



# Operation Manual

# OM 1092-2

Group: **Controls**  
Part Number: **OM 1092**  
Date: **January 2014**

## Daikin System Manager MicroTech® Integrated Systems



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## Revision History

Version Number	Date	Comment
OM 1092	September 2010	Initial release
OM 1092-1	September 2012	Revision 1
OM 1092-2	November 2013	Revision 2

## Reference Documents

Number	Company	Title	Source
IOM 1135	Daikin Applied	MicroTech III Generic I/O Manager	DaikinApplied.com
IOM 1150		LWM installation and operation manual	
OM 920-3		MicroTech III operation manual	
OM 931-4		MicroTech III unit controller for WSHP units	
OM 1063		BACnet VAV Actuator Owners Manual	
OM 1149		MicroTech Smart Source unit controller	
ED 15112-11		Protocol information for MicroTech III rooftop and self-contained units	
ED 19013		MicroTech® III Generic I/O Unit Controller Protocol Implementation Conformance Statement (PICS)	
ED 19014		MicroTech III Generic I/O Unit Controller Protocol Information	
ED 19015		LWC PICS and protocol information	

## Limited Warranty

Consult your local Daikin Applied Representative for warranty details. Refer to Form 933-430285Y. To find your local Daikin Applied Representative, go to [www.DaikinApplied.com](http://www.DaikinApplied.com).

## Introduction

The System Manager consists of a web-based user interface (Web-like pages accessible with Internet Explorer™) which allows the user to edit control parameters required for control of the MicroTech Integrated Systems.

## Hazard Identification Messages

### DANGER

Dangers indicate a hazardous situation that will result in death or serious injury if not avoided.

### CAUTION

Cautions indicate potentially hazardous situations, which can result in personal injury or equipment damage if not avoided.

### WARNING

Warnings indicate potentially hazardous situations, which can result in property damage, severe personal injury, or death if not avoided.

### CAUTION

**Static sensitive components. Can cause equipment damage.**

Discharge any static electrical charge by touching the bare metal inside the control panel before performing any service work. Never unplug cables, circuit board terminal blocks, or power plugs while power is applied to the Manager.

### NOTICE

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with this instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her own expense. **Daikin Applied disclaims any liability resulting from any interference or for the correction thereof.**

# Requirements

## System Devices

Completely mounted and connected devices, consisting of:

- Windows® Standard Embedded Operating System (EOS) with Ethernet Card and TCP/IP Protocol, Internet Explorer® browser version 8.0 or higher, Ethernet Cable or access to wireless network
- BACnet® enabled MicroTech equipped chillers
- MicroTech III equipped rooftop or self-contained units
- MicroTech III equipped WSHP units
- MicroTech III equipped Fan Coil units
- Maverick™ I equipped with DDC controllers and BACnet
- Daikin Applied VAV boxes
- Generic I/O unit controllers
- Loop Water Manager (LWM)

Figure 1: VAV Integrated System

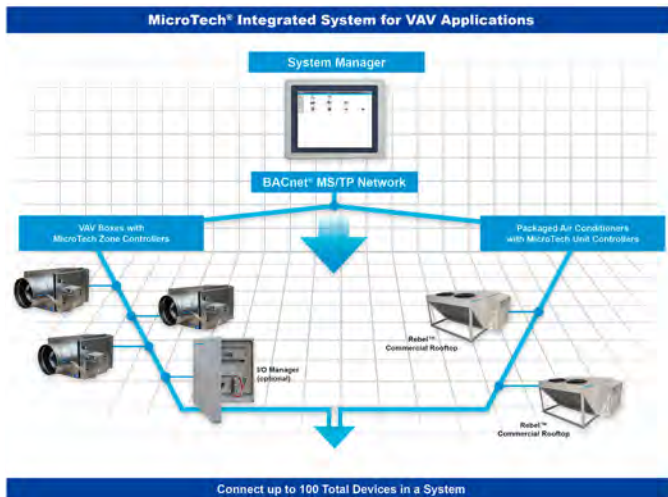
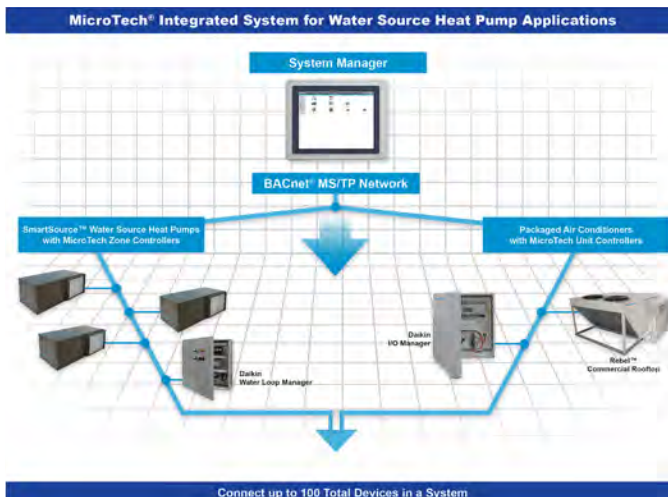


Figure 2: WSHP Integrated System

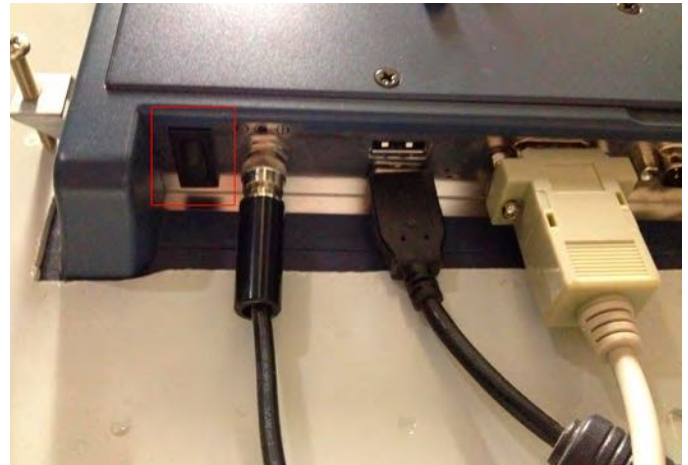


## System Manager Start up

### Power-Up

Before you power up the machine, you will want to make sure that all connections are in place. Make sure that your communication wires are connected to your system and that all necessary sensors and power cables are hooked up as well. Once you have verified that all necessary connections have been made you can then turn on the machine. When viewing the back of the LCD screen from inside the Controller box, the power switch is located on the bottom at the far left.

Figure 3: Power switch location on bottom rear of LCD screen



## System Manager Calibration

To ensure a judicious mode of operation, the System Manager should be calibrated.

Figure 4: Open the Control Controller Settings



Press on the “pm” icon on the bottom right corner of the desktop and open the “Control Panel” (Figure 4)

1. Press on the “Configure” button (Figure 5)
2. Select the “Standard Calibration” (Figure 6) and after that, just follow the calibration instructions

Figure 5: Configuration

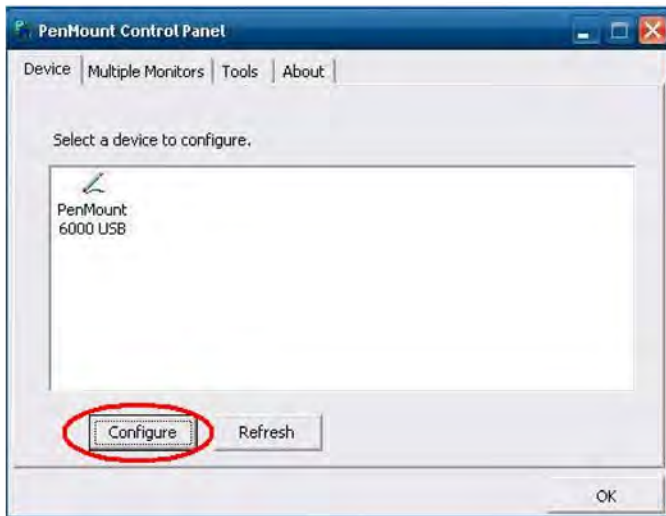


Figure 6: Calibration



## Shutdown

The System Manager can be shutdown safely using the shutdown button located in the left hand menu bar on the main screen. This button is not available if accessing the controller remotely, but is available to all user levels locally at the System Manager. Do not power it down using the power cord. The system can also be shut down using the power switch located on the controller itself.

## Restart

The System Manager can be restarted safely using the restart button located in the left hand menu bar on the main screen. This button is not available if accessing the controller remotely, but is available to all user levels locally at the System Manager. Do not restart it using the power cord.

Figure 7: System Shutdown and Restart Buttons



## Navigating the System Manager

The System Manager is designed to be easily navigated as a touchscreen interface, though in some instances, it may be quicker or otherwise more beneficial to utilize a mouse and/or keyboard. If you would like to add one of these devices to your System Manager, simply plug them in to the touchscreen PC through the USB port located on the bottom of the panel enclosure or directly into the PC, at the bottom of the screen, on the inside of the enclosure.

You can also utilize these USB ports to add or remove documents to and from the System Manager. To do this, simply plug in your mobile storage device into one of the USB ports on the System Manager. To access the information on the PC or in the removable storage device, you will need to first minimize the browser window by pressing or touching the extreme top of the screen. All files related to the operation of the System Manager are located in the PDFs folder within the MISystem folder on the local disk (C: drive).

## Updating Local Time

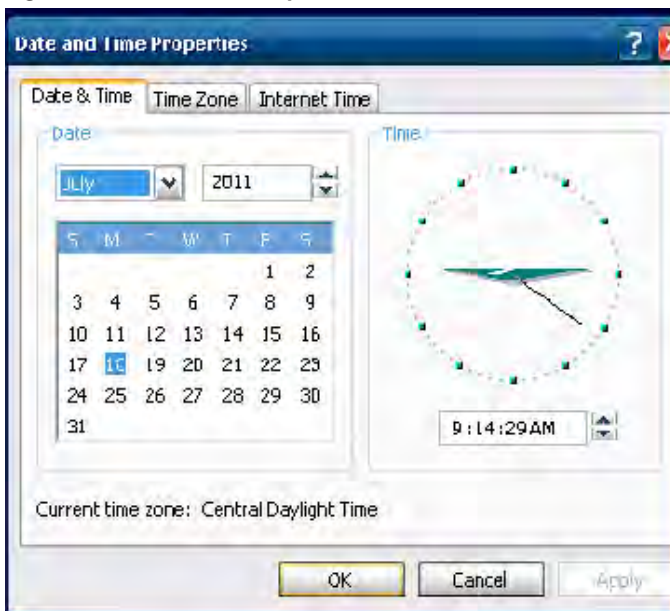
To avoid problems with following scheduling plans, it's necessary to update the Time and Time Zone of your System Manager.

Go to your system clock, which you will find on the bottom right corner of the desktop, double press on the Date/Time to open the properties window. Use this window to adjust your system time.

### ATTENTION

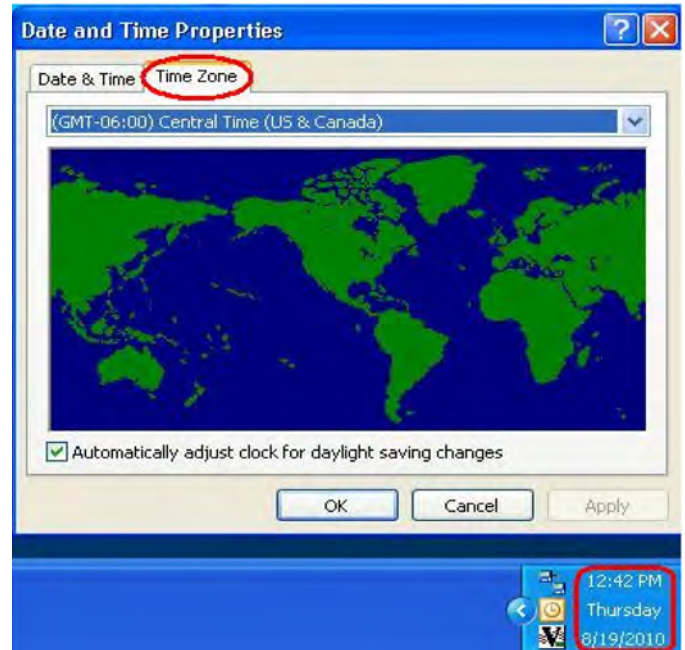
You must power cycle the System Manager for Time/Date changes to apply.

Figure 8: Date and Time Properties



After you have adjusted the date and time, press on the time zone tab. There you will choose the right time zone of your area. After making the Date/Time changes, cycle power on the System Manager.

Figure 9: Properties of the time zone



## Disabling Windows Firewall

To avoid network complications when viewing the system remotely, the windows firewall needs to be either configured or disabled on the System Manager. To configure the firewall, navigate to the windows desktop. From the start menu, go to My Network Places and click on the View Network Connections link on the left side menu. Then click on the Change Windows Firewall Settings link on the left side menu. Select the Off option to disable or navigate to the Exceptions or Advanced tab to configure. Click OK to apply new firewall settings.

## Networking

The System Manager local touch screen is a Windows™ based PC and can be added into a network like any other personal computer with a Windows™ operating system. The System Manager interface is a browser window. When a network connection is provided to the touch screen PC through the Ethernet port on the bottom of the Controller, any other computer on that network will have full access to the same system interface using the browser on their local device. Your System Manager will control properly without being connected to a network, but it will not have full functionality. Applications that require a network connection (such as remote monitoring and alarm notifications) will simply not work without access to the internet. The following steps will explain how to determine and set the IP address and subnet mask, then connect the system to System Manager through a browser window.

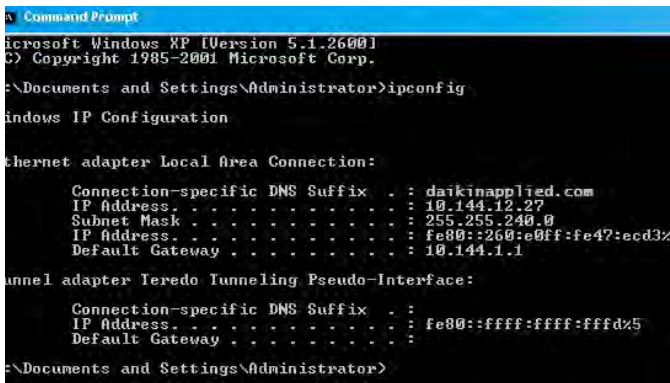
## Determining IP Address and Subnet Mask

Follow these steps to determine your IP Address and Subnet mask. These are important for connecting to the web-application without problems. It is important that your computer's IP Address is different than the System Manager's IP Address and that the Subnet Masks are the same.

To find your IP Address and Subnet mask you:

1. Click the Start button from the desktop
2. Go to Programs → Accessories → Command prompt
3. From the command prompt screen type in "ipconfig", and hit enter
4. You will see a readout showing your IP Address and Subnet mask

Figure 10: Viewing Computer's IP Address and Subnet Mask



Before you can view an IP Address you must first make sure that the controller is connected to the LAN Network via an ethernet cable, or a wireless network (where applicable). If the controller isn't connected you will not be given an IP Address, and will therefore be unable to connect remotely to the device.

## Setting manual IP Address and Subnet Mask

If for some reason you need to change your IP Address or Subnet Mask, to match or be different, you can do so by following these steps.

1. From the Start menu go to Settings and then Control Panel
2. Double-click on "Network Connections"
3. Depending on whether you are connecting via LAN or wireless right-click on your connection medium and select "properties"
4. Scroll down until you see "Internet Protocol (TCP/IP)". Click on it once and then click the properties button below. (Figure 11)
5. Select "Use the following IP address:" and enter the desired IP Address and Subnet Mask in the space provided (Figure 12).

Figure 11: Showing how to get to IP Address Configuration Page

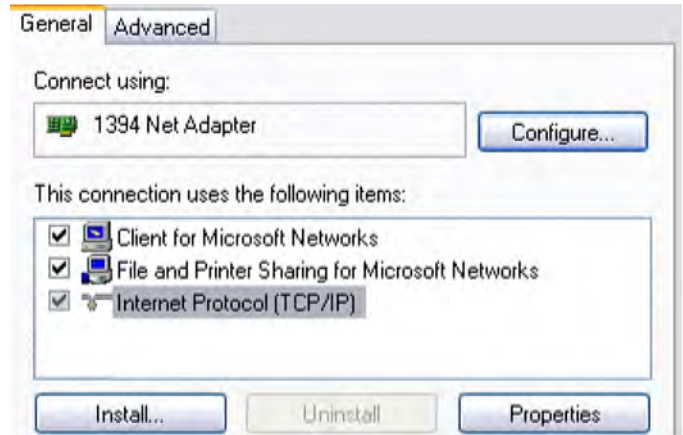
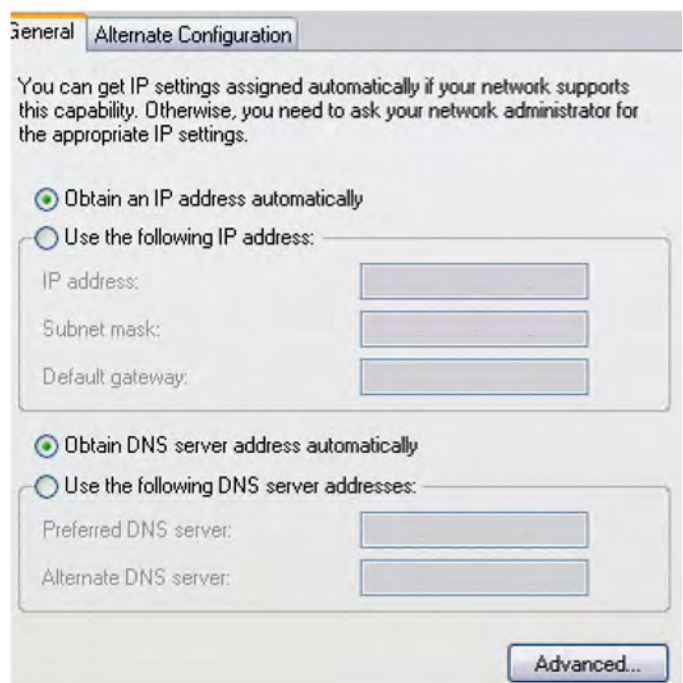


Figure 12: Showing TCP/IP page



## Connecting to Web-Application

A user can access the web-application via a wireless network, Ethernet connection, or direct connect to the touchpad via a hub. In any case the method for connecting to the application is the same.

1. First make sure your computer has a similar, but different IP Address than the computer you're accessing, and same Subnet Mask. If unsure check to see (see Determining IP Address and Subnet Mask).
2. Open Internet Explorer
3. Type <http://xxx.xxx.xxx.xxx/MISPanel>, where the xxx.xxx.xxx.xxx, is the address of the System Manager that you are trying to access. The IP-address of the controller was identified in [Figure 10](#).
4. If done correctly the web-application homepage should pop up on the screen.
5. In the first minutes the Discovery Mode will be active and searching for all devices. ([Figure 13](#))

Figure 13: Discovery Mode





## Startup Wizard

The System Manager is pre-programmed in the factory to ensure a relatively rapid startup in the field. To accomplish this the system offers Wizard utilities. The Startup Wizard is used as an onsite automatic commissioning tool for the System Manager (If this step is already done skip to Establish User Interface Communication). The Wizard icon and menu (see Figure 14) will appear the first time you open the application and go to the home page after initial power-up. It leads to a screen with two possible options: the VAV startup wizard and the WSHP and Fan Coil Unit Auto-Commissioning Wizard. The VAV startup wizard is designed to ensure proper airflow in the system, verify AHU/Terminal unit associations programmed in the factory are accurate in the field, and confirm that the configuration parameters on all the devices are set properly. The WSHP and Fan Coil Unit Auto-Commissioning Wizard wizard is used to address and identify connected WSHP devices. The user may wire and power the terminals without any previous configuration, then use the auto-commissioning wizard to configure them while they operate. The following screenshots will illustrate each step of these processes, and layout any information that may be necessary to ensure a smooth commissioning process.

**NOTE:** You must first ensure that all air handling units have first been started up per the installation manual for that unit by a trained professional before running the Startup Wizard.

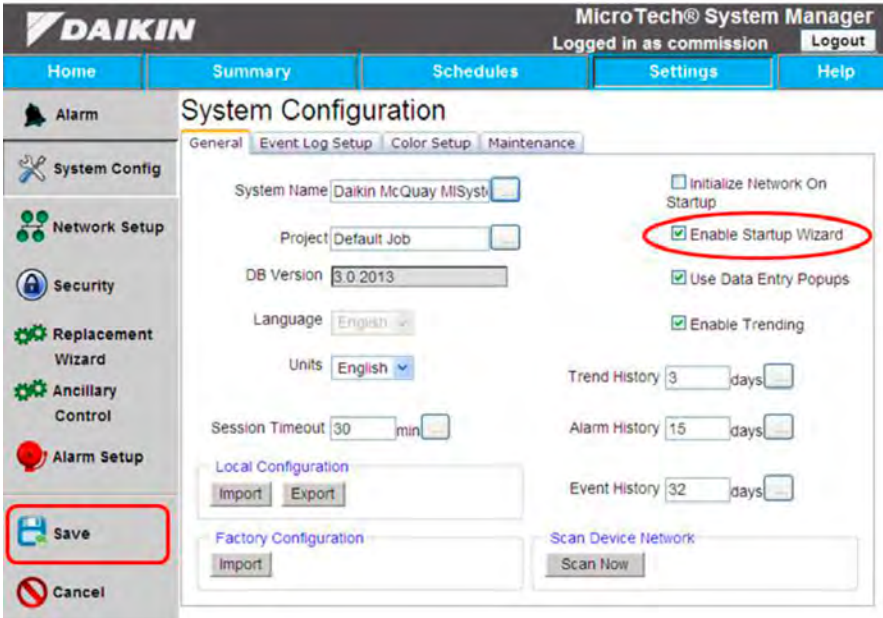
If the Startup Wizard won't appear or has been canceled:

1. Select the Settings tab on the top menu bar. You have to login. The login information is treated in the next chapter (Establish User Interface Communication).
2. Check the "Enable Startup Wizard" checkbox. (Figure 15)
3. Click on the Save button located in the left hand menu.
4. Select the Home tab.
5. Select the Startup Wizard button located in the left hand menu or the Run Startup Wizard icon in the center section. (Figure 14)

Figure 14: Main Screen with Startup Wizard enabled



Figure 15: Settings for initiating the Startup Wizard manually



## VAV Start Up Wizard

Figure 16: Welcome Screen for VAV System Startup Wizard

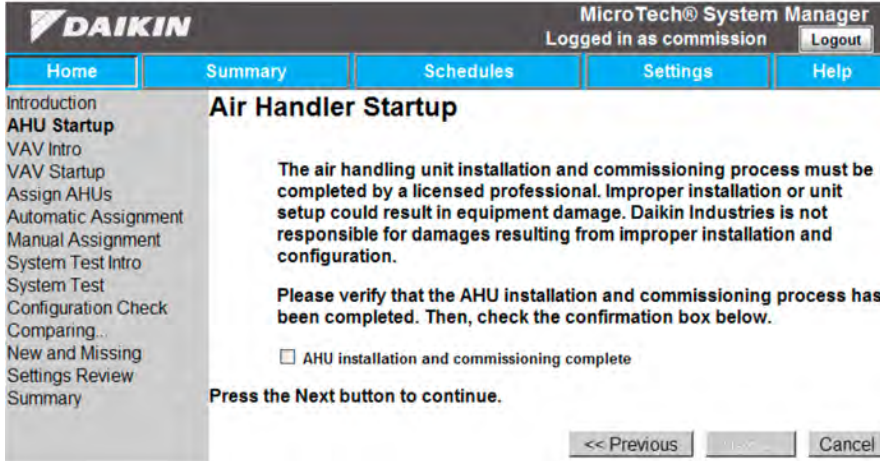


### Air Handler Start-Up

The “Air Handler” start-up section is only for confirmation purposes. The actual commissioning of the AHU must be done by a licensed professional. Therefore the user is asked to

confirm that this was indeed completed so that the process can continue.

Figure 17: Air Handler Startup



### VAV Start-Up

This portion of the setup wizard is used primarily to configure the damper motor on each VAV unit. The motor setup will be confirmed and then the damper on each VAV will be fully opened and fully closed for calibration purposes. The entire

process has 7 steps, and as each is completed the ellipsis becomes a green checkmark. If a process is still running then it will have a black circle with a spiraling dot pattern, indicating that it is currently running (Figure 19 and Figure 21)

Figure 18: VAV Startup



Figure 19: VAV Terminal Startup



**Assignment**

In this section you will go through the process of assigning VAV terminals to specific Air Handlers. The user has two options for selection, which are “Automatic Discovery” and “Manual Entry” (Figure 20). The automatic setup, as the name implies, means that the VAV’s will be automatically assigned to an available AHU based on flow readings attained when starting

each air handling units individually (Figure 21). This portion of the startup is designed to ensure all boxes were installed in on their proper supply duct. If the automatic assignment fails (because the Wizard was unable to start up the AHU for instance), the VAV’s will be manually assigned based on the XML file created when the system was ordered.

Figure 20: AHU Assignment

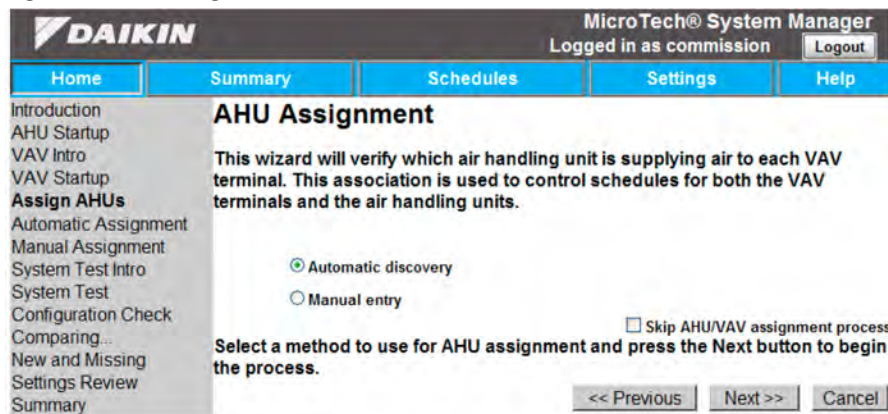
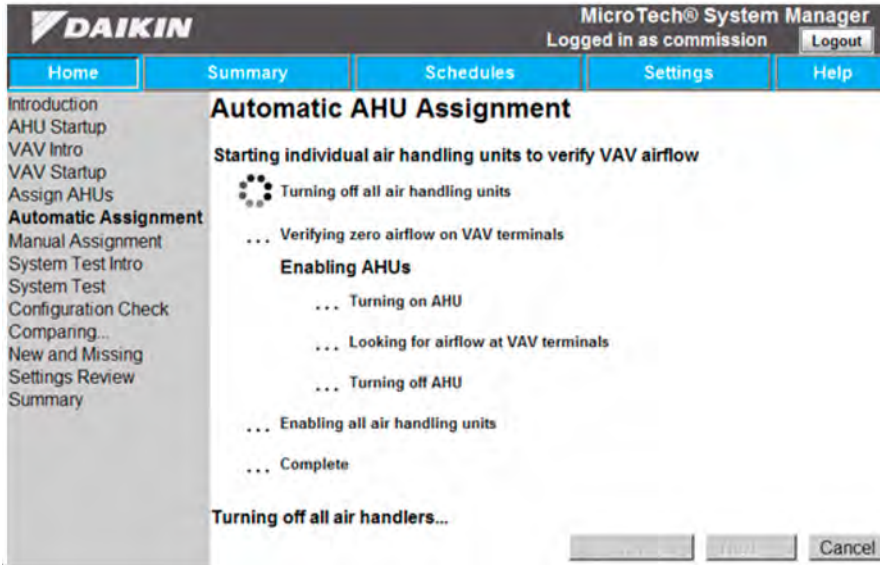
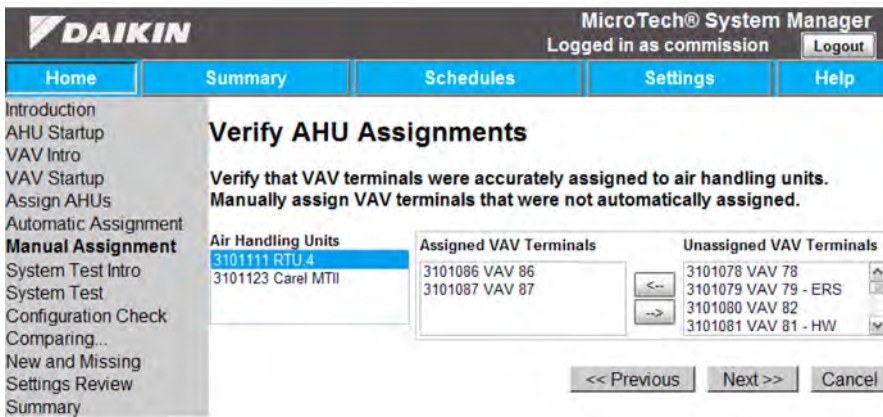


Figure 21: Automatic AHU Assignment



With the manual setup, the user can select which AHU to associate to each individual terminal unit. (Figure 22)

Figure 22: Manual AHU Assignment

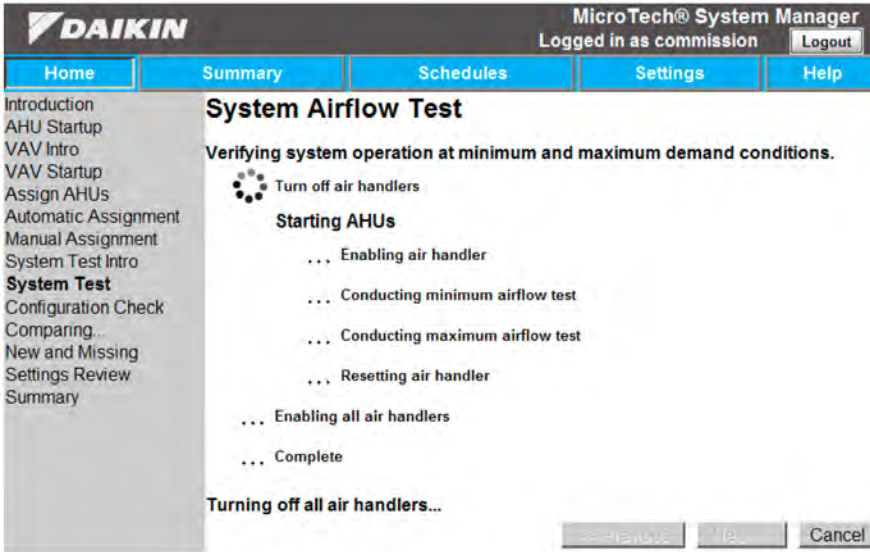


### System Airflow Test

This portion of pre-commissioning tests the system for appropriate airflow levels. It consists of commanding all terminal units to simultaneously maintain minimum and then maximum flow while their appropriate air handler adjusts its supply fan speed to maintain duct pressure. This test is used to make sure that the VAV's can support both the minimum

and maximum airflows in order to prevent starved or overworked boxes (Figure 23). Do not be overly concerned if the system fails the maximum flow test, since many systems are planned with some diversity and the air handler may not be engineered to satisfy full flow to all zones simultaneously.

Figure 23: System Airflow Test



**Configuration**

This step of the pre-commissioning process checks to make sure that the devices are configured correctly. The system will compare the current configurations to the configuration

files that were factory installed and make sure that they are identical. (Figure 24 and Figure 25)

Figure 24: Device Configuration Check

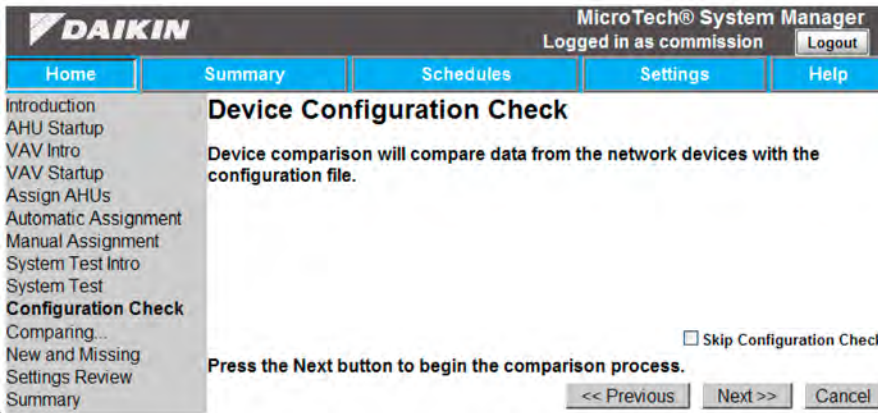
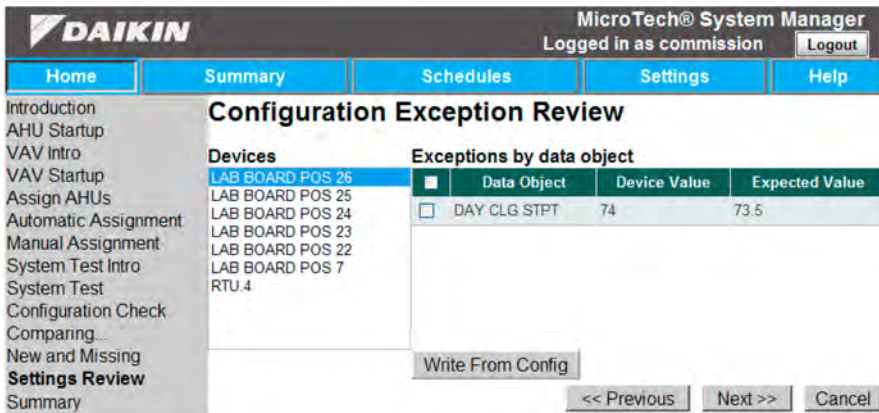


Figure 25: Comparing devices



Figure 26 shows an example of the Configuration Exception screen. This illustrates an example of when the indicated values for a specific device did not match those in the configuration file.

Figure 26: Configuration Exception Review



### Saving Exceptions Log

This last step in the pre-commissioning process summarizes all the exceptions found in the Startup Wizard. These exceptions should be reviewed and noted. To save a copy of the exceptions list, select the "Save to File" button. The list will be printed to a file that will be saved to the local drive on the controller at the following location: C:\MISystem\Logs. The file is called StartupLog[Date].txt.

**Saving New Configuration**

Once you have finished the Startup Wizard, your system has been re-configured with the current building setup, which may be different from the factory configuration. In order to save these changes to the configuration, press the “Export Config” button in the lower right hand corner of the screen. The resulting .xml file, called “LocalConfig.xml”, will be saved at the following directory on the local drive of the system panel: C:\MISystem\Config.

**NOTE:** It is important that you export the current system configuration with the “Export Config” button. The new configuration file (LocalConfig.xml) should also be saved to a remote location or storage device. Should your System Manager become damaged or otherwise defective and require replacement, this file will allow you to easily re-configure your replacement controller with the current system configuration. If you have not saved this configuration file, you will have to re-commission the system or revert to the factory configuration in the event of a controller replacement.

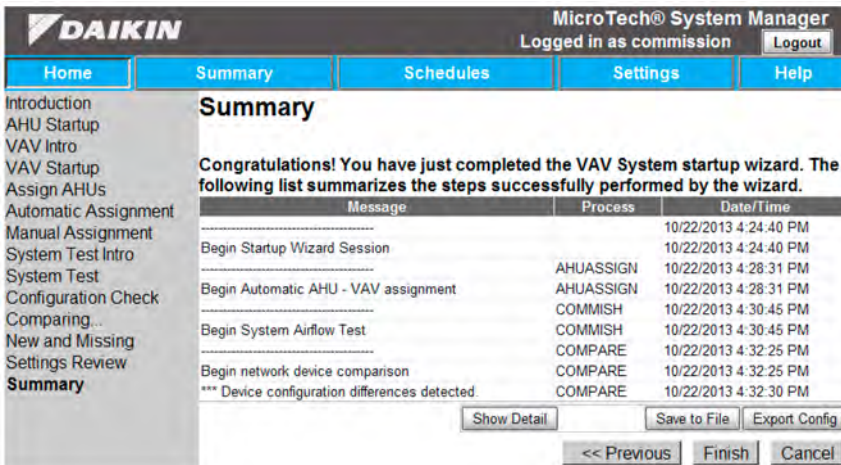
**Saving Data on external storage device**

To save the exceptions list or the current configuration to a removable storage device, simply plug the device into the USB port of the touch screen (located inside the panel). You must first minimize the browser window by clicking the extreme top of the screen. With the browser minimized, navigate to the appropriate folder by double clicking the “My Computer” icon, “New Volume (C:),” then the “MISystem” folder. The current configuration will be in the “Config” folder

and called “LocalConfig.xml”. The exceptions log from the Startup Wizard will be located in the “Logs” folder and called “StartupLog” followed by the appropriate date.

After completing the pre-commissioning process the user is now able to use the system as they see fit. By clicking on the “Finish” button, the user will be redirected back to the main home page, and can login accordingly and begin configuring the system.

Figure 27: Summary





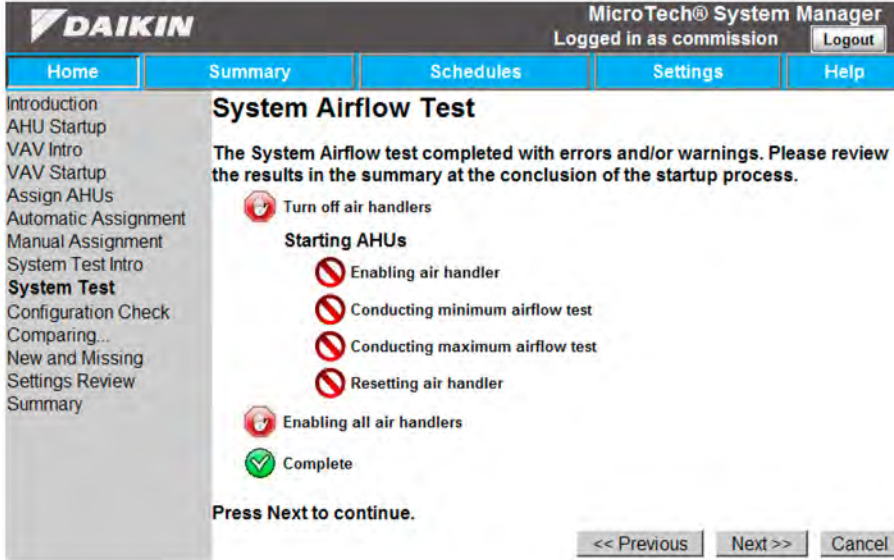
# Faults

## Commissioning Faults

The following screen captures illustrates what happens when an error is encountered during the pre-commissioning process. The red hand indicates that an error occurred during that

specific process, while the “Do Not Enter” symbol indicates that the process never got an opportunity to run because of a previous error.

Figure 28: Commissioning Fault at the startup wizard



## WSHP and Fan Coil Unit Auto-Commissioning Wizard

The WSHP and Fan Coil Unit Auto-Commissioning Wizard is a tool that will assist in locating and identifying the various WSHP and Fan Coil units within the building. In most cases, the MicroTech Integrated System will already have a pre-defined list of WSHP and Fan Coil units that it expects to see on the jobsite (though it isn't necessary). However, there is a process to initiate the communication with these units and associate them with units in this pre-defined list. This is the purpose of the Auto-Commissioning Wizard. WSHP and Fan Coil units will initiate communication on the network when the tenant override button on their associated space sensor is held in for more than 10 seconds. The Wizard will walk you through the process of initiating the communications with each of the WSHP and Fan Coil units and then identifying them on the MicroTech Integrated System. There are two basic strategies for doing this:

1. Build a pre-ordered list on the MicroTech Integrated System of the sequence in which you would like to initiate communication with the various WSHP and Fan Coil units. The MicroTech Integrated System will then automatically make the association as the units come on-line by associating the new device with the next WSHP or Fan Coil unit on your list.
2. Go zone to zone and initiate communications on each of the WSHP and Fan Coil units right away, one right after another. Do this on all units and then go back and identify them on the MicroTech Integrated System by the time stamp the communication was initiated.

Regardless of which method used, the Auto-Commissioning Wizard is designed to make the commissioning process for WSHP and Fan Coil units quick and easy, without having to access the WSHP or Fan Coil unit control cabinet or set dip switches. The process is fully defined in the following section.

Figure 29: Welcome Screen



## Verify Expected System

Figure 30: Screen for yes/no modify expected system

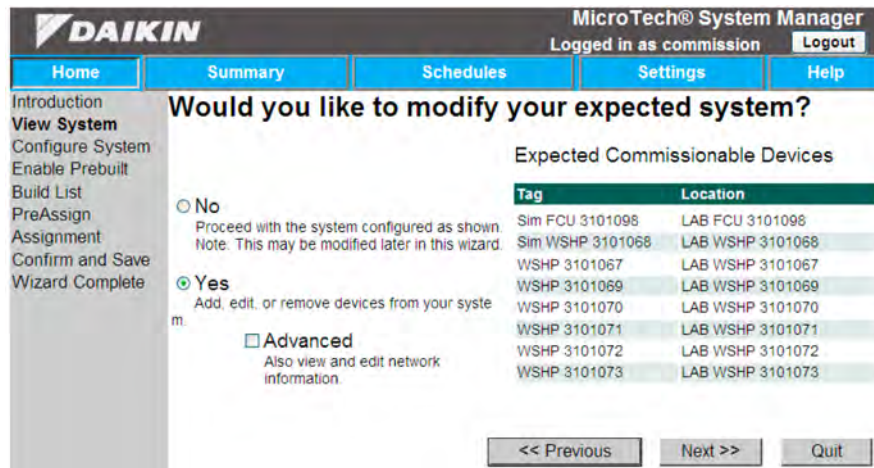
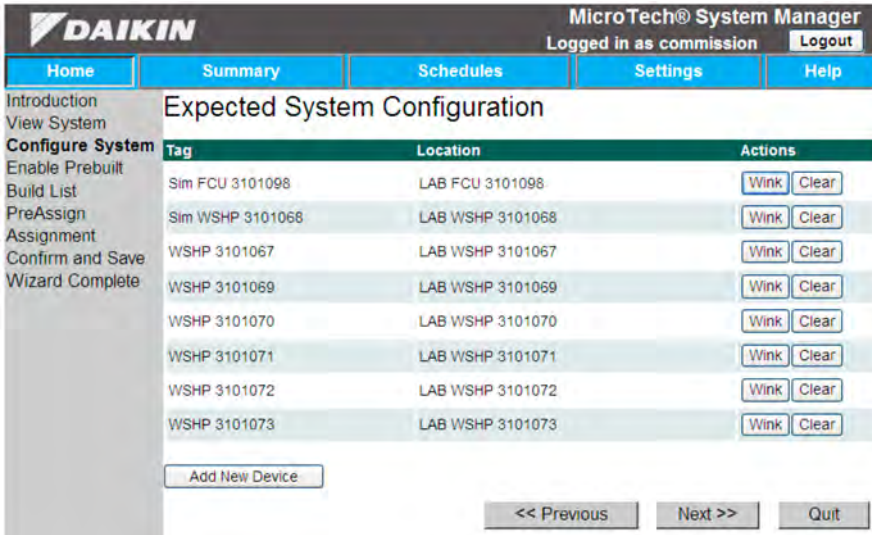


Figure 30 previews the current expected system specific to WSHPs and Fan Coil Units. If the system shown matches the installed system, select “No” and proceed to the Construct

Prebuilt List step. If the system shown requires modification, select “Yes”. For more options with regard to network information and addressing check the “Advanced” checkbox.

**Expected System Configuration**

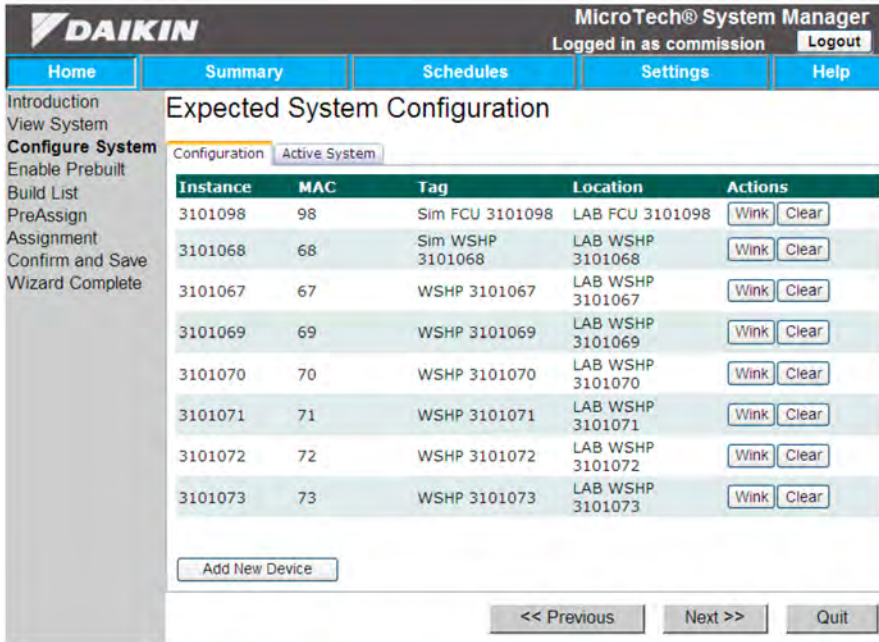
Figure 31: Basic System Screen



This screen shows what the system expects to see in terms of water source heat pump and fan coil units. Units not yet found appear in red. Those rows may be edited or deleted using the buttons in the right-most column “Rem” and “Edit”. Units already found and matching the expected configuration appear in white. The device may have a “Wink” command issued, which cycles the fan off for 5 seconds, on for 5 seconds, and off for 5 seconds, to assist in identifying

a device. The device may also have its information cleared using the “Clear” button, so that it may be rediscovered later in the wizard. When a device’s information is cleared, the row will revert to the red color of an undiscovered device that may be edited or deleted. When a device is selected to be edited, the text fields become text entry fields. The “Add New Device” button adds an editable row to the top of the table, which functions the same as the other editable rows.

Figure 32: Advanced System Screen

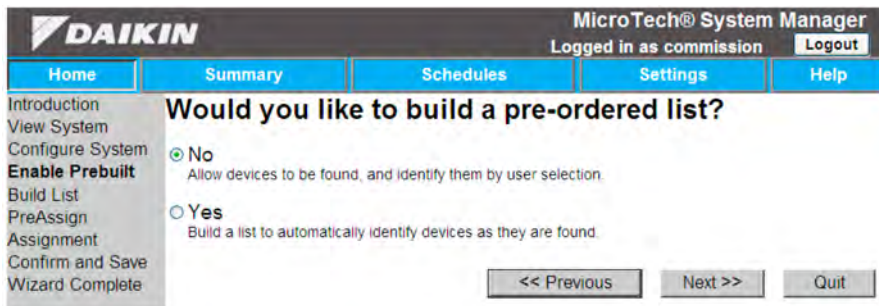


This screen brings a more advanced view of the system. The screen is split into two tabs: Configuration and Active System. The Configuration tab is a more detailed view of the Basic screen. The functions and coloration are the same as that of the Basic screen. In addition to the text component shown on the Basic screen, Device Instance and MAC address information are configurable. The system will verify the validity of any entry into those fields by comparing them

against the current existing system status. The Active System tab shows all pertinent network information of all known devices within the system’s defined active range. The same “Wink” button is present for all WSHP and Fan Coil units. The same “Clear” button is present for configurable WSHP and Fan Coil units. Non-communicating devices of all types are represented in red and have a “Clear” button, which will delete the current device information.

**Build Pre-ordered list?**

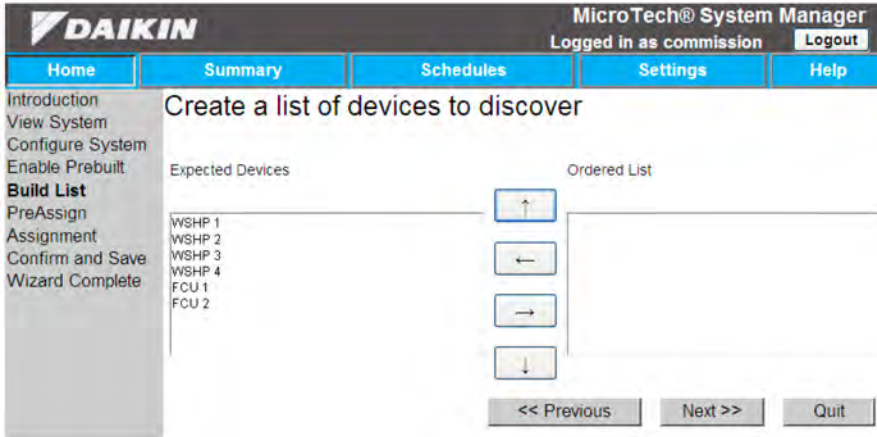
Figure 33: Build pre-ordered list prompt



The auto-commissioning wizard may be configured to automatically identify devices as they are discovered. To do this, select “Yes” at this point. To allow user intervention to identify devices at any time as they are found, select “No”.

Create List

Figure 34: Create list page



This screen is the interface to construct the list of devices in the order that they are to be discovered. The left-hand list contains available expected devices. The right-hand list is the order in which devices will be identified as they are

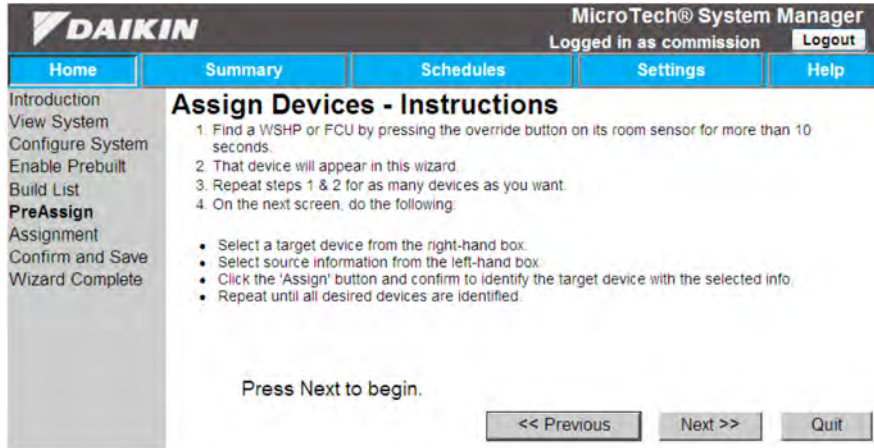
discovered. The arrow buttons between the two lists move the selected item in the direction of the arrow. Not all devices must be moved to the right-hand list for the list to be valid.

Assignment instructions

Figure 35: Assign instructions after "Yes"



Figure 36: Assign instructions after “No”



This page contains the user's instructions to proceed after this screen to accomplish the discovery and identification of the WSHP and Fan Coil units found on the network. No system actions are performed at this time.

**Auto assignment**

Figure 37: Assign Devices after “Yes”

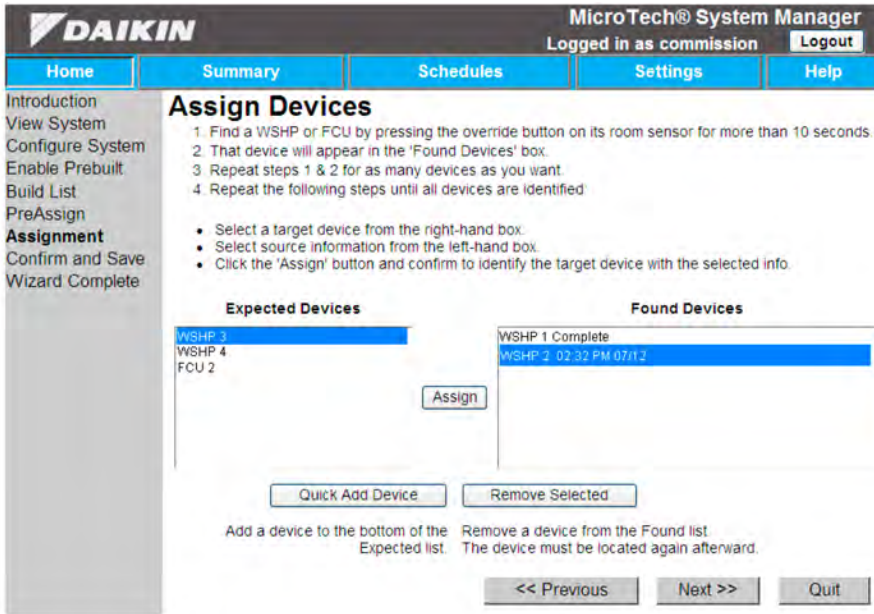


This page shows the current state of the discovery process. As devices are discovered, they will appear in the right-hand list. When they appear in that list, the information from the top device in the left-hand column will be assigned to that device. The “Quick Add Device” button will show fields that allow the user to identify a new device that is eligible

for assignment, and add it to the bottom of the left-hand list. The “Remove Selected” button clears the information of the selected device in the right-hand list and returns its information to the left-hand list to be assigned elsewhere. The current list has been saved, so the user may leave the wizard and return to this step later without losing their progress

Manual assignment

Figure 38: Assign Devices after “No”

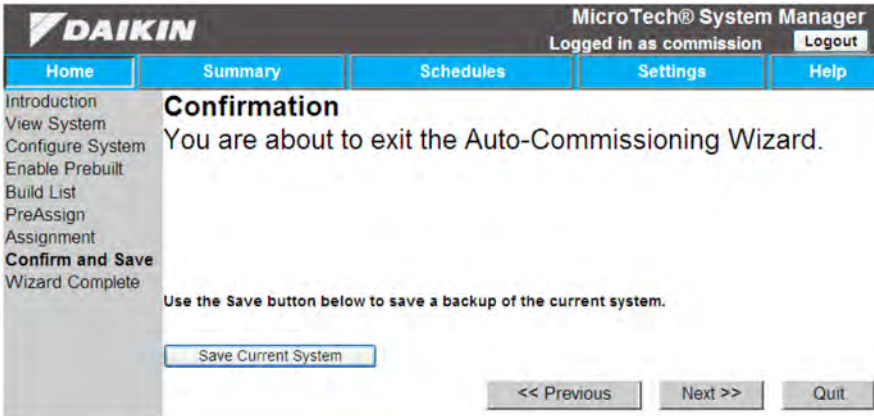


This page shows the current state of the discovery process. As devices are discovered, they will be added to the right-hand list with time stamp information. Devices discovered before the wizard was run will also be present in this list. To assign device information, select a device from both lists and press the “Assign” button. The configuration selected in the

left-hand list is then sent to the unconfigured device selected in the right-hand list. Progress updates will be shown next to the device in the right-hand list. The “Quick Add Device” and “Remove Selected” buttons function the same as they do on the Auto Assignment page.

Confirmation

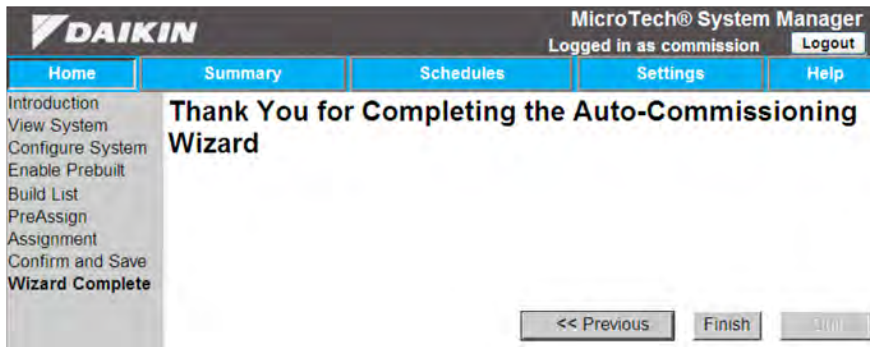
Figure 39: Confirmation page



This page allows the user to export the current system state to an XML file that may be retrieved later as a restore point.

## Finish

Figure 40: Finish page



Upon reaching this page, the wizard is complete. The icon to enter the wizard from the Home screen is now hidden, though it may be re-enabled through System Config in Settings.



# Creating Users and Access Privileges

## Required Tools

System Manager, or PC with Internet Explorer 8.0 or greater networked into the System Manager.

## User/Password Settings

### Password Protection

There are five levels of security, ranging from guest to Commission. Each level has its own access privileges that allow for varying degrees of configurations, and are put in place to prevent unauthorized users from making improper changes to the system. At the beginning of each section of this document describing menu functions, it will show what portions of that menu different access levels have the ability to see or manipulate.

### Configuring User Profiles

Table 1 shows a list of the different access levels along with default usernames and passwords. Some tabs/menus allow more or less privileges based on your security access level. Table 1 also shows what areas of the security menu are accessible at different access levels.

### Login

To log into the system at a higher access level than Guest, first click the "login" button in upper right corner of the screen. When logging into the web-application you will be prompted for a username and password. Type in the username and corresponding password for the access you require. Because default passwords are readily accessible to anyone from the operations manual, you will be prompted to change your password if you are using the default. Select OK to change the

**Table 1: Access Levels, Usernames, Passwords for Default Users and Settings**

Access Level	User Name	Password	Settings Menu Access (Tabs/Buttons)
Guest (Default User)	N/A	N/A	Not Available
Tenant	Tenant	None	Security
Maintenance	Maintenance	123	Security
Owner	Owner	123	System Config, Network Setup, Replacement Wizard, Alarm Setup
Commissioning	Commission	72639	System Config, Network Setup, Replacement Wizard, Alarm Setup

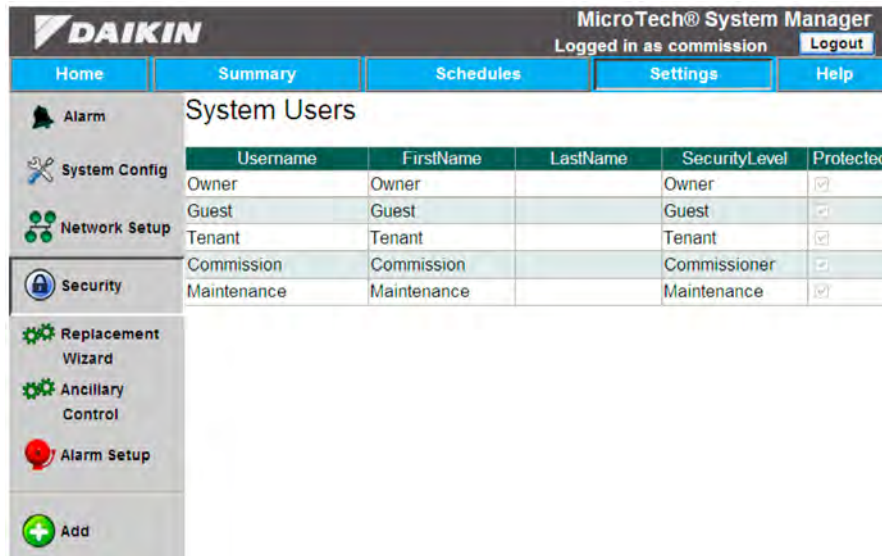
Usernames are not case-sensitive, but the passwords are. The users listed in the table above are defaults and cannot be removed under any circumstances. New users can be added and removed depending on your access level.

Further access privileges are described in the Configuration Section of each device.

default password or select Cancel to continue without changing the default password. This does not apply to the Guest or Tenant users.

**NOTE:** For security purposes, we recommend you change the default passwords from what is published in this document. Be sure the record them somewhere for safe keeping. Passwords cannot be reset again without higher level access.

Figure 41: System Login



**Adding Users**

1. Login as owner access level or higher.
2. Click on the Settings tab in the top menu bar.
3. From the Security page, click the add button in the left hand menu.
4. A new screen will pop-up, prompting the user to input first name, last name, user name, and user level (Figure 43)
5. Once all of this information has been entered, click the save button on the left side of the screen.
6. Enter the Password to assign in the New Password and Confirm Password boxes and press the Set New Password button. (Figure 44).

**NOTE:** The access level you log in as will dictate the type of access you can provide to the new user. For instance, since a commissioner is the highest access level, they can create a new user with any access. An owner, though, cannot create a commissioner level, but can create a user with any other access level.

Figure 42: System User Page

The screenshot shows the 'MicroTech® System Manager' interface. At the top, it says 'Logged in as commission' with a 'Logout' button. The navigation tabs are Home, Summary, Schedules, Settings, and Help. The left sidebar contains various system management options: Alarm, System Config, Network Setup, Security, Replacement Wizard, Ancillary Control, Alarm Setup, Add, Remove, and Properties. The main content area is titled 'System Users' and contains a table with the following data:

Username	FirstName	LastName	SecurityLevel	Protected
Owner	Owner		Owner	<input checked="" type="checkbox"/>
Guest	Guest		Guest	<input checked="" type="checkbox"/>
Tenant	Tenant		Tenant	<input checked="" type="checkbox"/>
Commission	Commission		Commissioner	<input checked="" type="checkbox"/>
Maintenance	Maintenance		Maintenance	<input checked="" type="checkbox"/>

Figure 43: Add User Page

MicroTech® System Manager  
Logged in as commission Logout

Home Summary Schedules Settings Help

Alarm  
System Config  
Network Setup  
Security  
Replacement Wizard  
Ancillary Control  
Alarm Setup  
Save  
Cancel

### Add User

First Name:  Username:

Last Name:  User Level:

Figure 44: Password Assignment Page

MicroTech® System Manager  
Logged in as commission Logout

Home Summary Schedules Settings Help

Alarm  
System Config  
Network Setup  
Security  
Replacement Wizard  
Ancillary Control  
Alarm Setup  
Save  
Cancel

### Password Assignment

New Password:

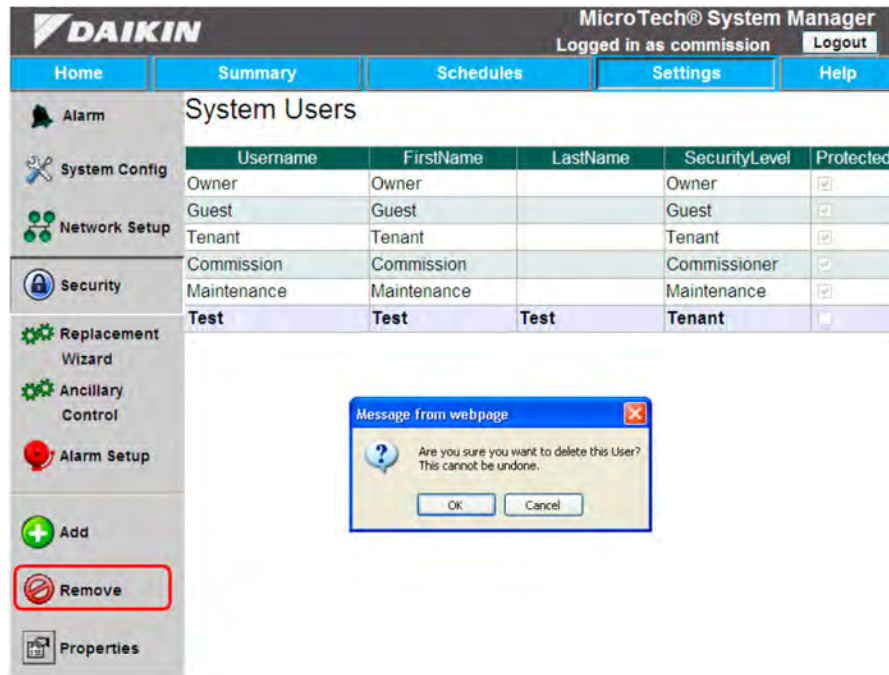
Confirm Password:

Set New Password

### Removing Users

1. Login using owner level access or higher
2. Press on the Settings tab in the top menu bar
3. From the Security page select any user that is not a default user, by pressing on the user. Default users are indicated by a checkmark in the column that labeled "Protected".
4. Once you have selected a user select the "Remove" button from the left side menu.
5. A dialog box will pop-up asking for confirmation. Press OK to remove the user.

Figure 45: Removing Users



### Changing/Resetting Passwords

1. Login as owner level or higher.
  5. If "Change Password" is selected then a new screen will pop-up asking for your current password, your new password, and confirmation.
  6. Upon successful change, a dialog box will pop-up and the user will be redirected back to properties page.
  7. If you select "Reset Password" then the current password for that user will be reset to "Password".
- NOTE:** To change a password, you must login as that particular user. Otherwise you will be able to reset the password to "Password", provided you are logged in under a higher access level.
2. Press on Settings tab in the top menu bar.
  3. Select any user and press the properties button on the left side menu.
  4. Select Change Password or Reset Password from the left hand menu.

**NOTE:** Only passwords for access levels lower than current user level can be changed.

Figure 46: Changing a user's password

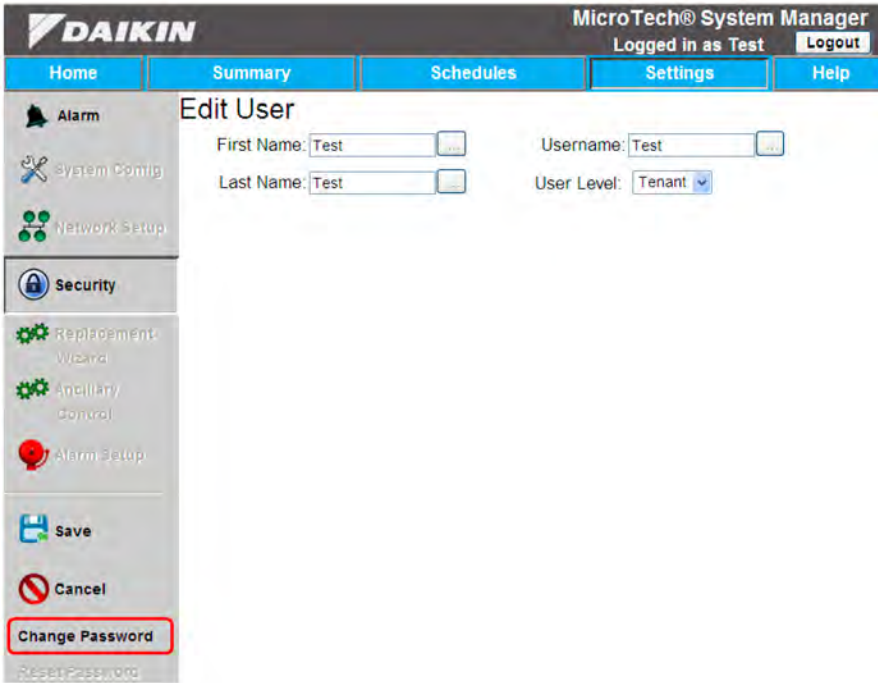
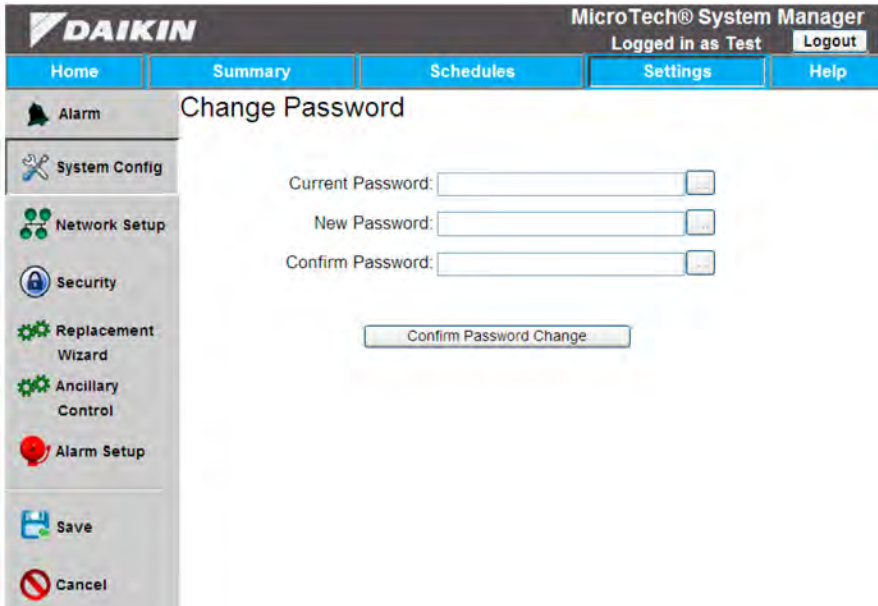


Figure 47: Password Change screen



Users can create multiple schedules to reflect the various occupancy times of different areas of the building. This will allow only certain units to become occupied, while the rest remain unoccupied. The Schedule column in Table 2 shows which access levels can make schedule changes.

Table 2: Schedule Access

Security Level	Schedules Menu Access (Tabs/Buttons)
Guest	View only
Tenant	View only
Maintenance	View only
Owner	Configurable
Commission	Configurable

Schedules are independent of devices in the System Manager. In other words, you do not schedule terminal units or air handlers directly. Under most cases, air handlers are not scheduled at all. The air handler schedule will be driven by their zones. If a zone served by a particular air handler goes occupied, the System Manager will automatically start the appropriate AHU based on the associations in its configuration file.

### Adding a Schedule

1. Login in at owner access level or higher
2. Select the Schedule tab from the main screen
3. On the next screen press the add button on the left side of the screen. A new schedule, with description "New Schedule", will populate the screen automatically, showing a schedule ID number and the description.
4. To edit the schedule ID and set the occupancy periods for your new schedule, refer to Editing a Schedule in the following section

Scheduling is a four step process.

1. Create all the various schedules required for all the different areas of the building by adding additional schedules or editing existing ones. Each schedule can have associated holidays assigned for special hours of operation on a specific day.
2. Create schedule groups made up of devices in the system that will all follow the same scheduled times. For instance, if the front lobby opens earlier than the rest of the building and there are several VAV units that serve that area, "Front Lobby" may be one schedule group you want to create.
3. Assign schedule groups to schedules. This will set the hours of occupancy for each schedule group.
4. Assign devices to schedule groups.

The following sections will describe how to perform these different steps. For each step, you will need to be logged in at the owner access level or higher.

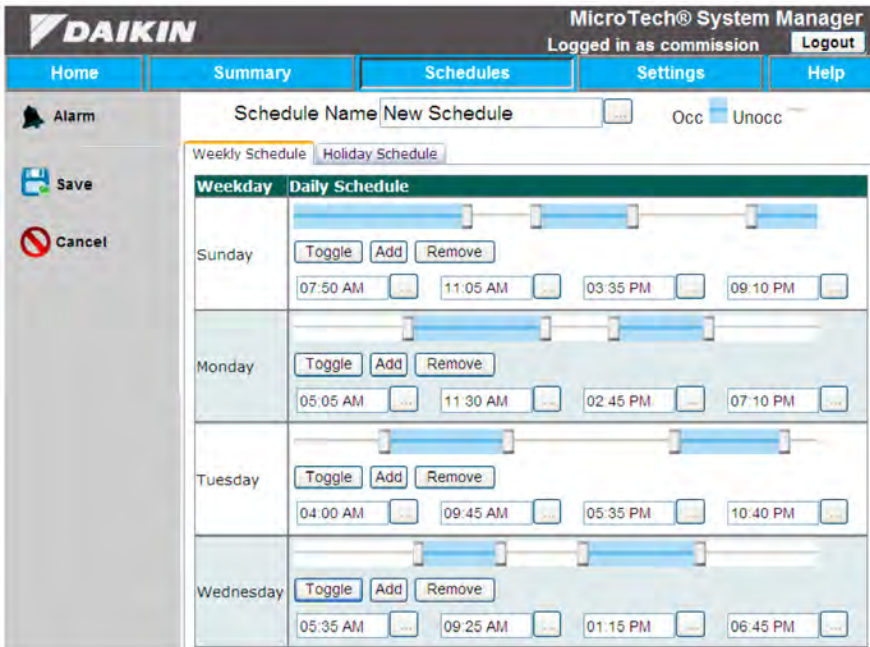
Figure 48: Adding a schedule



**Editing a Schedule**

1. Login in at owner level or higher
2. Select the Schedule tab from the main screen
3. Select the schedule you want to edit from the list to highlight it, and press the “Properties” button in the left side menu
4. From this page (Figure 49) you can change the description, as well as any daily schedule that is desired.
5. Each slider bar represents one full day. Each handle on the slider bar represents a transition from Occupied to Unoccupied or vice versa.
6. Handles may be added or removed using the “Add” and “Remove” buttons below the slider bar. There may be no more than 4 transitions per day.
7. Handles may be moved either by dragging them along the slider bar or by adjusting the time field corresponding to that handle. Handles and time fields correspond from left to right.
8. Pressing the “Toggle” button switches the Occupied time to Unoccupied and vice versa.
9. Add holiday schedules on the “Holiday Schedule” tab
10. Apply changes by using the “Save” button on the left.

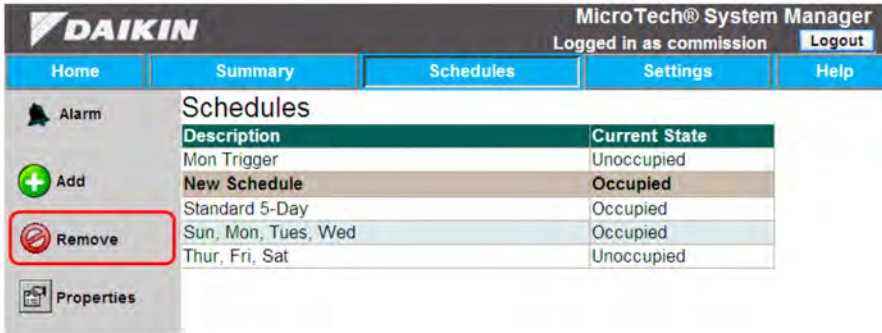
Figure 49: Schedule Configuration Page



### Deleting a Daily Schedule

1. Login in at owner level or higher
2. Select the Schedule tab from the main screen
3. Select a schedule from the list that needs to be removed to highlight it
4. Press the remove button located in the left hand menu
5. Press OK to delete or Cancel to cancel.

Figure 50: Deleting a Daily Schedule

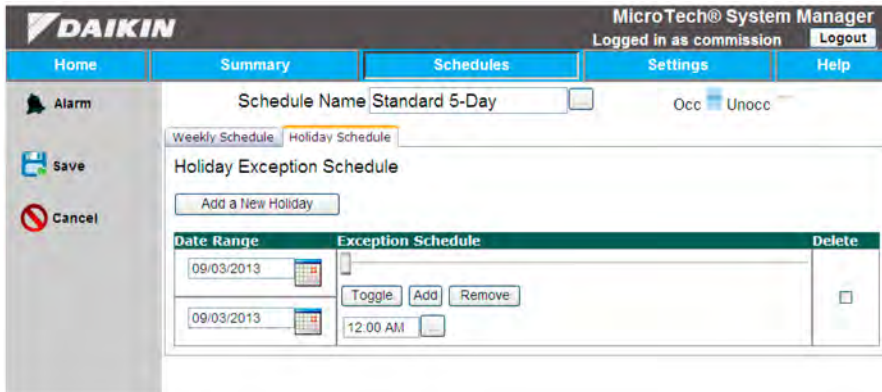


## Holiday Schedules

### Adding a Holiday Schedule

1. Login in at owner level or higher
2. Select the Schedule tab from the main screen
3. Select a schedule from the list, and press the "Properties" button in the left side menu
4. On the next screen select the "Holiday Schedule" tab
5. Select "Add a New Holiday" from the following screen
6. From the next screen you can set the start date and end date. Next to them is a slider bar indicating the schedule that will apply over that date range. The slider bar is managed the same way as the Daily Schedule entries.

Figure 51: Holiday Exception Schedule Screen

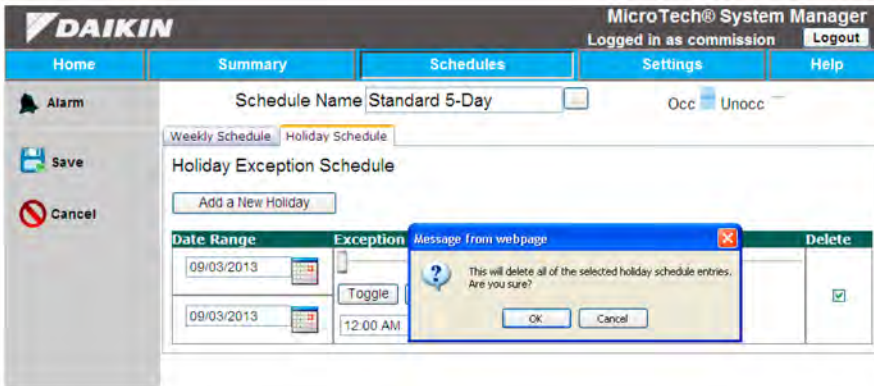




**Deleting a Holiday Schedule**

1. Login in at owner level or higher.
2. Select the Schedule tab from the main screen.
3. Select a schedule from the list, and press the “Properties” button in the left side menu.
4. Select the “Holiday Schedule” tab.
5. Select the checkbox under “Delete” and press the “Save” button.
6. You will be asked to confirm that you want to delete the schedule (Figure 52). Select OK to delete or Cancel to cancel the deletion of the schedule.

**Figure 52: Deleting a Holiday Schedule**



## Schedule Groupings

Once the schedules have been set, it's time to create schedule groups. Schedule groups are made up of devices in the system. Each group is assigned a specific schedule,

and that schedule is followed by all the devices in that group. The procedures for adding, editing and deleting a group are discussed below.

### Adding a Schedule Group

1. Login in at owner or higher level access.
2. Select the Summary tab from the main screen. On this screen you can see a listing of all the schedule groups that have been created. (Figure 53)

**NOTE:** To edit an existing group, simply press on the name next to the house icon. This will take you directly to the configuration screen. For further information, see the Configuration Section for the device type of concern."

3. Press the Add/Delete button located in the left hand menu. On this screen you can see a list view of the schedule groups that have been created, and the

schedule that each group is assigned to (Figure 54).

4. Press on the Add button located in the left hand menu.
5. On the next screen is where you can name your group as well as set the schedule for it. (Figure 55).
6. Once you are done making your changes, press "Save".

Once the schedule group has been added, you can go into the Air Handler or VAV unit properties and assign the individual units to a schedule group. Air handlers can only be assigned to a schedule group directly if they do not have associated VAV units. Otherwise, the VAV units will drive that air handler's schedule. All VAV units not assigned to a schedule will be put into the "Unassigned" schedule group.

Figure 53: Schedule Summary Tab



Figure 54: Group Management

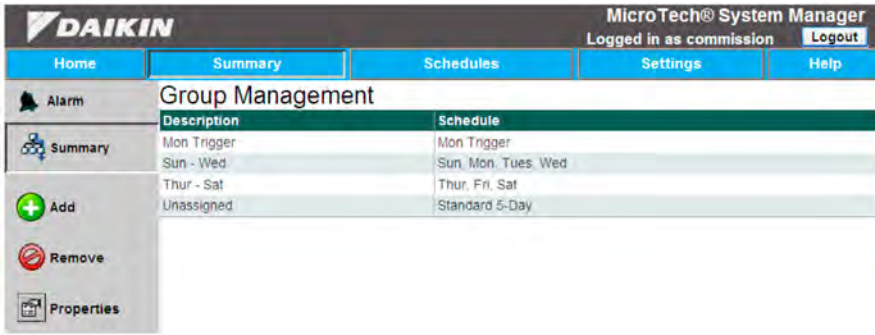
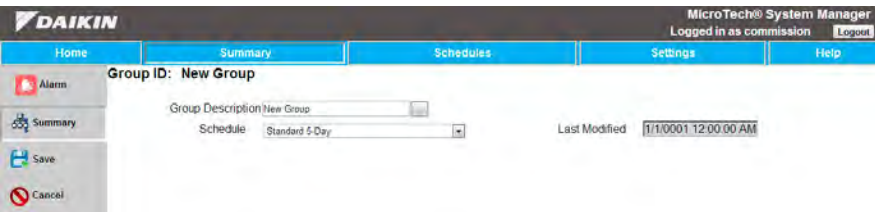


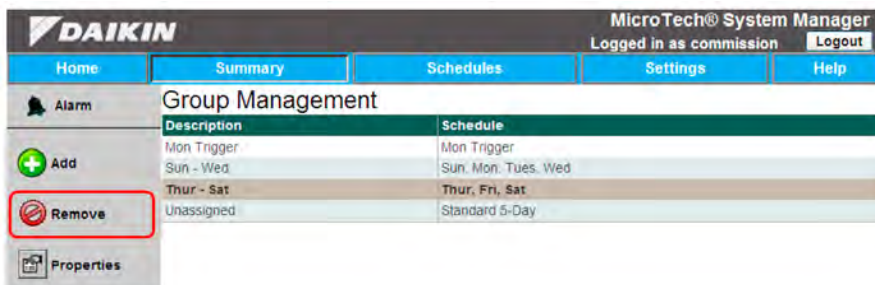
Figure 55: Group Add and Config Screen



### Removing a Group

1. Login at Commission level or higher
2. From home page press on the Summary tab at the top of the screen
3. From “Schedule Groups” page, press the Add/Delete button on left side menu
4. From the “Group Management” page select the group that you want to delete from the list by pressing on it.
5. Press the remove button on the left side menu. If there are units connected to this schedule group, you will receive a message telling you that the group cannot be removed.
6. Press OK to remove the group or Cancel to cancel.
7. The screen will automatically refresh, reflecting the change you have made.

Figure 56: Removing a Group



## Adding a VAV to a Schedule Group

1. Login as owner level or higher.
2. Select the Summary tab from the home page.
3. From the "Schedule Groups" page select the unit whose group you want to change.
4. From the properties screen of the particular unit, there is a drop down menu that is labeled "Schedule Group" under the "Device Status" tab. From this menu select the desired group and press the save button in the left hand menu.

Figure 57: Selection of the unit

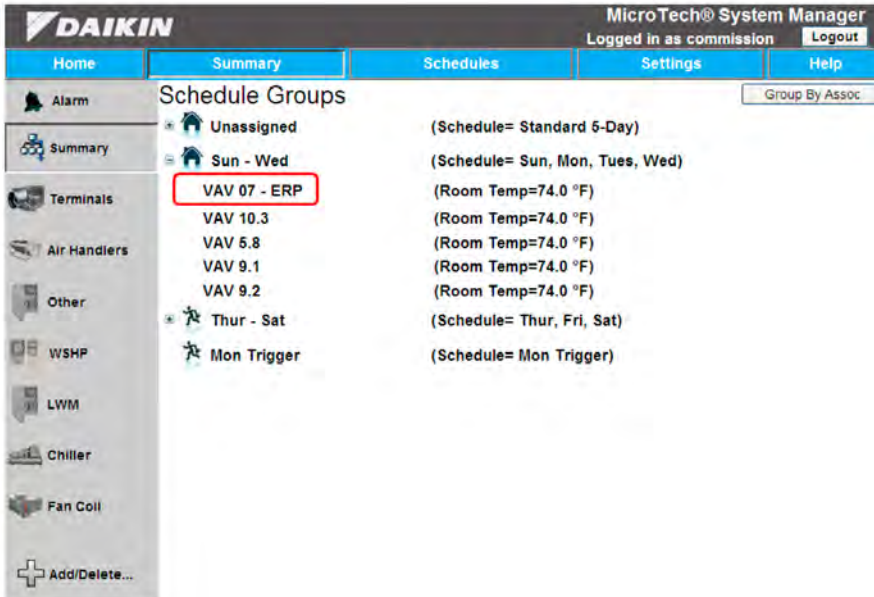
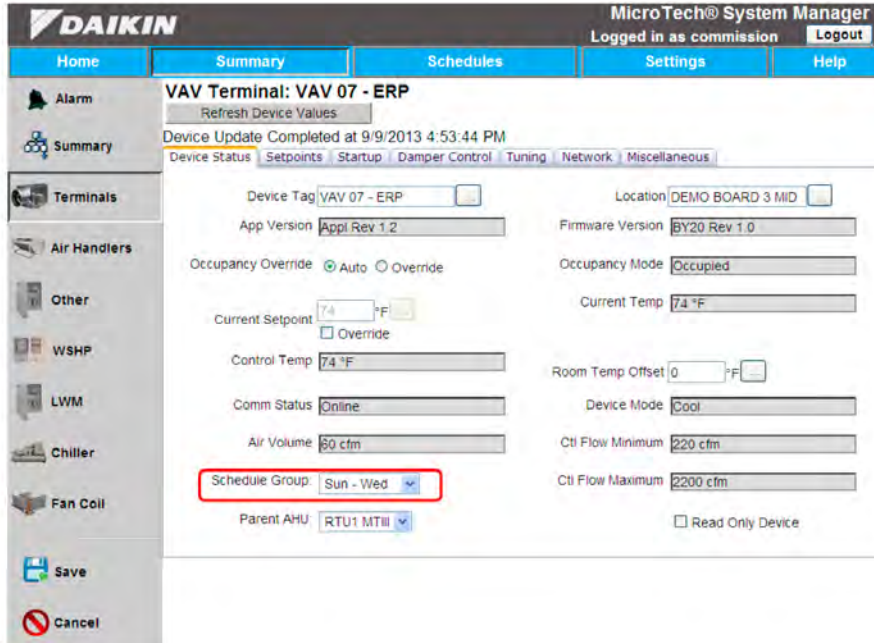


Figure 58: Group Assignment Location



## Viewing and Configuring the VAV Units

Terminal units are pre-configured at the factory. Tags, locations, min/max airflows, and the appropriate applications have all been pre-programmed. However, there are times when you may want to adjust some of these settings or modify various setpoints. To do that, you need to access the properties pages for the appropriate unit.

There are multiple ways to display the various zones and several ways to access their properties. Each has its own benefits and levels of convenience, but all will take you to the same place. In addition, each security level has varying degrees of capabilities and access, which is covered under VAV Properties Access.

### Access via Schedule Groups

1. Login as any access level
2. From home page select the “Summary” tab.
3. From the “Schedule Groups” page select the VAV that you want to view.

Figure 59: Access via Schedule Groups



## Access via VAV Terminal List (Icon/List Display)

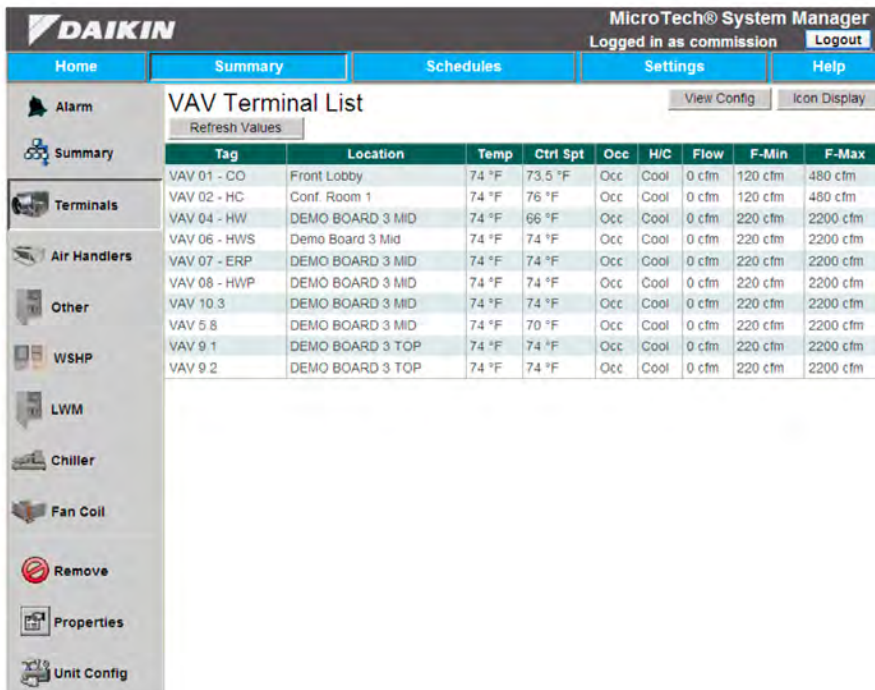
1. Login as any access level
2. Select the "VAV Terminal" button from the home page.
3. Select desired VAV from resulting page. This page can

list the VAV units by icon or by list. To change the view, select the "Icon Display" or "List Display" button (Figure 60 and Figure 61).

Figure 60: Icon View



Figure 61: List View



The list view allows the user much more information than either the summary page or icon view. The list view shows current temperature, current setpoint, occupancy, heat/cool mode, current airflow, and max and min airflows and is an extremely convenient location from which to view the building as a whole. Communication status is also displayed in both the list and summary screens. Red lines or icons indicate configured

devices that are currently not communicating. Blue lines or icons indicate communicating devices that are not configured.

To see a list of devices the system has been configured for, press "View Config". When pressed, the user will be directed to a list of configuration devices (if available). When selected, this will show the default configuration for the chosen device. This option is also available on the AHU device side as well.

**VAV Properties Access**

Table 3 outlines the various access levels along with their associated configuration capabilities on the VAV Properties screens. The Summary column outlines the tabs within the Properties page that are available based on user level.

**Table 3: Access privileges for VAV**

Security Level	Summary Menu Access (Tabs/Buttons)
Guest	Device Status
Tenant	Device Status
Maintenance	Device Status/Setpoints
Owner	Device Status/Setpoints
Commission	All tabs now available (added startup, damper controls, tuning, network and miscellaneous)

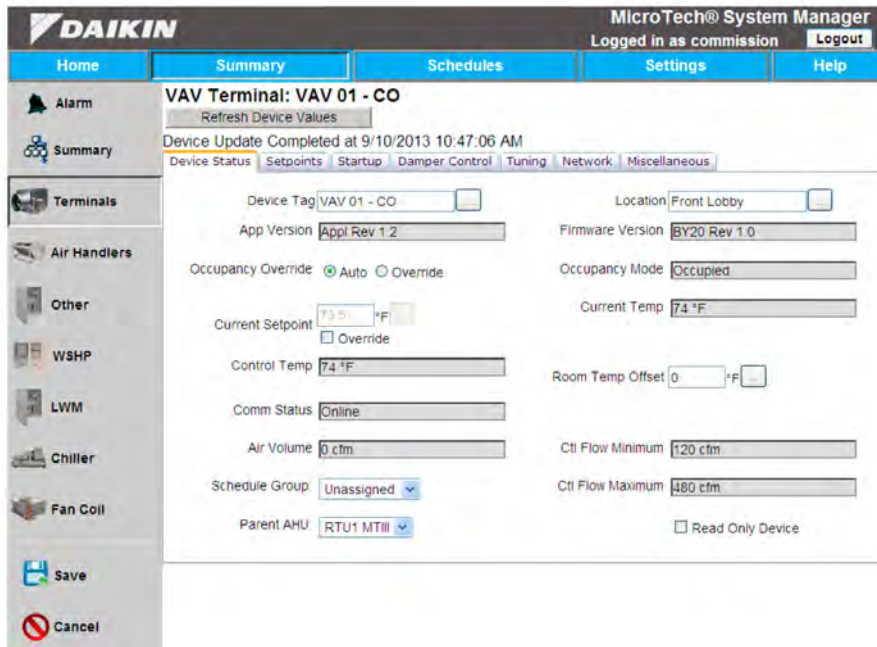
**VAV Properties**

The following section will outline all tabs found when accessing a VAV Terminal Properties page. These tabs include: Device Status, Setpoints, Startup, Damper Control, Tuning, Network, and Miscellaneous. Within each section a screen capture of the page will be shown, along with the description of what each value represents.

**NOTE:** Some values may be added or omitted based on the specific VAV application that is being used. Please refer to the "VAV Actuator's Owners Manual (OM 1063)" for a full list of points and application uses.

**Device Status Tab**

**Figure 62: Device Status Page**



**Device Tag:** This is the name given to the VAV unit. It is used to distinguish between specific zones within a system, as is shown here, or just to differentiate itself from others in the system.

**App Version:** This is the application software version in the VAV unit controller.

**Occupancy Override:** When set to “Auto”, the VAV will run as commanded by the schedule that it is assigned to. If Override is chosen then unit will go into an occupied state regardless of schedule.

**NOTE:** Override will not work if unit is already occupied.

**Current Setpoint:** This is the value of the current setpoint. This can either be set internally, via the setpoints tab, or by a thermostat in the room. This helps determine what mode the system should be in, whether heating or cooling.

**Control Temperature:** This is the current value for the control temperature. The control temperature. For VAV units, this will be the room temperature, adjusted by the offset.

**Comm Status:** This status shows whether the unit is currently communicating or not.

**Air Volume:** This is the value of the current airflow through the specific VAV unit.

**Schedule Group:** This shows the current schedule group that the VAV unit is assigned to. For more information on scheduling groups, in the previous section.

**Parent RTU:** This indicates which air handler on the system has been configured to serve the VAV unit.

**Location:** This indicates the space within the building that the VAV unit serves.

**Firmware Version:** This is the current firmware version of the VAV unit controller.

**Occupancy Mode:** This status shows whether the schedule associated with the unit is currently in an occupied or unoccupied state.

**NOTE:** If unit is put in an override state the status will still read “Unoccupied” even though the unit is operating

**Current Temperature:** This is the value of the current temperature in the room, as read by the thermostat. If no thermostat exists then value defaults to appropriate setpoint based on occupancy and mode (heat/cool).

**Room Temp Offset:** Compensates for deviations between the value of ROOM TEMP (Point 4) and the actual room temperature. This corrected value is displayed in CTL TEMP.  $RMTMP\ OFFSET + ROOM\ TEMP: CTL\ TEMP.$

**Device Mode:** This status shows the current mode (heat/cool) that the VAV is in. This status is visible depending on the application that the VAV is programmed for.

**Ctl Flow Minimum:** The active minimum flow used as a limit for the flow control loop. This value is the same as CLG FLOW MIN if the controller is in cooling mode, or is the same as HTG FLOW MIN if the controller is in heating mode, unless it is overridden.

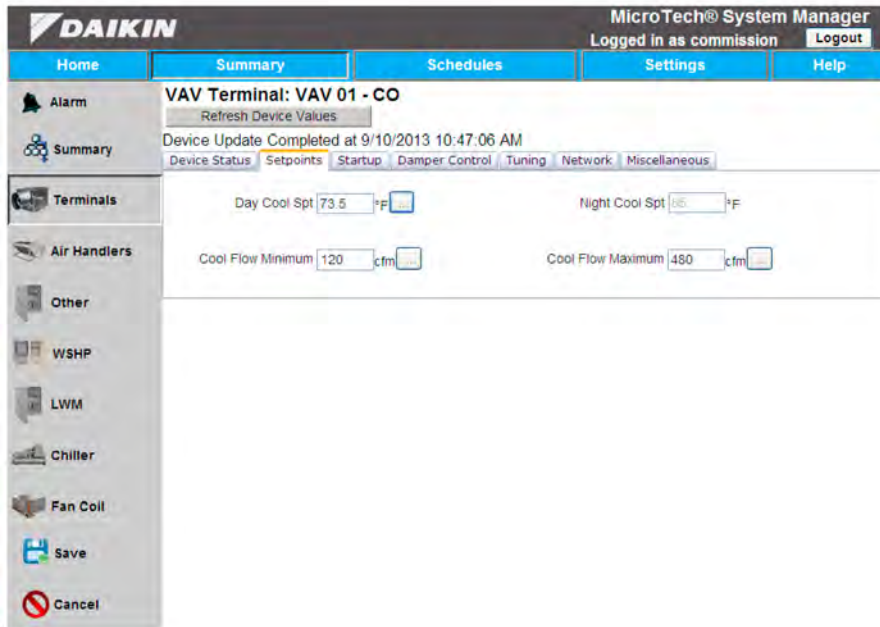
**Ctl Flow Maximum:** The active maximum flow used as a limit for the flow control loop. This value is the same as CLG FLOW MAX if the controller is in cooling mode, or is the same as HTG FLOW MAX if the controller is in heating mode unless, it is overridden.

**Read Only Device:** Checking this box and pressing the “save” button, will disable all control to the unit and it will exist on the system only for status information.



## Setpoints Tab

Figure 63: Setpoints Tab



**Day Cool Spt:** This is the value of the cooling setpoint that is applied during the day when the device is not controlled via setpoint adjustment on the room stat. If a room stat with setpoint adjustment is connected and configured, then it will supersede this value. Refer to the “Startup” tab to determine if the device has setpoint adjustment configured.

**Day Heat Spt:** This is the value of the heating setpoint that is applied during the day when the device is not controlled via setpoint adjustment on the room stat. If a room stat with setpoint adjustment is connected and configured, then it will supersede this value. Refer to the “Startup” tab to determine if the device has setpoint adjustment configured.

**Room Spt Minimum:** Limits the minimum setpoint available through the setpoint adjustment buttons on the local sensor.

**Room Spt Maximum:** Limits the maximum setpoint available through the setpoint adjustment buttons on the local sensor.

**Night Cool Spt:** This is the cooling setpoint the system controls to during unoccupied times.

**Night Heat Spt:** This is the heating setpoint the system controls to during unoccupied times.

**Cool Flow Minimum:** The minimum amount of airflow in CFM (L/s) to be supplied to the space in cooling mode.

**Cool Flow Maximum:** The maximum amount of airflow in CFM (L/s) to be supplied to the space in cooling mode.

**Heat Flow Minimum:** The minimum amount of airflow in CFM (L/s) to be supplied to the space in heating mode.

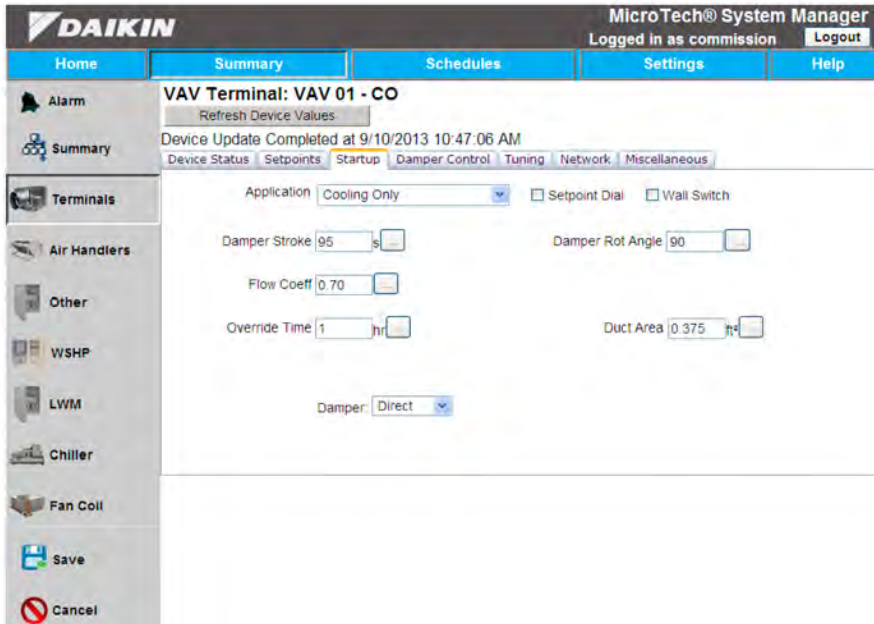
**Heat Flow Maximum:** The maximum amount of airflow in CFM (L/s) to be supplied to the space in heating mode.

### Startup Tab

The values in the startup tab are configuration values that depend on the programming and physical construction of the appropriate VAV box. With the exception of the Flow coefficient

(set during balancing) and the Override Time, in most cases, these values are preset in the factory and should not require field modification.

Figure 64: Startup Tab



**Application:** Describes the current application used by the specific VAV unit

**Damper Stroke:** Time required for the damper motor actuator to travel from full closed to the full open position.

**Flow Coefficient:** Value that the airflow is multiplied by in order to get airflow readings seen on “Device Status” page. This value is defaulted to an appropriate number based on the manufacture of the box, but can be adjusted during balancing to account for downstream pressure losses.

**Override Time:** The amount of time in hours that the controller will operate in day/occupied mode when the override switch is pressed while the controller is in night/unoccupied mode.

**Damper:** This is the status of the motor, as well as the direction that it moves in. The motor has three options for this: Disabled, which is when the motor is off; Direct, which means that the motor rotates clockwise to open; Reverse, which means that the motor rotates counterclockwise to open.

**Heat Stage 1:** This is available on electric heating boxes only, and indicates the status of each heating stage (up to 3). It can be overridden on or off by checking the “Override” button.

**Setpoint Dial:** Checked indicates that the room sensor has setpoint adjustment capability and it should be used as the temperature setpoint for control in day/occupied mode. This box should be unchecked to disable the remote setpoint adjustment feature, or if the relevant sensor does not have this function.

**Wall Switch:** Checked indicates that the controller is to monitor the status of a wall switch that is connected to DI 2 of the VAV box controller. Unchecked disables this feature.

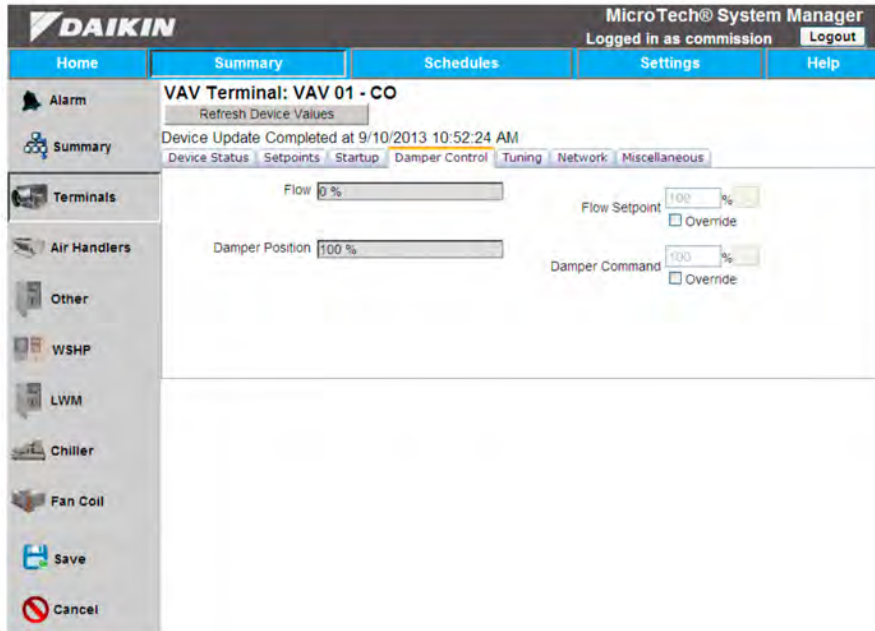
**Damper ROT Angle:** The number of degrees that the damper is allowed to move freely. Max value is 90 and min value is 0.

**Duct Area:** Area, in square feet (square meters), of the duct where the air velocity sensor is located. This is a calculated value (calculated by the field Controller or computer being used) that depends on duct shape and size. It is used in calculating all points in units of CFM, CF, LPS and L.

**Stage Count:** The number of heating stages used by the given unit.

## Damper Control Tab

Figure 65: Damper Control Tab



**Flow:** Indicates the actual amount of air currently passing the air velocity sensor. The value is calculated as a percentage of the maximum flow setpoint in the current heat/cool mode.

**Damper Position:** The current position of the damper motor in percent of full travel. This value is calculated based on motor run time.

**Flow Setpoint:** The Flow Setpoint is the current flow percentage the VAV unit controller is attempting to attain. Checking the “override” button will allow the user to dictate the flow setpoint.

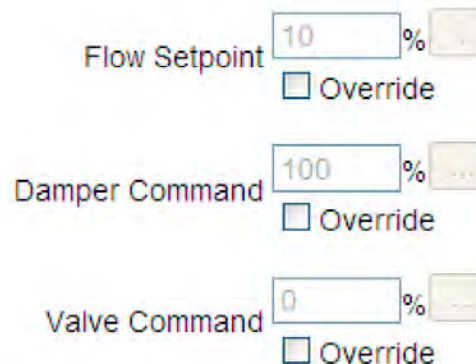
When the room temperature of Cooling-Only VAV boxes is less than the DAT of its parent AHU, the System Manager overrides the Flow Setpoint to its minimum position (Cooling Flow Minimum/Cooling Flow Maximum).

**Damper Command:** The value to which the damper motor is commanded in percent of full travel. Checking the “override” button will allow the user to manual dictate the damper position.

## Priority Setpoints

Certain setpoints are being actively controlled by the system or the VAV box controller. These points have priority arrays associated with them to allow the user’s input to take priority over the calculated control value. A priority written point will have an “override” check box below it (Figure 66), which will allow the user to command that point at a priority higher than the controller calculated value. To modify these points, you must first check the override box, which will open the field for editing. Once you have input the desired value you must then press the “Save” button along the left hand side. These points will remain overridden until the systems next scheduled changeover (from occupied to unoccupied or vice versa), when they will reset to their programmed default values.

Figure 66: Override button on priority written point

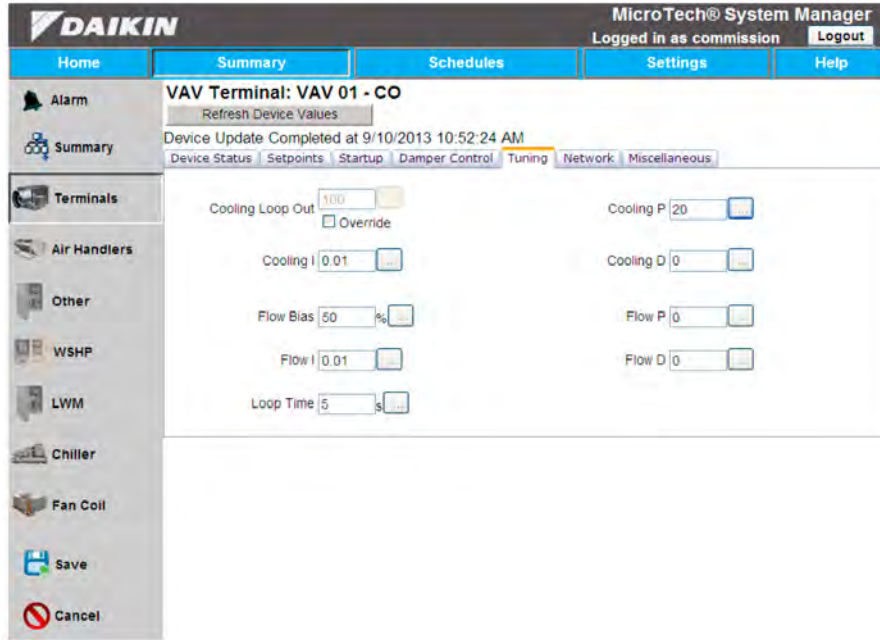


### Tuning Tab

The Tuning Tab provides access to various parameters that affect the way the unit controller reacts to changes in temperature and airflow. In most cases, the factory defaults

provide the best control. Modifying these values could cause sluggish control or hunting in the damper position and/or the electric or hot water reheat outputs.

Figure 67: Tuning Tab



**Cooling Loop Out:** The cooling temperature control loop output value in percent. This value will go from 0 to 100 as the control temperature gets farther above it's cooling setpoint.

**Cooling P:** The proportional gain value for the cooling temperature control loop.

**Cooling I:** The integral gain value for the cooling temperature control loop.

**Cooling D:** The derivative gain value for the cooling temperature control loop.

**Heating Loop Out:** The heating temperature control loop output value in percent. This value will go from 0 to 100 as the control temperature gets farther below it's heating setpoint.

**Heating P:** The proportional gain value for the heating temperature control loop.

**Heating I:** The integral gain value for the heating temperature control loop.

**Heating D:** The derivative gain value for the heating temperature control loop.

**Flow Bias:** The biasing of the flow control loop.

**Flow P:** The proportional gain value for the flow control loop.

**Flow I:** The integral gain value for the flow control loop.

**Flow D:** The derivative gain value for the flow control loop.

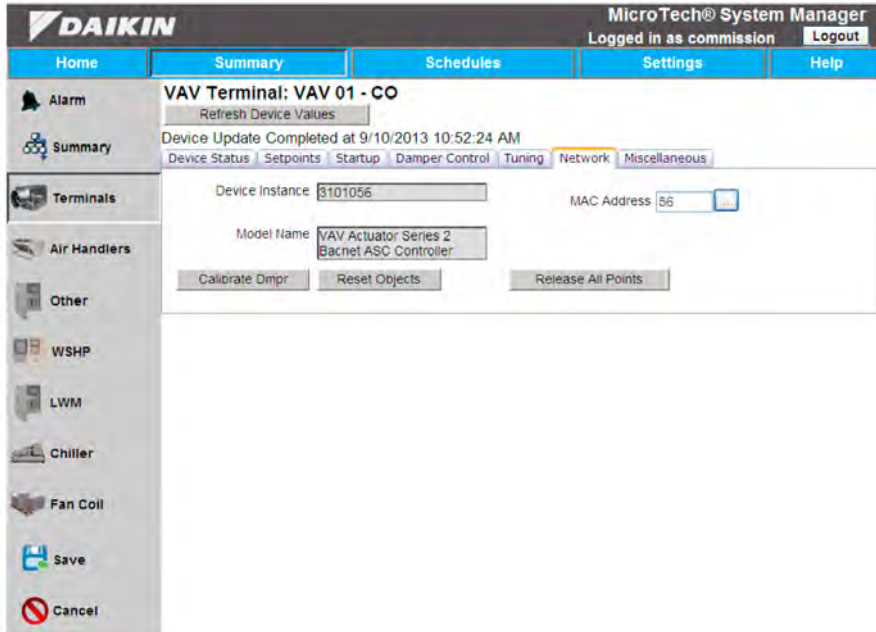
**Loop Time:** The time, in seconds, between control loop calculations.

### Network Tab

The Network Tab includes information that defines the device on the network. These values are factory set and should not be modified. Modifying the MAC address for the unit could cause

the system to loose communication with the device or other devices on the network.

Figure 68: Network Tab



**Device Instance #:** Unique ID number given to every device on the network. No two devices can have the same device instance number otherwise system will not work properly.

**Model Name:** Name of actuator.

**MAC Address:** Unique address (values from 0-127) given to each device. Used by network to find each device. In most cases, the MAC address will be identical to the last two digits of the device instance number.

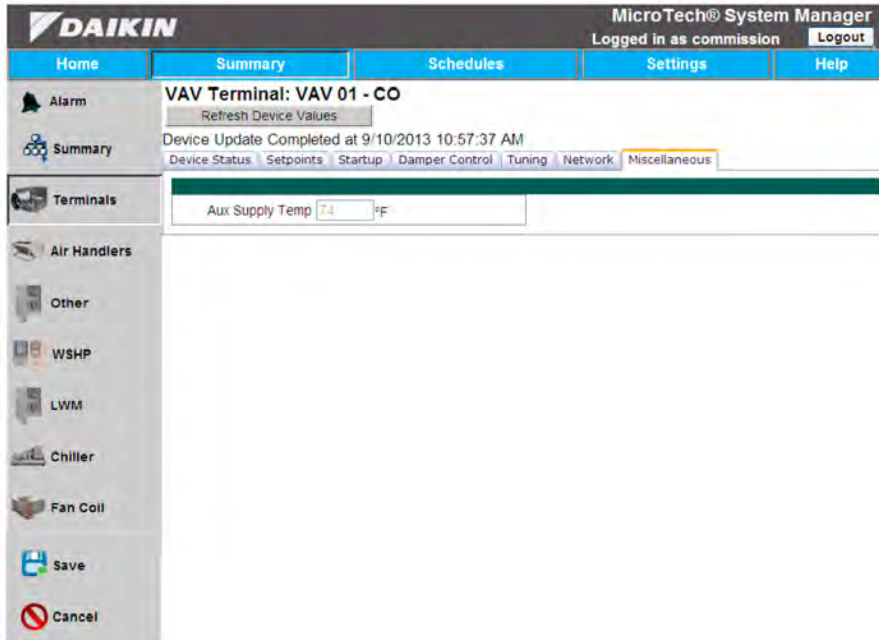
**NOTE:** It is important that your MAC Addresses be within the range of the Max Masters. If it is outside the range then the network will never find that device. The MAX Masters is typically set to 127.

**Release All Points:** Writes a null value to all points associated with the device and will have the effect of releasing any overrides that may be in place. This will also eliminate any commissioning that has taken place on the device and should not be used in most cases.

**Calibrate Dmpr:** Calibrates VAV damper position by stroking damper fully closed and then fully open.

## Miscellaneous Tab

Figure 69: Miscellaneous Tab under the Summary Menu



**Room Spt Dial:** The temperature setpoint in degrees from the room temperature sensor.

**Stage Time:** The cycle time in minutes for the electric reheat stages.

**Aux Supply Temp:** Actual reading from a VAV box thermistor connected to the controller’s AI 3 input. Typically used for a duct temperature sensor. When a thermistor is connected at AI 3, DI 3 is not available.

**Flow Start:** Determines how the damper modulation will be sequenced while in heating mode. When Heating Loop Out is above this value, then Flow Spt starts to increase from the minimum heating setpoint to the maximum heating setpoint. Typically set to 0 for a fixed heating airflow.

**Flow End:** Determines how the damper modulation will be sequenced while in heating mode. When Heating Loop Out is below this value, then Flow Spt starts to decrease from the maximum heating setpoint to the minimum heating setpoint. Typically set to 0 for a fixed heating airflow.

**Reheat Start:** Determines how the reheat modulation will be sequenced while in heating mode. When Heating Loop Out is above this value, then the reheat modulates upward.

**Reheat End:** Determines how the reheat modulation will be sequenced while in heating mode. When Heating Loop Out is below this value, then the reheat modulates downward.

**Stage Min:** The value, in percent, which the heating loop must go below for the electric heat to be OFF for the full duty cycle, “Stage Time”.

**EHeat Flow:** The flow required before the electric heat will be enabled.

**Stage Max:** The value, in percent, which the heating loop must exceed for the electric heat to be ON for the full duty cycle.

**Switch Limit:** The active temperature control loop output must be less than this value to switch between cooling mode and heating mode. Actual switchover depends on Switch D’band being exceeded and is subject to Switch Time being expired.

**Switch Time:** The cycle time in minutes for the electric reheat stages.

**Switch D’band:** The temperature range in degrees which is compared to the difference between Ctl Temp and Ctl Spt. The difference must exceed this value for temperature control mode to change over. Changeover is also subject to the active temperature control loop output being below Switch Limit and Switch Time being expired.

**Series On:** When flow rises above this value then the series fan will turn ON.

**Series Off:** When flow drops below this value, and the other conditions have been met, the series fan will turn OFF.

**Avg Heat Out:** This point is used to determine what stages of electric heat are used for a given loop output value. The range for the value is determined by the number of stages used: 0-100 for 1-stage, 0-200 for 2-stage and 0-300 for 3-stage.

Just like the VAV device, the AHU has a couple ways of accessing the main configuration screens. The device summary screens and tabs offer some level of configurability, and also like the VAV, access is limited for the specific security levels.

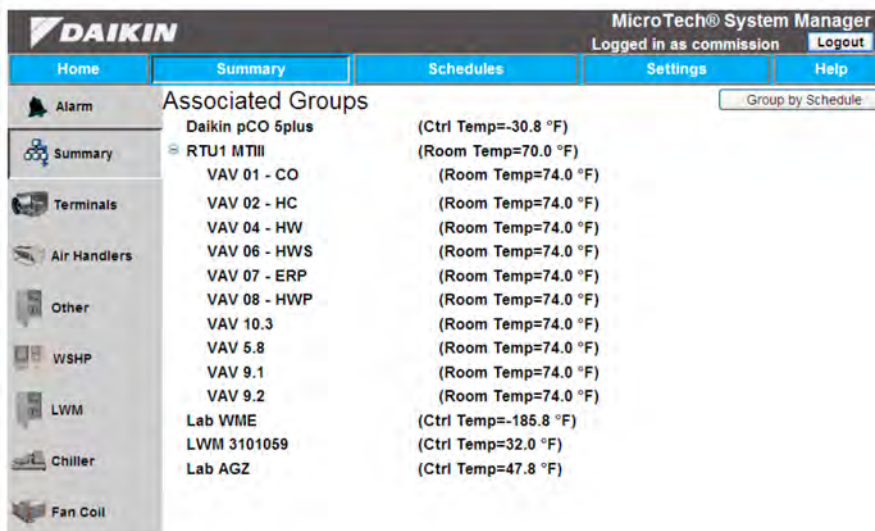
## Access via Schedule Groups

1. Connect to web application (if not already)
2. Login as any user, even Guest
3. From home page select the “Summary” tab
4. From the “Schedule Groups” page select “Group by Association” button in right corner (Figure 70), or select “Air Handlers” from the left column
5. From this page select the AHU that you wish to view (Figure 71)

Figure 70: Schedule Group screen view



Figure 71: Group by AHU screen view



### Access via Air Handler List

1. Connect to web-application (if not already)
2. Login as any user, even Guest
3. Select the “Air Handler” button from the home page
4. Select desired AHU from resulting page. If you prefer choosing without the icons you can choose “List Display”. To do this, press the “List Display” button that is in the upper right corner of screen. (Figure 72 and Figure 73).
5. Another option that is available from this page is “View Config”. When pressed the user will be directed to a list of configuration devices (if available), which, when selected, will show the default configuration for the chosen device. This option is also available on the VAV device side as well.

Figure 72: Icon View for AHU Selection

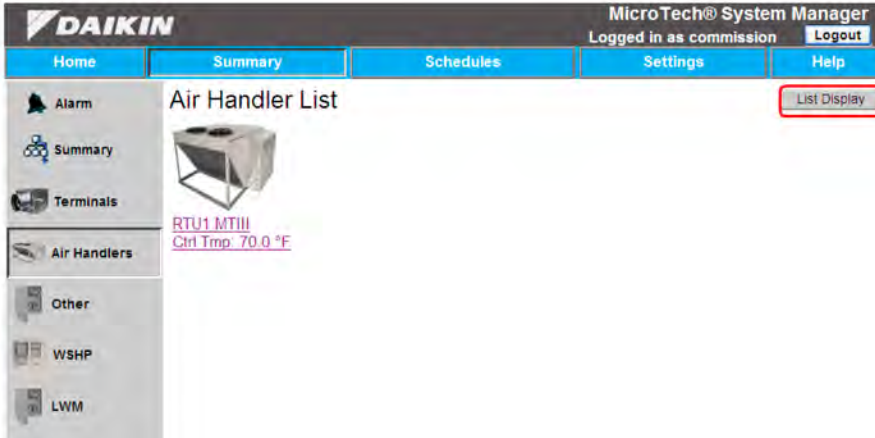
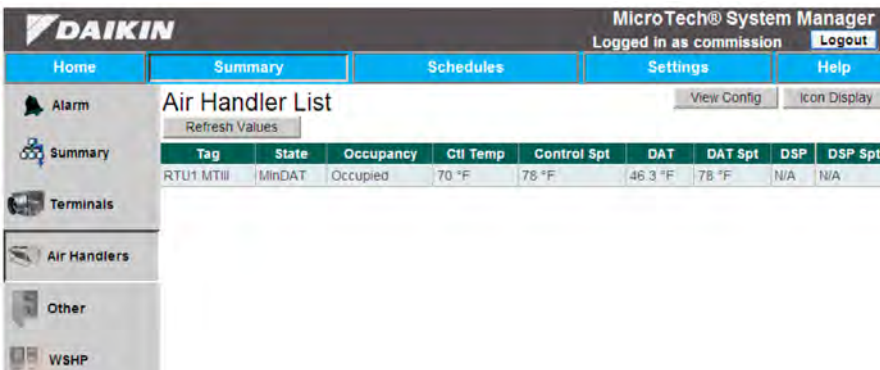


Figure 73: List View for AHU Selection



### Configuration Privileges

Just like with the VAV units, access is restricted based on security access level. Table 4 lists the various security levels as well as what each allows access to, with regard to the AHU Device Summary screen (reached once an AHU is selected).

Table 4: Access Privileges for AHU

Security Level	Summary Menu Access (Tabs/Buttons)
Guest	Device Status (read)
Tenant	Device Status (read)
Maintenance	Device Status (read and write), Capacity Status (read), Setpoints (read)
Owner	Device Status (read and write), Capacity Status (read), Setpoints (read)
Commission	All tabs now available: Device Status, Capacity Status, Setpoints (read and write), Network and Miscellaneous (read)



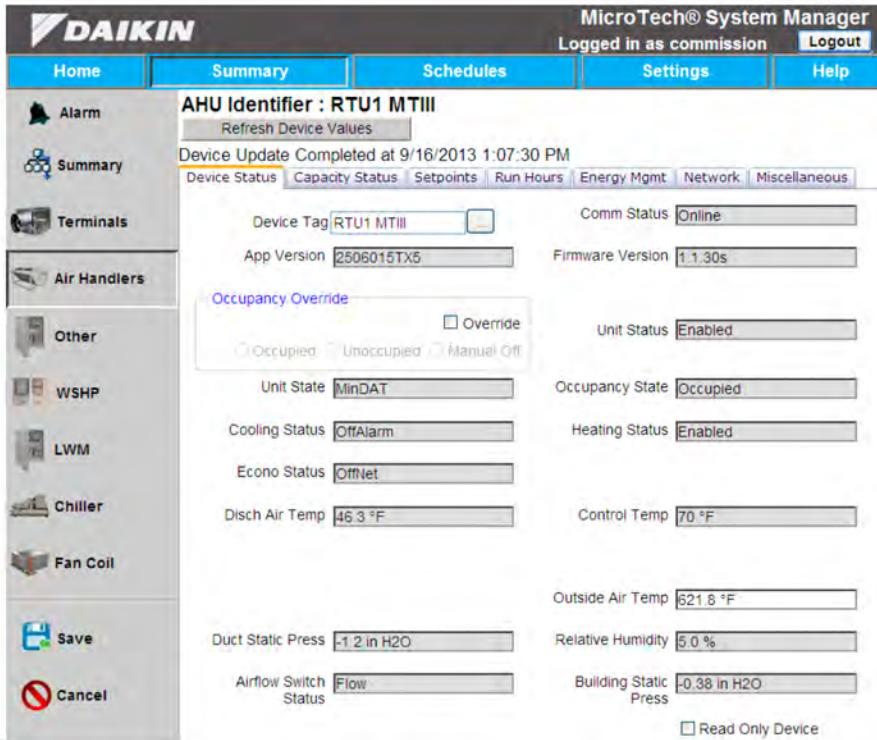
### Device Properties

The following section will outline all tabs found when accessing an AHU through the Summary Menu. These tabs include: Device Status, Capacity Status, Setpoints, Run Hours, Energy Management, Network, and Miscellaneous. Within each section a screen capture of the page will be given, along with the description of what each value is. Anything in a solid gray box is not configurable under any circumstances.

**NOTE:** Some fields and values may be added or missing depending on the setup that you have, for example if you don't have a BSP sensor then you won't have a BSP setpoint. Make sure to check and see what your setup is before moving forward.

### Device Status Tab

Figure 74: Device Status Tab under Summary Menu



**Device Tag:** Name given to the particular AHU.

**Comm Status:** Shows whether the system is online or offline.

**App Version:** The application software version in the AHU controller.

**Firmware Version:** The firmware version of the AHU controller's BACnet MS/TP module.

**Occupancy Override:** How system is reading for occupancy. It has three options: Auto reads from scheduler, Override turns it on, usually done through override button on thermostat, and Manual Off shuts system down.

**Unit Status:** Shows the current status of the unit. It can be on, off due to schedule or manual off, or off due to alarm ("OffAlarm").

**Unit State:** Current state of unit. Valid states include off, fan only, cooling, or heating.

**Occupancy State:** Describes the current occupancy state, which is either occupied or unoccupied.

**Cooling Status:** Status item indicating whether mechanical cooling is currently available and, if not, why. For more information on this point, see the unit controller operations manual.

**Heating Status:** Status item indicating whether heating is currently available and, if not, why. For more information on this point, see the unit controller operations manual.

**Econo Status:** Status item indicating whether economizer cooling is currently available and, if not, why. For more information on this point, see the unit controller operations manual.

**Disch Air Temp:** Current reading of the DAT sensor.

**Control Temp:** Current reading of the control temperature. The control temp is defined by the control temp source.

**Outside Air Temp:** Current reading of the OAT sensor.

**Airflow Switch Status:** Shows whether the airflow switch is active or not, by showing "Flow/No Flow" values.

**Duct Static Pressure:** Current reading of the duct static pressure.

**Read Only Device:** Checking this box and saving causes all configurable points to be locked.

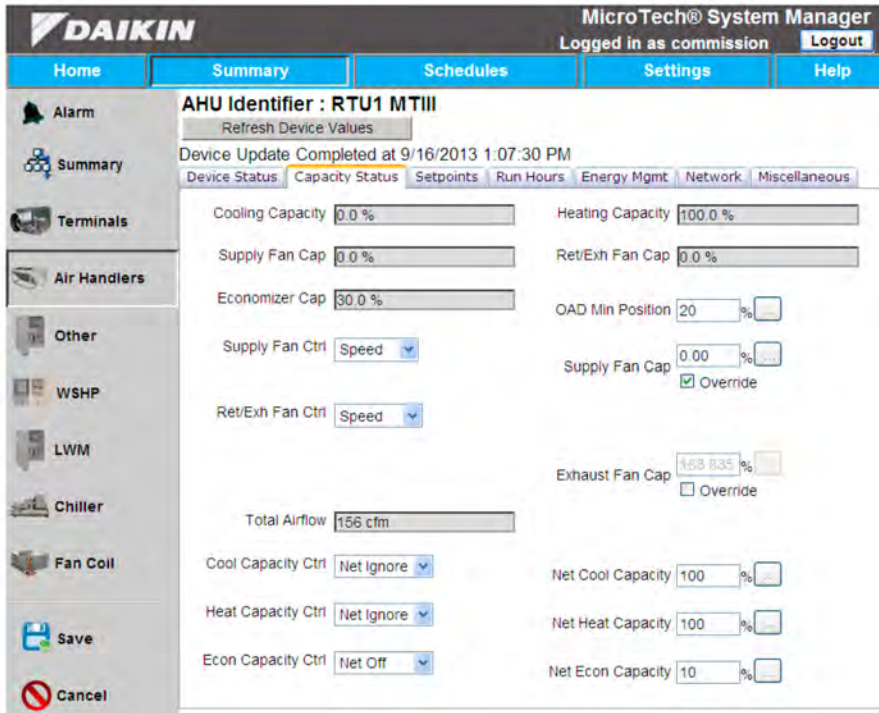
**Enable Direct Schedule:** Enables the use of direct schedules for the AHU, instead of using the internal schedule.

**Control Temp Source:** This determines where the AHU gets its Control Temp from. There are three options to choose which are outlined below.

- **Aggregate:** This is based on an algorithm which is based on a certain order of operations. First if any temperature is below the heating setpoint then that value is used. Second, if there is any value above the cooling setpoint, then that value is used. Finally, if all temperatures fall within heat/cool range then the lowest temperature in that range is selected.
- **Local Sensor:** This sets the control temperature to the same temperature that is read by the space sensor connected directly to the air handler. If no space sensor has been connected to the unit, do not use this option.
- **Select Zone:** The sets the control temperature to the same value as the temperature of a specific zone.

## Capacity Status Tab

Figure 75: Capacity Status Tab under the AHU Summary Menu



**Cooling Capacity:** This value displays the percentage of the AHU's total mechanical cooling capacity currently being used.

**Heating Capacity:** This value displays the percentage of the AHU's total heating capacity currently being used.

**Supply Fan Cap:** This value displays the current speed of the supply fan as a percentage of it's maximum speed.

**Economizer Cap:** This value displays the current position of the economizer damper in the AHU as a percentage of outside air.

**OAD Min Position:** Current minimum outside air damper setting for the AHU.

**Supply Fan Ctrl:** Current setting for the supply fan speed control on the selected AHU. The supply fan can be controlled to a duct pressure setpoint (DSP), a specific speed setpoint, or by the buildings cooling load (space).

**Ret/Exh Fan Ctrl:** Current setting for the return fan speed control on the selected AHU. The return fan can be controlled to a building pressure setpoint (BldgP), to track the supply fan speed (Tracking), or a specific speed setpoint. This should be set to "None" if the AHU has no return fan.

**Total Airflow:** Displays the sum of airflows across devices supplied by this AHU.

**Cool Capacity Ctrl:** Current setting for the selected AHU's network cooling control. This function can be disabled by setting it to "Net Ignore". Alternatively, it can be used to disable cooling (Net Off), or allow a specific amount of cooling for load shed operations (Net Val).

**Net Cool Capacity:** Current percentage of mechanical allowed by the network. This value does not have meaning unless the "Cool Capacity Control is set to "Net Val".

**Net Heat Capacity:** Current percentage of total available heating capacity being allowed by the network.

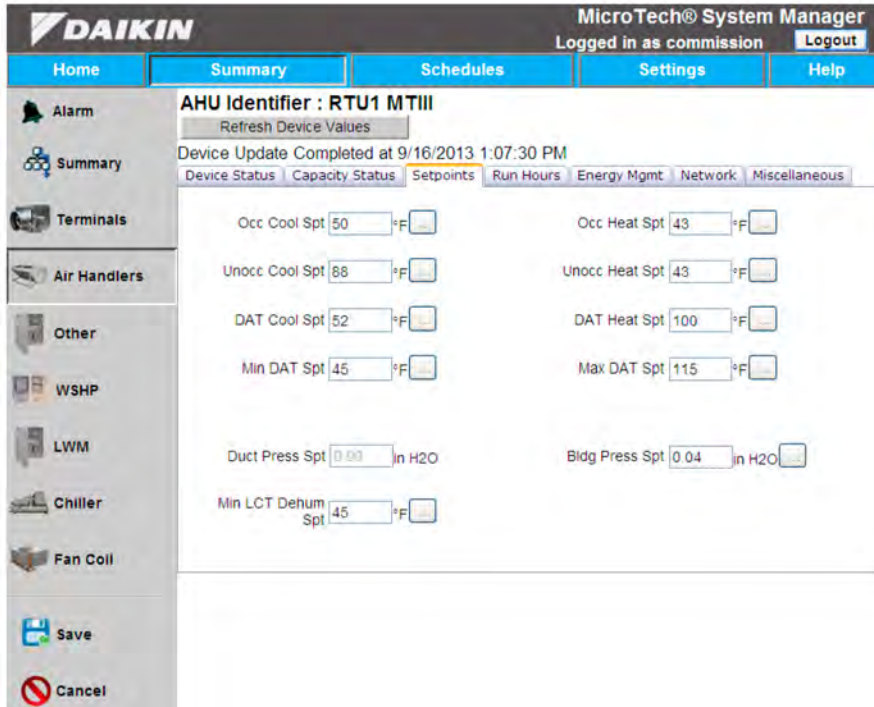
**Econ Capacity Ctrl:** Current setting for the selected AHU's network economizer control. This function can be disabled by setting it to "Net Ignore". Alternatively, it can be used to disable the economizer (Net Off), or allow a specific amount of cooling for load shed operations (Net Val).

**Net Econ Capacity:** Current percentage of economizer cooling allowed by the network. This value does not have meaning unless the "Cool Capacity Control is set to "Net Val".

**Heat Capacity Ctrl:** Current setting for the selected AHU's network heating control. This function can be disabled by setting it to "Net Ignore". Alternatively, it can be used to disable heating (Net Off), or allow a specific amount of heating for load shed operations (Net Val).

## Setpoints Tab

Figure 76: Setpoints Tab under the AHU Summary Menu



**Occ Cool Spt:** This is the room temperature required for the system to begin cooling (during day).

**Occ Heat Spt:** This is the room temperature required for the system to begin heating (during day).

**Unocc Cool Spt:** This is the room temperature required for the system to begin cooling (during nighttime).

**Unocc Heat Spt:** This is the room temperature required for the system to begin heating (during nighttime).

**DAT Cool Spt:** This is the discharge air temperature required for the system to begin cooling.

**DAT Heat Spt:** This is the DAT required for the system to begin heating.

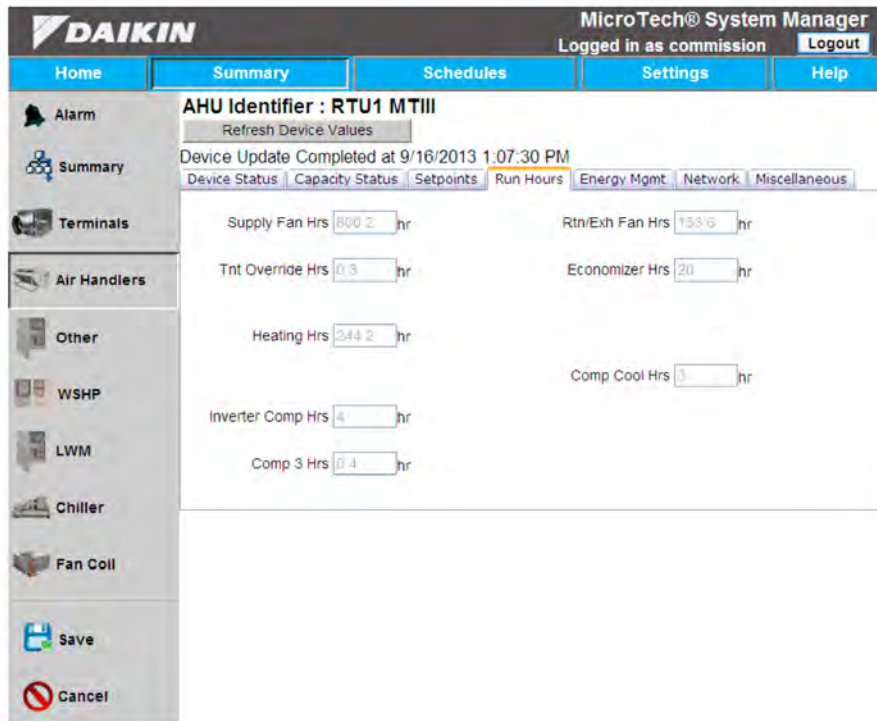
**Min DAT Spt:** This is the lowest value that the DAT can be set to.

**Max DAT Spt:** This is the highest value that the DAT can be set to.

**Duct Press Spt:** This value is the duct static pressure that the system will attempt to control to.

**Bldg Press Spt:** This value is the building static pressure that the system will attempt to control to.

Figure 77: Run Hours Tab under the AHU Summary Menu



**Supply Fan Hours:** Indicates the supply fan accumulated run hours.

**Return/Exhaust Fan Hours:** Indicates the return or exhaust fan accumulated run hours.

**Staged Exhaust 1-2 Hours:** Indicates the respective first or second stage exhaust fan accumulated run hours.

**Mechanical Cooling Hours:** Indicates the mechanical cooling accumulated run hours.

**Compressor 1-8 Hours:** Indicates the respective compressor accumulated run hours.

**Compressor Cooling Hours:** Indicates the compressor cooling accumulated run hours.

**Compressor Heating Hours:** Indicates the compressor heating accumulated run hours.

**Inverter Compressor Hours:** Indicates the inverter compressor accumulated run hours.

**Heating Hours:** Indicates the heating accumulated run hours.

**Economizer Hours:** Indicates the economizer accumulated run hours.

**Tenant Override Hours:** Indicates the tenant override operation accumulated run hours.

**Dehumidification Hours:** Indicates the dehumidification accumulated run hours.

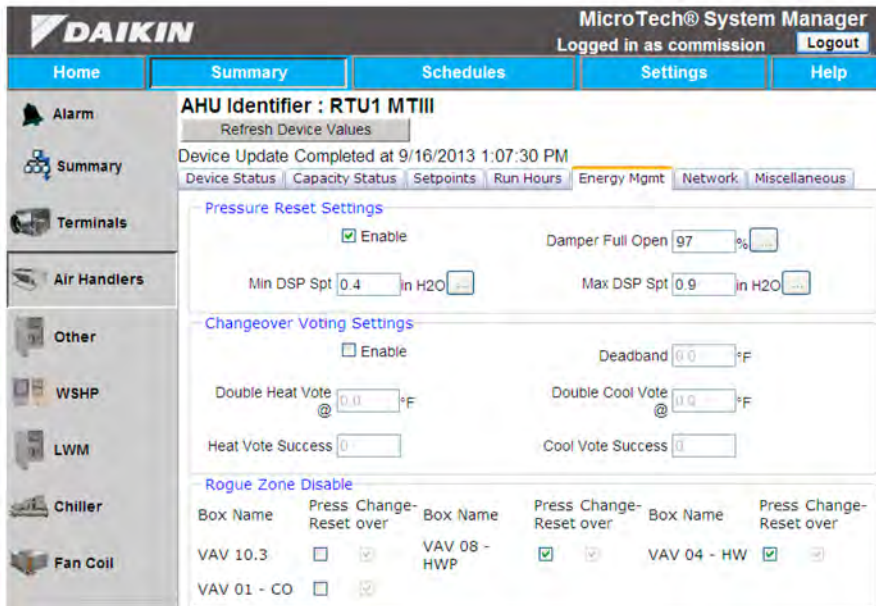
**Energy Recovery Wheel Hours:** Indicates the energy recovery wheel accumulated run hours.

### Energy Management Tab

The Pressure Reset Settings algorithm is a means by which the air handler’s energy consumption is regulated by altering its duct static pressure setpoint, and therefore its fan speed, in accordance with the state of the VAV boxes physically connected to it. Every 5 minutes, the VAVs are evaluated to be in one of three states: Starved – the box is open at least to the “Damper Full Open” point, and has flow below its setpoint; Satisfied – the box is open at least to the “Damper Full Open” point, and has flow of at least 95% of its setpoint; and Overflow – the box has flow at least 95% of its setpoint and is not open to the “Damper Full Open” point. If any boxes are Starved, the air handler’s pressure setpoint is adjusted up 0.1 in H2O. If no boxes are Starved, and at least one box is Satisfied, the pressure setpoint is not adjusted. If all boxes are Overflow, the setpoint is adjusted down 0.1 in H2O.

The changeover voting algorithm is a means by which the air handler’s heating or cooling mode is determined by the temperature need of its associated zones. Temperature needs are based on the difference of zone temperatures to their setpoints. There are five levels of voting per zone: Heat Vote, Double Heat Vote, Cool Vote, Double Cool Vote, and Satisfied. The votes are determined by user defined deadbands. The heat votes and cool votes are totaled and depending on the user determined Heat/Cool Success Votes the air handler will changeover to the appropriate mode. To save on energy when the Cool Vote Success is met it will override the Heat Vote Success and the air handler will be in cooling. The air handler’s occupied heating and cooling setpoints are locked out when the changeover voting is enabled and are adjusted to enable the changeover when the Heat/Cool Success Votes are met.

Figure 78: Energy Management Tab



## Pressure Reset Settings

**Enable:** If there are VAV boxes associated with this air handler, pressure reset may be enabled by checking this box. When the box is checked, all other values in this section are made active for editing.

**Damper Full Open:** This field allows the user to set the point at which a VAV's damper is considered to be "open" in the algorithm's logic.

**Min DSP Spt:** This is the low end of the range used by the pressure reset algorithm to reset the air handler's duct static pressure setpoint.

**Max DSP Spt:** This is the upper end of the range.

## Changeover Voting Settings

**Enable:** If there are VAV boxes associated with this air handler, changeover voting may be enabled by checking this box. When the box is checked, all other values in this section are made active for editing.

**Deadband:** This is the difference between the zone temperature and the temperature setpoint that the changeover voting algorithm uses to determine if zones vote for the air handler to go into heating or cooling. If the difference is within the deadband, the zone is satisfied and does not vote. If the difference is larger than the deadband, but less than the double heat vote or double cool vote, then the zone votes for heating or cooling.

**Double Heat Vote @:** If the zone temperature is less than the setpoint minus the double heat vote value, then the zone sends two heat votes.

**Double Cool Vote @:** If the zone temperature is greater than the setpoint plus the double cool vote value, then the zone sends two cool votes.

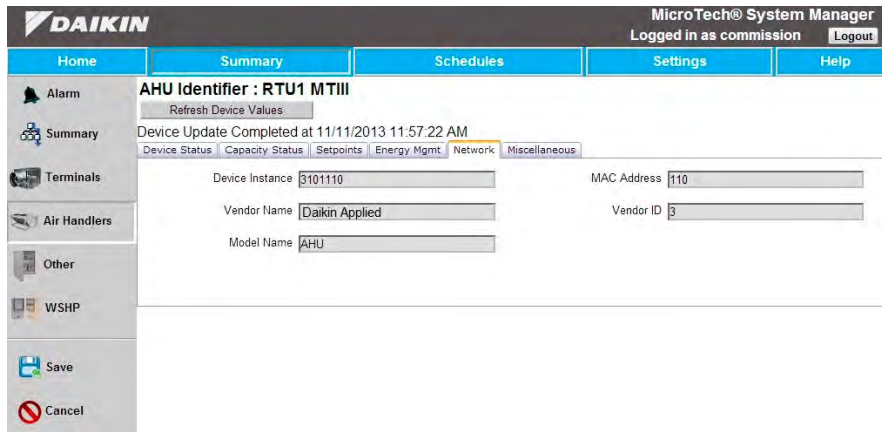
**Heat Vote Success:** The amount of zone votes needed for the air handler to go into heating.

**Cool Vote Success:** The amount of zone votes needed for the air handler to go into cooling.

**Rogue Zone Disable:** Zone that is not included in the pressure reset or changeover voting algorithms. Checking these zones removes them from the control logic. Zones disabled from the pressure reset algorithm may become starved when the pressure reset is enabled.

Network Tab

Figure 79: Network Tab under the AHU Summary Menu



**Device Instance #:** Unique ID number given to every device on the network. No two devices can have the same device instance number otherwise system will not work properly.

**Vendor Name:** Name of company who distributed the product.

**Model Name:** Name of the AHU.

**MAC Address:** Unique address (values from 0-127) given to each device. Used by network to find each device.

**NOTE:** It is important that your MAC Addresses be within the range of the Max Masters. If it is outside the range then the network will never find that device.

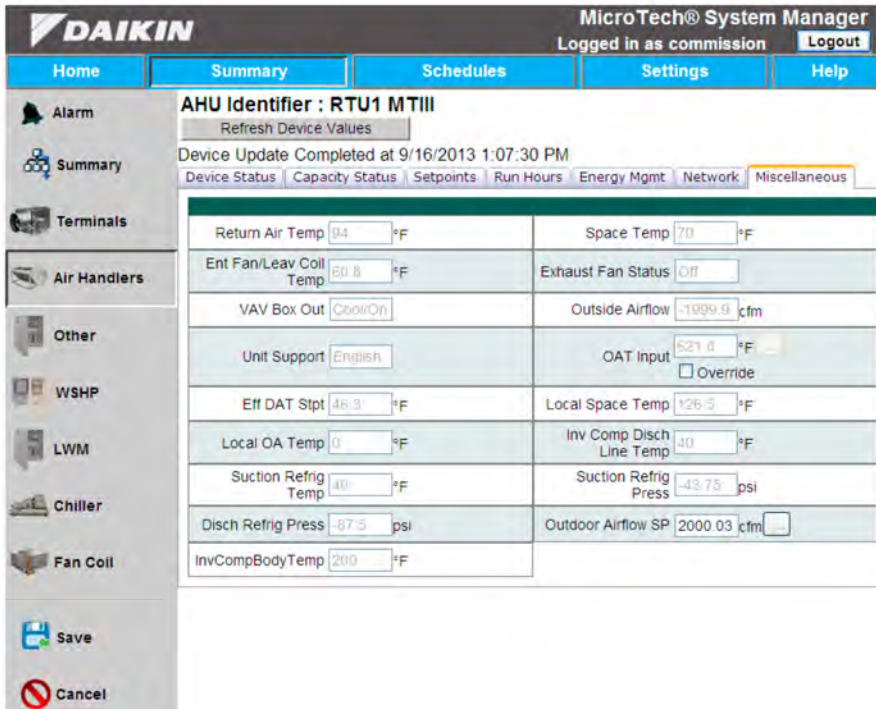
**Vendor ID #:** ID number unique to the vendor who provided the unit.

**Release All Points:** Writes a null value to all points associated with the device. This will eliminate any commissioning that has taken place on the device and should not be used in most cases .



Miscellaneous Tab

Figure 80: Miscellaneous Tab under the AHU Menu



**Return Air Temp:** This is the value read back by the RAT sensor.

**Space Temp:** This is the effective space temperature. If the network is controlling the space temperature, this will read the current network value, otherwise it will read the value from the local space temperature sensor.

**Exhaust Fan Status:** Current status of the exhaust fan.

**Unit Support:** Current unit of measure being used. This can be English or SI and is set on the AHU's local controller.

**OAT Input:** Network controlled outside air temperature. A valid value written to this point will override the unit's local outside air temperature sensor. The invalid value of 621.8°F allows the local outside air temperature to be used.

**Unit Support:** Displays the unit system being used by the device, SI or English units.

**Space Temp Input:** Network controlled space temperature. A valid value written to this point will override the unit's local space temperature sensor. Entering a value of 621.8°F releases this point and allows local hardwired sensors to be used.

**Eff DAT Stpt:** This is the effecting discharge air temperature setpoint.

**Local Space Temp:** This is the unit's local space temperature.

**Local OA Temp:** This is the unit's local outside air temperature.

**Ent Fan/Leav Coil Temp:** The temperature of the air as it leaves the coils and enters the fan (may not be applicable if the unit has no heat).

Just like the other devices, the LWM has a couple ways of accessing the main configuration screens. The device summary screens and tabs offer some level of configurability, and again, access is limited for the specific security levels.

## Access via Schedule Groups

1. Connect to web application (if not already)
2. Login as any user, even Guest
3. From home page select the "Summary" tab
4. From this page select the LWM that you wish to view (Figure 81)

Figure 81: Schedule Group screen view

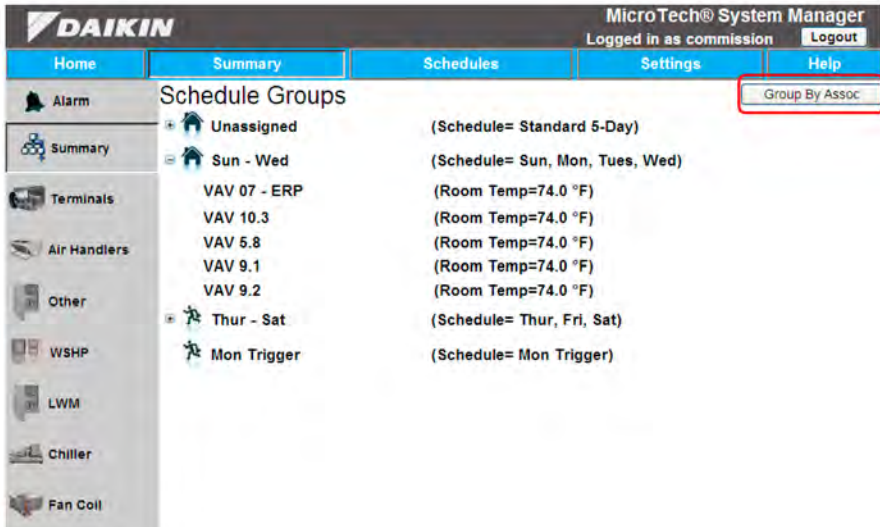
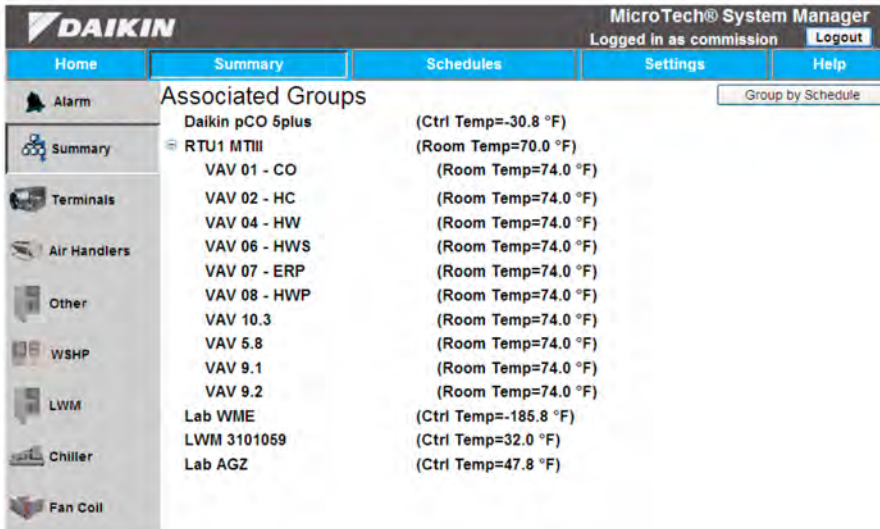


Figure 82: Group by Associated Group screen view



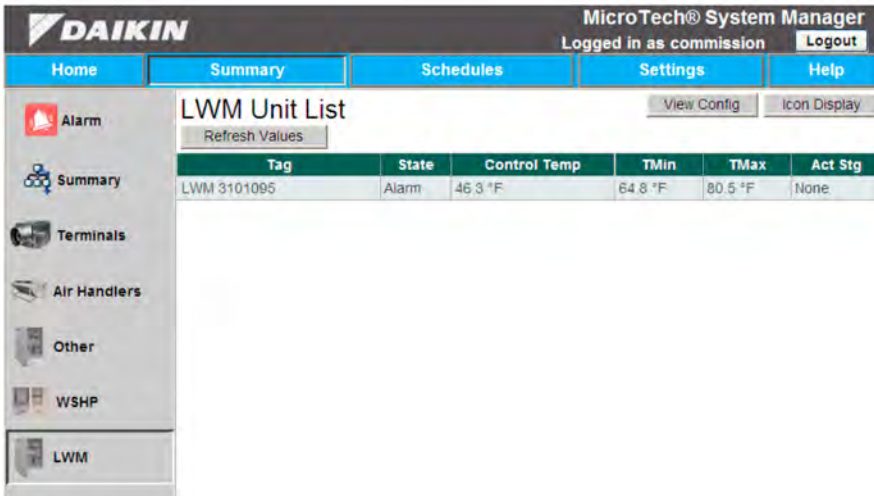
## Access via LWM List

1. Connect to web-application (if not already)
2. Login as any user, even Guest
3. Select the "LWM" button from the home page
4. Select desired LWM from resulting page. If you prefer choosing without the icons you can choose "List Display". To do this, press the "List Display" button that is in the upper right corner of screen. (See Figure 83 and Figure 84).

Figure 83: Icon View for LWM Selection



Figure 84: List View for LWM Selection



Another option that is available from this page is "View Config". When pressed the user will be directed to a list of configuration devices (if available), which, when selected, will show the default configuration for the chosen device.

## Configuration Privileges

Just like other devices, access is restricted based on security access level. Table 5. lists the various security levels as well as what each allows access to, with regard to the LWM Device Properties screen (reached once an LWM is selected).

Table 5: Access Privileges for LWM

Security Level	Summary Menu Access (Tabs/Buttons)
Guest	Device Status (read)
Tenant	Device Status (read)
Maintenance	Device Status (read and write), Sensor Status, Heat Setup (read), Cool Setup (read)
Owner	Device Status (read and write), Sensor Status, Heat Setup (read), Cool Setup (read)
Commission	All tabs now available: Device Status, Sensor Status, Heat Setup(read and write), Cool Setup(read and write), Pump Setup(read and write), Setup Options (read and write), Network and Miscellaneous (read)

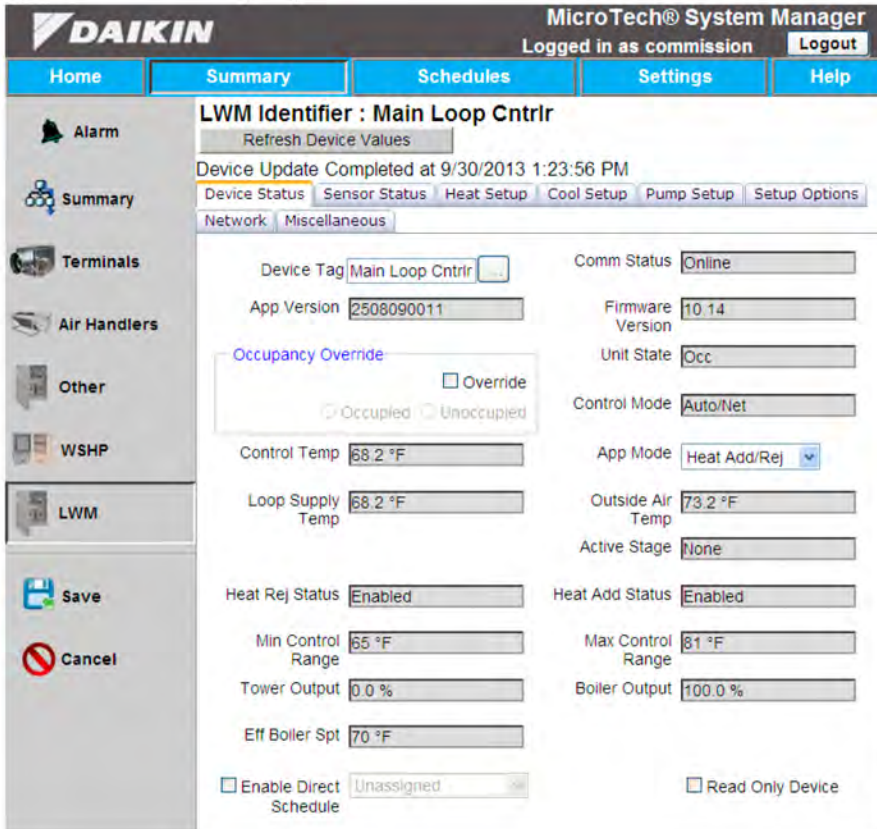
## Device Properties

The following section will outline all tabs found when accessing an LWM property page. These tabs include: Device Status, Sensor Status, Heat Setup, Cool Setup, Pump Setup, Setup Options, Network, and Miscellaneous. Within each section a screen capture of the page will be given, along with the description of what each value is. Anything in a solid gray box is not configurable under any circumstances.

**NOTE:** Some fields and values may be added or missing depending on the setup that you have, for example if you don't have a boiler valve actuator, you won't have a boiler valve setpoint. Make sure to check and see what your setup is before moving forward.

### Device Status Tab

Figure 85: Device Status Tab (LWM)



**Device Tag** = Name given to the particular LWM.

**Comm Status** = Shows whether the system is online or offline.

**App Version** = The application software version in the LWM controller.

**Firmware Version** = The firmware version of the LWM controller's BACnet MS/TP module.

**Occupancy Override** = How system is reading for occupancy. It has three options: Auto reads from scheduler, Override turns it on, usually done through override button on thermostat, and Manual Off shuts system down.

**Unit State** = Current state of unit. Valid states include: Unocc, UnoccLim, Recirc, Preheat, PreCoo1, ExtFlowReq, Occ, Alarm, Manual, Off.

## Control Mode

- **Off** = Puts the LWM in the Off state. The LWM will not run. (default)
- **Recirc** = Allows the LWM to run in the Recirculate state only. This state disables heat addition and heat rejection.
- **HeatAddOnly** = Allows the LWM to run heat addition when required. Heat rejection is disabled.
- **HeatRejOnly** = Allows the LWM to run heat rejection when required. Heat addition is disabled.
- **HeatAddRej** = Allows the LWM to run heat addition and heat rejection when required.
- **Auto/Net** = LWM looks at the application mode (App Mode) to determine what is enabled.

**Control Temp** = Current reading of the control temperature. The control temp is defined by the control temp select found on the Setup Options tab. Valid control temp sensors are supply or return.

**App Mode** = Mode used by LWM when Control Mode is set to Auto/Net. Otherwise, this parameter is ignored.

- **Off** = Puts the LWM in the Off state. The LWM will not run. (default)
- **Recirc** = Allows the LWM to run in the Recirculate state only. This state disables heat addition and heat rejection.
- **HeatAddOnly** = Allows the LWM to run heat addition when required. Heat rejection is disabled.
- **HeatRejOnly** = Allows the LWM to run heat rejection when required. Heat addition is disabled.
- **HeatAddRej** = Allows the LWM to run heat addition and heat rejection when required.

**Loop Supply Temp** = Current reading of the loop supply temperature.

**Outside Air Temp** = Current reading of the OAT sensor.

**Loop Return Temp** = Current reading of the loop return temperature.

- **Heat Rej Status** = Heat Rejection Status.
- **None** = The LWM is not configured for any stages of heat rejection.
- **OffLoc** = The control mode is disabling heat rejection.
- **OffNet** = The control mode is set to Auto/Net and the network is disabling heat rejection using Application Mode.
- **Enabled** = Heat rejection is enabled and is available to run.
- **Alarm** = All secondary pumps are off on alarm (ie, Secondary Loop Pump Fail Problem is active).

**Heat Add Status** = Heat Addition Status.

- **None** = The LWM is not configured for any stages of heat addition.
- **OffLoc** = The control mode is disabling heat addition.
- **OffNet** = The control mode is set to Auto/Net and the network is disabling heat addition using Application Mode.
- **Enabled** = Heat addition is enabled and is available to run.
- **Alarm** = All secondary pumps are off on alarm (ie, Secondary Loop Pump Fail Problem is active).

**Active Stage** = Current stage of heat addition or heat rejection.

**Min Control Temp** = This property indicates the current minimum temperature used for control.

- If the LWM is actively heating and is configured for staged heating, this will be the adjusted heat addition stage X setpoint, where X is number of heat addition stages.
- If the LWM is actively heating, has no staged heating, but is configured for a boiler valve, this value will be the adjusted boiler valve setpoint.
- If the LWM is actively cooling, and is configured for staged cooling, this will be the stage 1 cooling setpoint.
- If the LWM is actively cooling, and is not configured for staged cooling, but is configured for a tower fan actuator, this will be N/A (30.2°F/-1°C).
- If the LWM is not actively heating or cooling, and has staged heating, this will be the adjusted heat addition stage 1 setpoint.
- If the LWM is not actively heating or cooling, and has no staged heating, but is configured for a boiler valve, this value will be the adjusted boiler valve setpoint.

**Max Control Temp** = property indicates the current maximum temperature used for control.

- If the LWM is actively heating and is configured for staged heating, this will be the adjusted heat addition stage 1 setpoint.
- If the LWM is actively heating, has no staged heating, but is configured for a boiler valve, this value will be N/A (30.2°F/-1°C).
- If the LWM is actively cooling, and is configured for staged cooling, this will be the stage X cooling setpoint, where X is the number of heat rejection stages.
- If the LWM is actively cooling, and is not configured for staged cooling, but is configured for a tower fan actuator, this will be the tower fan setpoint

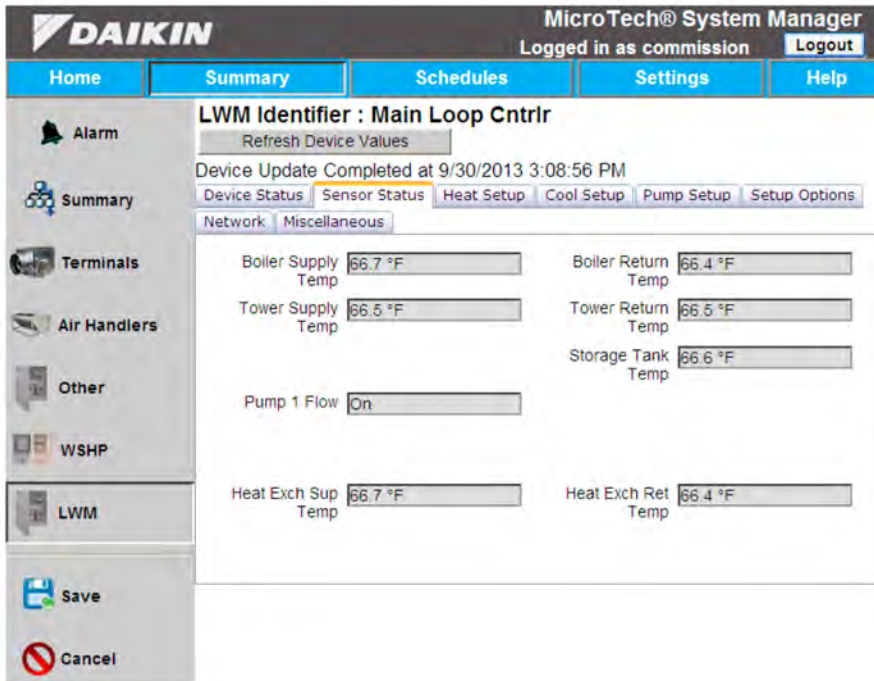
- If the LWM is not actively heating or cooling, and has staged cooling, this will be the heat rejection stage 1 setpoint.
- If the LWM is not actively heating or cooling, and has no staged cooling, but is configured for a tower fan actuator, this value will be the tower fan setpoint.

**Read Only Device** = Checking this box and saving causes all configurable points to be locked.

**Enable Direct Schedule** = Enables the use of direct schedules for the AHU, instead of using the internal schedule.

**Sensor Status Tab**

Figure 86: Sensor Status Tab (LWM)



**Boiler Supply Temp** = Current boiler supply temperature.

**Boiler Return Temp** = Current boiler return temperature.

**Tower Supply Temp** = Current tower supply temperature.

**Tower Return Temp** = Current tower return temperature

**Outside Air Humidity** = Current outdoor air humidity.

**Storage Tank Temp** = Current storage tank temperature.

**Pump 1 Flow** = Current status of the pump 1 flow digital input.

**Pump 2 Flow** = Current status of the pump 2 flow digital input.

**Sec Pump 1 Flow** = Current status of the secondary pump 1 flow digital input.

**Sec Pump 2 Flow** = Current status of the secondary pump 2 flow digital input.

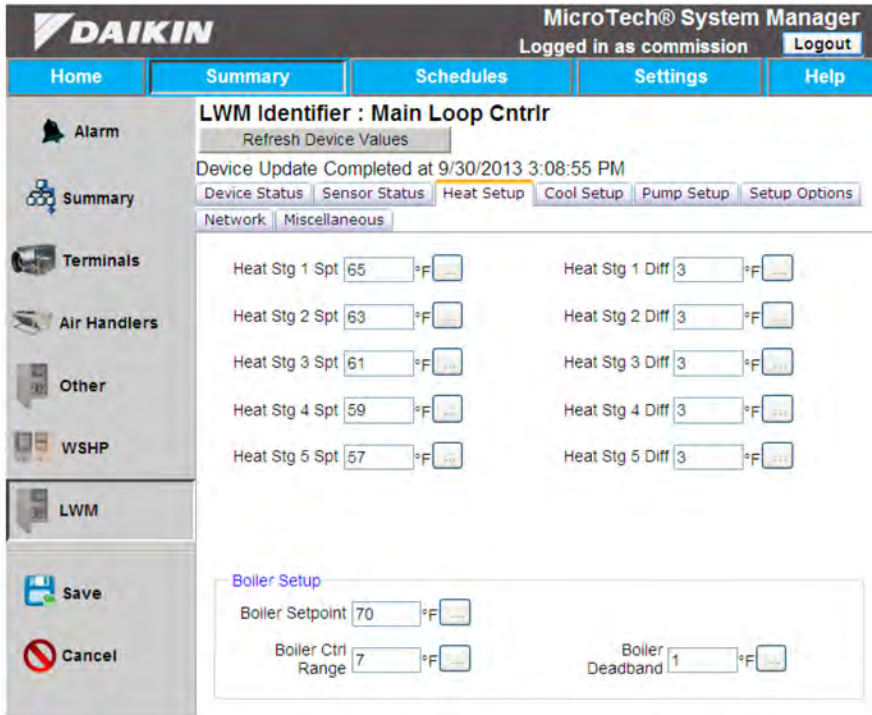
**Heat Exch Sup Temp** = Heat exchanger supply temperature.

**Heat Exch Ret Temp** = Heat exchanger return temperature.

**Geothermal Temp** = Geothermal temperature.

Heat Setup Tab

Figure 87: Heat Setup Tab (LWM)



**Heat Stg 1 (to 12) Spt** = Heat stage 1 through 12 setpoint.

**Heat Stg 1 (to 12) Diff** = Heat stage 1 through 12 differential.

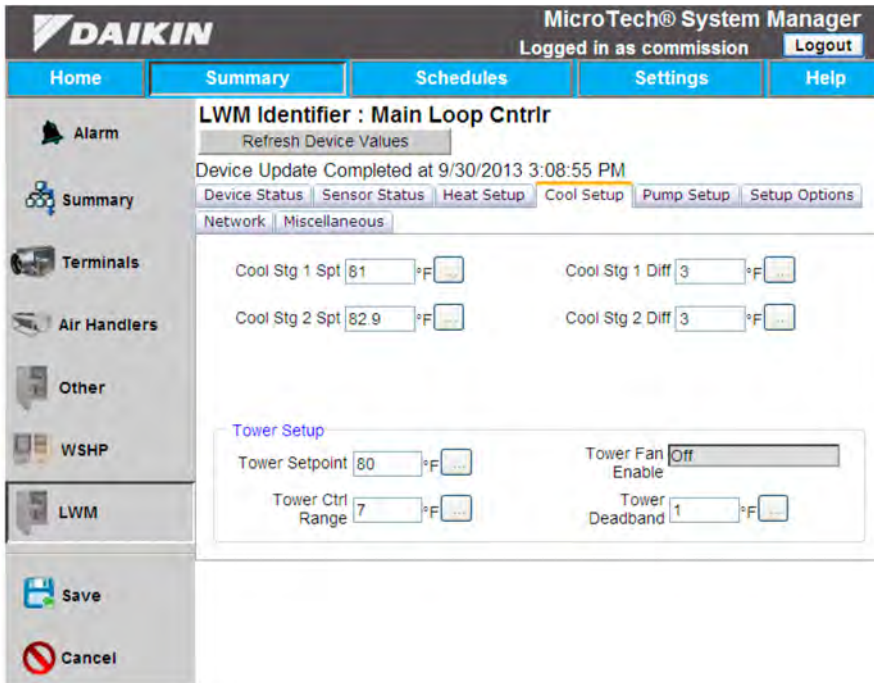
**Boiler Setpoint** = Boiler setpoint used for control.

**Boiler Ctrl Range** = Used to compute the gain used in the PID to control the boiler valve.

**Boiler Deadband** = Boiler deadband.

Cool Setup Tab

Figure 88: Cool Setup Tab (LWM)



**Cool Stg 1 (to 12) Spt** = Cool stage 1 through 12 setpoint.

**Cool Stg 1 (to 12) Diff** = Cool stage 1 through 12 differential.

**Tower Setpoint** = Tower setpoint used for control.

**Tower Fan Enable** = The status of the tower fan (Off/On).

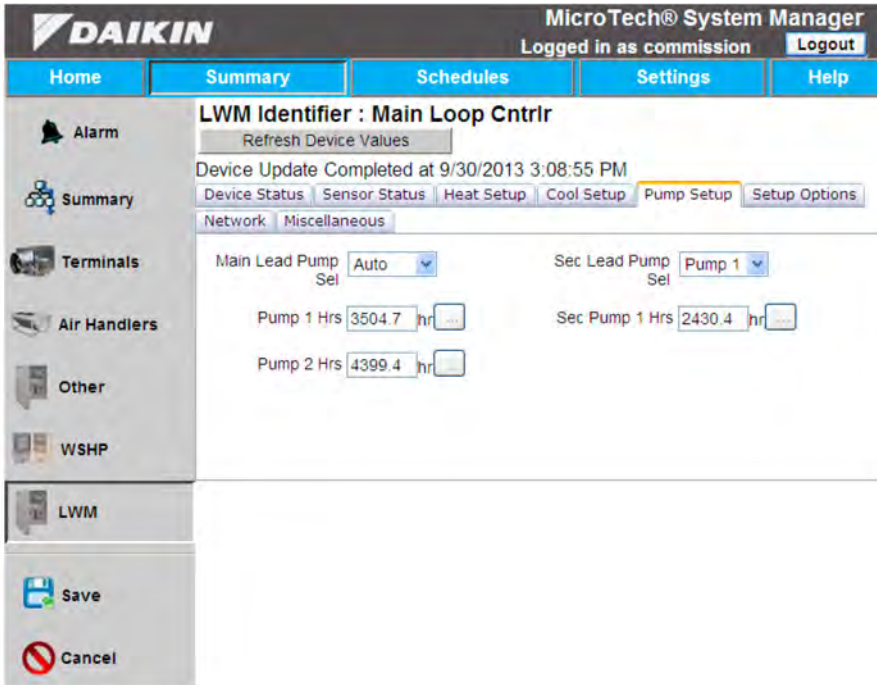
**Tower Ctrl Range** = Used to compute the gain used in the PID to control the tower fan.

**Tower Deadband** = Tower deadband.



Pump Setup Tab

Figure 89: Pump Setup Tab (LWM)



**Main Lead Pump Sel** = Configures which pump should start first.

- **None** = is used when there are no pumps.
- **Pump1** = always start pump 1 first.
- **Pump2** = always start pump 2 first.
- **Auto** = start whichever pump has the least run hours. This is only available if there is more than 1 pump.

**Sec Lead Pmp Sel** = configures which secondary pump should start first.

- **None** = is used when there are no pumps.
- **Pump1** = always start pump 1 first.
- **Pump2** = always start pump 2 first.
- **Auto** = start whichever pump has the least run hours. This is only available if there is more than 1 pump.

**Pump 1 Hrs** = Number of run hours for primary pump 1.

**Sec Pump 1 Hrs** = Number of run hours for secondary pump 1.

**Pump 2 Hrs** = Number of run hours for primary pump 2.

**Sec Pump 2 Hrs** = Number of run hours for secondary pump 2.

**Head Pressure** = Current head pressure.

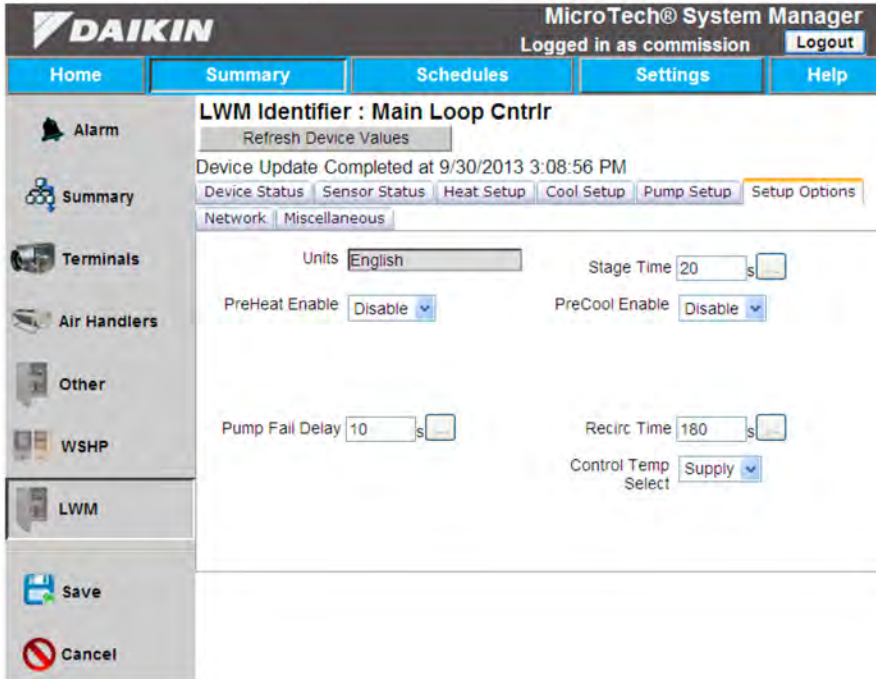
**Pressure Spt** = Head pressure setpoint used to control the loop head pressure.

**Pressure Loop Gain** = Head pressure gain used to control the loop head pressure.

**Pressure Loop DBand** = Head pressure loop deadband.

Setup Options Tab

Figure 90: Setup Options Tab (LWM)



**Units** = Controls the type of units that are passed through BACnet (SI or US). When this item is changed, power must be cycled on the LWM for the change to take effect. Also the device must be removed from the list screen and rediscovered for the unit to read properly.

**Stage Time** = Defines the amount of time between heat addition/rejection stages.

**PreHeat Enable** = Enables or disables PreHeat functionality.

**PreCool Enable** = Enables or disables PreCool functionality.

**Bvlv OAR Min** = When using an outside air reset of the boiler temperature setpoint, this value sets the minimum boiler temperature.

**Bvlv OAR Max** = When using an outside air reset of the boiler temperature setpoint, this value sets the maximum boiler temperature.

**PreHeat Stages** = Configures the LWM for the number of preheat stages. Setting this to None, disables the preheat feature.

**PreCool Stages** = Configures the LWM for the number of precool stages. Setting this to None, disables the precool feature.

**PreHeat OA Spt** = Configures the preheat outside air setpoint. The outside air temp must be less than this setpoint to enter preheat.

**PreCool OA Spt** = Configures the precool outside air setpoint. The outside air temp must be less than this setpoint plus the Pre Cool Diff in order to enter precool.

**OA Reset Min Spt** = an adjustable item which sets the minimum boiler valve setpoint for use with an outdoor air reset schedule.

**OA Reset Max Spt** = An adjustable item which sets the maximum amount the staged heat addition setpoints can be reset when outdoor air reset is enabled.

**Bvlv OAR Min@** = When using an outside air reset of the boiler temperature setpoint, this value sets the outside air temperature at which the boiler setpoint will be at a minimum (Bvlv OAR Min).

**Bvlv OAR Max@** = When using an outside air reset of the boiler temperature setpoint, this value sets the outside air temperature at which the boiler setpoint will be at a maximum (Bvlv OAR Max).

**Pump Fail Delay** = Defines the amount of time the LWM will wait for the flow switch to close before disabling the pump and initializing a pump alarm.

**Recirc Time** = Defines the amount of time the unit status will remain in the recirculate state when starting.

**Sump Dump Select** = Used to enable the method used to dump the sump.

- **Disable** – Disabled Sump Dump feature.
- **OAT** – Enables the sump dump feature using the outside air temperature(OAT). If the OAT is less than the sump dump setpoint minus the sump dump deadband, dump the sump. The dump is stopped when the OAT rises above the sump dump setpoint by more than the sump dump deadband.
- **Switch** – Enables the sump dump feature using a digital input.

**Control Temp Select** = Configures the temperature sensor used as the control temperature (supply or return)

**Sump Dump Month** = Configures the month in which the sump should be dumped.

- **Disable** – Disabled this sump dump/fill feature using the dump/fill dates.
- **Jan-Dec** – Selects the month in which the sump should begin to dump and will continue until the Fill date.

**Sump Fill Month** = Configures the month in which the sump is filled.

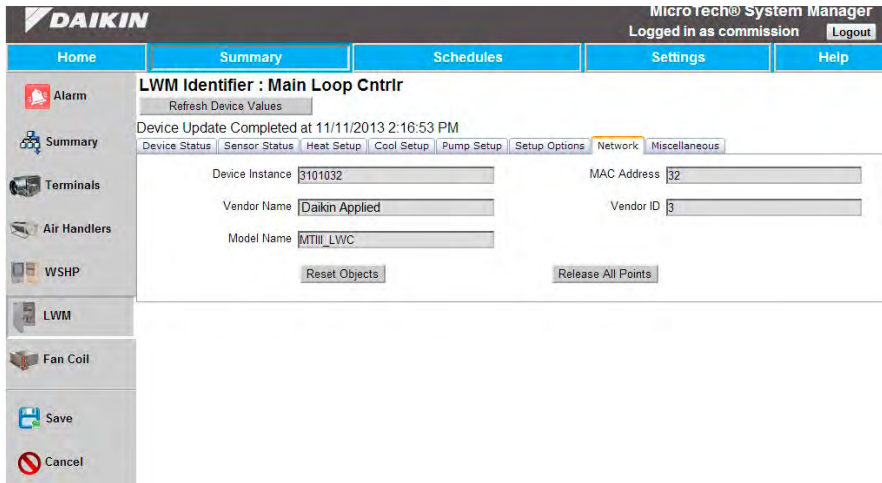
- **Disable** – Disabled this sump dump/fill feature using the dump/fill dates.
- **Jan-Dec** – Selects the month in which the sump should begin to fill.

**Sump Dump Day** = Configures the day of the month in which the sump will dump.

**Sump Fill Day** = Configures the day of the month in which the sump will fill.

Network Tab

Figure 91: Network Tab (LWM)



**Device Instance** = Unique ID number given to every device on the network. No two devices can have the same device instance number otherwise system will not work properly.

**Vendor Name** = Name of company who distributed the product.

**Model Name** = Model of the LWM.

**MAC Address** = Unique address (values from 0-127) given to each device. Used by network to find each device.

**NOTE:** It is important that your MAC Addresses be within the range of the Max Masters. If it is outside the range then the network will never find that device.

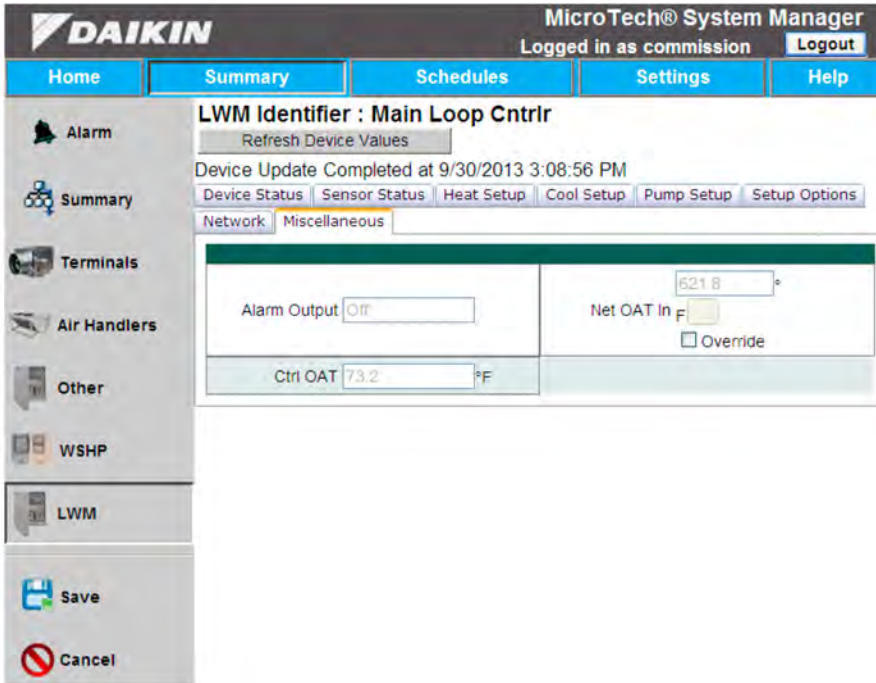
**Vendor ID** = BACent ID number unique to the vendor who provided the unit.

**Reset Objects** = When this button is pressed, the System Manager will attempt to discover the objects that had previously been marked not available.

**Release All Points** = Writes a null value to all points associated with the device. This will eliminate any commissioning that has taken place on the device and should not be used in most cases.

Miscellaneous Tab

Figure 92: Miscellaneous Tab (LWM)



**Press Ctrl Gain** = Sets the pressure control gain used for head pressure control.

**PreHeat Diff** = PreHeat differential.

**PreCool Diff** = PreCool differential.

**Tower Fan Speed** = Reads the current tower fan speed (0-100%).

**Boiler Vlv Pos** = Reads the current boiler valve position (0-100%)

**Zero OA Reset** = The outside air temperature when zero reset occurs. This only applies to outside air resetting of the staged heat addition setpoints.

**Max OA Reset** = The outside air temperature where maximum reset occurs. This only applies to outside air resetting of the staged heat addition setpoints.

**Damper Interlock** = Configures damper interlock feature.

**Alarm Output** = Status of the alarm output (MCB-X5).

**Net OAT In** = Network supplied outdoor air temperature. A value greater than 212°F/100°C is considered invalid and ignored by the LWM.

**Ctrl OAT** = This Outside Air Temperature is used in the unit's control logic. It will be equal to the local Outside Air Temperature Sensor, unless overridden by the network through the "Net OAT In" parameter.

The Daikin Applied MicroTech III Generic I/O Manager is an optional Controller that can be used to connect to a number of existing points in the building to control a fan, enable some piece of equipment, or possibly read a sensor and perform some action. This controller is only needed when the number of unused I/O points on the VAV and Air Handler unit controllers are not enough to meet the needs of the customer. When ordered with the MicroTech Integrated System, the Generic I/O Manager will come addresses and ready to be

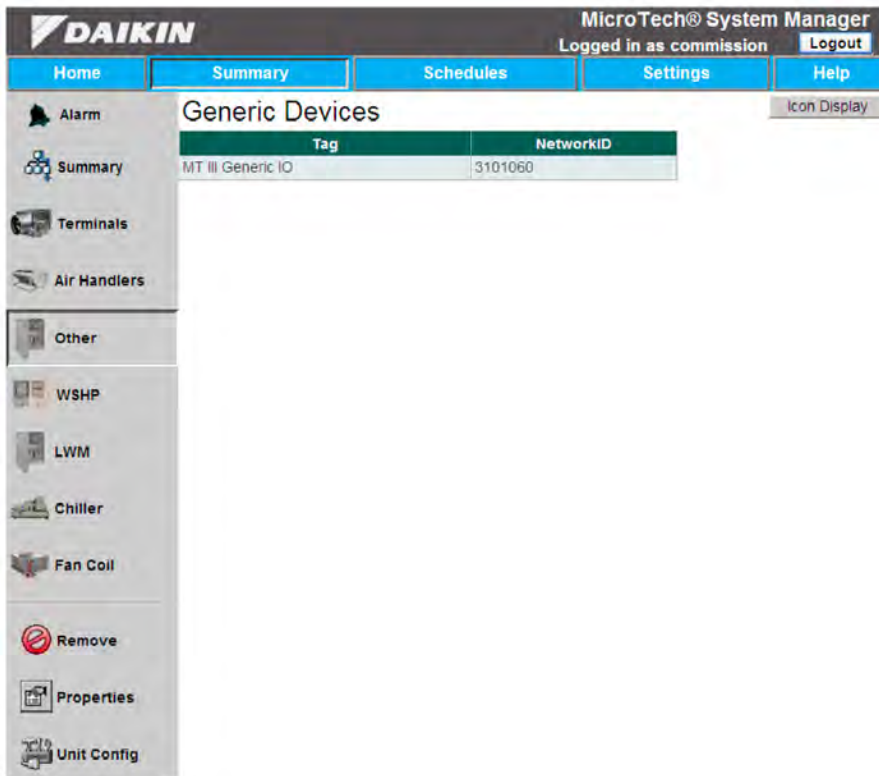
connected to the network after the I/O has been configured. Refer to IOM 1135 - MicroTech III Generic I/O for information on how to configure and wire the Generic I/O Manager.

When a Generic I/O Manager is connected to the MicroTech Integrated System, the status of all configure I/O will be available via the Other Devices list screen. These points are defined below. Only those points applicable to the configuration will appear on the property pages.

**Access via Generic Devices List**

1. Connect to web-application (if not already)
2. Login as any user, even Guest
3. Select the “Other Devices List” button from the home page.
4. Select desired device from resulting page. (Figure 93).

*Figure 93: Generic Devices List Page*



**Configuration Privileges**

Access is restricted based on security access level. Table 6 lists the various security levels as well as what each allows access to, with regard to the Generic Device Summary screen (reached once a Generic device is selected).

**Table 6: Access Privileges for Generic Devices**

Security Level	Summary Menu Access (Tabs/Buttons)
Guest	Device Status (read), Inputs (read), Outputs (read)
Tenant	Device Status (read), Inputs (read), Outputs (read)
Maintenance	Device Status (read and write), Inputs (read), Outputs (read)
Owner	Device Status (read and write), Setup (read), Inputs (read), Outputs (read)
Commission	All tabs now available: Device Status, Setup, Inputs (read), Outputs

## Device Properties

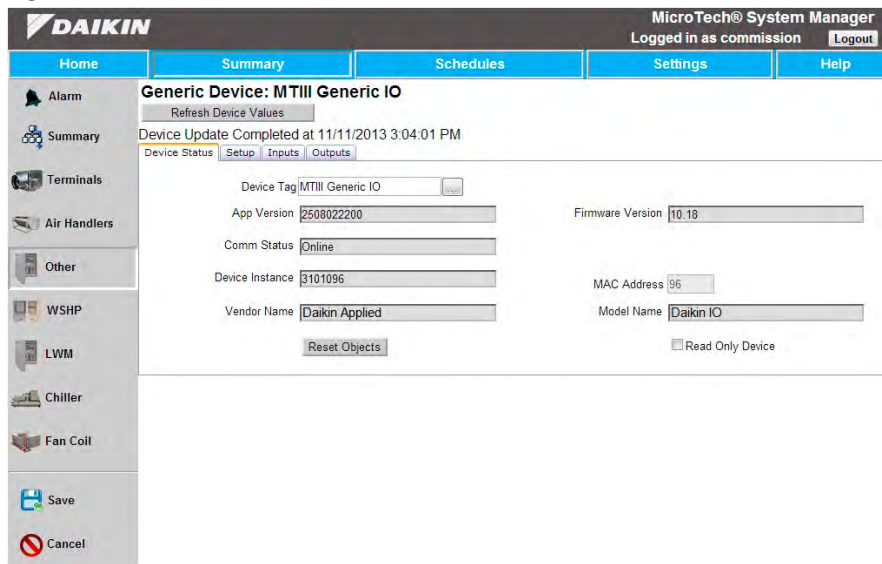
The following section will outline all tabs found when accessing a Generic Devices through the Summary Menu. These tabs include: Device Status, Setup, Inputs and Outputs. Within each section, a screen capture of the page will be given along with

the description of each value. Anything in a solid gray box is not configurable under any circumstances.

**NOTE:** Some fields and values may be added or missing depending on the configuration of the controller.

## Device Status Tab

Figure 94: Device Status Tab for Generic Device



**Device Tag:** Name given to the particular Generic device.

**Location:** The location of the device.

**App Version:** The application software version in the AHU controller.

**Firmware Version:** The firmware version of the controller's BACnet MS/TP module.

**Comm Status:** Shows whether the system is online or offline.

**Device Instance:** Unique ID number given to every device on the network. No two devices can have the same device instance number otherwise system will not work properly.

**MAC Address:** Unique address (values from 0-127) given to each device. Used by network to find each device.

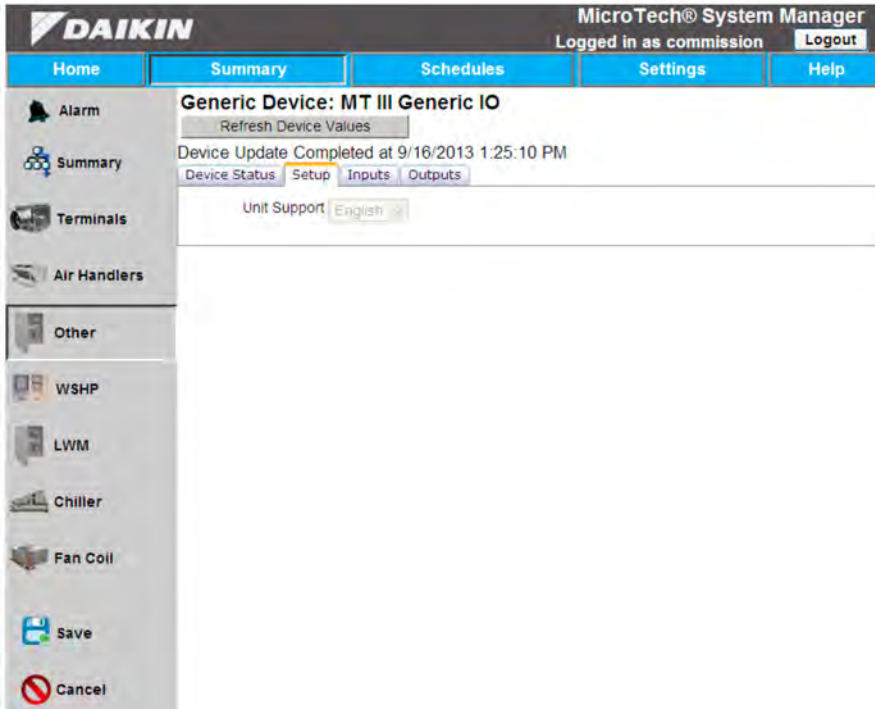
**NOTE:** It is important that your MAC Addresses be within the range of the Max Masters. If it is outside the range then the network will never find that device.

**Vendor Name:** Name of company who distributed the product.

**Model Name:** Name of the device.

## Setup Tab

Figure 95: Setup Tab for Generic Device



**Unit Support:** Units sent over BACnet (English/Metric). Because this requires a power cycle for the change to take effect, this point must be changed at the unit controller.

**PID Output:** Value of the output assigned to the PID loop. There is one for each of the five PID loops. This point is also located on the Outputs tab.

**Deriv:** Derivative factor for the PID loop. There is one for each of the five PID loops.

**LoopTime:** Loop time for the PID loop. There is one for each of the five PID loops.

**Prop:** Proportional band for the PID loop. There is one for each of the five PID loops.

**DBand:** Deadband for the PID loop. There is one for each of the five PID loops.

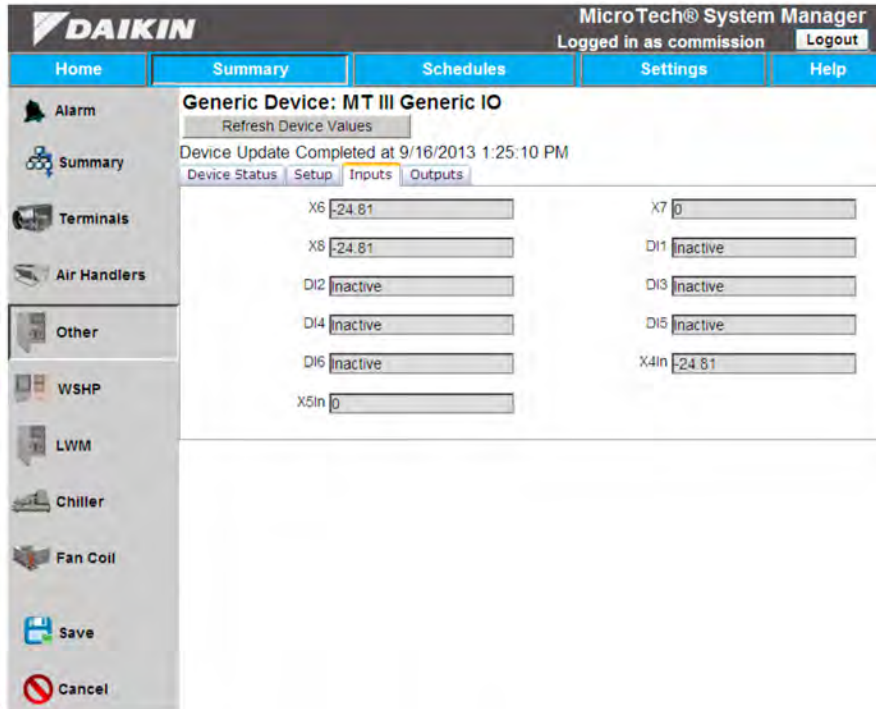
**Setpoint:** Setpoint for the PID loop. There is one for each of the five PID loops.

**InputSelect:** Reports the actual input that is used for this PID. There is one for each of the five PID loops.



### Inputs Tab

Figure 96: Inputs Tab for Generic Device



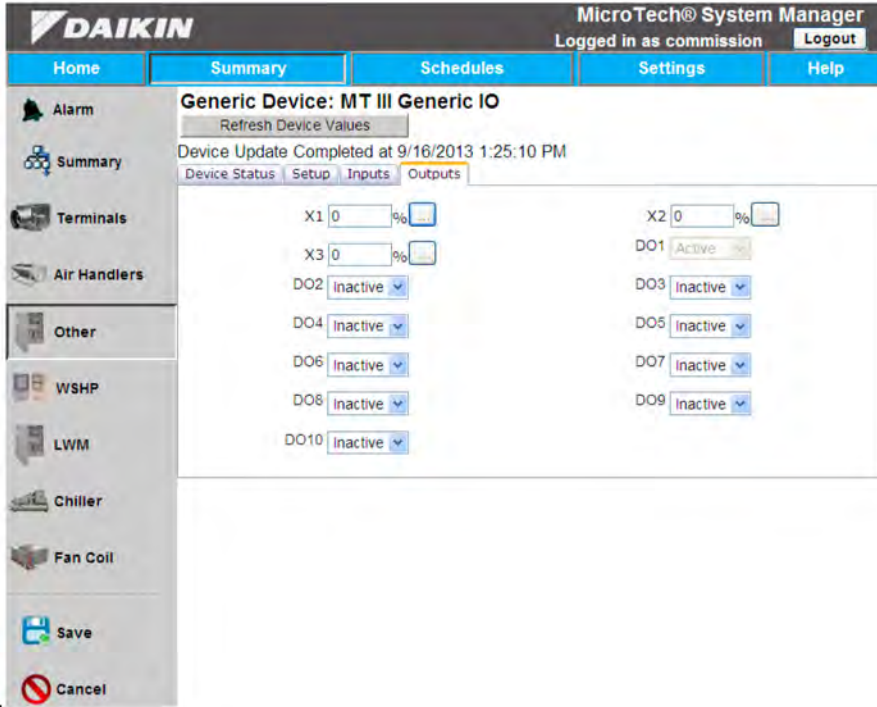
**AI1...AI3:** Results for hardware analog inputs 1 through 3.

**DI1...DI6:** Results for hardware digital inputs D1 through D6.

**X6...X8:** Results for hardware analog inputs X6 through X8. If these universal inputs are not setup, they will not appear here.

Outputs Tab

Figure 97: Outputs Tab for Generic Device



X1...X5: Results for hardware analog outputs X1 through X5.

DO1...DO10: Results for hardware digital outputs DO1 through DO10.

Just like the other devices, the WSHP has multiple ways of accessing the main configuration screens. The device summary screens and tabs offer some level of configurability, and also like the VAV, access is limited for the specific security levels.

## Access via Schedule Groups

1. Connect to web application (if not already)
2. Login as any user, even Guest
3. From home page select the “Summary” tab
4. From this page select the WSHP that you wish to view (Figure 98)

Figure 98: Schedule Group screen view

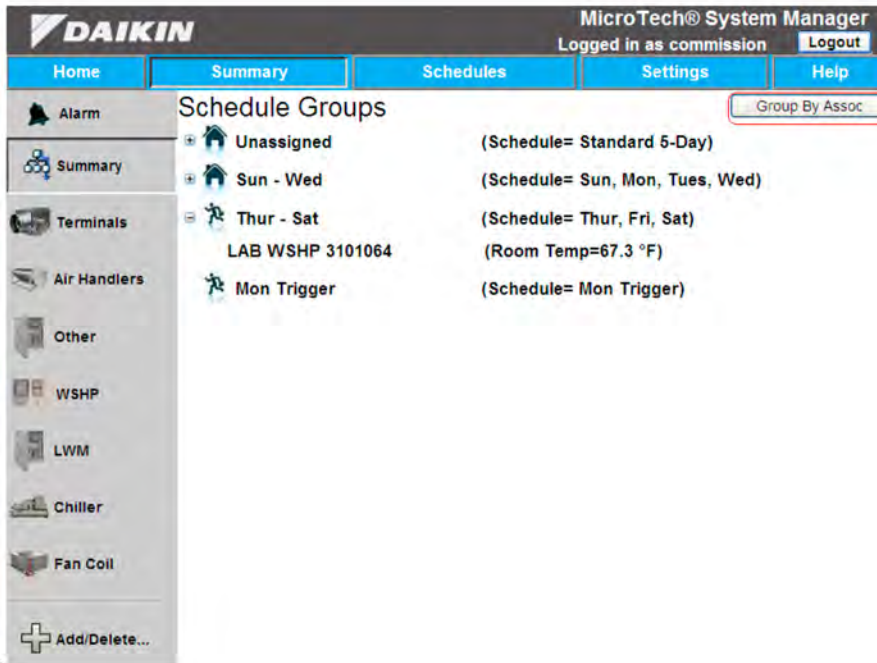
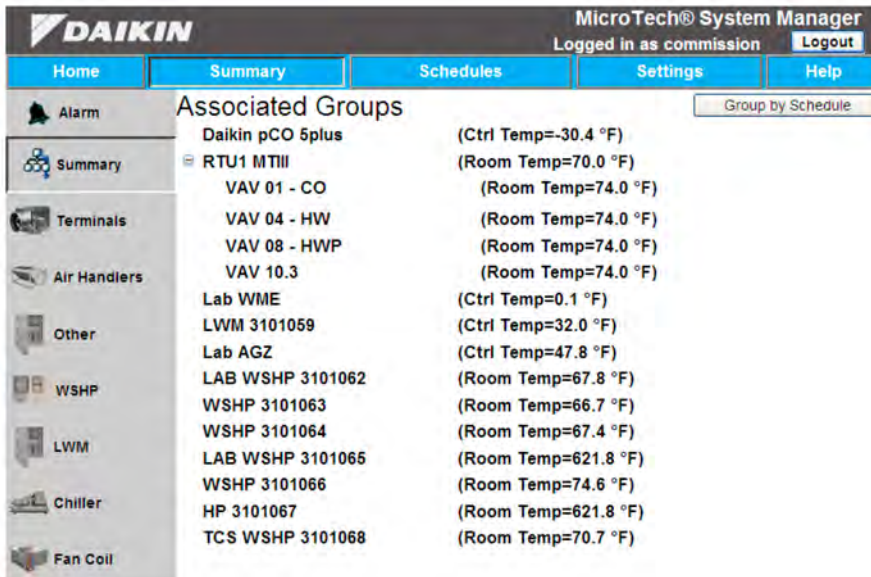


Figure 99: Associated Group screen view



### Access via WSHP List

1. Connect to web-application (if not already)
2. Login as any user, even Guest
3. Select the "Heat Pump List" button from the home page
4. Select desired WSHP from resulting page. If you prefer choosing without the icons you can choose "List Display". To do this, press the "List Display" button that is in the upper right corner of screen. (See Figure 100).

Figure 100: Icon View for LWC Selection

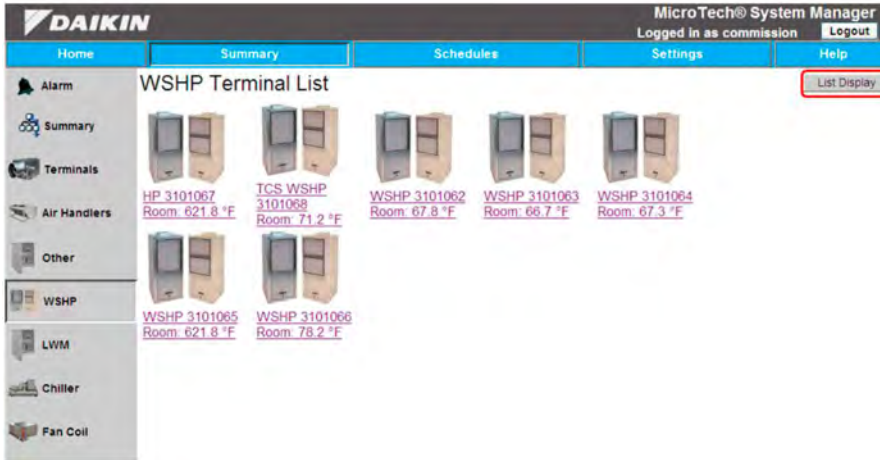
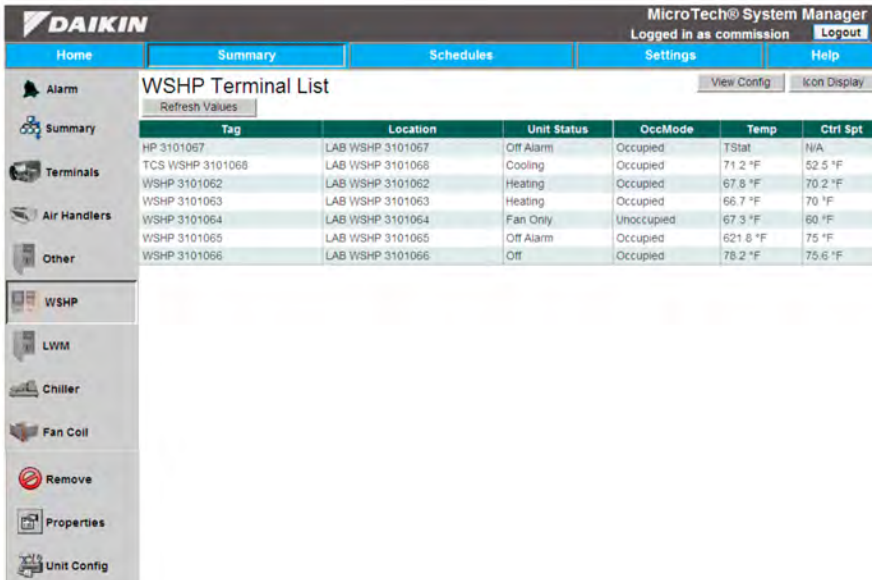


Figure 101: List View for LWC Selection



Another option that is available from this page is "View Config". When pressed the user will be directed to a list of configuration devices (if available), which, when selected, will show the default configuration for the chosen device.

## Configuration Privileges

Just like other devices, access is restricted based on security access level. Table 7 lists the various security levels as well as what each allows access to, with regard to the WSHP Device Properties screen (reached once a WSHP is selected).

Table 7: Access Privileges for WSHP

Security Level	Summary Menu Access (Tabs/Buttons)
Guest	Device Status (read)
Tenant	Device Status (read)
Maintenance	Device Status (read), Setpoints (read)
Owner	Device Status (read and write), Setpoints (read)
Commission	All tabs now available: Device Status, Setpoints (read and write), Setup, Config, Network Input, Network and Miscellaneous (read)

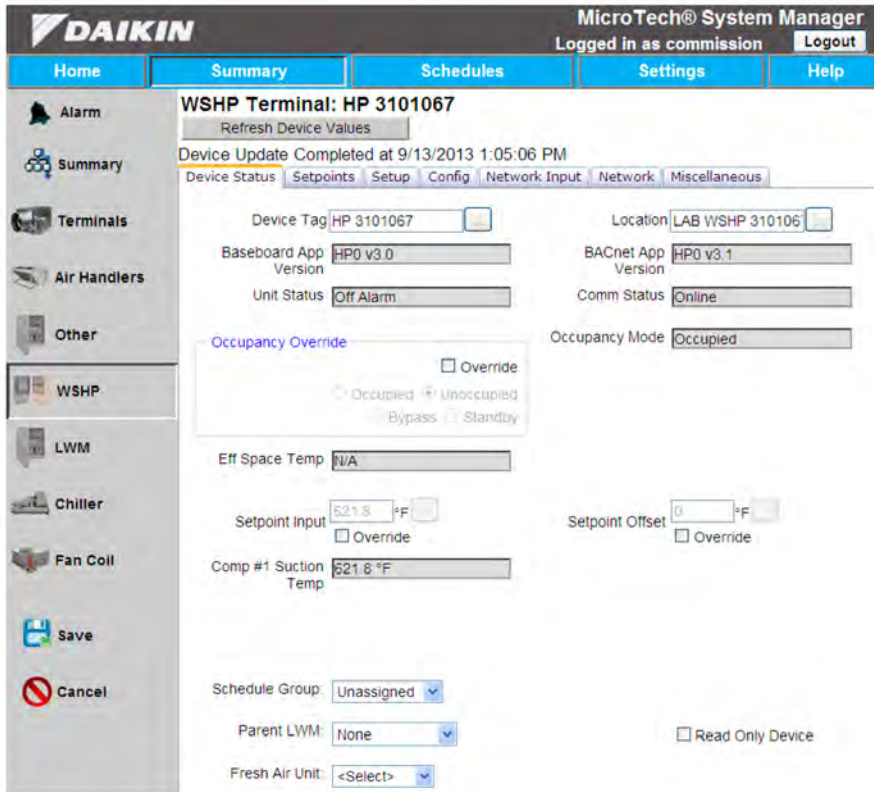
## Device Properties

The following section will outline all tabs found when accessing a WSHP property page. These tabs include: Device Status, Setpoints, Setup, Config, Network Input, Network, and Miscellaneous. Within each section a screen capture of the page will be given, along with the description of what each value is. Anything in a solid gray box is not configurable under any circumstances.

**NOTE:** Some fields and values may be added or missing depending on the setup that you have, for example if you don't have a boiler valve actuator, you won't have a boiler valve setpoint. Make sure to check and see what your setup is before moving forward.

### Device Status Tab

Figure 102: Device Status Tab (WSHP)



**Device Tag** = Name given to the particular WSHP.

**Location** = Indicates the space within the building that the WSHP unit serves.

**Baseboard App Version** = WSHP main controller application version.

**BACnet App Version** = WSHP BACnet card application version.

**Unit Status** = Indicates the operating status of the WSHP. States include: Off Alarm, Off, Start, Fan Only, Prepare To Cool, Cooling, Prepare To Dehumidify, Dehumidification.

**Comm Status** = Shows whether the system is online or offline.

**Occupancy Override** = Used to override the Occupancy Schedule that the WSHP is using (Occupied, Unoccupied, Bypass, Standby, Null)

**Occupancy Mode** = Indicates the current occupancy mode used by the WSHP (Occupied, Unoccupied, Bypass, Standby, Null).

**Current Fan Speed** = Displays the current fan speed (0-100%)

**Eff Space Temp** = Displays the actual space temperature the WSHP is using for control. If a Remote Space Temperature sensor has been integrated to the WSHP, the value of the Effective Space Temperature is the Remote Space Temperature. If communication is lost or there is no Remote Space Temperature sensor installed, the value of the Effective Space Temperature is the Local Space Temperature. If neither value is available, the output will send a defined "invalid" value. In addition, the WSHP will shut down and there will be a "Space Temperature Sensor Failed" alarm

**Effective Setpoint** = The effective temperature setpoint used for control.

**Setpoint Input** = Used to set the occupied and standby temperature setpoints via the network.

**Setpoint Offset** = Used to shift the occupied and standby effective setpoints via the network.

**Comp #1 Suction Temp** = Displays the value of the suction temperature sensor for compressor #1.

**Comp #2 Suction Temp** = Displays the value of the suction temperature sensor for compressor #2.

**Leaving Water Temp** = Displays the value of the leaving water temperature sensor.

**Entering Water Temp** = Displays the value of the entering water temperature sensor.

**Heat/Cool/Auto Switch** = Used to monitor the room sensor Heat/Cool/Auto mode switch.

**Fan On/Auto Switch** = Used to monitor the fan On/Auto switch.

**Schedule Group** = Defines the schedule group used to schedule this WSHP.

**Discharge Air Temp** = Displays the value of the discharge air temperature sensor.

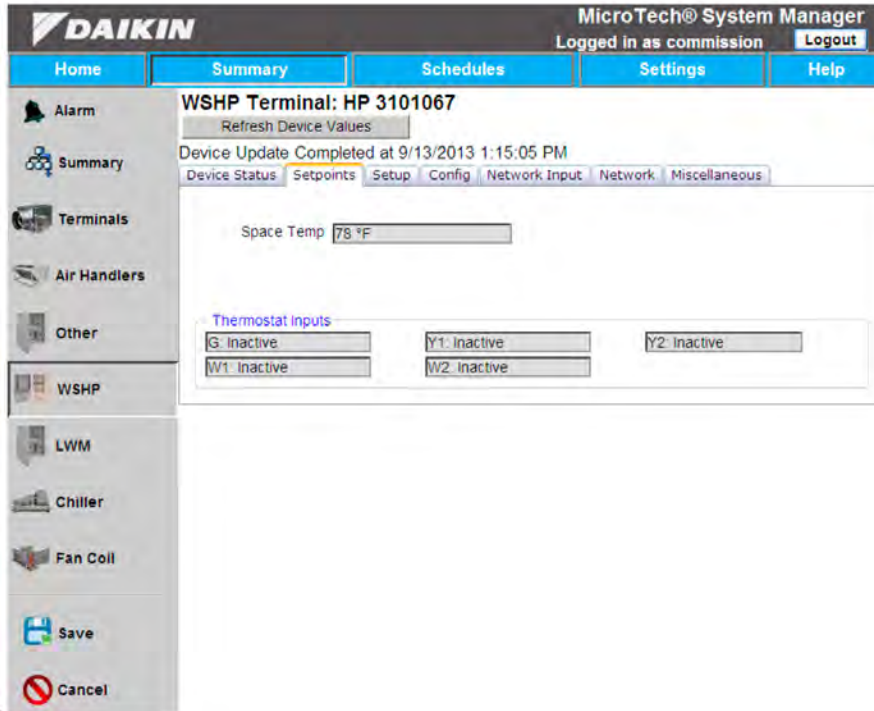
**Parent LWC** = Defines the LWC that controls the condensing water for this WSHP. Selecting "None" indicates that the LWC serving that loop is not on the network.

**Fresh Air Unit** = If set, and the WSHP is occupied, the parent LWC and AHU it is associated with must also be occupied. Selecting "None" indicates that there is no Fresh Air Unit supplying air to the zone.

**Read Only Device** = Checking this box and pressing the "save" button, will disable all control to the unit and it will exist on the system only for status information.

## Setpoints Tab

Figure 103: Setpoints Tab (WSHP)



**Occ Cool Spt** = Occupied cooling setpoint.

**Occ Heat Spt** = Occupied heating setpoint.

**Unocc Cool Spt** = Unoccupied cooling setpoint.

**Unocc Heat Spt** = Unoccupied heating setpoint.

**Standby Cool Spt** = Standby cooling setpoint.

**Standby Heat Spt** = Standby heating setpoint.

**Space Temp** = Current space temperature.

**Room Setpoint Enable** = This configuration property is used to Enable/Disable local hard-wired setpoint adjustment. If it is enabled, then the room sensor potentiometer is used. If it is disabled, then the Remote Space Temperature Setpoint is used.

**Local Setpoint** = This variable is the value of the local, hardwired space temperature setpoint if the jumper is in the closed position. This variable is invalid if the Jumper #5 is open.

**Local Spt Shift** = This is the value of the local hardwired setpoint adjustment input when jumper #5 is in the “Short Range” (open) position. This value is used to adjust the Occupied and Standby Cooling/Heating setpoints only. This variable is invalid if the Jumper #5 is in the “Long Range” (closed) position.

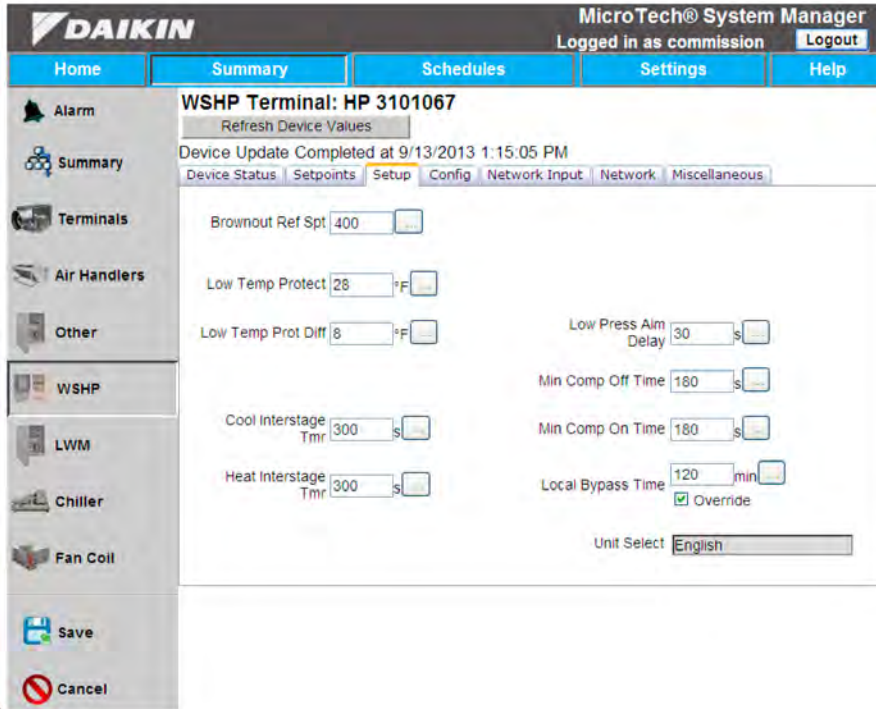
**Setpoint Adj Max** = Used to limit the maximum value of the long range setpoint adjust input, and the value must be greater than or equal to the Setpoint Adj Min. This setpoint only applies to room sensor controlled systems.

**Setpoint Adj Min** = Used to limit the minimum value of the long range setpoint adjust input, and the value must be less than or equal to the Long Range Setpoint Adjust Maximum setpoint. This setpoint only applies to room sensor controlled systems.

**Thermostat Inputs** = When the WSHP is configured to accept a thermostat, these values will become available, while hiding the temperature setpoints. They represent the current state of standard thermostat inputs as labeled.

## Setup Tab

Figure 104: Setup Tab (WSHP)



**Brownout Ref Spt** = Used for the Brownout Reference Setpoint. It is reserved for factory calibration of the brownout detection threshold. A password is required to unlock the value for writing.

**Cool Spt Hi Lim** = Defines the maximum value allowed for the cooling setpoints.

**Glycol Low EWT** = Sets the low entering water temperature detect setpoint, and is only used when the loop fluid jumper is in the “Glycol” position. The OFF setpoint differential is fixed at 2.0°F (1.0°C) above the ON setpoint value.

**Occupied Diff** = This configuration property is used to set the occupied setpoint hysteresis.

**Cool Spt Lo Lim** = defines the minimum value allowed for the cooling setpoints, and is also used in conjunction with the Heating Setpoint High Limit to clamp the allowed span of the long range setpoint adjust input.

**Water Low EWT** = Sets the low entering water temperature detect setpoint, and is only used when the loop fluid jumper is in the “Water” position. The OFF setpoint differential is fixed at 2.0°F (1.0°C) above the ON setpoint value.

**Unoccupied Diff** = This configuration property is used to set the unoccupied setpoint hysteresis.

**Heat Spt Hi Lim** = Defines the maximum value allowed for the heating setpoints, and is also used in conjunction with the Cooling Setpoint Low Limit to clamp the allowed span of the long range setpoint adjust input.

**Hydronic Heat On** = This is the hydronic valve heating on setpoint for systems supporting this option.

**Low Temp Protect** = Used in combination with the Low Temperature Protection Differential and low suction temperature alarm when the Water/Glycol (Jumper #3) is in the Water (open) position.

**Heat Spt Lo Lim** = Defines the minimum value allowed for the heating setpoints.

**Stage 2 Diff** = This parameter is used: for calculating the subsequent ON & OFF cooling setpoints from the previous stage setpoints; and for calculating the second stage ON & OFF heating setpoints from the first stage heating ON & OFF setpoints. This differential setpoint only applies to room sensor controlled systems.

**Low Temp Prot Diff** = Used in combination with the Low Temperature Protection Setpoint and low suction temperature alarm.

**Low Press Alm Delay** = Setpoint used to adjust the amount of delay between a low-pressure input and the generation of a low-pressure alarm for Compressor #1 or Compressor #2.

**Low Temp Prot Glycol** = This parameter is used in combination with the Low Temperature Protection Differential and low suction temperature alarm when the Water/Glycol (Jumper #3) is in the Glycol (closed) position.

**Min Comp Off Time** = Defines the minimum period of time the compressor needs to be off before it is turned on again.



**Cool Interstage Tmr** = Defines the number of seconds between cooling stages.

**Interstage Off** = Defines the time delay after compressor #2 stops before compressor #1 is allowed to turn off. This setpoint applies to both heating and cooling modes.

**Min Comp On Time** = Defines the minimum period of time the compressor needs to be on before it can be turned off again.

**Heat Interstage Tmr** = Defines the number of seconds between heating stages.

**Interstage On** = Used to delay the turn on of the secondary electric heating outputs in various ways. The Interstage On timer is started when transitioning out of the unoccupied mode, and will delay turn on of both electric heat outputs when the compressor remains available for use. This configuration property is also used to delay the turn on of the second electric heat output from the turn on of the first electric output when the fourth stage of heating (W4) transitions active with the third stage of heating (W3) inactive.

**Local Bypass Time** = Used to define the amount of time that the WSHP can be in the Timed Override position. Additional bypass requests (pressing the Timed Override button) resets the Timed Override timer to the maximum value. A value of 0 disables the bypass feature.

**Hydronic Cooling** = This variable is the waterside economizer cooling on setpoint for systems supporting this option. The OFF setpoint differential is fixed at 2.0°F (1.11°C) above the ON setpoint value.

**Hydronic Diff** = This differential is added to the hydronic cooling & heating ON setpoints to determine the effective OFF setpoints.

**Stage3 Diff** = Used for calculating the third stage heating ON & OFF setpoints from the second stage heating ON & OFF setpoints. This differential setpoint only applies to room sensor controlled systems.

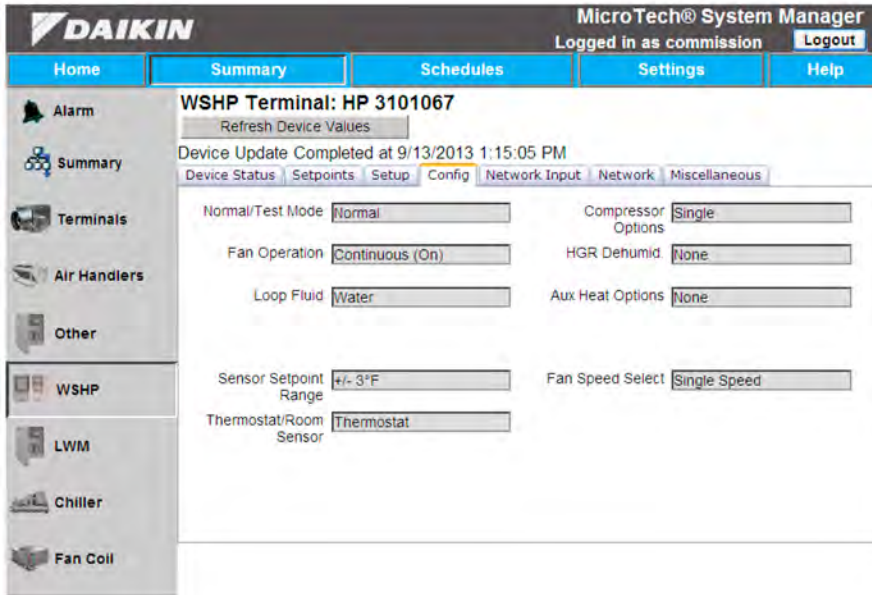
**Low LWT Diff** = This is the low leaving water temperature detect differential setpoint, and is added to the effective low temperature protect setpoint to determine the freeze fault temperature. The Low Temperature Protection Differential is added to the calculated freeze fault setpoint to determine the OFF setpoint.

**Stage 4 Diff** = Used for calculating the fourth stage heating ON & OFF setpoints from the third stage heating ON & OFF setpoints. This differential setpoint only applies to room sensor controlled systems.

**Unit Select** = Defines the types of units (English or Metric) that are being passed through BACnet.

Config Tab

Figure 105: Config Tab (WSHP)



**Normal/Test Mode** = Displays the status of jumper 1 on the main board. Normal operation occurs when jumper 1 is open(0).

**Compressor Options** = Status of expansion board jumper 1. Displays the number of compressors (single or dual).

**Fan Operation** = Displays the status of jumper 2 on the main board. If you have a continuous fan (jumper 2 is open), otherwise you have a cycling fan (jumper 2 is closed).

**HGR Dehumid** = Displays whether or not the unit is configured for hot gas reheat (jumper 2 on expansion board).

**Loop Fluid** = Displays the type of fluid in the loop using jumper 3 on the main board. If jumper 3 is open(0), it is a water loop. Otherwise glycol loop fluid is used.

**Freeze Fault Protection** = Tells whether or not freeze fault protection is enabled. This is configured using jumper 4 on the main board.

**Sec Heat Options** = Displays the type of secondary heat using jumpers 3 and 4 on the expansion I/O board.

**Baseboard JP4** = Status of main board jumper 4.

**I/O EXP JP4** = Status of jumper 4 on the I/O expansion board.

**Sensor Setpoint Range** = Status of main board jumper 5 which is used to define the room sensor setpoint potentiometer range.

**Fan Speed Select** = Defines the type of fan (single speed, two speed or three speed) using jumpers 5 and six on the I/O expansion board.

**Thermostat/Room Sensor** = Defines if you are using Thermostat control (main board jumper 6 is open(0)) or room sensor control (main board jumper 6 is closed(1)).

**I/O EXP JP6** = Displays the status of jumper 6 on the I/O expansion board.

**Baseboard JP7** = Displays the status of jumper 7 on the main board.

**I/O EXP JP7** = Displays the status of jumper 7 on the I/O expansion board.

**Baseboard JP8** = Displays the status of jumper 8 on the main board.

**I/O EXP JP8** = Displays the status of jumper 8 on the I/O expansion board.

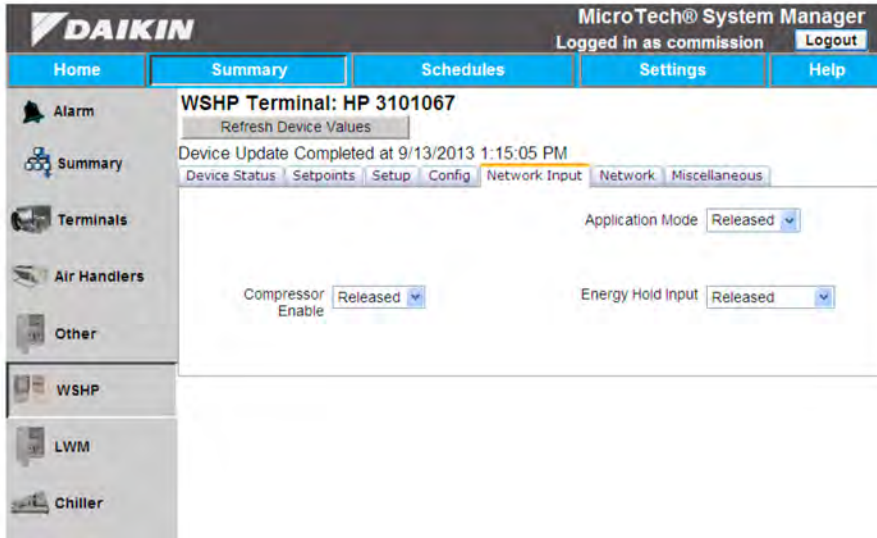
**Compressor Htg Source** = Displays whether or not compressor heating is allowed. This is configured using jumper 7 on the main board.

**I/O Expansion Module** = Displays whether or not an I/O expansion board is present or not. This is configured using jumper 8 on the main board.

**Comp Cap Option** = Displays whether or not the unit has a single stage capacity compressor (expansion board jumper 8 is open) or a dual stage capacity compress (expansion board jumper 8 is shorted)

Network Input Tab

Figure 106: Network Input Tab (WSHP)



**Space Temp Input**= the value of a remote, networked space temperature sensor. If communication to the networked device is lost, the WSHP uses the Local Space Temperature until communication is re-established. The default value is the invalid value of 0x7FFF, which equals 327.67°C (621.806°F). This value is set during power up and remains in effect until an update is received over the network.

**Application Mode** = This parameter sets the unit in an application mode (auto, off, heat only, cool only, fan only, or dehumidification). Application Mode does not “force” the unit into any state. However, it disables certain unit operation. For example, an Application Mode of “Cool Only” disables heating, “Heat Only” disables cooling, and “Fan Only” disables heating and cooling.

**Occ Sensor** = Used to indicate the presence of occupants in the space (motion detection). Values include: Occupied, Unoccupied & Released.

**Aux Heat Input** = This parameter is used to enable or disable auxiliary heat for models with supplemental electric heat. The default state is Released (Null), in which case auxiliary heat is enabled.

**Energy Hold Input** = The WSHP can be commanded to remain in an idle state where it is off but able to operate if the space temperature gets too low or too high (Energy Holdoff). The WSHP will use the standby heating and cooling temperature setpoints during Energy Hold Off. This is typically a signal from a window contact sensor. When enabled, it has priority over unoccupied mode.

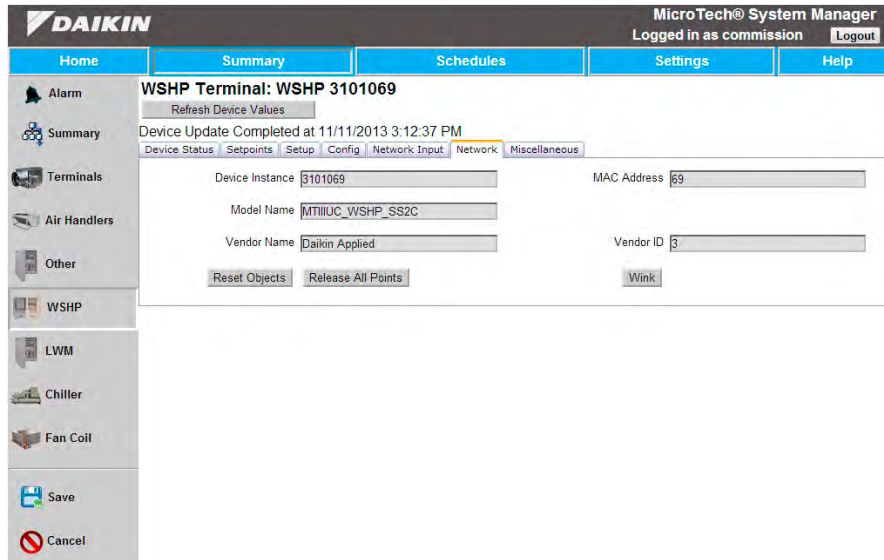
**Net Fan Switch** = Overrides the local inputs by using this network fan on/auto command. When set to Released, the local inputs are used.

**Humidistat In** = This parameter overrides the local humidistat input when it is not set to Released.

**Compressor Enable** = This parameter is used to indicate proof of flow. A WSHP provides either heating or cooling by running a compressor to transfer heat from the space to the water loop (cooling mode) or running a compressor to transfer heat from the water loop to the space (heating mode). The loop pump must be operating and there must be flow at the WSHP so that the compressor can operate safely inside the compressor envelope. The WSHP interacts with any loop water management system or BAS (i.e. System Manager) by requesting that the System Manager turn on the loop pump (request for flow). The System Manager reacts to the request by turning on the pump, proving flow and telling the WSHP that it is OK to operate the compressor (proof of flow). If the value is Null (Invalid) then flow is assumed to be true. The input is ignored. A value of Off (Disabled) indicates “No Flow” and the compressor will not start. A value of On (Enabled) indicates “Flow” and the compressor is allowed to run.

## Network Tab

Figure 107: Network Tab (WSHP)



**Device Instance** = Unique ID number given to every device on the network. No two devices can have the same device instance number otherwise system will not work properly.

**Vendor Name** = Name of company who distributed the product.

**Model Name** = Model of the WSHP.

**MAC Address** = Unique address (values from 0-127) given to each device. Used by network to find each device.

**NOTE:** It is important that your MAC Addresses be within the range of the Max Masters. If it is outside the range then the network will never find that device.

**Vendor ID** = BACent ID number unique to the vendor who provided the unit.

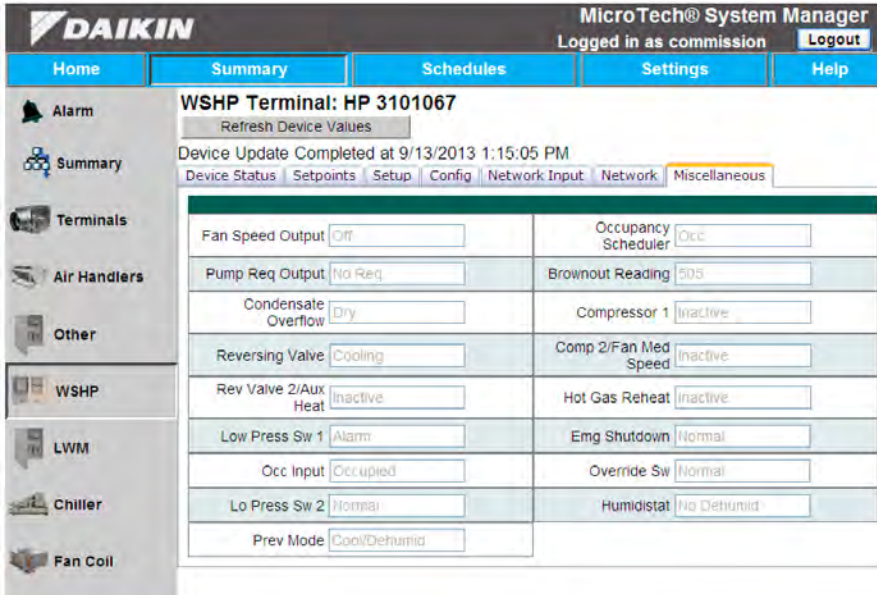
**Reset Objects** = When this button is pressed, the System Manager will attempt to discover the objects that had previously been marked not available.

**Release All Points** = Writes a null value to all points associated with the device. This will eliminate any commissioning that has taken place on the device and should not be used in most cases.

**Wink** = Sends a wink command to the WSHP which responds by cycling the fan off for 5 seconds, on for 5 seconds and back off for 5 seconds.

Miscellaneous Tab

Figure 108: Miscellaneous Tab (WSHP)



**Fan Speed Output** = Displays the actual fan speed.

**Occupancy Scheduler** = Used to schedule a group of WSHPs that are coupled to one time schedule.

**Pump Req Output** = Used to tell the System Manager or BAS to turn on the loop pump.

**Brownout Reading** = Displays the current brownout voltage reading.

**Condensate Overflow** = Displays the status of the condensate overflow sensor.

**Compressor 1** = Current compressor 1 request.

**Comp/Comp Low Spd** = Current compressor request or compressor low speed request, depending on the configuration.

**Comp1/Comp Low Spd** = Current compressor 1 request or compressor low speed request, depending on the configuration.

**Reversing Valve** = Status of the reversing valve output. On is heating position for compressors, off is cooling position for compressors.

**Comp High Spd** = Current compressor high speed request.

**Aux Heat Stage 1** = Current status of Aux Heat Stage 1.

**HGR/WSE** = Status of the Hot Gas Reheat / Waterside Economizer request output on the expansion board.

**Aux Heat Stage 2** = Current status of Aux Heat Stage 2.

**Comp2/Fan Med Speed** = Status of the Compressor #2 request or Fan Request at Medium Speed output.

**Comp 2/Comp Hi Spd** = Current compressor 2 request or compressor 1 high speed request, depending on configuration.

**Rev Valve 2/Aux Heat** = When on, compressor #2 heating or secondary heating on request. When off, compressor #2 cooling or secondary heating off request.

**Hot Gas Reheat** = Status of the Hot gas reheat request output.

**Low Press Sw** = Status of the low pressure switch.

**Low Press Sw 1** = Status of the low pressure 1 switch.

**Emg Shutdown** = Status of the emergency shutdown switch on the main board. A value of open shuts the unit down.

**Occ Input** = Status of the occupancy sensor input.

**Fan Speed Row** = This status of the four position Fan Speed Control switch which allows different CFM settings for application optimization. Refer to the appropriate unit OM for more details.

**Override Sw** = Occupancy override switch. This is used to override the local sensor or tenant override.

**Lo Press Sw 2** = Status of the low pressure 2 switch.

**Humidistat** = Dehumidification request input on the expansion board telling whether dehumidification is required (closed) or not (open).

**Unit Mode** = Provides mode awareness in the Fan Only state.

**Humidistat Out** = Display the status of the humidistat input from the I/O expansion board.

**Fan Run Status** = Used to monitor the fan running On/Off status.

Just like the other devices, the Chiller has a couple way of accessing the main configuration screens. The device summary screen and tabs offer some level of configurability, and again, access is limited for the specific security levels.

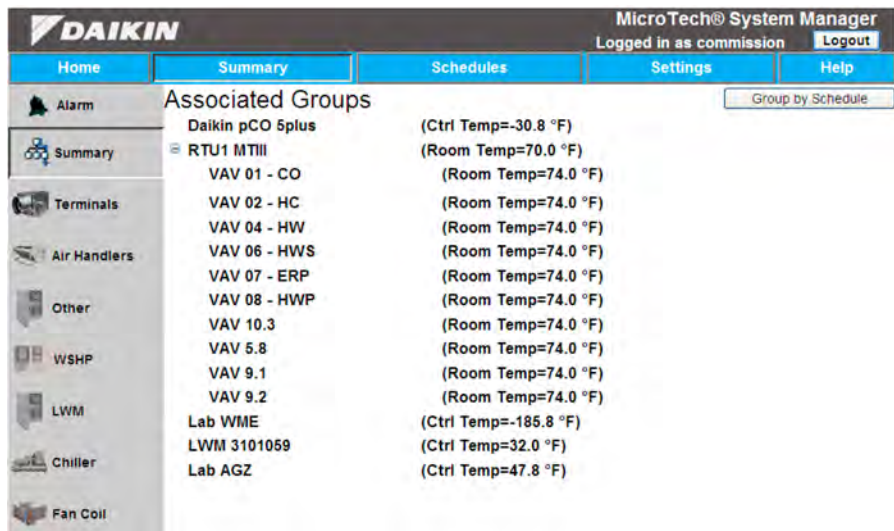
**Access via Schedule Groups**

1. Connect to web application (if not already).
2. Login in as any user, even Guest.
3. From home page select the “Summary” tab.
4. From this page select the Chiller that you wish to view.

Figure 109: Schedule Group screen view



Figure 110: Group by Associated Group screen view



### Access via Chiller List

1. Connect to web-application (if not already).
2. Login as any user, even Guest.
3. Select the “Chiller” button from the home page.
4. Select the desired Chiller from resulting page. If you prefer choosing without the icons you can choose “List Display”. To do this, press the “List Display” button that is in the upper right corner of the screen (Figure 111).

Figure 111: Icon Display

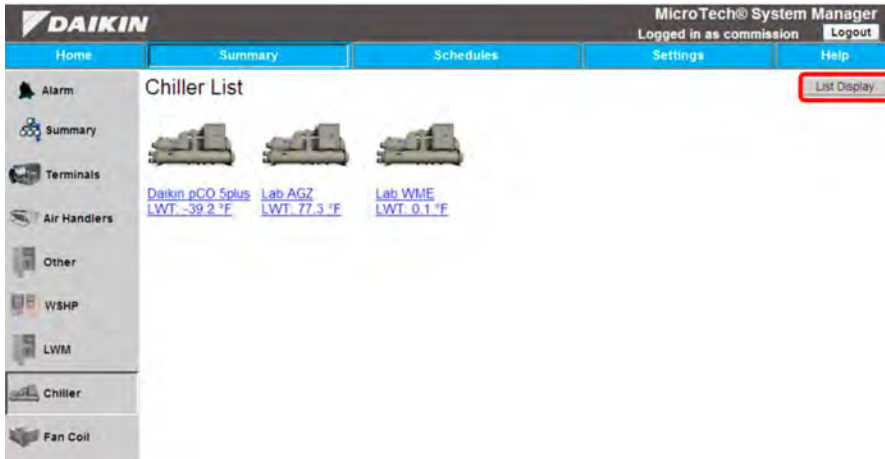


Figure 112: List Display



Another option that is available from this page is “View Config”. When pressed the user will be directed to a list of configuration devices (if available), which, when selected, will show the default configuration for the chosen device.

## Configuration Privileges

Just like other devices, access is restricted based on security access level. Table 8 lists the various security levels as well as what each allows access to, with regard to the Chiller Device Properties screen (reached once a Chiller is selected).

Table 8: Access Privileges for Chillers

Security Level	Summary Menu Access (Tabs/Buttons)
Guest	Device Status (read)
Tenant	Device Status (read)
Maintenance	Device Status and Setpoints (read)
Owner	Device Status and Setpoints (read)
Commission	Device Status, Setpoints, Unit Data, Circuit 1-3 Data, Network, and Miscellaneous (read)

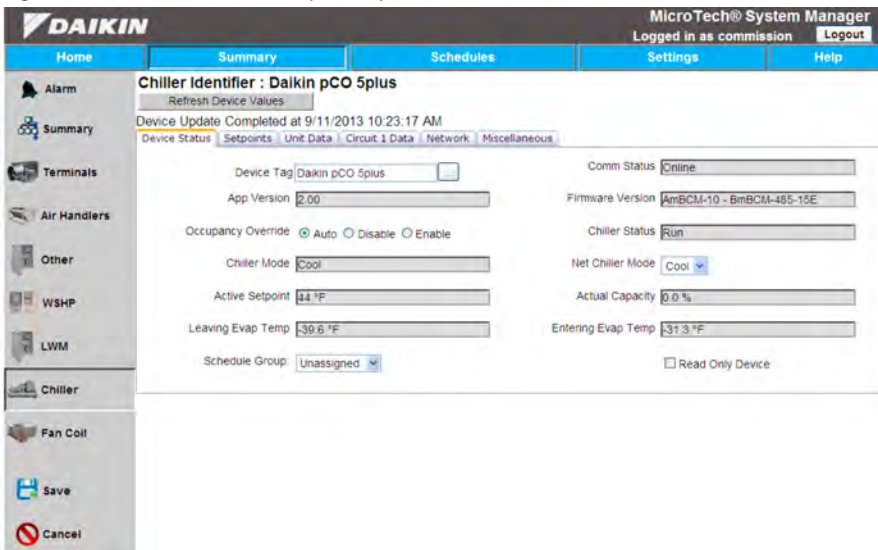
## Device Properties

The following section will outline all tabs found when accessing a Chiller property page. These tabs include: Device Status, Settings, Unit Data, Circuit 1-3 Data, Network, and Miscellaneous. Within each section a screen capture of the page will be given, along with the description of what each value is. Anything in a solid gray box is not configurable under any circumstance.

**NOTE:** Some fields and values may be added or missing depending on the setup that you have. Make sure to check and see what your setup is before moving forward.

## Device Status Tab

Figure 113: Device Status Tab (Chiller)



**Device Tag:** Name given to the particular chiller.

**App Version:** The application software version in the chiller controller.

**Comm Status:** Shows whether the system is online or offline.

**Firmware Version:** The firmware version of the chiller controller's BACnet MS/TP module.

**Chiller Status:** Indicates the unit status of the chiller. Valid states include off, start, run, pre shutdown, and service.

**Chiller Mode:** Indicates the current operating mode of the chiller. Valid states include ice, cool, heat, cool/heat recovery, and defrost.

**Active Setpoint:** Indicates the current setpoint used to control the chiller. Based on the operating mode of the chiller, this value is derived from the Cooling Setpoint, Ice Setpoint, or Heating Setpoint.

**Actual Capacity:** Indicates the percent of maximum capacity the chiller is producing under the present operating conditions.

**Leaving Evap Temp:** Indicates the current temperature of the fluid leaving the evaporator.

**Entering Evap Temp:** Indicates the temperature of the fluid entering the evaporator.

**Schedule Group:** This shows the current schedule group that the VAV unit is assigned to.

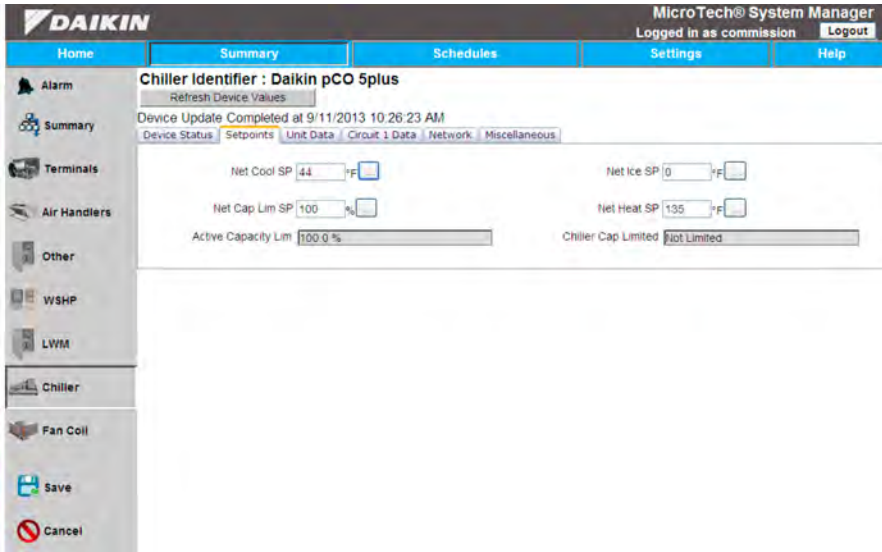
**Read Only Device:** Checking this box and saving causes all configurable points to be locked.

**Occupancy Override:** How system is reading for occupancy. It has three options: Auto reads from the scheduler, Override turns it on, usually done through override button on thermostat, and Manual Off shuts system down.



## Setpoints Tab

Figure 114: Setpoints Tab (Chiller)



**Net Cool SP:** Used to change the Cooling setpoint from the network. It sets the temperature of the Leaving Chilled Fluid when the chiller is operating in the Cooling Mode.

**Net Ice SP:** Used to change the Ice setpoint from the network. It sets the temperature of the Leaving Chilled Fluid when the chiller is operating in the Ice Mode.

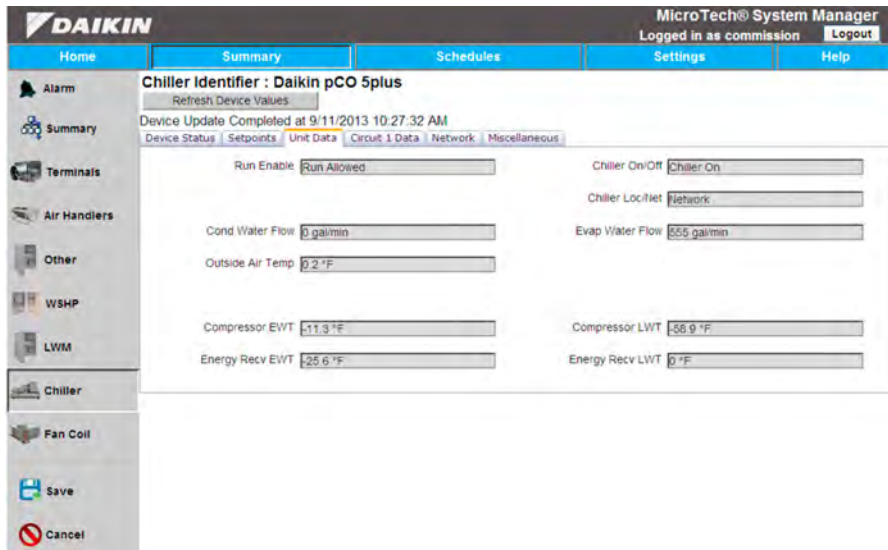
**Net Cap Lim SP:** This sets the maximum capacity level of the chiller.

**Active Capacity Lim:** A measure of the ratio of operating capacity limit to full capacity expressed in percent. This value is the lowest of all limits specified by the operator, analog Demand Limit input, or Network Capacity Limit Setpoint.

**Chiller Cap Limited:** Indicates whether conditions may exist that prevent the chiller from reaching full capacity. If conditions exist that limit operation, the chiller may be prevented from reaching the Leaving Water Temperature setpoint.

## Unit Data Tab

Figure 115: Unit Data Tab (Chiller)



**Run Enable:** Indicates the running mode of the chiller. The Run Enable output data point indicates that the chiller can start if operating conditions are met.

**Chiller On/Off:** Indicates the current state of the chiller.

**Chiller Enable:** Indicates if operation of the chiller is disabled or enabled.

**Chiller Loc/Net:** This provides a description of the location.

**Cond Water Flow:** Indicates the status of the fluid flowing through the condenser.

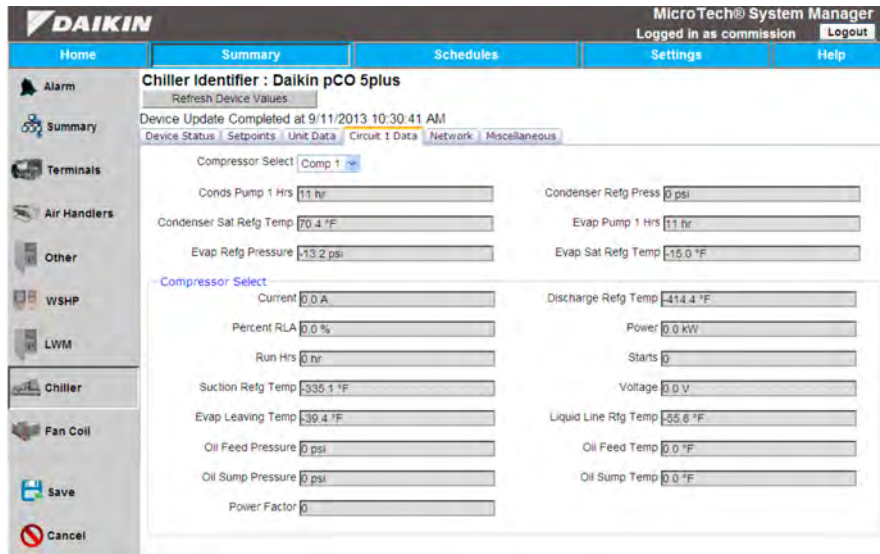
**Evap Water Flow:** Indicates the status of the fluid flowing through the evaporator.

**Outside Air Temp:** Indicates the current outdoor air temperature.

**Chiller Current:** Indicates the average current of the chiller.

### Circuit 1-3 Data Tab

Figure 116: Circuit 1 Data Tab (Chiller)



**Condenser Refg Press:** Indicates the current condenser pressure.

**Condenser Sat Refg Temp:** Indicates the current saturated refrigerant temperature of the condenser.

**Evap Refg Pressure:** Indicates the current refrigerant pressure in the evaporator.

**Evap Sat Refg Temp:** Indicates the current saturated refrigerant temperature of the evaporator.

**Evap Pump 1 Hrs:** Indicates the number of hours that evaporator pump 1 motor has been turned on.

**Evap Pump 2 Hrs:** Indicates the number of hours that evaporator pump 2 motor has been turned on.

### Compressor 1-3

**Discharge Refg Temp:** Indicates the current refrigerant temperature discharged from the compressor.

**Suction Refg Temp:** Indicates the current refrigerant temperature entering the compressor.

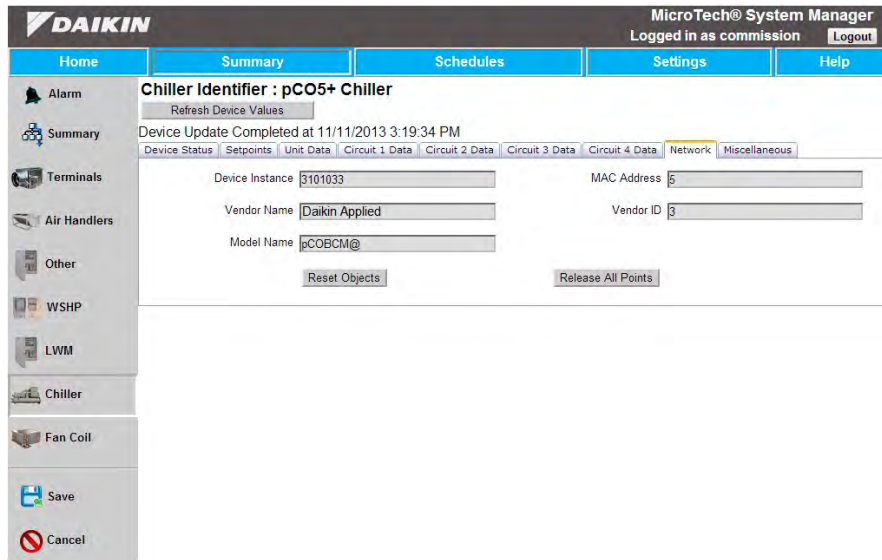
**Run Hours:** Indicates the number of hours that the compressor motor has been turned on.

**Starts:** Indicates the number of times the compressor motor has been started.

**Oil Feed Pressure:** Indicates the current oil feed pressures of each compressor.

**Network Tab**

*Figure 117: Network Tab (Chiller)*



**Device Instance:** Unique ID number given to every device on the network. No two devices can have the same device instance number otherwise system will not work properly.

**Vendor Name:** Name of company who distributed the product.

**Model Name:** Name of the chiller.

**MAC Address:** Unique address (values from 0-127) given to each device. Used by network to find each device.

**NOTE:** It is important that your MAC Addresses be within the range of the Max Masters. If it is outside the range then the network will never find that device.

**Max Masters (WME Only):** Tells the system how many devices need to be checked for when passing the token within the system. You will generally want to set this value on e higher than the total number of devices on the network.

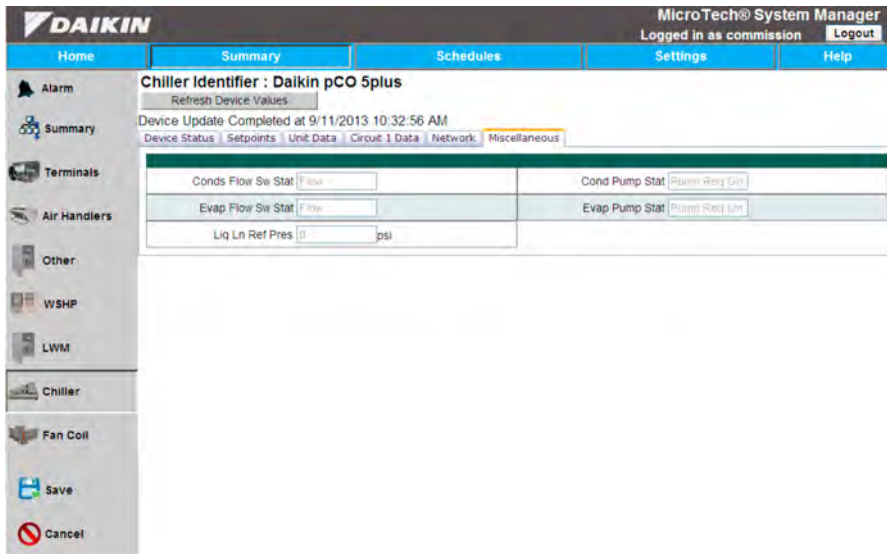
**Vendor ID:** ID number unique to the vendor who provided the unit.

**Reset Objects:** When this button is pressed, the System Manager will attempt to discover the objects that had previously been marked not available.

**Release All Points:** Writes a null value to all points associated with the device. This will eliminate any commissioning that has taken place on the device and should not be used in most cases.

## Miscellaneous Tab

Figure 118: Miscellaneous Tab (Chiller)



**Unit Support:** Current unit of measure being used. This can be English or SI and is set on the chiller's local controller.

**Evap Flow Switch:** Indicates the temperature of the fluid entering the evaporator.

**Evap Pump 1 Stat:** Indicates if evaporator pump 1 has been commanded On or Off.

**Evap Pump 2 Stat:** Indicates if evaporator pump 2 has been commanded On or Off.

Just like the other devices, the Fan Coil Unit has a couple ways of accessing the main configuration screens. The device summary screen and tabs offer some level of configurability, and again, access is limited for the specific security levels.

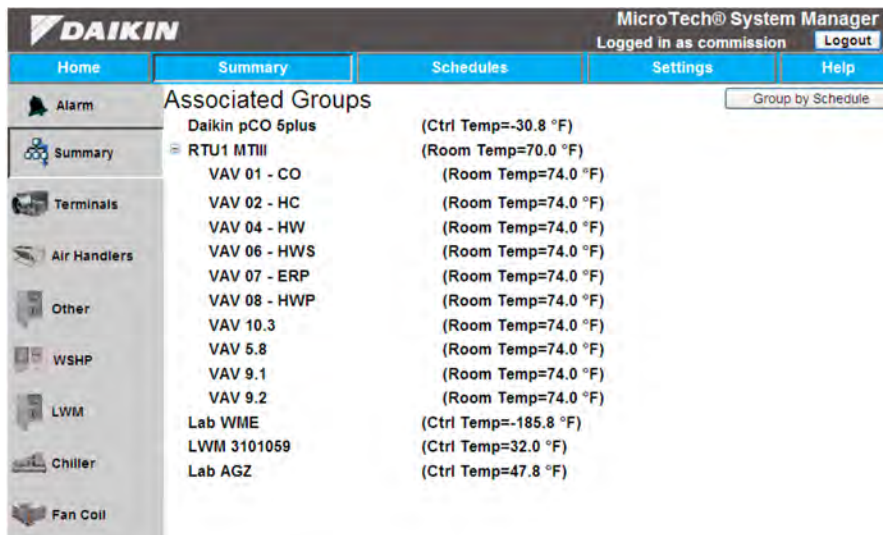
### Access via Schedule Groups

1. Connect to web application (if not already).
2. Login in as any user, even Guest.
3. From home page select the “Summary” tab.
4. From this page select the Fan Coil Unit that you wish to view.

Figure 119: Schedule Group screen view



Figure 120: Group by Associated Group screen view



### Access via Fan Coil Unit List

1. Connect to web-application (if not already).
2. Login as any user, even Guest.
3. Select the “Fan Coil Unit” button from the home page.
4. Select the desired Fan Coil Unit from resulting page. If you prefer choosing without the icons you can choose “List Display”. To do this, press the “List Display” button that is in the upper right corner of the screen (Figure 121).

Figure 121: Icon Display Tab (Fan Coil Unit)

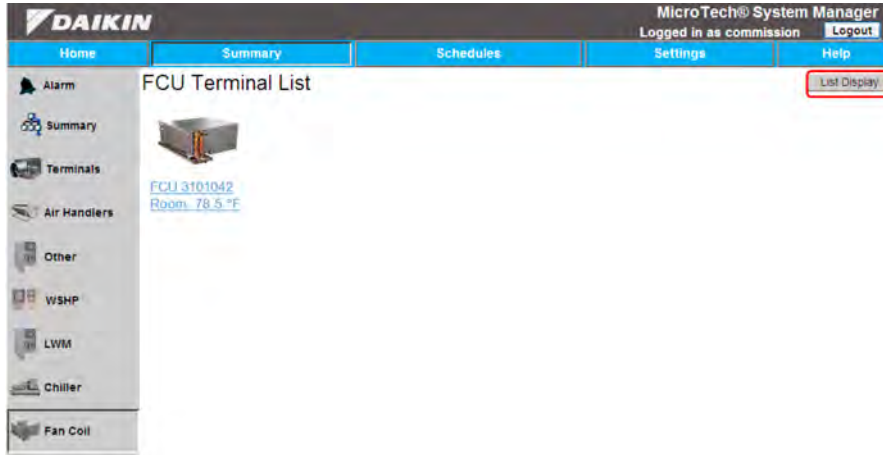
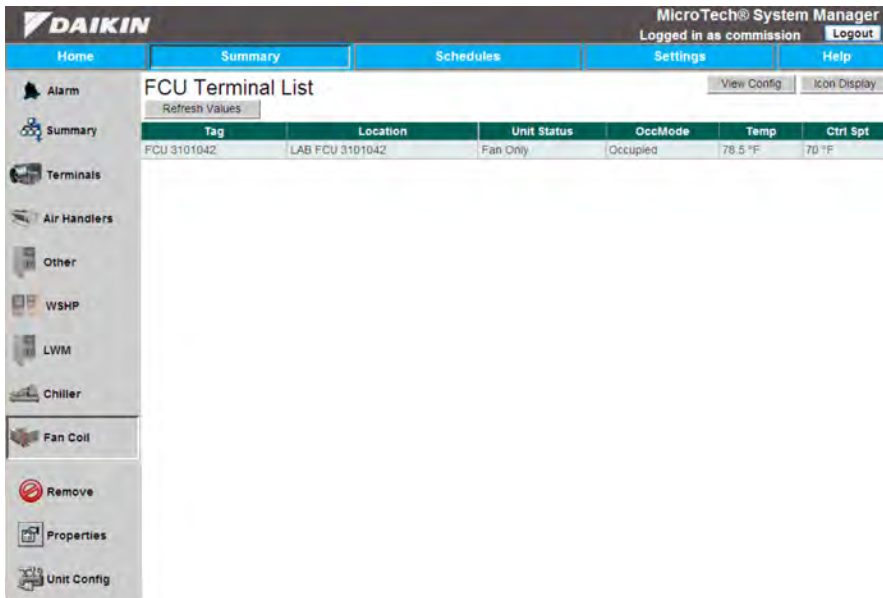


Figure 122: List Display



Another option that is available from this page is “View Config”. When pressed the user will be directed to a list of configuration devices (if available), which, when selected, will show the default configuration for the chosen device.

## Configuration Privileges

Just like other devices, access is restricted based on security access level. Table 9 lists the various security levels as well as what each allows access to, with regard to the Fan Coil Device Properties screen (reached once a Fan Coil is selected).

Table 9: Access Privileges for Fan Coils

Security Level	Summary Menu Access (Tabs/Buttons)
Guest	Device Status (read)
Tenant	Device Status (read)
Maintenance	Device Status and Setpoints (read)
Owner	Device Status and Setpoints (read)
Commission	Device Status, Setpoints, Loop Ctrl, Network Input, Econo Setup, Config, Network, Miscellaneous (read)

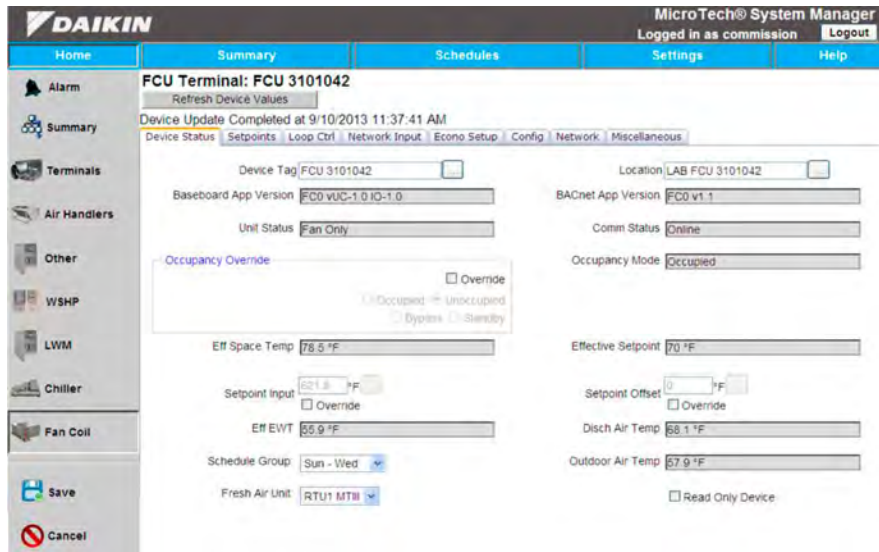
## Device Properties

The following section will outline all tabs found when accessing a Fan Coil property page. These tabs include: Device Status, Setpoints, Loop CTRL, Network Input, Econo Set up, Config, Network and Miscellaneous. Within each section a screen capture of the page will be given, along with the description of what each value is. Anything in a solid gray box is not configurable under any circumstance.

**NOTE:** Some fields and values may be added or missing depending on the setup that you have. Make sure to check and see what your setup is before moving forward.

### Device Status Tab

Figure 123: Device Status Tab (Fan Coil Unit)





**Device Tag:** Name given to the particular fan coil.

**Location:** Used to provide more descriptive physical location information for the fan coil.

**Baseboard App Version:** Displays the revision string for the fan coil unit Unit Controller and I/O board application software version.

**BACnet App Version:** Displays the Unit Controller application version.

**Comm Status:** Shows whether the system is online or offline.

**Unit Status:** Indicates the current operating status of the fan coil unit.

**Occupancy Mode:** Indicates which occupancy mode is being used by the fan coil unit.

**Eff Space Temp:** Current reading of the space temperature that the fan coil unit is actually using for control.

**Effective Setpoint:** The effective temperature setpoint used for control.

**Setpoint Input:** This is used to allow the temperature setpoints for the occupied and standby setpoints to be changed via the network. Unoccupied setpoints are not affected. Local setpoint operation must be disabled.

**Setpoint Offset:** This is used to shift the occupied and standby effective setpoints via the network. The unoccupied effective setpoints are not adjusted.

**Eff EWT:** Current reading of the effective entering water temperature that the fan coil unit is using for control.

**Disch Air Temp:** Current reading of the DAT sensor.

**Schedule Group:** Defines the schedule group used to schedule the fan coil unit.

**Outside Air Temp:** Current reading of the outside air temperature sensor.

**Parent Chiller:** Defines which chiller on the system has been configured to serve the fan coil unit.

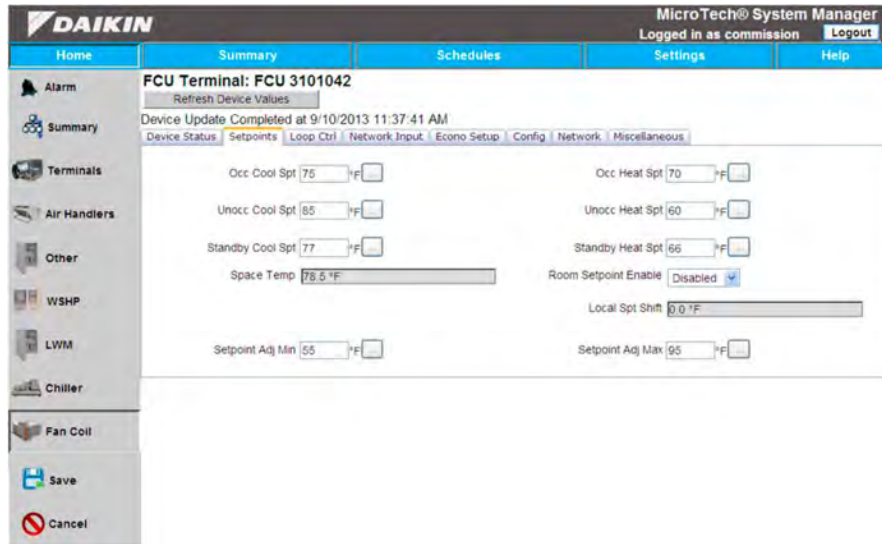
**Read Only Device:** Checking this box and saving causes all configurable points to be locked.

**Fresh Air Unit:** Defines which fresh air unit on the system has been configured to serve the fan coil unit.

**Occupancy Override:** This network variable is used to override the Occupancy Schedule that the fan coil unit is using. Valid states include: Occupied, Unoccupied, Bypass, Standby, and Null.

## Setpoints Tab

Figure 124: Setpoints Tab (Fan Coil Unit)



**Occ Cool Spt:** This is the room temperature required for the fan coil unit to begin cooling when occupied.

**Occ Heat Spt:** This is the room temperature required for the fan coil unit to begin heating when occupied.

**Unocc Cool Spt:** This is the room temperature required for the fan coil unit to begin cooling when unoccupied.

**Unocc Heat Spt:** This is the room temperature required for the fan coil unit to begin heating when unoccupied.

**Standby Cool Spt:** This is the room temperature required for the fan coil unit to operate in standby mode.

**Standby Heat Spt:** This is the room temperature required for the fan coil unit to operate in standby mode.

**Space Temp:** This is the effective space temperature. If the network is controlling the space temperature, this will read the current network value; otherwise it will read the value from the local space temperature sensor.

**Room Setpoint Enable:** This is used to Enable/Disable local hardwired setpoint adjustment.

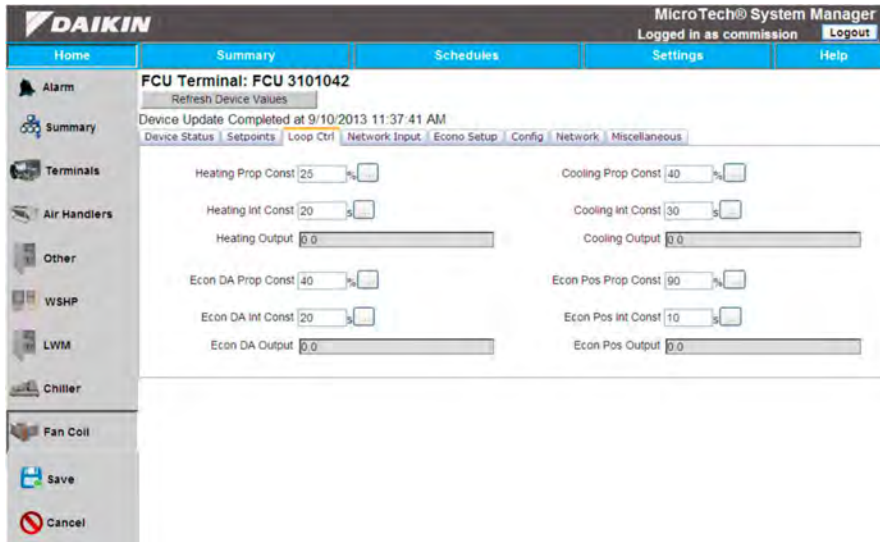
**Local Spt Shift:** This value is used to inspect the occupied & standby, heating and cooling setpoints.

**Setpoint Adj Min:** This is used to limit the minimum value of the setpoint adjust temperature setting.

**Setpoint Adj Max:** This is used to limit the maximum value of the setpoint adjust temperature setting.

## Loop Ctrl Tab

Figure 125: Loop Ctrl Tab (Fan Coil Unit)



**Heating Prop Const:** Indicates the proportional gain value of the loop algorithm used to control the heating valve.

**Heating Int Const:** Indicates the integral constant of the loop algorithm used to control the heating valve.

**Heating Output:** Indicates the hydronic heating valve commanded position, which is based on the heating PI control loop output.

**Cooling Output:** Indicates the hydronic cooling valve commanded position, which is based on the cooling PI control loop output.

**Cooling Prop Const:** Indicates the proportional gain value of the loop algorithm used to control the cooling valve.

**Cooling Int Const:** Indicates the integral constant of the loop algorithm used to control the cooling valve.

**Econ DA Prop Const:** Indicates the proportional gain value of the loop algorithm used to control the Economizer Setpoint.

**Econ DA Int Const:** Indicates the integral constant of the loop algorithm used to determine the discharge air setpoint that is fed to the economizer position loop.

**Econ DA Output:** Indicates the economizer commanded position.

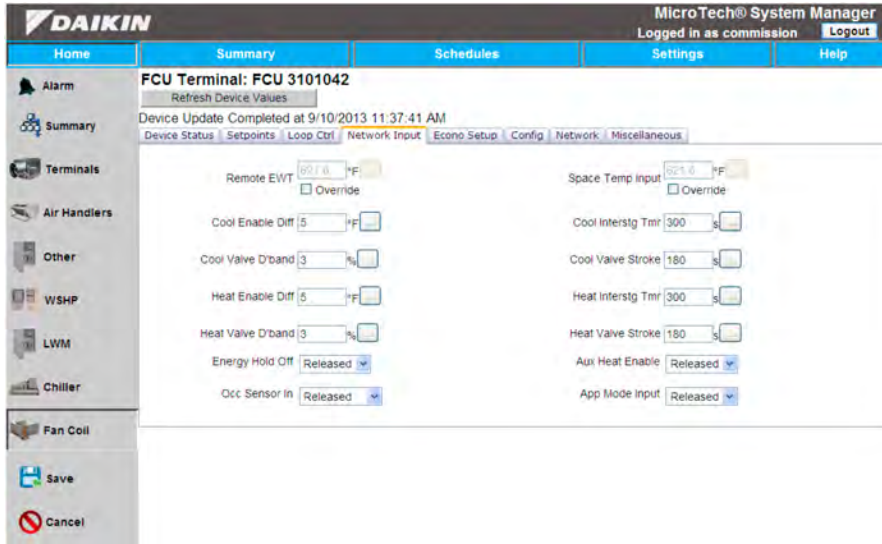
**Econ Pos Output:** Indicates the economizer commanded position.

**Econ Pos Prop Const:** Indicates the proportional gain value of the loop algorithm used to control the economizer position.

**Econ Pos Int Const:** Indicates the integral constant of the loop algorithm used to control the economizer position.

## Network Input Tab

Figure 126: Network Input Tab (Fan Coil Unit)



**Remote EWT:** Optionally provides entering water temperature from the network instead of using a local temperature sensor.

**Space Temp Input:** This input network variable is the value of a remote, networked space temperature sensor. If communication to the networked device is lost, the fan coil unit will use the Local Space Temperature until communication is re-established.

**Cool Enable Diff:** The Effective Room Temperature – the Entering Water Temperature must be greater than or equal to this value in order for the cooling valve to operate.

**Cool Interstg Tmr:** A countdown timer that defines the minimum period of time between cooling stages.

**Cool Valve D'band:** This adjusts the deadband for the cooling valve control outputs. As long as the input to the valve control algorithm falls within the deadband, the outputs remain off.

**Cool Valve Stroke:** Indicates the time required for the cooling valve to travel from fully open to fully closed, or fully closed to fully open.

**Heat Enable Diff:** The Entering Water Temperature – the Effective Room Temperature must be greater than or equal to this value in order for the heating valve to operate.

**Heat Interstg Tmr:** A countdown timer that defines the minimum period of time between heating stages.

**Heat Valve D'band:** This adjusts the deadband for the heating valve control outputs. As long as the input of the valve control algorithm falls within the deadband, the outputs remain off.

**Heat Valve Stroke:** Indicates the time required for the heating valve to travel from fully open to fully closed, or fully closed to fully open.

**Energy Hold Off:** The fan coil unit can be commanded to sit in an idle state where it is off but able to operate if the space temperature gets too low or too high.

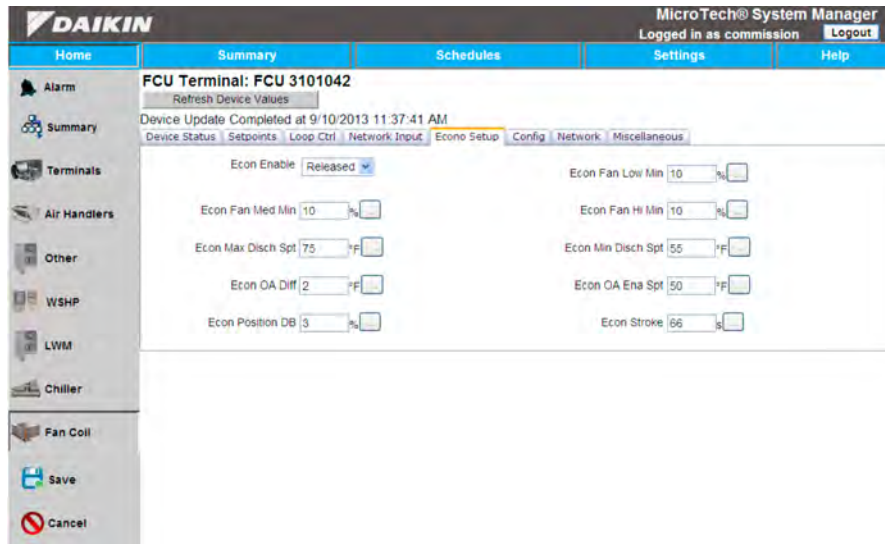
**Aux Heat Enable:** This input network variable is used to enable or disable auxiliary heat for models with supplemental electric heat. The “electric heating – only” model is always enabled, and is unaffected by this variable.

**Occ Sensor In:** Indicates the presence of occupants in the space (motion detection).

**App Mode Input:** Coordinates the fan coil unit with any supervisory controller or intelligent human interface device.

## Econo Setup Tab

Figure 127: Econo Setup Tab (Fan Coil Unit)



**Econo Enable:** Indicates whether the economizer is enabled or disabled for cooling purposes.

**Econo Fan Low Min:** Indicates the lowest economizer minimum position when the fan is running at low speed.

**Econo Fan Med Min:** Indicates the lowest economizer minimum position when the fan is running at medium speed.

**Econo Fan Hi Min:** Indicates the lowest economizer minimum position when the fan is running at high speed.

**Econo Max Disch SP:** Indicates the discharge air setpoint where the economizer DASP PI loop is at 0%, and must be a value greater than or equal to the minimum setting.

**Econo Min Disch SP:** Indicates the discharge air setpoint where the economizer DASP PI loop output is at 100%, and must be a value less than or equal to the maximum setting.

**Econo OA Diff:** The Indoor Air Temp minus Outdoor Air Temp must be greater than this value in order for the economizer to open. This ensures outdoor air is cold enough to provide cooling.

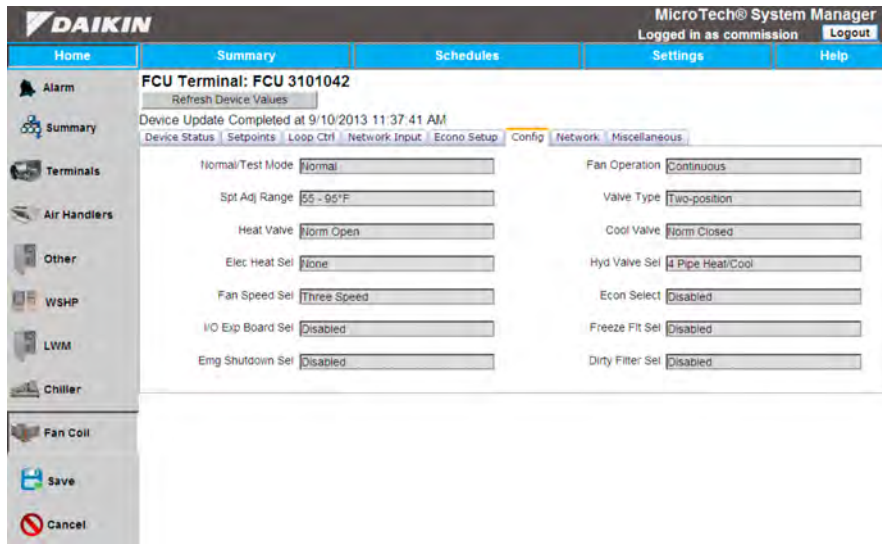
**Econo OA Ena SP:** The Outdoor Air Temperature must be greater than this configuration property value in order for economizer to operate. This prevents the economizer from opening if the outdoor air is too cold.

**Econo Position DB:** This adjusts the deadband for the economizer position control outputs. As long as the input to the valve control algorithm falls within the deadband, the outputs remain off.

**Econo Stroke:** Indicates the time required for the economizer to travel from fully open to fully closed, or fully closed to fully open.

Configuration Tab

Figure 128: Configuration Tab (Fan Coil Unit)



**Normal/Test Mode:** Indicates if the fan coil unit is in service test mode. Valid statuses are: Normal Operation and Service Test Mode.

**Fan Operation:** Indicates the operation of the fan. Valid statuses are: Continuous Fan and Cycling Fan.

**Spt Adj Range:** Indicates the Setpoint Adjust Temperature Range. Valid ranges are: Short Range (-5° to +5°F) and Long Range (55° to 95°F).

**Valve Type:** Indicates Valve Type. Valid statuses are: two position hydronic valves and modulating hydronic valves.

**Heat Valve:** Indicates the Heating Valve Action. Valid statuses are: Normally Open and Normally Closed.

**Cool Valve:** Indicates the Cooling Valve Action. Valid statuses are: Normally Open and Normally Closed.

**Elec Heat Sel:** Indicates the Electric Heat Selection. Valid statuses are: No Electric Heat, One Stage Electric Heat, and Two Stage Electric Heat.

**Hyd Valve Sel:** Indicates the Hydronic Valve Selection. Valid statuses are: No Hydronic Valves, 2 Pipe Heating Only, 2 Pipe Cooling Only, 2 Pipe Heating & Cooling Changeover, and 4 Pipe Heating & Cooling.

**Fan Speed Sel:** Indicates the Fan Speed Selection. Valid statuses are: Single Speed Fan, Two Speed Fan, and Three Speed Fan.

**Econ Select:** Indicates whether the economizer is selected. Valid statuses are: Enabled and Disabled.

**I/O Exp Board Sel:** Indicates whether the I/O Expansion Board is selected. Valid statuses are: Enabled and Disabled.

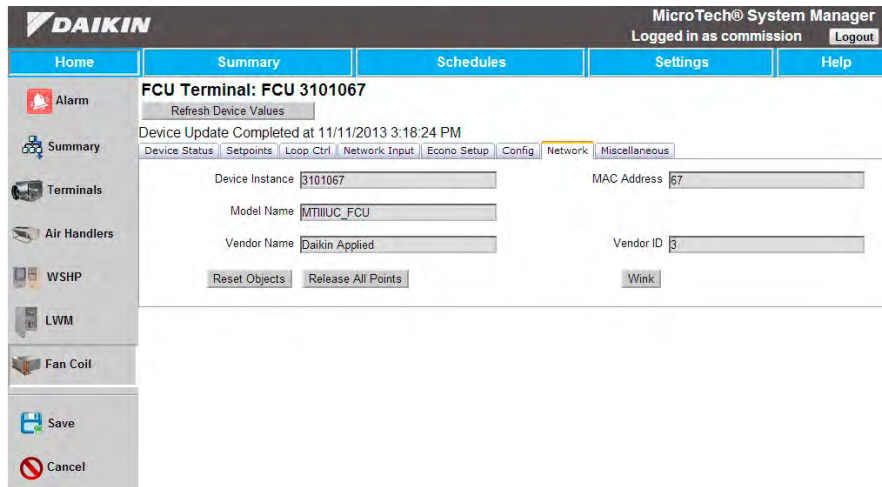
**Freeze Flt Sel:** Indicates detection of a Freeze Fault. Valid statuses are: Enabled and Disabled.

**Emg Shutdown Sel:** Indicates the Emergency Shutdown Selection. Valid statuses are: Enabled and Disabled.

**Dirty Filter Sel:** Indicates the Dirty Filter Selection. Valid statuses are: Enabled and Disabled.

Network Tab

Figure 129: Network Tab (Fan Coil Unit)



**Device Instance #:** Unique ID number given to every device on the network. No two devices can have the same device instance number otherwise the system will not work properly.

**Vendor Name:** Name of the company who distributed the product.

**Model Name:** Name of the fan coil unit.

**MAC Address:** Unique address (values from 0-127) given to each device. Used by network to each device.

**NOTE:** It is important that your MAC Addresses be within the range of the Max Masters. If it is outside the range then the network will never find that device.

**Vendor ID #:** ID number unique to the vendor who provided the unit.

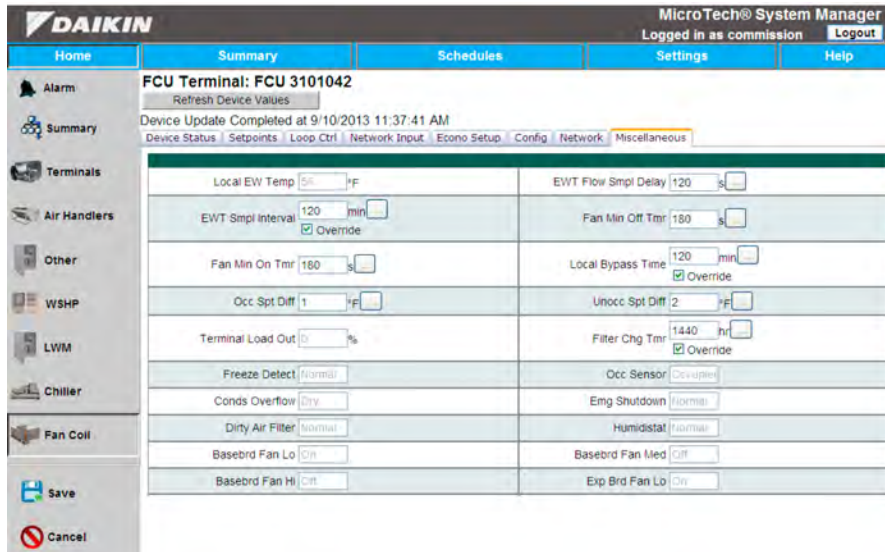
**Reset Objects:** When this button is pressed, the System Manager will attempt to discover the objects that had previously been marked not available.

**Release All Points:** Writes a null value to all points associated with the device. This will eliminate any commissioning that has taken place on the device and should not be used in most cases.

**Wink:** The Wink unit identification function allows verification of an individual unit network address without opening the unit access panels. The Wink command can be used during all operating and non-operating modes except for the following conditions: Invalid Equipment Configuration Alarm, Emergency Shutdown Alarm, and Actuator Calibration Process.

Miscellaneous Tab

Figure 130: Miscellaneous Tab (Fan Coil Unit)



**Local EW Temp:** Indicates the current value of the entering water temperature.

**EWT Flow SmpI Delay:** Indicates the time the unit controller waits after opening the hydronic valve before sampling the Entering Water Temperature to ensure the water is adequate to heat or cool.

**EWT SmpI Interval:** Indicates the time between sampling the Entering Water Temperature. A value of zero disables the EWT sampling feature.

**Fan Min Off Tmr:** This sets the minimum amount of time the fan must remain off once it has stopped. The timer counts down from the specified value until it reaches zero, signaling that the Fan is available to run.

**Fan Min On Tmr:** This sets the minimum amount of time the fan must remain on once it has started. The timer counts down from the specified value until it reaches zero, signaling that the Fan may be turned off during normal operation.

**Local Bypass Time:** Indicates the amount of time that the fan coil unit can be in the Timed Override position. A value of zero disables the bypass feature.

**Occ Spt Diff:** This is used to set the occupied and standby setpoint hysteresis.

**Unocc Spt Diff:** In heating, the amount the temperature must rise above the Unoccupied Heating Setpoint before the controller stages from heating to off. In cooling, the amount the temperature must fall below the Unoccupied Cooling Setpoint before the controller stages from cooling to off.

**Terminal Load Out:** Indicates the current heat/cool energy demand of the unit. Positive values indicate that the unit requires cooling energy. Negative values indicate that the unit requires heating energy.

**Filter Chg Tmr:** Indicates the amount of time that the fan can operate before a dirty air filter alarm is generated. This timer is only used when set to a non-zero value, and the dirty air filter binary input is disabled through the equipment configuration settings.

**Freeze Detect:** Indicates the freeze fault status of the fan coil unit.

**Occ Sensor:** Indicates whether the room is occupied or unoccupied.

**Conds Overflow:** Indicates condensate overflow.

**Emg Shutdown:** Indicates unit emergency shutdown.

**Dirty Air Filter:** Indicates dirty air filter.

**Humidistat:** Indicates whether dehumidification is required or not.

**Basebrd Fan Lo:** Output status of the baseboard fan at low speed.

**Basebrd Fan Med:** Output status of the baseboard fan at medium speed.

**Basebrd Fan Hi:** Output status of the baseboard fan at high speed.

**Exp Brd Fan Lo:** Output status of the expansion board fan at low speed.



**Exp Brd Fan Med:** Output status of the expansion board fan at medium speed.

**Exp Brd Fan Hi:** Output status of the expansion board fan at high speed.

**Heat Valve:** Indicates heating valve status, enabled or disabled.

**Cool Valve:** Indicates cooling valve status, enabled or disabled.

**Economizer:** Indicates economizer status, enabled or disabled.

**Dehumidification:** Indicates dehumidification status, enabled or disabled.

**Elec Heat Stg 1:** Indicates electric heat stage #1 status, enabled or disabled.

**Elec Heat Stg 2:** Indicates electric heat stag #2 status, enabled or disabled.

**Heat Vlv Calib:** Indicates heating valve calibration status, normal operation or calibration is active.

**Cool Vlv Calib:** Indicates cooling valve calibration status, normal operation or calibration is active.

**Econo Calib:** Indicates economizer calibration status, normal operation or calibration is active.

**EWT Sampling:** Indicates entering water temperature sampling status, normal operation or sampling process is active.

**EWT Sampling Heat:** Indicates entering water temperature sampling heating error status.

**EWT Sampling Cool:** Indicates entering water temperature sampling cooling error status.

**Econo Option:** Indicates whether the economizer is supported or not supported.

**Fan Mode Stat:** Indicates the fan mode and speed status of the fan coil unit. Valid states are: Off, Low, Med, High, Auto, and Null.

**Ht/Cl/Auto Stat:** Indicates the heat/cool/auto commands from the room sensor or network.

**Fan Speed Out:** Indicates the actual fan speed. Valid states are: Off, Low, Medium, High, and On.

**Units:** Indicates the units for all the appropriate properties in the fan coil unit. This supports both English and SI units.

The ancillary control subsystem allows the user to create, organize, and monitor user-selected logic elements. These elements with functions ranging from basic bitwise operations such as AND or OR to more complex functions such as

range-based scaling or value comparisons allow the user to create logic and functions otherwise not handled by any unit controllers.

### Side Loop

The ancillary control subsystem is composed of elements which are bunched into groups called “Side Loops”. These side loops serve as a cosmetic organizational tool and provide no inherent function of their own. They are used to bunch functional groups of elements, and do not restrict any cross-connections of elements between side loops.

on the main home screen or from the toolbar on the top of the screen. From there, an Ancillary Control button is available on the left toolbar.

Ancillary control is contained within the Settings menu of the System Manager (Figure 131), and may be accessed by first entering the Settings menu from any of its access points, either

When the Ancillary Control link is pressed, the user is taken to the Side Loop List page (Figure 133), where the user may add or remove side loops, or select an existing side loop for editing.

Also available on this screen are the individual elements that compose this side loop. The user may add, remove, and select for editing those elements on this screen.

Figure 131: Accessing Ancillary Control

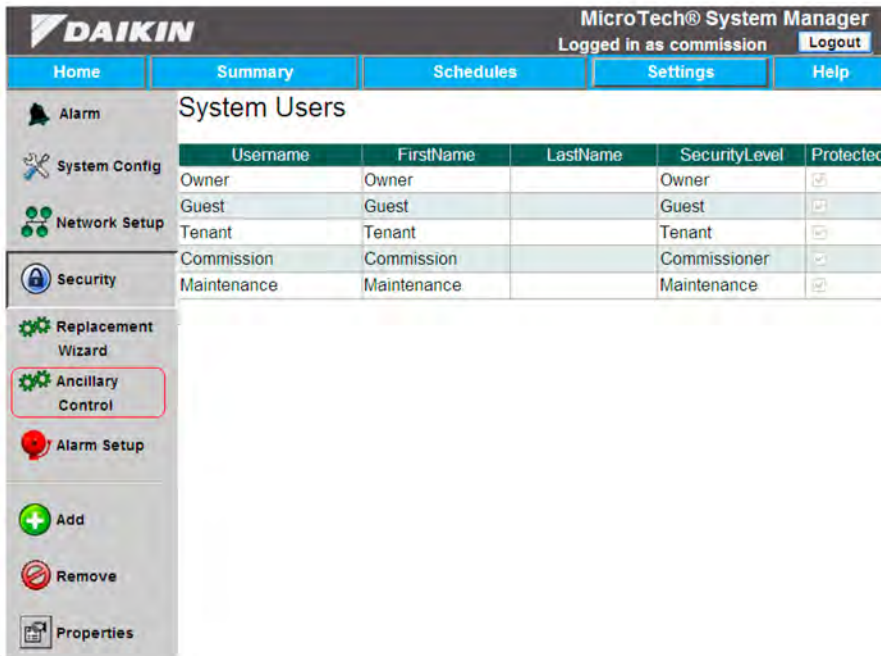


Figure 132: Side Loop List

The screenshot shows the MicroTech System Manager interface. The top navigation bar includes Home, Summary, Schedules, Settings, and Help. The left sidebar contains various system management options like Alarm, System Config, Network Setup, Security, Replacement Wizard, Ancillary Control, Alarm Setup, Add, Remove, and Properties. The main content area is titled 'Ancillary Control Subsystem' and displays a table of side loops.

Side Loop Name	Loop Description	Priority
NewSideLoop	Enter description here	1
AncillaryTest Loop	Test loop - retrieve data	2

Figure 133: Side Loop Configuration

The screenshot shows the configuration page for a side loop. The 'Loop Name' is set to 'AncillaryTest Loop' and the 'Priority' is set to '2'. The 'Description' field contains 'Test loop - retrieve data'. Below these fields is a table listing existing side loops.

Name	Sequence	Type	Description	Status
get dat cool spt	1	AnalogIn	Present Value of DAT Cool Spt in RTU1 MTIII	52
get dat htg spt	2	AnalogIn	Present Value of Net DAT Htg Spt in RTU1 MTIII	100.004

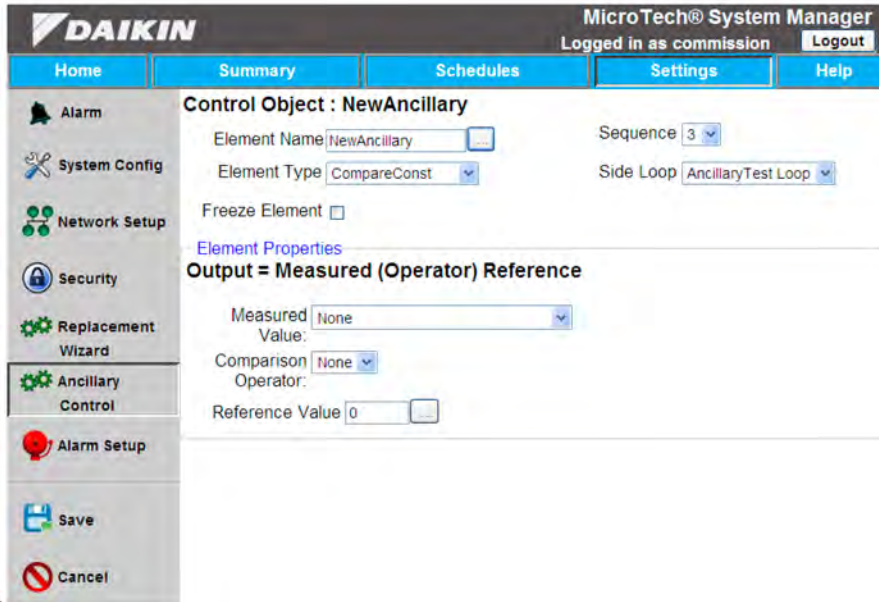
**Loop Name:** Name used to identify this side loop when needed.

**Description:** Longer identification information for this side loop, used to hold comments or other important information.

**Priority:** Order in which this side loop will be executed in relation to other side loops.

## Control Element

Figure 134: Loop Element Configuration



**Element Name:** Name used to identify this element.

**Sequence:** Order within its side loop that this element will be executed.

**Element Type:** Logical action this element represents.

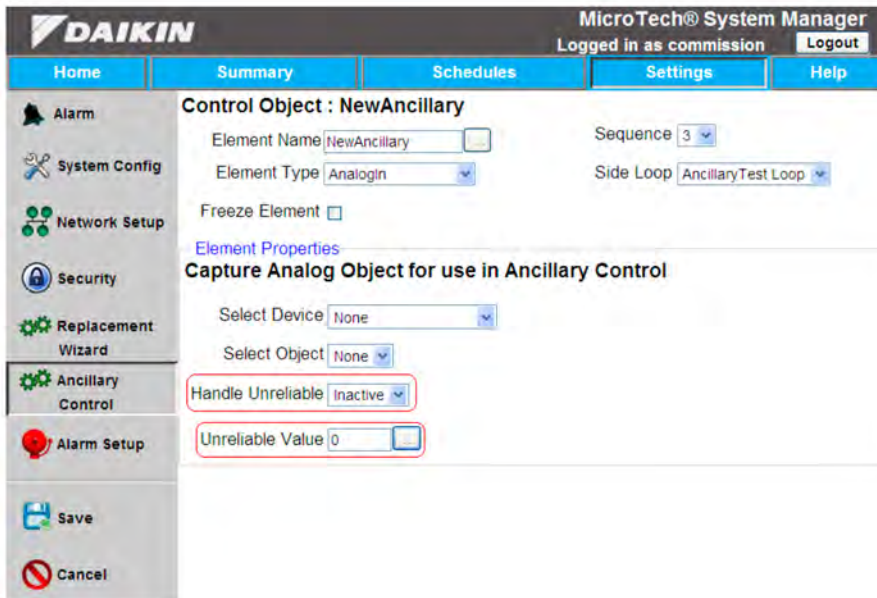
**Side Loop:** Selector to place this element within any available side loop.

**Freeze Element:** When checked, freezes the output of this block to any associated blocks.

**Re-initialize Element:** If an element is suspected to be malfunctioning, this button resets it.

**Element Properties:** This region of the page will populate with the description and properties specific to the selected control element type.

Figure 135: Input Element Configuration



For input-type elements (AnalogIn, DigitalIn, and MultistateIn) there are two special properties.

**Handle Unreliable:** If the physical input represented by the BACnet point connected to this element is determined to be unreliable by the source, the controller may be instructed to handle that condition with a specified value, allowing connected elements to otherwise function normally, or to allow ancillary control elements connected to this element to halt operation in their current state

**Unreliable Value:** Value to which this element will revert in the event of an unreliable condition. The value is restricted to be a form compatible with the selected element's type.

**Table 10: Available Element Types**

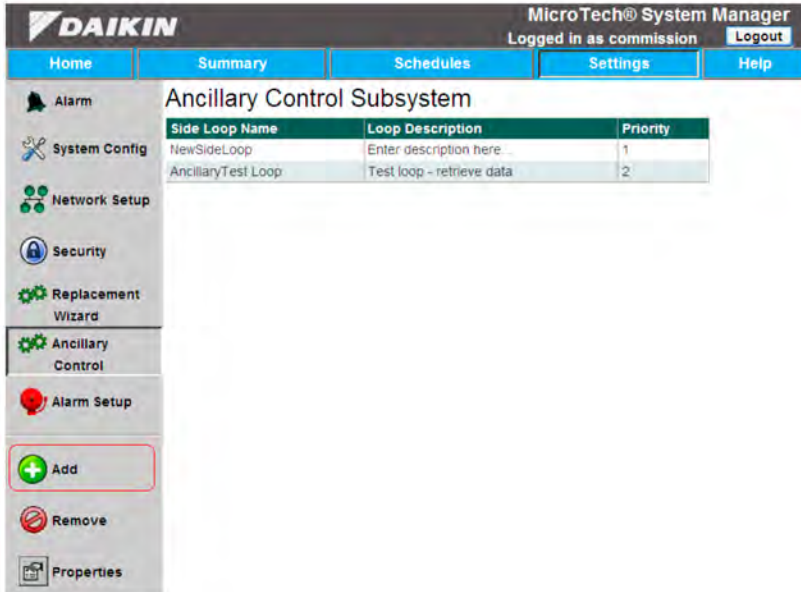
Element Type	Description	Properties		
		Name	Type	Description
AND	Logical AND operation between two binary values	Input 1	Boolean	Ancillary element input
		Input 2	Boolean	Ancillary element input
OR	Logical OR operation between two binary values	Input 1	Boolean	Ancillary element input
		Input 2	Boolean	Ancillary element input
NOT	Logical inversion of a single binary value	Input	Boolean	Ancillary element input
XOR	Exclusive OR operation between two binary values	Input 1	Boolean	Ancillary element input
		Input 2	Boolean	Ancillary element input
Switch	Use the binary value of one element to switch between two similar elements	Switch Block	Boolean	Ancillary element used as toggle switch between two other ancillary elements
		Inactive Output	Any	Element which has its output passed if the switch block output is false
		Active Output	Any	Element which has its output passed if the switch block output is true
ScheduleGroup	Boolean output based on group state	ScheduleGroup	Boolean	Group defined in user interface used to determine output state
Binary Alarm	Triggers alarm when selected element output is true	Alarm Trigger	Boolean	Ancillary element input that will trigger an alarm when set
Compare Value	Compare two element values, outputting a Boolean value	Measured Value	Real	Ancillary element value on left side of comparison operation
		Comparison Operator	Symbol	Symbol defining the rule used to evaluate the comparison operation
		Reference Value	Real	Ancillary element value on right side of comparison operation
		Measured Value	Real	Ancillary element value on left side of comparison operation
Compare Const	Compare an element value with a constant, outputting a Boolean value	Comparison Operator	Symbol	Symbol defining the rule used to evaluate the comparison operation
		Reference Value	Real	User-defined constant value on right side of comparison operation
		Measured Value	Real	Ancillary element value used as 'x' in slope-intercept equation
		Slope	Real	Constant used as 'm' in slope-intercept equation
Heat Vote	Return true if a specified number of VAV controllers are in heat mode	Offset	Real	Constant used as 'b' in slope-intercept equation
		Votes for success	Int	Number of VAVs required in heat mode to create a 'true' output
Cool Vote	Return true if a specified number of VAV controllers are in cool mode	Votes for success	Int	Number of VAVs required in cool mode to create a 'true' output
Digital In	Allows the use of a BACnet object of type Binary Input or Binary Value for use in other ancillary objects	Select Device	Object	Known BACnet device
		Select Object	Object	Object defined in selected device to be captured
		Handle Unreliable	Boolean	Allows user to force block into a specific state if selected object or device becomes unreliable
		Unreliable Value	Boolean	Output of block when in an unreliable state
Digital Out	Allows the use of a BACnet object of type Binary Output or Binary Value as a receiver of the result of ancillary control-defined logic	Select Device	Object	Known BACnet device
		Select Object	Object	Object defined in selected device to receive data
		Output Source	Boolean	Ancillary element to have its output sent to the selected object
		Relinquish Trigger	Boolean	Condition, if needed, to release control of selected object back to the device's control
		Execution Interval	Integer	Minimum time, in seconds, between writes to an object issued by this block
Analog In	Allows the use of a BACnet object of type Analog Input or Analog Value for use in other ancillary objects	Select Device	Object	Known BACnet device
		Select Object	Object	Object defined in selected device to be captured
		Handle Unreliable	Boolean	Allows user to force block into a specific state if selected object or device becomes unreliable
		Unreliable Value	Real	Output of block when in an unreliable state
Analog Out	Allows the use of a BACnet object of type Analog Output or Analog Value as a receiver of the result of ancillary control-defined logic	Select Device	Object	Known BACnet device
		Select Object	Object	Object defined in selected device to receive data
		Output Source	Real	Ancillary element to have its output sent to the selected object
		Relinquish Trigger	Boolean	Condition, if needed, to release control of selected object back to the device's control
		Execution Interval	Integer	Minimum time, in seconds, between writes to an object issued by this block
		Measured Value	Real	Ancillary element subject to conversion
Scaled Slope	Converts a measured value from one scale to another.	Measured Lo	Real	Low (0%) value of the input's scale
		Measured Hi	Real	High (100%) value of the input's scale
		Scale Lo	Real	Low (0%) value of the result's scale
		Scale Hi	Real	High (100%) value of the result's scale
		Input Block	Int	Ancillary element used for comparison
Multistate To Digital	Converts an integer value to Boolean. If the input block is equal to the selected value, the output is 'true', otherwise it is 'false'	Active Value	Int	Value required for a 'true' output
		Input Block	Boolean	Ancillary element used as selector
Digital To Multistate	Selects between two constant integer values based on the state of the input block	Inactive Value	Int	Value sent to output if input is 'false'
		Active Value	Int	Value sent to output if input is 'true'
Delay On	Delays a rising-edge event by a selected number of seconds; falling-edge events passed immediately	Input Block	Boolean	Ancillary element used as reference
		Delay Period	Int	Time in seconds to delay
Delay Off	Delays a falling-edge event by a selected number of seconds; rising-edge events passed immediately	Input Block	Boolean	Ancillary element used as reference
		Delay Period	Int	Time in seconds to delay
Delay Value	Delays a block output by a selected number of seconds; the block used as reference may be of any type	Input Block	Any	Ancillary element used as reference
		Delay Period	Int	Time in seconds to delay
Multistate In	Allows the use of a BACnet object of type Multistate Input or Multistate Value for use in other ancillary objects	Select Device	Object	Known BACnet device
		Select Object	Object	Object defined in selected device to be captured
		Handle Unreliable	Boolean	Allows user to force block into a specific state if selected object or device becomes unreliable
		Unreliable Value	Int	Output of block when in an unreliable state
Multistate Out	Allows the use of a BACnet object of type Multistate Output or Multistate Value as a receiver of the result of ancillary control-defined logic	Select Device	Object	Known BACnet device
		Select Object	Object	Object defined in selected device to receive data
		Output Source	Int	Ancillary element to have its output sent to the selected object
		Relinquish Trigger	Boolean	Condition, if needed, to release control of selected object back to the device's control
		Execution Interval	Integer	Minimum time, in seconds, between writes to an object issued by this block
Constant	Enables use of a user-defined value within ancillary control	Value	Real	Value to be used
Math	Performs basic arithmetic functions. Operates as Output = Value 1 (Operator) Value 2	Value 1	Object	Starting value in this mathematical operation
		Operator	Symbol	Mathematical operator in this equation. Available options: +, -, *, /
		Value 2	Object	Operand for the mathematical operation
Limiter	Clamps a mathematical operation within a high limit and/or a low limit	Input Block	Object	Input value to be operated on
		Limit Endpoints	Symbol	Select which endpoints are active: Low, High, Both
		Low Limit	Real	Value, if active, to be passed to output if it is greater than the Input Block value
		High Limit	Real	Value, if active, to be passed to output if it is lesser than the Input Block value

**Example: Side Loop**

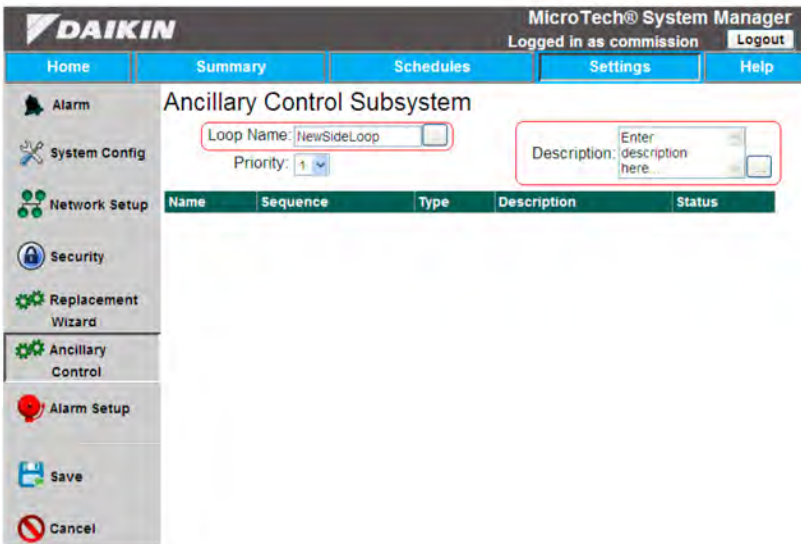
To illustrate a potential use of ancillary control, an example is provided here. In this example, a side loop will be created that will turn on a digital output connected to an exhaust

fan based on a schedule, then read back a feedback switch corresponding to the actual status of the fan, and raise an alarm if the fan does not turn on when it has been commanded.

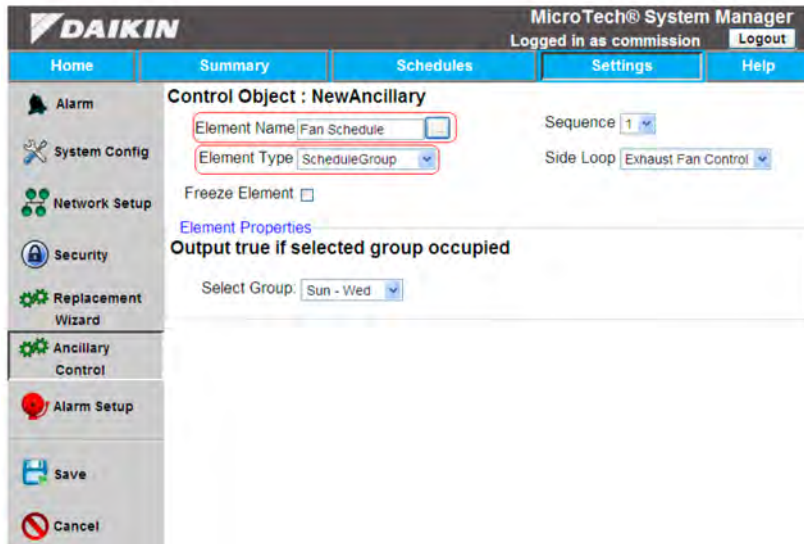
1. Start by creating a Side Loop by pressing Add on the Side Loop List screen.



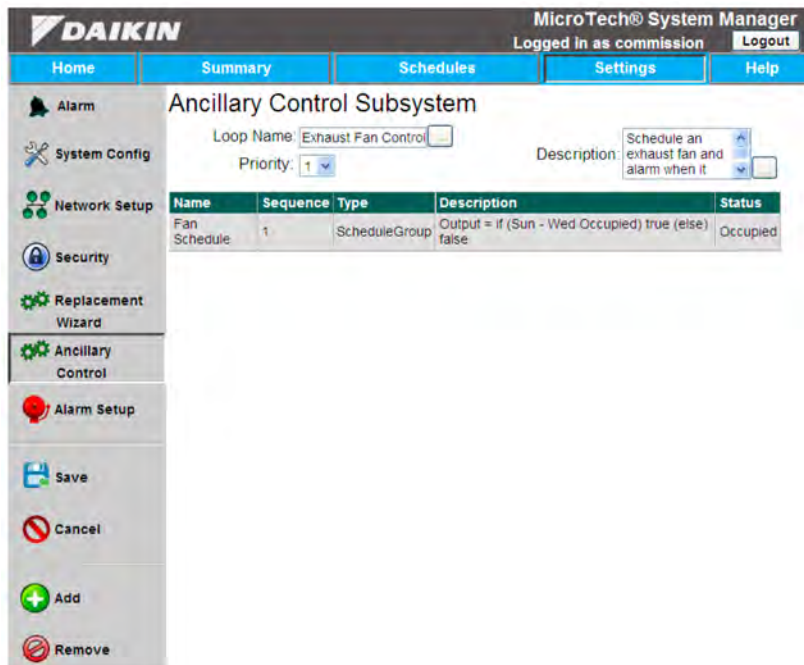
2. Give the Side Loop an appropriate name and description and press Save.



- The Side Loop will then be created and the user will be directed to create the first element. Start with a ScheduleGroup element named appropriately. Press Save.

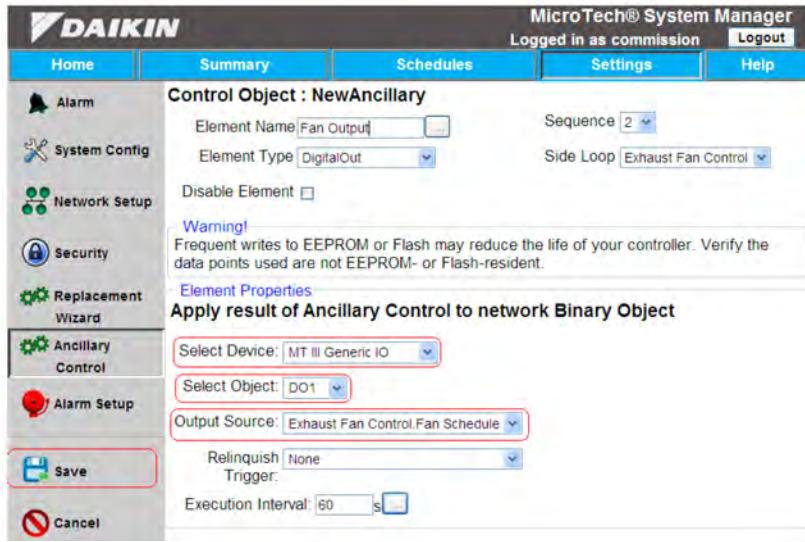


- Press Add to include another element in this side loop. Confirm that the element just created is present in the side loop.

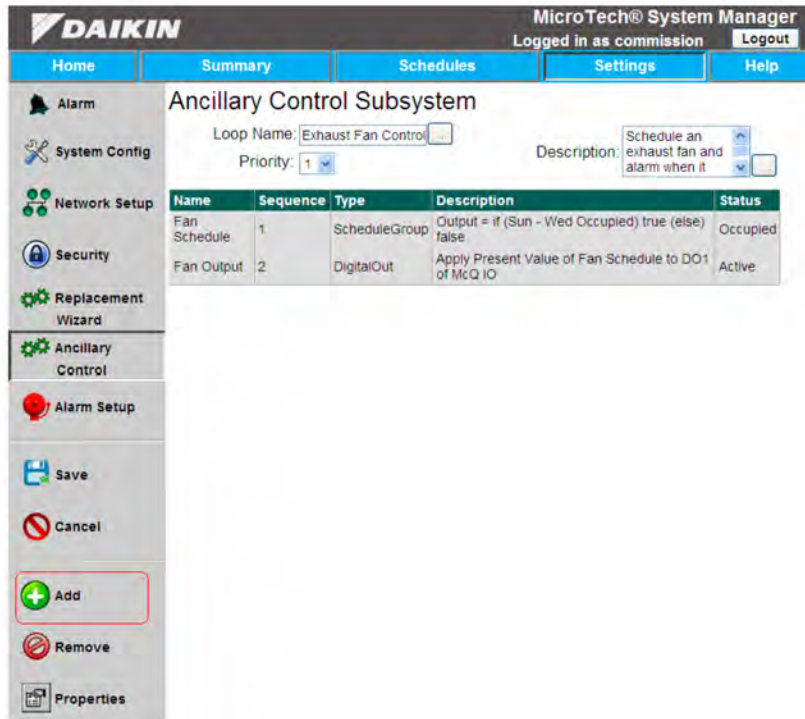




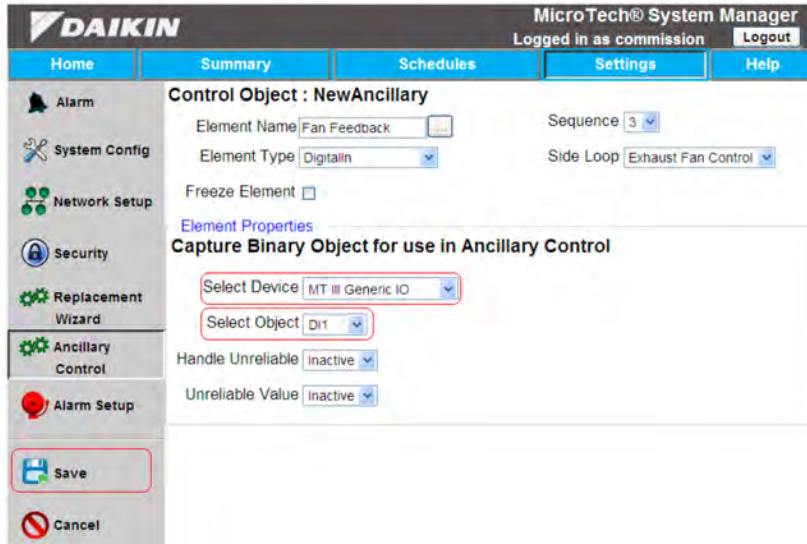
- Select a DigitalOut element. This example will use DO1 of a Daikin Generic I/O Manager “MTIII Generic IO” as the physical connection to the exhaust fan. Select the ScheduleGroup element just created as the source. Press Save.



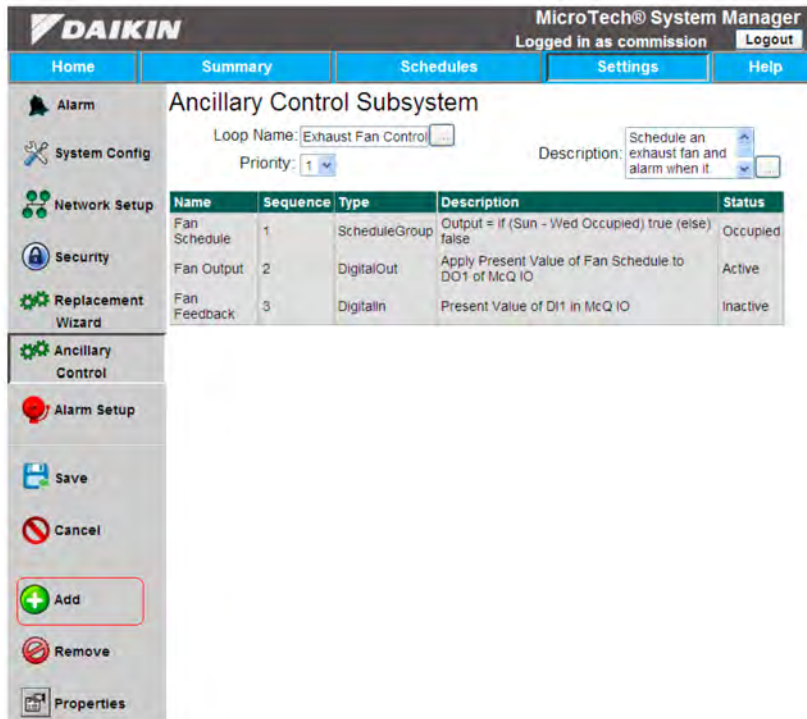
- Press Add to add another element.



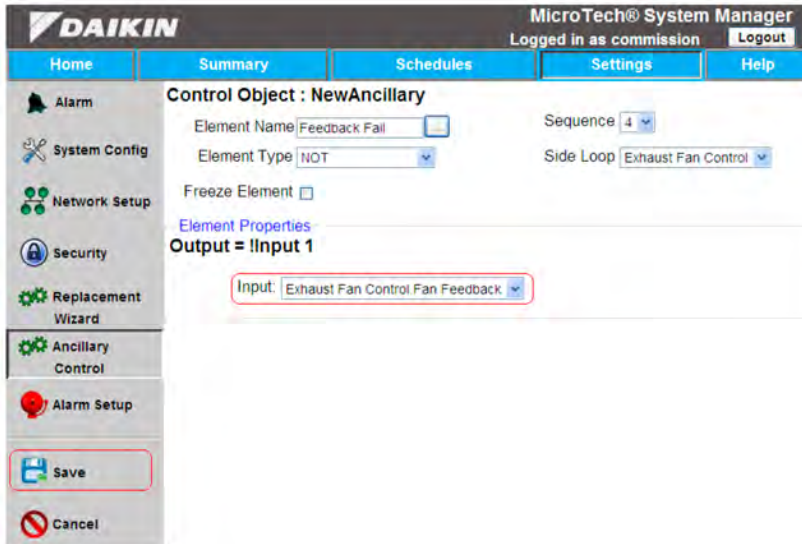
- Select a DigitalIn element. This element will receive the digital feedback on the same “MT III Generic IO” device, this time on physical port DI1. Press Save.



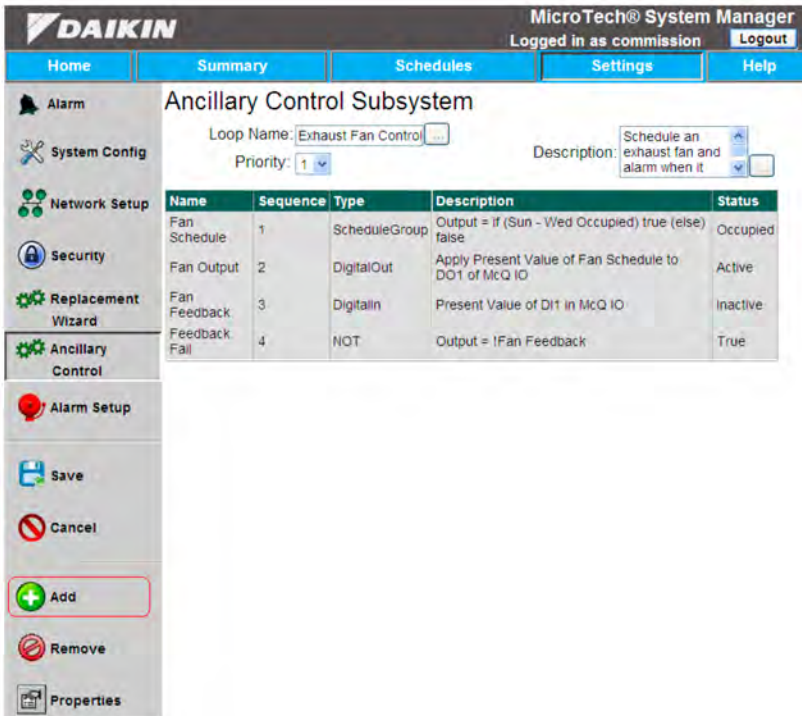
- Press Add to add another element.



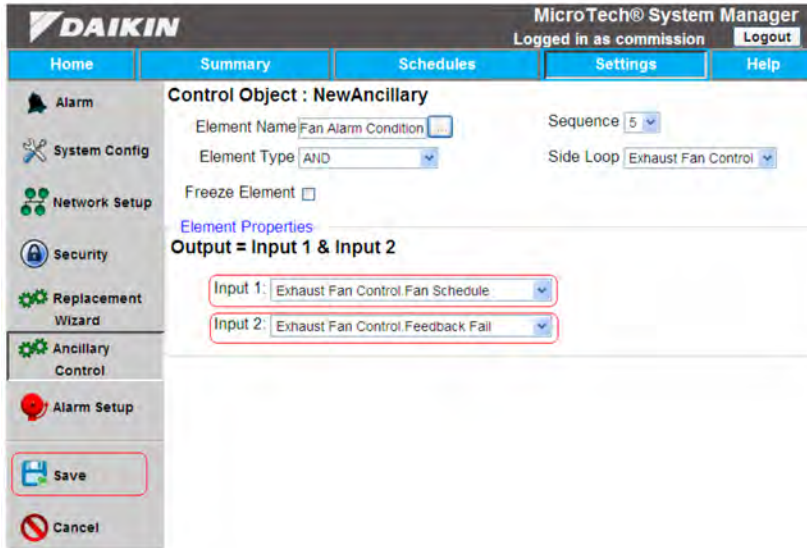
- The conditions for the alarm intended are that element "Fan Output" is active while "Fan Feedback" is inactive. Alarm elements raise an alarm when a condition is true. To create a 'true' output in those conditions, the logical sequence of Fan Output AND (NOT Fan Feedback) must be assembled. Based on order of operations, the first operation to execute is "NOT Fan Feedback". Therefore, select a NOT element. Select the Fan Feedback element as the input. Press Save.



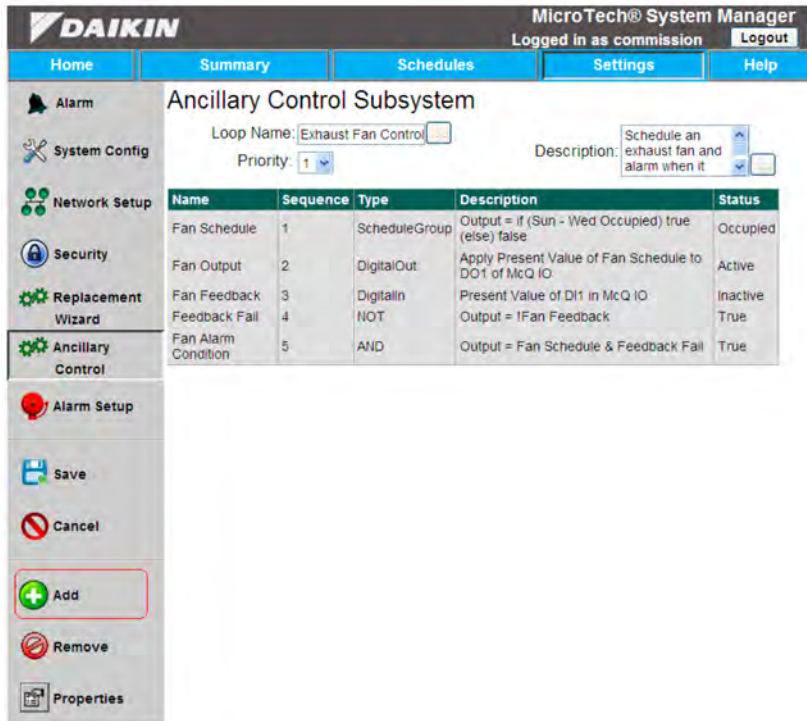
- Press Add to add another element. Notice the sequence of elements being assembled on the side loop page while passing through.



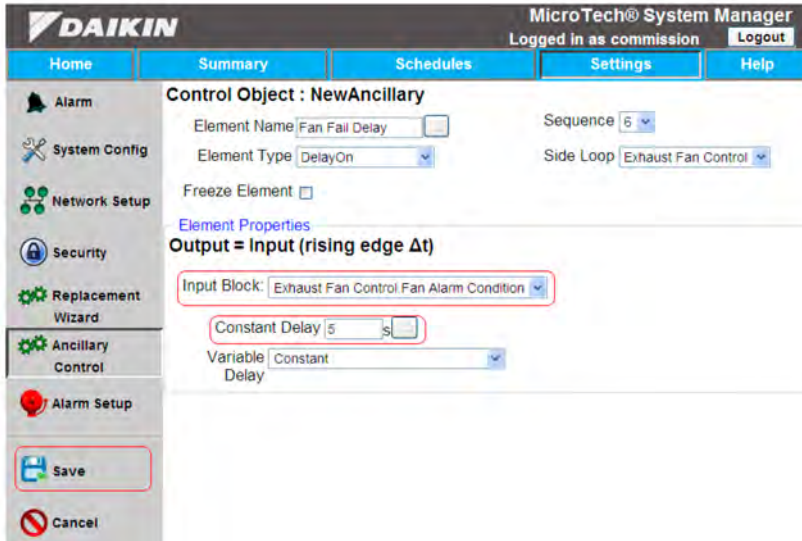
- To continue the logic described in Step 9, the conditions for the desired alarm must be assembled. Select an AND element. Select the Schedule and Failure elements as inputs. This element will then evaluate to 'true' when the fan is scheduled to be on, but has not turned on. Press Save.



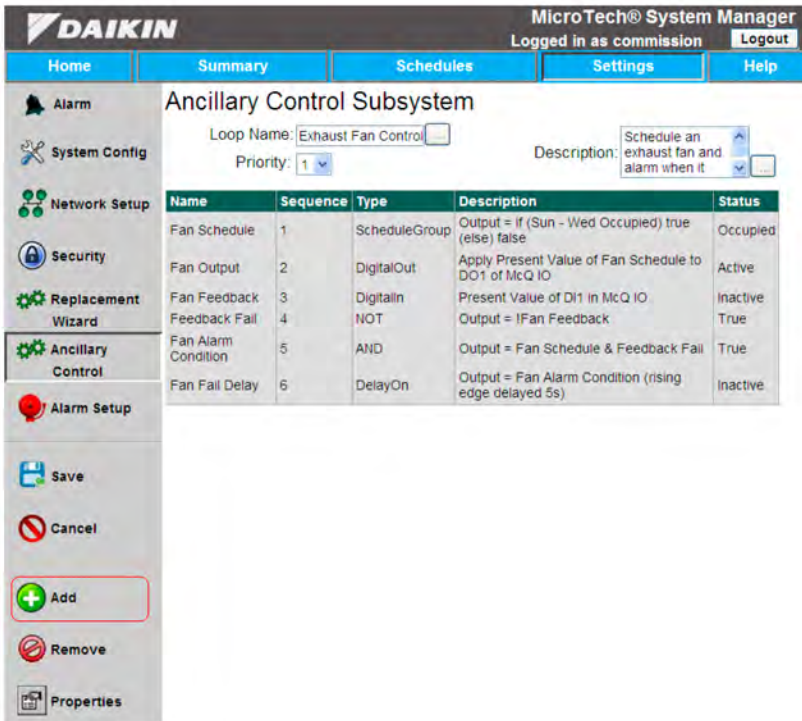
- Press Add to add another element.



- To ensure there are no nuisance alarms due to network latency or switch stickiness, a delay will be added. Select a DelayOn element. Select the Alarm Condition element just created, since the leading logic is correct to this point. A delay of 5 seconds is sufficient for this system. Press Save.



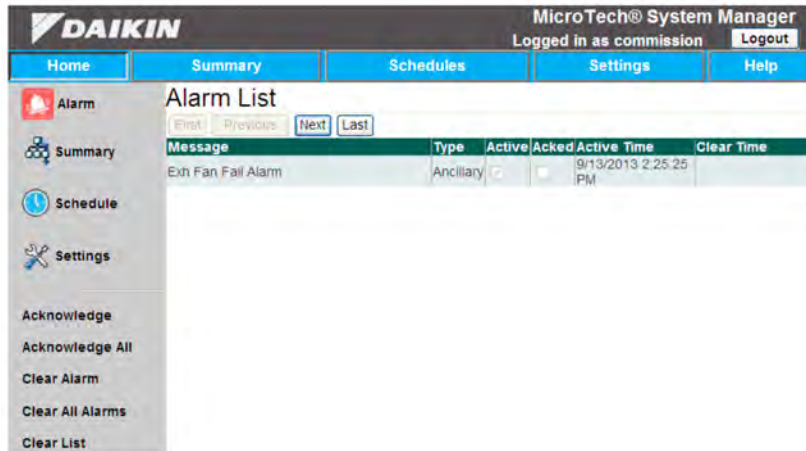
- Press Add to add a final element.



- Select a Binary Alarm element. The result of the logic assembled to this point is contained in the output of the element named "Fan Fail Delay", so that is the trigger for the alarm condition. The text used for this alarm is the Block Name. For this element, in particular, that name must be sufficiently descriptive to identify the alarm. When that name is entered, press Save.



- When the alarm is functioning correctly, the notification will show up in the alarm log.



17. The completed side loop will look like this:

The screenshot shows the DAIKIN MicroTech System Manager interface. The top navigation bar includes Home, Summary, Schedules, Settings, and Help. The left sidebar contains various system management options: Alarm, System Config, Network Setup, Security, Replacement Wizard, Ancillary Control, Alarm Setup, Save, Cancel, Add, Remove, and Properties. The main content area is titled 'Ancillary Control Subsystem' and shows the configuration for a loop named 'Exhaust Fan Control' with a priority of 1. The description is 'Schedule an exhaust fan and alarm when it'. Below this, a table lists the control sequence steps:

Name	Sequence	Type	Description	Status
Fan Schedule	1	ScheduleGroup	Output = if (Sun - Wed Occupied) true (else) false	Occupied
Fan Output	2	DigitalOut	Apply Present Value of Fan Schedule to DO1 of McQ IO	Active
Fan Feedback	3	DigitalIn	Present Value of DI1 in McQ IO	Inactive
Feedback Fail	4	NOT	Output = !Fan Feedback	True
Fan Alarm Condition	5	AND	Output = Fan Schedule & Feedback Fail	True
Fan Fail Delay	6	DelayOn	Output = Fan Alarm Condition (rising edge delayed 5s)	Active
Exh Fan Fail Alarm	7	BinaryAlarm	Raise System alarm if block Fan Fail Delay of loop Exhaust Fan Control output is set.	Active

# Home Menu

From the home page, access can be gained to several pages including: Alarm Summary, Startup Wizard, Summary page, Schedules, List pages, Event Log, Trend Log, Service, Settings

and Help pages. Not all pages are available to all users. Several of these pages are described below.

## Event Log

The Event Log page displays the communication on the network for a brief history. It is accessible via the home page, and is only available to users with commission level access or higher. It is primarily used as a debug tool.

The event list shows the last fifteen communication messages received by the system and is used primarily as a debugging tool. The types of events that are logged here can be filtered

through the Event Log History button (Figure 137) or through the Event Log Setup tab located on the Settings/System Config (See page 138). To filter and view the event log from the Event History page select the date, time, the desired events and press the Find button. The event log will display all desired events up to the selected date and time.

Figure 136: Event Log

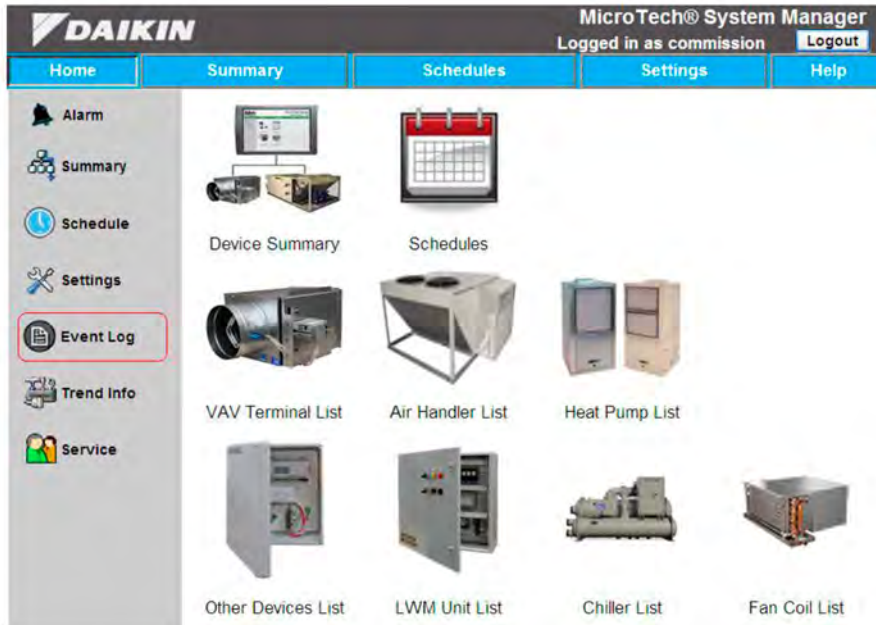
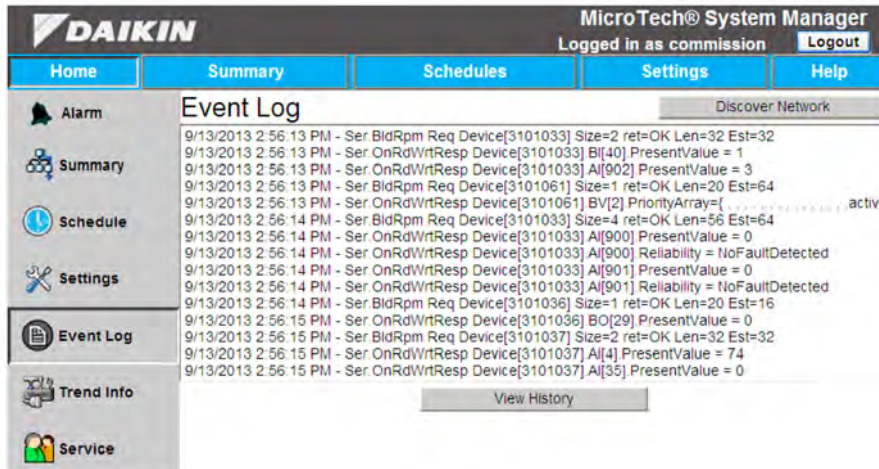


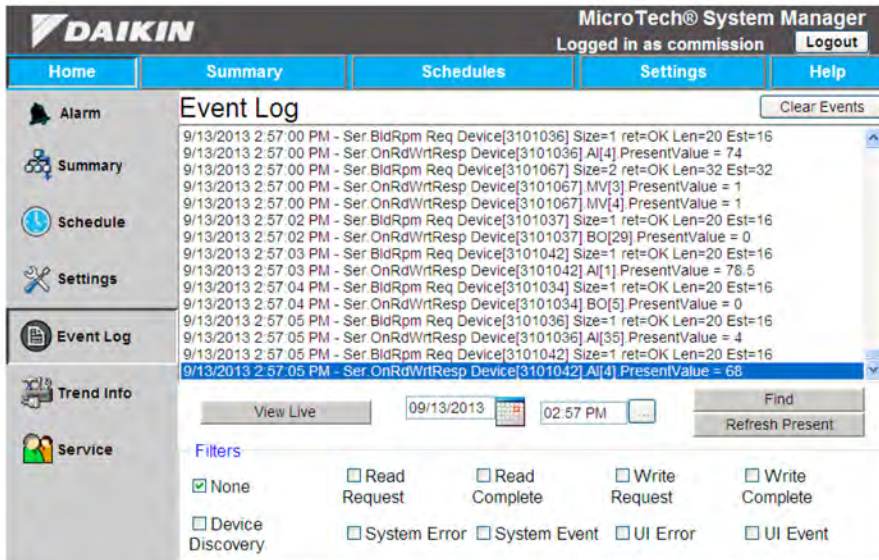


Figure 137: Active Event Log



The View History button will allow navigation through the entire event log.

Figure 138: Event Log History



**None:** View the entire event history.

**Read Request:** View the Read Request messages in the event log.

**Read Complete:** View the Read Complete messages in the event log.

**Write Request:** View the Write Request messages in the event log.

**Write Complete:** View the Write Complete messages in the event log.

**Device Discovery:** View the Device Discovery messages in the event log.

**System Error:** View the System Error messages in the event log.

**System Event:** View the System Event messages in the event log.

**UI Error:** View the User Interface Error messages in the event log.

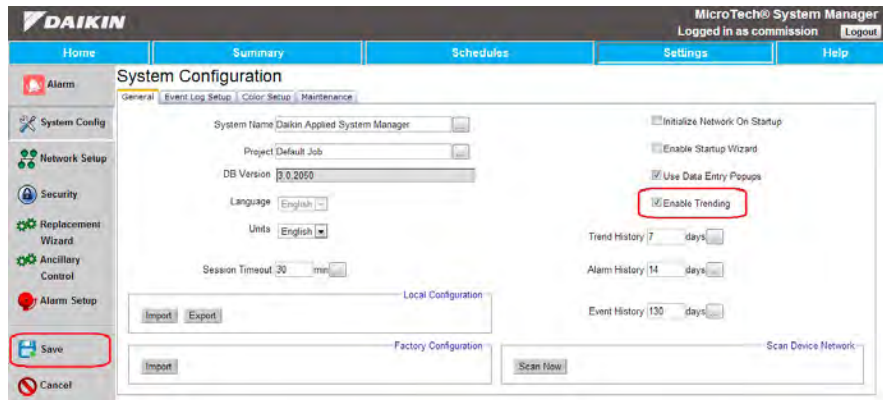
**UI Event:** View the User Interface Event messages in the event log.

**Trend Info**

The system allows the user to trend specific data points to allow for better diagnostics as well as tracking how the system is running over time. First be sure that the checkpoint “Enable Trending” is activated. You can check this with the following steps:

1. Open the settings tab in the top bar menu and press on the “System Config” Button on the left side menu.
2. Activate the checkmark “Enable Trending” (Figure 139).
3. Press on the “Save” Button on the left hand menu

**Figure 139: Enable Trending in the System Configuration**



To view trend data using tables or a graph:

1. Log onto web application at the commission user level or higher (if not already).
2. Select the "Trend Info" button located in left hand menu on the home page.
3. Select a device from the device drop down, for which you would like data on.
4. Select the desired data point for that device.
5. Repeat steps 3 and 4 up to two more times if needed.
6. Now you can page through the results, until you find the desired information.

**NOTE:** The rate of data trending is based solely on the refresh rate of each point. This means a point that is refreshed every 5 minutes will have one data point every 5 minutes, whereas a point refreshed once a day will have one data point each day and so forth.

The Trend Info page contains a common device and data points section and 3 tabbed pages. The tabbed pages include: Table, Graph Setup and Graph. Up to 3 data points from up to 3 different devices can be viewed at one time.

Figure 140: Trend Info Display

**DAIKIN MicroTech® System Manager**  
 Logged in as commission Logout

Home Summary Schedules Settings Help

Alarm  
 Summary  
 Schedule  
 Settings  
 Event Log  
**Trend Info**  
 Service  
 Export...  
 Archive  
 Save  
 Cancel

**Trend Information Display**

Device: VAV 10.3, RTU1 MTIII, VAV 08 - HWP  
 Data Point: RoomTemp, OAT, AirVolume  
 Show Values:

Table | Graph Setup | Graph

VAV 10.3.RoomTemp		RTU1 MTIII.OAT		VAV 08 - HWP.AirVolume	
Value	Modified	Value	Modified	Value	Modified
74	9/16/2013 12:39:12 PM	621.81	9/16/2013 12:41:20 PM	92	9/16/2013 1:31:52 PM
74	9/16/2013 12:15:26 PM	621.81	9/16/2013 12:24:39 PM	84	9/16/2013 1:30:50 PM
74	9/16/2013 11:14:59 AM	621.81	9/16/2013 11:24:33 AM	92	9/16/2013 1:29:48 PM
74	9/16/2013 10:14:54 AM	621.81	9/16/2013 10:19:21 AM	88	9/16/2013 1:28:33 PM
74	9/16/2013 9:14:39 AM	621.81	9/16/2013 9:15:30 AM	76	9/16/2013 1:27:31 PM
74	9/16/2013 8:14:28 AM	621.81	9/16/2013 8:15:19 AM	84	9/16/2013 1:26:28 PM
74	9/16/2013 7:13:44 AM	621.81	9/16/2013 7:15:06 AM	76	9/16/2013 1:25:25 PM
74	9/16/2013 6:59:53 AM	621.81	9/16/2013 6:16:24 AM	88	9/16/2013 1:24:23 PM
74	9/16/2013 5:59:29 AM	621.81	9/16/2013 5:16:17 AM	80	9/16/2013 1:23:21 PM
74	9/16/2013 4:59:13 AM	621.81	9/16/2013 4:16:08 AM	88	9/16/2013 1:22:17 PM

Save as CSV

### General

Devices with trend data available will appear in the drop-down boxes in the Device column. When a device is selected, the corresponding Data Point drop-down will populate with available trended data points for that device. If the user is on the Graph Setup or Graph pages, the Show Data checkboxes are also selectable.

**Device:** 3 pull downs exist to allow the user to select a trend point from 3 devices.

**Data Point:** For each device, there is a corresponding data point indicating the point in that device you want to monitor.

**Color Picker:** For each data point, there is a corresponding color picker that can be used to change the color of that point on the trend graph.

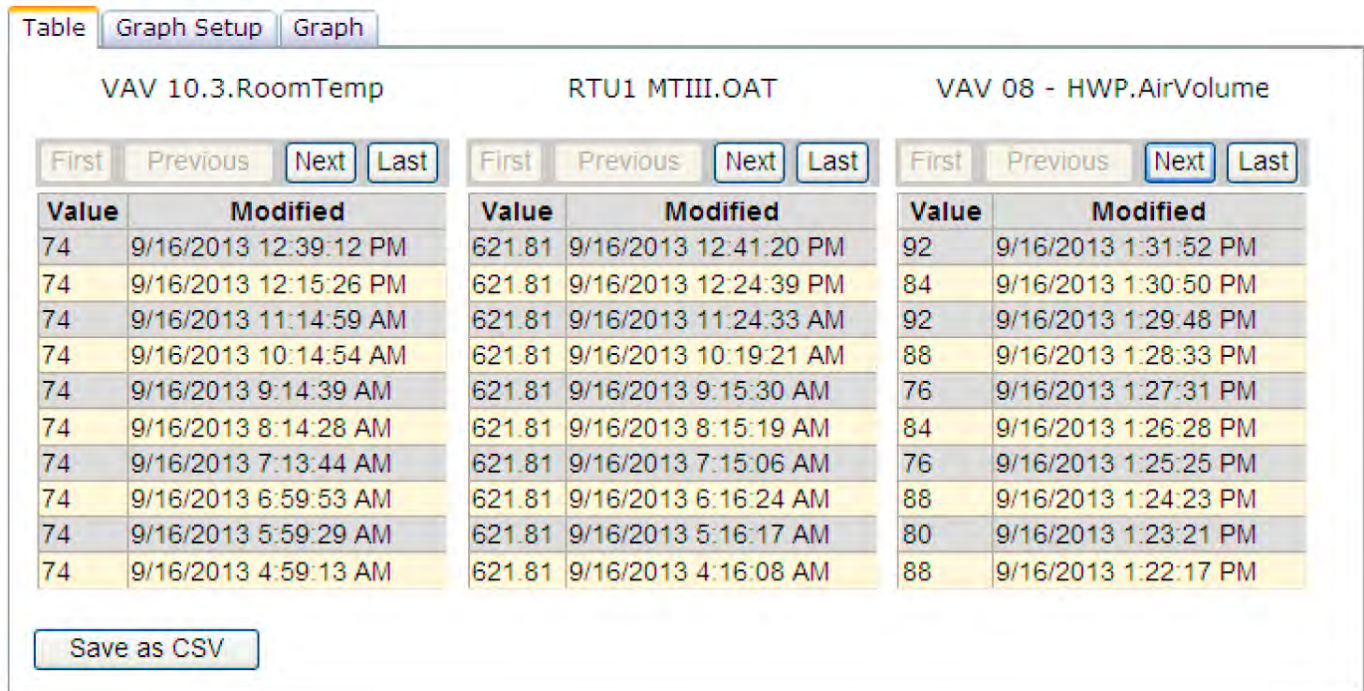
**Show Data:** This checkbox will display the value of the data on the trend graph for the corresponding data point, when checked. This checkbox is only available when the Graph Setup or Graph tab is active.

### Table Tab

When a data point is selected, a table on the Table tab will populate with the appropriate data. If multiple Data Points are selected, multiple tables will appear. There is a separate table for each Data Point.

The Table tab also allows the user to view historical trend data for points noted as trend points when data trending is available.

Figure 141: Trend Info – Table Tab



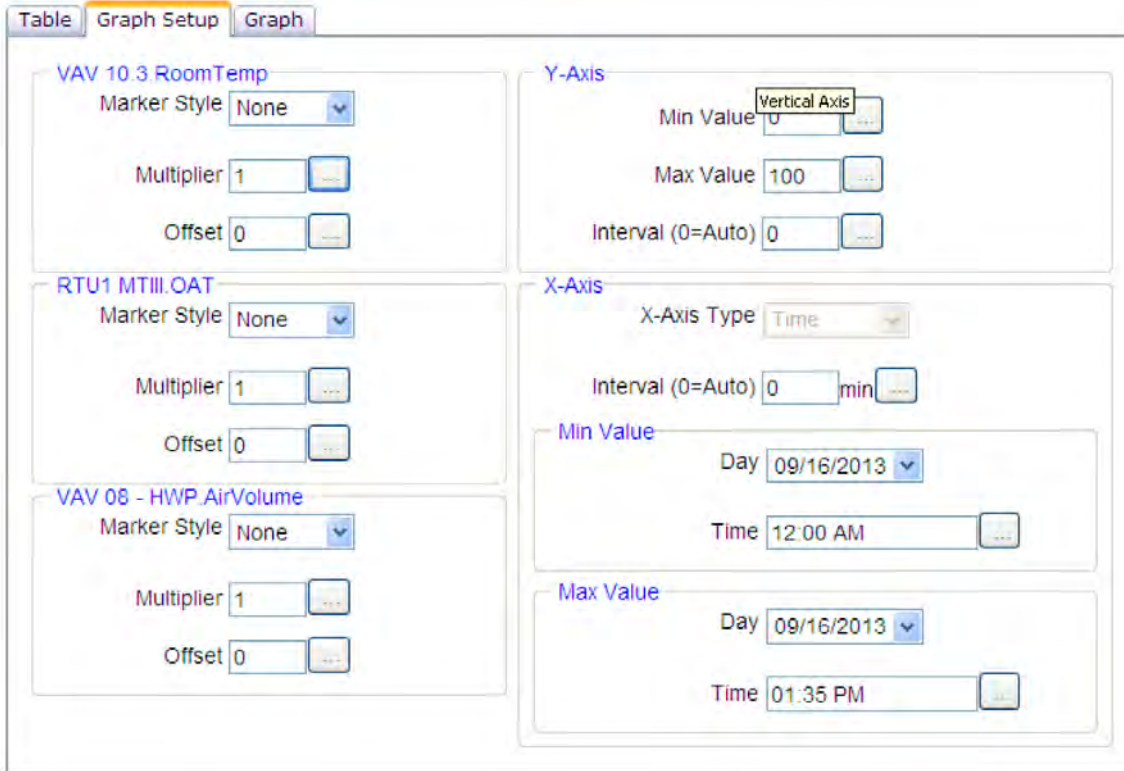
**Save as CSV:** This button takes the current data points tables and prints it as a comma-separated value file in the folder C:\MISystem\Logs. All selected data points are saved to 1 file. File can be saved and viewed remotely from a local computer when logged in.

### Graph Setup Tab

The Graph Setup tab contains configuration information for the trend graph. This information includes the setup of the x-axis and y-axis, as well as general setup. The graph also allows

the user to view historical trend data for the points selected as trend points.

Figure 142: Trend Info – Graph Setup Tab



### Y-Axis

**Min Value:** sets the minimum value for the y-axis. If set to 0, it is automatically calculated.

**Max Value:** sets the maximum value for the y-axis. If set to 0, it is automatically calculated.

**Interval:** sets the interval between major tick marks on the y-axis. A value of 1 shows every tick mark. A value of zero or Auto allows the graph to select the best interval for the data selected.

### X-Axis

**X-Axis Type:** If more than one day is selected for the min/max range, Date/Time will automatically be selected. Otherwise, the x-axis will show time. This is not changeable.

**Interval:** sets the interval between major tick marks on the x-axis. A value of 1 shows every tick mark. A value of zero or Auto allows the graph to select the best interval for the data selected.

**Day:** The day dropdown lists are automatically filled with the valid days that contain trend information for the data points that are selected. The min/max values here determine the amount of data that is shown on the graph.

**Time:** sets the minimum and maximum time values for the x-axis. Only data trended within the given day/time will be shown on the graph.

**Marker Style:** sets the marker style on the graph. There is one for each data point.

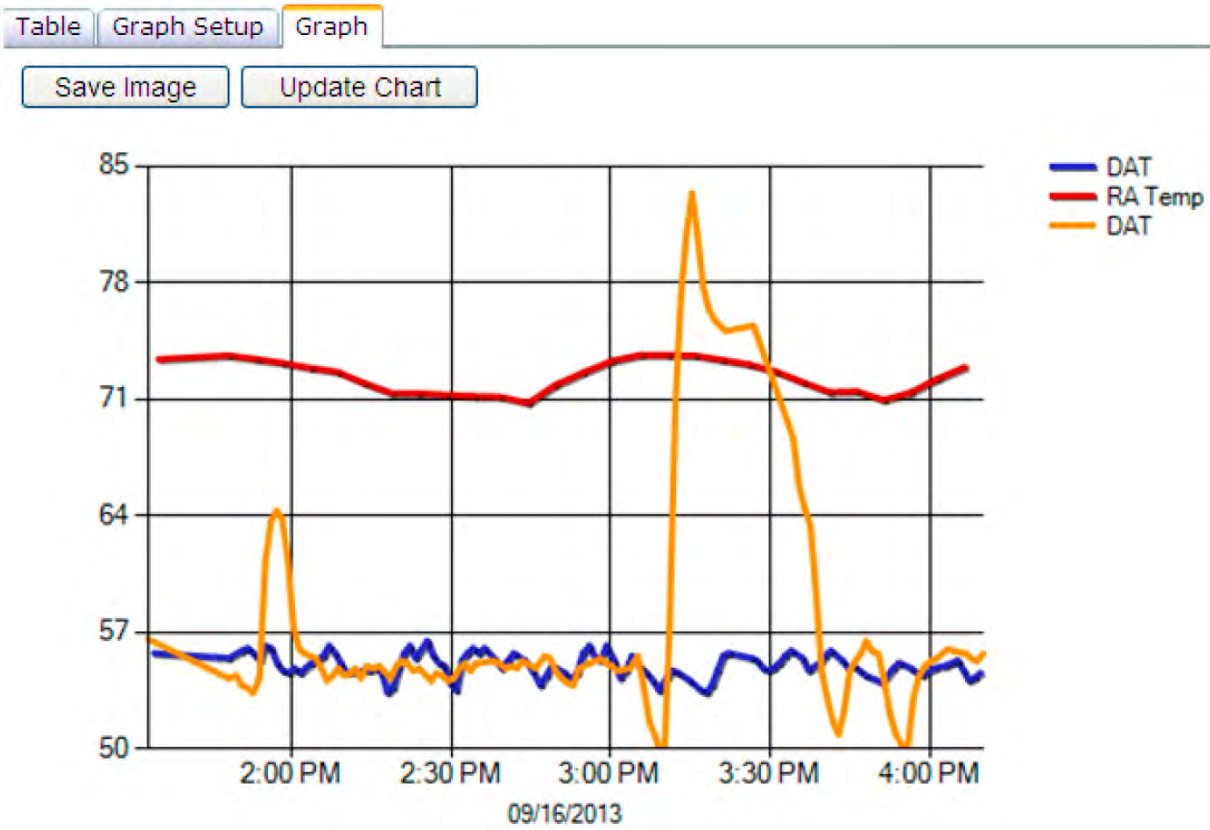
**Scale:** The value trended is multiplied by this value before being plotted on the graph. There is one for each data point.

**Offset:** This value is added to the value that is trended before being plotted on the graph. There is one for each data point. This is helpful when trending multiple points that may have the same value.

### Graph Tab

The Graph tab contains a line graph of the 1 to 3 data points that are selected.

Figure 143: Trend Info – Graph Tab



**Save Image** = Takes the current graph and saves it as a .jpeg to the C:\VAVSystem\Logs\ folder.

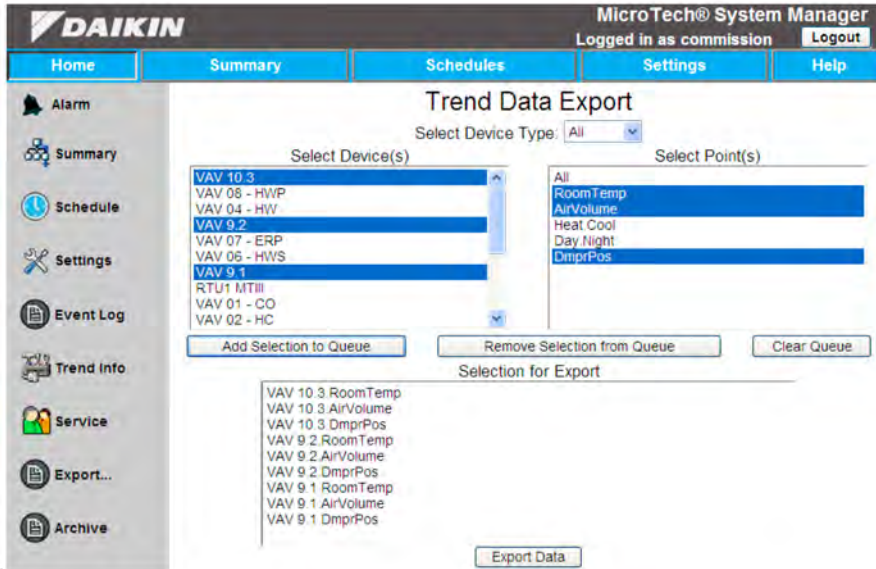
**Update Chart** = Refreshes chart data values.

## Trend Export

Data that is being trended can be exported to a CSV file. This page allows you to select one or more devices and the corresponding data points you want to view. If you are logged onto the MicroTech Integrated System remotely, you will get

the file served up directly to your PC. If you are logged on the actual System Manager, see the Trend Archive section for details on how to view the file.

Figure 144: Trend Export



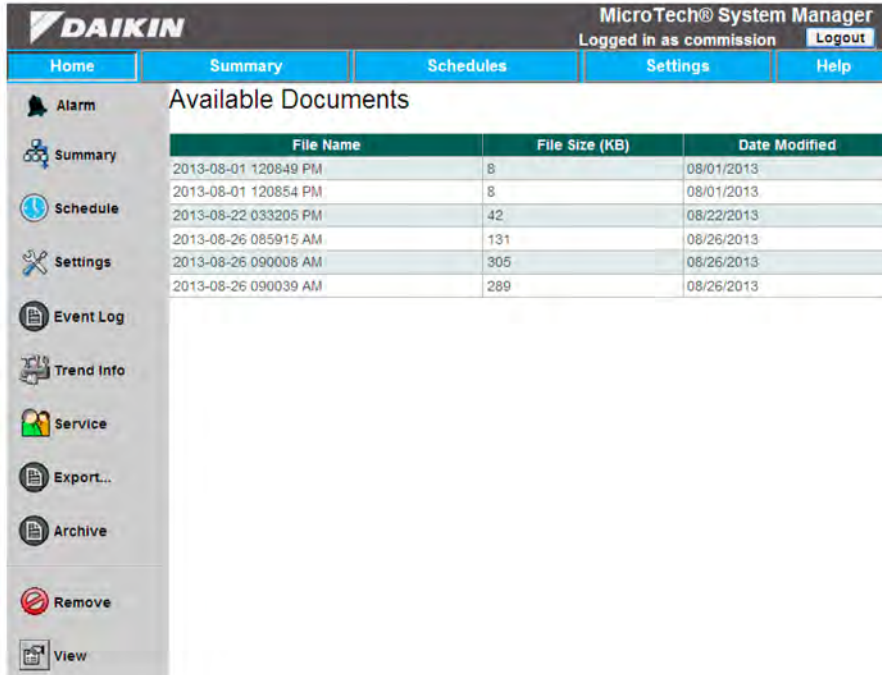
To export trend data:

1. Log onto web application at the commission user level or higher (if not already).
2. Select the "Trend Info" button located in left hand menu on the home page.
3. Select the "Export..." button located in the left hand menu.
4. Select any number of devices in the Select Device(s) box. These devices can be filtered using the "Select Device Type" drop down list.
5. Select any number of points in the Select Point(s) box. This list of points contains only the trended objects for the selected device(s).
6. Press the "Add Selection to Queue" button located on the page.
7. To remove a point from the Queue, select the point in the Selection for Export box and press the "Remove Selection from Queue" button.
8. To clear all the points from the Queue, press the "Clear Queue" button.
9. Press the "Export Data" button located on the page.
10. If you are logged onto the System Manager remotely, you will be asked if you want to Open or Save the file. Choose Open to open the file. Choose Save to save the file to your PC. Or choose Cancel to cancel the request.
11. If you are logged in to the System Manager directly, the file will be automatically saved to the Controller. Press the Archive button to view the file.

**Trend Archive**

The Archive page lists all the trend files that have been exported through the Trend Export process. The files are named with the date and time they were created.

*Figure 145: Trend Archive*



To view available trend archives:

1. Log onto web application at the commission user level or higher (if not already).
2. Select the “Trend Info” button located in left hand menu on the home page.
3. Select the “Archive” button from the left hand menu.
4. Select the archive file you would like to view.
5. Press the “View” button.

To delete available trend archives:

1. Log onto web application at the commission user level or higher (if not already).
2. Select the “Trend Info” button located in left hand menu on the home page.
3. Select the “Archive” button from the left hand menu.
4. Select the archive file you would like to delete.
5. Press the “Remove” button.
6. At the confirmation, select “OK” to remove the file and “Cancel” to cancel the request.



**Setting a Point to Trend**

1. Log onto web-application at commission level or higher.
2. From the home page proceed to the list page of the device containing the point to be trended.
3. Select the device and press the Unit Config button from the left hand menu.
4. From the next screen press on the point that you wish to trend and then select properties from the left hand menu.
5. Finally in the “Device Object Definition” page press the “Trend Point” box and then press Save.
6. Also available on this page is the ability to configure the frequency at which a point is read, and therefore the number of records in the trend log available when a graph is transcribed.

**⚠ CAUTION**

Increasing the frequency at which data points are read, regardless of whether or not they are selected for trending, has a cumulative negative effect on system performance.

*Figure 146: Selecting a Unit to Configure*

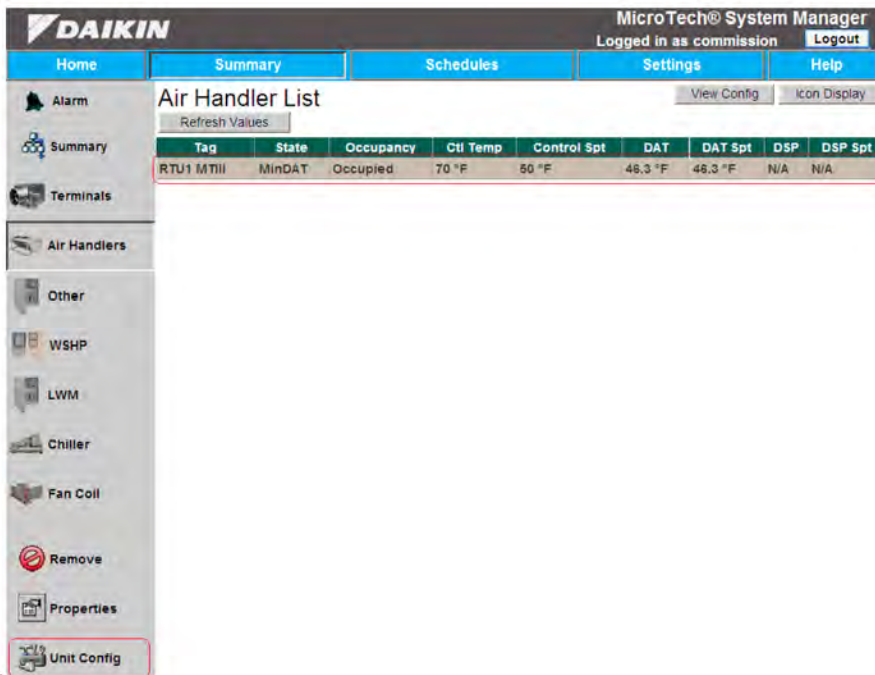


Figure 147: Configuring the Objects of a Unit

MicroTech® System Manager  
Logged in as commission Logout

Home Summary Schedules Settings Help

Unit Configuration Properties  
Name: [REDACTED]  Ignore Device

Description	Interval	Trend
Unit State	5 minutes	▼
App Mode	On Demand	☐
Occupancy	5 minutes	☐
OccMode	5 minutes	☐
DAT	Minute	☐
RA Temp	5 minutes	☐
OAT	Half Hour	☐
<b>DSP</b>	<b>Minute</b>	<b>☐</b>
DSP Stpt	Day	☐
Occ Cool Stpt	Day	☐
Unocc Cool Stpt	Day	☐
Occ Heat Stpt	Day	☐
Unocc Heat Stpt	Day	☐
DAT Cool Stpt	Day	☐
Min DAT Stpt	Day	☐
Clear Alarms	On Demand	☐
Unit Status	On Demand	☐
Cooling Status	On Demand	☐
Economizer Status	On Demand	☐
Heating Status	On Demand	☐

Alarm Summary Terminals Air Handlers Other WSHP LWM Chiller Fan Coil Save Cancel Properties

Figure 148: Object Definition

MicroTech® System Manager  
Logged in as commission Logout

Home Summary Schedules Settings Help

Object Definition

Object Description: [DSP] Type Description: [DSP]  
 Point Index: [0] Valid Values: [ ]  
 Object Type: [AV] Object Instance: [0]  
 Minimum Value: [0] Maximum Value: [0]  
 Null Value: [0]  
 Refresh Interval: [Minute] Trend Deadband: [0] [ ]  
 Access Mode: [Read Only]

Config Point  Trend Point  Use Priority Array  
 Priority Array: [ ]

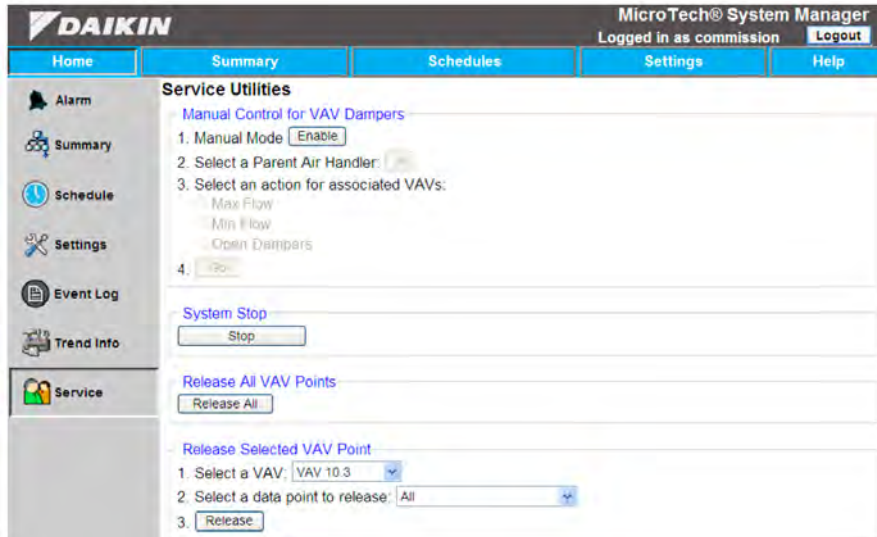
Alarm Summary Terminals Air Handlers Other WSHP LWM Chiller Fan Coil Save Cancel

## Service Utilities

The Daikin Applied Service Utilities page allows a user to perform a specific set of mass-issue commands useful in specific circumstances. It can be accessed by commission

level users and above by pressing on the Service button located on the left hand side of the screen on the Home page.

Figure 149: Service Screen



### Manual Control for VAV Dampers

- **Enable:** When Manual Mode is enabled, the Master Page will display a message so that users will know critical control points may be overridden. Once enabled, the page allows the user to select either a single air handler unit, or all known air handlers, then select an action to perform.
- **Max Flow:** overrides the control flow setpoint for all of the VAVs associated with the selected air handler to 100%.
- **Min Flow:** overrides to the control flow setpoint for all associated VAVs to the minimum.
- **Open Dampers:** overrides the damper command setpoint for all associated VAVs to 100%.
- **Go:** Pressing this button will perform the action selected in step 3 to all VAVs connected to the air handler indicated in step 2 (Figure 149).

**Release All:** issues a release command to all of the points that may have been overridden and returns them to the local device's control for every VAV on the network.

### Release Selected VAV Point

- **Select a VAV:** This is the VAV that you want to release a point from.
- **Data point to release:** This is the particular point, or all points, from the selected VAV that you want to release.
- **Release:** grants the user a more targeted use of the above tool, allowing them to release all priorities of all data points of a single device or all priorities of a single data point in that single device. It uses the two drop-down lists directly to its left to specify what is being released.

### System Stop

- **Stop:** Sets VAVs to unoccupied and Air Handlers and WSHPs to "App Mode: Off".
- **Start:** Sets VAVs back to occupied and Air Handlers and WSHPs to "App Mode: On".

# Summary Menu

## Communication Faults

Occasionally the system may experience a communication fault, resulting in loss of communication with a particular unit. When this happens the system lets you know through a couple methods. From the “schedule groups” page (see accessing via schedule groups) if there has been communication loss there

will be a red “exclamation” symbol next to the affected unit (Figure 150). If accessing the unit via the icons on the home page (see accessing via Icon/List Display) then the affected unit will be red (Figure 151 and Figure 152).

Figure 150: Communication Fault via Schedule Group

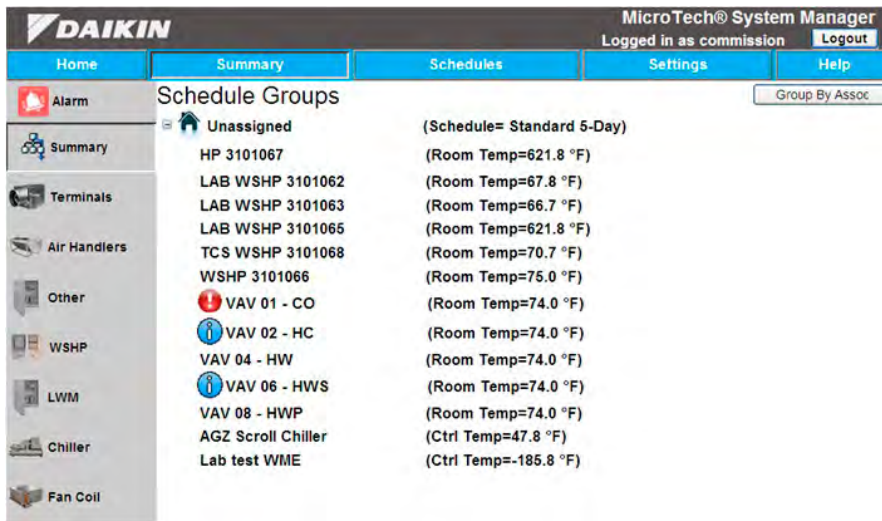


Figure 151: Communication Fault via Icon Display

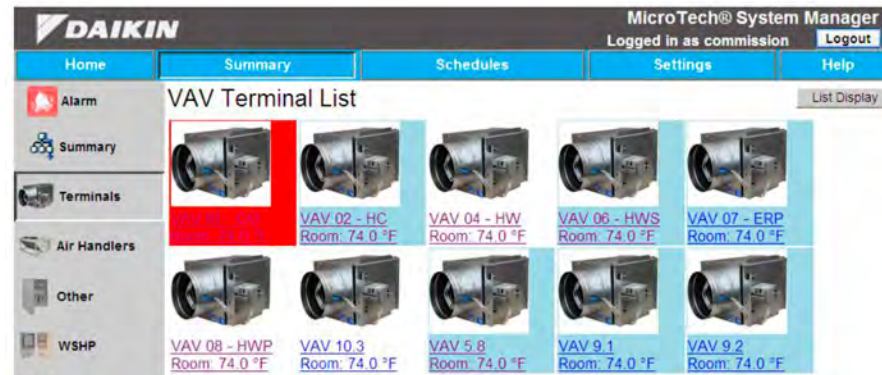


Figure 152: Communication Fault via List Display

The screenshot shows the 'VAV Terminal List' page in table format. The row for 'VAV 01 - CO' is highlighted in red, indicating a communication fault. The table provides detailed data for each VAV terminal, including its tag, location, current temperature, control setpoint, occupancy status, heating/cooling mode, and flow rates.

Tag	Location	Temp	Ctrl Spt	Occ	H/C	Flow	F-Min	F-Max
VAV 01 - CO	Cont. Room 1	74 °F	76 °F	Occ	Cool	24 cfm	120 cfm	480 cfm
VAV 02 - HC	Cont. Room 1	74 °F	76 °F	Occ	Cool	24 cfm	120 cfm	480 cfm
VAV 04 - HW	DEMO BOARD 3 MID	74 °F	66 °F	Occ	Cool	88 cfm	220 cfm	2200 cfm
VAV 06 - HWS	Demo Board 3 Mid	74 °F	74 °F	Occ	Cool	24 cfm	220 cfm	2200 cfm
VAV 07 - ERP	DEMO BOARD 3 MID	74 °F	74 °F	Occ	Cool	36 cfm	220 cfm	2200 cfm
VAV 08 - HWP	DEMO BOARD 3 MID	74 °F	74 °F	Occ	Cool	88 cfm	220 cfm	2200 cfm
VAV 10.3	DEMO BOARD 3 MID	74 °F	74 °F	Occ	Cool	0 cfm	220 cfm	2200 cfm
VAV 5.8	DEMO BOARD 3 MID	74 °F	70 °F	Occ	Cool	36 cfm	220 cfm	2200 cfm
VAV 9.1	DEMO BOARD 3 TOP	74 °F	74 °F	Occ	Cool	108 cfm	220 cfm	2200 cfm
VAV 9.2	DEMO BOARD 3 TOP	74 °F	74 °F	Occ	Cool	64 cfm	220 cfm	2200 cfm

## Device List Pages

The Air Handler, Terminals & Other List pages allows you to view various data from each device on the network of the selected type. From this page, you can change the view to display an Icon view or to view the configuration devices (if any). You can also Add, Remove, View/Edit Properties or change the Unit Configuration of any selected device.

## Remove

If a device has been added or automatically discovered and the device is no longer present on the network, you can remove it from the System Manager by pressing on the device and selecting Remove. If the device is still active on the network, it will be re-discovered and re-appear on the list screens. In that case, if you do not care about the device and want the System Manager to ignore it, go to the Unit Configuration page and check the Ignore Device checkbox (see Unit Configuration, page 134).

## View/Edit Properties

For VAV units, see page 36.

For Air Handler units, see page 47.

For LWM, see page 58.

For Generic I/O Manager, see page 70 .

For WSHP units, see page 75.

For Chillers, see page 86.

For Fan Coils, see page 94.

For Ancillary Controls, see page 106

Figure 153: Remove Device

The screenshot shows the MicroTech System Manager interface. At the top, it says "DAIKIN MicroTech® System Manager" and "Logged in as commission" with a "Logout" button. Below this is a navigation bar with "Home", "Summary", "Schedules", "Settings", and "Help". The main content area is titled "VAV Terminal List" and includes a "Refresh Values" button and "View Config" and "Icon Display" options. A table lists various VAV units with columns for Tag, Location, Temp, Ctrl Spt, Occ, H/C, Flow, F-Min, and F-Max. On the left sidebar, there are icons for Alarm, Summary, Terminals, Air Handlers, Other, WSHP, LWM, Chiller, Fan Coil, Remove (highlighted with a red box), Properties, and Unit Config.

Tag	Location	Temp	Ctrl Spt	Occ	H/C	Flow	F-Min	F-Max
VAV 01 - CO	Front Lobby	74 °F	73.5 °F	Occ	Cool	0 cfm	120 cfm	480 cfm
VAV 02 - HC	Conf Room 1	74 °F	76 °F	Occ	Cool	20 cfm	120 cfm	480 cfm
VAV 04 - HW	DEMO BOARD 3 MID	74 °F	86 °F	Occ	Cool	80 cfm	220 cfm	2200 cfm
VAV 06 - HWS	Demo Board 3 Mid	74 °F	74 °F	Occ	Cool	12 cfm	220 cfm	2200 cfm
VAV 07 - ERP	DEMO BOARD 3 MID	74 °F	74 °F	Occ	Cool	40 cfm	220 cfm	2200 cfm
VAV 08 - HWP	DEMO BOARD 3 MID	74 °F	74 °F	Occ	Cool	96 cfm	220 cfm	2200 cfm
VAV 10.3	DEMO BOARD 3 MID	74 °F	74 °F	Occ	Cool	0 cfm	220 cfm	2200 cfm
VAV 5.8	DEMO BOARD 3 MID	74 °F	70 °F	Occ	Cool	64 cfm	220 cfm	2200 cfm
VAV 9.1	DEMO BOARD 3 TOP	74 °F	74 °F	Occ	Cool	104 cfm	220 cfm	2200 cfm
VAV 9.2	DEMO BOARD 3 TOP	74 °F	74 °F	Occ	Cool	52 cfm	220 cfm	2200 cfm

## Unit Configuration

From the list screen, you can select a device and press the Unit Config button to modify one of the following:

**Ignore Device:** Tells the System Manager to not perform any reading or writing to this device. However, the device is still an active device on the MS/TP token ring.

**Interval:** Tells the System Manager how often the point should be read.

**Trend:** Tells the System Manager to place the point into the trend log table each time the point is read.

**Object Description:** This is the label used to describe the point on the property pages. It is only changeable for “Other” devices.

The Ignore Device checkbox can be changed on the Unit Configuration Properties page (Figure 154). To change the Interval or Trend properties, select the point and press the Properties button. This will take you to the Object Definition page (Figure 155) where these can be changed.

**NOTE:** Take care when modifying the Interval property. Reading a large number of points frequently can slow down a large network.

Figure 154: Unit Configuration Properties Screen

The screenshot displays the 'Unit Configuration Properties' screen. At the top, there is a navigation bar with 'Home', 'Summary', 'Schedules', 'Settings', and 'Help'. Below this, the user is identified as 'Logged in as commission' with a 'Logout' button. The main content area is titled 'Unit Configuration Properties' and includes a 'Name' field with the value 'WV04-HW' and an 'Ignore Device' checkbox. A table lists various properties with their descriptions, intervals, and trend settings. A sidebar on the left provides navigation options for different system components.

	Description	Interval	Trend
Terminals	RoomTemp	Minute	<input type="checkbox"/>
	AirVolume	Minute	<input type="checkbox"/>
Air Handlers	RMTMP	Day	<input type="checkbox"/>
	Ctr Address	Startup	<input type="checkbox"/>
Other	Application	Startup	<input type="checkbox"/>
	Heat.Cool	5 minutes	<input type="checkbox"/>
WSHP	DAY CLG STPT	Day	<input type="checkbox"/>
	DAY HTG STPT	Day	<input type="checkbox"/>
LWM	NGT CLG STPT	Day	<input type="checkbox"/>
	NGT HTG STPT	Day	<input type="checkbox"/>
Chiller	RM STPT MIN	Day	<input type="checkbox"/>
	RM STPT MAX	Day	<input type="checkbox"/>
Fan Coil	Night Override	Minute	<input type="checkbox"/>
	Day.Night	Minute	<input type="checkbox"/>
Save	DmprComd	5 minutes	<input type="checkbox"/>
	DmprPos	5 minutes	<input type="checkbox"/>
Cancel	Flow	5 minutes	<input type="checkbox"/>
	CtiFlowMin	Day	<input type="checkbox"/>
Properties	CtiFlowMax	Day	<input type="checkbox"/>
	CtiTemp	5 minutes	<input type="checkbox"/>

Figure 155: Object Definition Screen

**DAIKIN** MicroTech® System Manager  
Logged in as commission Logout

Home Summary Schedules Settings Help

Alarm

Summary

Terminals

Air Handlers

Other

WSHP

LWM

Chiller

Fan Coil

Save

Cancel

### Object Definition

Object Description	<input type="text" value="DimprPos"/>	Type Description	<input type="text" value="DimprPos"/>
Point Index	<input type="text" value="49"/>	Valid Values	<input type="text"/>
Object Type	<input type="text" value="AC"/>	Object Instance	<input type="text" value="49"/>
Minimum Value	<input type="text" value="0"/>	Maximum Value	<input type="text" value="100"/>
Null Value	<input type="text" value="0"/>	Trend Deadband	<input type="text" value="0"/> <input type="button" value="..."/>
Refresh Interval	<input type="text" value="5 minutes"/>		
Access Mode	<input type="text" value="Commandable"/>		
<input type="checkbox"/> Config Point		<input type="checkbox"/> Use Priority Array	
<input checked="" type="checkbox"/> Trend Point		Priority Array	<input type="text" value=""/>

## Settings Menu

The settings menu is where many system preferences are located, mostly pertaining to the network setup, security setup, or alarms, and is common to all device types.

The following section will outline the various sub-menus that are found within the settings tab. Access capabilities are outlined above (see configuration privileges). Necessary fields will be described as well.

Figure 156: Settings Menu

The screenshot shows the MicroTech System Manager interface. At the top, there is a navigation bar with tabs for Home, Summary, Schedules, Settings (which is active), and Help. Below the navigation bar, there is a sidebar menu with options: Alarm, System Config, Network Setup, Security, Replacement Wizard, Ancillary Control, Alarm Setup, Add, Remove, and Properties. The main content area displays the 'System Users' table.

Username	FirstName	LastName	SecurityLevel	Protected
Owner	Owner		Owner	<input type="checkbox"/>
Guest	Guest		Guest	<input type="checkbox"/>
Tenant	Tenant		Tenant	<input type="checkbox"/>
Commission	Commission		Commissioner	<input type="checkbox"/>
Maintenance	Maintenance		Maintenance	<input type="checkbox"/>



## System Configuration

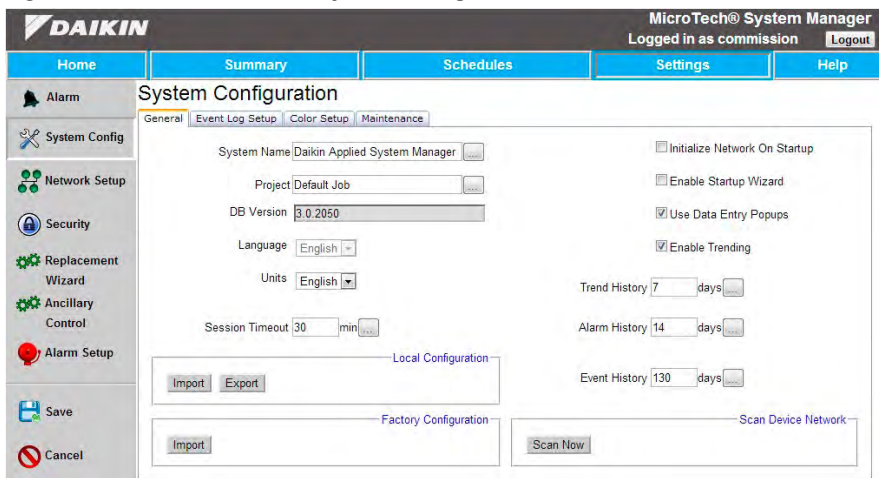
Under the system configuration menu are general system preferences such as time and date, as well as a couple general setpoints. The Home Page column (Table 11) identifies additional features on the Home Page that are available at each access level.

Table 11: Access privileges for the System

Access Level	Home Page	Settings Menu Access (Tabs/Buttons)
Guest (Default User)	None	Not Available
Tenant	None	Security
Maintenance	None	Security
Owner	None	System Config, Network Setup, Replacement Wizard, Alarm Setup
Commissioning	Event Log, Trend Info	System Config, Network Setup, Replacement Wizard, Alarm Setup

## General Tab

Figure 157: General Tab under System Configuration Menu



**System Name:** Name given to the System Manager.

**Project:** Name of specific project.

**DB Version:** Version number of software in system.

**Language:** Language the text is in. Currently, only English is supported.

**Units:** The user can choose between English and Metric units.

**Session Timeout (Min):** This is the amount of time that must pass before the system will timeout, and require the user to login again.

### Local Configuration

- **Import:** This reads in the local configuration (XML) record for the system (used primarily for system comparison).
- **Export:** Writes the current setup to the local XML file for future use.

### Factory Configuration

- **Import:** Reads in the factory delivered XML file.

**Initialize Network At Startup:** By selecting this option and then pressing the “Rediscover Network Devices” the system then rediscovers, from scratch, all devices on the network.

**Enable Startup Wizard:** Selecting this box and saving will enable the Startup Wizard menu and icons on the Home page.

**Use Data Entry Popups:** Allows user to utilize the System Manager pop-up data entry (ie: pop-up keyboard to enter setpoint values).

**Enable Trending:** Selecting this will allow the system to begin collecting data, allowing the user to trend that data, should they desire

**Trend History (days):** The number of days trend information is stored for.

**Alarm History (days):** The number of days alarms are kept in the alarm history.

**Event History (days):** The number of days events are kept in the event history.

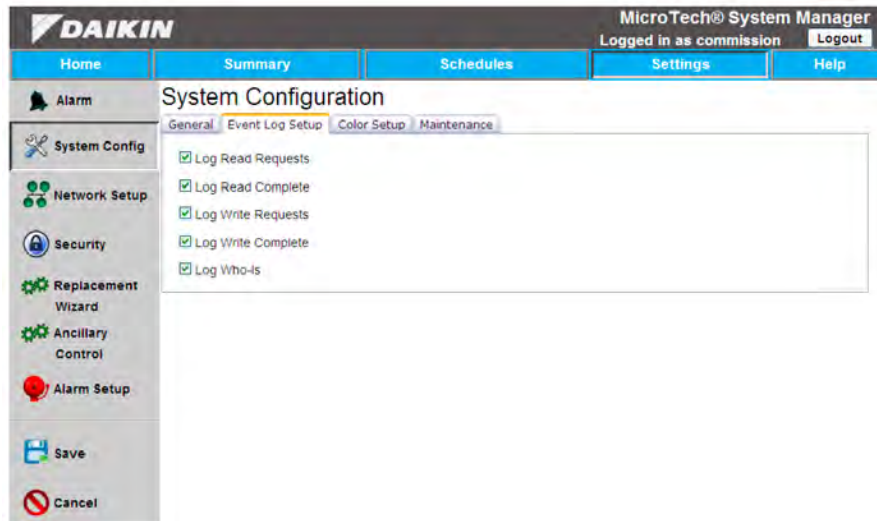
### Scan Device Network

- **Scan Now:** Pressing this button will rediscover the devices on a given network. Used when a current box has gone offline and needs to be refreshed or if a new one is added

### Event Log Setup Tab

The Event Log Setup page allows you to configure what messages appear in the Event Log.

*Figure 158: Event Log Setup under System Configuration Menu*



**Log Read Requests:** Adds Read Request messages to the event log.

**Log Read Complete:** Adds Read Complete messages to the event log.

**Log Write Requests:** Adds Write Request messages to the event log.

**Log Write Complete:** Adds Write Complete messages to the event log.

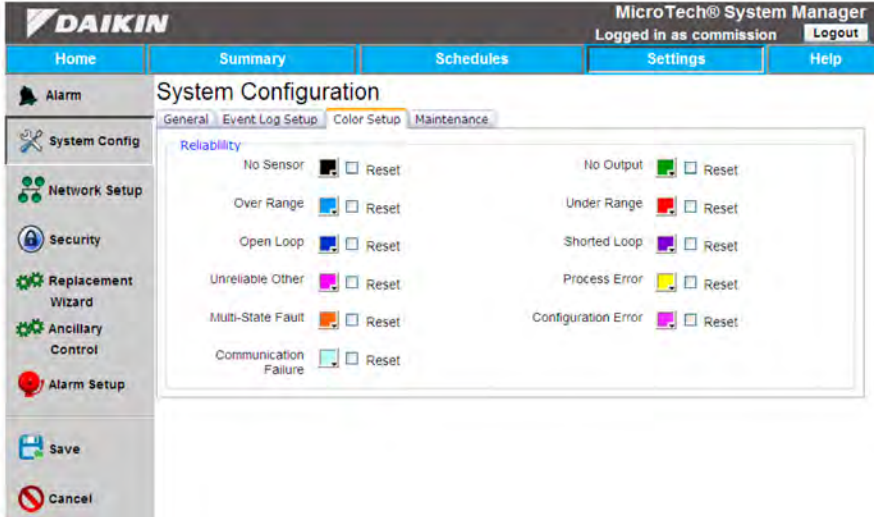
**Log Who-Is:** Adds Who-Is requests to the event log.

**Color Setup Tab**

The Color Setup page allows you to customize your property pages with color when the reliability of the point is something other than no-fault-detected. Selecting Reset for a particular

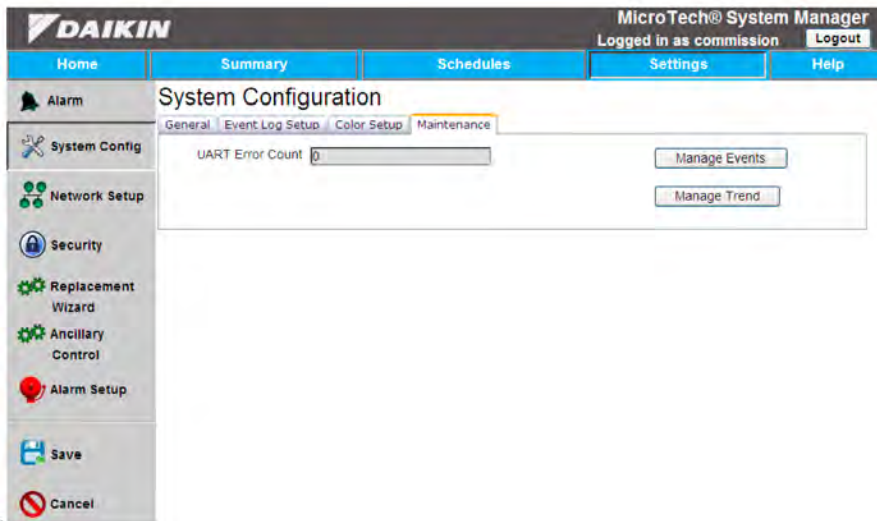
reliability and pressing save will have the effect of not using color.

*Figure 159: Color Setup under System Configuration Menu*



## Maintenance Tab

Figure 160: Maintenance Tab under System Configuration Menu



**UART Error Count** = The number UART errors. These errors are detected in the network level and are normally caused by wiring or addressing problems.

**Manage Events** = Pressing this button trims the event log to the number of event history days (defined on the General tab). For example, if event history days is 2, and you press this button on 5/24 at 2:00 PM, the event log will be trimmed to include everything from 5/22 at 2:00 PM to 5/24 at 2:00 PM.

**Manage Trends** = Pressing this button trims the trend log to the number of trend history days (defined on the General tab). For example, if trend history days is 2, and you press this button on 5/24 at 2:00 PM, the trend log will be trimmed to include everything from 5/22 at 2:00 PM to 5/24 at 2:00 PM.

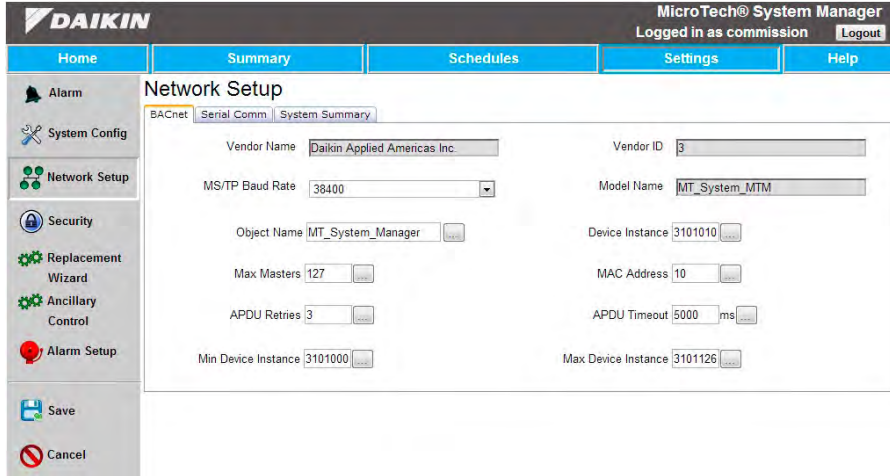
## Network Setup

Under the Network Setup tab is where you can configure network parameters for the computer system. From here you can change the BACnet settings, such as MAC Address and Device Instance. You can also configure certain aspects

of your IP Network as well as your Serial Communications Port. Each tab will be highlighted below, and necessary fields described.

### BACnet Tab

Figure 161: BACnet Tab under Network Setup Menu

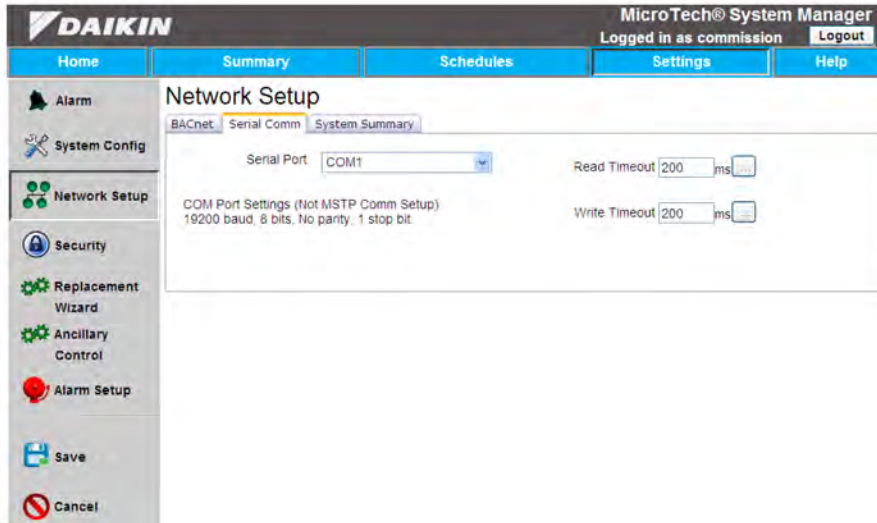


- Vendor Name:** Name of the vendor who sold the product.
- Vendor ID:** Unique number that is used to distinguish vendors.
- MS/TP Baud Rate:** The rate at which information is read over the network.
- Model Name:** Name of the network model.
- Object Name:** Name of the device (System Manager is name given to System Manager).
- Instance Number:** Unique number that distinguishes this particular device from others on the BACnet network.
- Max Masters:** Tells the system how many devices need to be checked for when passing the token within the system. You will generally want to set this value one higher than the total number of devices on the network.

- MAC Address:** Unique address that distinguishes this particular device from others on the network.
- ADPU Retries:** The number of times the system will try to send/receive a message from the stack before noting a communication error.
- ADPU Timeout:** Length of time required for a device to look for a message from the token before timing out..
- Min Device Instance:** The lowest Device Instance that the System Manager cares about.
- Max Device Instance:** The highest Device Instance that the System Manager cares about.

## Serial Comm Tab

Figure 162: Serial Comm Tab under the Network Setup Menu



**Serial Port:** Default port assignment for the system, when connected to a 9-pin serial port.

**Read Timeout:** The amount of time (in ms) required to pass before a read of information over BACnet times out.

**Write Timeout:** The amount of time (in ms) required to pass before a write of information over BACnet times out.

System Summary Tab

Figure 163: System Summary Tab under the Network Setup Menu

The screenshot shows the MicroTech System Manager interface. At the top, it says "MicroTech® System Manager" and "Logged in as commission" with a "Logout" button. Below this are navigation tabs: "Home", "Summary", "Schedules", "Settings", and "Help". The "Summary" tab is active, and the "Network Setup" sub-tab is selected. On the left, there is a sidebar with icons for Alarm, System Config, Network Setup, Security, Replacement Wizard, Ancillary Control, Alarm Setup, Save, and Cancel. The main area displays a table with the following data:

Instance	MAC	Obj Name	Description	Location	Type Desc
3101011	11	VAV 1	VAV 11	Loading Dock South	VAV
3101012	12	VAV 1A	VAV 12	Loading Dock North	VAV
3101013	13	VAV 2	VAV 13	TC Northeast	VAV
3101014	14	NW TECH CENT	VAV 14	TC Northwest	VAV
3101015	15	VAV 4	VAV 15	TC Southwest	VAV
3101016	16	VAV 5	VAV 16	Lit Room East 1	VAV
3101017	17	VAV 6	VAV 17	Lit Room West 1	VAV
3101018	18	VAV 7	VAV 18	Lit Room East 2	VAV
3101019	19	VAV 8	VAV 19	Lit Room West 2	VAV
3101020	20	VAV 9	VAV 20	Lit Room East 3	VAV
3101021	21	VAV 10	VAV 21	Lit Room West 3	VAV
3101022	22	VAV 11	VAV 22	Lit Room East 4	VAV
3101023	23	VAV 12	VAV 23	Lit Room West 4	VAV
3101024	24	VAV 13	VAV 24	TC Hallway	VAV
3101025	25	POL904_015441	AHU	UPPER_AHU	AHU
3101026	26	POL904_000119	AHU	LDOCK_AHU	AHU
3101028	28	POL904_011347	AHU	Rebel AHU 28	AHU
3101029	29	MTIIIUC_WSHP_Ser2_3101029	WSHP 3101029	Basement IT Room	Daikin MTIII WSHP Series 2

This tab displays all devices on the network along with their addressing information.

The information for each device includes:

**Instance** = BACnet Device Instance of the device. Must be unique to the BACnet network.

**MAC** = BACnet MS/TP MAC address for the device.

**Obj Name** = BACnet Device Object name. Must be unique to the BACnet network.

**Description** = Description of the device.

**Location** = Location of the device.

**Type Desc** = Identifies the type of unit associated with that row.

## VAV Replacement Wizard

The “VAV Replacement Wizard” allows the user to replace any VAV Unit that’s on the network. There are two different failure cases. Either there is a communication problem between the devices or there is for example a defect motor for an actuator, but the devices could still communicate. The first case will create a communication failure and there will appear a red “exclamation” symbol in the Summary (Figure 164).

In the later case, the problem couldn’t be fixed and you have to change the actuator, the Daikin Service (or other qualified technician) must transfer the instance number and MAC address from the old actuator to the new one. Do not run the VAV Replacement wizard until this is done and the new actuator is connected to the network.

If a VAV Unit has to be replaced and the communication still works, the device configuration could be transferred in the following replacement wizard (Figure 165). Daikin Service (or other qualified technician) must set up an available instance number and MAC address for the new VAV Unit and connect it to the network before the VAV Replacement Wizard is run.

If this requirement is fulfilled, login at Commission level or higher. Go to the “Settings” tab in the top bar menu and press on the “Replacement Wizard” button located in the left hand menu (Figure 165) and the VAV Replacement Wizard screen will appear (Figure 166).

Figure 164: Actuator out of order

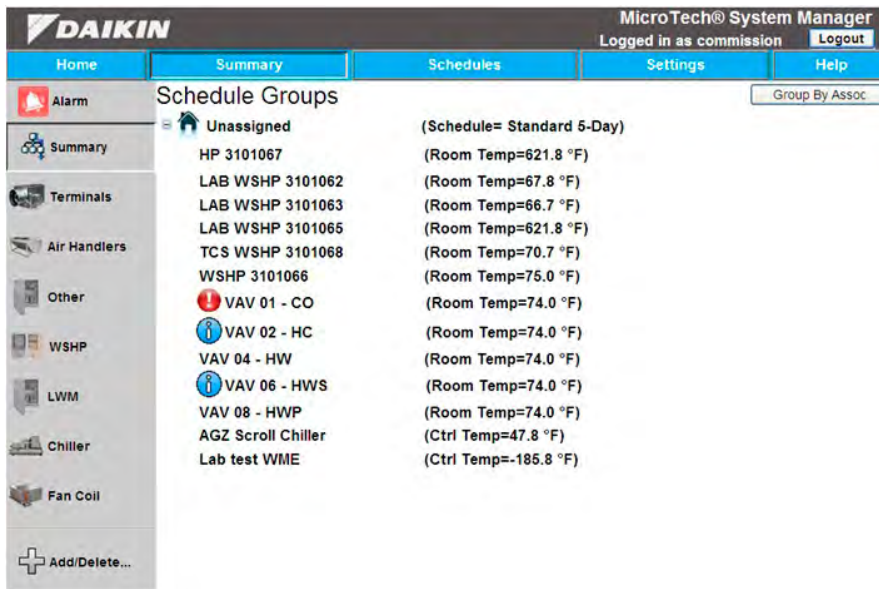




Figure 165: Way to find the Replacement Wizard

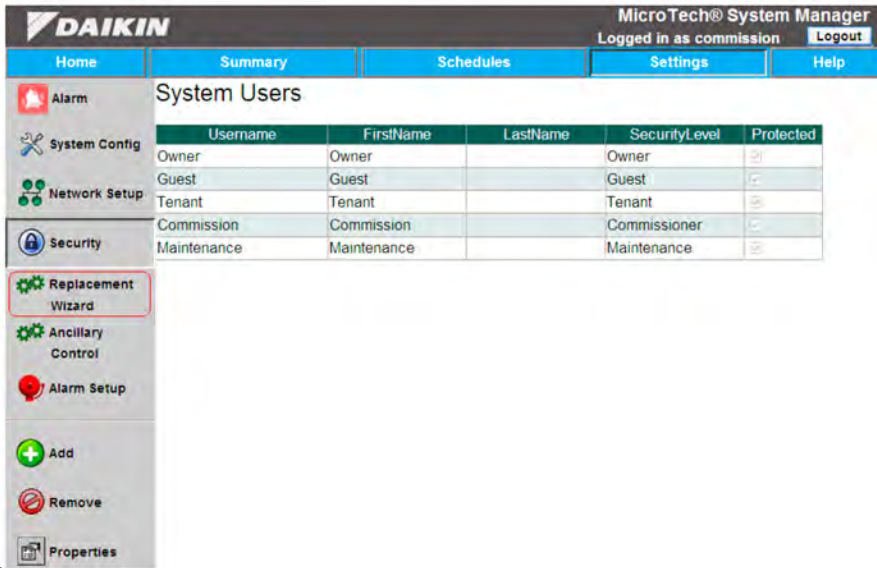
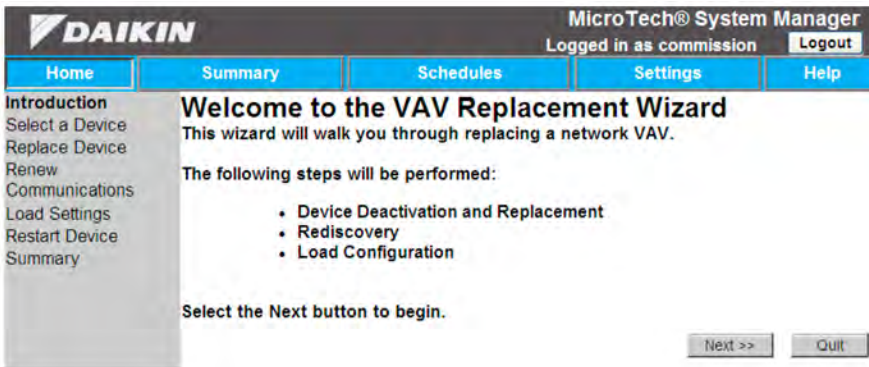


Figure 166: Device Replacement Wizard Welcome Screen



The steps involved in the process are shown below.  
 This is the point at which the user selects the device to replace.  
 This can be done one of two ways: by selecting the device by name or by instance number. Once the desired device has been chosen the wizard can then deactivate the device.

Figure 167: Selecting a Device to replace

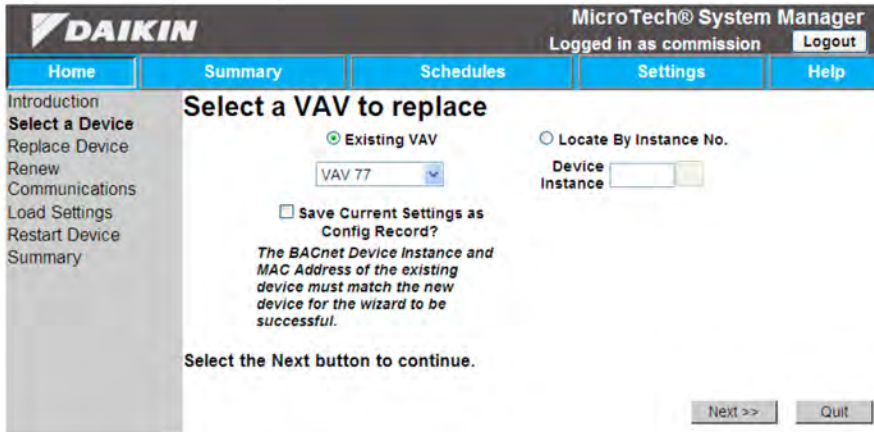


Figure 168: Device Wizard Deactivating Device

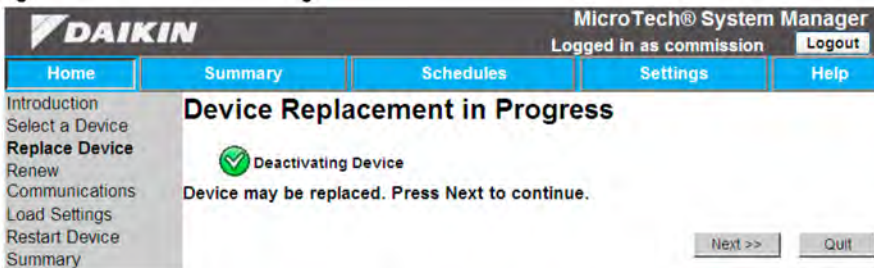


Figure 169: Locating the Deactivated Device



At this point is when the user decides on the settings to load into the new device. There are three options to choose from (Figure 170).

- **Keep Device Settings:** This keeps the current settings that are on the newly located device.
- **Load Settings from Active Device:** This allows the user to load the current active settings from any VAV Unit on the network.
- **Load Configuration Settings:** This allows the user to load settings from the configuration file saved in the system for any VAV Unit.

Figure 170: Selecting the Settings to Load onto the Replacement Device

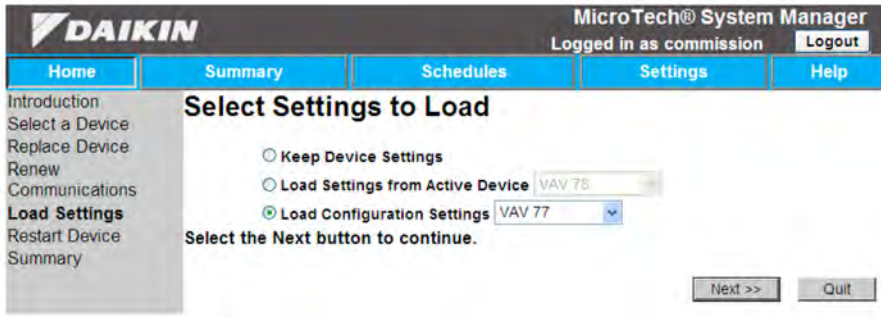
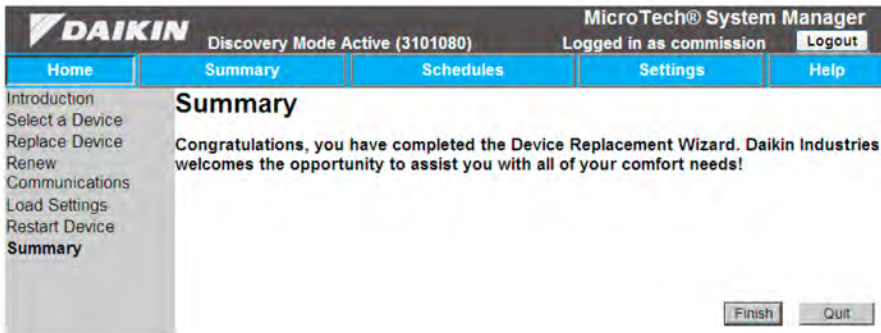


Figure 171: Device Restart Screen



Figure 172: Summary Screen



## Alarm Setup

This menu allows you to register both an e-mail address and phone number on which to receive alerts about existing alarms. The alarm setup menu also allows you to change the max

number of alarms that can be saved at any one time before being deleted. The two tabs located under this menu will be discussed below, and necessary fields will be described.

### General Setup

Figure 173: General Setup Section of Alarm Setup page

**Max Alarms:** Maximum amount of alarms listed in the alarm list page. Once this value has been reached, the oldest alarms are removed from the list.

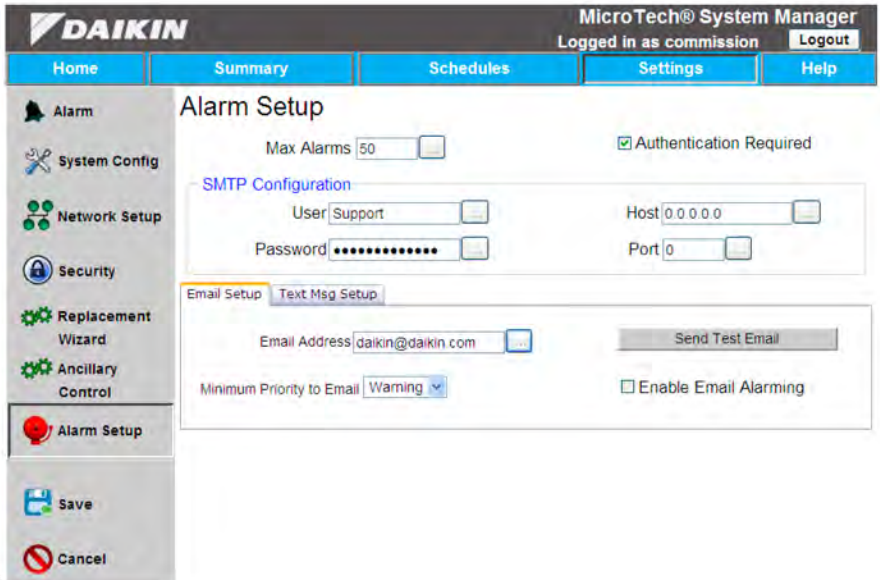
**Authentication Required:** When activated this will prohibit the user from sending an email with proper authentication (SMTP Username and Password required).

### SMTP Configuration

- **User:** The name of the person who is receiving the notifications.
- **Password:** The password used for allowing access to specific protocol network.
- **Host:** The IP address used by the protocol network.
- **Port:** This is the communication port used by the protocol network.

Email Setup Tab

Figure 174: E-mail Tab under the Alarm Setup Menu



**Email Address:** This is the email address that you want the notifications sent to

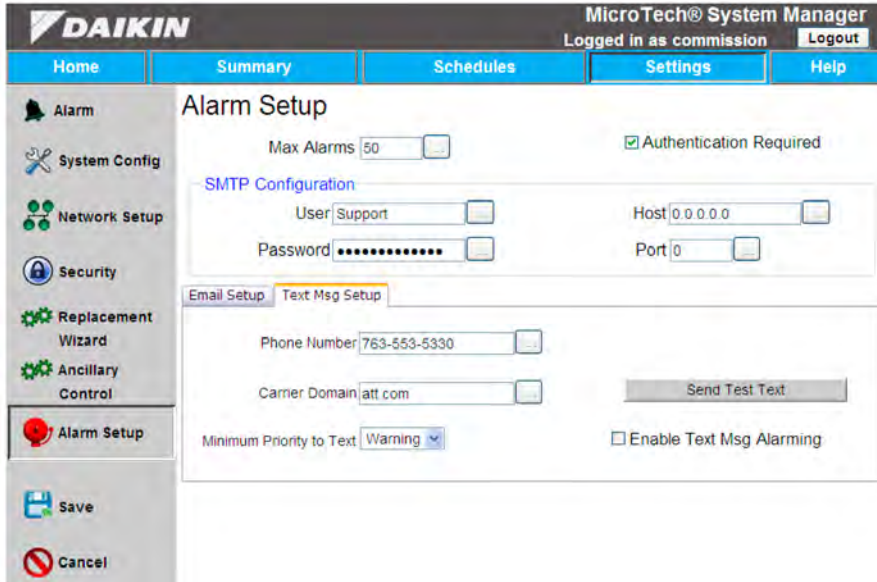
**Send Test Email:** Sends an email to the address that is designated to make sure that the system is working properly.

**Enable Email Alarming:** Allows alarms to be sent to pre-determined email address. Not default so user will have to select option and save.

**Minimum Priority to Email:** This parameter sets the minimum priority level alarm for which an email will be sent. Warnings do not affect unit operation. Problems will affect the unit operation in some way (i.e. disable cooling or heating), but allows the unit to continue to run. Faults will not allow the unit to run and will cause it to shut down until the alarm condition is resolved. See the unit operation manual for more information on different alarm priorities.

Text Msg Setup Tab

Figure 175: Text Msg Setup Tab under the Alarm Setup Menu



**Phone Number:** Phone number that you want notifications sent to.

**Send Test Text:** Sends a text message to the number that is designated to make sure that the system is working properly.

**Carrier Domain:** Cell phone provider.

**Enable Text Message Alarming:** Allows alarms to be sent to pre-determined phone. The default is unchecked so the user will have to enable it by selecting the checkbox and pressing save.

**Minimum Priority to Text:** This parameter sets the minimum priority level alarm for which a text message will be sent. Warnings do not affect unit operation. Problems will affect the unit operation in some way (i.e. disable cooling or heating), but allows the unit to continue to run. Faults will not allow the unit to run and will cause it to shut down until the alarm condition is resolved. See the unit operation manual for more information on different alarm priorities.

### Accessing Alarms

The alarms page is accessed via the home page and is located in the upper left hand corner. Configuring options, like everything else is restricted based on access level. If you are a tenant user or guest then you can access and view the

alarms but you cannot acknowledge or clear them. Beginning with the maintenance access level you can acknowledge and clear alarms, as well as clearing the list of past alarms, and this ability goes all the way through to support level users.

### Alarm Status

If there is an alarm that is current the bell that is located in the upper part of the left hand menu will flash red (Figure 176). You can access the alarm menu page through this button, where based on your access level, you can acknowledge and clear alarms. The system however, should acknowledge and fix active alarms so the user should only have to clear the list.

Figure 176: Showing what happens when an alarm is present

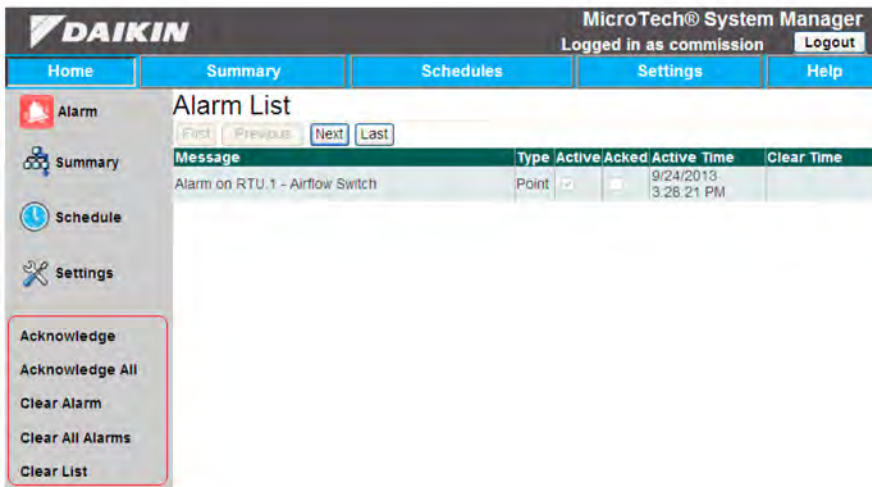


### Alarm List

The alarm list page allows the user to diagnose what is wrong with the system, as well as clear any alarms that have been resolved. From the alarm list page you can see what

alarms are currently active, acknowledged, as well as the acknowledged and clear time of the alarms.

Figure 177: Alarm List Page



**Acknowledge:** Allows the user to acknowledge an individual alarm. The user must select (by pressing on) an alarm and then press Acknowledge. Simply acknowledging the alarm does not fix or remove it.

**Clear Alarm:** This allows the user to force clear an alarm. The user must select (by pressing on) an alarm and press Clear Alarm. This doesn't necessarily mean the problem has been resolved. The system will clear alarms on its own, once alarms are actually cleared.

**Acknowledge All:** Allows user to acknowledge all alarms in the list. Acknowledging all alarms does not fix or remove any of them.

**Clear All Alarms:** This allows the user to force clear all alarms on the page. This doesn't mean problems have been resolved.

**Clear List:** This allows the user to clear all alarms out of the list, regardless of if the alarm has cleared or not.

### Version Information

The version information for the Web Application, BACnet Server and BACnet Firmware can all be found in the lower right hand corner of the help screen (see Figure 178). To view this

version information, simply press the Help tab in the top bar menu. If accessing the System Manager remotely, you must first login to access the help screen.

Figure 178: Identifying Version Information

The screenshot shows the DAIKIN MicroTech System Manager interface. At the top, it says "DAIKIN MicroTech® System Manager" and "Logged in as commission" with a "Logout" button. Below this is a navigation bar with tabs: Home, Summary, Schedules, Settings, and Help. A sidebar on the left contains icons for Alarm, Summary, Schedule, Settings, Add, Remove, and View. The main content area is titled "Available Help Documents" and contains a table with the following data:

File Name	File Size (KB)	Date Modified
ASP 31-276 - BACnet VAV Actuator_Drawing	217	07/30/2010
ASP 31-277 - Room Temperature Sensor_Drawing	94	07/30/2010
ASP 31-300	48	09/27/2010
ASP_31-333_Aug2011	122	09/06/2011
IM 1037-VAV Actuator IM	643	11/11/2010
IM 1040-VAV Actuator Start-Up Guide	336	11/11/2010
IOM_1135 MicroTech III Generic IO	1422	01/23/2012
OM 1092-1 DM System Manager	10592	09/06/2012
OM_1039-1 Space Sensor	92	01/23/2012
OM_1063-VAV_Actuator_OM	687	05/11/2012

In the bottom right corner, a red box highlights the following version information:

- Web App Version 3.0.2027.0
- BACnet Server Version 3.0.2027.0
- BACnet Firmware Version 3.0.2013



### Help Screen

In the "Help menu" you will find pre-loaded documentation on various devices within the system.

### Accessing a Document

1. Just press on the Help tab in the top bar menu
2. Chose the desired document and select it (Figure 179)
3. After selecting press the Properties button on the left hand menu and the pdf file will appear. (Figure 180)

The opening pdf-file could now also be saved on the remote PC or be printed if a printer is available.

Figure 179: Available Help Documents

File Name	File Size (KB)	Date Modified
ASP 31-276 - BACnet VAV Actuator_Drawing	217	07/30/2010
ASP 31-277 - Room Temperature Sensor_Drawing	94	07/30/2010
ASP 31-300	48	09/27/2010
ASP_31-333_Aug2011	122	09/06/2011
IM 1037-VAV Actuator IM	843	11/11/2010
IM 1040-VAV Actuator Start-Up Guide	336	11/11/2010
IOM_1135 MicroTech III Generic IO	1422	01/23/2012
OM 1092-1 DM System Manager	10592	09/06/2012
OM_1039-1 Space Sensor	92	01/23/2012
OM_1063-VAV_Actuator_OM	687	05/11/2012

Web App Version 3.0.2027.0  
 BACnet Server Version 3.0.2027.0  
 BACnet Firmware Version 3.0.2013

Figure 180: Appearing pdf-file

<b>BACnet VAV Actuator Operation Manual</b>	<b>OM 1063</b>
Group: Control	
Part Number: OM1063	
Date: 3/4/2010	
Supervisor: New	

**BACnet® VAV Actuator Owner's Manual**

Rev. AA, January 2010

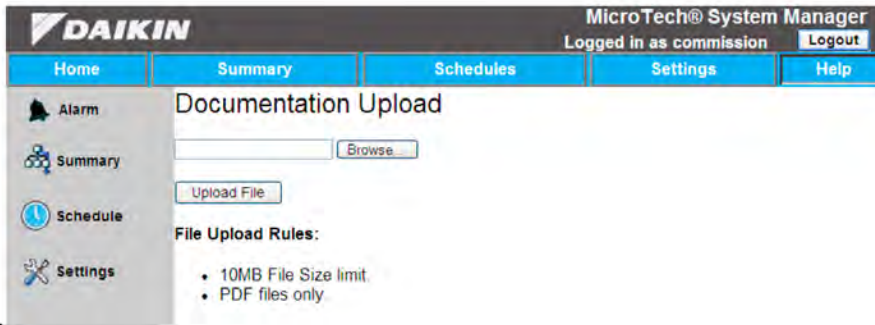
### Adding a Document

It is possible to add files to the Help screen. The file must be a pdf document and the maximum size is 10 MB.

To add a new document:

1. Connect to web-application (if not already)
2. Login in at commission access level or higher
3. Select the Help tab from the main screen
4. Select the Add button from the left hand screen. This brings you to the Documentation Upload screen (Figure 181).
5. Select the Browse button and navigate to the pdf file you want to add, select it and press Open.
6. Select the Upload File button.

Figure 181: Adding a File to the Help Screen

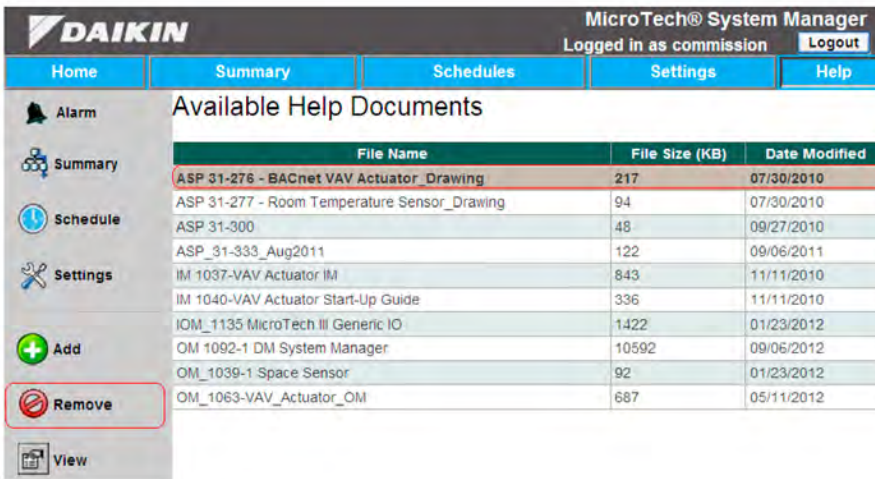


### Removing a Document

It is possible to remove unwanted files from the Help screen. First select the file that you want to remove and press the Remove button (Figure 182). You will be asked to confirm you

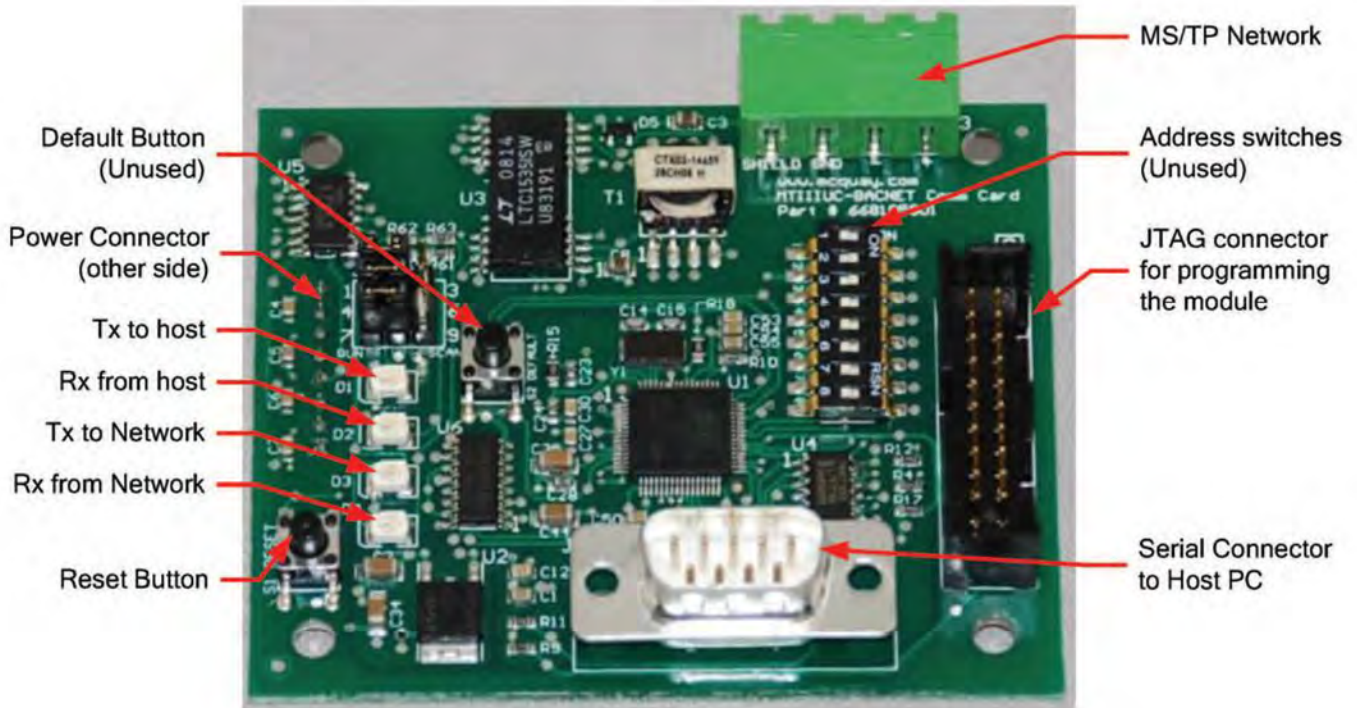
want to delete this file. Select OK to delete and Cancel to leave the file on the help page.

Figure 182: Removing a File from the Help Screen



# Communication Module Hardware

Figure 183: MTM Hardware Module



### LED Indicators

Four LED indicators provide diagnostic information.

- LED D1 – Flashes each time the Comm. Module sends a message to the host PC.
- LED D2 – Flashes each time the Comm. Module receives a message from the host PC.
- LED D3 – Flashes each time the Comm. Module sends a message to the MS/TP network.
- LED D4 – Flashes each time the Comm. Module receives a message from the MS/TP network.

### Reset Button

The RESET button resets the Comm. Module MPU.

### RS-232 Serial Port

The nine pin serial port connector is used to connect the Comm Module to the Host PC.

### MS/TP Network Connector

A four pin plug connector is used to connect to the MS/TP network.

### Power Connector

When used with the System Manager the Comm. Module is mounted with standoffs to the back Controller. This is done to allow room for the power cable to connect to the power connector on the back side of the board. A custom USB cable is used to provide power to the module from a USB connector on the host PC. The Comm Module power connector is on the back side of the module and is not shown in the picture.

### Unused Switches

DEFAULT button and the eight switches of S3 are not used by the Comm Module application.

**Table 12: Troubleshooting Guide**

Error/Condition	Problem	Solution
My System Manager doesn't find all devices on the network.		<ul style="list-style-type: none"> <li>• Check wiring.</li> <li>• Verify the devices have power applied.</li> <li>• Check the Min and Max Device Instance on the Settings/Network Setup screen.</li> <li>• Check the network addressing and baud rate.</li> </ul>
I can't communicate to the System Manager with my PC's web browser.		Compare the IP Address of your computer to the IP Address of the System Manager. Verify you are on the same subnet.
I can't log in to my System Manager.	Incorrect username or password.	The password is case sensitive. Be sure you are typing the username and password correctly.
Some, but not all alarms are being sent to my phone or e-mail.	Which alarms are sent depend on the configuration in the System Manager and the configuration of the unit controller.	Log in as a commission user or above and navigate to the Settings/Alarm Setup page. On the Email Setup and/or Text Msg Setup tabs, check the Minimum Priority to Email dropdown box. Change appropriately.
No alarms are being sent to my phone or e-mail.	This is probably a setup problem.	Log in as a commission user or above and navigate to the Settings/Alarm Setup page. Double check that all settings are correct.
I cannot access certain screens or data on my System Manager	You are most likely logged on at a lower user level than is needed for that particular screen.	
I try to access certain screens like the list or property pages, but I'm redirected to the main screen.	The server is disabled. The main screen shows the message "VAV Server Disabled".	Start the server.
The points I want to trend on the Trend Log page are not available in the object drop down list.	This object is either not available for this unit, has not yet been read or is not setup to be trended.	<ul style="list-style-type: none"> <li>• Verify the point you are looking for is a valid point for this unit.</li> <li>• Go to the list page, select the device you are concerned with and press the Unit Config button. <ul style="list-style-type: none"> <li>— Locate the object you need.</li> <li>— Verify the Trend checkbox is checked.</li> <li>— Verify the Interval for reading is correct.</li> <li>— If the Interval or Trend checkbox is incorrect, select the object and press Properties to change these.</li> </ul> </li> </ul>
I try to add a user, but the User Level I want to assign is not available.	You can only add users with a User Level equal to or lower than the User Level you are currently logged in as.	Assign the new user a different user level. Log in as a higher level user and create the new user. Have some with a higher user level add the new user.
The data point I want to view on the Trend Information page is not available in the Data Point drop down list.	Only points that are marked for trending appear in this list.	<ol style="list-style-type: none"> <li>1. Select the device you are interested in on the appropriate List page and press the Unit Config button.</li> <li>2. Select the point you want to trend and press the Properties button.</li> <li>3. Check the Trend Point checkbox.</li> <li>4. Press Save. The point will now start to be trended based on the Refresh Interval.</li> </ol>
The web pages I load are responding slowly, showing timeout errors, or not applying changes I've made.	Too many users accessing the Controller simultaneously.	Close your web browser and try back later.
The application works fine when I access it locally or from within a local network, but seems incomplete or broken when accessed from outside	Your local IT firewall may be causing an issue.	Consult with local IT staff on troubleshooting firewall rules. This may be commonly cause by an Internet-facing firewall rule that denies an ampersand '&' within URL headers, though there may be other issues.





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