SAFETY INSTRUCTIONS

⚠️ WARNING

1. 120 Volts may cause serious injury from electric shock. Disconnect electrical power before starting installation or servicing. Leave power disconnected until installation/service is completed.
2. Sharp edges may cause serious injury from cuts. Use care when cutting plenum openings and handling duct work.
3. Dropping may cause personal injury or equipment damage. Handle with care and follow installation instructions.

⚠️ CAUTION

1. Read all instructions before beginning installation.
2. Improper installation may cause property damage or injury. Installation, service, and maintenance must be performed by a qualified service technician.
3. Do not use in pool applications. Pool chemicals can damage the dehumidifier.
4. Do not use solvents or cleaners on or near the circuit board. Chemicals can damage circuit board components.
5. Wait 24 hours before running the unit if it was not shipped or stored in the upright position
6. Do not use dehumidification to prevent window condensation in the winter. To address window condensation, use ventilation to lower indoor humidity in the winter.

READ AND SAVE THESE INSTRUCTIONS
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<table>
<thead>
<tr>
<th></th>
<th>S1-CVD070T01A</th>
<th>S1-CVD095T01A</th>
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<tr>
<td><strong>Weight</strong></td>
<td>67 lbs.</td>
<td>70 lbs.</td>
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<tr>
<td><strong>Capacity</strong></td>
<td>70 pints per day @ 160 CFM</td>
<td>95 pints per day @ 265 CFM</td>
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<td><strong>AHAM DH-1-2008 80°F, 60% RH Conditions</strong></td>
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</tr>
<tr>
<td><strong>Power</strong></td>
<td>6.3A operating current</td>
<td>8A operating current</td>
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<tr>
<td><strong>115 VAC, Single Phase, 60Hz</strong></td>
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<td><strong>Dehumidifier Inlet Air Conditions</strong></td>
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<tr>
<td><strong>Dehumidification:</strong> 50°F – 104°F, 40°F dew point minimum</td>
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<td><strong>Ventilation:</strong> 40°F – 140°F, 0%RH – 99%RH (non-condensing)</td>
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<td><strong>Filter</strong></td>
<td>MERV 8, washable</td>
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<tr>
<td><strong>Airflow</strong></td>
<td><strong>External Static Pressure (&quot;w.c.&quot;)</strong></td>
<td><strong>Airflow (CFM)</strong></td>
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<td></td>
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<td>70</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.6*</td>
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</table>

*Maximum design external static pressure.

**SET UP DEHUMIDIFIER FOR INSTALLATION**

⚠️ **IMPORTANT:** Cut the strap securing the compressor shipping support bracket and remove the strap and shipping bracket. See **Figure 1.**

---

**Figure 1 – Remove Shipping Bracket**

- **REMOVAL OF SHIPMENT STRAP:**
- **CLIP OFF PLASTIC STRAP**
- **REMOVE SHIPPING BRACKET**
Set up Dehumidifier for Installation (continued)

Duct Collars

Standard Basement and Attic Installations (Fully Ducted)

- Use the screws in the parts bag to attach the duct collars to the inlet and outlet of the dehumidifier. The outlet collar has a backflow damper.
- The outlet duct collar may be attached to the top or end of the unit. Move the outlet cover to the location not being used. See Figure 2.
- Make sure there are no bends in the ductwork coming off the outlet for a minimum of 4”. This will ensure that the ductwork will not interfere with the backflow damper function.

Closet Installations

Use the screws provided in the parts bag to attach the duct collars if desired or required based on recommendations below:

- Where inlet space is restricted, the inlet duct collar is optional.
- When the dehumidifier is installed below the HVAC equipment and requires a vertical discharge, move the top access panel to the end of the unit. The outlet duct collar with backflow damper is not required. See Figure 3.
- When the dehumidifier requires a ducted vertical discharge, remove the top access panel and remount on the outlet of the unit. Install the outlet duct collar with backflow damper on top of the unit. See Figure 3.

Crawl Space, Sealed Attics or Basement Installations

If dehumidifying the space in which the dehumidifier is installed, the duct collars do not need to be installed. Leave the outlet cover on top of the unit. See Figure 4.

Figure 2 – Fully Ducted Installations

Figure 3 – Closet Installations

Figure 4 – Non-ducted Installations
CONTROL LOCATION

The on-board control can be located on the top of the dehumidifier or can be relocated to the front of the dehumidifier if the control cannot be seen/accessed in the top orientation.

To move the control:

1. Remove the front control panel cover.
2. Remove the filter access door and filter.
3. Detach the on-board control by removing the four (4) screws around the control. **NOTE:** Use one hand to support the bottom of the on-board control when removing.
4. Keep the control in the unit and relocate to the front access hole.
5. Secure the control with the same four screws used to attach the control to the top of the unit.
6. Secure the control panel cover to the top of the unit.

**FIGURE 5 – Control Location**

---

Set up Dehumidifier for Installation (continued)
The S1-CVD070T01A dehumidifier can be modified for applications where hard wire power to 115VAC is required. An electrical disconnect switch can be installed as needed to comply with appropriate codes or ordinances. The ON/OFF switch on the dehumidifier interrupts the 115VAC service to the internal components of the dehumidifier, but does not disconnect the power supply at the 115VAC terminals on the dehumidifier.

**United States Installations:** Make all electrical connections in accordance with the current edition of the NEC ANSI/NFPA 70 and any local codes or ordinances that may apply.

**Canada Installations:** Make all electrical connections in accordance with the current edition of the Canadian Electrical Code CSA C22.1 and any local codes or ordinances that may apply.

---

### ELECTRICAL SPECIFICATIONS FOR HARD WIRING

<table>
<thead>
<tr>
<th>Specification</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>110-120 VAC, 60 Hz, 1 phase</td>
</tr>
<tr>
<td>Minimum Circuit Capacity</td>
<td>9A</td>
</tr>
<tr>
<td>Maximum Fuse or Circuit Breaker Amps</td>
<td>16A</td>
</tr>
<tr>
<td>Minimum Wire Size AWG</td>
<td>14</td>
</tr>
</tbody>
</table>
HARD WIRING (CONTINUED)

WIRING INSTRUCTIONS

1. Disconnect electrical service at the main fuse or circuit breaker box.
2. Install any code required electrical disconnects to the line service.
3. Remove the side panel and electrical service panel from the dehumidifier. See Figure 6.
4. Disconnect the power cord connections from the terminals in the electrical service box. See Figure 7.
5. Use pliers to pinch the strain relief and pull it out of the dehumidifier cabinet along with the power cord. See Figure 6.
6. Route the service cable through the 7/8” diameter hole where the power cord was removed. USE ONLY COPPER SUPPLY WIRES.
7. Secure the cable/conduit to the dehumidifier using fittings/connectors approved for the type of cable/conduit used.
8. Connect the ground wire of the service cable to the ground lug in the electrical service box. See Figure 7.
9. Connect the line voltage wires of the service cable to the LINE BLK and NTRL WHT terminals. See Figure 7.
10. Reattach the electrical service panel and side panel.
11. Restore electrical service at the main fuse or circuit breaker box.

FIGURE 6 – Electrical Service Box Location

FIGURE 7 – Hard Wire to 115 VAC Service
LOCATION CONSIDERATIONS

- Allow sufficient clearance for filter removal and to prevent airflow obstruction
- Electrical service access will require the removal of the side panel shown. Allow sufficient space for service on this side of the unit.
- If locating the unit in an attic or crawl space, a S1-DDHC76 Control mounted in the living space is recommended.
- For attic installations, it is recommended that the dehumidifier be suspended.
- Always install the dehumidifier in a condensate pan when locating in or over a finished space.

DRAIN INSTALLATION

The drain outlet on the dehumidifier can be hard piped using 3/4” nominal drain tubing or the provided fittings and 1/2” clear PVC tubing can be used to drain the dehumidifier. Always maintain a constant downward slope from the dehumidifier to the drain and do not allow soft tubing to curl up which may result in air lock.

LEVELING

The feet can be adjusted to level the unit, and if required, to accommodate drain fittings and a secondary condensate pan. Leveling is required to ensure proper drainage from the dehumidifier. See Figure 9.

CONDENSATE PAN, CONDENSATE PUMP AND FLOAT SWITCH

Always install the dehumidifier in a condensate pan when locating in or above a finished space. Adhere to local codes regarding draining of the condensate pan. If a condensate pump is needed, install it in the condensate pan as well.

Install a condensate overflow safety switch (i.e. float switch) in the condensate pan, remove the factory installed jumper wire between the Float Switch terminals on the control and wire the float switch to the dehumidifier as shown in Figure 10. Overflow safety switches on condensate pumps can be wired to the Float Switch terminals in a similar fashion.
The Preferred Installation is to duct the dehumidifier to pull air from and return dehumidified air to the HVAC return duct. This installation will ensure warm, dehumidified air is thoroughly mixed with the HVAC system air before being discharged into the living space. Alternatively, the dehumidifier can be ducted to discharge to the supply duct, but the external static pressure of the HVAC system must not exceed 0.4” w.c. for the S1-CVD070T01A and 0.6” w.c. for the S1-CVD095T01A.

Required Component
10” Ductwork

Ducting Notes:
- Use insulated duct when the dehumidifier is located in an unconditioned space such as an attic or a garage.
- Use a minimum of 12” of flex duct at the dehumidifier inlet and outlet to prevent vibration noise transmission.
- When ducting return to return (preferred), the dehumidifier must be wired to turn on the HVAC fan when operating (see page 14).
- When ducting return to supply, allow adequate space before the first branch duct to ensure the warm dehumidified air is thoroughly mixed with the HVAC system air.
DUCTING TO HVAC SYSTEM – CLOSET INSTALLATIONS

The dehumidifier in these applications is typically installed under or next to the HVAC equipment. In both types of installation, the dehumidifier inlet is not ducted and pulls from the living space through a grille or louveres in the HVAC closet door. The Preferred Installation is to locate the dehumidifier under the HVAC equipment and supply dehumidified air through the alternate outlet on the top of the unit directly to the HVAC return. 

**NOTE:** The dehumidifier must be wired to activate the HVAC fan during dehumidifier operation in this installation. In the Alternate Installation the dehumidifier is located next to the HVAC equipment and ducted to the HVAC supply duct using the outlet on the top of the unit. The supply side external static pressure of the HVAC system must not exceed 0.4”w.c. for the S1-CVD070T01A and 0.6”w.c. for the S1-CVD095T01A.

---

**CAUTION**

When installing the dehumidifier as part of a combustion type furnace (gas, oil, propane, etc.) HVAC system located in a closet, duct or locate the dehumidifier inlet and outlet and seal as needed to separate the circulation air from the combustion and ventilation air. Follow all local and national building and safety codes when installing or modifying any HVAC system.

Optional Component

10” Ductwork

---

DUCTING FOR STAND ALONE INSTALLATIONS OR NON-DUCTED INSTALLATIONS

In this installation the dehumidifier is not ducted to the HVAC system and is used to dehumidify a specific area. This installation is typically in basements or crawl spaces.

**Optional Components**

10” Ductwork
Grilles with 10” Duct Collars

---

**FIGURE 17 – Stand Alone Ducted**

DEHUMIDIFIED AIR IS SUPPLIED TO DUCTED SPACE
DEHUMIDIFIED SPACE
AIR IS PULLED FROM DUCTED SPACE
GRILLE WITH 10” DUCT COLLAR (2 PLACES)
DUCTING FOR TWO ZONE INSTALLATIONS

In this installation the dehumidifier controls the humidity in two separate zones, a Primary and Secondary Zone. The dehumidifier will dehumidify the Primary Zone as the first priority, and will switch to the Secondary Zone after the dehumidification needs of the Primary Zone have been satisfied.

IMPORTANT: Normally Closed dampers must be installed in the ducts serving the Primary Zone and Normally Open dampers installed in the ducts serving the Secondary Zone.

Required Components
10” Ductwork and Fittings
Grilles with 10” Duct Collars
Drain Line
2 – Model S1-6510, 10” Normally Closed Damper
2 – Model S1-6610, 10” Normally Open Damper
24 VAC Transformer (40VA min.) for Dampers

NOTE: 5442 Basement Kit includes 2 – S1-6510 Dampers,
2 – S1-6610 Dampers and a 24VAC (40VA) transformer
NOTE: Use 18-22 AWG wire for control wiring.

**EXTERNAL CONTROL**

Used as an external control, the S1-DDHC76 is mounted in the space that is to be dehumidified. When the dehumidifier is powered, the display on the dehumidifier control will show "EXTERNAL" to indicate that an external control is being used. External controls are recommended when the dehumidifier is installed in an attic and is ducted to the HVAC system.

The S1-DDHC76 uses a normally open (NO), dry contact (i.e. not a triac or other semiconductor) relay to complete the circuit between the DH terminals of the dehumidifier control. If using other controls such as a thermostat with dehumidification outputs, ensure the output is a dry contact type and set the NO/NC switch on the dehumidifier control (see Figure 20) to correspond with the control being used.

If an external control is used in a zoned application, it must be located in the Primary Zone (refer to TWO ZONE – PRIMARY AND SECONDARY ZONED INSTALLATION on page 18 for details).

**CRAWL SPACE/SEALED ATTIC CONTROL**

Used as crawl space or sealed attic control (or remote control), the S1-DDHC76 is mounted in the living space while the dehumidifier is located in the area to be dehumidified. When the dehumidifier is powered, the display on the dehumidifier control will show "REMOTE" to indicate that a remote control is being used. The RH shown on the S1-DDHC76 is the RH measured at the dehumidifier.

Remote control is typically used for crawl space or sealed attic applications, but is also recommended when the dehumidifier and the space being dehumidified are inconvenient or difficult for the homeowner to access. Examples of this type of application include basements that may be inconvenient to access or storage areas.
The S1-TTSCC02 communicating control can be used as an external ON/OFF dehumidifier control. In this configuration, the thermostat initiates dehumidification, and overrides the on-board dehumidifier control logic.
NOTE: Use 18-22 AWG wire for wiring to HVAC system and zone dampers.

Pull off the wiring access cover near the dehumidifier control to access the wiring terminals. Snap the wiring access cover back into place after completing all wiring.

WIRING TO THE HVAC SYSTEM

When the dehumidifier is ducted to the HVAC system, it is recommended that it also be wired to the HVAC system as shown in Figure 23. If ducted to the HVAC system in return to return configuration, the dehumidifier must be wired to the HVAC system to prevent short circuiting dehumidified air directly back to the dehumidifier inlet. In return to supply ducting configuration, running the HVAC fan with the dehumidifier ensures the warm dry air is mixed with room air before being discharged to the home.

OPTIONAL W & Y WIRING

Wire the W and/or Y terminal to the HVAC system when using the ventilation feature of the dehumidifier (see VENTILATION on page 19).

Wire the dehumidifier Y terminal to the HVAC system if it is desired to disable the dehumidifier compressor from operating when the air conditioning is running. See DEH w/AC in SYSTEM SET-UP on page 16 for additional set up steps required to access this feature.

WIRING TO ZONE DAMPERS
SYSTEM SET-UP & CHECKOUT

If dehumidifier installation does not include ventilation or zoning and will not be wired to an external control, remote control or the HVAC system, proceed to Installer Test Mode section on page 17.

1. **Check all wiring.**
2. **Make sure the wire access cover has been snapped back onto the on-board control.**
3. **Plug unit in and turn power switch to ON.**
4. **The on-board control screen should display OFF.**

**NOTE:** If the display backlight is not on, the first button press (any button) will only turn on the backlight. Press the button a second time to achieve function.

5. **Hold the MODE button on the on-board control for 3 seconds to enter the Installer Set-up Menu.**
6. **Navigate through the following screens to set up the dehumidifier for the installed application.**
   - Use the UP or DOWN arrows to select items and use MODE to switch to the next set-up option. To exit installer set-up, all options must be scrolled through using the MODE button.
7. **After the installer set up options have been completed, DONE will blink for 3 seconds and the control will return to the OFF screen.**

### Ventilation

- **If not using the dehumidifier to bring in outdoor air, press MODE to go to ZONE screen selections.**
- **If using the dehumidifier for ventilation, Enable and press MODE to select TIMED or AUTO.**
- **If ventilating based on time only (no outdoor temperature restrictions), press MODE at the VENT TIMED screen to go to ventilation time selection screen.**
- **If ventilating with outdoor temperature restrictions, use the UP arrow to go from VENT TIMED to VENT AUTO –B and then the UP/DOWN arrows to select the desired ventilation mode, B, C, or D. Press MODE to go to the ventilation time selection screen.**

#### Vent-Auto-B:
Ventilation prevented when outdoor temperature is below 0°F and above 100°F. Between 0°F – 20°F ventilation is only allowed during a HVAC heat call.

#### Vent-Auto-C:
Ventilation prevented when outdoor temperature is below 0°F and above 100°F.

#### Vent-Auto-D:
Ventilation prevented when outdoor temperature is below 0°F and above 90°F. Between 0°F – 40°F ventilation is only allowed during a HVAC heat call.

**Vent-Auto-B, -C, -D modes apply outdoor temperature limits and require an outdoor temperature sensor to be installed.**

- **Press the UP or DOWN arrows to adjust the ventilation time per hour from 0 to 60 minutes. After selecting time, press MODE to go to the ZONE screen selections.**

### Remote Control – Crawl Space/Sealed Attic

- **If not installing in a crawl space or sealed attic with S1-DDHC76 remote control, press MODE to go to VENT screen selections.**
- **If installing in a crawl space or sealed attic with remote control, Enable and press MODE. The installer set-up is complete, proceed to Installer Test Mode section on page 17.**
To allow dehumidification during active air conditioning, select ENABLED and press MODE.

To disable dehumidification when the air conditioning is on, select DISABLED and Press MODE.

An offset can be applied to the on-board humidity reading to avoid discrepancies with other humidity measuring devices in the home. Use the UP/DOWN arrows to select an offset from -5\% to 5\%. Press MODE to exit the installer set-up screens.
SYSTEM SET-UP & CHECKOUT (CONTINUED)

Installer Test Mode

If everything is properly wired, the dehumidifier and all of the wired components will turn on and off during Installer Test Mode to demonstrate that all are properly operating. Installer Test Mode lasts for four (4) minutes. If the ON/OFF button is pressed during test mode, the dehumidifier will exit Installer Test Mode and return to the OFF screen.

### Dehumidification Only

If the dehumidifier is not already OFF, press the ON/OFF button to turn it off.

Press and hold the ON/OFF button and MODE buttons for 3 seconds. The measured humidity, AIR SAMPLING and TEST will show on the display. If wired to the HVAC system, the HVAC blower will turn on and if there is/are damper(s) wired to the DEH DAMPER terminals of the control, the damper(s) will energize.

After three (3) minutes the dehumidifier compressor will turn on and DEHUMIDIFYING will replace AIR SAMPLING on the control screen.

After one minute of compressor operation, all outputs will turn off and DONE will blink for 3 seconds and then return to the OFF screen.

### Zoning and/or Ventilation

If the dehumidifier has been set up for ventilation, VENTILATING will appear on the display throughout Installer Test Mode, and the ventilation damper will be energized.

If the dehumidifier has been set up for zoning, PRIMARY ZONE will show on the display for the first minute of dehumidifier blower operation. After one minute, SECONDARY ZONE will show on the display and the zone dampers will de-energize.
START UP AND SEQUENCE OF OPERATION

SINGLE ZONE WHOLE HOUSE OR STAND ALONE USING THE DEHUMIDIFIER CONTROL

1. Press the ON/OFF button to turn the dehumidifier control ON. The display will show the current setting, and the dehumidifier blower and HVAC blower (if wired to the HVAC system) will turn on to start sampling the air.

The setting will be replaced by the measured humidity and “AIR SAMPLING” will show on the display.

2. Use the UP or DOWN button to adjust the humidity setting as desired. The recommended initial setting is 59%.

3. After three (3) minutes of sampling, the measured humidity will be compared to the setting:
   a. If the humidity is above the setting, the dehumidifier blower turns on and “DEHUMIDIFYING” will appear on the display. The compressor remains on until the measured humidity falls 3% RH below the setting.
   b. If the measured humidity is below the setting, the blower turns off and the display returns to showing the RH setting.

4. The dehumidifier will sample again every 60 minutes, or at any time if the humidity setting is lowered.

CRAWL SPACE OR SEALED ATTIC (REMOTE) CONTROL USING S1-DDHC76

1. Press the ON/OFF button to turn the dehumidifier control ON. “REMOTE” will show on the display to indicate that a remote control is wired to the dehumidifier.

2. At the S1-DDHC76, press the ON button; the S1-DDHC76 will display the RH measured at the dehumidifier, and the dehumidifier blower will turn on to start sampling the air.

3. Use the UP or DOWN button on the S1-DDHC76 to adjust the dryness level as desired. The dryness levels are from 1 to 7, with 1 being least dry and 7 being most dry; the recommended initial setting is 3.

4. After three (3) minutes of sampling, the measured humidity will be compared to the setting:
   a. If the humidity is above the setting, the dehumidifier blower turns on and “ON” flashes on the S1-DDHC76 display.
   b. If the measured humidity is below the setting, the dehumidifier blower turns off.

5. The dehumidifier will sample again every 60 minutes, or at any time if the dryness level is increased.

SINGLE ZONE WHOLE HOUSE OR STAND ALONE USING S1-DDHC76 EXTERNAL CONTROL

1. Press the ON/OFF button to turn the dehumidifier control ON. “EXTERNAL” will show on the display to indicate that an external control is wired to the dehumidifier.

2. At the S1-DDHC76, press the ON button; the S1-DDHC76 will display the measured RH.

3. Use the UP or DOWN button on the S1-DDHC76 to adjust the humidity setting as desired. The recommended initial setting is 59%.

4. If the RH measured by the S1-DDHC76 rises above the setting, the dehumidifier blower will turn on with the HVAC blower (if wired to the HVAC system). “DEHUMIDIFYING” will appear on the dehumidifier control display to show that the S1-DDHC76 is calling for dehumidification. The dehumidifier and HVAC blower (if on) will turn off when the RH measured by the S1-DDHC76 drops 3% RH below the setting.

TWO ZONE – PRIMARY AND SECONDARY

1. Press the ON/OFF button to turn the dehumidifier control ON. Dehumidification of the Primary Zone follows the same sequence as described to the left for Single Zone, with or without a S1-DDHC76 external control installed in the Primary Zone. The dehumidifier control display will show “PRIMARY ZONE” in addition to that described to the left when sampling or dehumidifying the Primary Zone. The zone dampers are energized when sampling or dehumidifying the Primary Zone.

2. The Secondary Zone uses the humidity setting on the dehumidifier control. During Secondary Zone sampling or dehumidification, the zone dampers are de-energized and the HVAC blower (if on) stops. “SECONDARY ZONE” will show on the dehumidifier control display when the Secondary Zone is either sampling or dehumidifying. If the Primary Zone had just finished a dehumidification demand, the compressor will continue to run during Secondary Zone sampling to prevent short cycling of the compressor.

The Secondary Zone is sampled immediately after the Primary Zone has finished sampling, or if there is a call for dehumidification from the Primary Zone, immediately after the call has been satisfied. When a S1-DDHC76 external control is installed, the Secondary Zone will be sampled once per hour if there has not been a call for dehumidification from the Primary Zone. Secondary Zone sampling will also occur whenever the setting on the dehumidifier control is lowered.
VENTILATION

The dehumidifier can activate a normally closed damper to bring in outdoor air through a fresh air intake duct. This feature can not be used when a S1-DDHC76 has been installed in a Remote Control application, and is not recommended for two-zone installations.

**Required Components**
- Model S1-6506, Normally Closed Damper
- 6" Insulated Duct for Fresh Air Intake Duct
- 24 VAC Transformer (10VA min.) for Ventilation Damper Intake Hood
- 18-22 AWG Wire

**Optional Components**
- S1-8052 Outdoor Temperature Sensor

---

**INSTALLATION & WIRING**

**FIGURE 25 – Single Zone, On-Board Control Ventilation Installation**

**FIGURE 26 – Single Zone, External Control Ventilation Installation**

**FIGURE 27 – Ventilation Wiring**
VENTILATION (CONTINUED)

VENT-AUTO & VENT-TIMED

The dehumidifier can ventilate in four modes.

Vent-Timed: Ventilation occurs based only on time setting; no temperature restrictions.
Vent-Auto-B: Ventilation prevented when outdoor temperature is below 0°F and above 100°F. Between 0°F – 20°F ventilation is only allowed during a HVAC heat call.
Vent-Auto-C: Ventilation prevented when outdoor temperature is below 0°F and above 100°F.
Vent-Auto-D: Ventilation prevented when outdoor temperature is below 0°F and above 90°F. Between 0°F – 40°F ventilation is only allowed during a HVAC heat call.

Vent-Auto-B, -C, -D modes apply outdoor temperature limits and require an outdoor temperature sensor to be installed.

OUTDOOR TEMPERATURE SENSOR INSTALLATION

The Outdoor Temperature Sensor should be installed outside in a shaded location, or in the outdoor air intake duct.

FIGURE 28 – ODT Mounted Outside

FIGURE 29 – ODT Mounted in Intake Duct
DETERMINE VENTILATION REQUIREMENTS

CALCULATING AIRFLOW REQUIREMENT

1. The MINIMUM ventilation requirement is calculated using ASHRAE 62.2-2010.

\[
\text{ASHRAE Airflow in CFM} = \left(\text{House Area in Sq. Ft.} \times 0.01\right) + \\
\left(\text{Number of Bedrooms + 1}\right) \times 7.5
\]

**NOTE:** Use ‘Number of Bedrooms + 1’ or ‘Number of Occupants’, whichever is larger.

2. Table 1 shows the calculated airflow values to the nearest 5 CFM.

3. Record the required CFM. ________

<table>
<thead>
<tr>
<th>HOUSE SQ. FT.</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>35</td>
<td>40</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1500</td>
<td>40</td>
<td>45</td>
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<td>60</td>
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<td>2000</td>
<td>45</td>
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<td>65</td>
<td>65</td>
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<tr>
<td>2500</td>
<td>50</td>
<td>55</td>
<td>65</td>
<td>70</td>
<td>80</td>
</tr>
<tr>
<td>3000</td>
<td>55</td>
<td>60</td>
<td>70</td>
<td>75</td>
<td>85</td>
</tr>
<tr>
<td>3500</td>
<td>70</td>
<td>80</td>
<td>90</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** For the table above, 6” flex duct is laid loose with two, wide 90° bends and a fully opened damper. Rigid pipe values are based on 6” duct, two 90° elbows, and a fully open damper. In both cases, the air intake is through a metal vent hood with inlet screen. Airflow may need to be adjusted up or down for variations in duct work.

DETERMINE FRESH AIR DELIVERY RATE

1. Measure the negative static pressure of the return system at the location where the fresh air intake duct enters the return duct or dehumidifier inlet.

2. See Table 2 for estimated inlet airflow in CFM, based on duct type, length and available negative pressure. Use an airflow measuring device for a more accurate airflow delivery rate.

3. Record the delivered CFM. ________

<table>
<thead>
<tr>
<th>DUCT LENGTH</th>
<th>0.05</th>
<th>0.1</th>
<th>0.15</th>
<th>0.2</th>
<th>0.25</th>
<th>0.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 ft.</td>
<td>60</td>
<td>65</td>
<td>85</td>
<td>90</td>
<td>105</td>
<td>110</td>
</tr>
<tr>
<td>20 ft.</td>
<td>55</td>
<td>60</td>
<td>80</td>
<td>85</td>
<td>100</td>
<td>105</td>
</tr>
<tr>
<td>30 ft.</td>
<td>50</td>
<td>55</td>
<td>75</td>
<td>80</td>
<td>95</td>
<td>100</td>
</tr>
</tbody>
</table>

**NOTE:** Use ‘Number of Bedrooms + 1’ or ‘Number of Occupants’, whichever is larger.

DETERMINE CYCLE TIME

1. Use the Required CFM and Delivered CFM from the above steps to determine the Cycle Time from Table 3.

2. The values highlighted in gray cannot be set due to the maximum 60 minute Cycle Time. A second ventilation device (i.e., bigger duct or second duct) will be required to meet ventilation needs.
### VENTILATION (CONTINUED)

#### TABLE 3 – Cycle Time Setting (minutes) for Airflow Delivered vs. Airflow Required for 1 hour Cycle

<table>
<thead>
<tr>
<th>CFM Delivered</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td>70</td>
<td>80</td>
<td>90</td>
<td>100</td>
</tr>
<tr>
<td>80</td>
<td>15</td>
<td>25</td>
<td>30</td>
<td>40</td>
<td>45</td>
<td>55</td>
<td>60</td>
<td>70</td>
<td>75</td>
</tr>
<tr>
<td>100</td>
<td>15</td>
<td>20</td>
<td>25</td>
<td>30</td>
<td>35</td>
<td>40</td>
<td>50</td>
<td>55</td>
<td>60</td>
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<tr>
<td>120</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td>25</td>
<td>30</td>
<td>35</td>
<td>40</td>
<td>45</td>
<td>50</td>
</tr>
<tr>
<td>140</td>
<td>10</td>
<td>15</td>
<td>15</td>
<td>20</td>
<td>25</td>
<td>30</td>
<td>35</td>
<td>40</td>
<td>45</td>
</tr>
<tr>
<td>160</td>
<td>10</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td>25</td>
<td>25</td>
<td>30</td>
<td>35</td>
<td>40</td>
</tr>
</tbody>
</table>

#### INSTALLER SETTINGS

With the dehumidifier power switch on, press the ON/OFF button to turn the dehumidifier off.

Press and hold the MODE button for 3 seconds to access the installer settings menu. Press and release the MODE button repeatedly until the VENT DISABLED screen appears.

Press the UP or DOWN button to enable ventilation, then press the MODE button to set Timed or Auto ventilation.

Press the UP or DOWN to toggle between VENT TIMED, VENT AUTO-B, VENT AUTO-C and VENT AUTO-D (refer to page 20 for a description of each). Press the MODE button to select the desired ventilation method and adjust the ventilation time.

Press the UP or DOWN button to set the desired amount of ventilation time per hour from 0 to 60 minutes.

To complete, press the MODE button repeatedly until DONE appears on the display.
SEQUENCE OF OPERATION

When wired as shown in Figure 27, the ventilation damper will open whenever there is an HVAC heating (W), cooling (Y) or fan (Gs) call, allowing fresh air to be brought in when the HVAC blower is running (see VENTILATION WITH AN EXTERNAL CONTROL section below for exceptions). The ventilation damper will also open if the dehumidifier is operating. “VENTILATING” will show on the dehumidifier control when the dehumidifier is actively ventilating. When the HVAC call ends, the dehumidifier stops, or after the set amount of ventilation time has been met, the ventilation damper will be closed.

If the set amount of ventilation time has not been met before the end of the one-hour cycle, the dehumidifier will turn on the ventilation damper along with the HVAC blower to ensure the desired ventilation time is satisfied.

If the dehumidifier has been set up to operate ventilation with outdoor temperature restrictions (AUTO-B, AUTO-C or AUTO-D — refer to page 20) then ventilation will be limited as described.

DEHUMIDIFYING THE FRESH AIR

When the dehumidifier is set up for single zone and there is no external control installed, the dehumidifier will turn on its blower and measure the RH of the air entering the dehumidifier during ventilation when ducted as shown in Figure 25. If the relative humidity of the air entering the dehumidifier is higher than the setting, the dehumidifier compressor will turn to remove moisture.

VENTILATION WITH AN EXTERNAL CONTROL

When an external control is installed the dehumidifier will open the ventilation damper only when there is a cooling call (Y) or when the dehumidifier is operating, unless the ventilation need has not been met. If the set amount of ventilation time has not been met before the end of the one-hour cycle, the dehumidifier will turn on the ventilation damper along with the HVAC blower to ensure the desired ventilation time is satisfied.

ADJUSTING VENTILATION TIME AFTER INITIAL SET UP

1. Press the UP or DOWN button to access the RH adjustment screen or to turn on the backlight if using an External Control.

2. Press the MODE button to toggle to the VENT TIME setting.

3. Press the UP or DOWN button to adjust the ventilation time (minutes). After adjusted, press nothing else; the screen will return to home screen after three (3) seconds.
**TROUBLESHOOTING**

Technical Support is available Monday through Friday, 8:00 a.m. to 5:00 p.m. CST, at (877) 874-7378. Use the guides on the following pages to identify and correct system faults. Contact Technical Support before replacing the unit or any components and for additional troubleshooting.

**DIAGNOSTIC CODES**

When an error occurs, the Diagnostic Code along with SERVICE REQUIRED will be displayed on the control screen.

---

**TABLE 4 – Diagnostic Codes**

<table>
<thead>
<tr>
<th>Diagnostic Code</th>
<th>Failure Mode</th>
<th>Action</th>
<th>Reset</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>Internal Humidity or Temperature Sensor Open or Shorted</td>
<td>1. Check the connection between the sensor board and control board. 2. If connection okay, replace sensor board, Part No. S1-5460.</td>
<td>Cycle Power</td>
</tr>
<tr>
<td>E2</td>
<td>High Refrigeration Pressure</td>
<td>1. Verify that the fan works, the backflow damper swings freely and there is no blocked or restricted ductwork. 2. If the fault persists, call Technical Support.</td>
<td>Cycle Power</td>
</tr>
<tr>
<td>E3</td>
<td>S1-DDHC76 Remote Control Communication Loss</td>
<td>1. Check connections between S1-DDHC76 and dehumidifier control board. Terminals should be fully inserted and secured in the control board and S1-DDHC76 control terminals. 2. If connections are correct and secure, turn off the dehumidifier and remove the S1-DDHC76. Use a short section of 4-wire cable to reconnect the S1-DDHC76 to the control board. Turn the dehumidifier back on and increase the dryness level setting on the S1-DDHC76. If the dehumidifier turns on, the problem is with the wiring between the dehumidifier and control. 3. If the dehumidifier does not turn on, call Technical Support.</td>
<td>Self-Correcting</td>
</tr>
<tr>
<td>E4</td>
<td>Insufficient Capacity</td>
<td>1. Check the frost sensor connection at the power board. Terminal should be fully seated on the power board pins. 2. Remove the side access panel and verify that the sensor is secured to the suction line. 3. If the sensor is connected and secured to the refrigeration line proceed to the next step. 4. Reset the fault by cycling power to the dehumidifier. 5. Turn the humidity setting down (below room/home humidity level) to make a dehumidification call. 6. Allow the fan and compressor to run for approximately 10-15 minutes and then enter diagnostic test mode by simultaneously pressing the UP ARROW and MODE buttons for 3 seconds. The LCD will display the temperature measured by the internal sensor while also displaying AIR SAMPLING and ON, the humidity measured by the internal sensor while also displaying %RH and ON, and the frost sensor temperature while also displaying ON. Scroll through these values and by using the UP/DOWN arrow buttons. 7. Record values and call Technical Support.</td>
<td>Cycle Power</td>
</tr>
<tr>
<td>E5</td>
<td>High Temperature Thermistor Failure</td>
<td>1. Check the high temperature sensor connection at the power board. Terminal should be fully seated on the power board pins. 2. Remove the side access panel and verify the sensor is not damaged and connected to the refrigeration line coming from the compressor. 3. If the sensor is connected and secured to the refrigeration line, it may need to be replaced with Part No. S1-5456 – contact Technical Support to confirm.</td>
<td>Cycle Power</td>
</tr>
<tr>
<td>E6</td>
<td>Low Temperature Thermistor Failure</td>
<td>1. Check the low temperature sensor connection at the power board. 2. Remove the side access panel and verify the sensor is not damaged and connected to the suction line. 3. If the sensor is connected and secured to the refrigeration line, it may need to be replaced with Part No. S1-5455 – contact Technical Support to confirm.</td>
<td>Cycle Power</td>
</tr>
</tbody>
</table>
### TABLE 4 – Diagnostic Codes (continued)

<table>
<thead>
<tr>
<th>Diagnostic Code</th>
<th>Failure Mode</th>
<th>Action</th>
<th>Reset</th>
</tr>
</thead>
</table>
| E7              | Float Switch Open | 1. Empty the condensate pan.  
2. Check the float switch connection at the control board.  
3. If not using a float switch, verify jumper is between float switch terminals on dehumidifier control board.  
4. If the problem persists, replace the float switch. | Self-Correcting |
| E8              | Inlet Air Temperature Out of 50°F – 104°F or dew point below 40°F | 1. Verify all ductwork is properly sealed.  
2. If no signs of leak points, contact Technical Support. | Self-Correcting |
| E9              | Outdoor Temperature Sensor Open or Shorted | 1. Check the sensor connection at the power board.  
2. Remove the wires from the terminals and measure the resistance. A short circuit will have a resistance very close to 0 Ohms and an open circuit will have a very very high resistance. The table at right can be used to approximate the resistance based on outdoor temperature.  
3. If the sensor is not reading correctly, replace the sensor, Part No. S1-8052. | Outdoor Temperature Resistance

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0°F</td>
<td>84,500 Ohms</td>
</tr>
<tr>
<td>20°F</td>
<td>46,000 Ohms</td>
</tr>
<tr>
<td>40°F</td>
<td>26,000 Ohms</td>
</tr>
<tr>
<td>60°F</td>
<td>15,500 Ohms</td>
</tr>
<tr>
<td>80°F</td>
<td>9,500 Ohms</td>
</tr>
<tr>
<td>100°F</td>
<td>6,000 Ohms</td>
</tr>
<tr>
<td>Table 5 - Troubleshooting Guide</td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Symptom</strong></td>
<td><strong>Possible Reason</strong></td>
</tr>
</tbody>
</table>
| Dehumidifier does not turn on/run. | No power to unit. | - Check that the dehumidifier is plugged in.  
- Check that the power switch is turned ON.  
- Check that the control is turned ON.  
- Check that the circuit breaker has not tripped. |
| Dehumidifier blower is running but with little or no airflow. | Pressure drop across dehumidifier is higher than 0.4” w.c. for S1-CVD070T01 or 0.6” w.c. for S1-CVD095T01. | - Check dehumidifier air filter and wash or replace.  
- Check for blocked duct work and clear.  
- Verify that the outlet collar with backflow damper is installed on the outlet side of the dehumidifier.  
- Check if backflow damper is blocked or stuck and remove obstruction. |
| Dehumidifier blower is running but compressor is not. | Float switch open. | - If float switch installed, check connections at control board and empty condensate pan.  
- If no float switch installed check that the jumper is installed at the float switch terminals on the control board. |
| | | - Lack of or reduced airflow. Check dehumidifier air filter and wash or replace.  
- Check for blocked duct work.  
- Inlet air conditions below 60°F. Increase the humidity setting. |
| Inlet air temperature is outside of the 50°F – 104°F range or the dew point is below 40°F and there is a demand for dehumidification. | Incorrect damper wiring or bad connection. | - Verify wiring between dampers and 24 VAC transformer.  
- If wired for Two Zone operation, verify that 24 VAC transformer is 40 VA minimum.  
- Check all wiring connections between dampers and control board.  
- Verify the normally closed dampers are in the Primary Zone ductwork and the normally open dampers are in the Secondary Zone ductwork. |
| The ventilation damper does not open when the HVAC fan is active. | Cycle time has been met. | - The damper will not open if the Ventilation Time has already been met. |
| Dehumidifier is not draining properly. | Drain line blocked or unit not level. | - Check that the ODT is wired correctly to the dehumidifier control board and connections are secure.  
- Check that the ODT is installed in the outdoor air intake according to the set-up specified in the Ventilation Section beginning on page 19.  
- Remove the ODT leads from the dehumidifier control board and check the resistance. Compare the reading with the table shown. |
| The HVAC fan turns on unexpectedly. | Dehumidifier is sampling or ventilation in progress. | - The dehumidifier will turn on the HVAC fan during air sampling or as needed to meet the ventilation time. |
| Dehumidifier is producing hot air. | Normal function. | - Air is reheated across the condenser coil, resulting in a temperature rise between inlet and outlet. |

**Outdoor Temperature** | **Resistance** |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0°F</td>
<td>84,500 Ohms</td>
</tr>
<tr>
<td>20°F</td>
<td>46,000 Ohms</td>
</tr>
<tr>
<td>40°F</td>
<td>26,000 Ohms</td>
</tr>
<tr>
<td>60°F</td>
<td>15,500 Ohms</td>
</tr>
<tr>
<td>80°F</td>
<td>9,500 Ohms</td>
</tr>
<tr>
<td>100°F</td>
<td>6,000 Ohms</td>
</tr>
</tbody>
</table>
## SERVICE PARTS

<table>
<thead>
<tr>
<th>No.</th>
<th>Part Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Filter, 10&quot; x 12&quot; x 1&quot; EZK</td>
<td>S1-5443</td>
</tr>
<tr>
<td>2</td>
<td>Internal Control Board</td>
<td>S1-5444</td>
</tr>
<tr>
<td>3</td>
<td>User Interface Assembly</td>
<td>S1-5445</td>
</tr>
<tr>
<td>4</td>
<td>Wiring Access Door</td>
<td>S1-5446</td>
</tr>
<tr>
<td>5</td>
<td>Hole Cover, UI Ctrl</td>
<td>S1-5447</td>
</tr>
<tr>
<td>6</td>
<td>Door, Filter Access</td>
<td>S1-5448</td>
</tr>
<tr>
<td>7</td>
<td>Outlet Duct Panel</td>
<td>S1-5449</td>
</tr>
<tr>
<td>8</td>
<td>Backflow Damper, 10&quot;</td>
<td>S1-5450</td>
</tr>
<tr>
<td>9</td>
<td>Inlet Duct Panel</td>
<td>S1-5451</td>
</tr>
<tr>
<td>10</td>
<td>Cover, Outlet</td>
<td>S1-5452</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Part Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Fan, 70pt Deh</td>
<td>S1-5453</td>
</tr>
<tr>
<td>12</td>
<td>Fan, 95pt Deh</td>
<td>S1-5467</td>
</tr>
<tr>
<td>13</td>
<td>Wire Harness, Power</td>
<td>S1-5454</td>
</tr>
<tr>
<td>14</td>
<td>Sensor, Low Temperature</td>
<td>S1-5455</td>
</tr>
<tr>
<td>15</td>
<td>Sensor, High Temperature</td>
<td>S1-5456</td>
</tr>
<tr>
<td>16</td>
<td>Leveling Foot</td>
<td>S1-5457</td>
</tr>
<tr>
<td>17</td>
<td>Capacitor, 45MFD, 370VAC, 70pt/95pt Deh</td>
<td>S1-5458</td>
</tr>
<tr>
<td>18</td>
<td>Capacitor, 8MFD, 450VAC, 70pt Deh</td>
<td>S1-5459</td>
</tr>
<tr>
<td>19</td>
<td>Capacitor, 12MFD, 450VAC, 95pt Deh</td>
<td>S1-5468</td>
</tr>
<tr>
<td>20</td>
<td>RH Sensor</td>
<td>S1-5460</td>
</tr>
<tr>
<td>21</td>
<td>Drain Tube + Fittings</td>
<td>S1-5461</td>
</tr>
</tbody>
</table>

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Unitary Products
5005 York Drive, Norman, OK 73069

Form 035-24196-001
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