

# ELECTRON



## WORLD'S FIRST TANKLESS HEAT PUMP WATER HEATERS



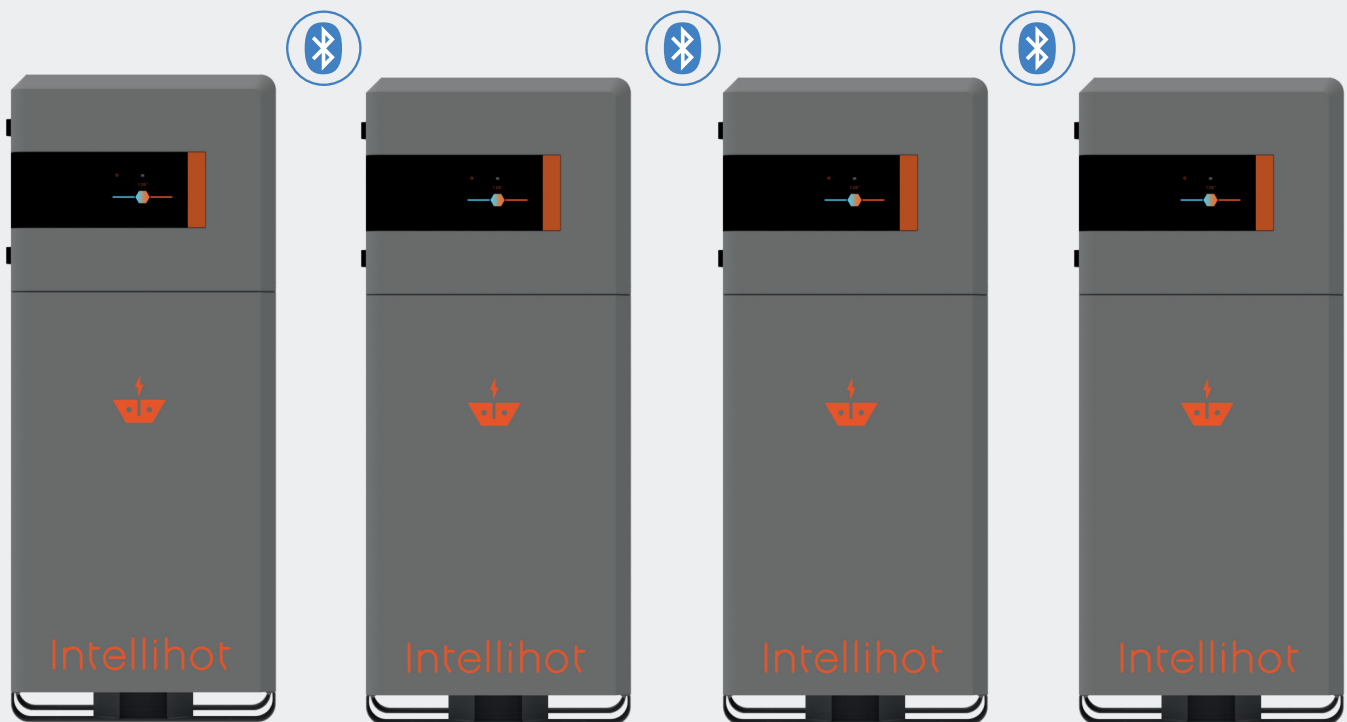
# INNOVATION AT WORK

## Introducing The **Electron** Series

CO<sub>2</sub> Powered Tankless Heat Pump Water Heater

Efficient and Healthy

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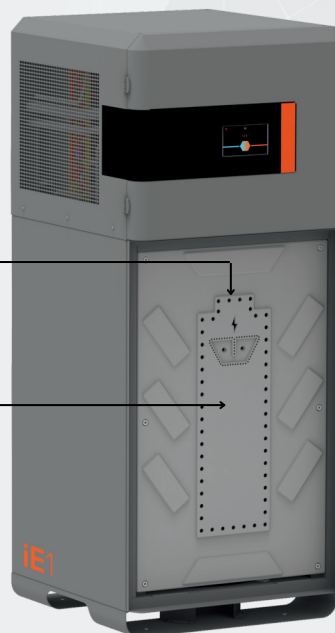
Model iE1:  
Heating Output: Up to 90,000 BTU/h  
First Hour Rating : 154 Gallons<sup>1</sup>

# How Does it Work?



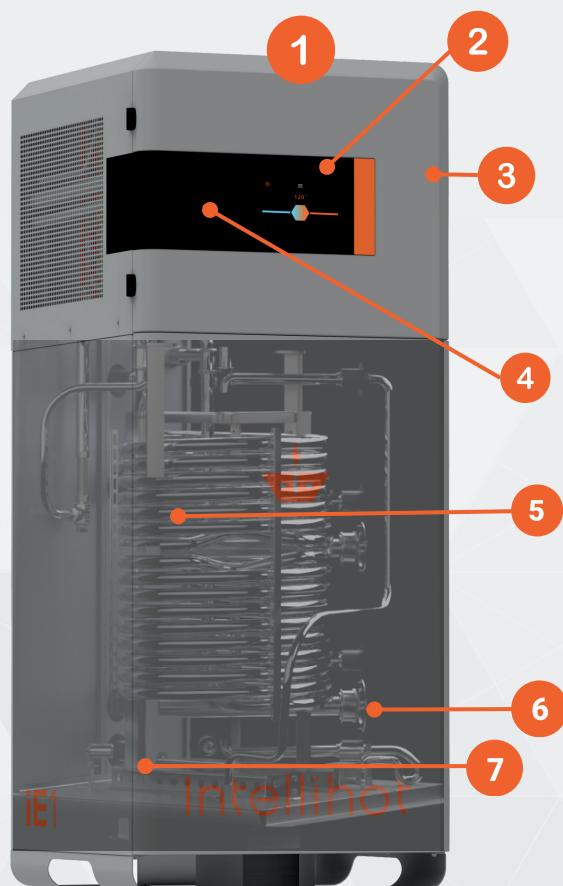
ANIMATION VIDEO

- 1 It absorbs heat from external air
- 2 Then, this energy is stored in a specially-designed thermal battery
- 3 When there is demand, cold water flows through a heat exchanger located inside the thermal battery and the water is heated to precisely the right temperature



Hot water

Cold water



## What's Inside?

- 1.CO<sub>2</sub> based heat pump
- 2.Touch Screen Display
- 3.Cellular, Bluetooth, and optional BMS
- 4.Smart Grid Ready CTA-2045 Module
- 5.All-stainless on-demand heat exchanger
- 6.Up to two electric heating elements available. (0kW, 6kW, 12kW Options)
- 7.Glycol Concentration Sensor



## Lowest GWP

The iE1 uses CO<sub>2</sub> refrigerant which has the lowest impact on the environment with a Global Warming Potential (GWP) of 1, zero Ozone Depleting Potential (ODP) and better cold weather performance.



## Efficient & Healthy

The iE1 absorbs and stores energy from the air in a specially-designed thermal battery. This energy is then used to heat water on-demand without storing it, thereby mitigating Legionella risks. This process is both efficient and healthy.



## Grid Connection

This unit is smart grid ready which allows it to collect and store energy when it's most cost-effective, maximizing return on investment and cutting operational costs.

# Key Features

## Multi-Storey Ready

Suitable for high-pressure, high-rise, multi-family buildings

## 24/7 Factory Monitoring

Via built-in cellular connectivity and on-board predictive diagnostics

## High Temperature Capable

Produces water up to 170°F

## Power Large Buildings

Can be scaled to meet the demand of larger commercial properties by seamlessly cascading multiple units via Bluetooth

## Free Up Space

Can be installed indoors or outdoors

## Mitigates Limescale

All-stainless heat exchanger with 400 times higher water velocity (compared to tanks) mitigates limescale buildup

## No Power Constraints - iE1

Select an Integrated model that suits your electrical infrastructure the best:

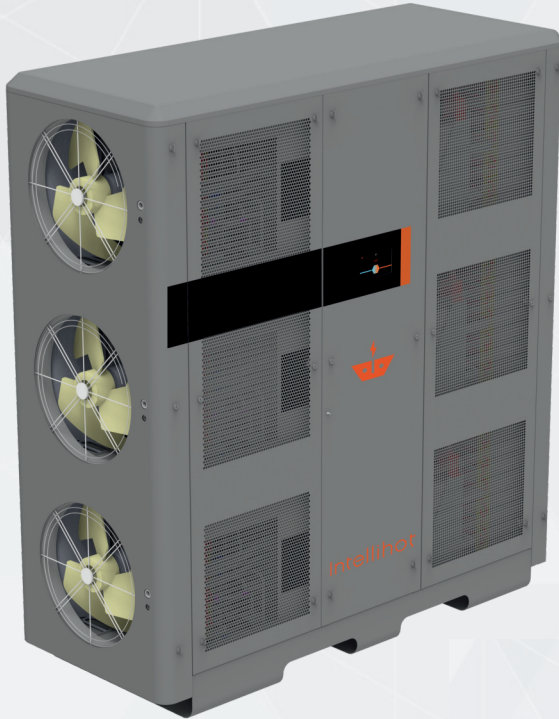
- **iE1 Std** | No Resistive Electric Heating Element 25 Amps circuit breaker
- **iE1 Mid** | One Resistive Electric Heating Element (6kW) 50 Amps circuit breaker
- **iE1 Max** | Two Resistive Electric Heating Elements (12kW total) 60 Amps circuit breaker

## Solar Ready

The iE1 unit is solar-ready and can be upgraded to use solar energy via an optional solar attachment within minutes.

# Additional Electron Products

Disclaimer: In Research & Development



## iE6

The iE6 heat pump unit is installed outside, and the thermal battery, iB3, is installed inside with a simple fluid connection between them.

A key feature of the iE6 is its modular construction. This unit consists of 6 individual Heat pump units, each with its own controller and compressor. Unlike other heat pump systems, this eliminates unnecessary doubling up of equipment to ensure high reliability with lower upfront costs. Automatic rotation and self-balancing ensure equal wear and tear.

## iB<sup>T</sup>3

The iB3 is a three-pack remote thermal battery to be installed indoors in the companion of the iE6.

The larger iE6 unit is paired with the thermal battery iB3 and installs just like traditional boiler-tank systems simplifying installation and taking out the guesswork. The iE6 heat pump unit is installed outside, and the thermal battery, iB3, is installed inside with a simple fluid connection between them.





## Specifications

iE1 STD		iE1 MID		iE1 MAX	
Type	Indoor / Outdoor, Floor Mounted	Indoor / Outdoor, Floor Mounted	Indoor / Outdoor, Floor Mounted	Indoor / Outdoor, Floor Mounted	
Power Source	Electric	Electric	Electric	Electric	
Supply Input Voltage	208 VAC, 60 Hz, 1Ph	208 VAC, 60 Hz, 3Ph	208 VAC, 60 Hz, 3Ph	208 VAC, 60 Hz, 3Ph	
Number of Wires	3 Wires (L1, L2 and G)	5 Wires (L1, L2, L3, N and G)	5 Wires (L1, L2, L3, N and G)	5 Wires (L1, L2, L3, N and G)	
Electrical Input	3.4 kW	9.4 kW	9.4 kW	15.4 kW	
Heating Output	Up to 57,000 BTU/h	Up to 77,000 BTU/h	Up to 77,000 BTU/h	Up to 97,000 BTU/h	
Current, FLA (Amps)	16.6	45.4	45.4	49.8	
Minimum Circuit Ampacity, MCA (Amps)	20.8	49.6	49.6	54.1	
Minimum Recommended Circuit Breaker	25	50	50	60	
Maximum Overcurrent Protection, MOP (Amps)	35	70	70	90	
Resistive Heating Elements	0	1 (6 kW )	1 (6 kW )	2 (2 x 6 kW)	
COP	Up to 4.9 (without Heating Elements)	Up to 4.9 (without Heating Elements)	Up to 4.9 (without Heating Elements)	Up to 4.9 (without Heating Elements)	
Compressor Type	Rotary	Rotary	Rotary	Rotary	
Safety Devices	Pressure Switch, Thermal Cutout, Overheat Protection	Pressure Switch, Thermal Cutout, Overheat Protection	Pressure Switch, Thermal Cutout, Overheat Protection	Pressure Switch, Thermal Cutout, Overheat Protection	
Ambient Air Operating Range	-10°F to 110°F	-10°F to 110°F	-10°F to 110°F	-10°F to 110°F	
Air Flow Requirement	2500 CFM	2500 CFM	2500 CFM	2500 CFM	
Outlet Water Temperature Range	100°F to 170°F	100°F to 170°F	100°F to 170°F	100°F to 170°F	
Temperature Stability	+/- 4°F	+/- 4°F	+/- 4°F	+/- 4°F	
First Hour Rating†	154 Gallons	199 Gallons	199 Gallons	244 Gallons	
Connectivity	Cellular and Bluetooth	Cellular and Bluetooth	Cellular and Bluetooth	Cellular and Bluetooth	
Operational Modes	Efficiency, Hybrid, Electric, Self-learning	Efficiency, Hybrid, Electric, Self-learning	Efficiency, Hybrid, Electric, Self-learning	Efficiency, Hybrid, Electric, Self-learning	
Grid Connectivity	Via CTA-2045 module (customer supplied)	Via CTA-2045 module (customer supplied)	Via CTA-2045 module (customer supplied)	Via CTA-2045 module (customer supplied)	
Refrigerant	R744, CO2 refrigerant	R744, CO2 refrigerant	R744, CO2 refrigerant	R744, CO2 refrigerant	
Cascading Protocol	Masterless, Up to 6 units	Masterless, Up to 6 units	Masterless, Up to 6 units	Masterless, Up to 6 units	
Noise Level	Up to 55 dBA	Up to 55 dBA	Up to 55 dBA	Up to 55 dBA	
Domestic Heat Exchanger	Stainless Steel, 316L	Stainless Steel, 316L	Stainless Steel, 316L	Stainless Steel, 316L	
Energy Storage	Water-Propylene-Glycol based Thermal Battery	Water-Propylene-Glycol based Thermal Battery	Water-Propylene-Glycol based Thermal Battery	Water-Propylene-Glycol based Thermal Battery	
Water Inlet & Outlet Connections	1.5" NPT Female	1.5" NPT Female	1.5" NPT Female	1.5" NPT Female	
Unit Dimensions H X W X D (Inches)	72 x 30 x 30	72 x 30 x 30	72 x 30 x 30	72 x 30 x 30	
Shipping Weight / Unit Weight	880 LBS / 758 LBS (with 5 Gallons Glycol), 1150 LBS (Thermal Battery Full)				
Water Pressure Min / Max (PSIG)	30 / 160	30 / 160	30 / 160	30/160	
Clearances					
Back	24"	24"	24"	24"	
Front	30"	30"	30"	30"	
Top	30"	30"	30"	30"	
Sides	12"	12"	12"	12"	
Certifications	Energy Star, NSF 372, UL 60335-2-40, CSA, C22.2 and CTA-2045	Energy Star, NSF 372, UL 60335-2-40, CSA, C22.2 and CTA-2045	Energy Star, NSF 372, UL 60335-2-40, CSA, C22.2 and CTA-2045	Energy Star, NSF 372, UL 60335-2-40, CSA, C22.2 and CTA-2045	
Warranty	1 Year on Parts and Compressor, 3 Years on Thermal Battery	1 Year on Parts and Compressor, 3 Years on Thermal Battery	1 Year on Parts and Compressor, 3 Years on Thermal Battery	1 Year on Parts and Compressor, 3 Years on Thermal Battery	

†Note: Due to Intellihot's Policy of continuous product improvements, design and technical specifications are subject to change without notice.  
Delivering 110°F to the fixtures



## **Why are current tank-based heat pump designs problematic?**

Current tank-based designs mandate storing large volumes of water and keeping this water stratified at various temperatures. Stratification is necessary to enable tank-based heat pumps achieve COPs greater than 1.5. Unfortunately, water stagnation and stratification temperatures between 77°F – 113°F foster the ideal conditions for the growth of Legionella bacteria. It is generally presumed that bacteria-contaminated water from this area will be “sanitized” by the hotter water above it, but this method is not guaranteed and places the burden of Legionella risk on the engineers and customers. Intellihot re-invented the Heat Pump Water Heater to fundamentally eliminate these root causes. There is no tank and water is heated on-demand, substantially mitigating Legionella risks. The result: clean, safe, healthy, and efficient hot water.

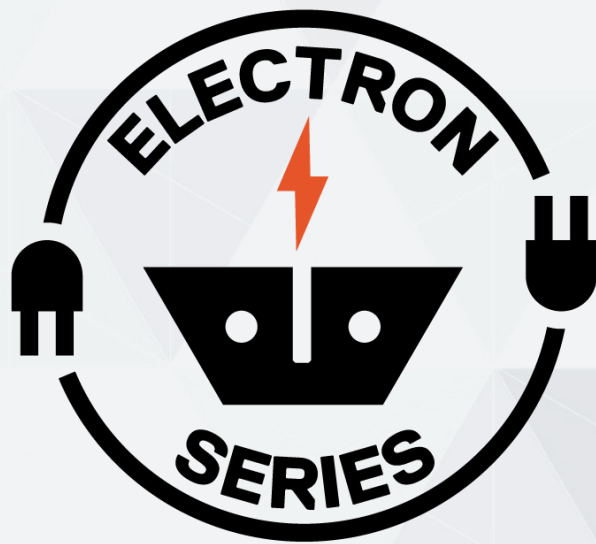
## **What is the typical maintenance on these units?**

The Electron iE1 is designed for long life and low maintenance. Only one item needs to be serviced at intervals indicated by a “Maintenance Alert” bar on the display. This is the Wye strainer which prevents large debris in the water supply from entering the unit. The unit has sophisticated predictive diagnostics capability, and the life of critical components are shown on the "Life Screen ." It provides guidance for when these parts should be changed.

## **What is the life of the thermal battery and are there any safety or disposal issues to be aware of?**

The Thermal Battery is estimated to last a lifetime under normal wear and tear. The battery is designed with high-grade stainless-steel components and factory-supplied food-grade propylene glycol. This food-grade glycol can be safely disposed of in a regular drain. The Thermal Battery can be sent to a typical metal recycling facility. Note: non-biodegradable glycol, especially ethylene glycol (e.g., automotive grade) or non-Intellihot supplied formulations, should never be used to charge the Thermal Battery. Doing so may cause irreparable damage and bodily harm, including death.

<sup>†</sup><https://www.cdc.gov/legionella/wmp/overview/growth-and-spread.html>



## **Intellihot's** Mission

We believe in empowering our customers with efficient, healthy, and sustainable solutions that are great for them and the planet.