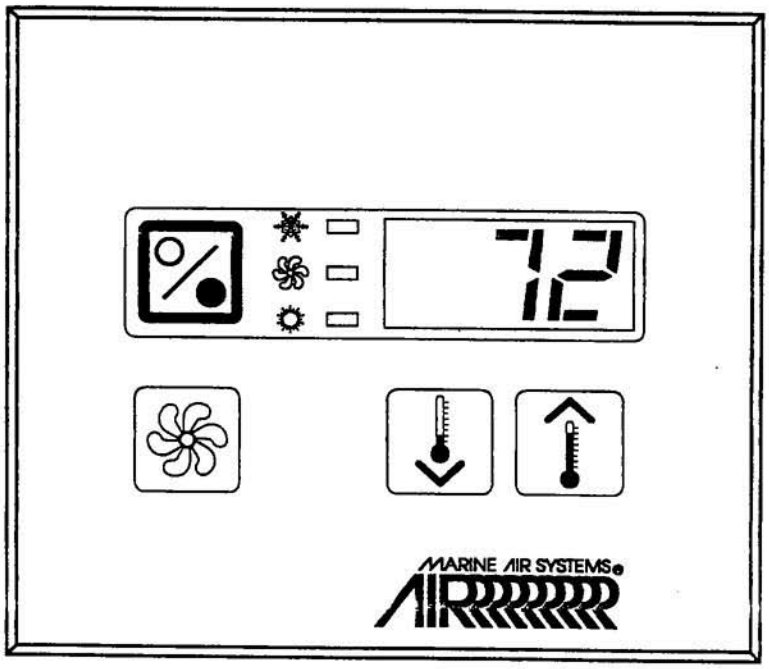
MARINE AIR SYSTEMS®

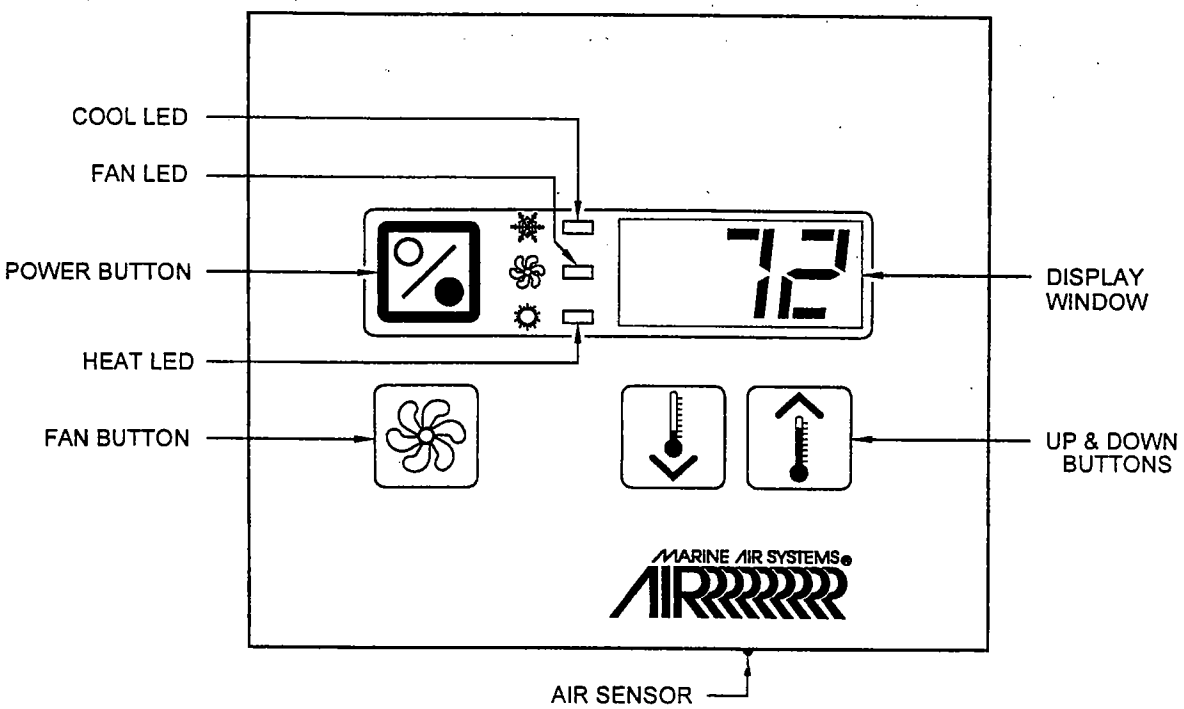
AH-PASSPORT
Operations Manual



Dometic® MARINE AIR SYSTEMS®

Revision: 13 Date: 8/01

PASSPORT II & AH-PASSPORT DISPLAY PANEL INSTALLATION



Before mounting the Passport II/AH-Passport digital display panel touch pad, consider the location. The air sensor built into the display panel will provide excellent room air temperature sensing given a proper installation. The display panel should be mounted on an inside wall, slightly higher than mid-height of the cabin, in a location with freely circulating air where it can best sense average temperature. The cut out size for the display panel is 3⅜" wide by 2¾" high. Do not mount the display in direct sunlight, near any heat producing appliances or in a bulkhead where temperatures radiating from behind the panel may effect performance. **Do not mount the display in the supply air stream.** Do not mount the display above or below a supply or return air grille. Do not mount the display behind a door, in a corner, under a stairwell or any place where there is no freely circulating air. Mount the display within display cable length (custom lengths available) of the air conditioner. Plug the display cable (15'/4.6m standard length with 8-pin connector) into the circuit board in the electric box and into the back of the display panel. Secure the display panel to a bulkhead with the adhesive strips provided. Clean the mounting surface with ***isopropyl alcohol only*** prior to placement (test alcohol on hidden portion of surface first). If the adhesive strips cannot be used directly on the bulkhead then use the plastic bulkhead adapter. The bulkhead adapter (sold separately) is mounted to the bulkhead with screws and the display panel is secured to the adapter with adhesive strips. Do not use a screw gun and do not over-tighten screws when mounting adapter.

If a proper location for room temperature sensing cannot be found for the display, an optional remote air sensor may be used. Mount the remote air sensor in the return air stream behind the return air grille/opening and plug its cable (7'/2.1m standard length with 6-pin connector) into socket #J2 on the circuit board (socket nearest the corner of the board). Installing the remote air sensor will override the face plate sensor. An optional outside air temperature (O.A.T.) sensor and cable may also be used. Plug the O.A.T. cable into the 6-pin socket #J3. Mount the sensor outside but not in direct sunlight. Air sensor cables are available in various lengths. Do not staple any cables when mounting.

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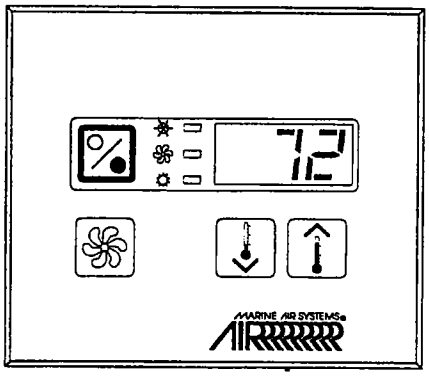
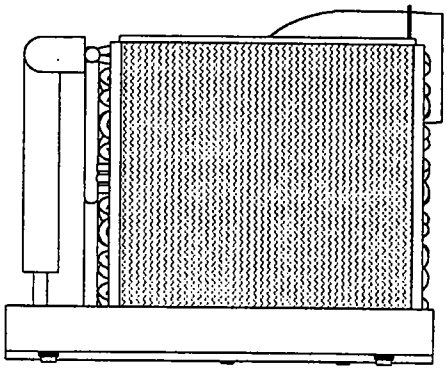
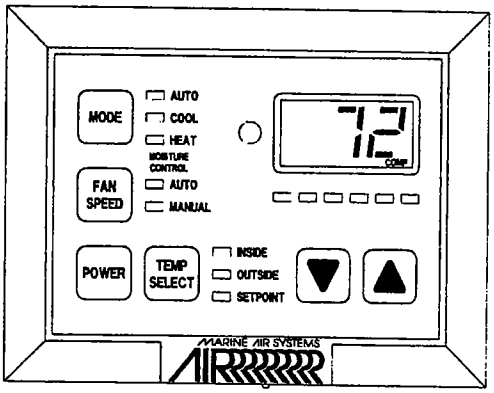
REV	DATE	REVISION	DWG	APR
A	11/9/98	MADE GENERIC FOR ALL AIR HANDLERS	DKM	D D

AH-PASSPORT





AH-MAXX



NO-VALVE AIR HANDLER

NOTICE

Change the following AH-Passport or AH-Maxx programmable parameters when using any Chilled Water Air Handler with NO VALVE:

AH-Passport:

U-10 must be set to "**0**" for the fan to cycle on demand of the thermostat only (all units).

U-12 must be set to "**1**" for a shaded pole fan motor (AHFD 6-16 units only).

AH-Maxx:

P-8 must be set to "OFF" for the fan to cycle on demand of the thermostat only (all units).

DATE: 11/5/98	OPERATION INSTRUCTIONS 'NO-VALVE' AIR HANDLER WITH AH-PASSPORT/MAXX CONTROLS FOR CHILLED WATER SYSTEMS	Taylor Made ENVIRONMENTAL™
SCALE: N.T.S.		
STATUS: CURRENT		
DRAWN BY: DKM / APPROVED BY: D D	DRAWING NO: H4080007A	

Contents

AH-PASSPORT Operations Manual
Marine Air Systems
2000 North Andrews Avenue, Extension
Pompano Beach, Florida 33069

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The **AH-Passport Control** unit is designed for use with Marine Air Hydronics Systems. The system operates on 115 or 230 volt AC power, 50 or 60 Hz. AH-Passport provides optimum control and cabin comfort by incorporating the following features:

Standard Features

- Non-Volatile Memory
- Low Voltage Display Panel
- LED Cabin Temperature Displayed [Fahrenheit or Celsius]
- Face Plate Air Sensor For Accurate Temperature Control

  IMPORTANT: Must be Installed Properly
- Programmable Multiple Fan Speed Selections
- User Selected Programs For Optimum Control
- Water In Sensor Allows Individual Cabin Heating

  Note: Optional Electric Heater Required.
- Moisture Mode Cycle For Humidity Control
- Conformal Coated PC Boards

  High Reliability in Marine Environment
- Dual AC Voltage Input... 115 or 220 VAC

Optional Features

- Outside Air Temperature Sensor
- Electric Heat Chill Chaser Output
- High Output Fan Circuit
- Alternate Air Temperature Sensor

This manual is intended to provide information necessary to insure proper installation and operation of the **AH-PASSPORT.** Improper installation or **MISUNDERSTOOD** operating procedures can result in unsatisfactory performance and or premature failure of the controller.

Before Proceeding Read This Manual Completely

If assistance is required prior to or during the installation call Marine Air Systems at 954 973-2477 or send Fax to 954 979-4414.

The **AH-PASSPORT** is covered under existing Marine Air Systems Warranty Policy. Neglect and system abuse are not covered under the implied or stated warranty policy.

In the interest of product improvement, Marine Air Systems' specifications and design are subject to change without prior notice.

Temperature Ranges

Set Point	60 - 85°F	15.5 - 29.4°C
Display Temperature	0 - 150°F	-17.8° to 65.6°C
Air Sensor Temperature	0 - 150°F	-17.8° to 65.6°C

Dimensions

Display Panel	Width 3.875" X 4.50"
Panel Cut Out	Width 3.375" X Height 2.750"

Cable Lengths

Display Cable	Standard 15'
Alternate Air Sensor	Standard 7'
Outside Air Sensor	Standard 15'

INFO

Custom cable lengths available on special request in 5 foot increments. Maximum length of display cable is seventy-five (75) feet. Sensor cable lengths should be limited to 150 feet. The **outside air sensor** and **alternate air sensor** are optional items and are **not** included with the standard control package.

System Inputs

Ambient or Inside Air Temperature

Water Inlet Temperature

Alternate Inside Air Temperature Sensor (Optional)

Outside Air Temperature Sensor (Optional)

Memory

AH-PASSPORT has nonvolatile memory which requires no batteries or any form of backup power. When power is lost, the operating parameters are retained indefinitely. When power is restored, the control resumes operating as last programmed. All operating and programming parameters are entered into nonvolatile memory instantly and are retained indefinitely.

Temperature Hysteresis

While in a given mode the controller will maintain a two degrees Fahrenheit (2 °F) temperature variation. A four degree swing is required to cause the unit to shift to the opposite mode. Once in a given mode, heating or cooling, AH-Passport will maintain a two degree hysteresis. The system can be programmed for automatic operation, i.e. heating or cooling on demand, cooling only, or heating only.

Please refer to figure 1, below, for the button locations and display functions listed on the following pages.

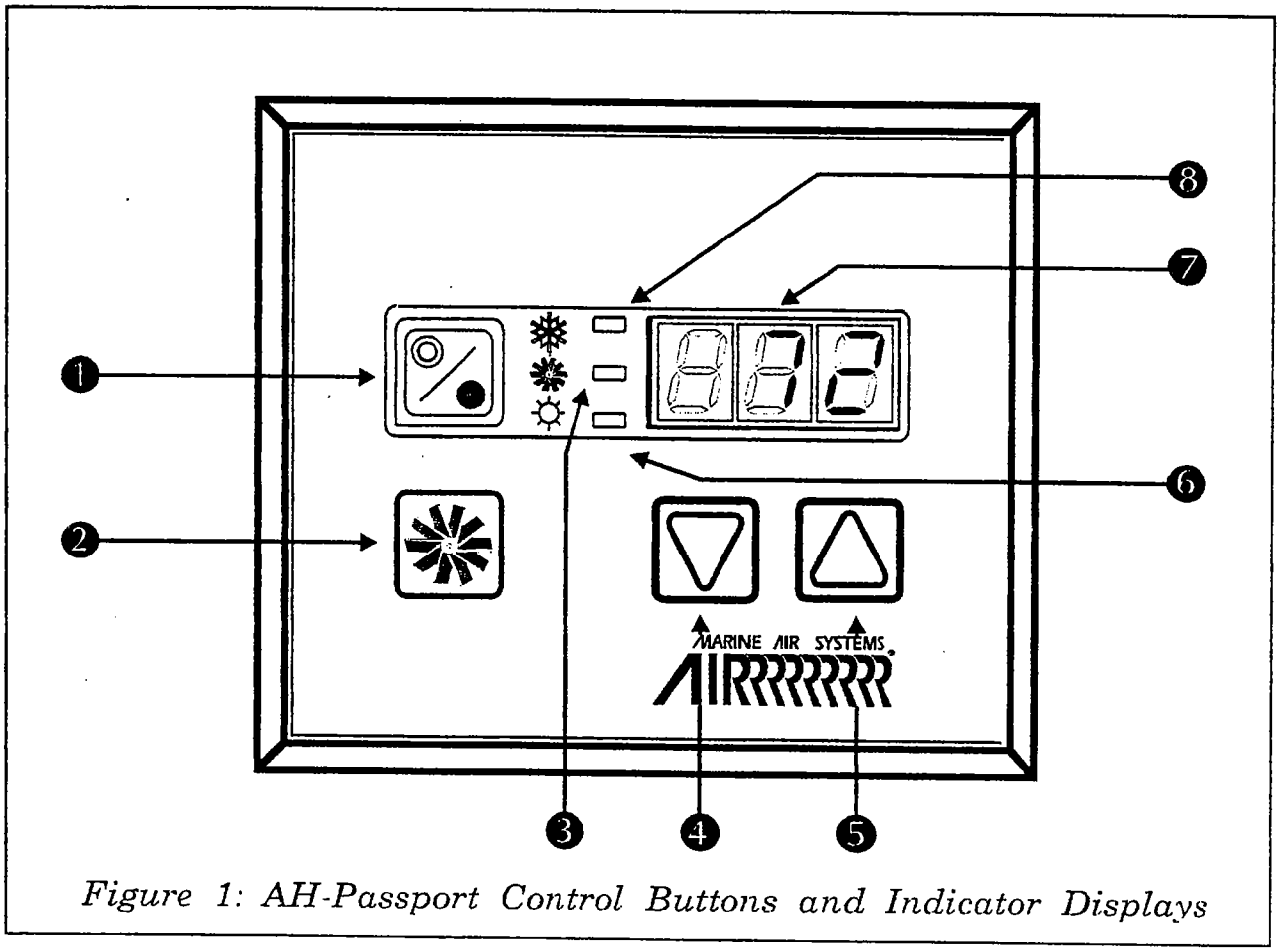


Figure 1: AH-Passport Control Buttons and Indicator Displays

1. POWER BUTTON The power button is used to toggle between the **on** and **off modes**. Press and hold the power button while in the off mode to enter the **program mode**. Press and hold the power button for ten seconds to reset the **factory default program parameters**. The **power** and **down buttons** are used to unlock the program values and allow programming changes while in the programming mode.

2. FAN SPEED BUTTON The fan speed button is used to select one of the six manual or automatic fan speed settings. The automatic fan mode controls fan speed according to the difference between set point and room temperature. The greater the difference, the faster the fan will run unless the system is programmed for reverse fan operation in the heating mode. The fan button is used with the down button to **Blank** the display for nighttime operation.

3. MANUAL FAN SPEED LED The manual fan speed indicator LED will be lit when a manual fan speed has been selected. The fan speed indicator is also lit when the fan is operated in the **circulation mode** only.

4. DOWN BUTTON Momentarily press and release the **down button** and the set point temperature will appear in the display. Press and hold the down button and the set point will begin to decrease, slowly at first, then faster as the button remains depressed. The lowest set point allowed is 60° Fahrenheit which is where the display will stop. The down button is also used in conjunction with the fan button to blank the display making night time operation less obtrusive. The down button is also used to change programmable parameters in the program mode.

5. Up Button Momentarily press the **up button** and the set point will appear in the temperature display. Press and hold the up button and the set point will increase, slowly at first, then faster as the button remains depressed. The highest set point allowed is 85° F which is where the display will stop no matter how long the button is held down. The up button is also used to change programmable parameters in the program mode.

6. HEAT MODE LED The heat mode LED indicator will be lit when the system is calling for heating and the water valve is open. The heat mode LED is also lit when electric heat is installed and heating is required.

Temperature Satisfied

7. THREE DIGIT SEVEN SEGMENT DISPLAY The inside air temperature is displayed in the window whenever the control is turned on. The three digit 7-segment display provides a read-out of the inside air temperature as detected by the inside air sensor (located on the face plate unless the **alternate** air sensor is installed).

The display provides program information, fault codes depending on the mode selected by the user and outside air temperature when the **optional outside air temperature sensor** is installed.

The three digit display also indicates set point when either the **up** or **down** buttons are momentarily pressed.

8. COOL MODE LED The cool mode indicator LED will be lit when cooling is called for and the water valve is open. When **cooling only** is selected the cool LED turns on and off with the water valve.

NOTE:

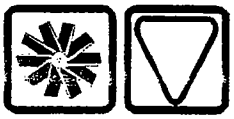
AH-PASSPORT RESET

When the control resumes operation after a power interruption all the display LEDs will turn on for one second. This is a normal operating condition and is referred to as "Power On Reset".

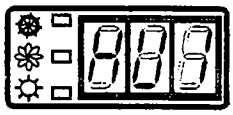
DUAL BUTTON FUNCTIONS

1. Up & Down Buttons...Off Mode Press the up and down button together and the outside air temperature will be displayed, providing the OPTIONAL OUTSIDE AIR TEMPERATURE SENSOR has been installed and programmed. See program item (U-8). The outside air temperature can only be viewed when the control is in the **off mode**.

2. Up & Down Buttons... On Mode Press the **up** and **down buttons** simultaneously, **while in the on mode**, and the convector water inlet temperature will appear in the display. The convector water inlet temperature can only be viewed while the control is in the **on mode**.

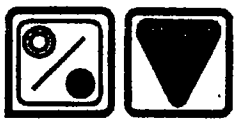


3. Fan & Down Button Press the fan and down buttons simultaneously to blank the display for night time operation. While the display is blanked, the heating or cooling mode LED will remain lit indicating proper system operation. When the control is satisfied the middle segment of the three digit display remains lit indicating the system is operational. Pressing any button returns the display to normal operation.



Humidity Mode Level 1

4. Power & Down Button While in the **ON MODE,** press the power and the down buttons together to enter the **MOISTURE CONTROL MODE**. Once in the moisture mode, the display will indicate **H U 1**. Pressing the power button once returns the control to the off mode.



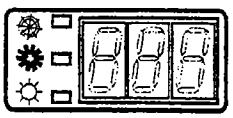
5. Power & Down Button - Program Mode Press the power and down button after entering the program mode to unlock the programming values and allow program changes. This feature prevents accidental programming changes should someone access the program mode by mistake.

NOTE:

Item Six (6) ... While in the Blank Display Mode, the center segment of the temperature display remains " ON " when no heating or cooling is called for indicating the control is operational.

MODES OF OPERATION

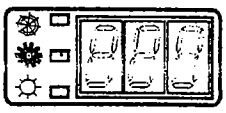
Off Mode



AH-PASSPORT OFF MODE

When the **AH-Passport** is in the off mode, all control outputs are turned off. Program parameters and user settings are saved in nonvolatile memory. The program mode can only be accessed from the off mode.

On Mode



AH-PASSPORT ON MODE

When the control is in the On Mode, power will be supplied to the appropriate control outputs and the display will indicate the current state of operation. The operating and program parameters resume based on those stored the last time the unit was operating.

Cool Only Mode

Cooling Mode

When the **AH-PASSPORT** control is configured for the **cooling only mode**, the cooling systems will be selected and operated as required. When the temperature drops below the cool set point the system will **not automatically** switch to the heating mode. The **cooling only mode** is supplied for installations without the optional chill chaser or where automatic heating selection is not desired.

Heating Mode Only

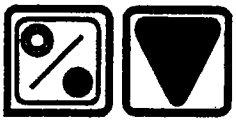
Heating Mode

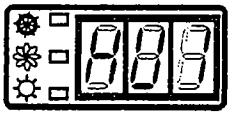
When the controller is programed for the **heating only mode**, the heating systems will be selected for operation as required. Should the temperature rise above the heating set point, the system will **not automatically** switch to the cooling mode. Heating only is supplied for circumstances that require the system not automatically switch to the cooling mode.

Automatic Mode

When **AH-PASSPORT** is configured for the automatic mode, both heating and cooling will be supplied as required. The heat and cool LED indicators will be lit according to which mode is required. The **heat** and **cool** LED follow the valve operation, i.e. on when the valve is on and off when the valve is off. Temperature hysteresis in a given mode will be maintained at two degrees (2° F) Fahrenheit, however, a four degree (4° F) Fahrenheit difference is required to allow mode changes. Once in a new mode, the hysteresis will remain at two degrees (2° F) Fahrenheit.

HUMIDITY MODE





Humidity Mode Level 1

While in the **on mode**, press the power and the down buttons simultaneously to enter the humidity or **moisture control mode**. The letters **"H U I"** will appear in the temperature display indicating successful entry.

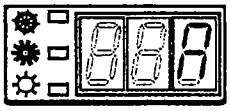
Every four (4) hours, the fan is started and air circulated for thirty (30) minutes. During this time the air temperature is sampled and entered into memory. The cooling cycle is started and continues until the temperature is lowered two (2) °F. The system is allowed a maximum of one hour running time to reach the desired temperature. Four (4) hours after the temperature is satisfied or the timer runs out, the cycle is repeated. During the humidity cycle the cool LED is lit while the valve is open.

The humidity mode is provided to maintain a specific temperature and humidity range when the yacht is unoccupied for extended periods of time.

PLEASE NOTE: THE HUMIDITY MODE CAN ONLY BE ENTERED FROM THE ON MODE.

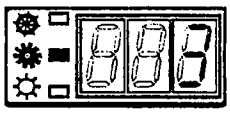
FAN MODES

Automatic Fan Mode


Automatic Fan Mode

AH-Passport has six automatic fan speeds available. Six represents high, three is medium and one is low fan speed. Press and hold the fan button until the letter **A** appears in the temperature display window. When the fan LED is off, **automatic fan operation** has been selected. Automatic fan mode allows AH-Passport to determine the fan speeds based on room temperature. The closer the room temperature is to the set point, the slower the fan will run. This permits a balance between the most efficient temperature control and slower, quieter fan speeds. Automatic fan operation is the **factory default mode**, however, manual fan speed control is available.

Manual Fan Mode


Manual Fan Speed 3

Press and hold the fan button during normal operation to select one of the six (6) manual fan speeds available. Six (6) is the fastest and one (1) represents the slowest speed. Manual fan mode allows the user to select the desired fan speeds manually. When a manual fan speed has been selected the fan LED will be lit. Manual fan mode is sometimes preferred when room temperature is constantly changing due to varying heat loads.

Circulation Mode

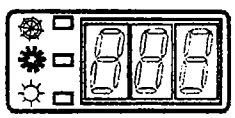
When the system is off at the display panel the fan can be used to only circulate the air. Press and hold the fan button when the display is off until the desired speed number appears in the window. Release the fan button and the fan will run at the selected speed circulating the air without heating or cooling. Press the power button once to cancel the circulation mode and enter the on mode.

NOTE:

High and Low Fan Limits - Fan speeds can be further tailored to suit the user by adjusting the high and low fan limits. See programming modes U 2 and U 3.

PROGRAM MODE

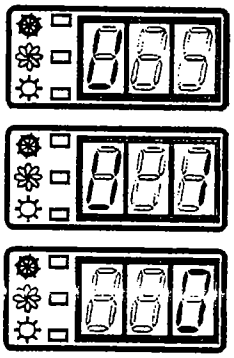
Program Mode Overview


AH-PASSPORT OFF MODE

The program mode is used to adjust the systems operating parameters to suit the particular needs of individual users. The program mode is also used to tailor the air-conditioning system for most efficient operation within an installation. Installation variables such as ducting, sensor location and system layout effect the perceived operation of the overall system. The program mode allows the system to operate as efficiently as possible within a given installation. **AH-PASSPORT** is shipped with factory programmable default settings which are stored in permanent memory and can be recalled at any time.

IMPORTANT! ***Severe electrical disturbances can sometimes upset the AH-PASSPORT operating sequences. Operator confusion related to program parameters can also cause, what seem to be, operational problems. Whenever there is any doubt as to the proper operation of the controller, Factory Default Parameters should be Re-initialized.***

ENTERING PROGRAM MODE



The program mode can ONLY be entered from the **off mode**. From the off mode, press and hold the power button for five (5) seconds until a "U" appears in the display. Release the power button and the characters "U 1" followed by a parameter setting, appear in the display. AH-PASSPORT is now in the program mode. Exit the program mode to the **off mode** by pressing and releasing the **power** button.

NOTE: The control will exit the program mode and return to the **off mode** if no programming is attempted for one (1) minute.

Restore Factory Default Settings

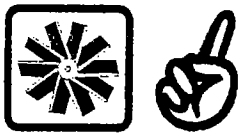
Restore Defaults

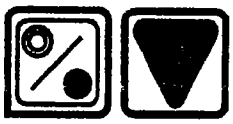
Software I.D.#

IMPORTANT ! Factory default settings can re **restored** by pressing and holding the power button for ten (10) seconds while the control is in the **off mode**. Five (5) seconds after the power button is pressed, the letter "U" appears in the display window. After ten (10) seconds a software revision number, such as ("A.1O") appears, indicating re-initialization has been completed. Release the power button and the AH-Passport control will return to the off mode with the **factory default settings** restored.

PROGRAMMING

Using the Program Mode





Increment from one **program parameter** to the next by pressing the **fan button** while in the **program mode**. Press and hold the fan button for a moment, then release the button when the desired parameter appears in the display. Press and **hold** the fan button to scroll through the program parameters. The **programmable parameters** range from "U-1" through "U-14" for hydronic air-conditioning systems.

To prevent accidental programming changes the program mode is locked. Once in the program mode both the power and down buttons must be pressed simultaneously to unlock the programming parameters.

Programmable Parameters

There are fourteen (14) programmable parameters with their Factory Default Settings listed in this section. The table below indicates what these parameters are, along with the permitted values and Factory Default Settings.

Program Number	Description	Defaults Set	Range
U-1	Operating Mode ... Cooling Only, Heating Only or Automatic Cooling and Heating as Required.	0 = Automatic	0 = Auto Heat or Cool 1 = Cooling Only 2 = Heating Only
U-2	High Fan Speed Limit (arbitrary units)	85	56 - 85
U-3	Low Fan Speed Limit (arbitrary units)	50	30 - 55
U-4	Not Displayed... for Future Options.	None	None
U-5	Temperature Sensor Calibration	0	±10° Fahrenheit
U-6	Not Displayed... for Future Options.	None	None
U-7	Display ° Fahrenheit or ° Celsius	0 = °F	0 = ° Fahrenheit 1 = ° Celsius
U-8	Outside Air Temperature Sensor Only When AltAir Sensor Not Required	0 = Not Installed	0 = Not Installed 1 = Sensor Installed
U-9	Reverse Fan Speeds During Heating Mode	1 = Reversed	0 = Normal Operation 1 = Reverse Fan
U-10	Continous Fan or Cycle Fan On Demand	1 = Cont. Fan Operation	0 = Cycle Fan w/ Demand 1 = Cont. Fan Operation
U-11	Electric Heater Option Installed	0 = Hydronic Heating Only	0 = Normal Heat Cycle 1 = Electric Heat Installed
U-12	Fan motor type selection... Shaded pole or split capacitor.	0 = Split Capacitor	0 = Split Cap Fan Motor 1 = Shaded Pole Motor
U-13	Water Valve Forced Open for 4 Hours to Bleed the System	0 = Normal Operation	0 = Normal Operation 1 = Valve Forced Open
U-14	Ambient Air Temp. to Hydronic Water Temp. Differential	15° Fahrenheit	5° to 25° Fahrenheit

Important: Should any programming problems or confusion occur, reset the Factory Default Settings by pressing and holding the Power Button, whilein the Off Mode, for ten (10) seconds.

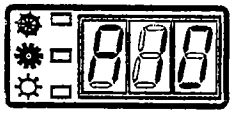
The Up and Down Buttons

The **up** and **down buttons** are used to select the data or set the desired limits for the parameter being programmed. This method is followed throughout the program mode, however, special instructions are included for individual functions that require them.

Exiting the Program Mode

There are two methods to exit the program mode. Press the power button and the **AH-PASSPORT** control will return to the **off mode**. Not pressing any buttons or attempting any program changes for sixty (60) seconds will cause the control to exit the **program mode** to the **off mode**. Any programming changes that were made while in the program mode will be memorized and put into operation when the mode is exited and the control returned to the on mode.

Software Identification



The software version of the control is identified for one (1) second prior to the exit from the program mode. The software identification number, i.e. ("A.1O") will appear in the display for one second, then the control will return to the off mode.

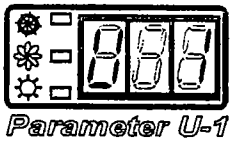
INFO

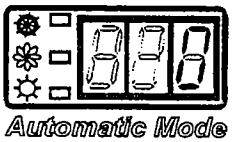
Should there be any reason to contact Marine Air Systems about the system or programming the AH-PASSPORT, be sure to have the software identification number available.

NOTE:

Button Functions are <u>Not</u> instantaneous as in pressing keys of a typewriter. When using the control press and hold the button for an instant before releasing. Follow specific button instructions closely, where such instructions are given.

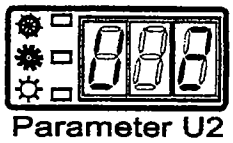
U-1: Operating Mode

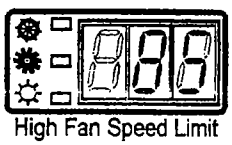




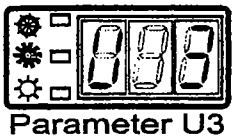
The **operating mode** is used to select **heating only**, **cooling only** or **automatic mode** depending on the particular requirement. Zero (0) selects the automatic mode, one (1) selects cooling only and two (2) selects heating only. EXAMPLE: Systems that do not have heating capabilities should be programmed for cooling only. The factory default is zero (0)... **automatic heating or cooling mode**.

U-2: High Fan Limit





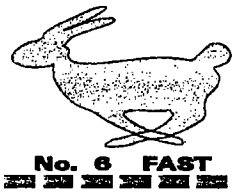
The upper fan speed limit can be tailored to suit various motors and operating conditions. The **high fan limit** is adjusted with the system installed and operational. The range of values are 56 through 85 and represent arbitrary units. Setting a higher number, results in a higher fan speed, setting lower numbers, lowers the high fan speed limit. Use the up and down buttons to select the desired high fan speed limit. The factory default setting is eighty-five (85).



U-3: Low Fan Limit

The low fan limit determines the lowest output allowed for the low fan speed. The range of values for the low fan speed limit are 30 through 55, in arbitrary units. The factory default setting is 50.

NOTE ! Both the high and low fan limits may be adjusted while the fan is operational. From the **off mode**, start the fan by pressing and holding the **fan button**. Continue to hold the button until one (1) appears in the display. This is the fan circulation mode only, fan speed one (1). Enter the **program mode** while the fan is running and select "U-3" which is the low fan limit adjustment. Raising and lowering the low fan limit allows the programmer to experience the fan speed changes as they are made.



Adjustment of the **high fan limit** while the fan is operating is accomplished the same way, except "U - 2" is be selected instead of "U-3".

IMPORTANT ! Once the high and low fan speed limits are set, the unit will automatically readjust the remaining fan speeds to produce six (6) equally spaced speeds.

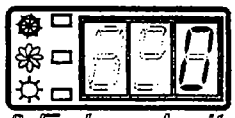
U-4: Reserved for Future Options

Program items U-4 and U-6 have been skipped because these memory locations have been reserved for future options.

U-5: Temperature Calibration

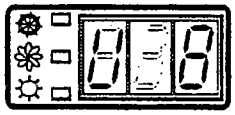
Use this feature to calibrate the air sensor within a range of ± ten (10) °F. Enter the program mode and the offset will be displayed. Use the up and down keys to select the desired offset. The factory default is zero.

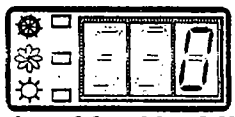
U-6: Reserved for Future Options



U-7: Fahrenheit or Celsius Selection

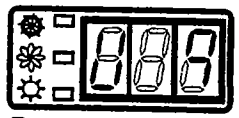
The unit can be programmed to display either Fahrenheit or Celsius. Programming zero (0) selects degrees Fahrenheit and selecting one (1) displays degrees Celsius. ... the factory default setting is zero (0) degrees Fahrenheit. When degrees Celsius (°C) is selected, the readings are displayed in tenths, i.e. 22.2° Celsius represents room temperature.

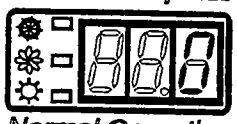




U-8: Outside Air Sensor Option

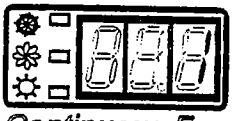
Jack J-2 can be assigned to read an optional outside air temperature sensor, providing the system does not require an alternate air sensor. Select 1 and install the outside sensor in jack J-2. View the outside temperature by pressing both the up and down buttons while in the off mode. Selecting 0 allows jack J-2 to be used as an alternate air sensor should the face plate sensor be located in an unfavorable location.





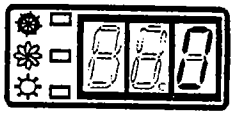
U-9: Reverse Fan Speeds During Heating

During normal operation, in both the **heating** and **cooling modes**, the automatic fan speeds are reduced as the set point is approached. During heating, this is not always the preferred method of operation. Some customers prefer that the fan run faster as the set point is approached. Lower fan speeds at cooler temperatures make the air seem warmer. Program one (1) if you wish to reverse fan speeds during heating... The factory default setting is one (1), reversed fan operation.



U-10: Cycle Fan with Demand

The fan can be programmed to run continuously when the system is on or can be allowed to cycle with the heating or cooling demand. When cycled on demand the fan will only operate when heating or cooling is called for. To cycle the fan with the water valve program zero (0). To operate the fan continuously, select one (1). The factory default is one (1) which allows continuous fan operation while the system is on.



U-11: Chill Chaser Option

Units may be equipped with chill chasers or in line electric duct heaters. Chill chasers are used when the hydronic system is supplying cooling and a particular cabin requires heating. The chill chasers are also used to supplement hydronic heating when necessary. Program one (1) to select the electric heat chill chaser option. The factory default is zero (0) which selects hydronic heating and cooling only.

IMPORTANT: Please note that option U-11 has to be turned on to allow electric heat or chill chaser operation.

U-12: Fan Motor Selection

There are two basic fan motor types, shaded pole and split capacitor. Each motor reacts differently to speed control and each motor requires different timing for optimum speed control. The default setting is zero (0) which selects split capacitor, however, one (1) should be selected if a shaded pole fan motor is used in the system.

U-13: Hydronic Valve Forced Open

This feature allows service personnel to force the hydronic valve open to facilitate bleeding air from the system. Selecting 1, will force the valve open for 4 hours while normal cooling and heating is maintained. The valve can be returned to normal operation, anytime during the cycle, by selecting zero .

U-14: Ambient to Water Temperature Differential

The difference between ambient air temperature and hydronic water temperature is used to control water valve opening and closing. The programmable range is five (5° F) through twenty-five (25° F) degrees Fahrenheit. Selecting ten (10° F) opens the valve when water temperature is ten degrees less than ambient in **cooling mode** and greater than five degrees (5° F) in the **heating mode**. Figure two (2), shown below, illustrates the relationship between ambient air and hydronic water temperature using the factory default values.

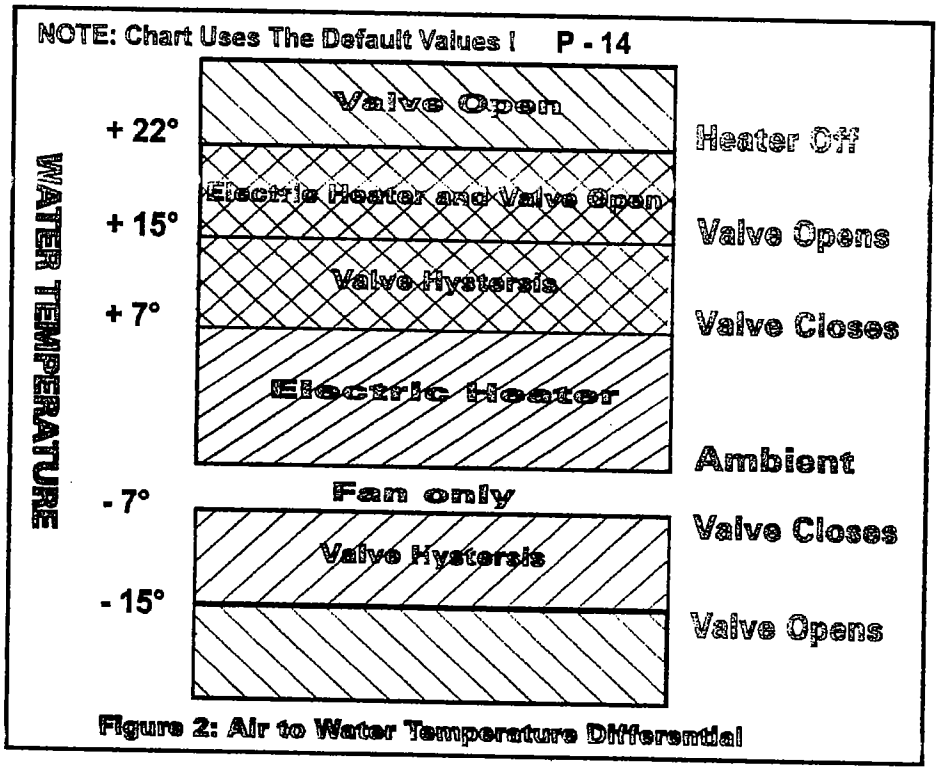


Figure 2: Air to Water Temperature Differential

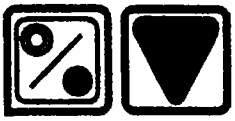
Careful selection of the temperature differential can fully utilize the ships heating and cooling resources. For example, while in the **cooling mode** and using a ten degree value, the valve will open to allow some cooling while the hydronic system is coming down to temperature... The programmable range is 5 to 25° Fahrenheit and the Default Setting is 15° F.

When equipped with an optional electric heater, the heater will overlap with the hydronic heat by twenty-two degrees fahrenheit (22° F). The heater will turn on when heat is required and remain on until the hydronic water temperature exceeds the ambient by twenty-two degrees fahrenheit or until the room temperature is satisfied.

The electric heat is allowed to overlap the hydronic heat to supplement the main heating system during very cold conditions.

PROGRAM LOCK AND NEW DEFAULTS

Program Lock



The systems program parameters cannot be altered without first unlocking the **program mode**. Defeat the program lock by **simultaneously** pressing and releasing the **power** and **down buttons** after entering the program mode. The program lock is provided to prevent accidental parameter value changes by someone unknowingly stumbling into the program mode.

New Defaults

Once the desired programming changes have been made and the system tests satisfactorily, your work can be saved as the **new factory defaults**. Your new defaults are initiated by **simultaneously** pressing and holding the **up** and **down buttons** for 3 seconds prior to exiting the **program mode.** New defaults can be initialized at any time by entering the program mode and following the above instructions.

Once **new defaults** have been initialized the control will revert back to the new defaults whenever factory defaults are restored as described on pages 8 and 10 of this manual.

OPTIONS AND HARDWARE CONFIGURATION

Several features are both hardware and software configured. The optional item is plugged into the board, the appropriate jumper selected, the program parameter set and the system recognizes the option on power-up.

Alternate Air Sensor Input

Provisions are made for an **alternate air sensor** should installation restrictions not allow the use of the standard **face plate air sensor**. Install the alternate air sensor cable in the appropriately marked jack located on the module board and fasten the sensor in the return air stream. The control will automatically recognize the alternate air sensor and no programming is required.

Outside Air Sensor Option

When this option is installed, the outside air sensor is plugged into the **alternate air sensor jack** and the U-8 program value set to one (1). The outside air temperature can be viewed during while in the **Off Mode** by pressing and holding the up and down buttons simultaneously. AH-Passport boards manufactured after May of 1996 include the outside air sensor jack.

IMPORTANT!

The primary function of Jack J-2 is to provide input for the alternate air sensor, therefore, the outside air sensor is not available when an alternate air sensor is required.

System Configuration

Jumper JMP-4 controls the basic system configuration... Chiller control or direct expansion control. When the passport module is used as a convector control, JMP-4 must be cut.

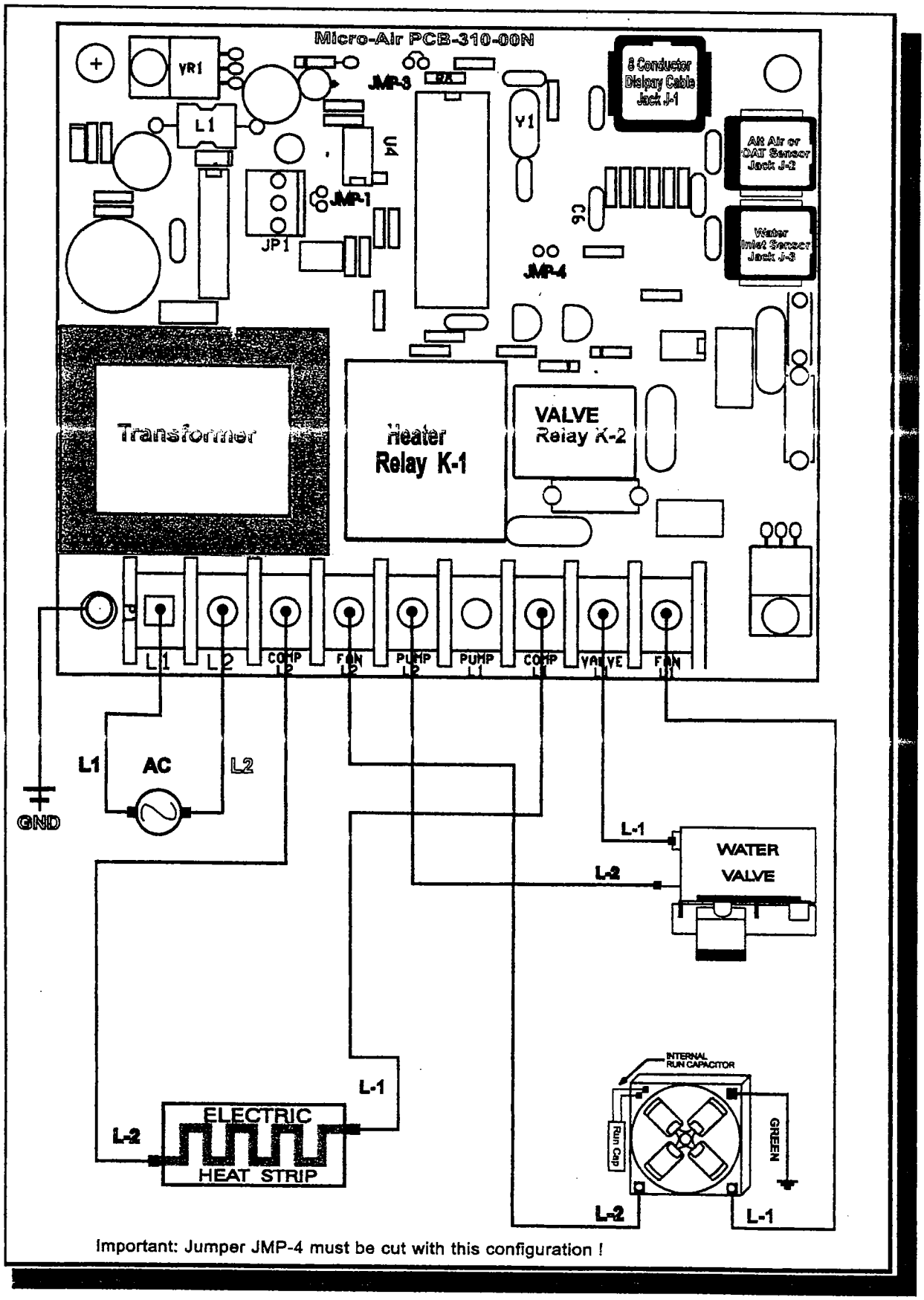
Fan Operation with Optional Electric Heat

The fan will continue to operate for three (3) minutes after the system is shut down when an electric heating cycle has been called for. This occurs if the fan is programmed to cycle on demand (U-10 = 0) and the cycle is stopped short by changing the set point or turning the unit off with the power button.

ELECTRICAL SPECIFICATIONS

SET POINT RANGE	60°F TO 85°F
TEMPERATURE RANGE DISPLAYED	O°F TO 150°F
SENSOR ACCURACY	±2°F AT 77°F
LOW VOLTAGE LIMIT 115 VOLT UNITS	75 VAC
LOW VOLTAGE LIMIT 220 VOLT UNITS	175 VAC
LOW VOLTAGE PROCESSOR RESET	60VAC
LINE VOLTAGE	115 THRU 240 VAC
HERTZ	50 OR 60 Hz
FAN OUTPUT	12 AMPS AT 220 VAC
MAXIMUM NUMBER OF FANS CONNECTED	TWO
VALVE OUTPUT	6 AMPS AT 220 VAC
HEATER OUTPUT	20 AMPS AT 220 VAC
MINIMUM OPERATING TEMPERATURE	0°F
MAXIMUM OPERATING TEMPERATURE	180°F
MODULE POWER CONSUMPTION	LESS THAN 5 WATTS

FIGURE 3: TYPICAL APPLICATION



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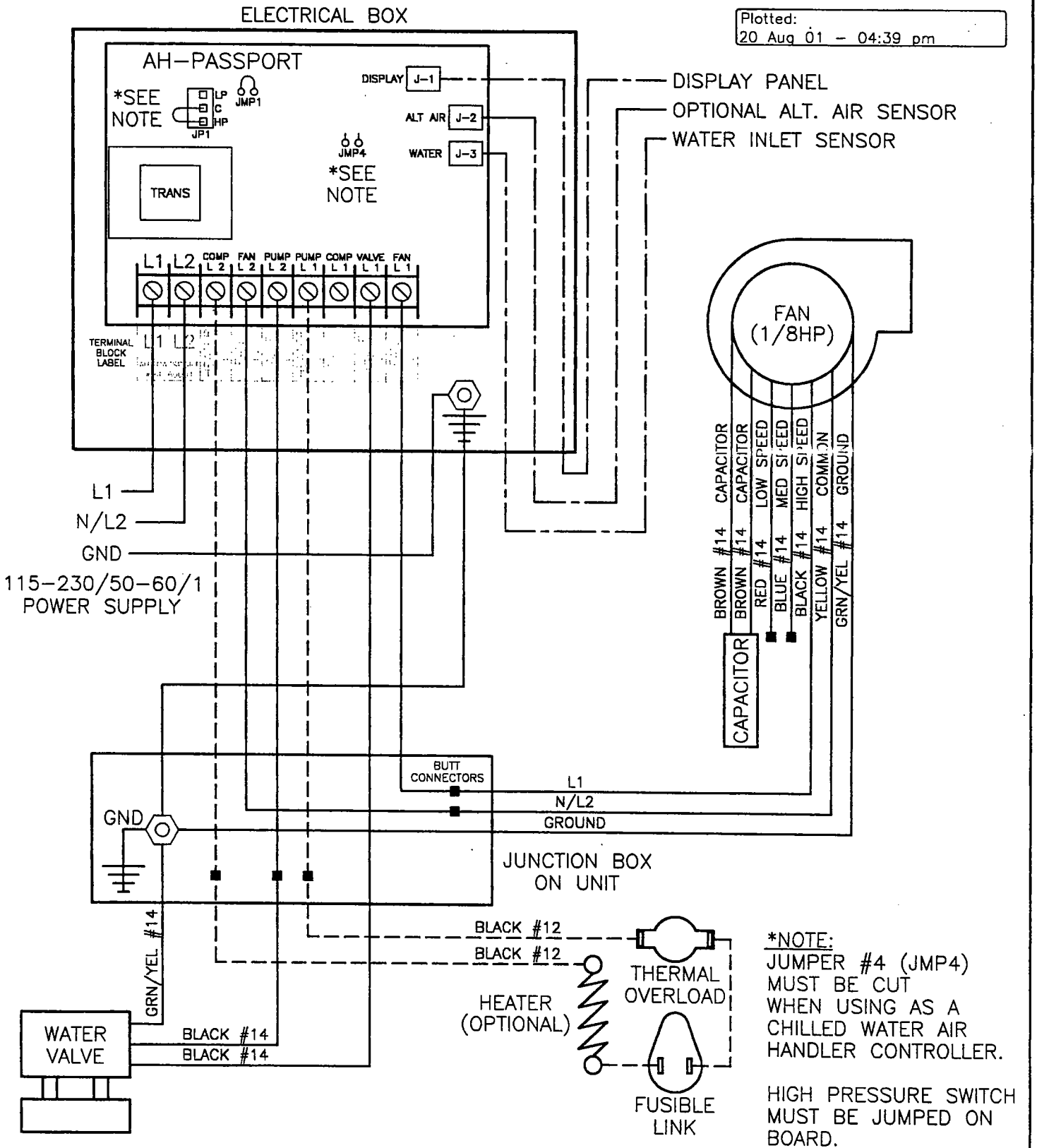
REV	DATE	REVISION	DWG	APR
A	2/25/99	ADDED JUMPER TO HP SWITCH ON BOARD	RMW	D D

REFERENCE DWG(S) H3010005, H3060008 FOR J-BOX LABEL & H4060001 FOR T-BLOCK LABEL

Plotted:
20 Aug 01 - 04:39 pm



DATE: 7-10-96	WIRING DIAGRAM AH6-24K-BT(Z) BLOW THRU TO AH-PASSPORT 115-230VAC/50-60HZ/1ø	Taylor Made ENVIRONMENTAL™
SCALE: N.T.S.		
SHEET: CURRENT		
DRAWN BY: DKM / APPROVED BY: D D	DRAWING NO: H3010021A	Trulsair · Marine Air Systems · Grunert · Sentry

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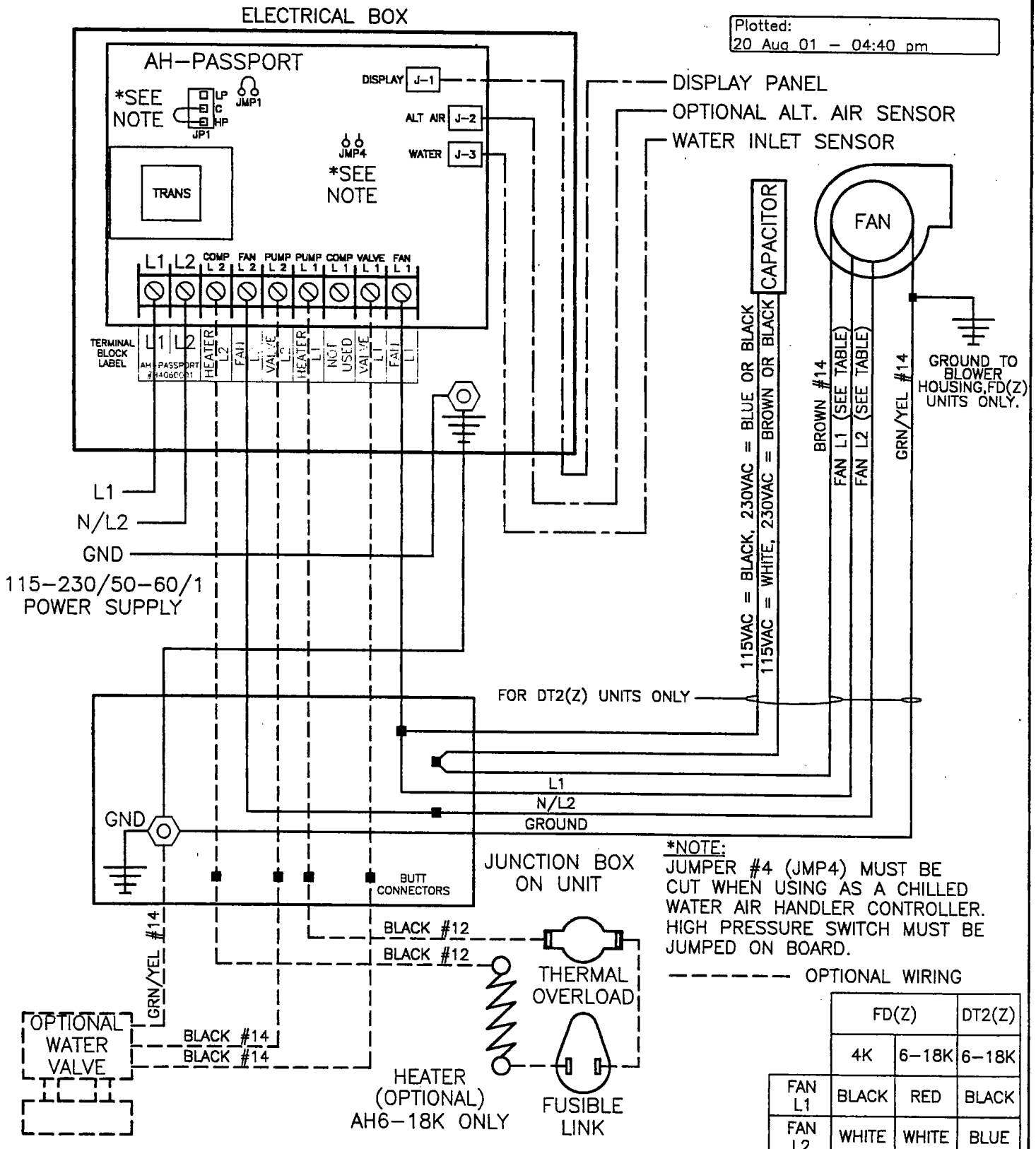
REV	DATE	REVISION	DWG	APR
A	5/30/97	ADDED FASCO SUPPORT	RMW	MFG
B	2/25/99	ADDED JUMPER TO HP SWITCH ON BOARD	RMW	D D
C	11/15/00	SHOW WATER VALVE AS OPTIONAL CAD588-00	RMW	JES

REFERENCE DWG(S) H3010003, 026, H3060008 FOR J-BOX LABEL & H4060001 FOR T-BLOCK LABEL

Plotted:
20 Aug 01 - 04:40 pm



*NOTE:
JUMPER #4 (JMP4) MUST BE CUT WHEN USING AS A CHILLED WATER AIR HANDLER CONTROLLER. HIGH PRESSURE SWITCH MUST BE JUMPED ON BOARD.

------- OPTIONAL WIRING

	FD(Z)		DT2(Z)
	4K	6-18K	6-18K
FAN L1	BLACK	RED	BLACK
FAN L2	WHITE	WHITE	BLUE

DATE: 7-10-96	WIRING DIAGRAM		
SCALE: N.T.S.	AH4-18K-DT2(Z)/FD(Z)		
SHEET: CURRENT	DRAW THRU/FLEX DUCT TO AH-PSPRT 115-230VAC/50-60HZ/1ø		
DRAWN BY: DKM	APPROVED BY: D D	DRAWING NO: H3010025C	

Taylor Made ENVIRONMENTAL™

Trulaire · Grunert · Sentry

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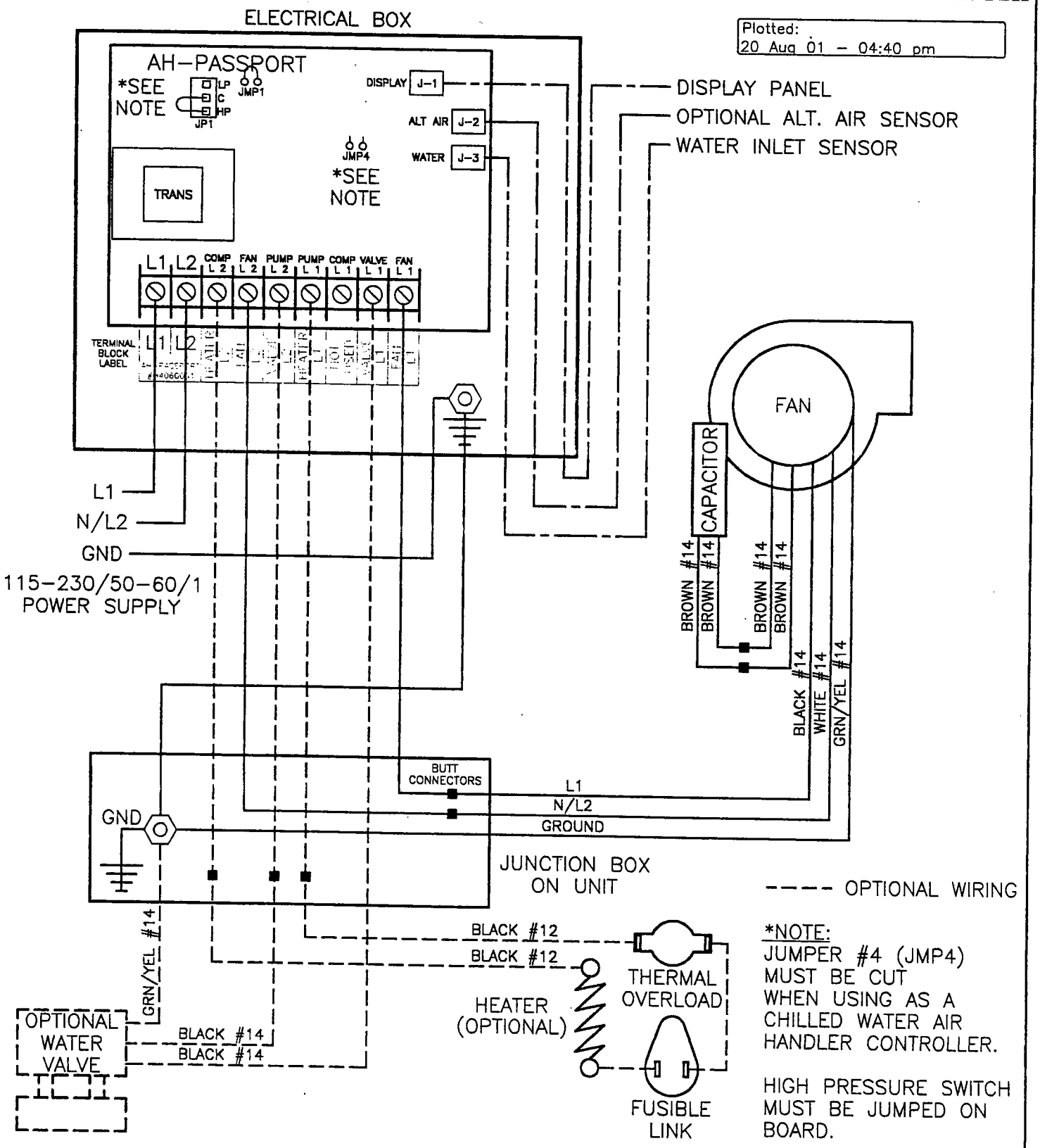
REV	DATE	REVISION	DWG	APR
A	7/1/98	REVISED TO INCLUDE FLEX DUCT	RMW	
B	2/25/99	ADDED JUMPER TO HP SWITCH ON BOARD	RMW	D D
C	11/16/00	SHOW WATER VALVE AS OPTIONAL CAD591-00	RMW	JES

REFERENCE DWG(S) H3010013, 025, H3060008 FOR J-BOX LABEL & H4060001 FOR T-BLOCK LABEL

Plotted:
20 Aug 01 - 04:40 pm



DATE: 7-10-96	WIRING DIAGRAM AH24K-DT2Z/FDZ DRAW THRU/FLEX DUCT TO AH-PSPRT 230VAC/50-60HZ/1ø	Taylor Made ENVIRONMENTAL™
SCALE: N.T.S.		
SHEET: CURRENT		
DRAWN BY: DKM / APPROVED BY: D D	DRAWING NO: H3010026C	Cruisair · Grunert · Sentry

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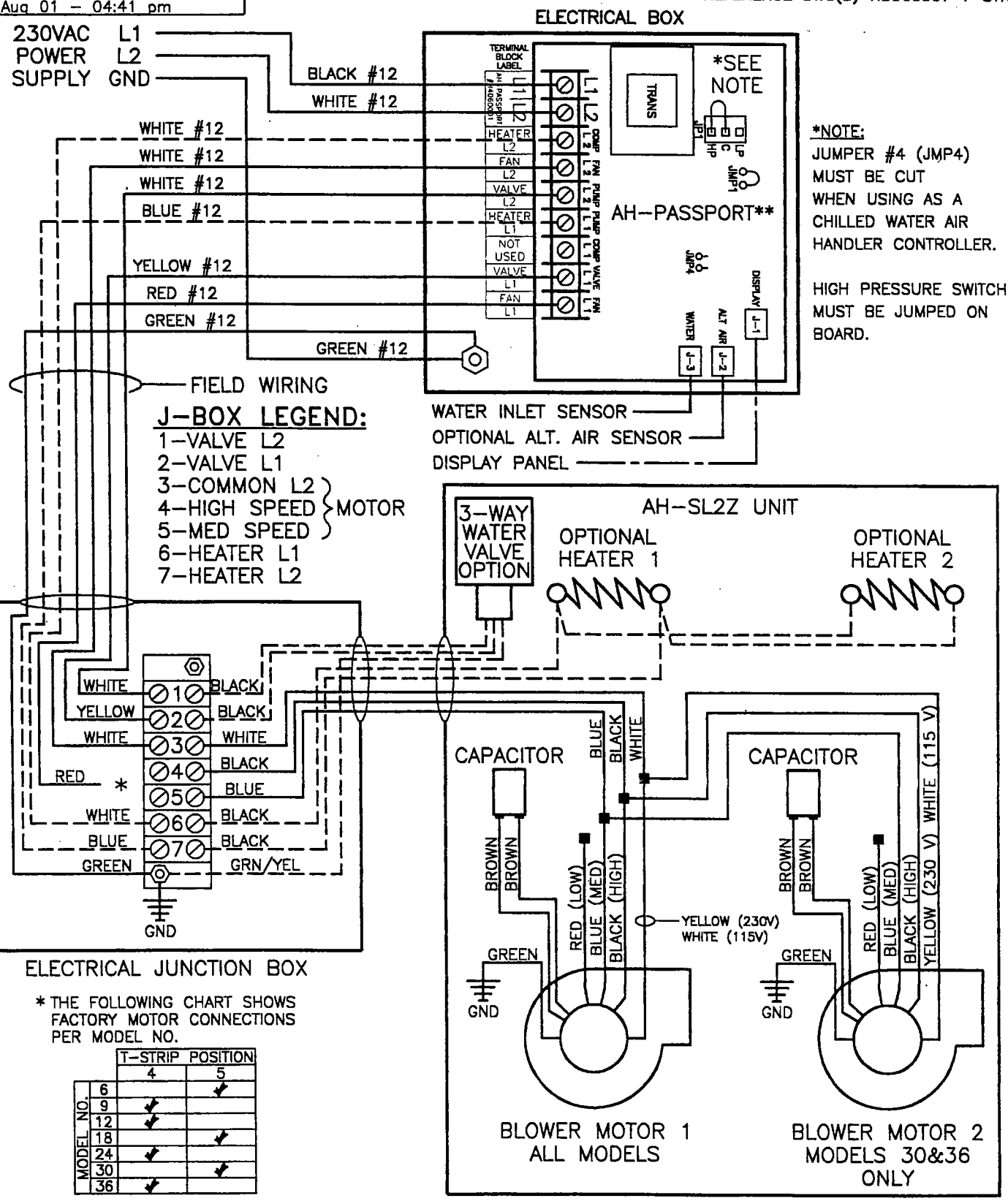
REV	DATE	REVISION	DWG	APR
A	2/10/98	MISC REVISIONS	DKM	DKM
B	10/14/98	ADDED 115V AND WATER VALVE OPTION	RMW	D D
C	2/25/99	ADDED JUMPER TO HP SWITCH ON BOARD	RMW	D D

Plotted: 20 Aug 01 – 04:41 pm

REFERENCE DWG(S) H3060007 T-STRIP



* THE FOLLOWING CHART SHOWS FACTORY MOTOR CONNECTIONS PER MODEL NO.

MODEL NO.	T-STRIP POSITION 4	5
6		✓
9	✓	
12	✓	
18		✓
24	✓	
30		✓
36	✓	

*NOTE:
JUMPER #4 (JMP4) MUST BE CUT WHEN USING AS A CHILLED WATER AIR HANDLER CONTROLLER.

HIGH PRESSURE SWITCH MUST BE JUMPED ON BOARD.

DATE: 12/9/97	WIRING DIAGRAM AH6-36-SL2/Z SLIM LINE TO AH-PASSPORT 115/230VAC/50-60HZ/1ø	Taylor Made ENVIRONMENTAL™
SCALE: N.T.S. (P)		
SHEET: CURRENT		
DRAWN BY: DKM / APPROVED BY: D D	DRAWING NO: H3010042C	Cruisair · Marine Air Systems · Grunert · Sentry

Single Button Operations

Power Button

1 - Turn the system on and off and enter the program mode.

2 - Exit the program mode

Fan Button

3 - Select automatic or manual fan operation and select manual speed.

4 - Advance to the next parameter in the program mode.

5 - Hold down to view the service history while the control is resetting.

Up Button

6 - View the set point and raise the set point.

7 - Advance data values in the program mode.

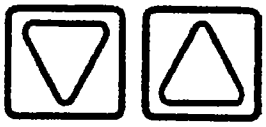
Down Button

9 - View the set point and lower the set point.

10 - Reduce data values in the program mode.

11 - Move back through the service log.

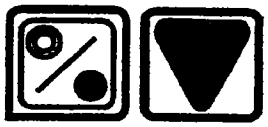
Dual Button Functions



Up and Down Buttons

13 - View the outside air temperature.

14 - Save new defaults when exiting the program mode.



Power and Down Buttons

15 - Enter the humidity mode while the control is in the on mode.

16 - Unlock the program parameters while in the program mode.

Fan and Down Buttons

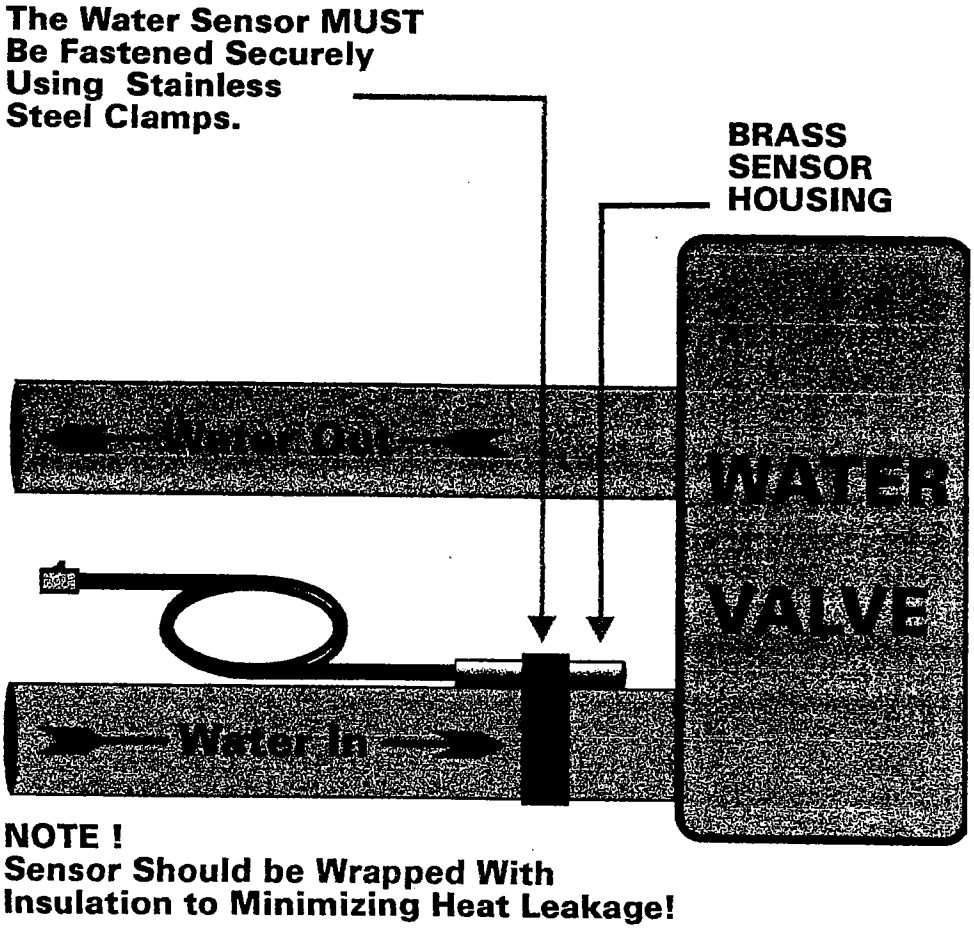
17 - Blank the display during night time operation.

Water Sensor Installation

Sensor Location

The Sensor should be located as close to the water valve as possible and securely mounted with stainless steel clamps. The sensor housing is brass providing compatibility with copper tubing used in the water system. The standard wire length is seven (7) feet, however, custom lengths are available on request. Maximum safe length for the water sensor cable is one-hundred (100) feet.

Proper operation of the water valve requires data from the Water In Sensor — the system cannot operate properly without Water -In Data! The sensor must be installed on the water inlet pipe.



Basic System Start - Up Problems		
PROBLEM	**PROBABLE CAUSE**	**SOLUTIONS**
• No lights in the display and the system does not heat or cool. Power on reset does not occur when AC power is applied.	• AC breaker is not turned on or AC power is not available. • Display cables or jacks broken or dirty. • Display cable is improperly assembled. • AC input is less than 75 VAC.	• Check for AC power at circuit breaker. • Check for AC power at module input. • Clean all jacks and plugs. • Try another known good display cable. • Check the system wiring diagram. • Check for proper AC power.
• The system operates but there is no compressor and no heat or cool lights.	• The set-point is satisfied!	• Raise or lower the set-point to allow the unit to cycle.
• The display toggles between **AAA** and zero **(0)**, and the systen will not run.	• The face plate air sensor is shorted or the display cable has been shorted or damaged. • The face plate air sensor is open or the display cable is broken.	• Clean all plugs and jacks. • Try an alternate air sensor or replace the display with a known good display. • Try a known good display cable. • Check the existing display cable for screws, staples and other damage.
• System displays room temperature but there is no fan or compressor.	• Set-point is satisfied and U-10 is programmed to cycle the fan on demand. • See Page 10 of this manual.	• Raise or lower the set-point to allow the system to cycle on... Check U - 10.
• The system runs but there is no cooling or heating, the compressor cycles on and off and eventually the AC breaker trips.	• The sea water valve is not open. • The sea water strainer is clogged. • The sea water pump is air-bound. • The sea water pump is inoperable.	• Open the sea water valve. • Clean the sea water strainer. • Bleed the air from the water system. • Check wiring, replace pump if necessary.
• The system operates but there is no fan. • The fan runs but only high speed, lower speeds are not available. • The fan runs very slow and is noisey.	• The fan wiring is incorrect. • Ducting is restricted or fan is miswired or triac has failed in closed mode. • Fan triac has failed or motor is defective.	• Check and correct fan motor wiring. • Check for proper duct sizes, correct any ducting restrictions and check wiring. Return the module for fan output triac replacement. • Check fan motor and replace triac or return module for repair or call for service.
• You can enter the program mode but aren't allowed to make any program changes.	• The programmable parameters are locked to prevent accidental programming changes.	• Refer to pages 5 and 13 for instructions. • Un-lock the programmable parameters.

ADVANCED AH-PASSPORT SYSTEM PROBLEMS		
PROBLEM	**PROBABLE CAUSE**	**SOLUTIONS**
• System runs continuously and is not able to achieve set-point.	• Face plate air sensor is located in direct sun light or the display is mounted on an outside wall. •OAT sensor is plugged into the Alt. Air sensor jack. • Set-point temperature set too low. • Insufficient hydronic cooling water. • No hydronic cooling water.	• Re-locate the display assembly...If this is not possible install an alternate air sensor. • Check the module board and plug the outside air sensor into the proper jack. • Raise the set-point to a reasonable level (68 or 72° F). • Restricted water flow or air is trapped in convector. • Check the main chiller module for proper operation.
• System short cycles and display indicates low temperatures.	• Supply air vent is blowing directly on display face plate. • The alternate air sensor improperly installed.	• Re-direct the air guide vanes, relocate the display or install an alternate air sensor. • Check and correct the sensor location.
• Convector coil is cool, hydronic water flow and temperature is correct but the system is still not cooling or heating properly.	• Duct work is restricted. • Temperature set-point is set too high. • Low fan speed is programmed too low... U-3	• Check and repair ducting. • Lower the set-point to a reasonable level (68 to 72°F). • Raise the low fan speed parameter (U-3).
• All eights ("888") appear in the display on start-up and the system operates normally.	• Power on reset indicating all LED's are ok and the system is functional.	• This is the normal system boot-up routine and occurs when the AC power is first applied.
• All eights ("888") appear in the display and the system shuts-down or trips the AC breaker when the system attempts to start.	• Insufficient dock power to handle the start surge. • Locked compressor rotor... Temporary! • Locked compressor rotor... Permanent!	• Check the shore power, move to a better dock or switch to the ships generator. • Temporary system imbalance, wait 5 min & re-start. • Other electrical problem...Call for service.
• The AC breaker trips when switching from shore to ships power... Applies to vessels with two or more staged chiller modules on board.	• Multiple stage chiller compressor time delays are not set, or are all set at the same value.	• Enter the Hydro-Matic programming mode and set the staging delays at least 5 seconds apart... See the main chiller manual for further instructions.
• Unit is programmed to cycle fan on demand but fan continues to run after set-point is satisfied in heat mode.	• Chill chaser or electric heating supplement was required... fan remains on 3 minutes to cool element.	• After the heating requirement is satisfied, the fan remains on to remove residual heat from the electric heating element.
• System seems to operate properly but there is no fan or fan runs very slow and makes a loud humming noise.	• Fan motor is 220 and supply is 115 VAC. • Fan is improperly wired. • Fan motor is defective. • Fan output triac has failed.	• Change voltage or replace fan motor. • Correct the wiring. • Replace the fan motor. • Return control module for repair or call for service.

ADVANCED AH-PASSPORT SYSTEM PROBLEMS		
PROBLEM	**PROBABLE CAUSE**	**SOLUTIONS**
• System operates but valve and heater outputs appear to be reversed.	• Jumper JMP-4 not removed from module board.	• JMP-4 must be removed for the module to function as a convector control.
• The system operates fine, however, in heating, the fan continues to run for three minutes after the set point is satisfied even though the fan is programmed to cycle on demand.	• The main hydronic system is in the cooling mode and the particular cabin called for heating which was supplied by the electric chill chaser.	• This is normal operation. The fan will remain on for 3 minutes after the set point is satisfied when the electric heater or chill chacser is required.

AH - Passport Stuck Button Chart	
Stuck Button	**Display Behavior**
POWER	Display will indicate"888" on Power-Up and operate in the Self-Test Mode in both the On and Off Modes..
FAN	The system will Reset ("888") and the display will go blank, from either the **On** or **Off Modes.**
UP	The original set point will increase to 85°F, where it will stay, and no other buttons will function. From the OFF MODE, the control will reset ("888") and the display will go blank. The display will increase the setpoint starting from the original setpoint to 85°, where it will stay.
DOWN	The original setpoint will decrease to 60°F, where it will stay, and no other buttons will function. From the OFF MODE, the control will reset ("888") and the display will go blank.

AH- Passport Display Cable Troubleshooting Guide	
Display Problem	**Possible Causes**
NO BUTTONS OPERATE, BUT THE DISPLAY IS OK.	- Line 1 is Shorted to Line 2. - No Connection Line 2 ... From Display On Mode. - Line 2 is Shorted to Line 3, or Line 5 is Shorted to Line 6.
NO DISPLAY AND THE BUTTONS DO NOT WORK.	- Cable Not Plugged In or Plugged In Backwards. - No Connection On Line 6 or Line 7. - No Connection on Line 2... From Display Off Mode. - Line 1 Shorted to Line 2... From Display Off Mode.
DISPLAY INDICATES "000" AND NO BUTTONS FUNCTION.	- Line 3 Shorted to Line 4. - Line 5 is Open. - Line 4 is Shorted to Line 5.
THE DISPLAY FLASHES "AAA" AND NO BUTTONS FUNCTION.	- Line 3 is Open. - Line 7 is Shorted to Line 8.
THE DISPLAY FLASHES "AAA" AND THE BUTTONS FUNCTION OK.	- Line 8 is Open.
NO BUTTONS FUNCTION AND ONLY THE FAN LED IS ON.	- Line 4 is Open.
DISPLAY INDICATES AMBIENT TEMP AND NO BUTTONS FUNCTION.	- Line 5 is Open... From Display On Mode.

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