



OPERATION & MAINTENANCE

OM 1063-4

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# DAIKIN VAV CONTROLLER

MODEL 250802400



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# Introduction

## Safety Information

### Hazard Identification

 <b>DANGER</b>
Danger indicates a hazardous situation, which will result in death or serious injury if not avoided.

 <b>WARNING</b>
Warning indicates a potentially hazardous situations, which can result in property damage, personal injury, or death if not avoided.

 <b>CAUTION</b>
Caution indicates a potentially hazardous situations, which can result in minor injury or equipment damage if not avoided.

<b>NOTICE</b>
Notice indicates practices not related to physical injury.

**NOTE:** Indicates important details or clarifying statements for information presented in Figures or Tables.

### Service Statement

Control devices are combined to make a system. Each control device is mechanical in nature and all mechanical components must be regularly serviced to optimize their operation. All Daikin Applied branch offices and authorized distributors offer Technical Support Programs that support continuous, trouble-free system performance.

## Reference Documents

Company	Number	Title	Source
Daikin Applied	ED 19157	Daikin VAV Controller BACnet Protocol Document	<a href="http://www.DaikinApplied.com">www.DaikinApplied.com</a>
	IM 1037	Daikin VAV Controller Installation Manual	
	IM 1040	VAV Box Controller Start-up	
	OM 1038	BACnet VAV Actuator Room Sensor 2508031	
	OM 1039	BACnet VAV Actuator Room Sensor 2508032	

## How To Use This Manual

This manual is intended for the owner and user of the Daikin VAV Controller (i.e. controller).

### Manual Organization

This manual contains the following sections:

- *Product Overview* – describes the hardware components and the accessories that are used with the controller.
- *Applications and Features* – describes the available control applications that includes a terminal block for input and output connections.
- *Connecting to the Controller, Changing the Application, and BACnet Network Addressing* - describes how to install the WCIS software for controller and sensor connection, changing the application number, and configuring the controller for BACnet communication (if applicable).
- *Service and Troubleshooting* – describes basic corrective measures to take should a problem be encountered when using the controller.
- *Glossary* – describes the terms and acronyms used in this manual.

### Technical Support

Contact Daikin Applied Controls Customer Support at 866-462-7829 or [Ctltechsupport@daikinapplied.com](mailto:Ctltechsupport@daikinapplied.com).

The VAV (Variable Air Volume) controller is used in pressure independent VAV applications. It is an electronic-output device that combines a damper actuator and an equipment controller into one package. It provides DDC (Direct Digital Control) for controller applications. It can operate as a stand-alone DDC room controller or networked via BACnet® MS/TP or with a field panel such as the Daikin SiteLine® Gateway.

The controller provides all input, output, system, and local communication connections. Hardware consists of the controller, air velocity sensor, damper actuator assembly and mounting bracket. Table 1 lists available applications and quick link to the description for use when choosing the correct application number.

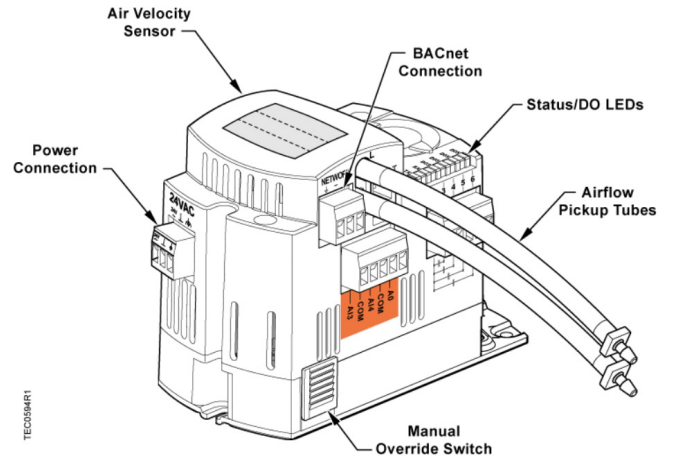
**Table 1: VAV Controller Applications**

Application Number	Application Description	Link to Application Description
6630	VAV Cooling Only	Application 6630 VAV Cooling Only
6631	VAV Cooling or Heating	Application 6631 VAV Cooling or Heating
6632	VAV with Electronic Reheat or Baseboard Radiation	Application 6632 VAV with Electric Reheat or Baseboard Radiation
6633	VAV with Hot Water Reheat <sup>1</sup>	Application 6633 VAV with Hot Water Reheat
6634	VAV Series Fan Powered with Electric Reheat	Application 6634 and 6636 VAV Series Fan or Parallel and Electric Heat
6635	VAV Series Fan Powered with Hot Water Reheat <sup>1</sup>	Application 6635 and 6637 VAV Series Fan or Parallel Fan and Hot Water Reheat
6636	VAV Parallel Fan Powered with Electric Reheat	Application 6634 and 6636 VAV Series Fan or Parallel and Electric Heat
6637	VAV Parallel Fan Powered with Hot Water Reheat <sup>1</sup>	Application 6635 and 6637 VAV Series Fan or Parallel Fan and Hot Water Reheat
6684	Slave Mode	Application 6684 Slave Mode

<sup>1</sup>Also applies to terminal units with SCR electric heat.

**NOTE:** For “out of the box” controller (field replacements), the controller powers up in Application 6684 (Slave Mode) and will not control until an application is selected. Quick Start: Set CTLR ADDRESS → select APPLICATION → run CHK OUT.

**Figure 1: Daikin VAV Controller**



## Hardware Inputs

### Analog

Air Velocity Sensor			
Application 6630	Application 6631	Application 6632	Application 6633
Application 6634	Application 6635	Application 6636	Application 6637
Room Temperature Sensor			
Application 6630	Application 6631	Application 6632	Application 6633
Application 6634	Application 6635	Application 6636	Application 6637
Room Temperature Setpoint Dial (Optional)			
Application 6630	Application 6631	Application 6632	Application 6633
Application 6634	Application 6635	Application 6636	Application 6637
Room Temperature Sensor with CO <sub>2</sub> Sensor (Optional)			
Application 6630	Application 6631	Application 6632	Application 6633
Application 6634	Application 6635	Application 6636	Application 6637
Room Temperature Setpoint Dial with CO <sub>2</sub> Sensor (Optional)			
Application 6630	Application 6631	Application 6632	Application 6633
Application 6634	Application 6635	Application 6636	Application 6637
Duct Temperature Sensor (Optional)			
Application 6631			
One Or Two Spare Temperature Sensor (10K/100K Ω Selectable Thermistor) or Spare Digital Sensor			
Application 6630	Application 6631	Application 6632	Application 6633
Application 6634	Application 6635	Application 6636	Application 6637

### Digital

Night Mode Override (Optional)			
Application 6630	Application 6631	Application 6632	Application 6633
Application 6634	Application 6635	Application 6636	Application 6637
Wall Switch (Optional)			
Application 6630	Application 6631	Application 6632	Application 6633
Application 6634	Application 6635	Application 6636	Application 6637

# Hardware Outputs

## Analog

Spare Analog Output (0-10 VDC)			
Application 6630	Application 6631	Application 6632	Application 6633
Application 6634	Application 6635	Application 6636	Application 6637
Valve Actuator and SSR Relay (0-10 VDC)			
Application 6633	Application 6635	Application 6637	

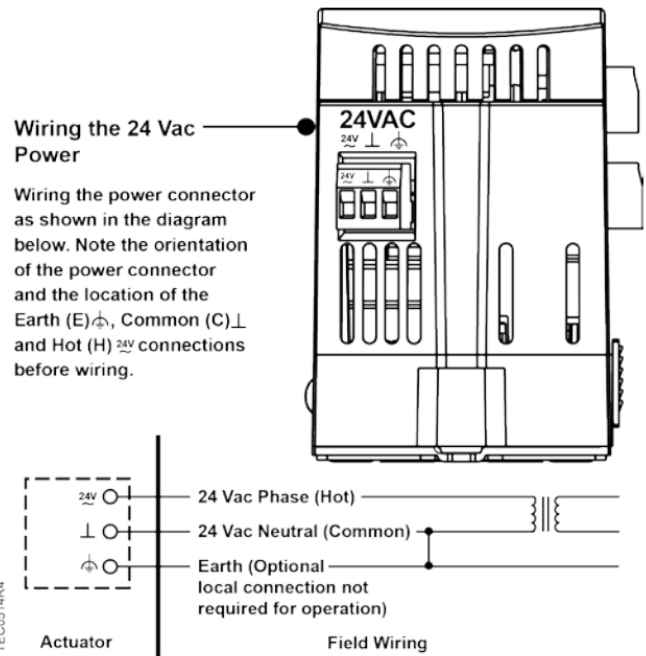
## Digital

Damper Actuator			
Application 6630	Application 6631	Application 6632	Application 6633
Application 6634	Application 6635	Application 6636	Application 6637
Valve Actuator (DO 3/DO 4)			
Application 6633	Application 6635	Application 6637	
2nd Valve Actuator (DO 5/DO 6)			
Application 6633			
Stage 1 Electric Heat or 2-Position Heating Valve (or Spare DO 3)			
Application 6632	Application 6634	Application 6636	
Stage 2 Electric Heat (or Spare DO 4)			
Application 6632	Application 6634	Application 6636	
Stage 3 Electric Heat (or Spare DO 5)			
Application 6632			
Spare DO 3, DO 4 or (DO 3/DO 4 Spare Floating Actuator)			
Application 6630	Application 6631		
Spare DO 5			
Application 6630	Application 6631	Application 6633	
Series Fan (DO 6)			
Application 6634	Application 6635		
Parallel Fan (DO 6)			
Application 6636	Application 6637		
Autozero Module (Optional)			
Application 6630	Application 6631	Application 6632	Application 6633
Application 6634	Application 6635	Application 6636	Application 6637

# Power Wiring

The controller is powered by 24 Vac. Power wiring connects to the two screw terminals on the power connector labeled “24V” (Hot) and “1” (Common). The power connector connects to the 3-pin connection labeled “24VAC” with the same labels as found on the power connector (See Figure 1 to locate the power connection). The third connection is for earth ground, which is not required for operation of the controller. At a minimum, include a ground connection to the metal case of the VAV box, or other approved metal surface. Refer to Figure 2 for more information about the hot, neutral, and earth ground connections.

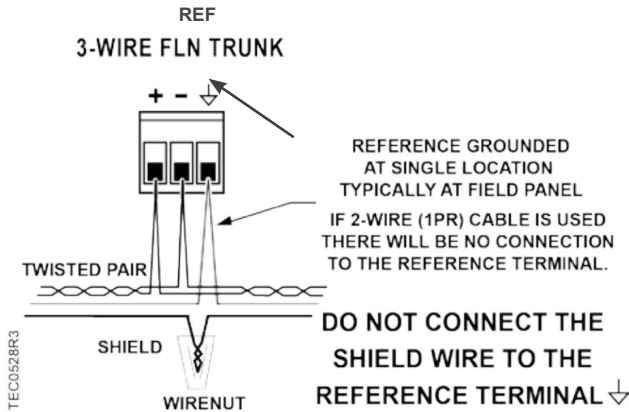
Figure 2: Power Wiring



## Communication Wiring

The controller communicates to a field panel (such as a Daikin Intelligent Systems controller or other network device) via BACnet MS/TP. This is done using a twisted pair wire connected to the positive (+) and negative (-) terminals as shown in Figure 3.

Figure 3: BACnet MS/TP Communication Wiring



## Controller LED Indicators

The controller has seven Status Light Emitting Diode (LED) indicators (see Figure 1 and Table 2).

Table 2: Controller LEDs

LED Type	Label (if present)*	LED Number	Indication
Basic Sanity Test	BST	1	Indicates, when flashing ON and OFF once per second, that the controller is functioning properly.
Transmit	TX	2	Indicates, when flashing, that the controller is transmitting information to the field panel.
Receive	RX	3	Indicates, when flashing, that the controller is receiving information from the field panel.
DO	LED 3-LED 6	4-7	Indicates the ON/OFF status of the DO associated with it. A glowing LED indicates that the DO is energized.

\* Some LED labels and numerals may be hidden by the controller cover.

## Temperature Sensors

### Room Temperature Sensor

The room temperature sensor connects to the controller by means of a cable terminated at both ends with a six-conductor RJ-11 plug-in connector.

### Room Temperature Sensor with CO<sub>2</sub>

Room temperature sensors are also available with an optional CO<sub>2</sub> sensor. Regardless if it is just a sensor, or a sensor with a setpoint dial, the CO<sub>2</sub> sensor requires more power than the RJ-11 alone can deliver from the controller. When this configuration is selected, an additional power module with a short RJ-11 cable will be included. Please refer to IM 1037 for more detailed installation instructions for the power module.

### Duct Temperature Sensor

An optional duct temperature sensor provides duct air temperature sensing inputs to the controller. For more information about temperature sensors, contact your local Daikin representative.

## Related Equipment

- Relay Module
- Damper Actuator(s)
- Duct Temperature Sensor (Optional)
- Room Temperature Sensor [with or without setpoint dial] (Optional)
- Room Temperature Sensor with CO<sub>2</sub> Sensor [with or without setpoint dial] (Optional)

## Applications and Features

This section outlines the features and applications supported by the Daikin VAV controller.

The controller provides Direct Digital Control (DDC) for Variable Air Volume (VAV) terminal box applications. If heating is included, it can be provided by hot water, up to three stages of electric reheat, or baseboard radiation though temperature control varies with the application. This section is split into an overview of features inherent to the controller (Occupancy, Control Loops, Calibration, Self-Regulation, and Fault Detection and Diagnostics) and also descriptions of each individual application the controller supports.

**NOTE:** Some of the features require additional hardware or hardware specific to certain applications.

### Occupancy

#### Day/Night Mode

The controller maintains the specified day setpoint temperature during daytime hours and the specified night setpoint during nighttime hours.

#### Occupancy (Night Mode) Override Switch

If the room temperature sensor has an override switch (i.e. it has a setpoint dial), it can be used to command the controller into day mode for an adjustable period of time. This can only affect an unoccupied controller (a controller in night mode).

### Control Loops

#### Temperature Loop (Heating or Cooling)

The controller maintains the temperature setpoint in day or night mode by changing the flow setpoint or modulating the heat source (hot water valve or electric reheat) if available to the controller.

#### Heating and Cooling Switchover

The heating/cooling switchover determines whether the controller is in heating or cooling mode by monitoring the room temperature and the demand for heating and cooling.

#### Control Temperature Setpoints

The controller maintains a specified temperature setpoint based on Day/Night mode, the heating/cooling mode, or the setpoint dial (if present).

#### Flow Loop

The controller maintains the flow setpoint by modulating the damper actuator position.

### Modulate Damper during Heating Mode (Optional)

#### CAUTION

If the damper is set to modulate in heating mode, verify that the controller is in the appropriate mode for the current supply air temperature.

Applications that have a heating source (hot water or electric) can be configured to modulate the flow setpoint in sequence with the heating source.

### Hot Water Reheat

#### CAUTION

Do not set HTG FLOW MIN to 0 cfm (0 lps). A minimum airflow should be provided across the heating coils when the heating valve is open.

The heating loop modulates the heating valve(s) to warm up the room. In cooling mode, the heating valve is closed.

### Electric Reheat

#### CAUTION

Verify that the equipment is supplied with "Safeties by Others" to confirm that there is airflow across the heating coils when they are to be energized.

The heating loop controls up to three stages of electric reheat to warm up the room. The electric reheat is time modulated using a duty cycle. When the controller is in cooling mode, the electric heat is OFF at all times.

### Safeties by Others

#### CAUTION

Always verify jobsite safeties and interlocks during commissioning.

"Safeties by Others" implies that the associated equipment has safety features installed. An example is adding mechanical stops to the dampers.

### Calibration

#### Air Velocity Sensor

Calibration of the controller's internal air velocity sensor is periodically required to maintain accurate air velocity readings. Calibration may be set to take place automatically or manually.

#### Autozero Module (AZM)

An AZM is used when damper cannot be closed and constant airflow is needed. For a controller used with an AZM, calibration occurs without closing the damper (see applications 6630, 6631, 6632, and 6633).

For a controller without an AZM, the damper is briefly commanded closed to get a zero airflow reading and an accurate damper position during calibration (see applications 6630, 6631, 6632, and 6633). Note that the damper may close briefly during calibration. This is normal behavior.

## Hot Water Valve

Calibration of a hot water valve is done by briefly commanding the valve closed (see applications 6633, 6635, and 6637).

## Controller Self-Regulation and Maintenance

### Floating Control Actuation Auto-correct

In addition to the existing options for floating control actuator full stroke actions, all floating control actuators are provided with additional logic to fully drive open or closed when commanded to 100% or 0%.

### Fail-safe Operation

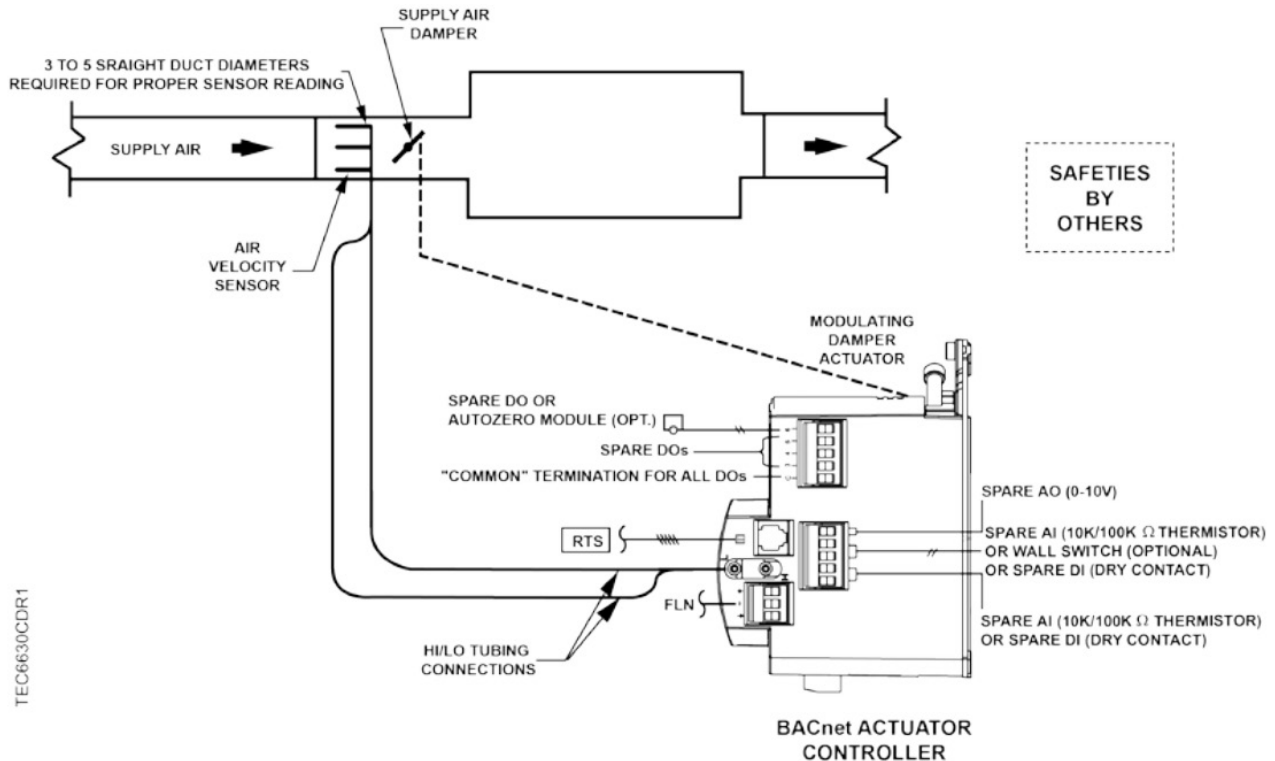
If the air velocity sensor fails, the controller uses pressure dependent control. The temperature loop controls the operation of the damper. If the room temperature sensor fails, then the controller operates using the last known temperature value.

## Application 6630 VAV Cooling Only

### Overview

In Application 6630, the controller modulates the supply air damper of the terminal box for cooling. In order for it to work properly, the central air-handling unit must provide cool supply air. See Figure 4.

Figure 4: Application 6630 Schematic



## Automated Fault Detection and Diagnostics (Checkout)

The controller has a built-in checkout procedure that performs a basic fault detection and diagnostic routine. It can be manually initiated at any time after the controller has been installed. This procedure tests all of the necessary I/O to confirm the controller can operate within the set airflow range, between CLG FLOW MIN and CLG FLOW MAX.

To perform the checkout procedure, set CHK OUT to YES. When the procedure has completed, CHK OUT returns to NO and the results display in CHK STATUS. See Table 2 for the description associated with each value of CHK STATUS in [Service and Troubleshooting](#).

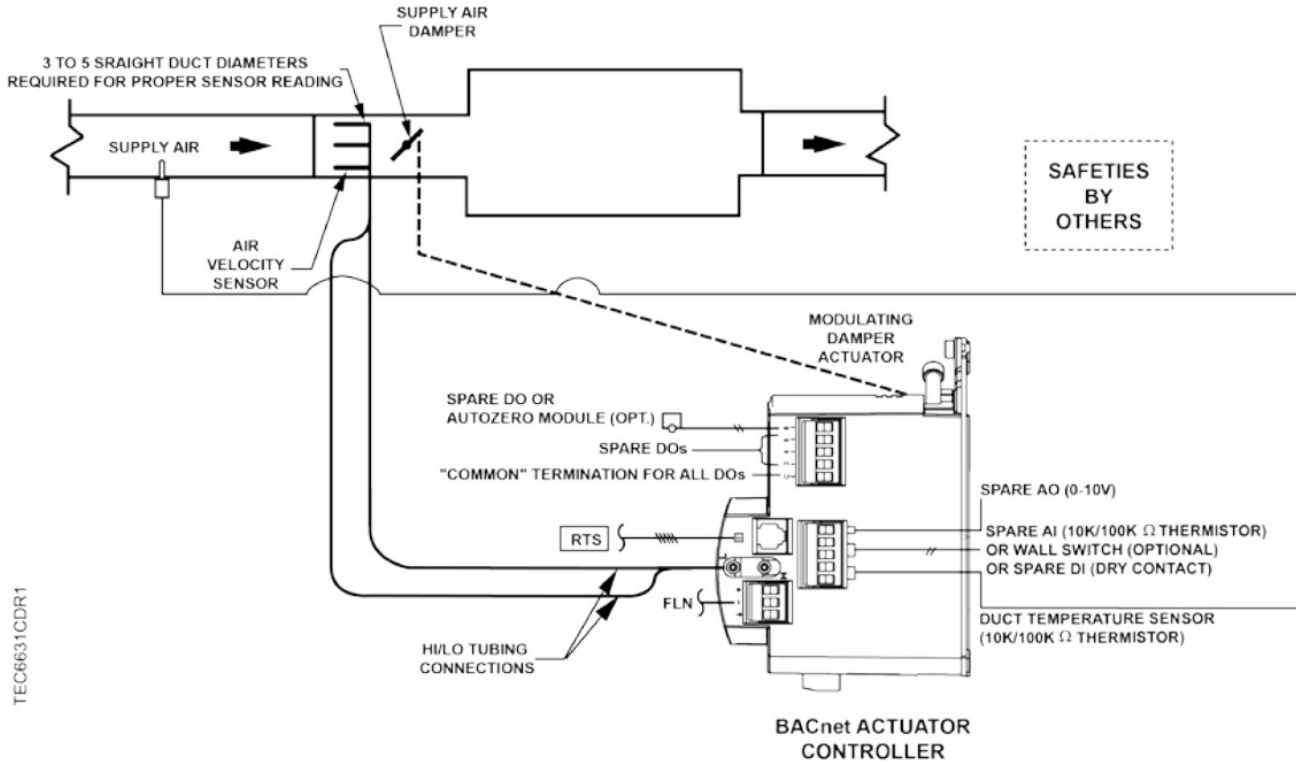
**NOTE:** In order to perform anything in this section, a WCIS Cable (or RJ-11 to Serial cable, P/N: 250804701) is required in order to connect a laptop running the WCIS software to the controller. Contact a Daikin Representative for more information.

# Application 6631 VAV Cooling or Heating

## Overview

In Application 6631, the controller modulates the supply air damper of the terminal box for cooling or heating. In order for it to work properly, the central air-handling unit must provide cool supply air in cooling mode and warm air during heating mode. See Figure 5.

Figure 5: Application 6631 Schematic



# Application 6632 VAV with Electric Reheat or Baseboard Radiation

## Overview

In Application 6632, the controller modulates the supply air damper of the terminal box for cooling and controls stages of electric reheat or baseboard radiation for heating. When in heating, the terminal box either maintains minimum airflow or modulates the supply air damper. In order for the terminal box to work properly, the central air-handling unit must provide supply air. See Figure 6 and Figure 7.

## Baseboard Radiation

Baseboard radiation can be a two-position valve or electrical resistance heating.

If the controller is in cooling mode, the heating valve is closed. When in heating mode, the controller operates the heating valve to maintain the heating setpoint.

Figure 6: Application 6632 Schematic (Electric Heat)

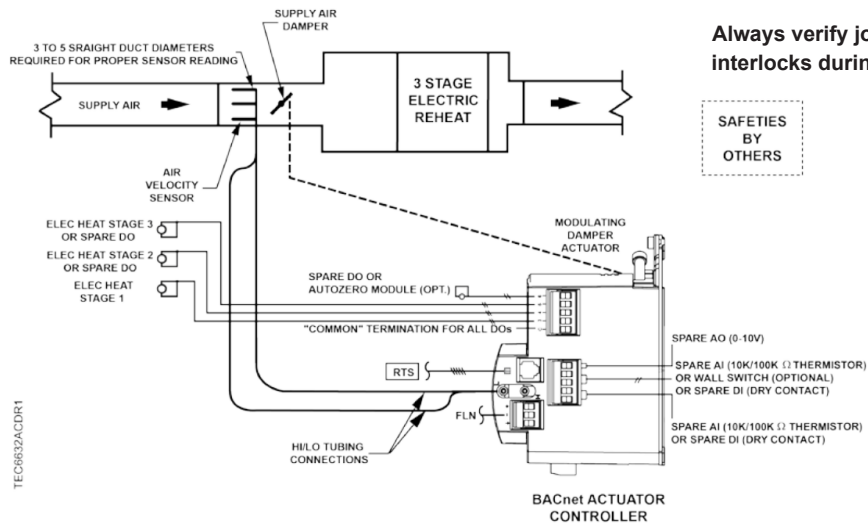
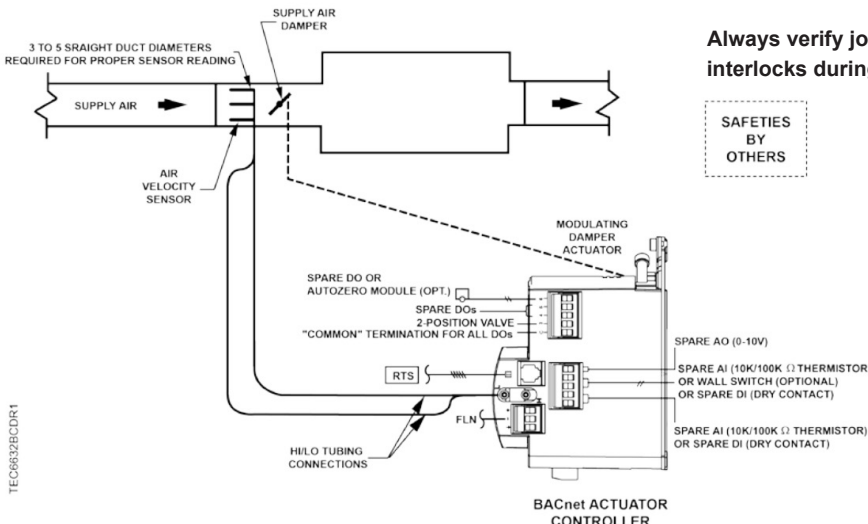


Figure 7: Application 6632 Schematic (Baseboard Radiation)



## Electric Heat Interlock

**⚠ CAUTION**

Do not set REHEAT FLOW (the defined minimum) to less than 5%; otherwise, the electric heat interlock will be disabled.

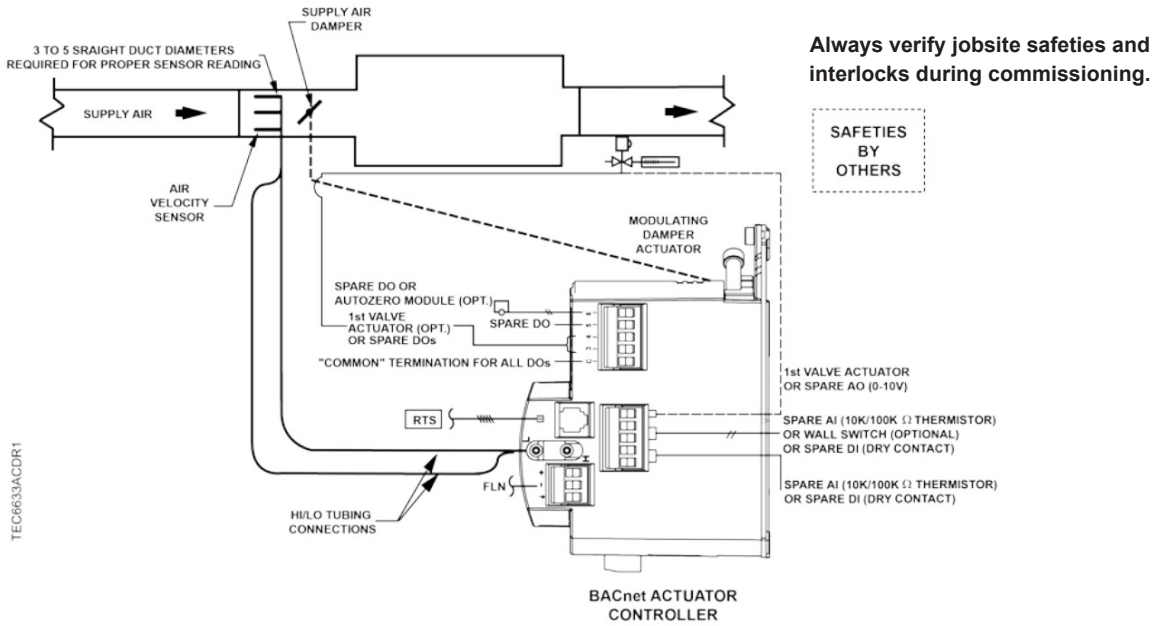
The electric heat stages are disabled (turned OFF) when the electric heat airflow is less than the defined minimum.

# Application 6633 VAV with Hot Water Reheat

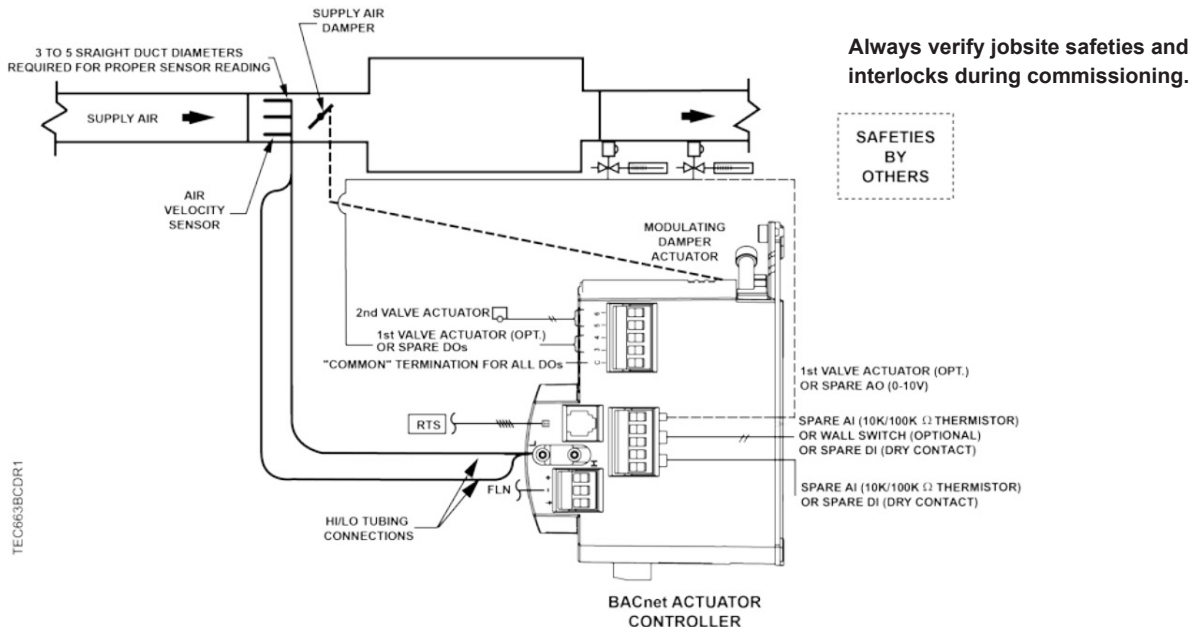
## Overview

In Application 6633, the controller modulates the supply air damper of the terminal box for cooling and controls a hot water valve (or valves) for heating. When in heating, the terminal box either maintains minimum airflow or modulates the supply air damper. In order for the terminal box to work properly, the central air-handling unit must provide supply air for cooling. See [Figure 8](#) and [Figure 9](#).

**Figure 8: Application 6633 Schematic (HW Heat and Spare DO)**



**Figure 9: Application 6633 Schematic (Two Valve Actuators)**



# Application 6634 and 6636 VAV Series Fan or Parallel and Electric Heat

## Overview

In Application 6636, the controller modulates the supply air damper of the terminal box for cooling and controls stages of electric reheat for heating. When in heating, the terminal box either maintains minimum airflow or modulates the supply air damper. Application 6634 has a series fan for air circulation. In order for the terminal box to work properly, the central air-handling unit must provide supply air. See Figure 10 and Figure 11.

## Fan Operation

**CAUTION**

On series fan powered terminal boxes, the terminal box fan must be controlled/interlocked to start either before or at the same time as the central air handler. Failure to do so may cause the terminal box fan to rotate backwards and cause consequent damage at start up.

In day mode, the fan is ON all the time. In night mode, the fan cycles on when heating or cooling is required.

Figure 10: Application 6634 Schematic

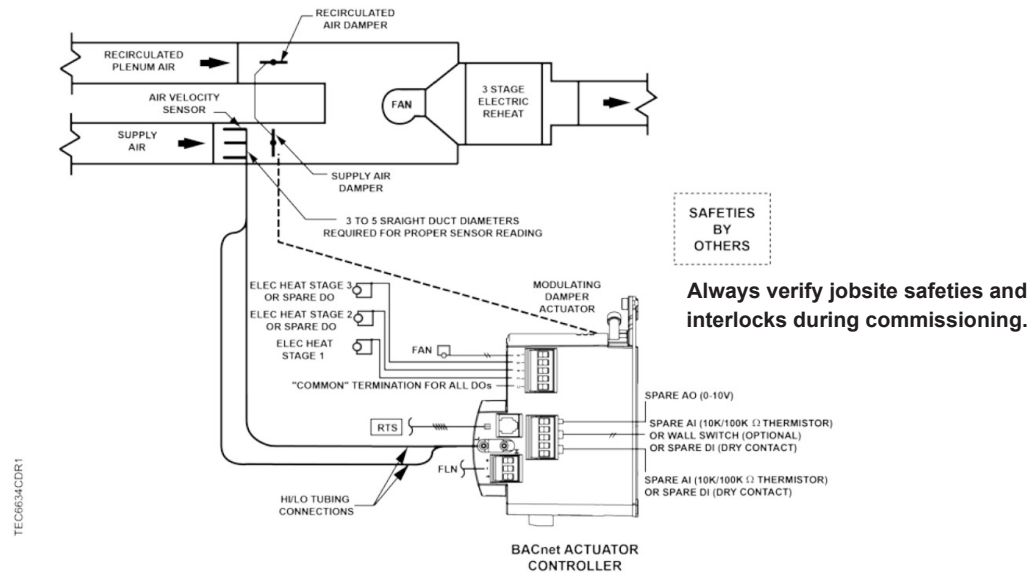
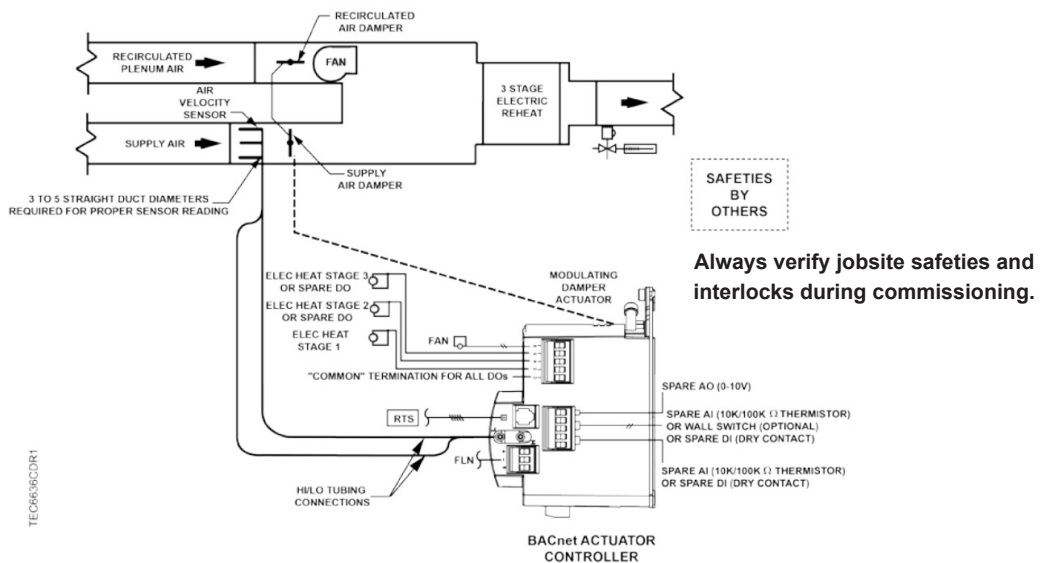


Figure 11: Application 6636 Schematic



# Application 6635 and 6637 VAV Series Fan or Parallel Fan and Hot Water Reheat

## Overview

In Application 6635, the controller modulates the supply air damper of the terminal box for cooling and modulates a hot water valve for heating. When in heating, the terminal box either maintains minimum airflow or modulates the supply air damper. Application 6637 has a parallel fan that re-circulates the room air. In order for the terminal box to work properly, the central air-handling unit must provide supply air. See [Figure 12](#) and [Figure 13](#).

## Fan Operation

**CAUTION**

On series fan powered terminal boxes, the terminal box fan must be controlled/interlocked to start either before or at the same time as the central air handler. Failure to do so may cause the terminal box fan to rotate backwards and cause consequent damage at start up.

In day mode, the fan is ON all the time. In night mode, the fan cycles on when heating or cooling is required.

Figure 12: Application 6635 Schematic

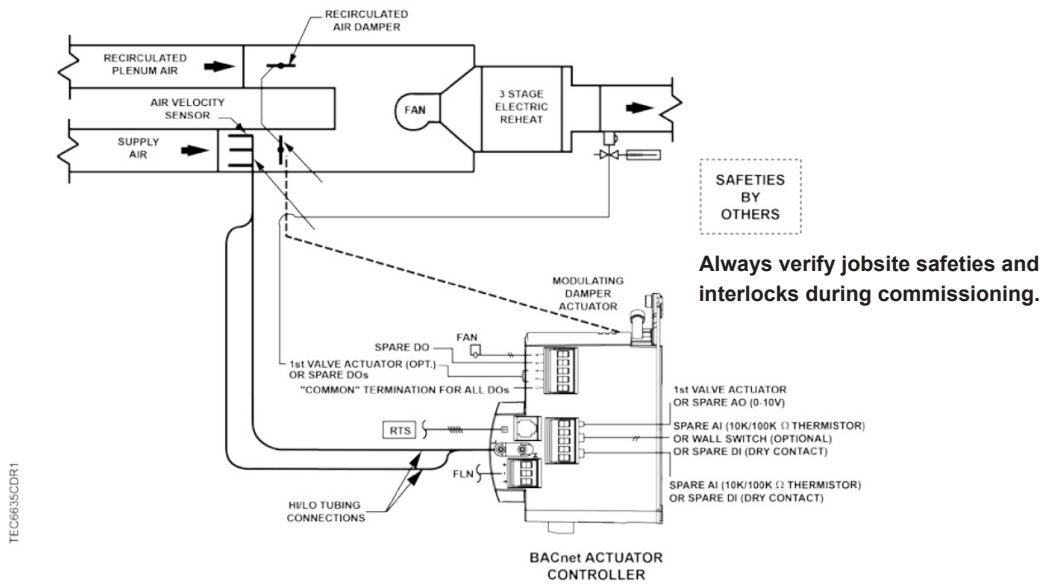
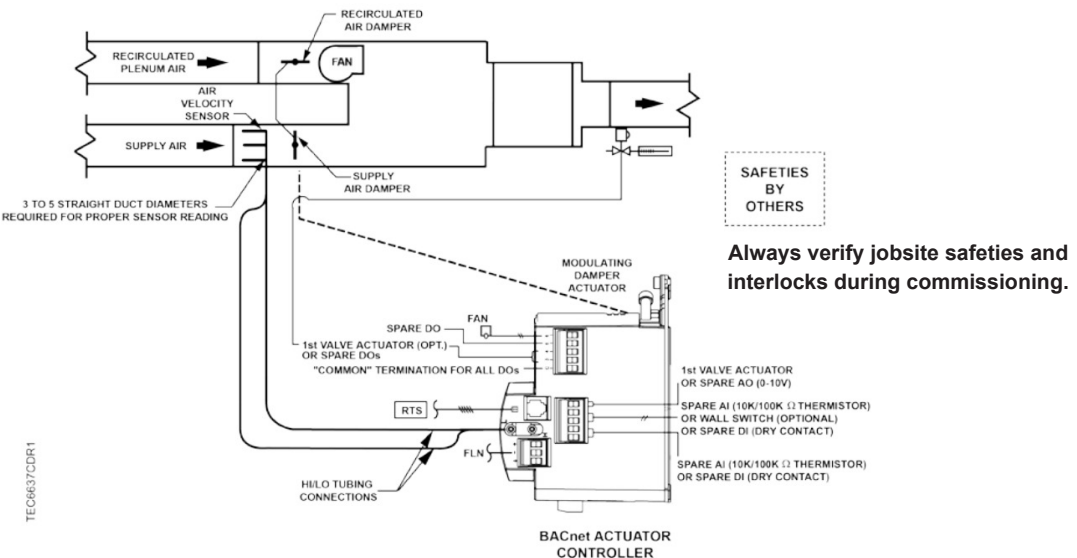


Figure 13: Application 6637 Schematic



## Application 6684 Slave Mode

### Overview

**NOTE:** The first power-up defaults to Application 6684 (Slave Mode) and the unit will not control until an application is selected: (CTRLR ADDRESS→APPLICATION→CHK OUT).

Application 6684 is the slave mode application for the controller. Slave mode is the default application that comes up when power is first applied to the controller. Slave mode provides no control. Its purpose is to allow the operator to perform equipment checkout before a control application is put into effect and to set some basic controller parameters (CTRLR ADDRESS, APPLICATION, etc.). A controller in default state can also be used as a point extension device by unbundling spare I/O points at the field panel.

### Using Auxiliary Points

It is possible to have extra points available on the controller - Electronic Output in addition to the ones used by the current application that is running in the controller. If these extra points are to be controlled by a field panel, then they must be unbundled at the field panel.

## Using the Controller as a Point Extension Device

If the controller is only used as a point extension device, with no control application in effect, its application must be set to slave mode and points must be unbundled at the field panel. All points must be controlled from the field panel in order to be used.

DO 3, DO 4, DO 5, and DO 6 may be used separately or in pairs (DO 3 and DO 4, DO 5 and DO 6) to control a motor as shown in the example.

**NOTE:** If using either a motor or DOs as auxiliary points, it is important to set MTR SETUP to the correct value. If using a pair of DOs to control a motor, then the DOs cannot be unbundled. Only MTR1 COMD and MTR2 COMD can be unbundled to control the motors.

### Example

If using DO 1 and DO 2 as the physical terminations for a motor, follow these steps:

1. Set MTR SETUP to 1 to enable the motor.
2. Unbundle MTR1 COMD at the field panel to command the motor from the field panel.

Contact your local Daikin representative for other combinations of DOs and motors.

# Connect to VAV Controller

## Setup and Run WCIS Software

This section describes how to physically connect to the VAV controller or room sensor. The Window Controller Interface Software (WCIS) software is used for this purpose. Use these instructions for installing and configuring the software to establish a connection to the controller directly or via a room sensor.

The WCIS software is then used to change the VAV application number, set the BACnet Address and Device Properties, and also troubleshoot the controller.

### Required Tools

- Computer with Windows 10 or newer
- WCIS software v4.2.1 or newer
- WCIS (MMI) cable
- USB to serial adapter for the WCIS cable (if needed)
- All software updated and drivers installed

### System Requirements

- COM Port or USB-to-Serial COM port adapter to communicate with the device
- WCIS (MMI) cable, Siemens PN 540-143
- 100 MB hard disk space, plus 6 MB additional temporary disk space available during installation

### Install WCIS Software

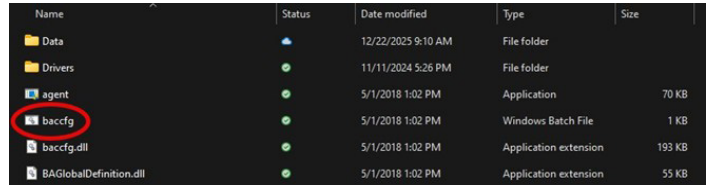
1. Acquire the WCIS software and download to the computer. The software is available Daikin's website: [WCIS VAV Software Configuration Tool](#).
1. Connect a laptop loaded with the WCIS software to the controller. Use the RJ-11 to Serial (Daikin PN:250804701) for a laptop with direct connection. If the laptop does not have a serial port, use a USB to serial cable (Figure 14).
2. Open the file and proceed.

Figure 14: WCIS Cable and USB Adapter



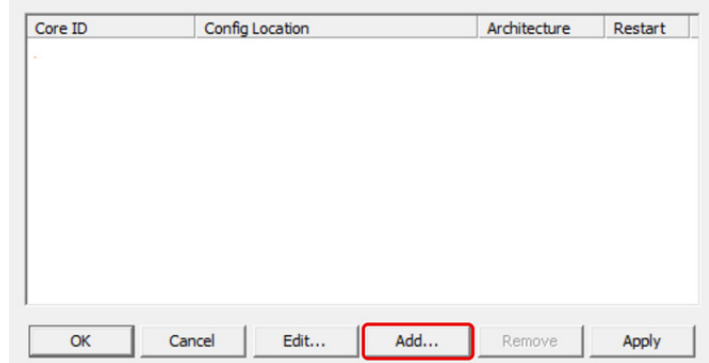
3. Once the software is installed, open and find the install file, baccfg.bat. (Figure 15).
  - a. Double-click on the baccfg.bat file in the dialog window.

Figure 15: Open the WCIS Dialog Page



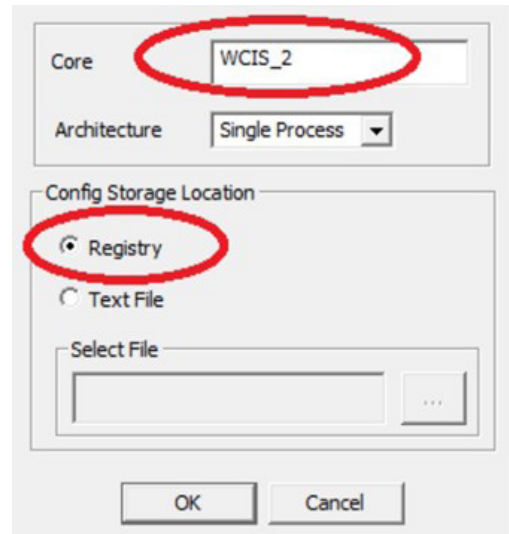
4. Click Add from the following dialog window (Figure 16).

Figure 16: Add the WCIS Software Configurations



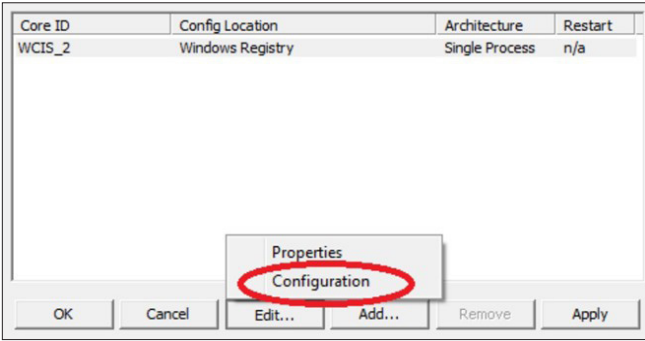
5. Verify the selections shown in Figure 17 are correct and click OK.

Figure 17: Confirm WCIS Software Setup



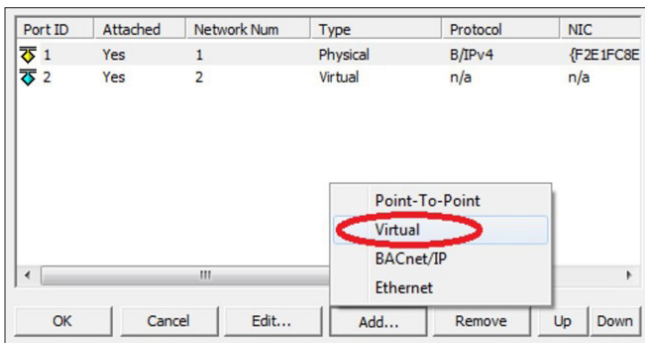
6. Select the WCIS\_2 row.
7. Select "Edit..."
8. Select "Configuration" to get the dialog page shown in Figure 18.

**Figure 18: Select WCIS\_2 and Configure**



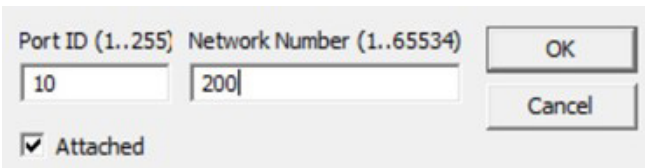
9. Select "Add..." and then "Virtual." The dialog box in Figure 19 then appears.

**Figure 19: Configure WCIS for Virtual Option**

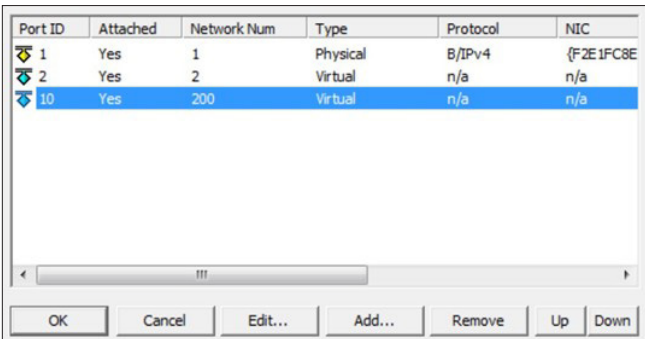


10. Verify the Port ID is 10 and the Attached option is checked (Figure 20).
11. Set the Network Number. This must be unique (i.e. not shared by another device on BACnet network, if connected to one) and click OK.
12. Click OK twice to close the dialog page (Figure 21).

**Figure 20: Port ID and Network Number**

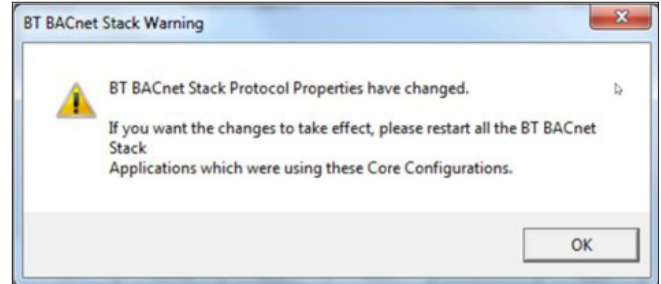


**Figure 21: Verify and Close Configurations**



13. Select OK in the pop-up message shown below (Figure 22). Note the warning does not apply and no restart is needed.

**Figure 22: Warning Message**



The WCIS software setup is complete. Use for further BACnet addressing and other troubleshooting.

## Physical Connections to the VAV Controller

There are two ways to connect to the VAV controller (Figure 2).

1. Connect from the room sensor using the RJ11 port on the base (top two images). During this connection, the display screen of the sensors displays "laptop".
2. Connect directly to the VAV controller from the stat port as shown in the bottom image.

**CAUTION**

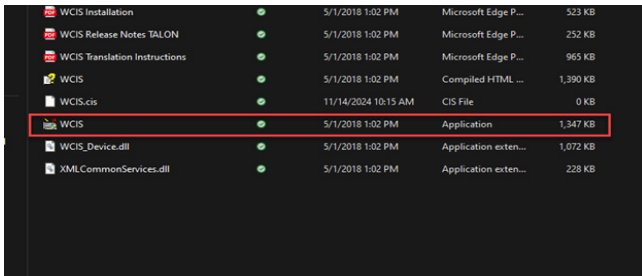
Verify proper cable connections to avoid possible damage to the hardware.

**Figure 23: Room Sensor and Direct Connection Options to VAV Controller**



- Once the WCIS file is installed and configured, open the application file (Figure 24).

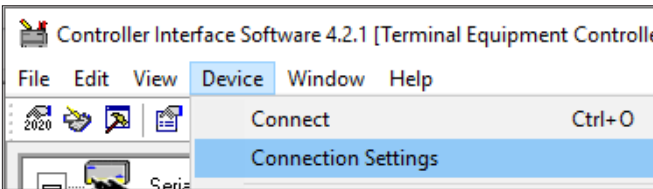
**Figure 24: Run WCIS Application**



## Configure Device Connection Settings

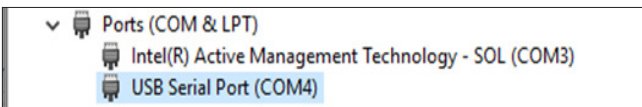
- Verify that the driver for the cable or converter is installed.
- Connect to the VAV box.
- Open WCIS application.
- Go to Device > Connection Settings (Figure 25).

**Figure 25: Connection Settings**



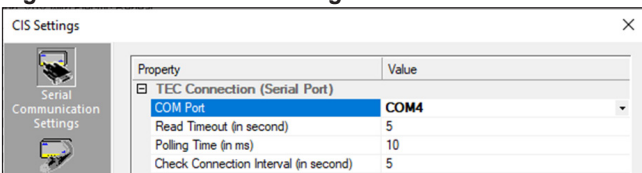
- Verify that the COM port number in the software matches the Device Manager COM port number. Do this by right clicking on My Computer/This Computer and then select Manage. In this example (Figure 9), the Device Manager shows the computer is using COM4.

**Figure 26: COM Port Example**



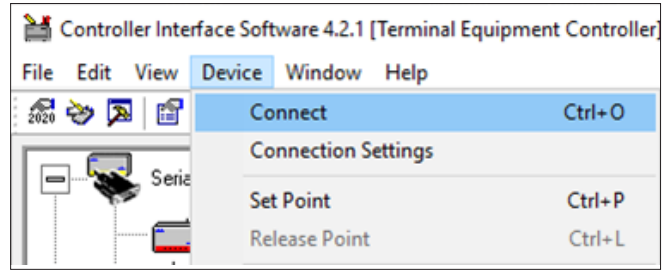
- Select the same port in WCIS (Device > Connection Settings), and click OK (Figure 4).

**Figure 27: Connection Settings**



- Click on Device > Connect (Table 2).

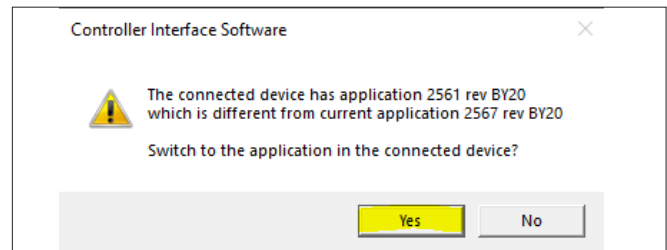
**Figure 28: Connect Device**



WCIS displays the following message (Figure 10).

- Select Yes to switch to the application in the connected device.

**Figure 29: Software Verification Message**



The VAV application software is now installed, connected to the controller, and ready for use.

## Change Controller Application

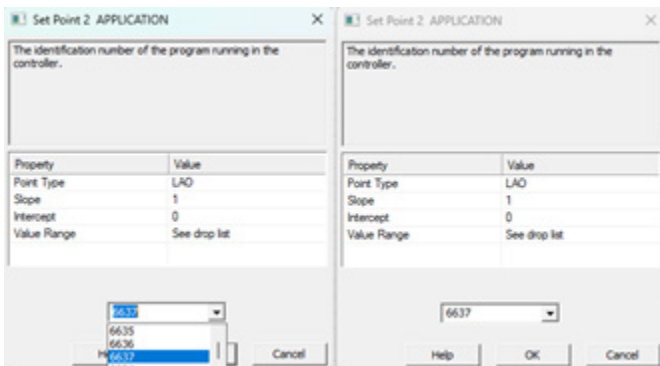
Follow these steps to change the VAV Controller application number.

1. Open and connect to the VAV in WCIS.
2. Navigate to Setpoint 2: Application and double-click on the value field (Figure 30).
3. The window in Figure 31 appears. Use either the drop-down menu or type in the desired application number.
4. Once the application number is selected, click OK to confirm (Figure 32).

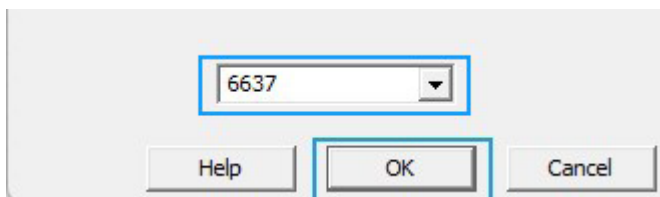
**Figure 30: Open Setpoint 2: Application**

1	CTLR ADDRESS	14	-N-		NONE *
2	APPLICATION	6637	-N-		NONE *
3	RMTMP OFFSET	U	-N-	DEG F	NONE

**Figure 31: Select New Application**



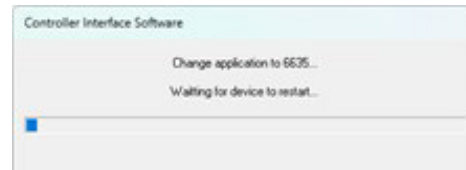
**Figure 32: Confirm New Application**



The Figure 33 window appears. This indicates the initialization and application upload has started.

**NOTE:** This upload process typically takes a few minutes to complete. Do not disconnect during the process.

**Figure 33: Initialize and Upload Application**



Several status messages appear as the controller is updated. The “Setup connection and verify information” and “Checking for COM port” windows indicate that the upload process is progressing as expected. When all steps are complete, the last window shows “Switching to application 663x”.

The WCIS software closes and then automatically restarts with the new application loaded. Setpoint 2 should reflect the new number.

# BACnet Configuration

This section describes how to set up the VAV controller for BACnet MS/TP communications. Refer to [Daikin VAV Controller BACnet Protocol Document, ED 19157](#) for complete points list and network integration details.

## Change the BACnet Address

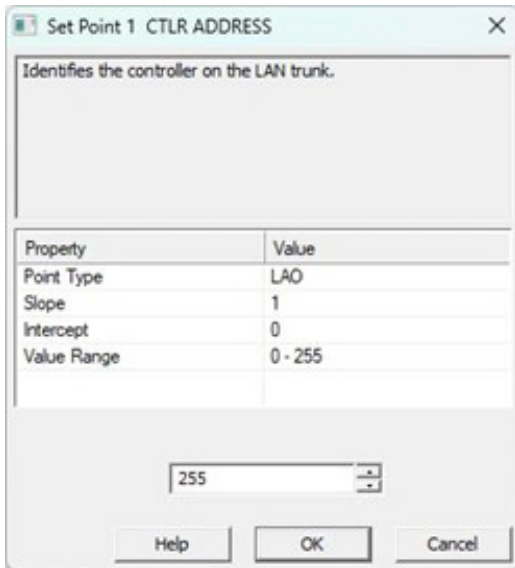
To change the MAC or MS/TP address of the controller:

1. Select Setpoint 1, CTRLR ADDRESS (Figure 34).
2. Change the desired address number and select OK. Note this value must be between 1-127, although the Value Range is 0-255 (Figure 35).

Figure 34: MAC Address Field in WCIS

▲ #	Description	Current	Status	Units	Priority
{1}	CTRLR ADDRESS	255	-N-		NONE
{2}	APPLICATION	6637	-N-		NONE
{3}	RMTMP OFFSET	-31.75	-N-	DEG F	NONE

Figure 35: Change MAC (MS/TP) Address



## Change Device Properties

1. Select Device Properties from the drop-down menu (Figure 36).
2. Change desired values of parameters from the Device Properties options shown in Figure 37.

**NOTE:** Refer to [ED 19157 Daikin VAV Controller BACnet Protocol Document](#) for configuring other network parameters such as Device Instance Number, Baud Rate, and Max Masters.

3. Click the Write button, and then click Close.
  - a. To restore previous values, click the Refresh button and then proceed to make any further changes.

4. The WCIS application writes the information to the controller, and is now ready to communicate to the network.

Figure 36: Select Device Properties in WCIS

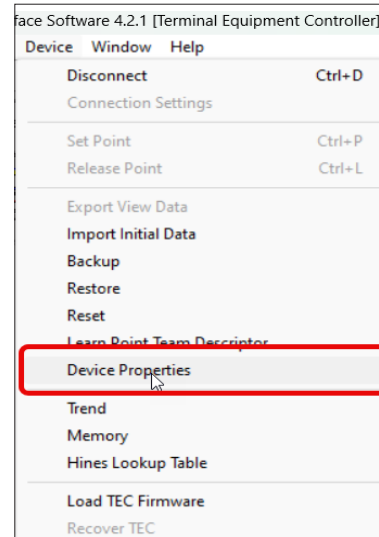
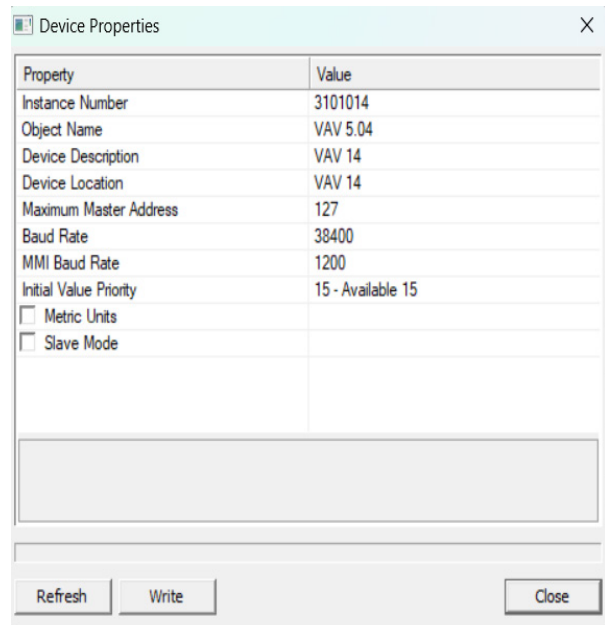


Figure 37: Device Properties in WCIS



# Service and Troubleshooting

In order to perform many of the troubleshooting steps described in this section or to change the application/configuration of the VAV actuator, a WCIS cable software is required. See [Connect to VAV Controller](#) for software file access, connection and use instructions.

## Service Information



**LOCKOUT/TAGOUT** all power sources prior to service, maintenance, or powering down the unit. Disconnect the main power to the controller. Failure to do so will result in death or serious injury if not avoided.

Always remove power to the controller when installing or replacing it. The controller does not have a power switch. A different method of removing power is necessary depending on how power is connected for the application. For instance, on a locally powered controller, it is recommended that you turn off power by removing power to the 24 Vac transformer. *However, on a controller powered by a power cable (even if it is a single controller) remove power either at the local disconnect or unplug the 24-volt power from the VAV actuator itself.*

**NOTE:** When removing power to a controller to perform maintenance or service, confirm that the facility manager is aware of this and that appropriate steps are taken to keep the building in control while it is being serviced.

Never remove the cover from the controller. There are no serviceable parts inside. An anti-static wrist strap is recommended when installing or replacing a controller.

When troubleshooting, record specific symptoms and what actions were performed immediately before the problem occurred. Be prepared to describe the problem in detail when contacting Daikin for support.

## Preventive Maintenance

Most controller components are designed so that, under normal circumstances, they do not require preventive maintenance. Periodic inspections, voltage checks, and point checks are normally not required. The rugged design makes most preventive maintenance unnecessary. However, devices that are exposed to dusty or dirty environments may require periodic cleaning to function properly.

## Safety Features

The controller board stores the controller's address, applications, and point values. In the event of a power failure or a reset, these values are retrieved from the controller's permanent memory and are used by the controller unless overridden by a field panel. If one of the following conditions occurs, the controller will activate safety features present in its fail-safe mode.

- Sensor failure
- Loss of power – Upon controller power loss, communication with the controller is also lost. The controller will appear as

failed (\*F\*) or in alarm due to communication loss at the field panel.

## Controller LEDs

To determine if the controller is powered up and running properly, verify the Basic Sanity Test (BST) LED is flashing ON and OFF once per second. The controller contains seven LEDs located on the circuit board. See [Table 2](#) for more information about the controller's LEDs.

**NOTE:** The TX and RX LEDs indicate communication over the BACnet network.

## Automated Fault Detection and Diagnostics (Checkout)

The controller has a built-in checkout procedure that performs a basic fault detection and diagnostic routine. It can be manually initiated at any time after the controller has been installed. This procedure tests all of the necessary I/O to confirm the controller can operate within the set airflow range, between CLG FLOW MIN and CLG FLOW MAX. This procedure requires the use of WCIS Software. If not already installed, see [Setup and Run WCIS Software](#) for download and use.

To perform the checkout procedure, set CHK OUT to YES. When the procedure has completed, CHK OUT returns to NO and the results display in CHK STATUS. See [Table 3](#) for the description associated with each value of CHK STATUS.

## Common Likely Causes

**Table 3: CHK STATUS Values and Associated Descriptions**

CHK STATUS Values	Description
-1	Checkout procedure has not been run since last controller initialization.
0	No errors found.
1	Room temperature sensor (RTS) failed.
2	Room setpoint dial failed. (If STPT DIAL is set to YES).
4	Air velocity sensor (AVS) failed.
8	Controller could not reach CLG FLOW MIN or below.
16	Controller could not reach CLG FLOW MAX or above.
32	Controller did not read low (zero) flow when damper closed.

**NOTE:** Multiple failure codes are added together and displayed as a single value.

Example 1: 17=1+16. If the room temperature sensor failed (1) and the controller could not reach CLG FLOW MAX, CHK STATUS displays 17.

Example 2: 10=2+8. If the room setpoint dial (2) failed and the controller could not reach CLG FLOW MIN (8), the CHK STATUS displays 10.

## CHK STATUS Code Descriptions and Troubleshooting Steps

1. Room temperature sensor failed - CHK STATUS= 1
  - a. The cable for the room temperature sensor may be

unplugged or loose. Check both ends to verify that the cable is securely seated.

- b. Connect directly to the controller through the room temperature sensor connection on the controller and check whether communication is possible.
  - i. If communication is successful, the issue may be related to the room temperature sensor or its cable.
  - ii. If communication is not possible, it may be hardware or communication issues with the controller.

## 2. Room setpoint dial failed - CHK STATUS= 2

- a. The cable for the room temperature sensor may be unplugged or loose. Check both ends to confirm the cable is securely seated.
- b. The controller may be incorrectly set to use a setpoint dial with a sensor that does not have the dial. If the sensor has no dial, change STPT DIAL from YES to NO.
- c. Connect directly to the controller through the room temperature sensor connection on the controller and check whether communication is possible.
  - i. If communication is successful, the issue may be related to the room temperature sensor or its cable.
  - ii. If communication is not possible, it may be hardware or communication issues with the controller.

## 3. Air velocity sensor failed - CHK STATUS = 4

- a. The sensor tubing may be blocked, leaking, or disconnected. Check for pinched, disconnected, or cracked sensor tubing. Correct as needed.
- b. The tubing connections for the air velocity sensor may be reversed. Re-pipe if HI and LO connections are incorrect.
- c. The sensor or the controller may be faulty.

## 4. Controller could not reach CLG FLOW MIN or below-CHK STATUS= 8

- a. The actuator on the controller may be loose on the damper shaft. Follow these torque guidelines:
  - i.  $-70 \pm 5$  inch pounds -Solid metal shaft.
  - ii.  $-37 \pm 2$  inch pounds - plastic, graphite, composite, or hollow metal shafts (hollow metal shafts require an insert to prevent shaft damage).
- b. The tubing for the air velocity sensor may be pinched, disconnected, or cracked. Check the tubing and correct as needed.
- c. The tubing connections for the air velocity sensor may be reversed. Re-pipe if HI and LO connections are incorrect.
- d. The box sizing information may be incorrect. Check

the values of the following BACnet points and correct as needed:

- DUCTAREA
  - FLOW CoEFF
  - CLG FLOW MIN
  - CLG FLOW MAX
- e. The Motor Setup information may be incorrect. Check the values of the following points and correct as needed:
    - MTRSETUP
    - MTR1 TIMING
    - DMPR ROT ANG
  - f. The air velocity sensor may need Calibration. Set CAL AIR to YES to run the Calibration sequence. When CAL AIR returns to NO, indicating that the sequence is finished, run the checkout procedure again to see whether the problem has been corrected.
  - g. The VAV box may not have been balanced correctly.

## 5. The controller could not reach CLG FLOW MAX or above - CHK STATUS= 16

- a. Check for the problems described for CLG FLOW MIN (CHK STATUS= 8)
- b. The box may be starved for air. Check the unit state of the central air handler to see if it is OFF. If it is on, check the duct static pressure. If it is within a desirable range, the issue is with the VAV box and not the air handler.

## 6. The controller did not read low (zero) flow when damper closed - CHK STATUS= 32

- a. Check for the problems described For CLG FLOW MIN (CHK STATUS= 8)
- b. The damper shaft may not be secured correctly to the actuator on the controller so that when the actuator is fully closed, the damper does not completely shut Off airflow.
- c. Airflow calibration (at zero) may need to be performed ensuring the damper is fully closed and/or the air handling unit is Off.

### Additional Comments

The controller, as shipped from the factory, keeps all associated equipment Off. The controller and its equipment are released to application control at start-up.

If the temperature swings in the room are excessive or if there is trouble in maintaining the setpoint, contact Daikin Technical Support.

### Technical Support

Contact Daikin Applied Controls Customer Support at 866-462-7829 or [Ctltechsupport@daikinapplied.com](mailto:Ctltechsupport@daikinapplied.com).

# Glossary

The glossary contains terms and acronyms that are used in this manual.

## **AI**

Analog Input. A point receiving a signal that represents a condition that has more than two states. For example, flow rate sensors (water or air), temperature sensors (room or duct), pressure sensors (static or velocity), and humidity sensors (room, duct, or outdoor).

## **Airflow**

Rate at which a volume of air moves through a duct. Usually expressed in cubic feet per minute (cfm) or liters per second (lps).

## **AVS**

Air Velocity Sensor.

## **AZM**

Autozero Module. Equipment controller device used to calibrate the Variable Air Volume Controller's internal air velocity transducer without changing the volume of air being delivered to a space.

## **Centralized Control**

Type of control offered by a controller that is connected by means of the BACnet network.

## **cfm**

Cubic Feet per Minute.

## **Control Loop**

PID algorithm that is used to control an output that is based on a setpoint and an input reading from a sensor.

## **DDC**

Direct Digital Control.

## **DI**

Digital Input. Physical input point that receives a two-state signal (ON/OFF, OPEN/CLOSED, YES/NO).

## **DO**

Digital Output. Physical output point that sends a two-state signal (ON/OFF, OPEN/CLOSED, YES/NO). equipment controller

## **Equipment Controller**

Device that provides additional point capacity to a field panel or provides individual room or mechanical equipment control.

## **Field Panel**

A device containing a microprocessor for centralized control of system components and equipment controllers.

## **Bacnet Network**

Standard open protocol network consisting of equipment controllers, end devices, fume hoods, etc.

## **LPS**

Liters per Second.

## **Loopout**

Output of the control loop expressed as a percentage.

## **Override Switch**

Button on a room temperature sensor that an occupant can press to change the status of a room from unoccupied to occupied (or from night to day) for a predetermined time.

## **Pressure Independent**

Variable Air Volume (VAV) room temperature control system in which the temperature drives an airflow setpoint.

## **PID**

Proportional, Integral, Derivative. Generally refers to a type of control scheme.

## **RTS**

Room Temperature Sensor.

## **Setpoint**

Virtual point that stores a point value such as a temperature setting. Points that monitor inputs, such as temperature, report actual values.

## **Slave Mode**

Default application that displays when power is first applied to an equipment controller. No control action is initiated in the slave mode.

## **Stand-Alone Control**

Type of control offered by a controller that is providing independent DDC control to a space.

## **Terminal Equipment Controller**

Daikin product family of equipment controllers (one is the VAV Controller - Electronic Output) that house the applications software used to control terminal units, such as heat pumps, VAV terminal boxes, fan coil units, unit ventilators, etc.

## **Unbundle**

Term used to describe the entering of a point that resides in a controller's database into the field panel's database so that it can be monitored and controlled from the field panel.

## **VAV**

Variable air volume. Ventilation system that changes the amount of air supplied to and exhausted from the rooms served.

## Revision History

Revision	Date	Changes
OM 1063-4	Apr 2026	Reformatted. Added BACnet Configuration and WICS sections.
OM 1063-3	Jan 2018	Updated cover image, title, and Figure 3.
OM 1063-2	Jan 2017	Updated for actuator with new AO connection.
OM 1063	Mar 2010	Initial release.

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