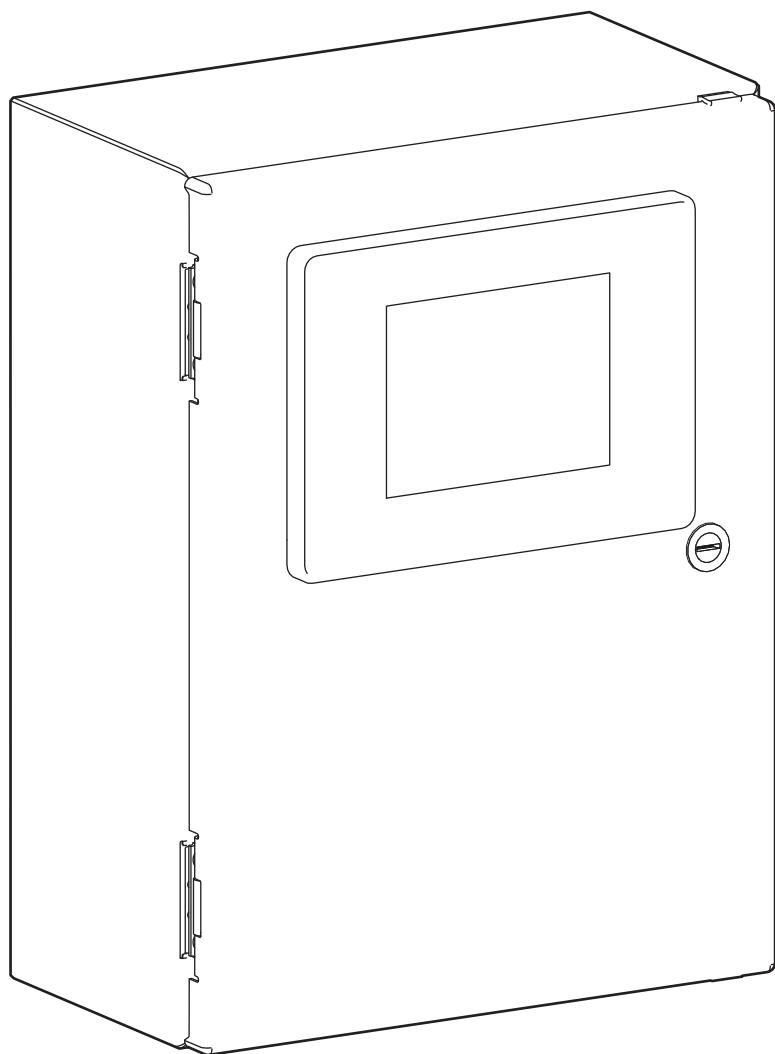




INSTALLATION GUIDE

Dewtect®



For help, call 1 (877) BIG-FANS
or visit www.bigassfans.com

READ AND SAVE THESE INSTRUCTIONS



WARNING AND CAUTION SYMBOL

Indicates a hazard with a medium level of risk that could result in injury or death or damage to property if not avoided



ELECTRICAL WARNING SYMBOL

Indicates an electrical hazard with a medium level of risk that could result in death or serious injury if not avoided



Installation Guide
Rev. Q
10/13/2022

Original English Instructions

Legal

Improper installation, delivery, or maintenance, including, but not limited to, any of the following actions by the customer or agent of the customer will constitute a breach of and will void all warranties:

- Failure to follow the required installation procedures specified in this Installation Guide and in all other documentation supplied with the fans and related equipment including documentation provided by the manufacturers of the individual fan and control components;
- Failure to follow all relevant codes and ordinances, including, but not limited to, the National Electric Code (United States), applicable national and local electrical codes, and state and local building codes;
- Failure to follow electrical engineering industry standards regarding the approved method of installing solid-state electrical equipment having the characteristics of the fans, the fan controls, and their related components, even if such standards are not specifically referenced in any instructions or literature supplied by Big Ass Fans or provided by manufacturers.

All trademarks used herein are the properties of their respective owners. No part of this document may be reproduced or translated into a different language without the prior written consent of Big Ass Fans. The information contained in this document is subject to change without notice. For the most up-to-date information, see the online installation guide at www.bigassfans.com

www.bigassfans.com/patents • www.bigassfans.com/product-warranties

IMPORTANT SAFETY INSTRUCTIONS

TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:

WARNING: This guide is intended to provide a basic overview for integrating Dewtect® with Big Ass Fans. Consult the installation guide included with each fan for additional installation and operation instructions.

WARNING: Risk of fire, electric shock, or injury to persons during cleaning and user-maintenance! Before installing or servicing this unit, switch power off at service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.

WARNING: The fan controllers contain high voltage capacitors which take time to discharge after removal of mains supply. Before servicing the fan controller, ensure isolation of mains supply from line inputs at the controller. Wait three minutes for capacitors to discharge to safe voltage levels. Failure to do so may result in personal injury or death. Note: Darkened display LEDs are not an indication of safe voltage levels.

CAUTION: Installation and electrical wiring must be done by qualified person(s) in accordance with the requirements specified in this installation manual and with any additional requirements set forth by the National Electric Code (NEC), ANSI/NFPA 70-2011, and all local codes. Code compliance is ultimately YOUR responsibility! Failure to comply with these codes could result in personal injury or property damage.

CAUTION: Exercise caution and common sense when powering the controller. Do not attempt to resolve electrical malfunctions or failures on your own. Contact Big Ass Fans if you have any questions regarding the installation of this controller.

CAUTION: When service or replacement of a component in the system requires the removal or disconnection of a safety device, the safety device is to be reinstalled or remounted as previously installed.

CAUTION: When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.

CAUTION: The Big Ass Fans product warranty will not cover equipment damage or failure caused by improper installation.

WARNING: This unit is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the unit by a responsible person. Children should be supervised to ensure that they do not play with the unit.

ATTENTION: If installing this unit for a fan in the United States, the fan must be installed per the following National Fire Protection Association (NFPA) guidelines:

- The fan must be centered approximately between four adjacent sprinklers.
- The vertical distance from the fan to the sprinkler deflector must be at least 3 ft (91.4 cm).
- The fan must be interlocked to shut down immediately upon receiving a waterflow signal from the alarm system.

Leave this installation guide with the owner of the facility after installation.

CONTENTS

Introduction	Important Safety Instructions	ii
	Technical Specifications	1
	Installation Overview	1
	System Overview	2
	Parts Included	3
Control Cabinet Installation	Location Requirements	4
	Wiring	4
Fan Setup and Wiring	Modbus Wiring Overview	5
	Modbus Cable Types and Distances	6
	Terminating or EOL Resistors	6
	Termination at the PLC	6
	Fire Alarm Interface Methods	7
	Setup and Wiring: Delta MS300 Series VFDs	8
	Setup and Wiring: 200–240 V & 400–480 V Delta E Series VFDs	10
	Setup and Wiring: Lenze SMVector VFDs	12
Fan Remote Operator Station (Optional)	Dimensions	15
	Installation	15
	Operation	15
	Remote Operator Station Wiring: Delta MS300 Series VFDs	16
	Remote Operator Station Wiring: 200–240 V & 400–480 V Delta E Series VFDs	17
	Remote Operator Station Wiring: Lenze SMVector VFDs	18
Analog Output Card	Analog Output Card	19
Sensor Installation	Indoor Temperature and Humidity Sensor	20
	Surface Temperature Sensor: Adhesive Thermocouple for Concrete	21
	Surface Temperature Sensor: Adhesive Thermocouple for Target Surface	22
	Outdoor Sensor	23
	Commissioning for Sensorless Mode	24
Wiring Diagrams	Wiring Diagram: 120/240 V	25
	Wiring Diagram: 480 V	26
Operation	Home Screen	27
	Configuring Security	28
	Setup	29
	Fan Connection & Fault Status	32
	Fan Drive Utility	32
	Data Logger	33
	Interface Configuration	33
BACnet Communications	Wiring	34
	Module Configuration as Shipped	35
	Changing the Module Configuration	35
	Detweck's Object Table	37
	Analog Input (AI) 8, System Status Word	38
	Starting and Stopping Fans	39
	Fan Faults and Resetting Faults	39
	Binary Inputs (BI) 6–10 and (BI) 12–14, Sensor Faults	39

Troubleshooting	Troubleshooting.....	40
Contact Us	Contact Us.....	41

INTRODUCTION

Dewtect® uses sensors and advanced algorithms to balance temperature and humidity with airflow to reduce the risk of condensation.

Technical specifications

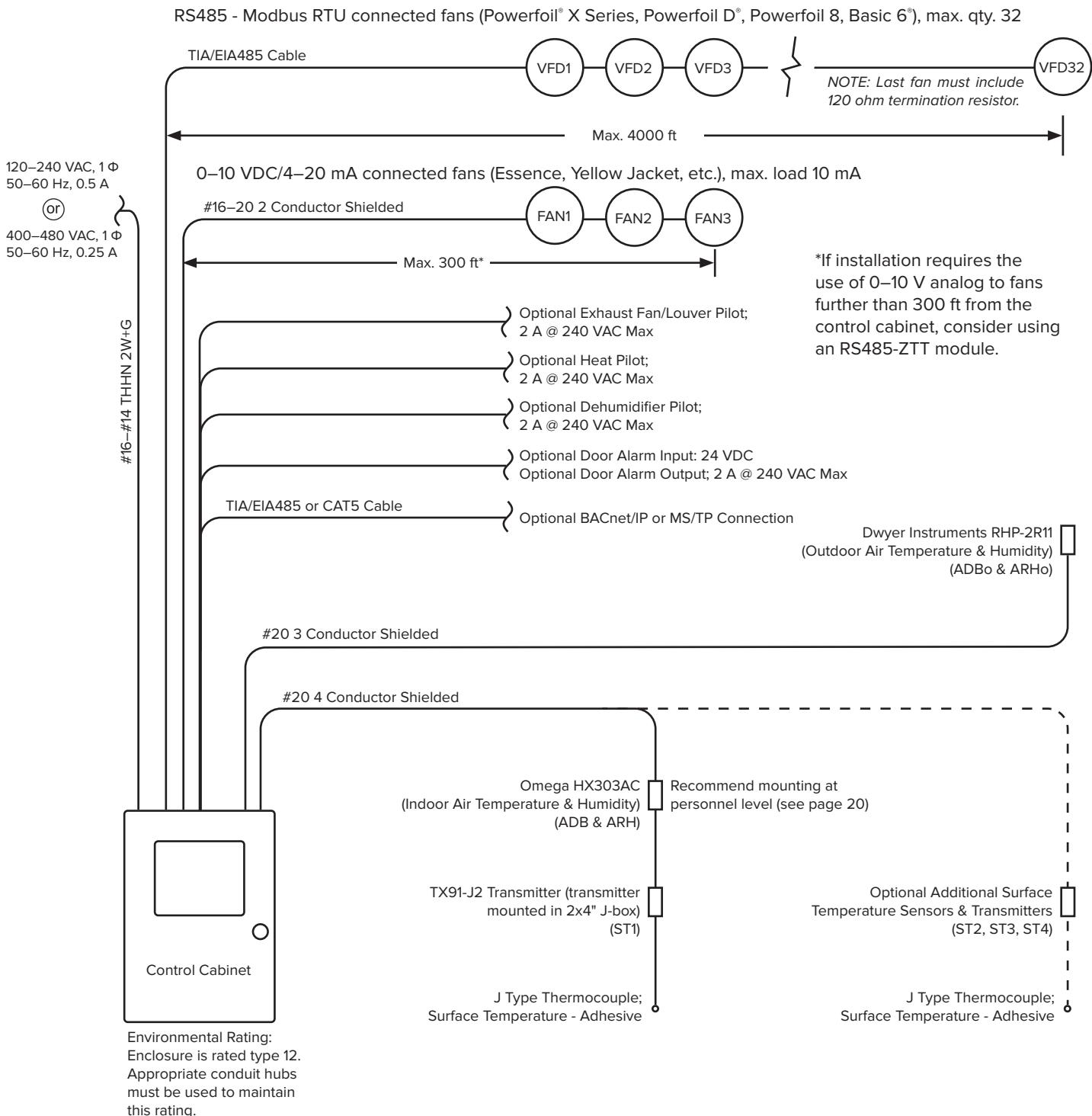
Compatible fans	Powerfoil® X, Powerfoil X2.0, Powerfoil X3.0 (240 V through 480 V), Powerfoil X4 (240 V through 600 V), Powerfoil D®, Powerfoil 8, Basic 6®, Essence®, Yellow Jacket® Optional: Fans controlled by 0–10 VDC analog
PLC cabinet	Type 12 electrical enclosure
Power supply	120/240 VAC, 1 Φ, 50–60 Hz 480 VAC, 1 Φ, 50–60 Hz
Touch screen	Display size: 7 in. (17.8 cm) Operating temperature: 32 to 122°F (0 to 50°C) Relative humidity: 0 to 95% noncondensing
Communication/ Fan control	Modbus RTU over a two-wire RS-485 network BACnet over LAN connection MS/TP over a two-wire RS485 network 0–10 VDC output

Installation overview

Pre-installation: Install fan(s) according to fan installation guide. Gather Dewtect parts and hardware. Read this guide.

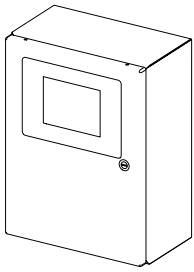
1. Install control panel and run power to cabinet (page 4).
2. Set up and wire fan(s) (page 5). Install fan remote operator station(s) if desired (page 15).
3. Install sensors (page 20).
4. If heat control is desired, connect control panel to heaters or thermostats. If exhaust fan control is desired, connect control panel to exhaust fan motor starters. Refer to wiring diagram on page 25 or page 26.
5. Turn on and configure Dewtect (page 27).
 - If desired, configure password (page 28).
 - Perform basic setup and sensor calibration.
 - If desired, make sure recording data to MicroSD card is enabled. *Note: For commissioning of Sensorless Mode, data must be logged on the MicroSD card for at least two weeks.*
 - *Configure BACnet communications if required*
6. On the Home screen, touch **Auto** to enable automated fan control.

System overview



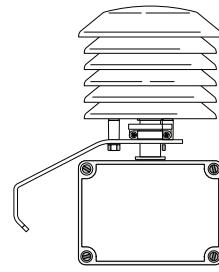
Parts included

Control cabinet



Contains touch screen, power supply, and programmable logic controller (PLC)

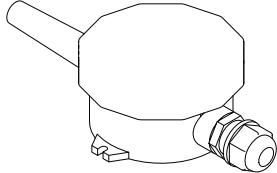
Outdoor sensor



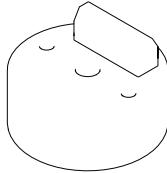
Temperature and humidity sensor

*Water-tight enclosure with gasketed screw-on cover.
For ambient temperature -40° to 140°F (-40° to 60°C).*

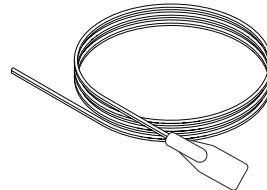
Indoor sensors¹



Ambient temperature & humidity
transmitter (4–20 mA, NEMA type 4)



Surface temperature transmitter
(4–20 mA, NEMA type 4)

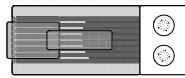


Adhesive thermocouple

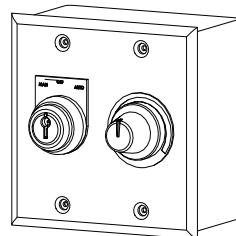
Fan parts and hardware



120 Ω, 1/4 W resistor



RJ45 to Modbus connector
for Delta E series VFD²



Remote operator station³

1. VHB tape also included. Up to three additional surface temperature sensors can be purchased separately.

2. An RJ45 to Modbus connector is required for each fan with a Delta E series VFD.

3. Included only if ordered. A remote operator station is required for each fan for which local control is desired.

CONTROL CABINET INSTALLATION

- ⚠ **WARNING:** Disconnect all fans from power supply before installing Dewtect®.
- ⚠ **WARNING:** Installation must be in accordance with the National Electrical Code, ANSI/NFPA 70-2011, and all local codes. The procedures and techniques outlined in this manual are merely a guide for proper installation. Code compliance is your responsibility! Failure to comply with these codes could result in personal injury or property damage.
- ⚠ **WARNING:** To reduce the risk of electric shock, wiring should be performed by a qualified electrician! Incorrect assembly can cause electric shock or damage the fan motor, fan controller, and Dewtect! Hazard of electrical shock!

Location requirements

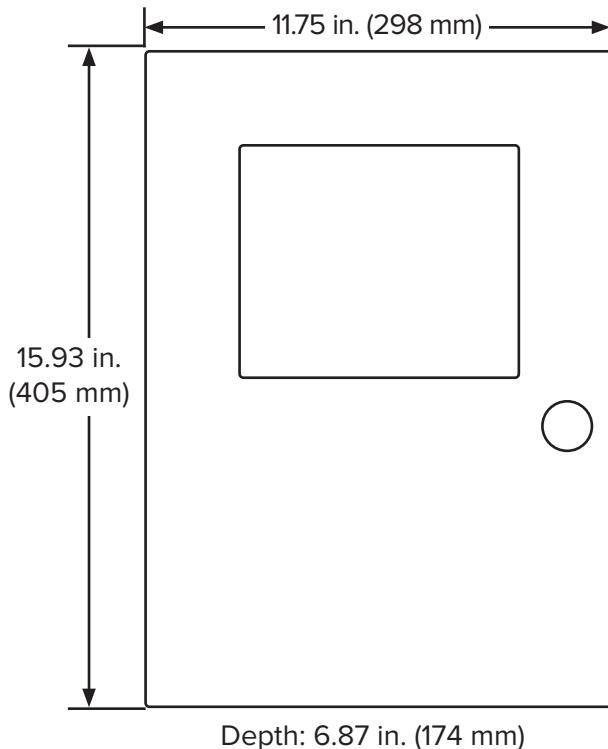
Mount the control cabinet on a flat surface that meets the following requirements:

- Free from vibration
- Not in direct sunlight
- Adequate distance from foreign objects or moving equipment
- Readily accessible and meets the requirements of OSHA standard 29 CFR 1910.303(g)

Refer to the dimensions below as you select a location to mount the cabinet. *Note: Drawing is not to scale.*

Wiring

To wire the control cabinet, refer to “System Overview” and the wiring diagrams on pages 25–26. For wiring to fans and sensors, refer to “Fan Setup and Wiring” and “Sensor Installation” and “BACnet Installation.”



FAN SETUP AND WIRING

⚠ WARNING: The fan controllers contain high voltage capacitors which take time to discharge after removal of mains supply. Before working on the fan controller, ensure isolation of mains supply from line inputs at the fan controller's disconnect (L1, L2/N, L3). Wait three minutes for capacitors to discharge to safe voltage levels. Failure to do so may result in personal injury or death. Note: Darkened display LEDs are not an indication of safe voltage levels.

⚠ WARNING: To reduce the risk of electric shock, wiring should be performed by a qualified electrician! Incorrect assembly can cause electric shock or damage the fan motor, fan controller, and Dewtect®! Hazard of electrical shock!

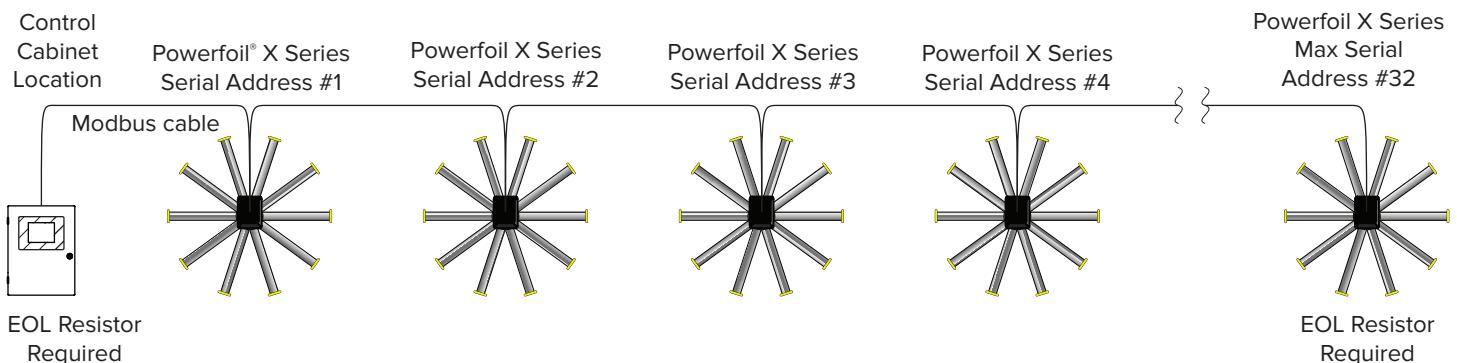
⚠ WARNING: Installation must be in accordance with the National Electrical Code, ANSI/NFPA 70-2011, and all local codes. The procedures and techniques outlined in this manual are merely a guide for proper installation. Code compliance is your responsibility! Failure to comply with these codes could result in personal injury or property damage.

Modbus wiring overview

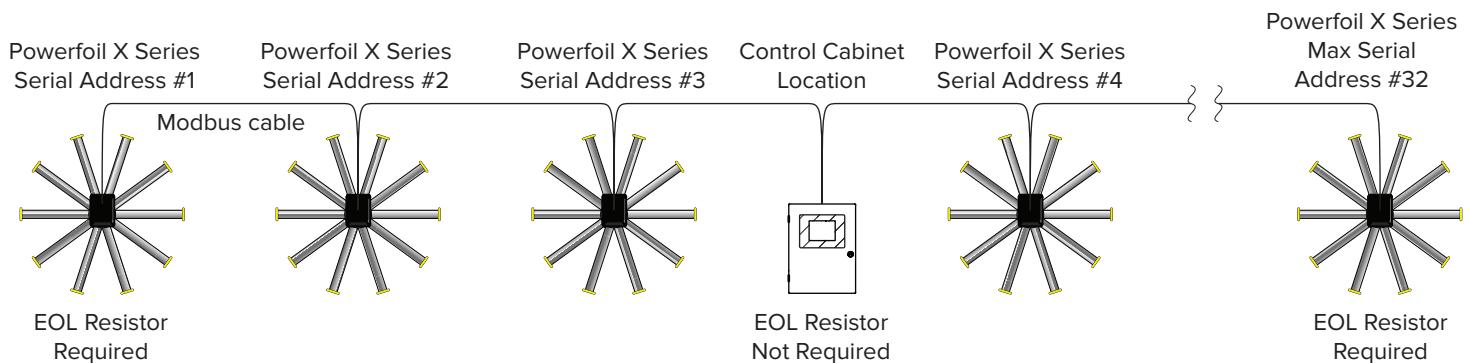
Dewtect uses the Modbus RTU protocol to communicate to fans over a two-wire RS-485 network. Each fan requires a unique serial address for the controller to function properly. The following pages detail the setup and connections unique to each supported type of fan.

Two basic wiring layouts are shown below. The first illustrates multiple daisy chained drops with the PLC located on one end of the Modbus loop. The second illustrates the same fan drop arrangement with the PLC in a central location. Either scenario will handle up to 32 sequential serial addresses.

Modbus loop: PLC located at one end



Modbus loop: PLC in a central location



Modbus cable types and distances

Dewtect® has a solid signal strength on a 4,000-ft (1,219.2-m) Modbus loop. (Big Ass Fans also offers a repeater kit that can aid with excessive cabling lengths and allows “T”s in the network. For more information, contact Customer Service.)

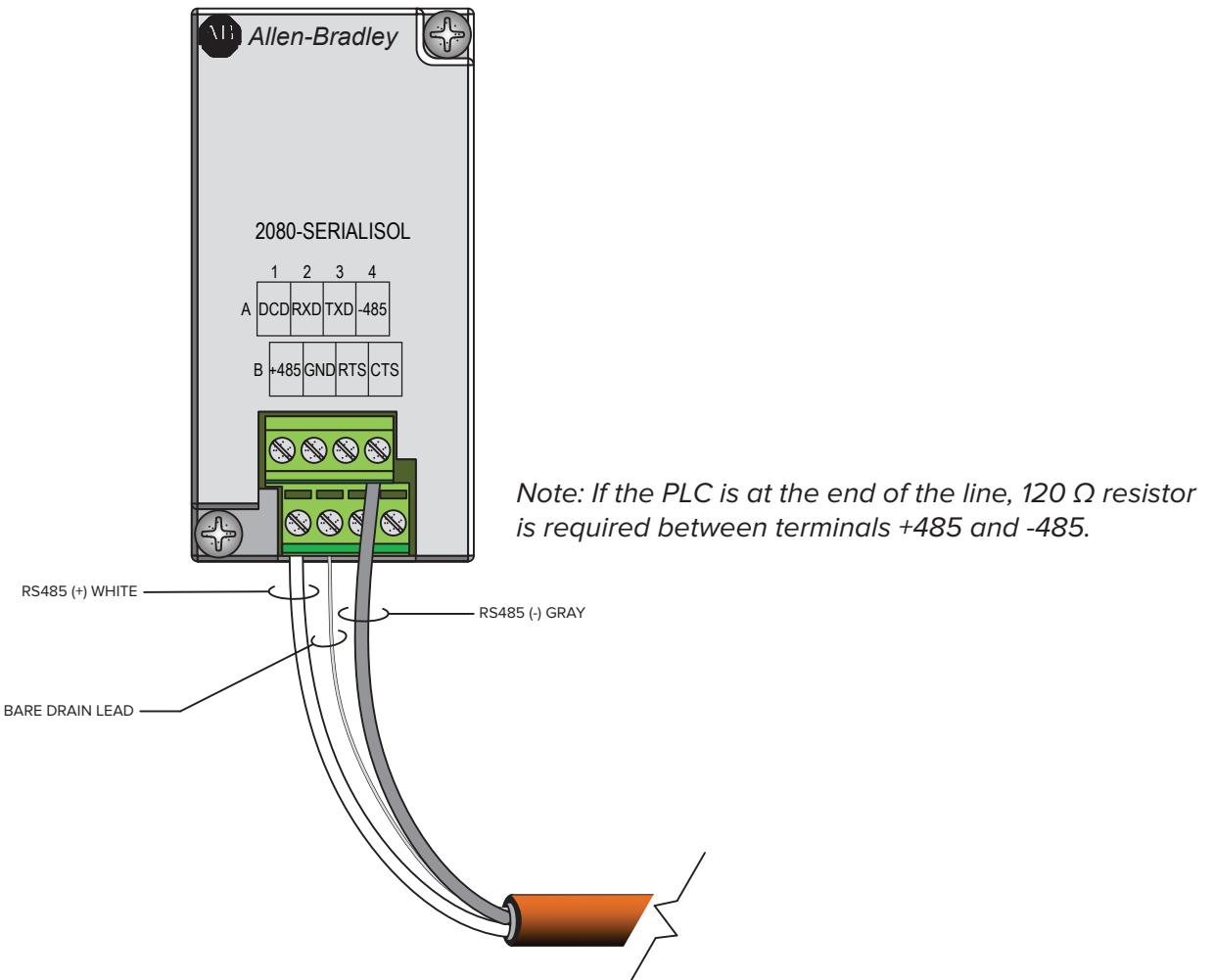
Cable used for Dewtect installation must meet TIA/EIA-485 standards for use on RS-485 networks. Manufacturers that make acceptable cable include Carol®, Alpha Wire, Tyco/Raychem®, and Belden. (This installation guide shows Windy City Wire Modbus cable in all illustrations.)

Terminating or EOL resistors

A number of 120 Ω, 1/4 W resistors are included in the provided hardware. As illustrated on the following pages, an end of line (EOL) resistor must be placed across the Modbus high and Modbus low (+485/A and -485/B) terminals at the first and last device in a Modbus cable run, even if it is only a single run between the PLC and a single fan.

Termination at the PLC

The illustration below shows the Modbus termination at the PLC. For detailed wiring diagrams, see pages 25–26.



Note: The wire colors shown are applicable to Windy City Wire Modbus cable only. Other cable types may differ. Take note of color/polarity if using a different model of cable. The reference line may be omitted on some brands of cable.

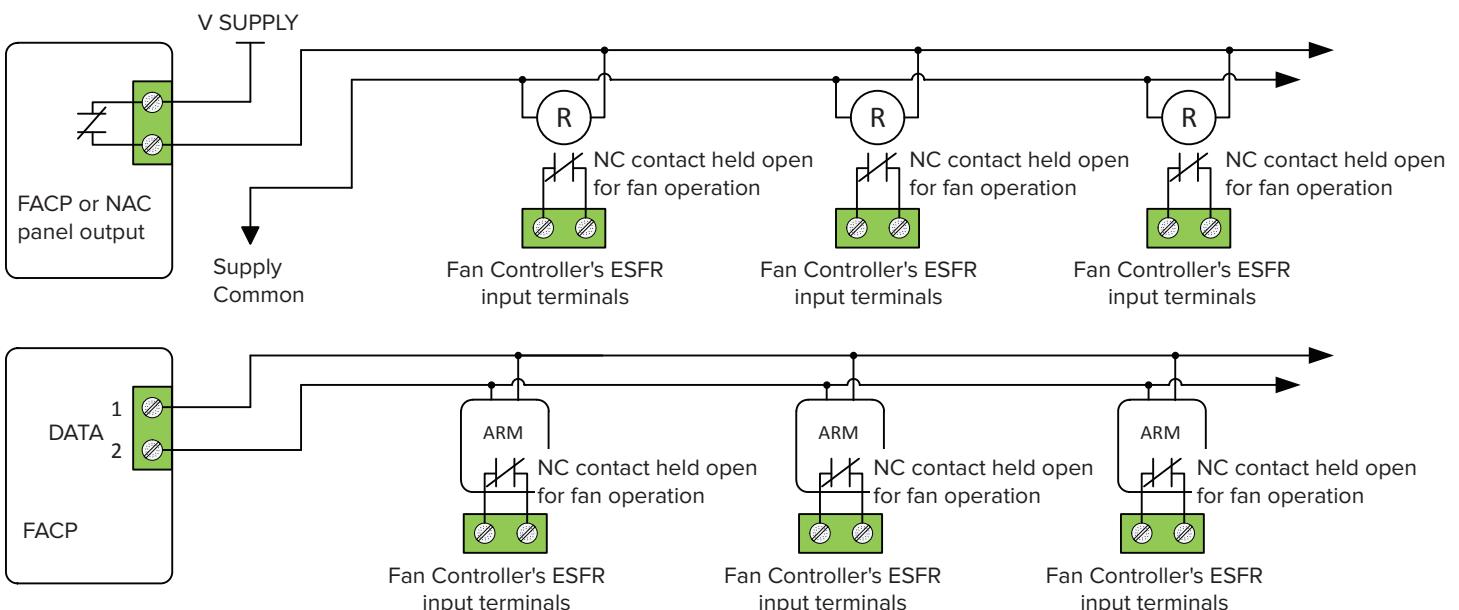
Fire alarm interface methods

The most common method for interfacing fans with a fire alarm system is to provide a dry relay contact to each fan. The relay coil remains energized by either a Fire Alarm Control Panel (FACP) or Notification Appliance Circuit (NAC). Proper implementation requires the relay to remain energized thus holding open the relay's Normally Closed (N.C.) contact which enables fan operation. The relay's dry contact is applied to a fan control's run enable input.

An alarm condition or circuit integrity failure opens the relay contact thus resulting in a fan shutdown. In newer systems, this relay is replaced with addressable Alarm Release Module (ARM).

The fire alarm must be interfaced at the fans per NFPA 13; the Dewtect® cabinet does not include an ESFR interface. See the installation guide included with your fans for wiring diagrams.

Typical circuit layout



Setup and wiring: Delta MS300 Series VFDs

 **WARNING:** The fan controllers contain high voltage capacitors that take time to discharge after removal of mains supply. Before working on the fan controller, ensure isolation of mains supply from line inputs at the fan controller's disconnect if installed. Wait three (3) minutes for capacitors to discharge to safe voltage levels. Failure to do so may result in personal injury or death. Darkened display LEDs are not an indication of safe voltage levels.

Powerfoil® X4 fans

To enable the fan to connect to Dewtect®:

1. With the fan powered and the BAFCon controller (provided with the fan) connected, change the fan's Modbus address. Each fan is programmed with a random address between 1–247. **You will need to change each fan you are connecting to Dewtect to a unique address between 1–32.** On the BAFCon Home screen, tap the menu icon, and then tap **FAN MANAGEMENT > Fan Name > Fan Settings**. The Modbus address is displayed at the bottom of the screen. Tap **CHANGE** to change the address, and then follow the instructions on the screen.
2. Record the Modbus address. You will need to know the address when setting up and using Dewtect.
3. Disconnect AC mains power from the fan via the twist-lock plug or other means.
4. Install the Modbus cable into the VFD enclosure with the appropriate fitting, such as a cord grip connector or other suitable connector.
5. Disconnect the wall controller data and power connections: SG+, SG-, +24V, and DCM.
6. Connect the Modbus cable as shown on the following page. Pay special attention to the polarity for Data+ and Data- (white and gray) throughout the system installation. The cable shield's drain lead and reference line (if present) shall connect to the VFD's "SGND" (signal ground) terminal.
7. Reinstall the VFD enclosure cover and reapply power to the fan. Dewtect will now be able to connect to this fan.

Note: A Modbus data loop wire break will result in a communications loss and subsequent fan shutdown.

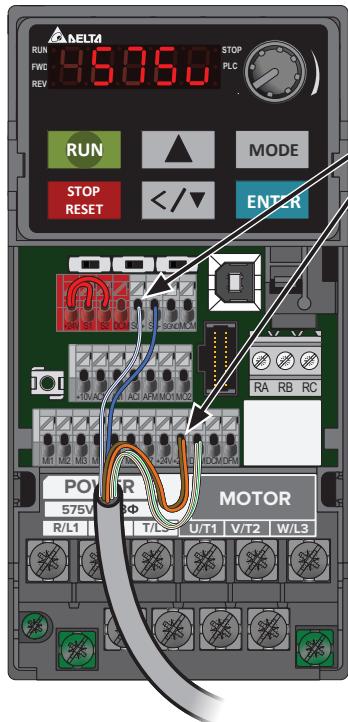
Alternatively, the remote operator station can be installed.

Fan parameters

All parameters for using Delta MS300 Series VFDs with Dewtect are programmed at the factory except for fan addresses. If you want to view or modify fan parameters, you can use the Dewtect Fan Drive Utility. On the Dewtect Home screen, tap **Setup > 2 of 2 > Configure Fans > Fan Drive Utility**, and then specify the address to view or edit. Each fan address must be set from 1–32 for the Dewtect system via VFD parameter 09.00. Fans are not automatically discovered. Addresses can be set using a standard controller or BAFCon controller.

You can also view/modify parameters by reconnecting the BAFCon controller and contacting Customer Service. Big Ass Fans recommends storing the BAFCon controller, CAT5 power tap, and controller cable near the fan in case you need to reconnect them.

To view or modify fan parameters with BAFCon, tap the menu icon on the BAFCon Home screen, and then tap **FAN MANAGEMENT > Fan Name > Diagnostics > VFD Parameters**. Follow the instructions on the screen for contacting Customer Service.

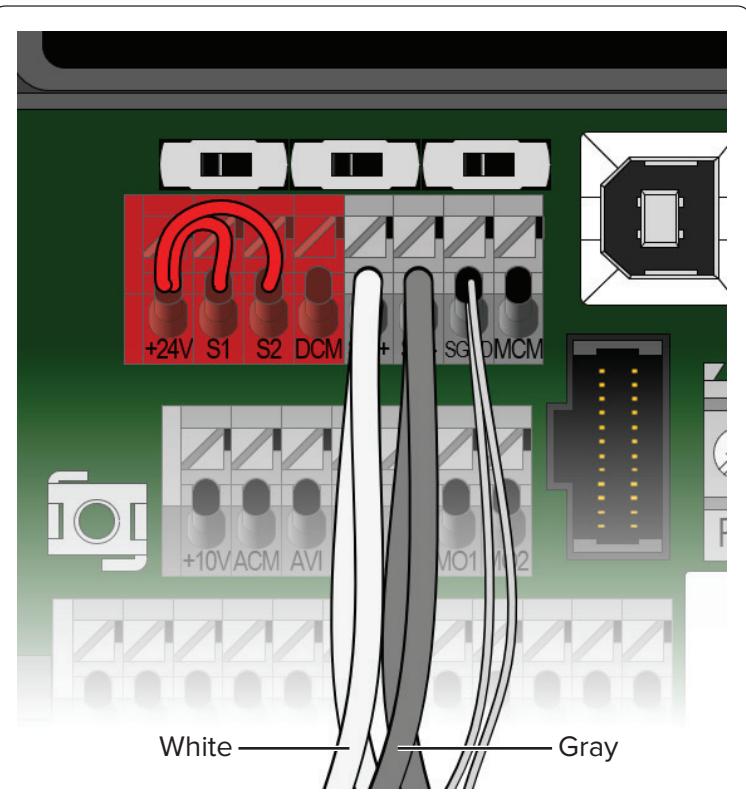


Disconnect existing wall controller wiring from SG+, SG-, +24V, and DCM

White (Data +) to SG+
Gray (Data -) to SG-
Shields to SGD



Modbus Cable from Dewtect® Cabinet
Modbus Cable Out to Next Fan (if applicable)



White Gray

Note: The wire colors shown above are applicable to Windy City Wire Modbus cable only. Other cable types may differ. Take note of color/polarity if using a different model of cable.

Setup and wiring: 200–240 V & 400–480 V Delta E Series VFDs

⚠ WARNING: The fan controllers contain high voltage capacitors that take time to discharge after removal of mains supply. Before working on the fan controller, ensure isolation of mains supply from line inputs at the fan controller's disconnect if installed. Wait three (3) minutes for capacitors to discharge to safe voltage levels. Failure to do so may result in personal injury or death. Darkened display LEDs are not an indication of safe voltage levels.

Powerfoil® X, Powerfoil X2.0, and Powerfoil X3.0 fans

To enable the fan to connect to Dewtect®:

1. Remove the VFD enclosure cover. Connect the BAFCon controller (provided with the fan) to the VFD by plugging the controller cable into the VFD's CAT5 power tap. Apply power to the fan.
2. Change the fan's Modbus address. Each fan is programmed with a random address between 1–247. **You will need to change each fan you are connecting to Dewtect to a unique address between 1–32.** On the BAFCon Home screen, tap the menu icon, and then tap **FAN MANAGEMENT > Fan Name > Fan Settings**. The Modbus address is displayed at the bottom of the screen. Tap **CHANGE** to change the address, and then follow the instructions on the screen.
3. Record the Modbus address. You will need to know the address when setting up and using Dewtect.
4. Disconnect AC mains power from the fan via the twist-lock plug or other means.
5. Install the Modbus cable into the VFD enclosure with the appropriate fitting, such as a cord grip connector or other suitable connector.
6. Disconnect the controller cable from the CAT5 power tap, and then disconnect the power tap from the VFD's RJ45 port and low voltage terminals. Refer to the illustration on the right.
7. Connect the data cable as shown on the following page. Pay special attention to the polarity for MBA, MBB. Note: *It is helpful to plug the data port screw terminal block into the drive prior to termination. BE MINDFUL of the tightening torque. The VFD's data port can be damaged by excessive force applied on the screw heads. The cable shield's drain lead and reference line (if present) connect to the VFD's Analog Common terminal (ACM).*
8. Reinstall the VFD enclosure cover and reapply power to the fan. Dewtect will now be able to connect to this fan.

Note: A Modbus data loop wire break will result in a communications loss and subsequent fan shutdown.

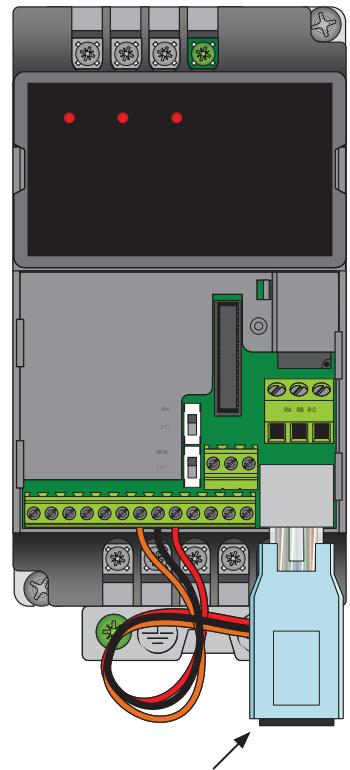
Alternatively, the remote operator station can be installed.

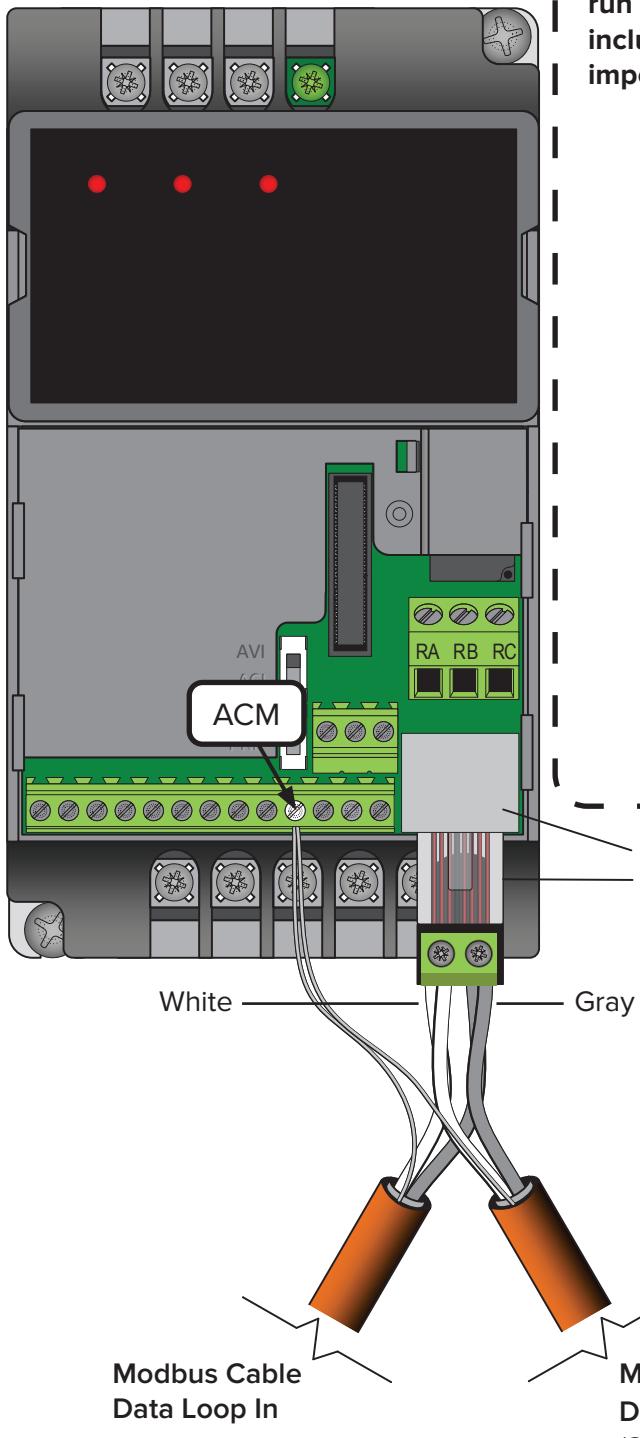
Fan parameters

All parameters for using Delta E Series VFDs with Dewtect are programmed at the factory except for fan addresses. If you want to view or modify fan parameters, you can use the Dewtect Fan Drive Utility. On the Dewtect Home screen, tap **Setup > 2 of 2 > Configure Fans > Fan Drive Utility**, and then specify the address to view or edit. Each fan address must be set from 1–32 for the Dewtect system. Fans are not automatically discovered. Addresses can be set using a standard controller, Delta keypad controller, or BAFCon controller.

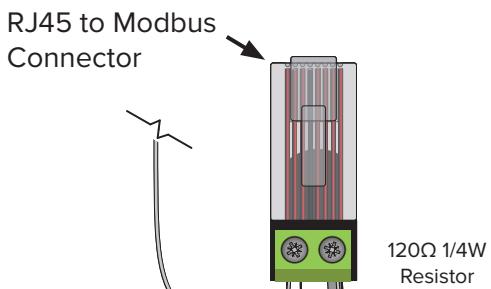
You can also view/modify parameters by reconnecting the BAFCon controller and contacting Customer Service. Big Ass Fans recommends storing the BAFCon controller, CAT5 power tap, and controller cable near the fan in case you need to reconnect them.

To view or modify fan parameters with BAFCon, tap the menu icon on the BAFCon Home screen, and then tap **FAN MANAGEMENT > Fan Name > Diagnostics > VFD Parameters**. Follow the instructions on the screen for contacting Customer Service.





It is important that the last device connected on a run of Modbus cable (single or multiple devices) includes an EOL resistor to maintain proper cable impedance.



RJ45 Port
RJ45 / Screw Terminal Adapter

Gray

White

Modbus Cable
Data Loop In

Modbus Cable
Data Loop Out if applicable
(See note above regarding EOL resistor)

Note: The wire colors shown above are applicable to Windy City Wire Modbus cable only. Other cable types may differ. Take note of color/polarity if using a different model of cable.

Setup and wiring: Lenze SMVector VFDs

 **WARNING:** The fan controllers contain high voltage capacitors that take time to discharge after removal of mains supply. Before working on the fan controller, ensure isolation of mains supply from line inputs at the fan controller's disconnect if installed. Wait three (3) minutes for capacitors to discharge to safe voltage levels. Darkened display LEDs are not an indication of safe voltage levels.

Powerfoil® 8 and Basic 6® fans

 **WARNING:** Before making parameter changes, ensure fan is stopped and jumper wires are removed.

Parameter	Default setting	Action
P100: Start Stop Control	3	Confirm set to 3
P101: Speed Reference	0	Confirm set to 0
P116: Remote Speed Reference	6	Confirm set to 6
P122: Terminal 13B Function	9	Confirm set to 9
P199: Program Selection	0	Confirm set to 0
P400: Communication Protocol	2	Confirm set to 2
P410: Modbus Address	1	Set to 1–32 (must be unique to fan)
P411: Baud Rate	2	Confirm set to 2
P412: Communication Format	2	Confirm set to 2
P422: Network Stop	2	Confirm set to 2
P425: Communication Timeout	30.0 sec	Confirm set to 30.0 sec
P426: Timeout Action	4	Confirm set to 4

Make parameter changes before disconnecting the wall controller cable from the VFD and proceeding with fan power down and Modbus loop termination.

To confirm or change fan parameters:

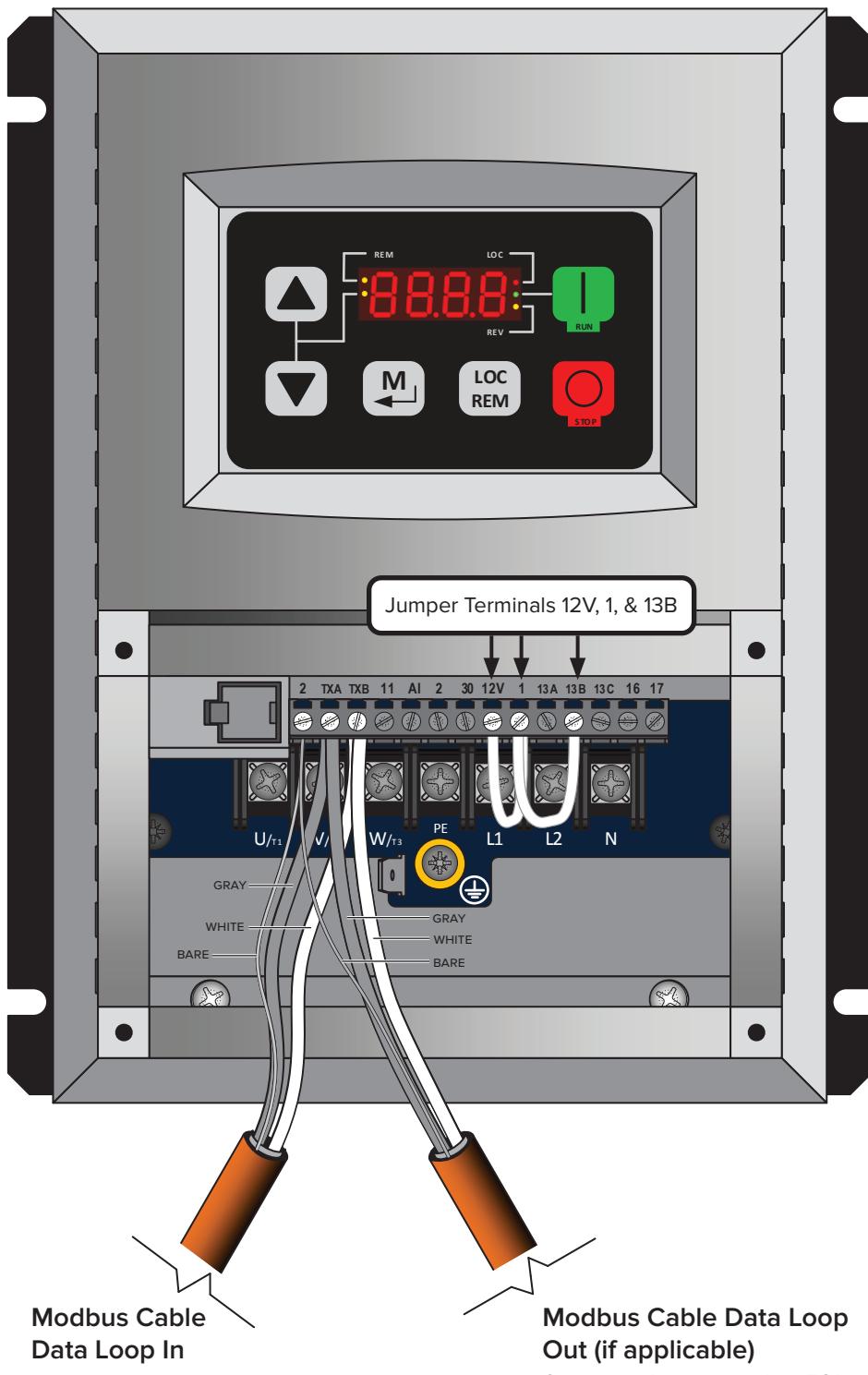
1. Press  on the wall controller to enter programming mode.
2. Press  or  until the desired parameter is displayed.
3. Press  to view the current setting.
4. Press  or  to change the setting (if necessary).
5. Press  to save the change.

Repeat the steps above to confirm or change parameters. When the last change is completed, the controller will return to the normal operational screen.

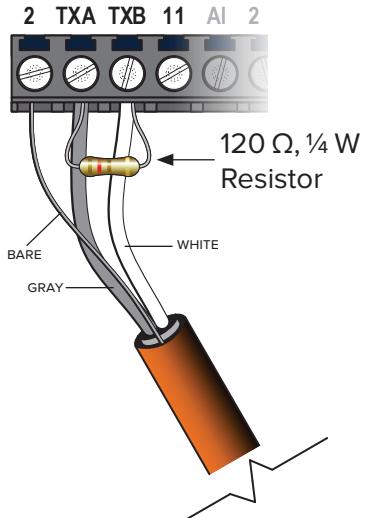
Final connections

1. Disconnect AC mains power from the fan via the included rotary disconnect or other means, and then wait for a darkened LED display on the wall controller.
2. Remove the lower VFD cover and install the Modbus cable into the main drive housing with the appropriate fitting, e.g., cord grip connector or EMT connector.
3. Install jumpers between terminals 12, 1, and 13B.
4. Connect the data cable as shown on the following page. Pay special attention to the polarity for Data(+) and Data(-). The cable's shield and drain line (if present) land on terminal 2 (DC Common) on the VFD.
5. Reinstall the VFD's lower cover while being mindful of the bare drain leads slack (if present). Incidental contact between the drain lead and the VFD's input/output leads can result in catastrophic damage to all other devices on the Modbus loop!
6. Reapply power to the fan. Dewtect® will now be able to connect to this fan.

Note: A Modbus data loop wire break will result in a communications loss and subsequent fan shutdown.



It is important that the last fan connected on a run of Modbus cable (regardless of fan quantity) includes an EOL resistor to maintain proper cable impedance as shown.

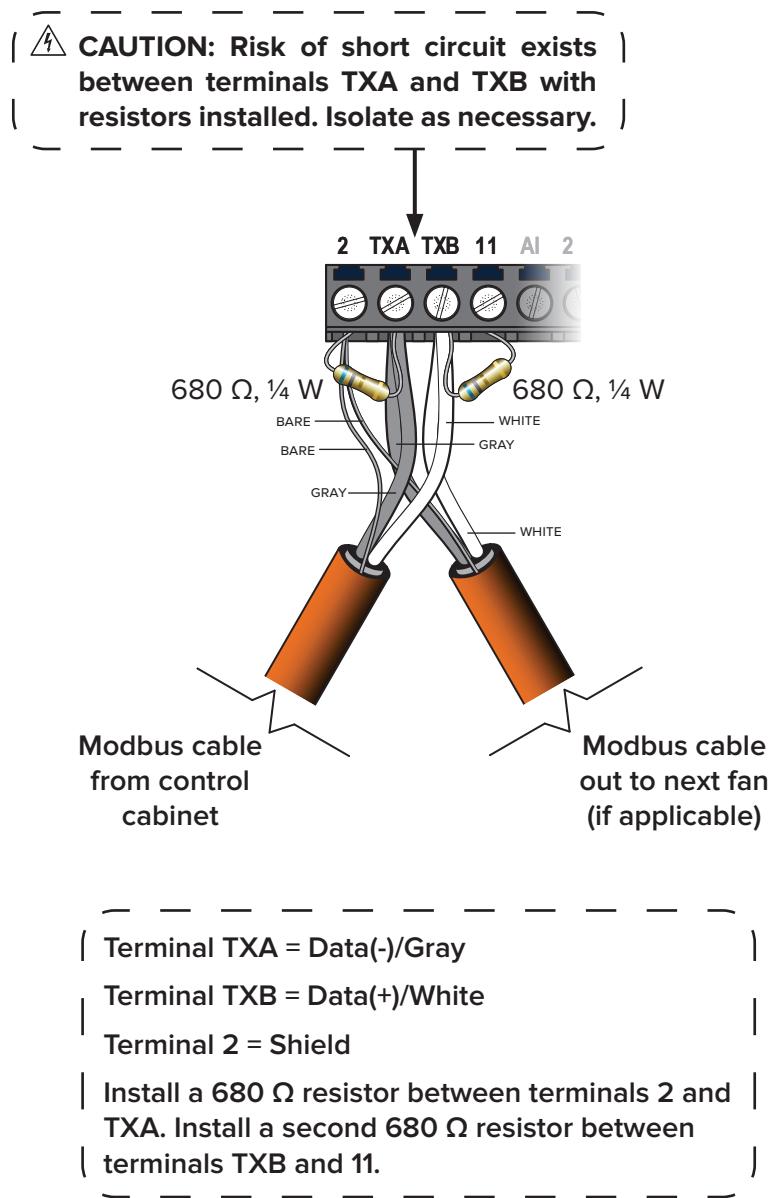


{ Terminal TXA = Data(-)/Gray
Terminal TXB = Data(+)/White
Terminal 2 = Shield }

Note: The wire colors shown above are applicable to Windy City Wire Modbus cable only. Other cable types may differ. Take note of color/polarity if using a different model of cable.

RS-485 network biasing

Depending on the design of the RS-485 transmitters and receivers, biasing resistors may be required for proper data transmission. The biasing resistors keep the data lines on the system at a fixed level while the transmitters are in an idle state. Without these resistors, data corruption or data packet loss can occur. The SMVector drives fall within these requirements; therefore, a pair of $680\ \Omega$, $\frac{1}{4}\ W$ resistors must be installed on either the first or last SMVector drive in the network series. Due to the presence of a $120\ \Omega$ resistor at the end of the line, Big Ass Fans recommends installing the $680\ \Omega$ resistors at the first fan location to prevent clutter on the terminal strip.

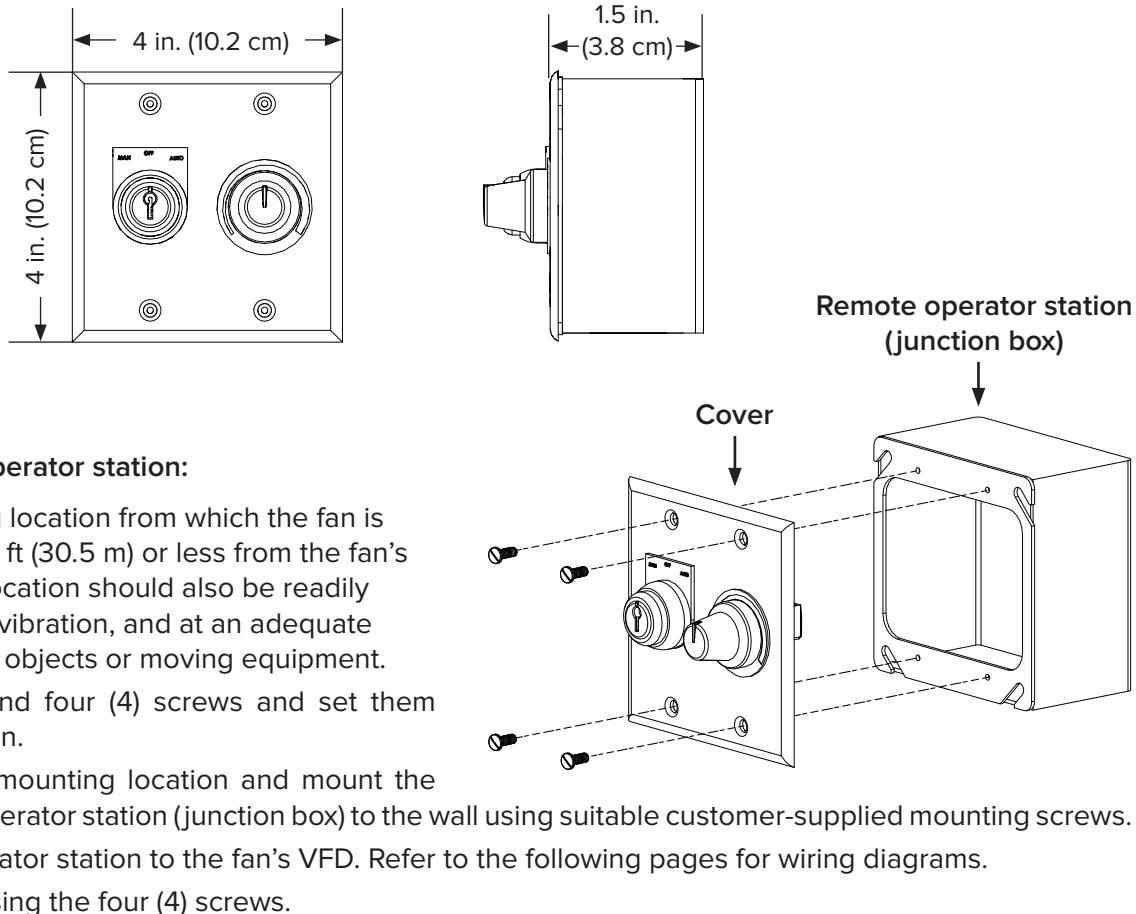


Note: The wire colors shown are applicable to Windy City Wire Modbus cable only. Other cable types may differ. Take note of color/polarity if using a different model of cable.

FAN REMOTE OPERATOR STATION (OPTIONAL)

⚠ WARNING: Disconnect all fans from power supply before installing a remote operator station.

The remote operator station lets you switch between Dewtect® fan control and local fan control. One remote operator station is required for each fan you plan to control locally. Each remote operator station must be wired to the fan it will control and can be mounted up to 100 ft (30.5 m) from the fan's VFD. The following pages describe how to mount and operate the remote operator station and how to wire it to each supported VFD. Note: *The required 6-conductor (20 AWG minimum) cable is not provided. Big Ass Fans recommends Belden 5504UE or similarly rated cable.*



Installation

To mount the remote operator station:

1. Select a flat mounting location from which the fan is visible and that is 100 ft (30.5 m) or less from the fan's VFD. The mounting location should also be readily accessible, free from vibration, and at an adequate distance from foreign objects or moving equipment.
2. Remove the cover and four (4) screws and set them aside in a safe location.
3. Route power to the mounting location and mount the back of the remote operator station (junction box) to the wall using suitable customer-supplied mounting screws.
4. Wire the remote operator station to the fan's VFD. Refer to the following pages for wiring diagrams.
5. Reattach the cover using the four (4) screws.

Operation

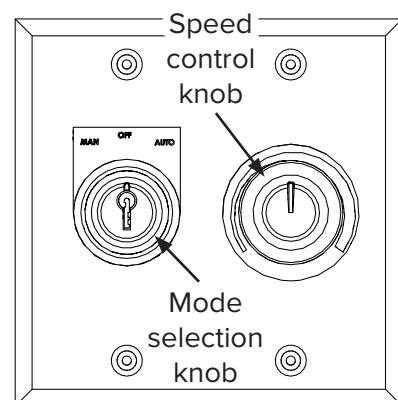
The remote operator station consists of a mode selection knob and a speed control knob. Use the provided key to turn the mode selection knob. *To prevent unauthorized access to the remote operator station, do not leave the key in the mode selection knob!*

To control the fan using Dewtect, turn the mode selection knob to the AUTO position.

To start the fan locally, turn the mode selection knob to the MANUAL position.

To stop the fan locally and lock it out, turn the mode selection knob to the OFF position.

To adjust fan speed locally, make sure the mode selection knob is turned to the MANUAL position, and then rotate the speed control knob to the desired speed setting.



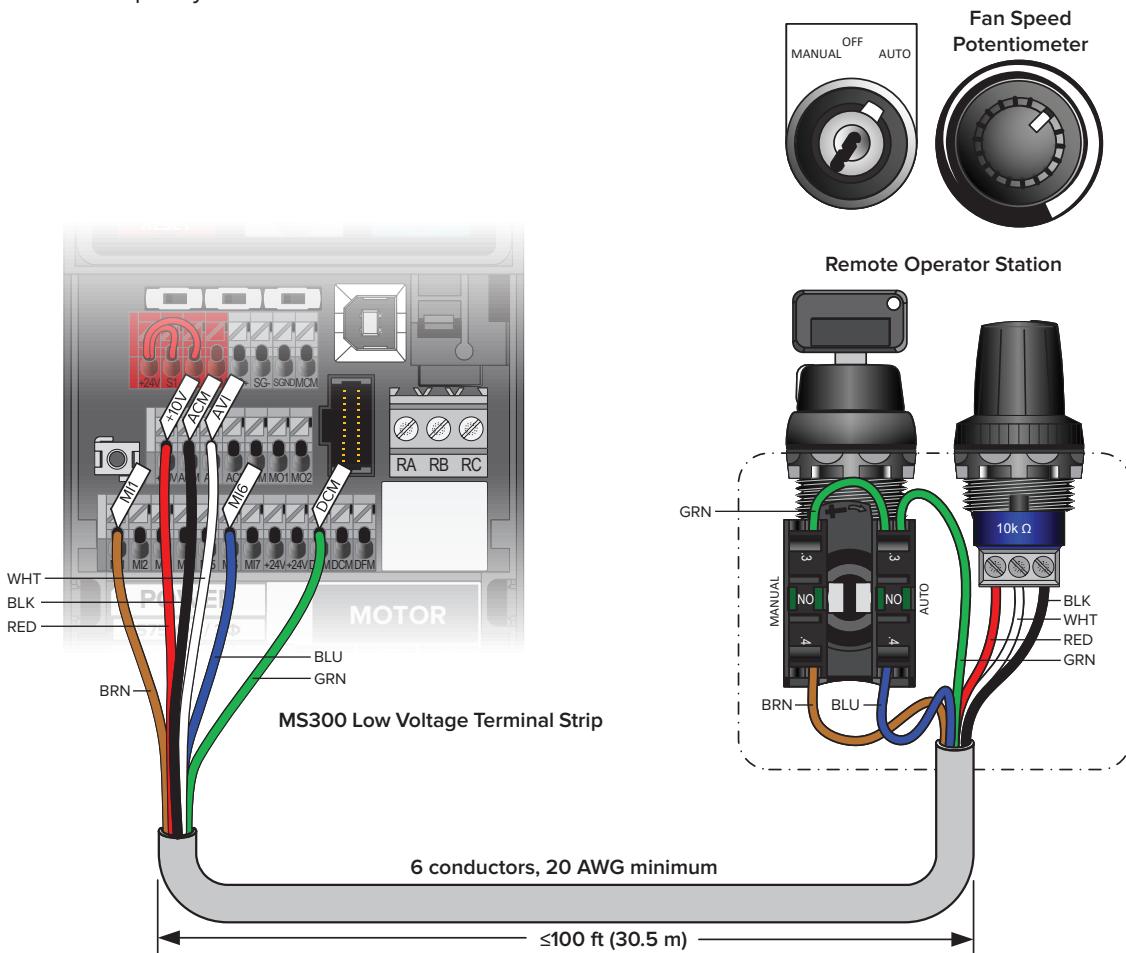
Remote operator station wiring: Delta MS300 Series VFDs

⚠️ WARNING: The fan controllers contain high voltage capacitors that take time to discharge after removal of mains supply. Before working on the fan controller, ensure isolation of mains supply from line inputs at the fan controller's disconnect if installed. Wait three (3) minutes for capacitors to discharge to safe voltage levels. Darkened display LEDs are not an indication of safe voltage levels.

Powerfoil® X4 fans

The addition of the remote operator station allows the user to select "Auto" to enable fan control via Dewtect®. Fan "Off" or "Manual" allows the user to start the fan locally or turn it off and lock it out. Manual mode allows use of the included speed potentiometer for fan speed reference.

IMPORTANT: Most drawings for the Delta MS300 and E Series VFDs show that I/O wiring is referenced to DCM (0VDC). This is because the drive is set to NPN operation from the factory. If the fan has been configured with the optional occupancy sensor, the drive has been set up for PNP operation with I/O referencing +24VDC. Therefore, using the illustration below as an example, the green wire would land on +24VDC, and the assertion level switch would be set to PNP. Refer to the instructions that came with the occupancy sensor for details.



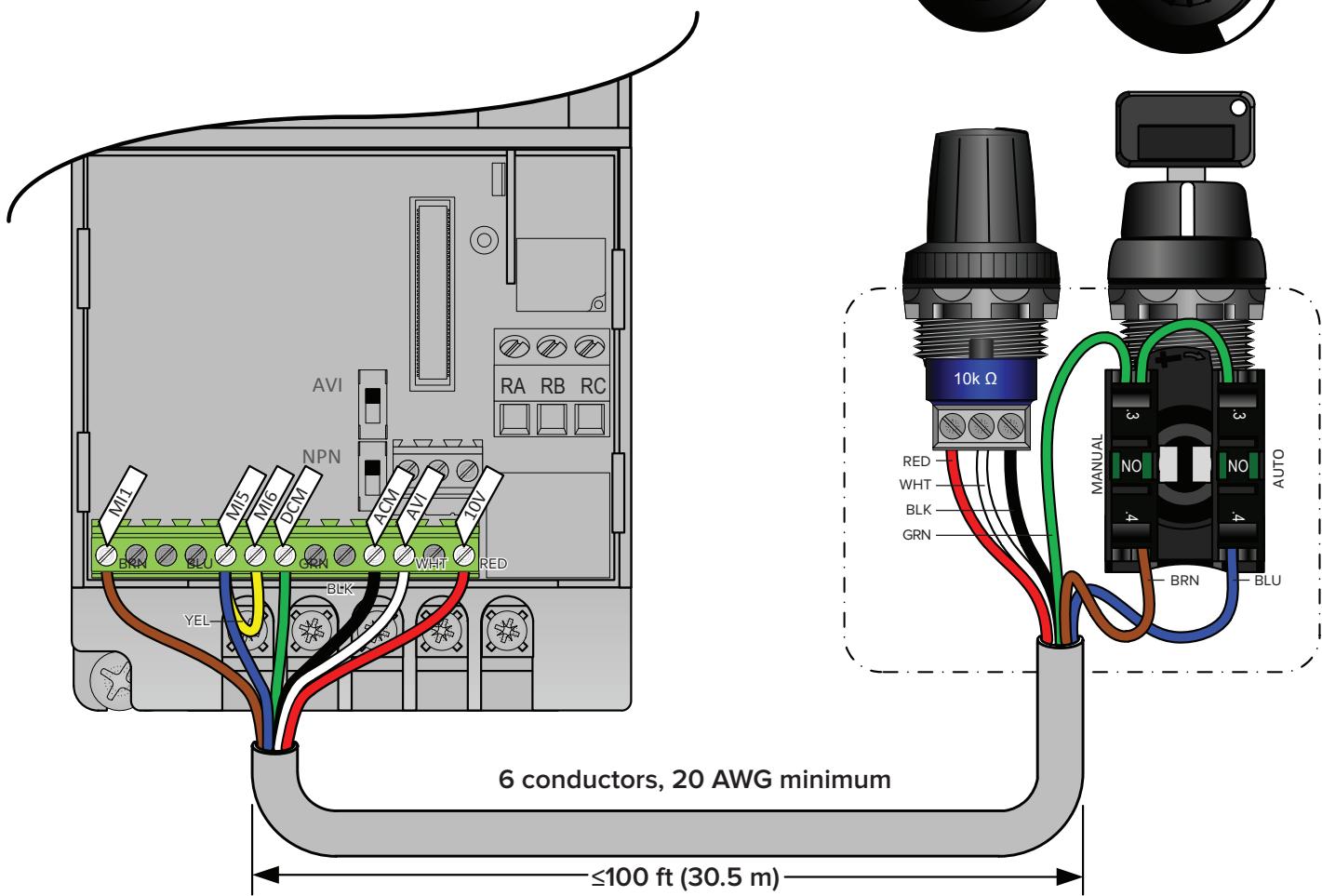
The following parameter changes are required for proper operation of the remote operator station.

Parameter	Change to
00-20: Master Frequency Command Source (REM)	"2" External Analog Input (0..10VDC)
00-21: Operation Command Source (REM)	"1" External Terminals
00-29: LOCAL/REMOTE Selection	"1" Drive Stops During Switch
00-30: Master Frequency Command Source (LOC)	"1" RS-485 communication
00-31: Operation Command Source (LOC)	"2" RS-485 communication
02-06: Multi-function Input Command MI#6	"56" Local/Remote Selection

Remote operator station wiring: 200–240 V & 400–480 V Delta E Series VFDs

⚠ WARNING: The fan controllers contain high voltage capacitors that take time to discharge after removal of mains supply. Before working on the fan controller, ensure isolation of mains supply from line inputs at the fan controller's disconnect if installed. Wait three (3) minutes for capacitors to discharge to safe voltage levels. Darkened display LEDs are not an indication of safe voltage levels.

Powerfoil® X, Powerfoil X2.0, and Powerfoil X3.0 fans



The following parameter changes are required for proper operation. To modify these parameters, you will need to reconnect the BAFCOn controller (provided with the fan) and contact Customer Service. Tap the menu icon on the BAFCOn Home screen, and then tap **FAN MANAGEMENT** > Fan Name > **Diagnostics** > **VFD Parameters**. Follow the instructions on the screen for contacting Customer Service.

Parameter	Change to
02-00: First Master Frequency Command	"1" 0 to +10 V from AVI Terminal
02-01: First Operation Command	"1" External Terminals
04-07: Multifunction Input Terminal 5	"20" Communication Command Enable

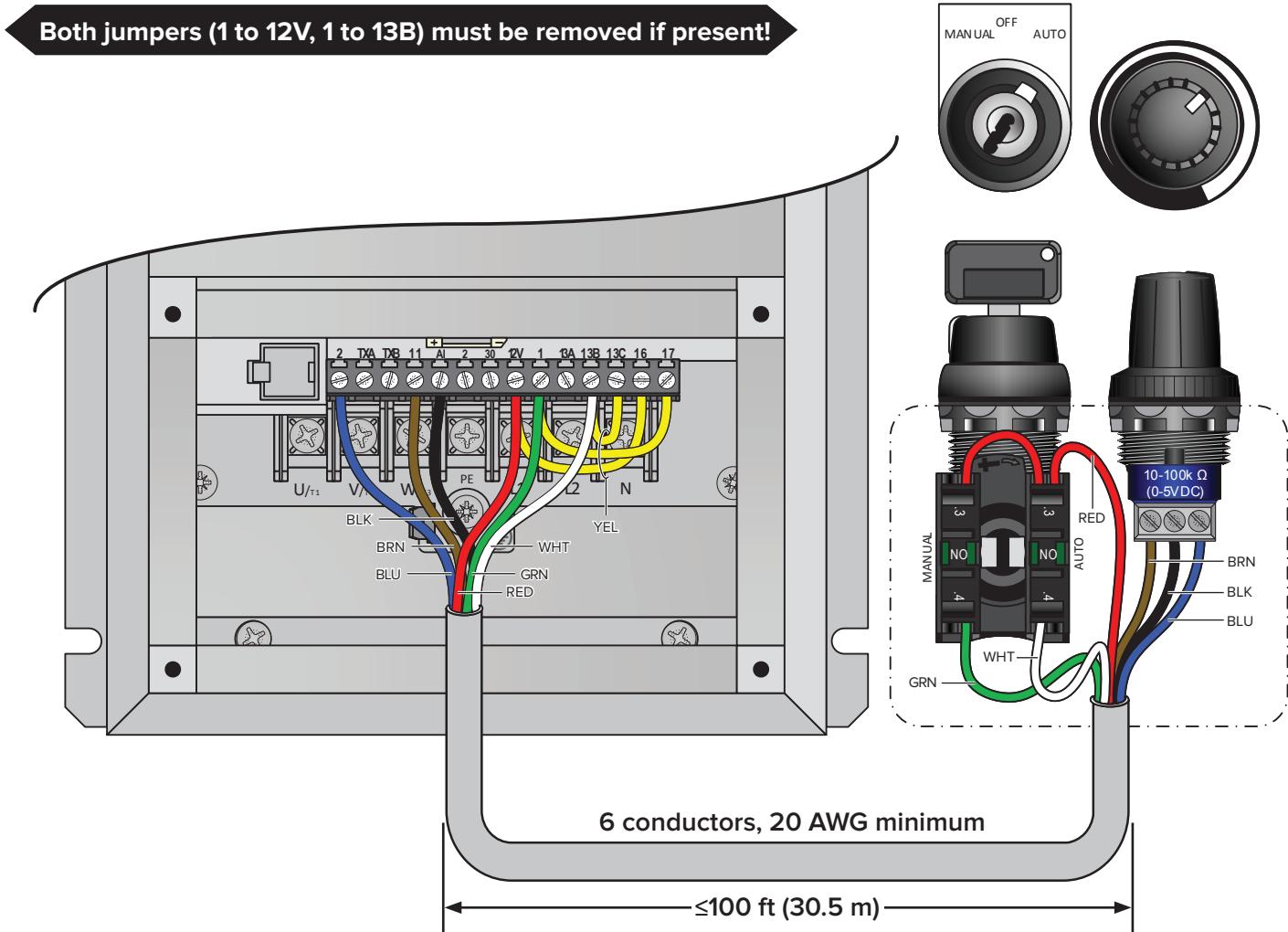
Jumper wire installation (yellow)

Big Ass Fans recommends making the parameter changes listed above prior to remote wiring or jumper wire installation. A new jumper should be installed between terminals MI5 and MI6.

Remote operator station wiring: Lenze SMVector VFDs

WARNING: The fan controllers contain high voltage capacitors that take time to discharge after removal of mains supply. Before working on the fan controller, ensure isolation of mains supply from line inputs at the fan controller's disconnect if installed. Wait three (3) minutes for capacitors to discharge to safe voltage levels. Darkened display LEDs are not an indication of safe voltage levels.

Powerfoil® 8 and Basic 6® fans



The following parameter changes are required for proper operation:

Parameter	Default setting	Change to
P100: Start Stop Control	3	1
P116: Remote Speed Reference	6	1
P123: TB13C Function	0	7
P140: Relay Function	3	16
P156: Analog In Config	0	1

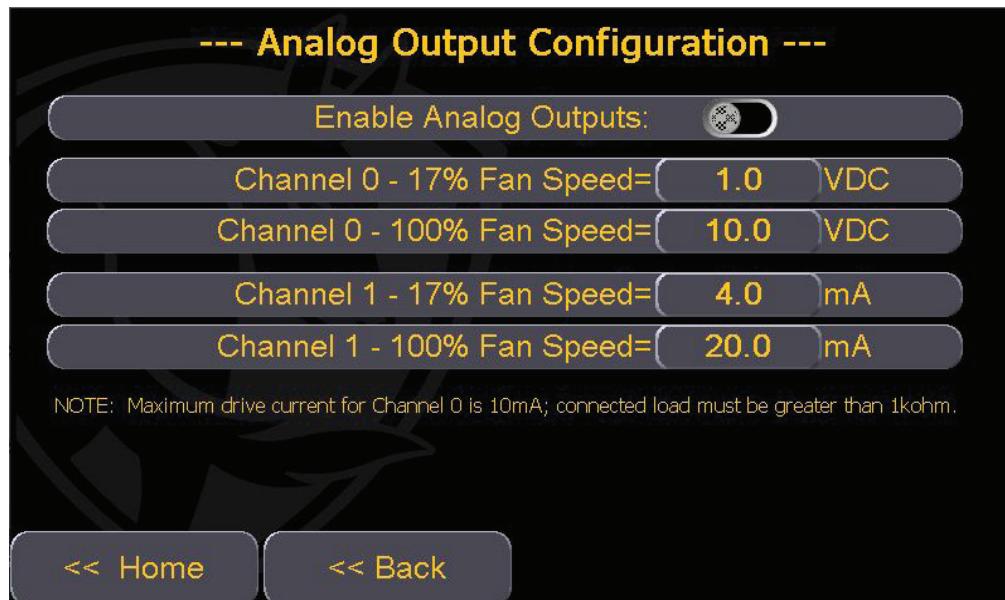
Jumper wire installation (yellow)

Big Ass Fans recommends making the parameter changes listed above prior to remote wiring or jumper wire installation. Jumpers should be installed between terminals 1 and 17, terminals 13B and 13C, and terminals 12V and 16. If an ESFR pilot relay is already installed on terminals 12V and 13A, remove the N.O. relay common lead from terminal 12V and relocate to terminal 16. This will prevent three wires from being landed under a single terminal. In this control arrangement, terminals 12V and 16 are both +12 VDC for digital supply.

ANALOG OUTPUT CARD

To facilitate use with 0–10 VDC or 0–20 mA controlled fans, a 2080-OF2 analog output card is installed.

Touch **Setup > 2 of 2 > Configure Fans > Analog Config** to access the following setup screen:



The voltage and current ranges set here will define the analog output's behavior relative to the fan command speed.

Refer to the wiring diagrams on pages 25 and 26.

SENSOR INSTALLATION

Do not mount sensors in the following locations unless otherwise noted:

- Adjacent to or above radiant heaters
- Near HVAC ventilation intakes or exhausts
- On poorly insulated exterior walls
- In roof decking
- Near radiant heat sources
- In direct sunlight

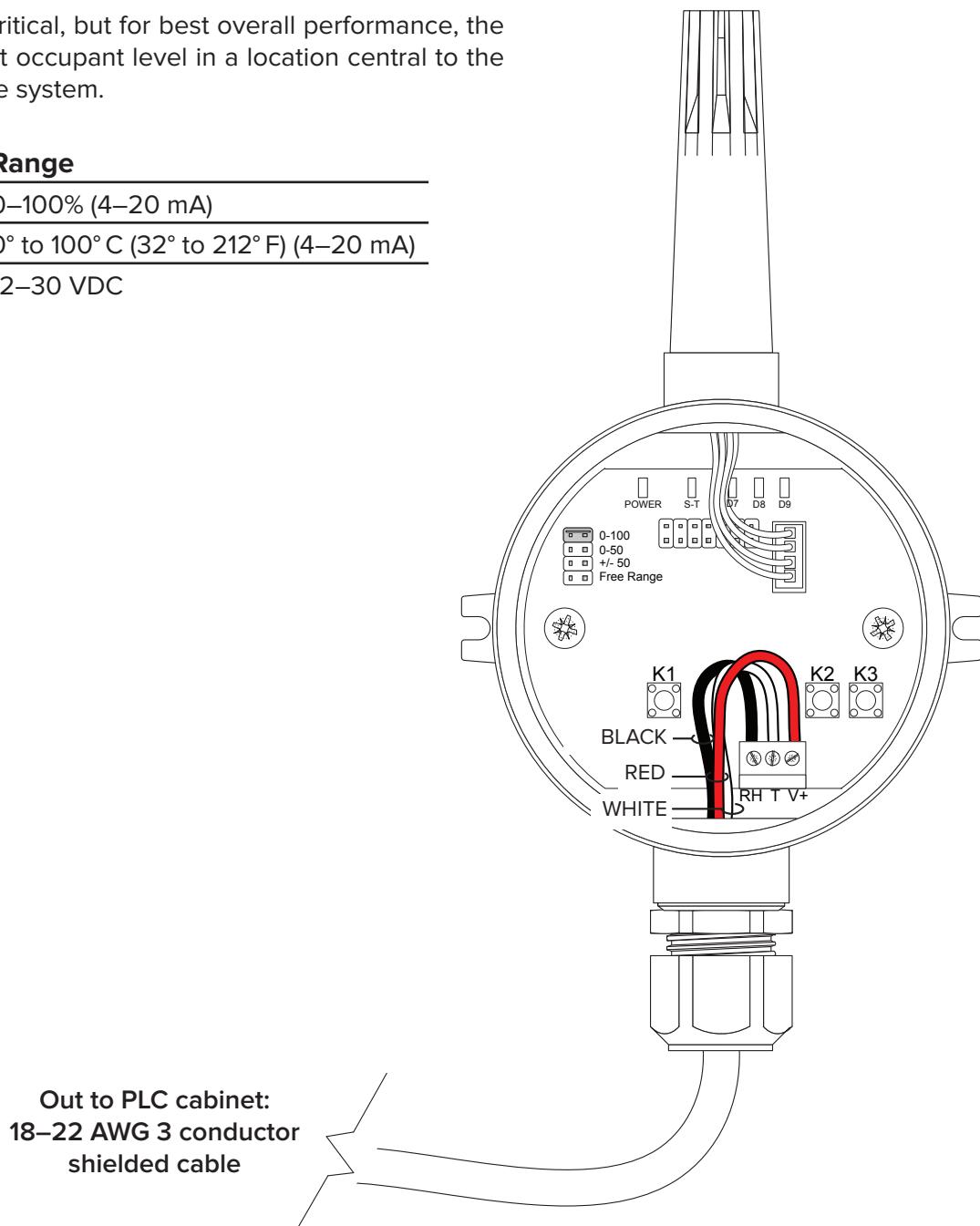
Indoor temperature and humidity sensor

Model HX303AC: IP65 Water-tight enclosure with gasketed screw-on cover.

The indoor air temperature and humidity sensor/transmitter is used in all installations. Refer to the illustration for wiring instructions.

Mounting orientation is not critical, but for best overall performance, the sensor should be mounted at occupant level in a location central to the space being controlled by the system.

Wire color	Property	Range
Black	RH	0–100% (4–20 mA)
White	T	0° to 100° C (32° to 212° F) (4–20 mA)
Red	V+	12–30 VDC



Surface temperature sensor: Adhesive thermocouple for concrete

Transmitter Model TX91-J2 or TX91-K2

1. Mount and wire the sensor and transmitter

DO NOT mount the sensor prior to calibration (see step 2). Refer to the illustration for installation and wiring instructions.

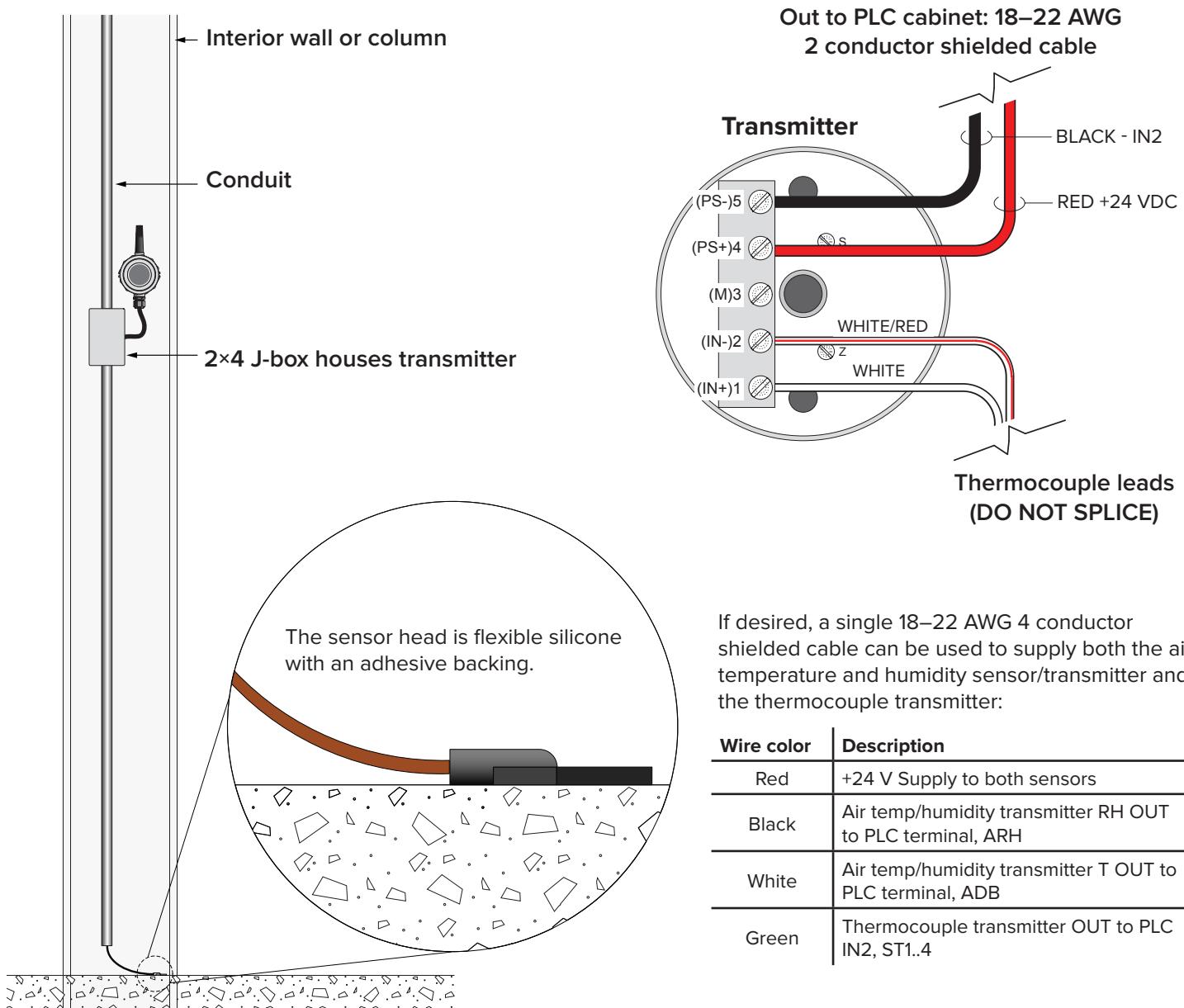
2. Calibrate the sensor

Once the system is fully wired and powered up, calibrate the sensor so that the reading from the surface temperature sensor in open air matches the indoor temperature sensor's reading. *For touch screen navigation help, refer to operation instructions beginning on page 27.*

- Navigate on the touch screen to "Indoor Sensor Calibration" and set Analog Filter to OFF.
- Note the current indoor temperature reading under (ADB) Air Dry Bulb Temperature.
- Navigate to "Surface Sensor Calibration" and note the current surface temperature reading.
- Increase or decrease both the minimum and maximum calibration values by the difference you just obtained. *For example, if the surface temperature is 2.1° F above the ambient temperature, change Min = 0 to Min = -2.1, and change Max = 200 to Max = 197.9.*
- Navigate back to "Indoor Sensor Calibration" and set Analog Filter to ON.

3. Affix the sensor to the floor

4. If installing multiple sensors, repeat steps 1–3 for each sensor



If desired, a single 18–22 AWG 4 conductor shielded cable can be used to supply both the air temperature and humidity sensor/transmitter and the thermocouple transmitter:

Wire color	Description
Red	+24 V Supply to both sensors
Black	Air temp/humidity transmitter RH OUT to PLC terminal, ARH
White	Air temp/humidity transmitter T OUT to PLC terminal, ADB
Green	Thermocouple transmitter OUT to PLC IN2, ST1.4

Surface temperature sensor: Adhesive thermocouple for target surface

Transmitter Model TX91-J2

Make sure to calibrate the sensor before affixing it to the target surface.

1. Wire the sensor and transmitter

Refer to the illustration below for wiring instructions.

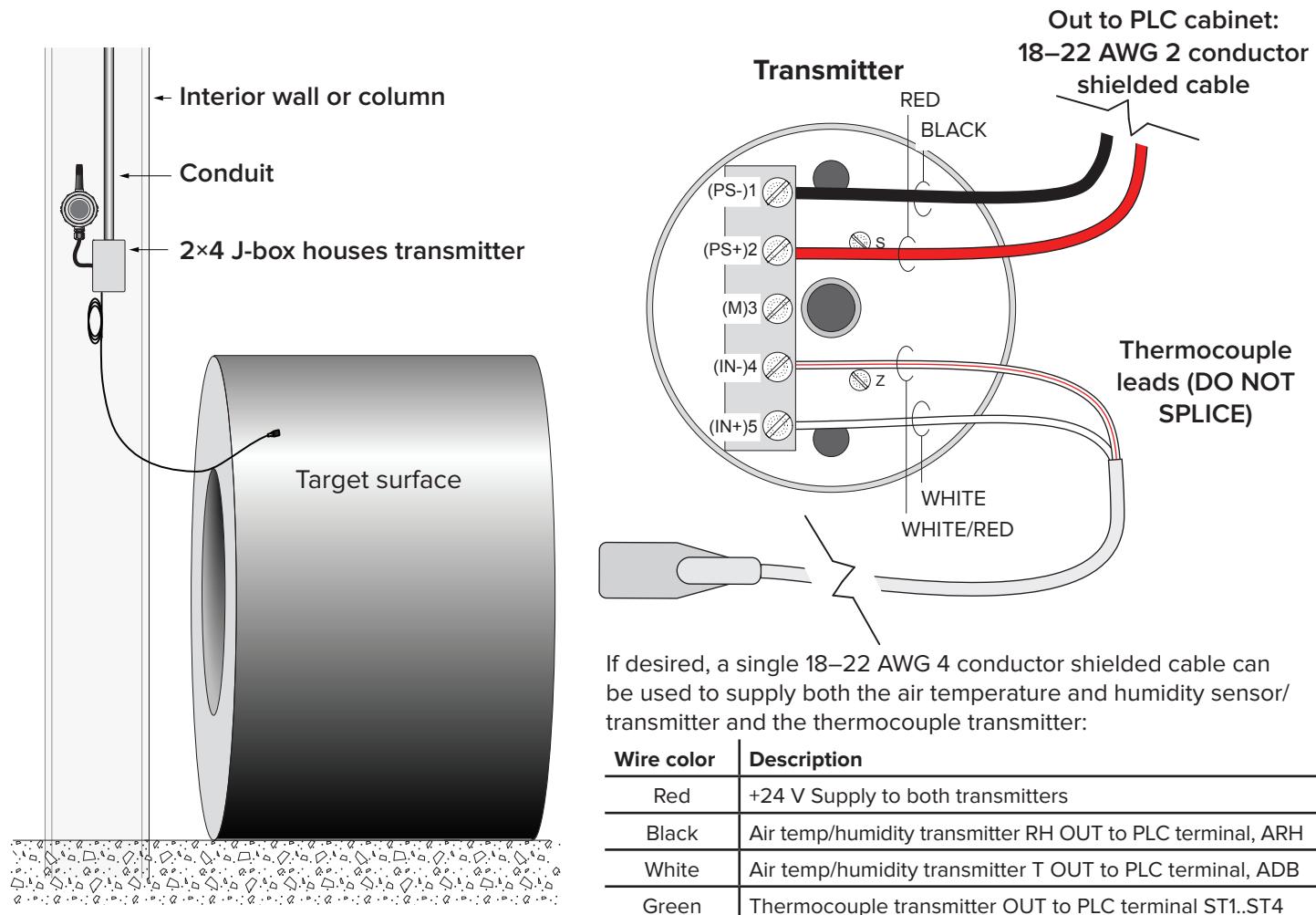
2. Calibrate the sensor

Once the system is fully wired and powered up, calibrate the sensor so that the reading from the surface temperature sensor in open air matches the indoor temperature sensor's reading. *For touch screen navigation help, refer to operation instructions beginning on page 27.*

- Navigate on the touch screen to "Indoor Sensor Calibration" and set Analog Filter to OFF.
- Note the current indoor temperature reading under (ADB) Air Dry Bulb Temperature.
- Navigate to "Surface Sensor Calibration" and note the current surface temperature reading.
- Increase or decrease both the minimum and maximum calibration values by the difference you just obtained. *For example, if the surface temperature is 2.1°F above the ambient temperature, change Min = 0 to Min = -2.1, and change Max = 200 to Max = 197.9.*
- Navigate back to "Indoor Sensor Calibration" and set Analog Filter to ON.

3. Affix the sensor

Clean the target surface thoroughly with alcohol or a similar solvent and allow to dry. Remove the pink film on the body of the sensor head, exposing the aluminum colored adhesive, and affix to the target surface.



Outdoor sensor

Dwyer Instruments RHP-2R11: IP65 Water-tight enclosure with gasketed screw-on cover. For ambient temperatures -40° to 140°F (-40° to 60°C). Note: The outdoor sensor includes a radiation shield which protects the sensor head from rain and direct sunlight. While it can be mounted in direct sunlight, it must not be mounted on an exterior wall with southern exposure. The radiant heat coming off of the sunlit wall will force the sensor's readings to be false high.

1. Secure and wire the sensor

The outdoor sensor can be mounted in direct sunlight. The mount can be used on a wall or on a pipe up to 2 in. (5 cm) in diameter. Refer to the table and illustration below for wiring instructions.

2. Calibrate the sensor

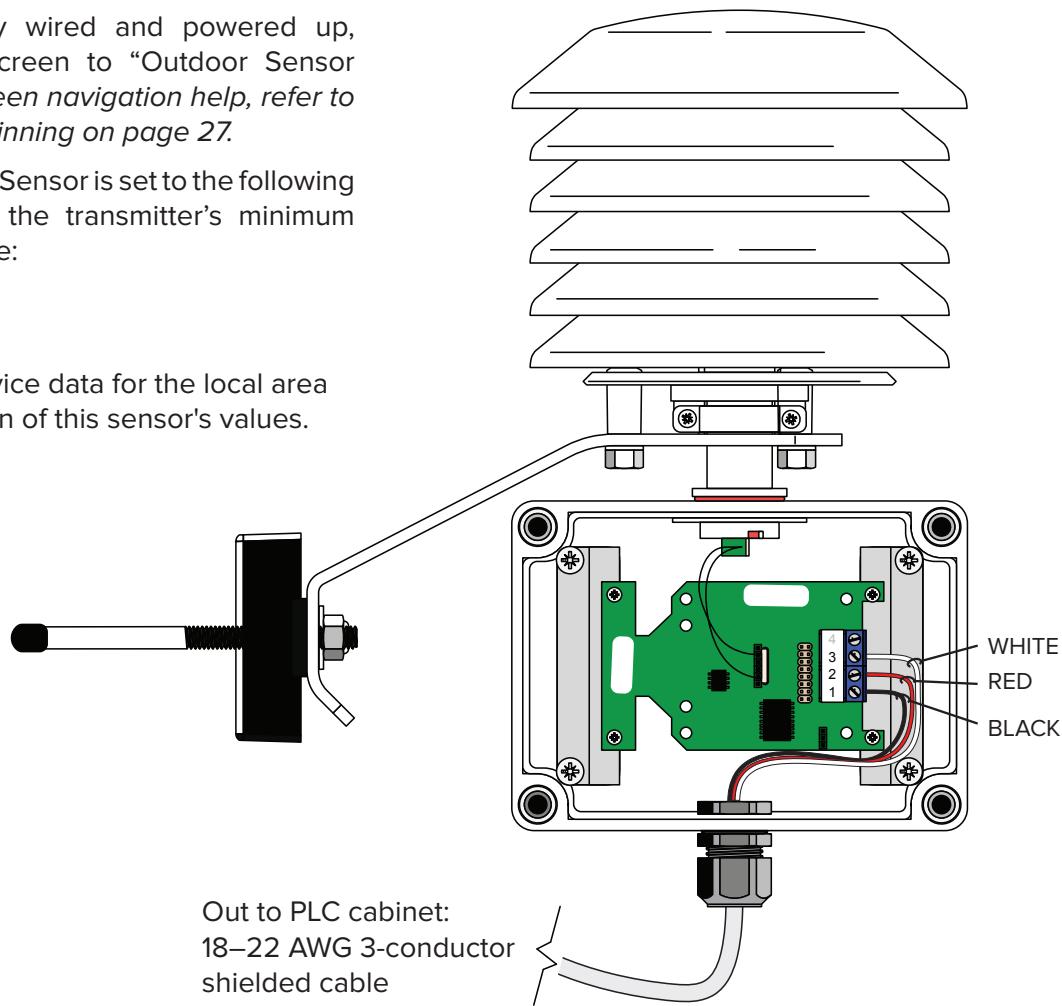
Once the system is fully wired and powered up, navigate on the touch screen to "Outdoor Sensor Calibration." For touch screen navigation help, refer to operation instructions beginning on page 27.

Verify that Air Temperature Sensor is set to the following values, corresponding to the transmitter's minimum and maximum output range:

4 mA = -40°F (-40°C)

20 mA = 140°F (60°C)

The National Weather Service data for the local area can be useful for calibration of this sensor's values.



Wire color	Label	Description	Range	
Red	2	+24 V (SEN+)	Supply to both sensors	10–35 VDC
Black	1	RH OUT	to PLC terminal (ARH _O)	0% (4 mA) – 100% (20 mA)
White	3	T OUT	to PLC terminal (ADB _O)	-40°C (-40°F / 4 mA) – 60°C (140°F / 20 mA)

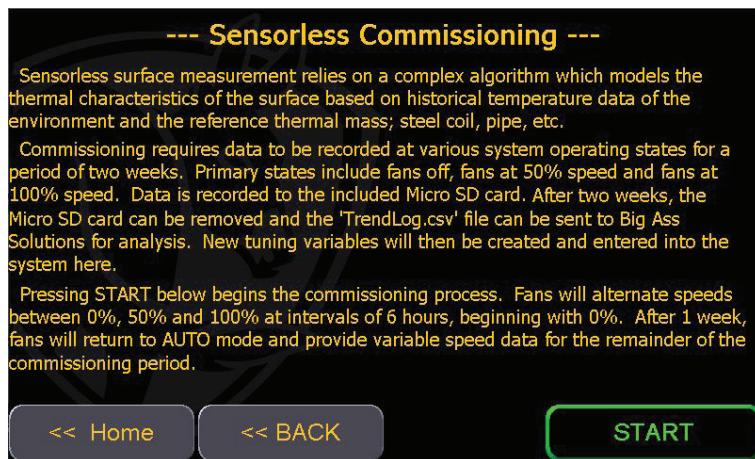
Note: Terminal 4 is unused.

Commissioning for Sensorless Mode

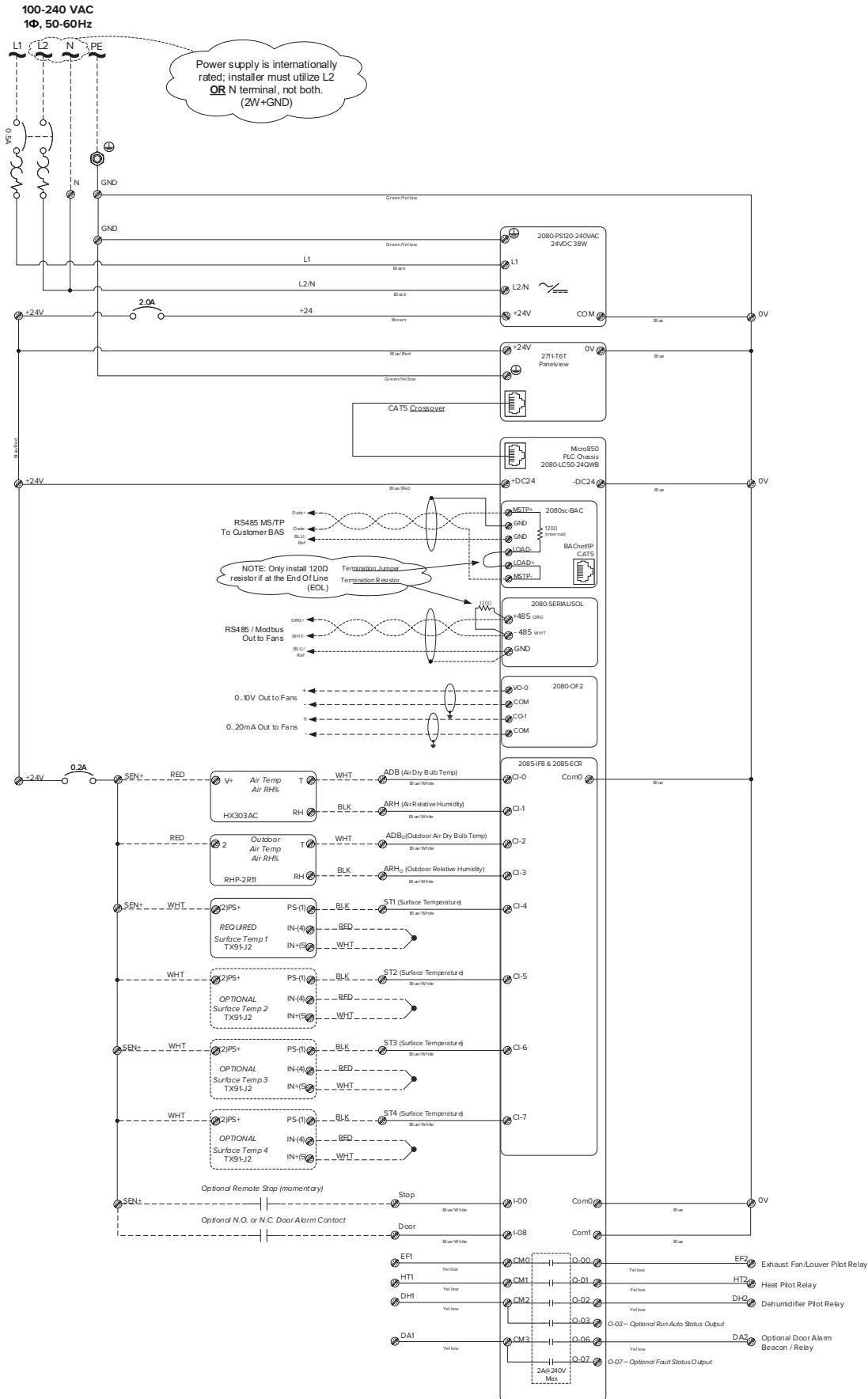
Dewtect® can function without surface temperature sensors in surface corrosion applications. Sensorless Mode is not recommended for slab sweat applications. The commissioning process takes at least two weeks and requires temporary installation of a surface temperature sensor on a representative surface. *Sensorless Mode works best if all items in the space are similar to the representative item used in the commissioning process.*

1. Select a representative item to use as the target surface. If items vary greatly in size, choose an item of average size or install multiple surface sensors.
2. Install a surface temperature sensor on the representative item (pages 21–22) and make sure recording to MicroSD card is enabled (page 33).
3. Start Sensorless Commissioning Mode. A *Commissioning Mode indicator and progress bar will appear on the Home screen. The fans will stop for six hours, and then cycle through 50% speed, 100% speed, and 0% speed (stopped) in six-hour intervals for two weeks. The system will automatically switch to Auto Mode after the second week of data collection.*
4. After logging data for at least two weeks, enable Sensorless Mode and disable logging to the MicroSD card. Remove the MicroSD card and send the data to Big Ass Fans for optimization.
5. Fine-tune Dewtect with optimization coefficients from Big Ass Fans. Enter the coefficients on the Sensorless Surface Temperature screen.
6. Remove the surface temperature sensor from the representative item.

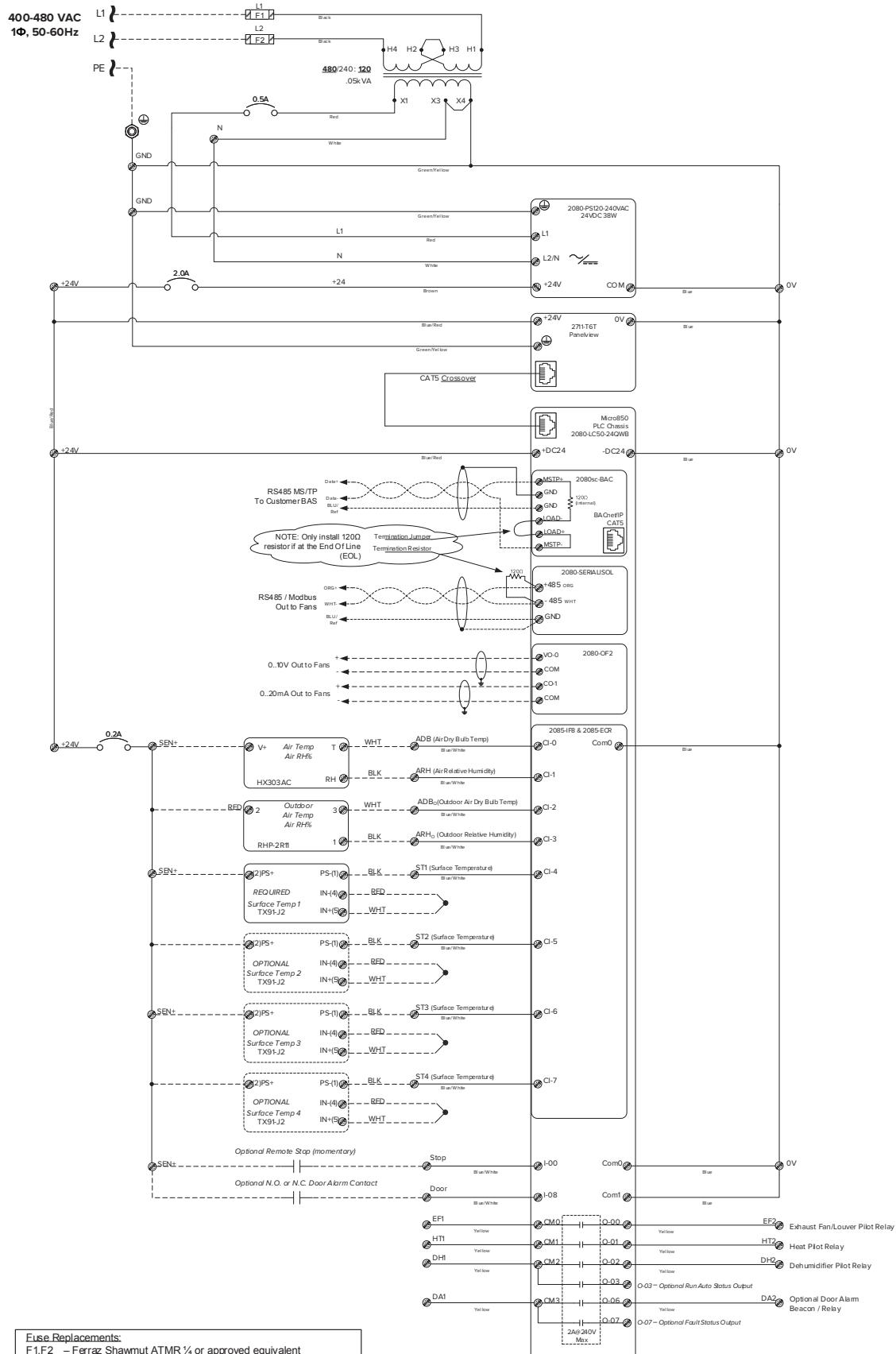
The commissioning process must be repeated if the item used in the original commissioning process is no longer representative of items in the space.



WIRING DIAGRAM: 120/240 V



WIRING DIAGRAM: 480 V



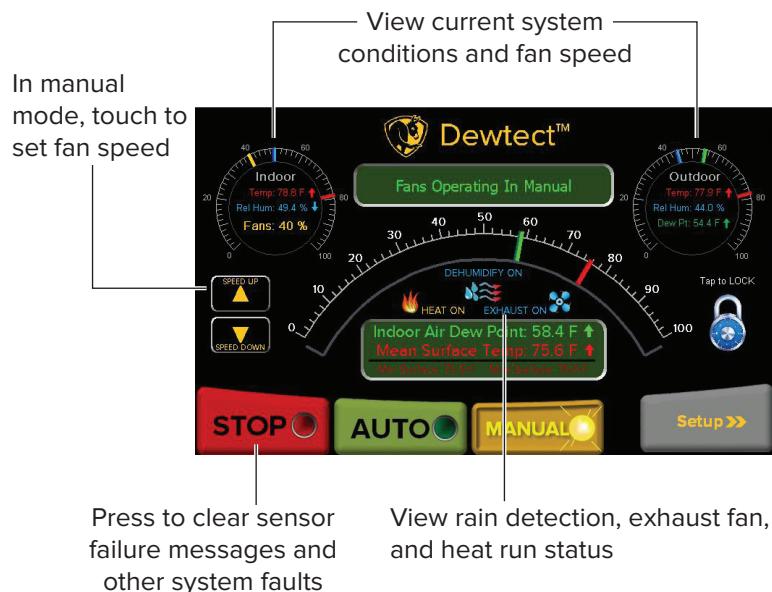
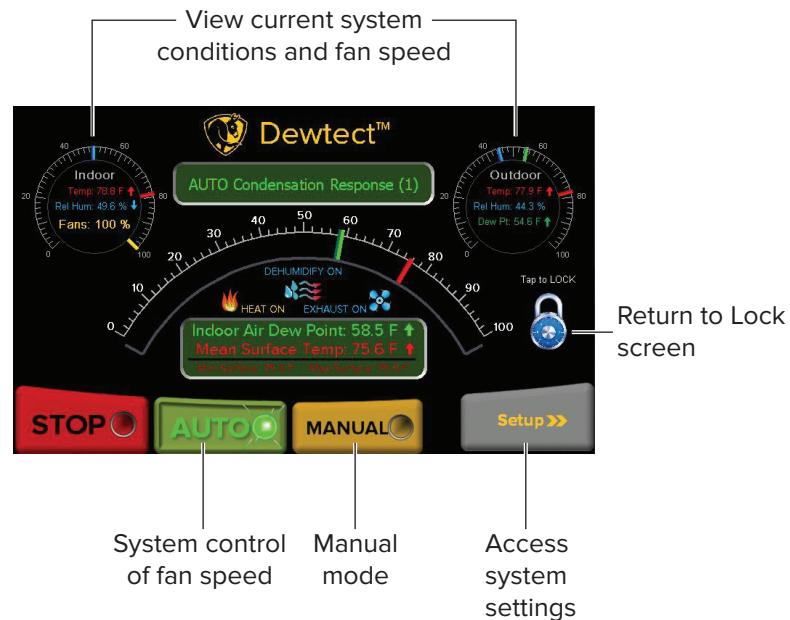
OPERATION

CAUTION: Before you change any settings, Big Ass Fans recommends that you record the original factory-preset settings in case you need to use them later.

Use the touch screen to configure sensors, adjust system settings, monitor the system, log data to MicroSD card storage, manually control fans, and perform fan and system troubleshooting. Note: In the event of a power loss, all system settings are retained in non-volatile memory. If Automatic Restart is enabled, the fans WILL RESTART AUTOMATICALLY.

Home screen

The Home screen is displayed upon startup. On the Home screen you can start and stop fans, set the system to run in Auto mode or Manual mode, and view a summary of system information.



Configuring security

1. On the Home screen, touch **Setup**.
2. Touch **Configure Security**.
3. Touch the text box and enter a password (can consist of letters, numbers, and special characters) followed by the carriage return.



Touch to enter
password



4. Touch **SAVE**. The password you entered will appear briefly and the save will be confirmed.



5. Toggle Security Enable ON. You will then have the option to enable a 30-minute "auto lock" feature. A lock icon will also be selectable from the Home screen for locking the system when desired.



To clear the password and disable security:

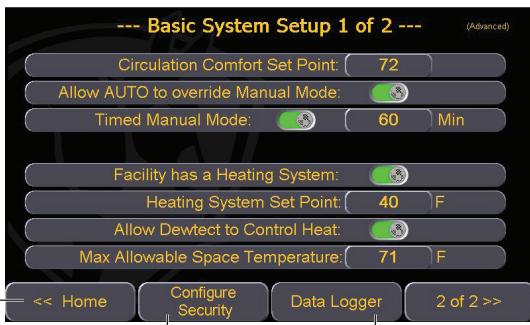
1. Toggle Security Enable OFF.
2. Touch **SAVE**. This clears the password from memory and disables security options.

Setup

To set up or change Dewtect® settings, touch **Setup** on the Home screen.

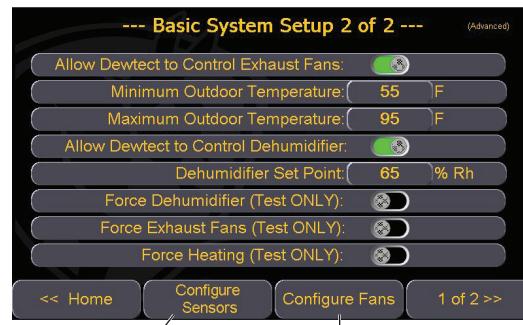
Basic Setup

Return to the Home screen



Configure password and security options

Access data log



Configure sensors and set up sensorless mode

Configure fans in the system

Setting	Action
Security – Screen saver lock out	Enable or disable password-protected screen lock. Note: Upon enabling the screen saver lock out, the user will be prompted to enter the username and password on the first attempt to return to the Home screen.
Circulation comfort set point	Specify a temperature (in degrees Fahrenheit) below which the fans should not run at 100% speed. ¹
Allow Auto override of Manual Mode?	Set Yes to allow the system to override Manual Mode if the system detects an approaching condensation event. Set No to never allow the system to override Manual Mode. For optimal condensation abatement, set Yes.
Timed Manual Mode	Set On to have the fans return to their previous operating state (Stop or Auto) after running in Manual Mode for the specified time interval. Specify the interval in minutes (30–720 minutes). Set Off to always keep the system in Manual Mode until Stop or Auto Mode is turned on. For optimal condensation abatement, set On with a time interval up to 60 minutes.
Is there a heating system installed?	Set Yes if a heating system is installed. Set No if a heating system is not installed.
What is the heating system set point?	Specify the thermostat set point on your heating system.
Allow this system to control heat?	Set Yes to allow Dewtect to control the heating system. ^{2,3}
Max allowable space temperature	Specify the maximum allowable space temperature. Dewtect will not use the heating system to warm the space above this temperature.
Allow system control of exhaust fans?	Set Yes to allow the system to control exhaust fans. ^{3,4}
Minimum outdoor temperature	Specify the outdoor air temperature below which the system should not bring in outdoor air.
Maximum outdoor temperature	Specify the outdoor air temperature above which the system should not bring in outdoor air.
Allow system control of dehumidifier?	Set Yes to allow the system to control the dehumidifier.
Dehumidifier set point	Specify the set point (% Rh) for the dehumidifier.
Force dehumidifier (Test ONLY)	To test dehumidifier setup, set Start to turn on the dehumidifier. Set Stop during normal operation.
Force exhaust fans (Test ONLY)	To test exhaust fan setup, set Start to turn on exhaust fans. Set Stop during normal operation.
Force heating (Test ONLY)	To test heat system setup, set Start to turn on heat. Set Stop during normal operation.

1. Dewtect treats the circulation comfort set point as a guideline. Under some circumstances, Dewtect can run fans at maximum speed when temperatures are below the circulation comfort set point.

2. The heating set point will be maintained unless additional heat is needed to control condensation.

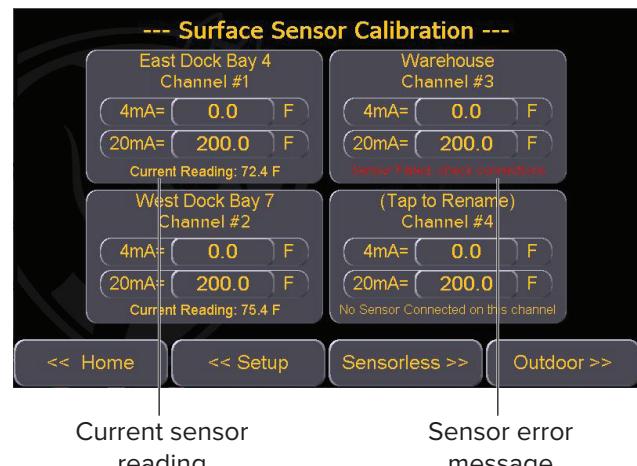
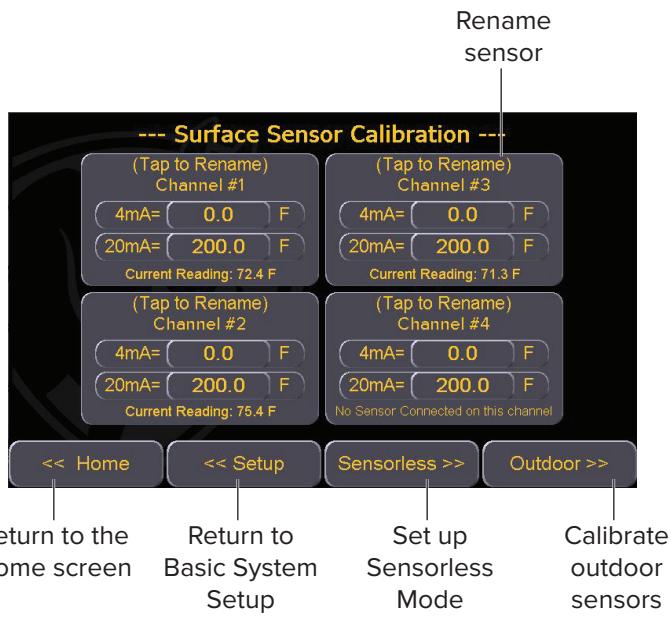
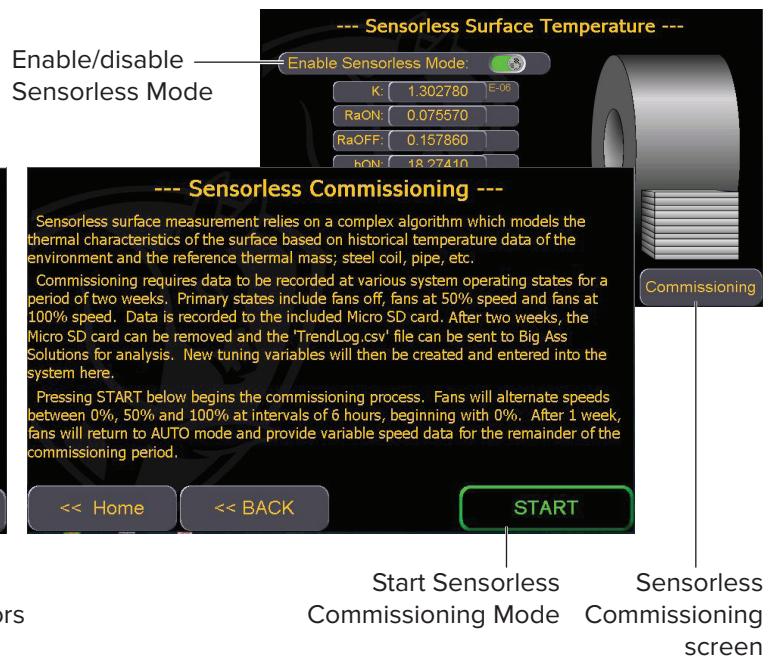
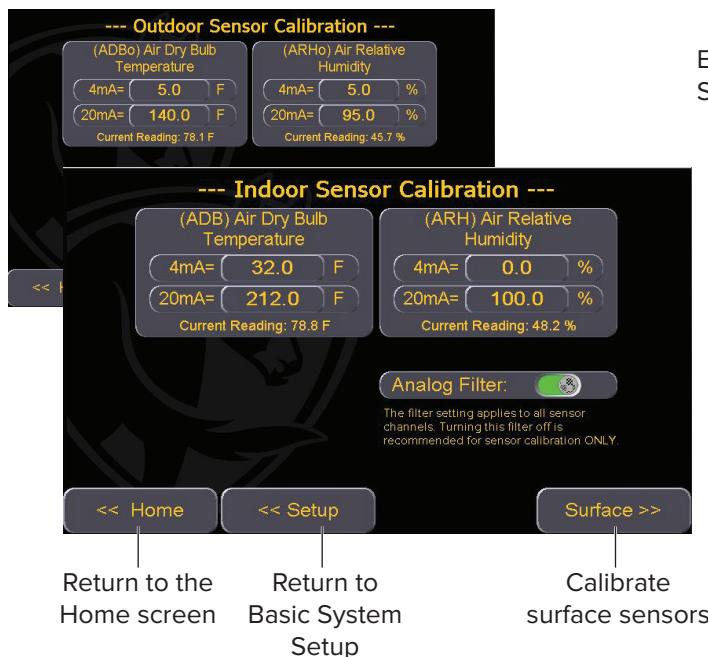
3. Additional wiring is needed to integrate Dewtect with a heating system and/or exhaust fans. See wiring diagrams on pages 25–26.

4. If a heating system is installed, Dewtect will only run exhaust fans if the outdoor air temperature is above the heating system set point.

Sensor Calibration

To calibrate sensors, touch **Configure Sensors** on the Basic System Setup screen. Parameter values for 4 mA and 20 mA should correspond to the transmitters' minimum and maximum output ranges.

To begin commissioning for Sensorless Mode, touch **Configure Sensors** on the Basic System Setup screen. Touch **Sensorless**, and then touch **Commissioning**. Touch **START**.



Note: You will need to reboot the Dewtect® system after adding a surface sensor. Up to three additional sensors can be added.

Advanced Setup

CAUTION: Do not make changes to the Advanced Setup screens without Big Ass Fans guidance. Contact Customer Service for assistance.

To view or change advanced system settings, touch the upper right corner of the Basic System Setup screen.

--- Advanced System Setup 1 of 3 ---

COND 1.1 SP: (3) F	COND 1&2 SPD: (100) %
COND 1.2 SP: (7) F	COND 3 SPD: (50) %
COND 1.3 SP: (5) F	COND 4.1 SPD: (50) %
COND 2.1 SP: (12) F	COND 4.2 SPD: (100) %
COND 2.2 SP: (5) F	COND 5 SPD: (25) %
COND 3.1 SP: (3) F	COND 1.1 RunT: (1) min
COND 3.2 SP: (7) F	COND 1.3 RunT: (1) min
COND 3.3 SP: (5) F	COND 2.1 RunT: (1) min
COND 4.0 SP: (10) F	COND 2.2 RunT: (1) min

<< Home << Basic Setup 2 of 3 >>

Return to the
Home screen Return to Basic
System Setup

--- Advanced System Setup 2 of 3 ---

Sample Interval: (300) sec	ST Select: Min Surface Value
EF Comfort Mode: <input checked="" type="checkbox"/>	ARHo Rain Detect: <input checked="" type="checkbox"/>
EF ADP DELTA: (5) F	
Min EF Run Time: (30) min	
EF ADB DELTA: (5) F	
COND 1.3 HSP: (5) F	DeHumidify Delta: (5) %Rh
COND 2.2 HSP: (5) F	DeHumidify RunT: (10) min
COND 3.3 HSP: (8) F	

<< Home << Basic Setup 3 of 3 >>

--- Advanced System Setup 3 of 3 ---

Open Door Alarm: <input checked="" type="checkbox"/>	When enabled and a door trigger switch is made: - Open door alarm will appear on the home screen. - Relay output terminals DA1-DA2 will close to support an external siren or beacon.
Door Trigger: N.O.	- Exhaust Fan, Heat and Dehumidifier operation will be DISABLED
Door Alarm Delay: (30) min	Tap the alarm message to acknowledge and reset delay timer or close the door.
Automatic Restart: <input checked="" type="checkbox"/>	- Automatic Restart will issue a STOP and Fault Clear message to all fans then after a delay, restart the DewTech System in Automatic in the event of a power outage.
Away Timer: <input checked="" type="checkbox"/>	- Away timer when activated from the home screen, will prevent "comfort" operation of ceiling fans and exhaust fans for the predetermined period of time, i.e. 'the weekend'.
Away Time: (60) hrs	

<< Home << Basic Setup 1 of 3 >>

Fan connection & fault status

To view the connection and fault status of all fans in the system, touch **Setup** on the Home screen to open Basic System Setup. Touch **Configure Fans**. Thirty-two fan address locations are displayed. Touch each address to select which type of fan is located at that address. Select **No Fan**, **PFX Fan**, **PF8/B6 Fan**, **Powerfoil D® Fan**, or **PFX 4 Fan**.

When a fan fault occurs, a descriptive fault message will scroll across the status bar(s) of the affected fan(s). Once the fan fault has been addressed, touch **Attempt Reset**. For Powerfoil® X and Powerfoil D® fans, this resets the fault code and the fans will resume operation. For Powerfoil 8 and Basic 6° fans, this button issues a STOP command to all fans as a means of fault reset. If the fan has regained capacity for normal operation, the status message will reset to "OK".



Return to the Home screen

Attempt reset after resolving fan fault

This button appears when a 2080-OF2 output card is installed in PLC slot 3.

View or set fan drive parameters

QOS (Quality of Service) meter. This number represents the quality of connection to the fans. For example, 98.5% indicates that 98.5% of the messages on the Modbus loop have executed properly. Any value less than 90% may indicate a network wiring issue.

Fan drive utility

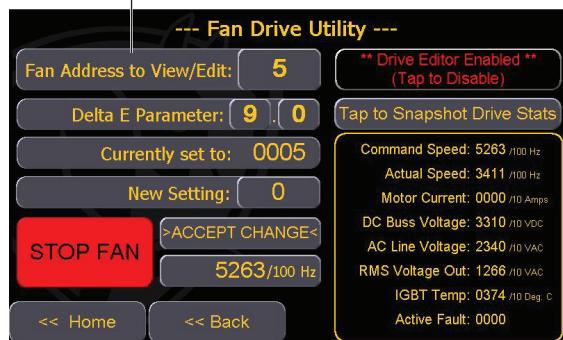
To view or set fan drive parameters, touch **Setup > 2 of 2 > Configure Fans** to open the Fan Connection & Fault Status screen. Touch **Fan Drive Utility**.

Note: Enabling the drive editor stops all connected fan drives and shuts down communication with all drives except the fan address selected. Navigating away from the Fan Drive Utility disables the Drive Editor and restores communication with all fan drives.

Return to the Home screen



Specify fan address to view or edit drive parameters



Data logger

The Data Logger graphically displays system data at 5-minute intervals over a 480-minute (8-hour) span. For a permanent record of system behavior, the same data is also logged to a MicroSD card.

Viewing the Data Logger

To view the Data Logger, touch **Setup > Data Logger**.

Logging data to MicroSD card

Dewtect® is shipped with a MicroSD card installed in the touch screen housing inside the control cabinet and is set to record to MicroSD card upon initial startup.

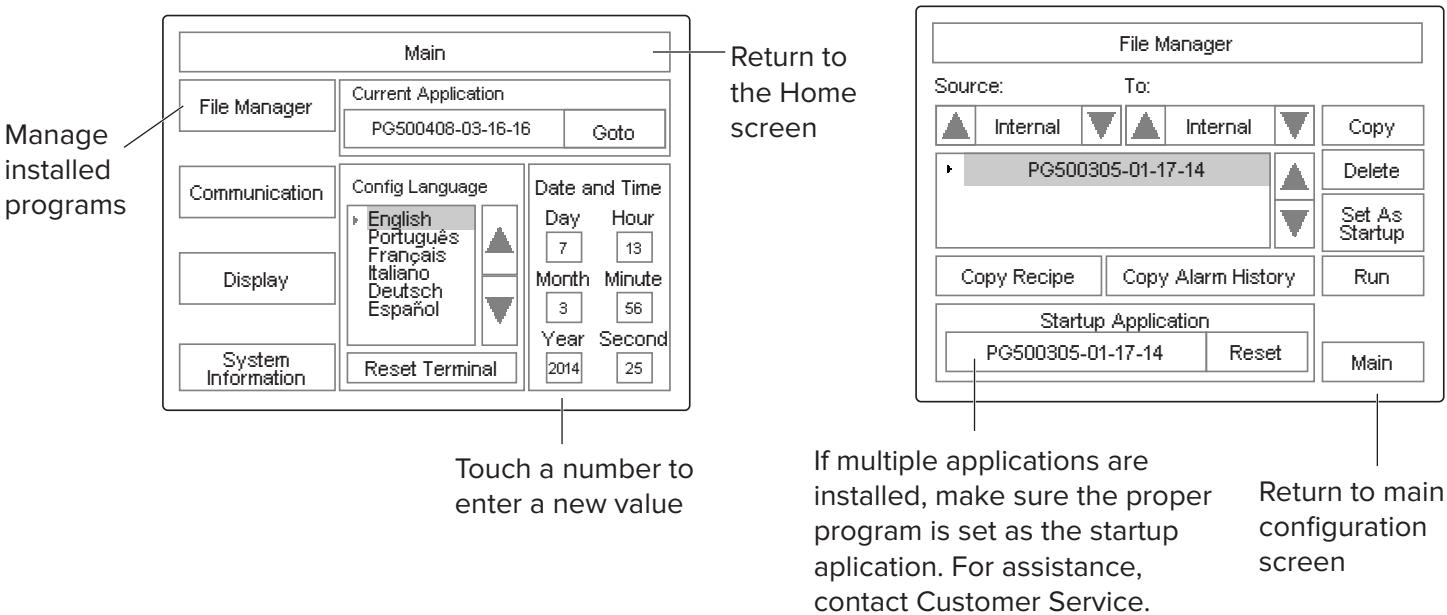
To disable logging data to the MicroSD card, touch **Recording to MicroSD** in the upper right corner of the screen.

To log data to the MicroSD card, first make sure the system clock is set to the correct date and time. On the Data Logger screen, touch **Record to MicroSD** in the upper right corner of the screen. For help, refer to “Interface Configuration” below.



Interface configuration

To view or change interface settings, touch the upper left corner of the Home screen.



BACNET COMMUNICATIONS

⚠ CAUTION: Dewtect® must be set to Automatic. It is not recommended to run the fans in manual mode or set a daily start/stop schedule. Some changes can be made to accommodate certain user scenarios; however, condensation and weather patterns are unpredictable. Please consult with Big Ass Fans as necessary.

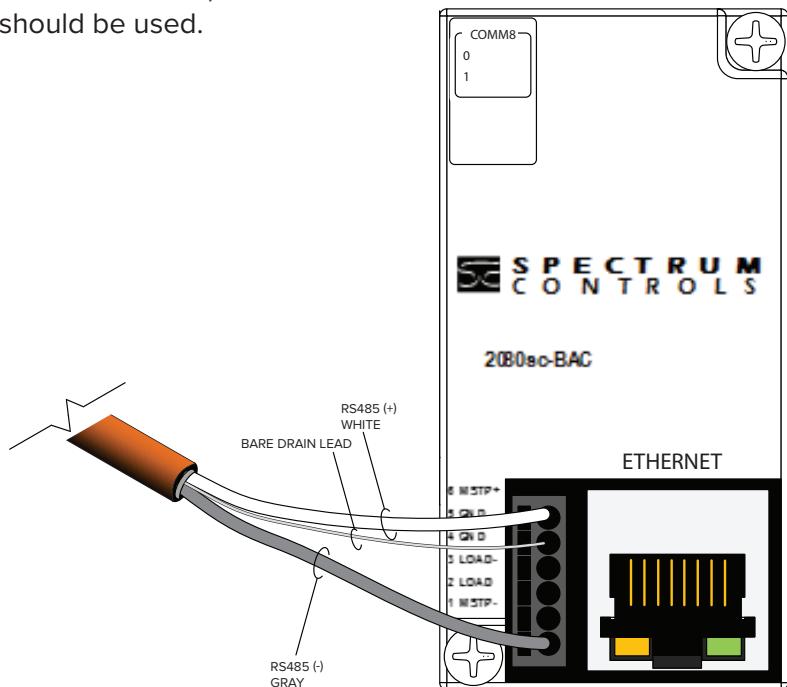
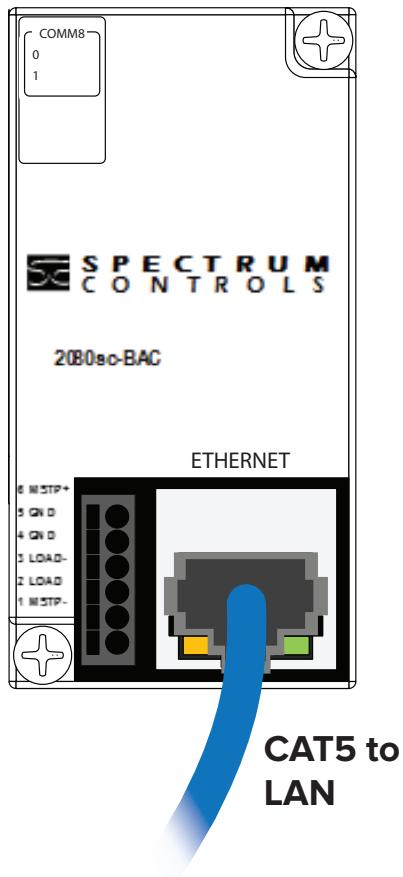
Dewtect can be monitored and controlled by a BACnet control system using the included Spectrum Controls 2080sc-BAC Communication Module. This module supports two channels of data communication: RS-485 half duplex serial communications for MS/TP, or 10/100M Ethernet full duplex serial communications for BACnet/IP.

All control and data points made available over the BACnet connection are duplicates of control and data points available on the Dewtect touchscreen. One means of control does not supersede the other. That is, if an operator sets the Dewtect System to Auto via the BACnet connection, a user on the floor can set the Dewtect System to Manual via the touchscreen. It is recommended to utilize the security features built into the Dewtect screen if BACnet is to be the primary means of system control.

Wiring

⚠ CAUTION: Power down the Dewtect cabinet when performing installation wiring tasks. Do not, under any circumstances, unplug and re-insert a module into PLC while powered. A hardware fault could occur.

For BACnet/IP installation, connect the BACnet module to the Local Area Network with a 568B CAT5 cable. For MS/TP connections, an EIA/TIA485 compliant 2- or 3-conductor cable should be used.



Note: The wire colors are applicable to Windy City Wire Modbus cable only. Other cable types will differ. Take note of color/polarity if using a different model of cable. If this module is at the end of an RS485 loop, install a jumper between terminals LOAD(+) and LOAD(-). If present, the third wire (reference) must be landed on the module's GND terminal. The cable shield (not shown) must be connected to Earth Ground at one end only.

Module configuration as shipped

The module ships from Big Ass Fans preconfigured for BACnet/IP communication as follows:

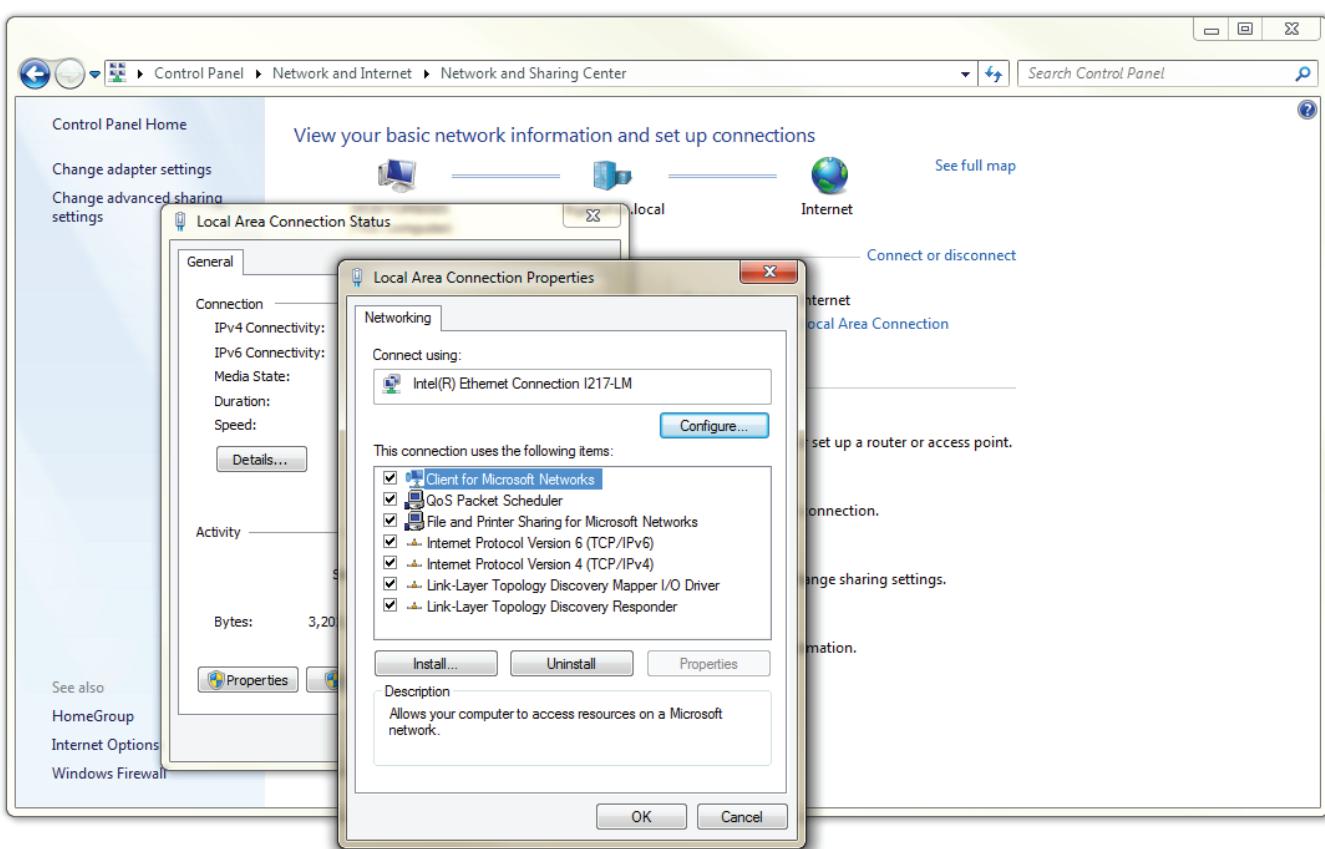
Name: Big Ass Fans Dewtect
Device Instance/ID #: 200121
UDP Port: 0xBAC0 (47808)
IP Address: 192.168.11.103
Subnet Mask: 255.255.255.0
Gateway: 192.168.11.1
Login Password: BAF1234
LAN Type: BACNet/IP (configurable to MS/TP)

Changing the module configuration

Module configuration changes for BACnet/IP and MS/TP are only accessible via web browser. To access the configuration page:

1. Ensure that the BACnet module and your PC are connected to the same Local Area Network.
2. Access your PC local area connection properties dialogue.

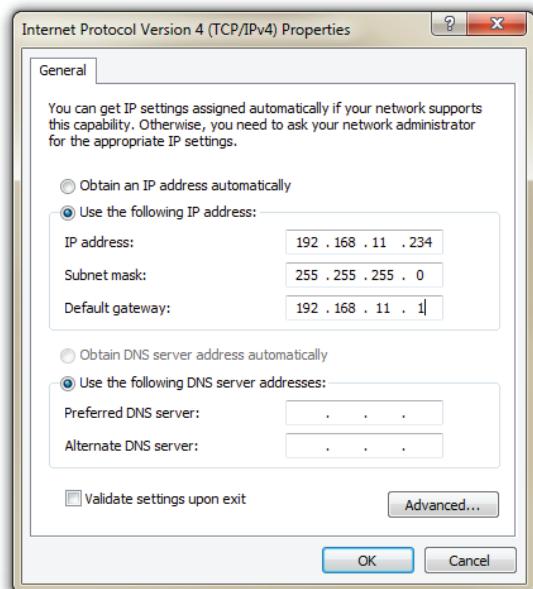
Start > Control Panel > Network and Internet > Network and Sharing Center > Change Adapter settings > Local Area Connection Settings > Properties



- From the Local Area Connection Settings dialogue window, select Internet Protocol Version 4 (TCP/IPv4) and enter the settings shown on the right.
- Click **OK** to save the changes. ***This action severs all existing network connections. Save your work as necessary.***
- Open a new internet browser window and enter the module's current address in the browser's address bar (192.168.11.103).
- Enter **BAF1234** in the Password field. The System Configuration tab appears.

At this time, any changes necessary for communication with your BACnet system can be made. Do not modify any information in the Tag Setup menu. Once changes have been entered, select **Save**.

For the changes to become active, the Dewtect® Controller must be power-cycled. ***If these changes are not noted and you forget or lose the settings, you will need to order a new BACnet module.***



System Configuration		Tag Setup	
Password	Login Password: <input type="text" value="BAF1234"/> * Reset/DCC Password: <input type="text" value="1234"/> *		
Date / Time	Determined by Network: <input checked="" type="checkbox"/> Date: <input type="text" value="3/21/2016"/> <input type="button" value="..."/> Time: <input type="text" value="13"/> : <input type="text" value="08"/> : <input type="text" value="33"/>		
Device	Instance: <input type="text" value="200121"/> * Name: Big Ass Solutions Dew: *		
LAN	LAN Type: <input checked="" type="radio"/> BACNet/IP <input type="radio"/> MS/TP UDP Port: 0x <input type="text" value="BAC0"/> * IP Address: <input type="text" value="192"/> . <input type="text" value="168"/> . <input type="text" value="11"/> . <input type="text" value="103"/> Subnet Mask: <input type="text" value="255"/> . <input type="text" value="255"/> . <input type="text" value="255"/> . <input type="text" value="0"/> Gateway: <input type="text" value="192"/> . <input type="text" value="168"/> . <input type="text" value="11"/> . <input type="text" value="1"/>		
<input type="button" value="Version Info"/> <input type="button" value="Show Log"/> <input type="button" value="Upgrade"/> <input type="button" value="Save"/> <input type="button" value="Reload"/>			

- Note changes to the module system configuration below. You can now return to your PC's IPv4 configuration to the previous settings. The module has been configured and will communicate via BACnet.

Login Password: _____
 Reset/DCC Password: _____
 Instance: _____
 LAN Type: __BACnet/IP__ __MS/TP__
 UDP Port: 0x _____
 IP Address: _____.
 Subnet Mask: _____.
 Gateway: _____.

MAC: _____
 Max Masters: _____
 Max Frames: _____
 Baud Rate: _____

Dewtect®'s object table

The following points are mapped to the module for use with the BACnet control.

Object Type	Object ID	Object Name	Attribute	Data Type	Additional Information
AI	0	Indoor_Air_Temperature (°F)	Read	REAL	See Sensor Calibrations for Min-Max ranges. Indoor Air Temperature, Indoor Dew Point, Outdoor Dew Point, and Surface Temperature are saved to the touchscreen data logger when recording is enabled.
AI	1	Indoor_Relative_Humidity (%)	Read	REAL	
AI	2	Indoor_Dew_Point (°F)	Read	REAL	
AI	3	Outdoor_Air_Temperature (°F)	Read	REAL	
AI	4	Outdoor_Relative_Humidity (%)	Read	REAL	
AI	5	Outdoor_Dew_Point (°F)	Read	REAL	
AI	6	Surface_Temperature_Channel_1	Read	REAL	
AI	7	Surface_Temperature_Channel_2	Read	REAL	
AI	8	Surface_Temperature_Channel_3	Read	REAL	
AI	9	Surface_Temperature_Channel_4	Read	REAL	
AI	10	Fan_Speed_Percent	Read	UINT	Fan speed feedback (Auto or Manual); reported as 17–100%
AI	11	System_Status_Word (32 bit)	Read	WORD	See Note
AI	12	Commissioning_Percent_Complete	Read	UINT	When system is in a commissioning cycle, completion status is reported as 0–100%
AI	13	STS_OFF_AUTO_MAN	Read	UINT	Fan status feedback; 0=Stopped, 1=Auto, 2=Manual
AO	0	CMD_OFF_AUTO_MAN	Write	UINT	Fan system command; 0=STOP, 1=Set to Auto, 2=Set to Manual
AO	1	MANUAL_Fan_Speed_Command	Write	UINT	When fans are set to manual, fan speed can be set to 17–100%
AO	2	Circulation_Comfort_Set_Point	Write	UINT	Temperature below which fans will not operate at 100% speed. This is a break point between winter and summer comfort operation. Fans will still run at 100% for certain condensation response conditions.
AO	3	Heating_Comfort_Set_Point	Write	UINT	When heating control is enabled, Dewtect acts as a standard thermostat. This is the set point for that mode of operation.
BI	0	Ceiling_Fans_In_Auto	Read	BOOL	Fan status feedback; can be used as an alternate to AI 10.
BI	1	Ceiling_Fans_In_Manual	Read	BOOL	
BI	2	Ceiling_Fans_Stopped	Read	BOOL	
BI	3	Commissioning_Started	Read	BOOL	
BI	4	Calling_For_Heat	Read	BOOL	
BI	5	Calling_For_Exhaust_Fans	Read	BOOL	
BI	6	Indoor_Temperature_Failure	Read	BOOL	
BI	7	Indoor_Humidity_Failure	Read	BOOL	
BI	8	Surface_Temperature_Failure_1	Read	BOOL	
BI	9	Outdoor_Temperature_Failure	Read	BOOL	
BI	10	Outdoor_Humidity_Failure	Read	BOOL	Sensor failure feedback; if any of these sensors fail, setting system to Auto shall be disabled.
BI	11	Fan_Fault_Present	Read	BOOL	Sensor failure feedback; if any of these sensors fail, setting system to Auto will be disabled if exhaust fan control is enabled
BI	12	Surface_Temperature_Failure_2	Read	BOOL	One or more of the fans is faulted. See Dewtect touchscreen for specific fault information.
BI	13	Surface_Temperature_Failure_3	Read	BOOL	Sensor failure feedback; if any of these sensors fail, setting system to Auto shall be disabled.
BI	14	Surface_Temperature_Failure_4	Read	BOOL	
BO	0	Start_Ceiling_Fans_AUTO	Write	BOOL	Fan system command; can be used as an alternate to AO 0. See Note
BO	1	Start_Ceiling_Fans_MANUAL	Write	BOOL	
BO	2	STOP_Ceiling_Fans	Write	BOOL	
BO	3	Fan_Fault_Reset	Write	BOOL	
BO	4	Heat_Run	Write	BOOL	If heat control is enabled on Dewtect, force heat to run.
BO	5	Exhaust_Fan_Run	Write	BOOL	If exhaust fan control is enabled on Dewtect, force exhaust fan operation.

Analog input (AI) 8, system status word

The 32 bit system status word is reported out to the BACnet point AI-8. Each bit represents a mode of operation or function status. Note: If bit 0, 1, 2, and 3 are all low in the data log, this indicates a Dewtect® reboot and no operator intervention. Auto Stop Start is disabled. The user must restart the system manually.

Bit	Definition (0 = FALSE/OFF; 1 = TRUE/ON)
0	1 = Ceiling Fan STOP Command Issued
1	1 = Ceiling Fan MANUAL Command Issued
2	1 = Ceiling Fan AUTO Command Issued (Relay Out O-03)
3	1 = Commissioning Command Issued
4	1 = Condition 1.1 Condensation Responses
5	1 = Condition 1.2
6	1 = Condition 1.3
7	1 = Condition 2.1
8	1 = Condition 2.2
9	1 = Condition 3.1
10	1 = Condition 3.2
11	1 = Condition 3.3
12	1 = Condition 4
13	1 = Condition 5
14	1 = Condition 3.3 Auto Override Enabled
15	1 = Ceiling Fan Timed-Manual Mode Enabled
16	1 = Ceiling Fan Auto-Restart Enabled
17	1 = Heat Call Auto (Relay Out O-01)
18	1 = Heat Call Manual (Relay Out O-01) (Tattletale)
19	1 = Exhaust Call Auto (Relay Out O-00)
20	1 = Exhaust Call Manual (Relay Out O-00) (Tattletale)
21	1 = Exhaust Fan Comfort Mode Enabled (Dew Point AND Temp Triggered)
22	1 = Dehumidifier Call Auto (Relay Out O-02)
23	1 = Dehumidifier Call Manual (Relay Out O-02) (Tattletale)
24	1 = VFD Fault(s) Present (Relay Out O-07)
25	1 = Sensor Fault(s) - Setting an AUTO Command is Disabled (Relay Out O-07)
26	1 = Sensorless Surface Temperature Enabled
27	1 = Rain Detection Enabled (ARHo rate of rise triggered)
28	1 = Rain Detected (Auto Exhaust Fan Operation Blocked)
29	1 = Open Door Alarm Enabled
30	1 = Open Door Alarm (Auto Heat, Auto EF, and Auto Dehumidifier Operation Blocked)
31	1 = Drive Editor Enabled (Tattletale)

Starting and stopping fans

Start and Stop functions can be controlled using either the analog output, AO-0, or binary outputs BO-0, BO-1, and BO-2. When the binary outputs are used, each output is fed into a one-shot within the PLC logic to ensure that the binary commands behave as momentary inputs to the PLC logic. Likewise, when an operator presses the Auto, Manual, or Stop buttons on the Dewtect® touchscreen, those inputs are momentary button presses. These binary output commands from the BACnet system should revert to low; otherwise, unexpected system behavior could occur.

Note: If the Dewtect System is in a sensorless commissioning cycle (see BI-3 and AI-9), Starting and Stopping the system from BACnet is disabled. Control shall only be permitted by the touchscreen on the Dewtect cabinet.

Fan faults and resetting faults

When faulted, Powerfoil® X fans can be reset by a momentary output on BO-3 without a stop command. Powerfoil 8 and Basic 6® fans can only be reset by issuing a fan system stop command via BO-2 or AO-0. BO-3 has no function on the Powerfoil 8 and Basic 6.

Binary inputs (BI) 6–10 and (BI) 12–14, sensor faults

Proper automatic operation of Dewtect relies on environmental sensor data. If the system is running in Auto mode and a sensor fault is reported, the fan speeds revert to a steady state. If the system is stopped when a sensor fault is reported, setting the system to automatic will not be permitted. Once the issue with a failed sensor is resolved, issuing a stop command via AO-0, BO-2, or the Dewtect touchscreen will clear the sensor fault message.

TROUBLESHOOTING

Some issues can be resolved before requesting service. Review the below troubleshooting tips before contacting Customer Service for support.

 **WARNING: Disconnect power before opening the control cabinet.**

Symptom	Possible solution(s)
The fan(s) have not come back on after a power loss	Make sure the Automatic Restart setting is enabled on the Advanced System Setup 2 of 3 menu. If it is enabled and the fans still did not restart automatically, cycle power to the fans (off for 30 seconds, re-energize).
2066: Logging Error message appears on the Data Logger screen	An error message will appear if recording to a MicroSD card is enabled, but a properly formatted MicroSD card is not installed. If you do not want to log data to a MicroSD card, disable recording to MicroSD card. Refer to instructions on page 33.
"Comms Failure - Check Config" message appears on the Fan Configuration & Fault Status screen when a fan should be present at the address indicated, but it cannot be communicated with	There are three possible causes for this error: <ul style="list-style-type: none">• The fan has no AC power.• There is no physical connection. Check to see if a wire is loose or a connector is broken.• The fan is connected but is not configured properly for communication (see pages 8–14). All other messages displayed here are drive error messages that are actively being read from the drive.
The START AUTO button does not respond	You cannot set the fan system to auto if any of the environmental sensors have failed. "Sensor Has Failed" will be displayed next to the corresponding field on the home screen. Touch STOP FANS or FANS STOPPED to reset the sensor failure warning if the sensor has been repaired.
Unexpected system behavior (e.g. My fans run full speed all the time, my exhaust fans never operate anymore, etc.)	The data logger tracks all system behavior. Retrieve the TrendLog.csv file from the MicroSD card. This file will need to be reviewed by Big Ass Fans personnel before corrective actions can be taken via system settings. It is also recommended that you verify system integrity. Check the wiring and other system components. If heat and exhaust fans are set up to be controlled by this system, use "Force Exhaust Fans" and "Force Heating" on the Basic System Setup 2 of 2 screen to verify that those circuits are functional. Sensor failures will also prevent proper system operation.

CONTACT US

Talk to a Big Ass Fan Expert. Call us at one of the numbers below or visit www.bigassfans.com



Customer Service

United States

2348 Innovation Drive
Lexington, KY 40511
USA
877-244-3267
Outside the U.S.
(+1 859-233-1271)
bigassfans.com

Canada

2180 Winston Park Drive
Oakville, Ontario L6H 5W1
Canada
1 844-924-4277
bigassfans.com/ca

Australia

35 French Street
Eagle Farm, Brisbane
QLD 4009
Australia
+61 1300 244 277
bigassfans.com/au

Singapore

50 Ubi Crescent
#01-01 Ubi TechPark
Singapore 408568
+65 6709 8500
bigassfans.com/sg

Mexico

CEBSA (Corporación Eléctrica
del Bravo SA de CV)
Avenida Ind. Rio San Juan
Lote 3-A Parque Industrial del Norte
Reynosa, Tamps C.P. 88736
+52 1 899 925 6398
<http://cebsainc.com/>

All Other Geographies

+1 859-410-6286
bigassfans.com



Manufacturing and Warranty

You are responsible for providing and paying for shipping when returning a product to Big Ass Fans for the purpose of recycling under the WEEE directive.

Manufacturer 
2348 Innovation Drive
Lexington, KY 40511
USA

Warranty and WEEE Returns
2201 Jaggie Fox Way
Lexington, KY 40511
USA

Manufacturing Site
2251 Innovation Drive
Lexington, KY 40511
USA



004463

Rev. Q

10/13/2022



2251 Innovation Drive, Lexington, KY 40511
1 (877) BIG-FANS | WWW.BIGASSFANS.COM