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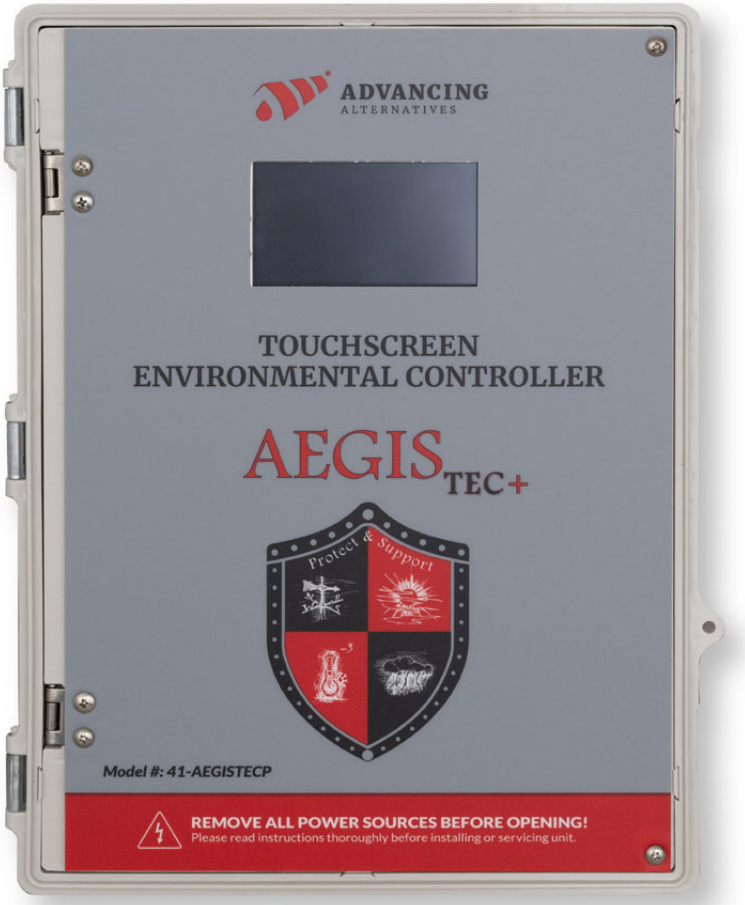
# 41-AEGISTECP

## Touchscreen Environmental Controller




For technical support visit advancingalternatives.com

# INTRODUCTION

Thank you for purchasing the AegisTEC Plus touchscreen environmental controller. The AegisTEC Plus is designed for ease of installation and operation, while still addressing the unique challenges of greenhouse environmental control. The system can coordinate and control ventilation curtains, light deprivation curtains, heaters, and fans.

## Product Description

The AegisTEC Plus lets you understand your temperature and humidity control via a touchscreen that explains each function. Save on energy with an emphasis on natural ventilation that eliminates external vent motor boxes. Protect your crop and structure by adding only the weather sensor(s) you need. Remotely access and receive alerts by adding the Wi-Fi module without paying monthly subscription fees. Receive the personal attention you want with support from our team.

## Main Features

- Two timed setpoint overrides
- DIF growing TEChnique capable
- Light deprivation capable
- Friendly touchscreen interface
- Staged ventilation
- Wind speed override option
- Humidity override option
- Rain override option
- Battery backed clock
- 10 relay outputs
- Dry contact control for heaters or fans
- Manual overrides

# WARNINGS

Read instructions completely before beginning your installation. Familiarize yourself with this unit and compare what you received with these instructions.

Always wear eye and ear protection. Always use gloves and other necessary safety equipment. Metal can be sharp, handle with care to avoid injury.

All electrical connections must be made by a qualified, licensed electrician. All connections must be made in accordance with all state and local codes.

*If you have any questions during installation, contact technical support for assistance.*

# CONTENTS

# OVERVIEW

## Theory of Operation

The key to successfully setting up the AegisTEC+ environmental controller is understanding how the control outputs are assigned by the controller and how they are used to control your greenhouse. The control circuitry is contained on two boards mounted on the inside of the hinged door. The top board is the logic and display board, which includes the touchscreen, and the lower one is the relay board. Sensor inputs (temperature, wind, rain, humidity, etc.) connect to the logic board whose terminals are clearly labeled to identify the connections for each sensor. Controller outputs to control the greenhouse are connected to the lower board, the relay board. The circuitry inside the main housing is the power circuitry, which contains potentially hazardous AC power circuitry. There is no reason to access this power side of the controller during normal setup or operation.

**Under no circumstance should 110 volt or higher AC power be connected to the controller. It is not designed or intended to switch AC power.**

The relay board contains ten sets of output terminals, numbered 1-10 from right to left. If also has ten plug in relays that correspond, right to left, to the ten output terminal sets. Each relay is a single pole double throw relay. The bottom row of terminals is normally the output from the controller.

The three rows of terminals connect to the three terminals of each relay. The bottom row of terminals connects to the relay common contact, the middle row to the normally closed contact, and the top row to the normally open contact. This means that when a relay is not activated, the output terminal (bottom row) is connected to the middle row terminal, and, when a relay activates the output terminal is connected to the top row terminal. This is the case for each relay and for each numbered set of terminals connected to its associated relay.

# OVERVIEW

Note that as delivered, terminal sets 1-8 have the middle row (normally closed) connected to the negative DC power supply (purple wire) and the top row (normally open) connected to the positive supply (blue wire) by a bus bar. In this condition, whenever a relay is activated, 24 volts DC will appear on its respective output terminal. When a relay is not activated, its terminal will be 0 volts. If any of terminal sets 1-8 are needed as a set of "dry contacts", such as to activate a heater thermostat or for other reasons, the bus bar can be broken apart for the desired terminals as described later in this manual.

In this way a relay activation by the controller will control various greenhouse functions through the use of a 24 volt output signal.

- Motor control: low voltage DC motors, such as curtain motors, are always connected to a pair of terminals, with the odd-numbered terminal being the lowest, such as 1-2, 3-4, 5-6, or 7-8. In this way, a pair of relays are activated alternately to run a motor in the forward or reverse direction by switching the 24 volt DC power to one or the other terminal in the pair.
- Fans or other AC powered accessories are connected through an external interface box with relays that are activated by 24 volt DC. For example, a terminal designated to control a fan is connected to the external fan relay coil, with the other side of the coil connected to the 24 volt DC negative terminal. In this way, the positive 24 volt output signal from the controller activates the external relay, which switches the AC power on to the fan.

Terminal sets 9 and 10 are configured by default as dry contacts. This means that unlike terminal sets 1-8, the three terminals for each set are not connected to the power supply. This leaves the terminals available to be connected to the system however they are needed. In most cases, this means that they will be used for heater control. A heater thermostat line is normally activated by making contact between the two wires. This is done by connecting the two wires to the bottom (numbered) terminal and the top (normally open) terminal. This way, when the relay is activated, it makes the connection between the two thermostat wires and the heater is activated.

# INSTALLATION

## Locating the AegisTEC Plus

Consider the following before installing the AegisTEC Plus:

- 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 enclosure.
- Drilling holes into the top or sides of the enclosure voids 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. It is important to not allow sensors to come into contact with direct sunlight. Secure temperature sensor wire to purlins or trusses using cable ties.

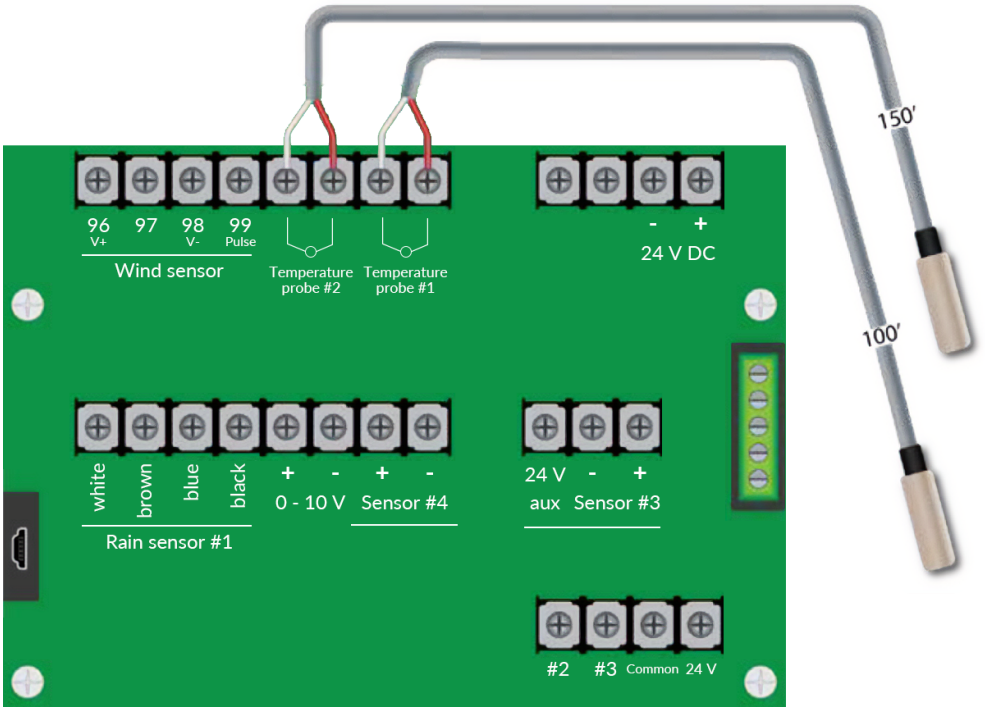
**Do not splice temperature sensor wires!** 150' temperature sensor wires are available. Improperly extending the temperature sensor wire will void the warranty.

To properly extend the temperature sensor, run 18-22 AWG wire (twisted or shielded if possible) from the sensor to the AegisTEC+. Keep the temperature sensor wire away from high voltage wires by at least one foot. Specifically keep it away from the VFD output wires. Solder or use gel filled crimps to connect your wires to the temperature sensor.

# INSTALLATION

## Connecting the Temperature Sensor

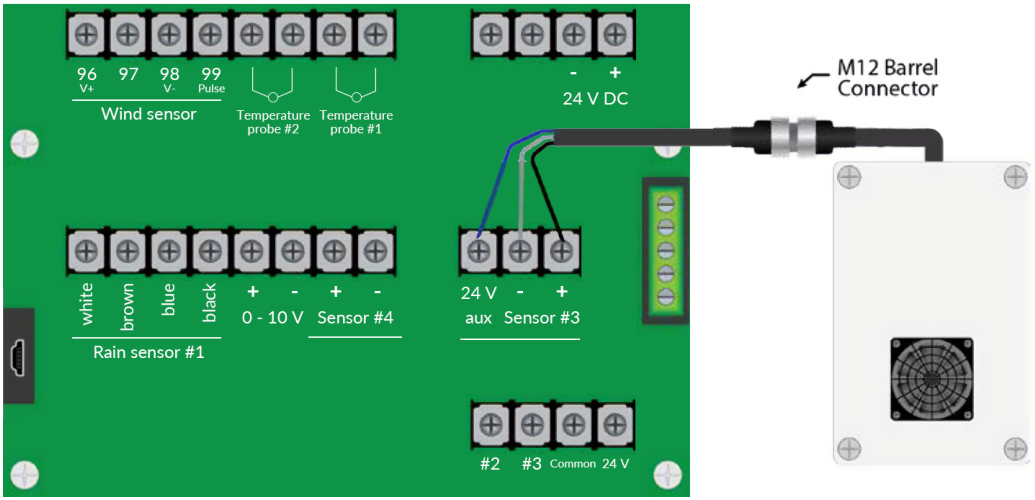
Connect the sensor wires to the temperature sensor #1 terminals. The temperature sensor has two wires, however the polarity is not important. Secure but do not overtighten (3 in-lb max). If the optional second temperature sensor is used, attach the wires in the same manner as above but connected to the sensor #2 terminals.



# INSTALLATION

## Connecting the Humidity Sensor

The humidity sensor allows you to monitor and control the humidity. If the humidity is too high, a vent can open or a fan can start. If you connect a humidity sensor, it needs to be activated. Activate it by selecting humidity for setup parameter P10. Mount the sensor in a central location. Keep it away from heaters or you will get a low reading when the heater is running. Keep the humidity sensor wires away from high voltage wires by at least one foot. Connect the black wire to the positive terminal for sensor #3, the gray wire to the negative terminal for sensor #3, and the blue wire to the 24 volt aux terminal located next to the sensor #3 terminals.

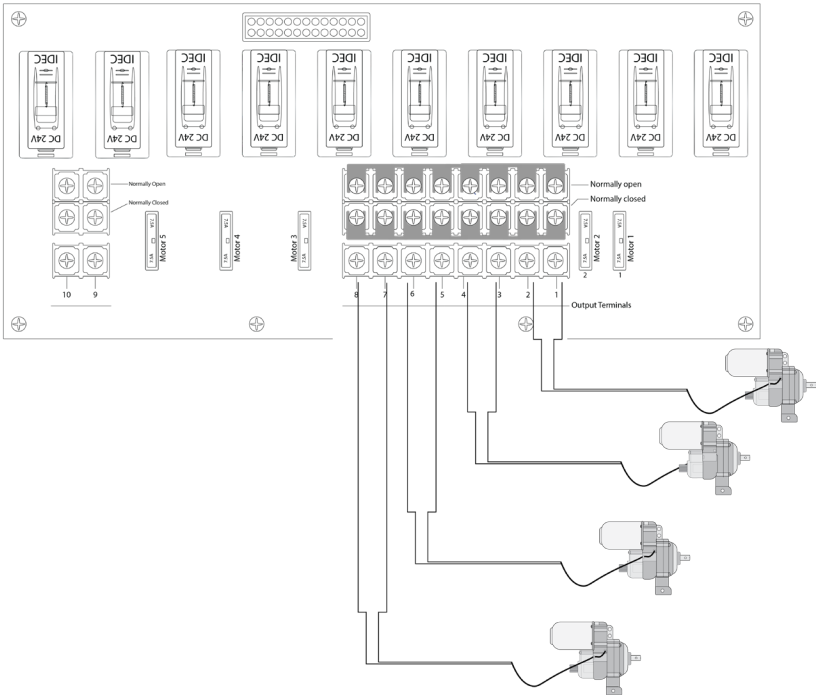


# INSTALLATION

## Connecting the Low Voltage Ventilation Motors

The AegisTEC Plus includes a 20 amp, 24 volt DC power supply. It is prewired to operate several 24 volt DC ventilation motors. A circuit breaker protects each motor. If a motor's experiences current that is above the amp rating, the center tab of the breaker trips out. Press the tab in to reset it. Replacing the circuit breakers with those of a larger amp rating can damage your structure and will void the motor warranty.

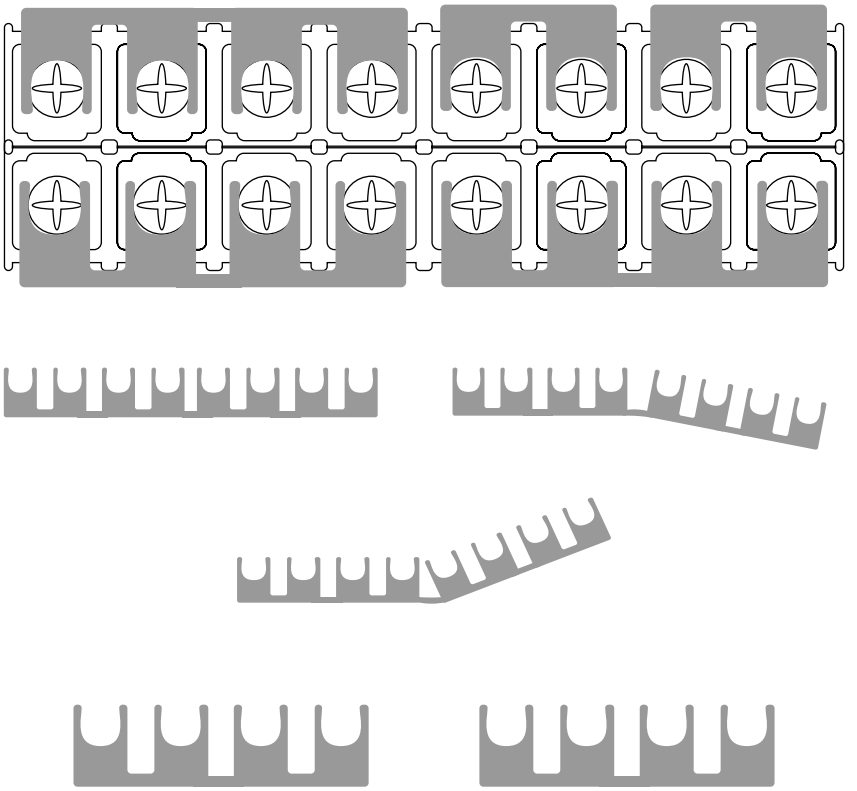
Connect motors directly to the control board as shown. A diagram has been included to show the correct wire connection. Fans, heaters, lights, and vent motors can be mapped to any relay. Map the relays with setup parameters P1 - P10.



# INSTALLATION

## Motor Connector Bars

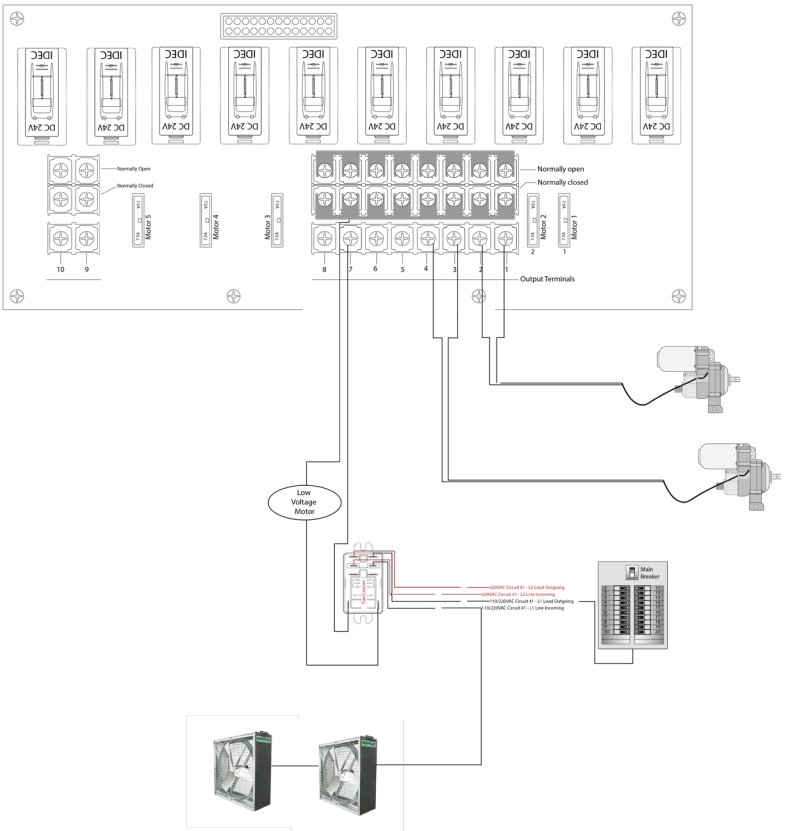
The motor connector bars make it easy for low voltage motors to be connected. They can be shortened or removed to allow fans, heaters, or lights to be connected instead of vent motors. To shorten them, remove the connector completely and use pliers to bend it repeatedly until it breaks apart.



# INSTALLATION

## Connecting the Fans

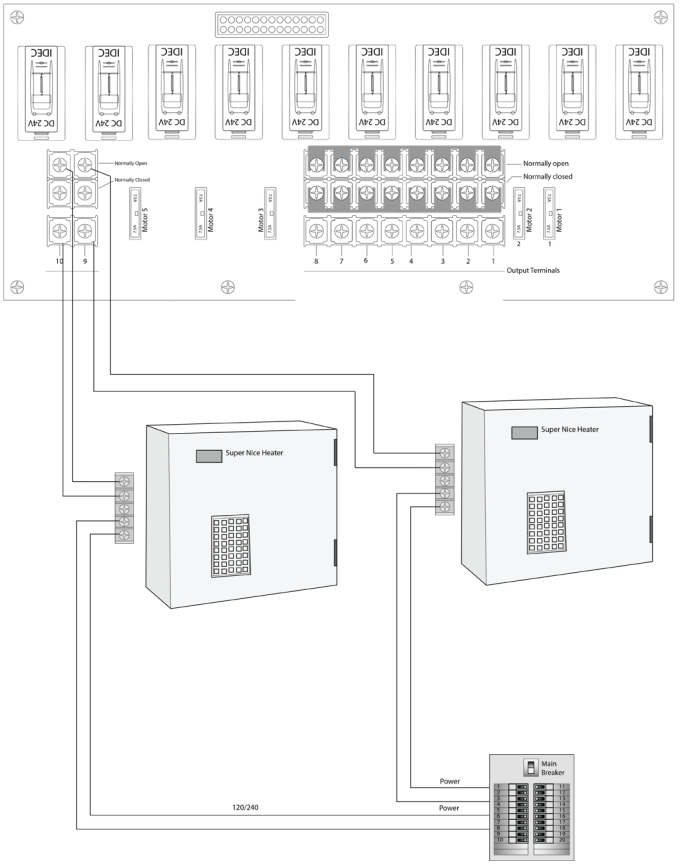
The AegisTEC Plus thermostatically and humidistatically controls horizontal air flow and exhaust fans. The relay board has two sections. The first section has a double row to allow optional motor connection bars. The second section is for heater or fan type connections. **Do not directly connect the 110/220 volt AC fan wires to the control board. A high voltage connection can cause a fire risk and void the warranty.** The connection is made using our contactor box (e.g., 42-CB2, 42-CB4). The drawing below illustrates the layout of the fan circuit. Connect your fans using the wiring diagram included in the 42-CB4 instruction sheet.



# INSTALLATION

## Connecting the Heaters

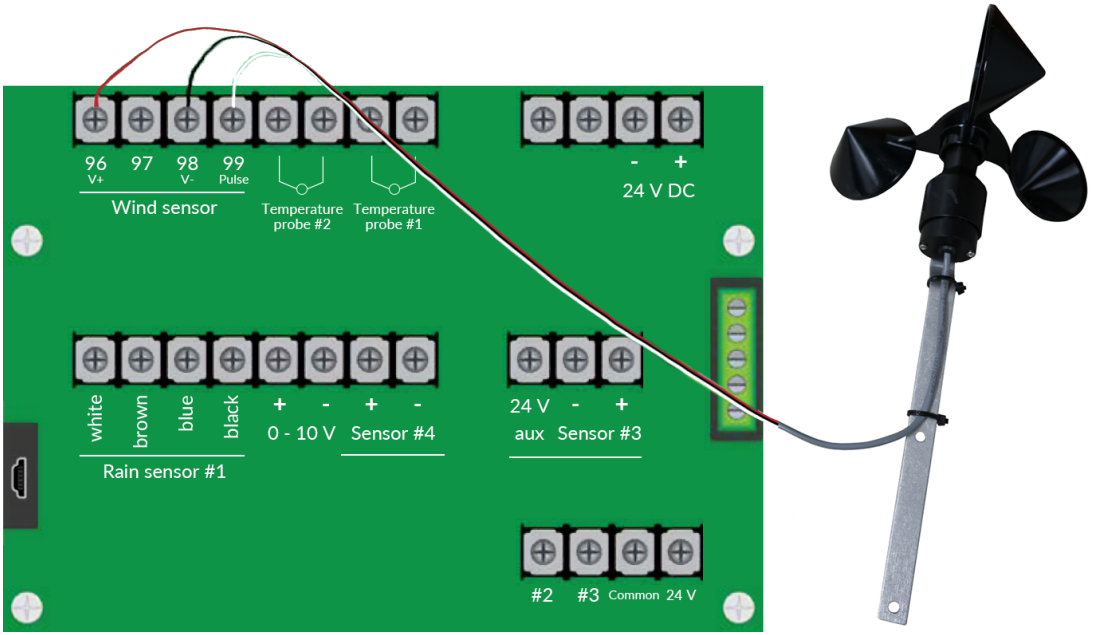
The AegisTEC Plus thermostatically controls heaters. **Do not directly connect the 110/220 volt AC heater wires to the control board. A high voltage connection can cause a fire risk and void the warranty.** Heaters produce their own 24 volt AC signal using an internal transformer. *Do not connect heater thermostat wires to 24 volt DC powered terminals as doing so permanently damages the controller and voids the warranty.* The drawing below illustrates the connection of the heater thermostat wires.



# INSTALLATION

## Connecting the Anemometer

The anemometer is used to close curtains in high wind conditions. It has three 18-24 gauge AWG wires that connect to the wind sensor terminals. Connect the red wire to the 24 volt positive terminal, the white wire to the input #2 terminal, and the black wire to the 0 volt negative terminal.

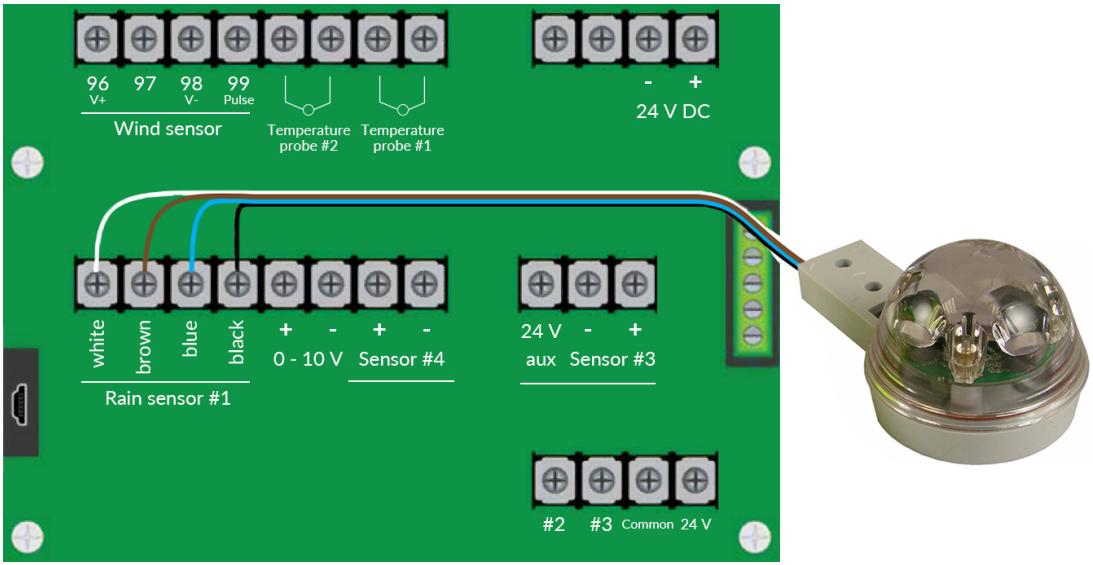


# INSTALLATION

## Connecting the Rain Sensor

The rain sensor detects water droplets on the lens and can close vent motors when its raining. The system supports one rain sensor. If you connected a rain sensor, the controller needs to know it. Setup parameters P40 and P41 assign the sensor to the vent motors. Mount the sensor on the structure at a height relative to the desired sensitivity, with a higher sensor less sensitive than a lower one. Match the rain sensor wire to the corresponding terminal by color.

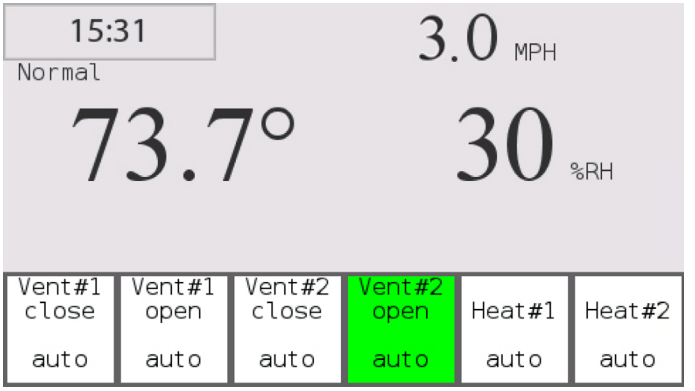
*Keep the sensor wire away from high voltage wires by at least one foot.*



# SYSTEM SETUP

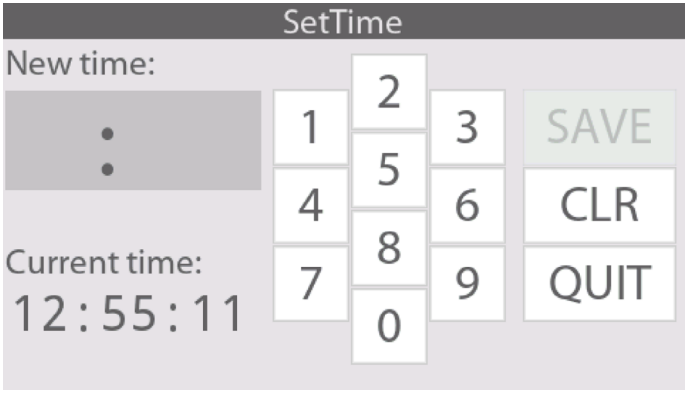
## Main Screen

The main screen shows the status of the controlled zone. You can see the temperature and the status of the relays. Touch the center of the screen to access the settings menu. Touch the bottom row of buttons for manual overrides.




## Setting the Clock

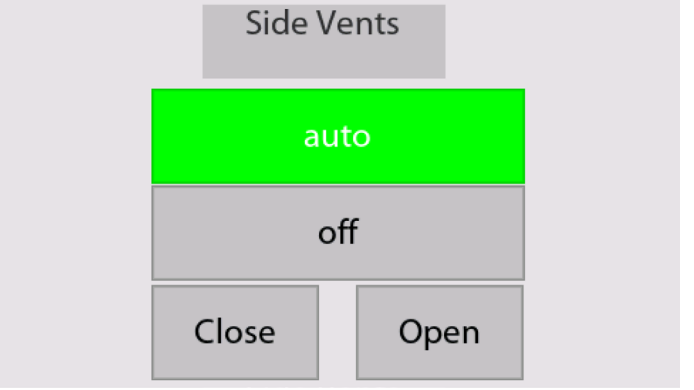
In the settings menu, touch the Clock button to enter the Set Time function. Set the current time using the input keyboard.



# SYSTEM SETUP

## Overrides

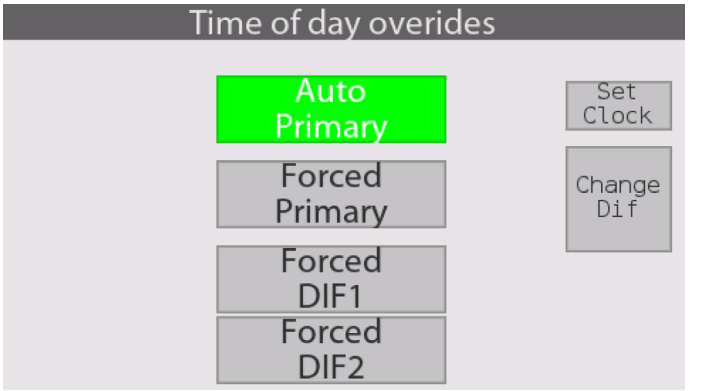
By touching the relay buttons on the main screen, you can access individual manual control, where you can select the relay status you want. In auto mode, the controller will perform as configured. Selecting the off button or one of the forced buttons allows you to manually override the auto settings. To exit, touch the area on either side of the buttons.



# SYSTEM SETUP

## Temperature DIFs

Temperature DIFs allow you to change the setpoint of the heating/cooling equipment throughout the day. DIFs are used to drop the humidity in the mornings or trap heat late in the day. The DIF status is displayed below. The screen will show you the status and if you left it forced on. Press on the clock in the top left of the main screen to change the DIF settings. Diff override buttons allow you to manually override any clock settings.




## Configuring the Controller

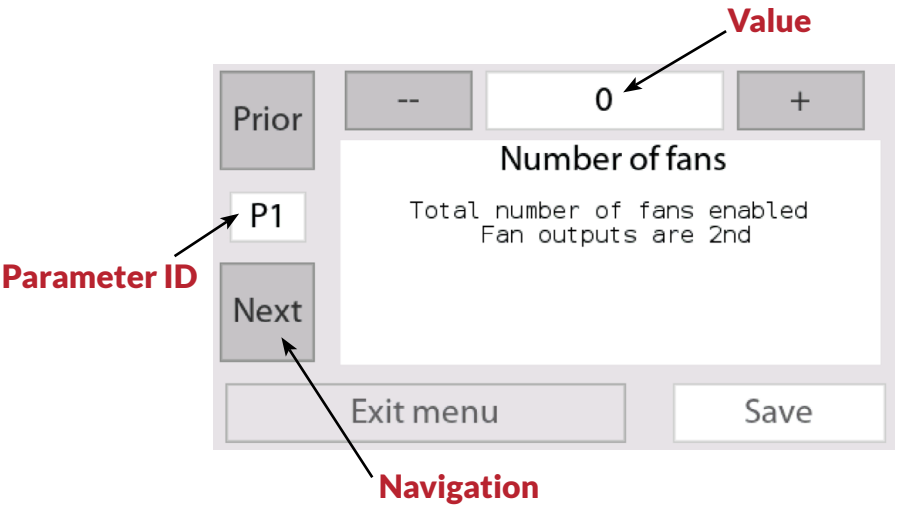
The configuration menu is where outputs and inputs are entered. Before attempting to establish the configuration settings, you should have a clear knowledge of your installed accessories. It may be helpful if you write out a list of everything that you have connected, considering the following:

- Number of vents, heaters, fans, lights, and light deprivation curtains.
- Roll-ups and ridge vents are considered “vents”; other cooling devices are considered “fans”.
- Number of temperature sensors, which may be used to establish separate temperature zones if desired.
- Other sensors that are connected (wind, rain, humidity).

# SYSTEM SETUP

Read through the manual to familiarize yourself with the available functions and have a plan that you will enable through the configuration menu and system settings. It is important, when setting parameters or making changes in the menu, to always touch “Save” before moving to the next parameter.

By touching the center of the main screen, you will access the settings screen. To enter configuration settings, touch the “Config” key, step through the menu with the navigation keys, and enter settings with the “+” and “-” keys, remembering to enter “Save” after each setting is correct. You can navigate forward and backward through the steps to make changes if you make an error. When you have entered all the parameters, touch “Exit menu”, which will restart the controller with your saved settings. If you have made errors, you can re-enter the menu, step to the incorrect parameter(s), change it, enter “Save”, and “Exit menu”. The controller will restart with your corrections in place. Following is a table of the configuration parameters and their default values.



# SETTINGS

## Configuration Setup

| ID | Description | |
|---|---|---|
| P0 | Vent channels each operate a 24 volt DC motor and use two output terminals per channel in order to run the motors in both directions. Low voltage rotary gear motors for curtain vents and low voltage linear actuators to lift hinged vents are controlled as vent channels. Louvers are controlled as fans, not vents, unless they are operated by a low voltage linear actuator. | **Min - Max**<br>0 - 5 |
| | | **Default**<br>3 |
| P1 | Set for light deprivation curtains. Each light deprivation channel operates a 24 volt DC motor and uses two output terminals in order to run the motors in both directions. | **Min - Max**<br>0 - 4 |
| | | **Default**<br>0 |
| P2 | Set for the total number of cooling devices. Cooling devices include fans, louvers (except for louvers operated by a low voltage DC actuator, which are configured as vents), and other cooling accessories such as evaporative curtains. | **Min - Max**<br>0 - 6 |
| | | **Default**<br>2 |
| P3 | The controller is set up to allow separate control of up to two heaters. Heaters are normally controlled through a thermostat line connected to dry relay contacts. Outputs 9 and 10 are provided as dry contacts for heaters. Additional dry contacts can be configured by separating the voltage bus as described in the manual. | **Min - Max**<br>0 - 10 |
| | | **Default**<br>2 |

# SETTINGS

| ID | Description | |
|---|---|---|
| P4 | There are ten output terminals which correspond to the ten button selections on the screen. The vents will use a consecutive string of terminals, ans this instructs which terminal to use as the first in the string. It is typically set to terminal #1, although it can be set to others. Not that it must start on an odd numbered terminal. | **Min - Max**<br>1 - 9 |
| | | **Default**<br>1 |
| P5 | Light deprivation uses curtain motors and is handled the same way as vents. See P4. | **Min - Max**<br>1 - 9 |
| | | **Default**<br>1 |
| P6 | Cooling devices include fans, louvers (except for louvers operated by a low voltage DC actuator, which are configured as vents), and other cooling accessories such as evaporative curtains. The cooling outputs will be grouped in a consecutive string of output terminals, and this establishes the starting terminal for the string. | **Min - Max**<br>1 - 10 |
| | | **Default**<br>7 |
| P7 | Heating outputs are configured together in a string of output terminals, and this establishes the starting terminal for the string. Note that heaters are normally controlled through a thermostat line connected to dry contacts. Contacts 9 and 10 are set up as dry contacts, so for one heater select 9 or 10, and for 2 heaters select 9. | **Min - Max**<br>1 - 10 |
| | | **Default**<br>9 |

# SETTINGS

| ID | Description | |
|---|---|---|
| P8 | This sets the number of output terminals used to control grow lights. | **Min - Max** 0 - 2 |
| | | **Default** 0 |
| P9 | Grow light outputs are configured together in a string of output terminals, and this establishes the starting terminal for the string. | **Min - Max** 0 - 2 |
| | | **Default** 0 |
| P10 | This sets the output terminal that will control a dehumidification device. Set to 0 if no device is used. | **Min - Max** 0 - 15 |
| | | **Default** 0 |
| P11 | A second temperature sensor can be connected to control a second greenhouse zone. | **Default** 0 |
| P12 | A humidity sensor can be connected to monitor humidity and allow control of various functions in response. Set to 1 if a humidity sensor is connected. | **Default** 0 |
| P20 | The controller factory default is set to Fahrenheit. Set this to 1 if Celsius is preferred. | **Default** 0 |

# SETTINGS

| ID | Description | |
|---|---|---|
| P21 | This establishes which curtains respond to the second temperature sensor if two are used. The designated curtain and all subsequently numbered curtains will respond to the second temperature sensor. | **Min - Max**<br>0 - 8 |
| | | **Default**<br>0 |
| P22 | This establishes which heaters respond to the second temperature sensor if two are used. The designated heater and all subsequently numbered heaters will respond to the second temperature sensor. | **Min - Max**<br>0 - 8 |
| | | **Default**<br>0 |
| P23 | This establishes which fans respond to the second temperature sensor if two are used. The designated fan and all subsequently numbered fans will respond to the second temperature sensor. | **Min - Max**<br>0 - 8 |
| | | **Default**<br>0 |
| P25 | DIF stands for differential and is a period of time during the day when different settings apply, such as increasing the temperature from 4-6 PM. Up to two periods per day can be established. | **Min - Max**<br>0 - 2 |
| | | **Default**<br>0 |
| P27 | This sets the time period over which wind speed is averaged to avoid initiating actions due to short gusts. This varies depending on local climate and greenhouse characteristics. 1-3 minutes is a good starting point that can be adjusted with observation. | **Min - Max**<br>1 - 5 |
| | | **Default**<br>3 |

# SETTINGS

| ID | Description | |
|---|---|---|
| P28 | This sets the number of rotations needed for the wind sensor to calculate the wind speed. Set to 25 for miles per hour or 17 for kilometers per hour. | **Default** 25 |
| P29 | This tells the controller if a wind sensor is connected. | **Default** 0 |
| P30 | Use this screen ONLY if you suspect a problem with the configuration and want to start over. This will erase all your settings and revert to the factory settings when the unit was new. Set to 0 and reboot to initiate the reset. | |
| P31 | This enables a high temperature setting to turn the fans off. This is to avoid running fans when the temperature is beyond their ability to provide cooling. | **Default** 0 |
| P32 - P37 | This determines whether the specific fan (1-6) should turn off if a certain input is on. Set to 0 if you do not want the fan to turn off for any input.<br><br>1 = off if input #1 is on \| 2 = off if input #2 is on | **Min - Max** 0 - 2<br>**Default** 0 |
| P38 | This sets how long the curtains shut for rain. | **Default** 0 |

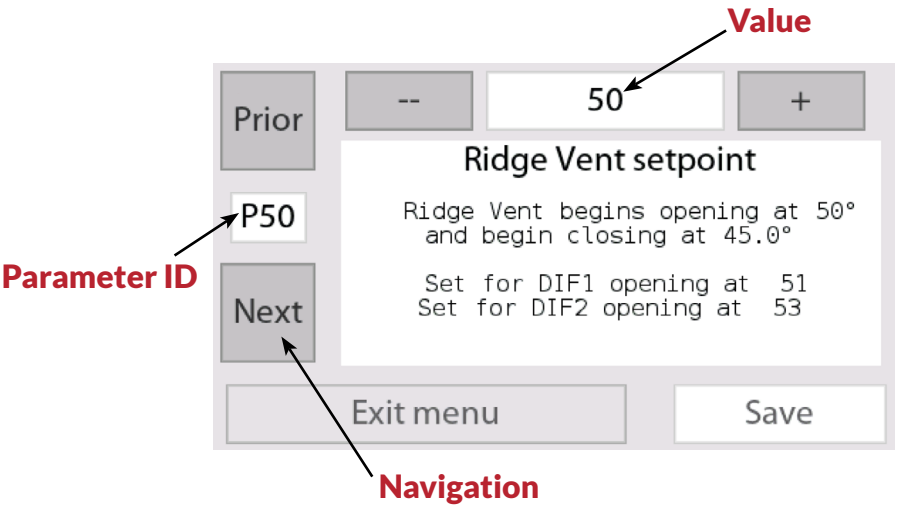
# SETTINGS

| ID | Description | |
|---|---|---|
| P39 - P42 | Choose which rain sensor input number the specific curtain (1-4) is controlled by. | **Min - Max** 0 - 3 |
| | | **Default** 0 |
| P43 | In addition to the humidity output terminal, one vent can be set to respond to humidity. Select the vent that should respond. | **Min - Max** 0 - P0 |
| | | **Default** 0 |
| P44 | This is the length of time in minutes that the light deprivation curtain motor needs to run to open and close the curtain. | **Min - Max** 1.0 - 20.0 |
| | | **Default** 15.0 |
| P45 - P48 | In many cases, if a vent is open, it will interfere with the light deprivation curtain. This setting will ensure that the specific vent (1-4) closes to allows the deprivation curtain to move properly. | **Default** 0 |

# SETTINGS

## Zone Parameter Setup

By touching the center of the main screen, you will access the settings screen. The system settings menu is where input values are assigned to the environmental systems to be controlled. What is visible in this menu is based on the information entered into the configuration menu. In system settings, you will enter values of time, temperature, humidity, wind speed, etc. When making changes in the menu, touch “Save” before moving to the next parameter. Following is a table of the system settings parameters and their default values.



# SETTINGS

## Curtain Settings

| ID | Description | |
|---|---|---|
| P49 - P53 | When the greenhouse temperature reaches the setting entered here, the specific vent (1-5) will open. The closing temperature is related to the opening temperature by the ventilation temperature gap entered in P74. | **Min - Max** 0° - 100° |
| | | **Default** 75° |
| P54 - P58 | This is the setpoint temperature for the specific vent (1-5) during the differential time period in P150 and P151. | **Min - Max** 0° - 100° |
| | | **Default** 65° |
| P59 - P63 | This is the setpoint temperature for the specific vent (1-5) during the differential time period in P154 and P155. | **Min - Max** 0° - 100° |
| | | **Default** 80° |
| P64 - P68 | The specific vent (1-5) will open for the number of seconds entered here, stop, and wait for the number of minutes entered in the vent's idle time. At that point, if the desired temperature has been reached, the vent will remain in its position. If it has not been reached, the vent will open further for the same number of seconds. It will repeat this cycle until the desired temperature is reached or it is fully opened. The same cycle will be repeated when closing. | **Min - Max** 2 - 100 |
| | | **Default** 15 |

# SETTINGS

| ID | Description | |
|---|---|---|
| P69 - P73 | This is how long the specific vent (1-5) will wait in minutes as described in P64-P68. | **Min - Max** 0.2 - 10.0 |
| | | **Default** 3.0 |
| P74 | This is the difference in between the temperature that causes the vent to open and the temperature that causes it to close. Setting this too low causes the vents to open and close unnecessarily. 5° is a good starting point. It can be adjusted after observing the greenhouse operation. | **Min - Max** 0.2° - 12° |
| | | **Default** 3.0° |
| P80 | This sets the humidity at which the curtain assigned to the humidity sensor will open to dry things. | **Min - Max** 0 - 100 |
| | | **Default** 95 |
| P81 | This is the number of seconds the curtain will open for the humidity event. | **Min - Max** 0 - 100 |
| | | **Default** 10 |
| P82 | The humidity event will be ignored if the temperature is below this setpoint. | **Min - Max** 0° - 100° |
| | | **Default** 32° |

# SETTINGS

| ID | Description | |
|---|---|---|
| P83 - P86 | Depending on greenhouse construction and vent installation, there could be interference if vents close in the wrong order. This step assumes that the system is equipped with a rain and/or wind speed sensor. Select which other vent should close before this specific vent (1-4). | **Min - Max** 0 - P0 |
| | | **Default** 0 |
| P87 - P90 | When closing for rain or wind, the vents will not close in stages in the way that they open and close for temperature. This setting establishes how far you want the vent to close by specifying how long it will run. It will run for this amount of time, stop, and remain in that position until it reopens. This assumes the connection of a rain or wind speed sensor. | **Min - Max** 1 - 254 |
| | | **Default** 100 |
| P91 | Select which vents will close from high wind speeds. The vent with the number chosen, as well as those with all lower numbers, will close from high wind speeds. | **Min - Max** 0 - 4 |
| | | **Default** 0 |
| P92 | Set this to the wind speed that should cause vent closure. There is a separate setting for the wind speed that allows the vents to reopen (P93). This assumes the connection of an anemometer. | **Min - Max** 0 - 120 |
| | | **Default** 15 |

# SETTINGS

| ID | Description | |
|---|---|---|
| P93 | Set this to the speed to which the wind must reduce for the vents to reopen. The difference between the close and open speeds should be great enough to avoid unnecessary cycling of the vents. This varies according to greenhouse characteristics and local climate. | **Min - Max** 0 - 99 |
| | | **Default** 10 |

## Fan Settings

The fan temperature parameters control the starting temperature. The fans are used for cooling. They will turn on above the temperature setpoint. If humidity is connected, fan #1 can be set to clear out the high humidity.

| ID | Description | |
|---|---|---|
| P101 - P106 | This sets the temperature at which the specific fan (1-6) will turn on. The shut off temperature is determined by P120. If a differential time is set, this screen also displays the settings during the differential period. | **Min - Max** 0° - 100° |
| | | **Default** 70° |
| P107 - P112 | This sets the specific fan's (1-6) start temperature during the first differential time period. The shut off temperature is determined by P120. This screen also displays the temperatures that are set for the normal daily setting and the second time differential time period if there is one. | **Min - Max** 0° - 100° |
| | | **Default** 60° |

# SETTINGS

| ID | Description | |
|---|---|---|
| P114 - P119 | This sets the specific fan's (1-6) start temperature during the second differential time period. The shut off temperature is determined by P120. This screen also displays the temperatures that are set for the normal daily setting and the first time differential time period. | **Min - Max** 0° - 100° |
| | | **Default** 80° |
| P120 | This sets the difference between the temperature that the fans turn on and the temperature at which they turn off. If this is set too low, the fans will cycle on and off unnecessarily. 6° is a good starting point. The best setting varies based on greenhouse characteristics and local climate and can be adjusted based on observation and experience. | **Min - Max** 0° - 10.0° |
| | | **Default** 6.5° |
| P121 | If the wind sensor is connected, use this to set the wind speed at which the fans will stop. | **Default** ? |
| P122 | This sets how much the wind speed must decrease for the fans to start again. | **Default** ? |
| P124 | Fan #1 can be set to run to reduce humidity. Set this to the humidity level that causes the fan to turn on. This assumes the connection of a humidity sensor. Set to 101 to deactivate. | **Min - Max** 0 - 101 |
| | | **Default** 99 |

# SETTINGS

| ID | Description | |
|---|---|---|
| P125 | This sets how much the humidity must decrease for the fan to turn off. 5% is a good starting point which can be adjusted based on observation. This assumes the connection of a humidity sensor. Set to 101 to disable humidity function. | **Min - Max**<br>0 - 101 |
| | | **Default**<br>5 |
| P126 | Set this to the temperature below which there is no need for the fan to reduce the humidity. This assumes the connection of a humidity sensor. | **Min - Max**<br>0° - 100° |
| | | **Default**<br>32° |
| P130<br>-<br>P135 | This setting helps to coordinate between fans and vents. If vents are set to a higher temperature than the specific fan (1-6), and there is no need for fans to run after the vents open, this setting can be used and should be set near the vent opening temperature. | **Min - Max**<br>0 - 100° |
| | | **Default**<br>0 |

# SETTINGS

## Dehumidification Settings

The dehumidification parameter gives one channel of dehumidification. It will turn on when humidity gets too high.

| ID | Description | |
|---|---|---|
| P147 | This sets the humidity level for the dehumidifier output. This is a separate function from the fan humidity level. Set to 101 to deactivate. | **Min - Max**<br>0 - 101 |
| | | **Default**<br>60 |
| P148 | This sets the difference in humidity between when the dehumidifier will turn on and when it will turn off. Setting this too low will cause the dehumidifier to cycle unnecessarily. 6% is a good starting point that can be adjusted after observing operation. | **Min - Max**<br>0 - 101 |
| | | **Default**<br>4 |

# SETTINGS

## Time Differential Settings

| ID | Description | |
|---|---|---|
| P150 | This sets the time at which the first time differential begins. Note that the 24 hour time format is used, i.e. 3:00 PM = 15:00. Greenhouse settings will switch to those specified for the DIF1 time period. | **Max** 24:54 |
| P151 | This is the time that ends the first differential time period. Settings will revert to normal daily settings. | **Max** 24:54 |
| P152 | This is DIF1's second start time. | **Max** 24:54 |
| P153 | This is DIF1's second end time. | **Max** 24:54 |
| P154 | This sets the time at which the second time differential begins. Note that the 24 hour time format is used. Greenhouse settings will switch to those specified for the DIF2 time period. | **Max** 24:54 |
| P155 | This is the time that ends the second differential time period. Settings will revert to normal. | **Max** 24:54 |
| P156 | This is DIF2's second start time. | **Max** 24:54 |
| P157 | This is DIF2's second end time. | **Max** 24:54 |

# SETTINGS

## Light Settings

These parameters control the light deprivation and some grow light settings. The light dep logic allows you to close shades and vents when dep is activated. Afterward, the vents will wait two minutes in the reopen sequence.

| ID | Description | |
|---|---|---|
| P158 | This sets the time of day for the light deprivation curtains to close, darkening the greenhouse. | **Max** 24:54 |
| P159 | This sets a time to open the light deprivation curtains, allowing light back into the greenhouse. | **Max** 24:54 |
| P160 | This sets a second time for the light deprivation curtains to close, darkening the greenhouse. | **Max** 24:54 |
| P161 | This sets a second time to for the light deprivation curtains to open, allowing light into the greenhouse. | **Max** 24:54 |
| P162 | This sets the time of day for the grow lights to turn on. | **Max** 24:54 |
| P163 | This sets the time of day for the grow lights to turn off. | **Max** 24:54 |
| P164 | This sets a second time of day for the grow lights to turn on. | **Max** 24:54 |
| P165 | This sets a second time of day for the grow lights to turn off. | **Max** 24:54 |

# SETTINGS

## Heater Settings

These parameters control the starting temperature for heaters. The heaters can also be controlled by the DIF function.

| ID | Description | |
|---|---|---|
| P169 - P178 | This sets the temperature for the specific heater (1-10) to turn on. It will turn off at the temperature specified in P199. | **Min - Max** 0° - 100° |
| | | **Default** 60° |
| P179 - P188 | This sets the temperature for the specific heater (1-10) to turn on during the first time differential period. It will turn off at the temperature specified in P199. The primary and second differential time period settings are also displayed. | **Min - Max** 0° - 100° |
| | | **Default** 50° |
| P189 - P198 | This sets the temperature for the specific heater (1-10) to turn on during the second time differential period. It will turn off at the temperature specified in P199. The primary and first differential time period settings are also displayed. | **Min - Max** 0° - 100° |
| | | **Default** 65° |
| P199 | This sets the gap between the temperature that the heaters turn on and the temperature that they turn off. Setting this too low will cause the heaters to cycle unnecessarily. 4-5 degrees is a good starting point that can be adjusted after observation. | **Min - Max** 0° - 10.0° |
| | | **Default** 3.0° |

# SETTINGS

## Miscellaneous Settings

These parameters control various extra settings, such as parameter shortcuts, LCD settings, and additional grow light settings.

| ID | Description | |
|---|---|---|
| P200 - P209 | This provides a shortcut to a frequently used parameter in the system settings. When on the main screen, pressing the button (of the ten available functions) corresponding to this output and then pressing the top button of the screen that comes up will open system settings to the parameter number specified here. This avoids scrolling through the system settings menu for the parameter that is to be adjusted. | **Min - Max** 49 - 200 |
| | | **Default** 50 - 59 |
| P220 | Adjust this to the desired screen brightness when the device is in use. | **Min - Max** 25 - 100 |
| | | **Default** 100 |
| P221 | Adjust this to the desired screen brightness when the screen dims after use. | **Min - Max** 2 - 30 |
| | | **Default** 25 |

# SETTINGS

| ID | Description | |
|---|---|---|
| P225 | This sets the first start time for a second set of grow lights. | **Max** 24:54 |
| P226 | This sets the first stop time for a second set of grow lights. | **Max** 24:54 |
| P227 | This sets the second start time for a second set of grow lights. | **Max** 24:54 |
| P228 | This sets the second stop time for a second set of grow lights. | **Max** 24:54 |

# SPECIFICATIONS

| | |
|---|---|
| Part Number | 41-AEGISTECP |
| Size of Enclosure | 7” x 10” x 6” |
| Input Voltage | 120 V AC |
| Output | 10 normally open relays |
| Temperature Sensor | 3’ cord - can be extended to 100’ |
| Warranty | 1 year |

# APPENDIX

## Connecting Accessories to a Greenhouse Controller

There are various types of accessories connected to a greenhouse controller. This is a summary of the basic connection types for different accessories.

### *Fans, AC Powered Louvers, and Other AC Powered Accessories*

Most greenhouse controllers do not switch AC power. The switching of power is handled by a separate box referred to as an "interface box" or "contactor box". The greenhouse controller is programmed to send a signal to the interface box when it wants a certain accessory to be activated. The contactor box responds by switching the power on to the appropriate unit, such as a fan or AC controlled louver. For a more detailed explanation, see "Understanding Interface Boxes", as well as relevant product manuals.

### *Low Voltage DC Accessories*

Roll-up curtains and roof vents are typically operated by 24 volt DC motors, or "linear actuators", which are essentially DC motors that drive a piston/shaft forward and backward to push open a vent. These 24 volt accessories can be operated directly from most controllers. They require two terminal connections, since the polarity of the DC voltage must be reversed to cause the drives to operate in the forward and reverse (open and close for vents) directions. There are also interface boxes with special capability to drive DC motors for expanded capability. These are also explained in "Understanding Interface Boxes", as well as relevant product manuals.

# APPENDIX

***Heaters***

Heaters are not typically controlled by switching AC power, which is not a capability of the controller in any case. Instead, heaters typically have a thermostat line. The heater is turned on by completing a connection between the two thermostat wires. Therefor, the controller has “dry contacts” to accomplish this. A set of dry contacts is simply a pair of terminals that are connected through a relay contact. When the relay is operated, contact is made between the two terminals to which the thermostat line is connected, turning on the heater.

## Understanding Interface Boxes

Advancing Alternatives provides a range of interface boxes to allow a controller to operate virtually any greenhouse accessory. Interface boxes are used to control accessories that are beyond the capacity or capability of an environmental controller. They receive a signal from the controller and respond by activating various accessories consistent with the design of the particular interface box being used.

- Some interface boxes are designed to control accessories that operate from 120 volt AC or 240 volt AC. This is because the environmental controllers are not designed of intended to handle AC power. The controller is configured to send a 24 volt DC signal to the interface box, containing relays or contactors which, when energized by the 24 volt signal, apply AC power to the accessory designated when setting up the controller configuration. The line of “CIBAC” units are designed for various combinations of AC powered accessories, and the simple 42-CB2 and 42-CB4 are inexpensive options for applications with the need to control only one or a few AC accessories.
- Interface boxes designed to control low voltage ventilation motors contain a built-in DC power supply. Some of these units have controls on the front panel to allow manual control of motors when desired or can be set in the “AUTO” position, which reverts control to the environmental controller.

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*Thank you for choosing Advancing Alternatives for your greenhouse needs. Our customers are our top priority, and our goal is 100% customer satisfaction. If we did not meet this goal, please contact us today so we can make it right. We look forward to serving you again.*

*Sincerely,*
*The Advancing Alternatives Team*