

# Heatmiser HVAC Integration with a HomeWorks System

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## 1.0 Overview

Underfloor heating is becoming an increasingly popular means to provide heat for a living space throughout much of the world. A company called Heatmiser has controls that can be used in many countries to control underfloor heating systems. This application note describes how to integrate HomeWorks systems with compatible Heatmiser controls for control of underfloor heating systems.

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## 2.0 Heatmiser Introduction

Heatmiser is a company specializing in the design and manufacture of underfloor heating controls as well as mobile applications. Lutron has collaborated with Heatmiser to offer simple integration with many of their controls and HomeWorks systems via TCP/IP protocol.

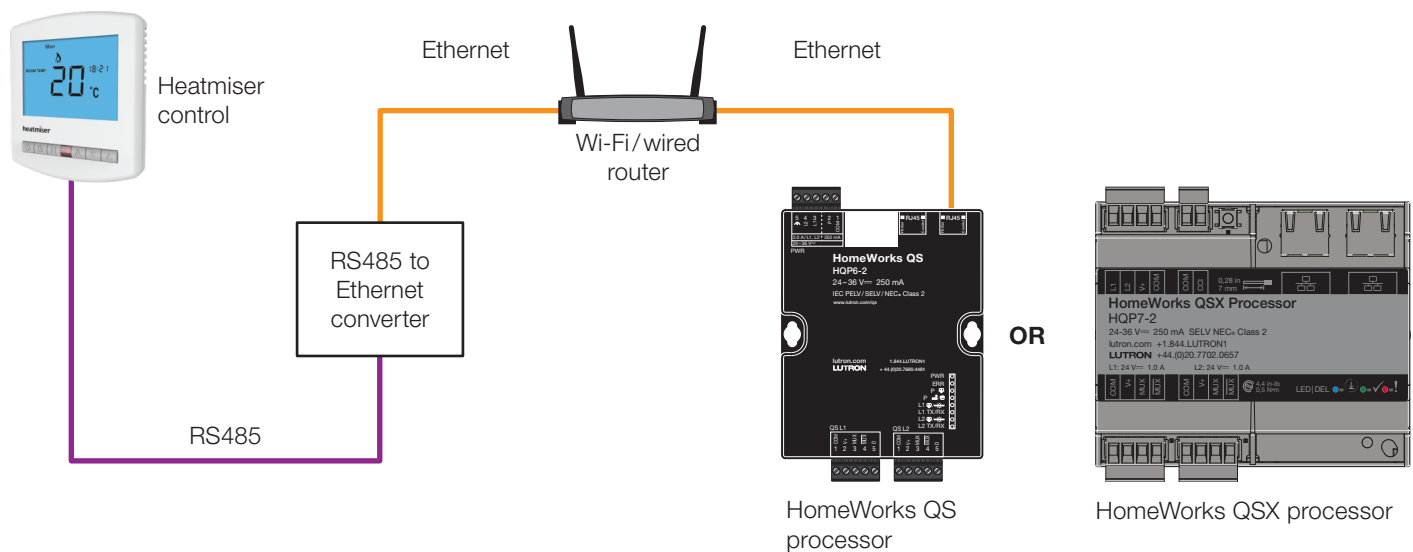
### 2.1 Features when Integrating Heatmiser with a HomeWorks System

Heatmiser Integration Capabilities		Supported?
Controls and triggers	Palladiom thermostat	Yes
	Control from a keypad	Yes
	Radio Powr Savr sensors	Yes
	Timeclock	Yes
	Lutron Connect (HomeWorks QS)	Yes
	Lutron App (HomeWorks QSX)	No <sup>1</sup>
Operating mode control	Heat	Yes
	Cool	n/a
	Auto	Yes (always goes to Heat)
	Off	Yes
	Emergency heat	n/a
Advanced programming	Green mode	No
	Conditional logic based on Heatmiser settings	Yes
Heatmiser specific	Frost mode	Refer to section 2.3.7

<sup>1</sup> HomeWorks QSX systems will support app control of HVAC zones in Q1 2022.

### 2.2 Connecting Heatmiser controls to a HomeWorks System

The RS485 to Ethernet converter must be connected to the same Local Area Network (LAN) that the HomeWorks processor resides on. The baud rate of the RS485 to Ethernet converter needs to be set to 4800 Baud.



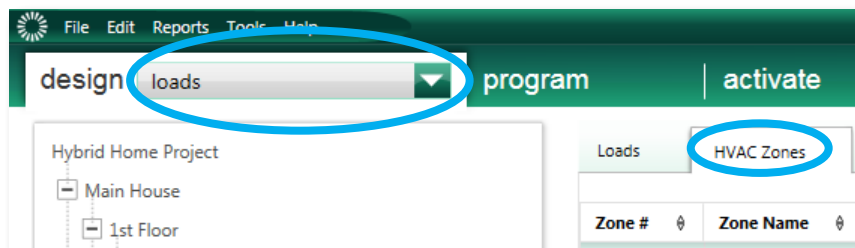
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## 2.0 Heatmiser Introduction (continued)

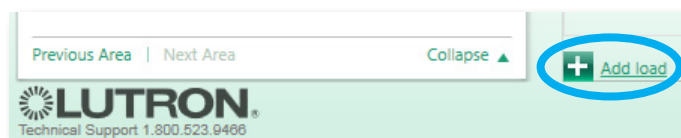
### 2.3 Implementing Heatmiser Controls into a HomeWorks Database

#### 2.3.1 Adding HVAC Zones to a HomeWorks Database

To add an HVAC zone to the database, go to the **design** tab of the Lutron Designer software and use the drop-down menu to select **loads**. Next, find the **HVAC Zones** tab on the right side of the screen.



Click **Add load** at the bottom of the screen.



For each HVAC zone added, provide a **Zone Name** and select **Operating Modes**. Unchecked modes will be hidden when using the Lutron mobile app. It is important to check only the modes that are necessary so the app is simpler for the end user. Choosing a user friendly zone name is important for the same reason.

**Note:** Heatmiser controls only work with off and heat modes and do not support fan modes.

Loads			
3rd Party HVAC			
Zone Name	UID	Operating Modes	Fan Speeds
Radiant Floor Heat		Off,Heat	Unknown

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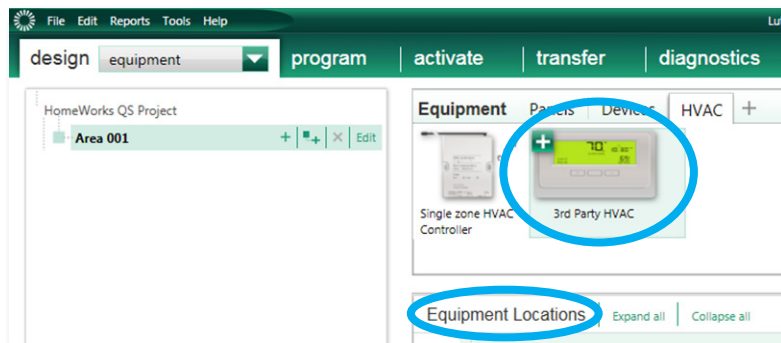
## 2.0 Heatmiser Introduction (continued)

### 2.3 Implementing Heatmiser Controls into a HomeWorks Database (continued)

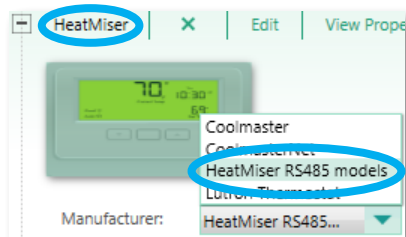
#### 2.3.2 Adding a Heatmiser Control to a HomeWorks Database

To add a Heatmiser control to the database, go to the **design** tab of the software and use the drop-down menu to select **equipment**. Next, find the **3<sup>rd</sup> Party HVAC** device in your toolbox and click the plus sign to add the device.

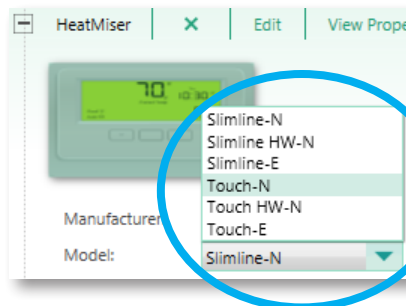
**Note:** The default toolbox does not contain this device by default, so it is necessary to edit or create a toolbox to include the 3<sup>rd</sup> party HVAC device.



Once the 3<sup>rd</sup> party HVAC control has been added to the **Equipment Locations** area, provide a name for the HVAC control and select **HeatMiser RS485 models** as the **Manufacturer**.



Select the model number of Heatmiser RS485 control being integrated into the HomeWorks system.



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## 2.0 Heatmiser Introduction (continued)

### 2.3 Implementing Heatmiser Controls into a HomeWorks Database (continued)

#### 2.3.2 Adding a Heatmiser Control to a HomeWorks Database (continued)

To configure the **Output** tab, assign the HVAC zone by clicking **Assign...** and enter the **UID** for the thermostat.

Zone Name	UID	Operating Modes	Fan Speeds
1st Floor	1234	Off, Heat	Unknown

The UID for a RS485 wired Heatmiser control is a two digit number and is set up using the applicable Heatmiser manual at [www.heatmiser.com/en/heatmiser-manuals](http://www.heatmiser.com/en/heatmiser-manuals). Up to 32 UIDs can be assigned to one 3<sup>rd</sup> party HVAC control. For example, address 1 of 32 would be entered as “01” into the Lutron Designer software. When more than 32 UIDs are required, a second 3<sup>rd</sup> party HVAC control must be added to the system and another RS485 to Ethernet converter must be used.

Under the **Controller Settings** tab, enter the IP Address of the RS485 to Ethernet converter into the **Address** field and ensure that the **Port Number** is correct (varies based on the RS485 to Ethernet converter). A **Username** and **Password** is not usually necessary because raw TCP is being used to communicate with the Heatmiser, not Telnet. The network settings are configured in the RS485 to Ethernet converter.

Address	Port Number	Username	Password
	8068		

#### 2.3.3 Link Assigning Heatmiser Controls to Processor Ethernet Connections

Heatmiser controls communicate with the HomeWorks processor by sending RS485 communication through an RS485 to Ethernet converter. As a result, the Heatmiser control appears as a network device to the HomeWorks processor and must then be assigned to an Ethernet connection on one of the 16 possible processors.

To assign a Heatmiser control to an Ethernet connection, first select **link assignment** from the **design** tab drop down menu. Click **Ethernet** under the processor to which the Heatmiser control is to be assigned.

design link assignment program

HomeWorks QS Project

- First Floor
  - Equipment Room
    - Processor LV21
      - Processor 1
        - Link 1 (HWQS RF)
        - Link 2 (QS)
        - Ethernet

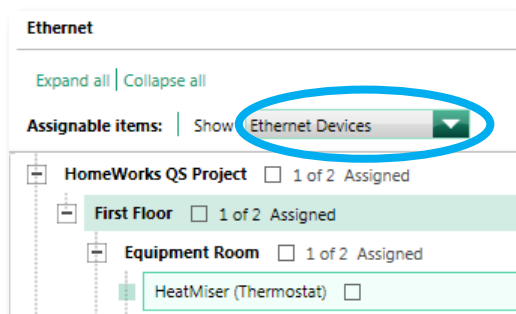
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## 2.0 Heatmiser Introduction (continued)

### 2.3 Implementing Heatmiser Controls into a HomeWorks Database (continued)

#### 2.3.3 Link Assigning Heatmiser Controls to Processor Ethernet Connections (continued)

Select **Ethernet Devices** from the **Show** filter on the **Assignable Items:** window on the right side of the screen.



Check the box for the zone that you would like to assign to an Ethernet connection and it will appear in the list of assigned Ethernet devices in the lower right corner of the software.

Item Description	Type	IP Address	Port	Username	Password
First Floor > Equipment Room > HeatMiser	Thermostat		8068		

The **IP Address** and **Port** numbers are the numbers used by the RS485 to Ethernet converter. If the converter communicates using the application layer protocol of Telnet, the converter would have a **Username** and **Password** that the processor would require in order to send outbound strings of communication.

Each 3<sup>rd</sup> party HVAC interface counts as 1 outbound connection in the HomeWorks system. Each HomeWorks QSX processor or Gateway has 5 available Ethernet connections. Refer to the chart below for HomeWorks QS connection quantities.

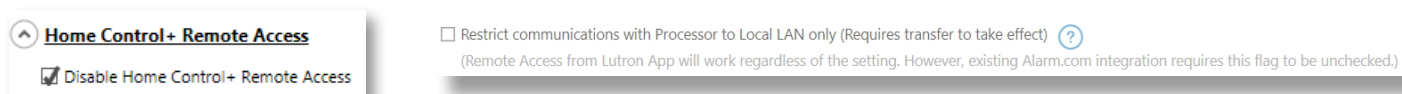
HomeWorks QS Software Version	Ethernet Connections Available			Ethernet Device Assignment
	Processor 1 – Remote Access Enabled	Processor 1 – Remote Access Disabled	Processors 2–16	
7.0 and newer	3	5	5	Manual, link assignment
Before 7.0	3	4	5	Automatic, round-robin

To disable remote access, you'll need to check the box next to either **Disable Home Control+ Remote Access** under **Ethernet** or, in newer versions of QS software, **Disable Alarm.com integration** for the first processor on the **Design > Link Assignment** screen:

b. And under the **Activate > Processors** screen:



Lutron does not recommend using the Home Connect+ app for new or upgraded HomeWorks QS installations. The



Connect app offers enhanced capability and is recommended for new and upgraded installations. See [Lutron Application Note #649](http://www.lutron.com) at [www.lutron.com](http://www.lutron.com) for additional information on the Connect app.

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## 2.0 Heatmiser Introduction (continued)

### 2.3 Implementing Heatmiser Controls into a HomeWorks Database (continued)

#### 2.3.4 Using Heatmiser Controls with a Palladiom Thermostat (version 11.0 and newer)

The final step is to assign any Palladiom thermostats that will be used to also control the setpoints and modes.



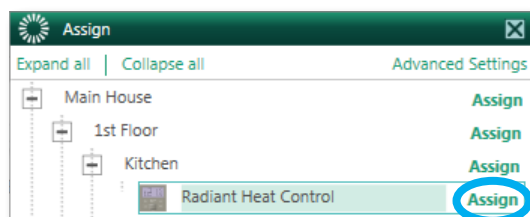
Palladiom Thermostat

The Palladiom Thermostat is a QS wired link device which can act as a remote thermostat control for Heatmiser controls. It takes one address of the 99 available on a QS link and there can be up to 32 Palladiom thermostats per QS link. When using a Palladiom thermostat with Heatmiser equipment, the sensor within the Palladiom thermostat is not used by the system. The Palladiom thermostat is available in Lutron Designer software version 11.0 or newer.

Click **Assign...** under the **Assigned Devices** field.

Output Controller Settings					
Zone Name	UID	Areas	Operating Modes	Fan Speeds	Assigned Devices
Kitchen Radiant	03	Hybrid Home Project	Off,Heat	Unknown	Assign...
Assign...					

Then click **Assign** for the Palladiom thermostat that will control the zone.



The name of the Palladiom thermostat will now be visible in the **Assigned Devices** field.

Output Controller Settings					
Zone Name	UID	Areas	Operating Modes	Fan Speeds	Assigned Devices
Kitchen Radiant	03	Hybrid Home Project	Off,Heat	Unknown	... ▶ Kitchen ▶ Radiant Heat Control
Assign...					

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## 2.0 Heatmiser Introduction (continued)

### 2.3 Implementing Heatmiser Controls into a HomeWorks Database (continued)

#### 2.3.5 Changing Setpoints and Modes from Keypad Buttons, CCIs, Sensors, or Timeclock Events

The first step, as with any keypad button or CCI, would be to select the **Program Type**, **Button Type**, and **LED Logic** for the button.

Button Number 1 | Engraving  | Program Type: Normal

Button Type: Single Action | LED Logic: Scene | Cycle Dim

Press On | Double Tap | Hold

☐ Use shared scene

Assignable Items | Show All | Lighting - Zones in All Areas

- Lighting - Zones
- Lighting - Areas
- Shade Groups
- Motors
- Fans
- HVAC Zones**
- Contact Closures
- Integration - DMX 1-Channel
- Control 3rd Party
- Variables
- Timeclocks
- Sequences
- Vacation Mode
- Green Modes
- Partition Walls

Once the button has been configured, select **HVAC Zones** from the **Assignable Items** drop down menu. Find the zone to add to the button and hover the cursor over the checkbox to the right of the zone name. In the window that appears, select the parameters that need to change based on the button press. Temperature setpoint, schedule status, and operating mode can be adjusted from keypad button presses.

Kitchen Radiant ☐

Temperature Setpoint

☐ Target  °F

Schedules

☐ Unaffected ☐ Hold ☐ Run

Operating Mode ?

☐ Unaffected ☐ Off ☐ Heat

Fan Speed ?

☐ Unaffected

Item Description

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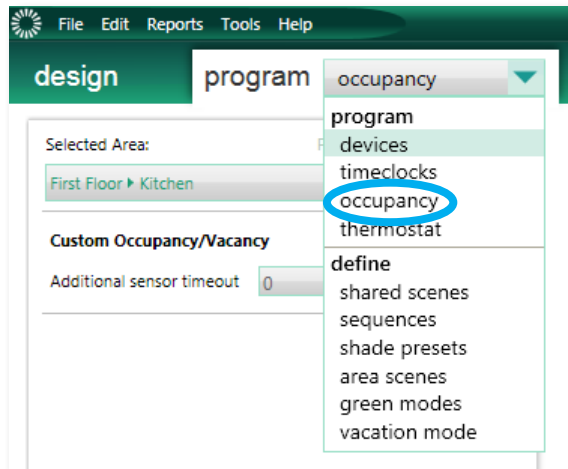


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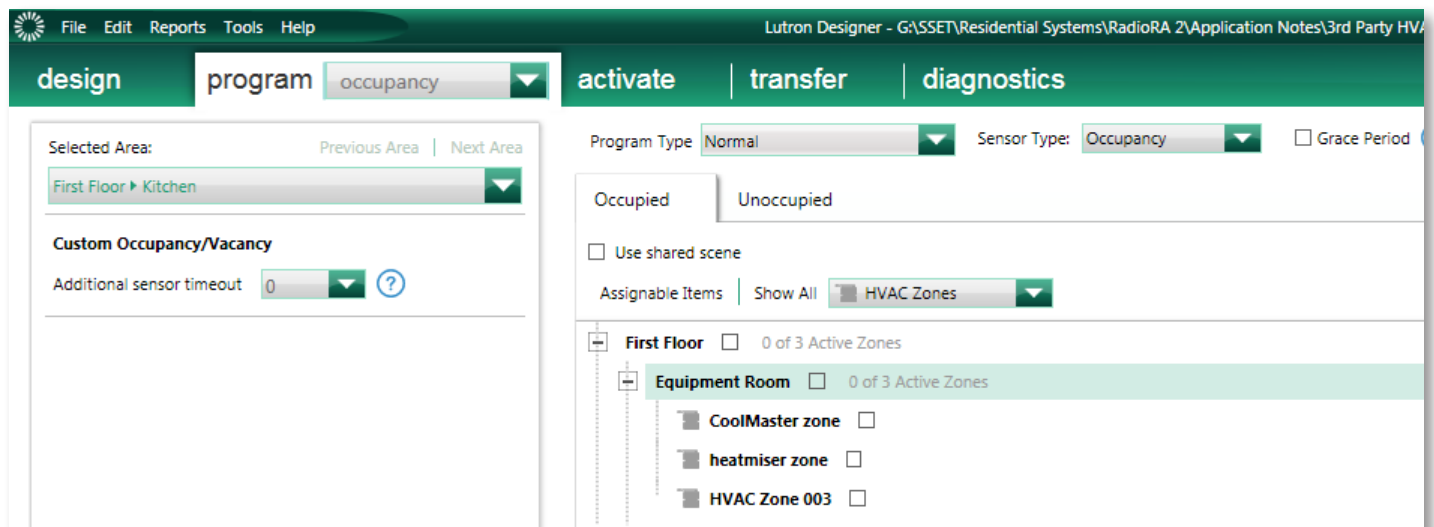
### 2.3 Implementing Heatmiser Controls into a HomeWorks Database (continued)

#### 2.3.5 Changing Setpoints and Modes from Keypad Buttons, CCIs, Sensors, or Timeclock Events (continued)

To program an occupancy or vacancy sensor to control a Heatmiser device, be sure to select **occupancy** from the **program** tab drop down menu and then select the sensor that is to be programmed.



Temperature setpoint, schedule status, and operating mode can be adjusted from sensors.



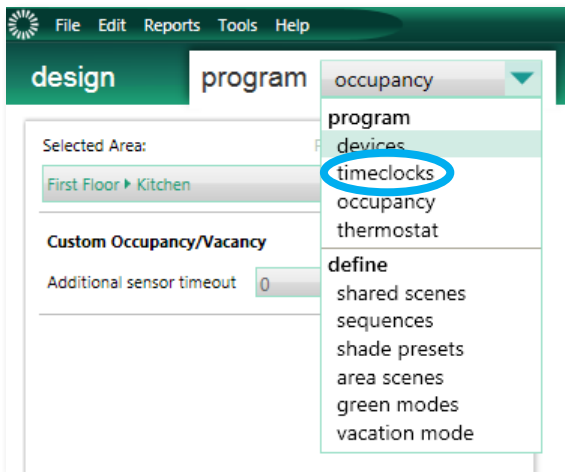
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## 2.0 Heatmiser Introduction (continued)

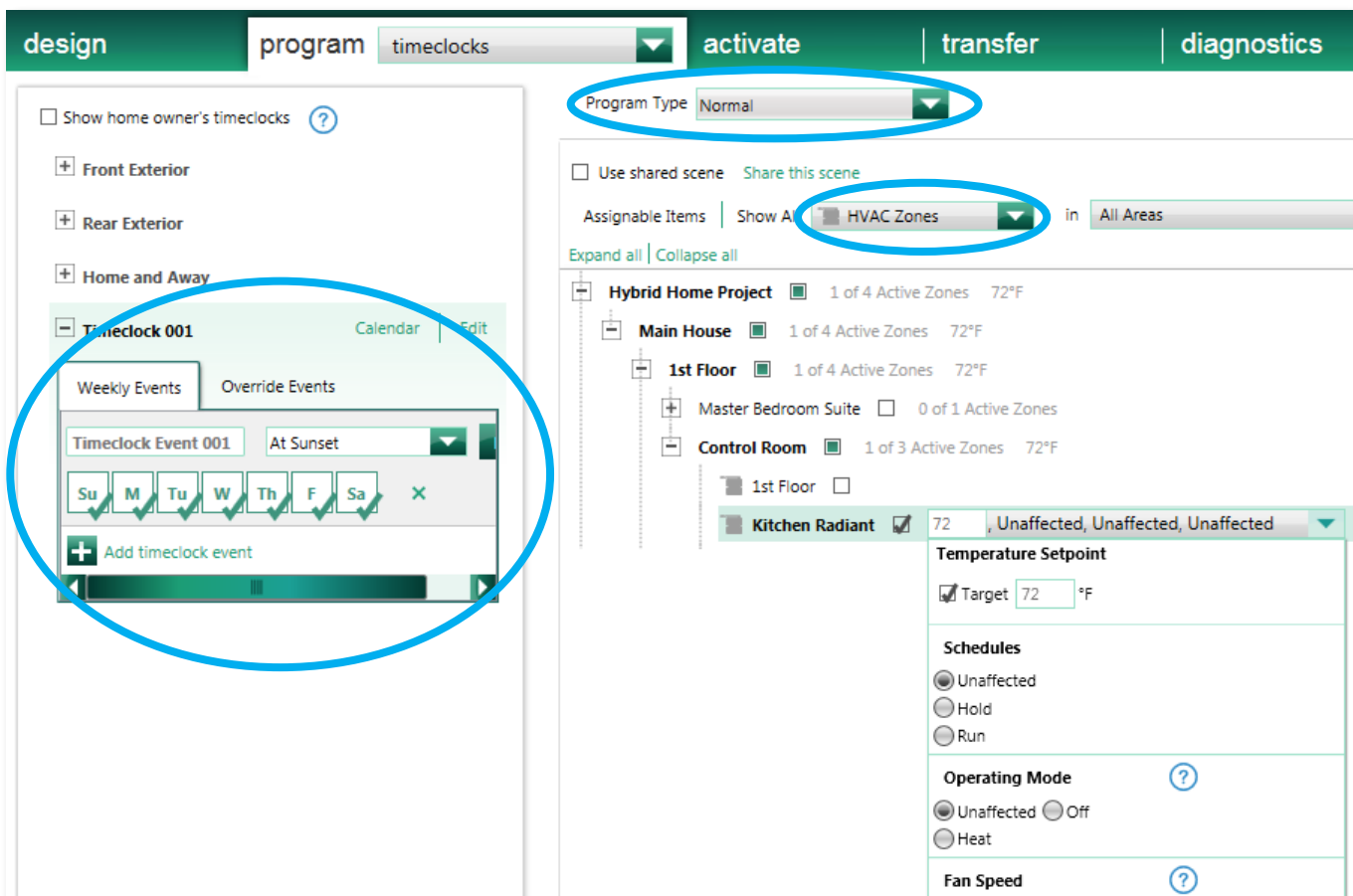
### 2.3 Implementing Heatmiser Controls into a HomeWorks Database (continued)

#### 2.3.5 Changing Setpoints and Modes from Keypad Buttons, CCIs, Sensors, or Timeclock Events (continued)

To program a timeclock event to control a Heatmiser device, select **timeclocks** from the **program** tab drop down menu.



Create a new timeclock event, give it a name, and select desired days of the week and time of the event. On the right side of the screen, select the **Program Type** and the **HVAC Zones** to be affected by the event. Timeclock events can be used to adjust temperature setpoint, schedule status, and operating mode.



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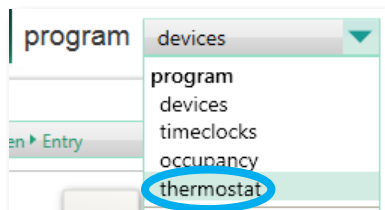
## 2.0 Heatmiser Introduction (continued)

### 2.3 Implementing Heatmiser Controls into a HomeWorks Database (continued)

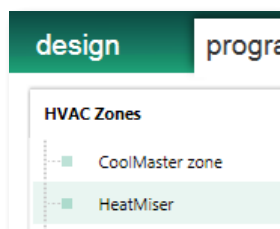
#### 2.3.6 Programming 7 Day Schedules

The Lutron Designer software can be used to create 7 day schedules which allow for automatic control of HVAC setpoints, up to 4 times per day, with the aim of maximizing energy efficiency and comfort. Programmed schedules are executed on a zone by zone basis although copying schedules from one zone to another is allowed to facilitate faster programming.

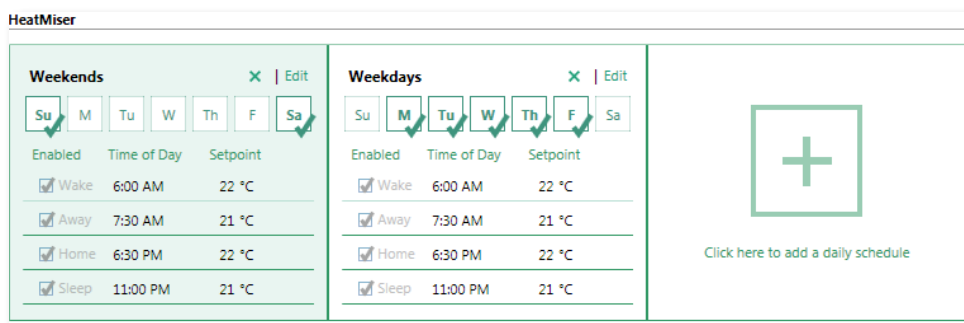
To program an HVAC schedule to control a Heatmiser zone, select **thermostat** from the **program** tab drop down menu.



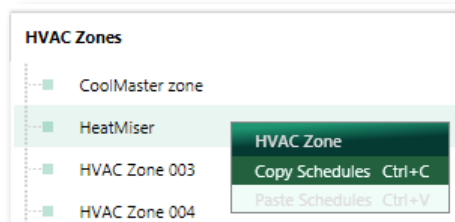
Next, select the desired HVAC zone.



On the right side of the screen, there will be the option to edit an existing schedule or to click “+” to add a new schedule. Each zone can have 1 schedule run per day for a maximum of 7 independent schedules per zone. There can be up to a maximum of 4 events that are triggered at fixed times throughout the schedule.



Schedules for each HVAC zone in the system are programmed independently. If two or more zones have the exact same scheduling requirements, copying/pasting of schedules is allowed to increase programming efficiency. To copy a schedule from one zone to another, right click the name of the **HVAC Zone** that contains the schedule to be copied. Click **Copy Schedules Ctrl+C**. Click the **HVAC Zone** to be programmed and click **Paste Schedules Ctrl+V** to copy the schedule to that zone.



**Note:** When coping schedules, only single setpoint schedules can be copied to other single setpoint zones and only dual setpoint schedules can be copied to other dual setpoint zones.

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## 2.0 Heatmiser Introduction (continued)

### 2.3 Implementing Heatmiser Controls into a HomeWorks Database (continued)

#### 2.3.7 Frost Mode Implementation

Frost mode is used primarily when the residents are away on vacation where the thermostat setpoints are set just above the level where the pipes would freeze. The purpose is to save energy and not have the equipment run as frequently when the residents are away from the home for an extended period of time. The typical setpoint for frost mode would be between 5 °C to 7 °C.

The HomeWorks system directly supports heat and off modes. The HomeWorks system does not directly support frost mode like Heatmiser controls. There is a way to simulate frost mode with the HomeWorks system through the programming of a keypad to change the setpoints of the zone(s) to a level equivalent to that of frost mode.

To set up frost mode, use a keypad button press to change the setpoint(s) of the zone(s) to the typical frost mode level.

Select the keypad to be programmed from under the **devices** section of the **program** tab. Name one of the buttons “Frost Mode” or “Frost”. This could also be part of a button called “Vacation” which would set the frost mode as well as enable vacation mode and other desired vacation functions. Set the **Button Type:** and **LED Logic:** next. In this case, a **Toggle** button with **Scene** LED logic will be used.

Select the Heatmiser zone that is to be programmed to the button and enter the target setpoint between 5 °C to 7 °C for the **Press On** function. Set the schedule status to **Hold**.

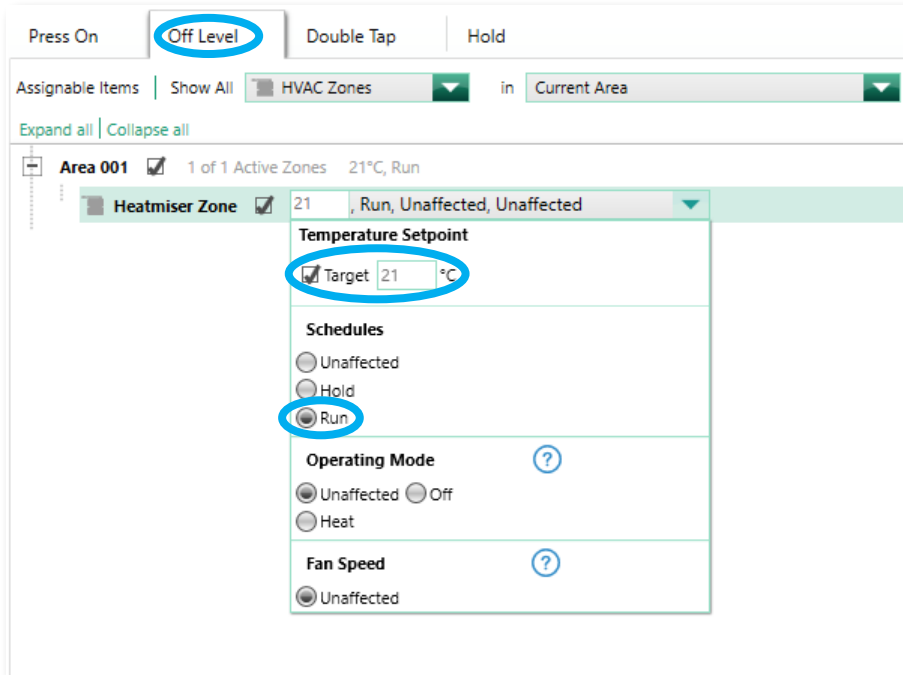
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## 2.0 Heatmiser Introduction (continued)

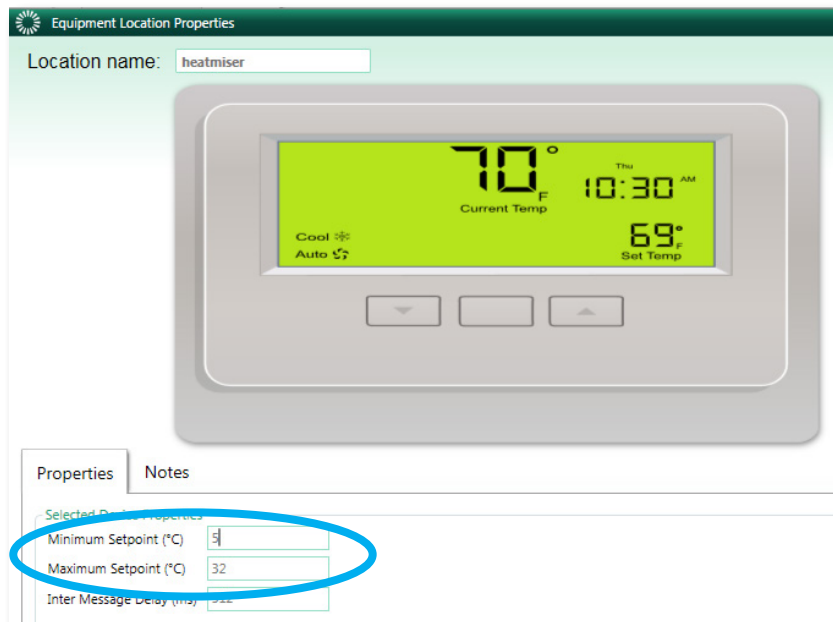
### 2.3 Implementing Heatmiser Controls into a HomeWorks Database (continued)

#### 2.3.7 Frost Mode Implementation (continued)

For the **Off Level** function, have the button adjust the target setpoint back to a comfortable temperature (e.g., 21 °C). Set the schedule status to **Run**.



If the setpoint cannot be adjusted below 10 °C, change the minimum setpoint to 5 °C for each Heatmiser zone to have this feature. To do this, go to the **design** tab and finding the thermostats under **Equipment**. Select the thermostat and click **Properties**. **Minimum Setpoint** must be between 5 °C to 21 °C and **Maximum Setpoint** must be between 27 °C to 45 °C.



### 3.0 Frequently Asked Questions (FAQs)

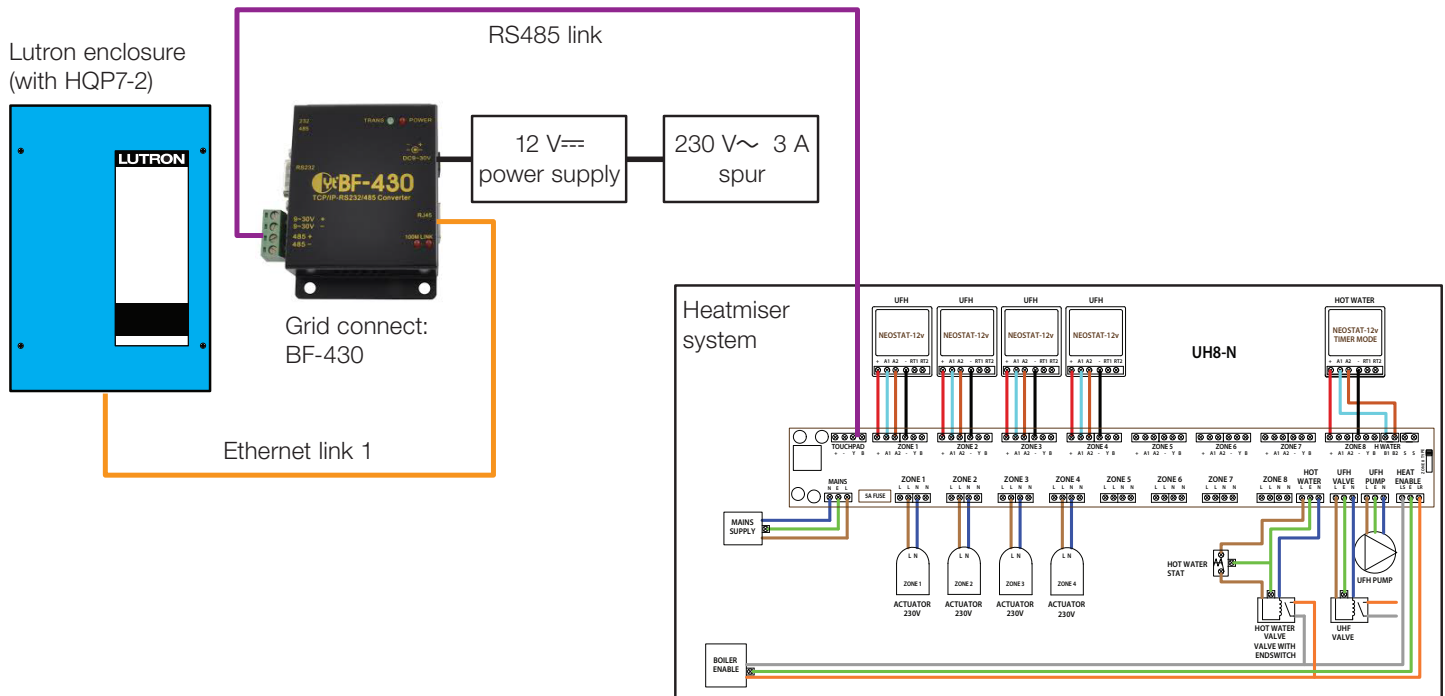
#### What are the typical forms of underfloor heating?

Typically, underfloor heating is performed one of two ways: using an electric heating element or liquid flowing through a closed loop of pipe from a furnace (hydronic). The liquid flowing through the pipes of the hydronic system is a combination of water and an anti-freeze.

#### Is the Heatmiser Neo app supported for integration with HomeWorks systems?

Presently, the Heatmiser Neo app is not a supported control platform. Lutron is continuously innovating and expanding integration capabilities thus leaving the door open for future integration possibilities with software like the Heatmiser Neo app.

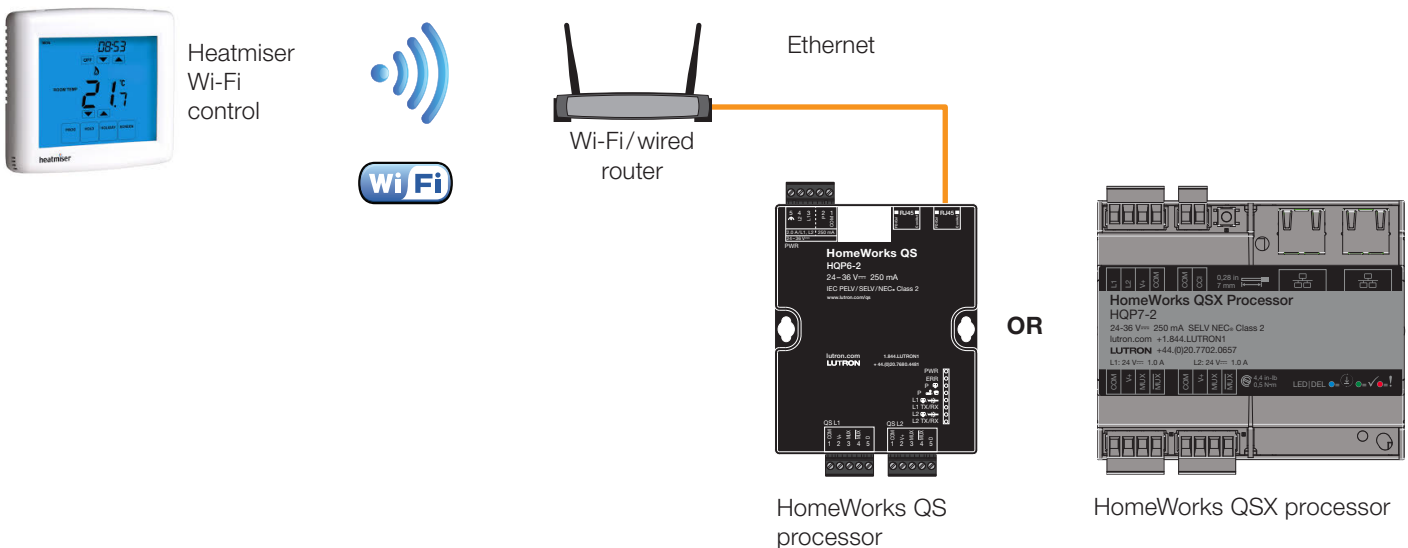
### 4.0 Appendix A – RS485 Heatmiser System Diagram Example



## 5.0 Appendix B – Discontinued Wi-Fi Heatmiser Thermostats

### 5.1 Connecting Heatmiser Wi-Fi Controls to the HomeWorks System

Wi-Fi Heatmiser controls must all be connected to the same LAN where the HomeWorks processor(s) reside(s).



### 5.2 Implementing Heatmiser Wi-Fi Controls into a HomeWorks Database

#### 5.2.1 Heatmiser Wi-Fi Thermostat Settings in a HomeWorks Database

On the **Output** tab for the Wi-Fi thermostat, enter the PIN of the Heatmiser control into the **UID** field. The unique four digit PIN for Wi-Fi Heatmiser controls is configured in the Heatmiser Wi-Fi Setup Utility located at [www.heatmiser.com/en/download/70/wifi-stat-setup-utility/5154/win.zip](http://www.heatmiser.com/en/download/70/wifi-stat-setup-utility/5154/win.zip). This is done while the Heatmiser control is connected to the computer over the network or by directly configuring the .txt file seen when connecting the Heatmiser control directly to the computer.

Controller Settings			
Zone Name	UID	Operating Modes	Fan Speeds
1st Floor	1234	Off, Heat	Unknown
Assign...			

**Note:** In the HomeWorks software, only one Wi-Fi Heatmiser control UID/PIN is allowed per 3<sup>rd</sup> party HVAC control.

Setup of the Wi-Fi Heatmiser network settings is handled by this Heatmiser Wi-Fi Setup Utility.

Under the **Controller Settings** tab, enter the IP Address of the Wi-Fi Heatmiser control into the **Address** field and ensure

Controller Settings			
Address	Port Number	Username	Password
	8068		

that the **Port Number** is correct (Wi-Fi devices use 8068). A **Username** and **Password** is not typically necessary because raw TCP is being used to communicate with the Heatmiser control, not Telnet. The network settings are configured in the Heatmiser Wi-Fi Setup Utility.

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## **Lutron Contact Numbers**

### **WORLD HEADQUARTERS USA**

**Lutron Electronics Co., Inc.**  
**7200 Suter Road**  
**Coopersburg, PA 18036-1299**  
TEL: +1.610.282.3800  
FAX: +1.610.282.1243  
support@lutron.com  
www.lutron.com/support

**North & South America  
Customer Assistance**  
**USA, Canada, Caribbean:**  
1.844.LUTRON1 (1.844.588.7661)  
**Mexico:**  
+1.888.235.2910  
**Central/South America:**  
+1.610.282.6701

### **UK AND EUROPE:**

**Lutron EA Limited**  
**125 Finsbury Pavement**  
**4th floor, London EC2A 1NQ**  
**United Kingdom**  
TEL: +44.(0)20.7702.0657  
FAX: +44.(0)20.7480.6899  
FREEPHONE (UK): 0800.282.107  
Technical Support: +44.(0)20.7680.4481  
lutronlondon@lutron.com

### **ASIA:**

**Lutron GL Ltd.**  
**390 Havelock Road**  
**#07-04 King's Centre**  
**Singapore 169662**  
TEL: +65.6220.4666  
FAX: +65.6220.4333  
Technical Support: 800.120.4491  
lutronsea@lutron.com

### **Asia Technical Hotlines**

Northern China: 10.800.712.1536  
Southern China: 10.800.120.1536  
Hong Kong: 800.901.849  
Indonesia: 001.803.011.3994  
Japan: +81.3.5575.8411  
Macau: 0800.401  
Taiwan: 00.801.137.737  
Thailand: 001.800.120.665853  
Other Countries: +65.6220.4666