

Performing U line test and balance using WebCTRL

To test a VAV's flow calibration, you can use the LogiStat Pro to calibrate a U line control module's flow sensor during test and balance. Each VAV box must be controlled by a control program that has a U line Airflow Control microblock. Control programs for dual duct boxes can have two U line Airflow Control microblocks.

Before performing test and balance, you must set all necessary parameters and set up the LogiStat Pro for calibration.

To obtain a reference card summarizing the most common test and balance procedures, [click here](#).

▼ Expand all ► Collapse all

▼ [Setting the parameters](#)

Before setting the parameters:

- Identify the control programs and BACnet device instance numbers for all control modules that control the air sources (air handling units) serving the VAV boxes.
- Make sure each air source's control program has a BACnet parameter or point object that reads the air source's static pressure. Without these points, the LogiStat will not show the system static pressure during test and balance.
- Identify which air sources supply each U line control module in the system.

Set parameters in the U line Airflow Control microblock for the VAV unit

- 1 In WebCTRL's **GEO** or **NET** tree, select the VAV unit control program.
- 2 On the **Logic** page, select the U line Airflow Control microblock.
- 3 In the **Configuration** field on the **Details** tab, select the control loop configuration type that corresponds to your U line control module.
- 4 For each VAV box, enter the values in the Airflow Control section of the **Properties** page.

Select the type of test and balance procedure you will perform

- 5 At the bottom of the UNI driver **Properties** page, select one of the following in the **Test and Balance mode** field.

Electrical and Mechanical Check	Used by the control system installer to ensure the control devices are wired and functioning correctly. See <i>Checking mechanical and electrical functions</i> below.
Test and Balance	Used by the control system installer for damper and flow sensor calibration, reheat valve and dual duct calibration. See <i>Damper and flow calibration</i> below.
Manual Calibration	Used to calibrate a VAV box (or a system of VAV boxes) from each zone's Properties page. See <i>Manual calibration</i> below.
- 6 Set the **Test mode enabled through this date** field to a date in the future, not the current date. Test mode will be disabled at the beginning (midnight) of the date you set. For example, if the date is set to 10/24/2004, the test and balance mode will disable at 12:00 a.m. on 10/24/2004.
- 7 Type the number of minutes of inactivity before the system returns to normal operation in the **Inactivity until test is aborted** field.

Configure the air source for the VAV system to be balanced

The air source, usually an air handling unit (AHU), supplies air to the VAV boxes. Global commands, such as the zero calibration, will be sent to every VAV box connected to that air source. While you calibrate a VAV box, all other VAV boxes connected to the same air source are locked in a fixed position so they do not disrupt the calibration flow. Because a UNI may communicate with U line control modules on several different VAV systems,

you must designate which U line control module belongs to which air source so that calibration commands are sent only to the appropriate U line control modules.

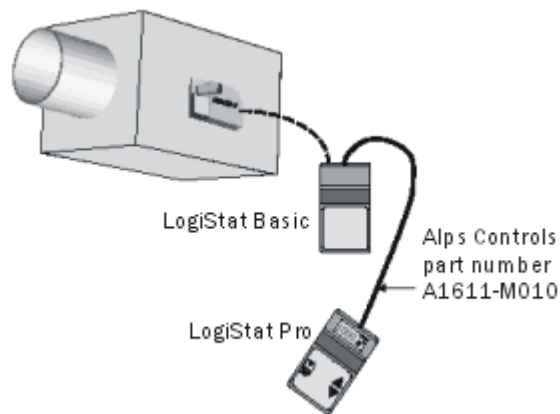
- 8 In the **Air Source Setup** table on the UNI driver **Properties** page, select **Enabled** in the **Test** column to place each air source in test and balance mode.

Each UNI module driver allows you to configure up to five different air sources. Additionally, if the AHU controller contains a BACnet object that reads the system static pressure, you can enter the BACnet address of this object into the UNI module driver so that you can read the system static pressure from the LogiStat during calibration. Perform steps b and c to enable this feature.

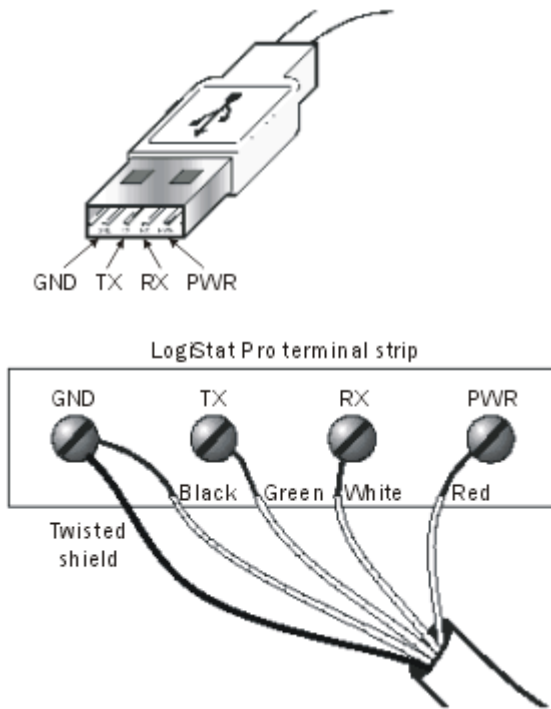
- a. In the **Device** column, enter the BACnet Device instance number for the module monitoring the system static pressure. This information is in the **BACnet Device Information** section on the module driver's **Properties** page for the control module controlling the air source.
 - b. In the drop-down field under **Analog Object**, select the BACnet object type that corresponds to the object monitoring the system static pressure. Then type in the object's instance number. The allowable object types are AI, AO, or AV. (A BACnet Status microblock is AV.) The instance number appears after the comma in the Object Identifier on this object's microblock pop-up . (Example: "Analog Input 0,#5". The instance number is 5.)
 - c. To begin test and balance operations on a specific system, set the **Test** property for that air source to **Enabled**.
- 9 Associate an air source, the AHU that serves that VAV unit, to the control program number that corresponds to that VAV unit. The air source is indicated in step 8 above. Dual duct systems can have two air sources, a cooling source for Control Loop 1 and a heating source for Control Loop 2. Conventional VAV systems will have only one air source, and will use 0 for the other control loop.
 - 10 Download parameters to the UNI.

▼ [Setting up a LogiStat Pro](#)

You can use a LogiStat Pro as a hand-held calibration tool; you do not need to use a computer. If a LogiStat or LogiStat Plus is installed, you can still use a LogiStat Pro for calibration.



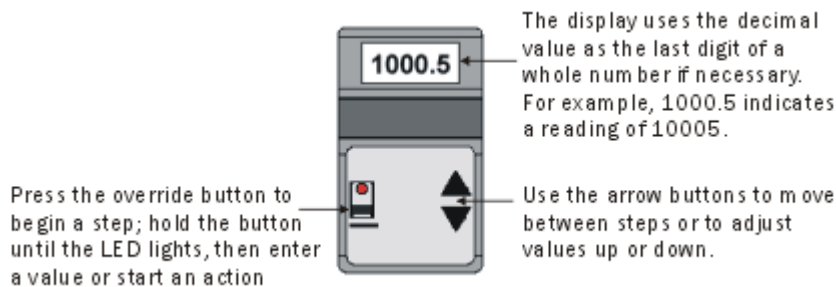
Connect the LogiStat Pro to the Local Access port on the LogiStat or LogiStat Plus using a USB cable (Alps Controls part number A1611-M010).



▼ Checking mechanical and electrical functions

Use this procedure to ensure the control devices are wired and functioning correctly. Keep the following points in mind.

- You must perform the procedure steps in order.
- To move from one step to the next:
 1. Press the LogiStat Pro's **Override** button to display the current step number.
 2. Press the up arrow button to display the next step number.
 3. Press **Override** to accept the step number.



NOTE The LogiStat Pro does not display numbers greater than 1999. To enter a value of 2000 or greater, you must enter the value as a 3-digit number followed by .5. For example, if you want to enter a value of 3058 CFM, you must enter 305.8 on the LogiStat Pro.

At the bottom of the UNI's driver **Properties** page, set **Test and Balance mode** to **Electrical and Mechanical Check**. On the LogiStat Pro, press both arrows and the **Override** button, then release the buttons simultaneously. The display shows 1 to indicate you are at step 1 in the procedure. Press **Override** to accept the step and proceed as follows:

For VAV dampers:

- 1 Set the cooling damper to fully open (100%).

The LogiStat Pro displays 100. Hold down **Override** until the red LED turns on. The LED turns off when the damper reaches the desired position and the flow reading stabilizes.

- 2 Verify that the LogiStat Pro displays a positive raw flow sensor reading for the cooling damper.

NOTE Calibration does not affect this reading. A positive reading indicates the sensor is working and the damper is open. A negative reading indicates the high and low pressure flow sensor tubes are reversed.

- 3 Set the cooling damper to fully closed (0%).

The LogiStat Pro displays 0. Hold down **Override** until the red LED turns on. The LED turns off when the damper reaches the desired position and the flow reading stabilizes. The damper should close during this step.

- 4 Position the cooling damper to X% open and lock.

Use the LogiStat's arrow buttons to display the desired percent. Hold down **Override** until the red LED turns on. The LED turns off when the damper reaches the desired position and the flow reading stabilizes. This value is now locked.

WARNING Do **not** skip this step when moving on to the next box. The duct static pressure could rise to dangerous levels if too many VAV boxes are in the closed position at the same time.

- 5 When finished for the day, set the cooling dampers for all VAV boxes on this air source to automatic.

The LogiStat Pro displays 1111. Hold down **Override** until the red LED turns on. The LED turns off when the dampers are set to automatic.

If you are not finished for the day, press the up arrow instead of **Override** and move on to the next step.

If the VAV box does not have reheat and is not a dual duct box, you are through checking mechanical and electrical functions for this box. Move to the next box and repeat the above procedure.

For reheat systems only:

- 6 Set the reheat valve to fully open (100%).

Hold down **Override** until the LED turns on. The LED turns off when the control program receives the request. Make sure the reheat valve completely opens.

- 7 Set this reheat valve to fully closed (0%).

Hold down **Override** until the LED turns on. The LED turns off when the control program receives the request. Make sure the reheat valve completely closes.

For dual duct systems only:

- 8 Set the heating damper to fully open (100%).

The LogiStat Pro displays 100. Hold down **Override** until the red LED turns on. The LED turns off when the damper reaches the desired position and the flow reading stabilizes.

- 9 Make sure the LogiStat Pro displays a positive raw flow sensor reading for the cooling damper.

NOTE Calibration does not affect this reading. A positive reading indicates the sensor is working and the damper is open.

- 10 Set the heating damper to fully closed (0%).

The LogiStat Pro displays 0. Hold down **Override** until the red LED turns on.

The LED turns off when the damper reaches the desired position and the flow reading stabilizes. The damper should close during this step.

- 11 Position the heating damper to X% open and lock.

Use the LogiStat's arrow buttons to display the desired percent. Hold down **Override** until the red LED turns on. The LED turns off when the damper reaches the desired position and the flow reading stabilizes. This value is now locked.

WARNING Do not skip this step when moving on to the next box. The duct static pressure could rise to dangerous levels if too many VAV boxes are in the closed position at the same time.

- 12 When finished for the day, set the heating dampers for all VAV boxes on this air source to automatic.

The LogiStat Pro displays 1111. Hold down **Override** until the red LED turns on. The LED turns off when the dampers are set to automatic.

▼ Performing test and balance

Verify that all U line control modules are powered, running and communicating with the UNI. The test and balance process uses global commands. If a control module is not communicating with the UNI, the process could slow down or stop.

NOTE During VAV calibration, the UNI directs much of its communications on the U line control module containing the VAV box you are calibrating. Therefore, you can calibrate only one VAV box per UNI at a time. In cases where U line control modules for VAV boxes from the same AHU are located on different UNIs, limit calibration to one VAV box per AHU at a time to avoid inaccurate readings.

Keep the following points in mind while performing the test and balance procedure:


- You must perform the steps in order.
- To move from one step to the next:
 1. Press the LogiStat Pro's **Override** button to display the current step number.
 2. Press the up arrow button to display the next step number.
 3. Press **Override** to accept the step number.
- During test and balance, the LogiStat Pro assumes that the calibration table in the airflow microblock is set to defaults, or filled with zeros. If you try to repeat or restart test and balance on a box, some of the values you have already entered in previous steps might prevent reliable control when performing damper and flow calibration steps 7 and 9 for cooling boxes or dual duct steps 27 and 29 for heating boxes. To avoid this problem, reset all values to zero by entering zero as the actual CFM reading. Zeroing out step 6 affects full open, maximum, and minimum values; step 8 zeros out maximum and minimum values only; step 10 zeros out minimum values only.

NOTE If your intent is to fine-tune the calibration by repeating a step that was fairly accurate to begin with, do not zero out any values in the calibration table.
- For maximum accuracy, ALC recommends complete calibration. However, after the box is zeroed and the wide-open flow is entered, you can skip damper and flow calibration steps 7 through 10 and dual duct steps 27 through 30 and still have a rough calibration.
- If you do not perform test and balance functions for an extended period, the system leaves the test and balance mode and resumes automatic control.

For cooling box damper and flow calibration:

Note the following instructions for this procedure:

- Perform step 1 only one time on the first U line control module you calibrate on each air source. Perform step 2 only one time on the first U line control module you calibrate on each air source unless a previous test session has expired because of test inactivity.
- Perform steps 3 through 11 for each individual box sharing the same air source.

- Perform steps 12 and 13 after balancing the last box. You should perform step 13 anytime you need to temporarily stop balancing and return control to the control programs.
- At the end of the test and balance procedure, you must upload parameters from each UNI to the database to accept calibration changes. In WebCTRL, click the menu button , select **Command**, then type paramupload.

On the UNI's driver **Properties** page, set the **Test and balance mode**. To begin test and balance, press both arrows and the **Override** button on the LogiStat Pro, then release all three buttons simultaneously.

- If this is the first time you have begun the procedure for a system, the number 1 appears.
- If you have previously performed steps 1 and 2 for this system, the number 3 appears, indicating you will begin with step 3.
- Even if you already performed steps 1 and 2 on the first module for this air source, the LogiStat will display step 1 if the time set in the **Inactivity until test is aborted**: field has expired. Do not perform step 1 again. Perform step 2 again to lock airflow parameters for stabilization.

Damper and flow calibration

Press **Override** and proceed with test and balance as follows:

- 1 Make sure the fan and AHU are off, then zero-calibrate the flow sensors.

WARNING Zero-calibrating the flow sensors closes all dampers in the system. The duct static pressure could rise to dangerous levels if the fan is running.

Use the LogiStat's arrow buttons to display zero. Hold down **Override** until the LED turns on. The LED turns off when all dampers associated with this air source are fully closed and the corresponding flow sensors have been zero-calibrated.

- 2 Position the dampers.

Because most VAV systems are designed with a "diversity factor" (for example, not all boxes will be wide open at the same time), the fan may not be able to maintain design static pressure unless the boxes are partially closed.

The LogiStat Pro displays the default damper position (50%) used to achieve diversity. Use the arrow buttons to adjust this value if necessary. Hold down **Override** until the red LED turns on. The LED turns off when all dampers associated with this air source reach the desired position.

NOTE Turn on the AHU and leave it turned on for the rest of the procedure.

- 3 Read the current static pressure for this air source.

The LogiStat Pro displays the current static pressure of the air source, if available. A reading of -3 indicates the LogiStat Pro cannot read the static pressure.

- 4 If the VAV box contains a fan controlled by the Airflow microblock, set the desired fan state (off or on).

The LogiStat Pro displays 1. Use the arrow buttons to adjust as needed (1=on; 0=off). Hold down **Override** until the red LED turns on. The LED turns off when the control program receives the request.

- 5 Position the damper.

The LogiStat Pro displays 100 (full open). Hold down **Override** until the red LED turns on. The LED turns off when the damper reaches the desired position and the flow reading stabilizes.

- 6 Measure the flow at full open.

The LogiStat Pro displays an estimate of the maximum airflow for this VAV box based on a default calibration value. Measure the actual flow using a flow hood. Use the LogiStat's arrow buttons to display the actual flow. Hold down **Override** until the red LED turns on. The LED turns off when the value is

entered into the control program's calibration table.

NOTE If you need only a rough calibration, you can skip to step 11.

- 7 Set the maximum cooling airflow setpoint.

The LogiStat Pro displays the maximum cooling airflow from the control program's **Properties** page. Use the arrow buttons to adjust this value as desired. To set the damper to the maximum airflow setpoint, hold down **Override** until the red LED turns on. The LED turns off when the desired flow setpoint is reached and the flow reading stabilizes.

- 8 Measure the flow at the maximum cooling setpoint.

The LogiStat Pro displays the current flow reading. Measure the actual flow using a flow hood. Use the LogiStat's arrow buttons to display the actual flow. Hold down **Override** until the red LED turns on. The LED turns off when the value is entered into the control program's calibration table.

NOTE If calibration at low flow points is not important to your task, you can skip to step 11.

- 9 Set the occupied minimum airflow setpoint.

The LogiStat Pro displays the occupied minimum airflow from the control program's **Properties** page. Use the arrow buttons to adjust this value as desired. Hold down **Override** until the red LED turns on. The LED turns off when the desired flow setpoint is reached and the flow reading stabilizes.

- 10 Measure the flow at the occupied minimum airflow setpoint.

The LogiStat Pro displays the current flow reading. Measure the actual flow using a flow hood. Use the arrow buttons to display the actual flow. Hold down **Override** until the red LED turns on. The LED turns off when the value is entered into the control program's calibration table.

- 11 Set a percent of maximum cooling setpoint.

Now that you have calibrated the box, enter the diversity factor as a percent of maximum flow rather than the less accurate percent open set in step 2.

The LogiStat Pro displays the percent set in step 2 as a default value for this diversity. Use the arrow buttons to display the desired percent of maximum cooling setpoint. Hold down **Override** until the red LED turns on. The LED turns off when the desired flow setpoint is reached and the flow reading stabilizes. The damper position is locked so it will not affect the balancing of other dampers in the system.

- 12 Read the current static pressure for this air source.

The LogiStat Pro displays the current static pressure of the air source, if available. A reading of -3 indicates the LogiStat Pro cannot read the static pressure.

NOTE Perform step 13 after balancing all VAV boxes or when you need to temporarily stop balancing and return control to the control programs. After completing this step, you must repeat step 2 before you can calibrate another box.

- 13 Return control of all dampers for this air source to their corresponding control programs.

The LogiStat Pro displays 1111. Hold down **Override** until the red LED turns on. The LED turns off when damper control returns to the control program. This step also removes any locks placed in previous steps.

Reheat valve calibration - For reheat systems only

These steps allow you to check the value to make certain the reheat valves are opening and closing correctly. Because these steps only lock a parameter, the LED only stays on for a short time. Press **Override** and proceed as follows:

- 14 Set all reheat valves for this air source to 100% open.

The LogiStat Pro displays 100. Hold down **Override** until the LED turns on. The LED turns off when the control program receives the request. Verify that the reheat valve opens completely.

- 15 Set this reheat valve to 0% open.

The LogiStat Pro displays 0. Hold down **Override** until the LED turns on. The LED turns off when the control program receives the request. Verify the reheat valve closes completely.

- 16 Return control of all reheat valves for this air source to their corresponding control programs. (Perform this step only when finished.)

The LogiStat Pro displays 1111. Hold down **Override** until the red LED turns on. The LED turns off when reheat valve control returns to the control programs.

Steps 17 through 20 are currently not used.

Dual duct flow calibration - For dual duct systems only

The following steps are for the warm duct of dual-duct applications. Note the following instructions for these steps:

- Perform steps 21 and 22 only one time for all boxes sharing the same air source.
- Perform steps 23 through 31 for each individual box sharing the same air source.
- Perform steps 32 and 33 after balancing the last box. You should also perform step 13 anytime you need to temporarily stop balancing and return control to the control programs.

Press **Override** and proceed as follows:

- 21 Make sure the fan and AHU are off, then zero-calibrate the flow sensors.

WARNING Zero-calibrating the flow sensors closes all dampers in the system, and the duct static pressure could rise to dangerous levels if the fan is running.

- 22 Position the dampers.

Because most VAV systems are designed with a "diversity factor" (for example, not all boxes will be wide open at the same time), the fan may not be able to maintain design static pressure unless the boxes are partially closed. The LogiStat Pro displays the default damper position (50%) used to achieve diversity. Use the arrow buttons to adjust this value if necessary. Hold down **Override** until the red LED turns on. The LED turns off when all dampers associated with this air source reach the desired position.

NOTE Turn on the AHU and leave it on for the rest of the procedure.

- 23 Read the current static pressure for this air source.

The LogiStat Pro displays the current static pressure of the air source, if available. A reading of -3 indicates the LogiStat Pro cannot read the static pressure.

- 24 If the VAV box contains a fan controlled by the Airflow microblock, set the desired fan state (off or on).

The LogiStat Pro displays 1. Use the arrow buttons to adjust as needed (1=on; 0=off). Hold down **Override** until the red LED turns on. The LED turns off when the control program receives the request.

- 25 Position the damper.

The LogiStat Pro displays 100 (fully open). Hold down **Override** until the red LED turns on. The LED turns off when the damper reaches the desired position and the flow reading stabilizes.

- 26 Measure the flow at full open.

The LogiStat Pro displays an estimate of the maximum airflow for the VAV box

based on a default calibration value. Measure the actual flow using a flow hood. Use the LogiStat's arrow buttons to display the actual flow. Hold down **Override** until the red LED turns on. The LED turns off when the value is entered into the control program's calibration table.

NOTE If you need only a rough calibration, you may skip to step 31.

- 27 Set the maximum heating airflow setpoint.

The LogiStat Pro displays the maximum heating airflow from the control program's **Properties** page. Use the arrow buttons to adjust this value as desired. Hold down **Override** until the red LED turns on. The LED turns off when the desired flow setpoint is reached and the flow reading stabilizes.

- 28 Measure the flow at maximum heating setpoint.

The LogiStat Pro displays the current flow reading. Measure the actual flow using a flow hood. Use the LogiStat's arrow buttons to display the actual flow. Hold down **Override** until the red LED turns on. The LED turns off when the value is entered into the control program's calibration table.

NOTE If calibration at low flow points is not important to your task, you may skip to step 31.

- 29 Set the occupied minimum airflow setpoint.

The LogiStat Pro displays the occupied minimum airflow from the control program's **Properties** page. Use the arrow buttons to adjust this value as desired. Hold down **Override** until the red LED turns on. The LED turns off when the desired flow setpoint is reached and the flow reading stabilizes.

- 30 Measure the flow at the occupied minimum airflow setpoint.

The LogiStat Pro displays the current flow reading. Measure the actual flow using a flow hood. Use the arrow buttons to display the actual flow. Hold down **Override** until the red LED turns on. The LED turns off when the value is entered into the control program's calibration table.

- 31 Set a percent of maximum heating setpoint.

Now that you have calibrated the box, enter the diversity factor as a percent of maximum flow rather than the less accurate percent open set in step 2. The LogiStat Pro displays the percent set in step 22 as a default value for this diversity. Use the arrow buttons to display the desired percent of maximum heating setpoint. Hold down **Override** until the red LED turns on. The LED turns off when the desired flow setpoint is reached and the flow reading stabilizes. The damper position is locked so it will not affect the balancing of other dampers in the system.

- 32 Read the current static pressure for this air source.

The LogiStat Pro displays the current static pressure of the air source, if available. A reading of -3 indicates the LogiStat Pro cannot read the static pressure.

NOTE Perform step 33 after balancing all VAV boxes or if you need to temporarily stop balancing and return control to the control programs. After completing this step, you must repeat step 22 before you can calibrate another box.

- 33 Return control of all dampers associated with this air source to their corresponding control programs.

The LogiStat Pro displays 1111. Hold down **Override** until the red LED turns on. The LED turns off when damper control returns to the control programs. This step also removes any locks placed in previous steps.

NOTE If the occupied minimum airflow was set to a value other than the design minimum airflow in step 9 of the damper and flow calibration section or in step 29 of this section (for dual duct systems only), use Global Modify to reset this property to its design value. See *Changing multiple microblock properties* in WebCTRL Help for information on Global Modify.

Fan assisted constant volume VAV boxes

To perform test and balance on a Fan Assisted Constant Volume VAV box, alter the procedure as follows. (The LogiStat Pro Test and Balance reference card has a brief version of the Fan Assisted Constant Volume procedure.)

Perform damper and flow calibration with the following changes. See *Damper and flow calibration* above.

- Steps 1 through 3: Globally zero and position all VAV boxes as written in the regular procedure.
- Step 4: Turn the fan on.
- Step 5: Instead of opening the damper to 100%, find the damper position at which air is neither drawn in to nor blown out of the return air grill on the VAV box.
- Repeat step 5 as necessary, using a different damper percent open each time, until you locate this "neutral zone". When the damper is in the neutral zone position, use a flow hood to measure the actual airflow coming out of the VAV box.
- Step 6: Enter the actual airflow measurement obtained in step 5 as the full open airflow.
- Step 7: Enter the actual airflow measurement obtained in step 5 as the maximum airflow cooling setpoint.
- Steps 8 through 10 are not used for this type of VAV system.
- Steps 11 through 13: Follow steps as written in the regular procedure.

Perform reheat valve calibration procedure with the following change. See *Reheat valve calibration* above.

- Steps 1 through 3 in reheat valve calibration are only used if a reheat coil is present.

▼ [Manual calibration](#)

Manual calibration makes it easy to calibrate a VAV box (or a system of VAV boxes) from each zone's **Properties** page. You can also do this from the flow microblock pop-up **Details** tab.

- 1 Using Global Modify, lock the dampers of every VAV box on the air source to a desired position, or set the lock value to -1 to lock them at their current position. This stabilizes the system and keeps the system static pressure from changing during test and balance.
- 2 At the bottom of the UNI's driver **Properties** page, set **Test and Balance mode** to **Manual Calibration** to improve accuracy by changing the flow control provided by the Airflow microblock in the following ways:
 - The flow deadband is set to zero.
 - The minimum occupied airflow limit is disabled.

These changes affect every zone control program associated with an air source that is in test and balance mode on the UNI's **Properties** page.

- 3 Navigate to the microblock pop-up **Details** tab of the VAV Flow Control point in the zone you want to calibrate. In the calibration section, enable **Use Calibration Table**.
- 4 Turn off the fan in the AHU, then enable the **Lock Damper Position to** field and set to **0%**.
- 5 After the damper is fully closed, note the number in the **Current Raw Sensor Reading** field.
- 6 Type the number obtained in step 5 in the **Zero Flow** field in the **Raw Sensor Reading** column.
- 7 Type 100% the **Lock Damper Position to** field, then turn on the fan in the AHU.
- 8 Watch the **Current Actual Flow Reading**. When it has stabilized, make a note of the **Current Raw Sensor Reading**.
- 9 Using an appropriate flow measuring device, measure the actual flow from this VAV box.
- 10 Type the measured flow reading in the **Dampers Full Open** field in the **Measured Flow** column. Type the raw sensor reading obtained in step 8 in the

Dampers Full Open field in the **Raw Sensor Reading** column.

- 11 Clear the **Lock Damper Position to** checkbox to unlock the damper position, then enable the **Lock Flow Setpoint to** field and type the maximum design cooling flow in the **cfm** field.
- 12 Watch the **Current Actual Flow Reading**. When the flow is close to the desired value (it may cycle above or below the setpoint since the deadband is zero), enable the **Lock Damper Position to** field and set to -1 to stop movement of the damper.
- 13 Use an appropriate flow measuring device to measure the actual flow from this VAV box.
- 14 Type the measured flow reading in the **Cool/Heat Max Airflow** field in the **Measured Flow** column. Read the **Current Raw Sensor Reading** and type it in the **Cool/Heat Max Airflow** field in the **Raw Sensor Reading** column.
- 15 Clear the **Lock Damper Position to** checkbox to unlock the damper position, then enable the **Lock Flow Setpoint to** field and type the occupied minimum airflow in the **cfm** field.
- 16 Watch the **Current Actual Flow Reading**. When the flow is close to the desired value (it may cycle above or below the setpoint since the deadband is zero), enable the **Lock Damper Position to** field and set to -1 to stop movement of the damper.
- 17 Use an appropriate flow measuring device to measure the actual flow from this VAV box.
- 18 Type the measured flow reading in the **Occupied Min Airflow** field in the **Measured Flow** column. Read the **Current Raw Sensor Reading** and type it in the **Occupied Min Airflow** field in the **Raw Sensor Reading** column.
- 19 Enable the **Lock Damper Position to** field and type the desired position in the **%** field.
- 20 Repeat steps 3 through 18 for all zones that need balancing.
- 21 After balancing all zones, go to the bottom of the UNI's driver **Properties** page and set **Test and Balance mode** to **Disabled** for normal operations.
- 22 Use Global Modify to unlock all zone dampers.

Tracking number: AIT-11792-1