Mini dap4
Installation, Operation & Maintenance Manual

Data Aire, Inc.
230 W. BlueRidge Avenue
Orange, CA 92865

www.dataaire.com
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1.0 INTRODUCTION

The Mini dap4 continues the tradition of advanced electronic devices from Data Aire for monitoring and control of computer room air conditioning units which began in 1977. Each generation has provided more accurate monitoring information and flexibility in controlling the unit.

The Mini dap4 offers the definite answer for precision environmental control. The Mini dap4 control system not only controls and monitors temperature, humidity, airflow and cleanliness, but also provides component run times, alarm history and an automatic self-test of the microprocessor. All messages are sequentially displayed on a backlit LCD (liquid crystal display). The Mini dap4 can interface with a variety of building management systems (BMS).

1.1 STANDARD FEATURES

**Stand Alone Panel**: Service terminals or additional devices are not required for programming or monitoring functions

**Microprocessor Based**: 32 bit, 44 MHz Micro controller. State-of-the-Art technology and reliability in a programmable logic control module

**LED Illuminated Keys**: Six highly reliable keys allow movement through the menus

**Backlit Liquid Crystal Display (LCD)**: Information is displayed and presented in a format that is easily viewed and understood

**All Settings are Programmable from the Face of the Panel**: Expedient and user friendly

**Layered and Forward and Backward Menu Access**: Facilitates programming with flexible operation

**USB Port**: Allows download/upload of software

**Multi-Level Password Access**: Controls any unauthorized changes to settings and system functions

**Database of Unit and Room Conditions**: Historical data that facilitates service, apparatus set-up and fine tuning of setpoints

**Factory Programmed Menus**: Menus that pertain to the type and method of cooling, reheat and humidification based on the unit's components and options

**Programmed Settings and Historical Data are Saved in Flash Memory**: Non-volatile memory stored so all control settings and operational parameters are secured indefinitely even during a power outage

**Calibrated Temperature and Humidity Sensors**: Accurate and consistent regulation especially in multiple unit applications

1.2 OPERATIONAL FEATURES (Optional features may require additional components and/or sensors)

**Sequential Load Activation**: Time and temperature based logic that sequentially starts and stops stages of cooling and reheat

**Compressor Short-Cycle Control**: Prevents excessive compressor wear by using restart and anti-cycle limits

**Automatic or Manual Restart**: Restart methods are programmable in the event of a power failure

**Humidity Anticipation**: Modifies the humidity setpoint to reduce excess humidification and dehumidification

**Dehumidification Mode Lockout**: Inhibits dehumidification if not required for system performance

**Start Time Delay**: Programmable time delay staggers the start-up of multiple units to prevent high power demand peaks

**Automatic Compressor Rotation**: Periodically rotates the lead/lag compressor sequence to balance run times
1.3 DIAGNOSTICS AND SERVICE FEATURES

Alarms Displayed in Order of Occurrence: Sequence with time of occurrence assist in diagnosing the cause of alarm(s)

Programmable Delays for Optional Alarms: Reduces nuisance and false alarms caused by temporary or transient conditions

Manual Diagnostics Program: Provides accessible procedures to test the processor and major system components

Adjustable Alarm Limits: Threshold levels for temperature and humidity alarms are programmable

Optional Programmable Alarm Contact: Allows selection of an alarm matrix that will operate the contact

Audio Alarm Tone: Three (3) programmable alarm tones are available

Alarm History: 100 alarms are stored for system follow-up

1.4 CONDITIONS and DATA DISPLAYED

UNIT TYPE: Data Aire model type
TEMPERATURE SETPOINT: Current temperature setpoint (°F or °C)

TIME: Current time (hour/minute)
UNIT ID/ZONE ID: Assigned unit ID and Zone Number*

UNIT STATUS: ON or OFF
TEMPERATURE: Current return air temperature (°F or °C)

HUMIDITY: Current return air humidity (%)
HUMIDITY SETPOINT: Current humidity setpoint (%)

DATE: Current date (month/day/year)
DISCHARGE AIR: Current chilled water temperature (°F or °C)*

CHILLED WATER TEMPERATURE: Current Temperature (°F or °C)*

1.5 FUNCTIONS DISPLAYED

COOLING: 1st stage, 2nd stage*
HUMIDIFICATION: Appears when operating*

DEHUMIDIFICATION: Appears when operating
REHEAT: Appears when operating

CHILLED WATER FLOW: Valve Opening: 0 - 100%

1.6 WARNINGS and ALARMS DISPLAYED

HIGH TEMPERATURE WARNING
HIGH HUMIDITY WARNING
POWER FAILURE RESTART
DIRTY FILTER*
MANUAL OVERRIDE*
MAINTENANCE REQUIRED
HUMIDITY SENSOR FAILURE
CUSTOM MESSAGE*
DISCHARGE AIR SENSOR ERROR*
STANDBY PUMP ON*
HIGH PRESSURE/COMP FAILS COMP 1
HIGH PRESSURE/COMP FAILS COMP 2*
LOW TEMPERATURE WARNING
LOW HUMIDITY WARNING
NO AIRFLOW
FIRESTAT TRIPPED
HUMIDIFIER PROBLEM*
TEMPERATURE SENSOR FAILURE
SMOKE DETECTOR*
FAN MOTOR OVERLOAD*
HIGH CONDENSATE WATER LEVEL
PERSON TO CONTACT ON ALARM
NO WATER FLOW*

For Chilled Water units, 3 optional alarms can be selected
For DX units, single circuit, 2 optional alarms can be selected
For DX units, dual circuits, 1 optional alarm can be selected

* This optional feature or data display may require additional components and/or sensors
1.7 HISTORICAL DATA DISPLAYED

EQUIPMENT RUNTIMES: Blower, compressor 1, compressor 2 (as applicable), reheat, dehumidification, Energy Saver*, humidifier, condenser and chilled water

ALARM HISTORY: Alarm list with time and date of occurrence

LAST 24 HOURS: High and low temperature, high and low humidity

AVERAGE PERCENT OF CAPACITY LAST HOUR: Compressor(s), humidifier, reheat strips and water valve

1.8 PROGRAMMABLE SELECTIONS

<table>
<thead>
<tr>
<th>TEMPERATURE SETPOINT</th>
<th>TEMPERATURE DEADBAND</th>
</tr>
</thead>
<tbody>
<tr>
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<td>LOW TEMPERATURE ALARM LIMIT</td>
</tr>
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<td>HUMIDITY SETPOINT</td>
<td>HUMIDITY DEADBAND</td>
</tr>
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<td>COMPRESSOR SHORT CYCLE ALARM</td>
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<td>POWER RESTART/RESTART MODE</td>
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<tr>
<td>SYSTEM START DELAY</td>
<td>MANUAL DIAGNOSTICS</td>
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<td>MESSAGE FOR OPTIONAL ALARM 1, 2, 3</td>
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<td>DELAY FOR OPTIONAL ALARM 1, 2, 3</td>
<td>TEMPERATURE SCALE</td>
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<td>COMPRESSOR ASSIST TO ENERGY SAVER</td>
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<td>REMOTE ALARM SELECTION</td>
<td>COMPRESSORS</td>
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<td>FIRESTAT TEMPERATURE ALARM LIMIT</td>
<td>HUMIDIFIER</td>
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<tr>
<td>CALIBRATE TEMPERATURE SENSOR</td>
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<td>CALIBRATE CHILLED WATER TEMPERATURE SENSOR*</td>
<td>WATER VALVE MODE</td>
</tr>
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</table>
2.0 GETTING STARTED

The Mini dap4 consists of two main components: the control module and the display panel. The control module is located in the electrical panel. The display panel is remotely mounted. The two are connected by special telephone type cable harness (units may be ordered with longer cables for optional remote wall mounting).

Note: Factory cable is required. This is a custom made cable and must be ordered from Data Aire. A regular telephone cable will not operate.

All data displayed on the display screen originates from the control module. The display panel has a backlit LCD (liquid crystal display). There are six keys on the face of the display panel to retrieve or enter settings.

**Control Module**

**Display Module**

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Alarm" /></td>
<td>Allows viewing of active alarms&lt;br&gt;Silences audible alarms&lt;br&gt;Resets active alarms</td>
</tr>
<tr>
<td><img src="image" alt="Menu" /></td>
<td>Allows entry to Main Menu</td>
</tr>
<tr>
<td><img src="image" alt="Esc" /></td>
<td>Return to previous screen&lt;br&gt;Hold five seconds to turn ON or OFF</td>
</tr>
<tr>
<td><img src="image" alt="Up" /></td>
<td>Allows scrolling to next screen&lt;br&gt;Allows values changes (increase)</td>
</tr>
<tr>
<td><img src="image" alt="Enter/Select" /></td>
<td>Allows entry to Menus&lt;br&gt;Advances cursor</td>
</tr>
<tr>
<td><img src="image" alt="Down" /></td>
<td>Returns to previous screen&lt;br&gt;Allows value changes (decrease)</td>
</tr>
</tbody>
</table>

button functions
The main loop will flip though a series of screens that allow you to see set-points, current unit status (temperature, relative humidity and operating mode – cooling, humidification, etc.).

2.1 POWERING the Unit ON/OFF

Before powering unit ON, check that power is available and proper connections have been completed.

Turn the disconnect switch to the ON position. The controller display keys and screen will illuminate and the processor will conduct a self-test (the screen will remain illuminated with no messages until the testing is complete). The self-test takes approximately 20 seconds. Once completed, the Main Menu screen will be displayed. For initial programming of setpoints, alarms, delays, etc., it is not necessary to have the unit ON. With the unit in the “OFF by Key” mode, all settings are available to view and change (other than Menus J – Factory Settings and L – Configure Inputs/Outputs) if the proper password is entered.

The Main Menu screen will display the unit type, date and time, and unit status. In addition, the screen will scroll and display the temperature, relative humidity and operating mode.

The Unit Status will indicate the unit: “OFF by Key”

The unit may be turned ON at any time. Hold the ESC key for approximately 5 seconds. The display will continue to scroll and display messages. At the same time the unit status is changed to “Unit On”. Once powered there will be a 5-600 second start delay indicated by “Time Before Start: XXs”.

Note: The start time delay is programmable from 5-600 seconds (Menu J – Factory Settings). The factory setting is 5 seconds.

2.2 ACCESSING MENUS/PASSWORDS

To access any Menu a numerical password is required. There are two levels of password:

• SERVICE LEVEL
• FACTORY LEVEL

The SERVICE LEVEL password allows viewing and changes to the following Menus:

A. On/Off    B. Setpoint    C. Clock/Scheduler
D. Input/Output E. Historical Data F. Information
G. Network Configuration H. Calibrate Sensors I. Manual Control
K. Alarms/Limits

The FACTORY LEVEL password allows changes to the SERVICE LEVEL Menus plus the following Menus:

J. Factory Settings    L. Configure Inputs/Outputs

The ZONE MASTER is an optional feature and requires a factory provided activation code. Contact factory if ZONE MASTER control is required.
To enter the Menu and Sub-Menu screens, press the MENU key on the display panel. A password will be requested. The password is a four digit entry (including 0). Units are shipped from the factory with the password requirement bypassed to accommodate start-up and set-up.

The display screen will have the following message:

**The Service Level Password setting from the factory is: 0000**

![Screen with password setting](image)

The cursor will be flashing at the top of the screen. Press the ENTER key to move the cursor to the first field. Press the UP or DOWN keys to increase or decrease the value. Once the value is entered, press the ENTER key to move to the next input. Increase or decrease the value by pressing the UP or DOWN keys. Once the desired value is shown, press the ENTER key to move to the next field.

Once the correct password is entered and accepted, the Menus will display on the screen. Only those Menus allowed through the Service Password will be available. Use the UP or DOWN keys to scroll through the available Menus.

Note: Factory Level Menus are for configuring the unit. The Mini dap4 controller is used for a variety of equipment types. The controller is based on the unit type, unit components and options. Under normal circumstances these menus should not be changed. If they need to be changed, please consult with Data Aire engineering or service personnel before proceeding.

### 2.2.1 Changing the Service Level Password

The Service Level password can be changed while the service level menu is active.

▼ After entering the Service password press Menu key again then press Down key, the screen will display the following message:

![Screen showing password change](image)

▼ Press the ENTER key. The cursor will highlight the first input. Change the input by pressing the UP or DOWN key. Once the selected number is displayed, press the ENTER key to move to the next input. Repeat the same steps for each input.

After the last input has been entered the new password is stored. Press the MENU key to return to Main Menu.
3.0 ENTERING MENU SETTINGS

3.1 MENU A – ON/OFF

Use the UP or DOWN key to scroll through the menus. Once the desired menu is highlighted, press the ENTER key.

MENU A allows Start-Up Delay Time, Start-Up Mode and ON/OFF to be changed from the factory settings (the Service Level password is required for entry).

The following will appear on the display screen:

![Display Screen](image)

The cursor will be flashing at the upper left hand corner. Press the ENTER key. The cursor will move to the “Start-up Delay”. The start-up delay is the time before the blower starts after being powered ON and the processor has completed its self-test. Press either the UP or DOWN button to change the delay time. The range is 5 to 600 seconds. Once a time is selected, press the ENTER key to save the setting and move to the next line “Start-Up Mode”.

Press the UP or DOWN keys to change the mode from ON to OFF or from OFF to ON. The setting will determine what the unit will do if power is interrupted. With the setting ON, the unit will automatically start once the self-test is completed. With the setting OFF, the unit will require manually starting by holding the ESC key for five (5) seconds. Depending on which selection is made (ON or OFF), the Status will display – Unit On or Unit Off by Key.

Once selections are made, leave MENU A by pressing the MENU key. The Main Menu screen will continue to display other menus (B, C, E and F). To look at any of these menus scroll to the desired menu. Press the ENTER key. If you choose to return to the Main Screen, press the ESC key.

3.2 MENU B - SETPOINTS

MENU B allows viewing and changing of Setpoints (Service Level password is required for entry)

Press the UP or DOWN key until “B. Setpoint” appears and is highlighted. Press the ENTER key.

Use the UP or DOWN key to scroll through the screens. Menu B has two screens.

The following will appear on the first Menu B screen (values are for reference only):

![Display Screen](image)
Press the UP or DOWN key. The following will appear on the screen:

![Screen with setpoints]

**FACTORY SETTINGS:**

- **TEMPERATURE:** 72.0°F  
  (Temperature range: 65 - 85°F)
- **DEADBAND:** 2.0°F  
  (Temperature Deadband range: 1 - 5°F)
- **STAGE TO STAGE:** 0.3°F  
  (Stage-to-Stage range: 0.3 - 3.0°F)
- **HUM SETPOINT:** 50%  
  (Humidity range: 25-70%)
- **HUM DEADBAND:** 3%  
  (Humidity deadband range: 1 - 15%)
- **ENGY SVR SETPT:** 50.0°F  
  (Setpoint range: 40.0 - 60.0°F)
- **DEADBAND:** 1.0°F  
  (Deadband range: 1.0 - 5.0°F)
- **CHANGE OVER:** 2.0°F  
  (Change over range: 2.0 - 5.0°F)

*If Humidity Anticipation is turned ON in humidity setting under Menu J - Factory Settings, the following page appears for reference (non-edit able):*

![Screen with humidity anticipation setpoints]

To change the value of any one of the setpoint values, move the cursor by pressing the ENTER key to the desired setpoint. The cursor will flash on the input value. Press the UP or DOWN button to increase or decrease the value. Once the desired setpoint value has been changed, press the ENTER key to move to the next setting or until the cursor is at the top of the screen.

Exit the Setpoint Menu by pressing the ESC Key. The display screen will return to the MAIN MENU. Use the UP or DOWN Keys to advance to another Menu or press the ESC Key to return to the normal operating mode.

**Note:** Changes to any Setpoint input will remain and can only be changed manually (as described above).

### 3.3 **MENU C – CLOCK/SCHEDULER**

MENU C allows programming for setting night set-back, week-end and special day schedules.

> Menu C should only be used for non-critical applications where units may be cycled off without any damage to sensitive electronic equipment. The typical application is comfort cooling where units may be shut down during non-working hours.
Enter Menu C by pressing the ENTER key. The following message will be displayed (values are for reference only):

![Image of Clock Settings]

To change the date or time, move the cursor by pressing the ENTER key to the date. To change the date, use the UP or DOWN keys. By pressing the ENTER key the cursor will move from segment to segment. Only the UP and DOWN keys will change the value. The day will automatically change when the date has been altered.

Press the ENTER key until the cursor is in the title block (upper left hand corner). Press the UP or DOWN key to see the next screen.

The following will be displayed (values are for reference only):

![Image of Set-Back Setting]

**Note:** Leaving the “Set-Back Enable” as NO, the set-back feature is non-operational and is the recommended setting for applications with constant load and cooling requirements.

The factory setting is NO

Ranges:

- Override Time - the range is 1-12 hours
- Cooling Offset - the range is 0-30°F
- Heating Offset - the range is 0-30°F
- Humidify Offset - the range is 0-30%
- Dehumidify Offset - the range is 0-30%

If Set-Back enable is YES, the Override Schedule will appear as the following (values are for reference only):

![Image of Override Schedule]

To change values, move the cursor to the desired input by pressing the ENTER key. Change the value by pressing either the UP or DOWN key. Once all changes are made to inputs on screen, move the cursor to the top and press the UP or DOWN keys to move to the next screen or press the MENU key to return to Main Menu screen.
Week Day Scheduler (only appears if the above Set-Back Enable selection was YES)

From the “Set-Back Settings” screen (with cursor at the top), press the DOWN key.

The following will be displayed (values are for reference only):

Screen Inputs

Press the ENTER key to move the cursor. The cursor will flash at the day (Monday). By pressing the UP or DOWN key all the days of the week can be viewed (or selected).

Press the ENTER key. The cursor will flash on the “Copy to: Day” Pressing the UP or DOWN key all the days of the week can be viewed.

The "Copy to:" function allows the user to copy setting from other days without going through the settings routine. By pressing the ENTER key, position the cursor on the Day: Press the UP or DOWN keys to scroll through the days of the week. Select the day that has been programmed and is to be copied. Press the ENTER key. The cursor will flash on the “Copy to:". Scroll through the days using the UP or DOWN key. Select the day to copy. Press the ENTER key. The cursor will flash by the NO message. Press the UP or DOWN key to change for to YES. Press the ENTER key. The display will have a SUCCESSFUL COPY message (which quickly is automatically removed).

The cursor will return to the title block. Repeat the same step for each day to be copied or select ALL.

▼ Press the ENTER key. The cursor will flash on the “NO or YES” setting. Pressing the UP or DOWN key will change from YES to NO or NO to YES. Leave in the NO setting until selections have been made.

▼ Press the ENTER key. The cursor will flash on the first time setting. All time is on a 24 hour clock (i.e. 6:00 PM = 1800 hours). The start time (line # 1) is selected by pressing the UP or DOWN key.

▼ Press the ENTER key to change the hour. By pressing the UP or DOWN key, the hour will change. Once the correct hour is selected, press the Enter key.

The cursor will flash on the minutes. By pressing the UP or DOWN key, the minutes will change. Once the correct minutes are selected, press the Enter key.

The cursor will be positioned on the settings input. Press the DOWN key to view the available selections:

- Set-Back
- Normal SP (setpoint)
- Turn Off

▼ Press the ENTER key. The cursor will flash on the second time setting.

Repeat the steps to set the second time setting (and third and fourth if used).

Once the settings are complete, with the cursor in the title block, press the DOWN key to advance to the next screen or press ESC to return to the Main Menu or press the ESC key to return to normal operation.
The following will be displayed (values are for reference only):

Available settings:

- Normal SP
- Turn Off
- Set-Back

Once the settings are complete, with the cursor in the title block, press the DOWN key to advance to the next screen or press ESC to return to the Main Menu or press the ESC key to return to normal operation.

The following will be displayed (values are for reference only):

Available settings:

- Normal SP
- Turn Off
- Set-Back

Once the settings are complete, with the cursor in the title block, press the DOWN key to advance to the next screen or press ESC to return to the Main Menu or press the ESC key to return to normal operation.
3.4 MENU D – INPUT/OUTPUT

MENU D is a view only menu allowing the user to view the various input and outputs.

To view, press the Menu key. A prompt for the password will be displayed on the display module. Once the password is entered, the Main Menu screen will display the various menus. Scroll through the menus using either the UP or DOWN keys. Move Menu D to the highlighted area and press the ENTER key.

The following will be displayed (values are for reference only):

Digital Inputs

▼ Press the DOWN key to view the next screen.

The following will be displayed (values are for reference only):

Digital Outputs

▼ Press the DOWN key to view the next screen.

The following will be displayed (values are for reference only):

Analog Input

▼ Press the DOWN key to view the next screen.
The following will be displayed (values are for reference only):

▼ Press the DOWN key to view the next screen.

The following will be displayed (values are for reference only):

▼ Press the MENU key to return to the Main Menu. Choose another Menu by pressing the UP or DOWN keys or press ESC to return the normal operating mode.
3.5 MENU E – HISTORICAL DATA

MENU E allows viewing alarms, component runtimes and resetting of component runtimes.

The first screen will display the most recent alarm (if any had occurred).

The following will be displayed (values are for reference only):

- Time and Date of Alarm
- Alarm Type
- Humidity at time of occurrence
- Chilled Water temperature at time of occurrence (if applicable)
- Discharge Air Temperature at time of occurrence (if applicable)

To view consecutive alarms press the ENTER key moving the cursor into the -> field.

▼ Press the UP key and the display will show the previous alarm, with time and date. Continue to press the UP key to view all alarms. Once the last listed alarm is viewed, press the ENTER to move the cursor back to the top of the screen.

The screen will display the following:

▼ Press the ENTER key to move the cursor. The cursor will flash the reset choice of NO or YES. To reset and clear runtimes, press the UP or DOWN key.

▼ Press the ENTER key until the cursor is flashing on the title line. Press the DOWN key to move to next screen.

▼ Press the ENTER key to move the cursor. The cursor will flash the reset choice of NO or YES. To reset and clear runtimes, press the UP or DOWN key.

▼ Press the ENTER key until the cursor is flashing on the title line. Press the DOWN key to move to next screen.
The screen will display the following:

```
Run Hours: 2  Reset
Engy Svr: 0000 No
CW Cool: 0000 No
Cond Aux: 0000 No
Reset all Runtimes: No (or Yes)
```

With the cursor flashing on the title line, press the UP or DOWN key to review the alarms or runtimes or press the MENU key to return to the Main Menu.

▼ Press the ESC key to return to the normal operating screen.
3.6 MENU F – INFORMATION

MENU F allows viewing of the processor version (Service Level password is required for entry). This is a view only menu.

Once password has been entered scroll until Menu F – Information is highlighted. Press the ENTER key to view. There two screens. The first screen will display the following:

▼ Press the UP or DOWN key to view second screen. The second screen will display the following:

▼ Press the MENU key to return to the main menu or press ESC to return to the normal operating mode.
3.7 MENU G – NETWORK CONFIG

MENU G allows selection of the BMS protocol (Service Level password is required for entry)

Once password has been entered, press the UP or DOWN key until “G. Network Config” appears and is highlighted. Press the ENTER key.

The following will be displayed (values are for reference only):

Only the protocol can be changed. The selections are as follows:

<table>
<thead>
<tr>
<th>Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>LON</td>
</tr>
<tr>
<td>BACnet MSTP</td>
</tr>
<tr>
<td>MODBUS</td>
</tr>
<tr>
<td>N/A</td>
</tr>
<tr>
<td>PCOLOAD*</td>
</tr>
<tr>
<td>MODEM*</td>
</tr>
<tr>
<td>CAREL*</td>
</tr>
<tr>
<td>BACnet TCP/IP</td>
</tr>
</tbody>
</table>

*PCOLOAD, MODEM, Modbus Ext and CAREL are for future use and should not be used.

Once the selection has been made, press the ENTER key and the cursor will move to the title block.

If MODBUS protocol is selected, the MODBUS network address and port baud rate can be programmed on the next screen.

**Note:** Heartbeat is for BMS to notify the controller that there is an active connection.

To move to the next screen, press the DOWN key.

The following will be displayed (values are for reference only):

The address range is 0 to 999

The available baud rates are: 1200, 2400, 4800, 9600, and 19200

Once the selection has been made, press the ENTER key to move the cursor to the title block.

▼ Press the ESC key to return to the Main Menu. Scroll to the next menu to be viewed or press the ESC key again to return to the normal operating mode.
3.8 MENU H - CALIBRATE SENSORS

MENU H allows calibration of the unit installed sensors (the Service Level password is required for entry)

Return air temperature and humidity sensors are standard with Data Aire units. Dependent on options and equipment type, a discharge air and chilled water sensor may be installed in the unit.

Press the UP or DOWN key until "H - Calibrate Sensors" appears and is highlighted. Press the ENTER key.

The following will be displayed on the display module (values are for reference only):

![Analog Input](image1)

▼ Press the ENTER key to move the cursor. The cursor will flash at the Offset. By pressing the UP (to increase) or DOWN (to decrease) keys the Offset can be changed.

Once the change has been made, press the ENTER key and the cursor will move to the title block of the screen. The Offset change is now entered and stored.

To move to the next screen, press the DOWN key.

The following will be displayed (values are for reference only):

![Analog Input](image2)

▼ Press the ENTER key to move the cursor. The cursor will flash at the Offset. By pressing the UP (to increase) DOWN (to decrease) keys the Offset can be changed.

Once the change has been made, press the ENTER key and the cursor will move to the upper portion of the screen. The Offset change is now entered and stored.

To move to the next screen, press the DOWN key.

The following will be displayed (values are for reference only):
▼ Press the ENTER key to move the cursor. The cursor will flash at the Offset. By pressing the UP (to increase) or DOWN (to decrease) keys the Offset can be changed.

Once the change has been made, press the ENTER key and the cursor will move to the upper portion of the screen. The Offset change is now entered and stored.

To move to the next screen, press the DOWN key.

The following will be displayed (values are for reference only):

▼ Press the ENTER key to move the cursor. The cursor will flash at the Offset. By pressing the UP (to increase) or DOWN (to decrease) keys the Offset can be changed.

Once the change has been made, press the ENTER key and the cursor will move to the upper portion of the screen. The Offset change is now entered and stored.

▼ Press the UP or DOWN key to move to another screen or if all calibrations are completed, with the cursor flashing in the title box, press the ESC key. This will take you to the Main Menu.

Use the UP or DOWN keys to scroll through the Menus or press the ESC key to return to the normal operating mode screen.

**Note:** Discharge and chilled water sensors are optional and must be installed to see screens.
3.9 MENU I – MANUAL CONTROL

MENU I allows manually running different unit components (the Service Level password is required for entry)

In the Main Menu screen press the UP or DOWN key until “I - Manual Control” appears and is highlighted. Press the ENTER key.

Move the cursor to the title block by pressing the ENTER key. To return to the Main Menu press the ESC key or to view the following screen press the DOWN key.

The following will be displayed (values are for reference only):

![Manual Output Mgmt. 1](image)

*Note:* The “Return to Auto:” is programmable from 10 to 300 seconds. Once the time has elapsed the functions will return to normal programmed operation.

Move the cursor to the title block by pressing the ENTER key. To return to the Main Menu press the ESC key or to view the following screen press the DOWN key.

The following will be displayed (values are for reference only):

![Manual Output Mgmt. 2](image)

Move the cursor to the title block by pressing the ENTER key. To return to the Main Menu or press the ESC key.
3.10 MENU J – FACTORY SETTINGS (factory use only)

MENU J is for setting the control to the type equipment and options ordered. This requires the Factory Level password and entry should be limited to Data Aire factory and service personnel.

In the Main Menu screen press the UP or DOWN key until “J - Factory Settings” appears and is highlighted. Press the ENTER key.

The following will be displayed (values are for reference only):

- **Model:** There are four available inputs – gForce, Mini, Mini-Plus and DA Series
- **Screen Flip Delay:** The range is 0 to 99 seconds (in 1 second intervals)
- **Temp Units:** Fahrenheit or Centigrade
- **Analog Output:** There are three choices – None, Humidify or CW Value
- **Fan Mode:** There are two settings – Continuous and Automatic
- **Fan Type:** There are two choices – Standard or Plug Fan

Once inputs have been made, move the cursor (by pressing the ENTER Key) to the title box.

▼ Press the DOWN key to view the next screen.

The following will be displayed (values are for reference only):

- **Available Selections:**
  - **Type:** Sngl Primary (single scroll compressor)
  - **Delay Btw Stages:** Range is from 30 to 300 seconds (delay between start of lag compressor)

Once a selection or selections have been made, move the cursor to the title block by pressing the ENTER key.

▼ Press the DOWN key to view the next screen.
The following will be displayed (values are for reference only):

Available Selections:

None, One or 1-Elect

1-Elect is the default setting and only allows the reheat to work during dehumidification mode. If One is selected then reheat allows to work whenever space temperature is below setpoint minus deadband regardless dehumidification operation.

Once a selection or selections have been made, move the cursor to the title block by pressing the ENTER key.

▼ Press the DOWN key to view the next screen:

The following will be displayed (values are for reference only):

Available Selections:

Wtr Vlv (Water Valve): Chill Wtr Cool, Engy Svg Cool, Aux Chill Wtr, Chill Wtr Reg, None

The screen information will vary with each water valve selection. The screen displays for each choice follows (values are for reference only):

**Chill Wtr Cool**
Available Selections:

Wtr Vlv Voltage: 0 to 10, 2 to 10, 7 to 10, 6 to 9, and 4 to 7
Wtr Vlv Action: Direct or Reverse
Engy Lockout Time: 15, 30, 45 and 60m

Once a selection or selections have been made, move the cursor to the title block by pressing the ENTER key.

▼ Press the DOWN key to view the next screen.

The following will be displayed (values are for reference only):
See Logic section for Relative humidity and Dewpoint control for details.

Available Selections:

**Humidify:**
- Compu Non-Mod (Computer Room, Non-Modulating)
- Computer Mod (Computer Room, Modulating)
- Comf Non-Mod (Comfort, Non-Modulating)
- Comf Mod (Comfort, Modulating)
- None

**Dsat Cyc:**
- Not Used or 1, 2, 3, 4 or 5 M Off (Minutes)

**Hum Anticipation:**
- On or Off

**Dehum Mode:**
- None
- 1C In Limit (1 compressor & within reheat limits)
- 2C In Limit (2 compressors & within reheat limits)
- 1C No Limit (1 compressor & no reheat limits)
- 2C No Limit (2 compressors & no reheat limits)

Once a selection or selections have been made, move the cursor to the title block by pressing the ENTER key or press the ESC key to return normal operating mode

▼ Press the DOWN key to view the next screen.

The following will be displayed (values are for reference only):

![Settings Management](image)

**Note:** Selecting YES will reset all values back to the factory settings (default).

If YES is selected, the following message will be displayed: "wait resetting" (resetting will take a few seconds). Once set the display will have the following message:

![Warning](image)

Power down the unit using the unit mounted electrical disconnect or the (field provided) wall mounted disconnect.

Once the self-test is complete, the display module will display that the unit is “OFFbyKEY”

Start (power-up) the unit following the instructions on page 7, Powering the Unit ON/OFF.
3.11 MENU K – ALARMS and LIMITS

MENU K is for setting the control alarm and limits. This requires the Service Level password and entry should be limited to service personnel starting or servicing the equipment.

In the Main Menu screen press the UP or DOWN key until “K - Alarms & Limits” appears and is highlighted. Press the ENTER key.

The following will be displayed (inputs are for reference only):

▼ Press the ENTER key to advance to Audio Mode. The cursor will flash on the current selection. Press the UP or DOWN keys to change the selection.

Available selections for Audio Mode are:
- None
- Full On
- Long Beep
- Short Beep

Once a selection has been made, press the ENTER key to advance to Pwr-Up. The cursor will flash on the current selection.

Available selections for Pwr-Up are:
- Auto, No Alarm
- Auto, With Alarm
- Man, Clr Alarm

Note: This setting determines what the unit will do on a loss power.

In the Auto, No Alarm setting the unit will automatically power up once power is restored. The unit will go through its self-test and start delay prior to the fan(s) beginning operation.

In the Auto, With Alarm setting the unit will automatically power up once power is restored and display an alarm condition. The unit will go through its self-test and start delay prior to the fan(s) beginning operation.

In the Man, Clr Alarm setting unit start is manual. It will display an alarm condition.

Once a selection has been made, press the ENTER key to advance to Maint Due Msg. The cursor will flash on the current selection.

Available selections for Maint Due Msg are:
- None
- 0 to 1000 hours

Note: If hours are selected and not cleared after maintenance, an alarm will sound.

Once a selection or selections have been made, move the cursor to the title block (Alarm Settings) by pressing the ENTER key.

▼ Press the DOWN key to view the next screen.
The following will be displayed (values are for reference only):

▼ Press the ENTER key to advance to Comp Short Cycle. The cursor will flash on the current selection. Press the UP or DOWN keys to change the selection.

Available Selections:

Comp Short Cycle: YES or NO

Note: With the setting in the YES selection mode, a compressor short-cycle alarm will activate and if the compressor has energized ten (10) times in a one (1) hour period.

Compressor life can be shortened by allowing frequent cycling. On-going short-cycle alarm problems should analyzed before selecting NO.

Once a selection has been made, press the ENTER key to advance to Reset Alarm Log. The cursor will flash on the current selection.

Reset Alarm Log: YES or NO (feature not used – see section on clearing alarms on page 42)

Note: The factory setting is NO. If YES is selected, the selection will change to NO once the cursor is returned to the title block and the alarm history is cleared.

Once a selection has been made, press the ENTER key to advance to Alarm Contact Screen. The cursor will flash on the current selection.

The available selections for Alarm Screen Contact are: Alarm Screen Contact: No Contact Message
Service Company
Maint Engineer
Data Proc Mngr
Custom Message (factory installed option)

Once a selection or selections have been made, move the cursor to the title block (Alarm Settings) by pressing the ENTER key

▼ Press the DOWN key to view the next screen:

The following will be displayed (values are for reference only):
Press the ENTER key to advance to No Water Flow Action. The cursor will flash on the current selection. Press the UP or DOWN keys to change the selection.

Available Selections:

- No Water Flow Action: Alarm Only
- Turn Compressors Off

**Note:** On Water/Glycol cooled ceiling type units it is advisable to select the TURN COMPRESSORS OFF mode. With a no water flow condition, the unit will trip on high head pressure. The high pressure switch is a manual type.

Press the ENTER key to advance to Wtr Flow Alm Dly. The cursor will flash on the current selection. Press the UP or DOWN keys to change the selection.

Wtr Flow Alm Dly: The range is 5 to 180 seconds (time before alarm is energized)

Press the ENTER key to advance to Air Flow Alm Dly. The cursor will flash on the current selection. Press the UP or DOWN keys to change the selection.

Air Flow Alm Dly: The range is 5 to 180 seconds (time before alarm in energized)

Once a selection or selections have been made, move the cursor to the title block by pressing the ENTER key.

Once a selection or selections have been made, move the cursor to the title block (Flow Alarms) by pressing the ENTER key.

▼ Press the DOWN key to view the next screen:

The following will be displayed (values are for reference only):

- Firestat Setpoint: 100°F
- Hi Temp Alarm: Yes
- Set Point: 80°F
- Lo Temp Alarm: Yes
- Set Point: 60°F

Press the ENTER key to advance to Firestat Setpoint. The cursor will flash over the current setting. Press the UP or DOWN key to change the setting.

The setting range is from 100 to 150°F (factory setting is 100°F)

**Note:** The firestat is one of two alarms that will automatically shut down the unit. Units with optional smoke detectors will also shut down the unit when in alarm.

Press the ENTER key to advance to Hi Temp Alarm. The cursor will flash over the current setting. Press the UP or DOWN key to change the setting.

Hi Temp Alarm: Yes or No (factory setting is Yes)

**Note:** Choosing NO as the setting, the High Temperature alarm will be disabled.

Press the ENTER key to advance to Set Point. The cursor will flash over the current setting. Press the UP or DOWN key to change the setting.
Set Point: The range is 70 to 90°F (factory setting is 80°F)

**Note:** If Hi Temp Alarm was set for NO – the Set Point will not appear on the screen

Press the ENTER key to advance to Lo Temp Alarm. The cursor will flash over the current setting. Press the UP or DOWN key to change the setting.

Lo Temp Alarm: YES or NO (factory setting is YES)

**Note:** Choosing NO as the setting, the Low Temperature alarm will be disabled.

Press the ENTER key to advance to Set Point. The cursor will flash over the current setting. Press the UP or DOWN key to change the setting.

Set Point: The range is 55 to 75°F (factory setting is 60°F)

**Note:** If Lo Temp Alarm was set for NO – the Set Point will not appear on the screen

Once a selection or selections have been made, move the cursor to the title block (Return Air Alarms) by pressing the ENTER key

▼ Press the DOWN key to view the next screen:

The following will be displayed (values are for reference only):

```
<table>
<thead>
<tr>
<th>Humidity Alarm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi Humidity Alarm:</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Set Point:</td>
</tr>
<tr>
<td>60%</td>
</tr>
<tr>
<td>Lo Humidity Alarm:</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Set Point:</td>
</tr>
<tr>
<td>40%</td>
</tr>
</tbody>
</table>
```

Press the ENTER key to advance Hi Humidity Alarm. The cursor will flash over the current setting. Press the UP or DOWN key to change the setting.

Hi Humidity Alarm: YES or NO (factory setting is YES)

**Note:** Choosing NO as the setting, the Hi Humidity alarm will be disabled.

Press the ENTER key to advance to Set Point. The cursor will flash over the current setting. Press the UP or DOWN key to change the setting.

Set Point: The range is 35 to 90% RH (factory setting is 60% RH)

**Note:** If Hi Humidity Alarm was set for NO – the Set Point will not appear on the screen

Press the ENTER key to advance to Lo Humidity Alarm. The cursor will flash over the current setting. Press the UP or DOWN key to change the setting.

Lo Humidity Alarm: YES or NO (factory setting is YES)

**Note:** Choosing NO as the setting, the Lo Humidity alarm will be disabled.

Press the ENTER key to advance to Set Point. The cursor will flash over the current setting. Press the UP or DOWN key to change the setting.
Set Point: The range is 10 to 65% RH (factory setting is 40% RH)

Note: If Lo Humidity Alarm was set for NO – the Set Point will not appear on the screen

Once a selection or selections have been made, move the cursor to the title block (Humidity Alarms) by pressing the ENTER key

▼ Press the DOWN key to view the next screen.

The following will be displayed (values are for reference only):

Note: Alarm messages are typically factory programmed dependent on the type of equipment and the options ordered. When making or considering changes consult with either Data Aire engineering or service. Many of the options require additional sensors or devices.

Press the ENTER key to advance Custom Alarm Messages. The cursor will flash over the current setting Alarm #1 (D1-2).

Available Selections for Alarm #1:
- C1 HIGH PRESSURE
- SEE TAG INSIDE DOOR
- CHK HUMIDIFIER CYL
- UNIT IN STANDBY
- NO FLOW – CHECK PUMP
- REHEAT INHIBITED
- C2 HIGH PRESSURE
- CUSTOM MESSAGE
- SMOKE DETECTOR
- STANDBY PUMP ON
- REHEAT & HUM INHIBIT
- HUM FLT-CHK WTR PR
- FAN MOTOR OVERLOAD
- DIRTY FILTER
- UPS ON-CHK MAIN PWR
- HUMIDIFIER INHIBITED

Press the ENTER key to advance to Alarm #2 (D1-2). The cursor will flash over the current setting.

Available Selections for Alarm #2:
- C1 LOW PRESSURE
- SEE TAG INSIDE DOOR
- CHK HUMIDIFIER CYL
- UNIT IN STANDBY
- NO FLOW – CHECK PUMP
- REHEAT INHIBITED
- C2 HIGH PRESSURE
- CUSTOM MESSAGE
- SMOKE DETECTOR
- STANDBY PUMP ON
- REHEAT & HUM INHIBIT
- HUM FLT-CHK WTR PR
- FAN MOTOR OVERLOAD
- DIRTY FILTER
- UPS ON-CHK MAIN PWR
- HUMIDIFIER INHIBITED

Once a selection or selections have been made, move the cursor to the title block (Alarm Inputs) by pressing the ENTER key

▼ Press the DOWN key to view the next screen.
The following will be displayed (values are for reference only):

Available Selections for Alarm #3:
- SEE TAG INSIDE DOOR
- CHK HUMIDIFIER CYL
- P2 ON – CHK PRI PUMP
- REHEAT INHIBITED
- CUSTOM MESSAGE
- STANDBY PUMP ON
- REHEAT & HUM INHIBIT
- FAN MOTOR OVERLOAD
- UPS ON-CHK MAIN POWER
- HUMIDIFIER INHIBITED

Once a selection or selections have been made, move the cursor to the title block (Alarm Inputs) by pressing the ENTER key:

▼ Press the DOWN key to view the next screen.

The following will be displayed (values are for reference only):

Note: If YES is selected, the alarm relay will energize. When the alarm is detected. If NO is selected, the alarm relay will not energize when an alarm is detected.

Once a selection or selections have been made, move the cursor to the title block (Alm Output Function 1) by pressing the ENTER key:

▼ Press the DOWN key to view the next screen.

The following will be displayed (values are for reference only):

Once a selection or selections have been made, move the cursor to the title block by pressing the ENTER key.

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Press the DOWN key to view the next screen:

The following will be displayed (values are for reference only):

Once a selection or selections have been made, move the cursor to the title block (Alm Output Function 3) by pressing the ENTER key

Press the DOWN key to view the next screen.

The following will be displayed (values are for reference only):

Once a selection or selections have been made, move the cursor to the title block (Alm Output Function 4) by pressing the ENTER key

Press the DOWN key to view the next screen.

The following will be displayed (values are for reference only):

Once a selection or selections have been made, move the cursor to the title block (Alm Output Function 5) by pressing the ENTER key

Press the DOWN key to view the next screen:

The following will be displayed (values are for reference only):

Press the DOWN key to view the next screen:

The following will be displayed (values are for reference only):
3.12  MENU L - Configure I/O (factory use only)

Menu L is a factory for configuring the unit’s digital inputs and the unit’s analog inputs and outputs. This requires the Factory Level password and entry should be limited to Data Aire factory and service personnel.

▼ Press the UP or DOWN key until “L. Configure I/O” appears and is highlighted. Press the ENTER key.

The following will be displayed (values are for reference only):

![Digital Input](image1)

Move the cursor by pressing the ENTER key. Move the cursor to change the setting.

The following can be changed by pressing the DOWN key:

- Channel – Open or Closed
- Delay – the range is 0 – 999 seconds
- Status – Open or Closed

Once a selection or selections have been made, move the cursor to the title block by pressing the ENTER key.

▼ Press the DOWN key to view the next screen.

The following will be displayed (values are for reference only):

![Digital Input](image2)

Move the cursor by pressing the ENTER key. Move the cursor to change the setting.

The following can be changed by pressing the DOWN key:

- Channel – Open or Closed
- Delay – the range is 0 – 999 seconds
- Status – Open or Closed

Once a selection or selections have been made, move the cursor to the title block by pressing the ENTER key.

▼ Press the DOWN key to view the next screen.
The following will be displayed (values are for reference only):

Move the cursor by pressing the ENTER key. Move the cursor to change the setting.

The following can be changed by pressing the DOWN key:

Channel – Open or Closed  
Delay – the range is 0 – 999 seconds  
Status – Open or Closed

Once a selection or selections have been made, move the cursor to the title block by pressing the ENTER key

▼ Press the DOWN key to view the next screen.

The following will be displayed (values are for reference only):

Move the cursor by pressing the ENTER key. Move the cursor to change the setting.

The following can be changed by pressing the DOWN key:

Channel – Open or Closed  
Delay – the range is 0 – 999 seconds  
Status – Open or Closed

Move the cursor by pressing the ENTER key. Move the cursor to change the setting.

Once a selection or selections have been made, move the cursor to the title block by pressing the ENTER key

▼ Press the DOWN key to view the next screen.

Once a selection or selections have been made, move the cursor to the title block by pressing the ENTER key

▼ Press the DOWN key to view the next screen.
The following will be displayed (values are for reference only):

```
Move the cursor by pressing the ENTER key. Move the cursor to change the setting.

The following can be changed by pressing the DOWN key:
- Channel – Open or Closed
- Delay – the range is 0 – 999 seconds
- Status – Open or Closed

Once a selection or selections have been made, move the cursor to the title block by pressing the ENTER key

▼ Press the DOWN key to view the next screen.

The following will be displayed (values are for reference only):
```

```
Digital Input
HI CONDENSATE SW
Channel: B6
Action: Closed
Delay: 5s
Status: Closed
```

```
Analog Input
Humidity Sensor
Enable: ON Channel: B2
Normal: 4-20 mA
Minimum: 0.0
Maximum: 100.0
Offset: 0.0
Value: 35.6
```

```
Analog Input
Return Air Temp Sensor
Enable: ON Channel: B1
High Res. NTC
Offset: 0.0
Value: 74.1
```

Move the cursor by pressing the ENTER key. Move the cursor to change the setting.

The following can be changed by pressing the DOWN key:
- Enable – ON or OFF

⚠️ **Note:** If (Enable) OFF is selected the Normal, Minimum, Maximum, Offset and Value will not be displayed.

With Enable ON, Normal, Minimum, Maximum, Offset and Value will be displayed and values changed.

Once a selection or selections have been made, move the cursor to the title block by pressing the ENTER key

▼ Press the DOWN key to view the next screen.

The following will be displayed (values are for reference only):

Move the cursor by pressing the ENTER key. Move the cursor to change the setting.

The following can be changed by pressing the DOWN key:

   Enable – ON or OFF

Note: If (Enable) OFF is selected the High Res, Offset and Value will not be displayed.

With Enable ON, High Res., Offset and Value will be displayed and values changed.

Once a selection or selections have been made, move the cursor to the title block by pressing the ENTER key.

▼ Press the DOWN key to view the next screen.

With Enable ON, Normal, Minimum, Maximum, Offset and Value will be displayed and values changed.

Once a selection or selections have been made, move the cursor to the title block by pressing the ENTER key.

▼ Press the DOWN key to view the next screen.

The following will be displayed (values are for reference only):

![Analog Input]

Discharge Air Sensor
Enable: ON Channel: B3
High Res. NTC
Offset: 0.0
Value: 74.1

Analog Input
Chilled Water Sensor
Enable: ON Channel: B4
High Res. NTC
Offset: 0.0
Value: 74.1

Note: If (Enable) OFF is selected the High Res, Offset and Value will not be displayed.

With Enable ON, High Res., Offset and Value will be displayed and values changed.

Once a selection or selections have been made, move the cursor to the title block by pressing the ENTER key.

▼ Press the DOWN key to view the next screen.

The following will be displayed (values are for reference only):

![Analog Input]

Note: If (Enable) OFF is selected the High Res, Offset and Value will not be displayed.

With Enable ON, High Res., Offset and Value will be displayed and values changed.

Once a selection or selections have been made, move the cursor to the title block by pressing the ENTER key.
▼ Press the DOWN key to view the next screen.

The following will be displayed (values are for reference only):

Move the cursor by pressing the ENTER key. Move the cursor to change the setting.

The following can be changed by pressing the DOWN key:

   Channel – there is one (1) selection (Y 2).

There are five Analog outputs available.

DO NOT ASSIGN THE SAME CHANNEL ON MORE THAN ONE ANALOG OUTPUT.

   Action – there are two choices; DIRECT AND REVERSE

   Minimum – the range is from 0.0 vdc to 10.0 vdc

   Maximum – the range is from 0.0 vdc to 10.0 vdc

Once a selection or selections have been made, move the cursor to the title block by pressing the ENTER key.

To Exit Menu L – Configure I/O, with the cursor in the title block, press the Menu key. The screen will display the Menus.

▼ Press the ESC key to return to the normal operating mode.
4.0 ALARMS/CLEARING ALARMS

The back-lit alarm symbol will flash red indicating there is an alarm condition. In addition, a message will be displayed on the display module screen. The message will scroll through with other information (temperature, relative humidity, etc.).

If no active alarm is present, pressing the Alarm key will display the following message:

Pressing the ENTER key allows viewing of the alarm history.

Press the ENTER key. The following message will be displayed (values for reference only):

The time is the actual time the alarm was recorded. The date is the actual date the alarm was recorded.

Smoke detector is the alarm condition.

The humidity, return air, chilled water, and discharge air are the conditions at the time of alarm.

To view additional alarms, move the cursor by pressing the ENTER key so it’s positioned on the line with the “- Scroll Up/Down?”. Press the UP or DOWN key to see the alarm history.

Each message will have the time, date, alarm, and space condition at the time of the alarm.

Up to 100 alarms may be stored.

13.1 Acknowledging an Alarm

To acknowledge the alarm condition, press the alarm symbol. The display screen will have the following message:
» Press the DOWN key. The following message will be displayed:

![Image 1](image1.png)

» Press the ENTER key. The following message will be displayed:

![Image 2](image2.png)

The above screen can be interpreted as: @ 5:28:11 AM on 9/17/11 the temperature was above the high temperature alarm setpoint. At the time of the alarm the humidity was 54% RH and the temperature was 75.2°F.

Press the ENTER key to move the cursor to - > Scroll Up/Down. Pressing the UP or DOWN key will display alarms with time, date, relative humidity temperature at time of alarm.

Once all alarms have been viewed, Press the ENTER key to move the cursor to the title block (time and date). Press the ESC key to return to the Main Menus or Press the DOWN key to see Run Hours.

Component run times may be seen and/or reset through this and consecutive screens.
13.2 Clearing Alarm History

Once the alarm has acknowledged and corrected, the flashing red alarm will cease. The alarm is now stored with the alarm history as described in Section 4.0.

The alarm history can be cleared by doing the following:

Go to Menu K – Alarms and History in the Main Menu

Press the ENTER key. The first screen will be titled “Alarm Settings”.

▼ Press the DOWN key to display the following screen:

Move the cursor by pressing the ENTER key so it flashes on the No input. To eliminate alarm history press the UP or DOWN key to change the message to Yes.

▼ Press the ENTER key. The history is now removed.

▼ Press the ENTER key to return cursor to title block.

▼ Press the ENTER key to return to Main Menu screen.
14.0 Mini dap4 CONTROL LOGIC

SYSTEM START DELAY

After the self-test is complete, the Timed Start Delay will be displayed and will start counting down from the pro-
grammed delay. The factory setting is five (5) seconds. The setting is programmed in Menu A – ON/OFF. The range
is from 1 to 600 seconds in 5 second increments.

BLOWER

Centrifugal Fans – The blower(s) will start upon completion of the Timed Start Delay and is programmed and wired to
run continuously during unit operation.

FUNCTIONS

Cooling, reheat, humidification and dehumidification functions are inhibited for one (1) minute after the blower starts.
This allows the temperature and humidity sensors to adjust.

COMPRESSOR COOLING

1. There is a five (5) minute delay between start-to-start of the same primary stage compressor. The delay will be
increased to six (6) minutes for one (1) hour following the detection of a compressor short-cycle condition even if
the compressor short cycle alarm is disabled (Menu K - Alarms and Limits).

2. There is a two (2) minute delay between stop-to-start of the same primary stage compressor.

3. There is a one (1) minute delay between stop-to-start of the same secondary unloader stage compressor or stop-
to-start of a second secondary stage compressor (dual compressor LCS type units only).

4. Compressor staging sequence at each adjustment period:

UNITs WITH STANDARD (DUAL) SCROLL COMPRESSORS

Compressor “ON” sequence (Increasing Temperature)

Cool 1 ON at Temperature Setpoint + Temperature Deadband
Cool 2 ON at Temperature Setpoint + Temperature Deadband + 0.3°F*

Compressor “OFF” sequence (Decreasing Temperature)

Cool 2 OFF at Temperature Setpoint + 0.3°F*
Cool 1 OFF at Temperature Setpoint

*LCS models with dual compressors (dual stage)

CHILLED WATER COOLING

(Standard) Chilled water valve “opening” sequence (Increasing Temperature): The chilled water is a two-position
valve that will open on a call for cooling in following sequence:

Valve ON when Current Temperature = Setpoint + Deadband

Valve OFF when Current Temperature = Setpoint

(Optional Modulating CW Valve) Chilled water valve “opening” sequence (Increasing Temperature)

1. The chilled water valve proportionally opens 10% for each 0.1°F above the temperature setpoint plus temperature
deadband.
2. The chilled water valve responds to a change of the return air temperature after each adjustment period.

If the current temperature is higher than the temperature at the last adjustment period, the following sequence will determine the new valve position:

- Current Temperature = Setpoint + 0.0°F = 0% Position Open
- Current Temperature = Setpoint + 0.1°F = 10% Position Open
- Current Temperature = Setpoint + 0.2°F = 20% Position Open
- Current Temperature = Setpoint + 0.3°F = 30% Position Open
- Current Temperature = Setpoint + 0.4°F = 40% Position Open
- Current Temperature = Setpoint + 0.5°F = 50% Position Open
- Current Temperature = Setpoint + 0.6°F = 60% Position Open
- Current Temperature = Setpoint + 0.7°F = 70% Position Open
- Current Temperature = Setpoint + 0.8°F = 80% Position Open
- Current Temperature = Setpoint + 0.9°F = 90% Position Open
- Current Temperature = Setpoint + 1.0°F = 100% Position Open

Chilled water valve “closing” sequence (Decreasing Temperature)

1. The chilled water valve proportionally closes 10% for each 0.1°F below the temperature setpoint plus 1.0°F.

2. The chilled water valve responds to a change of the return air temperature after each adjustment period.

3. If the current temperature is lower than the temperature at the last adjustment period, the following sequence will determine the new valve position:

- Current Temperature = Setpoint + 1.0°F = 100% Position Open
- Current Temperature = Setpoint + 0.9°F = 90% Position Open
- Current Temperature = Setpoint + 0.8°F = 80% Position Open
- Current Temperature = Setpoint + 0.7°F = 70% Position Open
- Current Temperature = Setpoint + 0.6°F = 60% Position Open
- Current Temperature = Setpoint + 0.5°F = 50% Position Open
- Current Temperature = Setpoint + 0.4°F = 40% Position Open
- Current Temperature = Setpoint + 0.3°F = 30% Position Open
- Current Temperature = Setpoint + 0.2°F = 20% Position Open
- Current Temperature = Setpoint + 0.1°F = 10% Position Open
- Current Temperature = Setpoint + 0.0°F = 0% Position Open

4. If the temperature is consistently rising, the valve will open accordingly at each adjustment period. Likewise, if the temperature is consistently falling, the valve will close accordingly at each adjustment period. However, if the temperature changes directions, the temperature must change the amount of the deadband before the valve will be repositioned. The temperature can slowly drift back and forth within a deadband window at any point in the adjustment period without a valve position change.

**ENERGY SAVER and AUXILIARY CHILLED WATER COOLING**

1. Energy Saver/Auxiliary Chilled Water Cooling will be available whenever the incoming water (or water/glycol) supply is below the Energy Saver/Chilled Water temperature setpoint (Menu B).

2. The Energy Saver/Auxiliary Chilled Water Cooling mode will operate only in a two to five degree range above the setpoint plus the deadband which is programmed in Menu B. The range is between the return air setpoint plus deadband and Energy Saver changeover band. If the temperature rises above this range, the Energy Saver / Auxiliary Chilled Water Cooling will be inhibited for the amount of time set in Menu J, “Energy Saver Lockout Time” and DX (Direct Expansion) cooling will take over. After the amount of time set in Menu J, “Energy Saver Lockout Time”, it will try Energy Saver/Auxiliary Chilled Water Cooling again.
Note: The standard Energy Saver/Auxiliary CW valve is an Off/On valve. If unit has optional modulating valve, the following steps apply (3 – 8).

3. The chilled water valve proportionally opens 10% for each 0.1°F above the temperature setpoint plus temperature deadband.

4. The chilled water valve responds to a change of the return air temperature after each adjustment period.

5. If the temperature is consistently rising, the valve will be opened more at each adjustment period. Likewise, if the temperature is consistently falling, the valve will be closed more at each adjustment period. However, if the temperature movement changes directions, then it must change the amount of the deadband before the valve will be repositioned. The temperature can be slowly drifting back and forth within a deadband window at any point in the adjustment period and no valve changes will be made.

6. If the current temperature is higher than at the last adjustment period, the following sequence is used to determine the new valve position:
   - Current Temperature = Setpoint + Deadband + 0.0°F = 0% Position Open
   - Current Temperature = Setpoint + Deadband + 0.1°F = 10% Position Open
   - Current Temperature = Setpoint + Deadband + 0.2°F = 20% Position Open
   - Current Temperature = Setpoint + Deadband + 0.3°F = 30% Position Open
   - Current Temperature = Setpoint + Deadband + 0.4°F = 40% Position Open
   - Current Temperature = Setpoint + Deadband + 0.5°F = 50% Position Open
   - Current Temperature = Setpoint + Deadband + 0.6°F = 60% Position Open
   - Current Temperature = Setpoint + Deadband + 0.7°F = 70% Position Open
   - Current Temperature = Setpoint + Deadband + 0.8°F = 80% Position Open
   - Current Temperature = Setpoint + Deadband + 0.9°F = 90% Position Open
   - Current Temperature = Setpoint + Deadband + 1.0°F = 100% Position Open

7. The chilled water valve proportionally closes 10% for each 0.1°F below the temperature setpoint plus 1°F.

8. If the current temperature is lower than at the last adjustment period, the following sequence is used to determine the new valve position:
   - Current Temperature = Setpoint + 1.0°F = 100% Position Open
   - Current Temperature = Setpoint + 0.9°F = 90% Position Open
   - Current Temperature = Setpoint + 0.8°F = 80% Position Open
   - Current Temperature = Setpoint + 0.7°F = 70% Position Open
   - Current Temperature = Setpoint + 0.6°F = 60% Position Open
   - Current Temperature = Setpoint + 0.5°F = 50% Position Open
   - Current Temperature = Setpoint + 0.4°F = 40% Position Open
   - Current Temperature = Setpoint + 0.3°F = 30% Position Open
   - Current Temperature = Setpoint + 0.2°F = 20% Position Open
   - Current Temperature = Setpoint + 0.1°F = 10% Position Open
   - Current Temperature = Setpoint + 0.0°F = 0% Position Open

REHEAT

1. Reheat setting is 1 – Elect (electric reheat). The reheat only operates during dehumidification mode.

If one reheat setting is selected, reheat allows during other mode

2. Reheat stages ON and OFF as follows:

   Reheat is ON at Temperature Setpoint – Temperature Deadband

   Reheat is OFF at Temperature Setpoint

The above reheat staging is for the standard single stage electric reheat. Other types of reheat are available (hot water and hot gas). They are single stage. Single stage operates in the following manner:

   Reheat is ON at Temperature Setpoint – Temperature Deadband
   Reheat is OFF at Temperature Setpoint
3. Reheat will be overridden by humidification when the humidifier setting is programmed for Computer, Non-Modulating or Computer, Modulating (See Menu J – Factory Settings).

HUMIDIFICATION

1. Humidification will inhibit the reheat if programmed (See Menu J - Factory Settings) for Humidifier: Computer Non-Modulating or Humidifier: Computer Modulating. Reheat is allowed during humidification if programmed for Humidifier Comfort, Non-Modulating or Humidifier Comfort, Modulating.

2. There is a one (1) minute delay between the stop-to-start of humidification.

3. There is a five (5) minute delay between the dehumidification and start of humidification.

4. The humidification staging sequence of each adjustment period for ON/OFF of non-modulating humidifiers is as follows:

   Humidifier is ON at Humidity Setpoint – Humidity Deadband  
   Humidifier is OFF at Humidity Setpoint – 1.0%

5. The humidification staging sequence for a modulating humidifier is as follows:

   Valve is OPENED at Humidity Setpoint – 1.0%  
   Valve is CLOSED at Humidity Setpoint – 0.5%

6. When the humidifier valve is opened, its position will follow a linear ramp that goes from 25% open with the humidity at setpoint minus 0.5% to 100% open at setpoint minus humidity deadband.

DEHUMIDIFICATION

1. Dehumidification Mode can be programmed with one or two compressors (dual compressor units only) for dehumidification and with or without reheat limits (See Menu J – Factory Settings).

2. If dehumidification is programmed for “In Limits” dehumidification will inhibit if the return air temperature drops to temperature setpoint minus temperature deadband minus 2°F. Dehumidification will be inhibited until the return air temperature rises to the temperature setpoint. Compressor short-cycle time will not be violated.

3. If dehumidification is programmed for “No Limits” it will remain ON until the humidity setpoint is reached. In this mode dehumidification has priority and overcooling is disregarded. The reheat sequence will remain the same.

4. If dehumidification is programmed for two (2) compressors, with or without reheat limits, only one (1) compressor will be allowed if reheat is required.

5. There is a one (1) minute delay between stop-to-start of dehumidification. Compressor short-cycle time delay will not be violated.

6. There is a five (5) minute delay between dehumidification and humidification.

7. The compressor staging sequence for dehumidification at each adjustment period is as follows:

   Cool 1 ON at Humidity Setpoint + Humidity Deadband  
   Cool 2 ON at Humidity Setpoint + Humidity Deadband + 1% (LCS Dual Compressor Units)  
   Cool 2 OFF at Humidity Setpoint + 1% (LCS Dual Compressor Units)  
   Cool 1 OFF at Humidity Setpoint

8. The sequence for dehumidification with Energy Saver or Auxiliary Chilled Water Cooling is as follows:

   Valve is OPENED to 100% at Humidity Setpoint + Humidity Deadband  
   Valve is CLOSED at Humidity Setpoint
DEWPOINT CONTROL LOGIC

Menu Settings and Display for Dewpoint mode

1. If humidifier control mode is set to Dewpoint control, Mini-dap4 will shows the additional setpoints:

   Menu B - Setpoints
   - High Dewpoint setpoint (Range 50 to 65) - default 59°F
   - High Dewpoint Deadband (Range 1.0 to 3.0) - default 1°F
   - Low Dewpoint setpoint (Range 40 to 55) - default 45°F
   - Low Dewpoint Deadband (Range 1.0 to 3.0) - default 1°F

   The high and low dewpoint setpoint cannot overlap.

DX Dehumidification in dewpoint mode

   In DX mode, 2-cooling stages on as follows:
   Cooling 1 on when dewpoint = High Dewpoint Setpoint - 0.2°F OR Humidity Setpoint - 1%
   Cooling 2 on when dewpoint = High Dewpoint Setpoint - 0.0°F OR Humidity Setpoint - 0%

   In DX mode, 2-cooling stages off as follows:
   Cooling 2 off when dewpoint = High Dewpoint Setpoint - High Dewpoint DB - 0.0°F AND
   Humidity Setpoint - Humidity Deadband - 0%
   Cooling 1 off when dewpoint = High Dewpoint Setpoint - High Dewpoint DB - 0.2°F AND
   Humidity Setpoint - Humidity Deadband - 1%

Chilled Water Dehumidification in dewpoint mode

   Chilled Water valve opening
   Chilled Water valve will open if dewpoint is increasing OR relative humidity is increasing closer to the setpoints. Either high dewpoint or high relative humidity can cause the CW to open and call for dehumidification. The modulation of the CW valve will be based on whichever has higher demand for CW valve to open. For example, if dewpoint requires the CW valve to open 20% and humidity requires the CW valve to open 50%, as a result, CW valve will open 50%. Individual logic for CW valve opening based on dewpoint and humidity is as followed:

   CW valve modulation based on dewpoint
   Dehumidification mode will start if return dewpoint rises to high_dewpoint_setpoint – 1.0°F; after that, CW valve will:
   - Open 10% if return dewpoint = high_dewpoint_setpoint – 0.9°F
   - Open 20% if return dewpoint = high_dewpoint_setpoint – 0.8°F
   - Open 30% if return dewpoint = high_dewpoint_setpoint – 0.7°F
   - Open 40% if return dewpoint = high_dewpoint_setpoint – 0.6°F
   - Open 50% if return dewpoint = high_dewpoint_setpoint – 0.5°F
   - Open 60% if return dewpoint = high_dewpoint_setpoint – 0.4°F
   - Open 70% if return dewpoint = high_dewpoint_setpoint – 0.3°F
   - Open 80% if return dewpoint = high_dewpoint_setpoint – 0.2°F
   - Open 90% if return dewpoint = high_dewpoint_setpoint – 0.1°F
   - Open 100% if return dewpoint = high_dewpoint_setpoint
CW valve modulation based on humidity

Dehumidification mode will start if return_relative_humidity rises to humidity_setpoint – 1.0%; after that, CW valve will:

- Open 10% if return_relative_humidity = humidity_setpoint – 0.9%
- Open 20% if return_relative_humidity = humidity_setpoint – 0.8%
- Open 30% if return_relative_humidity = humidity_setpoint – 0.7%
- Open 40% if return_relative_humidity = humidity_setpoint – 0.6%
- Open 50% if return_relative_humidity = humidity_setpoint – 0.5%
- Open 60% if return_relative_humidity = humidity_setpoint – 0.4%
- Open 70% if return_relative_humidity = humidity_setpoint – 0.3%
- Open 80% if return_relative_humidity = humidity_setpoint – 0.2%
- Open 90% if return_relative_humidity = humidity_setpoint – 0.1%
- Open 100% if return_relative_humidity = humidity_setpoint

Chilled Water valve closing

While still in dehumidification mode, Chilled Water valve will start to close if dewpoint is decreasing OR relative humidity is decreasing closer to the setpoints minus deadband. The modulation of the CW valve will be based on whichever has HIGHER demand for CW valve to open. For example, if dewpoint requires the CW valve to open 20% and humidity requires the CW valve to open 50%, as a result, CW valve will open 50%.

Individual logic for CW valve closing based on dewpoint and humidity is as followed:

CW valve modulation based on dewpoint

Start to close if return dewpoint drops to high_dewpoint_setpoint – high_dewpoint_deadband; after that, the CW valve will:

- Open 90% if return dewpoint = high_dewpoint_setpoint – high_dewpoint_deadband – 0.1°F
- Open 80% if return dewpoint = high_dewpoint_setpoint – high_dewpoint_deadband – 0.2°F
- Open 70% if return dewpoint = high_dewpoint_setpoint – high_dewpoint_deadband – 0.3°F
- Open 60% if return dewpoint = high_dewpoint_setpoint – high_dewpoint_deadband – 0.4°F
- Open 50% if return dewpoint = high_dewpoint_setpoint – high_dewpoint_deadband – 0.5°F
- Open 40% if return dewpoint = high_dewpoint_setpoint – high_dewpoint_deadband – 0.6°F
- Open 30% if return dewpoint = high_dewpoint_setpoint – high_dewpoint_deadband – 0.7°F
- Open 20% if return dewpoint = high_dewpoint_setpoint – high_dewpoint_deadband – 0.8°F
- Open 10% if return dewpoint = high_dewpoint_setpoint – high_dewpoint_deadband – 0.9°F
- Closed if return dewpoint = high_dewpoint_setpoint – high_dewpoint_deadband – 1.0°F

Humidifier Operation

Humidifier will turn on when dewpoint is below Low Dewpoint Setpoint

Humidifier will turn off when dewpoint is above Low Dewpoint Setpoint + Low Dewpoint Deadband

If Low dewpoint setpoint is set too high, the humidifier might run pass the relative humidity setpoint. When this happens, the humidifier will be inhibited and a warning will display on dap4 LCD screen.
DEHUMIDIFICATION FOR CHILLED WATER UNITS

1. All the standard dehumidification rules for dehumidification with compressors applies to chilled water units.

2. The chilled water valve responds to a change of the return air relative humidity (RH) after each adjustment period.

3. The dehumidification sequence for chilled water units is as follows:
   - Valve is OPENED to 100% at Humidity Setpoint + Humidity Deadband
   - Valve is CLOSED at Humidity Setpoint

AUTOMATIC FLUSH CYCLE for CHILLED WATER or HOT WATER COILS

If 100 hours elapses and the chilled water or hot water valve has not opened for normal cooling or heating, the valve will automatically open for 30 seconds to flush the coil. The display module will not display a message indicating the flush cycle is in progress.

HUMIDITY ANTICIPATION

1. Humidity anticipation is programmable: ON or OFF (See Menu J – Factory Settings)

2. When set to ON, the humidity setpoint is automatically modified to reduce excessive humidifying and dehumidifying.
   - The humidity setpoint is decreased by 1% for 1.5°F the return air temperature rises above the temperature setpoint. The maximum amount the humidity setpoint may be decreased is 10% (15°F above the return air temperature setpoint).
   - The humidity setpoint is increased by 1% for every 1.5°F the return air temperature falls below the temperature setpoint. The maximum amount the humidity setpoints may be increased is 10% (15°F below the return air temperature setpoint).

TEMPERATURE and HUMIDITY SENSOR PROBLEM

1. A temperature sensor problem will activate all of the cooling stages if the unit is operating at the time of the problem.

2. A humidity sensor problem will inhibit the humidification or dehumidification functions if the unit is operating at the time of the problem.

COMPRESSOR SHORT-CYCLE ALARM

1. Compressor shot-cycle alarm is programmable (See Menu K – Alarms and Limits). A compressor short-cycle alarm will activate if the compressor has been energized ten (10) times in a one (1) hour period.

2. The alarm is a warning only. Compressor operation will continue.

3. One cycle is a combination of compressor starts for cooling or dehumidification functions.

4. If the compressor is started ten (10) times in a one (1) hours period, the alarm will be activated and the message “Comp Short- Cycle” will be displayed on the display module.

5. The compressor short-cycle time delay will be increased from five (5) to six (6) minutes for the next hour.

6. The short-cycle alarm will not clear until a one (1) hour period has passed with less than ten (10) compressor starts.
POWER PROBLEM or RESTART MODE

The Power Problem or Restart Mode is programmable (See Menu K – Alarms and Limits). There are three available selections:

1. “Auto, No Alarm” (Automatic: No Message or Alarm). The unit will automatically start after a power failure or reset. No audio alarm will sound. No message will be displayed on the display module.

2. “Auto, With Alrm” (Automatic: Message, Audio Alarm & Relay). The unit will automatically restart after a power failure or reset. The audio alarm will be activated and the message " Power Failure Restart" will be displayed on the display module.

3. “Man, Clr Alarm” (Manual: Message, Audio Alarm & Relay). The unit will NOT automatically restart after a power failure or restart.

NO AIRFLOW ALARM

1. When no airflow is detected via the air flow switch or current sensing relay, the cooling, reheat, humidification and dehumidification functions are locked out until the alarm condition is corrected. Menu K – Alarms and Limits, allows adjustment of the alarm delay from 5 to 180 seconds in 5 second increments. Adjustment is to minimize false alarms due to air turbulence.

2. The audio alarm is activated and a “No Airflow” message is displayed on the display module until the condition is corrected.

STANDBY PUMP ON ALARM

1. The standby pump on alarm is optional and requires a contact from the optional Pump Auto-Changeover control to be added to the remote dry cooler.

2. The alarm is programmable (See Menu K – Alarms and Limits).

3. The audio alarm is activated and a “Standby Pump On” message will be displayed on the display module.

4. The alarm is a warning only and will not prevent any of the unit functions from operating.

5. The alarm will remain until the alarm condition is corrected.

UPS/ALTERNATE POWER ON ALARM

1. The UPS/alternate power on alarm is optional and requires an input contact from a field supplied alternate power source or contacts.

2. The alarm is programmable (See Menu K – Alarms and Limits).

3. The audio alarm is activated and a “UPS/Alternate Power On:Check Main Power” message will be displayed on the display module.

4. The alarm is a warning only and will not prevent any of the unit functions from operating.

5. The alarm will remain until the alarm condition is corrected.

REHEAT INHIBITED ALARM

1. The reheat inhibited alarm is optional and requires an input contact from a field supplied alternate power source or contacts.

2. The alarm is programmable (See Menu K – Alarms and Limits).
3. The audio alarm is activated and a “Reheat Inhibited” message will be displayed on the display module.

4. If in operating mode, the reheat is shut off and locked (off) when alarm is present.

5. The alarm will remain until the alarm condition is corrected.

**HUMIDIFICATION INHIBITED ALARM**

1. The humidification inhibited alarm is optional and requires an input contact from a field supplied alternate power source or contacts.

2. The alarm is programmable (See Menu K – Alarms and Limits).

3. The audio alarm is activated and a “Humidification Inhibited” message will be displayed on the display module.

4. If in operating mode, the humidification is shut off and locked (off) when alarm is present.

5. The alarm will remain until the alarm condition is corrected.

**REHEAT AND HUMIDIFICATION INHIBITED ALARM**

1. The humidification inhibited alarm is optional and requires an input contact from a field supplied contact.

2. The alarm is programmable (See Menu K – Alarms and Limits).

3. The audio alarm is activated and a “Reheat and Humidification Inhibited” message will be displayed on the display module.

4. If in operating mode, the reheat and humidification is shut off and locked (off) when alarm is present.

5. The alarm will remain until the alarm condition is corrected.

**DIRTY FILTER ALARM**

When a dirty filter is detected (through the unit mounted pressure differential switch), an audio alarm is activated and “Dirty Filter” message will be displayed until the condition is corrected.

**FIRESTAT TEMPERATURE ALARM**

1. The firestat temperature alarm is programmable from 100 to 150°F (see Menu K – Alarms and Limits)

2. If the return air temperature reaches the firestat temperature alarm limit, the blower, cooling, reheat, humidification and dehumidification functions are immediately terminated.

3. The audio alarm is activated and “Firestat Tripped – Unit Shutdown” message will be displayed on the display module until the condition is corrected.

4. The alarm will prevent the unit from operating until the alarm is corrected.

**HIGH TEMPERATURE ALARM**

1. The high temperature alarm limit is programmable (see Menu K – Alarms and Limits). The range is from 70 to 90°F. It can also be disabled.

2. If the alarm is not disabled and the return air temperature rises above the high temperature alarm limit, the audio alarm is activated and a “High Return Air Temperature” message is displayed on the display module.

3. The audio alarm is a warning only and will not prevent any of the unit functions from operating.

4. The alarm will remain until the alarm condition is corrected.
LOW TEMPERATURE ALARM LIMIT

1. The low temperature alarm limit programmable (See Menu K – Alarms and Limits). The range is from 55 to 75°F. It can also be disabled.

2. If the alarm is not disabled and the return air temperature falls below the high temperature alarm limit, the audio alarm is activated and a “Low Return Air Temperature” message is displayed on the display module.

3. The audio alarm is a warning only and will not prevent any of the unit functions from operating.

4. The alarm will remain until the alarm condition is corrected.

HIGH HUMIDITY ALARM LIMIT

1. The high humidity alarm limit is programmable (See Menu K – Alarms and Limits). The range is from 35 to 90%.

2. If the alarm is not disabled and the humidity rises above the high humidity alarm limit, the audio alarm is activated and a “High Humidity Warning” message is displayed on the display module.

3. The audio alarm is a warning only and will not prevent any of the unit functions from operating.

4. The alarm will remain until the alarm condition is corrected.

LOW HUMIDITY ALARM LIMIT

1. The low humidity alarm limit is programmable (See Menu K – Alarms and Limits). The range is from 10 to 65%.

2. If the alarm is not disabled and the humidity falls below the low humidity alarm limit, the audio alarm is activated and a “Low Humidity Warning” message is displayed on the display module.

3. The audio alarm is a warning only and will not prevent any of the unit functions from operating.

4. The alarm will remain until the alarm condition is corrected.

HIGH PRESSURE/COMPRESSOR 1 FAIL ALARM

1. In the event of a high pressure condition, the high head pressure switch is tripped or the compressor overload contact opens, the audio alarm is activated and a “Circuit #1: High Pressure” or “Circuit #2: High Pressure” message will be displayed on the display module.

2. The alarm will prevent the compressor(s) from operating and must MANUALLY RESET.

3. The alarm will remain until the alarm condition is corrected.

LOW PRESSURE COMPRESSOR ALARM

1. In the event of a low pressure condition, the audio alarm is activated and a “Circuit #1: Low Pressure” or “Circuit #2: Low Pressure” message will be displayed on the display module.

2. The alarm will prevent the compressor(s) from operating but will automatically reset when the low pressure condition is corrected.

3. The alarm will remain until the alarm condition is corrected.

PERSON TO CONTACT ALARM

1. The person to contact on alarm is programmable (See Menu K – Alarms and Limits). It can also be disabled.

2. The audio alarm is a warning only and will not prevent any of the unit functions from operating.

3. The alarm will remain until the alarm condition is corrected.
SMOKE ALARM

1. The smoke alarm requires an optional smoke detector.

2. If the smoke detector senses smoke, the blower, cooling, reheat, humidification and dehumidification are immediately terminated.

3. The audio alarm is activated and a “Smoke Detector” message is displayed on the display module.

HIGH CONDENSATE WATER LEVEL ALARM

1. When the high condensate water level alarm is activated, cooling, reheat, humidification and dehumidification are immediately terminated.

2. The audio alarm is activated and a “High Condensate Water Level” message is displayed on the display module.

3. The alarm will prevent the functions from operating until the alarm condition is corrected (condensate pump is checked and its float switch is open).

NO WATER FLOW ALARM ACTION – DX COOLING UNITS

1. The Mini dap4 controller will only detect the no water flow alarm when the unit calls for cooling.

2. Each time the cooling stage starts, the no water flow alarm detection will be displayed for the amount of time that is set in Menu K - Alarms and Limits. The programmable range is from 5 to 180 seconds in 1 second increments. The factory setting is “ALARM ONLY”

3. If the “Action” is set (See Menu K – Alarms and Limits) to “Compressor Lockout”, when a no water flow alarm is detected, the compressor(s) will be inhibited for 5 minutes and a “No Water Flow: Cooling Inhibited” message will be displayed on the display module.

CUSTOM MESSAGE ALARM

1. The custom message is optional and is limited to twenty-one (21) characters including spaces.

2. The custom message alarm can be changed to preset messages or to a no contact message (See Menu K – Alarms and Limits).

3. The alarm is activated and the custom message is displayed on the display module.

4. The alarm will remain until the alarm condition is corrected.
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TEMPERATURE SENSOR CHART
Addendum for Mini-Dap4 User Manual – gPod Model

The gPod model is specifically suited for agricultural applications. It has additional features of Lighting control, CO₂ level control, and Night time temperature and humidity offsets which are explained in this document.

1) Two additional sensors can be installed.
   a) CO₂ sensor: Carel (DPWL417000) 4-20mA. With a 24VDC power supply.
   b) Light sensor: 24VAC EM photocell sensor (EM-24A2)

2) Mini-Dap4 I/O connections

---

Mini dap4 I/O control board and Unit Terminal Block Pin ID Number for gPod

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3) Settings in Mini-dap4 for gPod model
There are night time offsets to the temperature, humidity and CO\textsubscript{2} set points. There are also additional settings for CO\textsubscript{2} high and Low level alarms.

a) gPod model
The Mini-dap4 is set to the gPod model at the factory and “gPOD” will appear on the main screen of Mini-dap4. Please contact the Data Aire if your Mini-dap4 controller is not set to the gPod model as required.

b) CO\textsubscript{2} control settings
To access the CO\textsubscript{2} level set point, press Menu button then enter the service level password (default is 0000). After entering the password, use ↑/↓ button to advance to Menu-B “Setpoint” then press enter and go to the CO\textsubscript{2} set point screen. Here you can adjust the CO\textsubscript{2} level set point, dead band and CO\textsubscript{2} valve as desired.

\textbf{CO\textsubscript{2} Set point}
Set point: 1000ppm (100-5000ppm)
Dead band: 25ppm (25-1000ppm)

Min Valve On: 5s (0-32767s)
Valve PWM: 10\% (0-100\%)

Note: This CO\textsubscript{2} set point screen is not shown if the control is not set for CO\textsubscript{2} control in the factory settings menu.

c) Temperature and humidity set point offsets for night time schedule.
To access the temperature and humidity set points, press Menu button then enter service password (default is 0000). After entering the password, select Menu-C “Clock/Scheduler” and go to the Night Schedule screen. Here you can adjust the offsets for temperature and humidity during the night time schedule.

\textbf{Night Schedule}
Cooling offset: 5.0 (-30 to 10°F)
Heating offset: 5.0 (0 to 30 °F)

Humidify offset: 10\% (0-30\%)
Dehumidify offset: 10\% (0-30\%)

Note: Avoid selecting a cooling offset or heating offset that cause excessive power consumption and/or lead to a system short cycle. (A warning message will appear under such conditions). For instance, if cooling offset is set to minus 5°F and heating offset is set to 1°F with 72°F Temp set point and 2°F dead band; during night schedule the cooling set point is adjusted to 67° and heating set point is adjusted to 71°. This cause the compressor to run at 69° (set point +dead band) and the heater to also run at 69° (set point – dead band).
d) Enable CO\textsubscript{2} control and CO\textsubscript{2} at night control
The default settings are that CO\textsubscript{2} control is Yes and Night CO\textsubscript{2} control is No. To access these CO\textsubscript{2} control functions, Press Menu button then enter the Factory level password (default is 0002). Advance to Menu-J “Factory settings” and move to the Options Installed screen. Here you can enable the CO\textsubscript{2} options as desired.

Options Installed
Electronic Valve: None
Power Meter: No

CO\textsubscript{2} Control: Yes (No)
Night CO\textsubscript{2} Cntrl: No (Yes)

Note: Please do not enable any options that are not installed in the unit.

e) CO\textsubscript{2} high and Low level alarm limit settings
To access the CO\textsubscript{2} high and low level alarm set points, press Menu button and enter service password (default is 0000). After entering the password advance to Menu-K “Alarms and Limits” then move to the CO\textsubscript{2} Alarms screen. Here you can enable and adjust the CO\textsubscript{2} alarm level thresholds as desired.

CO\textsubscript{2} Alarms
Low CO\textsubscript{2} Alarm: Yes
Set point: 100ppm (100-5000)

High CO\textsubscript{2} Alarm: Yes
Set point: 2000ppm (500-10000)

4) CO\textsubscript{2} control logic

CO\textsubscript{2} level control logic (when CO\textsubscript{2} control enabled).

i) The CO\textsubscript{2} level (in parts per million) appears on the main display along with other system current conditions such as return air temperature and humidity.

ii) If the CO\textsubscript{2} level drops below the CO\textsubscript{2} set point, the output to the CO\textsubscript{2} valve is energized and a “CO\textsubscript{2} valve on” message will appear on the main status screen. The CO\textsubscript{2} valve is modulated on/off to control its duty cycle by the PWM rate (0-100% in 10s intervals). If the Valve PWM is set to 100%, the CO\textsubscript{2} solenoid valve will turn on and not modulate. The valve will be modulated for at least the “Min Valve On” time even if the CO\textsubscript{2} level has risen. Once the CO\textsubscript{2} level rises above the CO\textsubscript{2} level set point plus CO\textsubscript{2} dead band the CO\textsubscript{2} valve will remain off.

An example of how CO\textsubscript{2} is controlled: let’s assure that the CO\textsubscript{2} set point is 1000ppm, CO\textsubscript{2} dead band is 25ppm, Min Valve on is 10 seconds and the Valve PWM is 20%. When the CO\textsubscript{2} level falls below 1000ppm, the CO\textsubscript{2} solenoid will cycle on for 2 seconds then off for 8 seconds until the CO\textsubscript{2} level rises above 1025ppm.
iii) If the High CO\(_2\) level alarm is enabled (Yes) and the CO\(_2\) level rises above the high CO\(_2\) alarm set point, a “High CO\(_2\) level” message is displayed and audio alarm will sound (if not programmed for Silence). This alarm is a warning only and will not prevent any of the unit functions from operating. The alarm will remain until the alarm condition is corrected. The alarm output contacts will close if this alarm is selected “Yes” in the alarm output function list in menu K.

iv) If the Low CO\(_2\) level alarm is enabled (Yes) and the CO\(_2\) level drops below the low CO\(_2\) alarm set point, a “Low CO\(_2\) level” message is displayed and audio alarm will sound (if not programmed for Silence). The alarm is a warning only and will not prevent any of the unit functions from operating. The alarm will remain until the alarm condition is corrected. The alarm output contacts will close if this alarm is selected “Yes” in the alarm output function list in menu K.

v) CO\(_2\) control during Day/Night schedule: If night CO\(_2\) control is set to No (default setting), CO\(_2\) control will be off at night or when light sensor senses no light and back to normal control mode during day schedule or light is on.

b) Night time mode

i) The night mode can be activated by either; an optional light sensor input or by a programmed time schedule.

ii) While in the night mode, the temperature and humidity set points will be offset by the amount of their offset band settings. See section 3c for details.

iii) A “Night Sch” status message will appear and the offset Temperature (“TSP”) and offset Dehumidify (“HSP”) set points are displayed instead of the normal set points.

iv) Set point offsets work as follows:

Normal daytime mode

- Cooling and Heating Temp set point = Temp set point
- Humidify and Dehumidify set point = Hum set point

Temp and Hum set points are adjusted in menu B “Set point”.

Nighttime mode

- Cooling Temp set point = Temp set point + Cooling offset
- Heating Temp set point = Temp set point - Heating offset
- Humidify set point = Hum set point - Humidify offset
- Dehumidify set point = Hum set point + Dehumidify offset

Night time offsets are adjusted in menu C “Clock/Scheduler”.

v) CO\(_2\) control can be disabled during the nighttime by setting “Night CO\(_2\) cntrl” to “No” (default setting) in Menu J “Factory settings”. CO\(_2\) control will resume during daytime mode.