ICE AIR®
World Class Comfort®

Installation Manual

CHPW

Slope or Flat Top Console Unit

Water Source Heat Pump (WSHP) Unit

ELA-13086

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Contents

Thank you for purchasing and installing the ICE-AIR WSHP (Water Source Heat Pump). ICE AIR is a leading supplier of WSHPs, offering superior quality, reliability and efficiency for our customers.

ATTENTION INSTALLING PROFESSIONAL

Read this manual and familiarize yourself with the specific terms and safety warnings that must be adhered to before attempting to install or service this unit. Precautions listed are intended as supplemental to existing practices. As a professional, you have an obligation to know the product better than the customer. This includes all safety precautions and related items. It is your responsibility to install the product safely and know it well enough to be able to instruct a customer in its safe use as required.

⚠ RECOGNIZE THIS SYMBOL AS A SAFETY PRECAUTION.

⚠ WARNING: ICE AIR will not be responsible for any injury or property damage arising from improper service or service procedures. If you install or perform service on this unit, you assume responsibility for any personal injury or property damage which may result. Many jurisdictions require a license to install or service heating and air conditioning equipment.

⚠ WARNING, HIGH VOLTAGE: Disconnect all power before servicing or installing unit. Multiple power sources may be present. Failure to do so may cause property damage, personal injury or death.

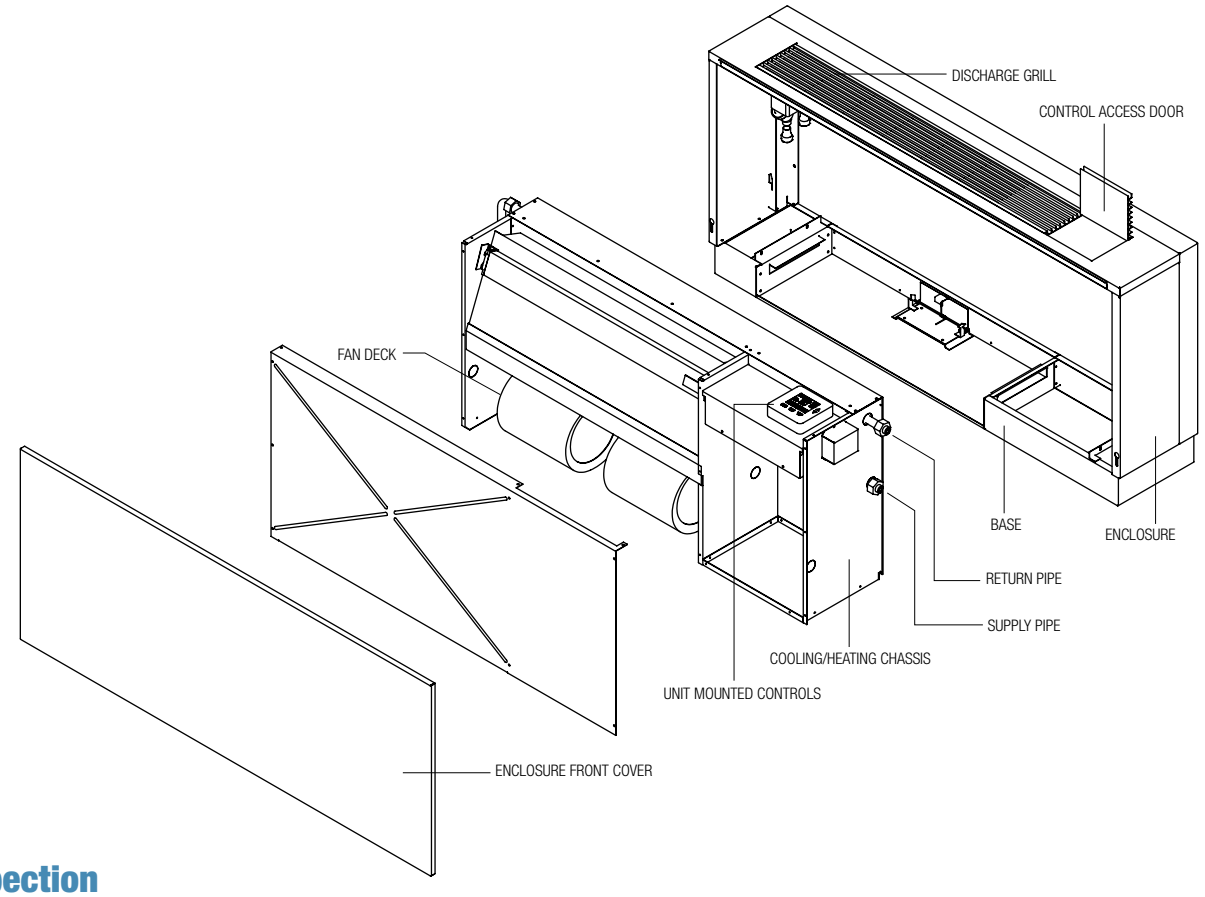
To ensure that the unit operates safely and efficiently, it must be installed according to these installation instructions and all local codes and ordinances, utilizing the best standards and practices at the time of installation or, in their absence, with the latest edition of the National Electric Code. The proper installation of this unit is described in the following sections. Following the steps in the order presented should ensure proper installation.

Overview

ICE AIR Water Source Heat Pumps are quality units, which should only be installed by a trained professional. Please ensure all sections are read thoroughly before installing the unit.

Application Note

It is important for heating/cooling systems to be properly sized for each application in order to achieve desired temperature and humidity levels. It is highly recommended that a professional engineer match the WSHP units you are about to install with the building structure and climate.



Inspection

1. Check the shipment against the Bill of Lading. Ensure all components are intact upon delivery and free from damage. Note any damage on the delivering carrier's Bill of Lading*.

2. The ICE AIR unit(s) arrive prefabricated with an enclosure. Ensure both the unit and the enclosure are

properly attached.

3. Make sure the floor is level in both directions so the unit's airflow will be aligned. Confirm adequate drainage is available to ensure adequate and continuous water flow during unit operation.

4. Remove the access panel is BEFORE installing.

5. Verify amperage to the unit(s) is correct and the unit can reach the power supply.

***** Purchaser's responsibility includes filing all claims with the delivering carrier in a timely fashion.

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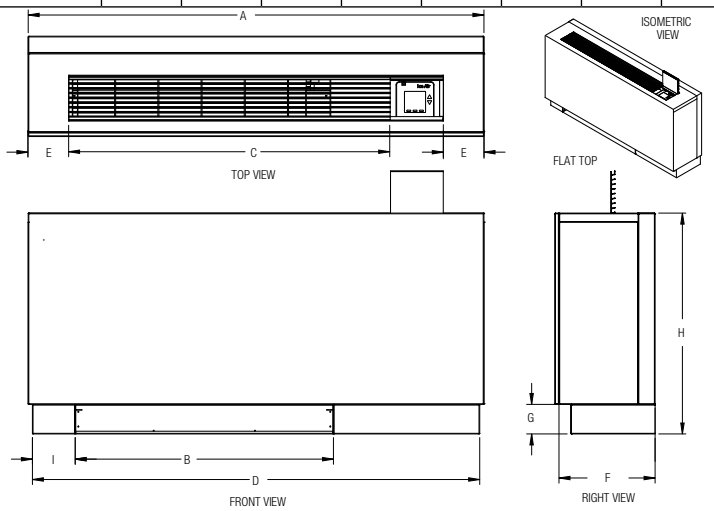
Before You Begin

1. Locate the unit where it can evenly distribute air throughout the room without obstructions. Units should be installed no closer than 12" apart when two units are side by side. A vertical clearance of 60" should be maintained between units.
2. Ensure the wall is structurally sound to support the weight of the unit.
3. Adequate and continuous water flow must be maintained for proper and safe unit operation. Ensure adequate drainage is also available.
4. Follow all applicable codes for installation.
5. Dedicated electrical circuitry and power supply is required to properly energize the ICE AIR unit. Verify the amperage of the dedicated electrical service to the unit is correct and the unit can reach the power supply.
6. Position the unit so the air filter can be removed easily and required maintenance can be performed without interference.
7. A minimum obstructed distance of 36" should be kept around the unit.

IMPORTANT: To avoid permanent damage to the unit, DO NOT operate during construction in an open space or as a supplemental heating and cooling source during construction.

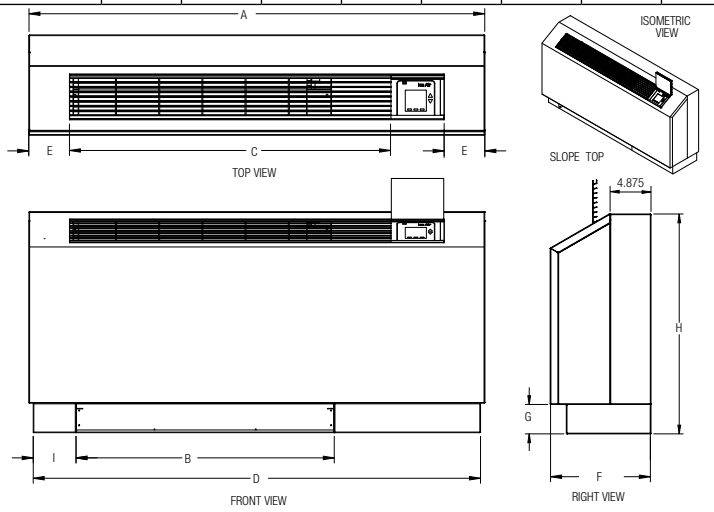
FLAT TOP

Model No.	Dimensions (inches)								
	A	B	C	D	E	F	G	H	I
5CHPW09	46	22	29.5	45	5	11	3.5	25.25	5.125
5CHPW13	46	22	29.5	45	5	11	3.5	25.25	5.125
8CHPW09	46	22	29.5	45	5	11	3.5	25.25	5.125
8CHPW13	54	30	37.5	53	5	11	3.5	25.25	5.125
8CHPW16	54	30	37.5	53	5	11	3.5	25.25	5.125
8CHPW19	54	30	37.5	53	5	11	3.5	25.25	5.125



SLOPE TOP

Model No.	Dimensions (inches)								
	A	B	C	D	E	F	G	H	I
5CHPW09-ZS	46	22	29.5	45	5	11	3.5	24.5	5.125
5CHPW13-ZS	46	22	29.5	45	5	11	3.5	24.5	5.125
8CHPW09-ZS	46	22	29.5	45	5	11	3.5	24.5	5.125
8CHPW13-ZS	54	30	37.5	53	5	11	3.5	24.5	5.125
8CHPW16-ZS	54	30	37.5	53	5	11	3.5	24.5	5.125
8CHPW19-ZS	54	31	38	53	5	11	3.5	24.5	5.125



Due to ICE AIR's ongoing product development programs, the information in this document is subject to change without notice.

Installation

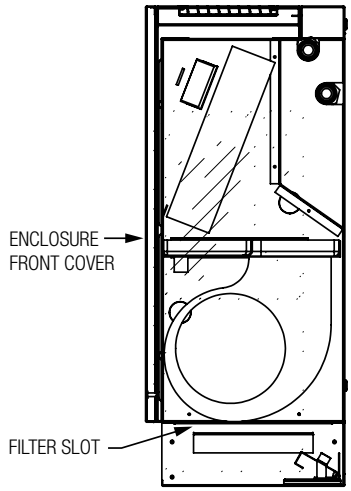
Piping Installation

ICE AIR's Console Water Source Heat Pump comes with standard Supply and Return Water pipes on both left and right side of the unit. Either can be connected for immediate use, however, the remaining pipes must be closed off using the enclosed plug. Connect the pipes using a Braided Steel Hose as shown below. The condensate tube will be on the right-hand side and arrive with a hose clamp to attach to the building's condensate pipes.

Units are typically shipped with plugs on piping connections, and field installer removes the plugs on the field piping side. Water piping terminates in the same location regardless of the connection and valve options.

Filter Installation

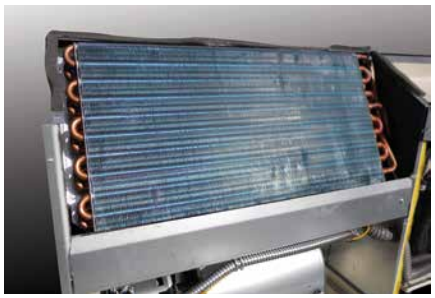
Each unit is delivered with a filter for the filter rack, which can be found at the bottom of the unit as shown below. In order to install the filter, slide the piece horizontally into the slot. Ensure the filter is effectively pushed to the end.



SIDE VIEW

Evaporator Coil

Check the coil for cleanliness and uniformity of fins. If the coil is dirty from construction process, vacuum clean with a soft brush attachment. If the coil requires additional cleaning, the unit must be removed and cleaned using compressed air and/or washed. These operations MUST be carried out prior to startup.



General Wiring

Line Voltage

Wiring, including the electrical ground, must comply with the National Electrical Code as well as all applicable local codes. Consult the wiring diagram below for field connections on the right of the electrical diagram located on the back of the unit electrical compartment front panel. All electrical connections must be made by the installing (or electrical) contractor. All final electrical connections must be made with a length of flexible conduit to minimize vibration and sound transmission to the building.

General Line Voltage Wiring

Be sure the available power is the same voltage and phase shown on the unit serial number plate. Line and low voltage wiring must be done in accordance with local codes or the National Electric Code, whichever is applicable.

> ⚠ **WARNING:** Electrical shock can cause personal injury or death while installing or servicing the system. Always turn OFF the main power to system. There may be more than one disconnect switch.

Power Connection

Units equipped with disconnect: Connect incoming line voltage to the disconnect switch and connect ground wire to the ground lug provided inside the electrical compartment.

Units without disconnect: Line voltage connection is made by connecting the incoming line voltage wires to the terminal block.

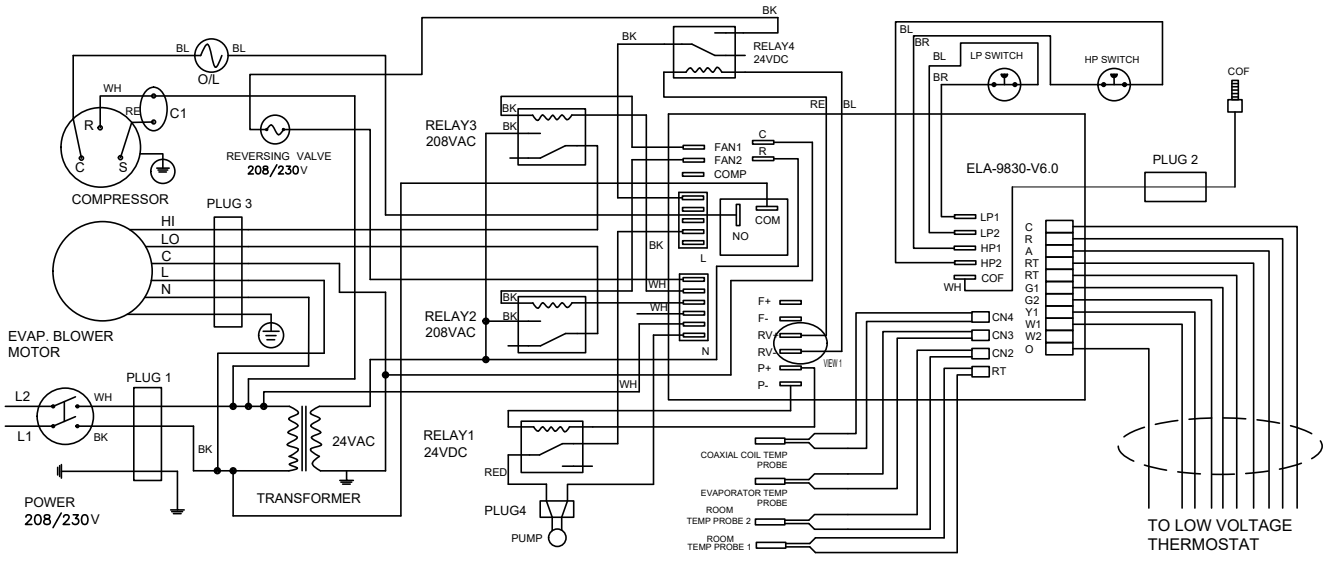
Volt Operation

All commercial units are factory-wired for specific voltages. These include:

- 115 VAC
- 208-230 VAC
- 265-277 VAC

For 230 volt single-phase operation, the primary voltage to the transformer must be changed.

NOTE: Failure to change the primary voltage lead when using 230 VAC line voltage may result in electrical component damage and intermittent system failure.



PLUG1

PLUG1 WIRE CHART		
1-	BLK	L
2-	WHT	N
3-	YEL/GRE	G
4-	-	-

PLUG2

PLUG2 WIRE CHART		
1-	WHT	COF

PLUG3

PLUG7 WIRE CHART		
1-	BLK	FAN1
2-	BLU	FAN2
3-	ORG	FAN3
4-	WIT	FAN4
5-	GRY	FAN5
6-	BRN	C
7-	BLK	L
8-	YEL	N
9-	YEL/GRE	G

PLUG4

PLUG2 WIRE CHART		
1-	YEL	RV+
2-	WHT	RV-

LOW VOLTAGE

WIRE CHART		
C	BLK	COM
R	RED	24 VAC
Y1	ORN	COOL
W1	WHT	HEAT
G1	YEL/GRE	HI-FAN
G2	BLU	LOW- FAN
A	YEL	ALA
O	TAN	-
RT	PPL	G
RT	GRA	RT

C1=COMPRESSOR CAPACITOR
RELAY1 = WATER PUMP RELAY
RELAY2 = EVAP. BLOWER MOTOR RELAY(LO)
RELAY3 = EVAP. BLOWER MOTOR RELAY(HI)
RELAY4 = REVERSING VALVE RELAY

System Start

System Cleaning and Flushing

Cleaning and flushing the unit is the most important step to ensure proper start-up and continued efficient operation of the system. Follow the instructions below to properly clean and flush the system:

1. Verify that electrical power to the unit is OFF.
2. Verify that supply and return riser service valves are closed at each unit.
3. Fill the system with water, leaving the air vents open. Bleed all air from the system, but do not allow the system to over flow. Check the system for leaks and make any required repairs.
4. Adjust the water and air level in the expansion tank.
5. With strainers in place, start the pumps. Systematically check each vent to ensure that all of the air is bled from the system.
6. Verify that make-up water is available and adjusted to properly replace any space remaining when all air is purged. Check the system for leaks and make any additional repairs if needed.
7. Set the boiler to raise the loop temperature to approximately 85°F (29.4°C). Open the drain at the lowest point in the system. Verify that make-up water replacement rate equals rate of bleed. Continue to bleed the system until the water appears clean or for at least three hours, whichever is longer.
8. Completely drain the system.

Commercial Water Loop Application

Commercial systems typically include a number of units connected to a common piping system. Any system or unit piping maintenance work can introduce air into the piping system. Therefore, air elimination equipment is a major portion of the mechanical room plumbing. In piping systems expected to utilize water temperatures below 60°, 1/2" closed-cell insulation is required on all piping surfaces to eliminate condensation. Metal-to-plastic threaded joints should never be used due to their tendency to leak over time.

Balancing valves, flow control valves, motorized solenoid valves and variable speed pumping systems may also be used.

The piping system should be flushed to remove dirt, pipe shavings, chips, and other foreign material prior to operation (refer to "System Cleaning and Flushing" section). The flow rate is usually set between 2.25 and 3.5 GPM per ton of cooling for most applications of water loop heat pumps. To ensure proper maintenance and servicing, P/T ports are imperative for temperature and flow verification, as well as performance checks.

Water loop heat pump (cooling tower/boiler) systems typically utilize a common loop, maintained between 60 - 90°F. The use of a closed circuit evaporative cooling tower with a secondary heat exchanger between the tower and the water loop is recommended. If an open type cooling tower is used continuously, chemical treatment and filtering will be necessary.

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Maintenance

Your Ice Air unit is designed to provide many years of efficient, trouble-free comfort conditioning service. To ensure equipment longevity and efficiency, please make sure that the following simple maintenance procedures are followed. This manual assumes that your unit has been installed by a qualified installation professional, and is operating properly prior to maintenance service.

Have your unit periodically inspected by a properly trained service professional or building maintenance staff person. The unit should be checked for the safe and proper functioning of all of its systems at least once a year. The following recommended maintenance procedures should be carried out only by trained personnel with strict adherence to the Safety Guidelines outlined at the beginning of this manual. These procedures MUST be followed to ensure your safety and the safety of the person maintaining the equipment!

Indoor Air Filter

It is recommended that you clean the indoor air filter after every 350 to 400 hours of unit operation – more frequently if the unit is running in an environment of high dust, pet dander or other pollutants in the indoor atmosphere.

Filter Replacement

Two filters are available for the ICE AIR units.

Reusable Filters can be removed at any point during the ICE AIR unit's longevity. The Reusable Filter can be washed using a moderate hose and returned into the unit. The filter should be cleaned twice every year, before the start of every heating or cooling season. If damage occurs, the Reusable Filter should be replaced. Please contact your local sales representative for replacements.

Dispensable Filters should be replaced twice every year, before the start of every heating or cooling season. Please contact your local sales representative for replacements.

REUSABLE FILTER

DISPENSIBLE FILTER

Condensate Drain Pan and Drain Hoses

Check the unit condensate drain pan and drain hoses annually to ensure proper condensate drainage. If any foreign matter build-up in the drain pan is found, clean the drain pan and drain hoses – frequency of cleaning depends on the level of dirt and pollutants that may be present in the indoor environment.

Evaporator Coil

Check and clean (if necessary) the unit evaporator coil annually.

Evaporator Motor and Blower Assembly

Check and clean for dust and dirt build up as necessary.

Compressor

Annual check should be performed to detect potential problems.

Condenser (Water Heat Exchanger)

Water coil maintenance is not required. If the unit installation is located in a system with water problem history, it is best to establish a periodic maintenance program. It is the building's responsibility to maintain a water system that should provide your unit with treated and filtered water to keep water flowing freely through your equipment.

With these simple maintenance procedures carried out on a proper maintenance schedule, your unit should provide many years of trouble-free service. The procedures are covered in greater detail on the following pages and should be implemented by trained personnel. But there are certain items that you, the apartment owner or tenant, can do to ensure proper unit function:

- Keep the area around your unit clear of objects that may block air flow into the unit – furniture, carpets and rugs, etc. may restrict air movement.
- Keep the top of your cabinet free of objects that may block air flow out of the unit – plants, paperwork and books, etc. should not be placed on or above the discharge grille area.
- Keep drapes, blinds and other window treatments clear of the air discharge area – any blockage of discharge air will have a negative impact on the unit and on its ability to properly condition the room.

General Unit Inspection

Visually inspect unit at least once a month. Pay special attention to hose assemblies and connections. Repair any leaks and replace deteriorated hose immediately to avoid potential costly damage to your property due to component failure.

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Troubleshooting

IMPORTANT: It is not the intent of this maintenance manual to resolve any problems with the operation of your ICE AIR unit. Please contact a trained servicer or building maintenance staff immediately if your unit fails to perform properly.

1. Contact a trained service technician to conduct full unit diagnostics and repair to equipment.
2. Record any unit that does not operate noting the unit serial number on your report.

If unit is not operating, conduct the following checks:

1. Check the electrical connections.
2. Check the voltage and current against the electrical specifications on the unit nameplate.
3. Look for wiring errors. Check for loose screw connections in both line and low voltage terminals.
4. Check the water supply piping for proper water connection.
5. Check for dirty filters.
6. Check indoor fan for proper operation.
7. Check that unit did not cycle off due to improper thermostat settings.
8. Check for fault codes on the control board – consult the Board Troubleshooting Table.

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Board Troubleshooting Table

Display (Fault Code)	LED			Troubleshoot Guide
	Yellow	Green	Red	
Normal Mode	OFF	ON	OFF	Normal Operation
High Pressure	OFF	OFF	FLASH	Low/no water flow, dirty coax coil, cap tube blockage, entering water temp is too high
Low Pressure	FLASH	OFF	OFF	Low charge, dirty filter, dirty evap coil
Evaporator too cold	FLASH	ON	FLASH	Dirty filter, dirty evap coil, fan motor failure, low gas
Coaxial winter protection	FLASH	ON	OFF	Water too cold during off mode
Temperature probe failure	OFF	FLASH	OFF	Loose/disconnected probe wire, bad probe
High/low voltage	OFF	OFF	ON	Site voltage unstable, bad transformer
Condensate over flow	OFF	ON	ON	Clogged condensate drainage
Coaxial water too cold	ON	OFF	OFF	Water too cold during on mode, low gas

Controls

1. Overview

The Ice Air model ELA-13086 is a digital thermostat with a TFT touch screen user interface (thin film transistor liquid crystal display; TFT-LCD). It provides the user with control of heating or cooling mode, temperature adjustment, 7-day programmable schedule, and various working mode options. A time clock and calendar are integral functions to this device.

2. Main Features

- Adjustable fan speed: High, medium, low, and auto. (2-speed or 3-speed can be set by the dip switch; 2-speed is the default)
- Optional mode: cooling, heating, auto and fan only. (heating function can be set by the dip switch; the default assumes a heating function present)
- Clock can be set to 12-hour (AM/PM) or 24-hour mode
- Calendar ranges: from 2020 to 2099
- 7-day programmable schedule (optional, set by the dip switch, the default is “function available.” If the user wants to disable the “7-day programmable schedule” they can do so via the dip switch, which would cause the thermostat to operate like a simple thermostat)
- Time delay function: 3 minute delay for compressor at first power-on; (this can be using the dip switch; the default is delay post start-up)
- System failure warning
- Heating mode: Set the heating mode type (hydronic coil heater, electric resistance, heat pump, etc.) using the dip switch
- Space temperature sensor is integral to the thermostat; the temperature sensing range is: 32°F to 99°F
- Optional unit mounted temperature sensor: User can select the integrated temperature sensor within the thermostat (default) or the unit mounted temperature sensor. (range of temperature detecting: 32°F to 99°F)
- Anti-freeze protection for hydronic heating applications (protection triggered when return air temperature is less than or equal to 40°F; thermostat returns to the previously set mode when the ambient temperature is higher than 60°F)
- Cold air prevention function, available only for hydronic heating applications in heating mode

3. Electrical Specifications

Power supply: AC24V/1A/50-60HZ
Warning input: AC24V±20%, keeping 10s (warning is triggered if abnormal condition occurs for more than 10 seconds)
Rest output: AC24V
Control signal output: AC24V/0.5A

4. Outside Temperature Sensor

5K/3950K±1% (cable type)

5. Specification of TFT Screen

Size: 3.5”
Resolution: 320×RGB×480dot
Display area: 48.96(H) × 73.44(V) mm
Screen type: Capacitive TFT touch screen

6. Dip switch options

TABLE 1

Dial code	Description	ON	OFF	Default
J1	Heating function	Valid	Invalid	Valid
J2	7-day programing function	Valid	Invalid	Valid
J3	Heating mode	Hydronic heating coil	Others	Hydronic heating coil
J4	Fan speed	2-speed	3-speed	2-speed
J5	Product type	PTAC/FCU/Hybrid	WSHP/PTHP	PTAC/FCU/Hybrid
J6	Compressor delay at first power-on	Valid	Invalid	Valid
J7	Space temperature sensor	Inside (thermostat built-in)	Outside	Inside

* To set various dip switch status to get suitable functions as below Table 2.

Notes:

J1: If the unit has any heating function, then J1=ON; J1=OFF in cooling only applications.

J2: If the user does not want "7-day programing function," then J2=OFF. With J2=OFF, the thermostat functions like a simple thermostat.

J3: The thermostat needs to know what type of heating is present. If the unit is using hydronic heating coil for the heating function (such as PTAC with hydronic heating coil or Hydronic WSHP), then J3=ON.

J4: For 2-speed fan operation J4=ON; for 3-speed fan applications J4=OFF.

J5: Refer to Table 5 for details.

J6: J6=ON is the default. J6=OFF is a test/service function option.

J7: There are two ambient temperature sensors in total, one is inside the thermostat A, the other is inside the unit. This switch is to set which sensor the customer is going to use.

7. Input or output for the terminal block

TABLE 2

Terminal #	Description	Terminal	Input/Output	Voltage
1	Transformer L	R	Input	24VAC
2	Transformer N	C	Input	0VAC
3	Cooling	COOL	Output	0/off; 24VAC/on
4	High fan speed	F1	Output	0/off; 24VAC/on
5	Medium fan speed	F2	Output	0/off; 24VAC/on
6	Low fan speed	F3	Output	0/off; 24VAC/on
7	Heating	H1	Output	0/off; 24VAC/on
8	Hydronic heating coil detecting	P	Input	ON/OFF signal
9	Common terminal	G	Input	--
10	Outside ambient temperature sensor	RT	Input	--
11	Resume	RST	Output	0/off; 24VAC/on
12	Alarm	ALARM	Input	0/off; 24VAC/on

8. 7-day Programmable Default Schedule

TABLE 3

The default day, time, and temperature are noted in Table 3 below. These values can be changed by the user at any time.

	Event	Time	Heat	Cool
Monday to Friday	Wake	6:00 AM	70 °F	78 °F
	Away	8:00 AM	62 °F	85 °F
	Home	6:00 PM	70 °F	78 °F
	Sleep	10:00 PM	62 °F	82 °F
Saturday and Sunday	Wake	6:00 AM	70 °F	78 °F
	Away	10:00 AM	62 °F	85 °F
	Home	6:00 PM	70 °F	78 °F
	Sleep	11:00 PM	62 °F	82 °F

9. Mode Functional Description

- **Cool Mode**
  - Select the Cool function from the menu by touching the **MODE** icon on the main screen (see Figure 1)
  - Select **FAN SPEED** from the menu by touching the **FAN SPEED** icon on the main screen then selecting High, Medium, Low, or Auto (see Figure 2)
  - The unit will run according to the default settings in Table 3 if the user has not altered any settings
  - **Temporary Override:** The user can change the temperature setting temporarily by touching the "+" or "-" icon on the main screen to get the expected temperature settings. The "+" and "-" icons appear after the user touches the screen. The temporary override setting will be effective once the user has not touched the screen for more than 3-seconds; (Figure 3)
  - The temporary override setting will only apply to the time period between the input and the next temperature pre-loaded in the programmed weekly schedule.
  - The **Temporary Override** will be shown on the screen, to indicate the new setting is different with the setting that set in the weekly schedule; and will not disappear until the applicable time period has passed
  - The color of the temperature value and temporary override text will be white when the setting is equal to the ambient temperature, it will be blue when the setting is lower than the ambient temperature, and it will be orange when the new setting is higher than the ambient temperature
  - Temperature Range: 51°F to 91°F

FIGURE 1

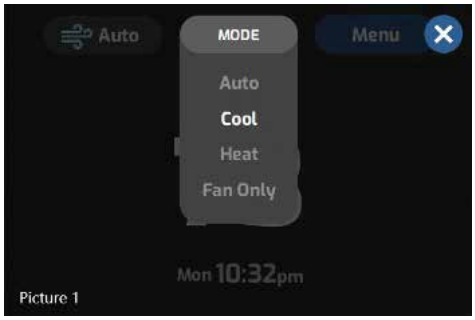


FIGURE 2

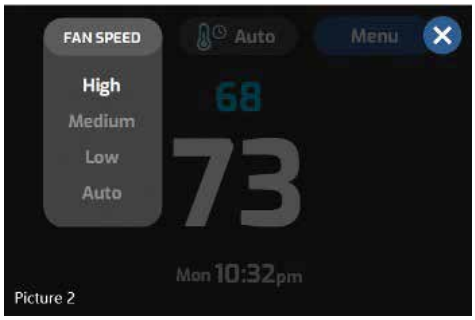
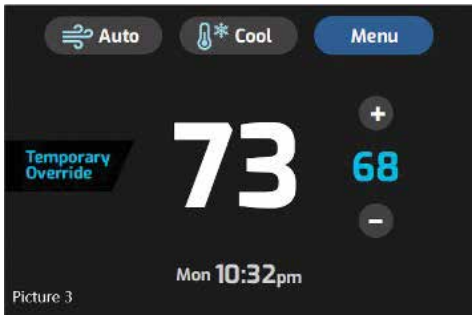


FIGURE 3



- **Heat Mode**
  - Same operation as **Cool** mode; See specific operation for Cool mode page 11
  - This function only applies to the unit with heating function
- **Auto Mode**
  - The same operation as **Cool** mode; See specific operation for **Cool** mode page 11
  - This function only applies to the unit with both cooling and heating functions. The **AUTO** option will be invalid if the unit is configured for cooling only
  - The unit will run automatically to maintain the space temperature, selecting either heating or cooling mode as required by the space conditions
  - When **AUTO** mode is selected, the unit will operate the fan at low speed for 20-seconds, then enter into cooling, heating, or fan mode depending on the deviation between the space temperature and the set point temperature. The default temperature is 77°F in this mode, and the unit will run as noted in Table 4. The unit only runs in one functional mode once it enters into cooling or heating mode

TABLE 4

Space temperature (Tr)	Tr <70°F (criterial)	70F≤Tr≤79°F (criterial)	79°F≤Tr (criterial)
Function Mode	Heating	Fan	Cooling

  - User can set new expected temperature from 51°F to 91°F by touch "+" or "-" icon on the main screen, the unit will run similarly as Table 4 but with different criterial temperature.

- **Fan Only Mode**
  - To select **Fan Only** function and fan speed; see referenced MODE and FAN SPEED instructions above
  - In Fan Only mode, the unit will only operate the indoor evaporator fan
  - Temperature cannot be set at this mode, "+" and "-" icon on the main screen will be invalid

10. Fan Speed Display Related to Signal Output to Fan Motor for Various Product Types

- When dip switch J4 = ON, i.e. 2 fan speed [Alternate: "fan speed 2" or "dual fan speed operation"]; High, Low, and Auto fan speed can be selected
- When dip switch J4 = OFF, i.e. 3 fan speeds [Alternate: "fan speed 3" or "tri fan speed operation"]; High, Medium, Low and Auto fan speed can be selected (option for future use)
- See Table 5 and Table 6 for fan speed set points and the corresponding Signal Output to the fan motor for various products

PTAC / FCU / Hybrid (J5 = ON) **TABLE 5**

Function Mode	Cooling		Heating		Fan only	
Set Point Display	LOW	HIGH	LOW	HIGH	LOW	HIGH
Signal output (J3 = On)	Medium	High	Low	Medium	Medium	High
Signal output(J3 = Off)	Medium	High	Medium	High	Medium	High

WSHP / PTHP (J5 = OFF) **TABLE 6**

Function Mode	Cooling		Heating		Fan only	
Set Point Display	LOW	HIGH	LOW	HIGH	LOW	HIGH
Signal output (J3 = On)	Medium	High	Medium	High	Medium	High
Signal output(J3 = Off)	Medium	High	Medium	High	Medium	High

11. AUTO Fan Speed in Different Modes

- **Cooling – Auto**
  - High speed: when space temperature ≥ Cool set point +2°C (4°F)
  - Low speed: when Cool Set point -1°C (2°F) ≥ space temperature ≥ Cool Set point +1°C (2°F)
  - Fan stop: when compressor stop
- **Electrical heater heating and others – Auto**
  - High speed: when space temperature ≤ Cool Set point +2°C (4°F)
  - Low speed: when Cool Set point -1°C (2°F) ≤ space temperature ≤ Cool Set point +1°C (2°F)
  - Fan stop: 10 seconds delay after the heater relay closed
- **Hydronic coil heating including Hybrid/FCU – Auto**
  - High speed: when the P1 was detected to be closed, and, space temperature ≤ Cool Set point +2°C (4°F)
  - Low speed: when space temperature ≤ Cool Set point -1°C (2°F)
  - Fan stop: 10 seconds delay after the heater relay closed
- **MODE – Auto**
  - Once the MODE is selected to AUTO, the fan will run in the same manner as noted in Cooling mode page 11

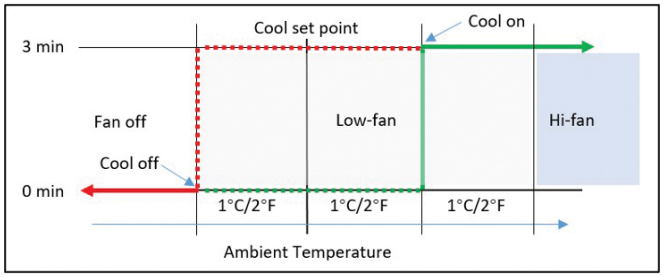
Remark: Other fan speeds like High, Medium and Low will cause no change once it is selected.

12. Compressor Control for Cooling Mode

- Criterial for compressor ON or OFF
- Compressor ON: space temperature ≥ Cool Set point +1°C (2°F)
- Compressor OFF: space temperature ≤ Cool set point - 1°C (2°F)

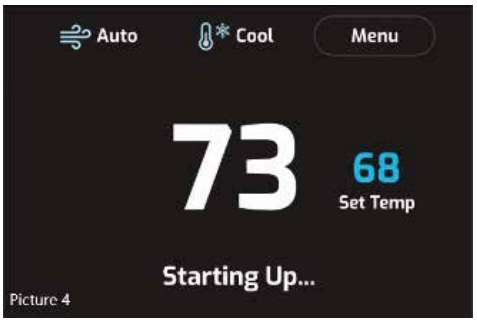
Remark: The fan status noted in the figure below only refers to the fan speed in "Auto" fan mode.

FIGURE 4



- **Compressor protection**
  - If the power is cycled ON, the compressor will start after 3 minutes delay, and will indicate "Starting Up…" on the main screen and flash the Cool icon (see Figure 5); This function can be set to valid or invalid by the dip switch J6
  - The compressor always starts with a 3 minutes delay each time it is enabled; the "Starting Up…" message is not shown in between compressor cycles, only when being powered up from an power OFF position

FIGURE 5

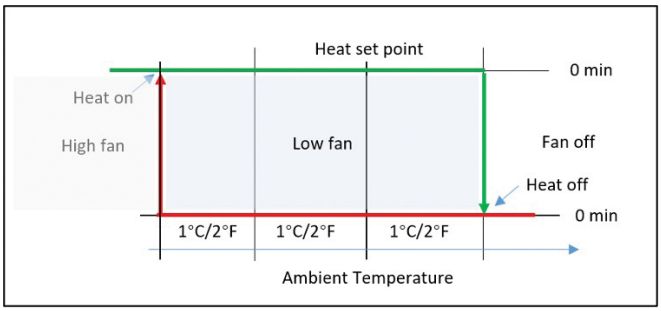


13. Heating Relay Control for Heat MODE

- **Criterial for heating relay ON or OFF**
- Relay ON: space temperature ≤ Cool set point - 1°C (2°F)
- Relay OFF: space temperature ≥ Cool set point +1°C (2°F)

Remark: The fan status in Figure 6 only refers to the fan speed at AUTO fan mode

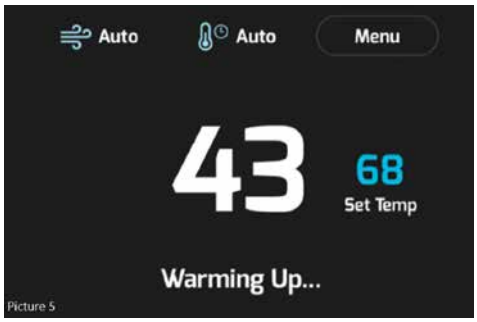
FIGURE 6



14. Anti-freeze Protection for Hydronic Heating Coil Applications

- This function is valid only when the unit is using a hydronic coil for heating and dip switch J3 = ON
- Trigger criterial: when the unit is ON or standing by, and, when the ambient temperature is ≤ 40°F (5°C), the protection is triggered. The unit will enter heat mode (heating reply is ON) and run medium fan speed, and Figure 7 will be shown on the main screen
- Resume criterial: when the space temperature = 60°F, the unit go back to pervious working status

FIGURE 7



15. Alarm System

- When the unit has a fault occurred (for example, high pressure protection triggered), if terminal "ALA" receives a signal for 10 seconds, then the unit will stop all output to the components, and Figure 8 will be shown on the screen
- The user can try to restart the unit by touching the "PRESS TO RESTART" icon on the screen
- If the system does not restart and operate normally, technical support is available at www.ice-air.com

FIGURE 8

16. 7-Day Programmable Schedule

- **Home, Away, and Sleep Temperature Settings**
  - Touch the **Menu** icon on the main screen, then enter the sub-menu, and touch **Cool Setting** to enter another sub-screen for the cooling temperature setting (for example) (see Figures 9, 10, 11)
  - To set the expect temperature for various time periods, touch the "+" or "-" icons next to the temperature settings (see Figures 12, 13)
  - Users can switch from °F or °C by touching said icons located at the bottom of the Settings page (see Figures 11, 12, 13)
  - To exit and go back to the main screen, touch the X icon in the upper right hand of the screen, or touch ← to go back to the previous screen (see Figures 11, 12, 13)
  - The new setting are effective immediately for the week and will display in the weekly schedule screen; User can see the new settings when entering the weekly schedule screen
  - Heat Settings function that same as the Cool Settings
  - The default settings for the weekly temperature schedules is noted in Table 3. New settings will overwrite previous settings

FIGURE 9

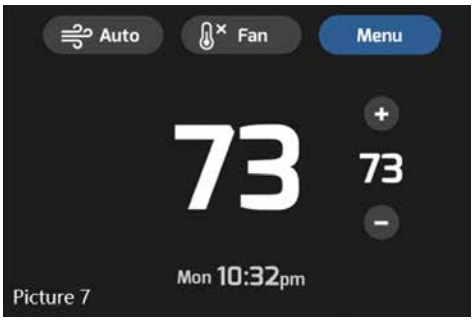


FIGURE 10

FIGURE 11

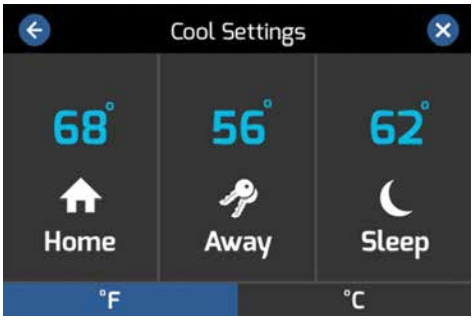


FIGURE 12

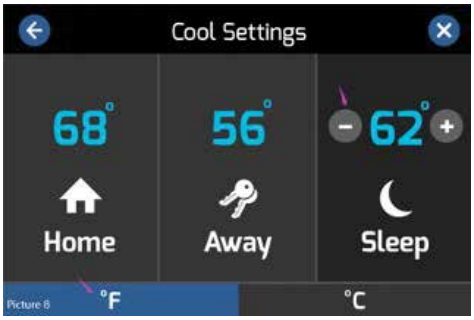


FIGURE 13

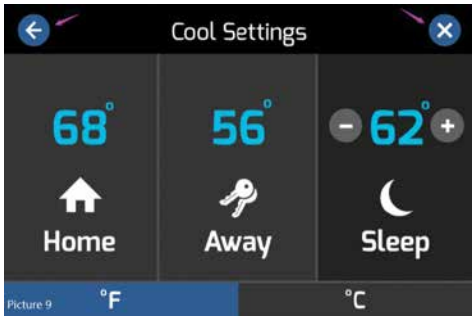


FIGURE 14

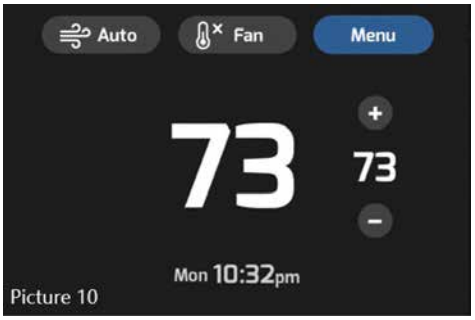


FIGURE 15

FIGURE 16

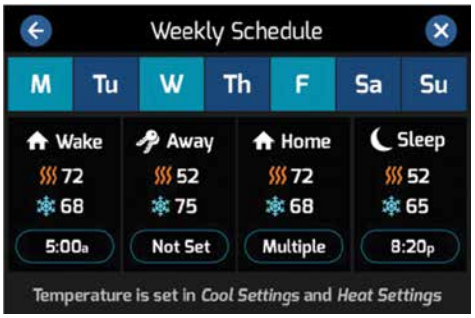
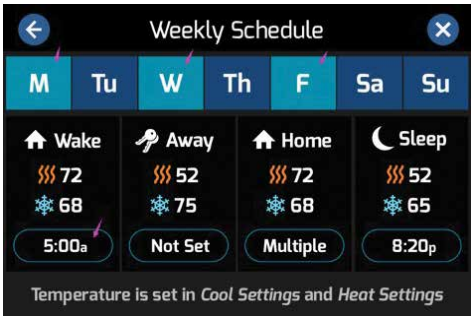
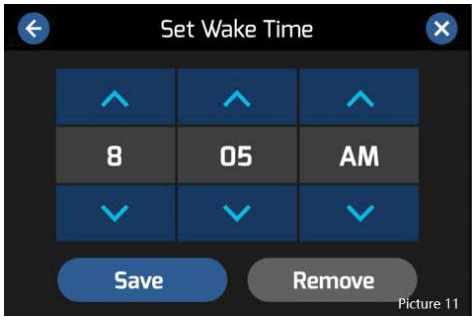


FIGURE 17



- **Weekly Schedule Settings**
  - Touch the MENU icon on the main screen, enter the sub-menu, and select **Weekly Schedule** to enter the selection screen (see Figures 14, 15, 16, 17)
  - To set the **Wake Time** for one day or several days (example: Monday, Wednesday and Friday), touch “M”, “W” and “F” one by one, then touch time icon under the Wake icon to enter the time setting for **Wake Time**; see Figure 18
  - Touch ↑ or ↓ icons to set expected hour and minutes; (the time advances in 5-minute intervals)
  - Touch the **Save** icon to record the settings, and touch Remove to reset the setting
  - Touch the **X** icon to finish the settings and return to the main screen, or touch ← to page backwards
  - The new setting will be shown on the **Weekly Schedule** screen; User can see the new settings when entering into the Weekly Schedule screen
  - Use the same procedure to set the expected time for **Away, Home and Sleep**
  - If the user does not select specific days and set specific times directly, then the new settings will apply to all of the days of the week
  - The default settings for the weekly temperature schedules is noted in Table 3. New settings overview the previous settings
  - Prior to the Day and Time being set by the user, the display will show “No Set” in the time display section of the screen. Once the Day and Time are set, it will display under the temperature indicator (see Figure 14)
  - If the settings for each day are different, then “Multiple” will be indicated; if the settings for several days is the same, the set time will be shown (see Figure 17)

FIGURE 18



17. System Time and Date Setting

- Touch the **MENU** icon on the main screen to enter the sub-menu, then touch **Date & Time** to enter the Day & Time sub-screen (see Figure 19, 20, 21, 22)
- Touch **Edit Date** or **Edit Time** to enter the screen to edit these settings (see Figures 23, 24)
- User can select 12-hour or 24-hour format by touching the 12h or 24h icon respectively
- To set Date: Touch ↑ or ↓ icon to set expected year, month and date; touch Save & Exit to save the settings and go back to the upper menu
- To set Time: Touch ↑ or ↓ icon to set expected hour and minutes (5 minutes as a step when pressing on the time adjustment icon); touch Save & Exit to save the settings and go back to the upper menu
- If the user does not touch the Save & Exit icon after the new setting, and touches **X** or ← instead, the system will reminder the user to save or not save (see Figure 25)

FIGURE 19

FIGURE 20

FIGURE 21

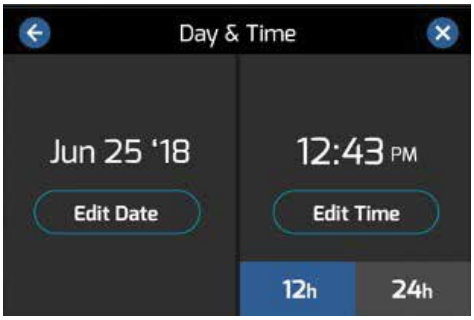


FIGURE 22

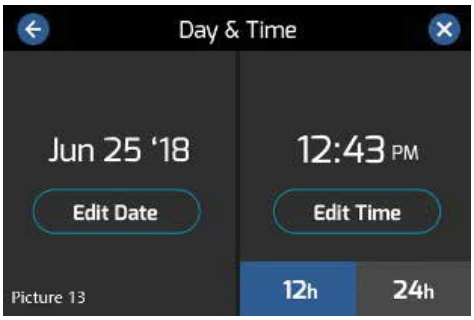


FIGURE 23

FIGURE 24

18. Power ON and Power OFF the Thermostat

- The thermostat requires 24-VAC power
- The thermostat will start up by showing the Ice Air logo and main "standing by" screen; Push main button on the plastic casing for the thermostat to enter working status; see Figures 26, 27
- To power the thermostat OFF, press the main button on the plastic casing for 3-seconds
- The screen will go into sleep mode 30-seconds after the last touch to the screen has been made. The user needs to touch the screen to wake up the display

FIGURE 25

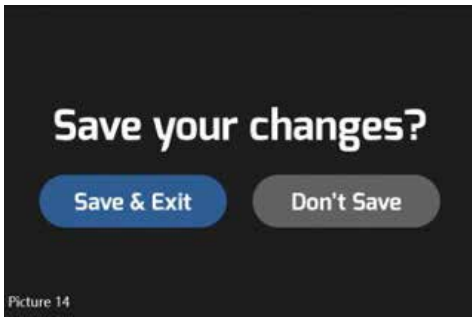
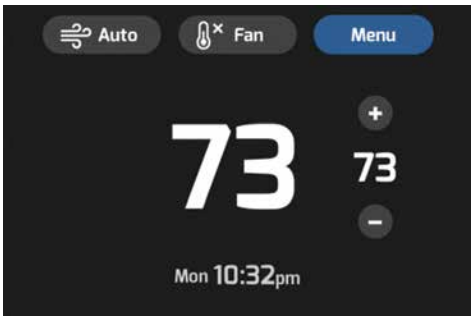


FIGURE 26

FIGURE 27

FIGURE 28



PLEASE NOTE: Other thermostats are available including:

Habitat Wireless Thermostat

Nest "Learning Thermostat"

Digital LCD Thermostat

System compatible with other 3rd party thermostats not shown here.
For more information go to: **www.ice-air.com/thermostats**

System Check List

Installer: Complete unit and system checkout and follow unit start-up procedures provided with the unit. Use this form to record information, temperatures and pressures during start-up. Keep this form for future reference.

Location Information.

Owner: _____

Address: _____

Model Number: _____

Serial Number: _____

Unit Location in Building: _____

Date: _____

Sales Order No: _____

In order to minimize troubleshooting and costly system failures, complete the following checks and data entries before the system is put into full operation.

Temperatures: (Circle) F or C

Antifreeze: _____Type: _____%

Pressures: (Circle) PSIG or kPa

Allow unit to run 15 minutes in each mode before taking data.

Do not connect service manifold gauges during start up unless instructed by ICE AIR service tech.

	Cooling Mode	Heating Mode
Return-Air Temperature DB (°F)		
Supply-Air Temperature DB (°F)		
Temperature Differential		
Entering Fluid Temperature (°F)		
Leaving Fluid Temperature (°F)		
Temperature Differential		
Water Pressure IN		
Water Pressure OUT (PSI)		
Pressure Differential (PSI)		
Flow Rate (GPM)		
Supply Voltage at Contactor (V)		
Transformer Low Side Volts (V)		
Compressor Amps (A)		
Motor Amps (A)		

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Project Nomenclature

Model Selection	8	CHPW	13	P	N	F	1	S	I	X	U	U	G	X	E	X	X	X	P	X	X	X	X	X
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

Primary Part

Item #	Matrix Name	Code String Value	Description
1	POWER	8	208V/1PH/60HZ
		7	277V/1PH/60HZ
		5	115V/1PH/60HZ
2	UNIT TYPE	CHPW	Console WSHP and Replacement Console
3	CAPACITY (BTUH)	09	9,000 (3/4-Ton)
		13	13,000 (1-Ton)
		16	16,000 (1-1/4-Tons)
		19	19,000 (1-1/2-Tons)
4	MOTOR	P	PSC - Permanent Split Capacitor
		E	ECM - Electrically Commutated Motor
		B	BLDC
		C	Chassis Only
		X	TBD/No Motor Details
5	DISCONNECT	F	Fused Disconnect
		N	Non-Fused Disconnect
		P	Line Cord With Plug
		X	Default: Terminal Block [For Console WHSP, Terminal Block with Cover]
6	CASING CONFIG. or ENCLOSURE (CHPW) CONFIG.	F	Flat Top (CHPW)
		E	Flat Top With Removable Chassis (CHPW)
		S	Sloped Top (CHPW)
		R	Sloped Top With Removable Chassis (CHPW)
		C	Custom Enclosure (CHPW)
7	CASING DETAILS or ENCLOSURE COLOR	1	Enclosure Color: Antique White (CHPW)
		2	Enclosure Color: Arctic White (CHPW)
		3	Enclosure Color: Custom Color (CHPW)
8	INSULATION	S	Insulation: 12.7 mm (1/2") Fiberglass
		C	Insulation: Closed Cell Foam
		N	Insulation Not Applicable
9	P-TRAP	I	Internal P-Trap
		X	No P-Trap
10	RISERS	X	Riser Options Not Applicable
11	PIPING ORIENTATION	L	Piping Orientation: LH Return
		R	Piping Orientation: RH Return
		U	Piping Orientation: Universal (Allows For Field Conn. On Either Side)
		X	Piping Orientation Not Applicable

Item #	Matrix Name	Code String Value	Description
12	WIRE WHIPS	A	Wall mounted with 6.5-foot wire whip
		B	Wall mounted with 10-foot wire whip
		C	Wall mounted with 12-foot wire whip
		D	Wall mounted with 30-foot wire whip
		E	Wall mounted with 50-foot wire whip
		F	Wall mounted T-Stat (shipped loose) - no wire whip
		U	Unit mtd controls
13	DRAIN PAN	G	Power Coated Galvanized for Casing and Chassis
		S	Stainless Steel for Casing and Chassis
		X	No Drain Pan
14	COMPRESSOR BLANKET	B	Sound Attenuation Blankets Provided
		X	No Compressor Blanket
15	CONTROLS	C	Non-programmable LCD touchpad thermostat (ELA-12690)
		D	Non-programmable LCD thermostat (ELA-8842 via dip switch)
		E	7-day programmable LCD thermostat (ELA-8842)
		F	7-day programmable Touchscreen thermostat (ELA-13086)
		G	Nest Thermostat (ELA-10665)
		H	Habitat Wireless thermostat (ELA-13161)
		I	Non-programmable LED touchpad thermostat (ELA-10328)
		X	Field Mounted By Others
16	VALVE OPTIONS	A	2-Position Motorized Valve N.O.
		B	2-Position Motorized Valve N.C.
		C	Custom Valve Option
		D	3-Way Motorized Valve N.O.
		E	3-Way Motorized Valve N.C.
		X	No Valve Option
17	FLOW CONTROL	A	Autoflow Valve (HAYS 2510/2517)
		B	Autoflow Valve/Shutoff combo (HAYS 2519)
		H	Autoflow Valve (HAYS 2515)
		C	YR Flow Valve
		M	Manual Balancing Valve
		Y	Y-Strainer
		F	YR Flow Valve + Strainer
		D	Autoflow Valve + Strainer
		E	Autoflow Valve/Shutoff combo + Strainer
		G	Manual Balancing Valve + Strainer
		X	No Flow Valves

Project Nomenclature

Model Selection

	8	CHPW	13	P	N	F	1	S	I	X	U	U	G	X	E	X	X	**X**	**P**	**X**	**X**	**X**	**X**	**X**
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	Primary Part																							

Item #	Matrix Name	Code String Value	Description
18	CONDENSATE PUMP	I	Internal Condensate Pump
		E	External Condensate Pump
		X	No Condensate Pump
19	FILTERS	A	MERV 8 Filter
		B	MERV 12 Filter
		C	MERV 13 Filter
		W	Washable Filter
		P	Paper Filter
		X	No Filter
20	AIR VENTS	M	Manual Air Vent
		T	Bleed Tee
		X	No Air Vents
21	VALVE PACKAGE ASSEMBLED OR SHIPPED LOOSE	A	Assembled
		S	Shipped Loose
		X	None
22	SECONDARY DRAIN PANS	G	Power Coated Galvanized Steel Secondary Drain Pan
		S	Stainless Steel Secondary Drain Pan
		P	Plastic Secondary Drain Pan
		X	No Secondary Drain Pan
23	SECONDARY OVERFLOW SWITCH	E	Electronic Secondary Overflow Switch
		X	No Secondary Overflow Switch
24	SECONDARY P-TRAP	E	External Secondary P-Trap
		X	No Secondary P-Trap

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Notes or Technical Comments

Notes or Technical Comments

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Notes or Technical Comments

Limited Warranty

Twelve (12) Month Warranty of Ice Air units – Ice Air, LLC, herein referred to as "Ice Air," warrants to the original owner that the entire unit is free from defects in material and workmanship for a period of twelve (12) months from the date of delivery. Any part of portion thereof which becomes defective under normal use during the period of this warranty will be repaired or replaced provided Ice Air's examination shall prove to its satisfaction that the part was or became defective under normal use. Ice Air's obligations under this warranty are limited to: (a) Repairing the defective part or (b) furnishing a replacement part provided the defective part is returned to the factory, without shipping damage, transporting charges prepaid. No reimbursement will be made for expenses incurred in making field adjustments or replacements unless specifically authorized in writing by the Company.

The Company is not obligated under this warranty for field labor such as service for inspection, removing, packing and/or reinstalling water source unit, nor for the return transportation charges.

OPTIONAL Extended Refrigeration Circuit Warranty

The Optional Extended Refrigeration Circuit Warranty MUST be purchased from Ice Air within thirty (30) days from date of delivery to be valid. The hermetically sealed refrigeration circuit (consisting of the motor, compressor assembly, evaporator coil, coaxial/condenser coil and interconnecting tubing) is warranted to the original owner for four additional years from date of the expiration of the Twelve Month Warranty. Components under this warranty will be supplied at Ice Air's expense provided the failed component is returned to the factory. This optional warranty does not include any other parts of the equipment such as fans, fan motors, controls, cabinet parts, electrical relays, capacitors, protective devices, or wiring. Ice Air is not obligated under this warranty for field labor such as service for inspection, removing, packing, and/or reinstalling the refrigeration circuit, nor for return transportation charges. Ice Air reserves the right to make a handling and inspection charge in the case of parts or equipment improperly returned as defective and/or as being in warranty.

To obtain assistance under the parts warranty or to purchase the optional extended warranty, simply contact Ice Air Customer Service at 80 Hartford Avenue, Mount Vernon, New York 10553. Telephone **914-668-4700**.

The Twelve Month and the OPTIONAL Extended Refrigeration Circuit Warranty (which must be purchased separately) constitute the buyer's sole remedy. They are given in lieu of all other warranties. There is no implied warranty of merchant-ability or fitness for a particular purpose. In no event and under no circumstance shall Ice Air be liable for incidental or consequential damages, whether the theory is breach of this or any warranty, negligence, or strict tort.

No person (including any agent, salesman, dealer or distributor) has authority to expand Ice Air's obligation beyond the terms of these express warranties, or to state that the performance of the product is other than that published by Ice Air.

General Conditions

The above warranties are void if Ice Air's equipment has been damaged, misused, subjected to abnormal use or service or its serial number has been altered, defaced, or removed, or payment for the equipment is in default. Ice Air is not responsible for service to correct conditions due to misapplication, improper installation, inadequate wiring, incorrect voltage conditions or unauthorized opening of the refrigeration circuit, nor for consequential damages. In case Ice Air's equipment is installed in conjunction with cabinets, grills, louvers, controls or other parts manufactured by others, these warranties shall apply only to Ice Air's manufactured portion of the equipment. The conditions of the standard warranty plan are effective for 18 months from TCO. Ice Air reserves the right to make a handling and inspection charge in the case of parts or equipment improperly returned as defective and/or as being warranty.

Important

The following are the responsibility of the user. They are not manufacturing defects, and are therefore not included in the warranty plan.

1) Failure of unit to operate satisfactorily due to improper amount of air on evaporator coil or air supply to air cooled condensers.
2) Damage to unit or unsatisfactorily operation due to improper cleaning of evaporator coil or use of unit in corrosive atmosphere locations such as chemical plants, refineries, or salt spray areas.
3) Damage to unit from unsatisfactory operation due to blown fuses, inadequate or interrupted electrical service, use of improper electrical protective devices or operation of unit on power supply other than covered by nameplate rating of unit.
4) Damage due to failure to properly maintain unit.
5) Damage due to transportation or handling prior to and during installation.
6) Damage due to accident or from alteration, improper installation, tampering.
7) Filter cleaning or replacement.
8) Misapplication.

Check, Test and Start

Check, Test and Start of the air conditioners by an experienced person is the responsibility of the installing contractor. This consists of physically confronting each unit operating in both heating and cooling modes and correcting any minor deficiencies noted. After the equipment leaves the factory, it may become damaged or maladjusted during transportation or on the job. Sometimes wires are disconnected accidentally, or fan motors move on their bases due to rough handling, causing fans to strike; a component(s) may be inoperable. The correction of such conditions is part of the Check, Test and Start. Note that unless otherwise specifically agreed to in writing, Ice Air includes no field labor, Check, Test, and Start (or the like) in the price of its equipment.

Installation

Ice Air is not responsible for the design, execution and performance of the installation method or any of the accessory items used during installation such as seals, caulking, weatherproofing, supporting structures, attachment means, louvers and frames supplied by others.

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email: service@ice-air.com
www.ice-air.com

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