup or Clean Backup. Refer to the Islanding Inverter Operation Manual for a complete explanation of the difference between Clean Backup and Priority Backup.
3. When the emergency has passed, follow the instructions on page 15 to enable the scheduler again.

*Pro Tip: Be aware that some utilities do not permit charging batteries from the grid. If you don't see Priority Backup mode listed with the other Operational Modes, your installer may have removed it to comply with utility rules.*

## Reserving Energy for Backup

REbus-compatible smart batteries come configured with a percentage of total capacity set aside as the Islanding Reserve. Energy in the Islanding Reserve is reserved for use during a grid outage, and does not get used for Time of Use energy management.

If you wish, you may adjust the size of the Islanding Reserve by adjusting the Minimum Arbitrage setpoint on your smart battery. In a system with multiple smart batteries, the Islanding Reserve for each smart battery can be set separately. Refer to your smart battery Operation Manual for instructions on adjusting its settings, including adjusting the size of the Islanding Reserve.

## Connecting to the Internet

Make sure Beacon is connected to the internet at all times. In most cases, you should connect Beacon to a router via ethernet. For manual DHCP setup, contact Pika Energy.

Once Beacon is installed, disable the inverter's onboard ethernet connection using the inverter front control panel. Beacon provides internet connectivity for the entire Energy Island system.

## Technical Support Information

Support department hours: 9AM to 5PM Eastern Time, Monday – Friday (excluding holidays)

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