



Backlit LCD User
Interface

Custom programming for
complex dehumidification
temperature & humidity
control

Multiple communication
options:

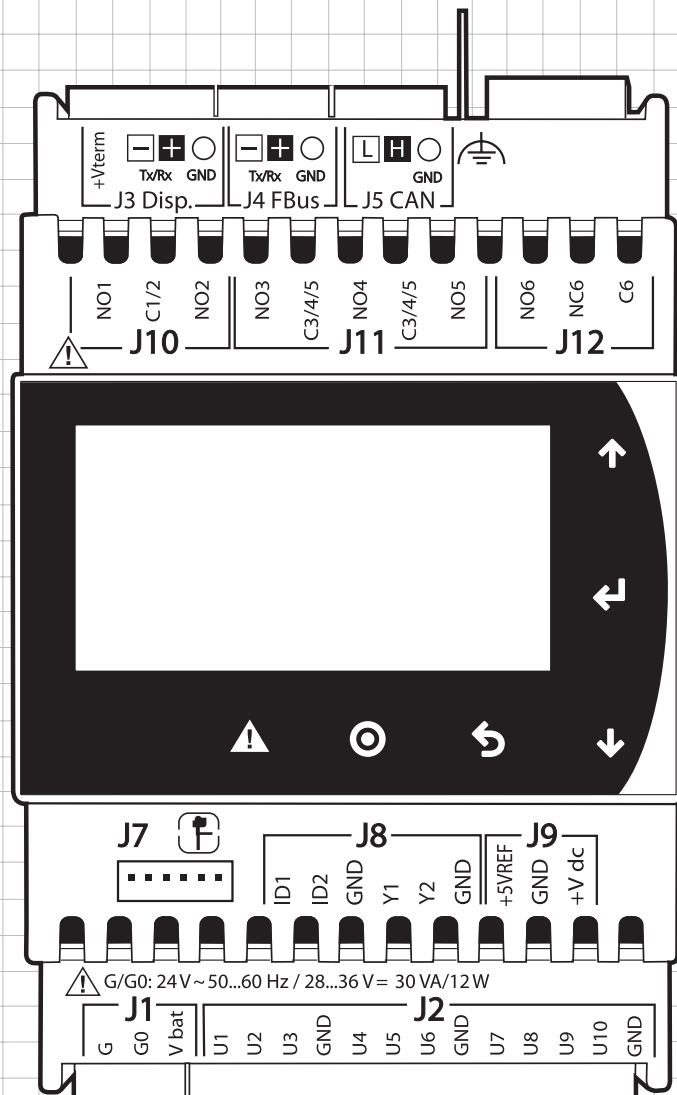
- LonWorks®
- BACnet™ Ethernet
- BACnet™ MS/TP
- Modbus®

Alarm history retention

Integral remote access
capability

CM3530 Series Controller

Installation and Operations Manual for LC/LV Units



CM3530 Controller





DANGER

ONLY TRAINED, QUALIFIED PERSONNEL SHOULD INSTALL AND/OR SERVICE DESERT AIRE EQUIPMENT. SERIOUS INJURY, DEATH AND PROPERTY DAMAGE CAN RESULT FROM IMPROPER INSTALLATION/SERVICE OF THIS EQUIPMENT. HIGH VOLTAGE ELECTRICAL COMPONENTS AND REFRIGERANT UNDER PRESSURE ARE PRESENT.

Desert Aire Dehumidification Equipment Standard Limited Warranty

Desert Aire warrants the dehumidifying unit to be free from defects in materials and workmanship subject to the terms, conditions and limitations stated herein.

TERMS

Desert Aire warrants all components (except as noted) for a period of two (2) years from the date of shipment. This warranty shall be limited to the supply of new or rebuilt parts for the part which has failed because of defects in workmanship or material, and does not include the cost for labor, transportation or other costs not herein provided for. Replaced parts are warranted only for the remaining portion of the original warranty period.

CONDITIONS

The warranty is subject to the following conditions:

1. The unit must be properly installed and maintained in accordance with the Desert Aire "Installation and Operation Manual" provided with each unit and/or other documentation provided.
2. **The Start-Up Report must be completed and returned to Desert Aire Service for evaluation. If no deficiencies are identified a Warranty Validation Letter will be issued that provides all warranty dates and coverage. If installation or start-up deficiencies are present, these must be corrected and communicated to Desert Aire in order to activate warranty.**
3. This warranty shall not apply to any part that has been tampered with, or has been subject to misuse, negligence or accident. A warranty can be obtained for altered equipment but only with written consent from Desert Aire.
4. The following parts and components are excluded from the warranty: belts, filters, driers, fuses and refrigerant.
5. Refrigerant coils or other components that corrode due to improperly balanced pool chemistry or corrosive air quality will not be warranted.
6. All replacements or repairs will be FOB Germantown, WI.
7. This warranty shall be null and void if defects or damages result from unauthorized opening of the refrigerant circuit, tampering with factory set controls, or operating outside the original design conditions.
8. Desert Aire shall not be liable for labor costs incurred in diagnosing the problem, or the removal or replacement of the part or parts being repaired.
9. Desert Aire must preauthorize all warranty coverage described herein.

Extended Warranty:

Your Desert Aire unit may have extended warranties beyond this Standard Limited Warranty document. Extended warranties are only available at the time of the purchase of the original equipment. These extended warranties are covered under a separate document and their terms and conditions are separate from this document. It is mentioned in this document for informational purposes only. Any Extended Warranties will be identified on the Warranty Validation Letter.

Any and all incidental or consequential damages are expressly excluded from this warranty. Some states do not allow the exclusion of incidental or consequential damages for personal injury, so the above limitations may not apply to you for certain damages. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state. No person or representative is authorized to make any warranty or assume any liability not strictly in accordance with the aforementioned.

Inquiries regarding warranty matters should be addressed to:

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Additional copies of this manual can be purchased for a nominal fee from Desert Aire. Desert Aire also posts the most current revision of our I/O Manuals on our website. For a digital copy of the I/O Manual for your unit revision, please submit request to the contact information listed above.

Product Warning for the State of California



WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

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1. Installation

1.1 Introduction

Your Desert Aire controller is designed for precise monitoring and control of air temperature and relative humidity (RH) within a conditioned environment.

This CM3530 control system is easy to install and operate. The controller features an internal display terminal (IDT). This display allows viewing and adjustment of the unit's sensors and setpoints. It also indicates the operating status of major components inside the dehumidifier. The CM3530 controller also has the ability to control auxiliary equipment such as a pool water or tower water pumps and auxiliary heating devices for optimum energy efficiency.

Most sensors and devices have been factory-installed and wired inside the dehumidifier. In most cases, only connection to a remote condenser, electrical power connection and an Ethernet connection to the facilities computer network are required. For units requiring a wall mounted zone air temperature and relative humidity sensor, wiring to the unit will be required. Also, units with a pool condenser will require temperature sensors to be wired in the pool water piping.

The control system includes a web page which allows a virtual display terminal to be accessed from any device on the computer network. Simply browse to the IP address assigned to the dehumidifier, enter the appropriate credentials, [user – Desert-Aire, password – 18485] and select the DISPLAY tab. Logging is also available from this web page.

The CM3530 controller also features optional building automation access. This includes options for network connect ability including LonWorks, BACnet IP, BACnet MS/TP, ModBus RTU and ModBus IP.

1.2 Sensor Installation

The CM3530 control system is normally provided with a unit mounted combination relative humidity and temperature sensor. This sensor provides accurate control without the problems associated with wall mounted sensors, such as faulty readings due to hot spots or drafts. If a pool water condenser has been provided in the dehumidifier, pool water temperature sensors will need to be installed in the water piping.

1.2.1 Unit Mounted Sensor

This sensor is factory mounted in the return air duct upstream of any outdoor air intakes.

1.2.2. Wall-Mount Humidity and Temperature Sensor

If your dehumidifier was ordered with a wall-mount humidity and temperature sensor, mount the sensor about five feet above the pool deck on an interior wall with natural air circulation. Avoid the following locations:

- Hot spots near concealed heating pipes, warm air ducts, supply register outlets, or solar radiation.
- Cold spots due to a cold wall or draft from stairwells, doors, windows, or supply register outlets.
- Dead spots such as behind doors or in corners where room air cannot circulate freely.

1.2.3 Water Temperature Sensors

Desert Aire dehumidifiers ordered with the pool water heating option are supplied with two water temperature sensors and two immersion wells.

- Screw the wells into the adapter fittings of the inlet and outlet pool water piping. The wells are equipped with a 1/2" MPT connection.
- Install the sensors upstream and downstream from the dehumidifier or the auxiliary pool water heater.
- The sensors must be installed in a location where they will accurately sense the pool water inlet and outlet temperature conditions. This means you must have continuous water flow at the sensor locations.

1.3 Auxiliary Air Heating Control Wiring

Note: You must use the Desert Aire CM3530 control system to control or interlock with the room heating system. This prevents the heater from trying to heat the room while the dehumidifier is running in cooling mode.

1.3.1 Auxiliary Heating - Dry Contact Closure

The standard Desert Aire CM3530 Controller provides a dry contact closure to operate the auxiliary space heater. The contact closes to energize a heater (may be supplied by others) which has its own power source.

Install two wires from the thermostat terminal blocks on the heater to the terminals H1 and H2 in the control panel of the dehumidifier. See your wiring schematic for connection details.

Note: Units with an internal electric air heater have an airflow proving switch installed between the heater and the control enclosure. If an air heater is installed external to the unit, provide an external airflow proving switch for protection of the heater.

1.3.2 Auxiliary Heating - Proportional Signal

Desert Aire will provide a proportional 0-10 VDC direct-acting signal to modulate a heating coil control valve or other auxiliary modulating heater. Most proportional valves have either three (3) or four (4) terminals for field-installed wiring.

- Four-terminal valves have two terminals for 24 VAC power and two terminals for the signal input.

- Three-terminal valves have one terminal for the “hot” 24 VAC input, a second terminal for the “neutral” 24 VAC input and the “negative” signal input.

The control signal may also be set for reverse-acting or for 2-10 VDC. Contact Desert Aire’s service department for recommendations or instructions on how these options can be implemented.

1.4 CM3530 Controller Overview







Desert Aire’s CM3530 microprocessor controller is a powerful, flexible controller with many useful features including:

- Display of room air temperature, relative humidity and refrigerant pressures.
- Display of equipment operating status such as dehumidification and cooling.
- Display of alarms for abnormal conditions such as sensor failures or tripped safety controls.
- An optional seven-day occupancy timer which can control outdoor air dampers (if used) to bring in fresh air when the dehumidifier is in an occupied state.
- A convenient, easy-to-understand display interface which allows the operator to view and change setpoints and time schedules.

2. LC / LV Controller Details

2.1 Menu Overview and General Instructions (Figure 1)

Your Desert Aire controller is pre-programmed and configured at the factory for use in the application you have specified. The internal display terminal (IDT, see Figure 1) allows the operator to monitor and adjust the setpoints of your Desert Aire system. The IDT has an LCD screen and six keys. These keys are labeled as below:

-  - **ALARM** Key
-  - **PROGRAM (Prg)** Key
-  - **ESCAPE (Esc)** Key
-  - **DOWN** Key
-  - **UP** Key
-  - **ENTER** Key

The Home Screen (Figure 1) displays the Desert Aire logo and shows the dehumidifier status, zone temperature and relative humidity and the operational state of the fan, compressor and air heating. The unit type is displayed in the upper right of the screen indicating either an LC or LV and the tonnage. Below this line, “Esc → Menu” indicates that if the **Esc** key is pressed, the Main Menu will be displayed. Pressing **Esc** on any other screen will take you back one screen. The “Prg → Stpt” indicates that if the **Prg** key is pressed, the setpoints can be changed. The “↑↓ → Help” indicates that if the **UP** or **DOWN** keys are pressed, the help screens will be shown. The **UP** or **DOWN** keys will now scroll through the help screens.

Menu screens allow the user to select from a series of actions. The action that is capitalized on the screen is selected by pressing the **ENTER** key. To cycle through the selections on a menu screen, use the **UP** and **DOWN** keys.

If setpoints or selections can be altered on a screen, the **ENTER** key will cycle through those items. Once the cursor is over an item, the **UP** and **DOWN** arrow keys will modify the setting. Numeric values require that the **ENTER** key be pressed to accept the value. An “on” or “off” selection is altered as soon as the **UP** or **DOWN** keys are pressed.

When an alarm is triggered, the red LED behind the **ALARM** key will light and remain on until the alarm is reset.

To view the alarms from any menu, simply press the **ALARM** key. If no alarm is active, the display will state NO ALARMS. If an alarm is present, it will be displayed along with the date and time it was triggered. The bottom two lines will display two data points recorded when the alarm was triggered.

To reset the alarm, use the **DOWN** key until the reset instructions are shown. Pressing the **ALARM** key for three seconds will reset all active alarms. See Section 3 for further alarm and alarm data logging information.

Screens which display a small **UP** arrow in the upper right and a small **DOWN** arrow in the lower right are part of a series of screens which can be accessed by pressing either the **UP** or **DOWN** arrow keys. If the operator has not pressed a key for an hour, the remote terminal will return to the Home Screen.

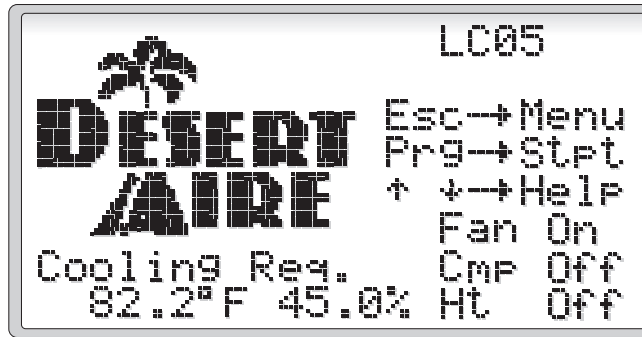


Figure 1

2.2 Zone Setpoints (Figure 2)

Pressing the **Prg** key from the Home Screen displays the ZONE SETPOINTS (Figure 2). This menu displays the standard adjustable temperature and humidity setpoints specific to the unit. At the bottom of the screen the current values taken from the local zone sensor can be seen.

To return to the MAIN MENU, press the **Esc** key.

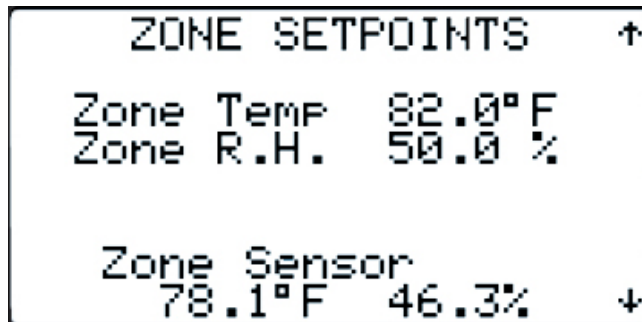


Figure 2

If the unit is configured to use setpoints taken from another Desert Aire Lead Unit, the USING LEAD UNIT screen will display (Figure 3) in place of the ZONE SETPOINTS screen. Here the lead unit's setpoints are displayed and can only be changed at the screen of the Lead Unit.

To return to the MAIN MENU, press the **Esc** key.

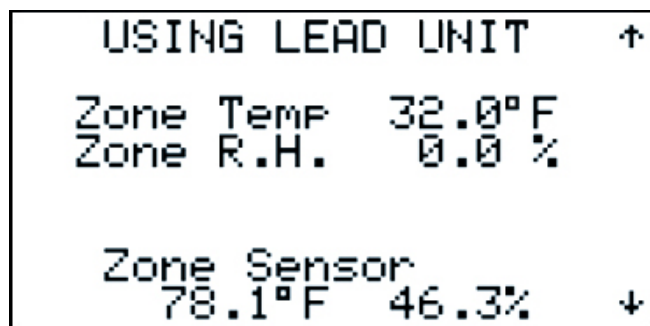


Figure 3

If the unit is configured to use setpoints sent by a BMS system, the USING BMS CONTROL screen will appear (Figure 4) in place of the ZONE SETPOINTS screen. Here the Network Zone Temperature and Humidity setpoints are adjustable from this screen. These setpoints will also be adjustable though Modbus or BACnet protocol points depending on the BMS option installed.

To return to the MAIN MENU, press the **Esc** key.

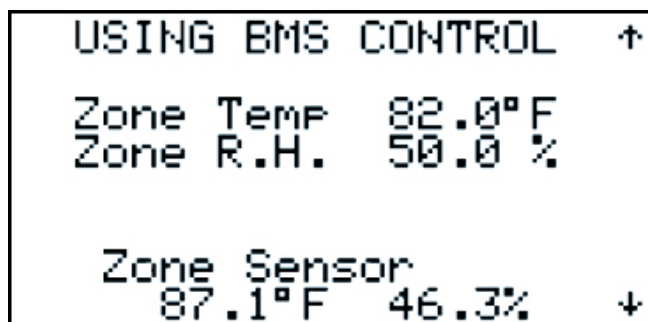


Figure 4

If pool heating is included in the unit, the **UP** and **DOWN** arrow keys will be shown on the right of the screen. Press the **DOWN** key and the screen shown in Figure 5 will appear. Set the pool water temperature set point with the **ENTER** and **UP** and **DOWN** keys and press the **ENTER** key to modify. The Partial Pool and or Surface Temperature set points will be shown in a similar manner when those options are supplied with the dehumidifier.

To return to the MAIN MENU, press the **Esc** key.

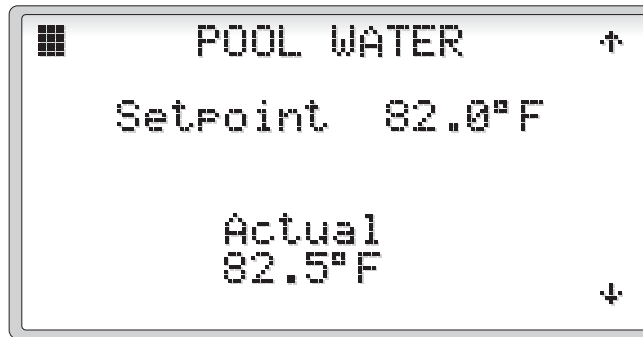


Figure 5

2.3 Main Menu (Figure 6)

Pressing the **Esc** key from the Home Screen displays the MAIN MENU (Figure 6). This menu allows the operator to select the UNIT STATUS, set the Occupancy Schedule, enter the Service Menu and view the Unit Revision.

To return to the Home Screen, press the **Esc** key.

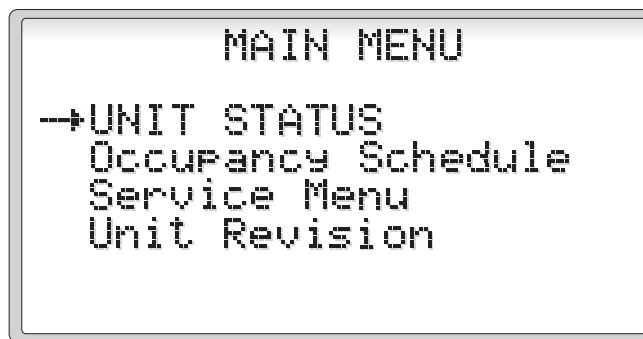


Figure 6

2.3.1 Unit Status (Figure 7)

Selecting the Unit Status from the MAIN MENU displays a text explanation of the unit. The ROC Available or ROC Unavailable is shown on the first line of this display. This is based on the state of the digital input U5. A water flow switch or a jumper will determine if a remote condenser is available for heat rejection. The Occupied state (either Occupied or Un-Occupied) is shown on the second line along with the state of the blower. The Unit Status will show one of the following states on the third line:

- Zone Satisfied
- Heating Req.
- Cooling Req.
- Dehum Req.
- Dehum & Heat
- Dehum & Cool
- Low Suct. Pr
- Low Air Flow

- Low DHU Tmp
- High DHU Tmp
- Sys Switch Standby
- Alarm

The fourth line will display the pool flow state if pool heating is required. The fifth line displays if the compressor is on or off. The sixth line will indicate if the compressor is waiting for its non-short cycling timer to time out and the time left before a restart is available.

To return to the MAIN MENU, press the **Esc** key.

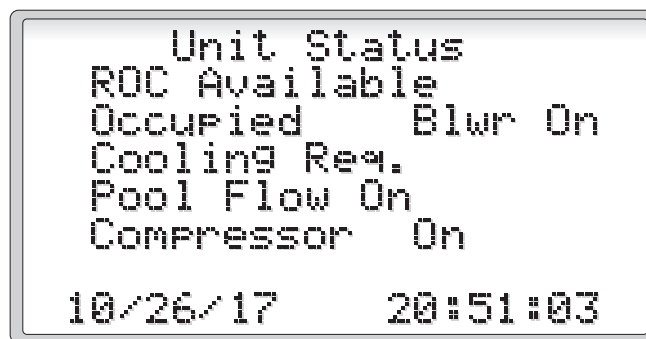


Figure 7

2.3.2 Occupancy Schedule (Figure 8)

Select the OCCUPANCY SCHEDULE from the MAIN MENU to enable a schedule to place the dehumidifier in the occupied mode. See Figure 8. To enable a schedule, select Yes, and press **ENTER**. The schedule will need to be setup before this will be enabled. Pressing the **Prg** key from this menu allows the date and time to be modified.

To return to the MAIN MENU, press the **Esc** key.

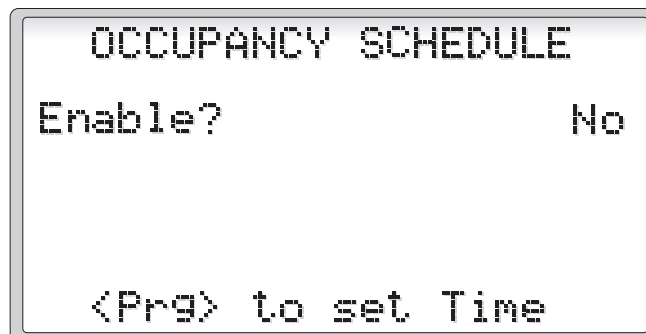


Figure 8

2.3.2.1 Time Settings (Figure 9)

This screen sets the time, date and day of week. To modify these settings,

press the **ENTER** key until the cursor is over the appropriate item and use the arrow keys until the desired setting is shown. All times are set in the 24 hour format. Pressing the **ENTER** key will accept that value and step to the next item.

To return to the OCCUPANCY SCHEDULE, press the **Esc** key.

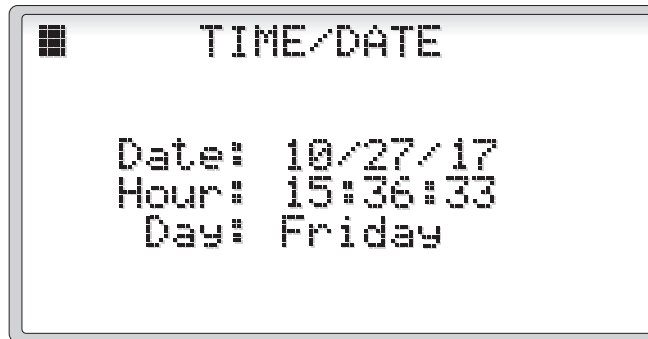


Figure 9

2.3.2.2 Daily Events (Figure 10)

This is where each day's events are set. Four settings are possible, which will allow two separate occupancy periods. Check the first box by pressing the **UP** key when the cursor is over the check box. Set the time in 24 hour format and then select 'Occupied' or 'Un-Occupied'. Save this data at the bottom of this screen by selecting 'Yes' and pressing **ENTER**.

Once a day is entered, these settings can be copied to any other day by selecting the day to copy, setting the Copy To: the appropriate day, and then selecting Ok? to 'Yes'. Modify these days as appropriate.

To return to the OCCUPANCY SCHEDULE MENU, press the **Esc** key.

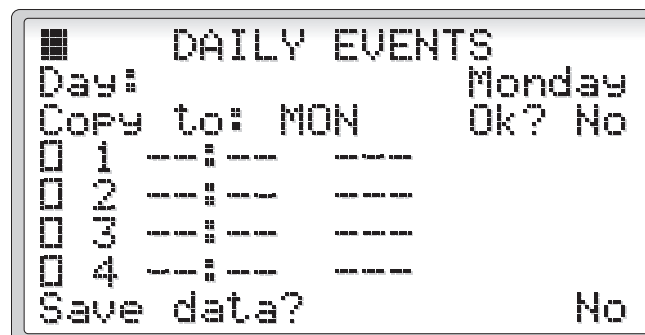


Figure 10

2.3.2.3 Vacation Periods (Figure 11)

The Vacation Periods will allow three sets of vacation to keep the dehumidifier ‘Occupied’ or ‘Un-Occupied’. Set the range of days that this will occur, the Start Date and the End Date for that holiday.

To return to the OCCUPANCY SCHEDULE MENU, press the **Esc** key.

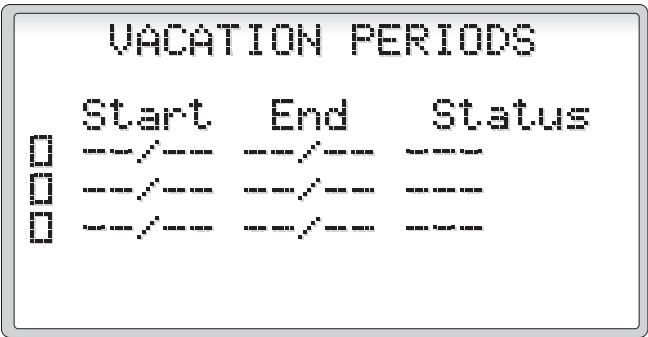


Figure 11

2.3.2.4 Special Days (Figure 12)

Also available are 6 special days where the full day can be set for either ‘Occupied’ or ‘Un-Occupied’.

To return to the OCCUPANCY SCHEDULE MENU, press the **Esc** key.

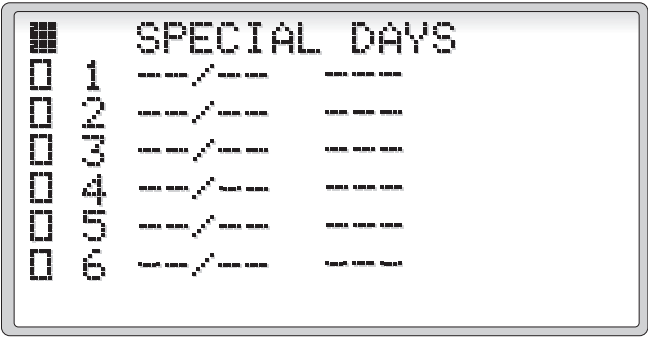


Figure 12

2.3.2.5 Temporary Occupancy (Figure 13)

This screen allows the unit to be manually set to Occupied for a preset amount of time. Press the **ENTER** key and enter the hours you would like the unit to be temporarily in the occupied mode. Press the **ENTER** key again and enter the minutes you would like the unit to be temporarily in the occupied mode. Press the **ENTER** key again and the cursor will begin blinking over the ‘Set Override’ message. Press the **UP** and **ENTER** keys to set this override to ‘On’. The dehumidifier will now be ‘Occupied’ for this period of time. When the

override expires, the screen will again display Set Override, and the dehumidifier will return to its normal state.

To return to the OCCUPANCY SCHEDULE MENU, press the **Esc** key.

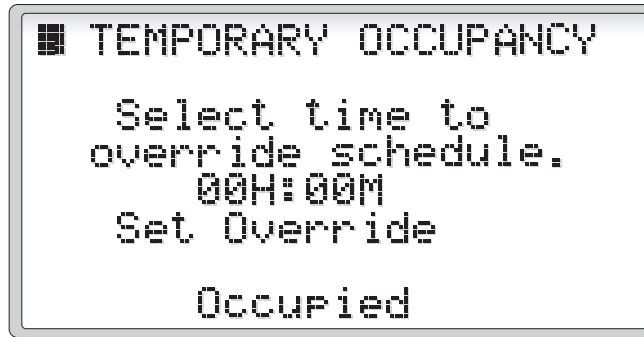


Figure 13

2.3.3 Service Menu (Figures 14 and 15)

Selecting the SERVICE MENU will display the Login Screen (Figure 14). Enter the service password, 1234, and press **ENTER**.

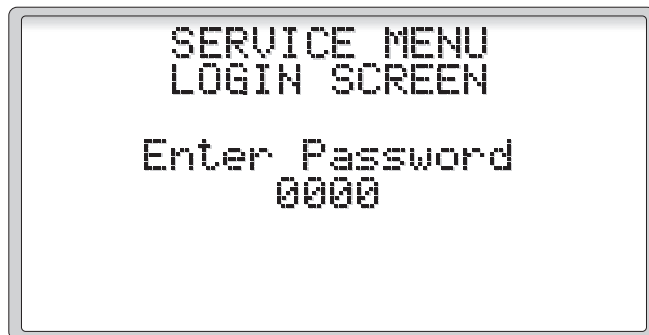


Figure 14

The SERVICE MENU gives access to Commissioning, Tuning, I/O Status, Sensor Offsets, Diagnostics and Memory Options (Figure 15).

To return to the MAIN MENU, press the **Esc** key.



Figure 15

The user remains logged in for 30 minutes after the password is entered. During this time, the Login screen reads “Logged In For” and the seconds left before the password expires. To login without entering the password, while this message is shown, press the **Prg** key.

To return to the MAIN MENU, press the **Esc** key.

2.3.3.1 Commissioning (Figure 16)

Selecting the COMMISSIONING MENU from the Service Menu displays the COMMISSIONING MENU (Figure 16). This menu allows the operator to select the Configuration, Network Config, Airflow Setup, Current Conditions, Commissioning Test, Motor Phasing and BMS Setup. To return to the Service Menu, press the **Esc** key.

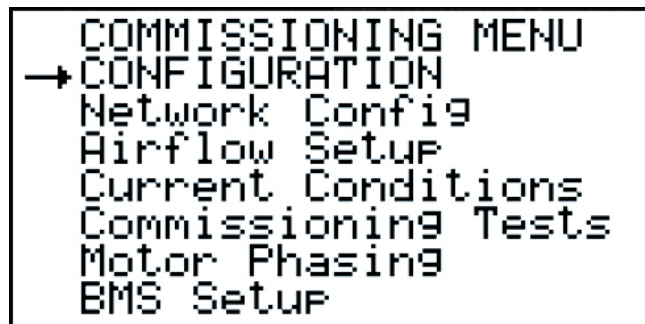


Figure 16

2.3.3.1.1 Configuration – Blower Setup (Figure 17)

Selecting the CONFIGURATION from the Commissioning Menu displays the BLOWER SETUP screen (Figure 17). The blower can be set for either CONTINUOUS or AUTOMATIC. Only set the blower to automatic if a wall mount sensor is used.

Press the **DOWN** key for the next Configuration screen. To return to the Service Menu, press the **Esc** key.

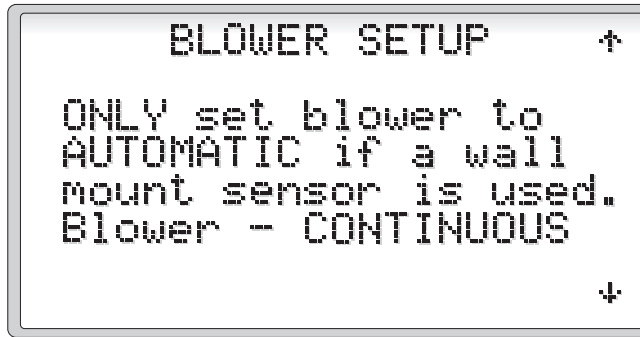


Figure 17

2.3.3.1.2 Configuration – Condenser Setup (Figure 18)

Pressing the **DOWN** key will now display the CONDENSER SETUP screen (Figure 18). This screen allows a delay in establishing condenser flow if a tower water condenser is used. When the condenser is connected to the dehumidifier, check the ROC Installed box. Checking this box along with the state of digital input #7 will determine if the ROC is available or unavailable.

Press the **DOWN** key for the next Configuration screen.

To return to the Service Menu, press the **Esc** key.

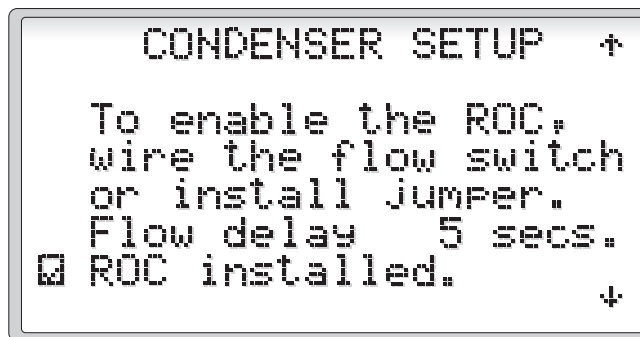


Figure 18

2.3.3.1.3 Configuration – Lead Setpoint & Sensor (Figure 19)

Pressing the **DOWN** key will now display the LEAD STPT & SENSOR screen (Figure 19). This screen allows the user to select where the unit will receive its zone sensor data and setpoints. If the units are sharing a zone sensor the Lead-Unit Control box should be checked. See the Network Config section 2.3.3.2 for setting up a lead-lag network. If communication fails between lead & lag units, a message at the bottom will state "Lead Unit MB FLT". An alarm will also occur notifying of Lead Sensor miscommunication, and the unit will default to the locally connected zone sensor (if equipped).

Towards the bottom of the screen a checkbox for Allow Setback can be enabled or disabled. If the Allow Setback box is checked the unit will use both Occupied and Unoccupied Zone Setpoints.

Press the **DOWN** key for the next Configuration screen. To return to the Service Menu, press the **ESC** key.

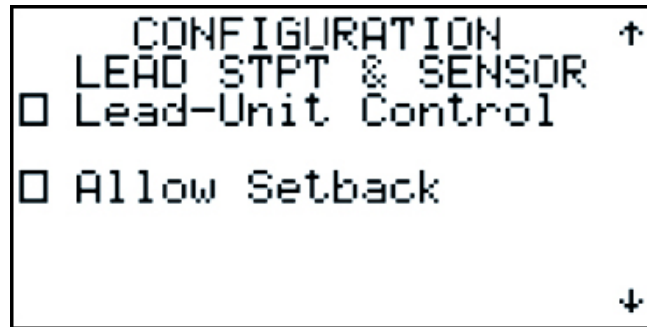


Figure 19

2.3.3.1.4 Configuration – BMS Setpoint & Sensor (Figure 20)

Pressing the **DOWN** key will now display the BMS STPT & SENSOR screen (Figure 20). This screen allows the unit to receive its zone sensor data or setpoints via BMS communication from the user.

If the Use BMS Sensor box is checked, a checkbox for BMS Heartbeat Enable will appear. The Heartbeat is a BMS Boolean point that will need to be toggled On and Off within the Heartbeat Delay time to verify communication is occurring. If there is a fault with the heartbeat, a message at the bottom of the screen will state “BMS Comm. FLT”. The heartbeat function is optional, but recommended. If the heartbeat is not selected and the zone sensor data is no longer sent to the unit, the last available sensor data will be used. This can result in runaway temperatures in the zone. If the heartbeat is selected and not actively sent, the unit will default to the locally connected zone sensor (if equipped).

Press the **DOWN** key for the next Configuration screen. To return to the Service Menu, press the **Esc** key.

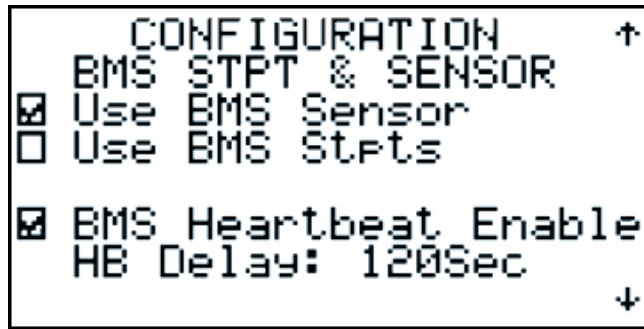


Figure 20

2.3.3.1.5 Configuration – Movable Roof/Wall (Figure 21)

Pressing the **DOWN** key will now display the Movable Roof/Wall screen (Figure 21). This screen displays the state of the Roof open. The Force Open State will manually set the Roof Open state from the controller. To determine what the dehumidifier will do when the Roof is Open, see the next screen.

Press the **DOWN** key for the next Configuration screen. To return to the Service Menu, press the **Esc** key.

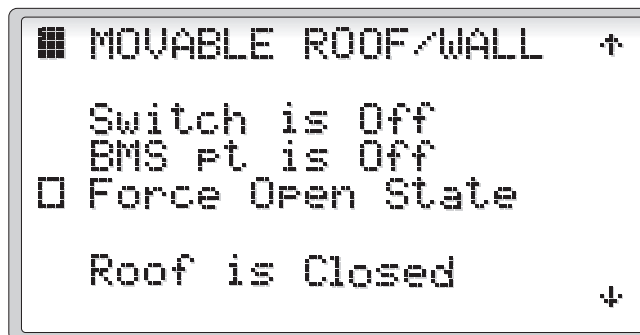


Figure 21

2.3.3.1.6 Configuration – Roof Open Action (Figure 22)

Pressing the **DOWN** key will now display the Action that will be disabled when the roof is open. Check all devices to disable that action when the roof is open.

To return to the Service Menu, press the **Esc** key.

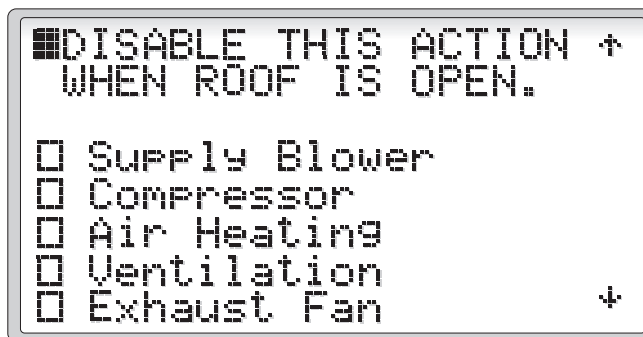


Figure 22

2.3.3.2 Network Config (Figures 23, 24 and 25)

An IP address must be used if the unit will be connected to AireGuard, Modbus IP, BACnet IP or as part of a Lead-Lag setup.

Selecting NETWORK CONFIG from the Commissioning Menu displays the NETWORK CONFIG screen shown in Figure 23. From this screen, the unit IP address can be set to either DHCP On (default) or to a static IP address. The settings here should be coordinated with the building controls contractor.

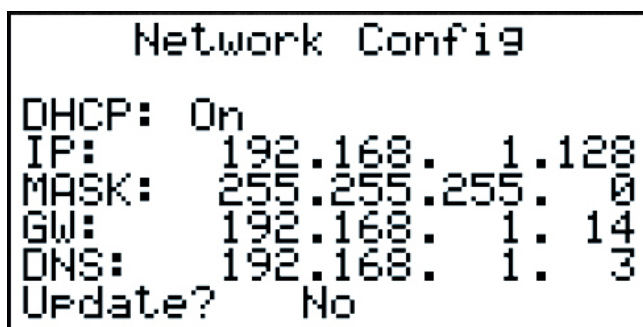


Figure 23

Pressing the **DOWN** key at the top of the Network Config screen will show the HOSTNAME screen of figure 26. The HOSTNAME screen allows the user to adjust the unit's hostname. This hostname is a label that will show up on the site network to identify this particular unit. This is defaulted to "dhu1" but it is recommended that the hostname matches the unit tag on the equipment. Hostnames should be coordinated with the building IT administrator.

The hostname appears at the top of the screen, and can be adjusted to any 8-character series of numbers or letters. (Note – Capital letters and special characters are excluded from the hostname). Once the hostname (unit tag) is changed to the desired value, the checkbox "Set Hostname" must be checked. This will write the new hostname to the controller. After the checkbox has been cleared, the checkbox "Get Hostname" can be checked to confirm that the correct hostname was written to the controller. The current hostname

of the unit will be displayed towards the bottom of the screen. After changing the hostname, the unit should be power cycled.

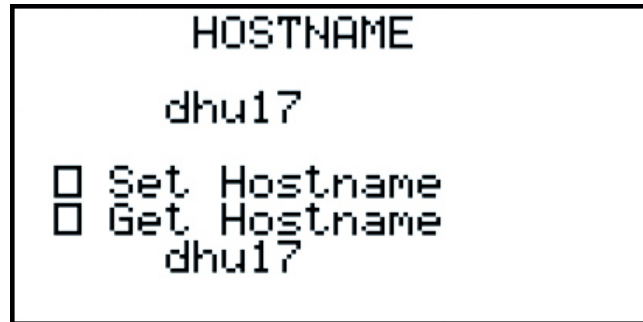


Figure 24

Pressing the **DOWN** key will view the LEAD UNIT HOSTNAME screen in Figure 25. This screen allows the user to enter the hostname (unit tag) of the lead unit if applicable. The lead unit will share zone sensor and setpoints with lag units that have a matching unit tag entered here. If no data is sent from the Lead Unit, the message “Hostname MB FLT” will be displayed. This will not cause an alarm, but inform the user that the hostnames (unit tags) must be coordinated. Towards the bottom of the screen the zone temperature and R.H. are displayed. Above the displayed values will be text that will either say “Zone Sensor”, “Lead Unit Sensor”, or “BMS Sensor” depending on what option has been selected and which sensor is connected and sharing data.

To return to the Commissioning Menu, press the **Esc** key.

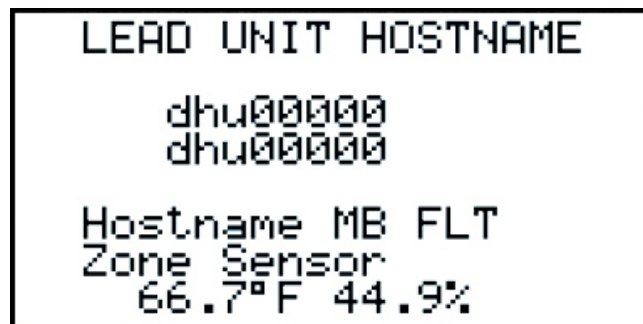


Figure 25

2.3.3.3 Airflow Setup (Figure 26)

Selecting the AIRFLOW SETUP from the Commissioning Menu will display either the screen shown in Figure 28 or Figure 29.

If the unit has a centrifugal housed blower the screen of Figure 29 will be displayed. The Standard CFM, Standard Differential Pressure, and Altitude are all adjustable towards the top half of the screen. Standard CFM is the target airflow rate of the unit. Standard DP is the differential pressure of the

reheat coil when Standard CFM at sea level is achieved. These values are programmed at the factory for the specific model size.

The Altitude programmed and the actual Reheat DP measured are used to calculate the current CFM reading. The CFM reading can be used for air balancing. Although corrections to the Standard CFM and DP are possible at the time of air balancing, it is recommended that Desert Aire Service be consulted before adjustment.

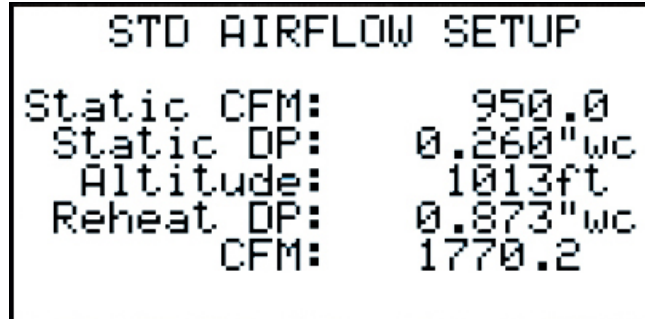


Figure 26

If the unit has a plenum fan, the screen of Figure 27 will be displayed. From the Airflow Setup screen the K Factor, Altitude, and Number of Fans are all adjustable towards the top half of the screen. Although corrections to the K-factor and number of fans are possible at the time of air balancing, it is recommended that Desert Aire Service be consulted before adjustment.

The Fan Differential Pressure, and Calculated CFM are displayed towards the bottom of the screen. To return to the Commissioning Menu, press the **Esc** key.

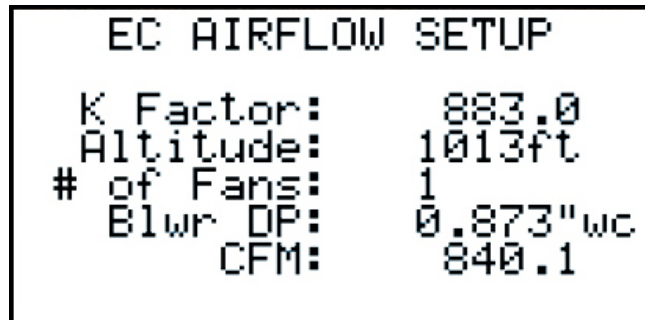


Figure 27

Pressing the **DOWN** key will display the EVAP DAMPER SETUP screen (Figure 28). This screen will allow the setup of the evaporative coil bypass damper. The screen will display the evaporative coil differential air pressure. Here the evaporative coil differential air pressure setpoint can be adjusted. A damper manual mode can be enabled, as well as a manual position. At the

bottom of the screen the current evaporator bypass damper position can be monitored.

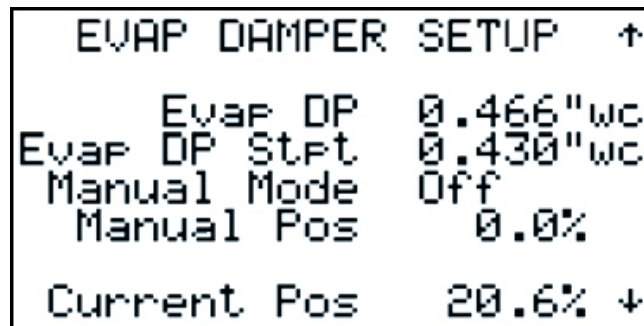


Figure 28

If the Dehumidifier is a non-packaged condenser unit and has an installed outdoor air box, Pressing the **DOWN** key will display the O/A DAMPER SETUP screen (figure 29). Here the Evaporative coil differential air pressure can be seen. The O/A Occ and O/A Unocc positions of the O/A damper can be set here. An override is also provided to allow the Occupied or Un-Occupied modes to be forced. This allows for the Damper positions to be set for the required air flow of the dehumidifier in either state

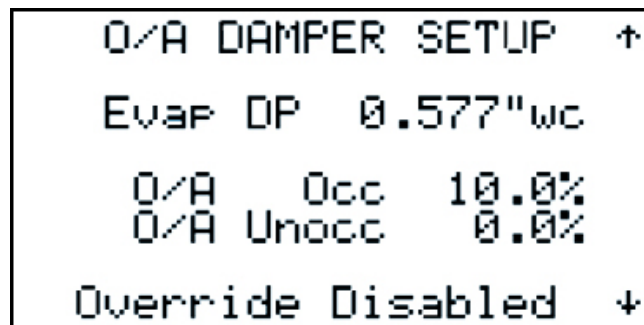


Figure 29

If the dehumidifier is a packaged condenser unit and has an installed outdoor air box, pressing the **DOWN** key will display a different version of the O/A DAMPER SETUP screen. Your screen will appear as (figure 30). Here the included outdoor differential air pressure sensor reading across the perforated plate can be seen as well as your current outdoor air flow in CFM. The O/A Occ and O/A Unocc setpoints of the O/A damper can be set here. The damper will use a PID tune to achieve these air flow setpoints. An override is again provided to allow the Occupied or Un-Occupied modes to be forced. This allows for the Damper positions to be set for the required air flow of the dehumidifier in either state.



Figure 30

2.3.3.2.1 System Setup (Figures 31 and 32)

Selecting the SYSTEM SETUP from the Commissioning Menu displays the CONDITIONS screen (Figure 31). This screen displays the zone air conditions, and the pool water temperatures, if a pool water condenser is provided. This screen allows for these conditions to be viewed before the commissioning test are done while staying in the Commissioning section of the Service Menu.

To return to the Commissioning Menu, press the **Esc** key.

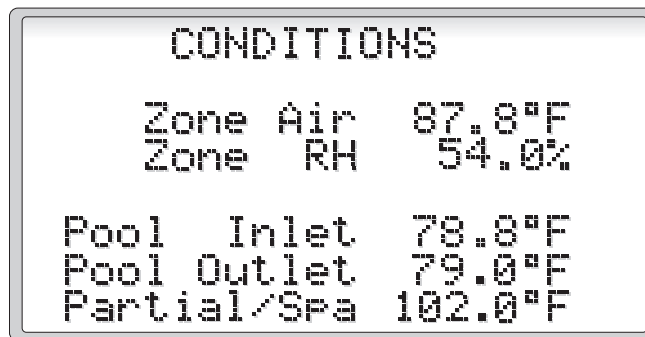


Figure 31

Pressing the **DOWN** key displays the SYSTEM SETUP screen (Figure 32). This screen is for initializing a lead lag hostname network over IP for up to five lag units with unit sizes and unit tags. This screen will be used in combination with the NETWORK CONFIG hostname screens, as well as the CONFIGURATION zone sensor select screens. If the unit is a lead unit, then the unit sizes and unit tags for all of the lag units can be entered on these screens. If it is a lag unit, then the unit sizes and unit tags will be displayed on these screens but not editable.

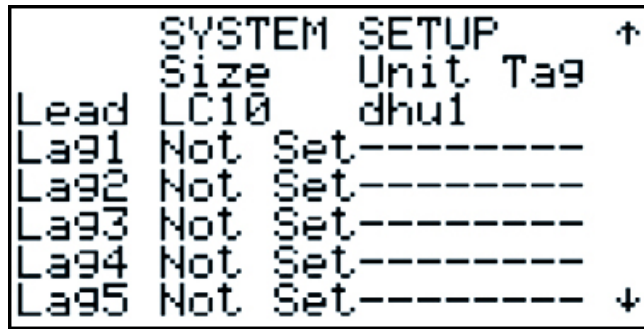


Figure 32

2.3.3.2.2 Commissioning Tests (Figure 33)

Selecting the COMMISSIONING TESTS from the Commissioning Menu displays the COMMISSIONING TEST screens (Figure 33). Every condenser used by the dehumidifier will have a separate screen. Select the condenser to test and override it by setting the Override to 'On'. Confirm that the superheat is stable before starting the test. Select 'Start Test' by pressing the **UP** key with the cursor over the Start Test text. After 5 minutes, the average refrigeration data can be shown by pressing the **Prg** key. The average superheat as well as the high and low readings of superheat during this test are found by pressing the **UP** and **DOWN** key. Record this data on the startup form.

Pressing the **DOWN** key will cycle through the available condenser to test. The last screen shown will be the Air Heating screen, Figure 33. This screen allows the air heat to be forced 'On' and a manual percentage to be forced. This allows for stable conditions for the amperage to be recorded on the startup form.

To return to the Commissioning Menu, press the **Esc** key.

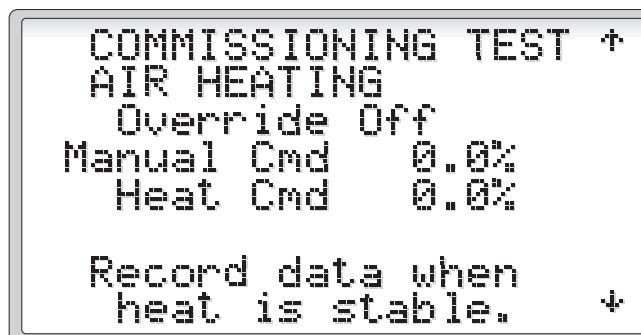


Figure 33

2.3.3.2.3 Motor Phasing (Figure 34)

Selecting the MOTOR PHASING from the Commissioning Menu displays the MOTOR PHASING screen to be shown, (Figure 34). Turning the Blower on will run the blower for 1 second to allow for the motor rotation to be checked. This is required for units connected to 3 phase electrical power. Turning the compressor on will run the compressor for 3 seconds. The discharge and suction pressure are shown on this screen for a check of the current compressor rotation.

To return to the Commissioning Menu, press the **Esc** key.

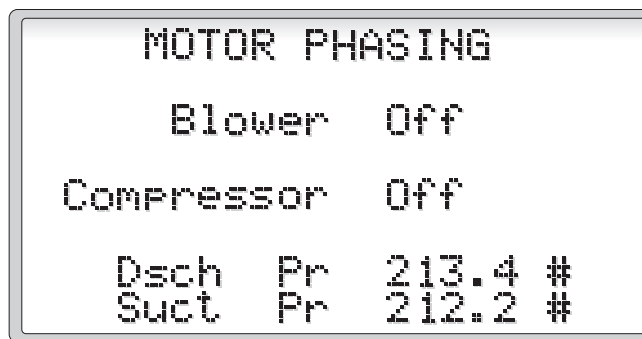


Figure 34

2.3.3.4 BMS Setup (Figures 35 through 39)

Selecting the BMS SETUP from the Commissioning Menu displays a set of screens which determine how the J3 serial port and the Ethernet port will communicate. The J3 port can be set to drive a remote PGD display terminal, communicate via Modbus RTU, LON or BACnet MS/TP. The Ethernet port can be set to send data via Modbus TCP/IP or BACnet IP.

When the J3 port is set for Modbus RTU, pressing the **DOWN** key will display Figure 35. This screen will allow the address, baud rate and data parameters to be set. If J3 is set for BACnet MS/TP, pressing the **DOWN** key will display Figure 36. This screen will allow the BACnet data to be used.

Pressing the **DOWN** key will also display the Ethernet protocol selection, Figure 38. Setting the Ethernet port for BACnet IP will allow the screen in Figure 39 to be displayed. This allows the Device ID and Port to be set.

Making any changes to the J3 or Ethernet ports will require a power cycle to have those changes take effect. While BACnet can be selected for the J3 or Ethernet port, a license file will need to be loaded into the controller in order for BACnet communication to be allowed.

To return to the Commissioning Menu, press the **Esc** key.

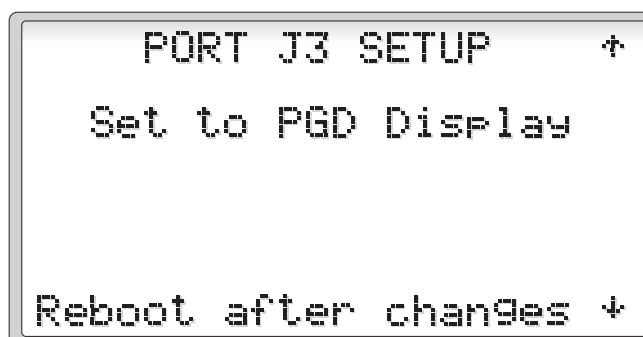


Figure 35

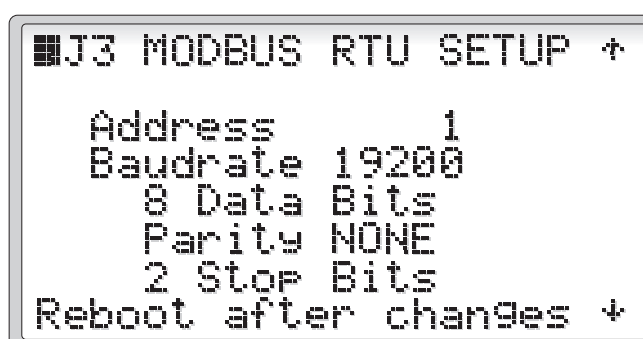


Figure 36

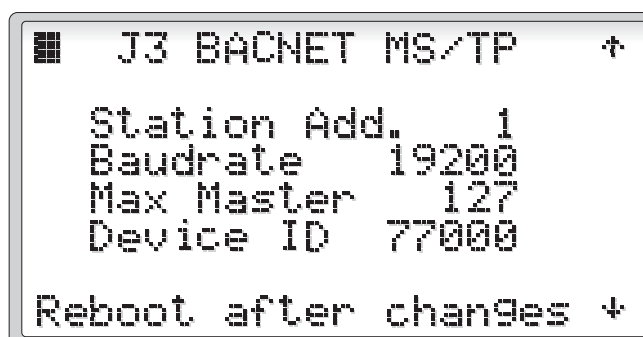


Figure 37

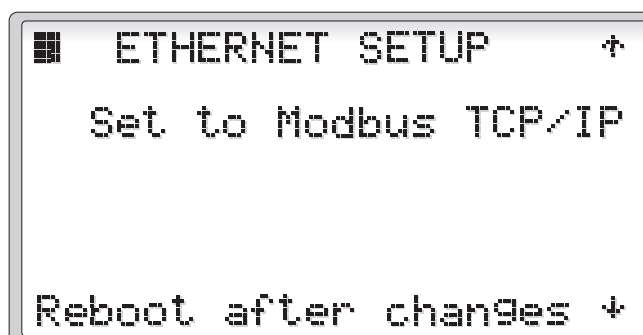


Figure 38

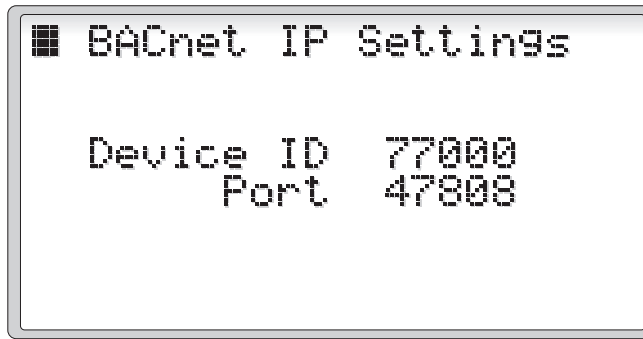


Figure 39

2.3.3.5 Tuning – Deadbands (Figures 40 through 43)

Selecting TUNING from the SERVICE MENU displays the DEADBANDS screen, (Figure 40). The default settings for the dead bands can be modified on this screen. The Heating Deadband value is subtracted from the Zone Temperature Setpoint from Section 2.2. This value is the heating setpoint that enables the aux heating output. It is also the heating setpoint for the Air Heating PID loop. The Cooling Deadband value is added to the Zone Temperature setpoint from Section 2.2. This value is the cooling setpoint. When the zone temperature exceeds this value, the compressor is required to be used for zone cooling.

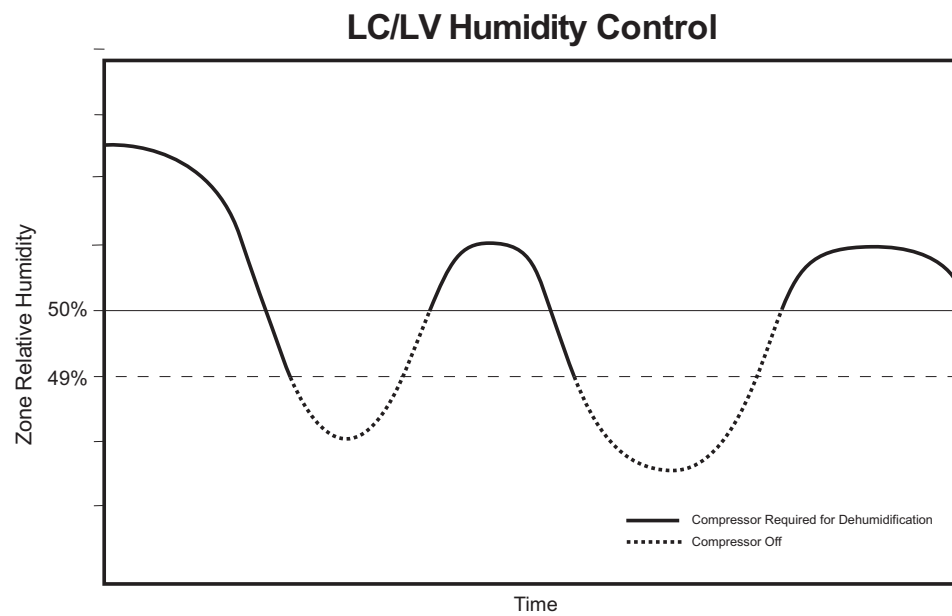
If the Pool Heating or Partial Pool options are enabled in the factory configuration, the Pool Deadband will be displayed. This setting is subtracted from the Pool Setpoint from Section 2.2. This value will then be used as the setpoint to enable the auxiliary pool heating output.

To modify settings, press the **ENTER** key until the desired setpoint is selected and use the arrow keys until the desired value is shown. Press the **ENTER** key to accept setpoint value. See the graphs in Figures 41 through 43 for an illustration of the operation of the deadbands and differentials. Figure 41 details the humidity control. Figure 42 details the heating and cooling control. Figure 43 details the pool heating control.

Press the **DOWN** key for the next Tuning screen. To return to the Service Menu, press the **Esc** key.



Figure 40

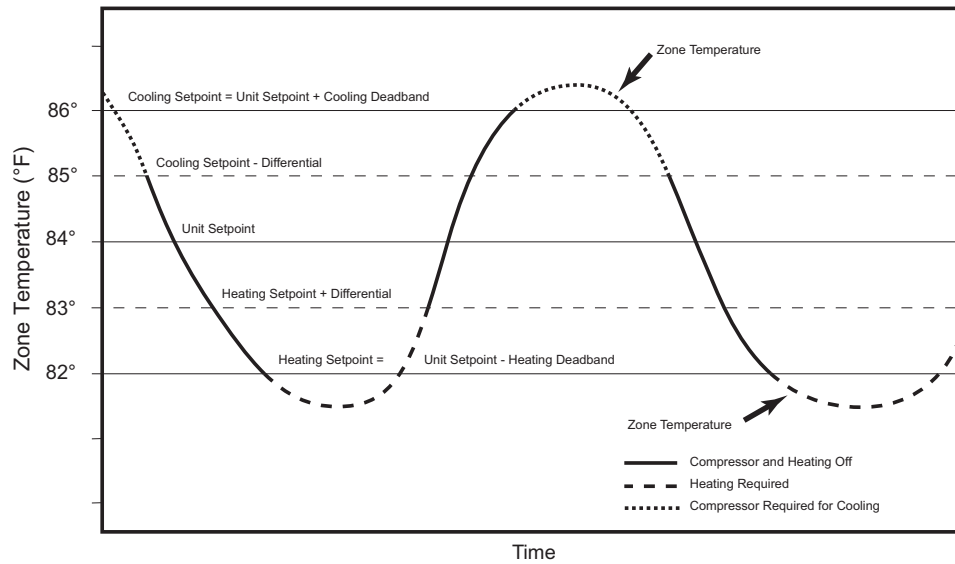


Setpoint: 50% RH
Differential: 1% RH

Compressor is required when RH is over 50%. Compressor is off under 49% RH, but between 50% & 49% a requirement for the compressor depends on a rising or sinking RH.

Figure 41

Zone Temperature Control



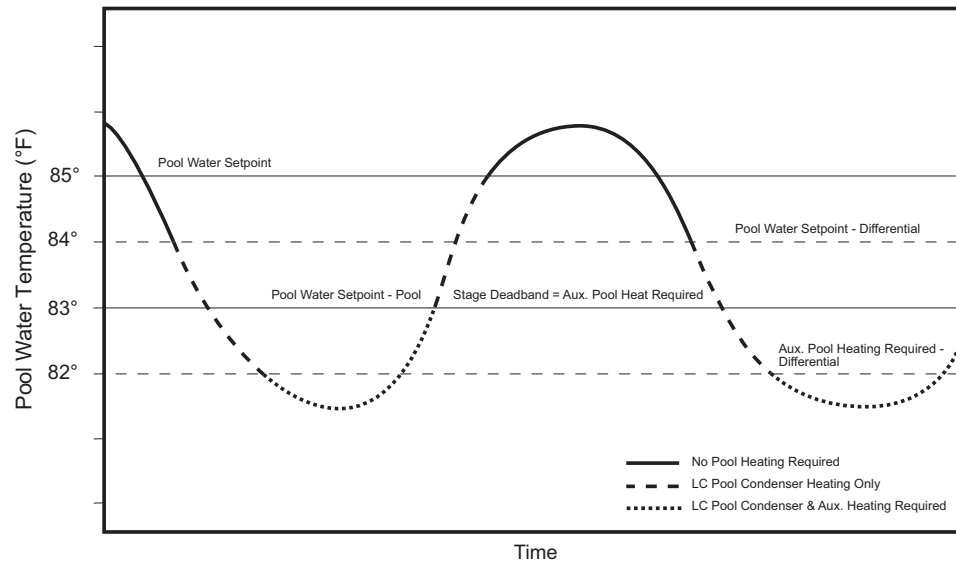
Unit Setpoint: 84° F
 Cooling Deadband: 2° F Heating Deadband: 2° F
 Cooling Differential: 1° F Heating Differential: 1° F

The cooling requirement is on above (84° F + 2° F) or 86° F and the cooling requirement is off below (86° F - 1° F) or 85° F.

The heating requirement is on below (84° F - 2° F) or 82° F and the heating requirement is off above (82° F + 1° F) or 83° F.

Figure 42

Pool Water Temperature Control



Pool Water Setpoint: 85° F
 Pool Differential: 1° F
 Pool Stage Deadband: 2° F

The LC pool condenser is used below the pool water set point and the aux. pool heat is required below the pool water set point minus the pool stage deadband.

Figure 43

2.3.3.5.1 Tuning – Differentials (Figure 44)

Pressing the **DOWN** key will now display the DIFFERENTIALS screen (Figure 44). This screen shows the Cooling, Heating and Humidity Switch Differentials. This differential is the range between the making and breaking of the switch. The range of the Cooling and Heating Differential is 0.0°F to 9.9°F. The range of the Humidity Differential is 0.0% to 9.9%.

If the Pool Heating or Partial Pool options are enabled in the factory configuration, the Pool and Partial Pool switch differentials are also displayed. The range of the Pool and Partial Pool Differentials are 0.0°F to 9.9°F.

To modify the differentials, press the **ENTER** key and use the arrow keys until the desired setting is shown. Press the **ENTER** key to accept setpoint value. See the graphs in Figures 32 through 34 for an illustration of the operation of the heating, cooling, dehumidification and pool heating modes.

Press the **DOWN** key for the next Tuning screen. To return to the Service Menu, press the **Esc** key.

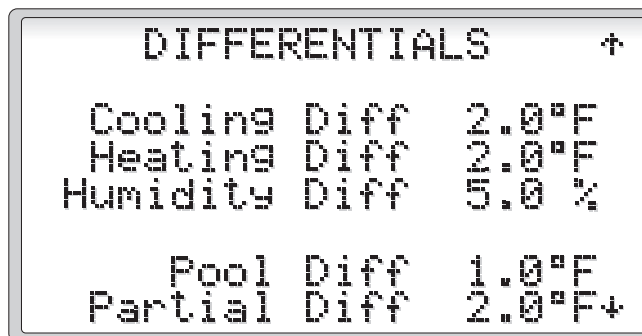


Figure 44

2.3.3.5.2 Tuning – Air Heat (Figure 45)

Pressing the **DOWN** key will now display the AIR HEAT screen (Figure 45). This screen shows the state of the air heat and the associated setpoints and temperatures. The Zone setpoint is settable from this screen. Press the **DOWN** key for the next Tuning screen.

To return to the Service Menu, press the **Esc** key.

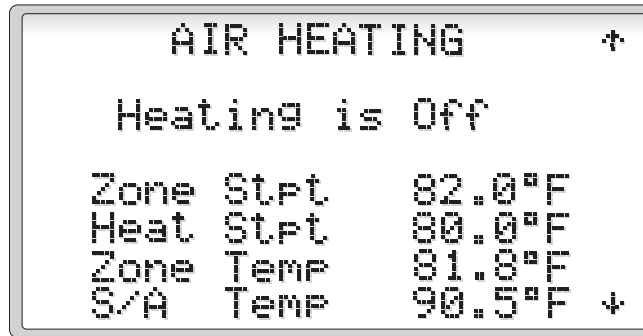


Figure 45

2.3.3.5.3 Tuning – Air Heating (Figure 46)

Pressing the **DOWN** key will now display the settings of the Air Heating PID loop. These settings control the modulating signal. The Gain, Integral and Derivative terms can be set here as well as the percentage to disable the digital heat contact and the time required for this to occur.

To return to the Service Menu, press the **Esc** key.

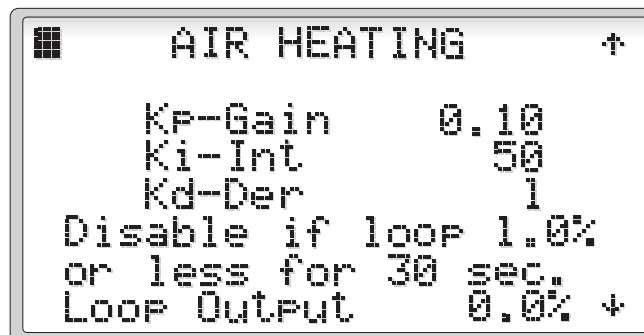


Figure 46

2.3.3.5.4 Tuning – EC Blower (Figure 47)

Pressing the **DOWN** key will now display the settings of the EC Speed PID loop if your unit has an EC Supply blower installed. These settings control the modulating signal for the EC supply blower speed. The Gain, Integral, and Derivative terms can be set here as well as the setpoint (in CFM) which the PID loop is targeting. This airflow is calculated into CFM based on the differential air pressure recorded across the reheat condenser coil. The current calculated airflow, as well as PID loop output can both be seen toward the bottom of the screen.

To return to the Service Menu, press the **ESC** key.

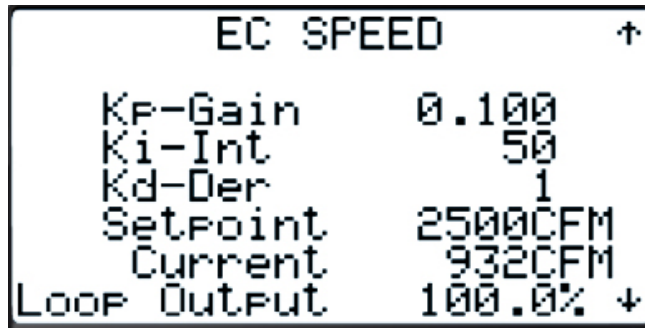


Figure 47

2.3.3.6 I/O Status (Figure 47)

Selecting the I/O Status from the STATUS MENU displays Digital Inputs, Analog Inputs, Digital Outputs and Analog Outputs selection menu. Use the **UP** and **DOWN** key to make a selection and press the **ENTER** key.

To return to the STATUS MENU, press the **Esc** key.

2.3.3.6.1 Digital Inputs (Binary) (Figures 48 and 49)

The Digital Inputs Screen shows the state of the digital contacts used by the control system. The first page shows the state of the contacts wired into port J2 and J8 of the controller. These screens are provided for troubleshooting the control system.

- The first line will show the status of U8, the supply blower motor starter overload contact. "OK" if the contact is closed, and "Flt" if an overload exists.
- The second line will show the status of U9, the compressor motor starter overload contacts – "OK" if no overload is present, and "Flt" if an overload exists.
- The third line will show the status of U10, the System On/Off switch, "On" and "Off".
- The fourth line will show the status of ID1, the smoke alarm contact – "OK" if this contact is made, and "Flt" if this contact is open.
- The fifth line will show the status of the Occupancy contact – "On" for Occupied, and "Off" for Un-Occupied.

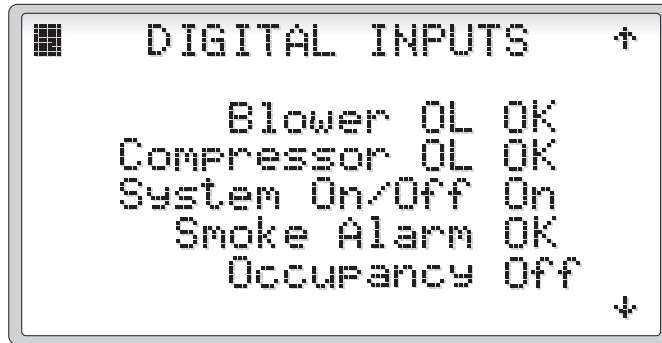


Figure 48

The second page of the Digital Inputs shows the status of the contacts wired to J2 of the expansion module.

- The first line will show the status U5, the condenser flow switch, or jumper, “On” if there is flow, and “Off” if no flow is present.
- The second line will show the status of U6. Units with out pool water heating will show this as a Spare Input. Units with pool water heating will show the pool water flow switch, “On” if there is flow, and “Off” if no flow.
- The third line will show the status of U7. Units without partial pool water heating will show this as a Spare Input. Units with partial pool water heating will show the partial pool flow switch, “On” if there is flow, and “Off” if no flow is present. This input may also be used as a low voltage monitor or filter alarm switch, if partial pool heating is not selected. These options can be used by modifying the factory configuration.
- The fourth line will show the status of U8, the Roof Switch, “On” or “Off”. This input may also be used as a low voltage monitor or filter alarm switch. These options can be used by modifying the factory configuration.

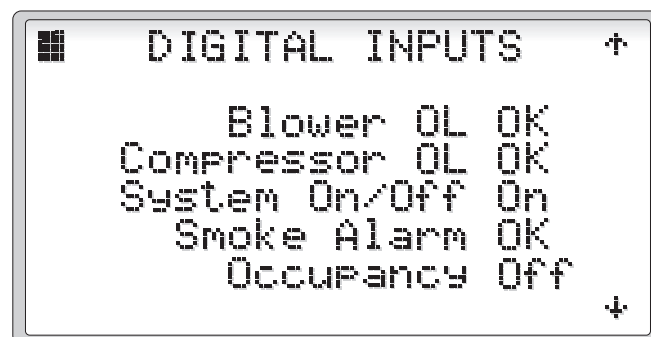


Figure 49

2.3.3.6.2 Analog Inputs (Figures 50 through 54)

The Analog Inputs Screens shows the state of the sensors used by the control system. The first page shows the zone sensor RH and Temperature conditions. Note that this sensor is a communicating device wired to serial port J4.

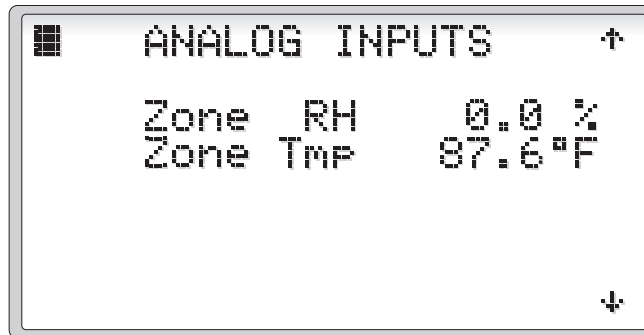


Figure 50

The second page of Analog Inputs shows the readings of the air differential pressure sensors for the drop across the reheat condenser and the drop across the evaporator. The interior dehumidifier temperature (DHU temperature) is also shown here.

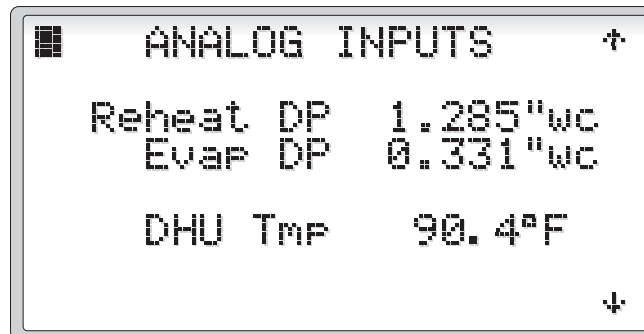


Figure 51

The third page of Analog Inputs shows the readings of the suction pressure and temperature and discharge pressure. The superheat shown is a calculated value derived from the suction temperature less the P2T of the suction pressure sensor.

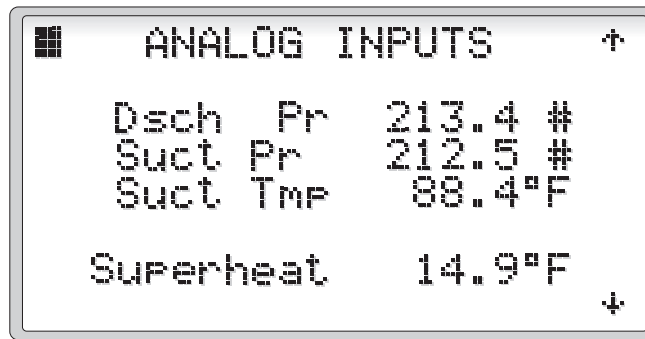


Figure 52

The fourth page of Analog Inputs shows the readings of the liquid pressure and temperature. The Liquid P2T is also shown. The subcooling shown is a calculated value derived from the P2T less the liquid temperature.

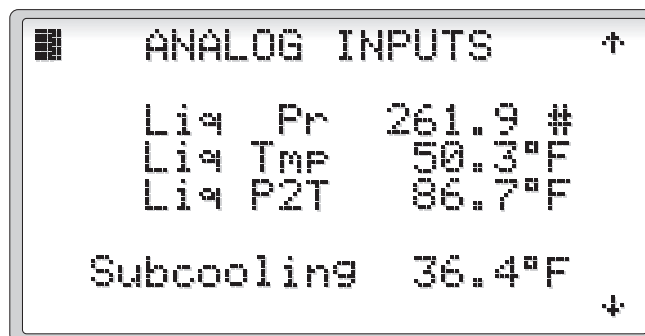


Figure 53

The fifth page of Analog Inputs shows the readings of the pool temperature sensors. This screen will only be shown if a pool condenser is supplied.

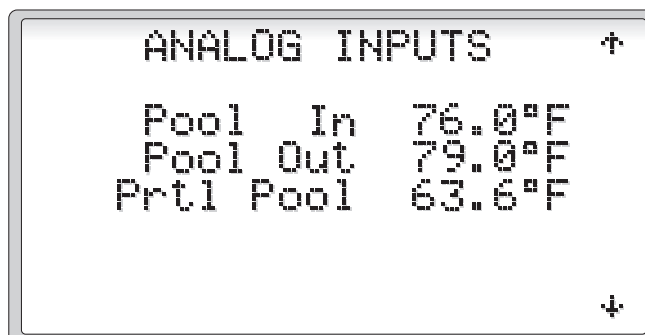


Figure 54

To return to the I/O STATUS screen, press the **Esc** key.

2.3.3.6.3 Digital Outputs (Binary) (Figures 55 through 57)

The Digital Outputs Screens shows the state of the devices turned on and off by the control system. The first page shows the state of the relay contacts on the controller ports J10 and J11.

- The first line will show the status of C1, the air heat contact, "On" and "Off".
- The second line will show the status of C2, the tower pump contact, "On" and "Off".
- The third line will show the status of C3, the Supply Blower Starter, "On" and "Off".
- The fourth line will show the status of C4, the Compressor Starter, "On" and "Off".
- The fifth line will show the status of C5, the Cooling Condenser 3 way solenoid, 1Sol, "On" and "Off".

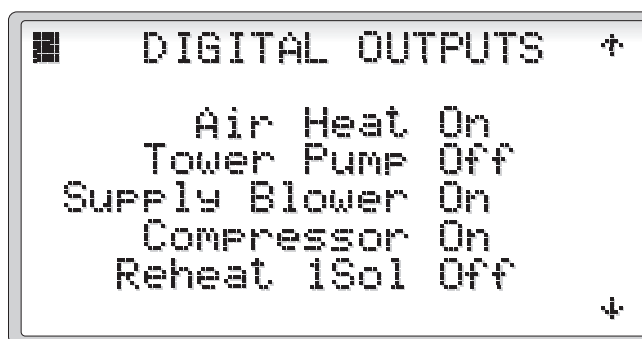


Figure 55

The second page shows the state of the relay contacts on the expansion module controller ports J10 and J11.

- The first line will show the status of C1, the Occupied contact, "On" and "Off".
- The second line will show the status of C2, the Alarm contact, "On" and "Off".
- The third line will show the status of C3, the Bleed Solenoid, 5Sol, "On" and "Off".

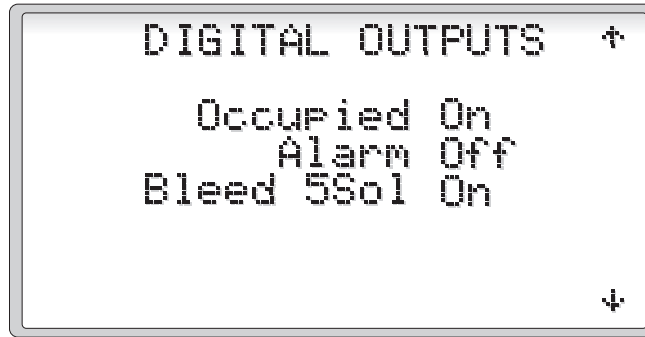


Figure 56

The third page shows the state of the relay contacts for the pool heating control on the main controller J12 and the expansion module controller ports J11 and J12.

- The first line will show the status of the Auxiliary Pool Heater contact, “On” and “Off” on main controller.
- The second line will show the status on the expansion board the Pool Pump contact, “On” and “Off”.
- The third line will show the status of C3, the Pool Water 3 way solenoid, 3Sol, “On” and “Off”.
- The fourth line will show the status of C4, the Partial Pool Water 3 way solenoid, 9Sol, “On” and “Off”.

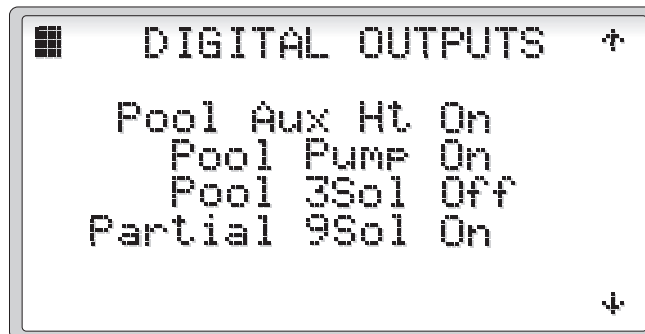


Figure 57

To return to the I/O STATUS screen, press the **Esc** key.

2.3.3.6.4 Analog Outputs (Figure 58)

This screen is provided for troubleshooting the control system.

The Analog Outputs Screen shows the following:

- Evap Bypass Damper Command
- Air Heat Modulating Command
- Outdoor Air Damper Command

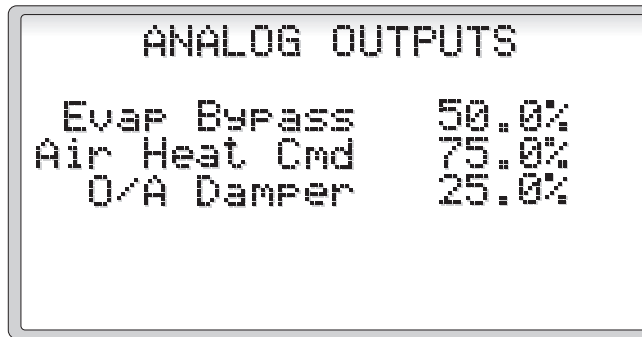


Figure 58

To return to the I/O STATUS screen, press the **Esc** key.

2.3.3.7 Sensor Offsets (Figures 59 through 61)

These screens allow the control values of the analog input points to be adjusted if calibration shows these devices to be inaccurate. The range of these offsets is -99.9 to 99.9. Care must be used when applying an offset to an analog value as erratic operation can result. To modify the offsets, press the **ENTER** key until the desired offset is selected and use the arrow keys until the desired setting is shown. Press the **ENTER** key to accept the offset value.

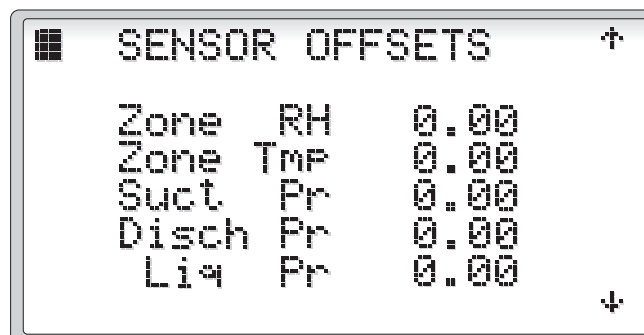


Figure 59

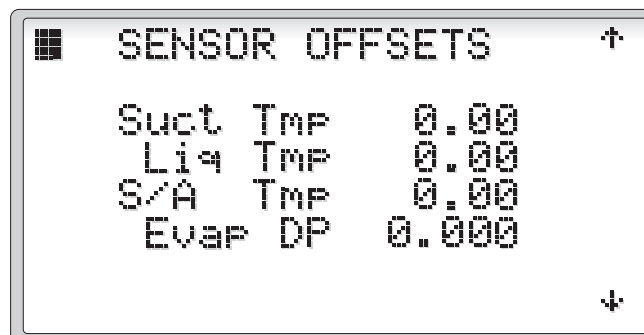


Figure 60

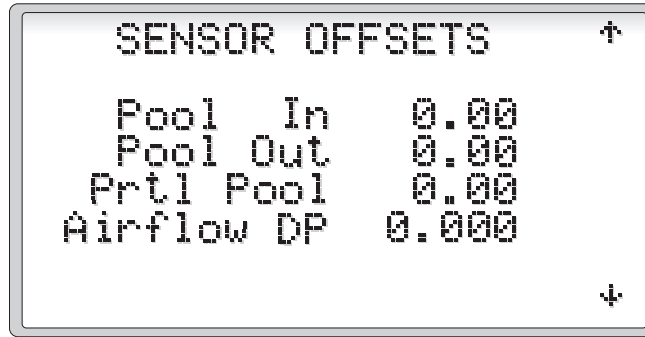


Figure 61

To return to the SERVICE MENU, press the **Esc** key.

2.3.3.8 Diagnostics (Figures 62 through 65)

These screens allow the refrigerant pressure, superheat and subcooling values to be watched while a specific condenser is selected for use. Turn the override on to use that condenser.

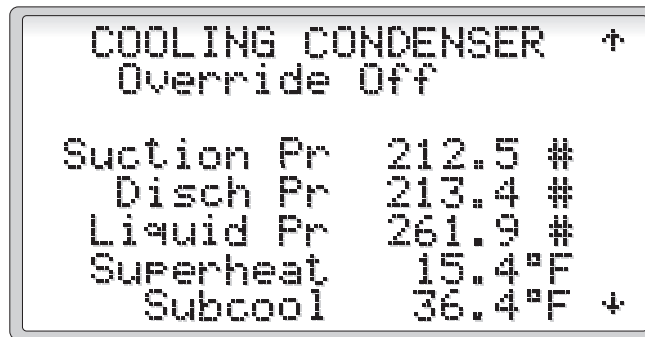


Figure 62

The Air Heating screen allows for the heater to be put into a manual mode for troubleshooting. Turn the override on to use and set a manual command.

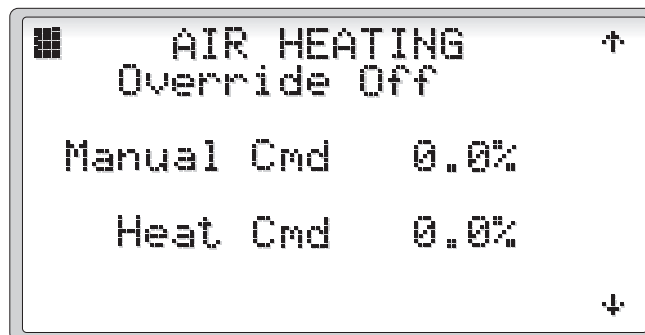


Figure 63

If the dehumidifier is a packaged condenser unit there will be included screens for each of the installed Modbus communication devices. These devices include supply blowers, condenser fans, and all dampers. The Modbus communication allows for more data feedback from the device to the controller.

Damper diagnostic screens (Figure 64) include the ability to switch the damper control from automatic to a set manual command for troubleshooting. The damper position can also be viewed on this screen. The CLEAR ERRORS command is used to wipe any errors which have occurred. If an error occurs, the specific fault of the damper can be read at the bottom of this screen. For a list of possible damper errors, view the associated BMS points list sent with the unit.

```
EVAP BYPASS DMPR  ↑
Evap Damper in Auto

Manual Cmd:      0.0%
Position:        0.0%

CLEAR ERRORS
Damper On       ↓
```

Figure 64

EC Fan diagnostic screens (Figure 65) include the ability to switch fan control from automatic to a set manual command for troubleshooting. The fan recorded speed and power consumption can also be viewed on this screen. If an error occurs, the specific fault of the fan can be read at the bottom of this screen. The screen will read Fan OK if there are currently no alarms.

```
SUPPLY FAN 1  ↑
Speed:        0RPM
Power:        0.0Watts

EC110 in Auto Mode
Manual Cmd:    0.0%

Fan OK       ↓
```

Figure 65

2.3.3.9 Memory Options (Figures 66 and 67)

These screens allow the logging files to be written to a portion of the internal memory space on the controller or a USB Storage Drive. To use, select the memory to write to, if USB Storage Drive, insert a USB Storage Drive and with the cursor over the 'Press UP to Write' field, press the **UP** key. Wait for the screen to say "Completed" before removing the drive. This may take a few minutes. The files written are the Alarm Log.csv and the Data Log.csv. Both of this can be opened in Excel. The Alarm Log takes a snapshot of the conditions whenever an Alarm is triggered. The Data Log records values every minute of operation for the past month.

The second and third screens allow for the file Setpoint.txt to either be saved or loaded. After the dehumidifier has been commissioned and is stable, saving the setpoints allows for these to be reloaded if anything happens to the controller. To use, select the memory to write to, if USB Storage Drive, insert a USB Storage Drive and with the cursor over the 'Press UP to Import' or 'Press UP to Export' field, press the **UP** key. Wait for the screen to say "Completed" before removing the drive.

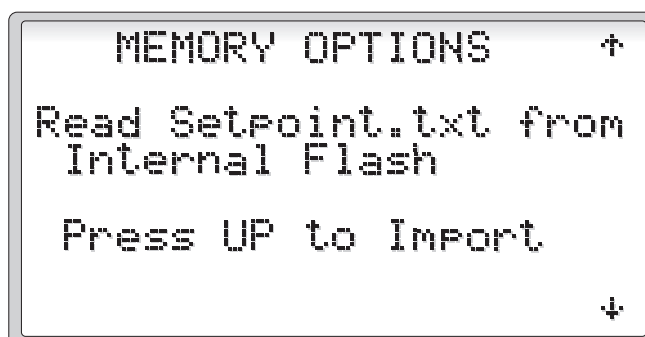


Figure 66

To return to the SERVICE MENU, press the **Esc** key.

2.3.4 Unit Revision (Figure 67)

The Unit Revision Screen shows the version of the application program that is running along with the release date of the software (Figure 67). This information should be passed to Desert Aire in the event a service call is necessary.

UNIT REVISION
LC 3.1.5
Release Date
Oct. 22nd, 2021

Figure 67

3 Alarm Menu (Figures 68 through 70)

To view the alarms from any menu, simply press the **ALARM** key. If no alarm is active, the display will state NO ALARMS ARE ACTIVE. See Figure 68.

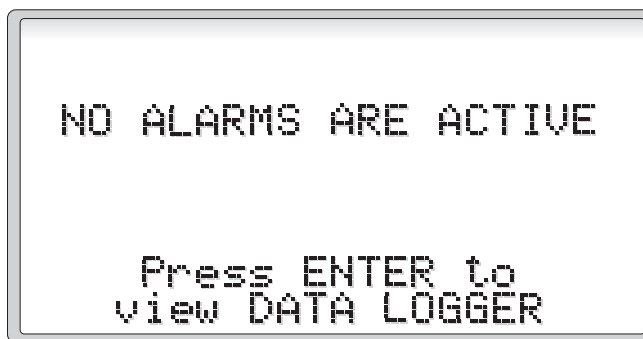


Figure 68

When an alarm is triggered, the red LED behind the **ALARM** key will light and will remain on until the alarm is reset. If an alarm is present, pressing the **ALARM** key will display a screen similar to Figure 69. The triggered alarm will be displayed along with the time and date. The bottom lines will display two pertinent data point values when the alarm occurred.

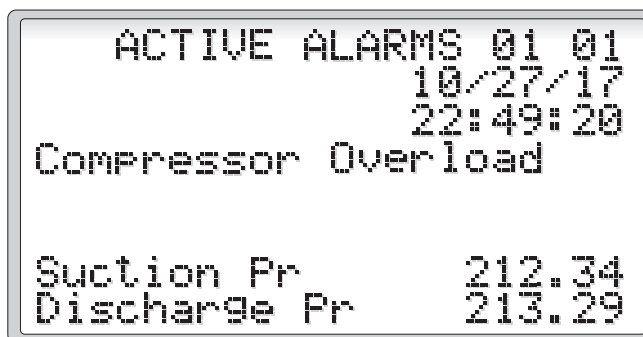


Figure 69

To reset the alarm, use the **DOWN** key until the reset instructions are shown. See Figure 70. Pressing the **ALARM** key for three seconds will reset all active alarms.

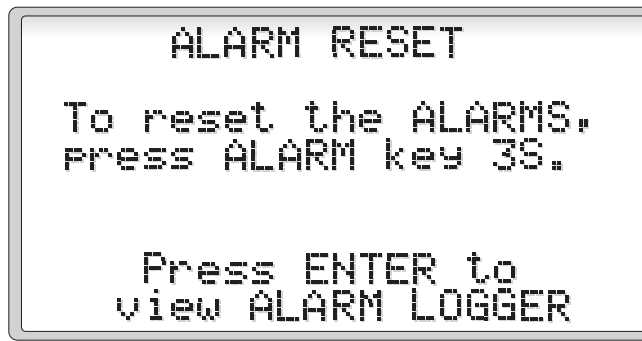


Figure 70

Alarms are either Automatic Reset or Manual Reset. Automatic Reset Alarms are alarms that allow the unit and/or circuit to return to operation once the operating parameter has been returned to acceptable operating conditions. The unit and/or circuit will restart automatically; however, the red Alarm LED will remain illuminated until acknowledged to alert the operator the alarm occurred. Manual Reset Alarms are alarms that stop the unit and/or circuit and do not restart until the alarm is acknowledged and the alarm condition is reset manually on the Alarm Screen. The red Alarm LED will stay illuminated until the alarm is acknowledged AND the alarm condition is reset.

To return to the home screen, press the **Esc** key.

3.1 Mult Suction Pr

This is a Manual Reset Alarm. The Mult Suction Pr will only be activated when the suction pressure falls below the suction pressure cutout point three times in a one hour period. The refrigeration circuit will stop and not restart until the suction pressure rises above 106.0 psig and the alarm is reset manually. The red Alarm LED on the display will stay lit until the alarm is reset.

The suction pressure trip setpoint is normally 58.0 psig. When the compressor is started and for the first 90 seconds of the compressor running, the suction pressure trip setpoint is set to 22.0 psig. This is to avoid any nuisance tripping due to low ambient conditions. The first and second conditions of the suction pressure falling below the suction pressure trip setpoint in a one hour period will stop the compressor but not activate the alarm. The compressor will restart when the suction pressure rises above 106.0 psig.

3.2 Discharge Pressure

This is a Manual Reset Alarm. The Discharge Pressure is activated when the discharge pressure rises above the high pressure cutout point, 575 psig. The refrigerant circuit will stop and not restart until the alarm condition is reset manually. The red Alarm LED on the display will stay lit until the alarm is reset.

3.3 Compressor Overload

This is a Manual Reset Alarm. The Compressor Overload is activated when the compressor motor overload device indicates an overloaded condition. In this state, the refrigerant circuit will stop and not restart until the alarm condition is reset manually. Typically, the motor starting hardware will need to be reset along with a control system reset. The red Alarm LED on the display will stay lit until the alarm is reset.

3.4 Discharge Pressure Sensor Fault

This is a Manual Reset Alarm. This alarm will trigger when the discharge sensor readings start to reach pressures outside of normal operating conditions. The refrigeration circuit will stop and not restart until the alarm condition is reset manually. Check discharge sensor wiring and condition. The red Alarm LED on the display will stay lit until the alarm is reset.

3.5 Smoke Alarm

This is an Automatic Reset Alarm. The Smoke Alarm is activated if the alarm contact wired to digital input ID1 is opened. In this state, the unit will stop and not restart until the smoke alarm contact closes. The red Alarm LED on the display will stay lit until the alarm is acknowledged, even after the alarm condition is cleared, to alert the operator the alarm occurred.

3.6 c.pCOe Comm Fault

This is an Automatic Reset Alarm. The c.pCOe is the expansion module. Check the expansion module power and communication link. The red Alarm LED on the display will stay lit until the alarm is reset.

3.7 c.pCOe Cnfg Fault

This is an Automatic Reset Alarm. The c.pCOe is the expansion module. Check the expansion module power and communication link. The red Alarm LED on the display will stay lit until the alarm is reset.

3.8 Modbus Sensor Fault

This is an Automatic Reset Alarm. Check the communication wiring to the sensor when this fault occurs. The red Alarm LED on the display will stay lit until the alarm is reset.

3.9 Lead Sensor Fault

This is an Automatic Reset Alarm. This alarm will trigger if a lead-lag network is being used and communication fails. Check unit hostnames and gateway Ethernet connection. The red Alarm LED on the display will stay lit until the alarm is reset.

3.10 Network Sensor Fault

This is an Automatic Reset Alarm. This alarm will trigger if the BMS heartbeat Boolean is not toggled within the delay time (if enabled). Check user BMS setup or BMS wiring. The red Alarm LED on the display will stay lit until the alarm is reset.

3.11 Blower Overload

This is a Manual Reset Alarm. The Blower Overload is activated when the blower motor overload device indicates an overload condition. In this state, the dehumidifier will stop and not restart until the alarm condition is reset manually. Typically, the motor starting hardware will need to be reset along with a control system reset. The red Alarm LED on the display will stay lit until the alarm is reset.

3.12 Too many mem writings or Retain mem write error

These are Automatic Reset Alarms. These alarms occur when there is an issue with the controller memory itself. If this fault cannot be reset, new controller hardware may be required. The red Alarm LED on the display will stay lit until the alarm is reset.

3.13 Evaporator Bypass/Outdoor Air Damper Alarm

These are Manual Reset Alarms. These alarms will trigger for a number of reasons read directly by the damper actuator. The alarm screen will include an alarm code correlating to the fault condition. This alarm code may be decoded via the code descriptions found on the BMS points list, or by viewing the Diagnostics screens within the Service Menu. The red Alarm LED on the display will stay lit until the alarm is reset.

3.14 EC Supply Fan/Condenser Fan Alarm

These are Manual Reset Alarms. These alarms will trigger for a number of reasons read directly by the EC fan. The alarm screen will include an alarm code correlating to the fault condition. This alarm code may be decoded via the code descriptions found on the BMS points list, or by viewing the Diagnostics screens within the Service Menu. The red Alarm LED on the display will stay lit until the alarm is reset.

3.15 Alarm Log (Figure 71)

The Alarm Data Logger Screen is accessible from the Alarm Reset screen (see Figure 71) by pressing the **ENTER** key. This screen shows records of the alarm log. The bottom two lines will show the pertinent data that was recorded when the alarm occurred. Use the **UP** and **DOWN** keys to view other records.

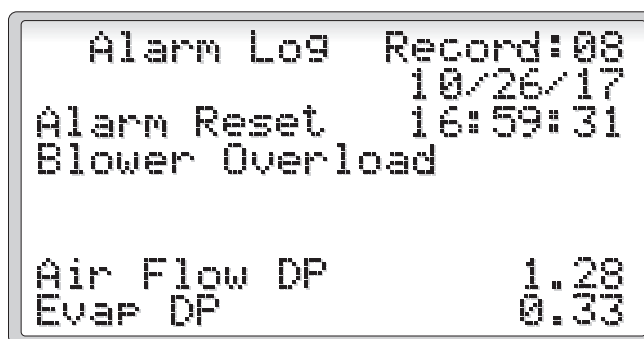


Figure 71

To return to the home screen, press the **Esc** key.

4 Hardware Details

4.1 Programmable Controller

The programmable controller is preprogrammed by Desert Aire for the control of your unit. The Desert Aire replacement part number for this controller is available by calling our service department.

4.2 Suction Pressure Transducer

The Suction Pressure Transducer is a 0.5 – 4.5 VDC to 0 – 250 psig ratio metric device. The body is brass with a 1/4 SAE female refrigerant connection. This transducer must be supplied with 4.5 to 5.5 VDC power. A display reading of 0.0 psig for the transducer indicates the device is disconnected or defective. For this device to function, 5.0 VDC must be present from the black to green wires on the transducer. To verify the output of the transducer, measure the DC voltage (should read between 0.5 to 4.5 VDC) from the white to green wires on the transducer and use this voltage in the following formula to determine the pressure (0-250 psig).

$$\text{Pressure (psig)} = (62.5) * (V) - 31.25$$

Example, if V is 2.50 VDC, then;

$$\begin{aligned}\text{Pressure (psig)} &= (62.5) * (2.50) - 31.25 \\ &= 156.25 - 31.25 \\ &= 125 \text{ psig}\end{aligned}$$

The Suction Pressure Transducer's replacement part number is available from Desert Aire by calling our service department.

4.3 Discharge Pressure Transducer

The Discharge Pressure Transducer is a 0.5 – 4.5 VDC to 0 – 652 psig ratio metric device. The body is brass with a 1/4 SAE female refrigerant connection. This transducer must be supplied with 4.5 to 5.5 VDC power. A display reading of 0.0 psig for the transducer indicates the device is disconnected or defective. For this device to function, 5.0 VDC must be present from the black to green wires on the transducer. To verify the output of the transducer, measure the DC voltage (should read between 0.5 to 4.5 VDC) from the white to green wires on the transducer and use this voltage in the following formula to determine the pressure (0-652 psig).

$$\text{Pressure (psig)} = (163) * (V) - 81.5$$

Example, if V is 2.50 VDC, then;

$$\begin{aligned}\text{Pressure (psig)} &= (163) * (2.50) - 81.5 \\ &= 407.5 - 81.5 \\ &= 326 \text{ psig}\end{aligned}$$

The Desert Aire replacement part number for the Discharge Pressure Transducer is available by calling our service department.

4.4 Suction Line, Liquid & DHU Temperature Sensor

These temperature sensors are a resistive NTC Bulb type device with a 10 foot cable. The temperature range is -58.0°F to 212.0°F and the environmental rating is IP67. The failure mode of this device will display a reading of -623.3°F if the sensor is open, and display a reading of 687.3°F if the sensor is shorted. The Desert Aire replacement part number for the Supply Air Temperature Sensor is available by calling our service department.

4.5 Zone Air Temperature and Relative Humidity Sensor

This sensor is a communicating device which sends Modbus data out from address 190. If communication is lost from this device, an alarm is activated. The Desert Aire replacement part number for the Zone Air Temperature and Relative Humidity Sensor is available by calling our service department.

4.6 Reheat Condenser and Evaporator Bypass Differential Air Pressure Sensors

These sensors have a range of 0.0"wc to 2.0"wc. The output of this device is a 0.25 VDC at 0.0"wc and 4VDC at 2.0"wc. The Desert Aire replacement part number is available by calling our service department.

4.7 EC Blower Differential Air Pressure Sensor

The EC Blower Differential Air Pressure Sensor has a range of either 0-10.0" wc, or 0-25" wc. The output of this device is a 0.25 VDC at 0.0" wc and 4 VDC at either 10.0" wc or 25.0" wc. The Desert Aire replacement part number is available by calling our service department.

4.8 Outside Air Differential Air Pressure Sensor

This sensor is only supplied on packaged condenser units with an outdoor air intake installed. This sensor is responsible for calculating the amount of outdoor airflow (in CFM). This sensor has a range of 0-2" wc. The output of this device is 0.25 VDC at 0.0" wc and 4 VDC at 2.0" wc. The Desert Aire replacement part number is available by calling our service department.

5 Appendix

5.1 Internal Web Page

The programmable controller is preprogrammed by Desert Aire to include a web page allowing a virtual remote display to be used from any node on the facilities computer network. Simply attach an Ethernet cable from your facilities computer network to the RJ45 port of the controller. Always check with your IT department before connecting this device to your network.

The Ethernet port of the controller has a factory default of DHCP for the TCP/IP address. To obtain the current address, see Section 2.3.3.3 for the Ethernet port setup, Figure 29. A static TCP/IP address can be set from this screen. Refer to your IT department to obtain a static TCP/IP address. Browse the IP address assigned to the dehumidifier, enter the appropriate credentials, [user – Desert-Aire, password – 18485] and select the DISPLAY tab. Logging is also available from this web page. Wait a few moments for initialization and use your mouse to click the keys. Key combinations are defined on the bottom of this web page.



OPTIMIZING SOLUTIONS THROUGH SUPERIOR DEHUMIDIFICATION TECHNOLOGY

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