# LUTRON

# CoolAutomation HVAC Integration with Lutron myRoom and HomeWorks systems



## 1.0 Overview

Variable Refrigerant Volume (VRV) or Variable Refrigerant Flow (VRF) systems are commonly used for Heating, Ventilation, and Air Conditioning (HVAC). With the implementation of an interface, the HomeWorks system can easily integrate with various VRV/VRF brands. This application note details how to interface CoolMasterNet, CooLinkNet, and CoolMaster by CoolAutomation, with a HomeWorks system for the control of VRV/VRF HVAC systems and also splits/multi-splits, provided by those manufacturers.

This application notes details:

– How to interface CoolMasterNet, CooLinkNet, and CoolMaster by CoolAutomation, with a HomeWorks system for the control of VRV / VRF HVAC systems and also splits/multi-splits, provided by those manufacturers.

– How to interface CoolPlug with the HomeWorks Palladiom thermostat and the myRoom Palladiom thermostat for the control of compatible VRV/VRF HVAC systems.

For additional information, including HVAC system compatibility and device settings, please refer to the documentation provided by CoolAutomation, available at www.coolautomation.com

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## 2.0 CoolAutomation Introduction

Lutron has collaborated with CoolAutomation to offer a series of HVAC interfaces, in the CoolMasterNet, CooLinkNet, and CoolMaster product families, for the control of VRV/VRF systems. These product families include interfaces for the control of a wide variety of VRV/VRF, split, and multi-split equipment from many different manufacturers.

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

| CoolMaster Integration | | Supported? |
|---|---|---|
| Controls and Triggers | Palladiom Thermostat | Yes |
| | Control from a keypad | Yes |
| | Occupancy/Vacancy Sensors | Yes |
| | Timeclock | Yes |
| | Lutron Connect (HomeWorks QS) | Yes |
| | Lutron App (HomeWorks QSX) | Yes |
| Operating Mode Control | Heat | Yes |
| | Cool | Yes |
| | Auto | Yes* |
| | Fan | Yes* |
| | Off | Yes |
| Advanced Programming | Green Mode | No |
| | Conditional Logic based on CoolMaster settings | Yes |
| CoolAutomation Specific | Dry Mode | Yes** |
| | Swing Status | No |
| | Filter Sign | No |
| | Malfunction Code | No |
| | Reset Filter | No |
| | Swing On/Off | No |

\* Answer varies when tying a Palladiom thermostat to a CoolAutomation HVAC interface:
    – If a Palladiom thermostat is tied to a CoolMaster/CoolMasterNet/CoolLinkNet interface, fan-only mode is not supported.
    – If a Palladiom thermostat is tied back to a CoolPlug interface, fan-only mode is supported in the "Off" operating mode with a fan speed selected.
    – If a Palladiom thermostat is tied to a CoolMaster / CoolMasterNet / CoolLinkNet Interface, Auto mode is not supported.
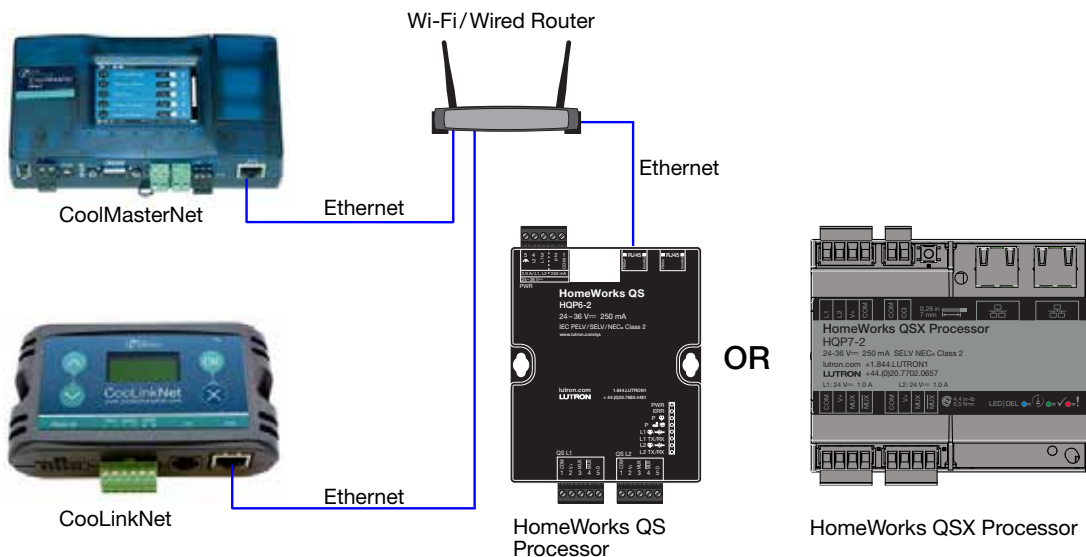\*\*Dry Mode is not supported when tying a Palladiom thermostat to a CoolAutomation HVAC interface.

# 3.0 CoolMasterNet/CooLinkNet Integration with a HomeWorks System

The CoolMasterNet allows for the control of VRV/VRF HVAC systems from third-party and mobile applications. The CooLinkNet allows for the control of split, and multi-split HVAC systems from third-party and mobile applications. Both interfaces connect directly to the local area network (LAN) within the residence allowing for direct integration with the HomeWorks system without the need for a protocol converter.

**NOTE:** Use the latest version of CoolMasterNet/CooLinkNet firmware when integrating with a HomeWorks system. For instructions on upgrading firmware, please refer to the CoolAutomation website at www.coolautomation.com

## 3.1 Connecting CoolMasterNet/CooLinkNet to the HomeWorks System

Wi-Fi/Wired Router

Ethernet

CoolMasterNet

Ethernet

**HomeWorks QS**
HQP6-2
24–36 V⎓ 250 mA
IEC PELV/SELV NEC₄ Class 2
www.lutron.com/hs

lutron.com      1.844.LUTRON1
+44.(0)20.7680.4481

OR

**HomeWorks QSX Processor**
HQP7-2
24–36 V⎓ 250 mA  SELV NEC₄ Class 2
lutron.com +1.844.LUTRON1
LUTRON +44.(0)20.7702.0657
L1: 24 V⎓ 1.0 A      L2: 24 V⎓ 1.0 A

CooLinkNet

Ethernet

HomeWorks QS
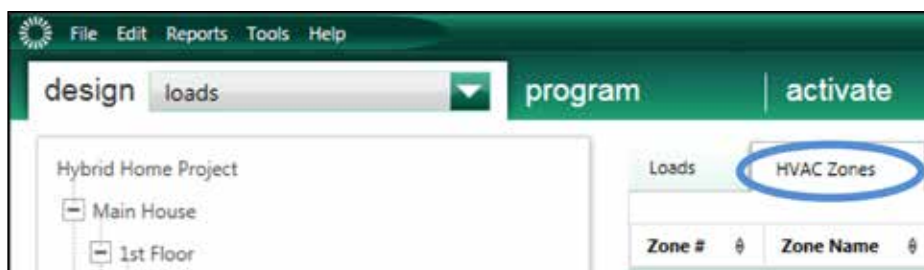Processor

HomeWorks QSX Processor

The CoolMasterNet/CooLinkNet interfaces must all be connected to the same LAN that the HomeWorks processor(s) reside(s) on.

## 3.2 Implementing CoolMasterNet/CooLinkNet into a HomeWorks Database

### 3.2.1 Adding HVAC Zones to a HomeWorks Database

To add a third-party 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 hand side of the screen.

File  Edit  Reports  Tools  Help

design  loads          program      |  activate

Hybrid Home Project                    Loads     HVAC Zones

Main House

1st Floor                              Zone #  ⊖   Zone Name  ⊖

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

Previous Area  |  Next Area          Collapse ▲     ➕ Add load

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# 3.0 CoolMasterNet/CooLinkNet Integration with a HomeWorks System *(continued)*

## 3.2 Implementing CoolMasterNet/CooLinkNet into a HomeWorks Database *(continued)*

### 3.2.1 Adding HVAC Zones to a HomeWorks Database *(continued)*

For each HVAC zone added, provide a *Zone Name*, select *Operating Modes*, and select the *Fan Speeds* that are applicable to the zone being created. 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.

| Zone Name | UID | Operating Modes | Fan Speeds |
|---|---|---|---|
| MBR HVAC | | Off,Heat,Cool,Auto,Fan,Dry | Auto,On,Cycle,High,Medium,Low,Top |
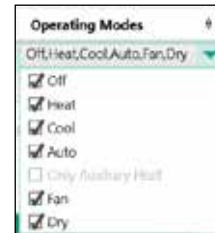
UID reflects the indoor unit address. All indoor units have to be given addresses (depending on specific HVAC system type, this can be done automatically by system, or has to be done manually by integrator). Addresses should be set by an HVAC contractor and the integrator should acquire the addresses from the contractor. The UID must be 3 digits long, no letters, spaces, or punctuation characters, and follow a specific numbering series.

If integrating with a CoolMasterNet, the CoolMasterNet display will auto-detect and update with all indoor units as shown in the example image below. The display shows them in the format Ln.ABC where "n" is the line number of CoolMasterNet and ABC is the UID address. The UIDs in this example are 101, 102, 104 connected to the Link L1 of the CoolMasterNet.

In this example, the CoolMasterNet auto-detected L2.101 zone connected to L2 of CoolMasterNet.

Note: Having two separate zones with the same UID (L1.101 and L2.101 as shown in image below) is not allowed and the HVAC contractor would need to change the L2.101 to any other address that does not conflict with existing UIDs.

### 3.2.2 Adding a CoolMasterNet/CooLinkNet to a HomeWorks Database

To add CoolAutomation equipment to the database, go to the *design* tab of the software and use the drop-down menu to select *equipment*. Next, find the *3rd Party HVAC* device in the toolbox and click on 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 third-party HVAC device.
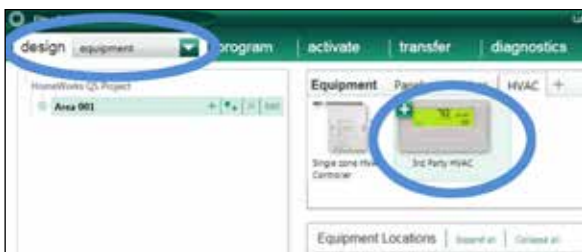
*Continued on next page...*

# 3.0 CoolMasterNet/CooLinkNet Integration with a HomeWorks System *(continued)*

## 3.2 Implementing CoolMasterNet/CooLinkNet into a HomeWorks Database *(continued)*

### 3.2.2 Adding a CoolMasterNet/CooLinkNet to a HomeWorks Database *(continued)*

Once the third-party HVAC control has been added to the **Equipment Locations** area, provide a name for the HVAC control and select **CoolAutomation** as the Manufacturer.
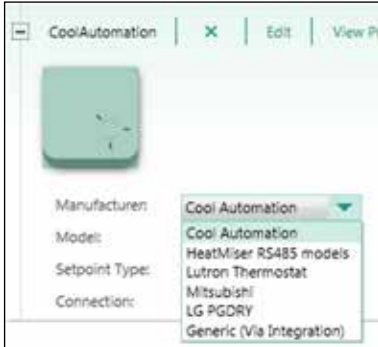


Once the manufacturer selection is made, choose the appropriate **Model** for the CoolAutomation equipment:
– CoolMasterNET (0.5 °C/1 °F Precision)
– CoolMasterNET (1 °C/1 °F Precision)

**NOTE:** For CoolPlug interface, refer to **Section 4.0.0** and for CoolMaster interface, refer to **Section 5.0.0**



Next, **Assign** HVAC zones using the **Output** tab. One CoolMasterNet can control multiple zones (maximum quantity depends on the manufacturer of the HVAC system). Up to 64 HVAC zones can be assigned to a single Ethernet link. Each CoolLinkNet can only control a single zone – **do not assign multiple zones to the third-party HVAC interface if using the CooLinkNet.**

**NOTE:** When adding the third-party HVAC interface, a zone is automatically added by default. All zones should be created as seen in the previous section, so this auto-created zone can be deleted.
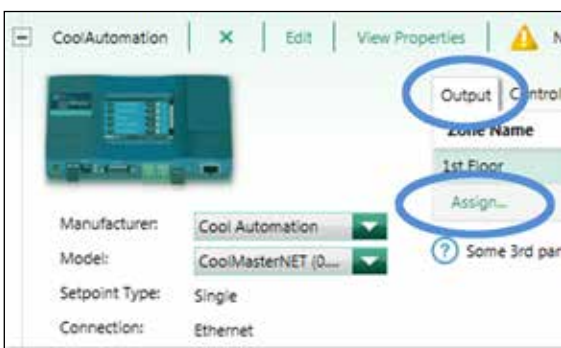
# 3.0 CoolMasterNet/CooLinkNet Integration with a HomeWorks System *(continued)*

## 3.2 Implementing CoolMasterNet/CooLinkNet into a HomeWorks Database *(continued)*

### 3.2.2 Adding a CoolMasterNet/CooLinkNet to a HomeWorks Database *(continued)*

The final step is to assign any remote Lutron temperature controls that will be used to also control the setpoints and modes. There are two options for remote temperature controls:



Palladiom Thermostat

The Palladiom thermostat is a QS wired link device which can act as a remote thermostat control for CoolAutomation. It takes one address of the 99 available on a QS link and there can be up to 32 Palladiom thermostats per QS link maximum. When using a Palladiom thermostat with CoolAutomation equipment, the sensor within the Palladiom thermostat is not used by the system. The Palladiom thermostat can be activated in 11.5 or newer versions of the software. Note that for systems using QSX processors, a software version of 21.4 or newer is required when integrating with CoolAutomation.

The Palladiom thermostat can be added to the project by navigating to **Design > Controls** and selecting the desired item from the toolbox. If the items do not show in the default **Temperature** tab, they can be added by clicking **Edit Toolbox**.



Select the correct device location from the area tree, hover over the control, and then click the **"+"** sign to add the control to the area.

# 3.0 CoolMasterNet/CooLinkNet Integration with a HomeWorks System *(continued)*
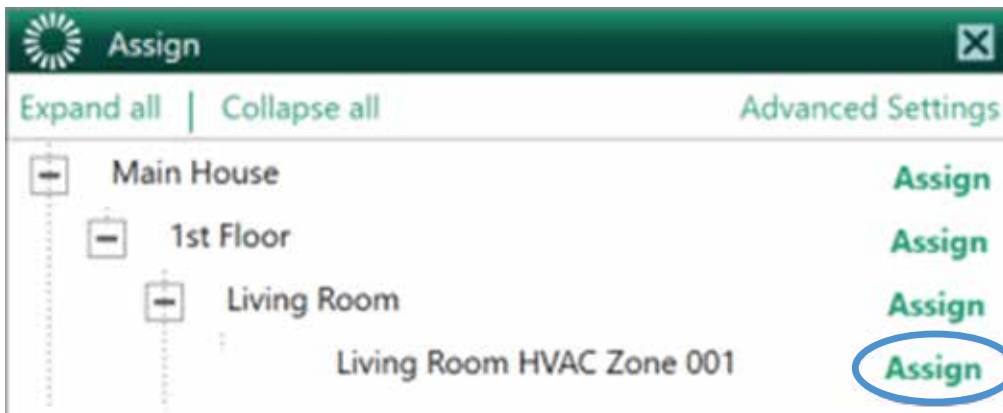
## 3.2 Implementing CoolMasterNet/CooLinkNet into a HomeWorks Database *(continued)*

### 3.2.2 Adding a CoolMasterNet/CooLinkNet to a HomeWorks Database *(continued)*

Click on **Assign...** under the **Remote Zone** field.



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



The name of the remote temperature control will now be visible at the HVAC controller in the **Assigned Devices** field in **Design > Equipment**. Note that when a Palladiom thermostat is tied back to CoolMaster/CoolMasterNet/CooLinkNet, fan-only operating mode is not supported.



The CoolMasterNet/CooLinkNet has a built-in ethernet port and connects directly to the network without the need for a converter. CoolMasterNet/CooLinkNet is set to DHCP and will automatically receive an IP address once it is connected to a Local Area Network (LAN) with a DHCP server. The IP address will be seen in the lower right corner of the CoolMasterNet screen and in the upper right corner of the CooLinkNet screen. It is recommended to set a Static IP address for the CoolMasterNet/CooLinkNet. Type this IP address into the **Controller Settings** tab for the CoolMasterNet/CooLinkNet. The **port number will be 10102** and no username or password is required.

Below is a depiction of the controller settings when using a CoolMasterNet/CooLinkNet interface.



For more information on the setup of the CoolMasterNet, CooLinkNet, or setting fixed IP addresses on CoolAutomation devices, refer to the Programmer Reference Manuals from CoolAutomation, available on www.coolautomation.com

# 3.0 CoolMasterNet/CooLinkNet Integration with a HomeWorks System *(continued)*

## 3.2 Implementing CoolMasterNet/CooLinkNet into a HomeWorks Database *(continued)*

### 3.2.3 Link Assigning CoolMasterNet(s)/CooLinkNet(s) to Processor Ethernet Connections

CoolMasterNet/CooLinkNet communicates to the HomeWorks processor by sending information via ethernet directly. As a result, the interface must then be assigned to an ethernet connection on one of the 16 processors available.

To assign a CoolMasterNet/CooLinkNet to an ethernet connection, first select **Link Assignment** from the **Design** tab drop down menu. Click on **Ethernet** under the processor where the CoolMasterNet/CooLinkNet interface is to be assigned.
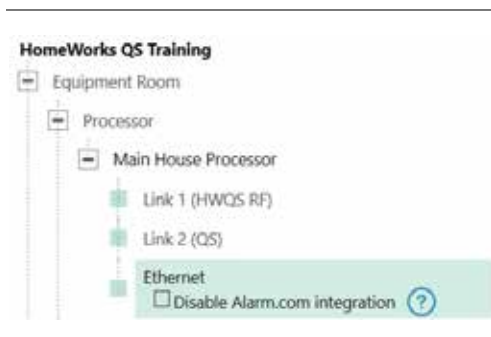


Select **Ethernet Devices** from the **Show** filter on the **Assignable items** window on the right-hand side of the screen.
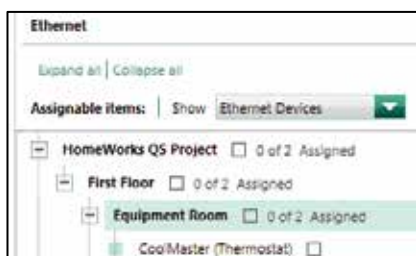


Check the box for the third-party HVAC device that you would like to assign to an ethernet connection and it will appear in the list of assigned ethernet devices on the right-hand side of the screen.

| Item Description | Type | IP Address | Port | Username | Password |
|---|---|---|---|---|---|
| Remote Access | | | | | |
| Remote Access | | | | | |
| First Floor ▶ Equipment Room ▶ CoolMasterNet | Thermost | 192.168.1.203 | 10102 | | |

# 3.0 CoolMasterNet/CooLinkNet Integration with a HomeWorks System *(continued)*

## 3.2 Implementing CoolMasterNet/CooLinkNet into a HomeWorks Database *(continued)*

### 3.2.3 Link Assigning CoolMasterNet(s)/CooLinkNet(s) to Processor Ethernet Connections *(continued)*

Each third-party HVAC interface, as well as any other Ethernet device, counts as one 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 through 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:



And under the *Activate > Processors* screen:
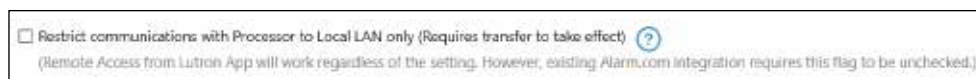


Lutron does not recommend using the Home Control+ app for new or upgraded HomeWorks QS installations. The Lutron Connect app offers enhanced capability and is recommended for new and upgraded installations. See Lutron Application Note #649 at www.lutron.com for additional information on the Lutron Connect app.

### 3.2.4 Changing Setpoints and Modes from Keypad Buttons, CCIs, Occupancy/Vacancy Sensors, or Timeclock Events

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

NOTE: CoolMasterNet/CooLinkNet only supports single setpoint changes. Heat and cool setpoints cannot be set at the same time.
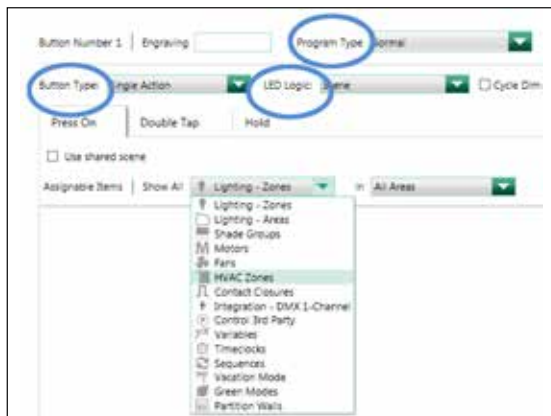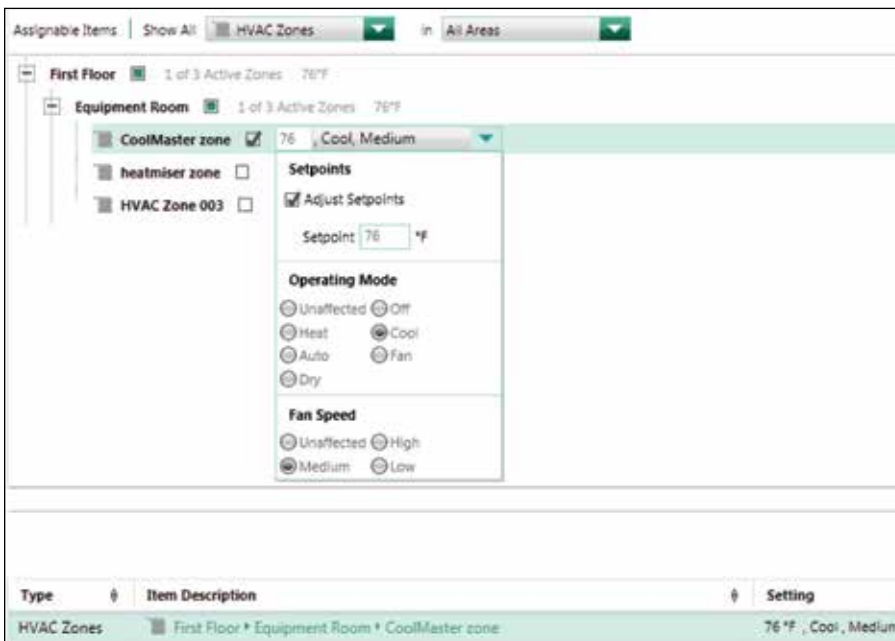
# 3.0 CoolMasterNet/CooLinkNet Integration with a HomeWorks System *(continued)*
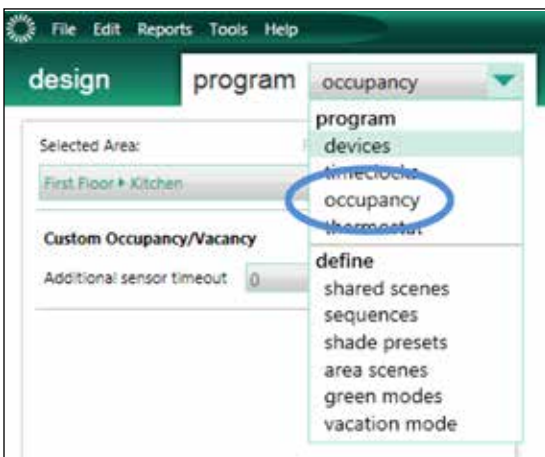
## 3.2 Implementing CoolMasterNet/CooLinkNet into a HomeWorks Database *(continued)*

### 3.2.4 Changing Setpoints and Modes from Keypad Buttons, CCIs, Occupancy/Vacancy Sensors, or Timeclock Events *(continued)*

After the button has been configured, select **HVAC Zones** from the **Assignable Items** drop down menu. All HVAC zones will appear in the **Assignable Items** frame. Find the CoolMasterNet/CooLinkNet zone that you would like to add to the button and hover the cursor over top of the checkbox to the right of the zone name for the dropdown menu to appear. Select the parameters that need to change based on the button press. You can adjust **Setpoints, Operating Mode,** and **Fan Speed** from keypad button presses and CCIs.



To program an occupancy or vacancy sensor to control a CoolMasterNet/CooLinkNet zone, first select **occupancy** from the **program** tab drop down menu and then select the area that is to be programmed.
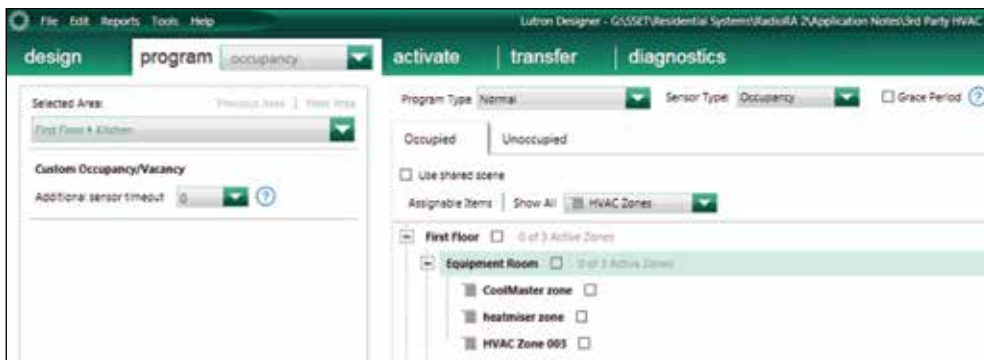


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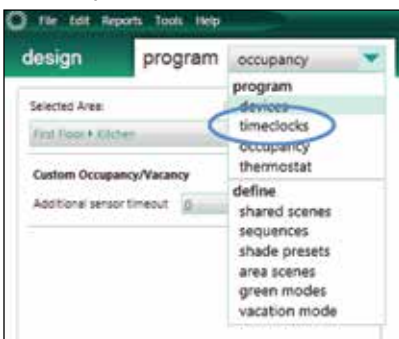# 3.0 CoolMasterNet/CooLinkNet Integration with a HomeWorks System *(continued)*

## 3.2 Implementing CoolMasterNet/CooLinkNet into a HomeWorks Database *(continued)*

### 3.2.4 Changing Setpoints and Modes from Keypad Buttons, CCIs, Occupancy/Vacancy Sensors, or Timeclock Events *(continued)*

You can adjust setpoints, operating modes, and fan speeds from occupancy/vacancy sensors.



To program a timeclock event to control a CoolMasterNet/CooLinkNet, be sure to select **timeclocks** from the **program** tab drop down menu.



Create a new timeclock event by setting the name, days of week, and time of the event. On the right hand side, select the **Program Type**. Select the **HVAC Zones** to be affected by the event. Timeclock events can be used to adjust **Setpoints**, **Operating Mode**, and **Fan Speed**.
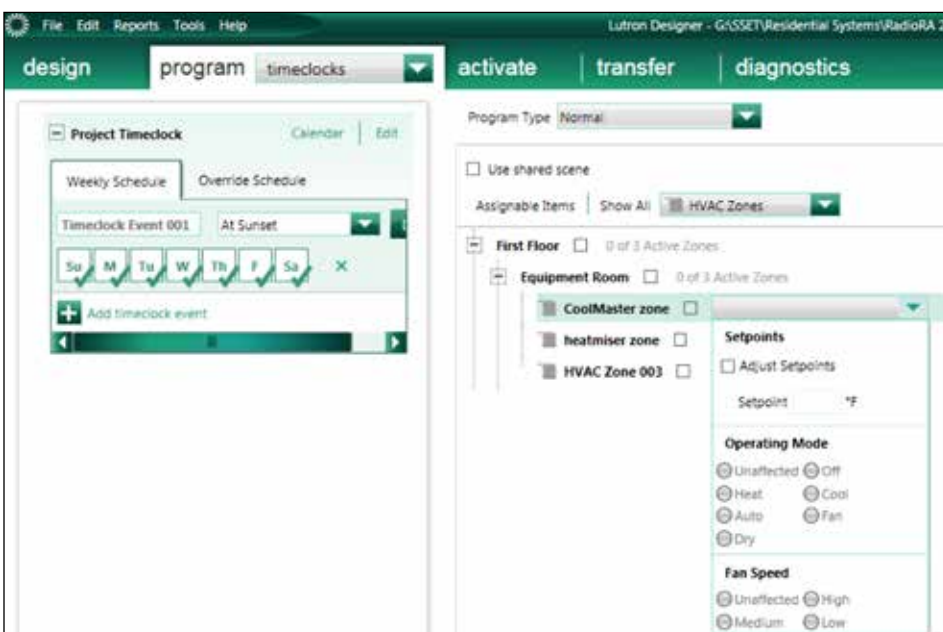


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# 3.0 CoolMasterNet/CooLinkNet Integration with a HomeWorks System *(continued)*

## 3.2 Implementing CoolMasterNet/CooLinkNet into a HomeWorks Database *(continued)*

### 3.2.5 Programming Seven Day Schedules

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

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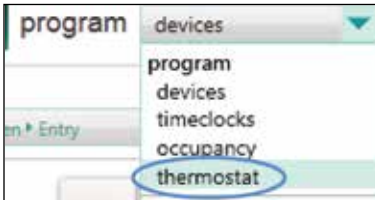


Next, select the **HVAC Zone** that requires schedule programming.
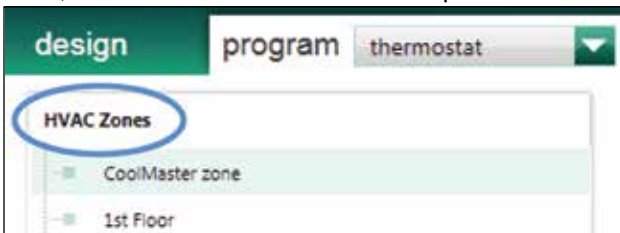


On the right-hand side of the screen you have the option of clicking on the **"+"** sign to add a new schedule or click on an existing schedule to edit. Each zone can have 1 schedule per day, for a total of 7 independent schedules per zone. Each schedule can have a maximum of 4 events.



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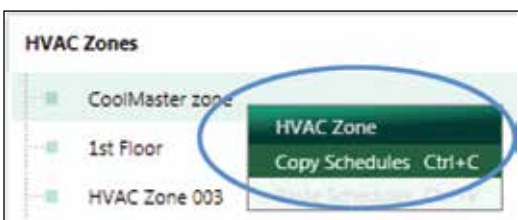


Click on the **HVAC Zone** to be programmed and click **Paste Schedules** to copy the schedule to the zone.

# 4.0 CoolMaster Integration with a HomeWorks System

A HomeWorks system can integrate with CoolMaster interfaces. The commands used by the CoolMaster interface to communicate with the HomeWorks system are similar to the CoolMasterNet / CooLinkNet. One primary difference between the two CoolAutomation interfaces is that CoolMasterNet and CooLinkNet have a built-in Ethernet port for a direct connection into the physical router or switch port in the LAN, while the CoolMaster has a serial communication port, RS-232, which must first be converted to Ethernet using a third-party converter device, prior to the commands getting to the HomeWorks system.

## 4.1 Connecting CoolMaster to the HomeWorks System
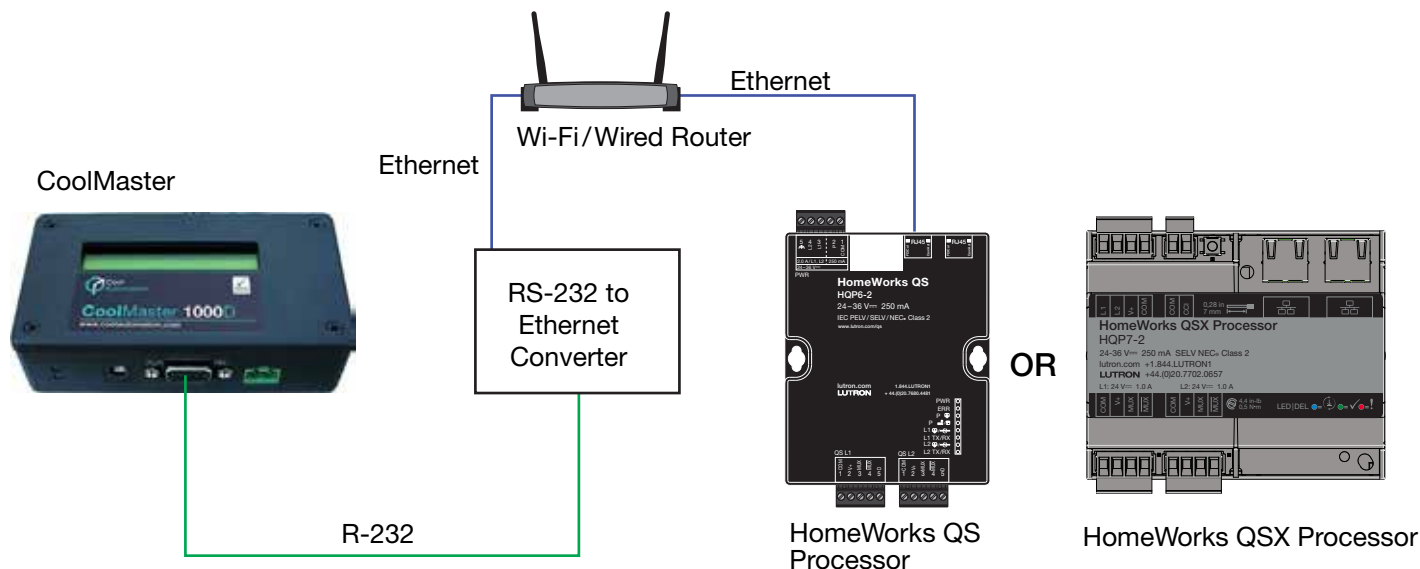


The CoolMaster interfaces will live on the network using an RS-232 to Ethernet converter. The converter is assigned an IP address, port number, and potentially a username and password, if the converter utilizes Telnet for its application layer. For more information about the network settings for converters, as well as supporting documentation of the converter that is being used for the application, refer to **HomeWorks Integration with Ethernet and RS-232 Devices** at www.lutron.com. Settings will vary by converter. Set the IP address of the converter outside of the DHCP range of the router to which it is connected.

Here is an example of CoolMaster interface controller settings using an RS-232 to Ethernet converter.

| Output | Controller Settings | | |
| --- | --- | --- | --- |
| Address | Port Number | Username | Password |
| 192.168.1.203 | 2101 | | |

The converter must be link assigned to one of the five available Ethernet connections on one of the processors in the HomeWorks system. For more information on link assignment, refer to **Section 3.2.3**.

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# 4.0 CoolMaster Integration with a HomeWorks System *(continued)*

## 4.2 Adding CoolMaster Interfaces to a HomeWorks Database

Adding and setting the parameters for a CoolMaster interface follows the same process as CoolMasterNet/CooLinkNet. Refer to **Section 3.2.2** for more information on adding CoolMaster to a HomeWorks database and how to define the necessary parameters.

### 4.2.1 HomeWorks QS Software Prior to 9.0

HomeWorks QS software versions prior to 9.0 had options available for selecting the full line of CoolMaster interfaces, including many which are no longer actively available for purchase from CoolAutomation. All devices communicate with the HomeWorks QS system in the same manner. The difference between the interfaces is on the HVAC equipment side. Each interface is intended for control of a specific manufacturer's VRV/VRF system.
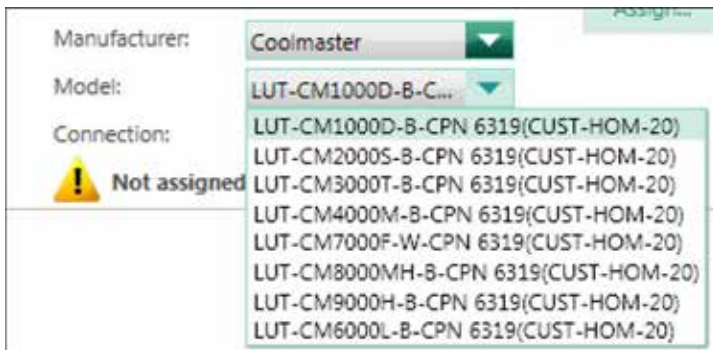


### 4.2.2 HomeWorks QS Software 9.0 to 10.7

As a result of the discontinuation of sale on most models of the CoolMaster interface, the HomeWorks QS software version 9.0 had a reduced list of model numbers but still supports all CoolMaster interfaces from a command and integration perspective. The only model number listed is for Fujitsu equipment. If utilizing another CoolMaster interface or controlling a different HVAC manufacturer, select the 7000F model number and be sure to make the appropriate bill of materials corrections so that the correct hardware is ordered. From the perspective of the HomeWorks QS system, the interfaces are essentially the same.
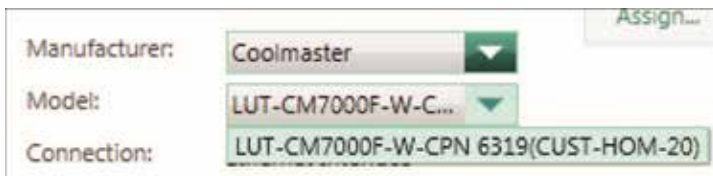


### 4.2.3 HomeWorks QS Software 11.x

In HomeWorks QS software version 11.0, all models of CoolMaster have been removed. Choose the option for CoolMaster from the Manufacturer drop-down menu. This will allow integration with every model of the CoolMaster interface.
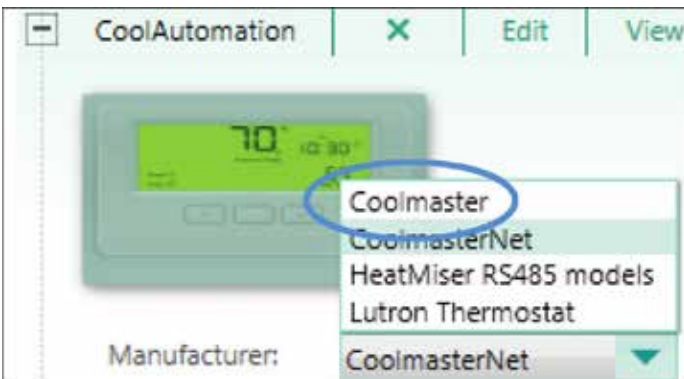
# 4.0 CoolMaster Integration with a HomeWorks System *(continued)*

## 4.2 Adding CoolMaster Interfaces to a HomeWorks Database *(continued)*

### 4.2.4 HomeWorks Software 12.0 and Newer

Starting in the HomeWorks software version 12.0 CoolMaster has to be added to the Model field (when CoolAutomation is selected in the Manufacturer field).



## 4.3 Programming for CoolMaster in the HomeWorks Software

Programming for control of the CoolMaster HVAC zones is similar to programming for CoolMasterNet/CooLinkNet. Refer to **Sections 3.2.4** and **3.2.5** for more information.

# 5.0 CoolAutomation CoolPlug

## 5.1 Overview

Please refer to the notes under the **VRV/VRF via wired third-party HVAC controller System Diagram** section in the myRoom Palladiom thermostat Specification Submittal (P/N 369861) at www.lutron.com for more information concerning this integration.

The Palladiom thermostat's internal temperature sensor is disabled when connected to a CoolPlug interface. The temperature must be measured and reported by the HVAC system's indoor unit (IDU). The IDU's measured temperature will be sent though the CoolPlug interface and displayed on the thermostat. Temperature averaging between multiple sensors is not available.

Only the Palladiom thermostat and CoolPlug solution may be connected to the IDU. No other thermostats may be connected to the HVAC system, as it risks communication link corruption.

Energy reporting in myRoom Vue and displaying operating status on the Palladiom thermostat is only available when integrating the CoolPlug with Daikin® VRV units. All other HVAC systems may not report the operating status to the CoolPlug.

Error messaging is not available for this integration. The Palladiom thermostat cannot receive any HVAC error messages from the HVAC equipment.

## 5.2 System Topology

myRoom Palladiom
Thermostat or HomeWorks
Palladiom Thermostat



QS Link to Lutron System

Thermostat / Controller Communication Link
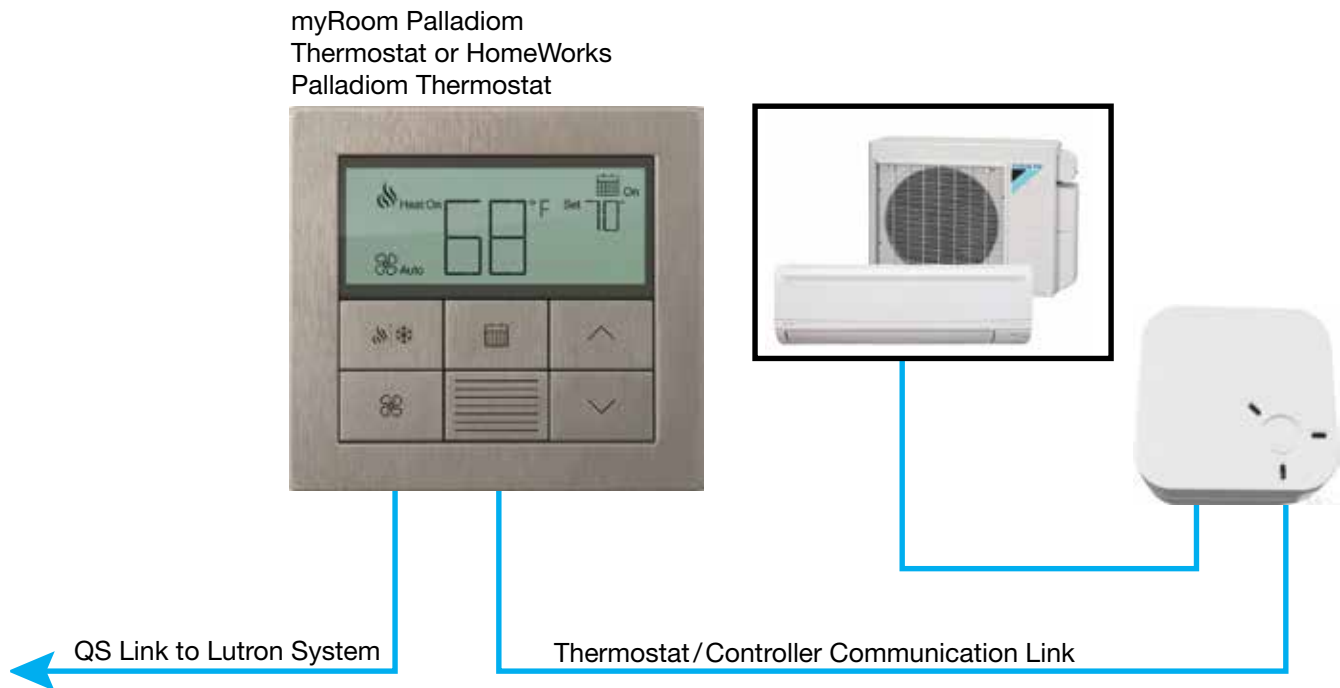
The myRoom Palladiom thermostat or HomeWorks Palladiom thermostat cannot be connected to more than one CoolPlug on its Controller Communication link.

Refer to the Lutron Specification Submittal P/N 369597 at www.lutron.com for more information on QS Link wiring. For Thermostat / Controller Communication Link wiring refer to the table below. For more information on wiring between CoolPlug and the indoor unit, refer the CoolPlug model specific wiring guide from CoolAutomation.

| Thermostat Controller Communication Link Wiring | Wire gauge | Lutron Cable Part Number |
|---|---|---|
| Up to 500 ft (152 m) | **Common:** 18 AWG or 22 AWG (1.0 mm² or 0.5 mm²)<br>**MUX:** 1 twisted, shielded pair 18 AWG or 22 AWG (1.0 mm² or 0.5 mm²) | GRX-CBL-346S (non-plenum)<br>GRX-PCBL-346S (plenum) |

# 5.0 CoolAutomation CoolPlug *(continued)*

## 5.3 Minimum Software Requirements

– HomeWorks Palladiom thermostat: Rev 3.20 or newer

– myRoom Palladiom thermostat: Rev 4.18 or newer

– Coolplug firmware 0.1.2 or newer.

    o CoolPlug-DK with software revision 0.1.2 can provide Daikin VRV Call Status for energy reporting in myRoom Vue. For other VRF systems, energy reporting may not be available.

## 5.4 Wiring Diagram (myRoom or HomeWorks Palladiom Thermostat with CoolPlug Controller)
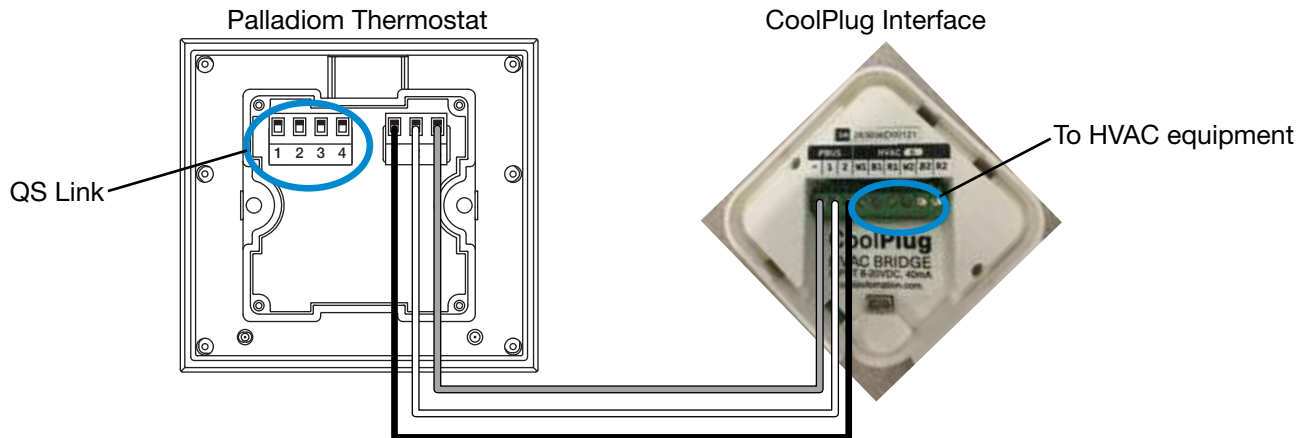


The CoolPlug interface integrates with the HomeWorks system by physically wiring to the back of a Palladiom thermostat. Below is a table detailing the connections between the Palladiom thermostat and CoolPlug interface.

| Palladiom Thermostat | CoolPlug Interface |
|---|---|
| $\overline{\text{MUX}}$ (terminal #1) | **PBUS 2** |
| MUX (terminal #2) | PBUS 1 |
| Ground (terminal #3) | PBUS – |

## 5.5 Configuring the Thermostat

Follow the directions on the thermostat install guide to enter the Controller Selection menu on the Palladiom thermostat and set the correct controller and controller address for the CoolPlug controller.

For the HomeWorks Palladiom thermostat please see the HomeWorks Palladiom Thermostat Configuration Guide (P/N 032498) and for the myRoom Palladiom thermostat please see the Palladiom Thermostat and Fan Coil Unit (FCU) Controller Configuration Instructions (P/N 041563) at www.lutron.com

# 5.0 CoolAutomation CoolPlug *(continued)*

## 5.6 Commissioning the Thermostat in Designer

### 5.6.1 Commissioning a myRoom Thermostat in a myRoom Database

To ensure that the thermostat can communicate with the CoolPlug controller, select **Fan Coil Unit** for the **Control Type** as as shown below. The thermostat acknowledges a connection to the CoolPlug, even though the control type is set to Fan Coil Unit.
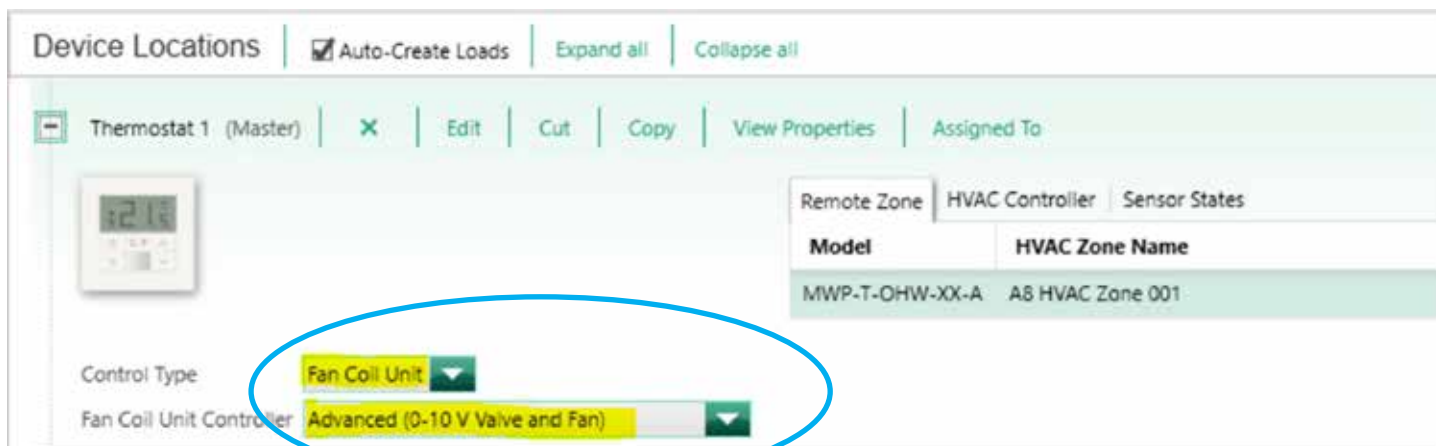


– Ensure that the Operating Modes and Fan Speeds available for the HVAC equipment are enabled at the HVAC Controller tab above.

### 5.6.2 Commissioning a HomeWorks Thermostat to a HomeWorks Database (version 12.0 or newer)

To add the CoolPlug Controller to the database, go to the **Design** tab of the software and use the drop-down menu to select equipment. Next, find the third-party HVAC device in the toolbox and click the **+** to add the device using HomeWorks 12.0 or newer. **NOTE:** The default toolbox does not contain this device by default, so it is necessary to edit or create a toolbox to include the third-party HVAC device.
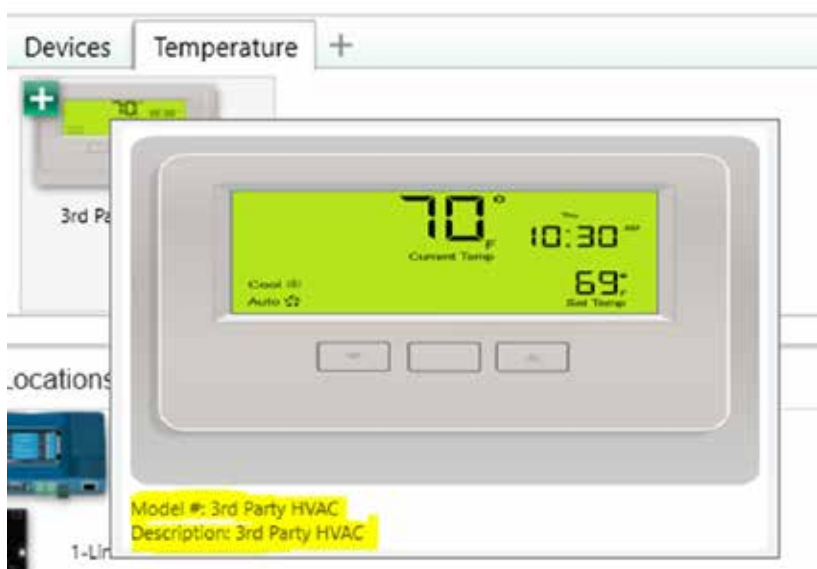
# 5.0 CoolAutomation CoolPlug *(continued)*

## 5.6 Commissioning the Thermostat in Designer *(continued)*

### 5.6.2 Commissioning a HomeWorks Thermostat on HomeWorks Database (version 12.0 or newer) *(continued)*

Once the third-party HVAC device has been added to the **CoolPlug Equipment** area, provide a name for the HVAC device and select **CoolAutomation** as the Manufacturer and **CoolPlug** as Model.
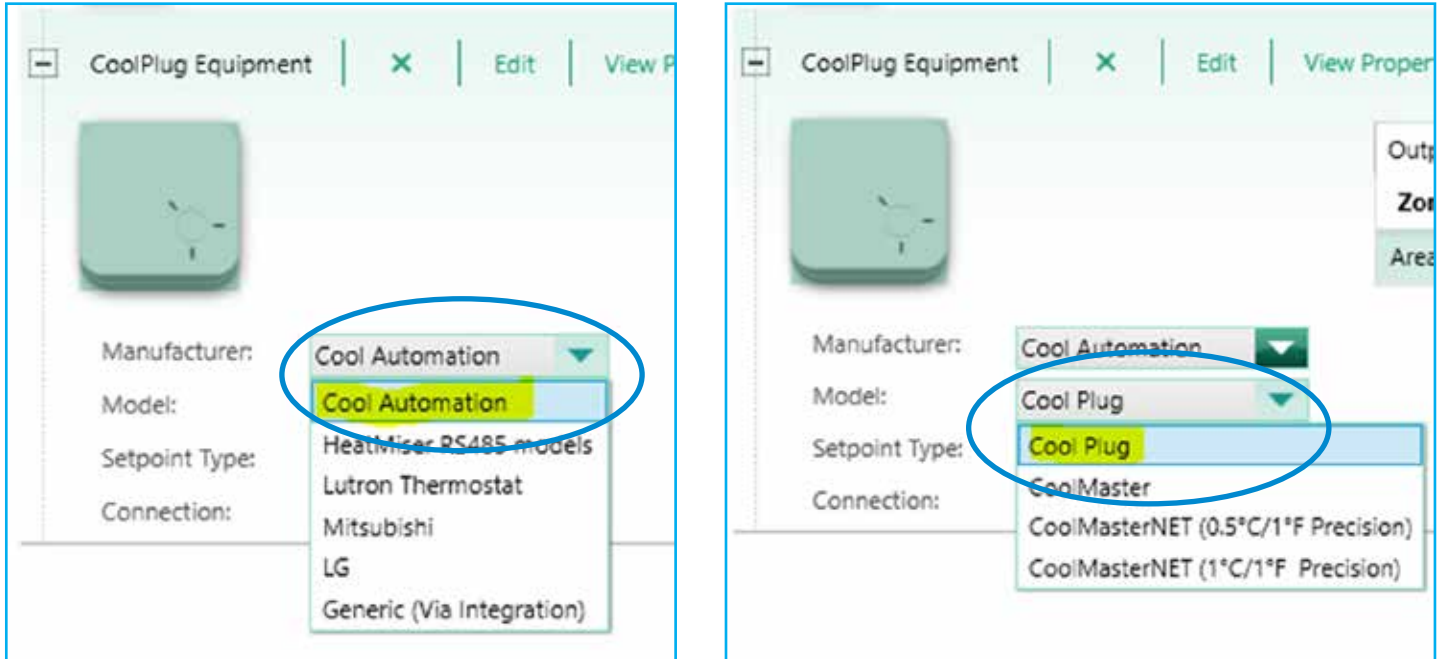


When adding the third-party HVAC device, a zone is automatically added by default to the area where the CoolPlug interface is located. Assign this zone as a **Remote** zone to the HomeWorks Palladiom thermostat. Ensure that the **Operating Modes** and **Fan Speeds** available for the HVAC equipment are enabled on the Coolplug. While you won't be able to select fan as an operating mode, fan-only mode is supported in the "Off" operating mode with a fan speed selected. See image below.
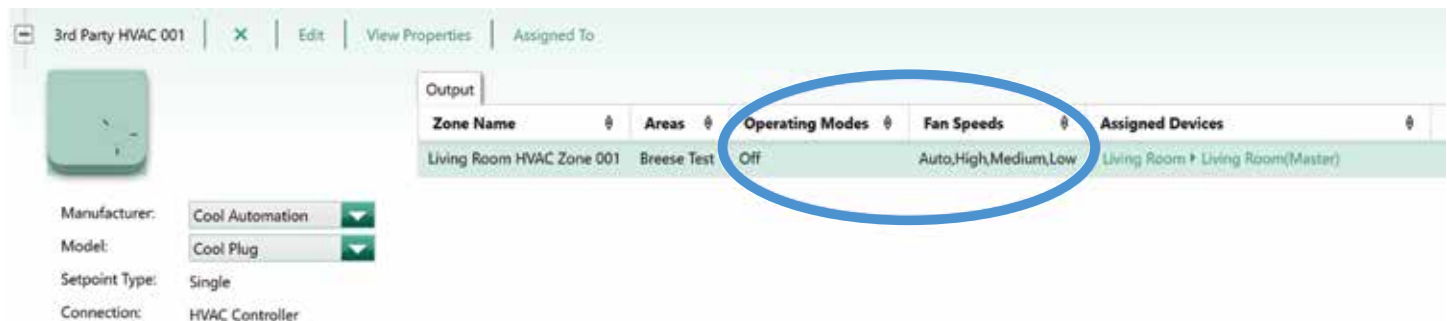
# 6.0 Frequently Asked Questions

**What is Variable Refrigerant Flow (VRF)?**

Variable Refrigerant Flow (VRF) uses refrigerant as the cooling and heating medium. It allows for one outdoor condensing unit to be connected to multiple indoor fan-coil units (FCUs), each individually controllable by its user, while controlling the amount of refrigerant delivered to each evaporator. By operating at varying speeds, VRF units work only at the necessary rate to achieve substantial energy savings at partial load conditions. Heat recovery technology allows individual indoor units to heat or cool as required, while the compressor load benefits from the internal heat recovery.

**What is Variable Refrigerant Volume (VRV)?**

Similar in functionality to VRF systems, Daikin® invented Variable Refrigerant Volume (VRV) technology in 1982. VRV multi-zone systems circulate only the amount of cooling/heating refrigerant volume required at any time. Different zones can simultaneously utilize different climate control settings. VRV offers a versatile and customizable solution for an entire building, minimizing consumption and individual user control.

**What is the difference between CoolMasterNet, CooLinkNet, and CoolMaster?**

There are a number of differences between all three, but each unit is compatible with a HomeWorks QS system. CoolMaster communicates to control systems, such as a HomeWorks QS system, primarily via RS-232 serial communication, and these interfaces are HVAC manufacturer specific (e.g. there is a model for Mitsubishi® and a different one for Daikin). The way that the HomeWorks system communicates to these interfaces does not vary from one HVAC manufacturer to another; however, the interface communication out to the HVAC system will vary. The RS-232 communication requires an RS-232 to ethernet converter in order to communicate with the HomeWorks processor.

CoolMasterNet and CooLinkNet have the ability to communicate via RS-232 but also has an ethernet port and can reside on the LAN. No serial to IP converter is required for communication with the HomeWorks processor. The CoolMasterNet is also not manufacturer specific and is a drop-in replacement for all models of the CoolMaster RS-232 interface. However, the CooLinkNet is manufacturer-specific, and the correct model must be ordered depending on which HVAC Manufacturer is planned to be controlled from the CooLinkNet. The CoolMasterNet can control multiple zones of HVAC with a single device, whereas the CooLinkNet is a single HVAC zone control device. For a list of HVAC Manufacturers supported and the appropriate CooLinkNet model for your application, please reference CoolAutomation's website at www.coolautomation.com.

**I cannot get my CoolMasterNet/CooLinkNet to communicate with my HomeWorks system or even through a terminal application. What could be the issue?**

The two keys to establishing communication are: knowing the IP address assigned to the CoolMasterNet or CooLinkNet, and knowing the port number that the CoolMasterNet or CooLinkNet uses to communicate to other devices on the network. The IP address that is assigned to the interface, from the DHCP server, will show in the lower right corner of the CoolMasterNet screen and the upper left corner of the CooLinkNet screen. The IP address of CooLinkNet is shown for a few seconds every one minute. Once you know the IP address, be sure to use port number 10102. Communication to the CoolMasterNet or CooLinkNet can be tested using a terminal program (e.g., PuTTY) using Raw TCP.

**How does a CoolPlug interface communicate with a HomeWorks system?**

The CoolPlug interface communicates with a HomeWorks system via the 3-pin terminal block on the back of a Palladiom thermostat.

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