

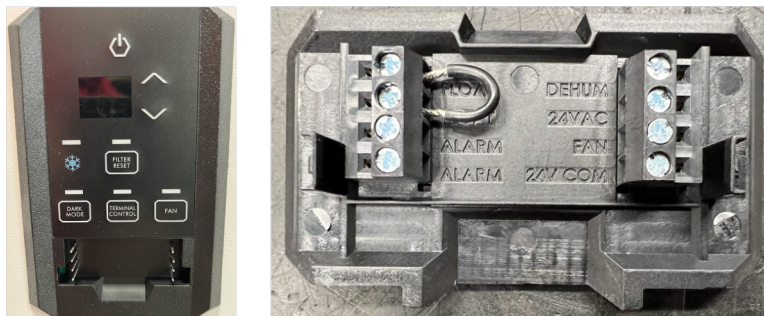
Quest 335-208/230v: #4042500
Quest 335-277v: #4042600

VERIFY conditions and complaint before testing to rule out user errors.

- Verify temperature - Unit operates between room conditions of 40°F to 120°F degrees.
- Verify specific humidity - Units operates down to a 45°F dew point.
- Verify air can flow thru the unit.
- Power supply - Should be between 208 volts to 230 volts single phase. +/- 10%
- Verify complaint - Run unit to produce failure described by customer.

FUNCTION TEST runs through all operations of the dehumidifier. This process will help identify what is and is not functioning.

1. Remove any exterior control wiring by removing terminal block from the unit control. Remove control wires but jump both FLOAT terminals together. Reinstall terminal block into the control.
A. Exterior controls are often the cause of improper dehumidifier function.



2. Plug unit in to known good power outlet. 208-240 VAC
3. Power unit on by pressing power button on top of control. The display should turn on and show green digits of either:
A. Current humidity set point.



- B. "tc" on the display indicating terminal control. Press the "TERMINAL CONTROL" button so the light is NOT illuminated, and humidity set point is displayed as above.



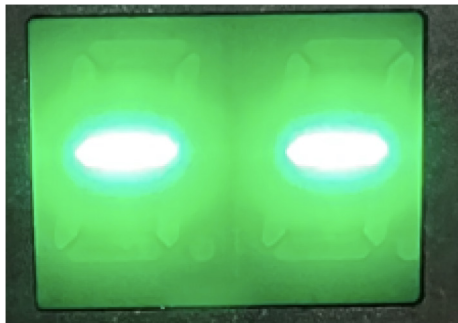
4. Force the unit on by pressing the down arrow several times until the display reads 'On'.
A setting below 20% will achieve this.



5. Verify that the fan comes on. Wait 20 seconds.
6. Verify that between 1 to 2 minutes the compressor turns on.
- A. Each unit will start differently to prevent power surges in daisy chaining applications.
7. Run the unit for 15 minutes and take a temperature measurement to see the temperature rise of the air coming out. Outlet air should be 10°F to 25°F higher than the inlet.
- A. For a more accurate test, collect and measure the water the unit produces in a 24-hour period. Depending on the room conditions the unit will make a varying amount of water. Use this sheet as a reference but please note that meter inaccuracy, changing conditions, length of test and airflow effect the amount of water made. In general, the water made should be within 20% of the chart below.

QUEST 335 (230V)			
Temp (°F)	40% RH	50% RH	60% RH
	ppd	ppd	ppd
60°	56	126	187
65°	88	162	228
70°	119	204	281
80°	171	262	335

8. Press and hold UP and Down Arrows simultaneously to enter the service mode. "Er" will be displayed. Press Filter Reset button to see if any error codes exist.
 - A. Example: E1 thru E8. See Service Mode section below for more info.
 - B. If no error codes are present a "--" (dash dash) will display.



9. If problems occur see below for further testing. If a problem does not occur the unit is most likely working properly. Check exterior controls or other possible causes.

DIAGNOSTICS -Error codes and special menus can help indicate the problem.

Note: Use T20 or T25 Torx bit for panel removal.

1. E1 Error code - RH sensor error
 - A. Presentation:
 - I. Hidden in Service menu.
 - II. Unit will run constantly - Fan only - No compressor
 - III. Will go away when issue is fixed. Power cycle not needed.
 - B. Check for unplugged or faulty intake humidity sensor
 - I. See Service menu to check actual RH reading.
2. E2 Error code - No E2 Error code for this model unit
 - A. Presentation:
 - I. Hidden in Service menu.
 - II. Unit continues to run.
 - III. Will go away when issue is fixed. Power cycle not needed.
 - B. Wrong control part number or firmware installed
 - C. Bad Power board
 - D. Bad Display board
3. E3 Error code - Evaporator temp is not 5 degrees below intake temperature after 10 minutes.

- A. Presentation: Fan and compressor shuts off. E3 Flashes.
 - I. Note: To reset the error code the unit must be unplugged.
- B. Refrigerant issue
- C. Off calibration intake sensor.
 - I. Reading lower than actual.
- D. Off calibration evaporator temp sensor.
 - I. Reading higher than actual. Check for E5 error code.
- E. Compressor not turning on
 - I. Unplugged or bad compressor relay
 - II. Unplugged or bad compressor
 - III. Unplugged or bad compressor capacitor
- F. Fan not turning on
 - I. Unplugged, bound, or bad fan
- 4. E4 Error code - Float terminals open
 - A. Presentation:
 - I. Fan and compressor shuts off.
 - II. E4 Flashes.
 - III. Will go away when issue is fixed. Power cycle not needed.
 - B. Terminal block removed
 - C. Loose or missing jumper wire between float terminals
 - D. 24V and Common shorted
 - E. 24V power supply from another unit causing issue.
 - F. Too much current draw on 24volt circuit.
 - I. Check control or damper power consumption.
 - G. Check special setting for reversed float setting.
- 5. E5 Error code - Evaporator temperature sensor error
 - A. Presentation:
 - I. Hidden in Service menu.
 - II. Compressor shuts off - Defrost light is on
 - III. Will go away when issue is fixed. Power cycle not needed.
 - B. Temp sensor reading above 200°F or below -20°F for more than 12 seconds.
 - I. Off calibration, shorted or unplugged evaporator sensor probe.
 - a. Open or unplugged will set E5 code. Unit be in an out of defrost.
 - b. Shorted will set E3 code and shut unit down. E5 code will also be set.
 - II. Could take up to 10minutes for code to set.
- 6. E6 Error code - Ambient temp or evaporate temp too high
 - A. Presentation:
 - I. Hidden in Service menu.
 - II. Compressor shuts off. Fan runs

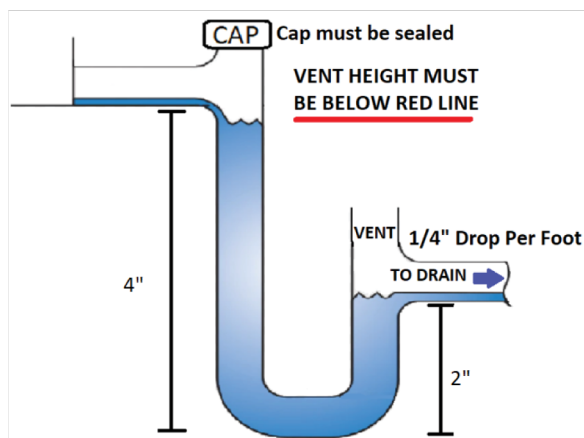
- III. Will go away when issue is fixed. Power cycle not needed.
 - B. Above 120°F (Not above 200°F – See E5 error code)
 - I. Likely ambient temp too high
 - a. Cool room down or move away from heater.
 - II. Ambient or evaporator temp sensor calibration issue.
 - a. Replace temperature sensors
 - III. Low air flow
 - a. Blower or filter issue
- 7. E7 Error code - Ambient temp too low
 - A. Presentation:
 - I. Hidden in Service menu.
 - II. Compressor off. Fan runs.
 - III. Will go away when issue is fixed. Power cycle not needed.
 - B. Below 40°F
 - I. Likely ambient temp too low
 - a. Warm room up or move away from Air Conditioner.
 - II. Ambient temp sensor calibration issue.
 - a. Replace sensor
 - III. Low air flow causing cold coil to effect sensor.
 - a. Blower or filter issue
- 8. E8 Error Code - Communication error
 - A. Presentation:
 - I. Hidden in Service menu.
 - II. Unit off.
 - III. Will go away when issue is fixed. Power cycle not needed.
 - B. Partially unplugged or damaged communication wire.
 - C. Water or corrosion in the communication wire connectors
 - D. Bad or wrong display board
 - E. Bad or wrong control board
- 9. E9 Error Code - High pressure cut out
 - A. Presentation:
 - I. Compressor shuts off for 1 hour
 - II. Fan runs for 1 hour.
 - III. E9 Flashes.
 - a. Note: To reset this error code the unit must be unplugged.
 - B. High side refrigerant pressure switch.
 - I. Normally closed below 650Psi
 - a. Pressure switch closes back at 550PSi
 - II. When switch is open for more than 2 seconds the compressor will turn off

and the Fan will run for a minimum of 1 hour.

- a. Unplugged at board or switch.
- b. Fan not operating, filter plugged, or air restricted in some way.
- c. Check Refrigerant charge. Over charge possible.
- d. Check for blockage in refrigeration system
 - i. TXV
 - ii. Filter drier

COMMON SYMPTOMS

1. High voltage
 - A. 277
 - I. Unit will run but long term problems may develop.
 - B. 480
 - I. Board varistor will blow. Red circle part on board burned. Control unresponsive.
2. Low voltage
 - A. 120
 - I. Control lights up but fan and compressor will not start.
 - II. E3 error code will set after 10 minutes.
3. Control voltage issue
 - A. Multiple 24 volt circuits
 - I. Will not harm 335 transformer.
 - B. 48 volts or above
 - I. Will cause display board to fail. Burned circuitry on back of board.
4. Water leaks
 - A. Drain trap not installed or poorly configured.



5. Unit runs all the time. Never shuts off or actual humidity much lower than set point.
 - A. User Error
 - I. Control displays RH set point only. Does not show actual humidity.
 - B. Unit working correctly but moisture load above unit capacity.
 - C. RH sensor off calibration (reading higher than it should) or bad.
 - I. See E1 error code.
 - II. Use service menu "rH" to check and calibrate.
 - D. Humidity in area of the unit much different than Customer's humidity meter.
 - I. Place customer humidity meter close to intake filter to check.
 - II. Check for A/C or humidifier blowing at unit.
6. Unit runs for a short while and shuts back off.
 - A. Could be normal. Fan turning on to sense humidity in the air.
 - B. External control with low dead band
 - C. Dry air coming out of the unit is blowing on the control
 - I. Check ducting or unit exhaust proximity to a wall.
7. Unit is defrosting too often or for too long.
 - A. Ambient temp is below 49°F
 - B. Low dewpoint - Below 45°F
 - I. See "dP" Dew Point display in Service Menu.
 - C. Evap temp sensor calibration - Reading below 49°F
 - I. Runs 15 min on - 15 min off.
 - D. Low air flow
 - I. Low fan speed, clogged air filter or restricted airflow
8. Filter light on even though filter has been recently changed.
 - A. Filter interval not reset
 - I. Press and hold filter reset button to reset light
 - II. Interval is 2,000 hours or 83 days
 - B. Ducting too restrictive
 - I. Remove ducting for testing
 - C. Air pressure in duct too negative or positive due to air handler
 - I. Remove duct work to test.
 - II. Duct unit differently.
 - D. New filter too restrictive
 - I. Remove filter for testing
 - II. Change filter to factory filter
 - E. Pressure switch off calibration, broken, or unplugged
 - I. Replace pressure switch
 - II. Bypass pressure switch using Low CFM Alert (PA) in service menu.
 - F. Pressure switch tubes unplugged, pinched or cut/leaking

- I. Inspect and replace tubes if needed
- G. Fan not changing speed to compensate for dirty filter
- 9. Whistling noise
 - A. Threaded plugs for feet or hanging not installed

SERVICE MODE:

- Enter Service mode by pressing and holding up and down arrows until “Er” displays on the screen.
 - Filter Reset and Fan light will illuminate.
- Button Usage in Service mode
 - Up Arrow = Up
 - Down Arrow = Down
 - Filter reset = Enter
 - Fan = Back
- Service Menu:



Display	Menu	Description
Er	Error codes	Lists any detected errors
sf	Fan Speed	Manually adjusts fan speed
rH	RH Offset	Adjusts Relative Humidity offset
tP	Temperature Offset	Adjusts Temperature offset
Fn	Fan toggle	Fan “Always on” mode on/off
cP	Compressor toggle	Toggles Compressor on/off
dP	Dewpoint	Displays current dewpoint
Et	Evaporator Temperature	Displays current evap temp
Ft	Float Toggle	Toggles float switch between NO/NC
FS	Float Status	Displays current alarm status for float switch
AL	Alarm toggle	Toggles alarm between NO/NC
PA	Pressure switch	Turns off Filter Reset alarm. Filter life still active (2000 hours)
Ur	User Interface Firmware	Displays firmware version of User Interface board
Pr	Power Board Firmware	Displays firmware version of Power Board
DT	Diagnostic Test	Runs diagnostic test on machine

- **Errors (Er)**
 - See diagnostic section for further details on errors.
- **Speed of Fan (SF)**
 - When “SF” is selected the current fan speed as a percentage of the max fan speed is shown.
- **RH offset (rH)**
 - Once the “rH” menu has been selected it will display the current RH being read by the unit. That RH value can be adjusted using the arrows to a new RH value and finalized by pressing the “Filter Reset” button. The unit will retain this RH offset moving forward.
- **Temperature offset (tP)**
 - Once the “tP” menu has been selected it will display the current temperature being read by the unit. That temperature value can be adjusted using the arrows to a new temperature and finalized by pressing the “Filter Reset” button. The unit will retain this temperature offset moving forward
- **Fan Toggle (Fn)**
 - Once the “Fn” menu has been selected the fan can be turned off and on.
 - When “OF” is shown on the display – The fan will shut off
 - When “On” is shown on the display – The fan will turn on
- **Compressor Toggle (cP)**
 - Once the “cP” menu has been selected the compressor can be turned off and on. Warning: Runs constantly with no fan and shuts off on Pressure switch.
 - When “OF” is shown on the display – The compressor will shut off
 - When “On” is shown on the display – The compressor will turn on
- **Dew point (dP)**
 - When “dP” is selected the unit will display the dew point that the unit is reading. Calculated by using the intake RH and Temp measurement.
- **Evaporator Temperature (Et)**
 - When “Et” is selected the unit will display the current evaporator temperature.
- **Float toggle NC or NO (Ft)**
 - This refers to the FLOAT input on the UI board. When “Ft” is selected the float input can be switched between Normally Closed “nc” (this is default) and Normally Open (“nO”).
- **Float Status (FS)**
 - When “FS” is selected the status of the float pins will be displayed either as open (“OP”) or closed (“cL”).
- **Alarm output (AL)**
 - When “AL” is selected the alarm output can be switched between Normally Closed “nc” (this is default) and Normally Open (“nO”). This is the state of the

output when an error is NOT occurring.

- Example: In the default mode (Normally Closed) the Alarm terminals are electrically closed without an error present. If an alarm happens the Alarm terminals will open.
- Only E3, E4 and E9 error codes activate the alarm circuit.

- **Low CFM Alert (PA)**

- When "PA" is selected the low CFM alert can be enabled or disabled.
 - When "En" is selected the alert is enabled and will cause the filter indicator to illuminate when the CFM is determined to be low.
 - At max fan speed the CFM should be over 850 CFM.
 - When "dA" is selected the unit will ignore when low CFM is detected.
 - This can be used to bypass a bad pressure switch. This does not bypass filter life. (200 hours)

- **User Interface Firmware Version (Ur)**

- When "Ur" is selected the UI firmware version of the control will be displayed.

- **Power Board Firmware Version (Pr)**

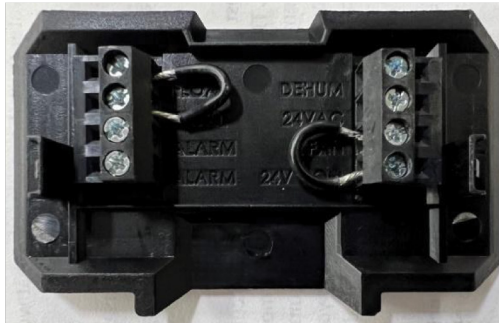
- When "Pr" is selected the Power Board firmware version of the control will be displayed.

- **Diagnostic Test (dt)**

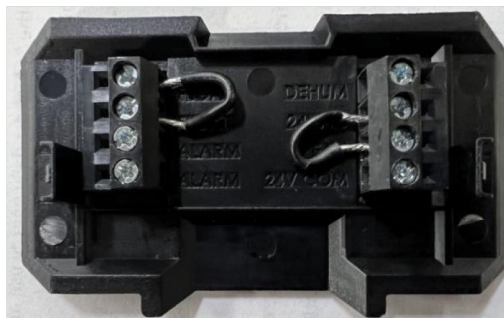
- When "dt" is selected the unit will run a diagnostic test of the refrigeration system. It will look for the Evap temp to be 5°F below the intake temp.
 - When selected the display will flash between the Evap temp & "dt"
 - If diagnostic test passes: Display "PS" = PASS (not flashing)
 - If diagnostic test fails: Display flashing "FL" = FAIL & "O3" alternating in the same manner described above for Evap temp & "dt"
- Any button press after completion of Diagnostic test shall return unit to circulation mode / normal operation
- Pressing "fan" button or pressing power shall exit the production test.

HIDDEN FEATURES:

- Fan always on mode: If the customer wants the fan to always run a jumper needs to be moved.
- From the factory a jumper wire is placed between FAN and 24V COM terminal. This jumper wire placement has no function but is used to store the jumper wire. See Below.



- To run the fan all the time, place the jumper wire between FAN and 24VAC. The fan will now run all the time until the unit is shut off or jumper wire is removed. This works in both terminal control and normal dehumidification mode.



- Defrost mode: this is not a button but a light to indicate the compressor is off and the fan is running.



- When the evap coil reaches 29°F the unit will wait 15 minutes then the compressor will shut off and the fan will run till the evap temp reaches 50°F.
- If the evap temp does not reach 50°F in 15min the unit will turn the compressor back on. The unit will then run 15min on and 15 min off until the evap reaches 50°F
- Dark Mode: This is used to turn off control lights for grow room or light sensitive applications.

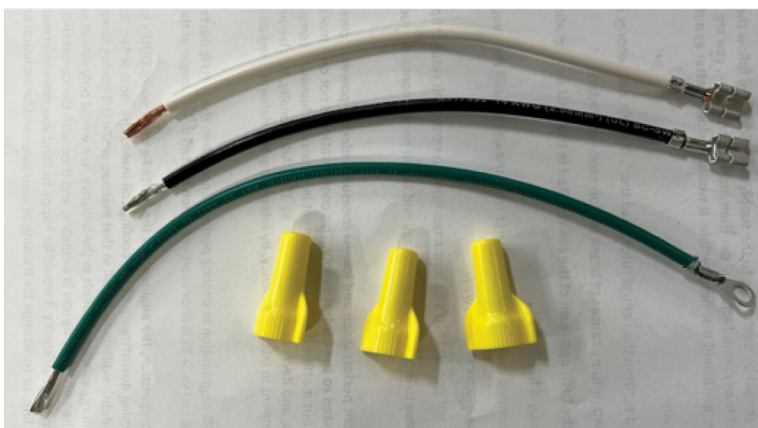
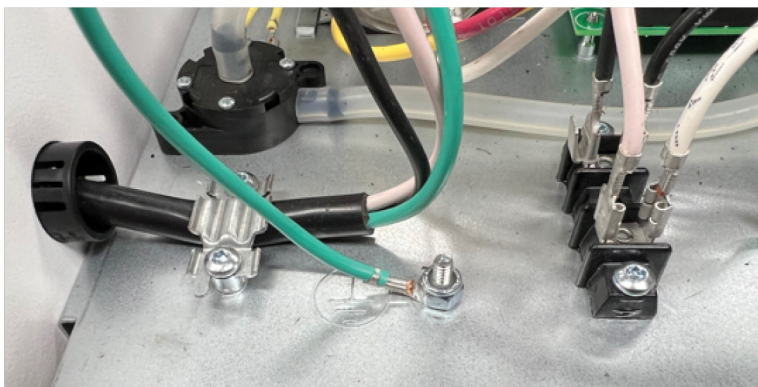


- Once Dark Mode is activated, lights will remain on for 20 seconds before the unit's control panel will go dark. Dark Mode light will flash for 3 seconds before

unit goes dark.

- Unit will temporarily leave dark mode when any button is pushed and will go dark 20 seconds after the last button is pushed
- To disable dark mode, press the dark mode button.
- Fan speed adjustment. This is used to set the max fan speed.
 - Procedure:
 - Hold FAN button for 3 seconds.
 - The display will begin to flash
 - Using the up and down arrows adjust the fan speed from 20-99%
 - There is no relation of percentage to airflow cfm.
 - 81 is normal fan speed.
 - Press Fan or wait 6 seconds to lock in new setting
 - Filter compensation will be disabled if using hi or low setting.
 - When to use
 - When ducting or static pressure is incorrect for the application this feature can be used to adjust airflow to compensate. An anemometer can be used to calibrate the fan speed to achieve 1000 CFM air flow required.
 - High fan speed noise level is unacceptable. Use this to set max fan speed.
 - Best Practice is to set this to 99 to prevent low CFM problems and extended use of filter.
- Filter Compensation:
 - Using an air pressure switch the unit will adjust the fan speed incrementally to compensate for a dirty filter. Once the max fan speed is reached the filter reset light will turn on.
 - 1 percentage every 3-4 minutes which is hard to notice.
- Circulate Mode:
 - Fan will turn on periodically to sense ambient humidity. Humidity and temp inside the unit where the sensor is located can be different than ambient.
 - Unit will remain off for 15 min once humidity is satisfied.
 - After 15 minutes the fan turns on for up to minute to sample air if the humidity reading is above the set point.
 - If it sees lower in 15sec it will turn the fan off.
 - If still higher after 1 min the unit will turn on.
 - If the humidity is always lower than the set point, then once per hour the fan will turn on to sample the air.
 - Always samples in low fan speed for sound reasons.
 - Only active if the unit is sensing the humidity and not in Terminal Control mode.
- Hard wiring: The unit comes with 3 pig tails and wire nuts to allow for removal of the cord and electrical conduit to be installed.

- Process:
 - Unplug unit for power.
 - Remove black and white wires from terminal block and install black and white pig tail wires.
 - Remove Green wire using a 11/32 nut driver and install green pigtail.
 - Remove cord clamp by removing 2 - T20 torx screws.
 - Remove cord bushing.
 - Install conduit. Hole in cabinet will accept ½ electrical connectors but can be enlarged.
 - Use 14 gauge or larger wire. Use yellow wire nuts to connect conduit wires to pigtail wires.



DIAGNOSTICS NOTES / PART PICTURES:

- Bypass Cap Tube: This is a minimum restriction for refrigerant flow. The TXV modulates the rest of the refrigerant.



- Symptoms of plugged.
 - Suction pressure and Evap temp steady. Not modulating from TXV
 - Compressor temp and amp slightly higher but may appear to be normal.
 - Lower performance at higher dewpoints.
- TXV: Bulb is to be attached to the side of the suction tube. Not the top or bottom.

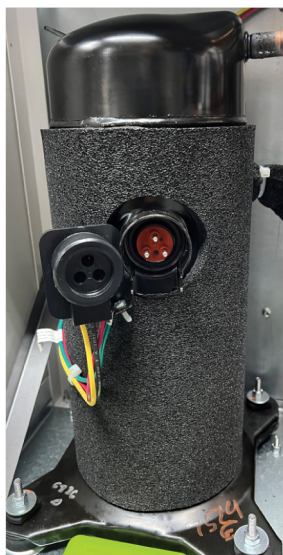


- TXV function: Purpose is to hold a specific super heat.
 - High super heat would open the valve to flow more refrigerant.
 - Low super heat would close the valve.

- Symptom of sensing bulb or tube leak.
 - Suction pressure and Evap temp steady. +/- 2
 - Frost on top of TXV
 - Compressor amps and temperature higher than normal. TXV closes restricting refrigerant and driving high pressure up.

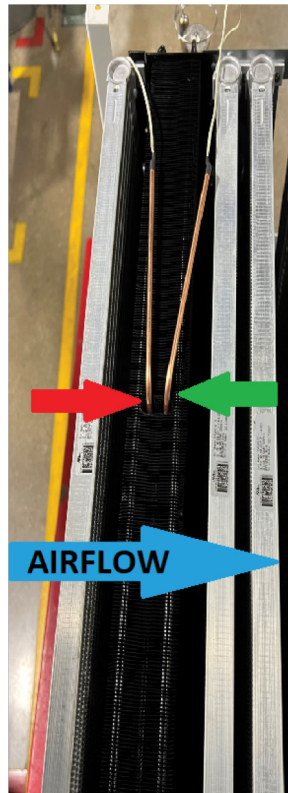


- Compressor



- Ohm reading
 - Any pin to ground: Infinite
 - Top Pin to Left pin = 1.6 ohm
 - Top Pin to Right pin = 1.8 ohm
 - Left pin to Right Pin = 3.1 ohm
- Evap Sensor
 - Top panel needs to be removed to change.

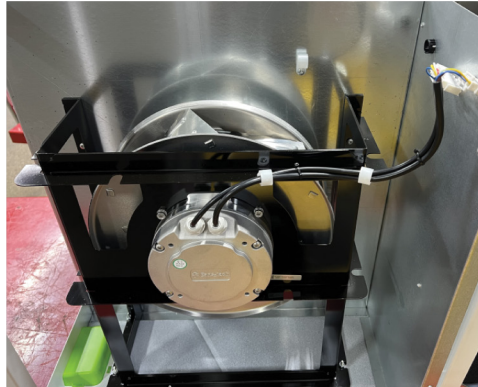
- Position is critical. See green arrow. Needs to be between circuit 2 and 3.



- Intake Sensor: Can be changed without removing the sensor cord. Pry housings apart with screwdriver to gain access to connector.



- Fan: this is an assembly with the black bracket.



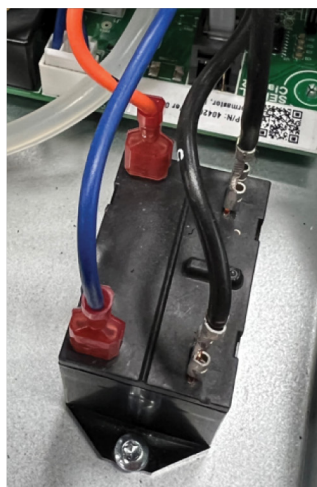
- Air Pressure Switch:
 - Top hose goes to Front barb next to humidity sensor
 - Side hose goes to Fan inlet ring
 - If this hose is loose or cut it will cause the fan speed to increase.
 - Pressure switch open will cause the fan speed to increase.
 - Pressure switch closed will cause the fan speed to decrease to the default fan speed.



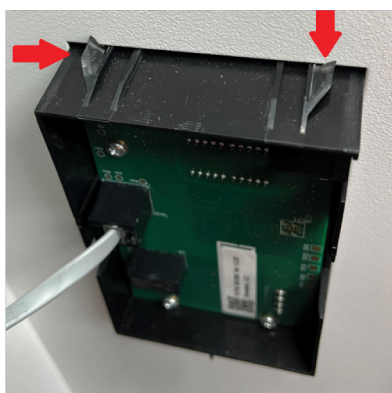
- Refrigeration Pressure switch



- Compressor Relay: Notice spade orientations for proper wiring.
 - If wired wrong will cause a direct short when compressor comes on.



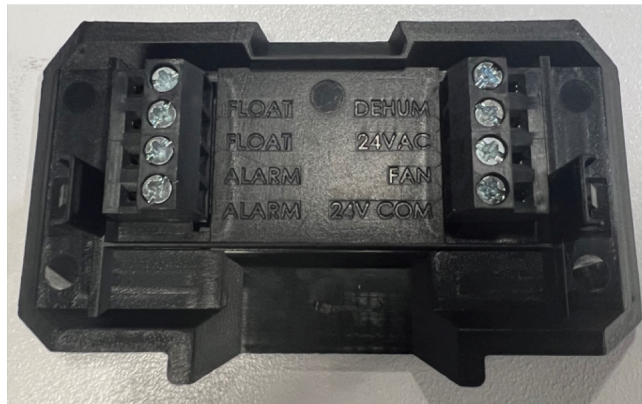
- Control board:
 - Push tabs down to remove
 - Bend tabs up to secure after install
 - Tabs located top and bottom



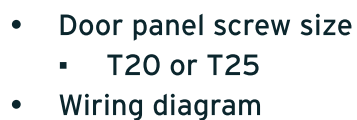
- Terminal Block
 - Quest Terminal Block Control Operations:
 - DEHUM Dehumidification (Fan and Compressor) Control Input
 - 24VAC Transformer High Side Output to External Control
 - FAN Fan Control Input
 - 24V COM 24VAC Power Transformer Neutral Side Output to External Control
 - FLOAT External Low Voltage Float Switch or Water Sensor Input (Use Normally Closed Switch)
 - FLOAT External Low Voltage Float Switch or Water Sensor Input (Use Normally

Closed Switch)

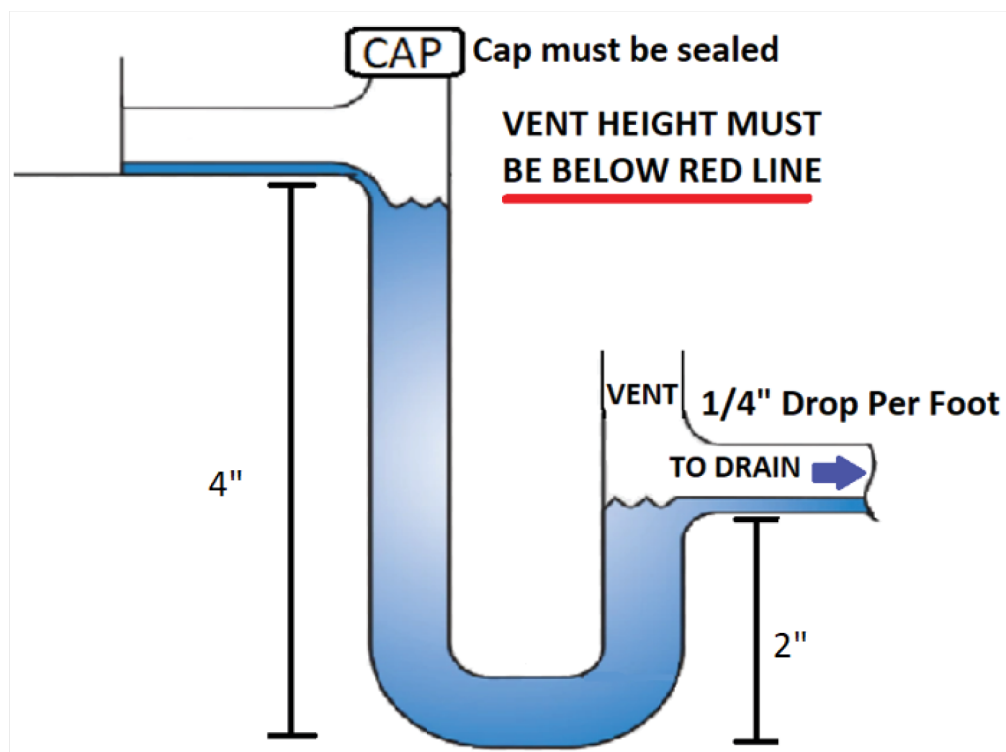
- Float can be changed to Normally Open. See Service Mode.
- ALARM Normally Closed Relay Output - Indicates when dehu is in an alarm state
- ALARM Normally Closed Relay Output - Indicates when dehu is in an alarm state
- Alarm can be changed to Normally Open. See Service Mode.



- Daisy Chaining
 - A Quest 335 control configuration uses no power as the terminals only sense voltage unlike other units.
 - 10+ Quest 335s could be daisy chained together but practically around 5 is recommended for power draw concerns.
 - If the Quest 335 is daisy chained with different units, make sure the Quest 335 is NOT the master unit that supplies control power to the rest.
 - A 506, 876, 225, 205, etc should be the master unit.
 - The power board has 0.25 VA output. This will not run much more than a control.
 - Humidi Pro = 0.1VA
 - The transformer has an automatically resettable fuse. Trips at 0.33 VA load.
 - If shorted the unit will Flash E4 error code.
- Power board:
 - Pry up to remove from corner pins.



- Drain trap configuration



Have Questions? Contact the Quest service department at **877-420-1330** or
service@questclimate.com