

Ultra-Aire 135H Air Purifying Dehumidifier with 

The Ultra-Aire 135H dehumidifier performs multiple functions in a compact enclosure; high-capacity dehumidification, fresh air ventilation, and is filtration ready.

Dehumidification

The highly efficient Ultra-Aire APD UA-135H dehumidifier utilizes refrigeration to cool the incoming air stream below its dew point. This cooled and drier air is used to pre-cool the incoming air stream resulting in up to a 200 percent increase in overall efficiency. After the pre-cooling stage the processed air is reheated by passing through the condenser coil. The heat removed by the evaporator coil is returned to the air stream, resulting in an overall temperature increase from the incoming air.

Fresh Air Ventilation (optional)

Fresh outdoor air is ducted to the unit via a 6" round duct. This provides desired air changes to dilute pollutants and maintain high oxygen content in the air. The amount of fresh air ventilation can be regulated by a variety of controls.

Air Filtration

The UA-135H includes air filtration to improve the indoor air quality of your living/working space. MERV-8 media is standard. An optional second MERV-14 deep pleated media filter is available for optimum air filtration to reduce airborne particles.



Figure 1: Ultra-Aire 135H (Package D)

Features and Benefits	
<p>Dehumidification</p> <p>Fresh Air Ventilation</p> <p>Compact Size</p> <p>Remote Filter Box</p>	<p>Therma-Stor LLC announces the introduction of the Ultra-Aire Model 135H Air Purifying Dehumidifier, a ventilating dehumidifier designed to provide ultimate indoor air quality. The Ultra-Aire provides the three key components of healthy indoor air: fresh air ventilation, particulate filtration and humidity control. At the heart of the 135H is a high capacity, energy efficient dehumidifier capable of removing over 17 gallons of water per day (at 80°F, 60% relative humidity) while using only 12 amps of electricity (120V). This allows the unit to maintain indoor humidity levels below 50%, the level widely recognized as critical for controlling mold, mildew and dust mite populations.</p>

Figure 2: Features and Benefits

Table of Contents

Introduction	1
Features & Benefits	1
1. Intended Application	2
2. Registrations	2
3. Specifications	2
4. Operation	2
4.1 Humidity/Fan Control Panel WITHOUT Fresh Air Ventilation or Damper	3
4.1A Humidity/Fan Control Panel WITH Fresh Air Ventilation and WITHOUT Damper	3
4.1B Humidity/Fan Control Panel WITH Fresh Air Ventilation AND Damper	3
4.1C Ventilation Timer and Humidity Control WITH Fresh Air AND Motorized Damper	3
4.1D DEH 2000 Digital Controller WITH Fresh Air AND Damper	3
4.1E DEH 2000 Digital Controller WITHOUT Fresh Air	3
4.2 Humidity Control Adjustment	3
4.3 Fan/Filter Switch	3
4.4 Ventilation Timer	3
4.5 Setting the Time	4
4.6 Ventilation Schedule	4
4.7 Automatic or Manual Mode	4
4.8 Low Pressure Control	4
5. DEH 2000 Digital Control	4
5.1 Specifications	4
5.2 Operation	4
5.2A Display	4
5.2B Setting	5
5.2C On/Off Setting	5
5.2D Setting Clock Time	5
5.2E Setting Relative Humidity Setpoint	5
5.2F Fan Setting and Operation	6
5.2G Fan On Fan Off Program	6
5.2H Damper Operation and Setting	6
5.2I Intermittent/Programmed Ventilation	6
5.2J Programming Notes	7
5.2K Stop Start	7
6. Maintenance	7
6.1 Standard Air Filter	7
6.2 High Efficiency Air Filter	7
6.3 Fresh Air Return	7
7. Service	7
7.1 Technical description	7
7.2 Troubleshooting	8
7.3 Refrigerant Charging	9
7.4 Impeller Fan Replacement	9
7.5 Compressor/Capacitor Replacement	9
7.6 Replacing Compressor - Nonburn Out	9
7.7 Electric Ventilation Damper	9
7.8 Condensate Pump Kit	9
8. Warranty	10
9. Optional Parts List	11

1 Intended Application for Ultra-Aire 135H

For the ideal installation, draw air from the central part of the home and return it to isolated areas of the home like the bedrooms, den, utility room, or family room. The ductwork of the existing heating system can be used to supply air to the home.

2 Registrations

The Ultra-Aire 135H (P/N 4025080) conforms to UL STD 1995. Certified to CAN/CSA STD C22.2 No. 236.

3 Specifications

Model:	UA-135H Air Purifying Dehumidifier
Electrical:	110-120 VAC, 12 Amps, 60 Hz, grounded
Capacity:	135 pints/day @ 80°F, 60% RH
Operating Temp.:	55°F min., 100°F max.
Air Flow:	355 CFM without external ducting 335 CFM @ .20 IWG external static 315 CFM @ .40 IWG external static
Refrigerant Charge:	1 lb., 12 oz. R22
Duct Connections:	Round 10" inlet, 10" outlet
Filter Size:	Pleated cloth: 2" X 20" X 24" High Efficiency: 4" X 20" X 24"
Unit Size (w/o duct collars):	31"L x 21"W x 18.65"H
Shipping Size:	37"L x 25"W x 28.5"H
Unit Weight:	100 lb.
Shipping Weight:	138 lb.

4 Operation

The Ultra-Aire UA-135H Air Purifying Dehumidifier performs three functions in one compact enclosure; High-Capacity Dehumidification, Fresh Air Ventilation, and Filtration. The UA-135H can be equipped with various accessories to enhance its operation. A remote control panel must be used with the UA-135H. Your unit has one of three remote control panels. To determine how each control operates the UA-135H it must first be determined which control is being used and whether or not the 135H is ducted for fresh air ventilation. Refer to Section 7 to identify which control you have installed. Inspect ducting or contact your installer to determine if your UA-135H is ducted for outside air.

Humidity/Fan Control Panel (P/N 4024155)

- 4.1 Humidity/Fan Control Panel WITHOUT Fresh Air Ventilation or Damper
- 4.1A Humidity/Fan Control Panel WITH Fresh Air Ventilation and WITHOUT Damper
- 4.1B Humidity/Fan Control Panel WITH Fresh Air Ventilation AND Damper

Ventilation Timer/Humidity Control Panel (P/N 4024125)

- 4.1C Ventilation Timer and Humidity Control WITH Fresh Air AND Motorized Damper

DEH 2000 Digital Control (P/N 4024539)

- 4.2 DEH 2000 Digital Controller WITH Fresh Air AND Damper
- 4.2A DEH 2000 Digital Controller WITHOUT Fresh Air

4.1 Humidity/Fan Control Panel WITHOUT Fresh Air Ventilation or Damper

The humidity/fan control panel automatically controls the humidity of the living space. The humidity/fan control panel contains an adjustable humidity control and a fan switch. The panel has a cover that must remain open to the air within the living space for accurate humidity sensing. Position the fan switch ON when the home is occupied. This filters and circulates air throughout the home. For humidity control operation refer to section 4.2.



Figure 1: Humidity/Fan Control Panel

4.1A Humidity/Fan Control Panel WITH Fresh Air Ventilation and WITHOUT Damper

The humidity/fan control panel automatically controls the humidity of the living space. The humidity/fan control panel contains an adjustable humidity control and a fan switch. The panel has a cover that must remain open to the air within the living space for accurate humidity sensing. Position the fan switch “ON” when the home is occupied. This filters and circulates air throughout the home. Outside air is introduced whenever fan is “ON.” Manual operation of fan filter switch controls outside air and ventilation. Since the fan operates whenever the UA-135H is dehumidifying outside air will be introduced. For humidity control operation refer to section 4.2.

4.1B Humidity/Fan Control Panel WITH Fresh Air Ventilation AND Damper

In this configuration, a motorized damper has been installed in the fresh air duct. When the fan/filter switch is in the “OFF” position, the damper is closed. The UA-135H will then circulate and dehumidify air to provide humidity control.

When the fan/filter switch is in the “ON” position, the motorized damper will open and the fan will run, introducing outside air. The unit may or may not be dehumidifying in the ventilation mode, depending on the humidity control setting. See Section 4.2 for humidity control operation.

4.1C Ventilation Timer and Humidity Control WITH Fresh Air AND Motorized Damper

Refer to sections 4.2 through 4.7.



Figure 2: Ventilation Timer and Humidity Control Panel

4.1D DEH 2000 Digital Controller WITH Fresh Air AND Damper

Refer to Section 5.

4.1E DEH 2000 Digital Controller WITHOUT Fresh Air

Refer to Sections 5 through Section 5.2G only.

4.2 Humidity Control Adjustment

Set the humidity control to the desired humidity level for the home. Turning the knob clockwise results in a drier setting. See the back of the control panel cover for set points. The dehumidifier will run continuously until the relative humidity (RH) is reduced to the humidity control dial setting. Setting the humidity control to lower RH levels will NOT increase the unit's dehumidification rate; the unit will simply run longer to reduce the area's RH to the setting. The UA-135H unit (and refrigerant-based dehumidifiers in general) will reduce a warm space's RH to a lower level than that of a cool space. It is therefore pointless to set the humidity control to excessively low levels in cool rooms; doing so will result in long periods of ineffective dehumidifier run time. Settings below 45% are not recommended.



Figure 3: Humidity Control Adjustment Knob

4.3 Fan/Filter Switch

Turning ON the fan/filter switch will cause the UA-135H impeller fan to run continuously, whether the UA-135H is dehumidifying or not. This function is desirable if the unit is used for air circulation and filtration to achieve maximum indoor air quality. When the switch is ON; air will be constantly filtered through the UA-135H and circulated throughout the house. When the switch is OFF the impeller fan will operate only when the humidity control calls for dehumidification or when the ventilation timer calls for ventilation.



Figure 4: Fan/Filter Switch

4.4 Ventilation Timer

The ventilation timer controls the impeller fan and the motorized fresh air damper. When the ventilation timer is activated, the UA-135H will circulate the indoor air, and bring in fresh air from outside. The ventilation timer should be set for the required ventilation of the residence. The home should be ventilated with fresh air as suggested by applicable codes and standards. The ventilation timer is an electronic timer that displays the current time. This timer has battery backup, so it will not require resetting after a power outage. Following a prolonged power outage the display of the timer will flash on and off indicating a power outage has occurred. The

one-minute time increments of the ventilation timer allow you to program the ventilation of your home to fit your schedule.

The ventilation timer allows six programs with each program having one "on" and one "off" event. A program allows the user to turn the ventilation on at a certain day and time, then it allows them to turn the ventilation off at a certain day and time. Each of these programs can be repeated daily or weekly or during a specified block of days. All six of the programs operate independently of each other. If the timer fails to operate or operates erratically, check that the control panel receives 24Vac from the UA-135H. If 24Vac is present at the control panel, reset the timer by pressing the reset button at the bottom center of the timer face. The reset button is the small recessed button with an R beneath it located below the 1...7 and h buttons. Depress the reset button until the display clears. Release the reset button. The display will reappear as 00:00. Resetting the timer will clear the time and all program settings. After resetting the timer follow the instructions below to set the correct time and ventilation programs.

4.5 Setting the Time

First, set the correct time on the timer by sliding the switch in the upper right hand corner of the timer to the clock symbol. and pressing the 1...7 (DAY), h (HOUR), and m (MINUTE) buttons. Remember this timer operates on a 24-hour (military time) clock.

4.6 Ventilation Schedule

Slide the switch in the upper right hand corner to the program symbol P. "ON" will appear to the right of the time and the number "1" will appear in the lower right hand corner of the display. The "1" and "ON" signify the turn on time for the first program. Press the 1...7, h and m button to choose the days of the week for this program. You can choose Mon.-Sun, Mon.-Fri., Sat-Sun, or any single day of the week. The days chosen are shown along the top of the display on the ventilation timer. Next press the h button to set the hour for the start of the ventilation period. Remember this timer operates on a 24-hour clock (military time). Then press the m button to set the minutes past the hour to start the ventilation. Now, with the ventilation start time set; press the I/O button. The word "OFF" should appear to the right of the time and the number "1" should remain in the lower right hand corner of the display. The "1" and "OFF" signify the turn off time for the first program. Set the turn off time using the 1...7, h and m buttons in the same way as described above and continue on to the second through sixth programs. When setting the ventilation programs, you can return to the current time display by sliding the switch in the upper right corner of the timer to RUN. The slide switch must be set to RUN for the timer to operate its scheduled programs.

4.7 Automatic or Manual Mode

The slide switch in the upper left of the timer is used to choose between automatic and manual operation. When the slide switch is set to AUTO mode, the UA-135H will ventilate

when the scheduled programs call for ventilation. When the slide switch is set to manual (set to hand symbol on the right), the operation of the timer is controlled by the I/O button only. Pressing the I/O button will switch the ventilation timer between ON (detent) and OFF (detent). As you press the I/O button, "ON" or "OFF" will be displayed to the right of the time. The "ON" or "OFF" indicates if the ventilation timer is on or off. The I/O button will manually override scheduled programs if the timer is in AUTO mode.

4.8 Low Pressure Control

If the low side refrigerant pressure drops to 15 PSIG, the low-pressure control opens and shuts off the compressor and impeller fan. It is automatically reset when the pressure rises to 35 PSIG. Its primary function is to prevent damage to the compressor. It may also open if the unit is A) installed in a cool area (below 50° F) or B) installed where it is below 40° F and then started. Under these conditions, the unit will restart within several minutes. Until the unit warms up, it may repeat the cycle several times.

5 (DEH 2000) Digital Control

DEH 2000 Digital Ventilation Timer/Humidity/Fan Control Installation & Operation Instructions

5.1 Specifications

Model:	4024539
Electrical:	24 VAC
Humidity Range:	20 - 90% RH
Humidity Accuracy:	+/- 4%
Output:	3 Amps 24 VAC

5.2 Operation

5.2A Display

When there is power to the control, the control display sequence will alternately show the clock, humidity, temperature, fan status, and fresh air damper status. The display sequence repeats continually, and is referred to as "home state".

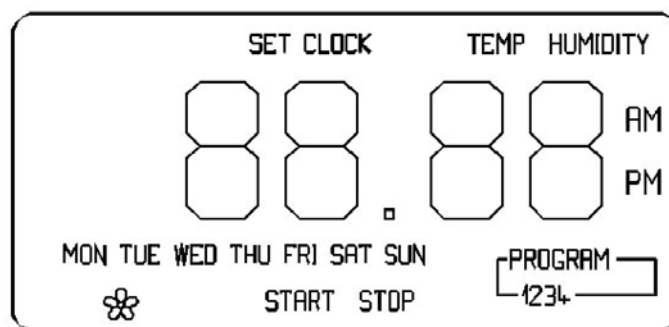


Figure 1: DEH 2000 Digital Display

- The word “CLOCK” appears at the top of the display during the clock display, along with the day and time.
- The word “HUMIDITY” appears during the humidity display, with the current setpoint on the left, and the ambient RH on the right.
- The word “TEMP” appears as the unit displays the current temperature.
- The fan status display is indicated by a capitol “F”. “OF” indicates fan off status, “on” indicates fan on status.
- The damper display is indicated by a “d” with the same on/off status indicators as the temperature.
- The ventilation program is displayed along the bottom of the display during the clock, humidity, and temperature displays only when the damper operation is set to the programmed setting “Pr”.

5.2B Setting

During the set-up process, if you make a mistake, you can always go back to adjust the settings. If you leave the control alone and don't touch any buttons for 10 seconds, the control will remember any changes made and return to “home state.”

5.2C On/Off Setting

Press the “ON/OFF” button to turn the system on or off. When the system is on, the green indicator will be lit. In the off mode, the controller continues the regular display sequence and indicates current time, temperature, and relative humidity. It also displays the status of the fan and damper as if the control were on, but the fan and damper will not operate unless the control is on and the green indicator is lit. Setup can be done with the control either on or off.



Figure 2: DEH 2000 User Panel

5.2D Setting Clock Time

1. Push “CLOCK” button. The hour display will flash, use the “SET” + or – buttons to adjust hour. Notice the a.m./p.m. display.



Figure 4: Fan Setting

2. Push “CLOCK” button again. The minute display will flash. Use the “+,-” buttons to adjust to the proper time.
3. Push “CLOCK” button again. The day display will flash. Use the “+,-” buttons to select the proper day.
4. Push “CLOCK” button again. The AM/PM display will flash. Verify AM/PM setting is correct.
5. Push “CLOCK” button again, or wait a few seconds for the display to stop flashing. The time is now set.

5.2E Setting Relative Humidity Setpoint

The relative humidity setpoint operates the dehumidifier function of the Ultra-Aire. It has no effect on any other function of the unit. The control senses the ambient relative humidity of the space in which it is located. The ambient condition is displayed on the right in the relative humidity display sequence, under the word “HUMIDITY”. The current setpoint is displayed on the left, under the word “SET”.



Figure 3: DEH 2000 Clock Display

If the setpoint is equal to or greater than the current ambient condition, the space does not need to be dried, so the dehumidifier function will be off. Example: Setpoint: 50% RH Current condition 45% RH = Dehumidifier off, red “DEHU” indicator not lit.

If the setpoint is less than the ambient condition, the dehumidifier will be on, and the red “DEHU” indicator will be lit. The space is more humid than the setpoint, so the controller operates the dehumidifier to dry the space. Example: Setpoint: 50% RH Current condition: 55% RH = Dehumidifier on, red “DEHU” indicator lit.

To set the relative humidity setpoint, press the “HUM” button. The display will show the “HUMIDITY” display, and the word “SET” will flash. Use the “SET” + or – buttons to adjust the relative humidity setpoint as desired. Therma-Stor Products recommends relative humidity levels of 45% in the summer, and lower levels in the winter. It is not recommended the humidity setpoint be set below 35%. In order to dry the home in the winter in a cold climate, use the ventilation function of the system rather than the dehumidifier function.

5.2F Fan Setting and Operation

Use the “FAN” button to adjust the fan operation. There are 3 choices for fan operation: “on”, “off” (denoted by “OF”), or program (denoted by “Pr”). To set operation,

1. Press the “FAN” button. The display will indicate the current fan setting.
2. Use the “SET” + or – buttons to adjust fan operation (“on”, “OF” or “Pr”). Press the “FAN” button again or leave the unit alone for 10 seconds to return to home state.



Figure 5: Setting Fan

5.2G Fan On Fan Off Fan Program

The fan display reading in the normal display sequence does not indicate the current fan setting, it indicates the current fan status, and will always read either on or off. With the fan in the “on” mode, the fan will run continuously. This does not effect the dehumidification functions of the system. In other words, the system may or may not be ventilating or dehumidifying while the fan is running. Common reasons for operating the fan continuously are continuous filtration and air recirculation. With the fan in the “off” or “program” mode, the fan will operate only when needed by other functions of the system. The fan will remain off unless the system is dehumidifying and/or ventilating. The fan always runs during dehumidification, it also always runs during ventilation. To completely turn the system off, use the “ON/OFF” button as described earlier.

5.2H Damper Operation and Setting (Ventilation)

The damper setting controls the ventilation function of the system. It has no control over the dehumidification function. In order to provide ventilation, the damper must be open (“on”) and the fan must be running. The controller takes care of these two functions automatically, so whenever the damper is open (“on”), the fan is running.

This is true even if the fan has been set to the “off” mode.

The ventilation indicator “.” will be lit whenever the unit is ventilating

There are three damper operation modes, “on”, “off” (denoted by “OF”), and program (denoted by “Pr”). With the damper in the “on” mode, the damper will be open and the fan of the system will be operating in order to introduce fresh air into the space. Use this mode for continuous fresh air ventilation. The fan is always on when the damper is open. When in “off” mode, the damper will not open and the system will not ventilate.

When in the “program” mode, the control will operate the damper and fan (ventilate) according to the programmed ventilation schedule (see the section referring to programming the ventilation schedule).

To select damper operation:

1. Press the “DAMPER” button. The letter “d” will appear on the display, along with the current mode setting.
2. Use the “SET” + or – buttons to adjust the fan setting to the desired mode (“on”, “OF”, or “Pr”).
3. Press the “DAMPER” button again or leave the control alone for 10 seconds to select the indicated damper mode and return to the home state.



Figure 6: Setting Damper

5.2I Intermittent or Programmed Ventilation

With the damper in program mode (denoted by “Pr” when setting the damper operation) the system will operate the ventilation function according to the current ventilation program.

There are 4 programs available for ventilation Monday through Friday. There are also 4 programs for Saturday and 4 programs for Sunday. No other choice of days is available. Each program to be used has an “on event” called “START” which brings the ventilation function on, and an “off event” called “STOP” which turns the function off. Each START and STOP must be entered in to the controller.



Figure 7: Ventilation Programming

To set or adjust the ventilation program:

1. Press the “PROG” button two times. The display will indicate “Program 1/start” at the bottom, and the hour display will flash.
2. Use the “SET” + or – button to adjust the hour for the Program 1 start time. Be sure to pay attention to the am/pm setting.
3. Press the “PROG” button again. The display will indicate “Program 1/start” at the bottom, and now the minute display will flash.
4. Use the “SET” + or – buttons to adjust to the desired minute setting.
5. Press the “PROG” button again to move on to the “Program 1/stop” event. The display will indicate “Program 1/stop” at the bottom, and the hour display will flash.

6. Use the “SET” + or – button to adjust the hour for the Program 1 stop time. Be sure to pay attention to the am/pm setting.
7. Press the “PROG” button again. The display will indicate “Program 1/stop” at the bottom, and now the minute display will flash.
8. Use the “SET” + or – buttons to adjust to the desired minute setting.
9. Pressing the “PROG” button again to move onto “program 2/stop” and begin the process again if setting the other programs. Follow the same procedure for each program.
10. To end the program process simply leave the control alone (don’t push any buttons) for about 10 seconds. The unit will remember any changes and return to “home state”.

5.2J Programming Notes

To run the ventilation program, the damper mode must be in the “program” mode (“Pr”).

The timer can be operated manually without changing the program by adjusting the damper mode from “program” to either “on” or “off”.

To delete a program after it has been entered, adjust the program so the “START” and “STOP” times are identical.

Occupants should determine ventilation times and rates. Therma-Stor Products makes no firm recommendations concerning when to ventilate. Common ventilation schedules include constant ventilation, ventilation based on occupancy times, intermittent operation, and seasonal ventilation.

Remember the control must be on for the unit to be functioning - make sure the green power indicator “ON” is lit.

5.2K Stop Start

During summer in hot, humid climates operating in ventilation mode will increase the moisture load in the home. Consider reducing the amount or frequency of fresh air ventilation if indoor humidity continues to be high.

6 Maintenance

6.1 Standard Air Filter

The UA-135H is equipped with a pleated cloth air filter. This filter should be checked every three months. Operating the unit with a dirty filter will reduce dehumidifier capacity and efficiency and may cause the compressor to cycle off and on unnecessarily on the defrost control.

! IMPORTANT

DO NOT operate the unit without the standard filter or with a less effective filter than the standard filter. The heat exchange coils inside the unit could become clogged and require disassembly to clean. Filter non-compliance invalidates the product warranty.

6.2 High Efficiency Air Filter

An optional high efficiency pleated microglass paper filter is available for the UA-135H. This filter is rated as 90%-95% efficient by the ASHRAE Dust Spot test method 52-76. The high efficiency pleated microglass paper filter should be used in conjunction with the standard filter, and placed directly behind the standard filter.

This filter is able to remove allergy-causing particles from the airstream. Check the high efficiency air filter every two years and replace if necessary. Be careful not to damage the media when handling the high efficiency pleated paper filter. Do not attempt to clean the high efficiency pleated paper filter. It should be replaced when it becomes restrictive.

6.3 Optional Fresh Air Return

Check and clean the screen on the outdoor fresh air return seasonally. The screen may become plugged during the seasons when there are many particles in the outdoor air.

7 Service

! CAUTION

CAUTION: Servicing the UA-135H with its high pressure refrigerant system and high voltage circuitry presents a health hazard which could result in death, serious bodily injury, and/or property damage. Only qualified service people should service this unit.

7.1 Technical Description

The UA-135H uses a refrigeration system similar to an air conditioner's to remove heat and moisture from incoming air, and add heat to the air that is discharged. Hot, high-pressure refrigerant gas is routed from the compressor to the condenser coil (See Figure 1). The refrigerant is cooled and condensed by giving up its heat to the air that is about to be discharged from the unit. The refrigerant liquid then passes through a filter/drier and capillary tubing which causes the refrigerant pressure and temperature to drop. It next enters the evaporator coil where it absorbs heat from the incoming air and evaporates. The evaporator operates in a flooded condition, which means that all the evaporator tubes contain liquid refrigerant during normal operation. A flooded evaporator should maintain nearly constant pressure and temperature across the entire coil, from inlet to outlet.

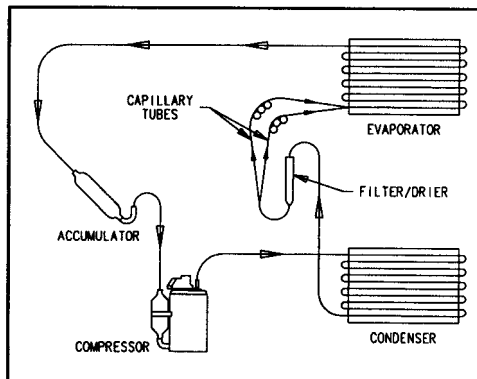


Figure 1: Refrigeration System of UA-135H

The mixture of gas and liquid refrigerant enter the accumulator after leaving the evaporator coil. The accumulator prevents any liquid refrigerant from reaching the compressor. The compressor evacuates the cool refrigerant gas from the accumulator and compresses it to a high pressure and temperature

Evaporator coil frosted continuously, low dehumidifying capacity.

1. Defrost thermostat loose or defective.
2. Low refrigerant charge
3. Dirty air filter(s) or airflow restricted.
4. Excessively restrictive ducting connected to unit.

7.2 Troubleshooting

No dehumidification, neither impeller fan nor compressor run with fan switch and ventilation timer OFF.

1. Unit unplugged or no power to outlet.
2. Humidity control set too high or defective.
3. Loose connection in internal or control wiring.
4. Defective Compressor relay.
5. Defective control transformer.
6. Low pressure Control open.
7. Optional Condensate Pump Safety Switch open.

Unit not providing ventilation. Ventilation timer not operating correctly.

1. If timer is not functioning correctly reset timer and reprogram.
2. Check control wire connections (check connections at fresh air damper also).
3. Defective fresh air damper.
4. Defective fan switch.

No dehumidification, compressor does not run but impeller fan runs with fan switch and ventilation timer OFF and humidity control turned to ON.

1. Defective compressor run capacitor.
2. Bad connection in compressor circuit.
3. Defective compressor overload.
4. Defective compressor.
5. Defrost thermostat open.

Unit removes some water, but not as much as expected.

1. Air temperature and/or humidity have dropped.
2. Humidity meter and or thermometer used are out of calibration.
3. Unit has entered defrost cycle.
4. Air filter dirty.
5. Defective defrost thermostat.
6. Low refrigerant charge.
7. Air leak such as loose cover or ducting leaks.
8. Defective compressor.
9. Restrictive ducting.
10. Optional Condensate Pump Safety Switch open.

Impeller fan runs with fan switch and ventilation timer OFF, but compressor cycles on & off.

1. Low ambient temperature and/or humidity causing unit to cycle through defrost mode.
2. Defective compressor overload.
3. Defective compressor.
4. Defrost thermostat defective.
5. Dirty air filter(s) or airflow restricted.
6. Low refrigerant charge, causing defrost control to cycle.
7. Bad connection in compressor circuit. Impeller fan does not run with fan switch in either position.

Unit Test to determine problem:

1. Detach field control wiring connections from main unit.
2. Connect the yellow and green pigtails from the main unit together; only the impeller fan should run. Disconnect the wires.
3. Connect the yellow and blue pigtails from the main unit together; the compressor and impeller fan should run.
4. If these tests work, the main unit is working properly. You should check the control panel and field control wiring for problems next.
5. Remove the control panel from the mounting box and detach it from the field installed control wiring. Connect the blue, yellow, and green wires from the control panel directly to the corresponding colored pig-tails on the main unit. Leave the violet, white and red wires disconnected!
6. Turn on the fan switch; the impeller fan should run. Turn off the fan switch.
7. Turn on the humidity control; the compressor and impeller fan should run.
8. If these tests work, the problem is most likely in the field control wiring.

Impeller fan does not run with ventilation timer activated. Compressor runs briefly but cycles on & off with humidity control turned to ON.

1. Loose connection in impeller fan circuit.
2. Obstruction prevents impeller fan rotation.
3. Defective impeller fan.
4. Defective impeller fan relay.
5. Defective impeller fan capacitor.

Impeller fan runs with fan switch ON. Impeller fan does not run with ventilation timer activated.

1. Defective ventilation timer.
2. Time not correct on ventilation timer.
3. Ventilation timer set to manual & switched OFF.
4. Defective fan switch.

7.3 Refrigerant Charging

If the refrigerant charge is lost due to service or a leak, a new charge must be accurately weighed in. If any of the old charge is left in the system, it must be recovered before weighing in the new charge. Refer to the unit nameplate for the correct charge weight and refrigerant type.

7.4 Impeller Fan Replacement

The motorized impeller fan is a unitary assembly consisting of the motor and impeller fan. If defective, the complete assembly must be replaced.

1. Unplug the power cord
2. Remove the cabinet access panel
3. Disconnect the impeller's blue, black, brown leads, which are attached to the capacitors as well as the green/yellow ground lead.
4. Remove the impeller access plate, which is the D-shaped plate mounted to the supply/exhaust panel of the UA-135H. The impeller should be attached to this D-shaped plate. Pull the leads through the black plastic scroll housing inside, as you remove the impeller access plate.
5. Remove the two cable clamps securing the impeller cord to the access plate.
6. Remove the defective impeller from the access plate
7. Reassemble the new impeller fan by reversing the above procedure. Note: Make sure that the new impeller cord is secured tightly to the impeller access plate utilizing the two cable clamps given with the unit. Make sure to reconnect all leads in their correct positions.

7.5 Compressor/Capacitor Replacement

This compressor is equipped with a two terminal external overload and a run capacitor, but no start capacitor or relay.

CAUTION

CAUTION-ELECTRICAL SHOCK HAZARD: Electrical power must be present to perform some tests. These tests should be performed by a qualified service person.

7.6 Replacing a Compressor, Nonburn Out

Remove the refrigerant from the system. Replace the compressor and liquid line filter/drier. Charge the system to 50 PSIG and check for leaks. Remove the charge and weigh in the refrigerant quantity listed on the nameplate. Operate the system to verify performance.

7.7 Electric Ventilation Damper

The electric ventilation damper is controlled by the ventilation timer. The damper will open when the ventilation timer is activated to allow fresh air into the structure through the 6" diameter fresh air inlet duct. The electric ventilation damper will remain closed when the ventilation timer is not activated to prevent over-ventilating the structure when the unit is dehumidifying or recirculating the indoor air.

The electric ventilation timer operates on 24 Vac from the control circuit. DO NOT connect high voltage to the damper motor or damage to the motor may result. DO NOT force the blade of the damper by hand or damage to the damper motor may result.

The damper opens in one direction only. The damper rotates very slowly, allow sufficient time for the damper to cycle. The damper will take approximately 1 minute to cycle from closed to open or from open to closed.

If the electric ventilation damper fails to operate:

1. Check that the wiring is correct and that voltage is present at the damper motor.
2. Check for any obstruction inside the damper. If the electric ventilation damper fails to operate after performing these checks, it must be replaced.

7.8 Condensate Pump Kit

An optional condensate pump kit is available from the factory for use with the UA-135H. Condensate is automatically pumped to a remote location when the water level in the pump's reservoir rises to close the float switch. The pump also contains a safety float switch. The white leads from this switch extend from beneath the pump cover. This switch should be installed in series with the field wire that connects the blue (#5) lead from the UA-135H to the blue (#5) lead on the control panel. If the pump fails, this switch opens the compressor control circuit and stops water production before the reservoir overflows. The UA-135H will continue to ventilate or circulate air as normal, but will not dehumidify until this switch closes.

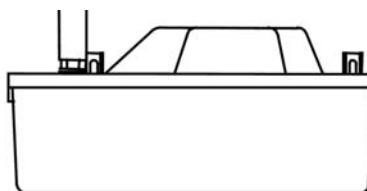


Figure 2: Condensate pump.

ULTRA-AIRE Dehumidifier Limited Warranty

WARRANTOR:

Therma-Stor LLC
PO Box 8050
Madison, WI 53708

Telephone: 1-800-533-7533.

WARRANTY: This warranty covers the Ultra-Aire 135H and extends only to the original residential end-user of the Ultra-Aire dehumidifier, and may not be assigned or transferred.

Year One - 100% parts and labor (all components). Therma-Stor LLC warrants that, for one (1) year the ULTRA-AIRE APD dehumidifier will operate free from any defects in materials and workmanship, or Therma-Stor LLC will, at its option, repair or replace the defective part(s), free of any charge.

Year(s) Three through Five - Therma-Stor LLC further warrants for a period of five (5) years, the condenser, evaporator, and compressor of the ULTRA-AIRE dehumidifier will operate free of any defects in material or workmanship, or Therma-Stor LLC, at its option, will repair or replace the defective part(s).

USER RESPONSIBILITIES: Warranty service must be performed by a servicer authorized by Therma-Stor Products. To obtain warranty service you must obtain a return material authorization (RMA). To obtain an RMA you must present proof of purchase or (lease), by use of a warranty card, original sales receipt or other reasonable and reliable means.

To obtain an RMA call Therma-Stor LLC at the above number and ask for the Therma-Stor LLC Service Department, which will then issue an RMA# and arrange for, at our option, either repair or replacement.

FREIGHT: Freight to and from the servicer is the responsibility of the end-user. The end-user is responsible for normal care and proper return packaging.

LIMITATIONS AND EXCLUSIONS: This warranty does not cover any defect, malfunction, etc. resulting from misuse, abuse, lack of normal care, corrosion, freezing, tampering, modification, unauthorized or improper repair or installation, accident, acts of nature or any other cause beyond Therma-Stor LLC's reasonable control.

If any Ultra-Aire 135H part is repaired or replaced, the new part shall be warranted for the balance of original warranty (but all warranty periods will be extended by the period of time, if any, that the Ultra-Aire 135H is out of service while awaiting covered warranty service).

Warranty service will be performed during normal working hours.

UPON THE EXPIRATION OF THE WRITTEN WARRANTY APPLICABLE TO THE ULTRA-AIRE DEHUMIDIFIER OR ANY PART THEREOF, ALL OTHER WARRANTIES IMPLIED BY LAW, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, SHALL ALSO EXPIRE. ALL WARRANTIES MADE BY THERMA-STOR LLC ARE SET FORTH HEREIN, AND NO CLAIM MAY BE MADE AGAINST THERMA-STOR LLC BASED ON ANY ORAL WARRANTY. IN NO EVENT SHALL THERMA-STOR LLC, IN CONNECTION WITH THE SALE, INSTALLATION, USE, REPAIR OR REPLACEMENT OF ANY ULTRA-AIRE DEHUMIDIFIER OR PART THEREOF BE LIABLE UNDER ANY LEGAL THEORY FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES INCLUDING WITHOUT LIMITATION WATER DAMAGE (THE END-USER SHOULD TAKE PRECAUTIONS AGAINST SAME), LOST PROFITS, DELAY, OR LOSS OF USE OR DAMAGE TO ANY REAL OR PERSONAL PROPERTY.

Some states do not allow limitations on how long an implied warranty lasts, and some do not allow the exclusion or limitation of incidental or consequential damages, so one or both of these limitation may not apply to you.

LEGAL RIGHTS: This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.



9. Optional Parts List: UA-135H Indoor Air Quality System

Item	Part No.	Description
1	4024125	Control Panel Assembly, Ventilation Timer & Humidity Control
2	4024155	Control Panel Assembly, Humidity/Fan
3	4024539	DEH 2000 Digital Controller
4	4025287	Filter Box
5	4022220	Condensate Pump Kit, External
6	4024377	Optional External Insulation Kit (not shown)
7	4024369	2"x20"x24" Filter (not shown)
8	4024370	4"x20"x24" Filter (not shown)
9	4020646	10" Backdraft Damper (not shown)
10	4025463	Stand Kit (not shown)



Figure 1: Ventilation Timer & Humidity Control

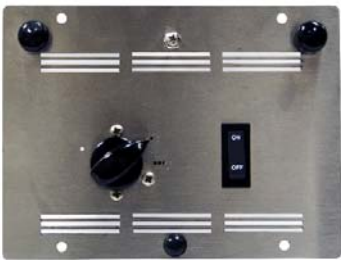


Figure 2: Humidity/Fan Control



Figure 3: DEH 2000 Digital Control

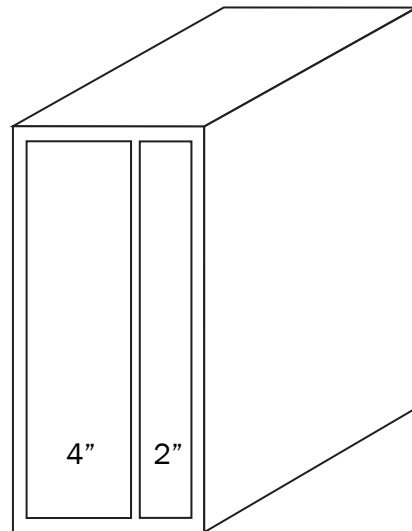


Figure 4: Filter Box

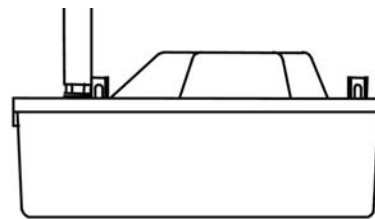


Figure 5: Condensate Pump



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