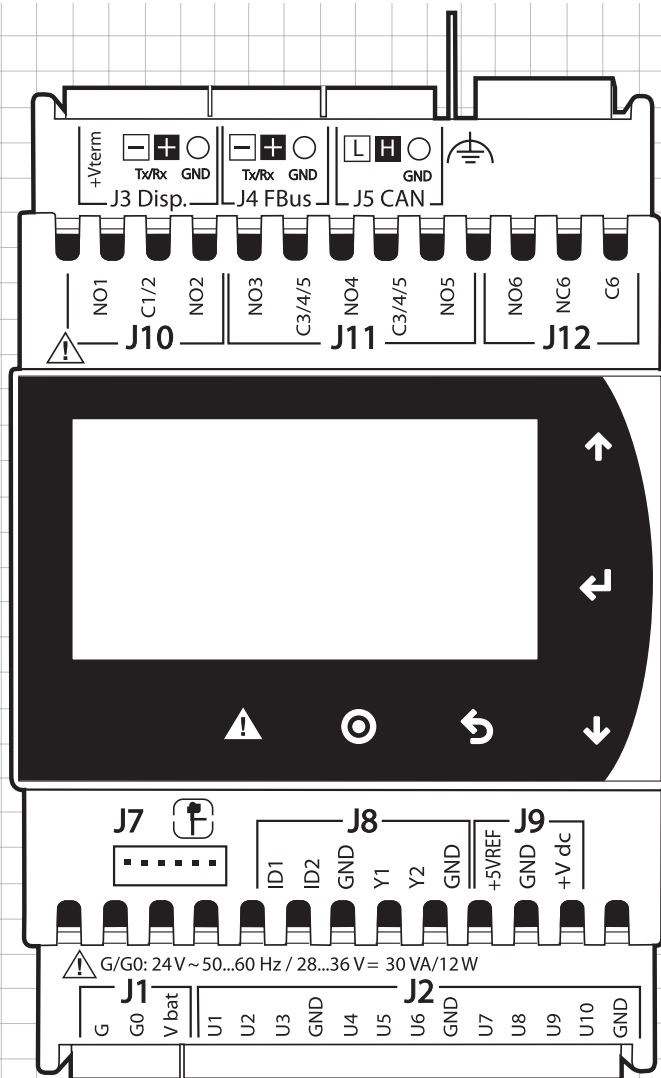




CM3540 Series Controller

Installation and Operation Manual for LW Units

- Advanced program capabilities
- Internal Display Terminal (IDT)
- Multiple communication interface options:
 - LonWorks®
 - BACNet™ Ethernet
 - BACNet™ MS/TP
 - Modbus®
- Precise temperature and humidity control



CM3540 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:

Desert Aire Corp
c/o Service Manager
N120 W18485 Freistadt Road
Germantown, WI 53022
PH: (262) 946-7400
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FAX: (262) 946-7401
E-MAIL: service@desert-aire.com

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

TABLE OF CONTENTS

1.	Installation	9
1.1	Introduction	9
1.2	Sensor Installation	9
1.2.1	Unit Mounted Sensor	9
1.2.2	Wall-Mount Humidity and Temperature Sensor	10
1.3	Auxiliary Air Heating Control Wiring	10
1.3.1	Auxiliary Heating - Dry Contact Closure	10
1.3.2	Auxiliary Heating - Proportional Signal	10
1.4	CM3540 Controller Overview	11
2.	LW Controller Details	13
2.1	Menu Overview and General Instructions	13
2.2	Zone Setpoints	15
2.3	Main Menu	17
2.3.1	Unit Status	18
2.3.2	ExV Status	18
2.3.3	Occupancy Schedule	19
2.3.3.1	Time Settings	20
2.3.3.2	Daily Events	20
2.3.3.3	Vacation Periods	21
2.3.3.4	Special Days	22
2.3.3.5	Temporary Occupancy	22
2.3.4	Service Menu	23
2.3.4.1	Commissioning	23
2.3.4.1.1	Configuration - Blower Setup	24
2.3.4.1.2	Configuration - Condenser Setup	24
2.3.4.1.3	Configuration - Zone Sensor Select	26
2.3.4.1.4	Configuration - Zone Setpoints Select	27
2.3.4.1.5	Network Config	28
2.3.4.1.6	Airflow Setup	30
2.3.4.1.7	Commissioning Tests	32
2.3.4.1.8	Motor Phasing	33
2.3.4.1.9	BMS Setup	34
2.3.4.2	Tuning - Dead Bands	36
2.3.4.2.1	Tuning - Differentials	37
2.3.4.2.2	Tuning - Air Heating	38
2.3.4.2.3	Air Heating	38
2.3.4.3	I/O Status	39
2.3.4.3.1	Digital Inputs (Binary)	39

2.3.4.3.2	Analog Inputs	40
2.3.4.3.3	Digital Outputs (Binary)	41
2.3.4.3.4	Analog Outputs	43
2.3.4.4	Sensor Offsets	44
2.3.4.5	Diagnostics	45
2.3.4.6	Memory Options	46
2.3.4.7	Clear Overrides	48
2.3.5	Unit Revision	48
2.3.6	DriCure Setup	48
3.	Alarm Menu	52
3.1	Too many mem writings or Retain mem write error	53
3.2	Low Suction Pr.	53
3.3	Discharge Pr.	53
3.4	Compressor Overload	54
3.5	Modbus Sensor Fault	54
3.6	Blower Overload	54
3.7	Smoke Alarm	54
3.8	c.pCOe Comm Fault	54
3.9	c.pCOe Cnfg Fault	54
3.10	Alarm Log	54
4.	Hardware Details	56
4.1	Programmable Controller	56
4.2	Suction Pressure Transducer	56
4.3	Discharge Pressure Transducer	56
4.4	Suction Line, Liquid & DHU Temperature Sensor	57
4.5	Zone Air Temperature and Relative Humidity Sensor	57
4.6	Reheat Condenser and Evaporator Bypass Differential Air Pressure Sensors	57
5.	Appendix	58
5.1	Internal Web Page	58

1. Installation

1.1 Introduction

Your Desert Aire CM3540 controller is designed for precise monitoring and control of air temperature and relative humidity (RH) within a conditioned environment.

This CM3540 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 set points. It also indicates the operating status of major components inside of the dehumidifier. The CM3540 controller also has the ability to control auxiliary equipment such as a customer supplied exhaust blower, outdoor air damper, and auxiliary heating devices for optimum energy efficiency.

Most sensors and inputs have been factory-installed and wired inside of 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. An additional sensor, included in the control assembly, needs to be mounted in the return air duct or the zone to be conditioned. This device senses the conditioned zone air temperature and relative humidity to control the LW dehumidifier. Also, units with surface temperature sensors will require additional wiring.

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 CM3540 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 CM3540 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.

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 our dehumidifier was ordered with a wall-mount humidity and temperature sensor, mount the sensor about five feet above floor, 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

Install using 24-16 AWG stranded wire; 18 AWG stranded wire recommended.

Do not run sensor wiring adjacent to, OR in the same conduit as, wires carrying more than 24 VAC. See manufacturer's specifications for more details.

1.3 Auxiliary Air Heating Control Wiring

Note: You must use the Desert Aire CM3540 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 CM3540 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.

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 Service Department for recommendations or instructions on how these options can be implemented.

1.4 CM3540 Controller Overview

Desert Aire's CM3540 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 set points and time schedules.

2. LW Controller Details (Figure 1)

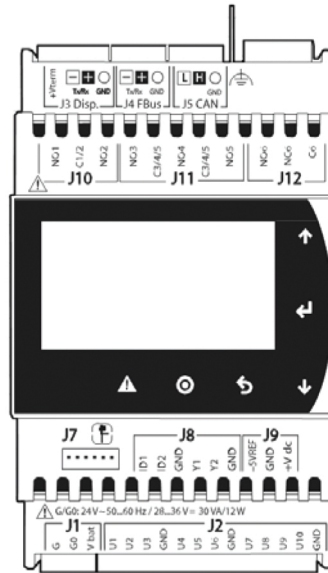


Figure 1

2.1 Menu Overview and General Instructions (Figures 2 and 3)

Your Desert Aire CM3540 Controller is pre-programmed and configured at the factory for use in the application specified. The internal display (IDT – Figure 1) allows the operator to monitor the operation and adjust the set points of your Desert Aire LW dehumidifier.

The IDT has an LCD screen and six keys. The keys from left to right are:







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

Figure 2

The Home Screen (Figure 2) displays the Desert Aire logo and shows the dehumidifier status, zone temperature and relative humidity, it also shows the operational state of the fan, compressor and air heating. The unit type and tonnage is displayed in the upper right of the screen. 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 set points 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.

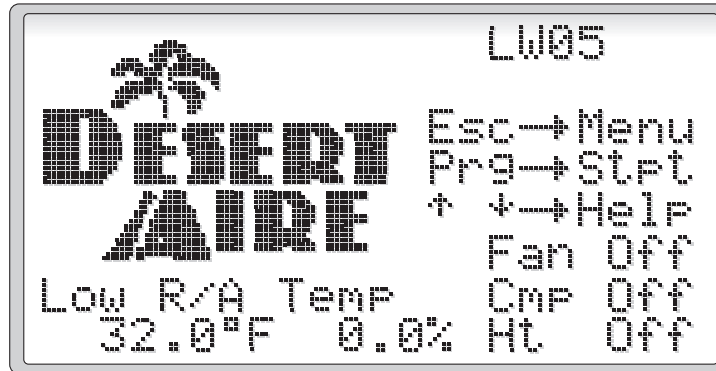


Figure 3

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** or **DOWN** keys.

If set points 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 will be 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 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 terminal display will return to the Home Screen.

2.2 Zone Setpoints (Figure 4)

Pressing the **Prg** key from the Home Screen displays the ACTIVE ZONE SETPOINTS (Figure 4). This menu displays the current temperature and humidity setpoints specific to the unit. The setpoints displayed are from one of the following options; the standard setpoints adjustable in the unit, the setpoints from a Lead Unit, or the setpoints from a BMS network. If the unit is a DriCure unit, the setpoints may also come from the DriCure schedule.

Pressing the **DOWN** key will display one of the screens shown in Figures 5,6,7.

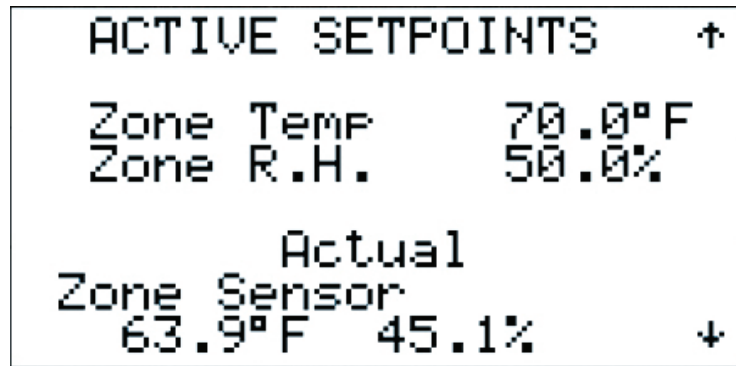


Figure 4

If the unit is set up to use the standard setpoints particular to the unit pressing the **DOWN** key will display the screen in Figure 5. On this screen the Zone Temperature and Humidity Setpoints are adjustable. If Setback has been enabled, the Unoccupied Zone Temperature and Humidity Setpoints are also adjustable on this screen.

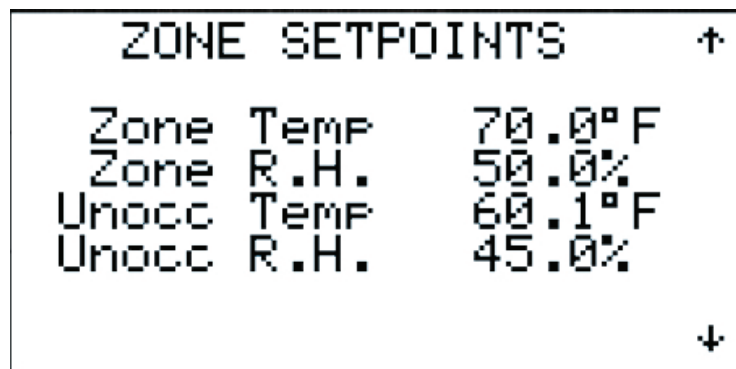


Figure 5

If the unit is set up to use the Lead Unit's setpoints, pressing the **DOWN** key will display the screen in Figure 6. Here the Lead Unit's setpoints are displayed, and can only be changed from the Lead Unit.

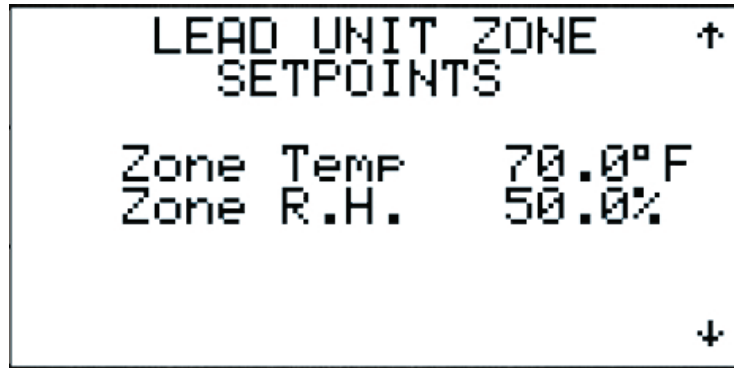


Figure 6

If the unit is set up to use setpoints sent by a BMS system, pressing the **DOWN** key will display the screen in Figure 7. Here the Network Zone Temperature and Humidity Setpoints are adjustable from this screen. If Setback has been enabled, the Unoccupied Zone Temperature and Humidity Setpoints are adjustable from this screen. These setpoints will also be adjustable through Modbus or BACnet protocol depending on the BMS option selected.

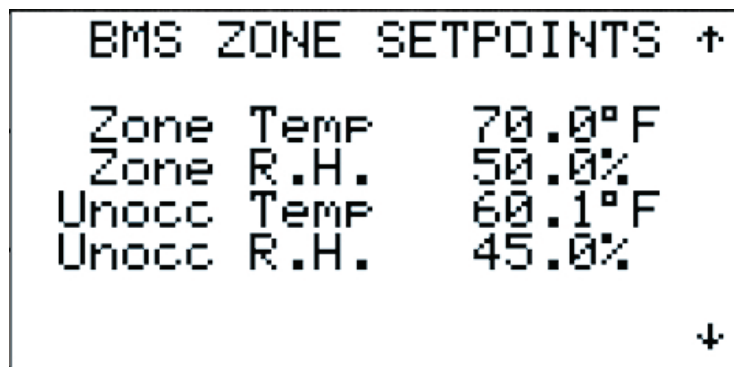


Figure 7

If the unit is a DriCure unit and has the DriCure Schedule set up, the **DOWN** key will have no function. Instead the ACTIVE SETPOINTS screen will look like the screen in Figure 8. The Zone Temperature and Humidity Setpoints will be adjustable in the DriCure Setpoints menus, and displayed on this screen. The screen will either say "Schedule Active", or display which period the schedule is on. Press the **Esc** key to return to the MAIN MENU.

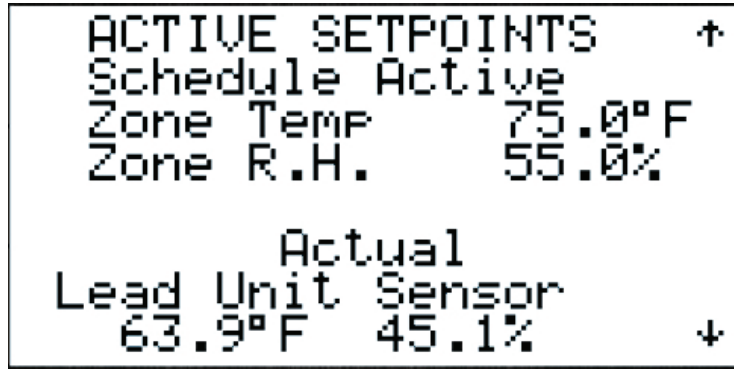


Figure 8

2.3 Main Menu (Figure 9)

Pressing the **Esc** key from the Home Screen displays the MAIN MENU (Figure 9). This menu allows the operator to view the Unit Status screens, set the Occupancy Schedule, enter the Service Menu, and view the Unit Revision.

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

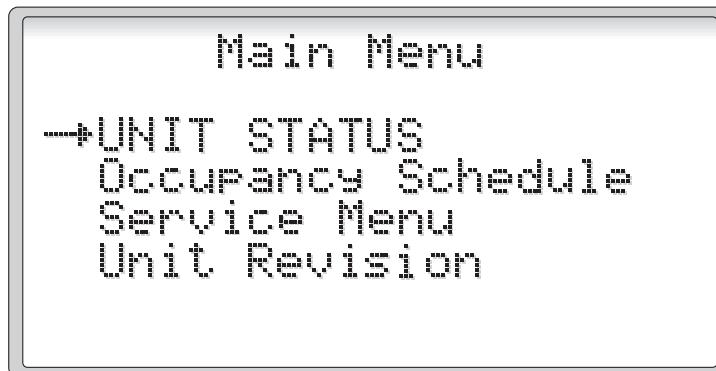


Figure 9

If the unit is a DriCure the MAIN MENU will look like Figure 10. The same options are available as Figure 5, with the addition of the DriCure Scheduler at the bottom.

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

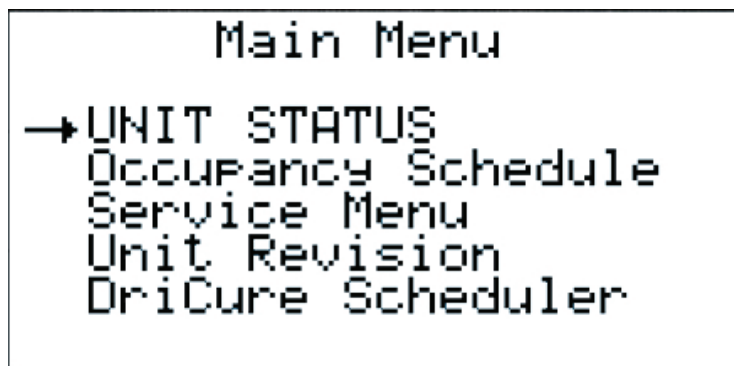


Figure 10

2.3.1 Unit Status (Figure 11)

Selecting Unit Status from the MAIN MENU displays a text explanation of the unit. On the first line of this screen if a remote condenser is available, the screen displays “RC Available”. If no remote condenser is available, the screen displays “RC Unavailable”. 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 Airflow
- Defrost Cycle
- Low R/A Temp
- ExV Init
- Surface Dehum
- Factory Test

The fourth line will display if the compressor is on or off. The fifth line will indicate if the compressor is waiting for its no-short cycling timer to time out and the time left before a restart is available. The very bottom of this screen is the current time and date set in the unit controller.

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

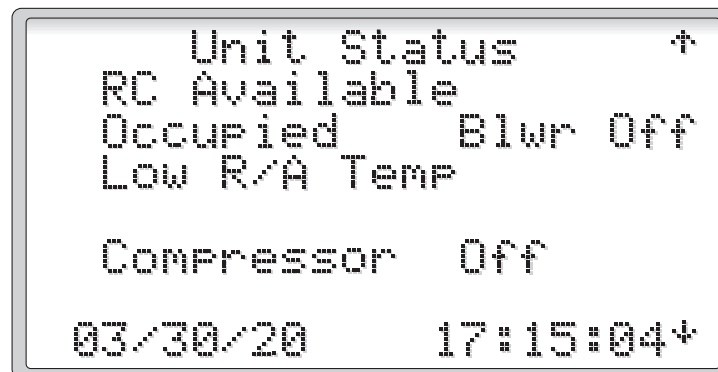


Figure 11

2.3.2 ExV Status (Figure 12)

Pressing the **DOWN** key from the UNIT STATUS screen displays a text/numerical explanation of the unit’s refrigeration system. On the first line of this screen the Superheat and Sub-Cooling values are displayed. In the lower right corner of the screen the following values are displayed from top to bottom; Suction Pressure,

Suction Temperature and Evaporation Temperature. In the lower left corner of the screen the following is displayed from top to bottom; Valve Steps, Valve % Open, Valve Status and Valve Emergency Controls Status.

The Valve Status can be one of the three values:

- “---” – Value is not initialized (Unit Size not set)
- “On” – Value is operating
- “Off” – Value is Standby

The Valve Controls Status can be one of the four values:

- “Low SH” – Low Superheat Controls
- “LOP” – Low Operating Pressure Controls
- “MOP” – High Operating Pressure Controls
- “Hi TCond” – High Condensing Temperature Controls

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

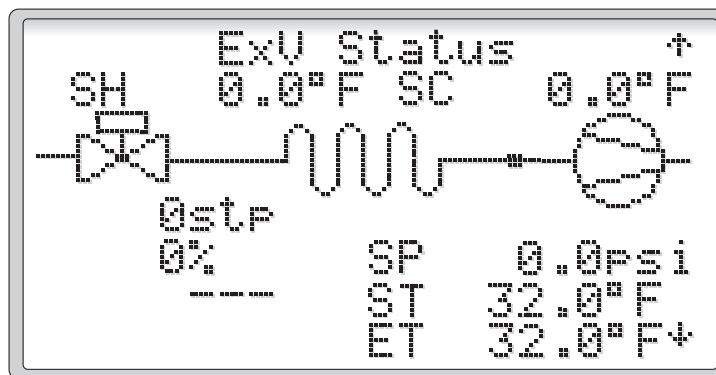


Figure 12

2.3.3 Occupancy Schedule (Figure 13)

Select the OCCUPANCY SCHEDULE from the MAIN MENU to enable a schedule to place the dehumidifier in the occupied mode. See Figure 12. 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.

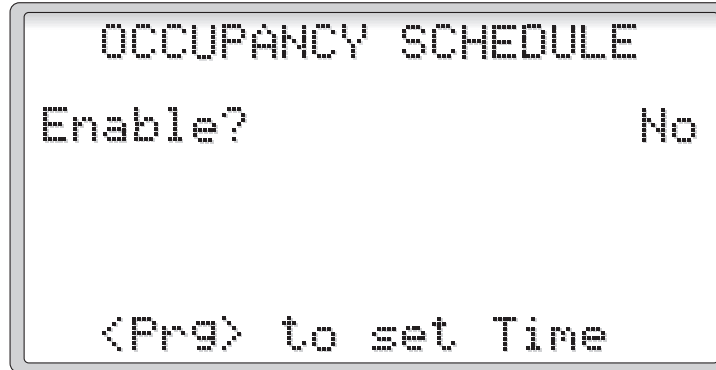


Figure 13

2.3.3.1 Time Settings (Figure 14)

This screen set 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. At the bottom of this screen the time zone can be selected and set from listed options.

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

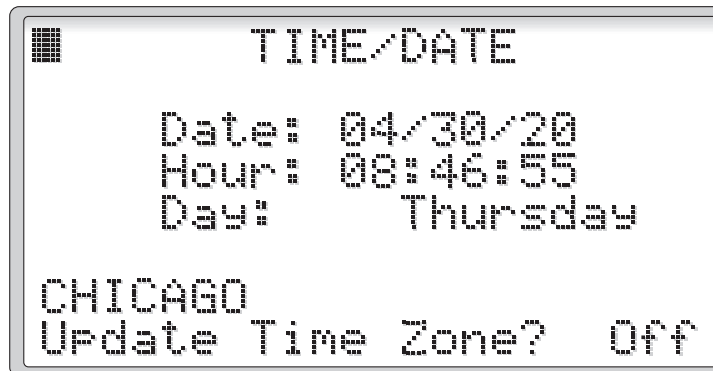


Figure 14

2.3.3.2 Daily Events (Figure 15)

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 date at the bottom of this screen by selecting 'Yes' and pressing **ENTER**.

Once a day is entered these settings can be copied on any other day by selecting a 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.

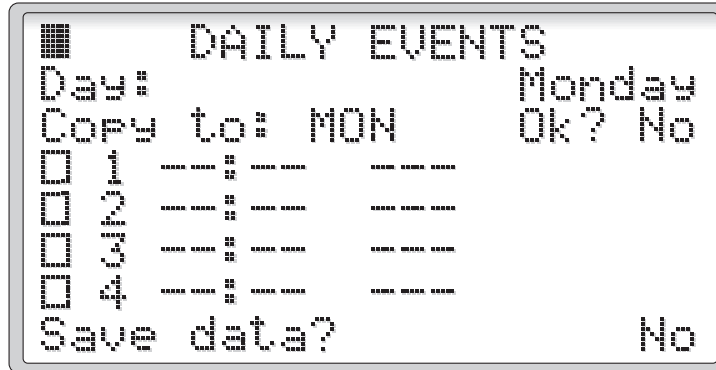


Figure 15

2.3.3.3 Vacation Periods (Figure 16)

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.

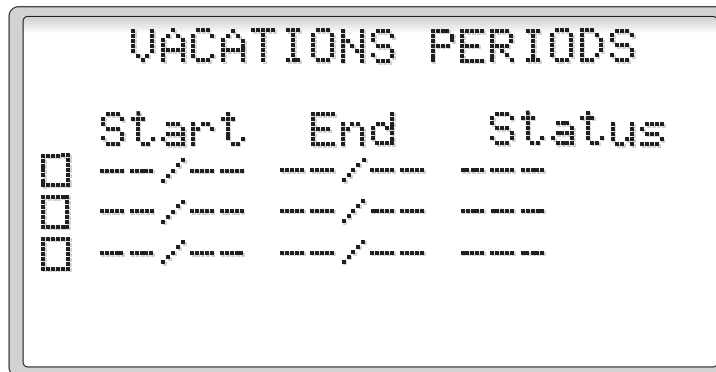


Figure 16

2.3.3.4 Special Days (Figure 17)

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.

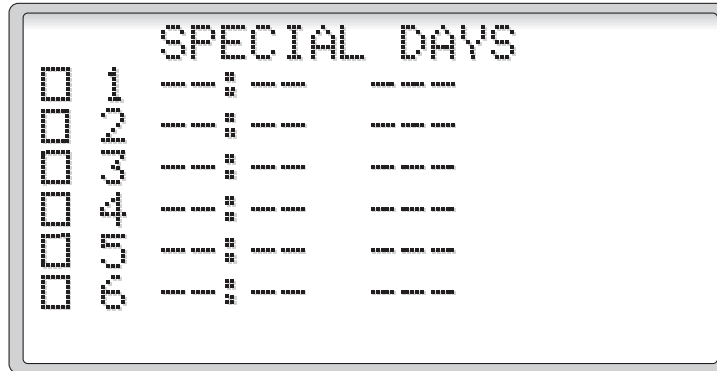


Figure 17

2.3.3.5 Temporary Occupancy (Figure 18)

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 in the temporarily 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.

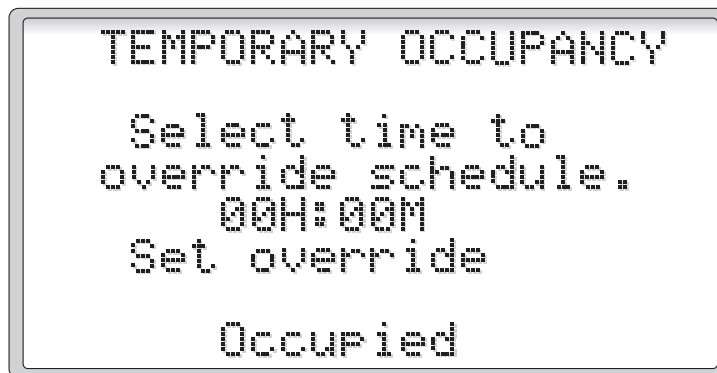


Figure 18

2.3.4 Service Menu (Figures 19 and 20)

Selecting the SERVICE MENU will display the Login Screen (Figure 19). Enter the service password, 1234 and press **ENTER**.

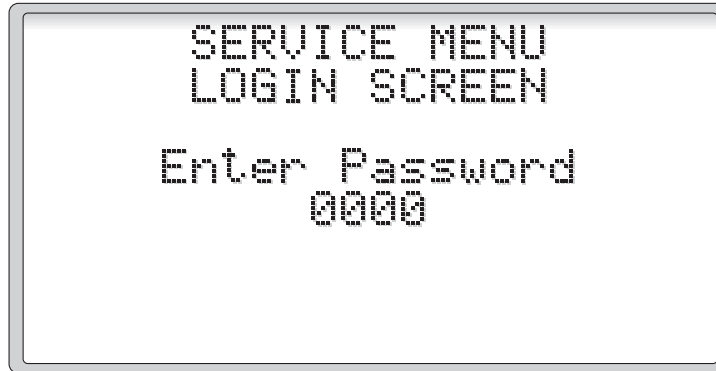


Figure 19

The SERVICE MENU gives access to Commissioning, Tuning, I/O Status, Sensor Offsets, Diagnostics, Memory Options and Clear Overrides (Figure 20).

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

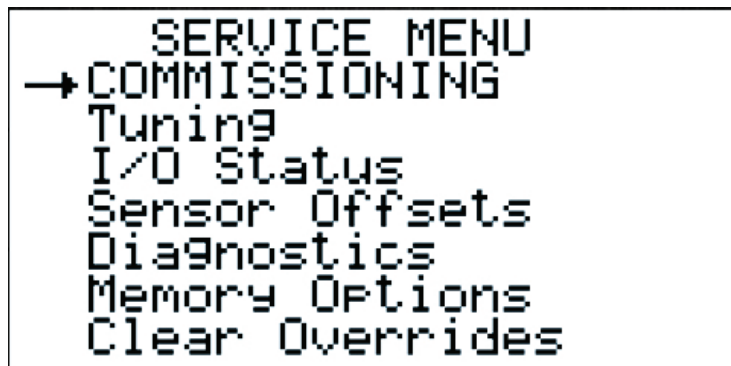


Figure 20

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 is shown, Press the **Prg** key.

2.3.4.1 Commissioning (Figure 21)

Selecting COMMISSIONING from the Service Menu displays the COMMISSIONING MENU (Figure 21). This menu allows the operator to select the Configuration, Network Config, Airflow Setup, Current Conditions, Commissioning Tests, Motor Phasing and BMS Setup.

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

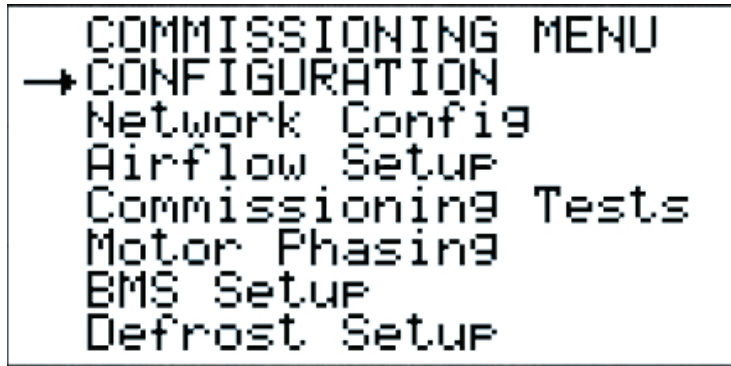


Figure 21

2.3.4.1.1 Configuration - Blower Setup (Figure 22)

Selecting the CONFIGURATION from the Commissioning Menu displays the BLOWER SETUP screen (Figure 21). 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.

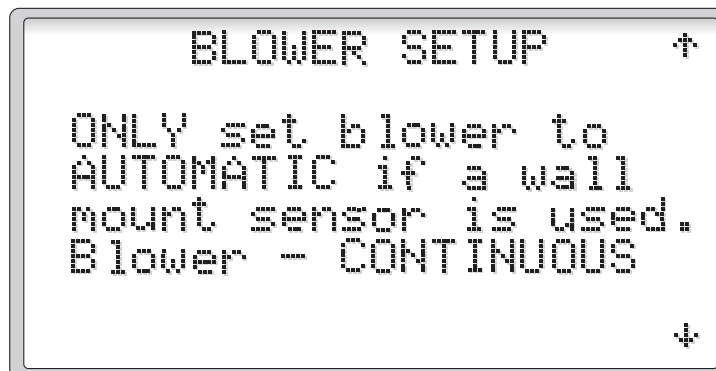


Figure 22

2.3.4.1.2 Configuration - Condenser Setup (Figures 23 and 24)

Pressing the **DOWN** key will now display the CONDENSER SETUP screen (Figure 23 or 24). If the unit has no provisions for a cooling condenser, the condenser screen will appear as Figure 23 stating 'No RC Installed'. In this case the compressor will only be allowed to run if dehumidification is required and cooling is not required. To allow the compressor to run whenever dehumidification is required, press the **ENTER** key, select 'Restrict Dehum' and change this to 'Allow Dehum'. Please note that in this case, overheating the space may occur or cause safety devices to trip. If this occurs, contact Desert Aire's Service Department at (262) 946-7400.

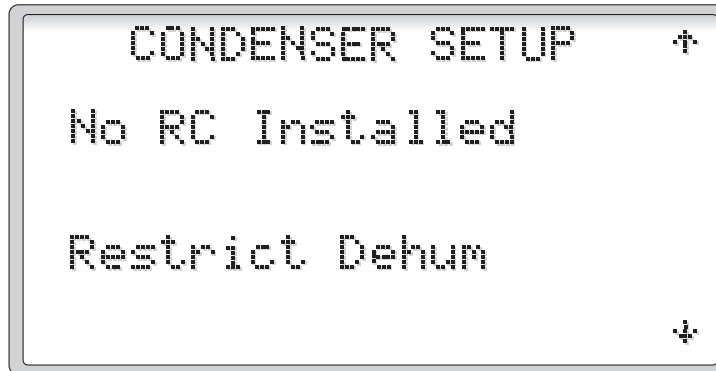


Figure 23

In the case where the dehumidifier has provisions for a remote condenser, but the condenser is not yet connected, the Condenser Setup screen will appear as Figure 24. After the Remote Condenser has been attached and is ready for use, select the 'Disabled' setting and modify it to 'Enabled'. Doing this will cause the 'Restrict/Allow Dehum' option to disappear.

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

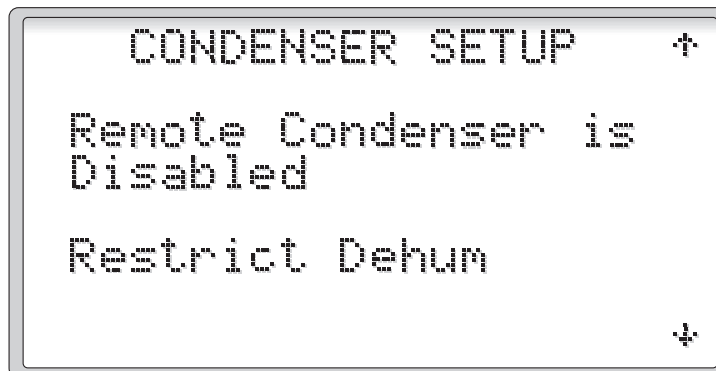


Figure 24

2.3.4.1.3 Configuration Zone Sensor Select

Pressing the **DOWN** key will now display the ZONE SENSOR SELECT screen (Figure 25). This screen allows the user to select where the unit will receive its Zone Sensor data. If a zone sensor is connected directly to the unit all selections should be left unchecked. If the unit will share a sensor with a Lead Unit, the “Use Lead Unit Sensor” box must be checked. If communication fails between Lead & Lag units, a message at the bottom will state “Lead Unit MB FLT”. If the unit will receive zone sensor data from a BMS system the “Use BMS Sensor” box must be checked.

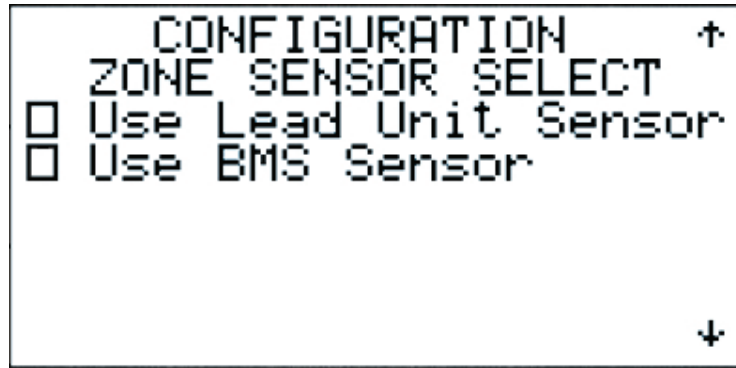


Figure 25

If BMS sensor is selected an option to enable a BMS Heartbeat and set a Heartbeat Delay will be displayed as shown in Figure 26. The Heartbeat is a BMS Boolean point that will need to be toggled On & 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 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).

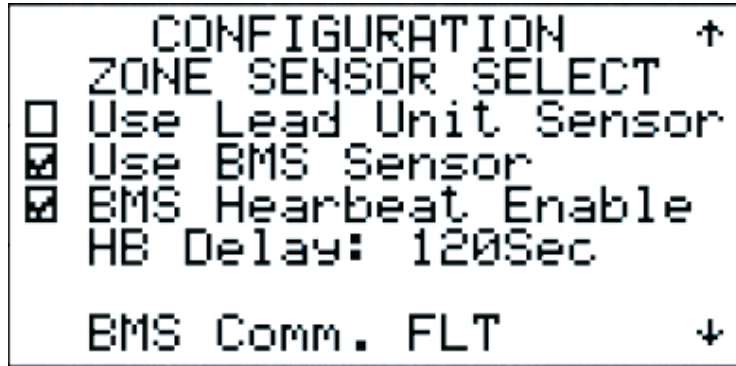


Figure 26

2.3.4.1.4 Configuration Zone Setpoint Select

Pressing the **DOWN** key will now display the SETPOINT SELECT screen (Figure 27). This screen allows the user to select where the unit will receive its Zone Temperature and Humidity Setpoints. If the unit will use the setpoints on the Zone Setpoints screen from the local display, all selections should be left unchecked.

If the unit will receive its setpoints from a Lead Unit, the “Use Lead Unit Stpts” box must be checked. The unit will then show the setpoints of the Lead unit. Any adjustments to the setpoints must be done from the Lead unit.

If the unit will use setpoints sent from a BMS communication system, the “Use BMS Stpts” box must be checked. The unit will then receive setpoints from either the BACnet or Modbus protocols.

If the unit is a DriCure unit, the display will have a DriCure Schedule option. If the “DriCure Schedule” option is selected the program will allow for several sequential setpoints for programmed durations to be set within the DriCure Schedule screens. See DriCure Schedule section for details on setting setpoints and durations.

Towards the bottom of the screen a checkbox for Allow Setback is adjustable. If the Allow Setback box is checked the unit will use both Occupied and Unoccupied Zone setpoints.

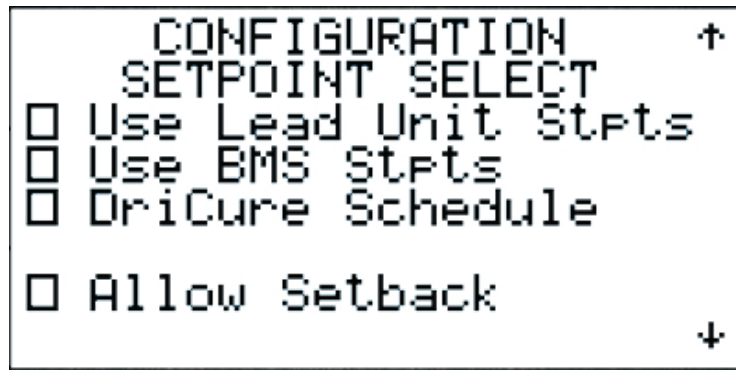


Figure 27

2.3.4.1.5 Network Config

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 28. From this screen, the IP address of the unit can be set to either DHCP On or to a static IP address.

The settings here should be coordinated with the building controls contractor.

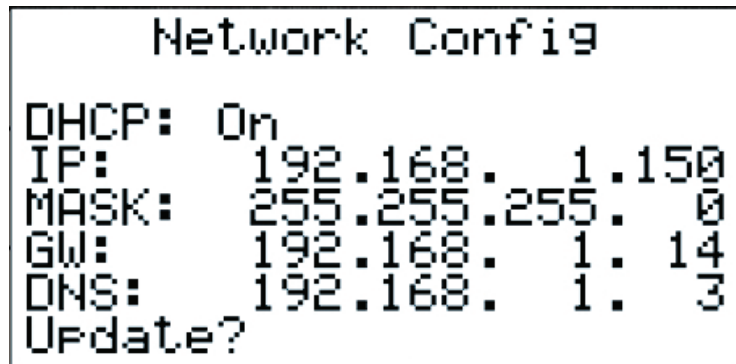


Figure 28

Pressing the **DOWN** key at the top of the Network Config screen will show the HOSTNAME screen. The HOSTNAME screen allows the user to adjust the unit's hostname (defaulted to "dhu1"). Each unit on a network should have a unique hostname. It is recommended that this hostname be the same as the unit tag or other unique identifier already associated with the specific unit.

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 is adjusted to the desired value the “Set Hostname” box must be checked. After the checkbox clears, the “Get Hostname” box must be checked to verify that the controller has been set to the adjusted hostname. The current hostname of the unit will be displayed towards the bottom of the screen.

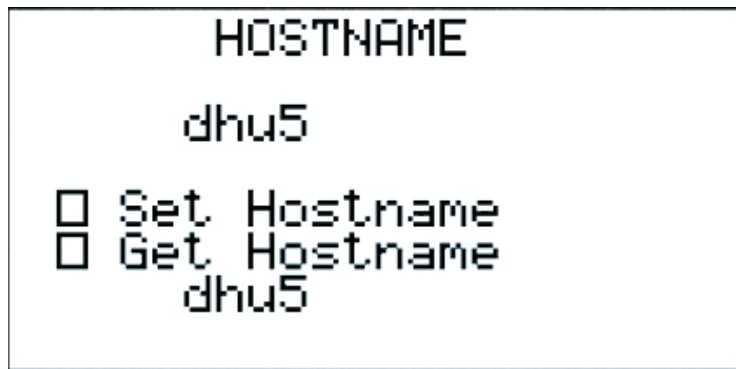


Figure 29

Pressing the **DOWN** key when at the top of the HOSTNAME screen will take you to the LEAD UNIT HOSTNAME screen. The LEAD UNIT HOSTNAME screens allows the user to enter the host name of the lead unit. If the current unit is a lead unit or will not have Lead-Lag operation, this screen is not applicable and should not be adjusted. The 8-character string at the top of the screen is adjustable and must be set to the Lead Unit hostname. Directly below is an indication of the lead unit hostname for this controller.

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

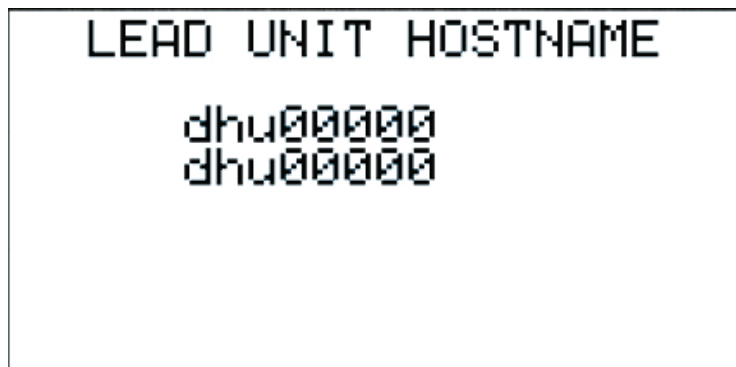


Figure 30

2.3.4.1.6 Airflow Setup (Figure 31)

Selecting the AIRFLOW SETUP from the Commissioning Menu will display either the screen shown in Figure 31 or Figure 32.

If the unit has a centrifugal housed blower the screen of Figure 31 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.

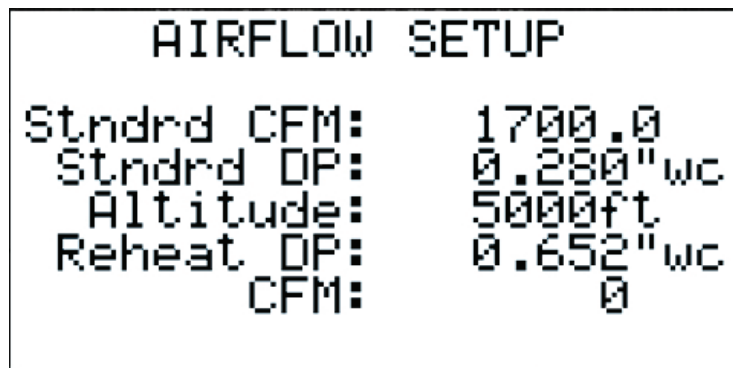


Figure 31

If the unit has a plenum fan, the screen of Figure 32 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.

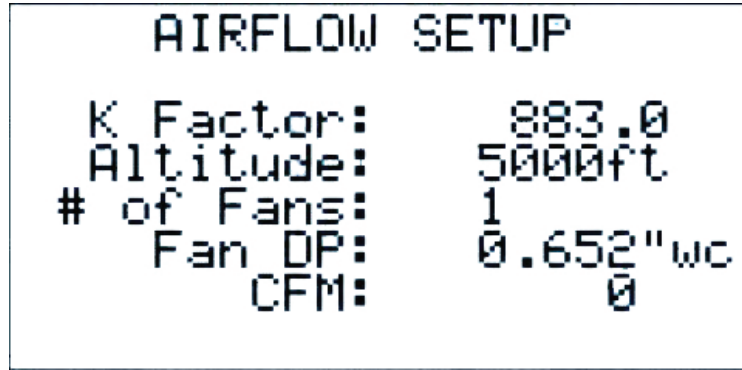


Figure 32

If the Outside Air option has been installed, press the **DOWN** key from the AIRFLOW SETUP screen to display the Outdoor Air Damper Setup screen shown in Figure 33. Here the Outdoor Air Damper Occupied and Un-Occupied positions can be set. The Manual override can be enabled here as well as setting the Manual position. At the bottom of the screen the Outdoor Air Damper position is displayed.

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

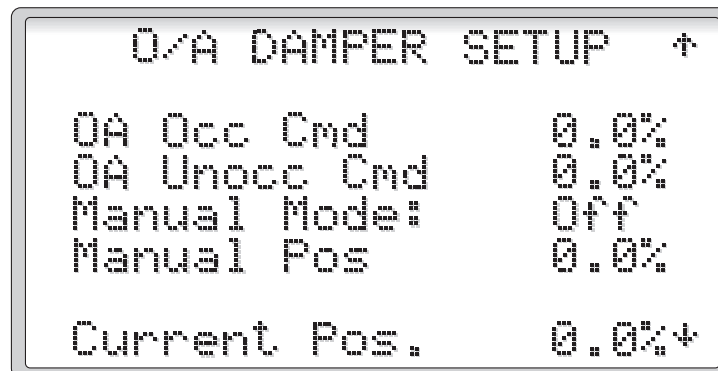


Figure 33

Pressing the **DOWN** key from the O/A DAMPER SETUP will display the EVAP DAMPER SETUP shown in Figure 34. The Evaporator Bypass Damper will modulate to hold a specific air differential pressure drop across the Evaporator coil. The Evaporator Differential Pressure Set Point is adjustable on this screen. Right below the adjustable set point is the actual differential pressure drop across the Evaporator Coil. The Manual Mode Enable and the Manual Position are adjustable towards the bottom of this screen. At the very bottom of the screen the Evaporator Bypass Damper Current Position is displayed.

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

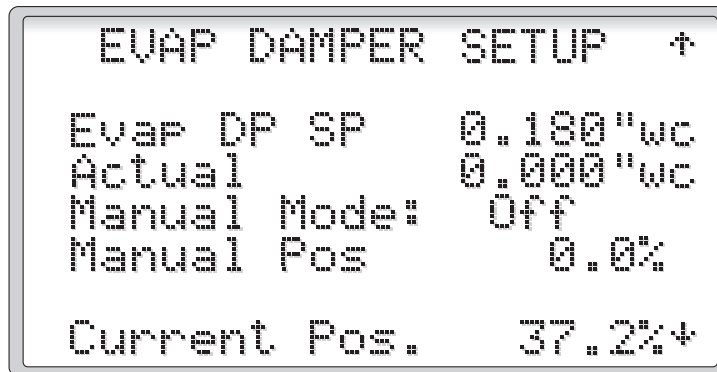


Figure 34

2.3.4.1.7 Commissioning Tests (Figures 35 - 37)

Selecting the COMMISSIONING TESTS from the Commissioning Menu displays the COMMISSIONING TEST screens. The Reheat and Remote or Cooling will have a separate test screen (Figures 35 and 36 respectively). Select the condenser to test and override it by setting the Override to 'On'. Insure 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.

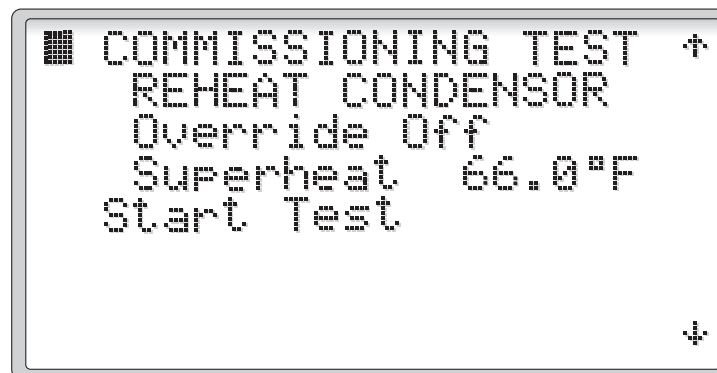


Figure 35

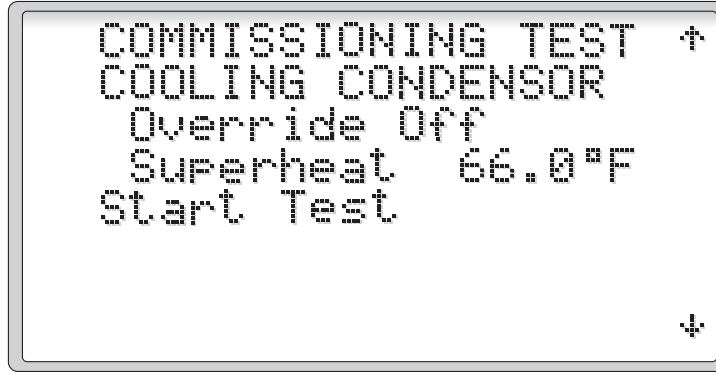


Figure 36

Pressing the **DOWN** key will cycle through the available condensers to test, and the last screen shown will be the Air Heating screen (Figure 37). 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.

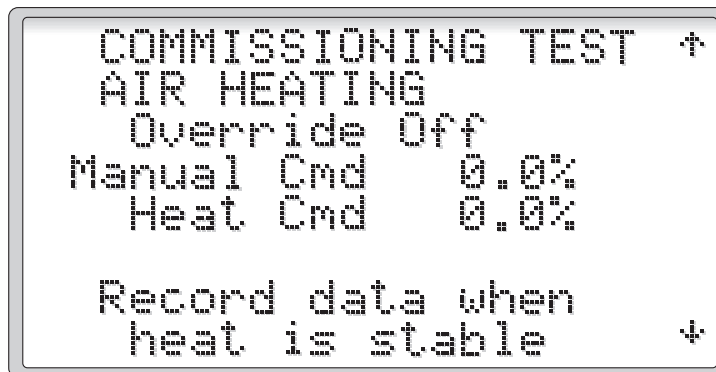


Figure 37

2.3.4.1.8 Motor Phasing (Figure 38)

Selecting the MOTOR PHASING from the Commissioning Menu displays the MOTOR PHASING screen (Figure 38). 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 current compressor rotation.

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

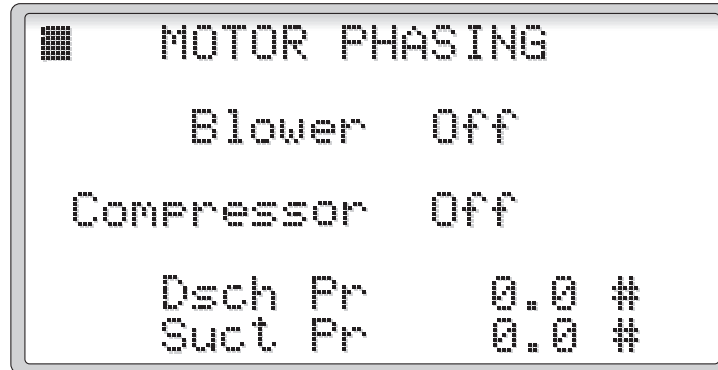


Figure 38

2.3.4.1.9 BMS Setup (Figures 39 - 43)

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 40. 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 41. This screen will allow BACnet data to be used.

Pressing the **DOWN** key will also display the Ethernet protocol selection, Figure 42. Setting the Ethernet port for BACnet IP will allow the screen in Figure 41 to be displayed. This allows the Device ID and Port to be set. Pressing the **DOWN** key once more displays the Ethernet Network Configuration, Figure 42. The unit default is DHCP.

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.

```
PORT J3 SETUP ↑
Set to PGD Display

Reboot after changes ↓
```

Figure 39

```
J3 MODBUS RTU SETUP ↑

Address      7
Baudrate    4800
8 Data Bits
Parity NONE
2 Stop Bits
Reboot after changes ↓
```

Figure 40

```
J3 BACNET MS/TP ↑

Station Add.  0
Baudrate     4800
Max Master   127
Device ID    0000
Reboot after changes ↓
```

Figure 41

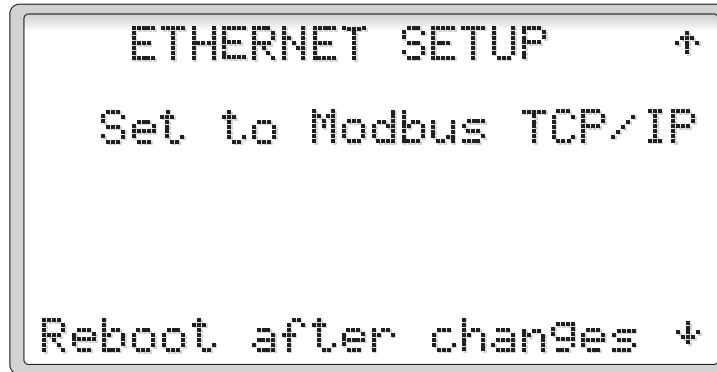


Figure 42

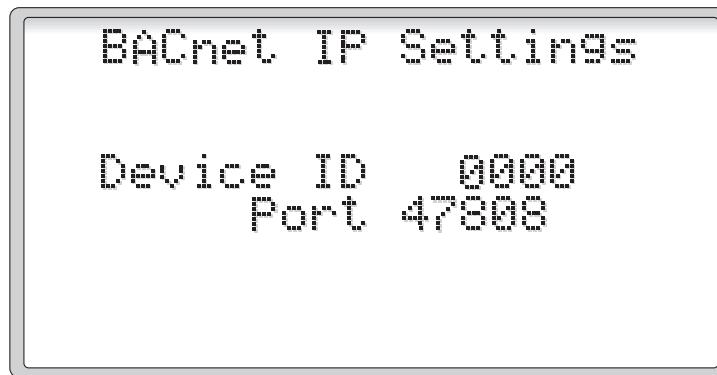


Figure 43

2.3.4.2 Tuning - Dead Bands (Figure 44)

Selecting TUNING from the SERVICE MENU displays the DEADBANDS screen, (Figure 44). The defaults settings for the deadbands 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 set point that enables the aux heating output. It is also the heating set point for the Air Heating PID loop. The Cooling Deadband value is added to the Zone Temperature Setpoint. This value is the cooling set point. When the zone temperature exceeds this value, the refrigeration system is required to be used for zone cooling. The Dehum Deadband value is added to the Zone Relative Humidity Setpoint. This value is the dehumidification set point. When the zone relative humidity exceeds this value, the refrigeration system is required to be used for zone dehumidification.

To modify settings, press the **ENTER** key, and use the arrow keys until the desired value is shown. Press the **ENTER** key to accept the set point value.

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

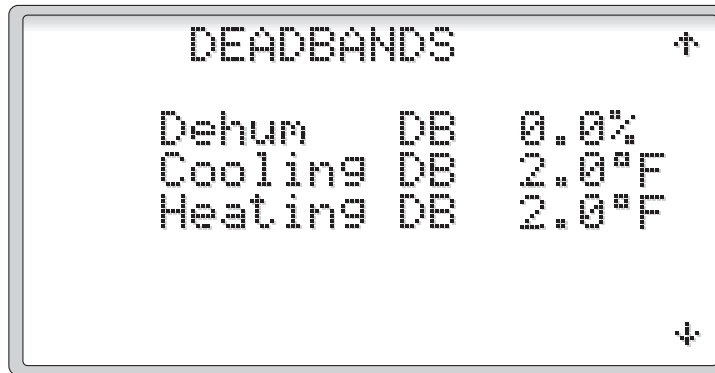


Figure 44

2.3.4.2.1 Tuning - Differentials (Figure 45)

Pressing the **DOWN** key will now display the DIFFERENTIALS screen (Figure 45). 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 0.0% to 9.9%.

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 the value.

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

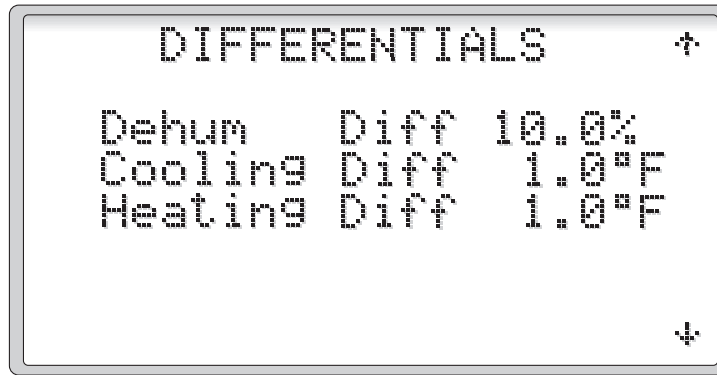


Figure 45

2.3.4.2.2 Tuning - Air Heating (Figure 46)

Pressing the **DOWN** key will now display the AIR HEATING screen (Figure 46). This screen shows the state of the air heat and the associated set points and temperatures. Press the **DOWN** key for the next Tuning screen.

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

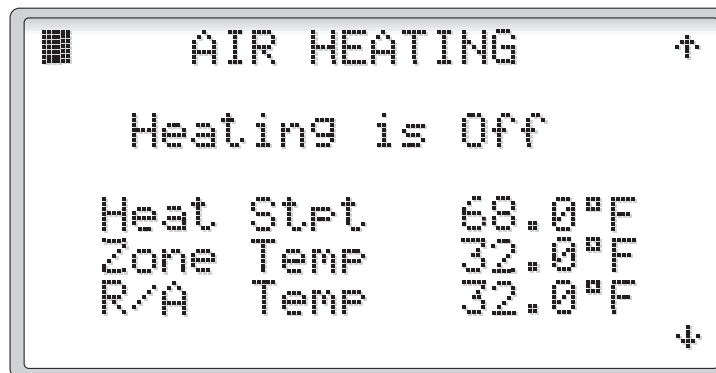


Figure 46

2.3.4.2.3 Air Heating (Figure 47)

Pressing the **DOWN** key will now display the settings of the Air Heating PID loop. These settings control the modulating heat 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.

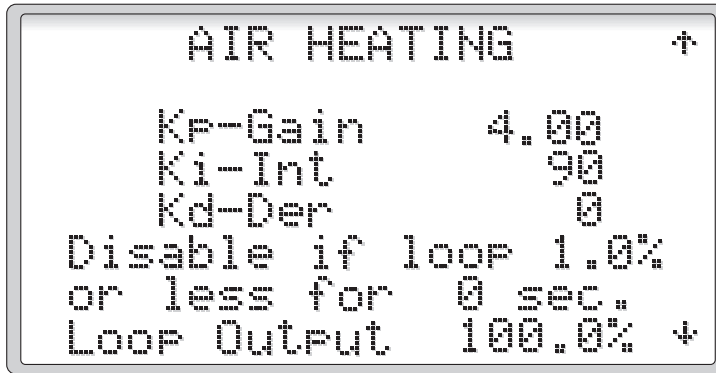


Figure 47

2.3.4.3 I/O Status (Figure 48)

Selecting the I/O Status from the SERVICE MENU displays the Digital Inputs, Analog Inputs, Digital Outputs and Analog Outputs selection menu (Figure 48). 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.

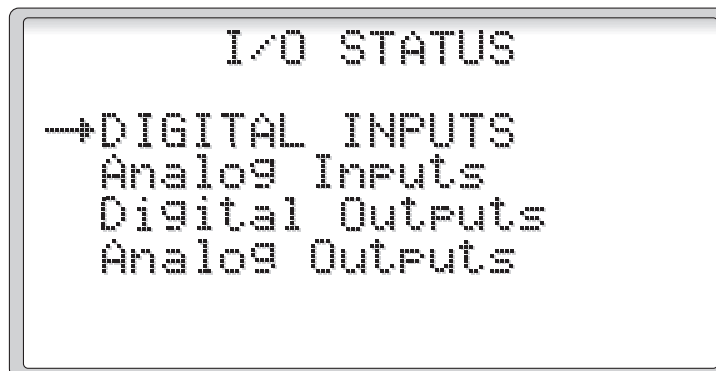


Figure 48

2.3.4.3.1 Digital Inputs (Binary) (Figure 49)

The Digital Inputs screen shows the state of the digital contacts used by the control system. These screens are provided for troubleshooting of 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 the contact is open.
- The second line will show the status of U9, the compressor motor starter overload contacts. "OK" if the contact is closed, and "Flt" if the contact is open.
- The third line will show the status of U10, the System

On/Off switch. "On" if the switch is closed, and "Off" if the switch is open.

- The fourth line will show the status of ID1, the smoke alarm contact. "OK" if the contact is closed, and "Flt" if the contact is open.
- The fifth line will show the status of ID2, the Occupancy contact. "On" if the contact is closed, and "Off" if the contact is open.

```
DIGITAL INPUTS

U8      Blower OL  OK
U9      Compressor OL  OK
U10     System On/Off On
ID1     Smoke Alarm OK
ID2     Occupancy On
```

Figure 49

2.3.4.3.2 Analog Inputs (Figures 50 - 52)

The Analog Inputs screens shows the state of the sensors used by the control system. The first screen (Figure 50) shows the zone sensor RH and Temperature conditions on the first two lines. Note that this sensor is a communicating device wired to serial port J4.

The next lines show the readings of the Suction Pressure, Discharge Pressure and Liquid Pressure.

```
ANALOG INPUTS

FB Zone Tmp      32.0°F
FB Zone RH       0.0 %
U1 Suct Pr       0.0Psi
U2 Dsch Pr       0.0Psi
U3 Liq Pr        0.0Psi
```

Figure 50

The second screen (Figure 51) shows the Suction Temperature, Liquid Temperature, Return Air Temperature and the air pressure drop across the Reheat Condenser.

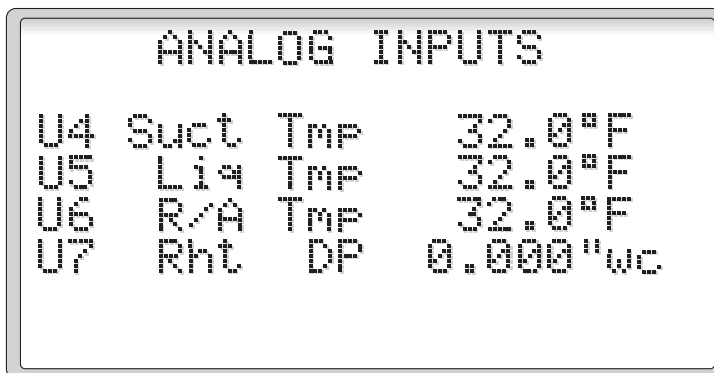


Figure 51

If the unit is equipped with an Outdoor Air option, or a Surface Temperature option, a third screen will be shown (Figure 52). This screen displays the Air Pressure Drop across the Evaporator Bypass Damper and the readings of the Surface Temperature Sensors 1-4 depending on how many were selected.

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

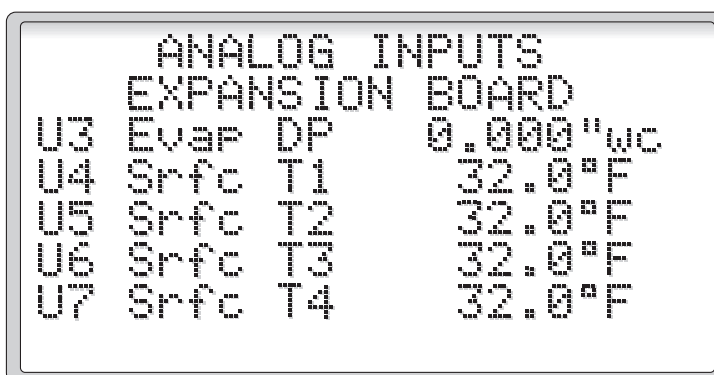


Figure 52

2.3.4.3.3 Digital Outputs (Binary) (Figures 53 - 55)

The Digital Outputs screens shows the state of the device turned on and off by the control system. The first two screens (Figures 53 and 54), shows the state of the relay contacts connected to the controller.

- The first line will show the status of NO1, the Defrost Solenoid (SOL216), "On" and "Off".
- If a Remote Condenser is enabled, the second line will show the status of NO2, the Reheat Solenoid (SOL218), "On" and "Off". If a Remote Condenser is disabled, this line will read "No Reheat Sol".

- The third line will show the status of NO3, the Supply Blower Starter, “On” and “Off”.
- The fourth line will show the status of NO4, the Compressor Starter, “On” and “Off”.
- The fifth line will show the status of NO5, the Liquid Solenoid (SOL223), “On” and “Off”.
- The first and only line on the second screen (Figure 54), shows the status of NO6, the Auxiliary Heat Contact, “On” and “Off”.

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

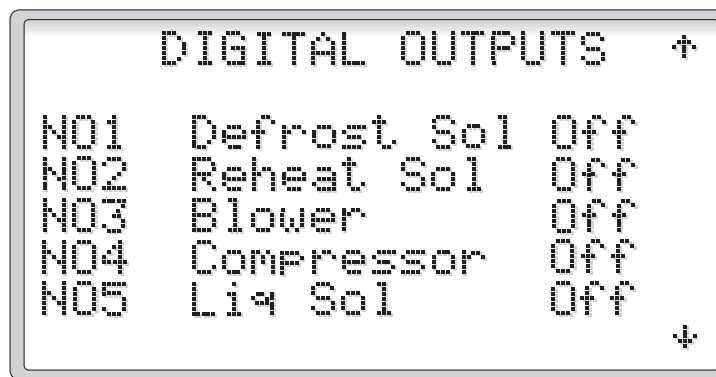


Figure 53

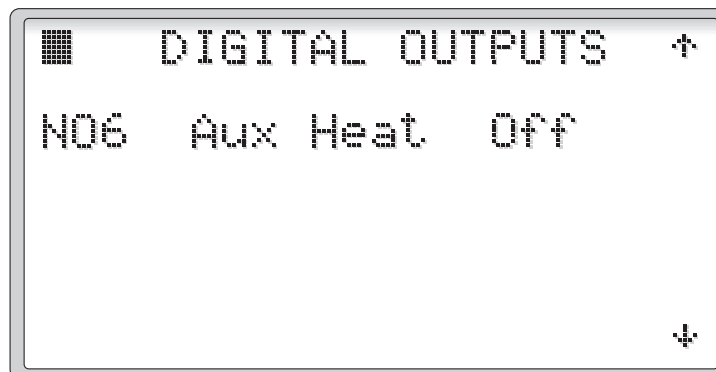


Figure 54

If the unit is equipped with an Outdoor Air option, then there will be a third screen of Digital Outputs (Figure 55), which shows the state of the relay contacts on the expansion module controller.

- The first line will show the status of NO1, the relay contact for a field supplied Exhaust Blower, “On” and “Off”.

- The second line will show the status of NO2, the relay contact for a field supplied Outdoor Air Damper, “On” and “Off”.

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

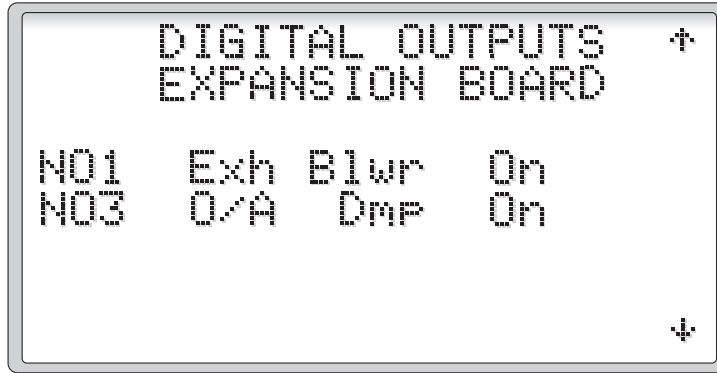


Figure 55

2.3.4.3.4 Analog Outputs (Figures 56 - 57)

This screen is provided for troubleshooting the control system. If the unit has been equipped with Modulating Heat, the Analog Outputs screen will look like Figure 56.

- The only line on this screen displays the output status of Y2, the Air Heat Modulating Command, from 0.0% to 100.0%. If the Modulating Heat has been Disabled this will read as “Mod Ht Off N/A”.

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

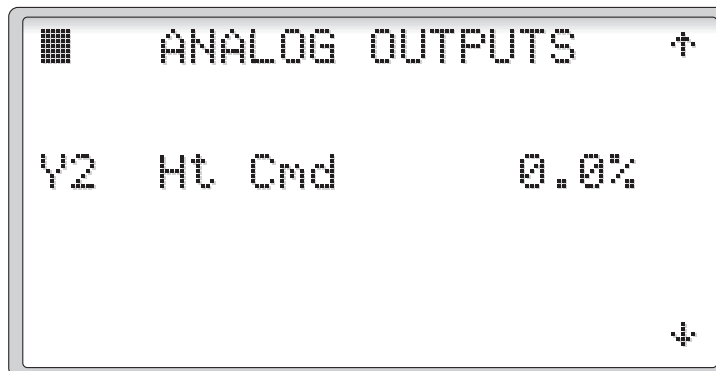


Figure 56

If the unit is equipped with the Outdoor Air Option a second Analog Output screen will be displayed (Figure 57). This screen displays the outputs of the Expansion Board Module.

- The first line of this screen displays the output status of U1, the Outdoor Air Damper Command, 0.0% to 100.0%.
- The second line of this screen displays the output status of U2, the Evaporator Bypass Damper Command, 0.0% to 100.0%.

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

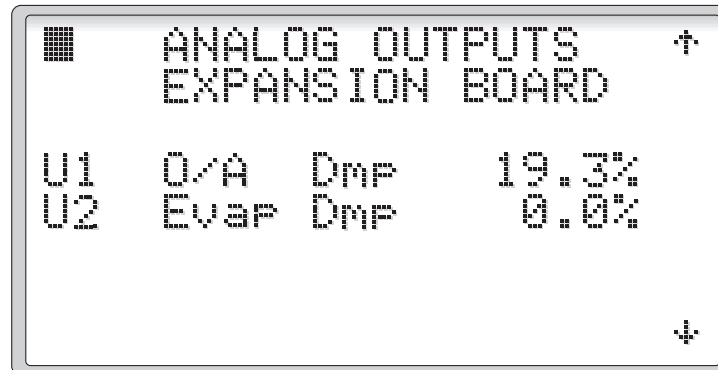


Figure 57

2.3.4.4 Sensor Offsets (Figures 58 - 59)

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 -9.9 to 9.9. 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.

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

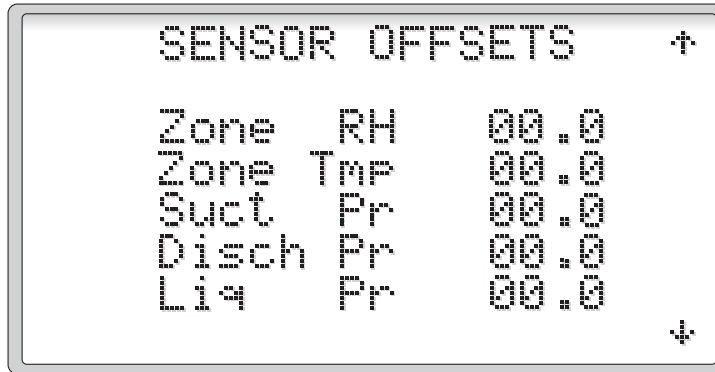


Figure 58

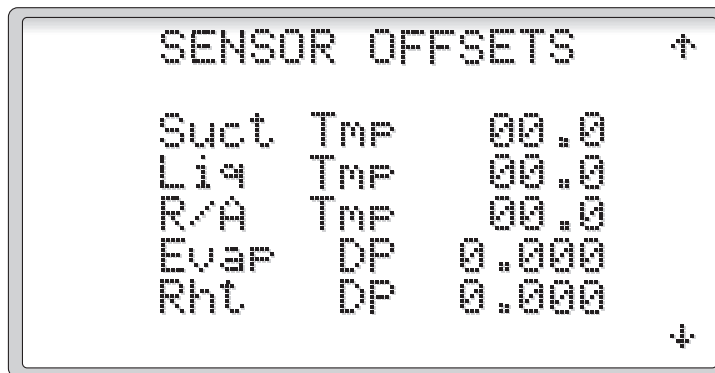


Figure 59

2.3.4.5 Diagnostics (Figures 60 - 62)

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

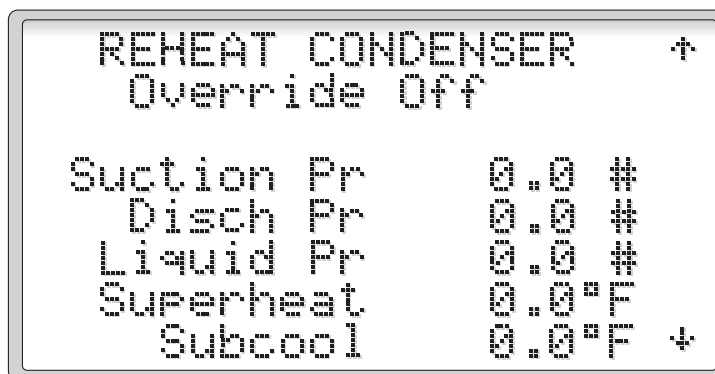


Figure 60

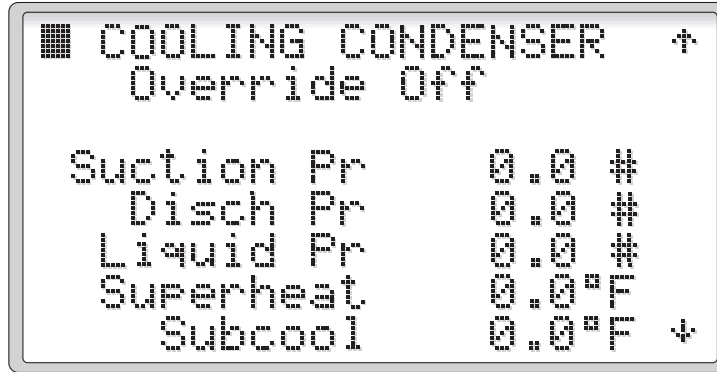


Figure 61

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.

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

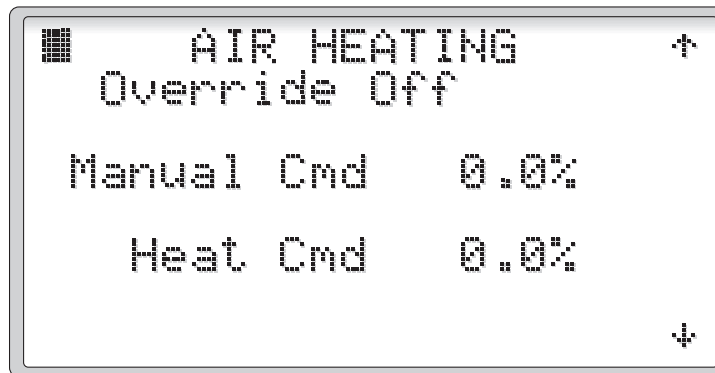


Figure 62

2.3.4.6 Memory Options (Figures 63 - 65)

These screens allow the logging files to be written to a portion of the internal memory space on the controller or a USB Pen Drive. To use, select the memory to write to, if USB Pen Drive, insert a USB Pen 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 these 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 Set Point.txt to either be saved or loaded. After the dehumidifier has been commissioned and is stable, saving the set points allows for these to be reloaded if anything happens to

the controller. To use, select the memory file to write to, if USB Pen Drive insert a USB Pen 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.

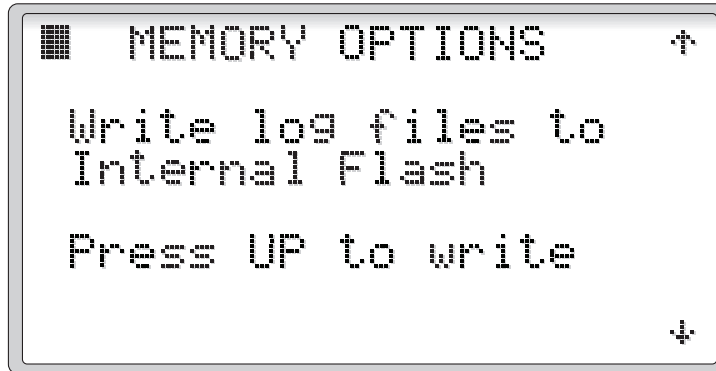


Figure 63

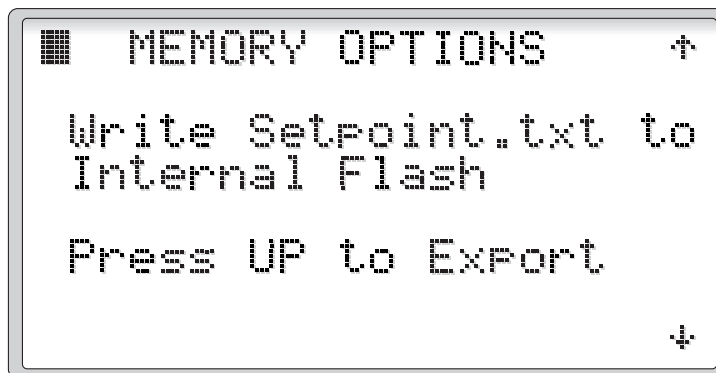


Figure 64

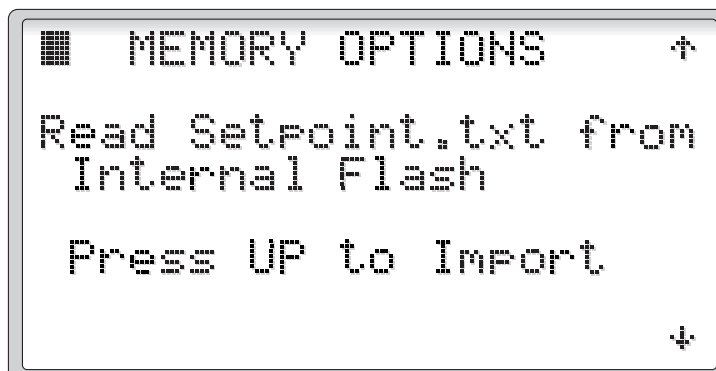


Figure 65

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

2.3.4.7 Clear Overrides

Selecting CLEAR OVERRIDES from the Service Menu will display the screen in Figure 66. From the Clear Overrides screen, any service menu, or factory test overrides can be cleared. Towards the bottom of the screen, the “Clear Overrides” text can be selected and changed to “Clearing...” after this no factory or service tests will be running.

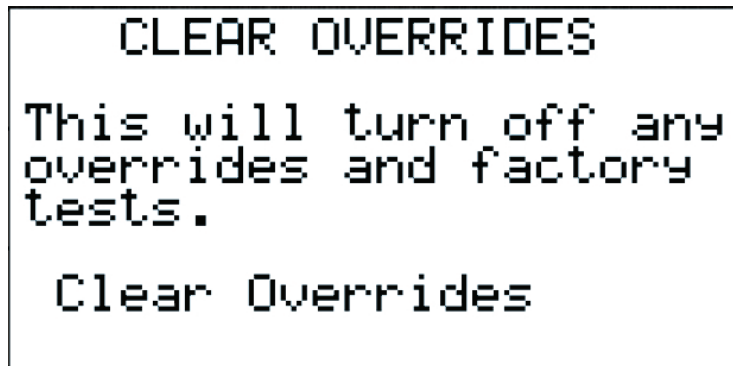


Figure 66

Press the **Esc** key to return to the Service Menu.

2.3.5 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 Service Department in the event a service call is necessary.

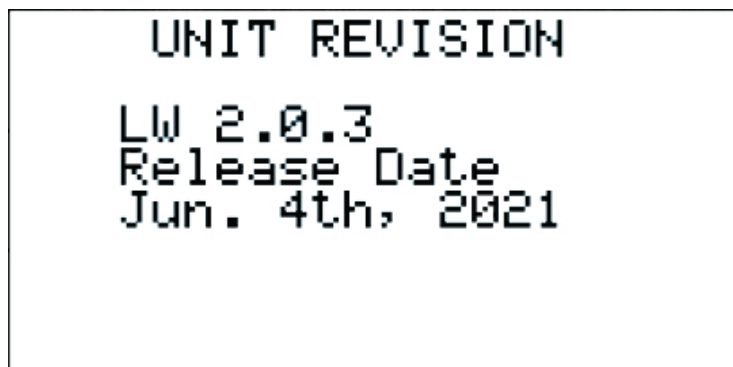


Figure 67

2.3.6 DriCure Setup (Figure 68)

Selecting DRICURE SCHEDULER from the Main Menu will display the screen of Figure 68. This welcome screen will explain the Keystrokes required to access the various parts of the DriCure Menu. Press the **Esc** key to return to the Main Menu.

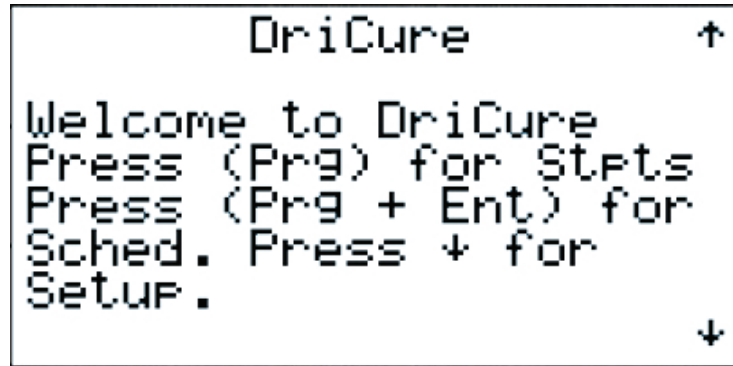


Figure 68

Pressing the **DOWN** key will display the screen of Figure 69. From this DriCure screen the date of Day 1 can be set. This will be the first day of the DriCure schedule. This date can be manually set, or set for the current day by selecting “Set” and changing it to “Setting...”. The transition time can also be set to any time from 0:00 to 23:00. The transition time will be the exact time of day that the schedule will transition from one period to another.

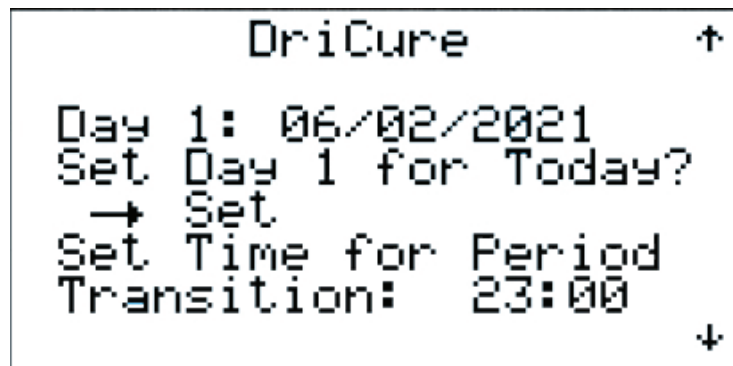


Figure 69

Pressing the **DOWN** key will display the screen of Figure 70. This screen allows the user to reset all the settings of the DriCure Schedule. As displayed on the screen, this will set the Day 1 to the current day, all the durations will become 1 day, and the transition time will be set to 23:00. This can be done by selecting “Reset” and changing it to “Resetting...”.

```

DriCure ↑
Reset will overwrite
all durations to 1
day, set Day 1 to
today, and transition
time to 23:00.

→Reset ↓

```

Figure 70

Pressing the **Prg** key will display the screens of Figures 71 and 72. This screen allows for the adjustment of each period's temperature and humidity setpoints. Press the **Esc** key to return to the DriCure Menu.

```

DriCure Setpoints ↑
  TMP      RH
1: 75.0°  55.0%
2: 70.0°  60.0%
3: 66.0°  58.0%
4: 64.0°  60.0%
5: 64.0°  60.0%
↓

```

Figure 71

```

DriCure Setpoints ↑
  TMP      RH
6: 64.0°  60.0%
7: 64.0°  60.0%
8: 64.0°  60.0%
9: 64.0°  60.0%
10: 64.0°  60.0%
↓

```

Figure 72

Pressing the **Prg + Ent** key will display the screens of Figures 73 and 74. These screens allow for adjustments to each period's duration. The number of days under the "Length" column can be adjusted from a minimum of 1 Day to a maximum of 5 Days. The dates on the right will automatically be calculated based on the duration of days entered. Press the **Esc** key to return to the DriCure Menu.

	DriCure	Schedule	↑
	Length	Mo/Dy	
1:	1 Days	06/02	
2:	1 Days	06/03	
3:	1 Days	06/04	
4:	1 Days	06/05	
5:	1 Days	06/06	↓

Figure 73

	DriCure	Schedule	↑
	Length	Mo/Dy	
6:	1 Days	06/07	
7:	1 Days	06/08	
8:	1 Days	06/09	
9:	1 Days	06/10	
10:	1 Days	06/11	↓

Figure 74

3. Alarm Menu (Figures 75 - 77)

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 75.



Figure 75

When an alarm is triggered, a red LED behind the **ALARM** key will light up, and remain lit until the alarm is reset. If an alarm is present, pressing the **ALARM** key will display a screen similar to Figure 76. 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.

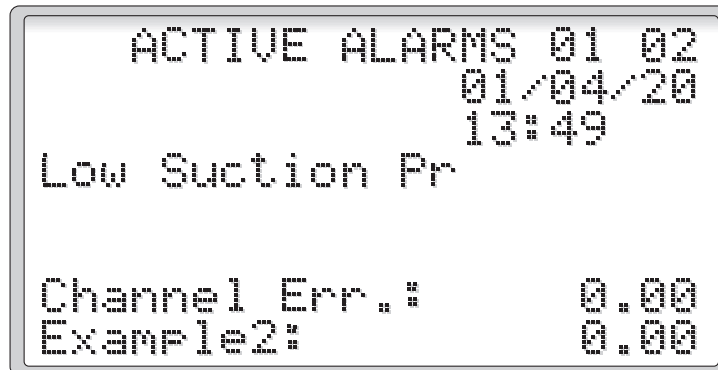


Figure 76

To reset the alarm, use the **DOWN** key until the reset instructions are shown. See Figure 77. Pressing the **ALARM** key for three seconds will reset all active alarms.

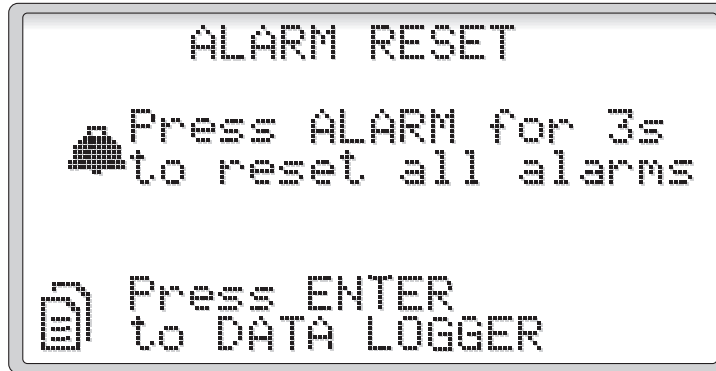


Figure 77

Alarms are either Automatic Reset or Manual Reset. Automatic Reset Alarms are alarms that allow the unit to return to operation once the operating parameter has been returned to an acceptable operating condition. The unit will restart automatically, however, the red Alarm LED will remain illuminated to alert the operator an alarm occurred until acknowledged. Manual Reset Alarms are alarms that stop the unit 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 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.

3.2 Low Suction Pr.

This is a Manual Reset Alarm. This alarm is activated when the suction pressure stays below 5 psig for 5 minutes or longer. The refrigeration circuit will stop, and not restart until the suction pressure rises above 10 psig and the alarm has been cleared.

The Pump Down controls of the compressor ensures that the compressor will not run once the suction pressure falls below 10 psig. A low suction pressure alarm would be indicative of a refrigerant leak somewhere in the system, or a faulty solenoid.

3.3 Discharge Pr.

This is a Manual Reset Alarm. This alarm is activated when the discharge pressure rises above the high pressure cutout point, 400 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.

3.4 Compressor Overload

This is a Manual Reset Alarm. The Compressor Overload alarm is activated when the compressor motor overload device indicates an overload 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.

3.5 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.

3.6 Blower Overload

This is a Manual Reset Alarm. The Blower Overload alarm is activated when the blower motor overload devices 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.

3.7 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.

3.8 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.

3.9 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.

3.10 Alarm Log (Figure 78)

The Alarm Data Logger screen is accessible from the Alarm Reset screen (Figure 78) 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.

```
Alarm Log Record:01  
16:29/01/04/20  
  
Modbus Sensor Fault  
Event:          Start
```

Figure 78

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 Transducers 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 – 625 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 (0-625 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 environment 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 communication 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 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 2.3.4.1.6 for the Ethernet port setup, Figure 42. 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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341 2021/08