



A WATTS Brand

HL Series - Commercial Heaters

Tankless Water Heating Solutions

- 5-25 kW (17,000 - 85,304 BTUs)
- Low flow activation options at .15 and .25 GPM (0.6 and 0.9 L-Min)
- Certified lead-free design
- Variable temp heat exchanger
- Pressure drop advantage
- NEMA 1 enclosure for 5-18 kW units
- 3/4" connections
- ETL certified to UL Standards
- Liquid-cooled triac switches
- Surface mounted bi-metal thermostat with manual reset
- Internal fusing (included) adds safety and permits single power connection

Standard Equipment

Tankless Water Heating Specifications

Bradley® HL-Series Tankless Water Heaters **Powered by Keltech™** are designed to accommodate most commercial fluid heating applications including: environments where demand is < 25kW and total flow is ≤ 7 GPM, and environments where lower activation flows are required: standard units are .5 GPM with options as low as .15 GPM. HL-Series units are also suited to applications where only single phase service is available or 3-Phase 208V, 240V and 480V, 50/60 Hz is required. HL Series 5-18 kW products include a NEMA 1 enclosure as standard, with NEMA 4 and 4X options available. HL-25 units are standard NEMA 4.

Construction

Temperature Controller

The PID Temperature Controller is more energy efficient and reliable than traditional microprocessors using staged elements. Power is infinitely variable, with no fixed inputs. The PID controller makes it possible to modulate the amount of power applied to the elements while also dispersing the required power evenly across all elements. This unique feature increases the product's life cycle.

Heating Element

Each heater features a heavy duty, low watt density, incoloy 800 sheathed resistive element. The heating design ensures greater protection, durability and resistance to scaling from hard water because water is only heated when flowing; this means sediment will not collect in the heat exchanger.

Triac Switches

The liquid cooled, triac switches provide silent switching which has a faster response than mechanical relays to assist in maintaining an accurate temperature.

Electrical

The HL-Series requires only one service feed per unit. Includes internal fusing as standard. Internal fusing provides superior protection so the incoming circuit can be higher than 48 amps (NEC). Each heating element is protected by fusing.

Independent Safety

The surface mounted bi-metal thermostat with manual reset acts as a fail-safe. In the event the temperature limit is exceeded, it must be manually reset before power is restored to the elements.



Product Compliance



Lead-Free

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.



ETL listed to UL499

cETL listed to CSA-C22.2 No. 88



Standard product selections contained within this document are third party CERTIFIED to NSF/ANSI 372 meeting the Lead-Free content requirement. Any product configured with custom options will be COMPLIANT with NSF/ANSI 372 meeting the Lead-Free content requirement.



ABS Design Assessed intended for product to be installed on an ABS classed vessel, mobile offshore drilling units (MODU), or facility. This is a Tier 2 Approval that states that the product complies with the stated standards and must receive approval by a Surveyor or Engineer for the intended installation.



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Cabinet Enclosure

Standard cabinet enclosure is NEMA 1 rated for 5-18 kW units and made from 18 gauge electro galvanized and powder coated steel. The HL-Series also features an optional 18 gauge NEMA 4 enclosure with ANSI 61 gray, corrosive resistant paint. The HL 25 kW unit comes standard in the 18 gauge NEMA 4 enclosure. The NEMA 4X enclosures are for harsher environments made from 16 gauge 304 stainless steel. The NEMA 4X enclosure can also be specified with 316 stainless steel.

Product Options

Building Management System (BMS) Integration

The D1 option has 4-20mA input and allows Building Management Systems to set temperature and view heater outlet temperature via the BMS display. This allows the BMS to command the temperature setting of the unit and verify unit performance with actual process values. The D1 option requires BMS input to establish a temperature setting; local adjustment of set-point per standard interface on the heater control display is not permitted.

The DC option is a RS-485 Modbus RTU and allows Building Management Systems to view heater outlet temperature and heater activation via BMS display as well as changing the temperature set-point from the BMS. This allows the BMS to command the temperature setting of the unit and verify unit performance with actual process values. Local adjustment of set-point per standard interface on the heater control display is permitted.

NEMA 4 or 4X enclosures are required for the D1 or DC option.

Other Product Options

For additional heater options and installation accessories, reference the appropriate section at the end of this document.

Alarm Selection

For critical process applications, the high/low temperature alarm (AL option) alerts you to an over or under temperature situation. The visual indicator alarm is located on the heater control panel. If the process temperature strays from the defined temperature range, an alert is sent to the controller.

Electrical Specifications for the Heater (1-Phase)



All internal fuses necessary for installation are included with the unit.

Capacity (kW)	Voltage	Maximum Amperage	Minimum AWG Wire Size
5	208	25	10
5	240	21	10
6	208	29	8
6	240	25	8
6	277	22	10
6	480	13	12
10	208	48	4
10	240	42	6
18	208	87	3
18	240	75	3
18	277	65	3
18	480	38	6

HL Pressure Drop Advantage

Pressure Drop							
GPM	1	2	3	4	5	6	7
PSI	0	2	4	8	12	17	24
L-MIN	3.8	7.6	11.3	15.1	18.9	22.7	26.5
BAR	0.0	0.1	0.3	0.5	0.8	1.2	1.6

Electrical Specifications for the Heater (3-Phase)



All internal fuses necessary for installation are included with the unit.

Capacity (kW)	Voltage	Maximum Amperage	Minimum AWG Wire Size
10	208	28	10
10	480	13	12
15	208	42	6
15	240	36	6
18	208	50	4
18	240	43	6
18	480	22	10
25	480	30	8



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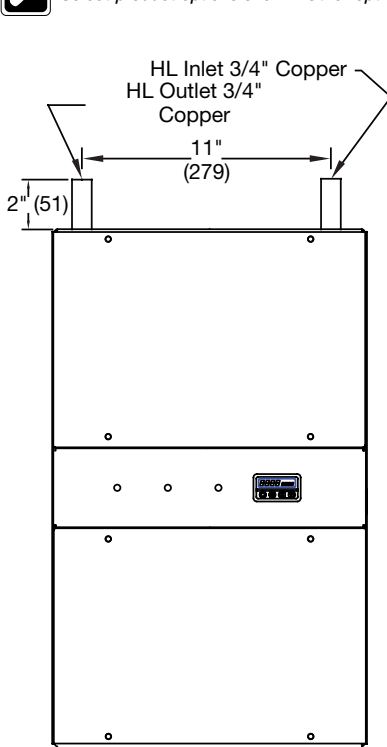
HL Series - Commercial Heaters Tankless Water Heating Solutions

HL Series - NEMA 1 Dimensions

(mm)



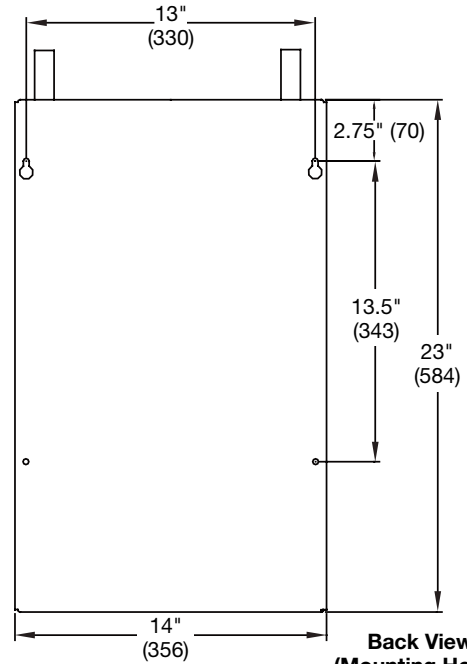
Select product options shown. Other options available.



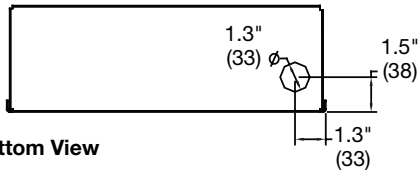
Front View



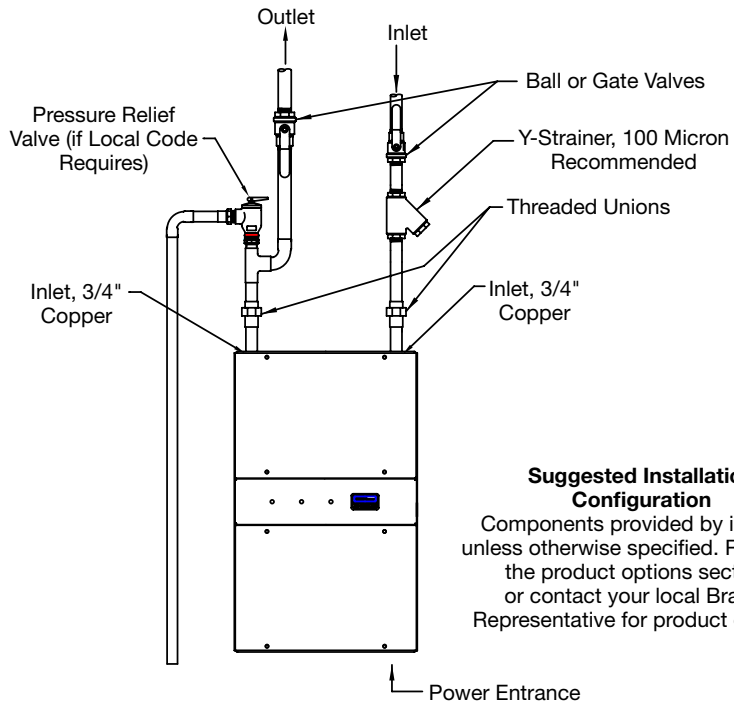
Side View



Back View
(Mounting Holes)



Bottom View



Suggested Installation Configuration

Components provided by installer unless otherwise specified. Reference the product options sections or contact your local Bradley Representative for product options.



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HL Series - Commercial Heaters

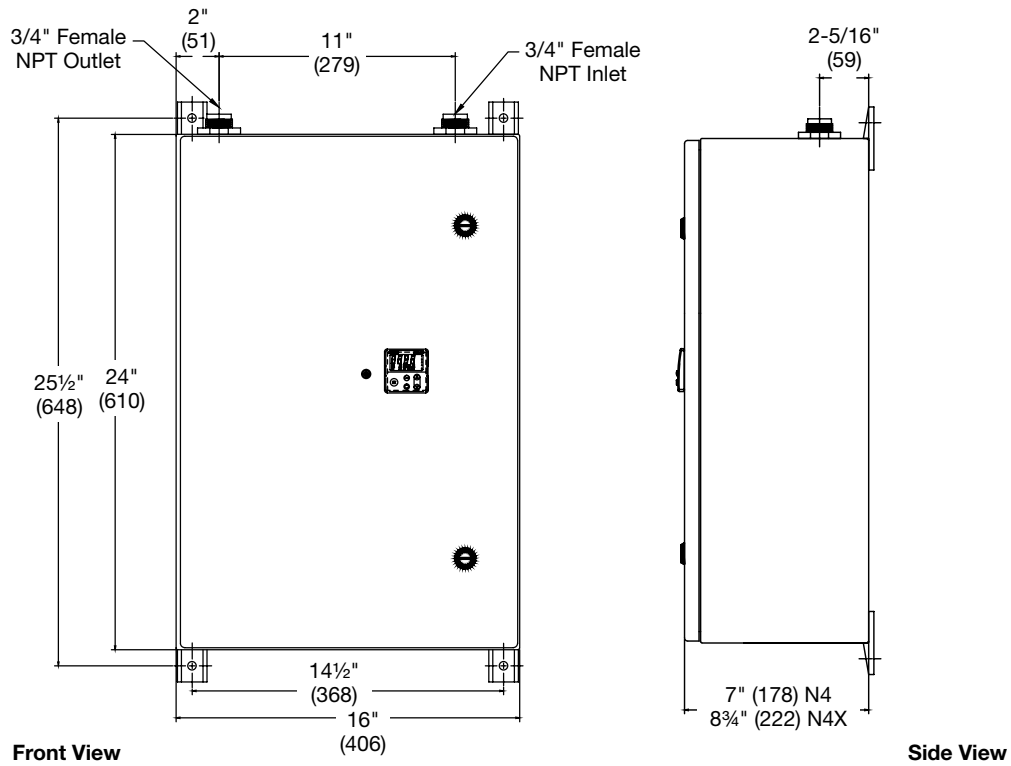
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HL Series (5-18 kW) - NEMA 4/4X Dimensions

(mm)



Select product options shown. Other options available.





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HL Series - Commercial Heaters

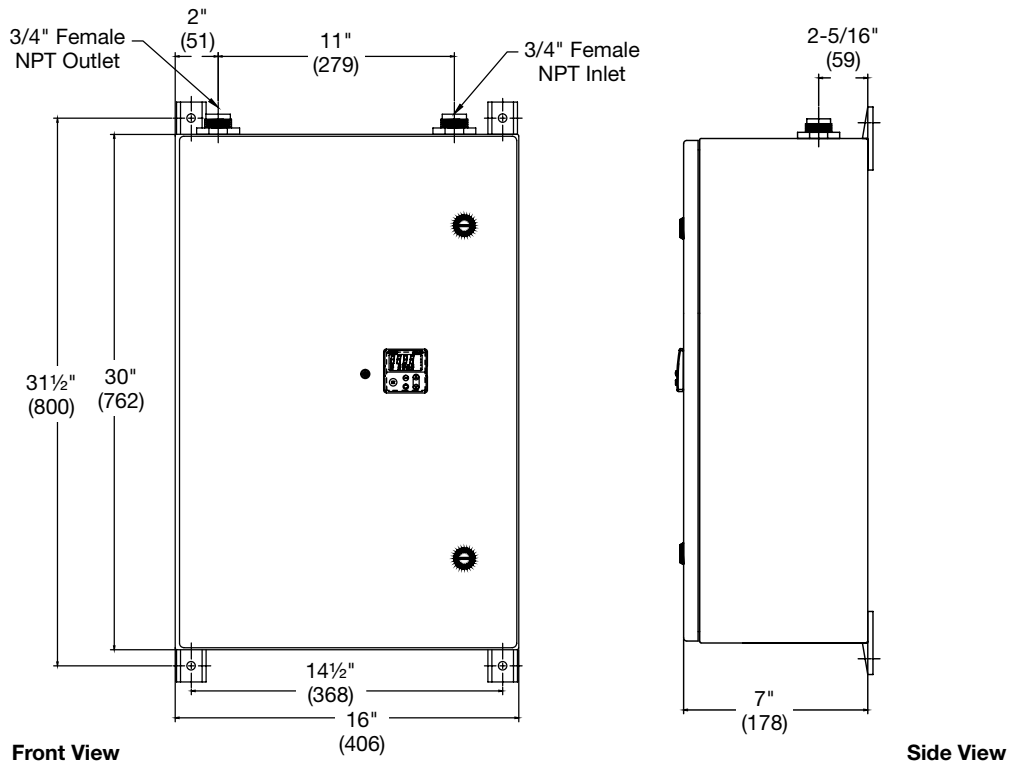
Tankless Water Heating Solutions

HL Series (25 kW) - NEMA 4/4X Dimensions

(mm)



Select product options shown. Other options available.





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kW Calculator

HL Series (kW): 5, 6, 10, 15, 18, 25

		Temperature $\Delta^{\circ}\text{F}$ ($^{\circ}\text{C}$)																											
GPM L-MIN		10° (6°)	15° (8°)	20° (11°)	25° (14°)	30° (17°)	35° (19°)	40° (22°)	45° (25°)	50° (28°)	55° (31°)	60° (33°)	65° (36°)	70° (39°)	75° (42°)	80° (44°)	85° (47°)	90° (50°)	95° (53°)	100° (56°)	105° (58°)	110° (61°)	115° (64°)	120° (67°)	125° (69°)	130° (72°)	135° (75°)	140° (78°)	
Flow	0.15 0.6	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
	0.25 0.9	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6
	0.50 1.9	5	5	5	5	5	5	5	5	5	5	5	5	6	6	6	10	10	10	10	10	10	10	10	10	10	10	15	
	0.75 2.8	5	5	5	5	5	5	5	5	6	6	10	10	10	10	10	10	10	15	15	15	15	15	15	15	15	15	18	
	1 3.8	5	5	5	5	5	6	6	10	10	10	10	10	15	15	15	15	15	15	15	18	18	18	18	18	25	25	25	
	1.5 5.7	5	5	5	6	10	10	10	10	15	15	15	15	18	18	18	25	25	25	25	25	25	25	25	-	-	-	-	
	2 7.6	5	5	6	10	10	15	15	15	15	18	18	25	25	25	25	25	-	-	-	-	-	-	-	-	-	-	-	
	3 11.3	5	10	10	15	15	18	18	25	25	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	4 15.1	6	10	15	15	18	25	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	5 18.9	10	15	15	25	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
6 22.7	10	15	18	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
7 26.5	15	18	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

Sizing for the proper flow rate is important. If the temperature rise requirements exceed a single HL model, consider using multiple HL-Series units or the C1N & C2N Series. Please contact your Bradley Representative for additional product information.

How to Size a Heater

- Calculate Delta-T (ΔT).
Set point temp - coldest ground water temp = ΔT $\Delta T =$ _____
- Select kW required by using chart or formula below.
Peak demand in GPM x ΔT x .1465 = kW kW = _____
- Confirm voltage and phase available on site. Voltage and Phase = _____
- Confirm minimum flow. Minimum Flow = _____



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HL Series - Single Phase Product Selections and Options

Model - Single Phase	
HL HL-Series - Single Phase Commercial Tankless Water Heater	
Standard Selections (Must select one from each category)	
Kilowatts	
05 5 kilowatts	10 10 kilowatts
06 6 kilowatts	18 18 kilowatts
AC Power Supply	
0 Single Phase	
Voltage	
208 208 Volts	380 380 Volts (down rated from 480V)
240 240 Volts	400 400 Volts (down rated from 480V)
277 277 Volts*	415 415 Volts (down rated from 480V)
480 480 Volts*	
System Controller	
D Digital Control	
Cabinet Enclosure	
N1	NEMA-1 Enclosure (standard)
N4	NEMA-4 Enclosure
N4X	NEMA-4X Enclosure - Stainless Steel

* 277V and 480V only available with 6 kW and 18 kW heaters.

Heaters listed above can be down rated in 380, 400 and 415 volts. Contact your local Bradley Representative for power ratio and effective kW.

Enhanced Performance Tuning	
Please select your type of application. Bradley will precisely "tune" your heater specifically to your application for the highest level of performance at no additional charge.	
Process Heating	
Potable	
Boosting	
Re-Circulating	

Product Options (Must select one from each category)	
D1	4-20mA Input for Integration with Facility Controls**
DC	RS-485 Modbus RTU**
AL	Process Temperature Alarm
NONE	None
IC	Temperature Loc Out at _____°F (4-160°F) or _____°C (5-71°C)
NONE	None
L15	Low Flow .15 GPM Turn On Point
L25	Low Flow .25 GPM Turn On Point
NONE	None
T190	High Temperature Package (Select for Temp Greater than 180°F)
T180	High Temperature Package (Select for Temp Greater than 170°F)
T170	High Temperature Package (Select for Temp Greater than 160°F)
NONE	None
TE2	Xylan Fluoropolymeric Coated Heat Exchanger with Bright Annealed Stainless Steel Elements, FDA Approved for Food Contact (Use in deionized water applications)
NONE	None

Installation Accessories	
BSPP	Stainless steel thread adapter converts NPT to BSPP**
NONE	None
PR	ASME Pressure and temperature relief valve
PRS	ASME pressure relief valve, stainless steel
NONE	None
YS	Y-Strainer
YSS	Y-Strainer, stainless steel
NONE	None

** Requires NEMA 4 or NEMA 4X Enclosure

Application Attributes (MANDATORY)	
Coldest ground water temperature:	_____
Minimum Flow:	_____
Maximum Flow:	_____
Set point temperature:	_____

Delta T Calculation

Set Point Temperature - Coldest Incoming Water Temperature = Minimum Delta T for Application

Single Phase Model Number Configuration

HL	0/	D-	-	-	-	-	-	-	-	-
<i>List applicable option codes alphabetically. Do not include Installation Accessories in configuration.</i>										

Customer Signoff _____



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HL Series - Commercial Heaters

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HL Series - Three Phase Product Selections and Options

Model - Three Phase	
HL HL-Series - Three Phase Commercial Tankless Water Heater	
Standard Selections (Must select one from each category)	
Kilowatts	
10 10 kilowatts	18 18 kilowatts
15 15 kilowatts*	25 25 kilowatts**
AC Power Supply	
3 Three Phase	
Voltage	
208 208 Volts	380 380 Volts (down rated from 480V)
240 240 Volts	400 400 Volts (down rated from 480V)
480 480 Volts	415 415 Volts (down rated from 480V)
System Controller	
D Digital Control	
Cabinet Enclosure	
N1 NEMA-1 Enclosure (Standard 10kW, 15kW, 18kW)	
N4 NEMA-4 Enclosure (Standard 25kW)	
N4X NEMA-4X Enclosure - Stainless Steel	

* 15kW only available in 208V and 240V.

**Only available in 480V.

Heaters listed above can be down rated in 380, 400 and 415 volts. Contact your local Bradley Representative for power ratio and effective kW.

Enhanced Performance Tuning
Please select your type of application. Bradley will precisely "tune" your heater specifically to your application for the highest level of performance at no additional charge.
Process Heating
Potable
Boosting
Re-Circulating

Product Options (Must select one from each category)	
D1	4-20mA Input for Integration with Facility Controls†
DC	RS-485 Modbus RTU†
AL	Process Temperature Alarm
NONE	None
IC	Temperature Loc Out at _____°F (4-160°F) or _____°C (5-71°C)
NONE	None
L15	Low Flow .15 GPM Turn On Point
L25	Low Flow .25 GPM Turn On Point
NONE	None
T190	High Temperature Package (Select for Temp Greater than 180°F)
T180	High Temperature Package (Select for Temp Greater than 170°F)
T170	High Temperature Package (Select for Temp Greater than 160°F)
NONE	None
TE2	Xylan Fluoropolymeric Coated Heat Exchanger with Bright Annealed Stainless Steel Elements, FDA Approved for Food Contact (Use in deionized water applications)
NONE	None

Installation Accessories	
BSPP	Stainless steel thread adapter converts NPT to BSPP†
NONE	None
PR	Pressure and temperature relief valve
PRS	ASME pressure relief valve, stainless steel
NONE	None
YS	Y-Strainer
YSS	Y-Strainer, stainless steel
NONE	None

† Requires NEMA 4 or NEMA 4X Enclosure

Application Attributes (MANDATORY)
Coldest ground water temperature: _____
Minimum Flow: _____
Maximum Flow: _____
Set point temperature: _____

Delta T Calculation

Set Point Temperature - Coldest Incoming Water Temperature = Minimum Delta T for Application

Three Phase Model Number Configuration

HL	3/	D-	-	-	-	-	-	-	-
List applicable option codes alphabetically. Do not include Installation Accessories in configuration.									

Customer Signoff _____