Set Up Home Energy System

Home Energy System
Every effort has been made in providing for the safe; secure installation of the Home Energy System, including the Energy Assistant®, Sensor Plugs, Transmitters, and Sensor Clamps. The installation of the Sensor Clamps requires the cover of the main electrical circuit breaker panel to be removed. When this is done, there exists the potential hazard of shock, burn, or even electrocution. DO NOT attempt to complete this installation unless you are VERY familiar with the electrical components and operation of the circuit breaker panel. Even when the MAIN circuit breaker has been turned to the "OFF" position, there may still be areas within the circuit breaker panel that may be electrified. DO NOT attempt installation unless you know where these areas are. Professional installation is *highly* recommended.

WARNING – These servicing instructions are for use by Qualified Personnel ONLY. To reduce the risk of electric shock, DO NOT perform any servicing other than that which is contained in these operational instructions, unless you are qualified to do so.

WARNING – If the equipment is used in a manner not specified in these instructions, the protection provided by the equipment may be impaired.
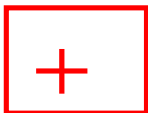
This symbol will be found throughout the instructions where there is a potential for electric shock, burn, or even electrocution. DO NOT attempt to complete the noted section if you are not an electrician, or qualified installer.

Energy Assistant® Buttons and Display Screens

WARNING – If the equipment is used in a manner not specified in these instructions, the protection provided by the equipment may be impaired.

The Energy Assistant® is the control and display element of a set of tools that allow you to create a simple and powerful Home Energy System. The Energy Assistant® shows you how you are using electricity, what it is costing you, and gives you information to lower your energy cost and increase your conservation efforts. This information can be seen on the three (3) display screens available on the Energy Assistant®; these display screens are the **Home**, **Conservation**, and **Energy Management** pages.

Energy Assistant® Buttons
§ The Energy Assistant® is designed for simplicity and ease-of-use. Buttons are arranged at the bottom of the Energy Assistant® and will be used on a regular basis to configure, control, and monitor your Home Energy Management System.
- o **LINK** Used for configuration and pairing of the Energy Assistant® with devices, including Sensor Plug(s) and Transmitter(s)
- o **OK** Acts as an enter key with mulitple functions
- o **H** Returns to the Home or default display screen.
- o ‡ Scroll up
- o ˆ Scroll down and Power On/Off (press and hold ˆ for 5 seconds to power on/off)
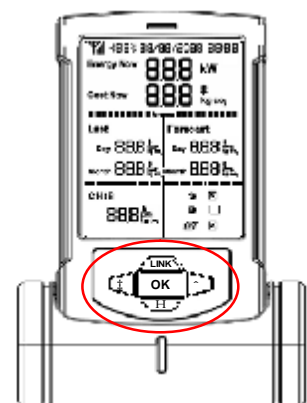
Energy Assistant® Presentation Page
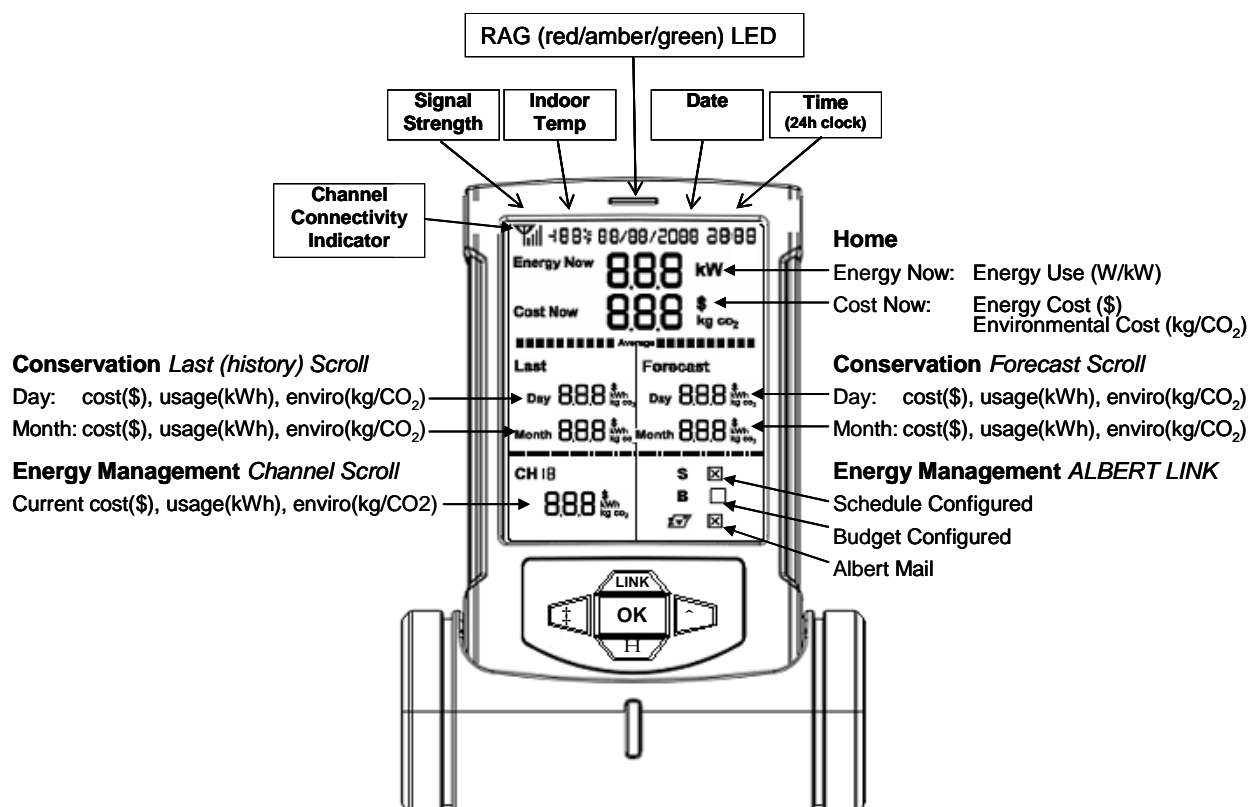
The *Energy Assistant®* **Home** *Segment* shows energy data from the entire residence. Usage and Cost Consumption totals are derived from one (1) of two (2) sources:
1) The Transmitter and Sensor(s) connected to the utility meter; **OR**
2) IF there is no connection to the utility meter, than total of ALL configured Channels.

Home Segment Navigation:
   § Energy Now-   Displays current energy usage as described above in W/kW.
   § Cost Now-   Scrolls every 10 seconds to display cost of energy usage in dollars ($) and carbon emissions (kg CO2)

The *Energy Assistant®* **Conservation** *Segment* has two sections, a *History* and a *Forecast* of energy cost, usage and environmental impact to allow for comparison by day and by month. Similar to the Usage and Cost Segment, the Conservation Segment values are derived from one (1) or two (2) sources:
1) The Transmitter and Sensor Clamps) connected to the utility meter; **OR**
2) IF there is no connection to the utility meter, than total of ALL configured Channels.

Conservation Segment Navigation (Last and Forecast):
   § Last (Day/Month)-   Scrolls every 10 seconds to display the history of your energy usage (W/kW0, cost of that usage in dollars ($), and carbon emissions (kg CO_2).
   § Forecast (Day/Month)-   Scrolls every 10 seconds to display a forecast of your energy usage (W/kW0, cost of that usage in dollars ($), and carbon emissions (kg CO_2).

The *Energy Assistant®* **Energy Management** *Segment* serves two (2) purposes:
1) Configuring, or adding, individual channel(s) (Sensor Plug(s) and/or Transmitter(s) to the Home Energy System (please see the **Set-Up Home Energy System** section of this manual for details); **AND**
2) Displaying individual channel (Sensor Plug(s) and/or Transmitter(s) consumption data.

Energy Management Segment Navigation:
   § Channel numbers (CH X) scroll every 40 seconds to display device usage.
   § Within each channel number (CH X), scrolls every 10 seconds to display the power draw (W/kW), energy usage (kWh), cost of that usage in dollars ($), and carbon emissions (kg CO_2)

§ To manually access channel usage, use the ‡ and ˆ to scroll through channel numbers (CH X). To return to the default screen, press the **H** button.
(NOTE: If there is no key operation within 1min, the Energy Assistant® will return to the default display.)
<u>ALBERT LINK Energy Management Segment:</u>
§ Channel(s) Scheduling
Scheduling is a function reserved to Home Energy Systems operating in tandem with Albert Software. If a Schedule for a particular channel is created within Albert, an **T** will appear beside Schedule when the appropriate channel number is displayed.The specific schedule CAN ONLY be created and viewed via Albert.
§ Channel(s) Budget(s)
As with Scheduling, Budget is a function reserved to Home Energy Systems operating in tandem with Albert Software. If a Budget for a particular channel is created within Albert, an **T** will appear beside Budget when the appropriate channel number is displayed.The specific budget CAN ONLY be created and viewed via Albert.

Using the Energy Assistant®

<u>Big Picture Savings</u>
The Energy Assistant® will always give you a visual indicator of how you are doing in your conservation efforts. The LED Indicators (above the LCD display) and Average Bar Graph (within the LCD display below) provide an easy at-a-glance understanding of your efforts at saving energy, based on one of two scenarios: 1) If you have a transmitter connected to your whole house meter and if you have collected at least one month's data; or 2) If you do not have a transmitter connected, the indicators will show progress on the total of the Sensor Plugs paired to your Energy Assistant®.

Average Bar Graph: The Average Bar Graph combines the components of energy conservation, power consumption, cost, and environmental impact (CO_2 emissions), into an easy to understand, progressive bar graph. These components are computed and displayed as ratio of the current day to the average of the past 30 days. When the total for the current day is smaller than the average for the past 30 days, bars will be displayed at the left of the AVERAGE tag, representing 10% of your use. For Example, if you are currently using 60% of your average consumption, there will be 6 bars to the left of the AVERAGE tag (see figure at right). Conversely, if you go over your average consumption, the bars will be displayed to the right of the AVERAGE tag in 10% bar increments (the figure at right represents a 40% increase over the average consumption).

<u>Little Picture Savings</u>
You can set a BUDGET for any Sensor Plug that has been paired with the Energy Assistant® using the Albert Link. The buzzer will sound an alarm once the BUDGET has been reached. Each Sensor Plug has been set by the factory at 1800 watts.

<u>Resetting the Energy Assistant®</u>
It shouldn't be necessary, but if you need to reset your Energy Assistant®, press and hold the ‡ and ˆ at the same time. When the LED Indicator flashes twice (2), release the ‡ and ˆ, the software version of the device will appear, and the numbers will revert to zeros (0). Once you do this, ALL DATA will be cleared from the Energy Assistant®. Unplug the Energy Assistant®, and then plug it back in. The Energy Assistant® will function normally. You must input all set up information again.

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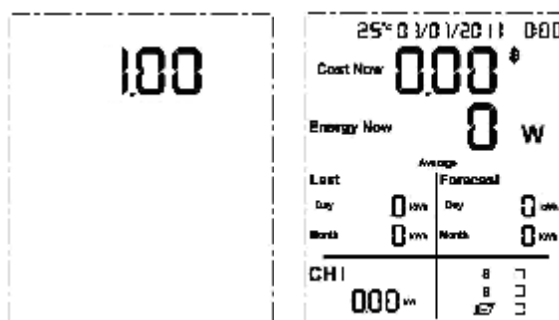
Set-Up Home Energy System

Set-up the Energy Assistant®
WARNING – If the equipment is used in a manner not specified in these instructions, the protection provided by the equipment may be impaired.

1) Determine a location for the Energy Assistant® that is conveniently located in close proximity to a power socket and PC, and where it will be well-suited to operate and monitor.
2) Use the Power Supply provided in the kit to attach the Energy Assistant® to the power socket.
   - When initially powered-up the Energy Assistant® LED Indicators will illuminate and the screen will display a default screen showing all fields with 0 (zeros) as place holders:
3) Place your Energy Assistant® near your PC. After setting up your Home Energy System, you will use the USB Cable provided in your kit to connect to register and configure your Home Energy System.
4) For the Energy Assistant® to function properly, it is important to set up the TARIFF or RATE, CO_2 coefficient (environmental impact), DATE/TIME, and TEMPERATURE unit. The Energy Assistant® will advance through the settings in the following order. To start, press the **OK** button and hold it in place for 3 seconds; release the **OK** button when the red LED flashes twice (2).
   (NOTE: If there is no key operation within 1min the Energy Assistant® will return to the default display.)

   - <u>TARIFF or RATE</u>; Upon entering the rate setting, the first digit of the default (*0*.163), or previously entered rate, will flash. Use the ‡ and ˆ to progress through the numbering. Press the **OK** button to confirm each entered digit and progress to the next digit. When the final digit is confirmed, the ENTIRE rate will flash. If any part of the flashing rate is *incorrect,* press the **OK** button to restart the rate setting process. If the rate is *correct* press the ˆ button to move on to the setting of the CO_2 coefficient (environmental impact).
   - <u>CO_2 Coefficient (environmental impact):</u> Upon entering the CO_2 setting, the first digit of the default (*0*.54), or previously entered CO_2 setting, will flash. Use the ‡ and ˆ to progress through the numbering. Press the **OK** button to confirm each entered digit and progress to the next digit. When the final digit is confirmed, the ENTIRE CO_2 setting will flash. If any part of the flashing CO_2 setting is *incorrect,* press the **OK** button to restart the CO_2 setting process. If the rate is *correct,* press the ˆ button to move on to the setting of the date and time.
   - <u>DATE/TIME:</u> Upon entering the date and time setting, the 2 digits for the default date/day (*01*), or previously entered date/day setting, will flash. Use the ‡ and ˆ to progress through the numbering (01-31) for the date/day. Press the **OK** button to confirm the date/day and progress to the month setting. Use the ‡ and ˆ to progress through the numbering (01-12) for the month. Press the **OK** button to confirm the month, and progress to the year setting. The first half of the year (20XX) is fixed, use the ‡ and ˆ to progress through the numbering (11-99) for the second half of the year. Press the **OK** button to confirm the year, and progress to the time setting. The Energy Assistant® operates on a 24-hour versus a 12-hour clock; use the ‡ and ˆ to progress through the numbering (00-23) for the hour of the day. Press the **OK** button to confirm the hour of the day, and progress to the minutes setting. Use the ‡ and ˆ to progress through the numbering (00-59) for the minutes of the day. Press the **OK** button to confirm the minutes of the day. When the final digit is confirmed, the DAY/DATE, MONTH, YEAR, HOUR and MINUTES will flash. If any part of the flashing date and time setting is *incorrect,* press the **OK** button to restart the date and time setting process. If the date and time are *correct,* press the ˆ button to move on to the setting of the temperature unit.
   - <u>TEMPERATURE:</u> Upon entering the temperature setting, the default (C°), or previously entered temperature unit, will flash. Use the ‡ and ˆ to select between Celsius (C°) or Fahrenheit (F°). Press the **OK** button to confirm the temperature unit. Upon completing the temperature setting, you will automatically be returned to the default display.
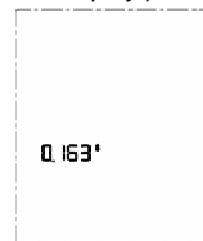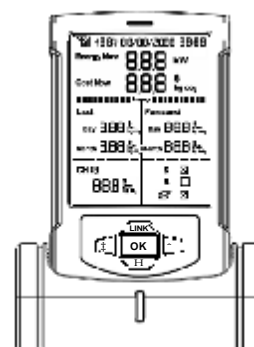
- BUZZER: The default for the buzzer is off. To change the setting, press the **H** button and hold it for 3 seconds to turn it on or off. If the buzzer is on, it will sound when there is an alarm in the system.

5) Confirm that the entries for the above settings, at the top of the LCD display, are correct. Make adjustments as necessary.
   (NOTE: It is extremely important that settings are correctly input to insure proper operation of the system. Improper configuration of the settings can result in incorrect consumption readings, scheduling and budgeting operation, etc.)

6) The following two (2) sections outline adding channels to the Home Energy System. Channels include things like Sensor Plugs, Transmitters and Sensor Clamps.
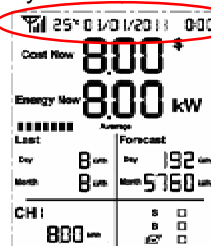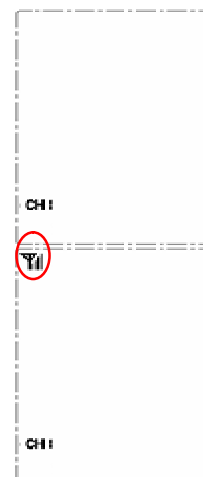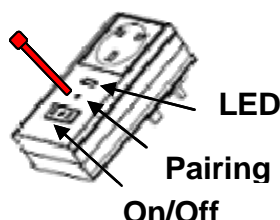
Set-up the Sensor Plugs

WARNING – If the equipment is used in a manner not specified in these instructions, the protection provided by the equipment may be impaired.

Pairing Sensor Plug(s) with the Energy Assistant®

(NOTE: When pairing, attempt to use a power socket in very close proximity to the Energy Assistant®, for ease and speed of processing.)

1) Starting with the Energy Assistant®, confirm that it is plugged in and securely affixed to the base.
2) Very nearby, plug a Sensor Plug into a power socket.
3) To start, press the **LINK** button on the Energy Assistant® and hold it in place for 3 seconds, until the red LED flashes twice (2).
4) The default channel (CH 1) will flash. If you want to use a Channel number that is different, use the ‡ and ˆ buttons on the Energy Assistant® until the desired channel number appears. Make sure to write down the Channel number, and a designation, for what you are plugging into it. Customizing the naming is included in the function reserved to Home Energy Systems, operating in tandem with Albert Software
   (NOTE: Channels 1-13 are reserved for the Sensor Plugs. Channels 14 -16 are reserved for other uses that will be described later.)
5) When the appropriate channel number has been selected, press the **LINK** button. The antenna symbol will flash, and the red LED will illuminate to indicate that the pairing process has begun.
6) Insert the slim plastic stick (provided) into the pairing hole of the Sensor Plug and hold in place for 3 seconds; the LED on the Sensor Plug will flash.
7) When the antenna symbol stops flashing, and the red LED on the Energy Assistant® goes out, you will be returned to the default display, and the solid antenna will indicate that the pairing is complete (this may take up to one (1) minute).
   (NOTE: When a channel has a successfully paired device, the antenna will be displayed.)

LED

Pairing

On/Off

8) Remove the stick and the Sensor Plug from its pairing location to where you want to monitor and/or control an electrical appliance.
9) Plug the Paired Sensor Plug into the nearest power socket, and plug the electrical appliance into the Sensor plug.
10) Press the ON/OFF button located under the hole on the Sensor Plug. The LED will light up indicating the Sensor Plug is active.
11) After about a 60 second delay, the Energy Assistant®, and the Sensor Plug, will begin to communicate. When the value is above 0, the Energy Assistant® will be able to display the data for the Channel/Channel number in the Energy Management segment, including cost ($), energy (kWh), and environmental impact ($kgco_2$).
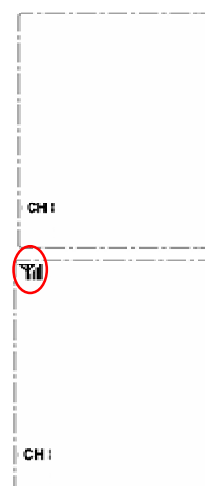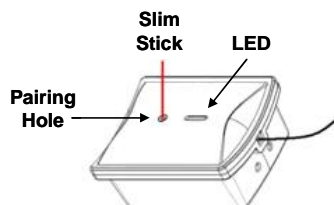
Transmitter

WARNING – If the equipment is used in a manner not specified in these instructions, the protection provided by the equipment may be impaired.

(NOTE: When pairing, keep the transmitter in very close proximity to the Energy Assistant®, for ease and speed of pairing.)

1) Confirm that the Energy Assistant® has power.
2) The transmitter is a small square device with one sensor clamp attached to it.
3) Remove the clear plastic tab (labeled Remove Before Using) from the Transmitter. The LED will flash.

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4) Confirm that the batteries have been correctly installed in the Transmitter.
5) To start, press the **LINK** button on the Energy Assistant® and hold it in place for 3 seconds, until the red LED flashes twice (2).
6) The default channel (CH 1) will flash, use the ‡ and ˆ buttons on the Energy Assistant® to navigate to Channel 14.
   (NOTE: Channels 14 -16 are reserved for the transmitter and sensor clamps attached to the utility meter.)
7) Press the **LINK** button. The antenna symbol will flash and the red LED will illuminate to indicate that the pairing process has begun.
8) Insert the slim plastic stick (provided) into the pairing hole of the Transmitter, and hold in place for 3 seconds; the LED on the Transmitter will flash.
9) When the antenna symbol stops flashing, and the red LED on the Energy Assistant® goes out, you will be returned to the default display, and the solid antenna will indicate that the pairing is complete (this may take up to one (1) minute).
   (NOTE: When a channel has a successfully paired device, the antenna will be displayed.)

Set-up the Sensor Clamps
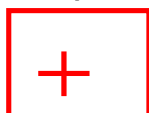
WARNING – These servicing instructions are for use by Qualified Personnel ONLY. To reduce the risk of electric shock, DO NOT perform any servicing, other than that which is contained in these operational instructions, unless you are qualified to do so.
**WARNING** – The Sensor Clamps and Transmitter must be connected to a switch or circuit breaker, in close proximity, to the equipment, and within easy reach of the operator. It must be marked as the disconnecting device for the Transmitter.
WARNING – If the equipment is used in a manner not specified in these instructions, the protection provided by the equipment may be impaired.

Installation of Sensor Clamps and Transmitter
1) Locate the circuit breaker or service panel.
2) Remove the cover of the circuit breaker or service panel.
3) Turn OFF the Main Circuit Breaker.
4) Test ALL circuits with an appropriate current tester to ensure that NOTHING in the circuit breaker panel is electrified.
5) Attach additional Sensor Clamp(s) to the Transmitter as required by your circuit breaker on the service panel.
   (DO NOT attach the Sensor Clamps to the ground and/or neutral wires.)
6) Assure that the sensor clamp is securely attached around the two feeder lines; make sure to let the line pass through the Sensor Clamps.
7) Place the transmitter inside the breaker panel, or adhere it to the wall of the panel (provided).
8) Turn ON the Main Circuit Breaker.
9) Close the cover of the circuit breaker or the service panel.
10) The sensor clamps and Transmitter will immediately sense the current and deliver usage data to the Energy Assistant®. On the Energy Assistant® Home Page, the Energy Now field will change from zeros (0), as your energy-use increases.

6
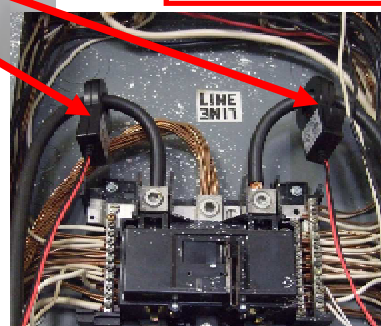
FCC Statement

1. This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

(1) This device may not cause harmful interference.

(2) This device must accept any interference received,

including interference that may cause undesired operation.

2. Changes or modifications not expressly approved by the party responsible

for compliance could void the user's authority to operate the equipment.

NOTE:

This equipment has been tested and found to comply with the limits for a Class B digital device,

pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable

protection against harmful interference in a residential installation.

This equipment generates uses and can radiate radio frequency energy and,

if not installed and used in accordance with the instructions,

may cause harmful interference to radio communications. However,

there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception,

which can be determined by turning the equipment off and on,

the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.