

Installation & Operations Manual iE1







Thank you for purchasing this Intellihot unit.

This unit is designed for years of trouble free operation, and I urge you to read and follow the instructions in this "Operation & Installation Manual."

Our mission to create a better water heating system began back in the winter of 2005 when a tank-type water heater broke down and flooded our founder's basement. By combining the principles of a diesel engine's robustness, robotics intelligence, and marine environment durability, Intellihot set out to design a unit from the ground up that would outperform and outlast all others.

Innovation is our hallmark and simplicity, efficiency, and durability are at the core of every Intellihot product. Our water heaters utilize the best attributes of tank and tankless – with intelligent logic and integrated recirculation. The result is a water heating system capable of handling the extreme loads of commercial applications with the preciseness needed for residential applications.

Our products are proudly engineered and built in Galesburg, Illinois making Intellihot the first and only US-based manufacturer of gas-fired condensing tankless water heating systems. For the past two decades, Intellihot has helped commercial customers throughout the nation save thousands of dollars while eliminating downtime. As we continue to expand our coverage across North America, we strive to provide you with the same unmatched performance advantages and savings. Our talented team of dedicated professionals is ready to assist you and help your business succeed.

I thank you for considering our Intellihot products.

Sincerely, Shamus M. Hurley CEO, Intellihot Inc.





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This product complies with UL 60335-2-40/CSA 22.2 Electric Water Heater. For use as potable water heating







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Intertek
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To avoid product damage, personal injury, or even possible death, carefully read, understand, and follow all the instructions in this Installation & Operation Manual before installing this product.

Improper installation, adjustment, alteration, or maintenance can cause injury, loss of life, and/or property damage.

This water heater should be installed and serviced by a qualified technician. The lack of proper service can result in a dangerous condition.

This manual must remain with the water heater

Due to Intellihot's policy of continuous product improvement and technology, the design, technical specifications, or both in this manual are subject to change without notice.

This manual contains safety information, installation instructions, and maintenance procedures. It must be left with the homeowner or placed near the water heater in a

noncombustible location. The customer should retain this manual for future reference.

Contact Information

Call us, your dealer, first if you have any questions about this product. We can help answer questions about installation, operation, or if there are damaged or missing parts when unpacking this unit from the shipping box.



Dealer Contact Information.





Electrical Shock Hazard - Do Not Touch

Electrical Shock Hazard

If the water heater becomes immersed in water up to or above the level of the bottom of the element doors, the heater should be examined by a qualified service agency before it is placed in operation.

1. General Information

1.1 Items Shipped With Water Heater

The items shown in the illustration are shipped loose with the water heater.



1.2 Serial Number Plate Locations

The unit's serial number is located on the right side of the unit. Provide this serial number when inquiring about service or warranty solutions.

Serial Number: _____

Date of Installation: ___ / ___ / ____

2. Safety

2.1 Safety Signal Words

A DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is limited to the most extreme situations.

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

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Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE

Indicates that equipment or property damage can result if instructions are not followed.

SAFETY INSTRUCTIONS

Safety instructions (or equivalent) signs indicate specific safety-related instructions or procedures.

2.2 Installation Warnings

WARNING

DO NOT use this water heater for any purpose other than heating water.

Read, understand, and follow the Installation & Operation Manual, including all warnings and precautions, before operating this water heater. If you do not follow these instructions exactly, a fire, electric shock or explosion can result, causing property damage, personal injury, or loss of life. This manual must remain with the water heater.

This water heater must be installed by a licensed plumber, or professional service technician. Installation by unqualified person(s) voids the warranty.

This water heater is designed for operations at outlet temperature(s) not more than 170°F (77°C).

This water heater is suitable for use in potable water applications. The cold and hot water fittings on the top of the water heater MUST NOT be connected to any other system.



The water heater temperature is factory set to $120^{\circ}F$ (49°C). Hot water temperatures above $125^{\circ}F$ can cause severe burns instantly or death from scalds.

If the proposed water heater outlet temperature is to be set above 125°F, installation of a thermostatically controlled (or temperature-limiting) mixing valve is recommended for all hot water going to faucets/showers to avoid the risk of scalding.

Examples include commercial applications where $140^{\circ}F$ (60°C) is often needed. Always check the temperature of the hot water before bathing, showering, washing, etc.





Electrical Shock Hazard - Do Not Touch

Turn OFF power at the branch circuit breaker serving the water heater before performing any service.

Label all wires prior to disconnecting when performing service. Wiring errors can cause improper and dangerous operation

Verify proper operation after servicing.

Failure to follow these instructions can result in personal injury or death.

This unit should not be operated by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction. children should be supervised and should not to play with the unit.

Verify the power to the water heater is turned off before opening the control panel or performing any service procedures.

Lightning protection is necessary if the water heater is installed where it would be easily subjected to lightning strikes.

WARNING



2000 PSI (13.7 MPa)

The Heat Pump Water heater contains R-744 CO2 refrigerant and it's under very high pressure. The system must be serviced by qualified persons only.

SAFETY INSTRUCTIONS

DO NOT use this appliance if any part has been under water.

DO NOT overtighten fittings as damage may occur, causing internal leakage.

The appliance should be located in an area where leakage within the unit or at its connections will not result in damage to the surrounding area. The manufacturer will not be responsible for any damage resulting from leaking if adequate drainage is not provided.

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Grounding Requirement

This water heater must be grounded in accordance with the National Electrical Code and/or local codes. These must be followed in all cases. Failure to ground this water heater properly may also cause erratic control system operations, and incorrect water temperatures.

This water heater must be connected to a grounded metal, permanent wiring system; or an equipment grounding conductor must be run with the circuit conductors and connected to the equipment grounding terminal or lead on the water heater.

3. Technical Specifications

3.1 Specifications Chart

Technical Data	iE1 Std	iE1 Mid	iE1 Max			
Туре	Indoor / Outdoor, Floor Mounted					
Power Source		Electric				
Supply Input Voltage	208 V AC, 60 Hz, 1Ph 208 \		AC, 60 Hz, 3Ph			
Number of Wires	4 Wires (L1, L2, N and G)	5 Wires (L1	, L2, L3, N and G)			
Electric Input, kW	3.4	9.4	15.4			
Heating Output (BTU/Hr)	Up to 57,000	Up to 77,000	Up to 97,000			
Current, FLA (Amps)	16.6	45.4	49.8			
Minimum Circuit Ampacity, MCA (Amps)	20.8	49.6	54.1			
Minimum Recommended Circuit Breaker (Amps)	25	50	60			
Maximum Overcurrent Protection, MOP (Amps)	35	70	90			
Resistive Heating Elements	0	1 (6 kW)	2 (2 x 6 kW)			
СОР		Up to 4.9 (without Heating Ele	ements)			
Compressor Type		Rotary				
Safety Devices		Pressure Switch, and Overheat F	Protection			
Ambient Installation Temperature		-10° to 110°F				
Air Flow Requirement		2500 CFM				
Outlet Water Temperature Range		100°F to 170°F				
Temperature Stability		+/- 4°F				
First Hour Rating†	154 Gallons	199 Gallons	244 Gallons			
Connectivity		Cellular and Bluetooth	1			
Operational Modes		Efficiency, Hybrid, Electric, Sel	lf-learning			
Grid Connectivity	Via CTA-2045 module (customer supplied)					
Refrigerant		R744, CO2 refrigeran	t			
Refrigerant Charge Quantity		3.96lbs (1.8 kg) Max				
Refrigerant Max Allowable Pressure		2175 PSI (15 MPa)				
Cascading Protocol		Masterless, Up to 6 un	its			
Noise Level		Up to 55 dBA				
Domestic Water Heat Exchanger		Stainless Steel, 316L				
Energy Storage	W	ater-Propylene-Glycol based The	ermal Battery			
Water Inlet & Outlet Connections		1-1/2" NPT Female				
Unit Dimensions H X W X D		72 in X 30 in X 30 in				
Shipping Weight		880 lbs				
Unit Weight	758 lbs ((with 5 gallons glycol), 1150 lbs (thermal battery full)			
Water Pressure Min / Max		30 PSI (0.21 MPa) / 150 PSI (1.03 MPa)			
CLEARANCES						
Back		30"				
Front	30"					
Τορ	300					
Sides						
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Certifications	Energy Sta	r, NSF 372, UL 60335-2-40, CSA	A C22.2 and CTA-2045			
Warranty	1 Year or	Parts and Compressor, 3 Years	on Thermal Battery			
Note: Due to Intellihot's policy of continuous product improvements the design and technical specifications are subjected to change without notice.						

3.2 Nomenclature



ltem No.	Nomenclature	Comments
1	High voltage Port	Power lines are routed from here to the terminal block. Refer to section 7
2	BMS, low voltage port	Low voltage BMS signal connection.
3	Glycol Concentration Sensor	Access point for Glycol concentration sensor also used to refill glycol.
4	Hot water outlet Port	Refer to section 6.0 for Hot water pipe installation
5	Pressure Relief valve port	Refer to section 6.0 for Pressure Relief valve installation
6	Glycol Hot Accessory Port	This port used with new unit glycol filling. Refer to section 6.0
7	Propylene Glycol Cold Accessory Port	
8	Condensate Drain	Refer to section 6.0 for Condensate Drain installation
9	Thermal Battery drain valve	
10	Thermal Battery Fill Port	This port is connected to water inlet with a dual check valve. Refer to section 6.0
11	Water Inlet strainer clean out port	Refer to maintenance section 10 for strainer clean out procedure
12	Cold Water inlet port	Refer to section 6.0 for Cold water pipe installation
13	Fan	Refer to maintenance section 10 for fan maintenance

3.3 Service Clearance Requirements



Location	Required Service Clearance
Тор	30" (76.2 cm)
Back	30" (76.2 cm)
Sides	24" (76.2 cm)
Front	30" (76.2 cm)
Bottom	0" (0 mm)

3.4 Connection Specifications

Description	Specification
Water Inlet Connection	1-1/2" NPT Female
Water Outlet Connection	1-1/2" NPT Female
Condensate Drain	3/4"
Power Supply	iE1 Std = 208 V AC, 60 Hz, 1Ph iE1 Mid = 208 V AC, 60 Hz, 3Ph iE1 Max = 208 V AC, 60 Hz, 3Ph

3.5 Overall Dimensions





FRONT VIEW





BOTTOM VIEW



REAR VIEW



3.6 Configuration Options

3.6.1 iE11 Unit Configuration









4. Quick Reference Installation Guide

4.1 Install the Water Heater

- 1. The installation must conform with these instructions and the local code authority having jurisdiction and the requirements of the power company. In the absence of local codes, the installation must comply with the latest editions of the National Electrical Code, NFPA 70 or the Canadian Electrical Code CSA C22.1.
- 2. This installation requires Plumbing and electrical work. A qualified service provider is required.
- 3. In California, this water heater must be braced or anchored to avoid falling or moving during an earthquake.
- Massachusetts Code requires this water heater to be installed in accordance with Massachusetts 248-CMR 3.00:
- 5. If after reading this manual you have any questions or do not understand any portion of the instructions, call the number listed on the back cover of this manual for technical assistance.
- 6. This unit shall be brought into the installation room, with the unit standing up. Please refer to section 5.1 Unit transportation for additional details.
- Select an installation location, for an interior or exterior location refer to section "5. Preparation Before Installation" on page 17.
- 8. Please make sure the clearance around the unit is met or exceeded as per section "3.3 Clearance Requirements" on page 9
- 9. Check the quality of the water to determine if additional water treatment would be beneficial to the function and efficiency of the water heater. For additional information refer to section"5. Preparation Before Installation" on page 17.
- 10. Make all necessary water connections. For additional information refer to section "6. Water Connections" on page 20. Make sure shut-off valves are included on the water inlet and water outlet.
- Make all necessary electrical connections as per section "7. Electrical Power" on page 23
- 12. If connecting multiple units together, refer to "9. Multi-unit Setup" on page 36.
- 13. Fill out the Warranty Card and return it to Intellihot.
- 14. For a copy of the card go to "13. Warranty" on page 55.

4.2 Startup Instructions

NOTICE

Before the initial startup operation of the iE1 Electric Water Heater, make sure to bleed all the air that is present in the water lines. Please see "6. Water Connections" on page 20. Do not startup the water heater if there is no supply of water to the water heater.

- The inlet water shut-off valve and the outlet water shutoff valve must be in fully open position to release any air trapped inside the water lines of the water heater.
- Make sure to gradually supply water through the water inlet. Rapid supply of water through the water inlet may cause damage to the water heater
- If the unit is brought into the room laying down, it must sit idle standing up for 48 hours before turning it ON. Please refer to section 5.1
- 2. Please refer to "3.2 Nomenclature" on page 9 to identify and locate the items mentioned in the below instructions.
- 3. Open the outlet water shut-off valve fully.
- 4. Gradually open the inlet water shut-off valve to allow the water to slowly flow through the water lines of the water heater. Please see Section 6.0 "Water Connections" on page 16.
- 5. Gently lift the lever of the T&P valve and push it all the way up to release any air present in the water lines of the water heater.
- 6. Close the outlet water shut-off valve
- 7. Turn ON the water heater.

NOTICE

The display screen will switch on and display the progress of charging the thermal battery and the water filling through the thermal battery fill port. The charging time may vary between 45 minutes to 2 hours.

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Make sure the outlet water shut-off valve is closed until the thermal battery is fully charged and the water in the thermal battery of the water heater is filled.

- 8. Gradually open the outlet water shut-off valve to allow hot water to flow out from the water lines of the water heater. Please see "6. Water Connections" on page 20
- 9. The water heater is ready for use.
- 10. If any error code appears on the display screen, please refer to "11.3 Troubleshooting Guide" on page 46.

ACAUTION

5. Preparation Before Installation

Before the installation of the water heater, please read the manual carefully to take all the necessary precautions.

5.1 Unit transportation

- 1. This unit has a compressor with compressor oil pre-filled. Also, it is shipped with 5 gallons of glycol pre-filled.
- 2. Please stop and reject the shipment if the unit is received with the Tip N Tell filled with blue.



Caution: Unit is not Tipped

Caution: The unit is Tipped

3. It is required bring the unit to the installation room with the unit standing up. This will allow the compressor oil and the glycol to stay intact

5.2 Selecting an Installation Site

- 4. Select an applicable indoor or outdoor location for the installation. Each installation is unique; therefore, take the time to find the best location for your water heater.
- 5. In case of outdoor installation, please refer to section "5.2 Outdoor Installation" on page 18

NOTICE

If there is not outside air circulation in the room, the heat pump will emit cold air and may cause the room temperature to become colder.

Important: The water heater must have unrestricted airflow.

The water heater should be in an area where leakage of the connections will not result in damage to the area adjacent to the heater or to lower floors of the structure.

- Install the water heater close to water inlet, water drain outlet and other water connections. Please refer to section "6. Water Connections" on page 20.
- 7. To minimizes the length of water pipes used in plumbing connections, install the water heater near locations that use hot water, such as bathroom, kitchen, or laundry room faucets. Please refer to section "6. Water Connections" on page 20
- Make sure to select the location of the unit that minimizes the length of electrical connections. Please refer to section "7. Electrical Power" on page 23.
- 9. If the distances are long or if the faucet or appliance requires "instant" hot water, we recommend running a recirculation line back to the water heater from the farthest fixture.
- 10. Make sure the unit is not located in a busy location and is located away from foot traffic.

NOTICE

Make sure the installation location must be free from any corrosive elements in the atmosphere such as sulfur, fluorine, and chlorine. In addition, excessive dust and lint affect the operation of the unit.

Water heaters are heat producing appliances. To avoid damage or injury, there shall be no materials such as dust, debris, chemical agents, or other flammable materials like gasoline or paint stored or kept around the water heater unit location.

- Allow sufficient clearances for the service and maintenance access to water inlet, water outlet and the drain connections of the water heater. Please refer to the "6. Water Connections" on page 20 for allowable clearances
- The water heater produces non-acidic condensate water similar to an air conditioner's condenser water. This condensate water is safe to drain without using any neutralizer. Please check with local plumbing code for the proper drainage of this condensate water.
- 13. If the water heater will be installed where the ambient temperature could fall below freezing temperature it is recommended to insulate all the piping connection to protect the water inlet, water outlet, condensate and all other water connections from freezing.

During extremely cold weather conditions and if there is a power failure, make sure to:

- Turn OFF the water heater
- Close the water inlet and outlet shut-off valves and drain the unit completely.
- · Drain the thermal battery by using the thermal battery drain valve

During extremely cold weather conditions and in case of a power failure, the water inside the water heater may freeze and cause damage to the water heater. Damage caused by freezing water will not be covered under the warranty of this unit...

- 14. Check the water quality.
 - Proper maintenance of the water heater is required to ensure that the water meets EPA quality standards. Refer to section "13. Warranty" on page 55 for quality standard requirements and additional information.
 - b. If you suspect that your water is contaminated in any way, discontinue use of the water heater, and contact an authorized technician or licensed professional.
 - c. If the incoming water is known to have a high mineral content or "hardness" (see table below and refer to "13. Warranty" on page 55 for additional details), water treatment is recommended upstream from the water heater.







Unit	Incoming Water Pressure (PSI)							
Setpoint (°F)	30	40	50	60	80	100		
100-119°	8	15	20	25	30	30		
120-139°	5	11	15	20	27	30		
140-159°	4	5	11	13	18	20		
160-170°	3	4	10	12	15	17		

15. Make sure the location meets all building code



requirements.

5.3 Outdoor Installation requirements

Select a suitable exterior/outdoor location to install the water heater. Please refer to "5.1 Selecting an Installation Site"

- 1. When installing the water heater outdoors, please follow all local plumbing and electric codes.
- 2. Water heater must be installed under a roof or other protective covering to protect the unit from prolonged periods of heavy precipitation
- 3. **Insulate:** If the water heater will be installed where the ambient temperature could fall below freezing, it is required to insulate all the piping connections to protect the water inlet, water outlet, condensate, and all other water connections from freezing. Install heat trace to protect the pipes from freezing.
- 4. **Air Ventilation:** The water heater must be installed in an area with sufficient atmospheric air ventilation in all directions.
- 5. **Snow Clearances:** Allow sufficient ground clearances to accommodate winter-time snow buildup around the unit.

- 6. **Maintenance Clearances:** Allow sufficient clearances for the service and maintenance access to the water inlet, water outlet, and drain connections of the water heater. Please refer to the section "3.3 Clearance Requirements".
- 7. **Plumbing Connections:** Make sure to perform all the necessary plumbing connections as shown in Section "6. Water Connections"
- 8. **Electrical and Grounding Connections:** Make sure to perform all the necessary electrical and grounding connections as per Section "7. Electrical Power"
- 9. Except for maintenance, the iE1 door must always be closed and locked. Failure to do so could cause water leaks, electric shock, and damage to the internal components. The warranty does not cover this.
- **10. Maintenance:** Outdoor installations are more prone to debris buildup on the fan guard. An Appropriate maintenance schedule is required..
- 11. Two example outdoor installations are shown below.

ACAUTION

Grounding Requirement

This water heater must be grounded in accordance with the National Electrical Code and/or local codes. These must be followed in all cases. Failure to ground this water heater properly may also cause erratic control system operations, and incorrect water temperatures.

Except for maintenance, the iE1 door must always be closed and locked. Failure to do so could cause water leaks, electric shock, and damage to the internal components. The warranty does not cover this.

This unit should not be operated by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction. Children should be supervised and should not to play with the unit.

5.4 Room Size Requirements

This is an air source heat pump water heater and uses heat from the surrounding air. During peak operation, the heat pump will move ~60,000 BTU/h of heat from the room to the thermal battery (2500 CFM). The room must be sized appropriately with sufficient make up air.

If the ambient air temperature in the installed location drops more than 10°F (5°C) in one hour, the air circulation is insufficient and could result in reduced water heater efficiency and performance.

6. Water Connections

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A licensed plumber or professional service technician must install this water heater. Installation by unqualified person(s) voids the warranty

NOTICE

Since each installation is different, it is up to the installer to route the water lines efficiently. The drawings shown here are suggestions indicating the items needed for the installation only.

A water-hammer arrestor shall be installed where quick-closing valves are utilized. The Water-hammer arrestors shall be installed per the water-hammer arrestor manufacturer's instructions.

ACAUTION

Do not over tighten any fittings or connections as damage may occur, and may cause internal or external leakage. Follow the instructions given in this manual carefully to avoid any damage to the water heater, fittings, or connections.

6.1 Quick Reference Installation

Instructions



Install the water heater on a concrete base with a minimum height of 4 inches from the floor and connect various connections as shown in the above figure.

Fill Glycol

- 1. Place the water heater at the selected installation location.
- 2. The thermal battery is pre-filled with 5 gallons of glycol. If additional glycol is included with the shipment, please follow section 6.5 to fill the glycol to the thermal battery.

Hot Water Outlet Connection

- 3. Connect the hot-water outlet.
- 4. Install an isolation valve to the hot-water outlet

Cold Water Inlet Connection

- 5. Connect the cold-water inlet.
- 6. Install one end of a T-joint to the cold-water inlet pipe.
- 7. Connect a pipe and install a dual check valve between the other end of the T-joint and the thermal battery fill port.
- 8. Connect a pipe and install an isolation valve to the last end of the T-joint.

Pressure Relief Valve Installation

- 9. Install the pressure relief valve (included with the water heater) to the Pressure Relief valve port.
- 10. Follow the local plumbing code to route the Pressure relief valve discharge line.

Drain Pipe Connections

- 11. A drain valve is already pre-installed with the water heater.
- 12. The drain valve accepts the garden hose connection. An additional drain connection could be added to the drain valve to route it to the floor drain.

ACAUTION

Any air trapped inside the water lines cause damage to the water heater. Make sure the isolation valves at the hot-water outlet pipe and cold-water inlet pipe are in fully open position to release any air trapped inside the pipes lines or the water heater.

Make sure to gradually supply water through the cold-water inlet. Rapid supply of water can cause damage to the water heater.

13. After the installation is completed, open the hot water outlet isolation valve fully. Then, open the isolation valve at the cold-water inlet to gradually fill water in the water heater..

NOTICE

Make sure there is continuous water flow in the connections of all the water pipelines connected to the water heater.

Make sure there are no leakages found in the joints and connections of all the water pipe lines connected to the water heater.

14. Open the nearest faucet or sink connected to the water heater and continue to drain the water until there is no air trapped inside the water pipelines connected to the water heater.

6.2 Hot Water Connection



1. Install and connect the hot water pipe lines as shown in the above figure.

NOTICE

The hot water pipes should be as short as possible to reduce heat loss and supply hot water to the fixtures quickly.

Only materials such as pipes, fittings, valves, solder, etc., that are approved for use in potable water systems must be used to prevent adverse health issues.

- 2. Connect a 1-1/2" NPT coupler to the water heater's hotwater outlet port.
- Install and connect the hot water outlet pipe to the 1-1/2" NPT coupler.
- 4. Install a T-joint and connect one end of the T to the thermal battery fill port with a double check valve in the middle (as shown).
- 5. Install a 1-1/2" union connection.
- 6. Install a 1-1/2" manual shut- off valve with 1-1/2" NPT fittings.

Please don't install any shut-off device between the water heater and the pressure relief valve to prevent serious personal injury. This valve is designed to release abnormally high pressure within the water heater in case of a system problem.

The supplied pressure relief valve must be used and installed. Please don't install any restrictions or other valves before the pressure relief valve.

- 7. Install the supplied 3/4" 150 PSI maximum pressure relief valve in the designated pressure relief valve port.
- 8. Please follow the local plumbing code to route the discharge pipe. The picture below shows discharge pipe routed within six inches of the floor and directed away from walkways or other appliances.



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Do not use any reducers in the outlet pipe. Do not install any valves, restrictions, elbows, or other blockages in the outlet pipe.

NOTICE

If multiple water heaters are being installed, the diameter of both the main cold-water pipes and the main hot water pipes need to be sized by an engineering professional.

- **9. For multiple unit installations only**: The pressure relief valve discharge pipes must not be connected together with another unit's pressure relief valve discharge pipe. Each discharge pipe must be routed separately.
- 10. Follow the local building codes to connect the water heater pipelines to the building's hot water pipe connections as required.
- 11. If this is an outdoor installation, install heat trace around the exposed pipes to prevent freezing.

NOTICE

To conserve energy, insulate all hot water pipes and recirculation pipes.

SAFETY INSTRUCTIONS

Do not insulate the pressure relief valve.

- 12. Make sure to purge all the air from the water lines.
- 13. Test the water pipes for any leakage. Repair any leaks immediately.

6.3 Cold Water Connection



AWARNING

Only materials such as pipes, fittings, valves, solder, etc., that are approved for use in potable water systems must be used to prevent adverse health issues.

SAFETY INSTRUCTIONS

If the incoming water is known to have a high mineral content or "hardness" (See "13. Warranty"), hardness treatment is required upstream from the water heater.

When the water heater is installed in a closed loop recirculation system, and if the cold water supply pipe has a backflow preventer, an expansion tank should be installed to allow for water expansion. The expansion tank should be sized to match the application.

- 1. Install and connect the hot water pipe lines as shown in the above given figure.
- 2. Connect a 1-1/2" NPT coupler to the water heater's cold water connection.
- 3. Install a T and connect one end of the T to the Thermal Battery fill port with a dual check valve in the middle. Please keep 6" or more clearance between the inlet strainer service port and the dual check valve line.



- 4. Install a 1-1/2" union connection.
- 5. Following local building codes, install a 1-1/2" manual shutoff valve with 1-1/2" NPT fittings.

NOTICE

Isolation valve kits can be used if incoming water treatment is anticipated (such as a water softener) due to hardness levels or heavy usage of the unit.

- 6. If this is an outdoor installation, install heat trace around the exposed pipes to prevent freezing.
- 7. Make sure the water heater is turned OFF and release the water to drain until there is no air trapped inside the water pipe lines of the water heater.
- 8. Test the water pipes for any leakage. Repair any leaks immediately.

6.4 Condensate Drain Connection

SAFETY INSTRUCTIONS

Do not drink the condensate water. The condenser of the water heater produces condensate (water) as a normal by-product of heating the water. It is advised to send this water to the drain.



- 1. Connect and Install a 3/4" hose to the hose connection on the water heater as show in the above figure and route it to the drain.
- 2. If this is an outdoor installation, install heat trace around the condensate drain pipe to prevent freezing. As a reminder,all external pipes must be protected by heat trace to prevent cold weather freezing.
- 3. If required connect discharge pipe from the thermal battery drain valve to the floor drain. The thermal battery drain valve accepts garden hose thread connection. If this is an outdoor installation, install heat trace around the drain pipe to prevent freezing.

NOTICE

It is recommended to have a drain of sufficient size to accommodate accidental pipe breaks and other various leaks that could occur due to normal wear and tear. The manufacturer will not be responsible for any damage resulting from leaking if adequate drainage is not provided.

6.5 Glycol Fill procedure

SAFETY INSTRUCTIONS

This process requires two persons. Five gallons glycol weighs about 45 lbs.

- 1. If unit is powered ON, power OFF the unit at the breaker.
- 2. If the unit was previously running, then drain the tank by using the drain valve at the back of unit. Drain only the amount equal to glycol that we will refill in.
- 3. Open the front door.
- 4. Remove two screws for the bottom front panel shown below.



- 5. Lift up and remove the panel
- 6. Open the Glycol fill port as shown below



7. Attach the funnel and pour the glycol slowly into the thermal battery. Please exercise caution as two persons may be needed to lift up 5 gallons.



- 8. Pour all the glycols included with the shipment; do not leave anything aside.
- 9. Attach the plug and tighten it
- 10. Install the front bottom panel. Close the front door.
- 11. When the unit starts for the first time, observe and any leaks that may appear due to loose connection.

7.1 Electrical Requirements



Electrical Shock Hazard - Do Not Touch

- Turn OFF power to the water heater at the connected branch circuit before the installation and servicing to avoid any personal injury caused due to electric shock.
- Make sure to label all the wires before installation of the water heater. Wiring errors may cause improper and dangerous operation to the water heater and may cause personal injury or death due to electric shock.
- To avoid serious injury or death, follow all applicable local, state, and national regulations, mandates, and building codes for guidelines to install the electrical power supply. Electrical wirings are installed according with national wiring regulations.

ACAUTION

- Do not supply power or charge to the water heater before the installation or servicing is completed and make sure the thermal battery is filled with water.
- After installation and servicing make sure to operate the water heater as given in "4. Quick Reference Installation Guide"

A WARNING

Make sure the water heater is connected to a grounded permanent wiring system to avoid electric shock and fire.

NOTICE

Electrical code requirements are different in the USA and Canada. Refer to and follow the local building codes, the latest edition of the National Electrical Code (NFPA 70) in the USA, or the CSA C22.1 Canadian Electrical Code - Part 1.

7.2 Power Supply

ACAUTION

Using the wrong voltage and/or phase may cause permanent damage to water heater components. The warranty does not cover damage from applying the wrong power supply voltage or phase.

- 1. iE1 is an electrically operated water heater.
- 2. The electrical power requirement varies between the models. Please refer to the table below.

Model	iE1 Std	iE1 Mid	iE1 Max
Power Requirements	208V, 1 Phase, 60 Hz	208V, 3 PI	nase, 60 Hz

- 3. The voltage fluctions should not vary more than +10% to -10%.
- 4. Lightning protection is necessary if the water heater is installed where it would be easily subjected to lightning strikes.

7.3 Wire Size Selection

- 1. Based on the iE1 model, the wire size required varies.
- 2. First locate the MCA value of the model that you are installing.

Model	iE1 Std	iE1 Mid	iE1 Max
MCA	20.8 A	49.6 A	54.1 A

- 3. The power wires of iE1 is rated for 75°C.
- 4. Use the *Temperature Rating Of Conductor* table to select the appropriate wire size. We recommend using the latest temerature rating of the conductor from the latest NFPA 70 or the CSA C22.1.
- 5. Apply temperature correction factor based on the *Ambient Temperature Correction Factor* table. We recommend using the latest Ambient Temperature Correction Factor from the latest NFPA 70 or the CSA C22.1.
- As per NEC/CSA code, not more than three conductors in raceway, cable, or earth (directly buried), based on ambient temperature of 30°C (86°F). If more than three conductors, please apply adjustment factor as per the *Adjustment Factor* table. We recommend using the latest Adjustment Factor from the latest NFPA 70 or the CSA C22.1.

Size		Temperature Rating Of Conductor					Size
AWG	TYPES TW, UF	TYPES RHW, THHW, THW, THWN, XHHW, USE, ZW	TYPES TBS, SA, SIS, FEP, FEPB, MI, RHH, RHW-2, THHN, THHW, THW-2, USE-2, XHH, XHHW, XHHW, XHHW-2, ZW-2	TYPES TW, UF	TYPES RHW, THHW, THW, THWN, XHHW, USE	TYPES TBS, SA, SIS, THHN, THHW, THW-2, THWN- 2, RHH, RHW-2 USE-2, XHH, XHHW, XHHW, XHHW,2, ZW-2	AWG
	COPPER			ALUM	IINUM OR COPF	PER-CLAD ALUN	IINUM
14	15	20	25				
12	20	25	30	15	15	25	12
10	30	35	40	25	30	35	10
8	40	50	55	35	40	45	8
6	55	65	75	40	50	55	6
4	70	85	95	55	65	75	4
3	85	100	115	65	75	85	3
2	95	115	130	75	90	100	2

Ambient Temperature Correction Factor

For Ambient temperatures over 30°C, multiply the allowable ampacities specified in the ampacity tables by the appropriate correction factor shown below

Ambient	Temp	Temperature Rating of Conductor				
Temp (°C)	60°C	75°C	90°C	Temp (°F)		
31-35	0.91	0.94	0.96	87-95		
36-40	0.82	0.88	0.91	96-104		
41-45	0.71	0.82	0.87	105-113		
46-50	0.58	0.75	0.82	114-122		
51-55	0.41	0.67	0.76	123-131		
56-60	-	0.58	0.71	132-140		
61-65	-	0.47	0.65	141-149		
66-70	-	0.33	0.58	150-158		
71-75	-	-	0.50	159-167		

Adjustment Factor				
For more than three current carrying conductors				
Number of Conductors	Percent of Values as adjusted for Ambient Temperature			
4~6	80			
7~9	70			
10~20	50			
21~30	45			
31~40	40			
41 and Above	35			

7.4 Example Wire Size calculation(s)

iE1 Std	iE1 Mid	iE1 Max
What size USE (copper) wire is needed to feed a 20.8 A iE1 Std?	What size USE (copper) wire is needed to feed a 49.6 A iE1 Mid?	What size USE (copper) wire is needed to feed a 54.1 A iE1 Max?
The iE1 Std will be fed through a conduit with 4 conductors and run through a room that could reach a max ambient temperature of 40C .	The iE1 Mid will be fed through a conduit with 5 conductors and run through a room that could reach a max ambient temperature of 40C .	The iE1 Max will be fed through a conduit with 5 conductors and run through a room that could reach a max ambient temperature of 40C .
Explore the latest NEC Wire size	Explore the latest NEC Wire size	Explore the latest NEC Wire size
table with Four conductors and	table with Five conductors and	table with Five conductors and
an ambient temperature of up to	an ambient temperature of up to	an ambient temperature of up to
30C. We get #12AWG wire for USE	30C. We get #8AWG wire for USE	30C. We get #6AWG wire for USE
Insulation type> 25A	Insulation type> 50A	Insulation type> 65A
The customer wanted a conduit	The customer wanted a conduit	The customer wanted a conduit
with 4 conductors, so explore the	with 5 conductors, so explore the	with 5 conductors, so explore the
Adjustment Factor Table with 4	Adjustment Factor Table with 5	Adjustment Factor Table with 5
conductor. It gives us 80 percent	conductor. It gives us 80 percent	conductor. It gives us 80 percent
of values as adjusted for Ambient	of values as adjusted for Ambient	of values as adjusted for Ambient
Temperature.	Temperature.	Temperature.
#12 AWG USE wire> 25A x 0.8	#8 AWG USE wire> 50A x 0.8 =	#6 AWG USE wire> 65A x 0.8 =
= 20A This value doesn't satisfy	40A This value doesn't satisfy iE1	52A This value doesn't satisfy iE1
iE1 Std requirements, so we need	Mid requirements, so we must look	Max requirements, so we need
to look for a higher wire size to	for a higher wire size to conduct a	to look for a higher wire size to
conduct a higher current.	higher current.	conduct a higher current.
Next size is #10AWG wire for USE	Next size is #4AWG wire for USE	The next size is #4 AWG wire for
insulation type> 35A	insulation type> 85A	USE insulation type> 85AA
#10 AWG USE wire> 35A x	#4 AWG USE wire> 85A x 0.8	#3 AWG USE wire> 85A x 0.8
0.8 = 24.5A This fulfills iE Std	= 68A. This fulfills the iE1 Mid	= 68A. This fulfills the iE1 Max
requirement.	requirement.	requirement.
But we need to add a correction	But we need to add a correction	But we need to add a correction
factor since the customer's room	factor since the customer's room	factor since the customer's room
ambient for iE1 Std Installation is	ambient for iE1 Std Installation is	ambient for iE1 Max Installation is
40C.	40C.	40C.
Explore the "Ambient Temperature	Explore the "Ambient Temperature	Explore the "Ambient Temperature
Correction Factor" table. For 40C,	Correction Factor" table. For 40C,	Correction Factor" table. For 40C,
the temp rating of the conductor at	the temp rating of the conductor at	the temp rating of the conductor at
75C gives us a correction factor of	75C gives us a correction factor of	75C gives us a correction factor of
"0.88".	"0.88".	"0.88".
#10 AWG USE wire> 35A x 0.8	#4 AWG USE wire> 85A x 0.8 =	#3 AWG USE wire> 85AA x 0.8 =
= 28A x 0.88 = 24.64A This fulfills	68A x 0.88 = 59.84A This fulfills	68A x 0.88 = 59.84AA This fulfills
the iE1 Std requirements along	the iE1 Mid requirements along	the iE1 Max requirements along
with customer's ambient & higher	with customer's ambient & higher	with customer's ambient & higher
conductor conditions.	conductor conditions.	conductor conditions.
#10 AWG USE Insulation wire for	#4 AWG USE Insulation wire for	#4 AWG USE Insulation wire for
iE1 Std will satisfy this particular	iE1 Mid will satisfy this particular	iE1 Max will satisfy this particular
customer's conditions.	customer's conditions.	customer's conditions.

7.5 Circuit Breaker/Fuse Selection

- 1. After a wire size is selected, please follow this section to claculate the circuit breaker/fuse.
- 2. First locate the MOP value of the model that you are installing.

Model	iE1 Std	iE1 Mid	iE1 Max
MOP	35 A	70 A	90 A
MCA	20.8 A	49.6 A	54.1 A

- 3. Based on the wire size and the amp carrying capacity of the wire size, please select a break/fuse. The size must higher than the MCA, but smaller than the MOP.
- 4. If multiple units are installed, each unit must have it's own breaker. A four unit iE1 Std installation breaker setup is shown below, where each unit has it's own breaker.



7.5.1 Electrical Emergency Shut-off

AWARNING

To avoid serious injury or even death from electrical hazards, an additional Breaker electrical emergency shut-off should be installed near the water heater. This will allow power to be disconnected from the water heater prior to servicing the unit or in the case of an emergency.

NOTICE

- An additional electrical shut-off is required for maintenance and at the time of an emergency.
- The electrical shut-off switch must be installed near the water heater, easily accessible in case of an emergency as shown above.
- Follow OSHA regulations or the local electrical code for proper height and distance. Otherwise, the distance of the electrical shut-off switch must be minimum three feet away from the water heater and four feet from the floor.
- Make sure the electrical shut-off switch is installed within the visibility of the water heater unit and follow your building regulation before the installation of an additional circuit breaker.
- If multiple water heaters are installed near the same location, each water heater must have its own electrical emergency shut-off switch.

ACAUTION

Do not connect an electrical shut-off switch, with other iE1 water heaters or any other appliances to avoid damage to the water heater.



7.6 Wire Routing

🛦 DANGER

Please do not drill holes or modify the unit in any manner. Doing so voids the warranty and may cause electric shocks, water leaks, damage to property, bodily injury, and even death.

1. The top channel is reserved for main power cable routing and the bottom channel is reserved for BMS power cable routing. The high voltage port is a 1" NPSM Female straight connector.



2. Open the front door and remove the two screws at the left hand inside.



3. Once the side panel is removed, go to the left hand side of the unit.



4. Inside the terminal box, at the bottom, the wiring phases, such as L1, L2, L3, and N, are clearly marked. At the top of the box, the ground location is clearly marked with a ground symbol.



5. Please refer to the local electrical code for the wiring colors to use. We recommend the following colors, however, local electrical codes take priority.

Phase	L1	L2	L3	N	G
Color	Black	Red	Blue	White	Green

6. For iE1 Std, wire only L1, L2, N, and G as shown below



7. For iE1 Mid/Max, wire all connections (L1, L2, L3, N, and G) as shown below.



- 8. Make sure no connections are loose, install the side cover panel and tighten with four screws.
- 9. Install the front side panel and tighten it with two screws.

ACAUTION

Grounding Requirement

This water heater must be grounded in accordance with the National Electrical Code and/or local codes. These must be followed for all the iE1 water heaters. Failure to ground this water heater properly may also cause erratic control system operations, and incorrect water temperatures.

This water heater must be connected to a grounded metal, permanent wiring system; or an equipment grounding conductor must be run with the circuit conductors and connected to the equipment grounding terminal or lead on the water heater.

8. Operations

8.1 Unit Overview

1. The display screen shows the user operating information of the **iE1 Electric Water Heater**.



2. The display screens given below are shown with an image as an example of the display screen and its applicable description and user operations wherever required.

8.1.1 Start Page – Temperature Setting

- 1. After the water heater is turned ON, the main screen will appear with the temperature setting option.
- 2. To increase the temperature as required, press the right arrow icon > shown in the image given below.
- 3. To decrease the temperature as required, press the left arrow icon < as shown in the image given below.
- 4. A loading bar will progress in the bottom the display screen as shown in the image given below.



- 5. The loading bar will disappear after the progress is fully completed.
- 6. To turn OFF the display screen, press the power icon on the left corner of the display screen.

8.1.2 Error Page

1. If the loading bar does not complete the progress, an error screen will appear as shown in the image given below.



- If any other error code appears, please refer to Section "11.3 Troubleshooting Guide" on page 46.
- 3. Press the CONTACT US icon on the error page to access the contact information for any technical support on your iE1 Electric Water Heater product as shown in the image below.
- 4. Press the back icon < to go back to the previous menu.

8.1.3 Main Page – Menu Options

Press the menu icon as shown in "8.1.1 Start Page – Temperature Setting" to view the main page with the menu options as shown in the image given below.



Press the back icon < to go back to the previous menu.

8.1.4 FLOW/TEMP

- 1. Press the FLOW/TEMP icon as shown in Section
- "8.1.3 Main Page Menu Options" to access the

FLOW/TEMP options as shown in the image given below.



Nomenclature	Description
Water Inlet	Temperature of the Inlet Water
Water Outlet	Temperature of the Outlet Water
Thermal Battery	Percentage of Thermal Battery Charge
Flow Rate	Rate of water in Gallons Per Minute
Ambient Air temperature	Temperature of the atmospheric air.
Pump Status	ON/OFF status of the Pump
Heating Elements	ON/OFF status of the Heating Elements
Evaporator Fan	ON/OFF status of the Evaporator Fan
Compressor	ON/OFF status of the Compressor

2. Press the back icon < to go back to the previous menu.

8.1.5 telliCare

 Press the telliCare icon to access your subscription status of the telliCare service as shown in Section 8.2.1 Main Page – Menu Options.



8.1.6 Life

 Press the LIFE icon to access the status of the life time of the components as shown in Section 8.2.1 Main Page – Menu Options.





- 2. When a part is changed, the life of that parts should be reset to maximum. Press and hold bar to reset the life-status of the components.
- 3. Enter the correct replacement code to re-set the lifestatus of the above components as shown in the above image.
- 4. Press the back icon < to go back to the previous menu.

NOTE: Maintenance does not require a code to reset.

Part	Life Reset Code
Water Vave	1129
Pump	0517
Heating Elements	0106
Evaporator Fan	0205

8.1.7 UNIT INFO – Contact Information

- Press the UNIT INFO icon as shown in Section "8.1.3 Main Page – Menu Options" to access the contact information for any technical support on your iE1 Electric Water Heater product
- 2. The Unit Info pages displays your unit's serial number, model number, and software version as shown in the below image.



3. Press the back icon < to go back to the previous menu.

8.1.8 HISTORY

- 1. Press the HISTORY icon as shown in "8.1.3 Main Page Menu Options" to access the history of the recent errors/ fault in the water heater.
- 2. Only a maximum of last 10 errors/fault with their respective time and date will be given as shown in the below image.



8.1.9 SETTINGS

Press the SETTINGS icon as shown in Section 8.2.1 Main Page – Menu Options to access the setting options as shown in the image below.



Press the back icon < to go back to the previous menu.

8.1.10 TIME/DATE

Press the TIME/DATE icon as shown in Section

 $8.2.7\ \text{Settings}$ to access the TIME/DATE options as shown in the image below.





Press the up or down arrow from the above options in your display screen to set the correct date and time.

Press the back icon < to go back to the previous menu.

8.1.11 SECURITY

- 1. Press the SECURITY icon as shown in Section
- 2. 8.2.7 Settings to access the SECURITY options as shown in the image below.
- 3. Press the ON options to choose and confirm a 4 digit pass-code for your water heater.

<	120 ⁵	Yıl
	OFF ON	
	PASSCODE	

- 4. Press the SET PASSCODE button to reset your 4-digit passcode.
- 5. In case of PASSCODE Error, please refer to Section 8.2.5 Unit Info – Contact Information.
- 6. Press the back icon < to go back to the previous menu.

8.1.12 MODE

1. Press the MODE icon as shown in Section 8.2.7 Settings to access the MODE options as shown in the image below.



2. Operate the water heater from the options as shown in the below image and table.

Nomenclature	Description
Efficiency	Efficiency Mode uses the heat pump to heat water.
Electric	Electric Mode uses heating elements to heat water
Hybrid	Hybrid Mode uses heat pump as the primary heating source, the heating elements will heat water if demand exceeds. It combines high energy efficiency with reduced recovery time
Self-Learn	Unit automatically determines the source of heat and manages the thermal battery based on the usage pattern, it is the most efficient mode (recommended)

8.1.13 CTA-2045

1. Press the CTA-2045 icon as shown in Section 8.2.7 Settings to access the CTA-2045 status as shown in the image and table below.

	120 ^₅			$\mathbf{Y}_{\mathbf{H}}$		
CTA-2045 S	tatus		ONLI	١E		
Allow Grid Co	ontrol		OFF		ON	
Level of Grid	Support					
	LOW 30%		MID 60%		HIGH 100%	
Allow Battery	y Superchar	ge	OFF		ON	

Nomenclature	Description
CTA-2045 STATUS	Allows you to choose ONLINE or OFFLINE options.
Allow Grid Control	Allows you to ON or OFF the Allow Grid Control options.
Level of Grid Support	Allows you to choose from OFF – 0%, LOW -30%, MID – 50%, HIGH – 100%
100% options.	Unit automatically determines the source of heat and manages the thermal battery based on the usage pattern
Allow Battery Supercharge	Allows you to choose ON or OFF the Allow Battery Supercharge option. With Supercharge, the thermal battery can charge up to 190 °F

8.1.14 CASCADING

1. Press the CASCADING icon as shown in Section 8.2.7 Settings to access the CASCADING options as shown in the image below.



 If there is more than one unit installed in the same location (within 50 meters), please refer to Section 9. Multi-Unit Overview.

8.1.15 BMS – Building Management Software

3. Press the BMS icon as shown in Section 8.2.7 Settings to access the BMS options as shown in the image given below.

<	120 *				
		iNTouch			
	Intellih	ot Building Manage	ement System		
	Uni by∣	t setpoint is being (building manageme	controlled nt system		
	Alarm Relay:	OFF	Pump Relay:	OFF	
	Remote Enabled:	OFF	Runtime Relay:	OFF	



Main menu screen automatically appears.

To turn the water heater OFF, press and hold the power button in the top left side of the screen.

8.3 Adjusting the Water Temperature

NOTICE

The outlet water temperature is factory preset to 120°F, however these commercial water heaters can heat water to 170°F.

A DANGER



Hot water temperature over 125°F (52°C) can cause severe burns instantly or death from scalding. Children, the disabled, and the elderly are at the highest risk of being scalded. Do not leave children or the infirm unsupervised. Check temperature of hot water before taking a shower or bath. To control water temperature to a particular faucet, temperature limiting valves can be installed by your service professional.

If temperature is changed while someone taking shower could cause scalding. Due to this it is recommended that all water faucets and showers must be closed before changing the temperature setting.

8.2 Turning Water Heater ON and OFF

When power is applied to the water heater or the electrical switch is turned ON, the following initialization screen appears.



AWARNING

Turning the unit OFF does not disconnect it from the power source. Whenever working around electrical components within the water heater, turn off the power at the ON/OFF breaker switch. Touching live electrical components can cause serious injury or death.



Firmly press the (>) and (<) to increase or decrease temperature. Firmly hold the icon until the display reaches the desired temperature.

If temperature set to 140 or higher, a scalding warning message will be displayed.



9. Multi-unit Setup

9.1 General Information

Multiple units can be connected together to supply a large demand for hot water.

The water heaters communicate through standard Bluetooth connection (Wi-Fi 2.4 GHz Frequency) between each water heater. The benefits of connecting the units are

 \cdot When demand for hot water is low, fewer units operate.

• If one unit has an error code, the others continue to operate.

 \cdot Changing the settings (temperature, time, etc.) on one-unit changes settings on all the units.

 \cdot It allows shutdown of one unit for maintenance while the others continue to operate.

9.2 Installation Procedure

- 1. Make sure the water heaters are installed in the same room. Maximum distance separation allowed is 50 ft. Any concrete walls or separator between the units would e communication loss and the units will not see each other.
- 2. Connect all the units to the power supply. Refer to "section 7 electrical power" for additional information.
- 3. Install and connect the hot water lines. Make sure the water pipe is properly sized in accordance with the number of units being operated.
- 4. Install and connect the cold-water lines. Make sure the water line is properly sized in accordance with the number of units being operated.
- 5. Connect and route the condensate drain lines to a suitable discharge location.
- 6. Power ON each unit one by one and wait until each unit finishes the initialization screen. Make sure all units are in thermal battery charging stage before continuing.
- 7. Each unit will have a cellular/bluetooth module used for both cloud connection and cascade.



9.3 How Will It Work?

On First Discovery

- If units are nearby and able to cascade, a popup will show on the display letting customer know that other units have been discovered.
- Separation distance is limited to 50 ft.



9.4 Auto Discovery Notification

Popups will show on any screen of the display on first time discovery of other units. Once interacted, popup will never show again.

Popup will not show if unit has been added into a cascade setup.

- Yes -> Navigate to Multi-Unit settings.
- No -> Skips setup and stays on
- · Current page (Normal Option).



9.5 Cascading Process

Units should be within 50 feet to enable cascading.

- · No unit cascaded.
- · No unit available for cascade.



For a cascade setup, click icon above the unit on the screen to add current unit with one available unit.



To remove from cascade setup, click \otimes icon above the unit on the screen.



For a cascade setup, click \oplus icon above the unit on the screen to add current unit with another available units.



9.6 Offline Cascading

Cascading of units that are not currently ON is not recommended and it can cause operational problems.



This O icon indicates that the concerned unit is offline from the current unit bank.

The offline unit can be removed by holding the $\,\textcircled{}_{\mathrm{O}}\,$ icon on the screen.

9.6.1 Cascading - Spacing

Make sure the water heaters are installed in the same room. Maximum distance separation allowed is 50 ft. Any concrete walls or separator between the units would cause communication loss and the units will not see each other.



9.7 Adding/Removing Units

For a cascade setup, click $\oplus\,$ icon above the unit on the screen to add current unit with one available unit.



By the click of the $\oplus\,$ icon, 'SAVE' option will appear on the screen.



After clicking the 'SAVE' option, second screen will appear with 'Multi-Unit Setup in progress



9.8 Cascade – Unable to setup



The maximum number of units that can be connected is ${\bf six}$ (6).



10. Maintenance

10.1 Inlet Strainer Cleaning

The following procedures must be performed at least once in every three months or it may affect the warranty of the product.

- The water heater must be turned OFF at the breaker ON/OFF switch before maintenance checks can be performed.
- 2. Slowly shut off the water outlet valve first and then shut off the water inlet valve.
- 3. Open a nearby tap/faucet and ensure that all the water is drained then close the tap.
- 4. You can use a wrench to loosen and remove the water inlet strainer.
- 5. Clean the strainer, reinstall it, and tighten the strainer nut.
- 6. Turn on the power supply.
- 7. Open the water inlet valve.
- 8. Perform a visual inspection of the water connections to make sure that there are no leaks.

10.2 Fan Guard Cleaning

The following procedures must be performed atleast once in every three months or it may affect the warranty of the product.

- 1. The water heater must be turned OFF at the breaker
- 2. The nearby emergency shut-off shut be turned OFF.
- 3. Make sure that water is fully powered down and the fan stops rotating.
- 4. Use a cleaning brush to clean the fan guard at the back and on the side.
- 5. Turn ON the water heater emergency shut-off and then turn ON the water heater.
- 6. make sure that the fan runs properly.

A DANGER

Except for maintenance, the iE1 door must be permanently closed and locked. Failure to do so could cause water leaks, electric shock, and damage to the internal components. The warranty does not cover this.



10.3 Pressure Relief Valve Test

The following procedures must be performed at least once in every three months or it may affect the warranty of the product.

A DANGER



AWARNING

When testing the Temperature-Pressure Relief Valve's functionality, make sure that no one is standing in front of or near the discharge line's outlet. The discharged water may be hot and may cause injury to personnel.

When using a valve, exercise caution because it might be hot and may cause injury to personnel.

ACAUTION

Make sure that the surrounding area is clear of any objects. The discharged water may be hot and may cause property damage.

- 1. Operate the lever at the relief valve's end several times. Make sure that the valve functions properly.
- 2. The temperature-pressure relief valve must be replaced if it fails to completely reset and continues to release water.

11.1 Operational Flow Chart









11.5 Troubleshooting Guide

Before troubleshooting the water heater for faults please see Section "2. Safety" on page 6 for safety instructions



Sections 11.4.1, 11.4.2, and 11.4.3 apply to all the above five sensors (Upper thermal Battery Sensor, Bottom Thermal Battery Sensor, Water Inlet Sensor, Water Outlet Sensor, and Heat Exchanger Sensor). For simplicity only, Water Inlet Sensor pictures are shown.

11.5.1 Temperature Sensor Open



Possible Causes	Remedy
Temperature Sensor is disconnected	Make sure that the temperature sensor connectors are correctly attached.
Unplugged connectors	Make sure that the temperature sensor
Faulty temperature sensor	connectors are correctly attached. Replace the temperature sensor.
Nicked or Broken wire.	
Incorrect temperature sensor wiring	Replace nicked or broken wires.
Too much heat in the water outlet or water inlet	Allow the water outlet temperature to decrease and make sure the resistance of the temperature sensor at the connector is 18 k Ω at 50°F, 10 k Ω at 77°F, 3 k Ω at 140°F.
Faulty temperature sensor controller	Replace the Control Board.

11.5.2 Temperature Sensor Shorted



Possible Causes	Remedy
Temperature Sensor is disconnected	Make sure that the temperature sensor connectors are correctly attached.
Nipped or Broken wire	Replace nicked or broken wires.
Faulty temperature sensor	Replace the temperature sensor.

11.5.3 Temperature Sensor Fault



Possible Causes	Remedy	
Faulty temperature sensor		
Sensor value is outside the range	Replace the temperature sensor.	
Temperature Sensor is disconnected	Make sure that the temperature sensor connectors are correctly attached.	
Nipped or Broken wire	Make sure the connectors are dry and free of corosion.	

11.5.4 Heat Exchanger Valve Fault



Faulty Glycol Concentration

sensor

Replace Glycol Concentration sensor

11.5.7 Outlet Temperature Overheat



Possible Causes	Remedy
Faulty temperature sensor wiring	Make sure that the temperature sensor connectors are correctly attached.
Unplugged connectors	Make sure that the temperature sensor connectors are correctly attached
Faulty temperature sensor	Replace the temperature sensor.
Too much heat in the water outlet or water inlet	Allow the water outlet temperature to decrease and make sure the resistance of the temperature sensor at the connector is 18 k Ω at 50°F, 10 k Ω at 77°F, 3 k Ω at 140°F.

11.5.8 Thermal Battery Overheat



Possible Causes	Remedy
Electrical elements connection	Check Eletrical elements wiring connections.
Stuck Relay	Check the two relays next the main Intellihot Control Board. Replace the relay (s).
Faulty Thermal Fuse	Check the thermal fuses connected to the heating elements. Either the thermal fuse is faulty or it's open

11.5.9 Leak Sensor Fault



Possible Causes	Remedy	
Nicked or broken connector	Replace nicked or broken wires and make sure the wire are correctly connected.	
Faulty temperature sensor wiring		
Broken or corroded Sensor	Replace the temperature sensor.	

11.5.10 Leak detected inside the Cabinet



Possible Causes	Remedy	
Leaks	Water leaks detected inside the Cabinet. Find the source of the leak and resolve it.	
Contact Intellihot Product support.		

11.5.11 Glycol Concentration Sensor Fault



Possible Causes	Remedy
Nicked or broken connector	Replace nicked or broken wires and make
Faulty temperature sensor wiring	sure the wire are correctly connected.
Broken or corroded Sensor	Replace the temperature sensor.

11.5.12 Heat Pump - Communication Fault



Possible Causes	Remedy
Power to the Heat Pump	Check the power and power connections
Faulty or disconnected communication cable	If faulty, replace the communication cable

11.5.13 Heat Pump - Unable to heat

Please contact the Intellihot technical support for the following heat pump faults.







<		
	Heat Pump - Compressor Suction Temperature Fault	
	Contact Intellihot Product Support	
		ACT US
I	allihot	















Contact Intellihot Poduct Support

12.1 Display



ltem	Part Number	Description	Qty
1	IGT-ELC0399	DISPLAY, 7" CAPACITIVE WITH ENCLOSURE	1

12.2 CTA2045



ltem	Part Number	Description	Qty
2	IGT-ELC0404	CTA2045 Interface Board	1
3	IGT-ELC0389	CTA2045 Interface Module (optional not included)	1

12.3 Electronics



ltem	Part Number	Description	Qty
4	IGT-ELC0414	HPU, COMPRESSOR/FAN INVERTER DRIVER	1
5	IGT-ELC0363	TRANSFORMER, 120V, 50/60Hz	1
6	IGT-ELC0457	HIGH PRESSURE LIMIT SWITCH RELAY	2
7	IGT-SPR0140	TRANSFORMER KIT	1
8	IGT-ELC0468	HPU, ELECTRIC HEATER RELAY	2
9	IGT-ELC0383	CAREL CONTROL (UPC3) BOARD	1
10	IGT-SPR0129	CONTROLLER BOARD, V9.4	1
11	IGT-ELC0382	BORON/CELLULAR IOT BOARD	1





ltem	Part Number	Description	Qty
12	IGT-CST0062	CASTING, WATER INLET, COLD SIDE	1
13	IGT-SLS0116	SEAL, EPDM, 70 DURO, NSF 61	3
14	IGT-LNE0072	CORRUGATED LINE, Ø32	1
15	IGT-SLS0115	SEAL, WATER INLET, iE1	1
16	IGT-OR0031	O-RING, #119, EPDM, NSF 61, 70 DURO	2
17	IGT-FTT0302	RETAINING RING, G3/4	2
18	IGT-HRD0020	CLIP, RETAINING, Ø19mm- Ø20mm	3
19	IGT-FTT0296	FITTING, ADAPTER, 20mm X G3/4	2
20	IGT-VL0044	COIL ISOLATION VALVE	1
21	IGT-SPR0003	FLOW SENSOR SPARE PARTS KIT	1
22	IGT-OR0010	O-Ring #113 EPDM, FDA, 70 DURO	1
23	IGT-FTT0297	FITTING, ADAPTER, 19mm X 1-1/4 NPT	1

12.5 Cold Side



Item	n Part Number Description		Qty
24	IGT-VL0045	VALVE, GLYCOL FILL SOLENOID	1
25	IGT-LNE0073	LINE, WATER, FILL PORT, 1/4	1
26	IGT-FTT0303	FITTING, COMPRESSION, G1/4 BSPP X 1/4 TUBE	2
27	IGT-SLS0110	SEAL, G1/4 BSPP	2
28	IGT-LNE0074	LINE, WATER, FILL PORT, 1/4	1
29	IGT-CST0065	CASTING, FILL PORT, GLYCOL	1

12.7 Glycol Side (1)



Item	Part Number	Description	Qty
30	IGT-LNE0075	LINE, CORRUGATED, 25" LG	1
31	IGT-FTT0300	FITTING, ADAPTER, G3/4 TO 3/4 NPT	1
32	IGT-SLS0112	SEAL, G3/4 BSPP	1
33	IGT-CST0064	CASTING, WATER OUTLET, HOT SIDE	1
34	IGT-SLS0117	SEAL, WATER OUTLET, iE1	1
35	IGT-ELC0062	SENSOR, THERMISTOR, AIR	1
36	IGT-SPR0003	FLOW SENSOR SPARE PARTS KIT	1
37	IGT-FTT0295	FITTING, ADAPTER, 20mm X 1-1/4 NPT	1



ltem	Part Number	Description	Qty
38	IGT-FTT0301	FITTING, ADAPTER, G1/2 TO 1/2 NPT	1
39	IGT-SLS0111	SEAL, G1/2 BSPP	1
40	IGT-SLS0113	SEAL, G1 BSPP	1
41	IGT-ELC0396	SENSOR, GLYCOL, CONCENTRATION	1
42	IGT-FTT0304	FITTING, PLUG, G1, SST	2
43	IGT-FTT0294	FITTING, 3/4 FIP TO G3/4	1
44	IGT-SLS0114	SEAL, DRAIN PORT, iE1	1

12.10 Heat Pump



ltem	Part Number	Description	Qty
45	IGT-FTT0298	FITTING, ADAPTER, GLYCOL PUMP TO 1/2 NPT	1
46	IGT-HRD0240	CLIP	2
47	IGT-OR0032	O-RING, 3.00 CS X Ø12.50mm ID, VITON	2
48	IGT-PMP0010	PUMP, CIRCULATION, iE1	1
49	IGT-FTT0299	FITTING, ADAPTER, GLY PUMP TO G1/2	1

12.9 Thermal Battery



ltem	Part Number	Description	Qty
50	IGT-THBT0001	THERMAL-BATTERY STORAGE, iE1	1



ltem	Part Number	Part Number Description	
51	IGT-HPU0001	Heat Pump Deck	1

12.11 Miscellaneous

Part Number	Description	Qty
IGT-ELC0367	IE1-Power Cord Jumper & Upper Coil Relay Harness	1
IGT-ELC368	IE1-Display Harness	1
IGT-ELC0369	iE1-120VAC Terminal Block to Transformer Harness	1
IGT-ELC0370	IE1-120VAC Main Power Harness	1
IGT-ELC0371	iE1-TB Valve Harness	1
IGT-ELC0372	IE1-Lower Coil Relay Harness	1
IGT-ELC0373	iE1-IOT Harness	1
IGT-ELC0374	IE1-Fill Solenoid Harness	1
IGT-ELC0375	iE1-Temperature Sensors Harness	1
IGT-ELC0376	iE1-Hex Valve Harness	1
IGT-ELC0377	iE1-HEX Flow Sensor Harness	1
IGT-ELC0378	iE1-Bypass Valve Harness	1
IGT-ELC0379	iE1-Bypass Flow Sensor Harness	1
IGT-ELC0380	iE1-Internal Comms Cable Harness	1
IGT-ELC0381	iE1-Glycol Concentration Harness	1
IGT-ELC0386	iE1-Glycol Keyence Harness	1
IGT-ELC0388	CTA2045 to iOT Board Harness	1
IGT-ELC0395	Glycol Level sensor with Harness	1

13.1 Warranty General

This unit is warranted by Intellihot Inc., and covers defects in materials and workmanship, subject to the applicable time periods and terms below. The Warranty coverage begins on the date of installation or 60 days from the date of manufacturing if installation cannot be verified. The manufacturing date is determined using the serial number located on the ratings label on the unit.

This warranty is extended to the original purchaser and any subsequent owner at the original installation location and applies only when properly installed by a licensed contractor and operated in accordance with the instruction manuals. This warranty is limited to repairs or replacement of parts, at Intellihot's option, that are proven to be defective under normal use and connected only to potable water systems.

Any replacement parts, including the Thermal Battery or the full unit will be warranted only for the unexpired portion of the original water heater's limited warranty period. Owners are responsible for all labor and installation costs associated with repairing and/ or replacing the product.

Warranty Period

ltem	Without Startup	With Startup	With Startup and activated telliCare remote monitoring system	
Thermal Battery	1 Year	3 years	3 years	
All Other Parts	1 Year	2 Years	2 Years	
Labor Coverage	No Coverage	No Coverage	Limited 12 months	

"Startup" refers to Intellihot-verification of product installation and operation, carried out at the site by the installing contractor or by IntelliPro contractor using the startup form. The startup form is available online at <u>https://</u><u>www.intellihot.com/start-up/</u>). This form must be completed and verified by Intellihot within 30 days from date of installation.

In addition to completing the **Startup when telliCare remote monitoring service** is activated within 30 days from date of installation, the unit is eligible for limited labor warranty.

Limited Labor: Intellihot will pay predefined labor charges for repairing or replacing parts or components during the labor warranty period. All repair parts must be genuine Intellihot parts. All repairs or replacements must be performed by a licensed contractor trained to do the type of repair. Only Intellihot can authorize the replacement of the entire unit at its sole discretion. Intellihot does not authorize any person or company to assume any obligation or liability concerning the replacement of the product. The total number of labor hours during the 12 months is limited, and the labor rates are defined for all regions. For complete details of the limited labor coverage, please visit <u>https://www.intellihot.com/warranty/</u>

All Other Parts and Components

The warranty period for any original parts (excluding the thermal battery) against failure, is 12 months from the effective start date. A replacement part is warranted for the unexpired term of the original warranty. Defective parts submitted can not be returned. No returns will be accepted without prior authorization from Intellihot.

Shipping Costs

If a replacement part is supplied under the terms of this warranty, Intellihot will provide ground service delivery for the part free of charge. Any expedited shipping expense will be paid by the customer.

Definition of Potable water

Potable water is defined as drinkable water supplied from utility or well water in compliance with EPA secondary maximum contaminant levels (40 CFR part 143.3) as shown in the table.

Contaminant	Level
Aluminum	0.05 to 0.2 mg/l
Chloride	250 mg/l
Color	15 color units
Copper	1.0 mg/l
Corrosivity	Non-corrosive
Fluoride	2.0 mg/l
Foaming Agents	0.5 mg/l
Iron	0.3 mg/l
Manganese	0.05 mg/l
Odor	3 threshold odor number
рН	6.5-8.5 mg/l
Silver	0.1 mg/l
Sulfate	250 mg/l
Total dissolved solids (TDS)	500 mg/l
Zinc	5 mg/l

13.2 Water Hardness Criteria

This warranty applies only when the water quality and supply meet the parameters as explained below.

The maximum allowable hardness is shown below. To use the table, locate the desired unit setpoint temperature on the left side of the table. Then, locate the incoming water pressure across the top. The corresponding value in the table is the maximum allowable hardness in grains per gallon (gpg).

Maximum Allowable Hardness (grains per gallon, gpg)						
Unit Setnoint (°F)	Incoming Water Pressure (psi)					
onic Seeponic (1)	30	40	50	60	80	100
100-119°	8	15	20	25	30	30
120-139°	5	11	15	20	27	30
140-159°	4	5	11	13	18	20
160-170°	3	4	10	12	15	17

13.3 Not Covered by this Warranty

This warranty does not cover failures or problems due to

- 1. Failure to install in accordance applicable building codes, ordinances, normal plumbing, or electrical trade practices.
- 2. Improper installation, improper use, improper maintenance, improperly made replacements or repairs, accidents, or abuse. The workmanship of any installer. Intellihot disclaims and does not assume any liability of any nature caused by improper installation, repair, or maintenance.
- 3. Sediment deposits, fire, flood, lightning, freezing, and acts of God, or any causes other than defects in materials and workmanship.
- 4. The warranty does not cover damage from applying the wrong power supply voltage or phase.
- 5. Damages due to lightning
- 6. Receiving the unit with a Tip N Tell sensor filled with blue or transporting the unit to the installation room the incorrect way
- 7. Starting the unit immediately when 48-hour standby is required
- 8. This warranty is void and has no effect if the unit is modified or altered in any way.
- 9. The unit is installed outdoor and the door is not closed and or not locked.
- 10. Unit installed outdoor without proper heat trace to pipes and the drains
- 11. Unit installed outdoor without a roof or or other protective covering to protect it from the rain water damage
- 12. Appliance(s) or equipment attached to the unit that have not been approved by Intellihot Inc.
- 13. The unit is used exclusively as a booster heater for a commercial dishwasher, or if the water from a reverse osmosis or deionized process is run directly through the unit.
- 14. The unit is installed without consideration for adequate drain to accommodate leaks,
- 15. The unit installed where the leakage could result in damage to the area adjacent to the water heater or to the lower floors of the structure
- 16. Damages due to improper/inadequate water hardness treatment or damages to scale formation due to water hardness
- 17. Building water charateristics requires a water hammer arrestor, but water hammer arrestor was not installed
- Electrical failures due to Inadequately sized electrical breaker or Multiple units installed, without a properly sized dedicated breaker for each unit
- 19. Lack of maintenance
- 20. Components failiure due to inadequate air flow to the room or water heater not operating at optimal performance due to inadequate air flow
- 21. Improper electrical grounding of the unit or not following the electrical grounding requirements

22. The serial number is altered, defaced, or discarded.

This warranty will be void and have no effect if:

- The unit is modified or altered in any way.
- Water heater or equipment attached to the unit that have not been approved by Intellihot Inc.
- If the unit is used exclusively as a booster heater for a commercial dishwasher, or if the water from a reverse osmosis or deionized process is run directly through the unit.
- \cdot The serial number is altered, defaced, or discarded

13.3.1 Warranty Limitations

This warranty applies only when the unit is used in the United States or Canada. Except for the limited warranties provided above, Intellihot Inc. disclaims any and all other warranties, including but not limited to warranties of merchantability and fitness for a particular purpose, provided however, that implied warranties of merchantability and fitness for a particular purpose are not disclaimed during the 1-year period from the effective date. Intellihot shall not be liable for indirect, special, incidental, consequential, or other similar damages, including lost profits, arising from or relating to the unit. This warranty gives you specific legal rights, and you can also have other rights which vary from state to state.

13.4 How to Make a Claim

Please visit https://www.intellihot.com/warranty/to open a warranty claim ticket

or

Call (877) 835-1705. Proof of purchase in the form of a dated sales receipt or warranty registration should be included with your claim. The product owner should submit the warranty claim directly to Intellihot at the following address:

Intellihot Inc.

Attn: Warranty Claims

2900 W. Main St.

Galesburg, IL 61401

All parts claimed to be defective can be requested to be returned to Intellihot for examination prior to full claim settlement.

Please include the following information on your warranty claim:

- · Model number and serial number of the unit.
- · Date of original purchase.
- Owner's name and address.
- · A description of the problem with the part and unit

NOTES		

NOTEO



Endless water. Zero waste.™







IGT-MNL0067 04-2025 iE1



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