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ZigBee Interface Module (ZIM) For HAI Omni and Lumina Controllers



Operation Manual

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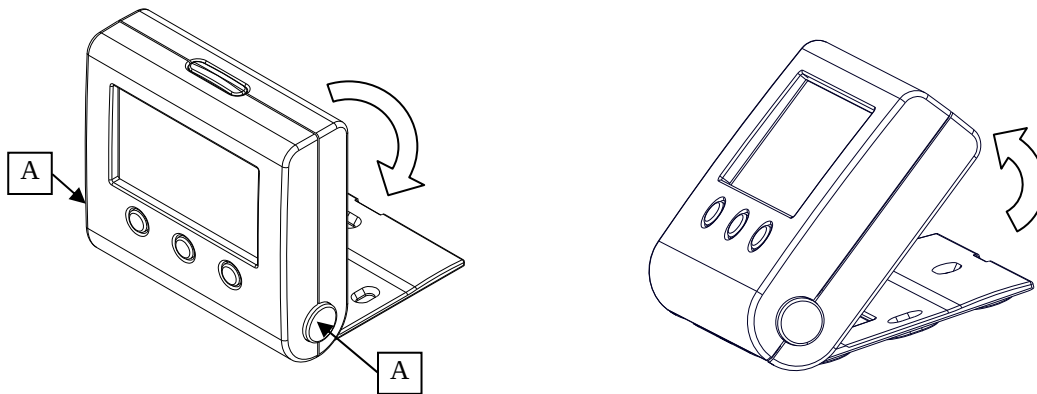
HAI ZigBee Interface Module (ZIM)

The ZigBee Interface Module (ZIM) is a wireless interface and coordinator for wireless ZigBee products. The ZIM connects to a serial port on HAI Omni or Lumina family controllers and allows control of HAI Wireless ZigBee Energy Management Components and other ZigBee devices.

The display on the ZIM allows you to easily set up, install, and control the wireless ZigBee system. The environmentally-friendly internal backup battery in the ZIM provides approximately 4 hours of active use power and up to 24 hours of power in sleep mode.

Getting Started

1. Unpack the ZIM. Included is the ZIM, a 7 foot modular power/communications cable, and this manual.
2. Adjust the foot stand by holding the ZIM 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.



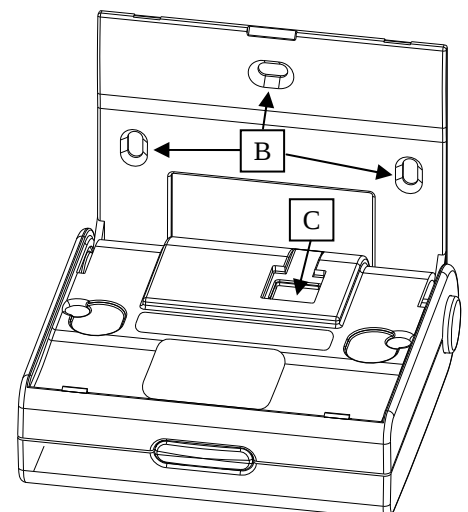
Installation

The ZIM can sit on a table or other flat surface or can be mounted on a wall. Install the ZIM in a central area of the premises, as high above ground as practical. Allow at least a 6-inch clearance above the ZIM.

- The ZIM should be at least 5 feet from electronic devices
- Avoid areas where receiver will be exposed to moisture
- Avoid areas with excessive metal or electrical wiring

Installing the ZIM

- a) The ZIM may be mounted to a wall using the mounting holes [B] on the foot stand of the ZIM.
- b) Insert one end of the supplied cable into the connector [C] on the ZIM. Connect the other of the cable into one of the built-in serial ports on an HAI controller.
- c) Set the jumper on the controller serial port to the “485” position.
- d) Set the Serial Function of the serial port to “ZigBee”.
- e) Adjust the unit so that the display is facing you by pushing in gently on the side buttons [A] and swing the unit to an upright position.



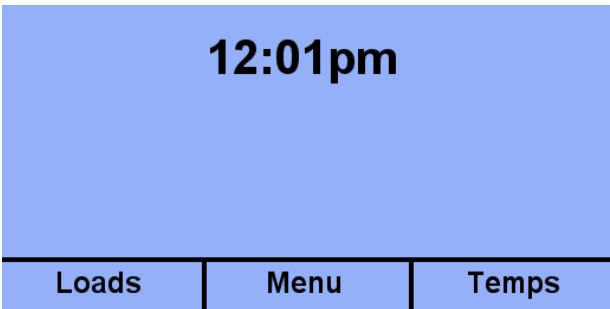
Sleep Mode

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

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

Home Screen

The Home screen shows the current time and allows you to access menus for controlling loads, controlling temperature devices, configuring the display, and configuring the ZigBee network. After loads and temperature devices have been configured, the Home screen can also display the status of up to three ZigBee loads and/or temperature devices.

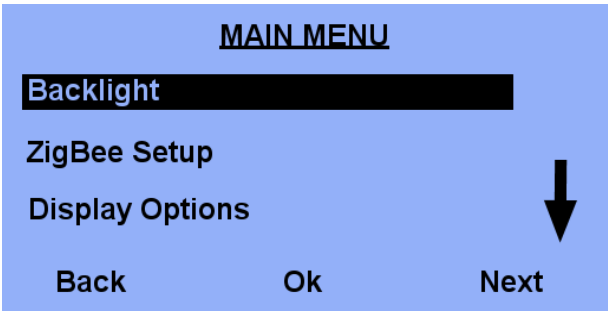


Menu Button

The Menu button is used to configure the display backlight, ZigBee network, display options, time and date, and to reset the ZIM to its factory default settings.

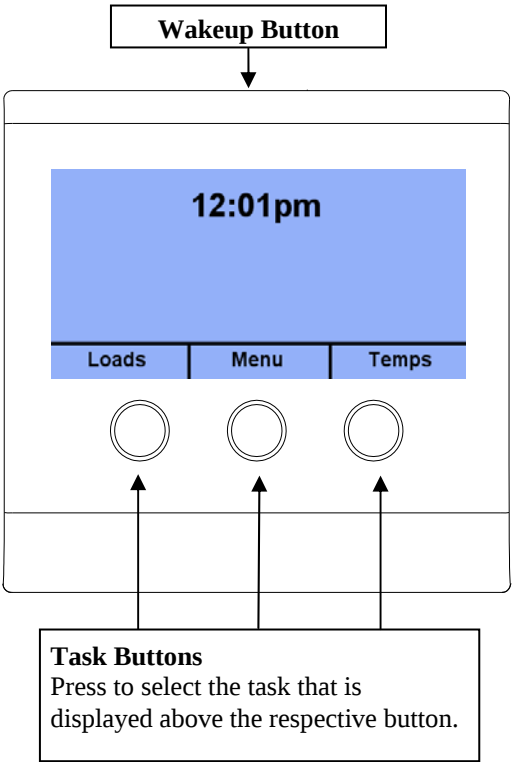
Main Menu

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:

- a) Backlight
- b) ZigBee Setup
- c) Display Options
- d) Set Time/Date
- e) Factory Defaults



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

Backlight

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

From the Main Menu, with the “Backlight” menu item highlighted, press the “OK” button. 

<u>BACKLIGHT</u>		
Color:	60	
Brightness:	10	
Status:	Always On	
OK	Change	Next

Color – Displays the value for the current color of the backlight (1-100)

Brightness – Brightness of the backlight (1-10)

Status – Sets the backlight options:

- a) Always on
- b) Always off
- c) Auto (backlight turns on when a button is pressed and automatically turns off)

Ok – Confirm change

Change – Change selected item

Next – Select next item in the table

Configuration and Operation Using an HAI Controller

HAI Omni and Lumina controllers with Version 3.7 or later firmware, support two-way integration with ZigBee thermostats and load control modules. Individual ZigBee devices can be controlled by the HAI controller and the HAI controller can respond to changes in the ZigBee devices.

Each HAI unit can be associated with a corresponding ZigBee dimmer or other load control module. ZigBee devices can be turned on, turned off, brightened, dimmed, set to a specific level, or toggled on/off. Each HAI thermostat can be associated with a corresponding ZigBee thermostat. ZigBee thermostats can be controlled and monitored as if they were standard HAI hardwired thermostats.

Configuring the HAI Controller

HAI controllers connect to the ZigBee network by using the ZIM as follows:

- 1) Set the jumper on the controller serial port to the “485” position.
- 2) Set the Serial Function for the serial port on the HAI controller to ZigBee.
- 3) If using PC Access, write the configuration to the controller.

The ZIM serves as the coordinator for the ZigBee network. Individual ZigBee devices need to be enrolled through the ZIM before they can participate in the ZigBee network. When a device is enrolled in the ZigBee network, it is assigned a unique four digit address by the ZIM. This address is used by the HAI controller to access the device. ZigBee devices may also be disbanded (removed) from the network.

Devices may be enrolled or disbanded by using an HAI console, HAI PC Access software, or at the ZIM directly (advanced configuration). The recommended method is to use HAI PC Access software to ensure that the ZigBee addresses are stored in the PC Access account file.

Configuring the ZigBee Network Using HAI PC Access

To enroll and disband devices on the ZigBee network using HAI PC Access, connect to the HAI controller using the PC Access software.

Configure Load Control Modules Using PC Access

To set up units, set the House Code Format for the desired units in the HAI controller to ZigBee. Click on the button in the “Address/Node ID” column for the desired unit. If the address is non-zero, a ZigBee device has already been enrolled for the unit. If this is not the correct device, press the “Disband” button in the dialog box to disband the current device. After any existing device has been disbanded, place the new ZigBee device in the enrollment mode by following the instructions for the device. Press the “Enroll” button in the dialog box to enroll the new device. If the enrollment process is successful, the ZigBee address for the device will be shown.

Configure Thermostats Using PC Access

Follow a similar process for thermostats. First, set the thermostat type for the thermostat as appropriate. Click on the button in the “Protocol/Address” column for the desired thermostat, set the protocol to “ZigBee”, place the thermostat in the enrollment mode, and enroll the thermostat by pressing the “Enroll” button.

Note that if PC Access is not connected to the HAI controller, the “Enroll” and “Disband” buttons will be disabled. ZigBee addresses may be manually entered if the ZigBee network has been previously configured by using the ZIM directly.

Configuring the ZigBee Network Using an HAI Console

To enroll and disband devices on the ZigBee network using an HAI console:

Configure Load Control Modules Using an HAI Console

- 1) To set up units, set the House Code Format for the desired units in the HAI controller to ZigBee.
- 2) While displaying the status of the desired unit, press the “#” key twice
- 3) Select “Disband” to disband any ZigBee device currently assigned to the unit.
- 4) Place the new ZigBee device in the enrollment mode and then select “Enroll” to enroll the new device.

Configure Thermostats Using an HAI Console

- 1) Set the thermostat type for the thermostat as appropriate.
- 2) When displaying the status of the desired thermostat, press the “#” key twice.
- 3) Select “Disband” to disband any ZigBee device currently assigned to the thermostat.
- 4) Place the new ZigBee device in the enrollment mode and then select “Enroll” to enroll the new device.

After enrolling or disbanding a ZigBee device remember to use PC Access to read from the controller so that the ZigBee addresses can be saved in the PC Access account file.

Advanced Configuration and Diagnostics

The ZIM is equipped with advanced configuration and diagnostic tools for configuring and monitoring the ZigBee network without the use of an HAI controller.

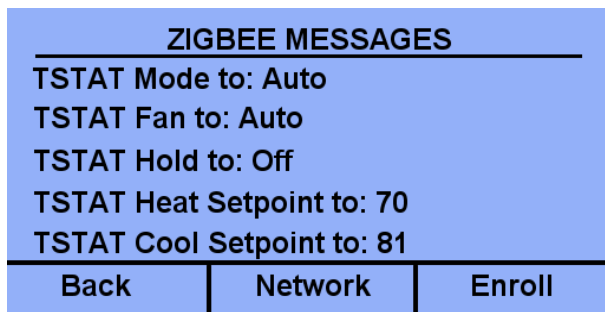
ZigBee Setup

The ZigBee Setup menu is used to view status messages, enroll devices, disband devices, view status of network devices, change the device type, and assign and edit names of devices on the network.

ZigBee Status Messages

To view the ZigBee status messages on the network:

1. From the Main Menu, highlight the “ZigBee Setup” menu item using the “Next” button. 
2. With the “ZigBee Setup” menu item highlighted, press the “OK” button. 



Messages that are received by the ZIM from ZigBee devices, the HAI controller, and/or over the USB port on the ZIM are displayed on the ZigBee Messages screen.

Enroll ZigBee Device

To enroll a device into the ZigBee network, start the enrollment process on the ZigBee device to be enrolled, and then:

1. From the ZigBee Messages screen, press the “Enroll” button. 
2. From the ZigBee Enroll menu, press the “Find Device” button. 



The ZIM will attempt to find the device that has been put into enroll mode.

Once the device has been enrolled, the screen will display “Device Found” along with the device address, type of device, and signal strength.

ZIGBEE ENROLL		
Device Found		
Address	Type	Signal
38E5	Tstat	100%
Cancel	Confirm	Type

Address – Displays the address of the ZigBee Device

Type – Displays the device type: Tstat, Display, or Load

Signal – Displays the signal strength of the ZigBee device

Cancel – Cancel the enrollment process for the device found (the device will not be saved as part of the ZigBee network)

Confirm – Saves the device found as part of the ZigBee network

Type – Changes the device type of the device found

3. To change the device type, press the “Type” button. 

The type will switch between Tstat (thermostat), Display (e.g. HAI MicroControl), and Load.

4. To save the current device as part of the ZigBee network, press the “Confirm” button. 

Once the device has been saved, the device can be given a custom name.

Name Device

Each device on the ZigBee network can have a custom name up to 15 characters.

<u>Name Device</u>												
TSTAT												
A	B	C	D	E	F	G	H	I		1	2	3
J	K	L	M	N	O	P	Q	R		4	5	6
S	T	U	V	W	X	Y	Z		0	7	8	9
/	-	'	CLEAR			SPACE		←	DONE			
↓			Select						→			

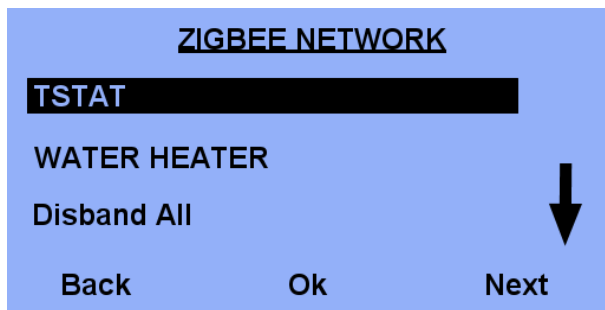
By default, the device is given a name. To save the device with the default name, with “DONE” highlighted, press the “Select” button. 

To name the device use the down-arrow and right-arrow buttons to highlight the character or function and press the “Select” button. When complete, highlight “DONE” and press the “Select” button.

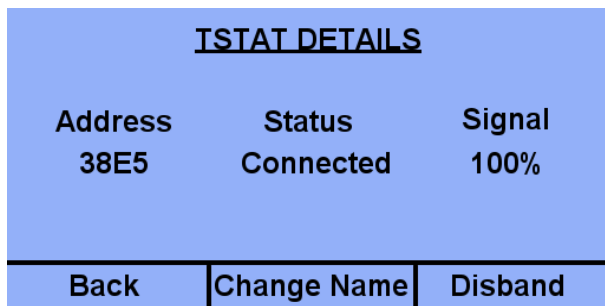
Edit Named Device

To change the name of a previously named device:

1. From the ZigBee Messages screen, press the “Network” button. 



2. Highlight the device to be renamed from the list of network devices and press the “Ok” button. 

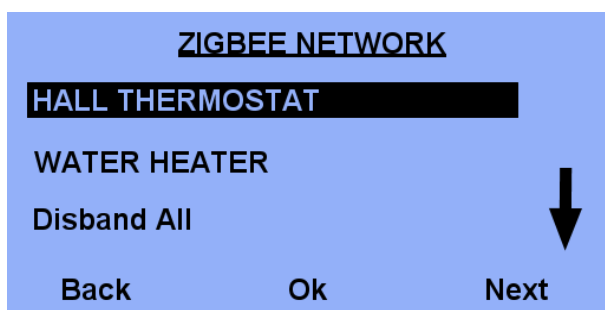


3. From the Device Details screen, press the “Change Name” button. 
4. Highlight the left-arrow function press the “Select” button to delete previously entered characters. Rename the device using the down-arrow and right-arrow buttons to highlight the character or function and press the “Select” button. When complete, highlight “DONE” and press the “Select” button.

Disband ZigBee Device

To disband (remove) a device from the ZigBee network:

1. From the ZigBee Messages screen, press the “Network” button. 



2. Highlight the device to be removed from the network and press the “Ok” button. 

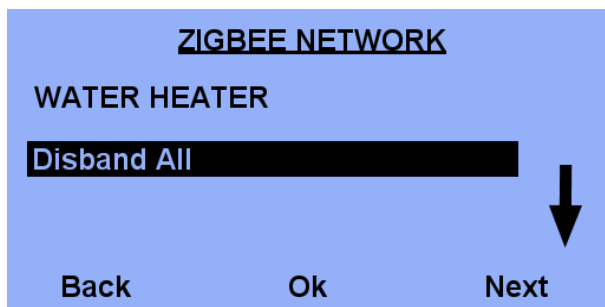
HALL THERMOSTAT DETAILS		
Address	Status	Signal
38E5	Connected	100%
Back	Change Name	Disband

3. To disband the selected device from the ZigBee network, from the Device Details screen, press the “Disband” button. 

Disband All ZigBee Devices

To disband (remove) all devices from the ZigBee network:

1. From the ZigBee Messages screen, press the “Network” button. 
2. Highlight “Disband All”, and then press the “”Ok” button. 

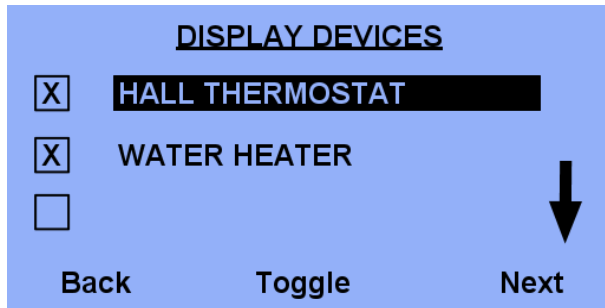


Warning: This will remove all enrolled ZigBee devices from the ZigBee network. If you *Disband All* devices, you will have to re-enroll each device.

Display Options

The Display Options menu option allows you to choose which, if any, ZigBee loads and/or temperatures show up on the Home screen of the ZIM. You can select up to three devices to be displayed.

1. From the Main Menu, highlight the “Display Options” menu item using the “Next” button. 
2. With the “Display Options” menu item highlighted, press the “OK” button. 



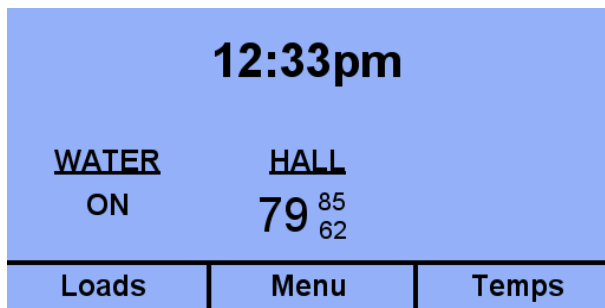
Back – Go back to the previous screen

Toggle – Place or remove an “X” mark from the box next to the selected device

Type – Select the next device in the list

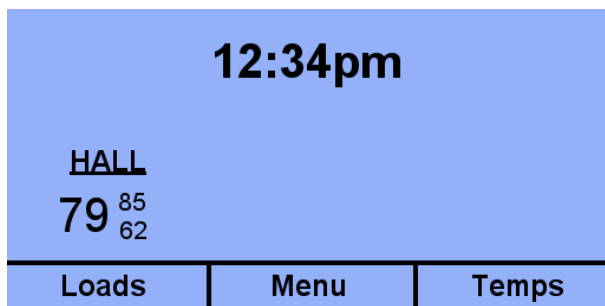
3. To display a device on the Home screen, highlight the desired device and put an “X” mark in the box by pressing the “Toggle” button. 

The status of the selected ZigBee device will be displayed on the Home screen.



4. To remove a device from the Home screen, highlight the device and remove the “X” mark from the box by pressing the “Toggle” button. 

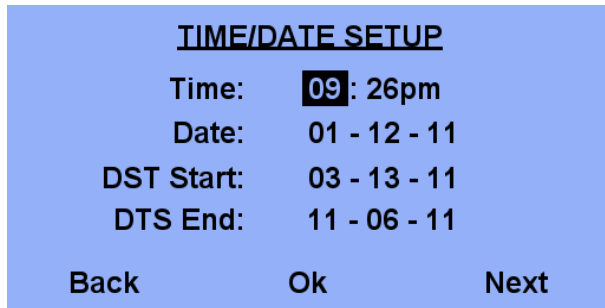
The status of the selected ZigBee device will no longer be displayed on the Home screen.



Set Time, Date, and Daylight Savings Time

The Set Time/Date menu option allows you to set the current time and date in the ZIM. It also allow you to enter the starting and ending day of Daylight Savings Time

1. From the Main Menu, highlight the “Set Time/Date” menu item using the “Next” button. 
2. With the “Set Time/Date” menu item highlighted, press the “OK” button. 



TIME/DATE SETUP

Time: **09**: 26pm

Date: 01 - 12 - 11

DST Start: 03 - 13 - 11

DTS End: 11 - 06 - 11

Back Ok Next

Back – Go back to the previous screen

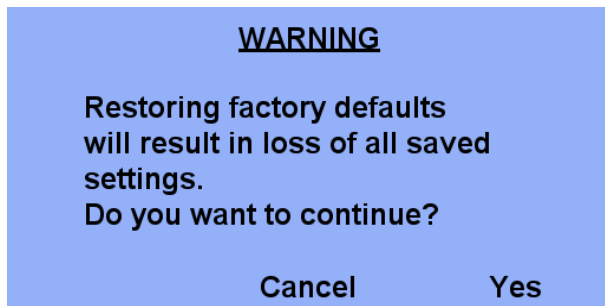
Ok – Increment the highlighted value

Next – Move to the next value

Factory Defaults

The Factory Defaults menu is used to configure all settings in the ZIM to the original factory default settings.

1. From the Main Menu, highlight the “Factory Defaults” menu item using the “Next” button. 
2. With the “Factory Defaults” menu item highlighted, press the “OK” button. 



WARNING

Restoring factory defaults
will result in loss of all saved
settings.
Do you want to continue?

Cancel Yes

3. Read the displayed warning message.
4. To reset the ZIM to its factory default settings, press the “Yes” button. 
5. To cancel the factory reset and return to the Main Menu, press the “Cancel” button. 

Controlling Loads

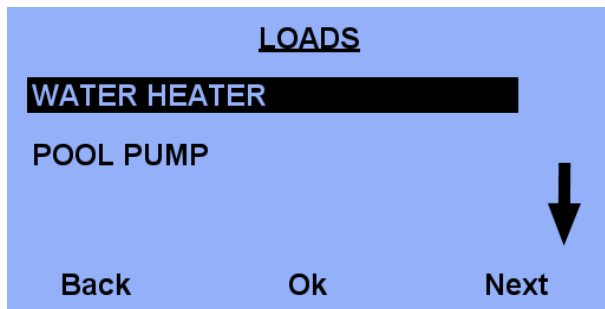
The Loads button is used to view the status of, view the demand of (if applicable), control, and schedule enrolled load control devices on the ZigBee network.

View, Control, and Schedule Loads

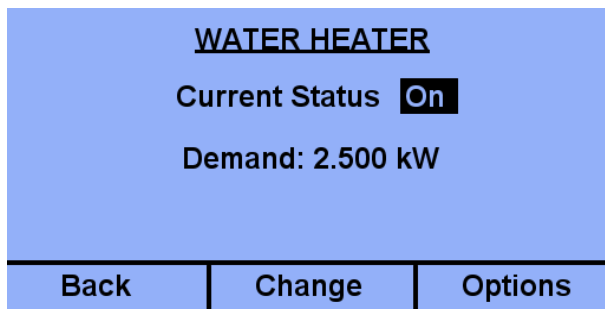
To view, control, and schedule available loads on the ZigBee network:

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

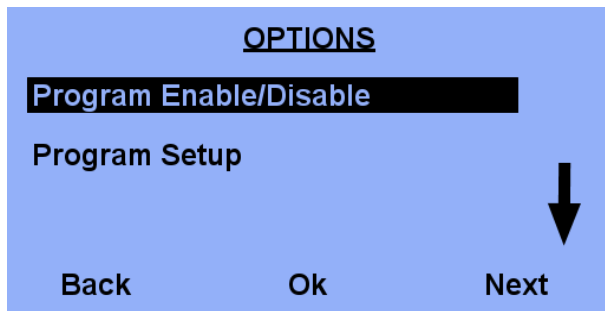
Change – Change the current state of the load

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

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

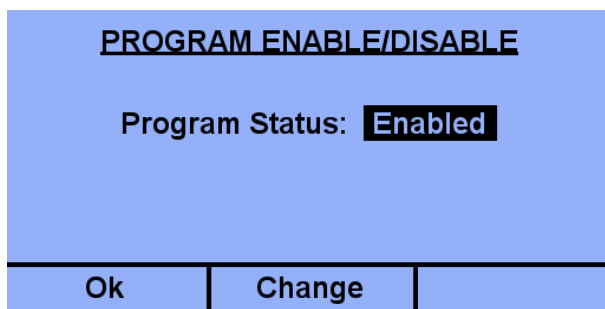
The “Change” button will cycle the load through the available state options.

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



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. 

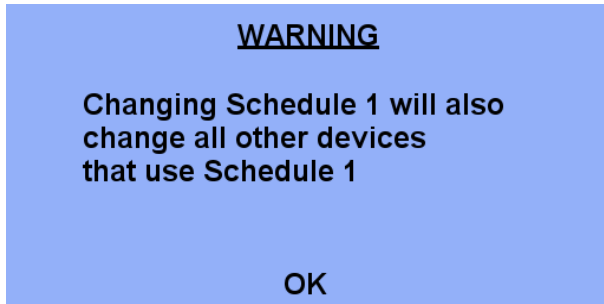
Schedule 1		
	<u>TIME</u>	<u>STATUS</u>
MORNING	4:30AM	ON
DAY	10:00AM	OFF
EVENING	3:45PM	ON
NIGHT	10:45PM	OFF
Ok	Change	Next

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. 

Schedule 1		
	<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. 

Schedule 1		
	<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. 

Controlling Thermostats

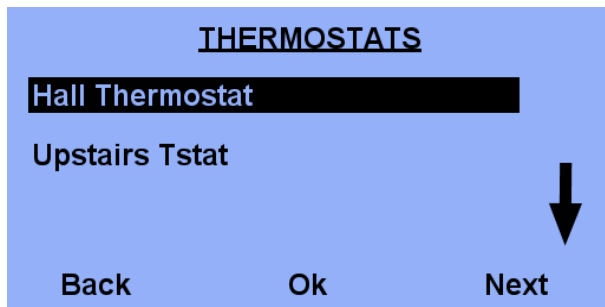
The Temps button is used to view the status of and control the supported features of enrolled thermostats on the ZigBee network.

View and Control Thermostats

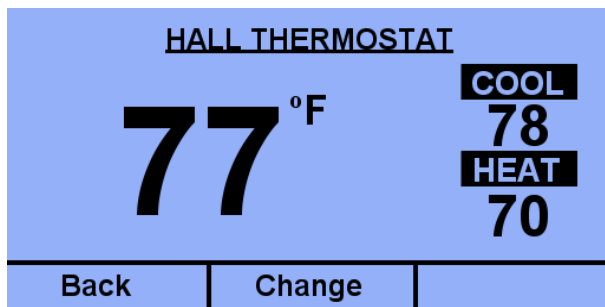
To view and control the available thermostats on the ZigBee network:

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

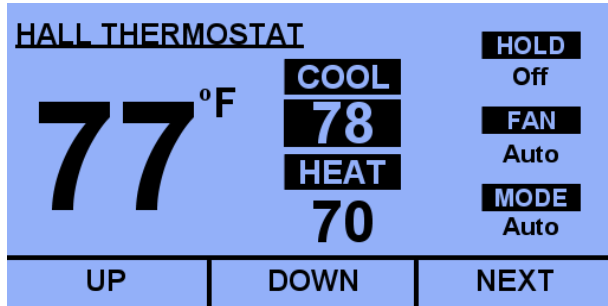
Cool Setpoint – Cool setpoint on the thermostat

Heat Setpoint – Heat setpoint on the thermostat

Back – Go back to the Home screen

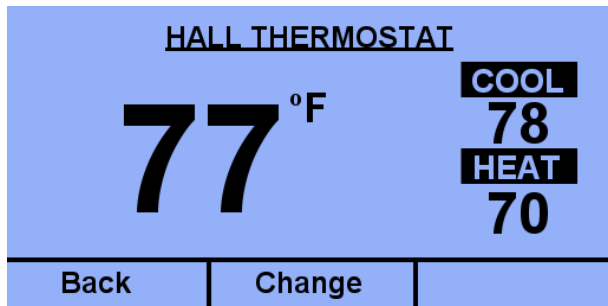
Change – Change the cool setpoint, heat setpoint, hold status, fan status, or mode of the thermostat

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



- a) Press the “UP” button  to increment or change the setting of the highlighted item.
- b) Press the “DOWN” button  to decrement or change the setting of the highlighted item.
- c) 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.



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