



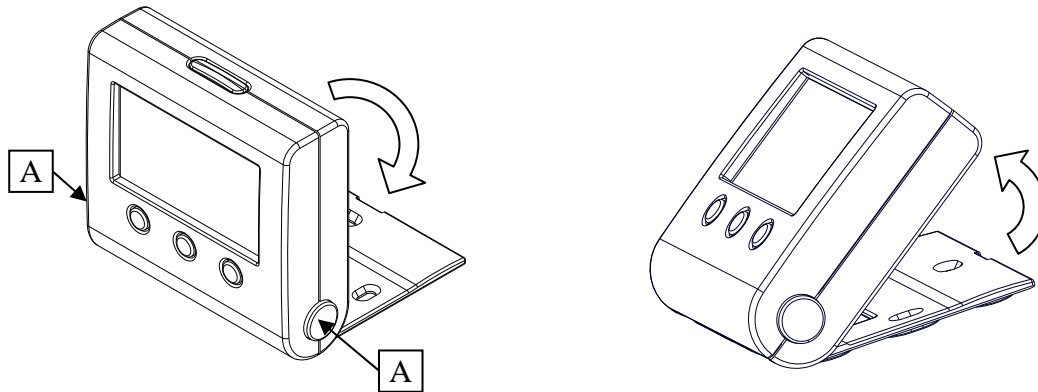
In Home Display (IHD) and ZigBee Smart Energy



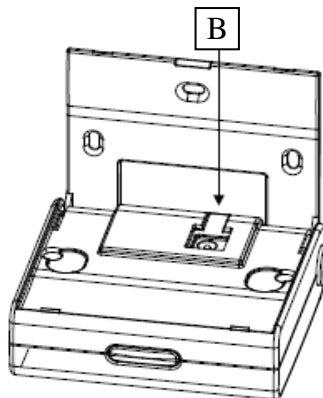
Operation Manual

Getting Started

1. Unpack the In Home Display (IHD). Included in the box is the display unit, plug-in power supply, and this document.
2. Adjust the foot stand by holding the IHD in one hand and pushing in gently on the side buttons [A]. Pull the foot from the back of the unit and adjust for a comfortable view.



3. Plug in the barrel connector from the power supply in the round receptacle on the display unit [B].



4. For the initial joining of the IHD with your smart meter, try to be as close to your meter as possible, for example, in a room nearest the location of the meter. You do not have to be outdoors.
5. Plug the power supply into an outlet. The IHD will power up.
6. For best results, allow the IHD to remain plugged in for four hours to allow the battery to charge before relocating the IHD.

In Home Display (IHD)

The In Home Display (IHD) allows you to track your electricity usage and cost. Screens have been customized to provide electricity information, including current and total electricity usage. This information will help you understand how the equipment and devices in your home consume electricity, which determines the amount of your monthly electric costs.

The IHD may be carried with you, placed on a table top, or hung on a wall. Since the device communicates with the electric meter, it must be in signal range to retrieve and display information. Check the signal strength indicator on the Home screen to find the best locations.

The environmentally-friendly internal backup battery in the IHD provides approximately 4 hours of active use power and up to 24 hours of power in sleep mode.

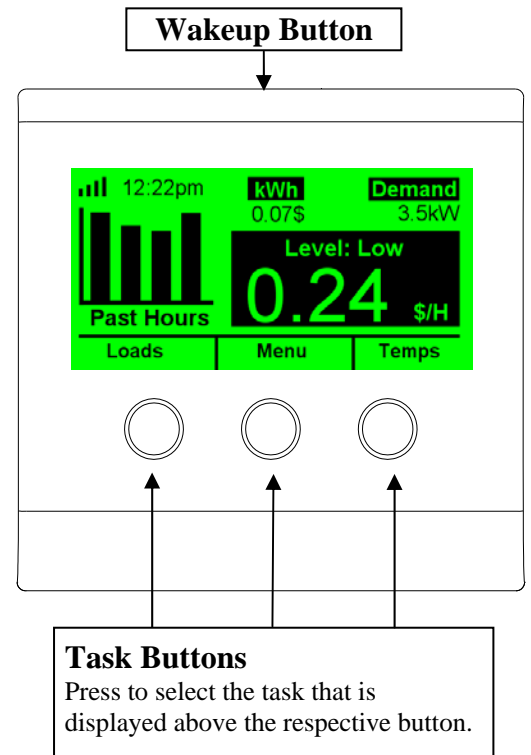
Message Screen

This device may display custom messages from your utility company to keep you informed. When you have a message from your utility company, it will appear on the first screen displayed. Read it and press “OK” to go to the Home screen.

Sleep Mode

When AC power is lost or if the IHD is unplugged, the IHD will remain operational using the internal backup battery. However, while operating on battery power, the IHD will enter sleep mode 30 minutes after the last button is pressed. To use the IHD while it is in sleep mode, you must first wake it up by using the Wakeup Button located on the top edge of the IHD.

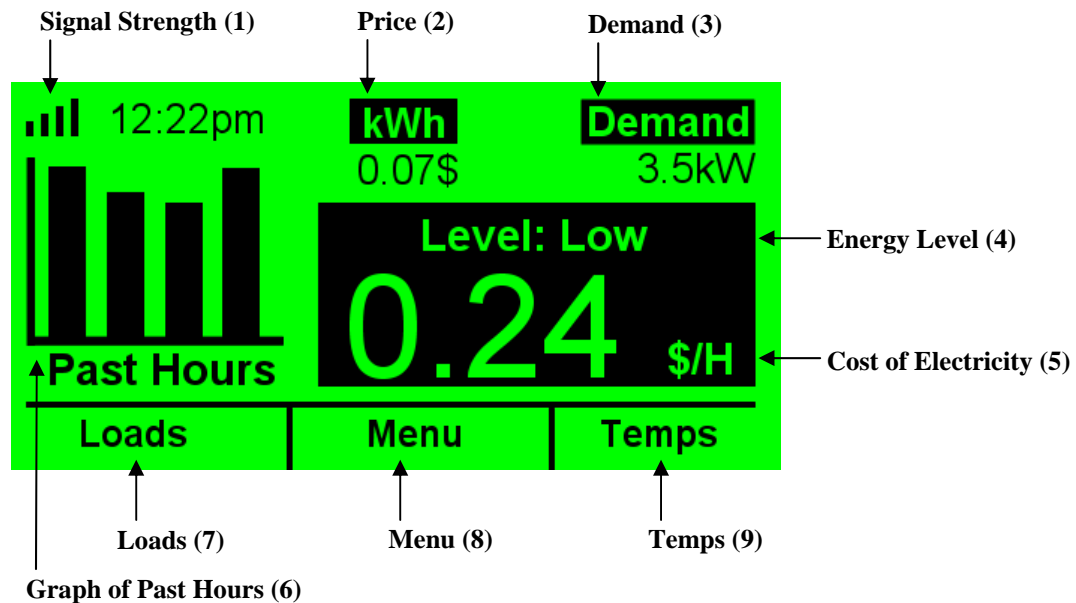
To wake up the IHD, press and hold the Wakeup Button for three seconds.



	Press the Task Button on the left.
	Press the Task Button in the middle.
	Press the Task Button on the right.

Home Screen

Once communications are established between the IHD and the electric smart meter, the Home screen is displayed on the IHD. The Home screen contains key information to help you see your electricity status at a glance. The display's background color will change from green to blue to yellow to red to catch your attention as energy prices or events change.



- (1) Signal Strength:** Displays the signal strength of the wireless ZigBee network. Adequate signal strength is required for the IHD to communicate with your smart meter. If the signal is lost, the display will show “no signal” after 5 minutes.
- (2) Price (kWh):** Displays the current price for electricity.
- (3) Demand (kW):** Displays the amount of power that is currently being used. The more devices that you have “on” the higher the number and the higher your cost. Updated every 30 seconds.
- (4) Energy Level:** Displays the current energy level as: [None], Low, Medium, High, or Critical.
- (5) Cost of Electricity (\$/H):** Displays the hourly cost of electricity, based on the current level of electric demand and current electric rates. Updated every 5 minutes.
- (6) Past Hours:** Bar graph that displays kWh used in each hour over the last 4 hours (IHD must remain plugged in and on).
- (7) Loads:** The Loads button is used to view and control individual compatible loads.
- (8) Menu button:** Provides access to additional screens to configure the backlight, set the time and date, view the current reading of the electric meter, to configure the ZigBee network, and to reset the unit to its factory default configuration.
- (9) Temps:** The Temps button is used to view and control individual compatible thermostats.

Controlling Loads

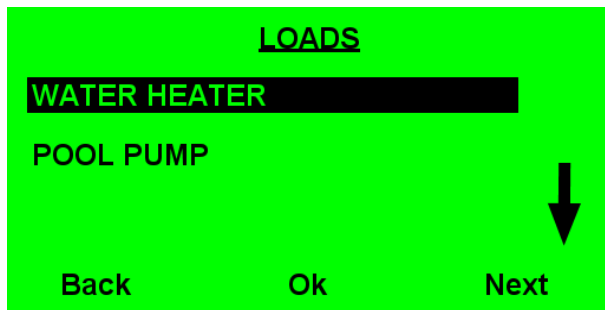
The Loads button is used to view the status of, view the demand of (if applicable), control, and schedule enrolled load control devices on the ZigBee network.



View, Control, and Schedule Loads

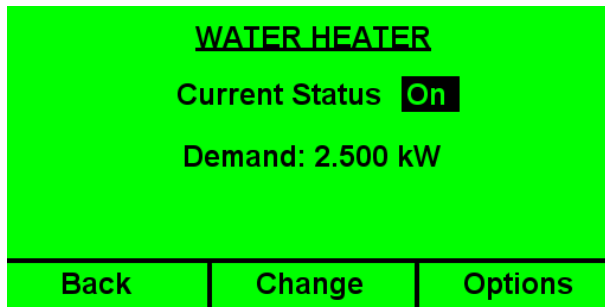
To view, control, and schedule available loads on the ZigBee network:

1. From the Home screen, press the “Loads” button. 

A list of available loads is displayed:



1. To highlight a load in the list, press the “Next” button. 
2. To select a load, highlight it in the list and press the “Ok” button. 



Water Heater – Name of the selected load


Current Status – Current status of the individual load

Demand – Current energy demand of individual load (if available)

Back – Go back to the Home screen

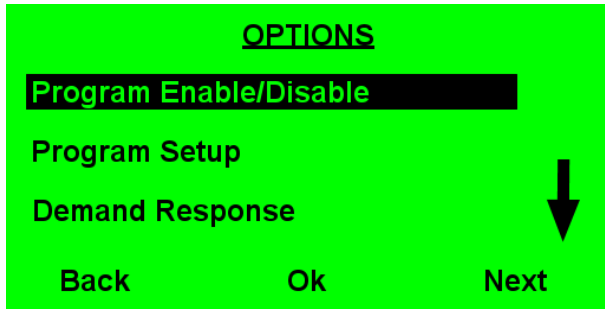
Change – Change the current state of the load

Options – Enable, disable, or change the program schedule of the load

3. To change the state of the load, press the “Change” button. 

The “Change” button will cycle the load through the available state options.

4. To enable, disable, or change the program schedule of a load, press the “Options” button.

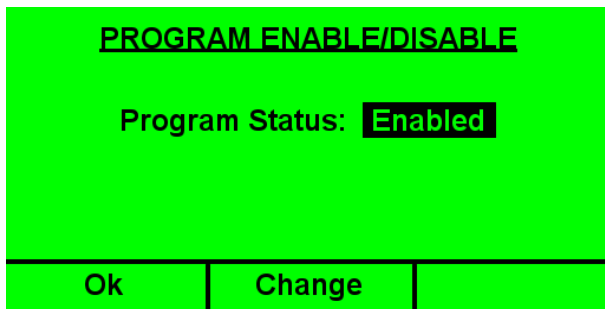


The items in the Options menu are:

- a) Program Enable/Disable
- b) Program Setup
- c) Demand Response
- d) Load Setup

5. To enable or disable the program schedule, from the Options screen, highlight “Program Enable/Disable” and then press the “Ok” button.

The status of the program schedule is displayed:



a) Press the “Change” button to change the status of the program schedule.

The “Change” button will cycle the Program Status between Enabled and Disabled.

b) Press the “Ok” button to save the highlighted Program Status.

Note: While on this screen, if no buttons are pressed for 5 seconds, the display will return to the previous screen.

6. To change the program schedule of the load, from the Options screen, highlight “Program Setup” and then press the “Ok” button.

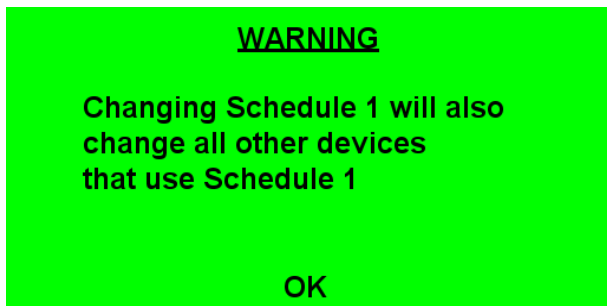
Schedule 1		
	TIME	STATUS
MORNING	4:30AM	ON
DAY	10:00AM	OFF
EVENING	3:45PM	ON
NIGHT	10:45PM	OFF
Ok	Change	Next

There are 4 time schedules that affect all loads. If you change a Time and/or Status in a schedule, it will change the Time and/or Status for all devices that use that schedule.

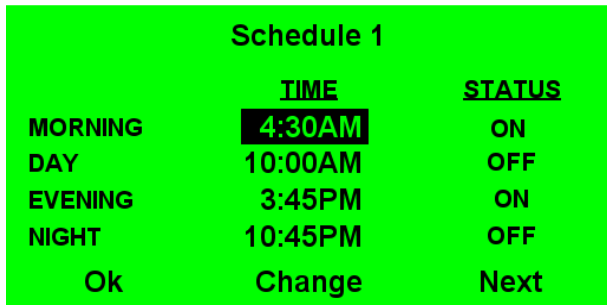
- a) To select the Schedule to be modified, press the “Next” button.

The “Next” button will cycle between Schedule 1, Schedule 2, Schedule 3, and Schedule 4.

- b) To modify the selected schedule (with the desired Schedule listed at the top of the screen), press the “Change” button.



- c) Read the Warning message and then press the “OK” button.



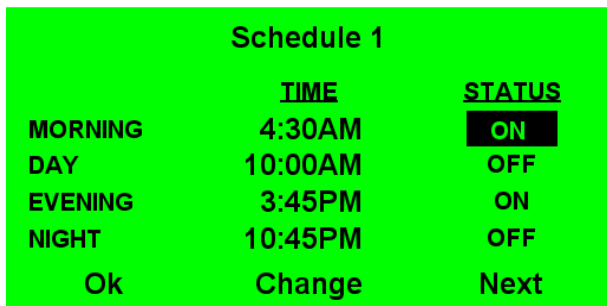
A screen titled "Schedule 1" showing a table of time periods and their status. The "4:30AM" time is highlighted in red.

	<u>TIME</u>	<u>STATUS</u>
MORNING	4:30AM	ON
DAY	10:00AM	OFF
EVENING	3:45PM	ON
NIGHT	10:45PM	OFF
Ok	Change	Next

- d) There are four periods (Morning, Day, Evening, and Night) for each schedule. To change the time for a period, highlight the time and press the “Change” button.

- The time is increased in 15 minute increments
- To disable a period, set it and the next period to the same time

- e) To change the status for a period, highlight the status by pressing the “Next” button.




A screen titled "Schedule 1" showing a table of time periods and their status. The "ON" status for the Morning period is highlighted in red.

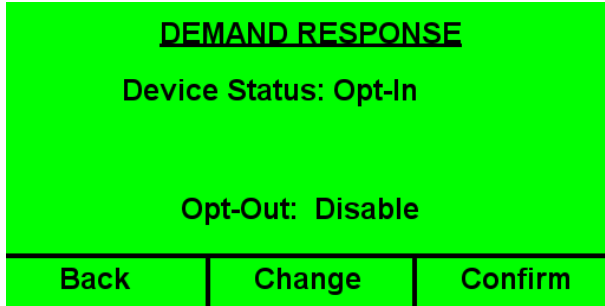
	<u>TIME</u>	<u>STATUS</u>
MORNING	4:30AM	ON
DAY	10:00AM	OFF
EVENING	3:45PM	ON
NIGHT	10:45PM	OFF
Ok	Change	Next

- f) To change the status for the selected time, press the “Change” button.


The “Change” button will cycle the load through the available state options.

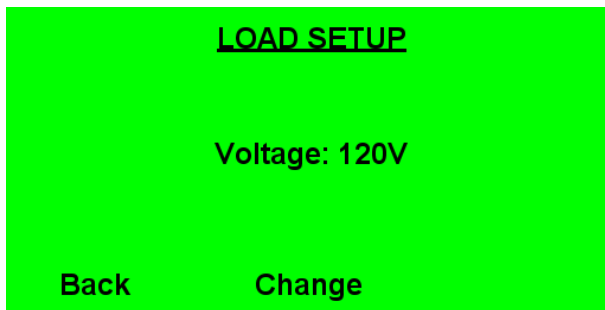
- g) When the schedule is complete, press the “Ok” button.

7. To configure if the selected load will participate in a demand response event, from the Options screen, highlight “Demand Response” and then press the “Ok” button. 



Back – Go back to the Options menu screen
Change – Toggles the status between Enable/Disable
Confirm – Confirms the selection

8. To configure the operating voltage of the load that is connected to the selected load control module, from the Options screen, highlight “Load Setup” and then press the “Ok” button. 




Back – Go back to the Options menu screen
Change – Change the operating voltage of the load that is connected to the selected load control module

Controlling Thermostats

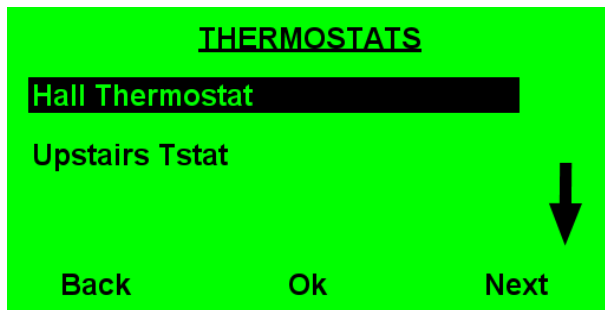
The Temps button is used to view the status of and control the supported features of enrolled thermostats on the ZigBee network.



View and Control Thermostats

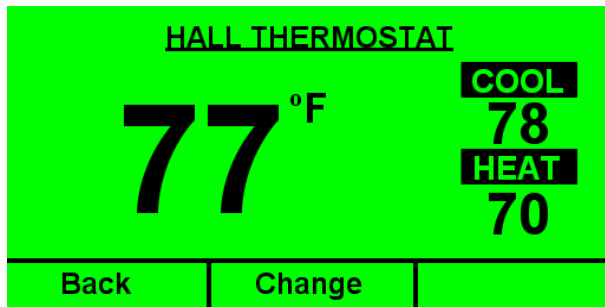
To view and control the available thermostats on the ZigBee network:

1. From the Home screen, press the “Temps” button. 

A list of available thermostats is displayed:



2. To highlight a thermostat in the list, press the “Next” button. 
3. To select a thermostat, highlight it in the list and press the “Ok” button. 



Hall Thermostat – Name of the selected thermostat


Current Temperature – Current temperature reported on the thermostat

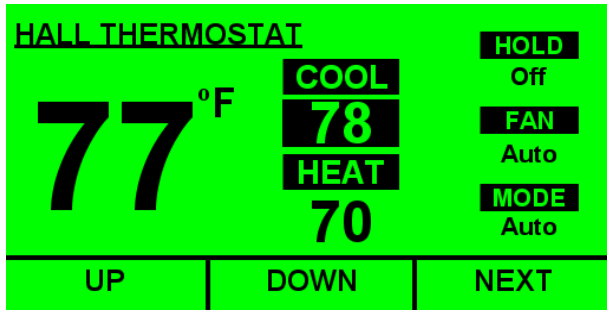
Cool Setpoint – Cool setpoint on the thermostat




Heat Setpoint – Heat setpoint on the thermostat

Back – Go back to the Home screen

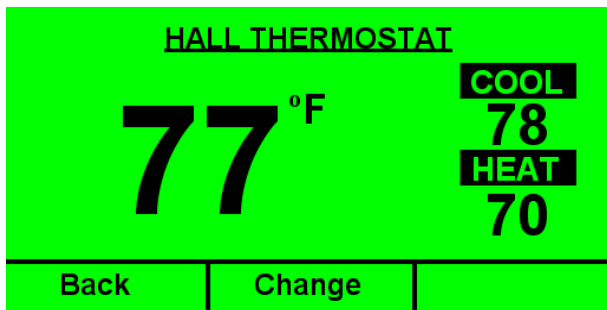
Change – Change the cool setpoint, heat setpoint, hold status, fan status, or mode of the thermostat

4. To change the cool setpoint, heat setpoint, hold status, fan status, or mode of the thermostat, press the “Change” button. 



- Press the “UP” button  to increment or change the setting of the highlighted item.
- Press the “DOWN” button  to decrement or change the setting of the highlighted item.
- Press the “NEXT” button  to advance to the next item.


Note: While on this screen, if no buttons are pressed for 5 seconds, the display will return to the previous screen.

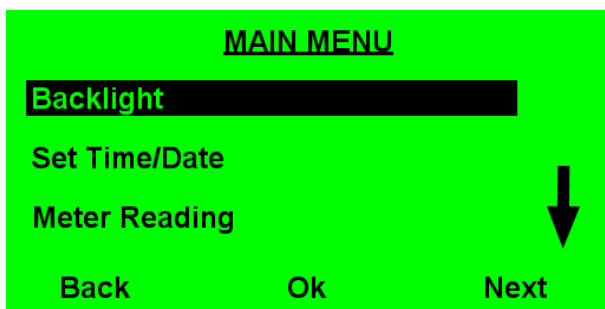


Menu Button

The Menu button is used to configure the backlight, set the time and date, view the current reading of the electric meter, to configure the ZigBee network, and to reset the unit to its factory default configuration.

Main Menu

To view or configure the items in the main menu, from the Home screen, press the “Menu” button. 

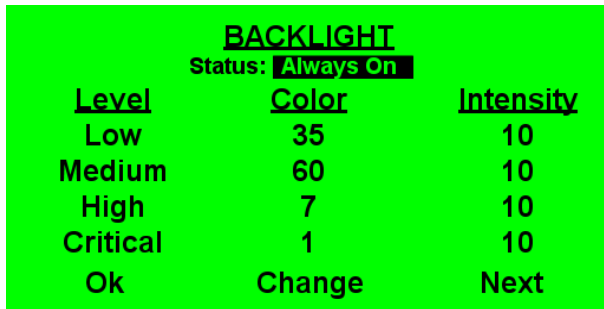


The items in the Main menu are:

- Meter Reading
- Set Time/Date
- Meter Reading
- ZigBee Setup
- ZigBee Network
- Factory Defaults

Backlight

The Backlight screen is used to set the parameters on the backlight.



<u>BACKLIGHT</u>		
Status: Always On		
<u>Level</u>	<u>Color</u>	<u>Intensity</u>
Low	35	10
Medium	60	10
High	7	10
Critical	1	10
Ok	Change	Next

Status – Sets the backlight options:

Always on

Always off

Auto (backlight turns on when a button is pressed and automatically turns off)

Level – Level or price which defines each tier

Color – Sets the color of the display for each tier

Intensity – Intensity of the backlight for the tier

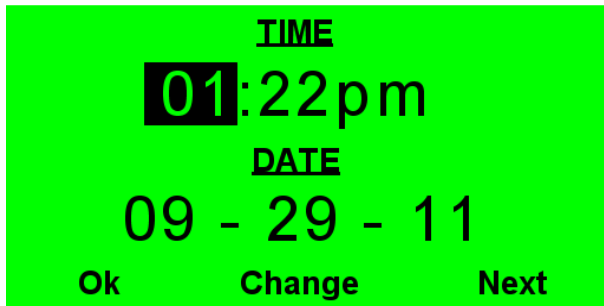
Ok – Confirm change

Change – Change selected item

Next – Select next item in the table

Set Time/Date

The Set Time/Date screen is used to set the current time and date in the device.



<u>TIME</u>		
01:22pm		
<u>DATE</u>		
09 - 29 - 11		
Ok	Change	Next

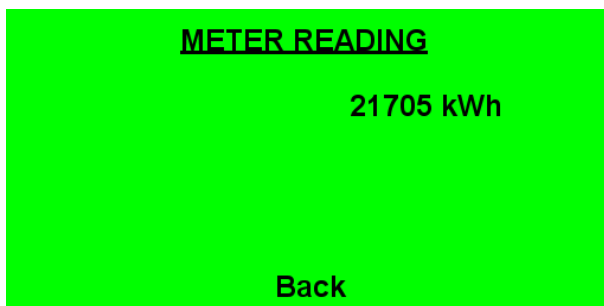
Ok – Confirm change

Change – Change selected item

Next – Select next item in on the screen

Meter Reading

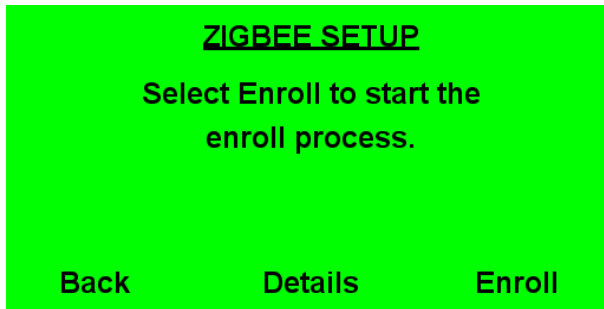
The Meter Reading screen shows you the current reading of the electric meter.



<u>METER READING</u>
21705 kWh
Back

ZigBee Setup

The ZigBee Setup screen is used to enroll the device into the ZigBee network.



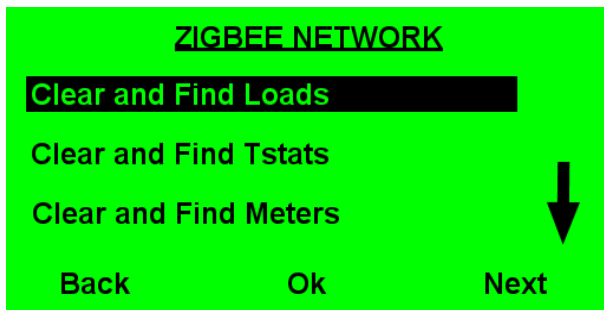
Back – Go back to the Main Menu screen

Details – View the Join details page (scrolling list)

Enroll – Enroll the IHD into the ZigBee network

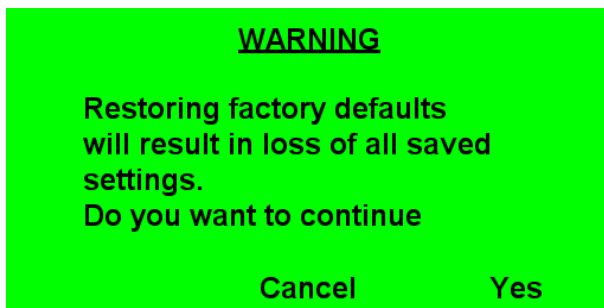
ZigBee Network

The ZigBee Network screen is used to clear and find loads, thermostats, and smart meters.



Factory Defaults

The Factory Defaults screen is used to configure all settings in the IHD to the original factory default settings.



To continue with resetting the IHD to its factory default settings, press the “Yes” button.



Safety

- Do not locate this device near water (sink, bathroom, etc.).
- Do not operate device if there are any cracks in plastic housing of power supply, display unit, or cord.
- Plug power supply firmly into outlet; do not allow prongs to be partially exposed.
- Use only the power supply that was provided with the product.

Specifications

Display: LCD with LED backlight (multicolor)

Power Supply: UL Listed, high efficiency isolated
5VDC output
110-120VAC input
Consumption, under 1 watt, typical

Battery: LiFe 3V, RCR123, rechargeable

Communications: ZigBee RF Communications
Smart Energy Profile

Warranty - This device has a limited warranty of 2 years.

Designed and Manufactured in the USA, using components sourced worldwide.

FCC Statement: This device includes 65A26-1 radio module, FCC ID: HHC-65A261, IC: 1516A-65A261. 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, and (2) this device must accept any interference received, including interference that may cause undesired operation. In the unlikely event that the device is suspected of causing interference with a radio, TV or other receiver, try relocating the device, the receiver or adjusting the antenna on the receiver.

This product employs certain elements from one or more of the following U.S. Patents: IP CO, LLC: 7,089,125; 7,054,271; 6,249,516; 6,044,062. SIPCO LLC: 7,103,511; 6,914,893; 6,891,838; 5,714,931; 6,233,327; 7,397,907; 6,618,578; 7,079,810; 7,295,128; 7,263,073; 7,480,501; 6,437,692; 7,468,661; 7,053,767; 7,650,425; 7,739,378