ICE AIR®
World Class Comfort®

Operating and Maintenance Manual

VSHPW

Vertical Stack Unit

ELA-13086

Water Source Heat Pump (WSHP) Unit

ICE AIR®
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Contents

Welcome

Congratulations on your selection of the Ice Air Water Source Heat Pump (WSHP). The WSHP is a combination cooling and heating unit that provides an efficient room by room source for comfort conditioning of your living environment.

Ice Air WSHP Vertical Stack units are built to a high standard of quality and reliability, employing commercial grade components and heavy duty, galvanized sheet metal casings. With proper maintenance and usage, Ice Air WSHPs should provide many years of efficient, quiet and trouble-free comfort.

To enhance the use of your Ice Air equipment, you will want to read and carefully follow all of the instructions contained in this Operating and Maintenance Manual. We recommend that you pay special attention to the Safety and Warning Information section at the beginning of this Manual, and to the various safety advisories throughout this Manual.

Please retain this Manual for your future reference. We suggest that you keep it with other important documents and product manuals. If your unit has optional features, they will be explained in a separate instruction sheet specific to that option.

On behalf of Ice Air, and our network of distributors and dealers, we are happy to welcome you to our base of satisfied customers!

We recommend that you record the following information about your Ice Air product(s).

Location	Model No.	Serial No.
Living Room		
Master Bedroom		
Bedroom		
Dining Room		
Other		

Precautions and preparations listed are for general knowledge and to define basic guidelines. Local codes and existing practices should be observed and preformed by a professional.
Due to Ice Air's ongoing product development programs, the information in this document is subject to change without notice.

Consumer Reference Information

For safe and optimal enjoyment of your Ice Air unit, please read the following consumer safety and operating notes carefully before operating your equipment!

⚠ 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.

Safety Guidelines

Read this entire manual before operating the unit.

⚠ **WARNING:** This unit MUST be serviced only by professionally trained and qualified technicians. Do NOT attempt to maintain or service this unit on your own – severe injury and death can occur from electric shock, moving parts, and other hazards.

- Your Ice Air unit must be properly installed and commissioned to operate correctly. Improper unit installation, adjustment or commissioning, and/or improper heating system installation and connection can lead to equipment malfunction and hazardous operating conditions, and may void your warranty. If you have any doubt about the proper installation of your Ice Air unit, please contact your property manager at once to have a qualified technician inspect the equipment.
- Your Ice Air units must each be wired on an individual, dedicated electrical circuit with the correct voltage and proper amperage (capacity) to match the unit nameplate requirements.
- Each unit's electrical circuit must have a proper overcurrent protection device, employing an approved circuit breaker or fuse of the proper rating under NEMA and local building codes.

⚠ **WARNING:** Every unit contains refrigerant within a sealed and pressurized refrigerant system. This system must not be opened or tampered with and any refrigeration system repairs MUST be carried out by trained technicians. Refrigerant must be properly handled and recycled per EPA regulations and guidelines.

⚠ **WARNING:** Do NOT operate the unit with frayed, burnt or damaged electrical wires!

⚠ **WARNING:** Do NOT operate the equipment when in doubt – have it inspected first!

IMPORTANT: It is not the intent of this maintenance manual to correct any installation deficiencies. If you have any doubt about the proper initial installation (or re-installation after servicing) of your Ice Air unit(s) – noisy or inefficient unit operation, frayed or damaged electrical connections, improper unit appearance, etc. – please contact a trained servicer or building maintenance staff immediately.

The following physical conditions must be maintained for proper unit operation:

Air flow must be unobstructed into and out of the unit return air opening.

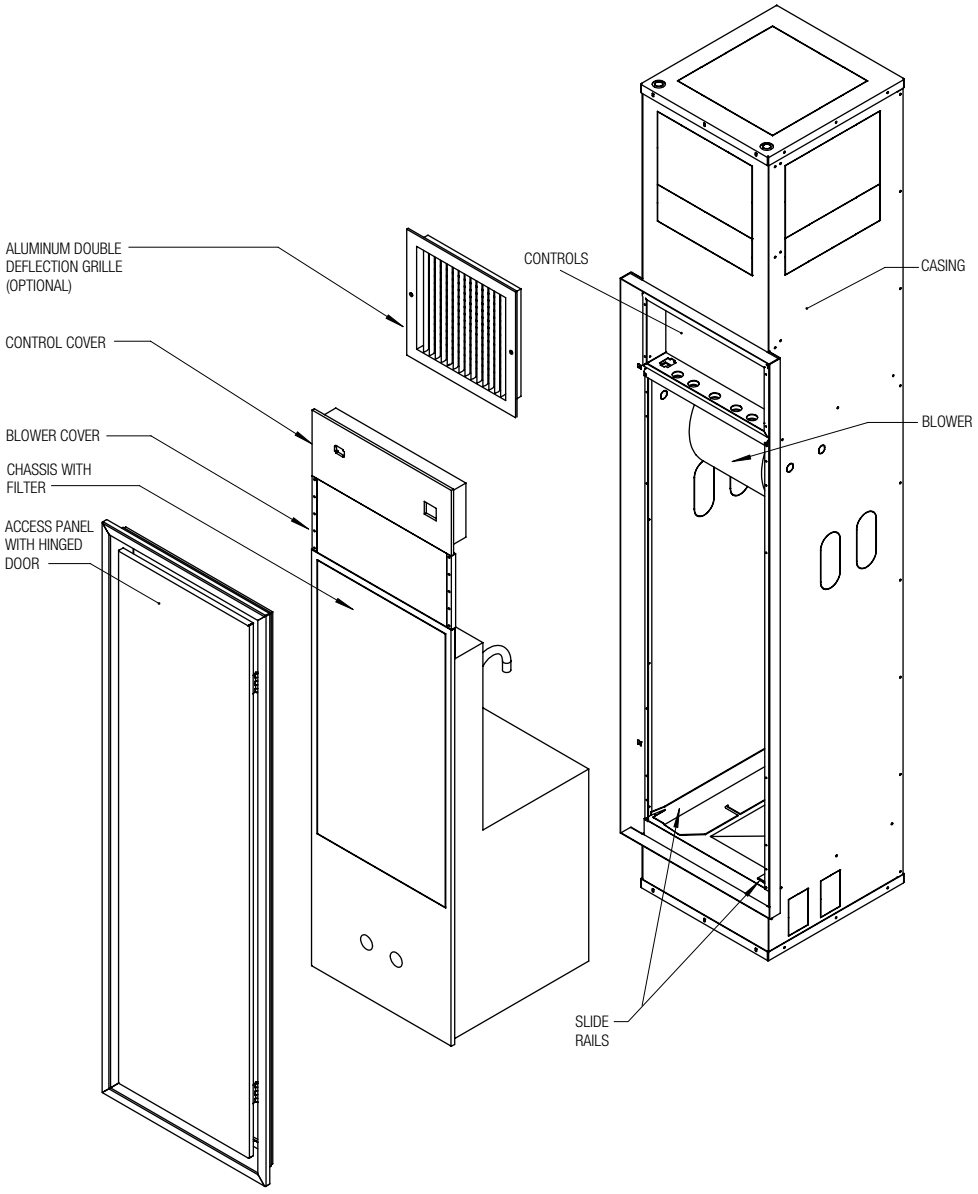
- Have the unit filter properly cleaned and serviced to prevent air blockage from dirt and dust within the filter media.

Intended for indoor use only.

Proper installation and operating environment must be maintained. Therefore:

- Do not operate the unit in corrosive environments such as chemical plants, refineries or salt spray areas.
- Operate only with proper electrical service and protective circuit breakers or fuses in place.
- Operate only with all unit and enclosure sheet metal parts in place and properly installed.
- In areas of high concentrations of dirt, dust, pet dander or pollutants, clean the filter often (at least monthly).
- Do not clean the unit with any solvents or cleaning solutions that may damage the equipment.
- Understand and follow the unit operating instructions before using your Ice Air equipment.

Components and Parts Exploded View



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

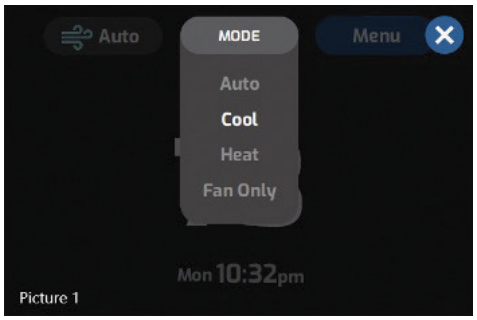


FIGURE 2

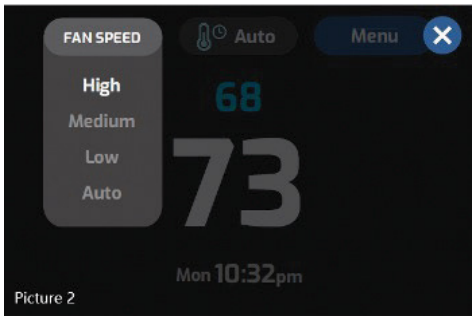
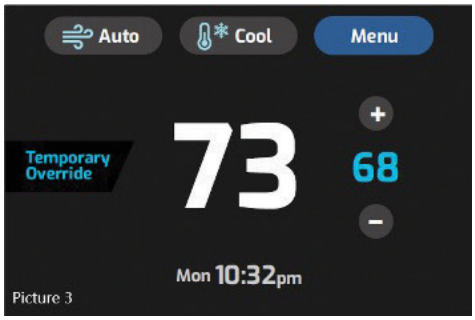


FIGURE 3



- **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
  - 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

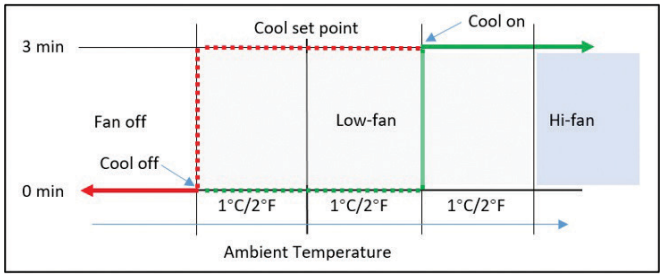
Remark: Other fan speeds like High, Medium and Low will cause no change once it is selected.

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)

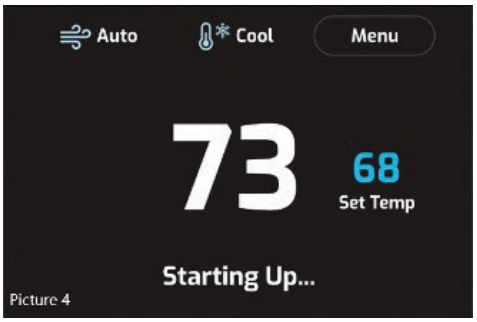
Remark: The fan status noted in the figure below only refers to the fan speed in "Auto" fan mode.

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

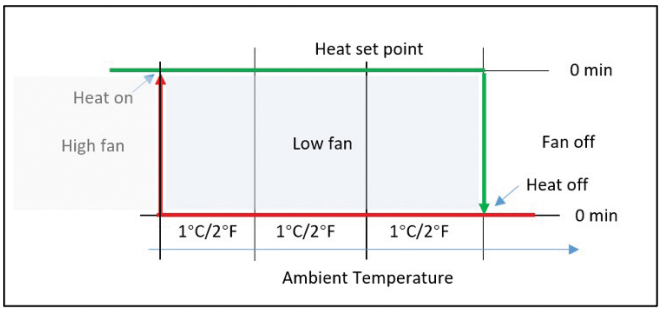


13. Heating Relay Control for Heat MODE

- **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

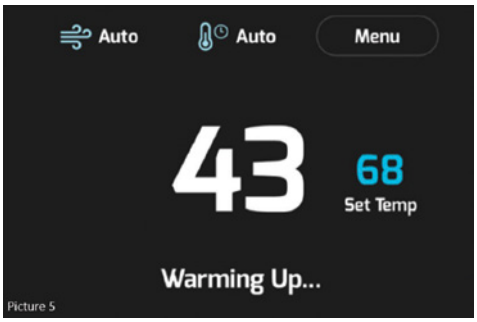
FIGURE 6



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

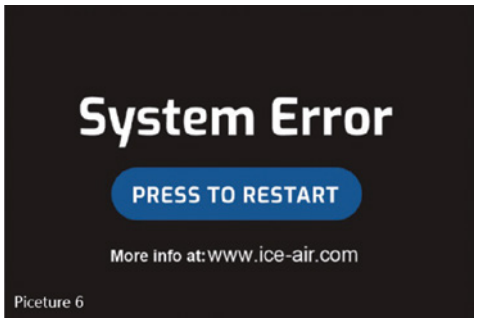
FIGURE 7



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

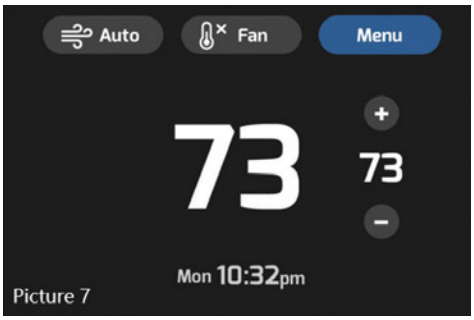


FIGURE 10

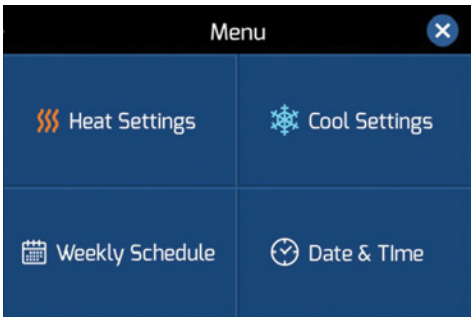


FIGURE 11

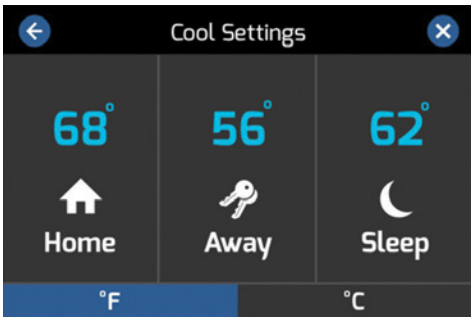


FIGURE 12

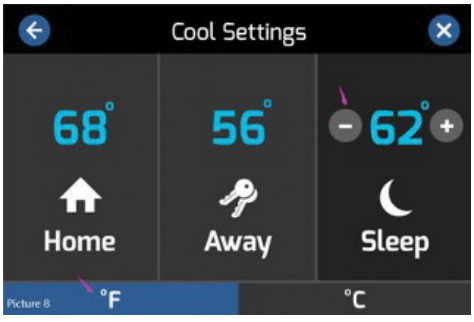


FIGURE 13

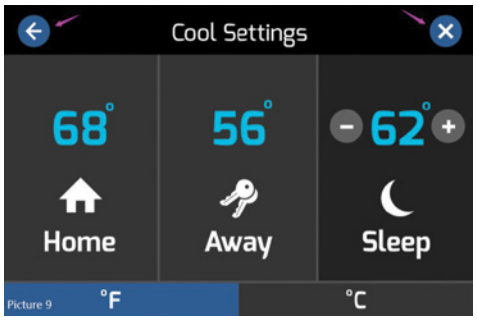


FIGURE 14

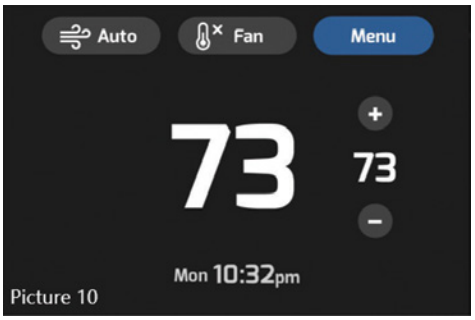


FIGURE 15

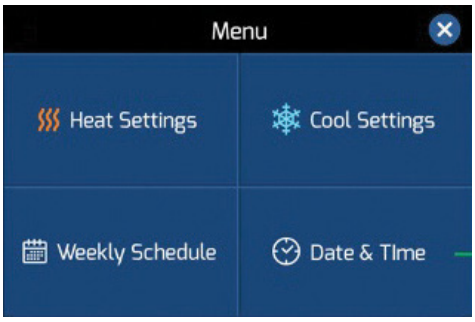


FIGURE 16

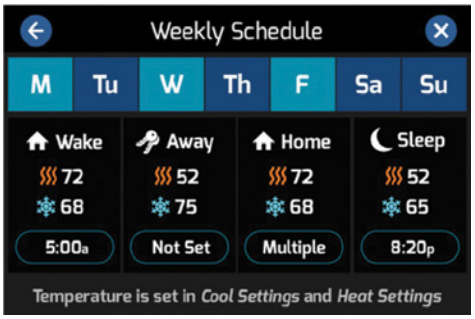
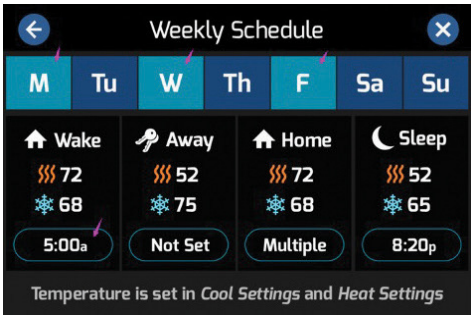
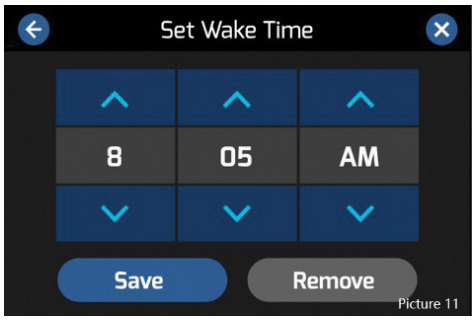


FIGURE 17



- **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

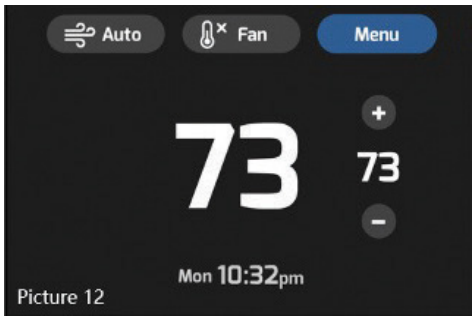


FIGURE 20

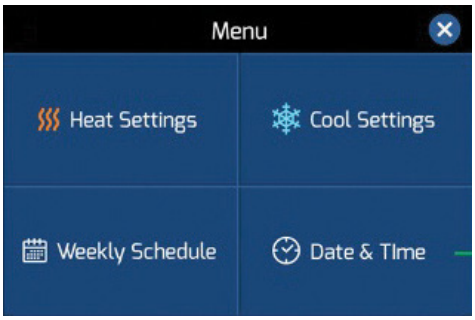


FIGURE 21

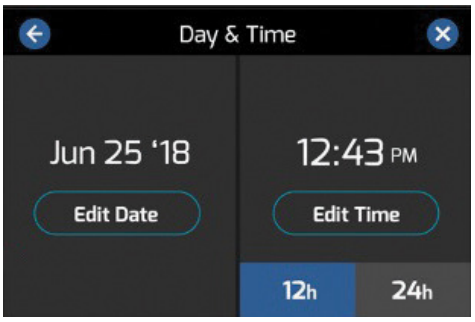


FIGURE 22

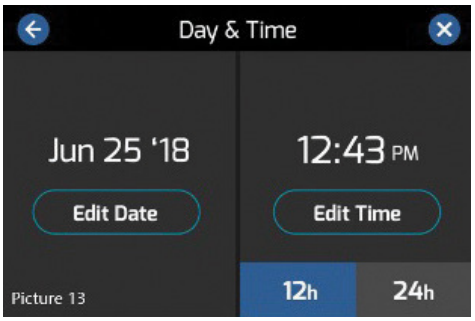


FIGURE 23

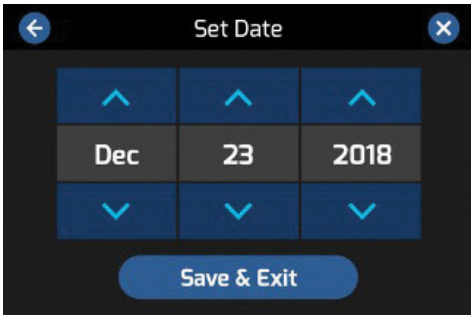
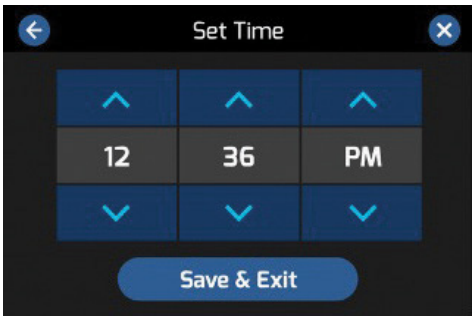


FIGURE 24



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

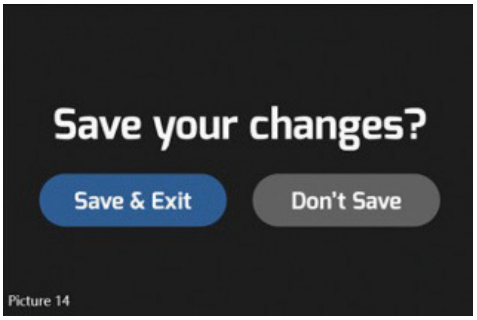
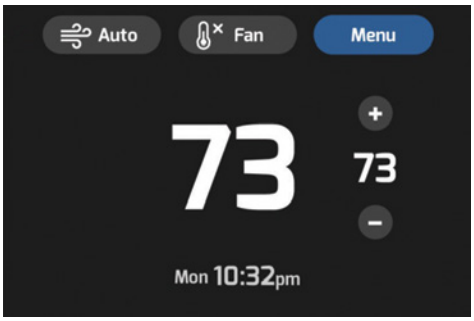


FIGURE 26

FIGURE 27

FIGURE 28



PLEASE NOTE: Other thermostats are available including:

Habitat Wireless Thermostat

Digital LCD Thermostat

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

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.

Board Troubleshooting Table

Display (Fault Code)	LED		
	Yellow	Green	Red
Normal Mode	OFF	ON	OFF
HPS (Refrigerant Pressure) (E1)	OFF	OFF	FLASH
LPS (Refrigerant Pressure) (E2)	FLASH	OFF	OFF
Evaporator coil low temperature protection (E3)	FLASH	OFF	FLASH
Coaxial Coil Anti-freeze protection (E4)	FLASH	ON	OFF
Temperature probe fault (E5)	OFF	FLASH	OFF
High/Low Voltage Protection (E6)	OFF	OFF	ON
Low Pressure Protection (E7)	OFF	ON	ON
Condensate Overflow Electronic Protection (E8)	ON	OFF	OFF
Coaxial Coil water flow low temperature Protection (E9)	ON	OFF	FLASH
Low Ambience Temperature Protection (E10)	ON	FLASH	OFF

⚠ 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.

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.

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.

Roomside Component Cleaning

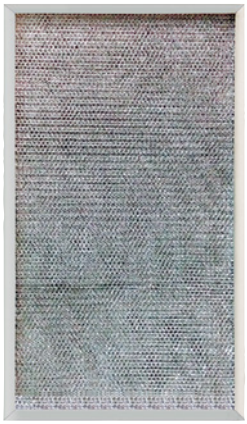
IMPORTANT: Power MUST be disconnected before carrying out any of the following cleaning!

To access the components within the chassis of the unit:

1. Unit must be in OFF Position.
2. Disconnect unit from power source.
3. Remove the unit front cover/access door by unscrewing the retaining screws that hold it in place. You will then have access to the unit components.

NOTE: Pictures of components and parts may vary depending on your model.

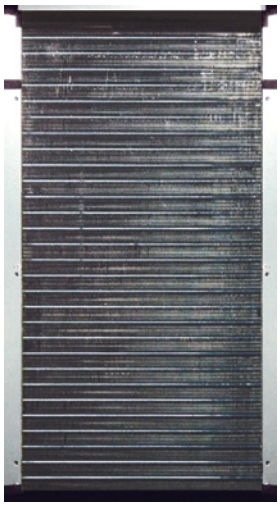
Air Filter



1. Remove Air Filter.
2. If reusable, wash Air Filter in warm water and biodegradable cleaner.
3. Rinse with clean water and allow to dry completely.
4. Replace Air Filter.
5. As an alternate cleaning method, the filter may be cleaned on both sides using a vacuum cleaner and a soft brush type attachment.
6. If your filter is disposable, replace with new filter.

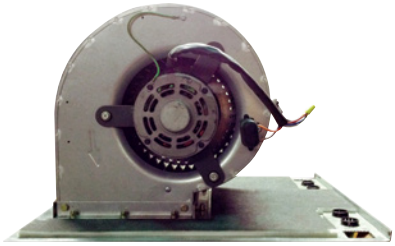
IMPORTANT: Do not operate unit without filters.

Evaporator Coil



Check the coil for cleanliness and uniformity of fins. If the coil is dirty, vacuum clean with a soft brush attachment. This is the only form of cleaning that should be carried out within an apartment. 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 in a facility properly equipped to handle this type of work in a safe and professional manner.

Evaporator Motor and Blower Assembly



If there is evidence of dirt or dust build-up in the evaporator motor or blowers, they should be cleaned either by vacuum cleaning (if working in an apartment) or by removing the unit to a workshop location and cleaning with compressed air.

⚠ **WARNING: Always obey safety guidelines for using compressed air in this latter case.**

Your Ice Air unit has permanently lubricated motor bearings that do not require additional lubrication. Blowers and motors are factory assembled for quiet performance – if there is any excessive noise and vibration from this assembly, it should be serviced by a qualified technician.

Condenser (Water Heat Exchanger)

Generally, if water flow exceeds 3 gpm per ton, the water velocities should keep your coil free of scaling of debris that could lead to erosion and fouling.

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Product Nomenclature

Casing Nomenclature

Model Selection

8	**VSHPW**	**12**	**P**	**N**	**F**	**1**	**S**	**I**	**X**	**U**	**U**	**G**
1	2	3	4	5	6	7	8	9	10	11	12	13

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	**VSHPW**	Vertical Stack WSHP
3	CAPACITY (BTUH)	**09**	9,000 (3/4-Ton)
		12	12,000 (1-Ton)
		15	15,000 (1-1/4-Ton)
		18	18,000 (1-1/2-Tons)
		24	24,000 (2-Tons)
		30	30,000 (2.5-Tons)
		36	36,000 (3-Tons)
4	MOTOR	**P**	PSC Motor
		E	EC Motor
		B	BLDC
5	ELECTRICAL CONNECTION	**F**	Fused Disconnect
		N	Non-Fused Disconnect
		P	Line Cord With Plug
		X	Default: Terminal Block
6	CASING CONFIG.	**N**	Not Applicable
7	CASING DETAILS	**S**	Standard 88" Casing
		C	Custom Casing
		P	Casing 68" (Reduction From The Top)
		R	Casing 86" (Reduction From The Top)
		A	Standard 88" Casing with 1" Stand
		B	Standard 88" Casing with 2" Stand
		C	Standard 88" Casing with 3" Stand
		D	Standard 88" Casing with 4" Stand
		E	Standard 88" Casing with 5" Stand
		F	Standard 88" Casing with 6" Stand
		G	Standard 88" Casing with 7" Stand
		H	Standard 88" Casing with 8" Stand
8	INSULATION	**S**	Insulation: 12.7 mm (1/2") Fiberglass
		C	Closed Cell Foam Insulation
9	P-TRAP	**I**	Internal P-Trap
		E	External P-Trap
		X	No P-Trap
10	RISERS	**X**	No Risers
		H	Unit Mounted Half Risers
		G	Unit Mounted Half Risers (Geothermal Units Only)
		F	Unit Mounted Full Risers

Item #	Matrix Name	Code String Value	Description
11	PIPING ORIENTATION	**L**	Left Hand Connection
		R	Right Hand Connection
		M	Left Hand with Bypass and Ball Valves (Half Riser Only)
		N	Right Hand with Bypass and Ball Valves (Half Riser Only)
		A	Rear
		B	Rear with Bypass and Ball Valves (Half Riser Only)
		X	Piping Orientation Not Applicable
12	WIRE WHIPS	**A**	6.5' Wire Whip for Remote Mounted Thermostat
		B	10' Wire Whip for Remote Mounted Thermostat
		C	12' Wire Whip for Remote Mounted Thermostat
		D	30' Wire Whip for Remote Mounted Thermostat
		E	50' Wire Whip for Remote Mounted Thermostat
		F	Standard 18" wire whip
		U	Unit Mounted Thermostat
13	DRAIN PAN	**G**	Powder Coated Galvanized Drain Pan
		S	Stainless Steel Drain Pan
		X	No Drain Pan

Product Nomenclature

Chassis Nomenclature

Model Selection **8 VSHPW 12 B C A A I A M A**

1 2 3 4 5 6 7 8 9 10 11

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	VSHPW	Vertical Stack WSHP
3	CAPACITY (BTUH)	09	9,000 (3/4-Ton)
		12	12,000 (1-Ton)
		15	15,000 (1-1/4-Ton)
		18	18,000 (1-1/2-Tons)
		24	24,000 (2-Tons)
		30	30,000 (2.5-Tons)
		36	36,000 (3-Tons)
4	COMPRESSOR BLANKET	B	Sound Attenuation Blanket
		X	No Compressor Blanket
5	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 Wi-Fi Thermostat with Water Leak Detector (ELA-13161)
		I	Non-Programmable LED Touchpad Thermostat (ELA-10328)
		X	Thermostat Field Mounted By Others
6	MOTORIZED VALVES	A	2-Way, 2-Position Motorized Valve NO
		B	2-Way, 2-Position Motorized Valve NC
		C	Custom
		D	3-Way, 2-Position Motorized Valve NO
		E	3-Way, 2-Position Motorized Valve NC
		X	No Motorized Valve

Item #	Matrix Name	Code String Value	Description
7	FLOW VALVES	A	Autoflow Valve (HAYS 2510/2517)
		B	Autoflow Valve/Shutoff combo (HAYS 2519)
		H	Autoflow Valve (HAYS 2515) [high GPM only]
		C	Autoflow Valve w/PT Ports (YR Flow Valve)
		M	Manual Balancing Valve
		Y	Y-Strainer
		F	Autoflow Valve w/PT Ports (YR Flow Valve) and Y-Strainer
		D	Autoflow Valve (HAYS 2510/2517) and Y-Strainer
		E	Autoflow Valve/Shutoff combo (HAYS 2519) and Y-Strainer
		G	Manual Balancing Valve and Y-Strainer
		X	No Flow Valves
8	CONDENSATE PUMP	I	Internal Condensate Pump
		E	External Condensate Pump
		X	No Condensate Pump
9	FILTER	A	MERV 8 Filter
		B	MERV 12 Filter
		C	MERV 13 Filter
		W	Washable Filter
		P	Fiberglass Filter
		X	No Filter
10	AIR VENTS	M	Manual Air Vent
		T	Bleed Tee
		X	No Air Vents
11	VALVE SHIPPING OPTIONS	A	Assembled
		S	Shipped Loose
		X	None

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Notes or Technical Comments

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Notes or Technical Comments

Limited Warranty

Twelve (12) Month Warranty of entire Packaged Terminal Equipment

Ice-Air, LLC ("Ice Air" or the "Company") warrants, solely to the person or entity that directly purchased the packaged terminal system from the Company (the "Original Owner"), that the entire packaged terminal system is free from defects in material and workmanship for a period of twelve (12) months from the date of delivery (the "Twelve Month Warranty"). Any part or 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 subject to the satisfaction of the conditions set forth in the last paragraph of this Section and are limited to: (a) repairing the defective part or (b) furnishing a replacement part provided the defective part is returned to Ice Air, 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.

Except as otherwise provided in the last sentence of this paragraph, 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. In addition, the Company is not obligated under this warranty to make reimbursement of the labor or service charges of any other party. Notwithstanding the foregoing, labor provided by or at the direction of the Company during the twelve (12) month period from the date of delivery referred to in the initial paragraph above, in connection with the Twelve Month Warranty of parts provided in the initial paragraph above, is included in such warranty, solely in the case in which a packaged terminal system is sold by the Company to an Original Owner for use in a new facility to be constructed and located in the greater New York City metropolitan area. For the avoidance of doubt, except in the case described in the preceding sentence, the Company has no obligation under this warranty to provide for field labor or to make reimbursement of the labor or services charges of any other party, provided, however, that the Company, in its sole and absolute discretion, may elect to do so, so long as (i) such election is set forth in a writing signed by the Company and (ii) the facility at which the applicable packaged terminal system is or will be installed is located in the greater New York City metropolitan area (the "Metropolitan Area").

The obligations of the Company set forth in the preceding paragraphs of this Section are in all cases subject to the satisfaction of the following conditions: (x) the Company shall have received proof, satisfactory to the Company, of the purchase by the Original Owner from the Company of the packaged terminal system that is the subject of the Original Owner's claim, (y) all amounts due and payable to the Company on or prior to the date of such claim in respect of such packaged terminal system shall have been paid in full and (z) nothing shall exist or occur that relieves the Company, in accordance with the terms of this agreement, from the performance of its warranty obligations hereunder.

OPTIONAL Extended Refrigeration Circuit Warranty

2nd – 5th year compressor parts only; labor not included
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 Ice Air. 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. In addition, the Company is not obligated under this warranty to make reimbursement of the labor or service charges of any other party. 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 Phone 914-668-4700.

Additional warranty options include:

2nd – 5th year full unit parts only warranty
2nd – 5th year compressor parts and labor warranty, so long as such labor is performed in the NY Metropolitan Area
2nd – 5th year complete parts and labor warranty (Full unit coverage), so long as such labor is performed in the NY Metropolitan Area.
All Warranties (which must be purchased separately) constitute the Original Owner's sole remedy. They are given in lieu of all other warranties. Ice Air is not 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. In addition, neither the Original Owner nor any such person has the right to sell, transfer or assign, or attempt to sell, transfer or assign, any rights of the Original Owner in or to the warranties provided for herein, no such sale, transfer or assignment shall be binding upon Ice Air and any such sale, transfer or assignment is null and void and of no force or effect.

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, faulty or improper installation, inadequate wiring, incorrect voltage conditions or unauthorized opening of the refrigeration circuit, nor forconsequential 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 12 months from the date of equipment delivery. 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 Disclaimers Ice Air Has No Responsibility For:

(A) Certain Damages

The following are the responsibility of the user. None of the following constitutes a manufacturing defect, and each is expressly excluded from 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 unsatisfactory 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 or tampering.
7) Failure to clean or replace filter timely.
8) Misapplication of equipment.
9) Damage due to deviation from original design and intended use of equipment.
10) Damage due to use of additional accessories either unapproved or approved but modified or manipulated.

(B) 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.

(C) 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 conditioner 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 has no obligation to perform, nor does the price of its equipment include field labor in connection with the performance of, these Check, Test, and Start procedures (or the like).

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