



Operations Manual

OM 1254

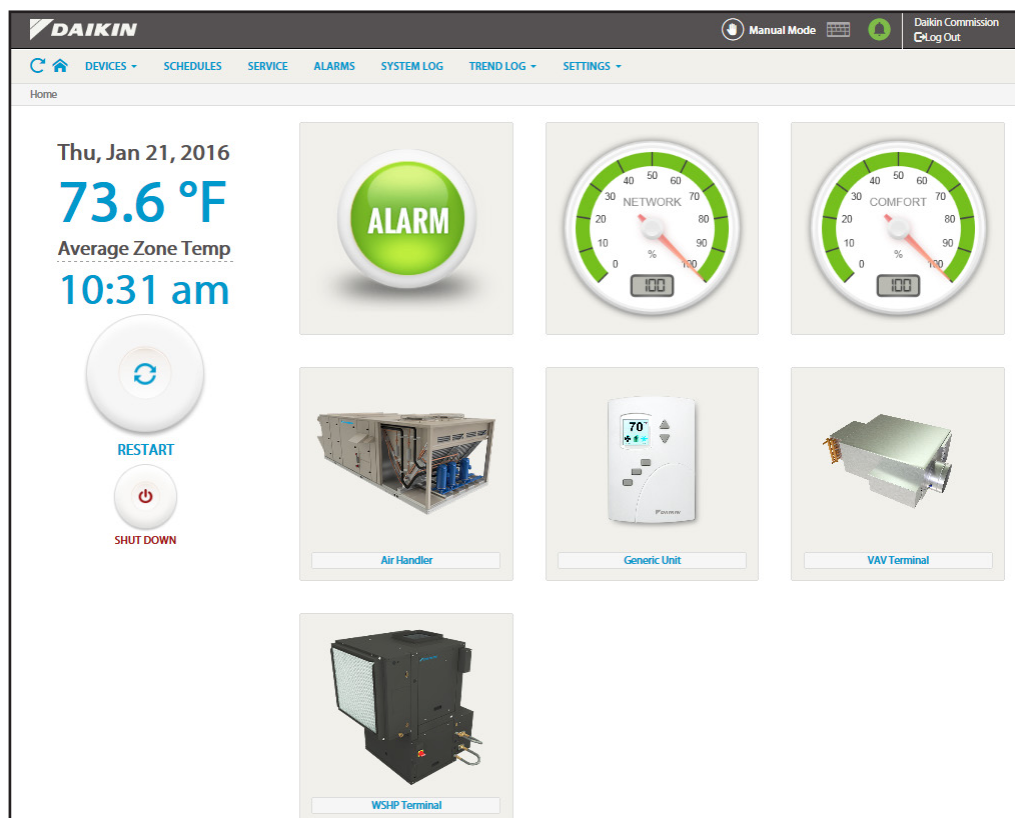
Group: **Controls**

Part Number: **OM 1254**

Date: **April 2016**

Daikin MicroTech® System Manager

Use with Daikin MicroTech Integrated Systems



| | | | |
|---|----------|---|-----------|
| Introduction | 3 | System Manager | 15 |
| Revision History | 3 | The System Manager — Page-by-Page | 15 |
| Reference Documents | 3 | Home Page | 15 |
| Limited Warranty | 3 | Devices | 17 |
| Hazardous Information Messages | 3 | Default Device Properties Tabs | 18 |
| Getting Started | 4 | Scheduling | 19 |
| Power Up | 4 | Creating New Schedules | 19 |
| System Manager Calibration | 4 | Editing Schedules | 21 |
| Shutdown and Restart | 4 | Holiday Schedules | 21 |
| Navigation Options | 5 | Service Utilities Page | 22 |
| Updating Local Time | 5 | Service Utilities – Global Actions | 22 |
| Networking | 6 | Service Utilities - Balancing | 22 |
| Disabling Windows Firewall | 6 | Service Utilities – Network Actions | 23 |
| Windows Update | 6 | Alarms | 24 |
| Determining IP Address and Subnet Mask | 6 | Alarm Colors | 24 |
| Setting Manual IP Address and Subnet Mask | 7 | Manage Alarms Page | 24 |
| Accessing the System Manager Remotely | 7 | Acknowledging Alarms | 24 |
| Start-Up Guide | 8 | Clearing Alarms | 24 |
| Discovery Mode | 8 | Alarm History Tab | 24 |
| System-Level Device Configuration | 9 | Alarm Notifications | 25 |
| Addressing | 9 | System Log | 26 |
| Addressing Devices Manually | 9 | Trend | 26 |
| ATS Auto Assignment for WSHPs and FCUs | 10 | Export Trend Data | 26 |
| Managing Users | 11 | Export History | 26 |
| Adding Users | 11 | Settings | 27 |
| Removing Users | 12 | System Configuration | 27 |
| Changing or Resetting User Passwords | 12 | System Log Configuration | 28 |
| Resetting a Password | 12 | Alarm Configuration | 28 |
| Changing a Password | 13 | My Configurations | 28 |
| Saving the Configuration | 14 | Ancillary Control | 29 |
| | | Display Templates | 34 |
| | | Managing Device Templates | 35 |
| | | Network Setup | 36 |
| | | Manage Documents | 36 |
| | | Troubleshooting | 37 |

The MicroTech Integrated System's (MIS) System Manager is a Windows® Embedded Standard 7 based PC with a touch-screen display and a web-based interface that allows you to monitor and control all BACnet MS/TP capable HVAC devices in a building's HVAC system.

When properly connected to the internet, the System Manager can be securely accessed by any authorized user with any major web browser (Chrome®, Internet Explorer®, Safari®, Firefox®, etc.), and its responsive UI design means content will adapt to any screen size, including desktop and laptop computers, tablets, and smart phones. This remote access allows you to receive alerts and notifications and access building controls and information from anywhere in the world.

Revision History

| Version Number | Date | Comment |
|----------------|------------|-----------------|
| OM 1254 | April 2016 | Initial Release |

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. To find your local Daikin Applied representative, go to www.DaikinApplied.com.



MicroTech Integrated Systems' System Manager
250801500

Hazardous Information Messages

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.

DANGER

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

NOTICE

Notices give important information concerning a process, procedure, special handling or equipment attributes.

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.

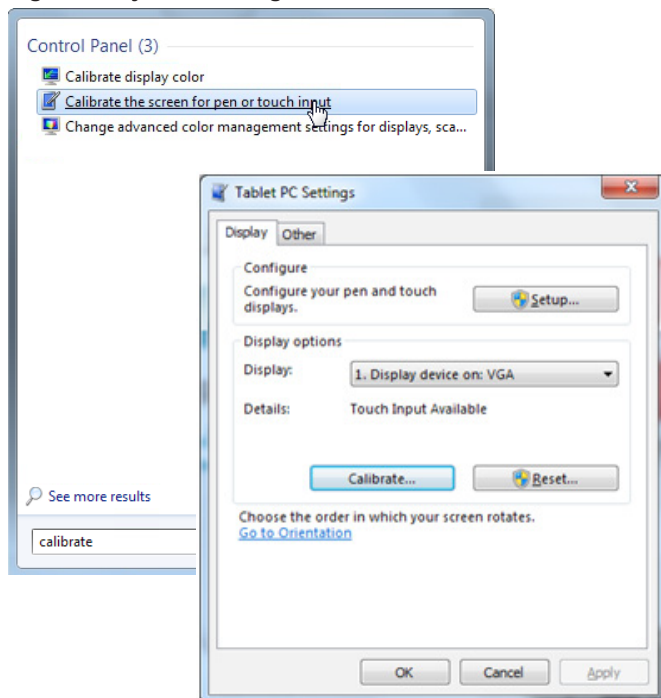
Power Up

You will likely find it is most convenient to power-up and connect all HVAC devices before you power-up the System Manager for the first time. To do this, confirm that all necessary communication wires connect the System Manager to all devices in your building's HVAC system, and check to ensure that all necessary sensors and power cables are hooked up properly. You can then proceed to power up the System Manager by connecting it to a power source. When plugged in, the System Manager will automatically begin start-up and the power button will light up blue. If power-up does not occur after applying power to the System Manager, press the power button on the front of the System Manager PC.

System Manager Calibration

To ensure a judicious mode of operation, the System Manager should be calibrated. Tap on the top of the screen and a window saying "You have gone full screen. Press F11 to exit full screen" will appear. Press "Press F11 to exit full screen" and minimize chrome in the upper right corner. Go into the start menu by pressing at the extreme bottom of the screen, or by moving a mouse down to the bottom of the screen. In the **Start Menu, Search Programs and Files** and type "Calibrate". Select [Calibrate the screen for pen or touch input], refer to [Figure 1](#). Select **Calibrate...** and tap the crosshairs as they appear to complete calibration.

Figure 1: System Manager Calibration



Shutdown and Restart

CAUTION

Do not restart using the power cord. Not following the proper shut down methods can result in corruption to the System Manager database

To either shutdown or restart the System Manager safely, click on the shutdown or restart buttons which you will find on the lower left hand corner of the system's home page, as shown in [Figure 2](#). The home page can be accessed from any other page by clicking on the home icon in the upper left corner of the screen, as shown circled in [Figure 3](#). All users have access to the restart and shutdown buttons when using the System Manager on-site. However, Commission level user access is required to access the shutdown and restart buttons remotely. The system Manager can also be safely shutdown by using the power button located on the front of the system Manager - just make sure to turn the System Manager back on to continue effective use of MicroTech Integrated Systems.

Figure 2: Restart and Shut Down Buttons

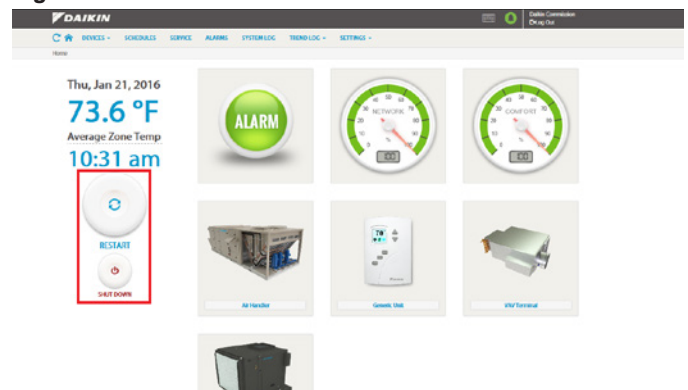
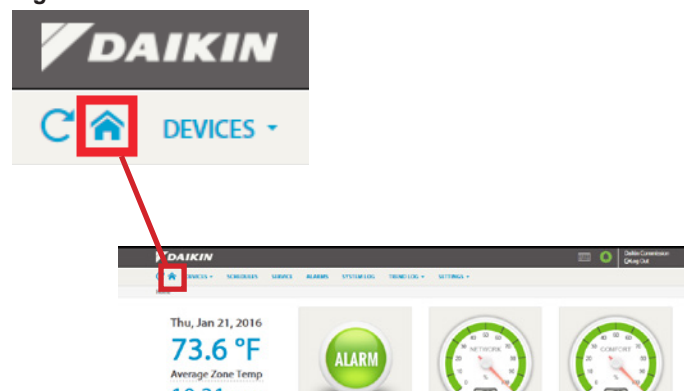


Figure 3: Home Button



Navigation Options

Hardware Options: The System Manager is designed to be navigated as a touchscreen interface. In some instances a user may find it preferable to use a mouse and/or keyboard. A USB mouse and/or keyboard can be added and used by simply plugging one or both of these devices into one of the System Manager's USB ports located on the back panel of the System Manager. If a physical keyboard is not possible, the System Manager has two built-in options for keyboards.

The Windows On-Screen Keyboard can be accessed at the System Manager PC only. This Keyboard can be used both in the System Manager's MIS program and outside the MIS program to search files and programs on the System Manager PC itself. To open the On-Screen keyboard select the tab along the left side of the screen. The tab to open the keyboard, and the keyboard itself can be seen in [Figure 4](#).

The System Manager Virtual Keyboard is designed to be used within the MIS program only. However, the virtual keyboard can be accessed remotely from any other touchscreen device that is used to access the System Manager's program. To enable the MIS program's virtual keyboard, select the keyboard icon in the upper right of the screen, shown boxed in [Figure 5](#) next to the virtual keyboard. It will automatically appear whenever a box that allows user input is selected (e.g. logging in, setpoints, device location, etc). When you are finished using the virtual keyboard, select the keyboard icon again to disable it.

Figure 4: Windows On-Screen Keyboard



Figure 5: System Manager Virtual Keyboard



Updating Local Time

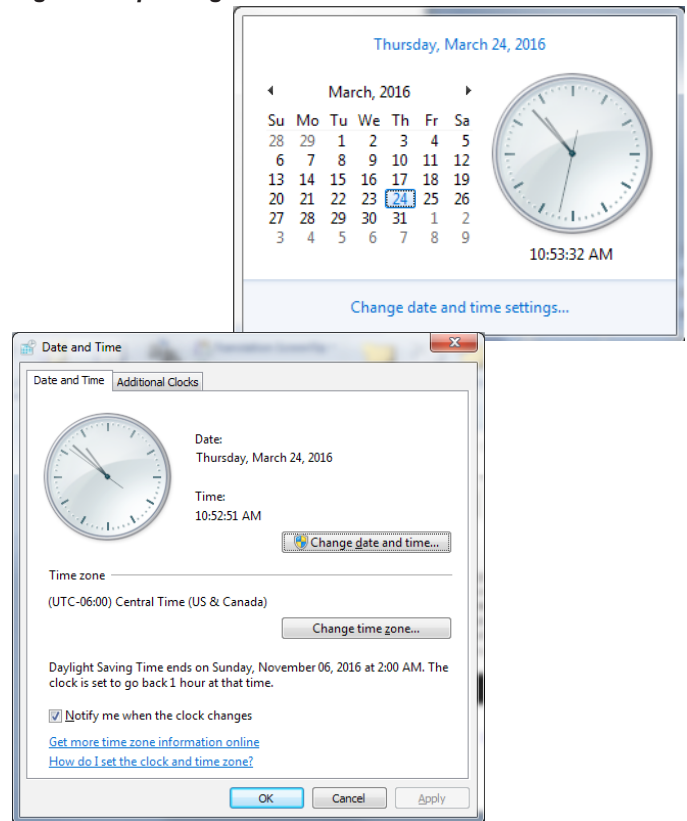
NOTICE

You must restart the MIS Application for Time/Date changes to apply.

To avoid problems with schedules inside MIS, it's necessary to update the Time and Time Zone of your System Manager.

Tap on the top of the screen and a window saying **"You have gone full screen. Press F11 to exit full screen"** will appear. Press **"Press F11 to exit full screen"** and minimize Chrome in the upper right corner. Tap at the extreme bottom of the screen. Go to your system clock in the bottom right corner of the desktop and select **"Change date and time settings."** Use this window to adjust your system time and update the Time Zone if necessary, refer to [Figure 6](#). The MIS application needs to be restarted for the changes to apply. Go to the Home screen and select **Restart**.

Figure 6: Updating Date and Time



The System Manager is a Windows-based PC and can be added to a network and connect to the internet like any other personal computer with a Windows operating system. When a network connection is provided to the System Manager through the Ethernet port on its back panel, any other computer on the same network can access the System Manager's interface using the web-browser on their local device.

The System Manager will control your buildings HVAC system 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 not work without access to the internet. The following sections will explain how to disable the Windows Firewall, determine and set the IP address and subnet mask, and connect to the System Manager remotely from any other device with a web-browser.

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 start menu. From the start menu, **Search Programs and Files** and type "**Windows Firewall**." Next select "**Windows Firewall**." Then click on the "**Turn Windows Firewall On or Off**" link on the left side menu. Select the **OFF** to disable Windows Firewall. The other option is to navigate to "**Windows Firewall with Advanced Security**" where configuration options are available under "**Windows Firewall Properties**". Click **OK** to apply new firewall settings.

Windows Update

By default, Windows Update has been disabled on the System Manager. The rationale behind this decision is if a selection window pops up during a shutdown or a system boot, the System Manager may not start properly. This is inconvenient, especially if the restart or shutdown was done remotely. The other reasoning is that some System Managers will not be connected to the internet (it is not required for it to run).

If you would like to enable Windows Update, make sure the System Manager is connected to the internet. Exit full screen and minimize Chrome, then select the Windows start menu. In "**Search Programs & Features**," type "**Windows Update**" and select "**Windows Update**." This will bring you to the Windows Update section of the Control Panel where you may change Update Settings such as Automatic Updates, or tell the System Manager to check for updates manually.

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. The System Manager must have a unique IP address on the network it is connecting to, and have the same Subnet mask.

NOTE: 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.

To find the System Manager IP Address and Subnet mask follow these steps:

1. Minimize the web-application (Exit full screen by going to the top of the screen).
2. Access the Windows desktop Start Menu.
3. Search Programs and Files → Type "cmd" and select cmd.exe.
4. From the command prompt screen type in "ipconfig" and hit enter.
5. A readout showing your IP Address and Subnet Mask should appear, shown in [Figure 7](#).

Figure 7: Viewing System Manager's IP Address and Subnet Mask

```

C:\Windows\system32\cmd.exe
C:\Users>ipconfig

Windows IP Configuration

Wireless LAN adapter Wireless Network Connection:

    Connection-specific DNS Suffix  . : mcquay.com
    Link-local IPv6 Address . . . . . : fe80::781f:2df5:9860:fdc3%16
    IPv4 Address. . . . . : 10.144.13.6
    Subnet Mask . . . . . : 255.255.240.0
    Default Gateway . . . . . : 10.144.1.1

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : mcquay.com
    Link-local IPv6 Address . . . . . : fe80::91cc:2c9e:f2ec:fadc%15
    IPv4 Address. . . . . : 10.144.12.178
    Subnet Mask . . . . . : 255.255.240.0
    Default Gateway . . . . . : 10.144.1.1

Tunnel adapter isatap.mcquay.com:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . : mcquay.com

Tunnel adapter Local Area Connection* 13:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Tunnel adapter Local Area Connection* 12:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

C:\Users>_
  
```

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. Minimize the web-application (Exit full screen by going to the top of the screen).
2. Enter the Windows desktop Start Menu.
3. Search Programs and Files → Type “View Network Connections”.
4. Depending on whether you are connecting via LAN or wireless right-click on your connection medium and select Properties.
5. Select “Internet Protocol Version 4 (TCP/IPv4)” then click the properties button below, see [Figure 8](#).
6. Select “Use the following IP address” and enter the desired IP Address and subnet Mask in the space provided, see [Figure 9](#).

Figure 8: Accessing IP Address Configuration Page

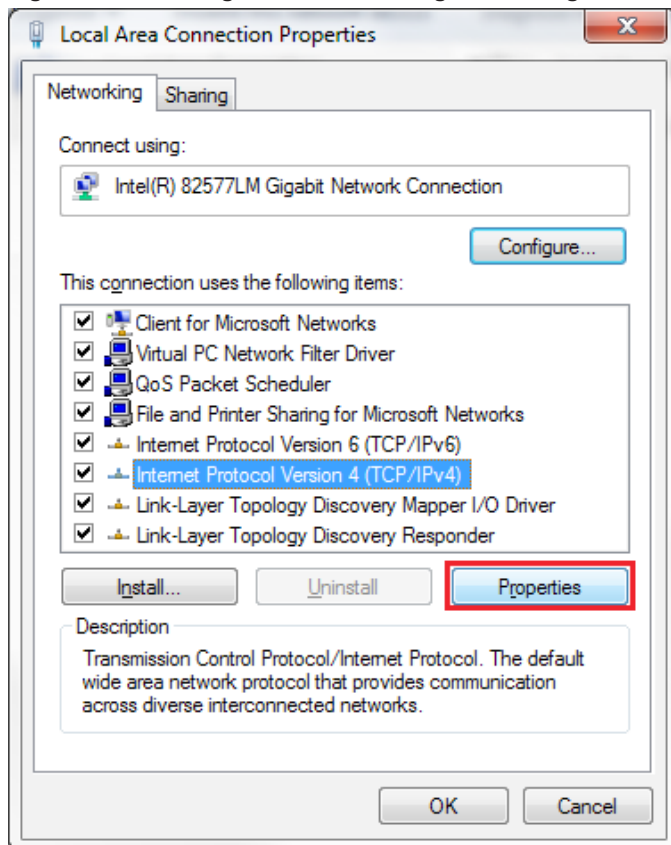
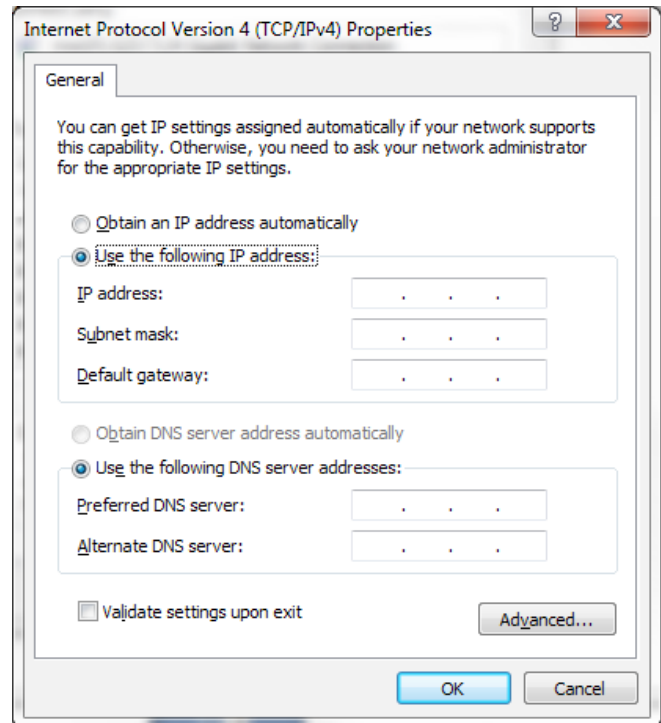


Figure 9: TCP/IP Page



Accessing the System Manager Remotely

To access the System Manager from any other device follow these steps:

1. If the computer or other device you are using shares the same network as the System Manager, make sure your computer or other device has a similar, but different IP Address than the System Manager, and the same Subnet Mask. If unsure, see the section “Determining IP Address and Subnet Mask.”
2. Open any major web-browser.
3. Type <http://xxx.xxx.xxx.xxx/MISPanel>, where the xxx.xxx.xxx.xxx, is the IP address of the System Manager you would like to access. The System Manager's IP-address was identified in the previous section (Determining IP Address and Subnet Mask).
4. If done correctly the System Manager's log in window should be brought up on the screen.
5. You can log into the System Manager using the default user names and passwords found in [Table 1](#), or using a custom user name and password. To learn more about adding users and setting passwords see the section, [Managing Users](#).

The System Manager can be pre-programmed in the factory to expect to find the HVAC devices in your building's HVAC system.

NOTE: HVAC devices manufactured by brands other than Daikin, cannot be factory pre-addressed.

Some of the actions required during startup will require Commission level access. To log-in at commission-level, find and select the "login" in the upper, right-hand corner of the home screen and enter the appropriate user name and password for commissioning access. Table 1, on the following page, lists default user names, passwords, and settings for each access level.

NOTE: To learn more about user access, see the [Managing Users](#) section.

Table 1: Default User Names

| Access Level | User Name | Password | Settings Menu Access (Tabs/Buttons) |
|----------------------|-------------|-------------|---|
| Guest (Default User) | N/A | N/A | Manage Users (View Only), System Configuration (View Only), Manage Documents |
| Tenant | Tenant | daikin123 | See Guest |
| Maintenance | Maintenance | daikin123 | Manage Users (may add), System Configuration, Network Setup, Manage Documents |
| Owner | Owner | daikin123 | Maintenance level plus access to Service and System Log tabs |
| Commission | Commission | daikin72639 | Owner level, plus access to Ancillary Control, Device Templates |

Discovery Mode

Step 1: The first time you power-up the System Manager you will be taken to the home screen and a process of discovery will automatically begin indicated by the phrase "Discovery Mode" displayed in the black Daikin banner running across the top of the screen as seen in Figure 10.

During the discovery mode process, the System Manager will be busy discovering and establishing connections with each device it finds in your building's HVAC system. It's best to leave the System Manager alone and untouched until the Discovery Mode process is complete. (Completion times vary, but in general, allow between 10-15 minutes). The Discovery Mode process will be completed when the icon has been removed from the banner, see Figure 10.

NOTE: The System Manager can properly connect with HVAC devices **only when** they are powered up, addressed, and properly wired to the System Manager.

Daikin brand Water Source Heat Pumps (WSHP) and Fan Coil Units (FCU) have a separate start-up wizard and will not be discovered during the discovery process.

Step 2: When complete, a list of HVAC system devices will be available on the Devices tab. This list includes all the HVAC devices that the System Manager was able to find and/or establish communication with during the discovery process.

NOTE: If the System Manager was purchased with equipment, the System Manager will be preprogrammed with all of the associated equipment information. If the System Manager was purchased separately from equipment, this will not be the case.

You will want to review the device list carefully to be sure each device in your HVAC system is included. Although most devices will be listed in plain text fields you may notice that some devices are highlighted in blue or in red. You may also notice that one or more of your building's HVAC device(s) are not listed at all. Please review Table 2 to understand what these differences mean.

Table 2: Discovery Mode Text Function

| Device Listed in: | Plain Black text | Blue Highlight | Red Highlight | Device is NOT listed |
|------------------------|---|---|---|---|
| What this means: | The System Manager has established communication with this HVAC device, and it was pre-programmed to expect to find it. | The System Manager has established communication with this HVAC device, but it was not pre-programmed to expect to find it. | The System Manager was not able to establish communication with this HVAC device, but it was pre-programmed to expect to find it. | The System Manager was not able to establish communication with this HVAC device, and it was not pre-programmed to expect to find it. |
| Additional Information | These devices are properly wired, powered, and pre-addressed. These devices will require minimal system level configuration. | These devices are properly wired, powered, and addressed. These devices will require some system level configuration. | See Step 3 to learn more. Check power, network wiring, the MAC address, and the Device Instance Number. If there are no conflicts with addressing or wiring, contact Daikin Applied. | See Step 3 to learn more. This is the same as the previous field, except there was no pre-programming. Check power, network wiring, the MAC address, and the Device Instance Number. If there are no conflicts with addressing or wiring, contact Daikin Applied. |

Figure 10: Discovery Mode



Step 3: According to [Table 2](#) if you have one or more system devices that are either highlighted in red or missing from the device list, these devices are not communicating with the System Manager. The following are a list of the 3 primary reasons why communication errors may happen and what to do in each case to establish communication.

1. **The device is not powered or connected properly.**
Communication wiring issues are the most common cause of communication failures. Be sure to check that the HVAC device is plugged in, powered on, and wired properly to the System Manager. Also check for loose or damaged communication wires. If any issues are found, solve or repair the problem. If the wiring issue was the only problem, the System Manager will automatically discover the device once the wiring issue is solved. If the device is still missing from the list or highlighted in red after the wiring issues have been solved, see the second and third possible reasons listed below.
2. **The device is a Daikin brand Water Source Heat Pump (WSHP) or Fan Coil Unit (FCU).** The System Manager has a separate ATS Auto Assignment wizard that is designed to address and establish communication with all Daikin Brand WSHPs and FCUs. Please see the section, [ATS Auto Assignment for WSHPs and FCUs](#) to learn more.

NOTE: WSHPs and FCUs manufactured by all other brands must be manually addressed

3. **The device has not been addressed or is addressed improperly.** HVAC devices cannot communicate with the System Manager unless they are properly addressed. Each device must have a unique MAC address and device instance. The device instance number, by default, must be between 3101000 and 3101999. The MAC Address must be unique between 0 and 127. All preprogrammed Daikin equipment will have the last three digits of their device instance number match their MAC Address – for example the System Manager default is 3101010 and MAC Address of 10. All unaddressed devices, including WSHPs and FCUs manufactured by brands other than Daikin, must be manually addressed. See the Addressing section for more information.

System-Level Device Configuration

When devices are expected by the System Manager, they will often be pre-configured at the factory. However, it's not unusual for some of your HVAC devices to need some system-level configuration. System-level configuration includes addressing devices manually, checking whether devices have templates available, assigning templates, assigning devices to schedules, and setting up proper parent-child associations. These system-level configurations will be addressed various sections – Addressing is in the Start-up section, Templates are under the Devices section, Schedules is in its own section, and Parent-Child associations are also in the [Devices](#) section.

Addressing

All BACnet MS/TP enabled HVAC devices can communicate with the System Manager regardless of brand, but these devices must be addressed to do so. Most Daikin brand devices will be pre-addressed in the factory, but the factory cannot pre-address devices from any other brand. All other devices remaining undiscovered after the Discovery Mode completes must be manually addressed. Each device must have a unique address in the Daikin device address range (the MAC Address range is between 0–127 and the default Device Instance range is between 3101000–3101999).

Addressing Devices Manually

To enable the System Manager to communicate with any BACnet MS/TP capable HVAC device, the device must be given an appropriate unique MAC Address and Device Instance number. To manually address any system device, please refer to the Operating Manual of the particular device in question.

To determine an available address:

Each device must be given its own unique address. No two devices can share the same device instance and/or MAC address number. When manually addressing a device, you may need to determine an available address by following the steps below.

1. Log in at Commission user access level.
2. Select “**Settings**” from the main menu bar beneath the Daikin banner.
3. Select “**Network Setup**” from the Settings drop down menu.
4. Select the “**System Summary**” tab, which will display a list of all communicating devices on the network.
5. To sort this list by order of Device Instance number or by order of MAC address number, select either the “Device Instance” heading, or the “MAC Address” heading.
6. Selecting either heading multiple times will toggle the display between listing numbers in ascending and descending order.
7. Toggle the “MAC Address” or “Device Instance” to list numbers in ascending order, and go to the end of the list to view the last used address. This list includes all addresses currently communicating.
8. Choose an unused MAC address between 0–127 and a device instance between 3101000–3101999.

NOTE: Devices with a MAC Address between 0–127 but incorrect Device Instance range will still pass the BACnet MS/TP token on the network trunk, but the device will not be displayed on the System Manager.

ATS Auto Assignment for WSHPs and FCUs

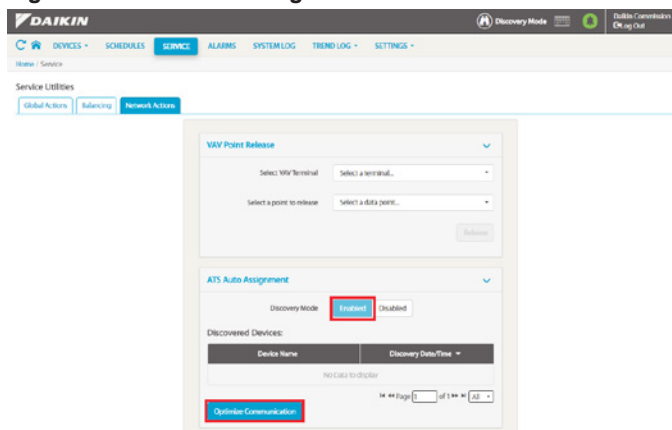
ATS Auto Assignment is a wizard that will assist in locating, addressing, and establishing a connection with the various WSHP and Fan Coil units within the building. To begin this process select the “Service” tab, then select the “Network Actions” sub-tab. The “ATS Auto Assignment” section is found under the “VAV Point Release” box. To enable the system to discover the WSHP and Fan Coil Units within your building, you must enable the Discovery Mode by selecting “Enable” next to Discovery Mode, see [Figure 11](#). Once the discovery mode has been enabled, the System Manager is ready for incoming communication.

Each WSHP and/or Fan Coil Unit will initiate communication when it's associated space sensor is held in for more than 10 seconds. When this is done, the System Manager will signal that it has discovered the device by listing it under “Discovered Devices” in the ATS Auto Assignment section along with the date and time of discovery. The newly discovered devices will be listed in order of the first-discovery on top, to the latest discovery on the bottom. The date and time of each discovery can be helpful in identifying each device in the list. This is because each device is given a generic name by the System Manager according to default settings, and these generic, default names can make it difficult to determine which device each name refers to. It is suggested to use the following strategy:

1. After enabling the Discovery Mode, initiate communication with the first WSHP or Fan Coil unit by pressing and holding its tenant override button for more than 10 seconds.
2. Record the time you initiated communication with this device, before moving on to the next device.
3. In this way, go zone to zone, initiating communication with each device in the building and recording the time and order communication with each device was initiated.
4. Return to the System Manager. Use the order and time as a guide to identify which device, each default device name is referring to.
5. It is recommended to change the default device names when the initial identification is complete. This will help keep devices organized later.
6. After confirming and possibly renaming each WSHP and Fan Coil unit is on the discovered devices list, press the “Optimize Communication” button. Once pressed, the System Manager will scan the entire Max Master range and identify the lowest, open MAC Address and assign it to the first discovery. It will iterate this process until all newly discovered devices have been optimized.
7. Optimize Communications will be complete when the System Manager displays a notification. Once complete, disable the discovery mode by selecting the “Disable” button to end the process. (**NOTE:** This will clear the Discovered Devices list, so be sure you are done interacting with this list. Devices can still be interacted with through their respective Device Property page.)

NOTE: As with other newly discovered devices, some system level configuration may need to be done. See the associated section for more information.

Figure 11: ATS Auto Assignment



Managing Users

For security purposes, the System Manager has 5 separate levels of user access. User levels allow different kinds of users to access only the specific information and controls they need, while preventing unauthorized access and changes to the system. Table 3 outlines what System Manager settings each default user level has access to view or change. The default levels of access are listed in order from the most restrictive, Guest level, to the most permissive, Commission level.

NOTE: Passwords are case sensitive, but user names are not.

The default users, listed in Table 3, cannot be removed under any circumstances

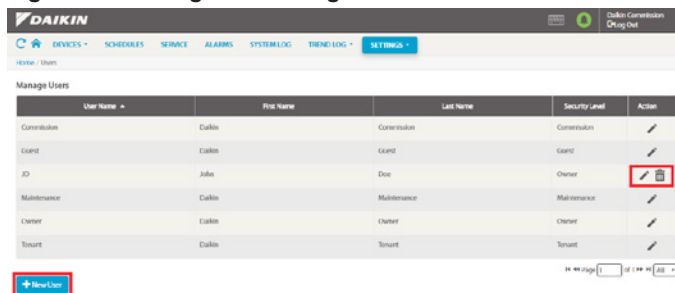
For security purposes it is highly recommended that default user names and passwords, published in Table 3, be changed, recorded, and stored safely. After passwords are changed from their defaults, they cannot be reset without the help of a user at a higher access level.

Table 3: Default User Names

| Access Level | User Name | Password | Settings Menu Access (Tabs/Buttons) |
|----------------------|-------------|-------------|---|
| Guest (Default User) | N/A | N/A | Manage Users (View Only), System Configuration (View Only), Manage Documents |
| Tenant | Tenant | daikin123 | See Guest |
| Maintenance | Maintenance | daikin123 | Manage Users (may add), System Configuration, Network Setup, Manage Documents |
| Owner | Owner | daikin123 | Maintenance level plus access to Service and System Log tabs |
| Commission | Commission | daikin72639 | Owner level, plus access to Ancillary Control, Device Templates |

Logging In: You must log in at a Maintenance, Owner, or Commissioning access level to manage users, which includes adding users, removing users, and resetting user passwords. However you can only manage users at or below the access level you log in at. Therefore, when managing users, it's generally easiest (though not always necessary) to log in at the highest, Commission, access level.

Figure 12: Manage Users Page



Adding Users

1. Login at Maintenance access level or above.
2. Select the **"Settings"** tab from the main menu bar and select **"Manage Users"** from the drop-down menu.
3. Select the **"New User"** button, shown in Figure 12, which will open the "Add User" page.
4. Enter the proper user information into the required blank fields of the **"Add User"** form, shown in Figure 13. Be sure to choose a Security Level* from the dropdown list and a Password that meets the listed criteria.
5. Select the **"Add"** button when the "Add User" form is complete.

NOTE: *You can only add users at an access level equal to or below the access level you logged in at.

Figure 13: Adding a User

Add User

First Name *

Last Name *

User Name *

Security Level * Guest

Password *

Confirm Password *

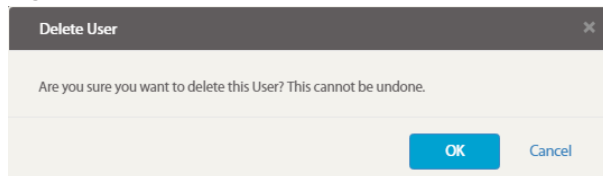
* Password must be between 8 and 20 characters long.
 * Password must contain characters from at two of the following groups:
 - Lowercase letters
 - Uppercase letters
 - Numbers
 - Special Characters

Add Cancel

Removing Users

1. Login at Maintenance access level or above.
2. Select the **"Settings"** tab from the main menu bar.
3. Select **"Manage Users"** from the drop-down "Settings" menu.
4. Select the **"Delete"** icon (See the Delete icon or trash can icon in [Figure 12](#)) under the action heading for the user you would like to remove from the system.
5. A pop-up message, shown in [Figure 14](#), will appear to ensure you want to delete the selected user from the system. Select the **"OK"** button to complete the deletion process.
6. A message will inform you that the user deletion was successful.

Figure 14: Delete User Confirmation



Changing or Resetting User Passwords

Users can change their own passwords at any time. In the event that a user loses or forgets their password, another user at a higher access level will be required to log in and reset the user's password to the default password. These processes will be explained in the following sections.

NOTE: Passwords are case sensitive. Usernames are not case sensitive.

Resetting a Password

1. Login at Maintenance access level or above.
2. Select the **"Settings"** tab and then select "Manage Users" from the drop down menu.
3. Select the **"Edit"** icon (see the edit icon or pencil in [Figure 12](#)) under the action heading for the appropriate user.
4. The edit icon will open the "Update User" page, as seen in [Figure 15](#). Select the **"Reset Password"** button.
5. A pop-up message will verify that you want to reset the chosen user's password. Select the **"OK"** button, to complete the process.

NOTE: *You cannot reset your own password, the reset button will not be available when selecting the user name you are currently logged in under.

After a user's password is reset. A user should change their password from the default to a new personalized password by following the steps for "Changing a Password."

Figure 15: Reset Password

Update User: JD

User Information

| | |
|------------------|------------------------------------|
| First Name * | <input type="text" value="John"/> |
| Last Name * | <input type="text" value="Doe"/> |
| Security Level * | <input type="text" value="Owner"/> |

Changing a Password

Users may change their own password by using their current password to confirm the change. You can only change the password of the user you log in as. You cannot change any other user's password, the change password tab will not be available.

1. A user must log in and select the **"Settings"** tab from the main menu bar.
2. Select **"Manage Users"** from the drop-down "Settings" menu.
3. Select the **"Edit"** icon (pencil) under the action heading for the user who is currently logged in.
4. Select the **"Change Password"** tab in the Update User window.

NOTE: This tab will not be available when choosing the edit icon for a user other than the logged-in user.

5. The Change Password tab contains a form, shown in [Figure 16](#), with open text boxes for the user's current password and new password. The new password must meet the criteria listed and be entered twice for confirmation.
6. Select the **"Update"** button to complete the change of password.
7. A pop-up message will inform you that the password change was successful.

Figure 16: Change Password

Update User: JD

User Information Change Password

Current Password *

New Password *

- Password must be between 8 and 20 characters long.
- Password must contain characters from at two of the following groups:
 - Lowercase letters
 - Uppercase letters
 - Numbers
 - Special Characters

Confirm Password *

Update Cancel

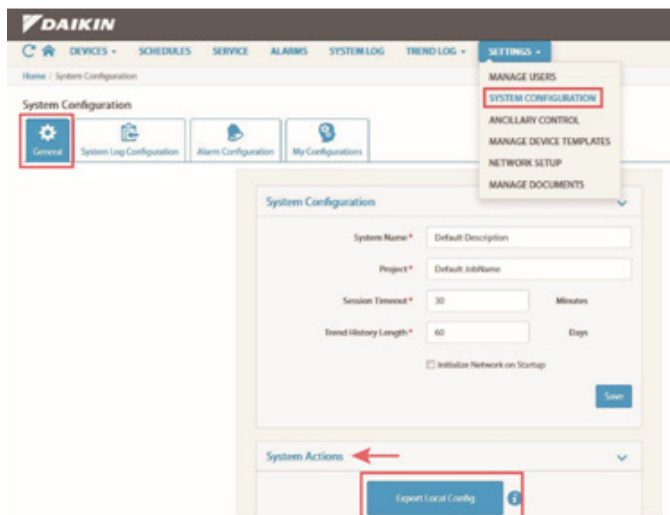
Saving the Configuration

After completing the setup for the System manager, save the configuration. This will have all the settings created and allows for quick recovery in the event of a PC failure. To do so follow these steps: (Refer to Figure 17)

1. Go to the “Settings” tab → “System Configuration”.
2. Under “System Actions” press the “Export Local Config” button.

The configuration is now saved in case of future need to upload the file to return to the systems original settings. It is recommended to save this file to a USB flash drive. The location of the **LocalConfig.xml** file is **C:\MISystem\Config\System**.

Figure 17: Saving the Configuration

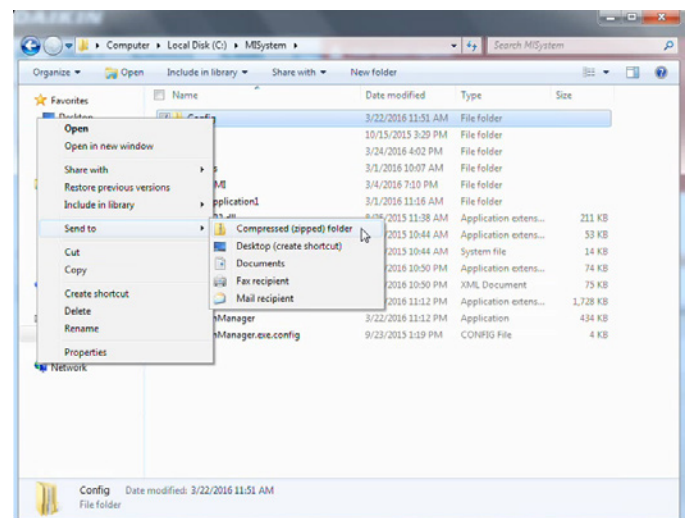


In addition to saving the **LocalConfig.xml** file, it is also recommended to save and send Template xml files. They organize device information on each Device Property page and are located in **C:\MISystem\Config\Templates** – please create a .zip file of the Config folder (outlined in the next paragraph). If some devices do not have templates in place you may either read up on how to create and edit your own templates in “Manage Device Templates” under “Settings,” or contact Daikin Applied.

To save the current configuration and template files to a removable storage device, simply plug the device into the USB port located on back of the MIS. You must first minimize the browser window by touching (or clicking if a mouse is connected) at the upper right hand corner of the screen. With the browser minimized, navigate to the appropriate folder by double clicking the “My Computer” icon, and then navigating to **C:\MISystem**. Locate the Config folder, then press and hold (or right click if using a mouse) on the folder. In the menu that appears, select “Send to...” and in the side menu select “Compressed (zipped) folder.” This will create a new .zip folder of the Config folder in the same area. The file will automatically be looking for a new name, but renaming is optional. Tap in the empty space of the file explorer to exit out of changing the file name – or enter a new name. Once renaming is complete (changed or not), press and hold on the zipped Config file. In the menu that appears, select copy. Then on the left side of the file explorer, look for the flash drive connected under Computer. If it does not appear, double tap or double-click on Computer to see the various storage locations available and find and select your USB drive. Once in your USB drive, press and hold anywhere in the file area for the USB until the menu appears, and select Paste.

It is recommended to email the **Config.zip** file to MISystem@daikinapplied.com. This will ensure any replacement PCs get set up prior to shipping.

Figure 18: Creating a Zipped File



The System Manager — Page-by-Page

The System Manager program was designed to be responsive to different screen sizes, which means when viewing the pages remotely from a device with a smaller screen size, the pages may look slightly different than the following described view based on the System Manager's full screen size. However, each page's main components will remain the same.

Home Page

The Home Page, seen in [Figure 19](#), is designed to give you an at-a-glance, overall status of your building's HVAC system. Your System Manager will open up upon this page each time it starts, and you can reach this page from any other page or tab in the MIS program by clicking on the home icon in the System Manager's main menu bar. The following list will briefly detail the home page's alarms, gauges, and other display features, since these are paramount to navigating the System Manager, and understanding the current status of your system. The numbers in the following sections will correspond with [Figure 19](#).

Figure 19: Home Page Items



1. **Daikin Banner** – the Daikin banner spans the top of each browser page in the System Manager MIS application program. This banner will include information about what mode MIS is in. The far right portion of the banner displays a “Log In” or “Log Out” option and will display the name of the user currently logged in. To the left of the log-in area, two icons are displayed:
 - a. **Keyboard Icon** – The keyboard icon allows you to enable and disable the virtual keyboard that can be used, when needed, in any input area of the System Manager's MIS application.
 - b. **Alarm Bell Icon** – The alarm bell icon signifies the current alarm status of your building's HVAC system. The bell will always have a colored circle around it which signifies the existence and severity-level of current alarms. Please see [Table 4](#) to learn more about alarm status colors. A small number above the alarm bell icon will indicate how many alarms are currently active. When the alarm bell icon is in a green circle and has no number displayed above it, there are no alarms are currently active. The alarm status icon can be viewed from any page and selecting it will take you to the Manage Alarms page where you can access more detailed information if desired.
 2. **The Main Menu Bar** – Like the Daikin banner, the main menu bar will always be found spanning the top of the screen of each page in the System Manager program. The Main Menu bar is the System Manager's Main Navigation tool. You can navigate to any page or section in the System Manager program by selecting options from the Main Menu bar and its drop-down sub-menus.
- NOTE:** When accessing the System Manager from a remotely with a smaller screen, the main menu bar may be displayed in the Daikin banner at the top of the screen as a “menu icon” or three horizontal bars. You can click on this menu icon to open a drop-down version of the main menu that will optimally fit a smaller screen size.
3. **Time, Date, and Average Temp Display** – In this section you will find the current date and time displayed, along with the average building temperature. The average building temperature is an average of the current temperature readings in all zones or areas of your building.
 4. **Restart and Shutdown Buttons** –These buttons allow a user to safely restart or shut-down the System Manager. They are detailed further under the [Shutdown and Restart](#) section.

5. **Alarm Status Button** – The Alarm status button alerts users to current active alarms by changing color from green to yellow or red, based on alarm severity. A yellow alarm status button indicates one or more alarms are currently active, but none are above the yellow severity level. A red alarm status button indicates that one or more alarms are currently active and at least one is at the red severity level. To learn more about alarm severity colors see [Table 4](#).

- a. **Flashing Status Button** – When alarms are activated, the alarm status button will show yellow, red, or flashing red. A flashing alarm signifies that the alarm has not been acknowledged by a user. A user can choose to acknowledge an alarm to let other users know the alarm has been noticed.
- b. **Static Status Button** – When all active alarms are acknowledged, the alarm status button will stop flashing but remain yellow or red to indicate that the alarm is still active.

Clicking on the alarm status button on the home page will take you to the “Manage Alarms” page, which will give you more detailed information about the alarm type and cause. To learn more, see the section, [Manage Alarms Page](#).

6. **Network Gauge** – This gauge is an indication of whether the network is working well or not. The number indicated by the dial is the percentage of networked HVAC devices that have a solid connection with the System Manager. Those that have a spotty connection or no connection at all will bring down the overall network efficiency number and change the gauge color from green to yellow or red depending on the connection problems’ severity.

Network Gauge color explanations:

Green – the network is working well


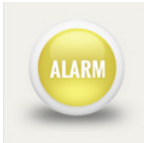

Yellow – there are some interruptions on the network

Red – there are major interruptions on the network, or MIS is no longer communicating with a device.

7. **Comfort Gauge** – This gauge indicates the overall comfort level of your building by indicating the percentage of building areas or zones that are currently within two degrees of their temperature set-points. For example: if your building has 4 main zones or areas, but only 3 are within 2 degrees of their targeted set-points, the comfort gauge dial would read 75% because 75% of all building zones are within the comfort range.

8. **Device Type Link Buttons** – each of these buttons represents a particular HVAC device-type that is part of your buildings HVAC system. Each device-type in your building will have its own device-type button on the “Home” page and its own corresponding device-type tab on the “Manage Devices” page. When a specific device-type button is selected, it will open the corresponding device-type tab on the “Mange Devices” page. This device-type tab will list each individual device in your building that is of the device-type chosen along with the alarm status of each device and other associated information. Choosing any individual device from this list will take you to that particular device’s property page.

Table 4: Alarm Severity Color Explanation

| Alarm Status Color | What it means for the Alarm Status Button and Icon | What it means for an Individual Device |
|--|--|---|
|  | Indicates all HVAC system devices are in proper working order. No current or active alarms exist. | This HVAC device has no alarm issues and is in proper working order. |
|  | A yellow alarm status button and icon signifies one or more alarms are currently active, but none are at the red alarm severity level. Yellow alarms signify less-serious issues. Some (not all) yellow alarm conditions may limit device operation, but they will not result in a complete device shut-down. | This device has an alarm issue that may or may not limit its operation. However yellow alarm issues will NOT cause the device to shut-down completely. Issue or problem needs to be fixed. Some yellow alarms must be manually cleared while others will clear on their own. |
|  | A red alarm status button and icon signifies one or more alarms are currently active and at least one is at the red alarm severity-level. A red alarm signifies a more-immediate and serious problem. A red alarm condition results in device shut-down. | This device has an alarm issue or problem that is serious enough to cause device shut-down or a loss of communication with the System Manager. Problem must be fixed and alarm must be manually cleared before this device can operate once again. |

Devices

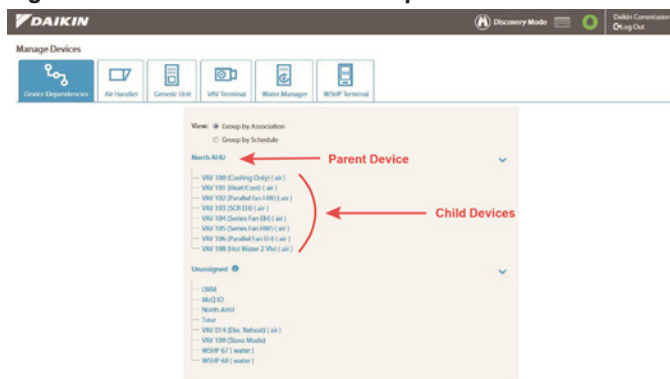
There are many ways to navigate to the Manage Devices Page. You can select any device-type button on the home page or you can select any device-type option from the dropdown menu that appears when you select “Devices” from the main menu bar. The tabs on the Manage Devices page will include a tab for each device-type discovered in your system and a tab called “Device Dependencies.”

This Device Dependencies tab will list all the devices in your building’s system. You can choose to view this list in one of two different ways by selecting either “Group by Association” or “Group by Schedule.” If you select “Group by Association,” the list of system devices will be displayed according to the Parent/Child relationships between them. The Devices that generate or supply heated or cooled air or water are called parent devices. Beneath each Parent device is a list of its corresponding “child devices.” The distinction will be seen in a tabbed list, as seen in [Figure 20](#).

Alternatively, you can display the list of devices according to the schedule they are set to follow by selecting “Group by Schedule.” When this option is selected, the title of each schedule that currently exists in the system will be listed with the devices set to that particular schedule listed below it. From either view option, you can select an individual device from the list and this will bring you to that particular device’s Device Property page.

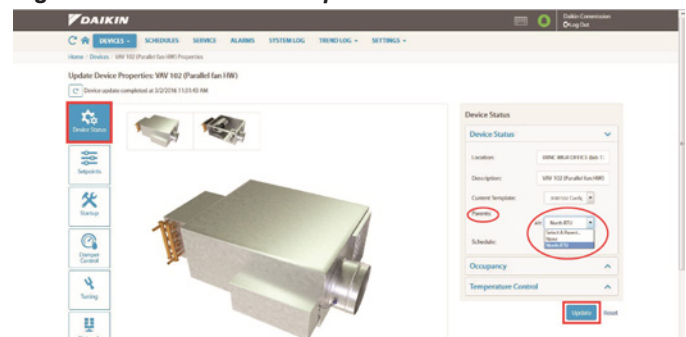
Parent/Child relationships are not automatic. To set parent relationships for consumer devices, you may either go to each Device Property page and set parents on the Device Status tab as seen in [Figure 21](#), or you can use the Global Actions option by opening the Services tab in the main menu bar. The Global Actions tab will allow you to assign multiple child devices at one time to a single parent device by using the “Update Parent” button. To learn more about Global Actions, see the section titled, [See Service Utilities – Global Actions on page 22](#).

Figure 20: Parent/Child Relationship



Next to the “Device Dependencies” tab, you will find tabs that list various device-types, such as “Air Handler” or “VAV terminal.” There will be one tab for each device-type in your building. Selecting any of these tabs will display a list of each device of that type in your system. To access a device’s Device Property page directly, select the associated device tag. The rest of the device-type list provides information for each device on the list. The information included about each device will vary depending on the device-type, but all device-types will include the alarm status of each device, the current occupancy setting of each device, the location of each device, and two more actions associated with each device. These actions will include a “Delete” icon (Trash Can) and an “Update Device Configuration” icon (Wrench and Gear). Some of the additional information per device can be customized with the “Change Columns” option found directly above the Device Tag column.

Figure 21: Parent/Child Dropdown List



Selecting the “Delete” icon for any device will completely delete that device from the System Manager. If you choose to delete a device from the system by selecting the “Delete” icon, a pop-message will ask whether you are sure before proceeding with the deletion. If you delete a device that is still connected to the network, after a brief moment the System Manager will automatically enter Discovery Mode and “rediscover” the deleted device. This can sometimes be a useful troubleshooting tool. Selecting the “Update Device Configuration” icon (Wrench and Gear) for any device will bring you to the “Update Device Configuration” page for that specific device. This page will have a list of associated objects for that device and each object can be edited by selecting the “Action” icon (Pencil) under the “Actions” heading. Selecting the “Edit” icon will bring you to a new Edit Object page. This includes object settings such as the object description, refresh rate, trend enable, alarm settings, and other event properties. If more settings are desired, you may go to the associated device template. More information on templates can be found in the following sections: [See Display Templates on page 34](#) and [See Managing Device Templates on page 35](#).

Default Device Properties Tabs

When accessing the Device Properties page of a device, by default there will be at least three tabs: Device Status, Network, and Miscellaneous. As mentioned previously, the device status page can be accessed through a number of ways. This will by default include information about the device such as its description, location, current template, and schedule. If it is a consumer device (child) it will also have a parent selection option. As with any of the other Device Property tabs, if any changes are made, make sure to select Update before changing to a different page. Selecting Update tells the System Manager to write any updated values to the device. The network tab will contain information such as the Device Instance number, Model Name, Vendor ID, MAC address and so on. If the device is a parent, it will have an option for direct scheduling. This will allow the device to be assigned to a schedule, rather than utilizing the schedule or schedules of its associated children.

If the device is a child, it will have an option for “rogueZone.” RogueZone causes the device to be excluded from Changeover or Pressure Reset algorithms. For more information on these algorithms, please see the Ancillary Control section under Settings. The last default tab is the Miscellaneous tab. If no template exists for the device, all BACnet objects that can be read will be found there. Typically logic or objects important to ancillary control algorithms will reside here. Any other tabs aside from the default three exist as a result of the device’s template. Templates allow the user to define reading and writing security for each object in addition to the organization of information on the Device Property page. If you would like to create a template for a device, please see the [Managing Device Templates](#) section, [page 35](#).

Scheduling

Creating schedules keeps your building comfortable while conserving energy and saving money by only running your HVAC system devices when and where they are needed. The System Manager allows you to maintain comfortable temperatures for times when building areas are occupied by people (called occupied set-points) and maintain temperatures that conserve energy for times when building areas are unoccupied (called unoccupied set-points). Schedules tell each HVAC device when it should be maintaining its occupied and unoccupied set points.

When setting up building schedules for the first time, it's important to understand that schedules are set based on building zones (or areas) and the HVAC system devices that serve those zones. How you divide your building into zones depends on how many areas of your building have occupancy times that differ from other areas in building. Users often set up set-up one schedule for each building area that has its own separate occupancy times. For example, if your building has a front office that opens earlier and closes later than other areas in the building, then this would be one building zone that could have its own schedule, called "front office."

After you determine the number of zones in your building, you will need to determine which HVAC system devices service each zone. The devices that service each zone will be child devices such as VAV boxes, WSHPs, and Fan Coil Units (child devices are supplied cooled or heated air or water by a main parent device). Parent devices automatically follow the schedules of their child devices unless direct scheduling is enabled.

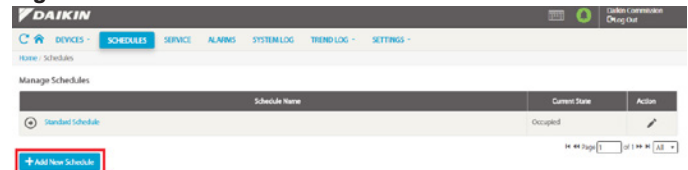
Once you know the building zones you intend to create schedules for, and you have determined which HVAC child devices service each of these zones you are ready to create your schedules.

NOTE: To Manage Schedules, including creating, editing, and removing schedules, you must be logged in at the Maintenance user access level or higher.

Creating New Schedules

1. Select the **"Schedule"** tab from the main menu bar.
2. To create a new schedule, select the **"Add New Schedule"** button, shown in [Figure 22](#), at the bottom of the schedules list.

Figure 22: New Schedule



3. Change the default schedule name.

NOTE: If you choose a name that matches the name of another schedule, the System Manager will warn you with a pop-up message.

4. There are **two different ways to adjust the times** that the area will be occupied and unoccupied for each day of the week.
 - a. **Sliders** are available for each day of the week. You may add up to two sets of sliders to a particular day by using the + button above the "Toggle Occupancy" button – meaning there will be two sections of occupied time in a given day. The slider tabs show where occupancy time begins and ends. Select and drag the left tab to the occupied start time. Then select and drag the right tab to the occupied end time.
 - b. **The Clock** to the right of the start and end time boxes will also change the occupied times. This will open a small drop-down window that allows you to adjust the start and end occupied time. If there are two sets of sliders, there will be two sets of time ranges.

NOTE: The occupied times are represented in blue. The unoccupied times are represented in white. You can switch the occupied and unoccupied times for any day by selecting the "Toggle Occupancy" button, refer to [Figure 24](#).

5. After the main weekly schedule times have been set, you can add a holiday schedule to the main schedule if you wish by selecting the **“Holiday Schedule”** tab and following the directions for “Holiday Schedules” on [page 21](#).
6. The final step in creating a new schedule is assigning devices that will follow the new schedule. Remember, schedules are designed to control the HVAC system devices that service a particular building zone or area.
 - a. To add system devices to the schedule, select the “Devices” tab. A dropdown box is available in the “Devices” tab which lists all of the connected devices. When a device is selected from the dropdown box, a checkmark will appear to the left of the device name, as shown in [Figure 23](#), and the device name will appear below the “Assign Devices to Schedule” dropdown box.
 - b. To remove a system device from the schedule, select the grey “X” next to the device name in the list of devices below the “Select device(s)...” dropdown box or go into the dropdown box and select the device name again to remove the checkmark.
7. When finished assigning devices to the new schedule, select the **“Save”** button in the upper right corner to save all changes and complete the process of creating the new schedule. A message will appear to confirm your save was successful.

Figure 23: Assigning Devices to Schedule

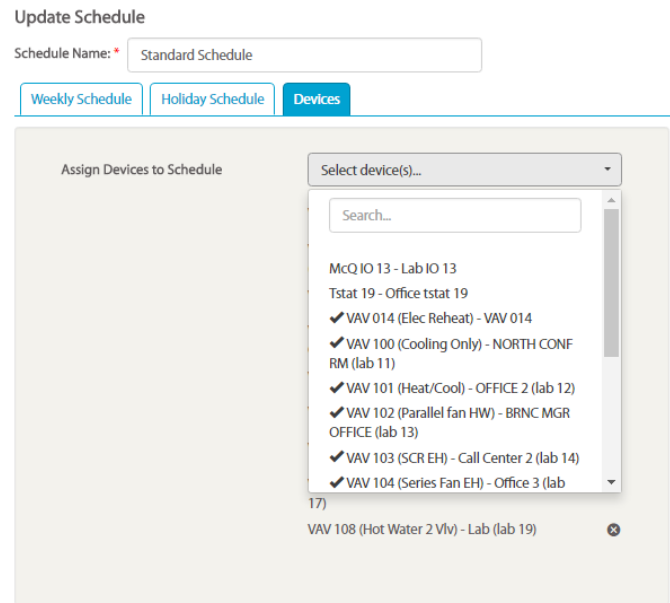
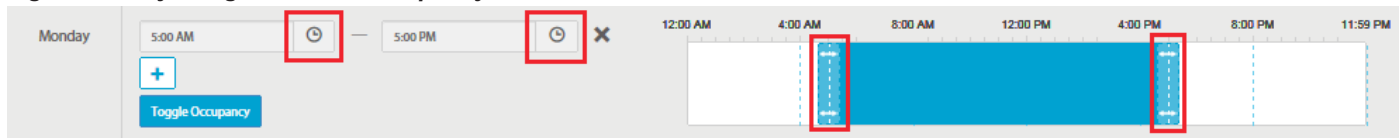


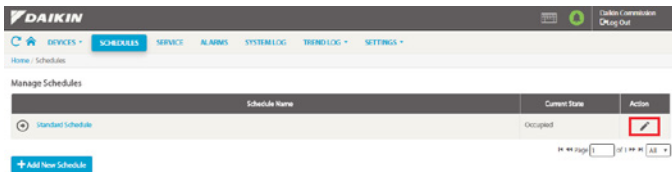
Figure 24: Adjusting Schedule Occupancy



Editing Schedules

1. To edit a saved schedule, select the **"Schedule"** tab from the main menu bar.
2. The Manage Schedules page will list each schedule currently in the system. Select the **"Edit"** icon, shown in [Figure 25](#), next to the name of the schedule you would like to edit.
3. When the "Update Schedule" page opens, you have the option to change the name of the schedule and change the occupancy times. By selecting the Holiday Schedule tab, you can add new holidays or edit and delete current holidays that are attached to the main schedule selected. By selecting the Devices tab, you can assign devices to the schedule and remove devices from the schedule.
4. After all desired edits have been made, select the **"Save"** button to save your changes. A pop-up message will confirm the save was successful.

Figure 25: Edit Schedule



Holiday Schedules

1. You can add a holiday schedule to any regular schedule during the process of creating a new schedule or editing an existing schedule, by selecting **"Holiday Schedules."**
2. Then select the **"+ Add New Holiday"** button which opens a default holiday schedule on today's date with occupied time of 5AM to 5PM.
3. Adjust the start and end dates for the holiday period you are scheduling.
 - a. If the holiday spans multiple days, and each holiday day will have different occupancy times, then you will need to add a new holiday using the **"+ Add New Holiday"** button for each day of the holiday period. Adjust each day as desired.
 - b. If the holiday spans multiple days, but all days will have the exact same occupancy times, then one holiday, with the start and end dates spanning the entire holiday, will suffice.
3. Adjust the occupied times using the sliders or clocks.
4. After holiday date and occupied times are set, select the **"Save"** button to save changes.

Service Utilities Page

The services tab gives users a way to do bulk processes – changing setpoints, assigning parents, VAV manual damper control, and other networking activities.

Service Utilities – Global Actions

The “Global Actions” tab, on the “Service Utilities” page lists all HVAC devices in the buildings MIS system, along with each device’s location, assigned parent device, assigned schedule, and occupied and unoccupied set points. You can choose to display the whole list by selecting “Show: All” or you can select a group of devices and then select the “Show: Selected Only” option to display a list of selected devices.

The tabular list shows all devices connected to the System Manager. In this list you may update a particular device’s set points, parents, or even schedules. This list makes it easy to change a large number of devices all at once rather than one at a time. If more control over a single device is desired, select the pencil icon at the end of a particular device on the list, and you may edit all three properties (set points, parents, and schedule) of a single device.

The “System Start/Stop” button will either display as “System Start” or “System Stop” depending on current device settings. The “System Stop” button will set all VAVs to unoccupied and all AHUs and WSHPs to “App Mode: OFF”. Selecting the “System Start” button will set the VAVs back to the appropriate occupancy setting and AHUs and WSHPs to “App Mode: Auto”.

NOTE: Depending on the group of devices you select, a particular setting change may or may not be available. To make a group change, each device in the group you select must be able to have the chosen change applied. For example, if you plan to change a group’s parent device, the group must include all child devices of the same type (such as all VAV boxes). If you include a parent device or different kind of consumer in your child device group, the “Update Parent” option will no longer be available.

Service Utilities - Balancing

The System Manager controls the dampers and the air volume of VAV terminals to maintain the occupied and unoccupied temperature set points. Depending on the physical location and construction of a VAV terminal, the air flow registered by the System Manager, may or may not be the actual air flow produced. When the System Manager is registering the airflow volume of a VAV terminal incorrectly, the VAV terminal’s flow coefficient can be adjusted to correct this problem. This is called balancing and can be done on the “Service Utilities” page under the tab, “Balancing.”

To learn whether the System Manager is registering the air flow volume of all VAV terminals accurately, a professional will need to measure the actual airflow volume of each VAV terminal while they are maintaining a constant airflow rate.

To keep the airflow rate constant for balancing measurements, go to the “Service Utilities” page and select the “Balancing” tab. Then select the “Manual” option in the “Device Status” area to enable the manual VAV control mode. The manual mode will allow you to choose a single parent air handling unit or all the parent air handling units communicating with the MIS system and then choose an action to apply. This will apply the action to all the VAV terminals connected to the air handling unit or units chosen.

The three actions available are:

- **Max Flow:** The air handling unit’s associated VAVs’ control flow set point will be overridden to 100% to maintain maximum design cfm.
- **Min Flow:** The air handling unit’s associated VAVs’ control flow set point will be overridden to the minimum percentage to maintain the minimum design cfm.
- **Open Dampers:** The air handling unit’s associated VAV’s damper command set point will be overridden to 100%.

After an airflow rate is chosen and VAV dampers are set to open, press “Go” to apply these changes to the air handler chosen and its associated VAV terminals.

After airflow measurements are taken, check whether the measured airflow volume matches the airflow volumes that are currently registered by the System Manager. The airflow volume that the System Manager currently registers for each VAV box can be found in the “Flow Coefficients” table under “Displayed Air Volume.”

If the measured airflow volume differs from what the System Manager registers as the current airflow volume for that VAV terminal, then you will need to change the actual air volume which can be used to automatically calculate the new flow coefficient. This will balance the airflow volume registered by the System Manager with the actual airflow volume measured at the VAV terminal.

To manage and change displayed air volumes and flow coefficients, in the “Flow Coefficients” table, select the “Edit” button (pencil icon) with the desired VAV terminal. This will open a new page (Figure 26) that allows you to enter the actual measured airflow volume if it’s different from the current displayed air volume. Once you have the Actual Air Volume entered, you would then press the calculate button next to the “New Flow Coefficient” entry field. After the “Actual Air Volume” and “New Flow Coefficient” are entered and/or calculated, select the “Update” button to apply these changes. When all VAV boxes are balanced correctly, you can return the system to its automatic mode by selecting the “Automatic” control mode once again and selecting “Go.”

NOTE: You can also adjust flow coefficients for any particular VAV by visiting that particular VAV terminal’s device page and selecting the “Startup” tab.

Service Utilities – Network Actions

The “Network Actions” tab of the “Service Utilities” page is where you can find the ATS Auto Assignment tool and release VAV set points. The ATS Auto Assignment tool assists in locating, identifying, and establishing communication with the various WSHP and Fan Coil units within the building. To learn more about this tool please see the previous section “ATS Auto Assignment” on [page 10](#).

The “VAV Point Release” section of the “Network Actions” tab allows you return VAV points back to their previously configured point settings after any temporary override. For example, VAV points are often overridden during VAV balancing to keep airflow volume settings stable and dampers set to open. VAV point overrides might also be done through WCIS at the VAV actuator. More information on WCIS can be found in [IM 1253](#).

To release VAV points and return them to their previous settings, select one or more VAV terminals from the dropdown list. Then select one or more corresponding points to release on the VAV terminals you’ve selected. When your selections have been made, press the “Release” button to release the selected points on selected VAV terminals, and return these points to their previous settings.

Figure 26: VAV Flow Coefficient

Flow Coefficient for VAV 14

| | |
|---|---|
| Displayed Air Volume | 2516 cfm |
| Actual Air Volume | 2516 – + |
| Current Flow Coefficient | 0.71 |
| New Flow Coefficient * | 0.71 – + Calculate |
| Update Cancel | |

Alarms

Alarms are the main source of feedback the System Manager provides. If something goes wrong on a HVAC controller and it has a way of sending a message about it, then an alarm will be generated. The other instance is if the device suddenly stops communicating with MIS then that will also generate an alarm.

Alarm Colors

There are three levels of alarm colors based on alarm severity. Each alarm that activates is automatically assigned a lower yellow or higher red severity level. The alarm status button on the home page and the alarm status icon in the Daikin banner will be yellow if one or more yellow alarms are active, but they will turn red if one or more alarms are red, even if there is a mix of yellow and red alarms currently active. The alarm status button and icon cannot show the severity level of each individual alarm.

Selecting a device-type from the Device dropdown menu will list every device in the system of that particular type, as well as each device's alarm status color.

To get more information on each alarm, visit the Manage Alarms page.

Table 5: Alarm Coding

| Alarm Priority Level | What it means | Alarm Severity Color |
|----------------------|---|----------------------|
| Warning | An alarm issue that needs to be fixed, but will not limit the effected device's operation . | Yellow Alarm |
| Problem | An alarm issue that needs to be fixed and will limit , but NOT shut-down, the affected device's operation . | Yellow Alarm |
| Fault | An alarm that needs to be fixed, and will cause the affected device to shut-down completely. | Red Alarm |

Manage Alarms Page

The “Manage Alarms” page is the go-to page to learn more about active alarms. Users can choose to acknowledge and clear alarms or investigate patterns that may exist in the Alarm History. There are 3 separate ways to navigate to the “Manage Alarms” page: you can select the Alarm Status Button on the Home page, you can select the “Alarms” tab on the main menu bar, or you can select the Alarm Bell icon displayed in the black Daikin banner.

The Manage Alarms page has two tabs, one labeled “Active Alarms” and one labeled “Alarm History.”

Active Alarms tab – The Active Alarms tab provides more detailed information about currently active alarms than the alarm status button or icon can provide alone. This information includes the date and time the alarm was activated, the name and location of the device involved, and a brief message describing the particular condition or problem that activated the alarm. You can select specific active alarms from the list and then choose the show “Selected only” option to shrink the size of the list, or you can change the number of alarms per page in the drop down box in the bottom right.

Active alarms can be either acknowledged or cleared by selecting one or more active alarm check boxes from the list and clicking on the “Acknowledge Selected” or “Clear Selected” buttons under the Active Alarms list.

Acknowledging Alarms

Acknowledging alarms places a checkmark under the heading “Aked” (for “acknowledged”) next to the alarms name in the active alarm list. When all active alarms are acknowledged, the alarm status button will change from a flashing alarm color to a static alarm color. Acknowledging an alarm neither fixes nor clears the alarm, but it allows other System Manager users to know that someone has noticed the alarm.

Clearing Alarms

Clearing an alarm will erase it from the Active Alarms list, and place it in the Alarm History list. When all alarms are cleared, the Alarm Status button on the Home page and the Alarm Status icon in the Daikin banner will turn green to signify zero alarms. However, the System Manager is in continuous contact with all system devices, so if an alarm is accidentally cleared without solving its originating problem, the System Manager will simply re-detect the problem and the alarm will reappear on the active alarms list within 10 to 30 seconds of being cleared.

Alarm History Tab

The Alarm History Tab displays a list of all previous alarms messages that have not been deleted or cleared from the system's memory. These alarm messages include all previous alarms, alarm clears, alarm acknowledgements, events, and event clears. The Alarm History tab has two drop-down menus that allow users to search and refine the alarm history by Device, Message type, or both. After selecting devices and/or message types, press find to filter the alarm history. To return to the entire list of alarm history, press clear.

Alarm Notifications

When the System Manager is connected to a network that provides internet access, alarm notifications can be configured in the “System Configurations” page in the settings drop down menu by selecting the “Alarm Configuration” tab. Alarm notifications allow the system to send emails and text messages to notify selected users within minutes of an alarm being activated. Alarm notification settings must be set up for each individual user who requires them.

NOTE: In order for this feature to work, you must set up the appropriate SMTP Host and SMTP Port under “Source Configuration” under Settings – System Configuration – Alarm Configuration. Contact your IT team, or if you know the information, enter it in the “Source Configuration” section.

To Set Alarm Notifications

1. Select the “Settings” dropdown menu, then “System Configuration” in the dropdown menu
2. Select the “Alarm Configuration” tab on the System Configuration page
3. In the “Email and SMS Configuration” form, shown in [Figure 27](#), choose a user from the dropdown box next to the phrase, “Alarm Settings for.” All current users will be listed in the dropdown box, but alarm settings are configured for one user at a time.
4. Select either “Enable Email Alarming,” “Enable SMS Alarming” or both by clicking the selection box corresponding to each option. The option or options you choose will depend on the method of notification that the chosen user prefers.
5. For each selected option, you may adjust the minimum priority level that an alarm must reach before a text or email will be sent to the user. There are three priority levels to choose from in a dropdown menu box – differentiation can be found earlier in [Table 5](#).
6. Enter the email and/or phone information to tell the System Manager where to send Alarm Notifications

NOTE: For SMS (text) messages, a cellular phone carrier must be chosen from the drop-down box list. Most major carriers are available in the dropdown list, and you can search the list quickly by entering your carrier name into the provided search box. However, if your cellular carrier is not on the dropdown list, you have the option to add a new carrier by selecting “Add New,” and entering your carrier’s domain number. Contact your carrier directly to get the carrier’s domain.

7. After the “Email and SMS Configuration” form is completed, you have the option to test the new alarm notification settings by selecting the “Send Test Email” and/or “Send Test SMS” buttons. This will send a test alarm notification message to the email address or cell phone number entered.
8. To complete the process of configuring alarm notifications for the chosen user, select the “Save” button.

Figure 27: Email and SMS Notification

System Log

The system 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 25 communication messages received by the system and is used primarily as a debugging tool. The types of messages that are logged here can be filtered through by **Message Type** and **Date and Time**. To filter by **Date and Time**, select corresponding dates and times at the top of the table. The calendar will be the first window to pop up – to select a time, press the clock icon in the bottom of the calendar window. Once the date and time are set as desired press the **Search** button. The system log will display all desired messages within the selected time frame.

Trend

The trend tab is for graphical representations of data being collected by the devices. Devices with trend data available will appear in the dropdown 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. The user may also select the color of the corresponding line. Once a device and a point on the device have been selected, the graph will default populate with the past hour of data. If the graph appears empty, it is likely the data point you selected did not change more than the “change of value” (COV), resulting in there being only a single point of data for the hour (select a different range of time to see a line formed by the data). If desired, up to 5 points from 5 different devices may be plotted, along with up to 2 different units of measure (e.g. damper position in % and room temperature in °F or °C). If three different units of measure are requested, the graph will turn off and a message will appear telling the user the operation was not possible. As for the rest of the Trend page, the Export to CSV functionality will be more explained in the following section, because it also results in traveling to the “Export Trend Data” page.

Export Trend Data

Directly selecting Export Trend Data from the Trend Log drop down menu will allow you to export any to all data currently saved in the trend log. The top box allows you to sort between Device Type, Device, and Data Point. The list below will initially show all devices, and all associated data points with each of the devices. This makes it easy for users that want to quickly export all trended data as a CSV file which is easily opened with Microsoft® Excel or similar program.

If you traveled to the Export Trend Data page from a created graph, the format is the exact same, but the only points available for export are those that were selected to be graphed in the previous window. This simplifies the process of going through and selecting the points that were graphed from the potentially long and extensive list.

Export History

If you are interested in looking back at a previous export file, but cannot find it, then check the Export History section under the Trend Log. This will have the file name which has a time and date nomenclature already in place, in addition to information such as the file size, and a more user friendly version of the creation date. If there was a file exported by accident, or otherwise unwanted, files may be removed from the export history by selecting the trash can icon next to the corresponding file. If there are lots of export files, feel free to filter the search results by creation date at the top of the page.

Settings

The settings menu contains access for Manage Users, System Configuration, Ancillary Control, Manage Device Templates, Network Setup, and Manage Documents. Users were already covered as part of the start-up earlier in this document, and will not be reiterated.

System Configuration

The system configuration menu contains several tabs: General, System Log Configuration, Alarm Configuration, and My Configurations. It includes settings like the System Name, Session Timeout, Network initializations, Saving Configurations, Colors, Units, and more. The subsequent sections will outline the specifics.

General

The general section contains high level system information in two sections: System Configuration and System Actions.

System Configuration contains five options:

System Name: Name that the System Manager responds with if asked by BACnet. It is also used as organizational tool in the ordering process.

Project: Property that the System Manager responds with if asked by BACnet. It is also used as organizational tool in the ordering process.

Session Timeout: Time in minutes that may pass in idle state before the System Manager logs out the current user. This value must be between 1 and 300.

Trend History Length: Time in days that are retained for trending purposes. The trend function will measure at least every hour if the measured object has not exceeded the COV value. See the Trending section for more information.

Initialize Network on Startup: If this option is selected, the next time the System Manager is restarted two things could happen. If the local config file has been exported prior to the restart, the System Manager will prime itself with knowledge of the devices it previously discovered but will also look for new devices. If there is no local config file, then the System Manager will begin from scratch aside from what was preconfigured.

The other section, System Actions, includes file management options:

Export Local Config: As mentioned previously, this is used to save the **LocalConfig.xml** file found under **C:\MISystem\Config\System**. It is encouraged to email the .zip file **Config.zip** to MISystem@daikinapplied.com as a back-up. Refer to “Saving the Configuration” for more information.

Import Local Config: This will load the **LocalConfig.xml** file currently located in **C:\MISystem\Config\System**. If there is no **LocalConfig.xml** file, then this button will do nothing.

Import Factory Config: This restores factory defaults prior to any commissioning done with the System Manager. This does not impact any information stored at a device level as they are separate entities.

Scan Device Network: If waiting is not your thing, you may encourage the System Manager to look for new devices more immediately with this option. Typically this is done automatically, but some users will want to speed up the discovery of a new device.

Below both the System Configuration and System Action boxes, information regarding versioning can be found. This includes the UI version, API version, and BACnet Firmware version. Please make sure to send this information along with any requests for troubleshooting as builds can impact that process.

System Log Configuration

System Log Disk Saver Options: The types of messages that the System Log will save if they occur.

System Log History Length: Separate from Trend Log History Length, this is how long the selections under the System Log Disk Saver Options will be saved.

Alarm Configuration

The Source Configuration box deals with the building's SMTP network, or emailing network. It configures how the System Manager sends alarm notifications via email. Work with your Building's IT team to configure this properly .

NOTE: Email and SMS Configuration is concerned with Alarm notifications on a per-user basis.

Alarm Settings: For Select a user – settings will be saved on a per-user basis.

Enable Email Alarming: For a particular user, when checked enables Email Alarm Messages.

Min Priority for Email: Choose between Warning, Problem, and Fault (in order of escalating priority) for the threshold at which alarm emails are sent. Refer to [Table 5 on page 24](#).

Email Address: This is the email that alarm emails will be sent to.

Enable SMS Alarming: For a particular user, when checked enables SMS Alarm messages.

Min Priority for SMS: Choose between Warning, Problem, and Fault (in order of escalating priority) for the threshold at which SMS alarm messages are sent.

Phone Number: Cellular device number that will receive Alarm SMS messages.

Carrier Domain: Cellular device company (e.g. AT&T, T-Mobile, Verizon, etc).

My Configurations

Custom Colors: The user interface appearance. Hitting reset next to any of the colors will reset the corresponding UI color to the default.

Localization Settings: This will change the default language and the units displayed. The System Manager currently supports the English language, and the English and SI unit systems.

Default Page Size: Determines the default number of pieces of information given on a list. Examples of its use would be Device Lists, Ancillary Control elements, Manage Documents list, and more.

NOTE: Default Page Size does not apply to the System Log due to the sheer amount of data located there – it defaults at 25 per page up to a max of 100.

Ancillary Control

Ancillary Control gives users additional control over the logic of unit controllers in the System, and even a couple features of the System Manager itself (e.g. Alarms). If logged in at Commission level or higher, the user will have access to these controls through the settings tab in the System Manager.

The typical structure of Ancillary Control consists of a loop or many loops. Each loop is its own entity in the eyes of the System Manager – you can assign a priority number to tell it which one to run first, second, and so on. Within each loop elements are contained which may also be prioritized. These elements consist of logic statements, inputs, outputs, and a couple more complex control logic elements that will be explained in the following section.

Table 6: Ancillary Control Functions

| 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 |
| Aggregate Temperature ¹ | Aggregates Space Temperatures for a selected Air Handler | Parent AHU | AHU | Unit marked as Air Source with child units assigned to it |
| Alarm | Triggers alarm when selected element output is true | Alarm Trigger | Boolean | Ancillary element input that will trigger an alarm when set |
| | | Alarm Text | Text | Text to be output on Alarm Page |
| All Delay | 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 |
| Analog In | Allows the use of a BACnet object of type Analog Input or Analog Value for use in other ancillary objects | Select Device | Device | 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 | Device | 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 to release control of selected object back to the device's control |
| | | Execution Interval | Int | Frequency that the output should be executed at |
| Binary In | Allows the use of a BACnet object of type Binary Input or Binary Value for use in other ancillary objects | Select Device | Device | 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 |
| Binary 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 | Device | 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 to release control of selected object back to the device's control |
| | | Execution Interval | Int | Frequency that the output should be executed at |

1, 2 and 3; see [page 32](#).

| Element Type | Description | Properties | | |
|-------------------------|---|----------------------|---------|--|
| | | Name | Type | Description |
| Changeover ² | Adjusts the selected parent air handler's mode based on its associated units, particularly for VVT applications | Select Parent | AHU | Unit Marked as Air Source with child units assigned to it |
| | | Deadband | Int | 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, cooling, or fan only mode. |
| | | Double Heat Vote | Int | Difference required to incur two heat votes |
| | | Successful Heat Vote | Int | Number of votes required to go into heating |
| | | Double Cool Vote | Int | Difference required to incur two cool votes |
| | | Successful Cool Vote | Int | Number of votes required to go into cooling |
| Compare | Compare two integer values, outputting a Boolean value | Input 1 | Int | Ancillary element value on left side of comparison operation |
| | | Input 2 | Int | Ancillary element value on right side of comparison operation |
| | | Operation Select | Symbol | Symbol defining the rule used to evaluate the comparison operation |
| Constant | Generates a constant value that may either be an integer, or a Boolean value | Constant Value | Int | Numerical value of constant |
| | | Boolean Flag | Boolean | If true, system will interpret 0 as False, and any other number as True |
| Count | Reads an object from a device with a particular parent and counts the number of devices that return true when compared with a given value (e.g. counting the number of VAV boxes that are in cooling) | Template Class | Class | Type of Device Template being read |
| | | Attribute Select | Object | Once a template class is selected, this may be any readable input object |
| | | Parent Select | AHU | Option to limit selection to a particular section of HVAC system by parent child relationships |
| | | Compare Mode | Symbol | Symbol defining the rule used to evaluate the comparison value |
| | | Compare Value | Int | Ancillary element input |
| Fall Delay | Delays a falling-edge transition by a selected number of seconds, rising-edge events passed immediately | Input Value | Boolean | Ancillary element used as reference |
| | | Delay Period | Int | Time in seconds to delay |
| Limiter | Takes in a value and based upon the limit select, "limits" the input value to a certain range | Input Value | Int | Ancillary element input |
| | | Limit Select | Choice | None, High, Low, or Both – they limit the value accordingly |
| | | High Limit | Int | Ancillary element input – if selected to limit, prevents input from going above this value |
| | | Low Limit | Int | Ancillary element input – if selected to limit, prevents input from going below this value |
| Math | Add, Subtract, Multiply, and Divide integer values | Input 1 | Int | Ancillary element input |
| | | Op Select | Symbol | Add, Subtract, Multiply, Divide |
| | | Input 2 | Int | Ancillary element input |
| 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 |
| NOT | Logical inversion of a single binary value | Input | Boolean | Ancillary element input |
| OR | Logical OR operation between two binary values | Input 1 | Boolean | Ancillary element input |
| | | Input 2 | Boolean | Ancillary element input |
| Pressure Reset | Algorithm 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 | Select Parent | AHU | AHU with DSP reset capabilities (it will only show up in the list if this applies) |
| | | Min DSP Setpoint | Int | Minimum Duct Static Pressure used by algorithm |
| | | Max DSP Setpoint | Int | Maximum Duct Static Pressure used by algorithm |
| | | Damper Full Open | Int | Degree at which damper is considered completely open by algorithm |

1, 2 and 3; see [page 32](#).

| Element Type | Description | Properties | | |
|--------------|---|----------------|----------|--|
| | | Name | Type | Description |
| Rise Delay | Delays a rising-edge transition 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 |
| Scaled Slope | Converts a measured value from one scale to another. | Measured Value | Real | Ancillary element subject to conversion |
| | | Measured Hi | Real | High (100%) value of the input's scale |
| | | Measured Lo | Real | Low (0%) value of the input's scale |
| | | Scale Hi | Real | High (100%) value of the result's scale |
| | | Scale Lo | Real | Low (0%) value of the result's scale |
| Schedule | Returns true if a selected schedule is currently occupied | Input 1 | Schedule | Schedule created and saved in the system |
| Switch | Use the binary value of one element to switch between two similar elements | Switch Input | Boolean | Ancillary element used as toggle switch between two other ancillary elements |
| | | Set Output | Any | Element which has its output passed if the switch block output is TRUE |
| | | Unset Output | Any | Element which has its output passed if the switch block output is FALSE |
| XOR | Exclusive OR operation between two binary values | Input 1 | Boolean | Ancillary element input |
| | | Input 2 | Boolean | Ancillary element input |

1, 2 and 3; see [page 32](#).

Aggregate Temperature

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.

Changeover Voting

The changeover voting algorithm is a means by which the air handler's unit 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 (No Vote). 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. The air handler's occupied heating and cooling setpoints are locked out when the changeover voting is enabled and are adjusted to enable the unit mode change when the Heat/Cool Success Votes are met. The algorithm is checked once every 10 minutes. A quick overview can be found in [Figure 28](#).

Unit Mode Heating to Cooling Transition

If the unit is in Heating Mode, the cooling and heating setpoints are set at high values. Once the Cool Votes Success has been met, then the heating setpoint will first be lowered causing the unit to transition to Fan Only Mode. It will remain in Fan Only mode for a minimum of 10 minutes until the algorithm is rechecked. There are three options in the algorithm during Fan Only Mode detailed in the "Options in Fan Only Mode". The unit will transition into cooling if the Cool Vote Success threshold is still met; the cooling setpoint will be lowered causing the unit mode to transition to cooling.

Unit Mode Cooling to Heating Transition

If the unit is in Cooling Mode, the cooling and heating setpoints are set at low values. When the algorithm is checked and the Heating Vote Success threshold has been met and the Cool Votes Success Threshold has not been met, then the cooling setpoint will be raised causing the unit to transition to the Fan Only Mode. It will remain in Fan Only for a minimum of 10 minutes until the algorithm is rechecked. There are three options in the algorithm during Fan Only Mode detailed in the "Options in Fan Only Mode". The unit will transition into heating if the Heat Vote Success is still met and the Cool Vote Success is still not met; the heating setpoint will be raised causing the unit to transition to heating.

Options in Fan Only Mode

When the unit is in Fan Only mode (the cooling setpoint at a high value and the heating setpoint at a low value) there are three options for the algorithm. The first is if neither the Cool Votes Success nor the Heat Votes Success is met, then the unit will remain in Fan Only mode. Second, if the Cool Votes Success is met, then the cooling setpoint will be lowered causing the unit to go into cooling. Lastly, if the Heat Votes Success is met, then the heating setpoint will be raised causing the unit to go into heating.

Keeping the Status Quo

If neither the Cool Vote Success nor the Heat Vote Success is met, then the unit will remain in its current mode.

Figure 28: Changeover Voting State Diagram



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, cooling, or fan only mode. 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, respectively.

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. This option is found on the “**Devices**” tab, and for a particular VAV box under the “**Network**” sub tab on the “**Device Properties**” page.

Pressure Reset

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.

Min DSP Setpoint: 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 Setpoint: This is the upper end of the range.

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.

Display Templates

When all building HVAC devices have been addressed and are communicating properly with the System Manager, you will want to check that each device is displayed properly. Many devices – all Daikin equipment and many common third party devices – will have their own factory-programmed templates. A template defines the device's properties page organization in the System Manager.

To check if your system devices have programmed templates available, go to a device's device properties pages. If the device has a pre-programmed display template, its properties page will have device information displayed in an organized manner, and will include one or more device illustrations or diagrams for reference. See Figure 29 for an example of a device with a configured template.

If the device does not have a pre-programmed display template, its properties page will be unorganized and will not include device illustrations or diagrams. Most BACnet points that the System Manager reads from the device will be displayed in the "Miscellaneous" tab. It is still usable, but may require more technical knowledge to operate properly. For an example of a device without a preconfigured template, see Figure 30.

If you find that a particular device in your HVAC system does not have a pre-programmed template, keep in mind that the System Manager is highly customizable and flexible. It has been designed to allow users to create their own templates or customize existing templates for any device without a current template available.

Figure 29: Device with Template

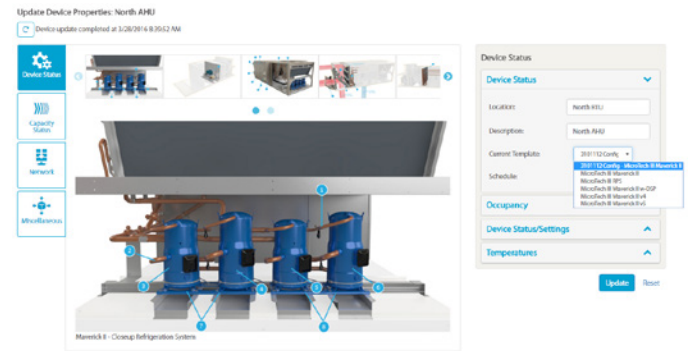
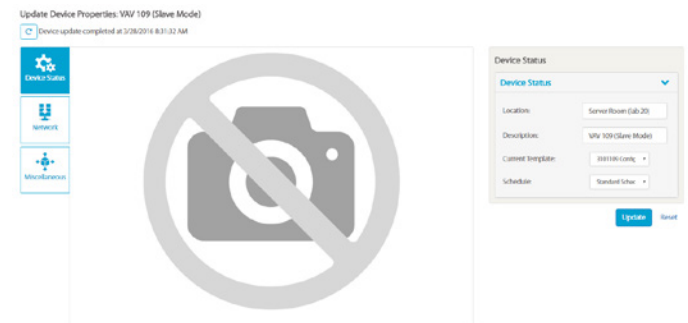


Figure 30: Device without Template



Managing Device Templates

When a device communicates through BACnet MS/TP to the System Manager, it is registered as a type of device based upon the Model Name. However, if this is the first time for the System Manager to interact with a particular device a new default template will be created. This default template will have no pictures attached to it along with three basic sub tabs: Device Status, Network, and Miscellaneous. Device Status will include information such as: Location, Description, the current template being used, parents (if applicable), and the schedule the device is assigned to. Network includes information such as the Device Instance number, the Device's MAC address, model and vendor information and software versions. Lastly, the Miscellaneous section includes all BACnet points that the device carries (aside from any information mentioned earlier).

The default template setup will end up being more involved and may require more technical knowledge to navigate, but will still work nonetheless. If you would like to edit the template first go to the respective device page and open the Network sub tab. Write down the Model Name – it will be shown in the template list found on the Device Status tab of the Device Properties Page (See [Figure 29](#) which shows this list). Next select the Settings tab, and in the dropdown select Manage Device Templates. When a new Template is created, it will end up under a Template Class. This Template Class will be named off of the Model Name if it has not already been named. For example, if a new application of VAV is created, that does not necessarily create a new Template Class, but rather makes a new template under the VAV Template Class. Select the arrow to the left of the particular Template Class to see a list of associated templates with that Model Name. If this template was also auto-generated it will be named along the lines of “base Model Name.” Select the template to edit attributes within it.

Next will be a brief overview of the preferences behind a template. The Properties tab outlines basic format of text and other nomenclature features. The Configurations tab outlines settings for occupancy, alarms, identifiers, attributes, and resources. Pay particular attention to resources as it is what the System Manager uses to sort a device into a particular section of the device page (e.g. if you want to show a device as an Air Handler, set the Air resource to Provider). The Objects tab lists every single BACnet point that the System Manager was able to read in from the device. Each point can be configured in a number of ways. Typical configuration settings include write security, home tab and sub tab, trend enable, and refresh rate for reading of the point. Device Images is what the name suggests – feel free to upload any supported file format (GIF, BMP, JPEG, JPG, PNG). These images are saved as a local resource, and as such may be used in other templates freely (so you would not have to upload the images again for another template). Lastly the Tabs subtab is the organizational center of templates. Create main tabs as seen along the left side of a template and choose its corresponding icon. In addition, sub tabs within each of the main tabs are also created here. Any tabs and sub tabs created here will be accessible in the Objects section under Object Configuration (once an object has been selected).

All template work is saved when the update button at the bottom of the page is selected (make sure to do this often). However, changes made to a template are [not automatically applied to a device.] To apply an updated template to a device, go to the respective device properties page and reselect the template from the drop down menu – you will see a repeat of the current selected template. Once selected, press **“Update”** and refresh the page to see the new, updated template changes.

As an additional step, it is recommended you save your configuration (Settings – System Configuration – Export Local Config) and email the Config.zip file found and created in C:\MISystem\ to MISystem@daikinapplied.com. Refer to “Saving the Configuration” for more information on how to save the configuration, create the zip file, and save it to an external storage device to email to MISystem@daikinapplied.com.

Network Setup

BACnet®

Settings for how the System Manager communicates along BACnet are given here along with parameters for the BACnet network the System Manager will facilitate. These settings tend to care towards more advanced users, as some of these values heavily influence how the System Manager behaves.

Vendor Name: Name of the vendor who sold the product.

Vendor ID: Unique number that is used to distinguish vendors.

Model Name: Name of the network model.

Object Name: Name of the device (MT_System_Manager is name given to the System Manager).

MS/TP Baud Rate: The rate at which information is read over the network.

ADPU Timeout (ms): Length of time required for a device to look for a message from the token before timing out.

ADPU Retries: The number of times the system will try to send/receive a message from the stack before noting a communication error

MAC Address: Unique address that distinguishes this particular device from others on the network.

Device Instance: Unique number that distinguishes this particular device from others on the BACnet network.

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.

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.

Serial Port: Port that the BACnet card is communicating through. Should not be adjusted – it is internal.

System Summary

This lists all devices discovered on the network along with its MAC address, Object Name, Device Tag, Template Name, and location. All of these properties can be changed at the Device Properties page except for the Device Instance numbers and the MAC address. Those need to be changed at a controller level either manually or if applicable through ATS Auto Commissioning. This is a convenient way to see all devices quickly without any of the other information from the devices themselves.

Manage Documents

In Manage Documents you will find pre-loaded documentation on various devices within the system, along with the Installation manual ([IM 1253](#)) and this document, [OM 1254](#). To search for a document enter in a file name into the search box, enter in a file date if desired (it searches the past year by default), and hit search. You may add other documents for your reference if so desired through the **Add New Document** button at the bottom left of the table.

Figure 31: MIS Alarms Troubleshooting Decision Tree

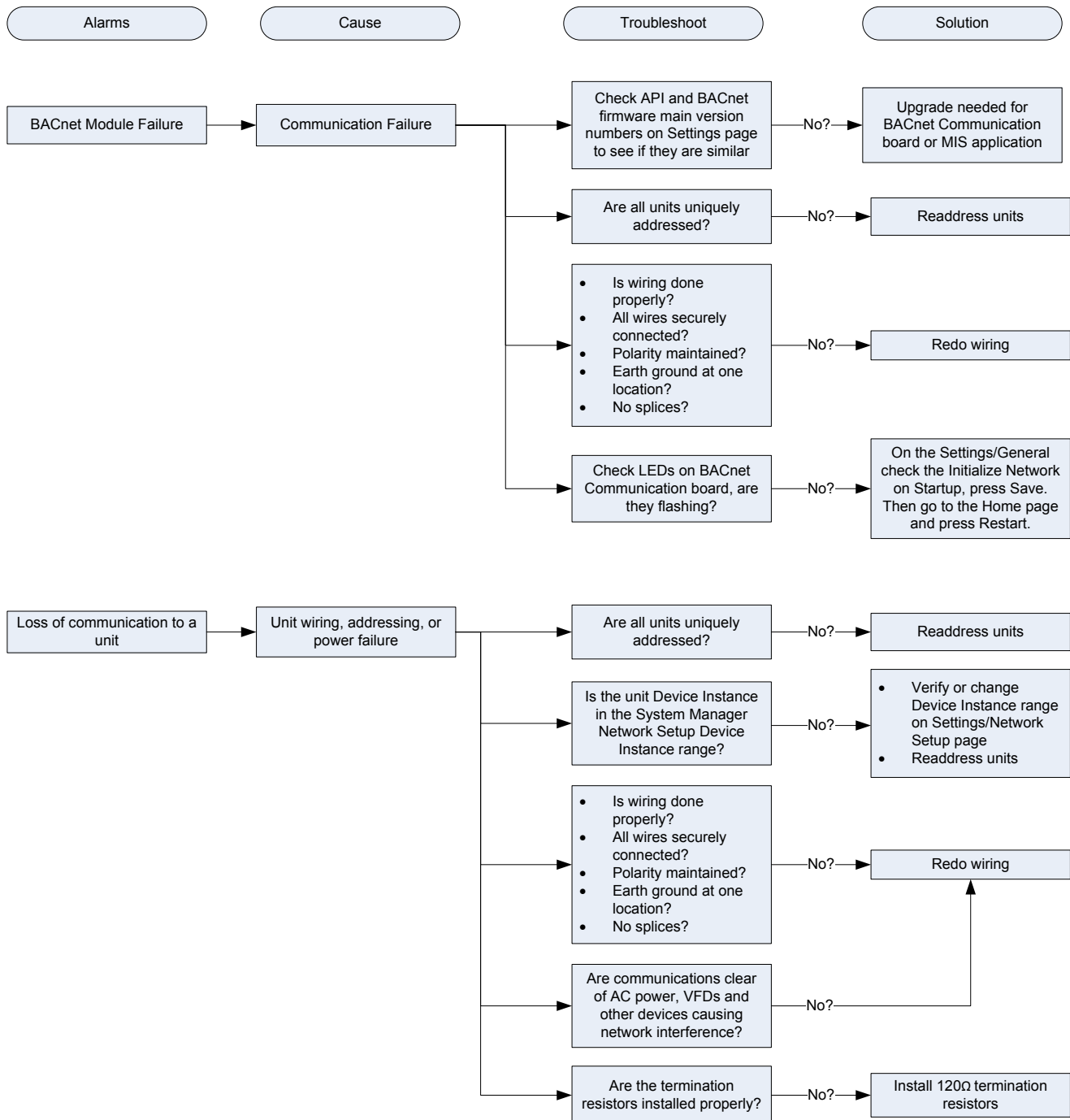


Figure 32: MIS System Log Troubleshooting Decision Tree

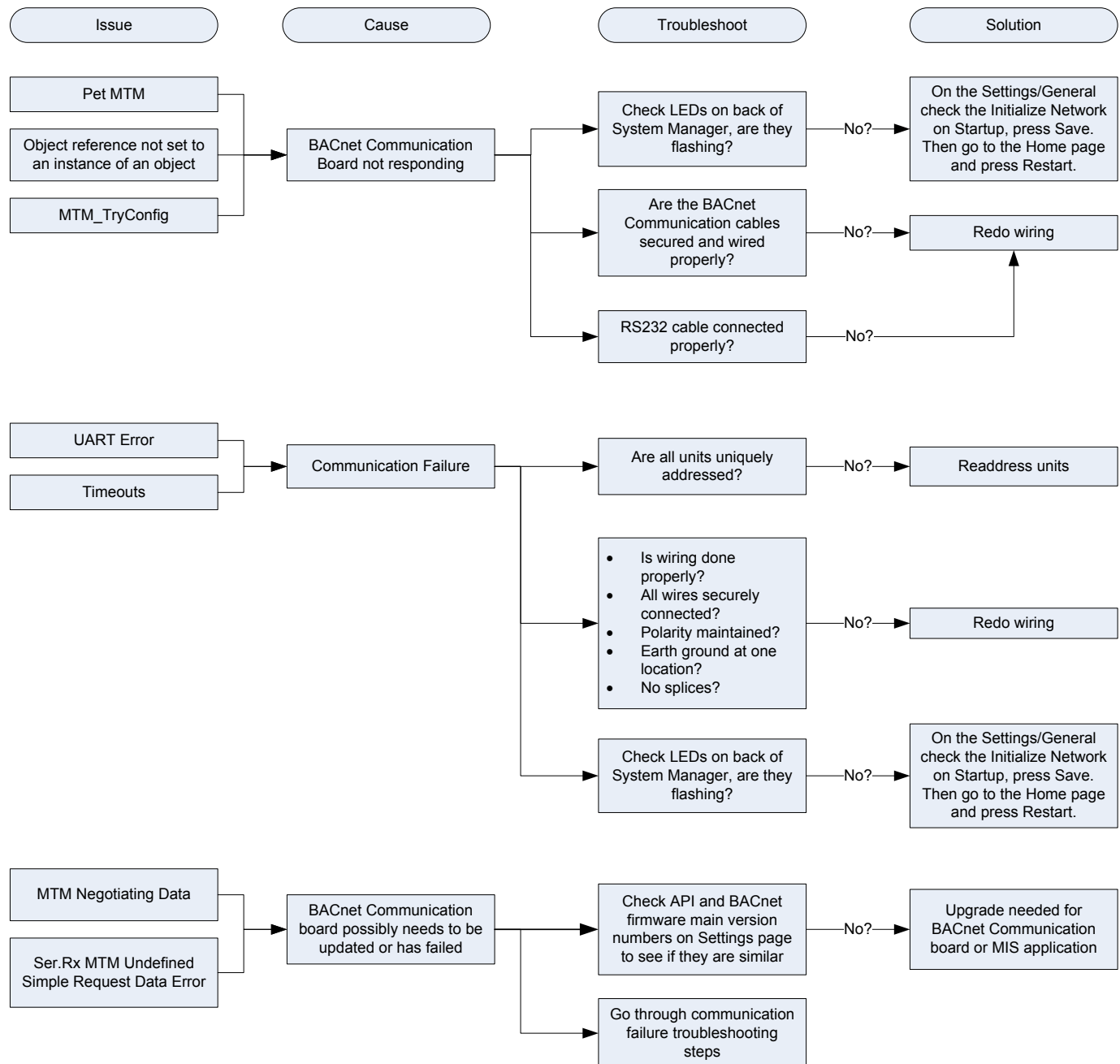


Figure 33: MIS System Troubleshooting Decision Tree

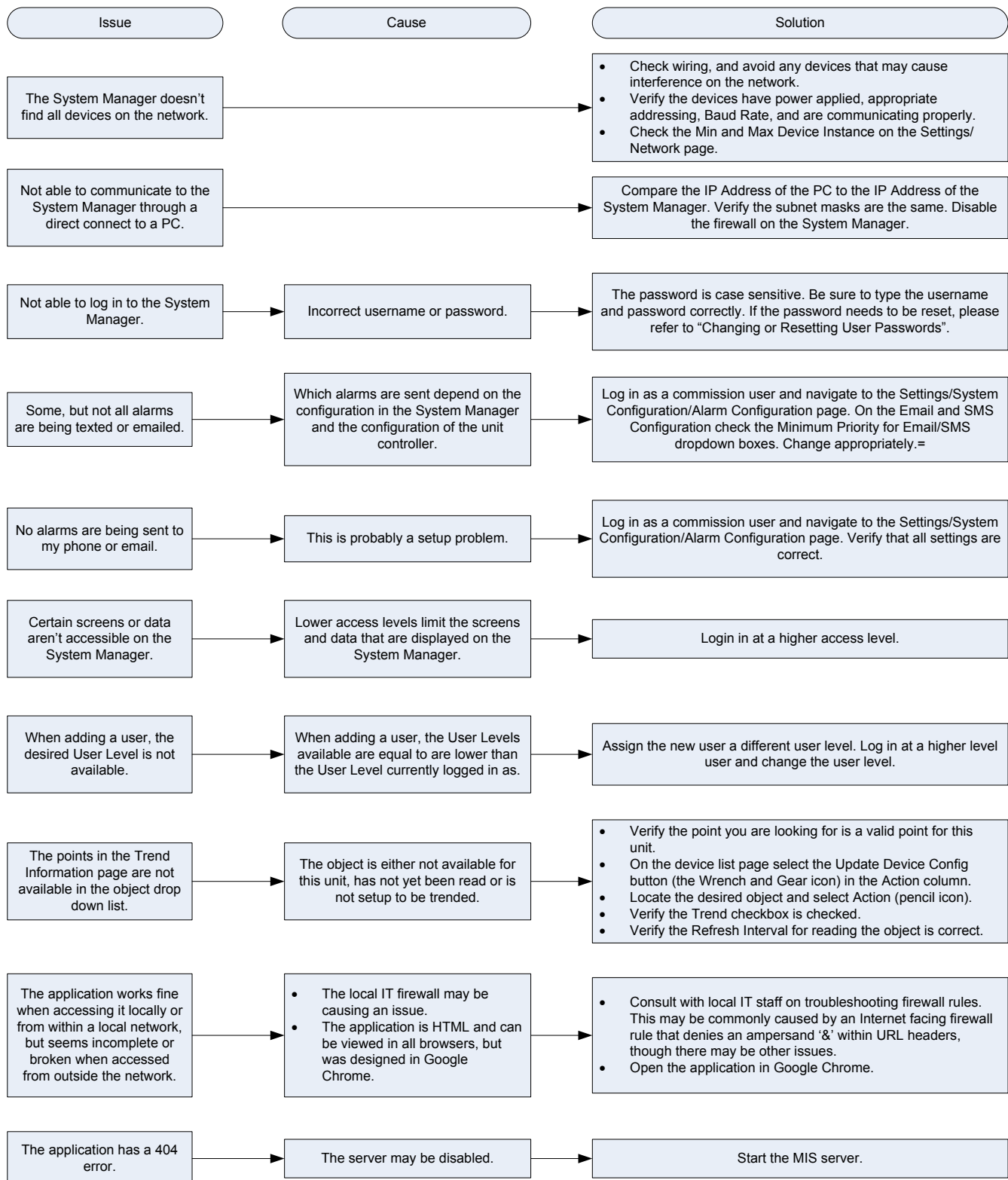
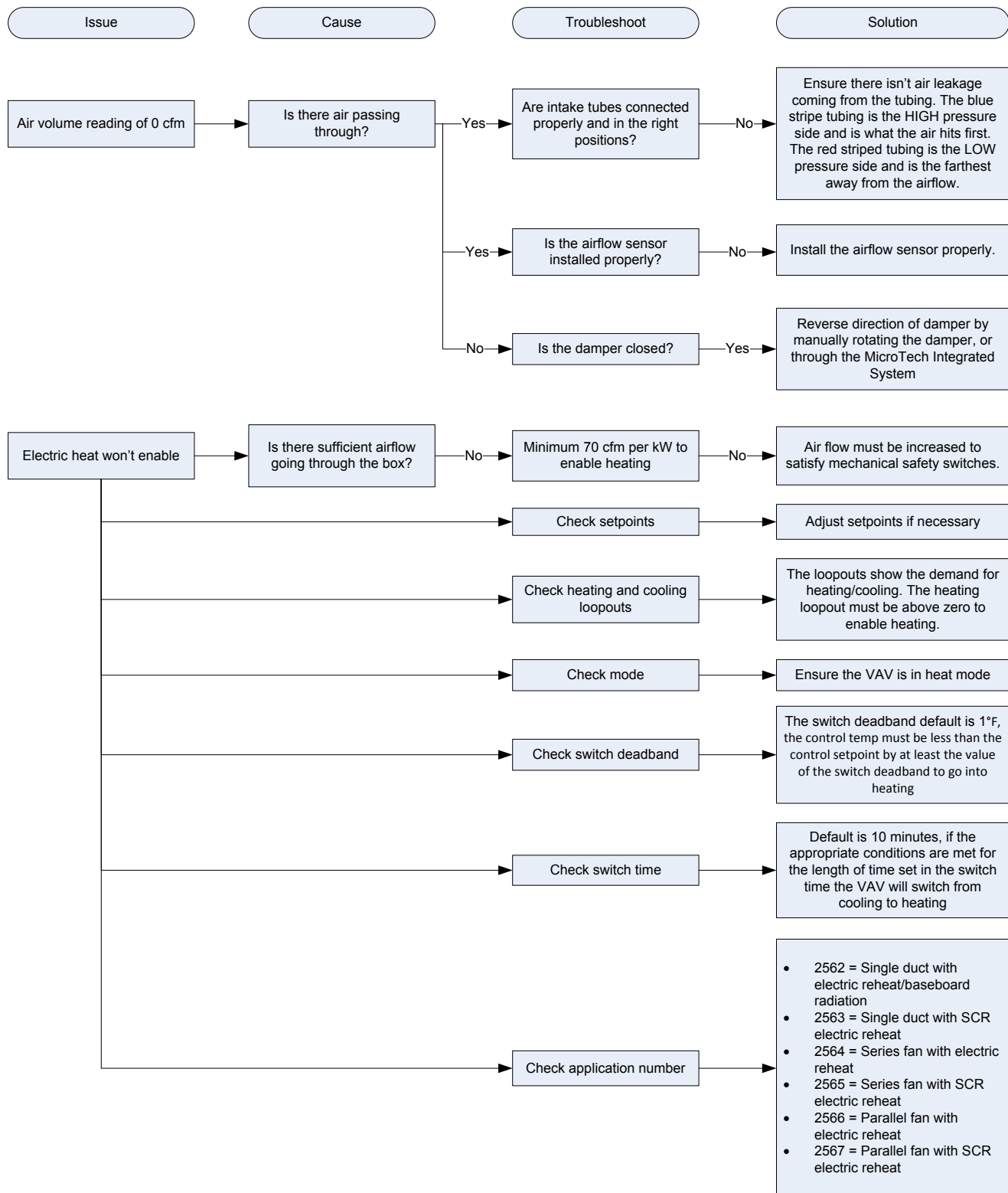


Figure 34: VAV Troubleshooting Decision Tree





Daikin Applied Training and Development

Now that you have made an investment in modern, efficient Daikin equipment, its care should be a high priority. For training information on all Daikin HVAC products, please visit us at www.DaikinApplied.com and click on Training, or call 540-248-9646 and ask for the Training Department.

Warranty

All Daikin equipment is sold pursuant to its standard terms and conditions of sale, including Limited Product Warranty. Consult your local Daikin Applied representative for warranty details. To find your local Daikin Applied representative, go to www.DaikinApplied.com.

Aftermarket Services

To find your local parts office, visit www.DaikinApplied.com or call 800-37PARTS (800-377-2787). To find your local service office, visit www.DaikinApplied.com or call 800-432-1342.

This document contains the most current product information as of this printing. For the most up-to-date product information, please go to www.DaikinApplied.com.

Products manufactured in an ISO Certified Facility.