

VentStar

Environmental Controller



USER MANUAL

Introduction

Thank you for purchasing the VentStar environmental controller. This controller is designed for ease of installation and operation, as well as addressing the unique challenges of greenhouse environmental control. The system can coordinate and control ventilation curtains, heaters, and fans.

Freestanding Greenhouse Application

The VentStar provides climate control for a single greenhouse zone with crop quality control features. It's ideal for high tunnels and stand-alone greenhouses. This manual's purpose is to assist you in utilizing the controller to its fullest potential, for your specific application. Thermostatic control of your ventilation curtains, heaters, louvers, and fans is just a setpoint away when connected to the VENTSTAR . When combined with our optional humidity sensor and AC contactor box the VENTSTAR provides relative humidity overrides for ventilation, fans, and louvers.

Main Features

- Manual override
- Simple to program set points, vent drive run times, and sensor reading intervals.
- Provides power for two (2) 24V DC vent motors.
- Controls motors, fans, heaters, or alarms.
- Dry contact for heaters.
- Humidity sensor option.
- Resettable circuit breaker for motor protection.
- Includes 100' temperature sensor.

Read directions completely before beginning installation.

Always wear eye and ear protection. Use gloves and safety equipment.

All electrical connections must be made by a qualified electrician.

Installation

Locating the VentStar

Consider the following before installing the VentStar:

- Protect the enclosure from moisture—mount it in a secure and dry place.
 - Use watertight cable glands and only drill holes in the bottom of the enclosure.
- Drilling holes into the top or sides of the enclosure will void the warranty.
- Secure using the included mounting brackets and properly sized screws or bolts.
- Place in a location where sensor and motor wires can be easily connected

Locating the Temperature Sensor

Place the temperature sensor in the middle of the structure and at a height that best represents the average temperature at crop level. Secure temperature sensor wire to purlins or trusses using cable ties.

Do not splice temperature sensor wires!

If the 100' temperature sensor is not long enough to reach the desired location we have 150' sensors available for purchase,

Keep the temperature sensor wire away from high voltage wires by at least 1 foot.

Locating the Humidity Sensor

Place the humidity sensor in the middle of the structure and at a height that best represents the average relative humidity of the air.

Avoid placing the humidity sensor in a warm air current, for example in front of a heater. The air within a warm air current is dryer than the average air and produces an inaccurate humidity reading.

Avoid spraying the humidity sensor with water or chemicals.

Keep the humidity sensor wire away from high voltage wires by at least 1 foot.

Connecting the Temperature Sensor

Connect the temperature sensor wires to the terminals labeled “Temperature Sensor” on the circuit board.

The temperature sensor has two wires, (1) red and (1) white.

Either wire can be connected to either terminal if they are both secured at the proper location.

Test the connection by powering up the VentStar. The LED will display the temperature if a proper connection has been made. See the troubleshooting section of this manual if the temperature is not displayed.

Do not splice temperature sensor wires!

If the 100’ temperature sensor is not long enough to reach the desired location we have 150’ sensors available for purchase,

Not Overtighten, 4 in-lb of torque is enough.



Connecting the Heater(s)

The VentStar environmental controller provides 2 dry contacts for low voltage, 24VAC, heater connections.

Do not connect the 110/220 V AC heater power supply to the controller terminals.

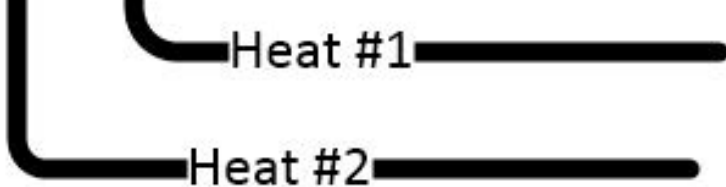
The controller sends an operation signal to the heaters. The heaters are powered independently of the controller. The VENTSTAR is intended to replace existing thermostatic heater controls.

A qualified, licensed electrician must make all heater electrical connections. Connections required must follow all state codes, local codes, and heater manufacturer instructions.

Failure to have a qualified person complete the installation voids the warranty and could result in severe injury or death.

Connect the heater thermostat wires to the dry contact terminals as shown below — two conductor wire is required for each heater connection. Either wire can be connected to either terminal if they are both secured to the proper location.

Do Not Overtighten, 4 in-lb of torque is enough.



Heater #1 (Setpoint #1)
24V AC Thermostat connection

Heater #2 (Setpoint #2)
24V AC Thermostat connection

SETUP

Connecting the Humidity Sensor

Place the humidity sensor in the middle of the structure and at a height that best represents the average relative humidity of the air.

Avoid placing the humidity sensor in a warm air current, for example in front of a heater.

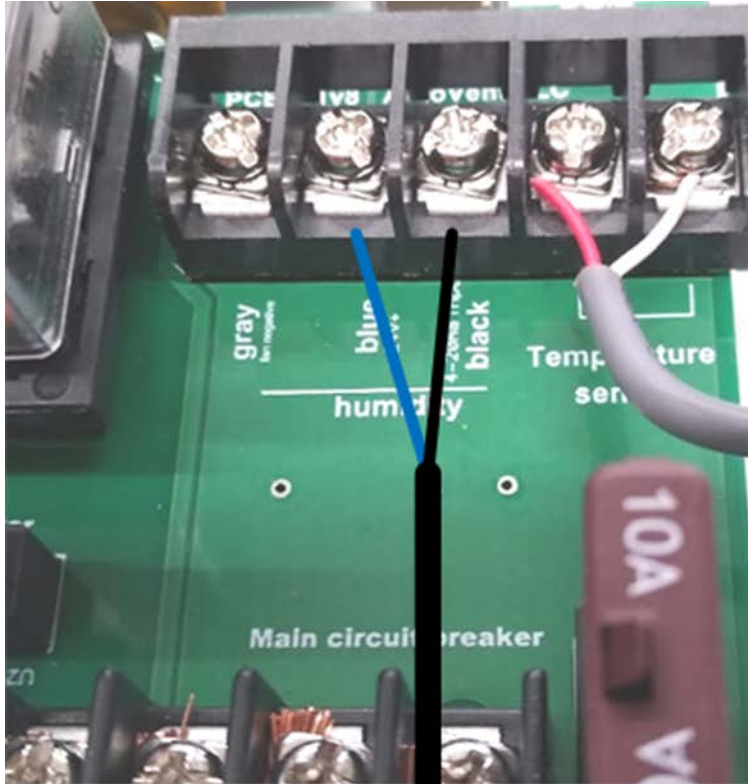
Air within a warm air current is dryer than the average air and produces an inaccurate humidity reading. Avoid spraying the humidity sensor with water or chemicals. Keep the temperature sensor wire away from high voltage wires by at least 1 foot.

The humidity sensor includes an M12 pigtail and a 100-foot M12 extension cable. Do not cut the 100-foot extension cable. Connections to the controller are made using the M12 pigtail connector. The M12 cable is a 5-conductor cable, grey, blue, black, brown, and white.

The humidity sensor only uses 2 of the 5 conductors, blue and black. The grey, brown and white can be cut off.

Connect the blue, and black wires to the humidity sensor terminals.

Do Not Overtighten, 4 in-lb of torque is enough.



Connecting an Alarm

The VentStar can connect and send a high and low-temperature signal to an existing external alarm system. If enabled, the temperature alarm signal is always configured to dry contact #4.

Depending on the alarm manufacturer the type of signal required varies between constant or signaled when an alarm condition is present. Refer to the manufacturer's documentation to determine what type of signal is required. The VENTSTAR configuration settings provide for both signal conditions.

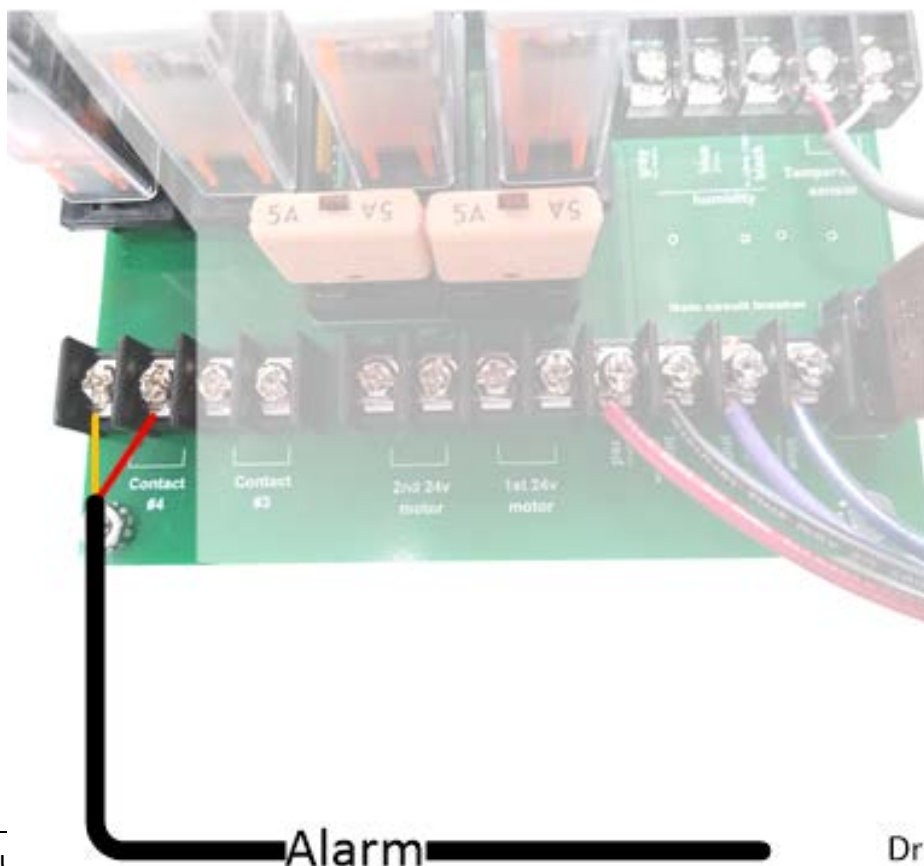
Signal condition configuration and alarm limit settings are in the "Configuration Setup" and "Zone Parameter Setup" sections of this manual.

Setting C16 to #1, normally closed provides a constant signal. Setting it to #2, normally open, provides a signal only when an alarm condition is present.

Connect the alarm sensor wires to dry contact #4 terminals as shown. Two conductor wires are required for alarm connection.

Either wire can be connected to either terminal if they are both secured to the proper location.

Do Not Overtighten, 4 in-lb of torque is enough. Do not connect the 110/220 V AC alarm power supply to the controller terminals..



SETUP

Conencting 1 heater and 1 Fan/Cooling

The VentStar can provide thermostatic control of fans and louvers by sending an operational signal to an optional AC contactor box. Do not connect the 110/220 V AC fan power supply to the controller terminals.

Additional wiring is required to power the dry contact which provides a signal to activate the AC contactor.

If connecting only 1 fan/louver, make all fan control connections to contact#4 terminals. Contact #3 remains free for a heater connection.

Disconnect the controller power supply before making any connections.

Install a jumper wire between the blue wire, 24V DC positive, and the first terminal of contact #4.

Two conductor signal wire is required, 18 ga is sufficient, to activate the contactor coil.

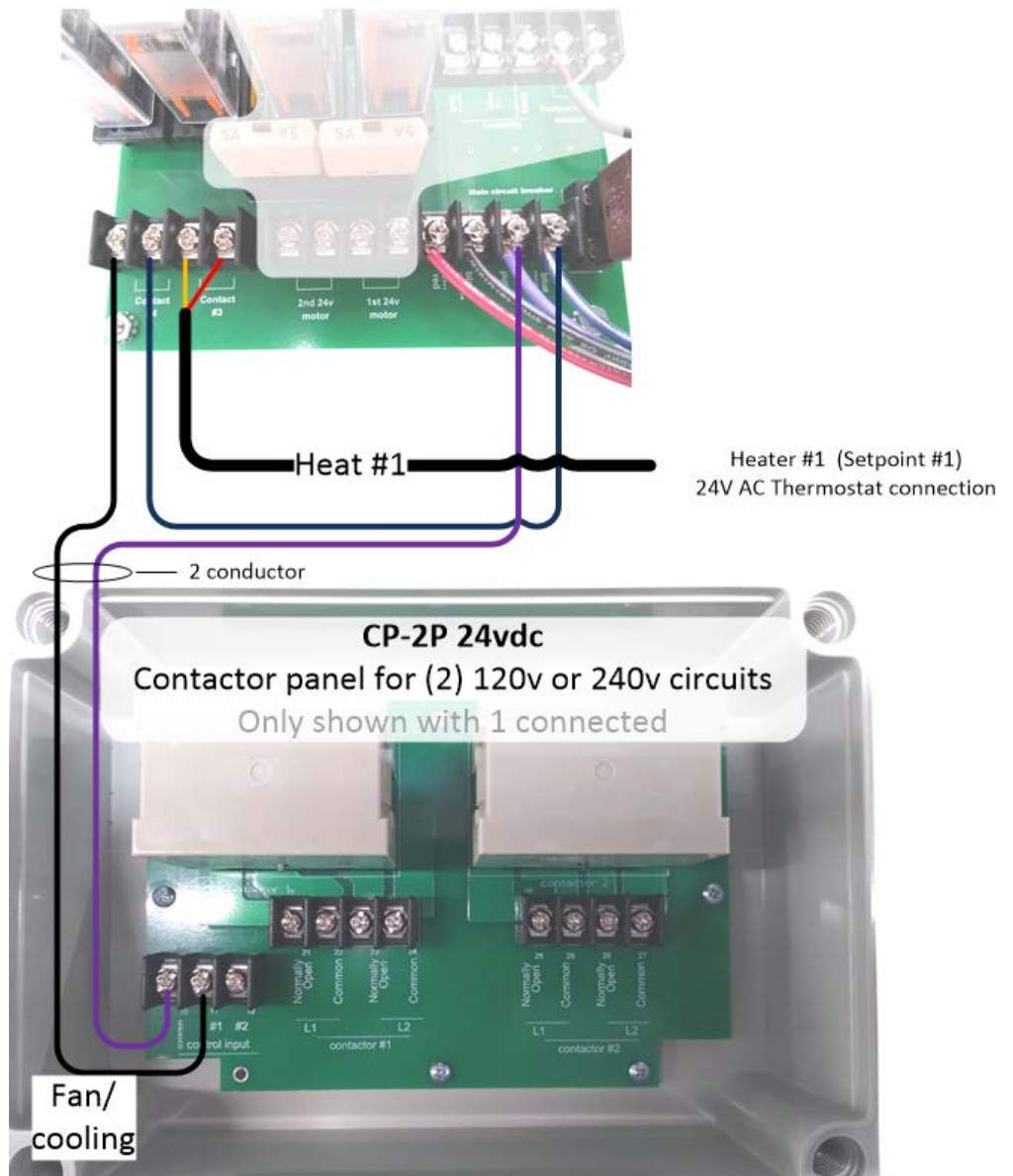
Connect one of the signal wire conductors to the blue wire, 24V DC positive, and the other to the remaining terminal at contactor #4 as shown below.

All remaining AC/DC connections are made inside the AC contactor box. See the instructions included with the contactor box to complete the installation.

To properly configure the VENTSTAR for the number of heaters, and fans and enable setpoints please see the "Configuration Setup" and "Zone Parameter Setup" sections of this manual.

A qualified, licensed electrician must make all fan electrical connections. Connections required must follow all state codes, local codes, and fan manufacturer instructions

Failure to have a qualified person complete the install voids the warranty and could result in severe injury or death



Connecting 2 AC circuits for cooling or heating

Disconnect the controller power supply before making any connections.

Install a jumper wire between the blue wire, 24V DC positive, and the first terminal of contact #3 & #4.

Three conductor signal wire is required. 18 ga is sufficient, to activate the contactor coil.

Connect one of the signal wire conductors to the purple wire, 24V DC negative to the Control input common .

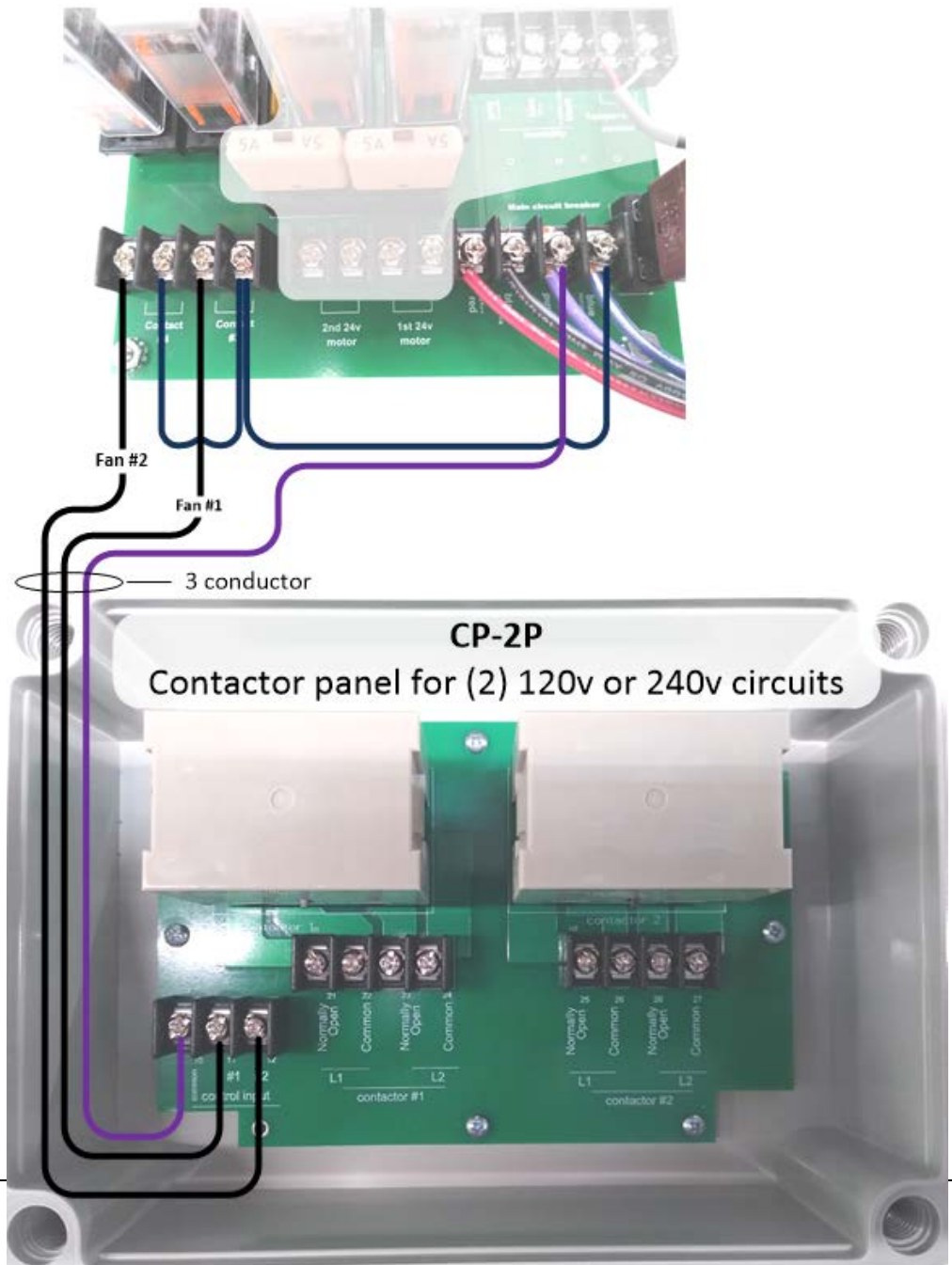
Wire Contact#3 to #1 control input as shown.

Wire Contact#4 to #2 control input as shown.

All remaining AC/DC connections are made inside the AC contactor box. See the instructions included with the contactor box to complete the installation.

To properly configure the VENTSTAR for the number of heaters, and fans and enable setpoints please see the "Configuration Setup" and "Zone Parameter Setup" sections of this manual.

A qualified, licensed electrician must make all fan electrical connections. Connections required must follow all state codes, local codes, and fan manufacturer instructions. Failure to have a qualified person complete the install voids the warranty and could result in severe injury or death.



SETUP

Connecting Low voltage motors

The VentStar provides the 24V DC power required to operate up to two 5 amp Low Voltage Motors (LVM). motors operate simultaneously at one setpoint.

The motors connect to the controller using the attached motor wire. When the motor wire is not long enough to reach the controller, a watertight junction box is required to make the necessary splice.

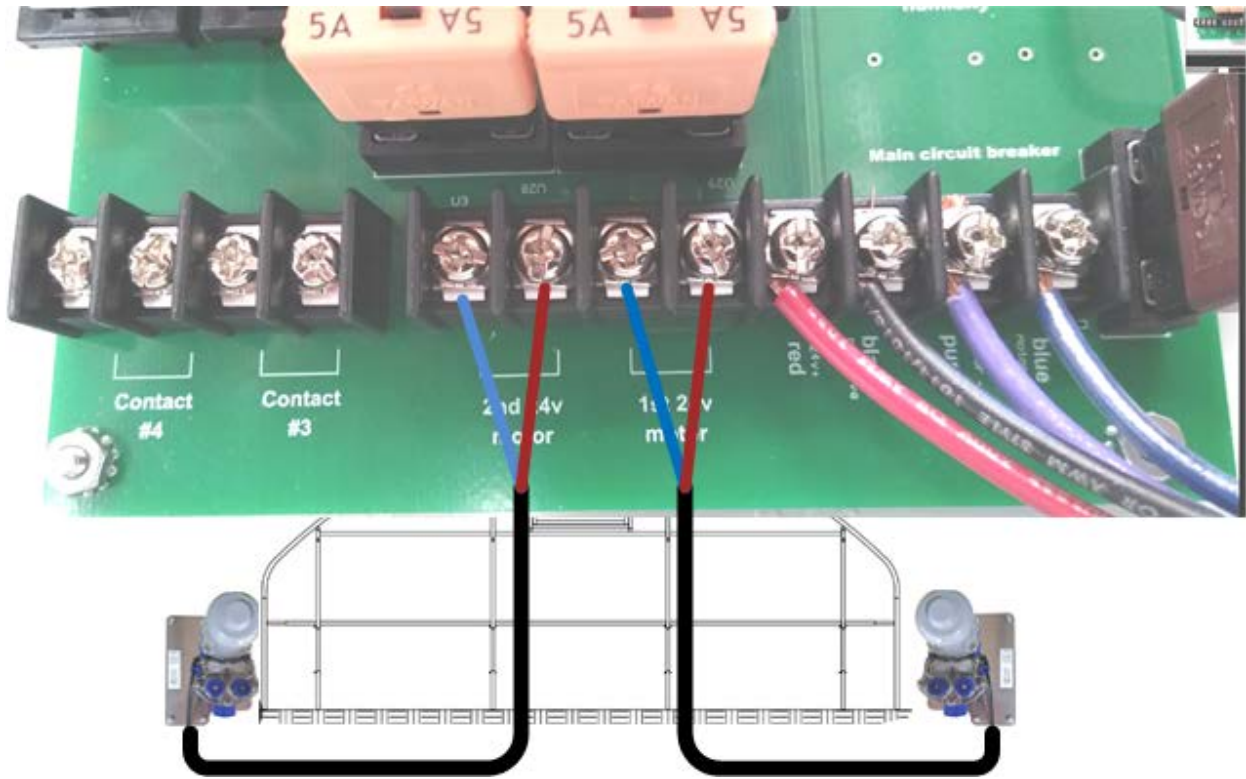
Make a note when creating a splice to extend the motor wire on which the new color wire connects to the blue and brown wires. i.e., if the extension wire has (1) black and (1) white conductor and you connect the blue motor wire to the black and white to the brown. Make a note of this for later reference.

We recommend using an SJEOOW-rated wire to extend the connection to the controller. Connections of 199 feet or less require a 14 ga / 2c, flexible, standard cable.

Connections of 200 feet or more require a 12 ga / 2c, flexible, standard cable. Undersized wire causes over-amp conditions that trip the inline breaker as well as shorten the lifespan of the motor.

Each motor wire has two conductors, (1) blue and (1) brown. The install location dictates what direction of rotation, clockwise or counter-clockwise, the motor shaft is required to turn to open or close the vent.

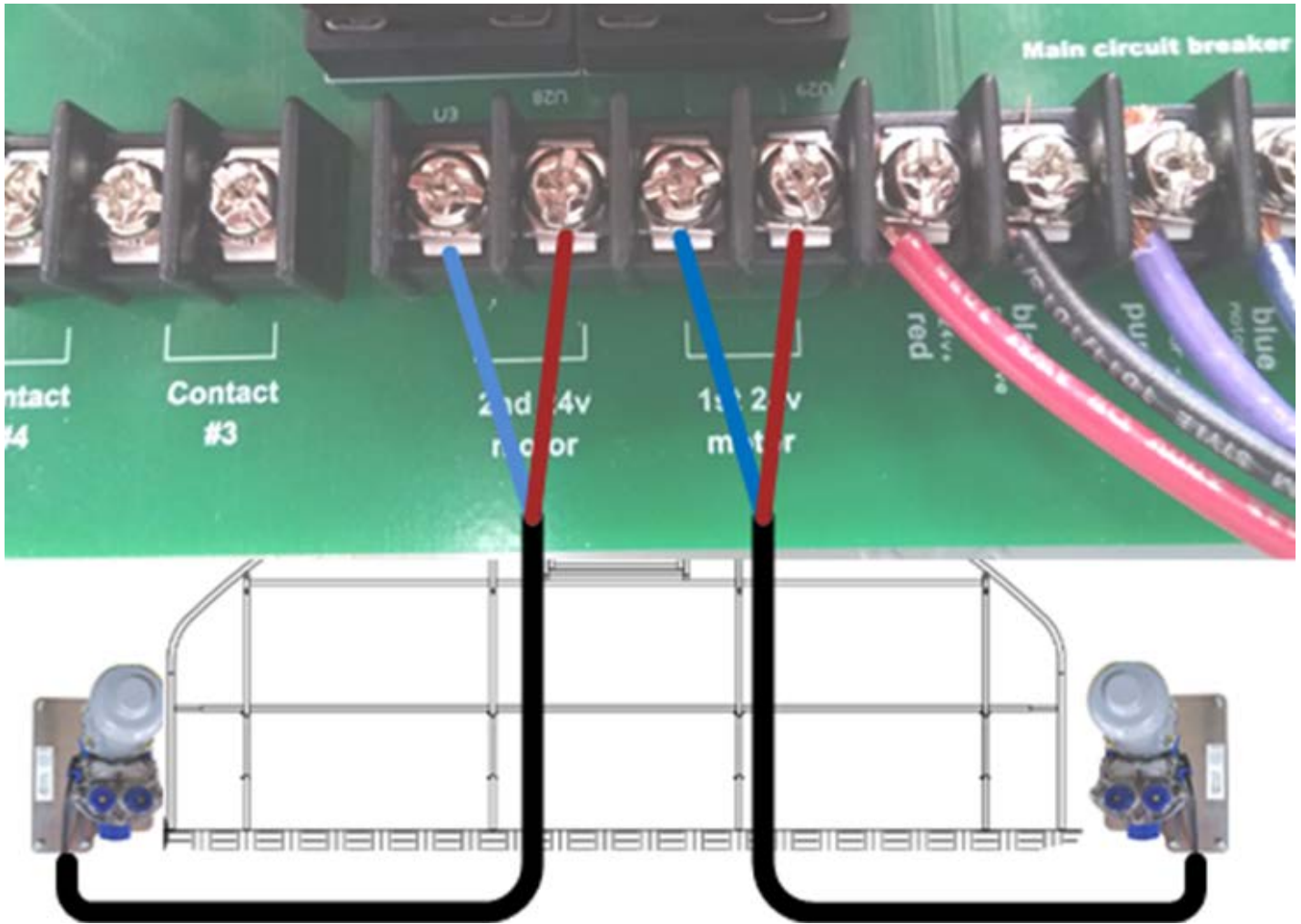
One conductor provides the clockwise rotation of the motor shaft while the other provides the counter-clockwise rotation.



The motor wires connect to the lower relay board at the terminals labeled "1st 24v motor" and "2nd 24v motor." Relay #1 (close circuit) and Relay #2 (open circuit) provide the signal for the motors.

Connect the 1st motor's Brown wire to the right terminal screw on the circuit board as shown below.

SETUP



If a motor operates in the opposite direction after connection; simply switch that motor's blue and brown wires.

Configuration

To enter the configuration menu, remove power from the VentStar.

Press and hold "ENTER" and repower the controller.

Release "ENTER" after approximately 3 seconds of power. Upon release, the controller LED should read "C3".

- Power down VENTSTAR
- Power Up, Hold "ENTER"
- Release after 3 Seconds



- Press "ENTER" to Cycle Menu
- Press "OPEN" to increase value
- Press "CLOSE" to decrease value



- Configuration Values Set
- Press "ENTER" to Cycle Menu
- "END" Displayed on LED

Parameter ID	Description	Default	Min	Max
14	Configuration AutoVent, LLC			

SETUP

C3	Manual override latch	1	0	1
C4	0= Fahrenheit , 1=Celsius	0	0	1
C11	Type of 2 nd sensor connected 0= none. 1= humidity,	0	0	1
C12	Temperature probe failure override. Default temperature that will be used instead.	70°	0	150°
C16	If alarm on dry contact #2 is enabled. 0= NO, 1 = Normally closed alarm, 2= Normally open Alarm. Note : Using the alarm eliminates Heater #2 or Fan#2	0	1	2
C19	Number of heaters circuits for this controller	2	0	2
C20	Interlock degrees between heater stages.	5.0°	0	20.0

Configuration Settings Description

C3 – Manual Override Latch

Set default to 1 allows the user to press and release the "OPEN" or "CLOSE" button and the manual override is activated. Press the button again to deactivate the manual override and return to "Auto" mode.

Set to 0 the user must press and hold the "OPEN" or "CLOSE" button for the manual override to be active. Releasing the button returns the control to "Auto" mode.

During manual override, the LED displays "OPE" or "CLO." In "Auto" mode the LED displays the temperature.

C4 - Temperature Scale

Set default to 0 the vent control unit measures and displays temperature using the Fahrenheit scale.

Set to 1 the vent control unit measures and displays temperature using the Celsius scale.

C11 – Humidity Sensor

Set default to 0 disables the humidity sensor functions of the vent control unit.

Set to 1 to enable the humidity sensor functions of the vent control unit. The humidity sensor must be connected to the control when humidity function overrides are active.

During humidity, the override period LED displays "H1."

C12 - Temperature Sensor Failure: Override Temperature

The LED display flashes "F1" and this temperature setting, "70", on temperature sensor failure. The vent control unit uses this as a default temperature until the failure is corrected. This setting should change per season. During warmer seasons this temperature should be set higher, and in cooler seasons the temperature should be set lower.

i.e., A temperature sensor fails during the summer months, and the override temperature is "85°." The ventilation curtains setpoint is "70°." The vent control unit operates using the

85° temperature reading. The 85° temperature is higher than the 70° setpoint for the ventilation curtains. The vent control unit activates and opens the ventilation curtains. Opening the ventilation curtains prevents crop damage from extremely high temperatures.

The default 70° temperature is a baseline setting. The crops and seasons determine the ideal temperature setting.

C16 - Alarm Enabled: Relay State

The type of signal required varies by alarm manufacturer. See the manufacturer's documentation to determine what type of signal is required. When enabled, the external alarm function uses contact #4 to send and receive signals.

Set the default to 0 the external alarm signal is disabled.

Set to 1 the alarm relay is "Normally Closed" – Continuous Signal Sent

Set to 2 the alarm relay is "Normally Open" – Signal only when an alarm condition is present.

C19 – Number of Heaters

The VENTSTAR has a maximum of 2 heater setpoints. Setpoint #1 corresponds to contact #3, and setpoint #2 corresponds to contact #4. Setting to a value lower than 2 activates the cooling functions for the remaining contact(s).

Set to 0 enables two cooling setpoints for louvers and fans (AC Contactor Box Required). Set to 1 enables one heating setpoint and one cooling setpoint. Heating setpoint uses contact #3, and the cooling setpoint uses contact #4.

SETUP

Set default to 2 enables two heating setpoints.

Set to 0 will enable two cooling setpoints. Louvers/Fans will use contacts #3 & #4.

(Fans/louvers require an AC Contactor Box: 42-CIBAC1F1L, 42-CIBAC-2F2L, 42-CB2, 42-CB4)

C20 – Heater and Ventilation Interlock

The interlock function provides a safe zone between the ventilation curtain opening, fan startup, and heater startup. The interlock degree setting prevents the ventilation setpoint from being set too close to the heater setpoint.

i.e., the Ventilation curtain setpoint is 70° with a 5.0° differential. Curtains open at 70° and close at 65°. The interlock function setting is 5.0°. The heater setpoint temperature is locked and cannot exceed a 64° setpoint.

Set default to 5.0°

Parameter ID	Description	Default	Min	Max
P1	Ventilation Curtain setpoint.	70°	1°	99°
P2	Ventilation Curtain Runtime Seconds	20	5	50
P3	Ventilation Curtain idle time Minutes	3.0	.1	25.4
P4	Ventilation curtain Temperature differential.	3.0°	1.0°	10.0°
P5	Heater /fan setpoint –contact #3	60	35	99°
P6	Heater /fan setpoint –contact #4	60	35	99°
P7	Heater/fan hysteresis /Fan Differential	1.8	.1	25.5°
P8	Ventilation Curtain Humidity Override RH%	80%	30	101%
P9	Humidity Overrid Curtain Runtime Seconds	20	1	200
P10	Humidity Low Temperature Override	32°	0	99
P11	Fan #1 Humidity Override	78%	20	101
P12	Humidity hysteresis	3%	1	20
P13	Alarm Low temperature setpoint	32	0	200
P14	Alarm High temperature setpoint	95	1	200

SETUP

Parameter Settings Description

P1 - Ventilation Curtain Setpoint

Set default to 70° the ventilation curtains begin the cooling cycle when the temperature rises above this setpoint. The cooling cycle ends when the temperature has decreased by the value of P4, set default to 3.0°. The opening cycle begins at 70° and the closing cycle at 67°.

P2 - Ventilation Curtain Runtime: Seconds

Set the default to 20 seconds the ventilation curtains run this amount of time between idle times and beginning open/close cycles. Ventilation curtains pause for the value of P3 set default to 3.0 minutes. Ventilation curtains open/close for 20 seconds, idle for 3.0 minutes then repeat the cycle until the vent control unit ends the cycle.

P3 - Ventilation Curtain Idle time: Minutes

Set default to 3.0 minutes the ventilation curtains pause, "idle," between runtime cycles. The vent control unit continually measures temperature during this idle period. If the temperature has decreased below the P4 value, the cycle ends, and the curtain begins the closing cycle. If the temperature has not decreased the curtain enters another run cycle. The process continues until the ventilation curtains are either fully open or closed.

P4 - Ventilation Curtain Temperature Differential

Set default to 3.0° this is the amount the temperature must decrease below the P1 setpoint for the ventilation cooling cycle to end. The ventilation curtains begin opening at the P1 setpoint, operating on the run (P2) and idle time (P3) cycle. The cooling cycle ends when the temperature decreases by the value of P4.

i.e., (P1) 70° - (P4) 3.0° = (End Cycle) 67°

P5 - Heater or Fan Setpoint: Contact #3

P6 - Heater or Fan Setpoint: Contact #4

Set default to 60° the heater begins a warming cycle when the temperature decreases below this setpoint. The heating cycle ends when the temperature has increased by the value of P7.

A cooling cycle initiates if the C19 value is 0. The fan/louver ends the cooling cycle when the temperature has decreased by the value of P7

P7 - Heater Hysteresis / Fan Differential

Set default to 1.8° this is the amount the temperature must increase in degrees above the

P5/P6 setpoints for the heating cycle to end.

A cooling cycle also initiates if the C19 value is 1. The fan/louver ends the cooling cycle when the temperature has decreased by the value of P7.

If the set value of C19 is 1, then the heater must be connected to contact #3 and the AC contactor box for the fan/louver to contact #4. Contact #3 initiates a heating cycle and contact #4 a cooling cycle.

i.e., (P5) 60° - (P7) 1.8° = (End heat cycle) 61.8° (P6) 60° - (P7) 1.8° = (End cool cycle) 58.8°

P8 - Ventilation Curtain Humidity Override: RH%

The use of P8 - P12 requires the optional humidity sensor to be connected. (46-HUMID) Set default to 80% the vent control unit initiates a humidity override when the humidity rises above this setpoint. The ventilation curtains open for the value of P9 in seconds and remain open until the humidity decreases by the value set at P12. The vent control unit returns to auto mode only after the override condition has cleared.

P9 - Humidity Override Curtain Runtime: Seconds

Set the default to 20 seconds the ventilation curtains open when the humidity override initiates. The curtains remain open until the relative humidity has decreased below the P12 setting. The ventilation curtains close the same amount of time when the override condition has cleared.

P10 - Humidity Low-Temperature Override

Set default to 32° the humidity override clears if the inside temperature falls below this setpoint. The vent control unit returns to the auto mode.

P11 - Fan #1 Humidity Override: RH%

Set default to 78% the vent control unit initiates a humidity override when the humidity rises above this setpoint. Fan #1 starts a cooling cycle and continues to run until the humidity for the value of P9 in seconds and remains on until the humidity decreases by the value set at P12. The vent control unit returns to auto mode only after the override condition has cleared. Fan#1 is the only fan controlled by the humidity override. *To disable the fan humidity override function set the value to 101*

P12 - Humidity Deadspan.

Set default to 3.0% this is the amount the relative humidity must decrease below the P8/ P11 setpoint for the ventilation air exchange cycle to end.

The ventilation curtains open for the number of seconds set at P9. The curtains remain open until the relative humidity has decreased below the P8 setpoint by the value set here. i.e., (P8) 78% - (P12) 3.0% = (End cycle) 67%.

TROUBLESHOOTING

If more than one fan/louver is enabled only fan/louver #1 initiates the air exchange cycle. The fan/louver startup and continue operating until the relative humidity has decreased below the P11 setpoint by the value set here. i.e., (P11) 78% - (P12) 3.0% = (End cycle)

67%.

The ventilation curtains will open for the number of seconds set at P9. The curtains remain open until the relative humidity has decreased below the P8 setpoint by the value set here. i.e., (P8) 78% - (P12) 3.0% = (End cycle) 67%.

P13 - Alarm Low-Temperature Setpoint

Set default to 32° this is the setpoint the temperature must fall below for the vent control unit to send a low-temperature signal. The signal is sent continually to the external alarm system until the alarm condition has cleared. The value of this setting is structure and crop-dependent. The grower should set the value to the required temperature. The temperature alarm function requires contact #4 to send the signal and limits the number of heaters or fans/louvers that can be enabled.

P14 - Alarm High-Temperature Setpoint

Set default to 95° this is the setpoint the temperature must rise above for the vent control unit to send a high-temperature signal. The signal is sent continually to the external alarm system until the alarm condition has cleared. The value of this setting is structure and crop-dependent. The grower should set the value to the required temperature. The temperature alarm function requires contact #4 to send the signal and limits the number of heaters or fans/louvers that

Temperature Sensor

LED Flashing F1 and Temperature:

LED Flashing F1 and Temperature - F1 is the fault code for a disconnected temperature sensor. Check to ensure the red and white sensor wires are in the correct location and securely connected, see page 6. The wires may appear to be connected but not making good contact. Disconnecting and reconnecting the sensor wires clears the fault in most occurrences.

LED Flashing F2:

The F2 fault code indicates a damaged or short-circuit of the temperature sensor. Temperature sensor failures are rare and usually caused by improper splicing or physical damage. If an F2 fault condition is present, triple check the sensor's wire condition very carefully.

Temperature Reading Fluctuates:

The LED temperature reading continually indicates large swings in temperature. Temperature fluctuations occur when the sensor wire runs parallel to power lines, (120/220V AC). Do not run temperature sensor wire inside of conduit alongside power lines. Make all sensor wire crossings at 90° to power lines.

Humidity Sensor

Humidity Sensor Not Reading:

Inspect the relay board to ensure the sensor wires are securely connected and in the correct location. Check all barrel connections for proper alignment at the sensor; extension cable ends, and at vent control unit.

Check the configuration setting C11 to verify it is set to a value of 1, enabling the humidity sensor.

Ventilation Curtains and Fan/Louver #1 Not Responding to Humidity Override:

Check the configuration setting C11 to verify it is set to a value of 1, enabling the humidity sensor. Check parameter settings P8 - P12 is set to the desired setpoints, runtimes, and deadspan.

TROUBLESHOOTING

Heater(s)

Heater Does Not Come On at Setpoint:

Check the configuration setting C19 to verify it is set to a value of at least 1 to enable the heater. The heater thermostat wires must be connected to contact #3 when only 1 heater is present. Verify parameter settings P5 – P7 are set to the desired setpoints and hysteresis. Check heater manufacturer documentation to confirm thermostat wires are correctly installed.

Heater Starts Above the Assigned Setpoint:

Heaters starting above the desired setpoint are an indication that a cooling cycle, not a heating cycle, has been configured. Check the configuration setting C19 to verify it is set to a value of at least 1 to enable the heater. If two heaters are present set C19 to a value of 2. The heater thermostat wires must be connected to contact #3 when only 1 heater is present, and contacts #3 and #4 when two heaters are present.

Heater Cycles Frequently:

Verify parameter setting P7 is set to a hysteresis higher than the average temperature swing of the structure. The hysteresis is the value in degrees the temperature must rise for the heating cycle to end. A low P7 value causes the heater to cycle on and off more frequently than a higher setting.

Fan(s) or Louver(s)

Fan/Louver Does Not Come On or Starts Below Setpoint:

Check configuration setting C19 is set to a maximum value of 1 to enable the fan/louver. The fan/louver must be connected to the vent control unit via an AC contactor box.

Do not connect fans/louvers directly to the relay board. Confirm the AC contactor box connection is at contact #4 and the additional wiring required corresponds to the diagram on page 11. Check parameter setting P6 is set to the desired setpoint.

Fan/Louver Cycles Frequently:

The parameter setting P7 functions as both the heater hysteresis and fan differential if one heater and one fan/louver are enabled. Verify parameter setting P7 is set to a hysteresis/ differential higher than the average temperature swing of the structure.

External Alarm Function

Low or High-Temperature Did Not Signal Alarm:

Check the values of P13(Low-Temperature) and P14(High-Temperature) area the desired setpoints. Verify configuration setting C16 is at any value other than 0.

The next steps require information obtained from the external alarm manufacturer documentation.

Determine the type of signal required by your external alarm, continuous or signal sent during an alarm condition.

The alarm function sends a continuous signal when C16 is set to the value of 1 (Normally Closed). The alarm function sends a signal during an alarm condition when the C16 value is set to 2 (Normally Open).

The external alarm must be connected to contact #4. Confirm the external alarm connection is at contact #4 and the wiring required corresponds to the diagram on page 9.

Relays and Fuses

Circuit Protection:

The VentStar includes several different points of overload protection, all resettable – (1) 5A circuit breaker on the bottom right, (1) 10A circuit breaker on the bottom left, (1)

10A main fuse on the right of the relay board, and (2) 5A fuses on the relay board for motor protection.

No display on LED:

If the LED display is blank first check, the primary power source to the vent control unit. If power is present inspect the 10A circuit breaker on the bottom right of the enclosure. Pressing the button reset the circuit breaker and the display returns to normal. If the

10A circuit breaker trips immediately again and contact an electrician for further diagnosis.

Most likely the rectifier (black 1" square with 4 tabs with a single screw) needs replaced.

No Power at the Relay Board:

There are two points of protection for the relay board, (1) a 10A circuit breaker and (1)

10A ATO fuse. Verify the 10A circuit breaker located on the bottom left has not tripped. Pressing the button resets the circuit breaker and power returns. If power has not returned, disconnect the vent control unit from

TROUBLESHOOTING

the primary power source. Open the enclosure and inspect the 10A ATO main fuse located on the right of the relay board. Pressing in on the red center tab resets the fuse and the normal function returns.

Low Voltage Motors

Motor(s) Operate in Opposite Direction:

Low voltage motors operating in the opposite direction are an indication of reversed polarity. i.e., the ventilation curtain opens when you press the close button. Reversing the position of the blue and brown, within the terminals sets resolves this condition.

Remove the primary power source from the vent control unit before opening the enclosure lid. Identify which motor is operating in the reverse direction and the connection location at the relay board. i.e., Motor #1 or Motor #2 terminal set. Disconnect the blue and brown wires noting their current location. Reconnect the blue wire to the location where the brown wire previously was connected and repeat this process for the brown wire. Close the enclosure lid and power up the unit. Press the "OPEN" or "CLOSE" button, and the motor operates in the proper direction.

Motor(s) Do Not Operate:

Low voltage motors not operating at setpoint, or in manual override, could be an indication of one of several situations.

The first step in the troubleshooting process is to check the

10A circuit breaker located on the bottom right of the enclosure.

If this has tripped, press in to reset and power is restored.

The second step is to disconnect the primary power supply and open the enclosure lid to inspect the 10A main fuse and the two 5A motor fuses located on the relay board.

Pressing in on the red tab of each fuse resets that fuse and restores the connection.

Close the enclosure lid and repower the unit. Motor power is restored. The last step is to verify the internal limit switches located on the motors have not reached their limit. Refer to the documentation included with the low-voltage motors for further instructions on how to set the limit switches.

There are more how to diagnose on YouTube search for @AutoVentlearn to find our channel

Motor(s) Do Not Open or Close at Desired Setpoint:

Verify vent control unit is not locked in manual override. In manual override, a "CLO" or "OPE" will be displayed on the LED.

In auto mode, the LED will display the current temperature or "H1" if humidity overrides.

Confirm the parameter settings P1 – P4 are properly configured.

A desired ventilation setpoint of 70° will have parameter settings like the following:

(P1) 70° setpoint,

(P2) 20s runtime,

(P3) 1.0m idle time,

(P4) 3.0° temperature differential.

The ventilation curtain opens for the 20s when the temperature reaches 70°, and pauses for 1 minute, if the temperature decreases to 67° curtain closes, if not the cycle repeats.

Specifications

Size of enclosure	7" x10"x6"
Input voltage	120VAC
Output	4 Normally open relays, 24vdc Dry contact
Temperature sensor	Included 100ft probe
Warranty	1 year