

MANUAL – INSTALLATION

DMSA

Diffuser Measuring Station

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ADVANTAGE DIGITAL VAV DIFFUSERS

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SUPPORT ▼

Having difficulty installing this product?
Acutherm is here to help.

Application Support

Phone: 510.785.0510

Email: techsupport@acutherm.com

acutherm.com

ADVANTAGE DIGITAL VAV DIFFUSERS

General Description

The Diffuser Measuring Station (DMSA) is an optional addition to the Advantage VAV diffuser providing air flow measurement at each Advantage master diffuser. The collar mounted SP300 multipoint sensor aligned with the flex elbow provides accurate measurement of air flow throughout the VAV diffuser operating range. In conjunction with the BACnet Interface option, the measured air flow from each diffuser is available to the BACnet network along with the other measurements and diffuser properties.

Receiving Inspection

After unpacking the DMSA assembly, check for shipping damage to the collar, cross flow sensor (SP300), and tubing. If any damage is found, immediately report to the delivering carrier and Acutherm customer service. During unpacking and installation do not handle the product by the cross flow sensor as damage may result.

Installation

The DMSA must be installed according to the following instructions. Failure to follow the outlined installation procedure may result in inaccurate air flow measurement readings. The DMSA is intended for use with the Advantage master VAV diffuser with BACnet network communication.

1. CONNECT THE DMSA COMPONENTS

The DMSA must be installed directly onto the diffuser inlet in the correct orientation with the TP ports facing the airflow (direction label on collar). Correct orientation will result in the green port toward the diffuser and the red port toward the duct (see Fig.1). The high (red) and low (green) pressure Tubing must be connected to the Pressure Control Board following color guidelines (see Fig. 1). The Pressure Sensor Board is factory mounted on the Advantage master diffuser control bracket.)

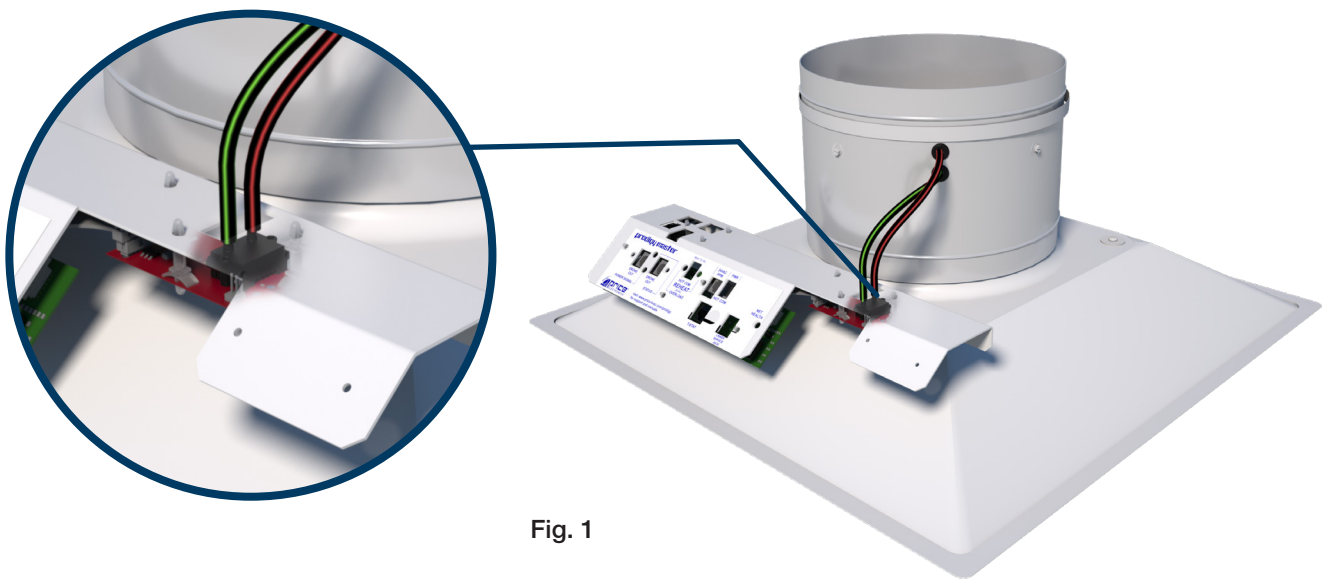


Fig. 1

2. DETERMINE DIFFUSER DUCT CONNECTION TYPE

The method of duct connection and resulting inlet conditions can directly affect the performance of the DMSA. If a side duct connection to the diffuser resulting in an elbow is required, use the FlexRight elbow connection method (see figure 2). Follow this method for a hard duct elbow. If there is a straight duct connection to the diffuser (no elbow for at least three equivalent duct diameters), use the straight connection method (see Fig. 2). If using flexible duct, ensure that the duct is fully extended and pulled tight for best results.

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- a. FLEXRIGHT ELBOW CONNECTION:** Use the included FlexRight duct elbow and duct zip ties (X2) to maintain optimal inlet conditions to the diffuser. **Ensure that the spokes of the flow cross line up with the elbow and airflow direction.** Rotate the collar if required to achieve desired location and secure the collar to the diffuser inlet using the three predrilled holes. Pull the flex duct over the bead on the top of the collar and secure. Next, position the FlexRight elbow and secure using the zip ties through the arms at both ends.

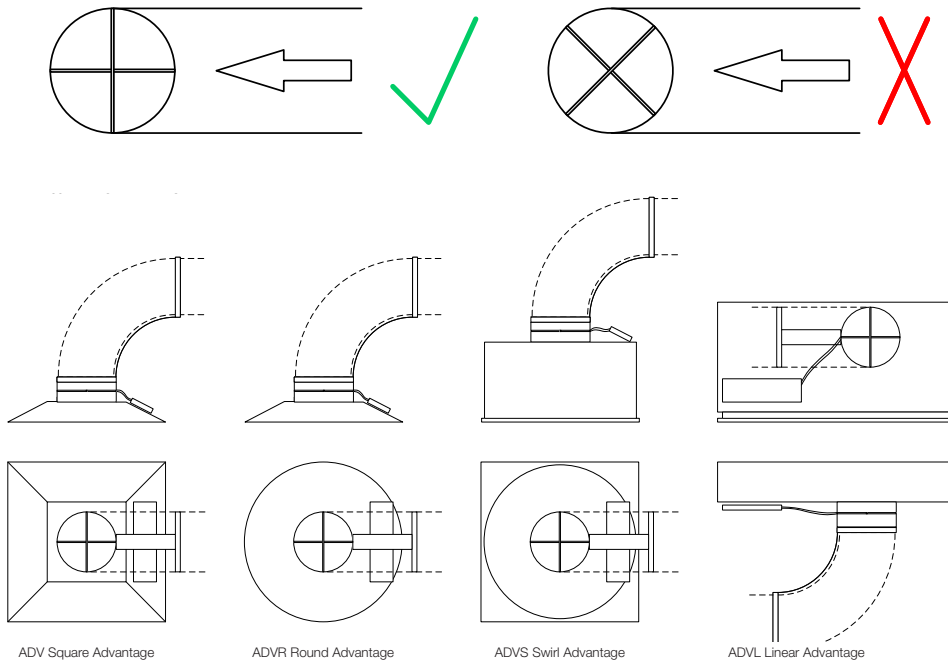


Fig. 2

Model ADVL 60in / 1500mm with 4 slots uses an oval inlet. DMSA not available for oval inlet.

- b. STRAIGHT DUCT CONNECTION:** Discard the included FlexRight duct elbow and duct zip ties (X2) and ensure you have at least three equivalent duct diameters of straight duct run before the diffuser. Ensure to avoid diagonal transitions or kinks as they may affect accuracy. If using flexible duct, ensure that the duct is fully extended and pulled tight for best results (see Fig. 3).

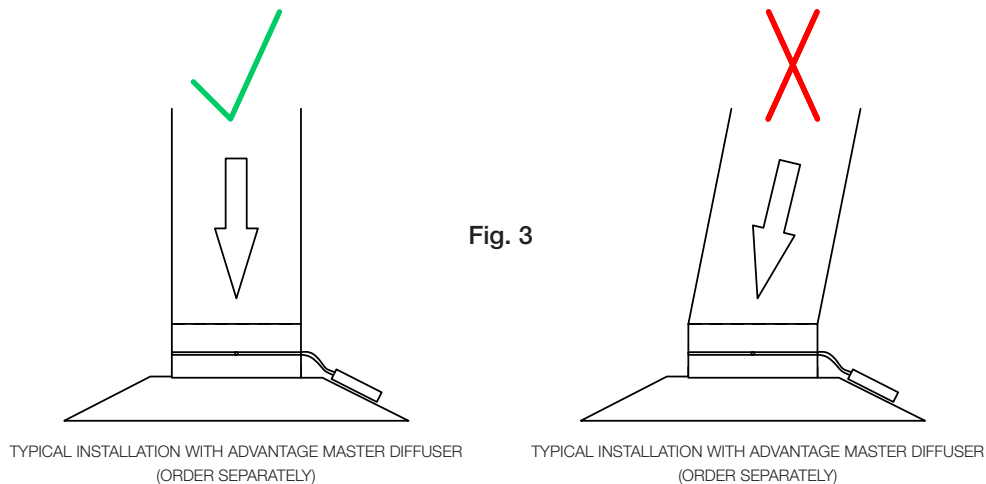


Fig. 3

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READING THE DMSA VALUES

The flow measurement is accurate to an average of 10% over the VAV diffuser's operating range down to a minimum flow as shown in Table 1. The sensitivity of the pressure transducer below these values will result in a flow reading of zero.

Inlet Size (in)	Min Flow Reading (cfm/l/s)	Average Accuracy (%)
6	14 / 7	10
8	26 / 12	10
10	44 / 21	10
12*	64 / 30	10

*Model ADVL 60in / 1500mm with 4 slots uses an oval inlet. DMSA not available for oval inlet.

The flow measurement may be read using the Advantage master LCD thermostat or over the BACnet network connected to the Advantage master diffuser with BACnet option. The units of measure may be switched between I-P (cfm) and SI (l/s or cmh) using the Advantage master LCD thermostat. Please see Display Navigation for instructions using the LCD thermostat. The following BACnet objects are used with the DMSA.

- AV41 Air-Flow
- AV42 K-Factor
- V43 Sensor connection status

Calibration

The DMSA comes factory calibrated and should not require field calibration. The factory K-Factors can be field adjusted if required by accessing the diffuser Service Menu through the LCD thermostat. Please see Display Navigation to access the menus. The factory K-Factors are shown below.

Factory Calibration K-Factors

Inlet Size	ADV Square	ADVR Round	ADVS Swirl	ADVL Linear
6	510	468	510	485
8	950	890	990	1050
10	1500	1250	1300	1660
12	2400	2330	2350	*

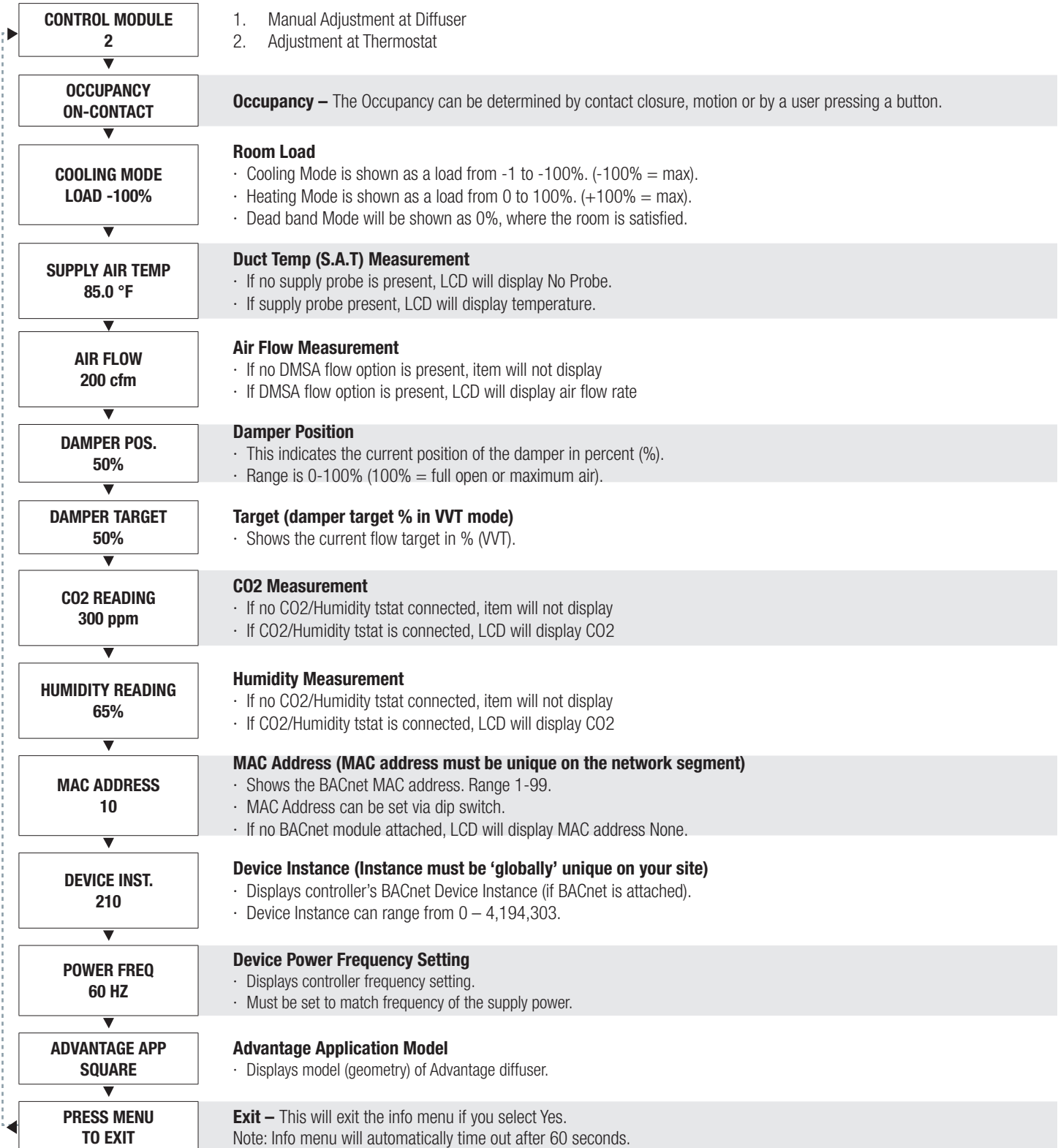
*Oval Inlet - DMSA not available

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Information Menu *LCD Stats Only*

The info menu shows information about the controller status regarding room load, damper position and BACnet address info. No values can be changed from this menu and it is not locked or protected in any way.

The **Info Menu** is accessed by pressing the **Menu** button, scroll through with **Up** and **Down** buttons.



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Service Menu *LCD Stats Only*

The **Service Menu** allows the balancer/installer to access to the controller setup to change settings. For example setting flows, heating outputs, etc.

Hold down **Menu** button for 5 seconds; display will show '**Passcode:**' Use the **Up** and **Down** buttons to enter the password in this sequence: **Down, Up, Up, Down**

VVT Menu

Pressure Dependent Mode

Scroll through with **Up** and **Down** buttons, press **Menu** button to apply your changes *---wait---* will display as changes are applied.

VVT	
▼	
DPR. COOL MIN* 0%	Cool Min Flow <ul style="list-style-type: none"> · Cool Min Flow in % · Range: 0-100% Default: 0%
▼	
DPR. COOL MAX.* 100%	Cool Max Flow <ul style="list-style-type: none"> · Cool Min Flow in % · Range: 0-100% Default: 100%
▼	
DPR. HEAT MIN* 0%	Heat Min Flow <ul style="list-style-type: none"> · Heat Min Flow in % · Range 0-100% Default: 0%
▼	
DPR.HEAT MAX* 100%	Heat Max Flow <ul style="list-style-type: none"> · Heat Max Flow in % · Range 0-100% Default: 100%
▼	
DPR. NEUTRAL 0%	Neutral Flow <ul style="list-style-type: none"> · Sets the neutral flow · Range 0-100% Default: 0%
▼	
UNOCC DPR POS* 0%	Unocc Dpr Pos <ul style="list-style-type: none"> · When Advantage is unoccupied damper will 'rest' at this position · Range: 0-100% Default: 0%
▼	
INLET SIZE* 10 INCHES	Inlet Size <ul style="list-style-type: none"> · Size of the diffuser inlet (factory set)
▼	
K FACTOR* 1500	K Factor <ul style="list-style-type: none"> · If no DMSA flow option is present, item will not display · Air flow calibration factor see DMSA manual for more details
▼	
AIR FLOW* 200 cfm	Air Flow Measurement <ul style="list-style-type: none"> · If no DMSA flow option is present, item will not display · If DMSA flow option is present, LCD will display air flow rate
▼	
FLOW UNITS* 200 cfm	Air Flow Measurement <ul style="list-style-type: none"> · If no DMSA flow option is present, item will not display · Units of measure for air flow adjustable to 'cfm', 'l/s', or 'cmh'
▼	
PRESS MENU* TO EXIT	Exit – This will exit the info menu if you select Yes Note: Info menu will automatically time out after 60 seconds

*Also available over BACnet network if diffuser has BACnet option installed.

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Troubleshooting

- Check duct elbow is aligned with cross flow and aligned with diffuser.
- Check Advantage diffuser has 24VAC power.
- Check tubing between cross flow and pressure sensor board is connected with high side to high side (red) and low side to low side (green).
- Check ribbon cable connection from pressure sensor board to master control board.
- Confirm 'Air Flow' is shown in Info Menu and Service Menu.

This document contains the most current product information as of this printing.
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