

Tankless Electric Water Heater

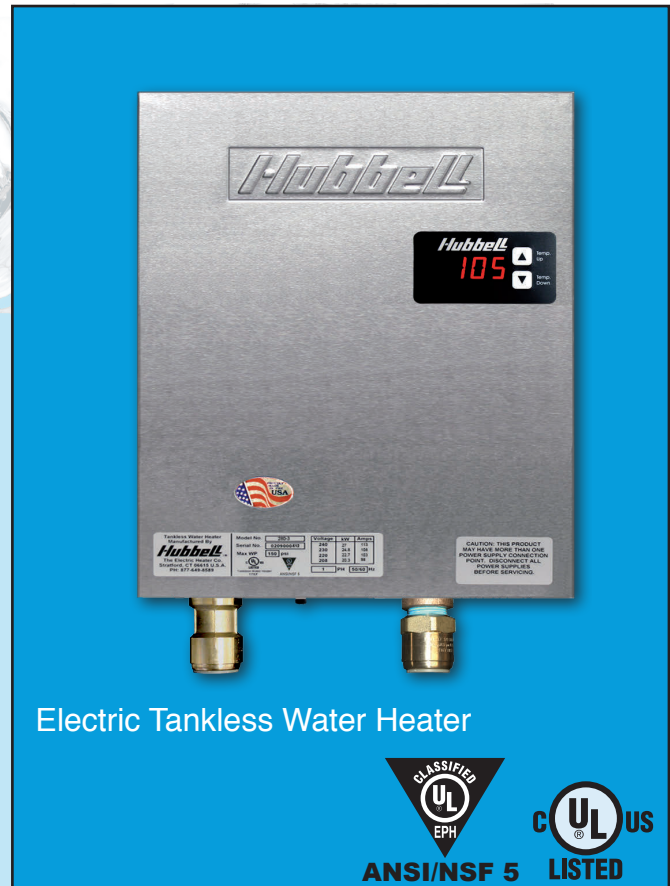
Available 3 - 27 KW in Single Phase Voltages

Features

- **Heavy Duty Construction**
 - ✓ Constructed with high grade materials to ensure long operating life
 - ✓ Simple to install and operate
 - ✓ Compact space saving design
- **Reliability**
 - ✓ Engineered to ensure reliable operation
 - ✓ Wide selection of sizes
- **High Efficiency**
 - ✓ On demand heating eliminates costly and cumbersome storage tanks
 - ✓ Instantaneous design reduces stand-by heat loss and significantly lowers operating costs compared to traditional storage tanks

Applications

- Point-of-Use
- Single or Multiple Lav Sinks
- Condos & Apartments
- Whole House



Electric Tankless Water Heater

The Hubbell Tankless is a highly efficient and compact electric tankless water heater that is easy to install, operate and maintain.



Products marked with the Lead-Free logo comply with the Safe Drinking Water Act (SDWA) requirements of a weighted average of less than 0.25% lead content on wetted surfaces of pipes, pipe fittings, plumbing fittings and fixtures.

Tankless Water Heater For Residential and Commercial Use

The Hubbell Tankless electric water heater is a highly reliable and easily maintained heater designed for point-of-use or whole house operation. The Hubbell Tankless electric water heater is compact, extremely efficient, takes up minimal space and reduces operating costs. Hubbell's vast experience, meticulous engineering and

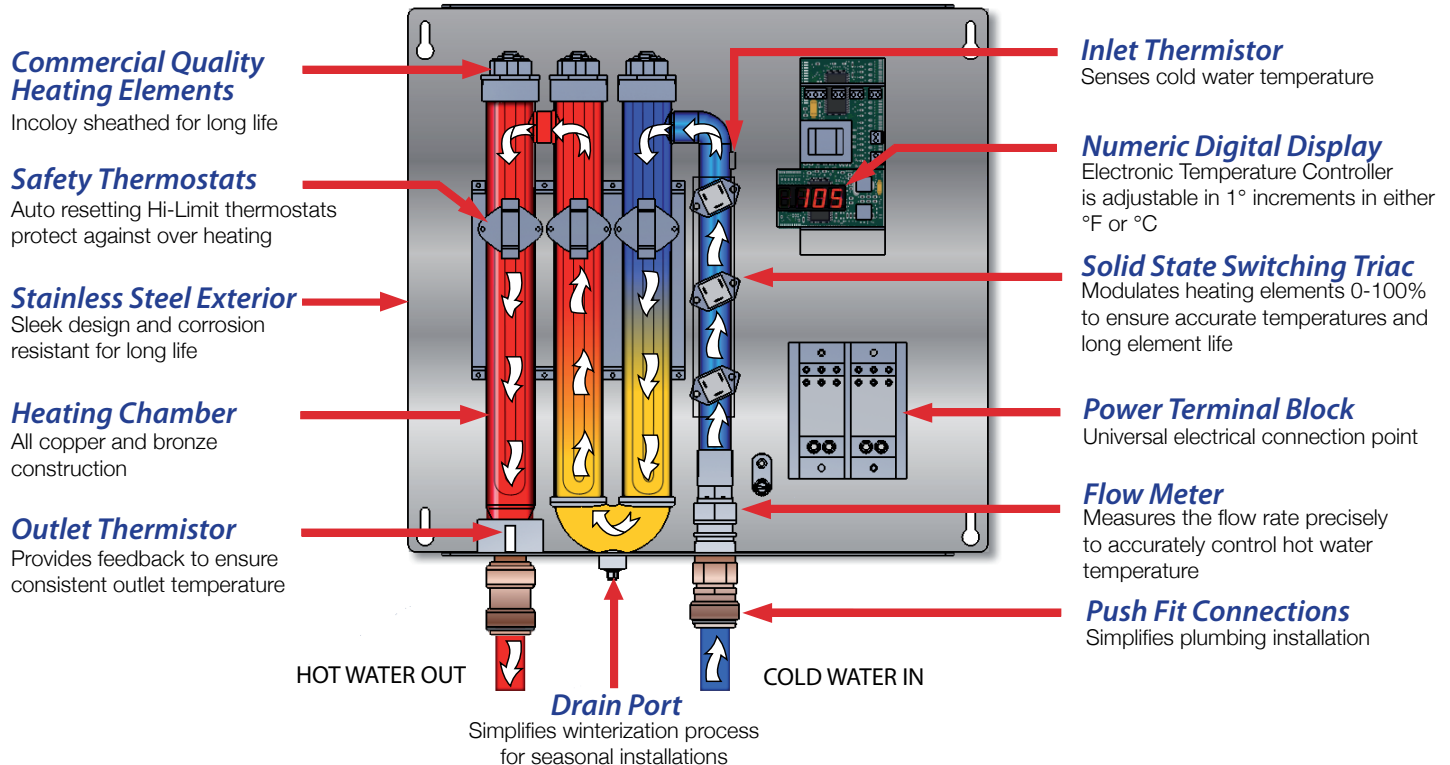
advanced technology ensure that you can rely on the Hubbell Tankless heater for your water heating needs in even the most demanding applications. The Hubbell Tankless is the right choice for your water heating needs and provides you with an energy efficient, trouble-free and long lasting heater.

Hubbell Tankless Features

How It Works

The Hubbell tankless electric water heater contains high powered heating elements that heat water only when there is demand for hot water. When hot water is needed, a built in flow sensor measures the exact flow rate, and that data combined with temperature readings at the heater's inlet and outlet are processed by the electronic temperature controller. This data is continuously transmitted to the temperature controller, which constantly calculates the precise amount of power (kW) needed to achieve the desired temperature. A zero cross over firing signal is sent to the fast acting triacs in order to modulate the heating elements to the precise level needed to meet demand. The Hubbell tankless heater uses only as much power as is needed, while delivering accurate and consistent hot water temperature.

Heater Overview - 3 Element Model Shown



Tankless Standard Specifications

Heating Chamber:	Copper and Bronze	Hi-Limit:	150°F (65°C)
Capacities:	3 thru 27 kW	Design WP:	150 psi
Orientation:	Wall Mounted	Design TP:	300 psi
Voltage:	240 / 220 / 208 Volt	Elements:	Incoloy 800
Phase:	1 Φ	Standby Power:	< 3 Watts
Power Factor:	0.999	Chamber Warranty:	Residential: 5 Years Commercial: 5 Years
Thermal Efficiency:	98% +	Electrical Warranty:	Residential: 3 Years Commercial: 1 Years
Inlet/Outlet Size:	3/4" Push Fit	Enclosure:	Stainless Steel Brushed Finish
Min/Max Flow:	0.2 GPM Min, 8.0 GPM Max	Approvals:	cULus, UL EPH ANSI/NSF5
Thermostat Range:	32 -140°F / 0-60°C		

Technical Features

Temperature Controller

A sophisticated electronic temperature controller with LED digital display provides the user interface. The temperature controller processes all flow and temperature data and calculates the precise amount of power needed to meet demand.

Operator Control Capabilities		
✓	Power Limiting:	Allows the operator to reduce the power consumption by any percentage to provide installation and operational flexibility and savings.
✓	Diagnostics:	Display inlet and outlet temperatures, flow rate and error codes to assist in troubleshooting.
✓	Cost Calculator:	Determine the exact cost of operating the heater. Input your cost per KW-Hr and the controller displays total KW-HRs consumed, total cost of operation, and total hot water usage (shown in gallons or liters).
✓	Temperature Control:	Set the digital display to the desired water temperature in °F or °C. Fully adjustable in 1° increments from 32-194°F (0-90°C). A user adjustable +/- 3° calibration feature provides additional control for superior accuracy.

Full Heater Modulation

Each heating element is switched on/off using a fast acting solid state triac with zero cross over firing control. This switching schema provides full modulation of each heating element, ensuring that the precise amount of heat is added to meet demand. To improve operating efficiency and component longevity, each triac is mounted to a heat sink located on the incoming supply piping so that heat generated by the triac during the switching process is dissipated into the water.

Proper Power Integrity

All Hubbell tankless water heaters are engineered to operate as a balanced load and operate at 0.999 Power Factor. All load switching in Hubbell tankless models is performed as zero cross over, eliminating phase angle firing interference and associated EMI issues.

Full Resource Staging

The Hubbell tankless control schema ensures that usage is equalized across all heating circuits. To achieve this, once the controller has calculated the precise amount of kW required, all circuits are energized in a staggered fashion such that each circuit is proportionally and independently energized and then time staggered between circuits. This Full Resource Staging Schema reduces EMI output, increases component longevity and provides highly accurate and consistent hot water temperatures.

Building Management Integration

Remote Control: Ability to remotely enable or inhibit the heating operation of the unit using one of the following two methods:

1. Customer supplied 24VDC signal is user configured for either Inhibit Mode or Normal Operation Mode.
2. Customer supplied volt free contact is user configured for either Inhibit Mode or Normal Operation Mode.

Priority Control: An integrated SPDT potential free dry contact (NO/NC 10A @ 240VAC) energizes when the unit is heating and de-energizes when not heating. This feature is useful when it is desirable to give the water heater priority over another electrical load to ensure that both are not operational at the same time.

Options

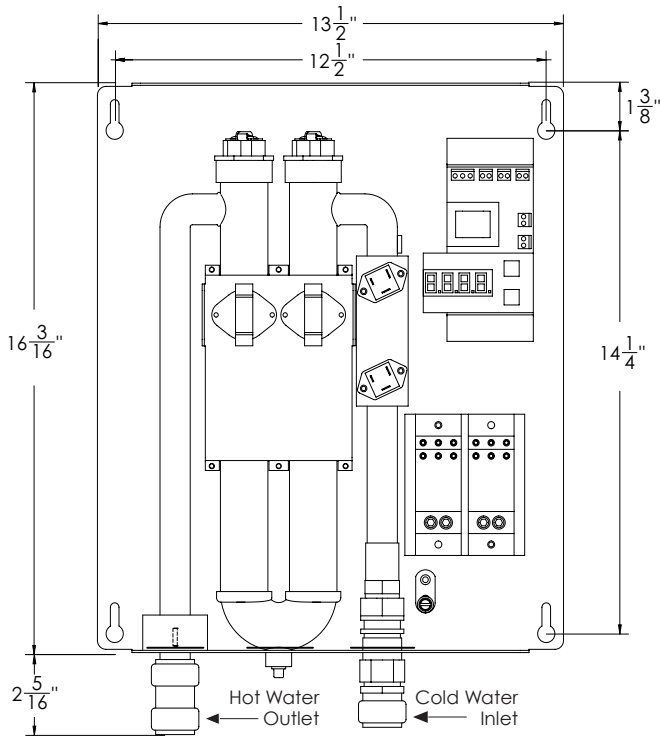
- | | |
|---|---|
| <input type="checkbox"/> A. Inlet and Outlet Valve assembly simplifies installation and includes unions, shut offs, check valve, drain ports and pressure relief valve. | <input type="checkbox"/> D. For heaters suitable for operation with 3 phase voltages please see Hubbell model TX brochure. |
| <input type="checkbox"/> B. Air Separator to clear the incoming cold water of micro air bubbles, sand, dirt and rust. Recommended for use with well water systems. | <input type="checkbox"/> E. Special construction features available. Please consult factory. |
| <input type="checkbox"/> C. Descaler kit simplifies the process of cleaning the heater and removal of mineral deposits. | <input type="checkbox"/> F. Remote Control Display allows the heater to be installed in a remote location. The 3" x 5" NEMA 4 display enclosure can be located up to 250' from the heater and gives the operator full remote control and monitoring capabilities. |

Metric Conversions

Liters x 0.2641 = Gallons	°F = (°C x 1.8) + 32	kPa x 0.1456 = psi
Gallons x 3.79 = Liters	°C = (°F - 32) x 0.556	Kg/cm² x 14.28 = psi
Gallons x 0.003785 = m³	psi x 0.06896 = Bar	psi x 0.07 = Kg/cm²
m³ x 264.2 = Gallons	Bar x 14.5 = psi	Lbs x 0.4536 = Kg
1°C ΔT = 1.8°F ΔT	psi x 6.86 = kPa	Kg x 2.2 = Lbs

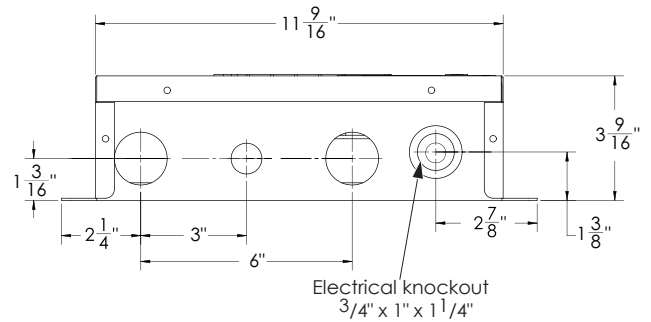
Outline Dimensions and Model Selection

3 -18 KW Models (2 Element)



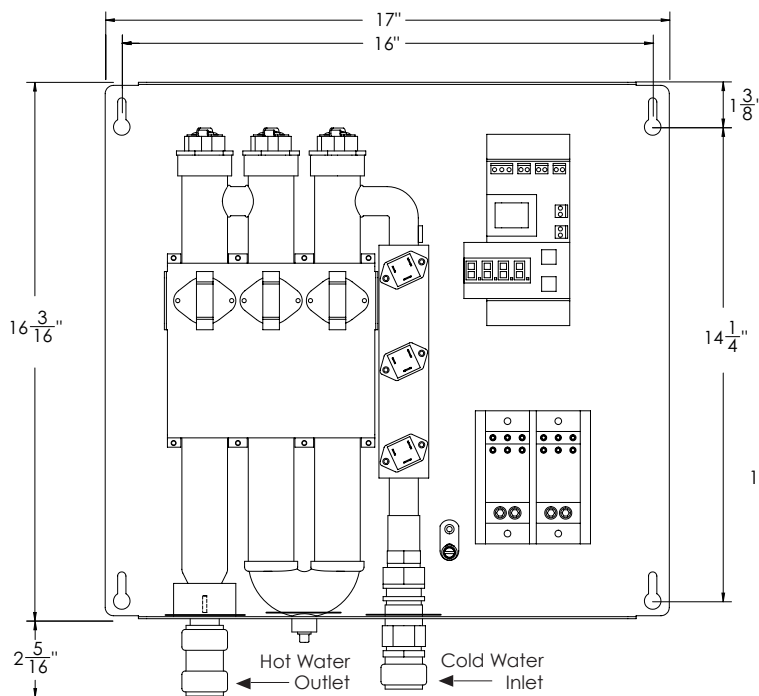
KW Selection Chart			
Model Number	KW Ratings		
	240V	220V	208V
R003-2S	3	2.5	2.2
R005-2S	4.5	3.7	3.3
R007-2S	7	5.8	5.2
R009-2S	9	7.5	6.7
R0011-2S	11	9.2	8.2
R0014-2S	14	11.7	10.5
R0016-2S	16	13.4	12
R0018-2S	18	15.1	13.5

Side View



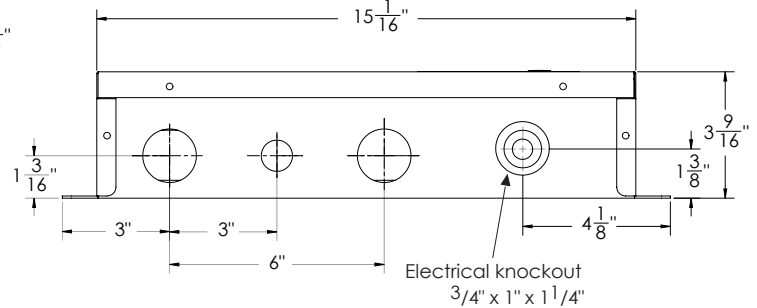
Pressure Drop: 3 psi @ 4 GPM Dry Weight: 16 Lbs Wet Weight: 16.5 Lbs Shipping Weight: 17 Lbs

21-27 KW Models (3 Element)



KW Selection Chart			
Model Number	KW Ratings		
	240V	220V	208V
R021-3S	21	17.6	15.7
R024-3S	24	20.1	18
R027-3S	27	22.6	20.2

Side View



Pressure Drop: 3 psi @ 4 GPM Dry Weight: 20 Lbs Wet Weight: 20.5 Lbs Shipping Weight: 21 Lbs

Heating Capacity and Amperage Chart

Model No.	KW Ratings at Various Voltages			Heating Capability in GPM at °F Temperature Rise (°F ΔT)				Max Amps at 100% output		
	240V	220V	208V	40°F ΔT	60°F ΔT	80°F ΔT	100°F ΔT	1 Phase Voltages		
R003-2S	3			0.51	0.34	0.26	0.20	12.5		
		2.52		0.43	0.29	0.21	0.17		11.4	
			2.25	0.38	0.26	0.19	0.15			10.8
R005-2S	4.5			0.77	0.51	0.38	0.31	19		
		3.78		0.64	0.43	0.32	0.26		17.1	
			3.37	0.57	0.38	0.29	0.23			16.2
R007-2S	7			1.19	0.80	0.60	0.48	29		
		5.88		1.00	0.67	0.50	0.40		26.7	
			5.2	0.89	0.59	0.44	0.35			25
R009-2S	9			1.54	1.02	0.77	0.61	37.5		
		7.56		1.29	0.86	0.64	0.52		34.3	
			6.7	1.14	0.76	0.57	0.46			32.2
R011-2S	11			1.88	1.25	0.94	0.75	46		
		9.24		1.58	1.05	0.79	0.63		42	
			8.2	1.40	0.93	0.70	0.56			39.4
R014-2S	14			2.39	1.59	1.19	0.96	58		
		11.76		2.01	1.34	1.00	0.80		53.4	
			10.5	1.79	1.19	0.90	0.72			50.4
R016-2S	16			2.73	1.82	1.36	1.09	67		
		13.44		2.29	1.53	1.15	0.92		61	
			12	2.05	1.36	1.02	0.82			57.6
R018-2S	18			3.07	2.05	1.54	1.23	75		
		15.12		2.58	1.72	1.29	1.03		68.7	
			13.5	2.30	1.54	1.15	0.92			64.9
R021-3S	21			3.58	2.39	1.79	1.43	87.5		
		17.64		3.01	2.01	1.50	1.20		80.1	
			15.75	2.69	1.79	1.34	1.07			75.7
R024-3S	24			4.09	2.73	2.05	1.64	100		
		20.16		3.44	2.29	1.72	1.38		91.6	
			18	3.07	2.05	1.54	1.23			86.5
R027-3S	27			4.61	3.07	2.30	1.84	112		
		22.68		3.87	2.58	1.93	1.55		103	
			20.25	3.45	2.30	1.73	1.38			97.3

Note:

- Alternate voltages including 277, 380, 415, 440, 575 and 600 volt available. Please consult factory for exact KW availability in these voltages.
- For 3 phase voltages please reference Hubbell model TX brochure.

Sizing Formulas

Step 1 Solve for the unknown using formulas below.

Variables To Solve For:

KW Requirement:

$$\text{_____ GPM} \times \text{_____ } ^\circ\text{F}\Delta\text{T} \times 0.1465 = \text{_____ KW}$$

Temperature Rise:

$$\text{_____ KW} \times 6.824 \div \text{_____ GPM} = \text{_____ } ^\circ\text{F}\Delta\text{T}$$

Flow Rate:

$$\text{_____ KW} \times 6.824 \div \text{_____ } ^\circ\text{F}\Delta\text{T} = \text{_____ GPM}$$

Step 2

Choose the Tankless model with the KW rating which meets the peak demand (GPM) and required temperature rise (°FΔT) for your application.

Step 3

Choose the supply voltage available. Note the total amperage draw of the unit and verify availability.

Voltage De-Rating Factors

Rated Voltage	Applied Voltage	De-Rating Factor
240 V	230 V	92%
240 V	220 V	84%
240 V	208 V	75%

When the actual supply voltage (applied voltage) is different than the design voltage (rated voltage) the resulting KW output will be affected. Please see the chart for typical voltage de-rating factors, or use the following formula.

$$\frac{\text{Applied Voltage}^2}{\text{Rated Voltage}^2} \times \text{Rated KW} = \text{KW output at applied voltage}$$

Master Specification: Point-of-Use Tankless

JOB NAME _____

ENGINEER / ARCHITECT _____

REPRESENTATIVE _____

CONTRACTOR _____

GENERAL

Provide a quantity of _____ packaged type instantaneous electric tankless water heater(s) Model No. _____ as manufactured by HUBBELL Electric Heater Co., Stratford, CT. The entire unit is packaged ready for plumbing and electrical service connections and shall bear the cULus listing mark certifying the entire unit to UL499, CSA C22.2 No. 64-M91 and UL EPH Sanitation listed to ANSI/NSF Standard 5.

HEATING CHAMBER

The heating chamber shall be all Sil-brazed copper and bronze construction. A plastic heating chamber shall not be acceptable. Water heater heating chamber shall be rated for a maximum allowable working pressure of 150 psi. The heating chamber and all electrical controls shall be completely enclosed in a heavy gauge Type 304 stainless steel case.

HEATING CAPACITY

The tankless heater shall be rated at _____ KW which will heat _____ GPM of water at _____ °F rise (_____ ° to _____ °F). Heaters that require the use of a flow restrictor or specialized aerator shall not be acceptable.

ELECTRICAL

The heater shall be designed to operate at _____ volts, single phase, 50/60Hz and will draw _____ amps only when operating at full power. The immersion heating elements shall be high quality incoloy sheathed and sized to obtain the rated capacity. Each element is to be operated using zero cross over solid state controls. The heating elements shall be fully modulated from 0-100% to provide precise temperature control through the full range of flows. A Hi-Limit thermostat with automatic reset shall be factory installed to disconnect each heating element in the event of an over-temperature condition. An electronic digital display temperature controller shall be user adjustable in 1° increments in either °F or °C and shall display flow rate, outlet temperature, inlet temperature and provide error indication. A turbine-type flow meter shall be factory installed to provide precise temperature control for water flows as low as 0.2 GPM up to a maximum flow of 8 GPM. Heaters that require greater than 0.2 GPM flow for actuation or restrict flow shall not be acceptable.

WARRANTY

Hubbell shall warranty all electrical components against defects in workmanship and material for a period of one (1) year from date of start-up and the heating chamber for a full five (5) years from date of start-up (for residential service, five (5) years heating chamber and three (3) years electrical), provided that the unit is started within three (3) months of date of shipment and installed and operated within the scope of the heater's design and operating capability. Labor is not covered under warranty. Each heater shall be shipped with a complete set of installation and operating instructions including spare parts list and approved drawings. All fabrication and assembly shall be performed in the U.S.A.

OPTIONS

In addition, the tankless electric water heater shall be supplied with the following options:

- ☐ Option _____
- ☐ Option _____
- ☐ Option _____

ISO 9001:2008



Committed to continuous improvement...

Continuing research results in product improvement; therefore specifications are subject to change without notice. For the most updated information, consult the factory directly.

