

# RA-1250 Thermal Dispersion Fan Inlet Sensor Airflow Measuring System

## Installation Instructions

Part No. 44-1123-7, Rev. C  
Issued October 3, 2014

Refer to the [QuickLIT website](#) for the most up-to-date version of this document.

### Applications

RA-1250 Thermal Dispersion Fan Inlet Sensor Airflow Measuring System averages velocity and temperature from fan inlet sensors, providing accurate, dependable airflow measurement from 0 to 10,000 fpm (0 to 50.8 mps) within  $\pm 2\%$  accuracy.

Each sensor circuit is connected to a router that stores the calibration data. The router's microprocessor calculates flow and temperature and sends this information digitally to DMPR-RA003 Electronic Controller, which provides air temperature and velocity information on an LCD screen. The transmitter sends the output to a Building Automation System (BAS) through 4–20 mA or 2–10 VDC analog outputs (using a 500 ohm resistor) or a 1–5 VDC analog output (using a 250 ohm resistor).

The factory-assembled RA-1250 Thermal Dispersion Fan Inlet Sensor Airflow Measuring System includes fan inlet sensors, CAT5e shielded cables, router box and a DMPR-RA003 Electronic Transmitter.

### North American Emissions Compliance

#### United States

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

#### Canada

This Class (A) digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la Classe (A) respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

### Installation



#### **WARNING: Risk of Electric Shock.**

Disconnect the power supply before making electrical connections. Contact with components carrying hazardous voltage can cause electric shock and may result in severe personal injury or death.

#### **AVERTISSEMENT : Risque de décharge électrique.**

Débrancher l'alimentation avant de réaliser tout branchement électrique. Tout contact avec des composants conducteurs de tensions dangereuses risque d'entraîner une décharge électrique et de provoquer des blessures graves, voire mortelles.

**IMPORTANT:** Only a qualified service technician should install this system. To avoid unsatisfactory operation or damage to the product, strictly follow the instructions provided and do not substitute parts. Damage to the product resulting from not following the instructions or using unauthorized parts may be excluded from the manufacturer's warranty coverage.

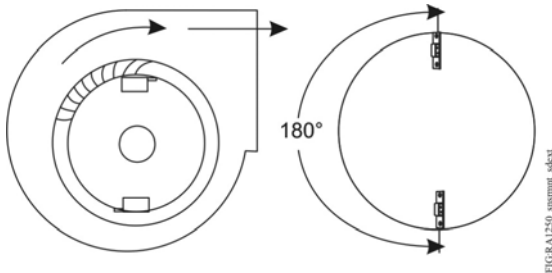
**IMPORTANT:** In addition to these instructions, the installation contractor shall comply with all local and International codes and standards to ensure proper and safe installation.

### Locating the Fan Inlet Sensors on Forward Curve Fans

Inspect the fan inlet opening to ensure no obstructions or irregularities interfere with installation of the sensors.

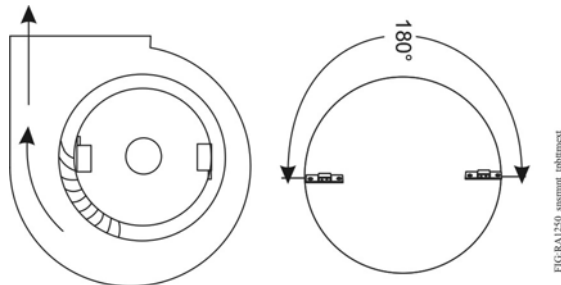
Install the two fan inlet sensors opposite one another within the fan inlet bell. Place the sensor housing at or near the highest restriction point of the fan inlet as possible.

Place sensors at the 12:00 and 6:00 positions for fans with the air exiting the right or left of the housing. See Figure 1.



**Figure 1: Mounting Sensors for Air Exiting from the Right Side or Left Side**

Place sensors at the 3:00 and 9:00 positions for fans with the air exiting the top or bottom of the housing. See Figure 2.



**Figure 2: Mounting Sensors for Air Exiting from the Top or Bottom**

On dual inlet fans, install two sensor circuits within each fan inlet bell. Place the sensor housing at or near the highest restriction point of each inlet as possible.

### **Locating the Fan Inlet Sensors on Backward Curve or Plenum Fans**



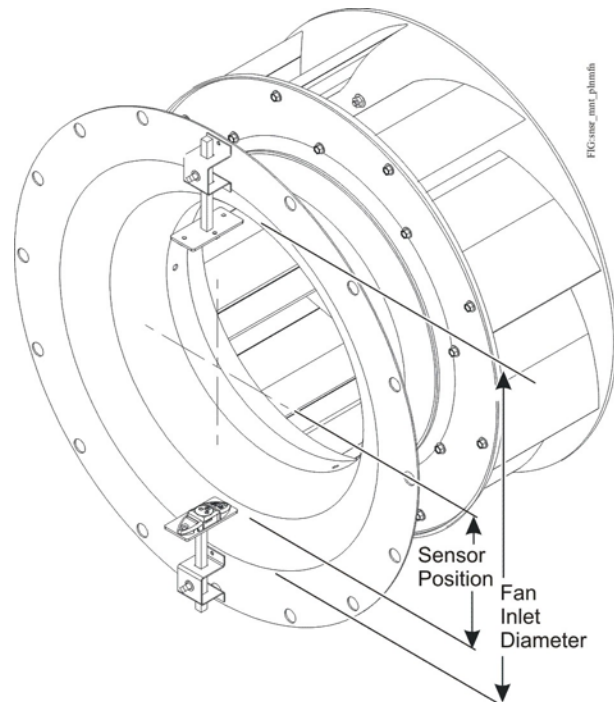
#### **CAUTION: Risk of Property Damage.**

Securely install the mounting brackets, position rods, and sensors. Failure to do so may cause the components to be drawn into the fan, resulting in damage to the fan and other equipment.

#### **MISE EN GARDE : Risque de dégâts matériels.**

Installez les pattes de montage, les tiges de positionnement et les sondes à des emplacements sûrs. Si cette précaution n'est pas respectée, des composants pourraient être aspirés par le ventilateur, entraînant des dégâts à l'hélice et aux autres équipements.

Mount the rods solidly on the flat face of the inlet bell as shown in Figure 3.



**Figure 3: Sensor Mounting using Mounting Brackets and Position Rods on Backward Curve or Plenum Fans**

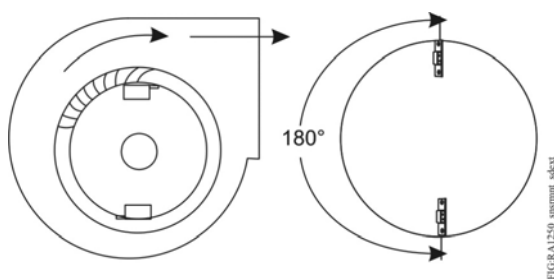
Adjust the position rods so that the sensors are located correctly, according to the fan's inlet diameter. See Figure 3 and Table 1.

**Table 1: Sensor Position by Fan Inlet Diameter**

Inlet Diameter, in. (cm)	Sensor Position, in. (cm)	Inlet Diameter, in. (cm)	Sensor Position, in. (cm)
15	4-13/16	29	9-3/4
16	5-3/16	30	10-1/8
17	5-1/2	31	10-7/16
18	5-7/8	32	11-3/16
19	6-3/16	33	11-1/2
20	6-9/16	34	11-7/8
21	6-15/16	35	12-1/4
22	7-1/4	36	12-9/16
23	7-5/8	37	12-15/16
24	8	38	13-5/16
25	8-5/16	39	13-5/8
26	8-11/16	40	14
27	9-1/16	41	14-3/8
28	9-3/8	42	14-11/16

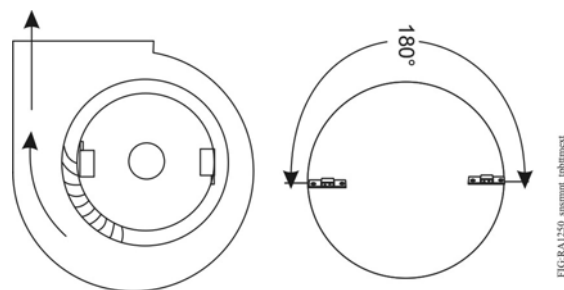
Secure the sensor cables to the back of the rods with zip ties so that the cables do not move when the fan is operating.

Place sensors at the 12:00 and 6:00 positions for fans with the air exiting the right or left of the housing. See Figure 4.



**Figure 4: Mounting Sensors for Air Exiting from the Right Side or Left Side**

Place sensors at the 3:00 and 9:00 positions for fans with the air exiting the top or bottom of the housing. See Figure 5.



**Figure 5: Mounting Sensors for Air Exiting from the Top or Bottom**

**Note:** Ensure that the airflow arrow is pointed in the correct direction.

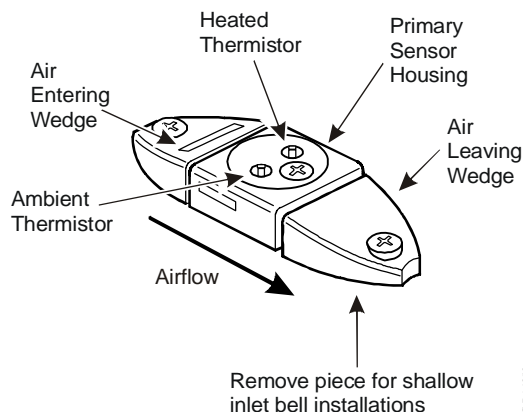
### ***Mounting the Fan Inlet Sensors***

Use the supplied pan head, self-drilling fasteners (included in parts bag) to fasten the fan inlet sensor to the inlet bell.

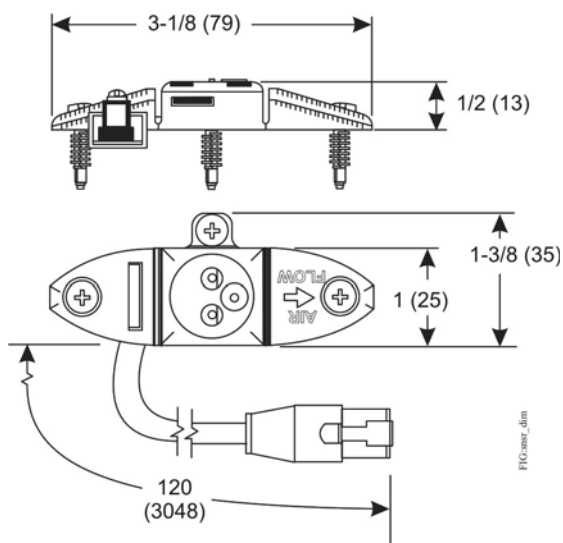
If the fan has a shallow inlet bell, use a box knife or other utility knife to remove the Air Leaving Wedge, leaving the primary sensor housing (containing the sensor circuit) and the Air Entering Wedge. Use the mounting hole on the Primary Sensor Housing if you remove the Air Leaving Wedge.

Remove the shipping cover before installing the fan inlet sensor.

**Note:** Ensure that the airflow arrow is pointed in the correct direction.



**Figure 6: Fan Inlet Sensor**



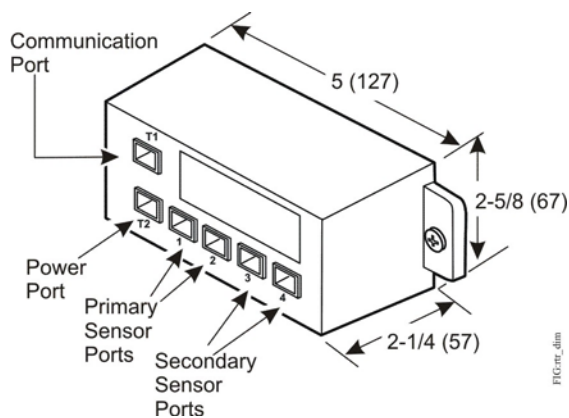
**Figure 7: Fan Inlet Sensor Dimensions, in. (mm)**

### Installing the Router

Do not mount the router to the fan housing. Mount the router to a solid, non-vibrating surface (such as an adjacent structural wall, plenum, or ductwork) that is within 10 ft. (3 m) of all sensors.

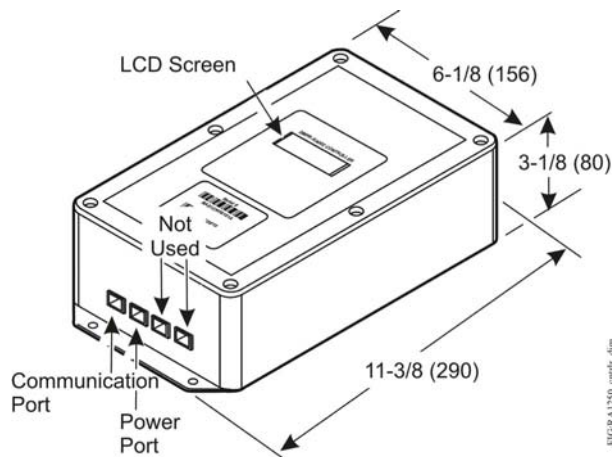
Use four field-supplied fasteners to mount the enclosure in an appropriate location. Use fasteners suitable for the wall material.

Install and store the router indoors or in a noncondensing environment.



**Figure 8: Router Dimensions, in. (mm)**

### Installing the DMPR-RA003 Electronic Controller



**Figure 9: DMPR-RA003 Electronic Controller Dimensions, in. (mm)**

Do not mount the electronic controller to the fan housing. Install the electronic controller on an adjacent structural wall, plenum, or ductwork that is isolated from excessive system vibration.

Mount the electronic controller inside of an air handling unit or place the electronic controller with similar control panels within the structure.

Do not install or store the electronic controller outdoors.

Mount the electronic controller within 50 feet (15 m) of the thermal dispersion fan inlet sensors to prevent voltage drop or distortion between the electronic controller and the router.

Mount the electronic controller on a flat surface using these steps:

1. Securely mount the electronic controller on a wall near the sensors, leaving at least 12 in. (31 cm) above the electronic controller to allow removal of the cover. Use four field-supplied fasteners to mount the enclosure in an appropriate location. Use fasteners suitable for the wall material.
2. Remove the six screws that secure the cover of the electronic controller. Remove the cover from the electronic controller.
3. Remove the appropriate conduit plugs on the top of the electronic controller for connection of the field wires to the circuit board terminal blocks (see Figure 10).
4. Wire the supply power and outputs. See [Wiring](#).

## Wiring

Whenever possible, use a dedicated transformer for each RA-1250 System. If you use a dedicated transformer for multiple RA-1250 Systems, ensure that the transformer is rated with sufficient capacity for the total load of the connected probes, sensors, and other devices.

Errors in the load calculations can lead to problems. Wiring multiple low-voltage devices from a common transformer can result in lower-than-expected voltage at the device and higher-than-expected current draw when devices are connected a great distance from the power source.

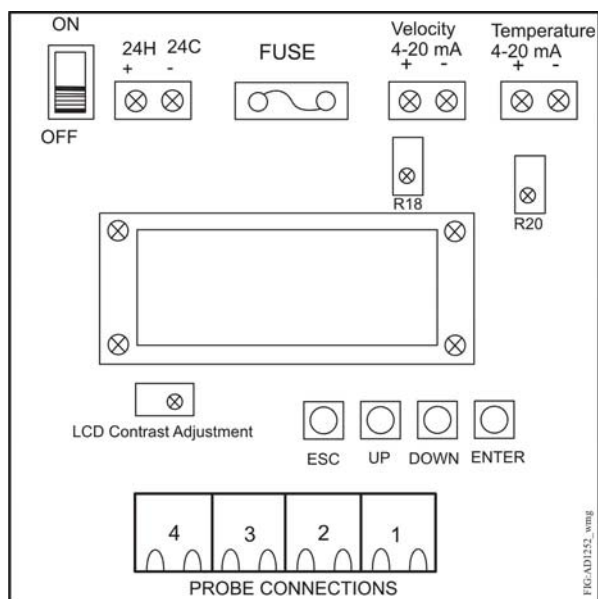
Transformers for the DMPR-RA003 Electronic Controller are not required to be isolated from other devices. Isolation is only required to prevent electrical fluctuations due to intermittent high loads from causing problems with electronic devices.

Make sure that the sensors labelled 1 through 4 are installed in the corresponding port on the router to help ensure proper operation.

See Figure 10 for supply power and output connections.

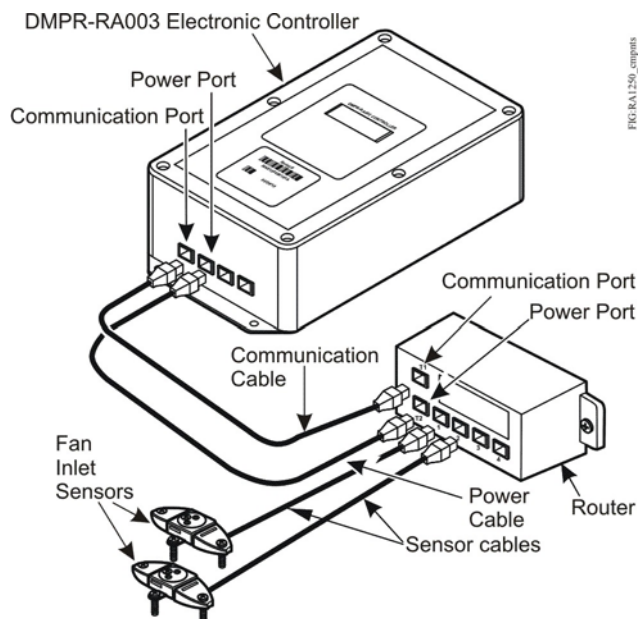
Follow these steps to make wiring connections:

1. Connect dedicated 24 VAC power to DMPR-RA003 Electronic Controller. See Figure 10.
  - a. Connect 24 VAC hot to 24H + terminal.
  - b. Connect 24 VAC common to 24C - terminal.
2. Connect 4 to 20 mA velocity and temperature outputs from the electronic controller to a Building Automation System (BAS) controller. See Figure 10.



**Figure 10: DMPR-RA003 Electronic Controller Wiring Diagram**

## Connecting the Cables



**Figure 11: RA-1250 System Components**

1. Connect a CAT5e cable between the Communication Port RJ45 connector on the router to the Communication Port RJ45 connector on the electronic controller (see Figure 11).
2. Connect a CAT5e cable between the Power Port RJ45 connector on the router to the Power Port RJ45 connector on the electronic controller (see Figure 11).



3. Use nylon cable clamps (included in parts bag) to secure RJ45 cable between the sensors and the router, and between the router and the control transmitter. Space cable clamps on 6 in. (152 mm) centers.
4. Move the electronic controller's power switch (see Figure 10) to the ON position.
5. Use the LCD Contrast Adjustment screw (see Figure 10) to adjust the LCD contrast as desired:
  - Turn the screw clockwise to increase contrast.
  - Turn the screw counterclockwise to decrease contrast.
6. Use the Options Menu to configure the electronic controller for your application. See [Connecting the Cables](#) for specific instructions.
7. After configuring the electronic controller, replace the cover.

## Setup and Adjustments

### Output Display Menu

Use UP and DOWN (see Figure 10) to scroll through each sensor's velocity and temperature reading. Press ESC on the electronic controller to display the average velocity and temperature values.

### Options Menu

The Options Menu allows the user to reset the controller to factory settings, temporarily deactivate the LCD screen, enable error indication, change units, adjust gain and offset, set the zero cutoff of the electronic controller, and adjust the output filter value. See Figure 12.

To access the Options menu, press and hold both ENTER and ESC on the electronic controller until the LCD screen clears.

To scroll through each of the menu options, press UP and DOWN on the electronic controller (see Figure 10):

- RESET SETTINGS
- LCD ON/OFF
- ERROR INDICATION
- TEST SIGNAL
- UNITS
- GAIN

- OFFSET
- ZERO CUTOFF
- DISPLAY VELOCITY OUTPUT FORMULA
- SCALE VELOCITY mA OUTPUT SIGNAL
- ADJUST mA OUTPUT FILTER VALUE

**Note:** Pressing ESC while in one of the submenus exits the option menu without saving changes and returns to the Initialization menu.

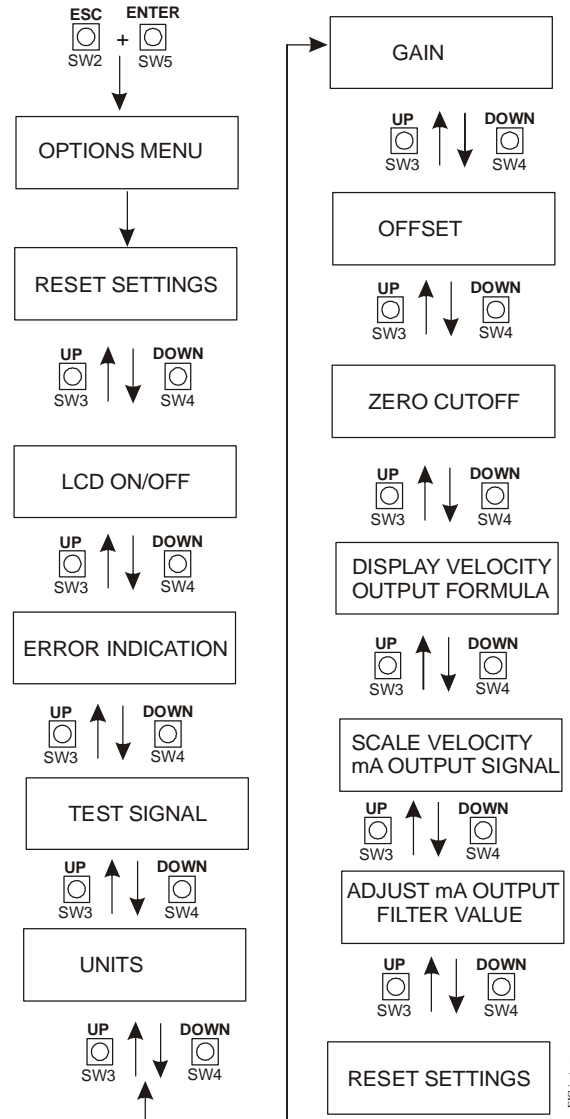


Figure 12: Options Menu

## RESET SETTINGS

This option submenu restores the electronic controller to the default factory settings. See Figure 13.

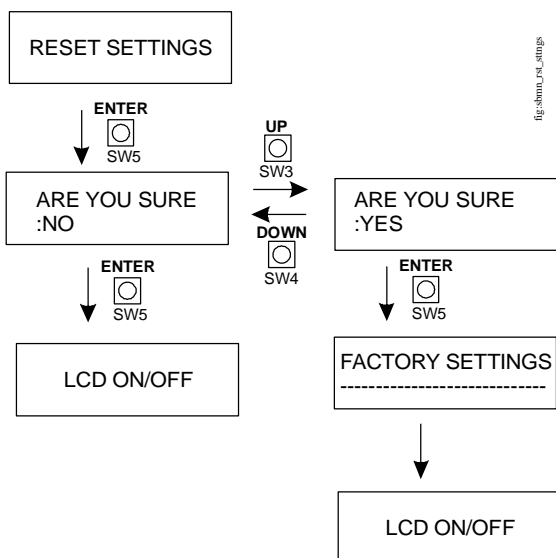


Figure 13: Reset Settings Submenu

## LCD ON/OFF

This option submenu turns the LCD screen on the electronic controller ON or OFF. See Figure 14.

**Note:** Pressing ESC, UP, DOWN, or ENTER reactivates the LCD screen.

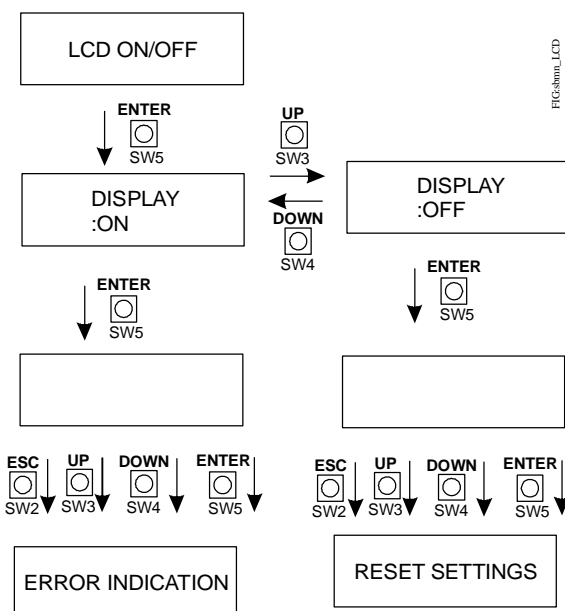


Figure 14: LCD ON/OFF Submenu

## ERROR INDICATION

This option submenu activates the error indication on the LCD screen. See Figure 15.

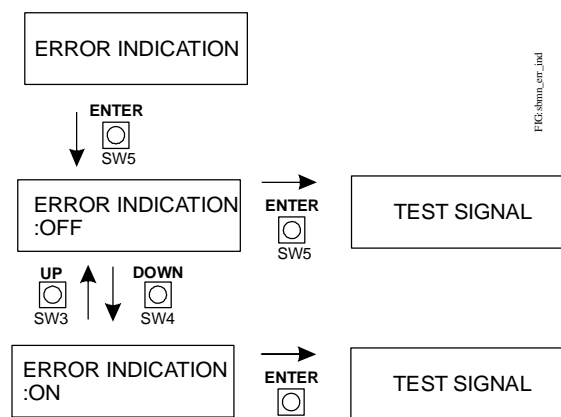


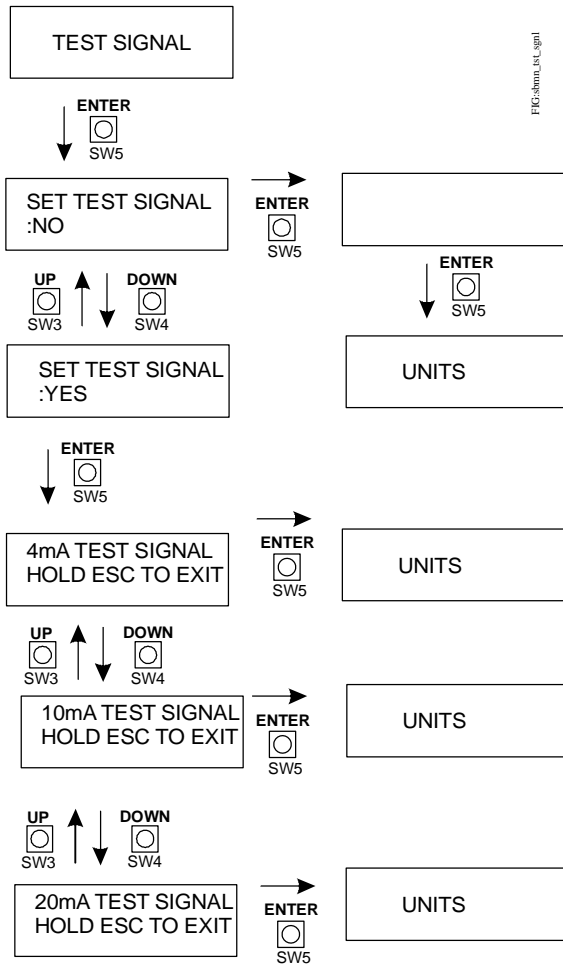
Figure 15: Error Indication Submenu

## TEST SIGNAL

This option submenu outputs a fixed mA value to each 4 to 20 mA output.

To turn a test signal ON, press ENTER from the Option Menu to access the TEST SIGNAL options. Use UP and DOWN to select the SET TEST SIGNAL: YES option. Use UP and DOWN to scroll through each of the available fixed output signals (4, 10, or 20 mA). Press ENTER to accept the test output signal and turn the test signal ON.

To turn the test signal OFF, press ENTER or EXIT.



**Figure 16: Test Signal Submenu**

## UNITS

This option submenu sets the displayed velocity and temperature unit. To access this submenu, press ENTER. The LCD screen states UNIT SYSTEM. (See Figure 17.) Use UP and DOWN to select SI or IU unit systems.

- Select SI for FPM or CFM with temperature in degrees Fahrenheit.
- Select UI for MPS or LPS with temperature in degrees Celsius.

Use UP and DOWN to scroll through the available units. Press ENTER to select the desired unit.

If CFM or LPS is selected, the area is requested on the LCD screen. Use UP and DOWN to adjust the area calculation. Press ENTER to accept the area value.



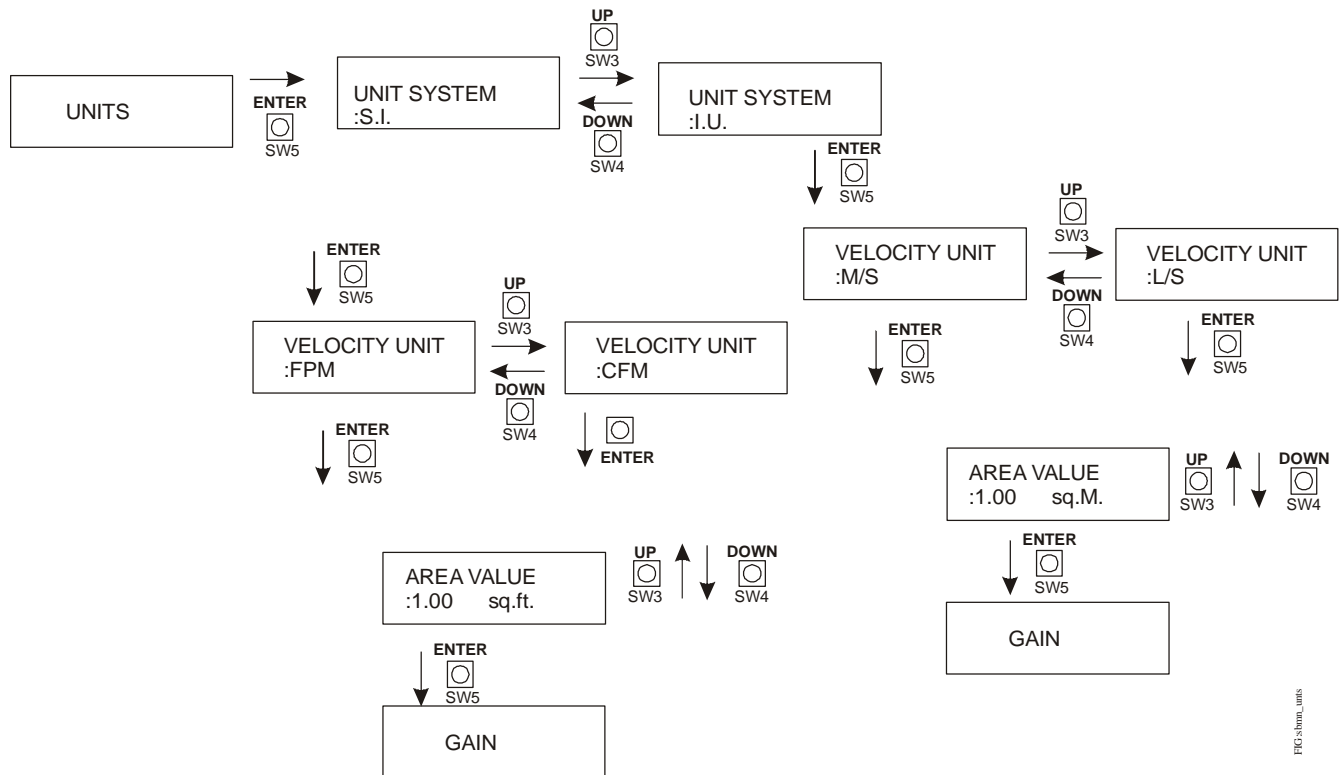


Figure 17: Units Submenu

## GAIN

This option adjusts the gain for the average velocity calculation. Press ENTER from the Options Menu to access the GAIN adjustment submenu. Use UP and DOWN to adjust the desired gain value (Range = 0 to 99). Press ENTER to accept the value.

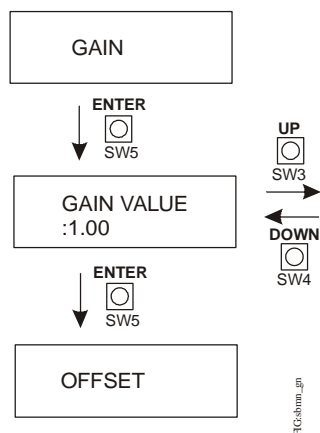


Figure 18: Gain Submenu

## OFFSET

This option adjusts the offset for the average velocity calculation. Press ENTER from the Options Menu to access the OFFSET adjustment submenu. Use UP and DOWN to adjust the offset value (Range = 0 to 1000). Press ENTER to accept the value.

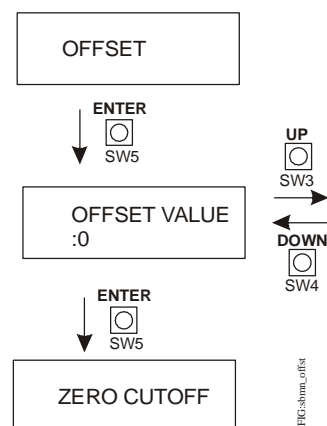


Figure 19: Offset Submenu

## Field Calibrating GAIN and OFFSET

Point field adjustment must be performed when the air measurement station is installed. Perform balancer field calibration if necessary when the values as measured by the test and balance contractor (T&B) do not match the air measurements displayed.

### Point Field Adjustment

**This portion of the calibration procedure must be performed to complete the air measurement station installation.** Set the fan to a known airflow rate. An airflow rate of 100% should match the rating of the fan or AHU. Set the fan speed to obtain the rated CFM of the fan. Typically, this is the maximum speed of the fan. Make sure VAV boxes, dampers, and other obstructions are open so damage does not occur. Complete the following to calculate the gain for the controller.

1. Set the in controller values for gain to 1.0 and the offset to ZERO, and set the controller to display CFM (L/S).
2. Record the flow rate displayed on the controller with the fan running at a known flow.
3. Record the rated flow of the fan.
4. Calculate the gain by dividing the value recorded in step 3 by the value recorded in step 2.
5. Set the gain in the controller. Expected gain values can be 1.0 to 6.0 or more, depending on sensor placement.
6. Make sure that the offset remains at 0.0.

### Balancer Field Calibration Mode

Balancer Field Calibration Mode is available only in Firmware Version 8.5 and above. This feature allows a variable speed fan to be configured as installed using air flow values provided by Test & Balance (T&B) or other known values. Before starting this test, make sure that the dampers and VAV boxes are set to fixed positions, and record the positions and settings so they can be duplicated at a later date if necessary.

The RESET SETTINGS options submenu does not delete or reset field calibration settings. Do **not** turn off Balancer Field Calibration. Field calibration settings are replaced with factory settings when Balancer Field Calibration is turned off, and the settings cannot be restored without repeating the calibration steps. When Balancer Field Calibration Mode is selected and turned ON, follow these calibration steps:

1. Set the Gain to 1.0 and the Offset to ZERO, and set the controller to display CFM (L/S) or (M/S) depending on what will be measured. Gain is ignored during the calibration procedure, and a factory default of 1.0 is used during the calibration process. If the GAIN is not equal to 1.0, readings will not match the expected reading when the controller is returned to normal operation and gain is applied to the calibrated measurements.
2. Scroll to BALANCER FIELD CALIBRATION -> ENTER.
3. Use the Up and Down buttons to display ON -> ENTER
4. Run the fan at a fixed low speed and have the T&B contractor establish the known air flow (application dependent). Record this value along with drive speed and damper settings.
5. Use the Up or Down button until the display matches the known value for MIN FLOW.  
MIN FLOW POINT -> Up / Down -> ENTER uses this flow to display low air flow.  
The display will change to MID FLOW after Enter is pressed.
6. Press ENTER to move to the next set point before speeding up the fan.
7. Run the fan at a fixed medium speed between low and high, and have T&B establish known air flow. Record this value along with drive speed and damper settings.
8. Use the Up or Down button until the display matches the known value for MID FLOW.  
MID FLOW POINT - -> Up / Down -> ENTER uses this flow to display midpoint air flow.  
The display changes to MAX FLOW.
9. Press ENTER to move to the next set point before speeding up the fan.
10. Run the fan at the fixed high flow or at the highest speed that is likely to be encountered.
11. Have T&B establish the known flow.

12. Record this value along with the drive speed and damper settings.
13. Use the UP or DOWN button until the display matches the known value for this highest flow.  
MAX FLOW POINT -> Up / Down -> ENTER uses this flow to display the maximum air flow.

The display shows RESET SETTING. Scroll up or down to the other settings or to the ESCAPE setting.

Do **not** turn off Field Calibration.

When field calibrate is selected, the product uses the low, medium, and high readings that were entered in these steps to generate the curve for a particular fan.

When the field balance is turned off, the transmitter reverts to the factory sensor calibration data, and field calibration is lost.

Do **not** turn off Field Calibration after completing the calibration steps unless you are restarting the field calibration processor.

Previous balancer settings are lost when field calibration is turned off.

To force the display to show zero when off, enter a ZERO CUTOFF value that is greater than the highest value displayed on any sensor when the fan is off. Do **not** use offset for this function. Using offset will affect the calibration for this function. A hard zero in the interface can also be used to report a zero when the fan is off. A non-zero display is normal and expected when the Field Calibration method is selected and the fans are off.

## ZERO CUTOFF

**IMPORTANT:** Only use this function when the fan is off and there is no airflow to the probe sensors. If you use this function when the probe sensors are measuring any airflow, the system uses that airflow value as the zero airflow velocity reference point and provides a zero output (4 mA).

This option submenu sets the zero velocity reference point. Ensure that there is no airflow to the probe sensors before accessing this submenu to set the zero velocity reference point. The LCD screen displays ARE YOU SURE. Use UP and DOWN to scroll YES or NO. Press ENTER to accept the value.

The calculated velocity indicates zero when it reaches the zero cutoff value.

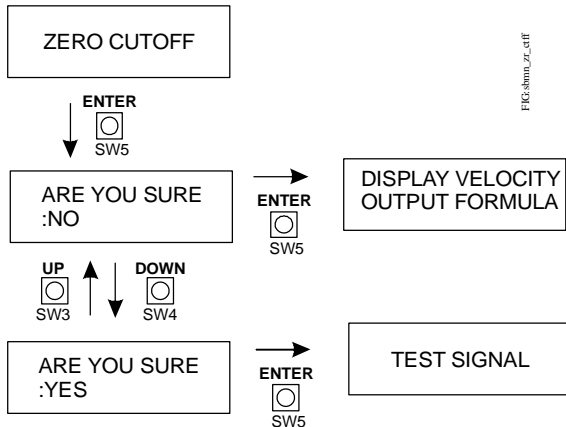


Figure 20: Zero Cutoff Submenu

## Display Velocity Output Formula

This option submenu displays the velocity output formula and the values of components of the formula. Use these components, along with the signal strength, to calculate the velocity output.

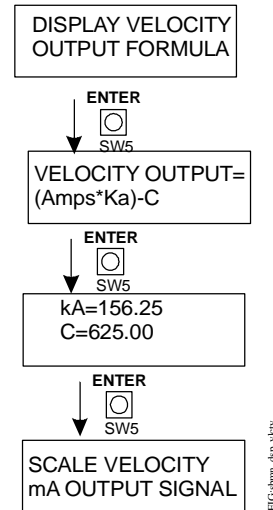


Figure 21: Display Velocity Output Formula Submenu

## Scale Velocity mA Output Signal

This option submenu allows the user to adjust the airflow associated with the 20 mA and 4 mA input signals. The submenu options differ, based on the selection made in the UNITS submenu: FPM, CFM, M/S or L/S.

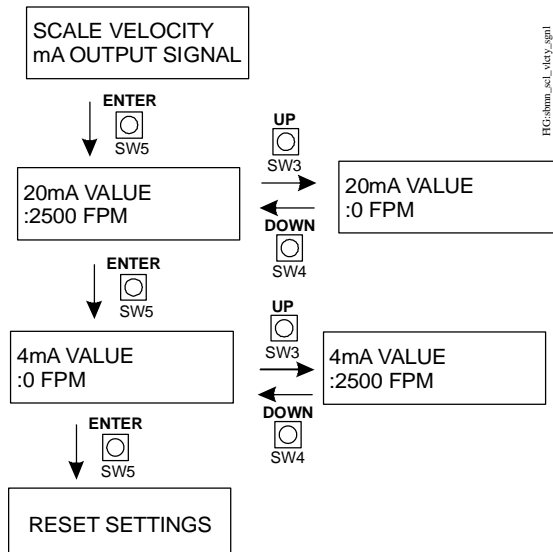
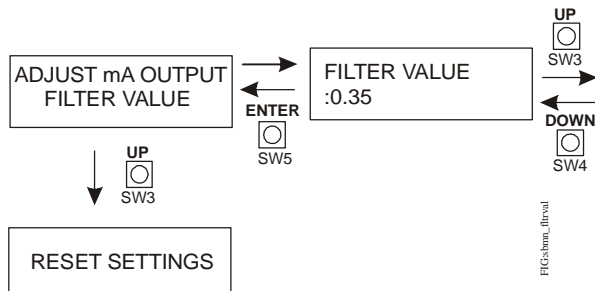


Figure 22: Scale Velocity mA Output Signal Submenu with Velocity Unit: FPM Selected

### Adjust mA Output Filter Value

This option submenu allows the user to adjust the mA filter value used to speed up or slow down the mA output slew rate. Use the default value of 0.35 for the majority of applications. Use an mA filter value of 0.5 when an instantaneous output signal is required for applications such as fan tracking.



**Figure 23: Adjust mA Output Filter Value Submenu**

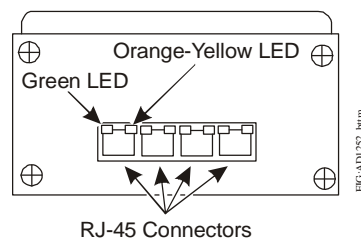
### Troubleshooting

During normal operation, two LEDs illuminate at the RJ45 connector on the DMPR-RA003 Electronic Controller. The left (green) LED indicates that the electronic controller has properly identified the probe. The right (amber) LED illuminates each time the electronic controller communicates with the connected thermal dispersion probe. See Figure 24.

If the right (amber) LED does not blink, reset the electronic controller by cycling the power switch OFF and then ON. See Figure 24.

If an error occurs with one of the sensors, an error indication displays on the LCD screen. (See Figure 9.) The error is indicated on the LCD screen by the velocity unit in lowercase letters.

Use Table 2 to troubleshoot problems with the RA-1250 System.



**Figure 24: DMPR-RA003 Electronic Controller, Bottom View**

**Table 2: RA-1250 System Troubleshooting (Part 1 of 2)**

Symptom	Possible Cause	Corrective Action
The LCD screen shows the units label without a numerical velocity or temperature value.	The DMPR-RA003 Electronic Controller is in calibration mode.	<ol style="list-style-type: none"> <li>1. Press ESC and ENTER at the same time to enter the OPTIONS MENU.</li> <li>2. Press UP and DOWN at the same time to enter the FACTORY MENU. PROBE CALIBRATE appears.</li> <li>3. Press ENTER to access the CALIBRATION MODE submenu.</li> <li>4. Use UP and DOWN to set the CALIBRATION MODE to OFF.</li> <li>5. Press ENTER to return to the FACTORY MENU.</li> <li>6. Press ESC to return to normal operation.</li> </ol>
The electronic controller does not display airflow below a certain value, even if airflow drops below that value.	The ZERO CUTOFF is set at a value higher than what the electronic controller is measuring.	<ol style="list-style-type: none"> <li>1. Reset the electronic controller to factory settings. See the RESET SETTINGS submenu.</li> <li>2. Ensure that the fan is off prior to reprogramming the Zero Cutoff.</li> <li>3. Reprogram the other settings.</li> </ol>
The LCD screen shows this message: <b>ERROR! CHECK CAT5 CABLE AND RESET</b>	The CAT5e connector cables are not terminated properly.	<p>Check for proper termination on all CAT5e connector cables.</p> <p>For field-manufactured cables, check if cable is straight-through type instead of crossover type.</p>
The LCD screen stops or freezes during startup. LCD screen shows -----	The multiplex circuit is not programmed.	<p>Cycle power to the electronic controller.</p> <p>Check the amber LEDs on the RJ45 connector ports on the bottom of the electronic controller.</p> <p>If more than one amber LED flashes at the same time, the multiplex circuit is not properly programmed. If this occurs, contact Technical Support.</p>
The mA output is locked on a single value.	The mA OUTPUT CALIBRATION function did not exit properly.	<ol style="list-style-type: none"> <li>1. Press ESC and ENTER at the same time to enter the OPTIONS MENU.</li> <li>2. Press UP and DOWN at the same time to enter the FACTORY MENU. PROBE CALIBRATE appears.</li> <li>3. Press UP or DOWN to scroll to the desired mA CALIBRATION submenu.</li> <li>4. Press ENTER to access the desired submenu.</li> <li>5. Press ENTER to accept each value and then press ESC.</li> </ol>
The mA output appears to be moving very slowly. The output does not keep up with the airflow.	The mA filter value is set too low.	Enter the OPTIONS MENU and increase the mA filter value.
The mA output is constantly spiking high, then low.	The mA filter value is set too high.	Enter the OPTIONS MENU and decrease the mA filter value.

**Table 2: RA-1250 System Troubleshooting (Part 2 of 2)**

Symptom	Possible Cause	Corrective Action
The LCD screen displays a blank screen.	<ul style="list-style-type: none"> <li>The transformer VA rating is too low.</li> <li>Too many items are on one transformer.</li> </ul>	Replace the existing transformer with a transformer with the proper VA rating: <ul style="list-style-type: none"> <li>4 probes, 4 sensors each - 50 VA</li> <li>3 probes, 4 sensors each - 38 VA</li> <li>2 probes, 4 sensor each - 26 VA</li> <li>1 probe, 4 sensors - 14 VA</li> </ul> Maximum VA usage occurs when there is no airflow or low airflow. As airflow increases, VA use decreases.
The electronic controller communicates with one probe and ignores the others.		
The LCD screen displays 0 CFM and the GREEN LED blinks intermittently.		

### **Factory Menu**

The Factory Menu is used to calibrate the sensors. Do not adjust the sensors by using this menu unless you are directed to do so by a factory representative or by Johnson Controls® field technical support.

### **Repair Information**

If the RA-1250 Thermal Dispersion Fan Inlet Sensor Airflow Measuring System fails to operate within its specifications, replace the unit. For a replacement RA-1250 System, contact the nearest Johnson Controls representative.

### **Maintenance**

Johnson Controls RA-1250 Thermal Dispersion Fan Inlet Sensor Airflow Measuring Systems have no components that require routine scheduled maintenance.

Twice a year, scroll through the velocity and temperature values using UP and DOWN (see Figure 10). Clean the sensor nodes if readings vary from normal readings.

Wipe down the fan inlet sensor with a damp cloth.

Remove lint, dust, and other matter from the opening of the sensor shroud by blowing through the hole or using a soft bristle brush.

Annually inspect the fan inlet sensor in unfiltered outside air, return air, or exhaust air applications to ensure that the sensor is free of excessive buildup of lint, dust, or other airborne particulates. Clean the sensor with a soft bristle brush when necessary.



## Technical Specifications

### RA-1250 Thermal Dispersion Probe Fan Inlet Sensor Airflow Measuring System

<b>Velocity Requirements</b>	Minimum 0 fpm (0 mps) Maximum 10,000 fpm (50.8 mps)
<b>Fan Degradation</b>	Minimal
<b>Sensor Accuracy</b>	Airflow: $\pm 2\%$ of reading and $\pm 0.15\%$ repeatability Temperature: $\pm 0.10^\circ\text{F}$ 24 VAC internally fused power supply Velocity Output: 4–20 mA (standard) or 2–10 VDC (requires 500-ohm resistor) Temperature Output: 4–20 mA (standard) or 2–10 VDC (requires 500-ohm resistor) Fused outputs
<b>Power Requirement</b>	Dedicated 24 V, 20 VA with one router connected and 40 VA with two routers connected
<b>Power Consumption</b>	18 VA Maximum per router
<b>Operating Conditions</b>	-25 –140°F (-32–60°C); 0–99% RH, noncondensing
<b>Router Unit (One per Fan Location)</b>	One microprocessor based multiplexer circuit Sensor/communications circuit Router circuits encapsulated in electronic potting compound
<b>Approximate Weight</b>	Controller: 2.9 lb (1.32 kg) Router: 1 lb (0.45 kg) Sensor: 0.5 lb (0.22 kg)

Measuring stations are tested at an AMCA Certified Laboratory using instrumentation and procedures in accordance with AMCA Standard No. 610-93, Air flow Station Performance.

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.



#### Building Efficiency

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