

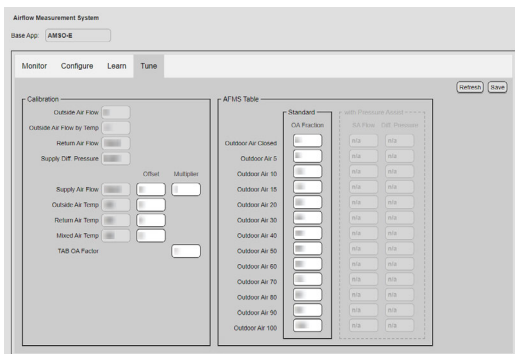
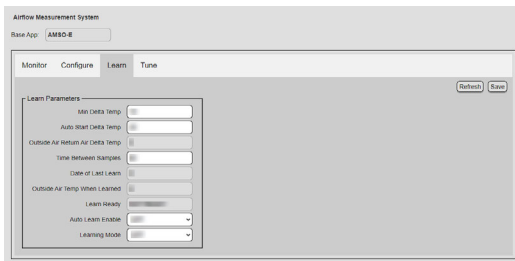
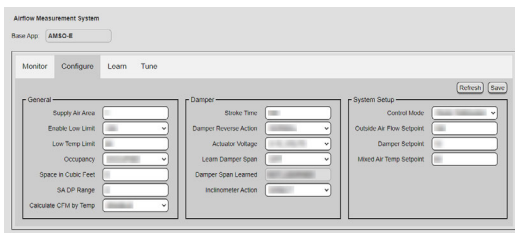
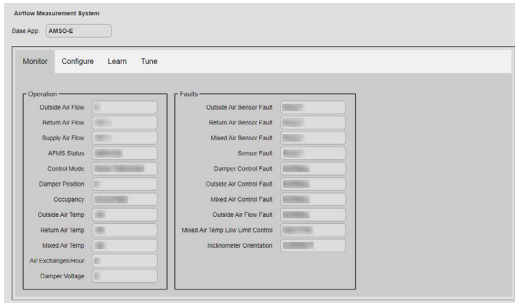


AFMS Ethernet Model Configuration Web Pages

Application Guide for Checkout and Commissioning



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INTRODUCTION

This document guides users through checkout and commissioning of an Airflow Measurement System. It is designed to aid in completing the tasks on the *Note Sheets for AFMS Checkout and Commissioning*.

Ethernet-enabled “E” AFMS models with the latest firmware can be configured with a web browser from pages served from within the AFMS controller. The AFMS controller has the following default network address values:

- IP address—192.168.1.251
- Subnet mask—255.255.255.0
- Gateway—192.168.1.1

NOTE: See the AFMS selection guide for a table of other tools that can be used to configure some or all AFMS parameters.

NOTE: The default IP address of the BAC-5051(A)E router is 192.168.1.252.

LOGIN WINDOW

To log in to an AFMS controller with a web browser:

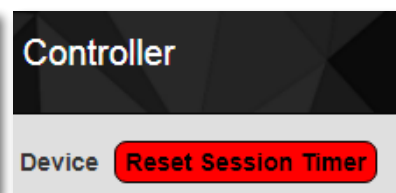
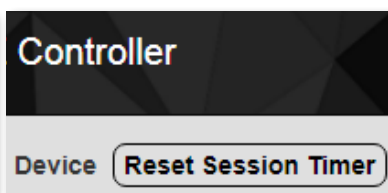
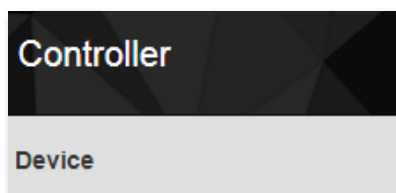
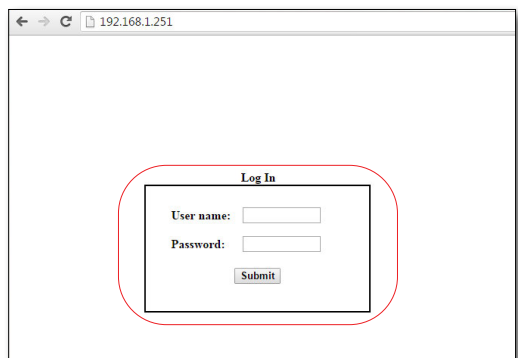
1. Connect the AFMS to an Ethernet port by doing one of the following:
 - Connect directly to the computer, which typically requires changing the computer IP address. See [Changing Your Computer's Address on page 20](#).
 - Connect to a subnet that recognizes address 192.168.1.251.
2. Connect power to the controller. (See the AFMS installation guide.)
3. Open a new browser window.
4. Enter the address **192.168.1.251**.
5. In the login window, enter the following:
 - **User name:** admin
 - **Password:** admin

NOTE: The login screen will be accessible about 30 seconds after a controller has restarted or had power first applied. (See also [Recovering an Unknown IP Address on page 19](#).)

6. After logging in, change the controller parameters as needed.
 - To change passwords and add users, see [Security Window on page 16](#).
 - To change the IP address, see [Device Window on page 14](#).

After login, a ten-minute timeout starts. The timer resets to ten minutes for any of these conditions:

- A page is refreshed or saved.
- The menu (on left side of screen) is clicked to go to a different page.
- The flashing **Reset Session Timer** (which appears two minutes before the end of the timeout period) is pushed.

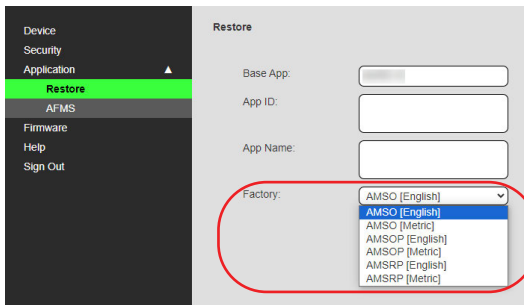


POINT-TO-POINT CHECKOUT TASKS

The steps for each point-to-point checkout task are presented in subsections below. Complete each task/subsection in the order presented.

Verify Correct Application for the Installation

NOTE: Check and (if needed) change the base application under **Restore** > **Factory** before configuring setpoints or other system options. Changing the base application will reset setpoints and system options to their factory defaults.



Under **Application** > **Restore**, next to **Factory**, verify that the correct application is configured for the AFMS installation:

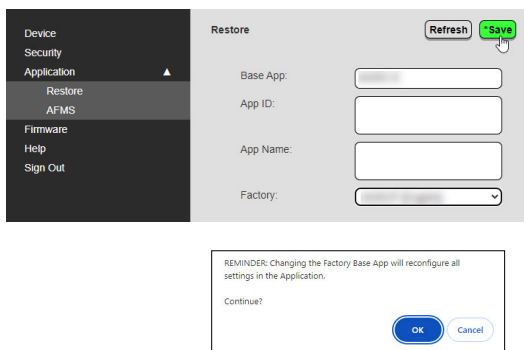
- **AMSO [English]**: Standard outside air damper application with English units
- **AMSO [Metric]**: Standard outside air damper application with Metric units
- **AMSOP [English]**: Pressure assist outside air damper application with English units
- **AMSOP [Metric]**: Pressure assist outside air damper application with Metric units
- **AMSRP [English]**: Pressure assist return air damper application with English units
- **AMSRP [Metric]**: Pressure assist return air damper application with Metric units

If you need to change the configured application:

1. Next to **Factory**, select the correct application for the AFMS installation.
2. Click **Save**.

NOTE: A window appears with “REMINDER: Changing the Factory Base App will reconfigure all settings in the Application. Continue?”

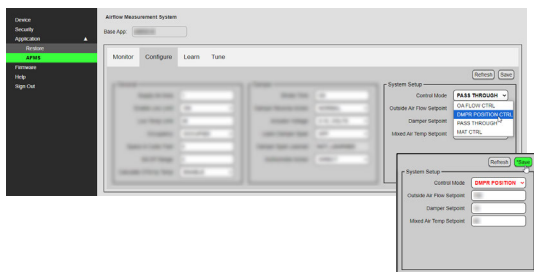
3. Click **OK**.
4. In the reminder pop-up, click **OK**.
5. Wait about 20 seconds for the AFMS to restart, then log in again.



Set Control Mode to Damper Position Control

Under **Application** > **AFMS** > **Configure**, in the **System Setup** group:

1. For **Control Mode**, select **DMPR POSITION CTRL** from the drop-down menu.
2. Click **Save**.



Verify Pressure Transducer Settings

Do the following for all pressure transducers (supply and pressure assist) that were installed, following their manufacturer's installation instructions:

1. Verify that the signal output type is set to volts.
2. Verify that the transducer is set to unipolar mode.
3. If the transducer has several pressure range options, verify that the correct range is set (according to the pressure range of the unit).

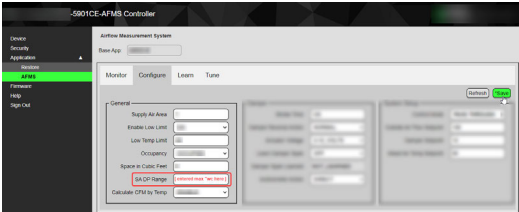
Make Pressure Transducer Zero Adjustment

Zero out all pressure transducers (supply and pressure assist) that were installed, following their manufacturer's installation instructions.

You will need to expose the transducer high and low ports to ambient pressure by temporarily removing the tubing from the ports. After zeroing the transducer, reconnect each tube to the correct port.

Set the Supply Air Differential Pressure Range (5901-AFMS only)

Under **Application > AFMS > Configure**, in the **General** group:



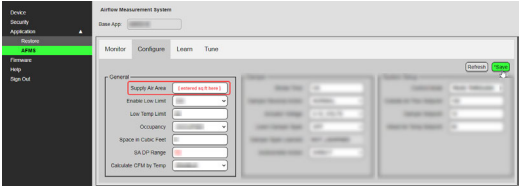
1. For **SA DP Range**, enter the maximum inches of water column that the supply air pressure transducer can measure.

NOTE: For example, a TPE-1475-21, can measure up to 2" wc, so enter 2. A TPE-1475-22 can measure up to 10" wc, so enter 10. (A 9311-AFMS can measure up to 2" wc.) Some AFMS installations may use other pressure transducers.

2. Click **Save**.

Set the Supply Air Area

Under **Application > AFMS > Configure**, in the **General** group:



1. For **Supply Air Area**:

- If the supply air pickup tubes were installed on the supply air fan bell, enter the square foot measurement of the fan inlet.
- If the supply air pickup tubes were installed in the supply air duct, enter the square foot measurement of the duct cross-section where the tubes are located.

NOTE: For assistance calculating the area, use the Free Area Calculator in the *Note Sheets for AFMS Checkout and Commissioning*.

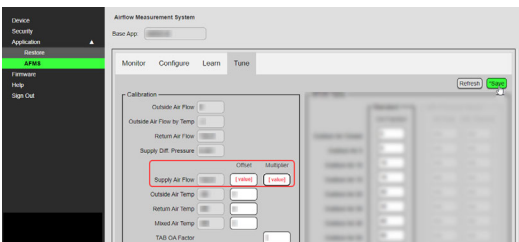
2. Click **Save**.

Inspect Pressure Assist Pickup Tubes (PA only)

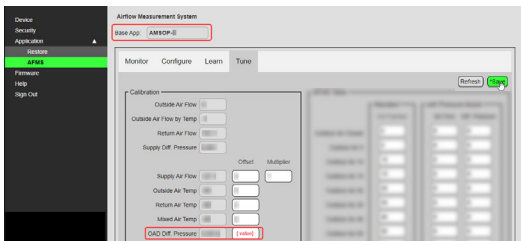
For pressure assist applications, ensure that the pickup tubes were installed in the correct location per the AFMS installation guide.

Calibrate the Supply Air Flow

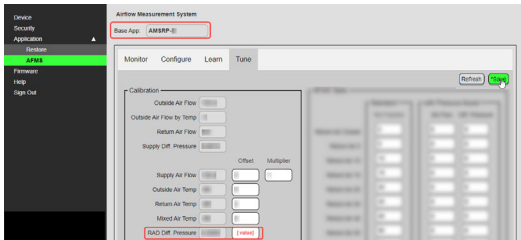
Under **Application > AFMS > Tune**, in the **Calibration** group:



1. Do any of the following:
 - In the **Offset** column for **Supply Air Flow**, enter the CFM offset (determined by a TAB technician) for the supply air pressure transducer.
 - In the **Multiplier** column for **Supply Air Flow**, enter the multiplier (determined by a TAB technician) for the supply air pressure transducer.
2. Click **Save**.



or



Calibrate OAD/RAD Diff. Pressure (pressure assist only)

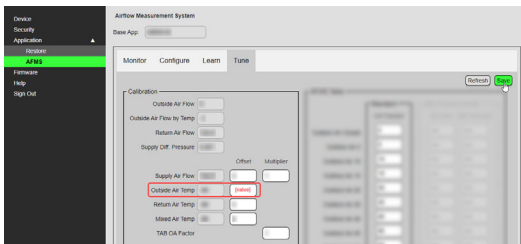
For pressure assist applications, under **Application > AFMS > Tune**, in the **Calibration** group:

1. In the **Offset** column for **OAD Diff. Pressure** / **RAD Diff. Pressure**, enter the differential pressure offset (determined by a TAB technician) for the pressure assist pressure transducer.
2. Click **Save**.

Verify and Calibrate Outside Air Temperature

Under **Application > AFMS > Tune**, in the **Calibration** group:

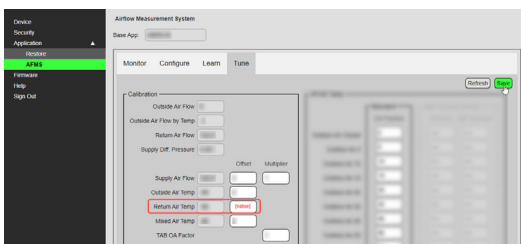
1. Locate the OAT sensor's reading, next to **Outside Air Temp**.
2. Using a NIST-traceable instrument, measure the temperature near the OAT sensor.
3. Compare the two values.
4. Enter the **Offset** for **Outside Air Temp**.
5. Click **Save**.



Verify and Calibrate Return Air Temperature

Under **Application > AFMS > Tune**, in the **Calibration** group:

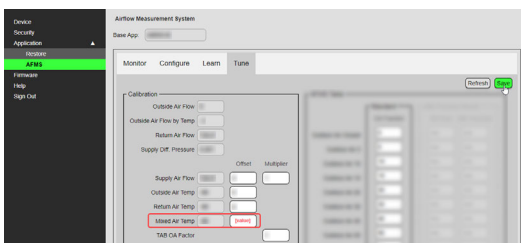
1. Locate the RAT sensor's reading, next to **Return Air Temp**.
2. Using a NIST-traceable instrument, measure the temperature near the RAT sensor.
3. Compare the two values.
4. Enter the **Offset** for **Return Air Temp**.
5. Click **Save**.



Verify and Calibrate Mixed Air Temperature

Under **Application > AFMS > Tune**, in the **Calibration** group:

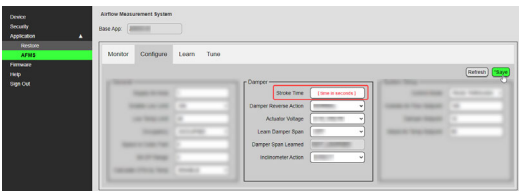
1. Locate the MAT sensor's reading, next to **Mixed Air Temp**.
2. Using a NIST-traceable instrument, measure the temperature near the MAT sensor.
3. Compare the two values.
4. Enter the **Offset** for **Mixed Air Temp**.
5. Click **Save**.



Point-point-checkout is completed. Continue to the [Damper Span Calibration Tasks on page 7](#).

DAMPER SPAN CALIBRATION TASKS

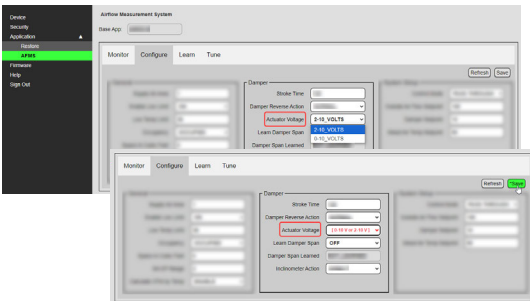
After completing the [Point-to-Point Checkout Tasks on page 4](#), calibrate the damper span. The steps for each damper span calibration task are presented in subsections below. Complete each task/subsection in the order presented.



Set the Damper Stroke Time

Under **Application > AFMS > Configure**, in the **Damper** group:

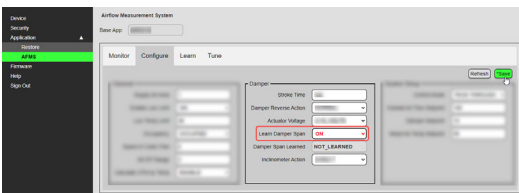
1. For **Stroke Time**, enter the time (in seconds) that it takes for the actuator to move the damper from fully closed to fully open.
2. Click **Save**.



Set the Actuator Voltage Range

Under **Application > AFMS > Configure**, in the **Damper** group:

1. For **Actuator Voltage**, select the voltage range of the damper actuator from the drop-down menu (2 to 10 volts or 0 to 10 volts).
2. Click **Save**.

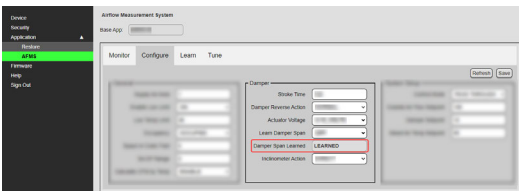


Turn On Learn Damper Span, then Verify

Before the AFMS can run **Learn Mode**, it must learn the minimum and maximum incline of the damper using the inclinometer. The **Learn Damper Span** sequence will take 3 to 5 minutes to complete.

Under **Application > AFMS > Configure**, in the **Damper** group:

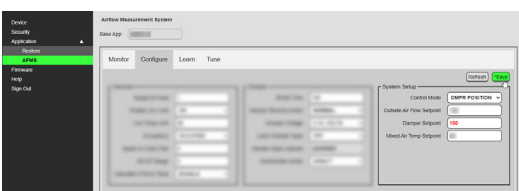
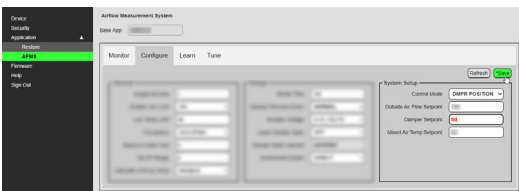
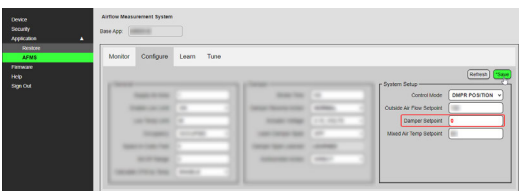
1. For **Learn Damper Span**, select **ON** from the drop-down menu.
2. Click **Save**.
3. After 3 to 5 minutes, verify that **Damper Span Learned** reports **LEARNED**.



Stroke Damper and Visibly Verify Positions

Under **Application > AFMS > Configure**, in the **System Setup** group:

1. Ensure that **DMPR POSITION** is set for **Control Mode**.
2. For **Damper Setpoint**, enter **0**.
3. Click **Save**.
4. Once the actuator stops moving, visibly verify that the damper is fully closed.
5. For **Damper Setpoint**, enter **50**.
6. Click **Save**.
7. Once the actuator stops moving, visibly verify that the damper is 50% open/closed.
8. For **Damper Setpoint**, enter **100**.
9. Click **Save**.



10. Once the actuator stops moving, visibly verify that the damper is fully open.

If the actuator is moving the damper in reverse (i.e. 10 volts = closed), see the next section, "Set Damper Reverse Action".

Set Damper Reverse Action (if needed)

If visual inspection (see the previous section) revealed that the damper actuator moves in reverse action (i.e. 10 volts = closed), under **Application > AFMS > Configure**, in the **Damper** group:

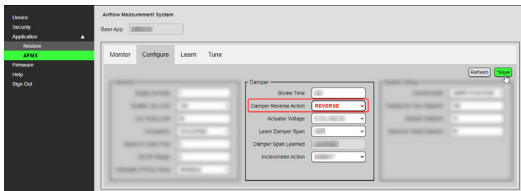
1. For **Damper Reverse Action**, select **REVERSE** from the drop-down menu.
2. Click **Save**.

Stroke Damper and Verify that Reported Damper Position Follows

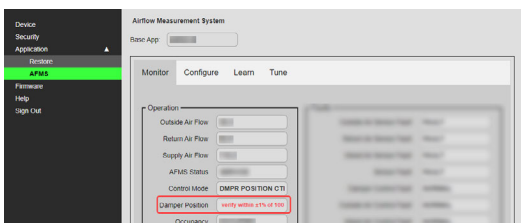
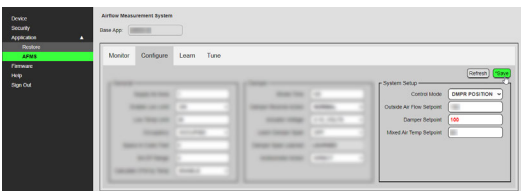
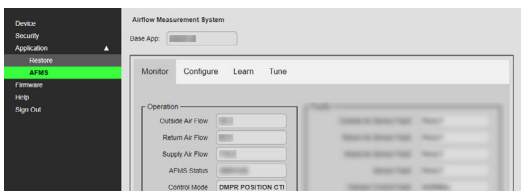
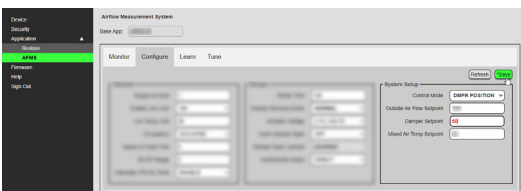
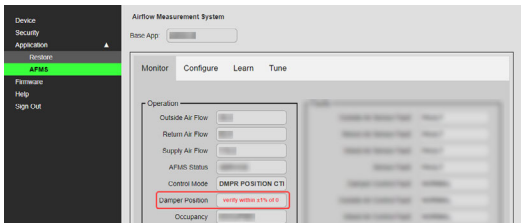
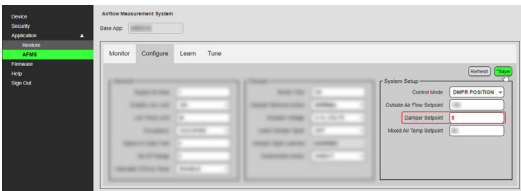
1. Go to **Application > AFMS > Configure > the System Setup** group:
2. Ensure that **DMPR POSITION** is set for **Control Mode**.
3. For **Damper Setpoint**, enter **0**.
4. Click **Save**.
5. Once the actuator stops moving, visibly verify that the damper is fully closed.
6. Go to the **Monitor** tab.
7. Verify that **Damper Position** (in the **Operation** group) reports a value within $\pm 1\%$ of 0.

NOTE: The inclinometer can detect very small movements of the damper assembly.

8. Go to the **Configure** tab again.
9. For **Damper Setpoint**, enter **50**.
10. Click **Save**.
11. Once the actuator stops moving, visibly verify that the damper is 50% open/ closed.
12. Go to the **Monitor** tab again.
13. Verify that **Damper Position** reports a value within $\pm 1\%$ of 50.
14. Go to the **Configure** tab again.
15. For **Damper Setpoint**, enter **100**.
16. Click **Save**.
17. Once the actuator stops moving, visibly verify that the damper is now fully open.
18. Go to the **Monitor** tab again.
19. Verify that **Damper Position** reports a value within $\pm 1\%$ of 100.



(if needed)



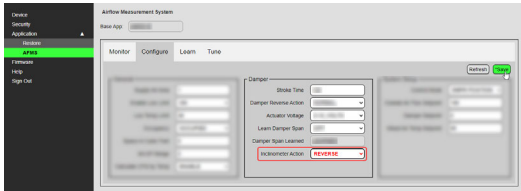
If **Damper Position** reports values that are the opposite of the entered **Damper Setpoint**, see the next section, “Set Inclinator Action to Reverse”.

Set Inclinator Action to Reverse (if needed)

For the standard (AMS0) application or OAD Pressure Assist (AMSOP) application, if the inclinometer was mounted on a horizontal *return* air damper blade because the outside air damper blades are vertical, then you need to set **Inclinator Action** to **REVERSE**.

If testing revealed that **Damper Position** reports values that are the opposite of the **Damper Setpoint** (see the previous section), under **Application > AFMS > Configure**, in the **Damper** group:

1. For **Inclinator Action**, select **REVERSE** from the drop-down menu.
2. Click **Save**.



(if needed)

Damper span calibration is completed. Continue to the [Learning Mode Tasks on page 10](#).

LEARNING MODE TASKS

The steps for each learning mode task are presented in subsections below. Complete each task/subsection in the sequence presented.

Prerequisite Tasks

Before starting **Learning Mode**, for valid results, ensure that:

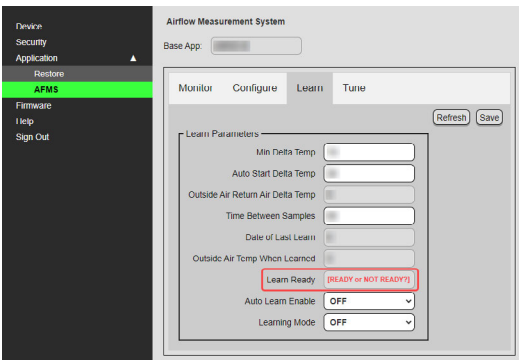
- The sensors are calibrated ([Point-to-Point Checkout Tasks on page 4](#)).
- AFMS is configured properly ([Damper Span Calibration Tasks on page 7](#)).
- The supply air fan is running at a normal, steady rate (without hunting or sporadic spikes).
- If the unit has a heat recovery wheel, it is turned off.
- If any heating or cooling sources are located upstream of the MAT sensor, they are turned off.
- If the unit has a bypass damper, it is set to 100% open.

Starting Learning Mode

1. Go to **Application > AFMS > Learn**.
2. Note whether **Learn Ready** reports **READY** or **NOT READY**.

If **READY** is displayed, **Learning Mode** can be started manually. Otherwise, see [Enabling Learning Mode to Auto Start on page 11](#).

NOTE: In special cases, you may consider the [Alternative to Running Learning Mode on page 12](#).



Manually Starting Learning Mode

1. Leave **Min Delta Temp** set to the default or adjust if needed.

NOTE: If the ΔT becomes less than **Min Delta Temp**, the AFMS controller will abort Learning Mode. This is to ensure that the controller does not receive unusable learning samples. Setting **Min Delta Temp** at a 15°F or larger difference is recommended.

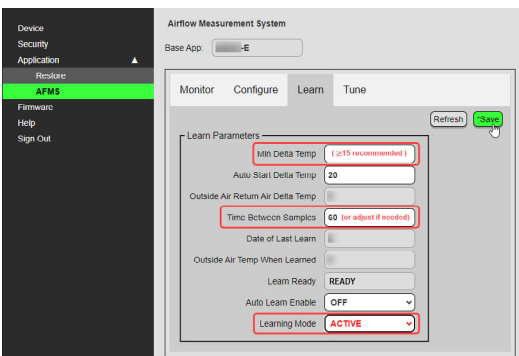
2. Leave **Time Between Samples** (Seconds) set to the default or adjust it if needed.

NOTE: Most often, **Time Between Samples** (Seconds) can be left on the default (60 seconds). You might increase the value if the damper **Stroke Time** is longer than that of a typical unit, or if the damper actuator requires extra time to respond. You might decrease it if a large ΔT is present and time at the site is limited. However, too little time between samples could result in inaccurate measurements.

3. For **Learning Mode**, select **ACTIVE**.
4. Click **Save**.
5. Wait for Learning Mode to complete.

NOTE: To calculate the total time (in minutes) that Learning Mode should take to complete, multiply **Time Between Samples** (Seconds) by 91, then divide by 60.

Skip to [Verify that AFMS Status is in Learning Mode on page 11](#).



Enabling Learning Mode to Auto Start

If **Learn Ready** reports **NOT READY** because of currently unfavorable temperatures, you may enable the AFMS to automatically start Learning Mode when it detects favorable temperatures later (overnight is likely).

1. Leave **Min Delta Temp** set to the default or adjust it if needed.

NOTE: If the ΔT becomes less than **Min Delta Temp**, the AFMS controller will abort Learning Mode. This is to ensure that the controller does not receive unusable learning samples. Setting **Min Delta Temp** at a 15°F or larger difference is recommended.

2. Leave **Auto Start Delta Temp** set to the default, or adjust it if needed.

NOTE: When the ΔT reaches the **Auto Start Delta Temp**, Learning Mode will start. Learning Mode will complete if the ΔT remains greater than the **Min Delta Temp** for the entire duration. An **Auto Start Delta Temp** that is at least 20°F more than **Min Delta Temp** is recommended.

3. Leave **Time Between Samples** (Seconds) set to the default or adjust it if needed.

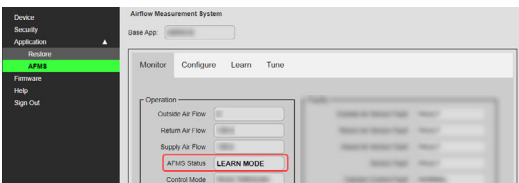
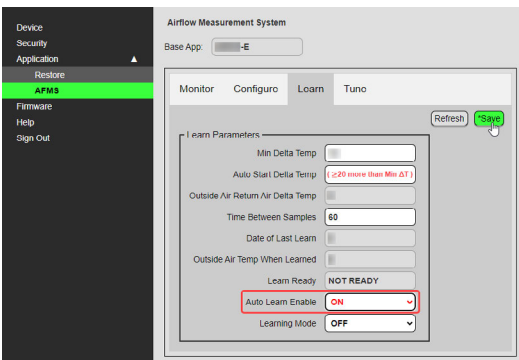
NOTE: Most often, **Time Between Samples** (Seconds) can be left on the default (60 seconds). You might increase the value if the damper **Stroke Time** is longer than that of a typical unit, or if the damper actuator requires extra time to respond.

4. For **Auto Learn Enable**, select **ON**.

5. Click **Save**.

6. Wait for Learning Mode to complete during favorable temperatures (overnight is likely).

Skip to [Verify Learning Mode Completed and Record Date on page 11](#).



Verify that AFMS Status is in Learning Mode

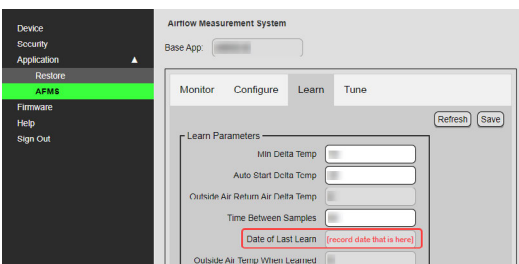
Under **Application > AFMS > Monitor**, in the **Operation** group, verify whether **AFMS Status** reports **LEARN MODE**.

Verify Learning Mode Completed and Record Date

After the AFMS completes Learning Mode (approximately 2 hours), under **Application > AFMS > Learn**:

1. Locate the **Date of Last Learn** (YYMMDD).
2. Enter the date into the *Note Sheets for AFMS Checkout and Commissioning*.

Skip to [Access the AFMS Table and Record Data on page 12](#).



Alternative to Running Learning Mode

While not ideal, the damper characterization data can be calculated and entered manually in the **AFMS Table**. This should only be done if—in the allotted time for setting up the AFMS—the ΔT is unlikely to remain greater than the **Min Delta Temp** for the duration of Learning Mode.

To make the calculations, use the %OA/%RA equations found in ASHRAE Standard 111, section 7.6.3.3, “Flow Rate Approximation by Temperature Ratio”.

1. Go to **Application > AFMS > Configure**.
2. For **Damper Setpoint**, enter the first damper position (Closed, i.e. **0**) found in the **AFMS Table** (on the **Tune** tab).

NOTE: Note: Each subsequent time through this process, enter the next damper position from the table: 5, 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100.

3. Click **Save**.
4. Go to the **Monitor** tab.
5. Allow the **Outside Air Temp**, **Return Air Temp**, and **Mixed Air Temp** to stabilize.
6. Depending on the application, calculate either the **OA Fraction** or **RA Fraction**, using the temperature readings and either the %OA or %RA equation from the standard.
7. Go to the **Tune** tab.
8. Enter the result into the **OA Fraction** column/ **RA Fraction** column (depending on the application).

NOTE: For Pressure Assist applications, also enter the **Supply Air Flow** reading into the **SA Flow** column and the **OAD Diff. Pressure / RAD Diff. Pressure** reading into the **Diff. Pressure** column.

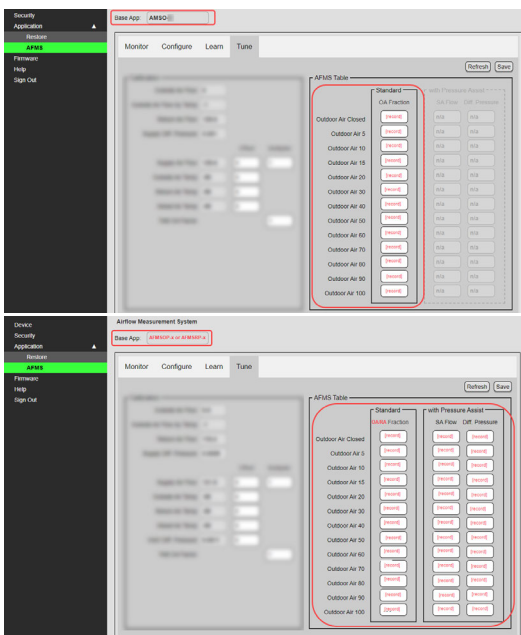
9. Select **Save**.

Repeat those steps for the remaining 12 damper positions listed on the **AFMS Table**.

Access the AFMS Table and Record Data

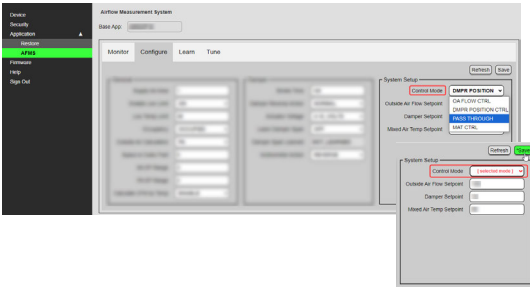
Under **Application > AFMS > Tune**, in the **AFMS Table** group:

1. Locate the Characterized Airflow Performance® data, found in:
 - The **OA Fraction** column (for both standard and outside air damper pressure assist applications)
 - The **RA Fraction** column (for return air damper pressure assist applications only)
 - The **SA Flow** column (for both types of pressure assist applications only)
 - The **Diff. Pressure** column (for both types of pressure assist applications only)
2. Record the data into the *Note Sheets for AFMS Checkout and Commissioning*:
 - For standard applications, use the AFMS Post Table.
 - For pressure assist applications, use the AFMS PA Post Table.



Set Control Mode

Under **Application > AFMS > Configure**, in the System Setup group:



1. For **Control Mode**, select from the drop-down menu the option that will be the AFMS's normal mode for this installation:
 - **OA FLOW CTRL**: The AFMS modulates the damper actuator to maintain the **Outside Air Flow Setpoint** (CFM).
 - **PASS THROUGH**: The AFMS passes control of the damper actuator to another controller. (The AFMS measures and monitors only.)
 - **MAT CTRL**: The AFMS modulates the damper actuator to maintain the **Mixed Air Temp Setpoint** (°F/°C).
2. Click **Save**.

ABOUT TESTING AND BALANCING AFMS

If everything was installed and configured correctly prior to running Learning Mode, the AFMS Table data is very reliable. The AFMS uses the same method from ASHRAE Standard 111 (Section 7.6.3.3, "Flow Rate Approximation by Temperature Ratio") that a good tester and balancer should use. Furthermore, as the AFMS performs the method, it takes the OAT, RAT, and MAT measurements simultaneously and several times for reliable averages, increasing the reliability of the data.

However, should verification be required, the following guidelines should be observed:

- Make measurements using NIST-traceable instruments.
- Use the method from ASHRAE Standard 111, Section 7.6.3.3, "Flow Rate Approximation by Temperature Ratio" to calculate the table data.
- Should an adjustment be needed, adjust *single* data items from the *AFMS Table* rather than making a linear adjustment.

NOTE: **TAB OA Factor** (found in the **Calibration** group under **Tune**) should be at **1** and not adjusted.

If large adjustments need to be made to the AFMS Table data, one or more of the sensors may have been installed incorrectly and/or a setting was misconfigured prior to running Learning Mode. The problem should be corrected by fixing the installation and/or configuration, then running Learning Mode again.

DEVICE WINDOW

The **Device** window identifies the controller as a BACnet device and sets BACnet communication properties. The Device window also configures the controller for the Local Area Network (LAN). The new IP Address, Subnet Mask, and Default Gateway values are supplied by the building's IT department system administrator.

NOTE: After changes in the window are saved, the controller will use the new settings and will require you to log in at the new address. If the controller is not on the same subnet as the network gateway router, it will not function correctly.

The **Device** window shows multiple parameters (which vary depending on whether IP or Ethernet is selected):

- **Device Name**—The name must be unique among all devices on the BACnet internetwork.
- **Description**—Optional information not included in the device name.
- **Location**—An optional value that describes the controller's physical location.
- **Device Instance**—A number that identifies the controller on the internetwork. The device instance must be unique on the internetwork and in the range from 0–4,194,302. The device instance is assigned by the BACnet system designer. The **default device instance is 1 and must be changed to a unique number to avoid conflict with other devices.**
- **Number APDU Retries**—Indicates the maximum number of retries that an APDU (Application Layer Data Unit) is retransmitted.
- **APDU Timeout**—Indicates the time (in milliseconds) between retransmissions of an APDU requiring an acknowledgment for which no acknowledgment has been received.
- **APDU Seg. Timeout**—The Segment Timeout property indicates the time (in milliseconds) between retransmissions of an APDU segment.
- **Backup Failure Timeout**—The time (in seconds) that the controller must wait before ending a backup or restore procedure. Use KMC Connect, TotalControl, or Converge to back up the controller.
- **IP Address**—The internal or private network address of the controller. (To recover a lost address, see [Recovering an Unknown IP Address on page 19](#).

- **MAC**—The MAC address of the controller.
- **Subnet Mask**—The Subnet Mask determines which part of the IP address is used for a network identifier and which part is used for a device identifier. The mask must match the mask for the network gateway router and other devices on the subnet.
- **Default Gateway**—The address of the network gateway router. The controller and gateway router must be part of the same LAN subnet.
- **UDP Port**—UDP (User Datagram Protocol) is an alternative communications protocol to TCP used primarily for establishing low-latency and loss-tolerating “connectionless” connections between applications on the Internet. The port is the “virtual channel” through which the data is transmitted and received.
- **Restart Device**—Restarts the controller. This is similar to restarting the controller with a BACnet cold start from KMC Connect or TotalControl. A restart does not change properties or save changes not yet saved.

The screenshot shows the 'Security' configuration window. On the left, a sidebar lists 'Device', 'Security' (highlighted), 'Application', 'Firmware', 'Help', and 'Sign Out'. The main content area is titled 'Security' and includes 'Refresh' and 'Save' buttons. Below these is a table for user management with columns 'Username', 'Password', and 'Access Level'. The table contains one row with 'admin' in both fields and 'Administrator' as the access level, followed by several rows with 'Enter Username' and 'Enter New Password' placeholders. The 'Access Level' dropdown menu is open, showing options: 'View Only', 'Operator', 'Administrator', and 'Custom'. Below the table is a section titled 'NetSensor# 1 Passwords:' containing a table with 'Access Level' and 'Password' columns, showing 'Level 1' with password '0000' and 'Level 2 (Admin)' with password '1100'.

Username	Password	Access Level
admin	Enter New Password	Administrator
admin	Enter New Password	
Enter Username	Enter New Password	View Only
Enter Username	Enter New Password	Operator
Enter Username	Enter New Password	Administrator
Enter Username	Enter New Password	Custom
Enter Username	Enter New Password	
Enter Username	Enter New Password	
Enter Username	Enter New Password	
Enter Username	Enter New Password	
Enter Username	Enter New Password	

NetSensor# 1 Passwords:	
Access Level	Password
Level 1	0000
Level 2 (Admin)	1100

SECURITY WINDOW

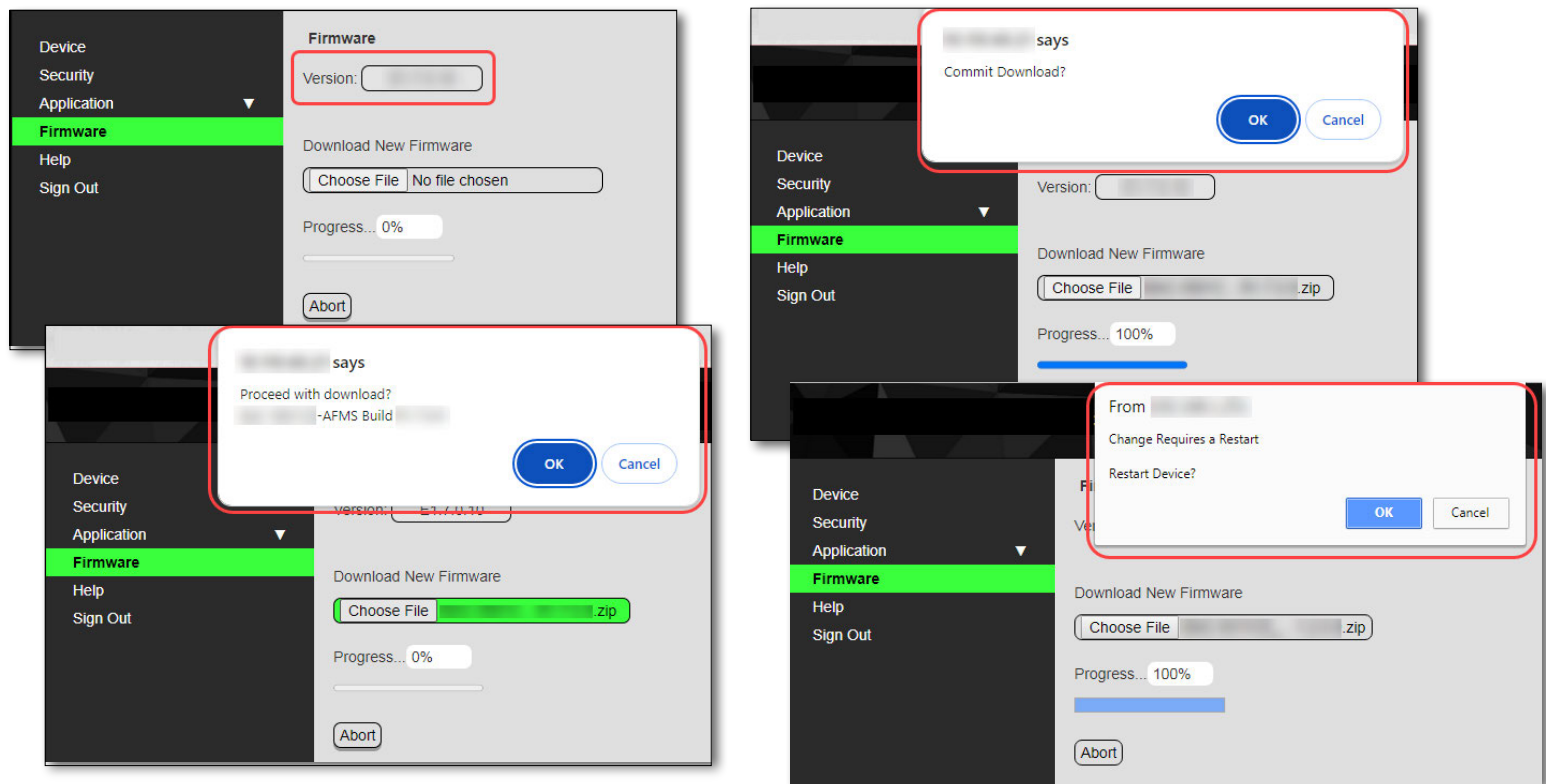
The **Security** window sets user access to the controller:

- During configuration, the default **admin/admin** defaults should be changed to enhance security.
- The user name list must include at least one name with Administrator privileges.
- User names and passwords are case sensitive.

The controller has multiple levels of user access:

- A **View Only** user may view configuration pages but not make any changes.
- An **Operator** may make configuration changes but cannot modify security settings.
- An **Administrator** may make configuration and security changes.
- A **Custom** access user has a combination of access options as selected by an Administrator.

The NetSensor Passwords section provides the viewing of and option to change the passwords required to access a controller using a Conquest STE-9000 series NetSensor or the KMC Connect Lite mobile app. These passwords are four digits, with each digit being a number 0 to 9. If all four numbers are 0, no password is required of the user for that level. For more information, see the *Conquest Controllers Default Password Technical Bulletin* after logging into the KMC Controls web site.



FIRMWARE UPDATE WINDOW

The AFMS controller's firmware can be updated through the web browser after downloading the latest firmware from KMC Controls. To download from KMC Controls and install the firmware file onto the **computer**:

1. Log into the KMC Controls [web site](#) and download the latest zipped firmware file from any AFMS controller's product page.
2. Find and extract the "Over-The-Network" (not the "HTO-1105_Kit") EXE file for the relevant model controller (which must be a "BAC-xxxxCE-AFMS" version of the firmware).
3. Run the BAC-xxxxCE-AFMS_x.x.x.x_OverTheNetwork.exe file.
4. Click **Yes** to allow Windows to install the program.
5. Click **OK** on the Firmware License dialog box.
6. Click **Unzip** in the WinZip Self-Extractor dialog box.

To then load the firmware from the computer into the **controller**:

1. Log-in to the controller's web page. See [Login Window on page 3](#).
2. In the controller's **Firmware** window, click **Choose File**, locate the new firmware zip file (it should be in a subfolder of C:\ProgramData\KMC Controls\Firmware Upgrade Manager\BACnet Family), and click **Open**.
3. After being asked if you want to proceed with the download, click **OK** and the new firmware starts loading into the controller.

NOTE: To cancel the update and leave the devices with the original firmware intact, click the **Cancel** or **Abort** button.

4. After the new firmware is loaded, you will be asked if you want to commit to the download. To finish the update, click **OK**.
5. To put the firmware change into effect, the controller will need to be restarted. When asked if you want to restart the device, click **OK**.
6. After the controller restarts, you will need to log in again to continue any additional configuration. See [Login Window on page 3](#).



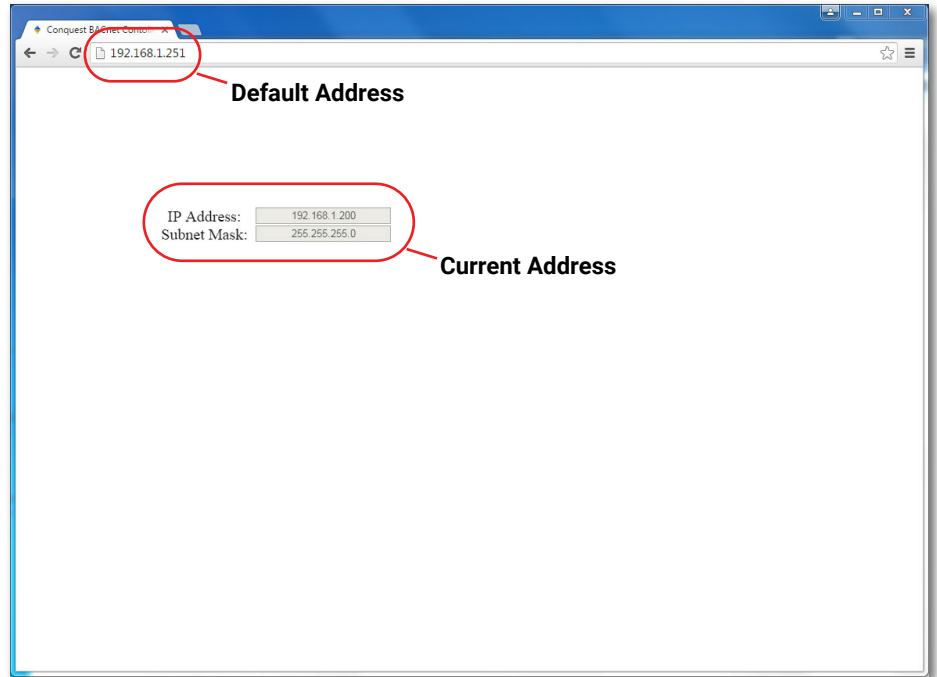
HELP WINDOW

Go to KMC takes you to the KMC Controls public web site. Use the search to find the AFMS controller's product page. Look at the various files that can be downloaded. You will need an active Internet connection for the link to work.

NOTE: Bulletins and firmware are available only after logging into the web site.

RECOVERING AN UNKNOWN IP ADDRESS

If the network address of the controller is lost or unknown, the controller will respond to the default IP address for approximately the first 20 seconds after power is applied.



To discover an unknown IP address:

1. Disconnect the controller from the LAN and connect the controller as described in [Login Window on page 3](#).
2. On the computer, open a browser window and enter the default address of **192.168.1.251**.
3. Reconnect the controller to the power source and immediately attempt to connect with the browser. The browser will respond with the controller's IP address and subnet mask.
4. Once the address is known, connect the controller to the relevant IP subnet for normal operation or controller configuration.

NOTE: A controller's IP address can also be seen in KMC Connect, TotalControl, and KMC Converge when the controller is properly connected to the network.

CHANGING YOUR COMPUTER'S ADDRESS

Introduction

To directly connect a computer to a controller, you must temporarily set the IP address of the computer to be compatible with the IP address of the controller. The IP address of a computer can be changed by using a utility or manually.

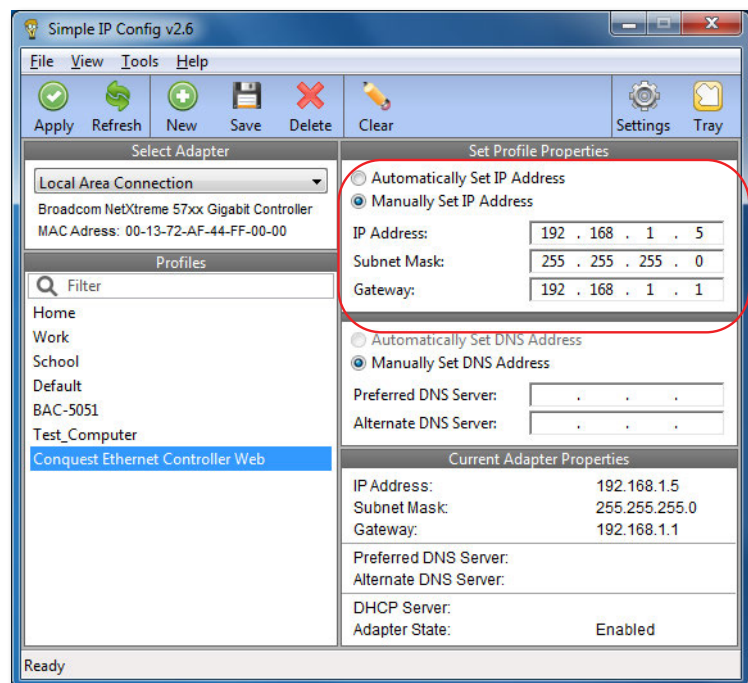
Change a Computer's IP Address with a Utility

The easiest method for users who will change their IP address on multiple occasions is to install an IP address changing utility (such as **Simple IP Config** available from [GitHub](#)). See the instructions with the software.

In the software:

1. Save a record/setting of your existing computer's address information.
2. Enter the following for the computer's temporary new IP address, Subnet mask, and Gateway:
 - IP address—**192.168.1.x** (where **x** is a number between 1 and 250)
 - Subnet mask—**255.255.255.0**
 - Gateway—Leave **empty or unchanged** (or if that does not work, use **192.168.1.*****, where the last digits are different than the IP address in the computer or controller).

NOTE: After configuration of the controller is complete, revert your computer to the original IP settings.



Change a Computer's IP Address Manually

Introduction

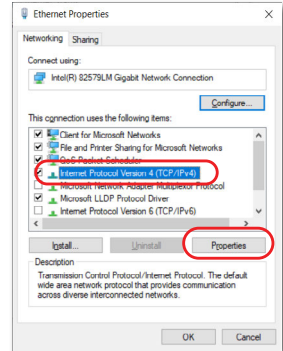
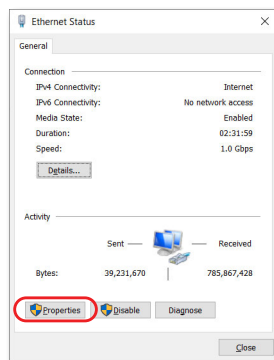
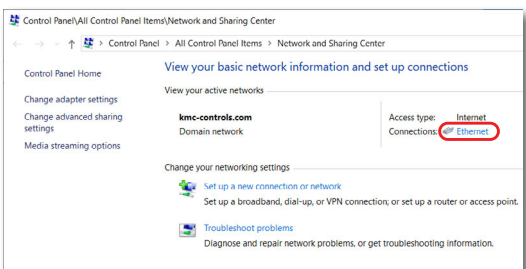
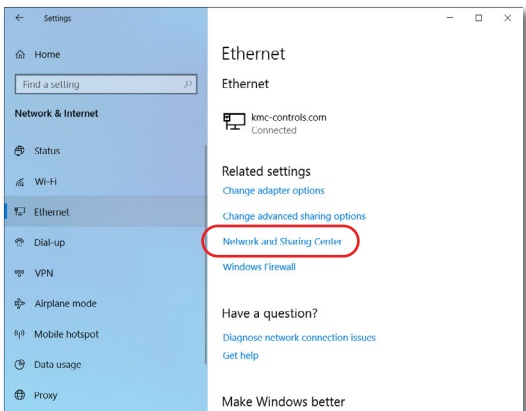
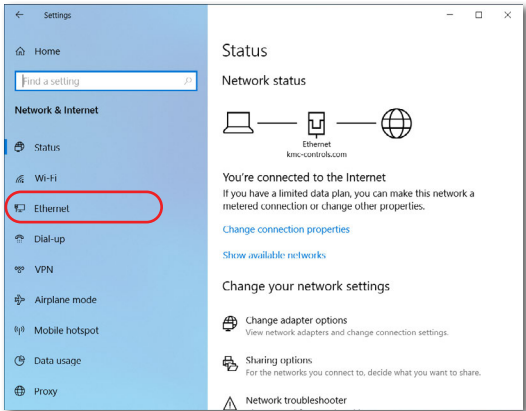
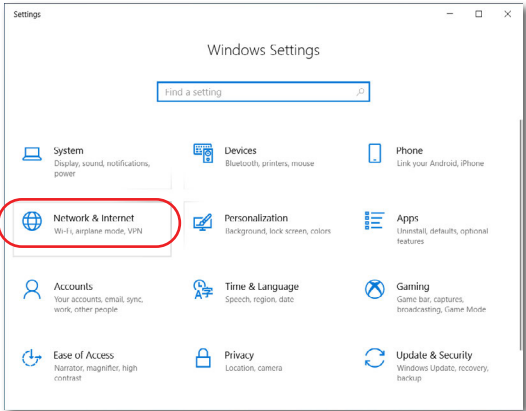
To change your computer's IP address manually, follow the instructions (or the equivalent for your hardware and operating system) for **Windows 10 (Settings)** on page 21 or **Windows 7 (Control Panel)** on page 22.

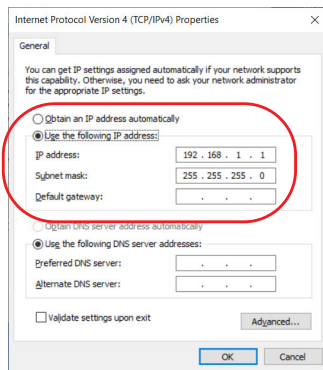
NOTE: Screens will look different in different versions of Microsoft Windows.

NOTE: Depending on the computer and version of Windows, the exact name for the connection to the controller may be Ethernet, Local Area Connection, or something similar.

Windows 10 (Settings)

1. Click the **Start** button.
2. In the Start menu, click **Settings** (the gear icon).
3. In Windows Settings, click **Network and Internet**.
4. Click **Ethernet**.
5. Click **Network and Sharing Center**.
6. Click Connections: **Ethernet**.
7. Click **Properties**.
8. Click **Internet Protocol Version 4 (TCP/IPv4)** and then **Properties**.





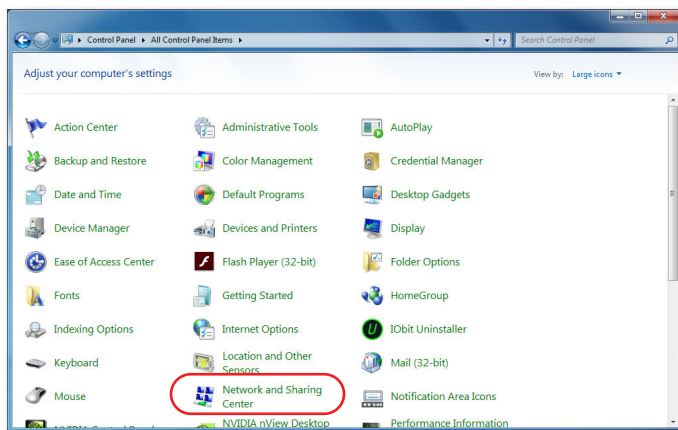
NOTE: If **Obtain an IP address automatically** is selected, the IP address and Subnet mask of the computer are not shown. They can be seen, however, by running `ipconfig` from a command prompt. To run `ipconfig`, type `cmd` in the Search box, at Command Prompt App press **Enter**, type in `ipconfig` at the prompt, and press **Enter**.

9. Record the existing settings of the Properties dialog.
10. Select **Use the following IP address** and then enter the following for the IP address, Subnet mask, and Gateway.
 - IP address—**192.168.1.x** (where **x** is a number between 2 and 255)
 - Subnet mask—**255.255.255.0**
 - Gateway—Leave **empty or unchanged** (or if that does not work, use **192.168.1.*****, where the last digits are different than the IP address in the computer or controller).
11. When all information is correct, click **OK** and **OK**.

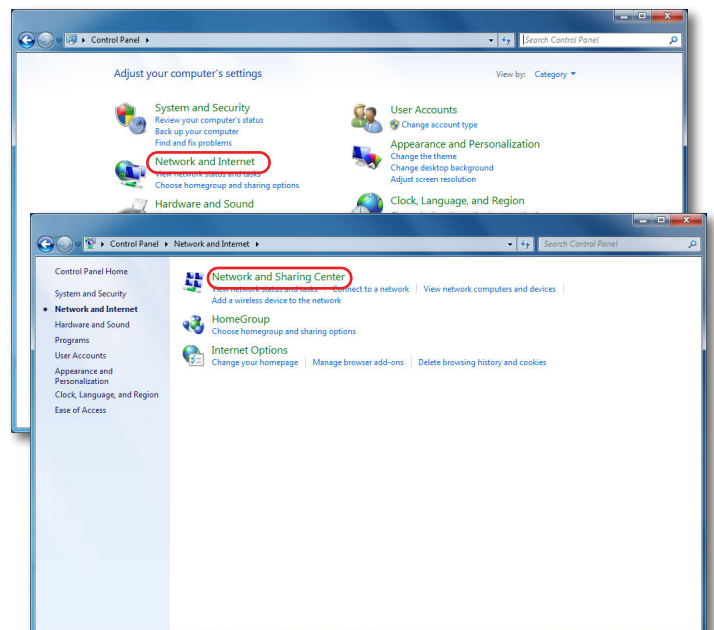
NOTE: The changes should take full effect after a few seconds.

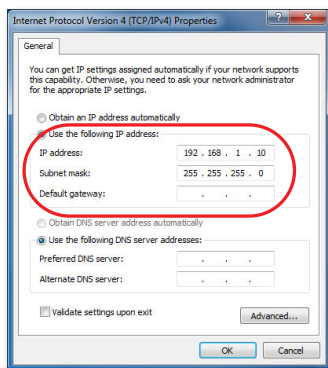
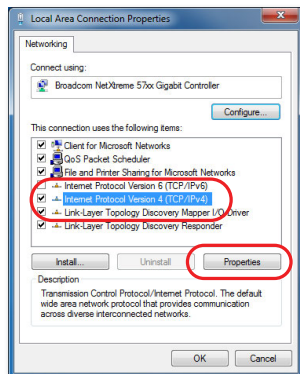
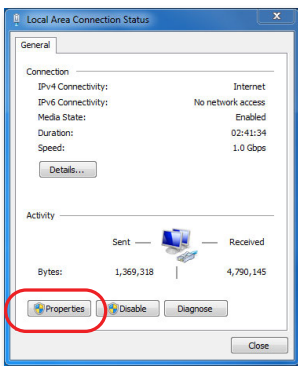
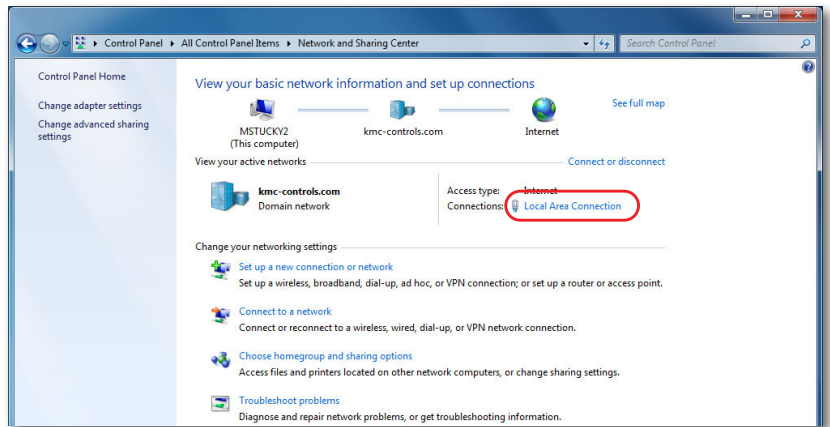
Windows 7 (Control Panel)

1. Click the **Start** button and select **Control Panel**.
2. From the Control Panel:
 - (When viewed by icons) click **Network and Sharing Center**.
 - (When viewed by category) click **Network and Internet** and then **Network and Sharing Center**.



OR





3. Click the local connection for the LAN. Depending on the computer and version of Windows, the exact name for the connection may be Ethernet, Local Area Connection, or something similar.
4. In the Local Area Connection (or similar) Status dialog, click **Properties**.
5. Then click on **Internet Protocol Version 4 (TCP/IPv4)** and then click **Properties**.

NOTE: If **Obtain an IP address automatically** is selected, the IP address and subnet mask of the computer are not shown. They can be seen, however, by running `ipconfig` from a command prompt. To run `ipconfig`, click the **Start** button, type `cmd` in the Search box, press **Enter**, type in `ipconfig` at the prompt, and press **Enter**.

6. Record the existing settings of the Properties dialog.
7. In the Properties dialog, select **Use the following IP address** and then enter the following for the IP address, Subnet mask, and Gateway.
 - IP address—**192.168.1.x** (where **x** is a number between 1 and 250)
 - Subnet mask—**255.255.255.0**
 - Gateway—Leave **empty or unchanged** (or if that does not work, use **192.168.1.*****, where the last digits are different than the IP address in the computer or controller)
8. When all information is correct, click **OK** and **Close**.

NOTE: The changes should take full effect after a few seconds.

NOTE: After configuration of the controller is complete, repeat this process using the original IP settings.

TROUBLESHOOTING

- Check that the Ethernet connection cable is plugged into the Ethernet port and not the Room Sensor port.
- Check the network and connections.
- Restart the controller. See the Resetting Controllers section in the **KMC Conquest Controller Application Guide**.
- Review IP address and login information. See **Introduction on page 3**, **Login Window on page 3**, and **Changing Your Computer's Address on page 20**.
- See Communication Issues—Ethernet section in the **KMC Conquest Controller Application Guide**.

HANDLING PRECAUTIONS

For **digital and electronic** sensors, thermostats, and controllers, take reasonable precautions to prevent electrostatic discharges to the devices when installing, servicing, or operating them. Discharge accumulated static electricity by touching one's hand to a securely grounded object before working with each device.



IMPORTANT NOTICES

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The KMC Connect Lite™ app for NFC configuration is protected under United States Patent Number 10,006,654.

Pat. <https://www.kmccontrols.com/patents/>

SUPPORT

Additional resources for installation, configuration, application, operation, programming, upgrading and much more are available on the KMC Controls web site (www.kmccontrols.com). Viewing all available files requires logging in to the site.

