



# 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

Keltech, Inc. HL-Series Tankless Water Heaters are designed to accommodate most commercial fluid heating applications including: environments where demand is < 25kW and total flow is  $\leq$  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

Keltech's 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 Keltech 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). Keltech protects both hot sides of each heating element with 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.

#### 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.



### Code Compliance and Certifications



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.



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## Tankless Water Heating Solutions

### 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.

### 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 (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

### 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



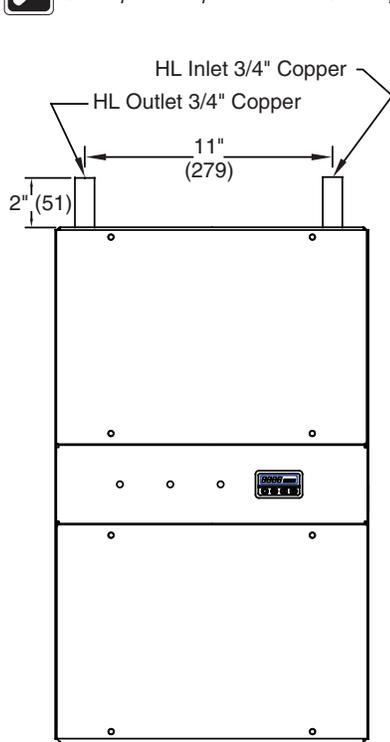
# HL Series - Commercial Heaters

## Tankless Water Heating Solutions

### HL Series - NEMA 1 Dimensions

(mm)

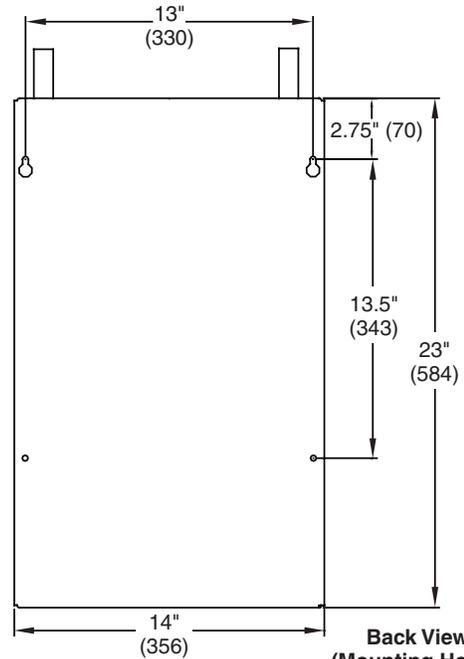
Select product options shown. Other options available.



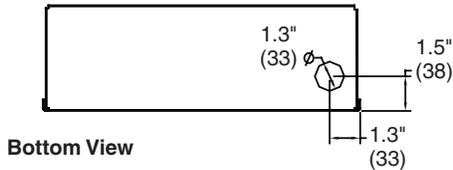
Front View



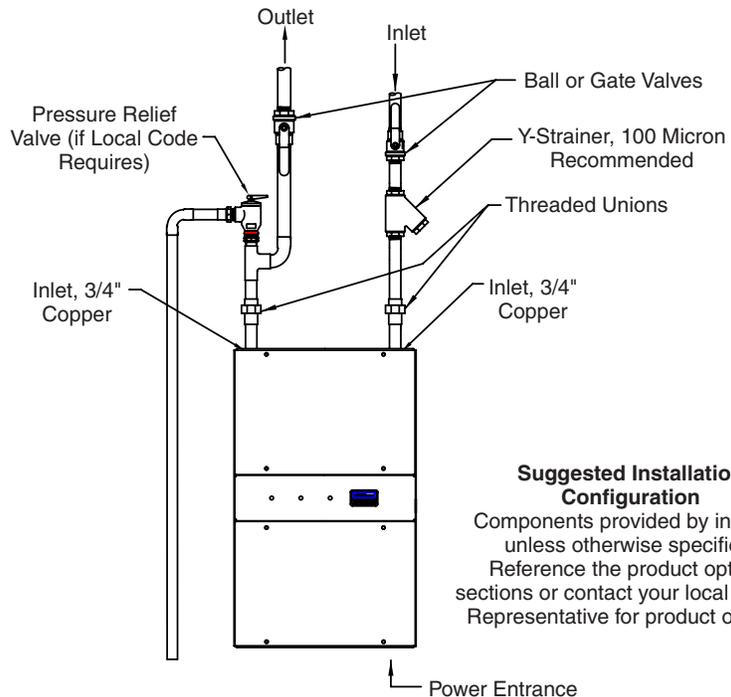
Side View



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.



# HL Series - Commercial Heaters

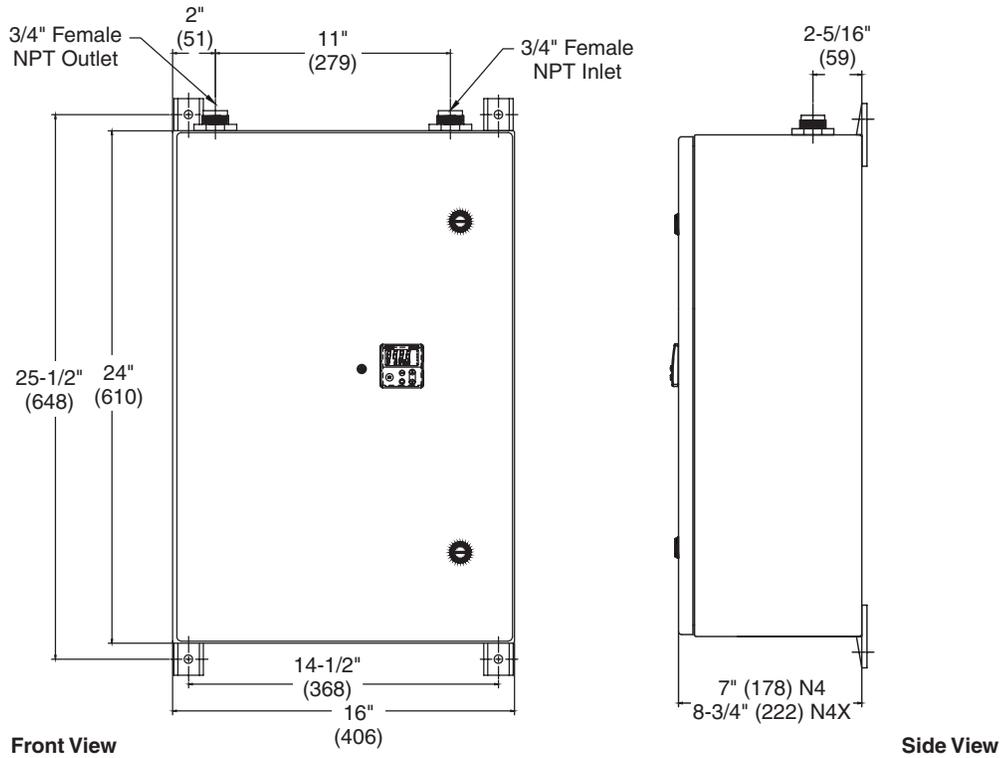
## Tankless Water Heating Solutions

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

(mm)



Select product options shown. Other options available.





# HL Series - Commercial Heaters

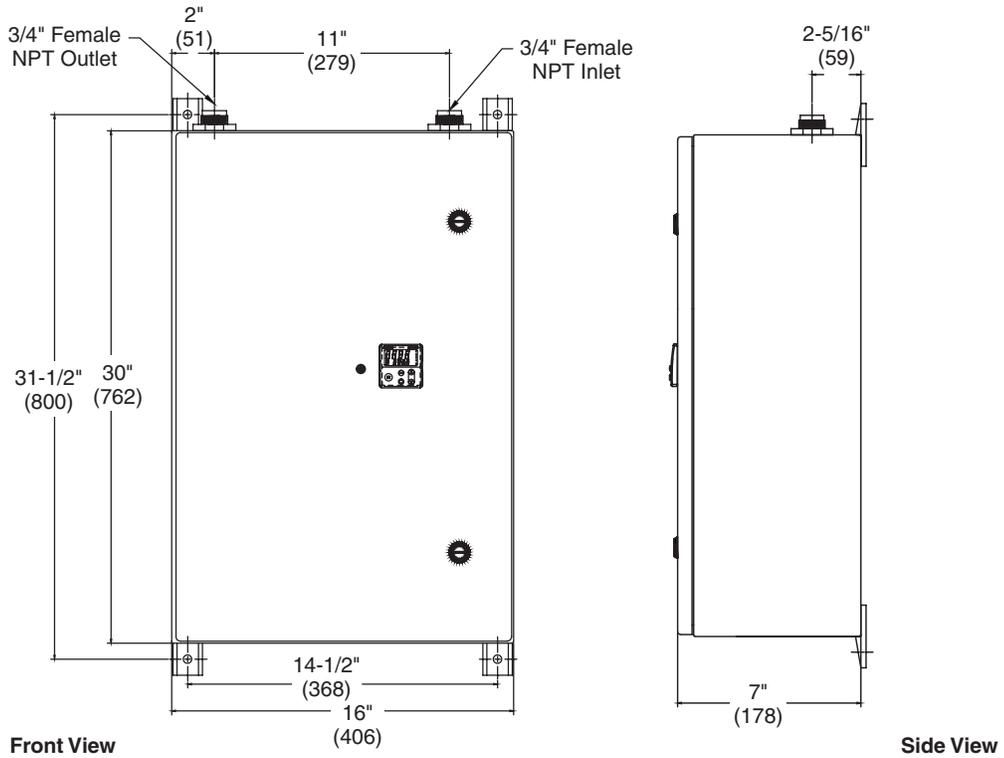
## Tankless Water Heating Solutions

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

(mm)



Select product options shown. Other options available.





# HL Series - Commercial Heaters

## Tankless Water Heating Solutions

### 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	
	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	6
	0.50	1.9	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	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	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 Keltech Representative for additional product information.*

### How to Size a Heater

1. Calculate Delta-T ( $\Delta T$ ).

Set point temp - coldest ground water temp =  $\Delta T$

$\Delta T =$  \_\_\_\_\_

2. Select kW required by using chart or formula below.

Peak demand in GPM x  $\Delta T$  x .1465 = kW

kW = \_\_\_\_\_

3. Confirm voltage and phase available on site.

Voltage and Phase = \_\_\_\_\_

4. Confirm minimum flow.

Minimum Flow = \_\_\_\_\_



# HL Series - Commercial Heaters

## Tankless Water Heating Solutions

### HL Series - Single Phase Product Selections and Options

<b>Model - Single Phase</b>	
<input type="checkbox"/> HL HL-Series - Single Phase Commercial Tankless Water Heater	
<b>Standard Selections</b> (Must select one from each category)	
<b>Kilowatts</b>	
<input type="checkbox"/> 05 5 kilowatts	<input type="checkbox"/> 10 10 kilowatts
<input type="checkbox"/> 06 6 kilowatts	<input type="checkbox"/> 18 18 kilowatts
<b>AC Power Supply</b>	
<input checked="" type="checkbox"/> 0 Single Phase	
<b>Voltage</b>	
<input type="checkbox"/> 208 208 Volts	<input type="checkbox"/> 380 380 Volts (down rated from 480V)
<input type="checkbox"/> 240 240 Volts	<input type="checkbox"/> 400 400 Volts (down rated from 480V)
<input type="checkbox"/> 277 277 Volts*	<input type="checkbox"/> 415 415 Volts (down rated from 480V)
<input type="checkbox"/> 480 480 Volts*	
<b>System Controller</b>	
<input checked="" type="checkbox"/> D Digital Control	
<b>Cabinet Enclosure</b>	
<input type="checkbox"/> N1 NEMA-1 Enclosure (standard)	
<input type="checkbox"/> N4 NEMA-4 Enclosure	
<input type="checkbox"/> 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 Keltech Representative for power ratio and effective kW.

<b>Enhanced Performance Tuning</b>
Please select your type of application. Keltech will precisely "tune" your heater specifically to your application for the highest level of performance at no additional charge.
<input type="checkbox"/> Process Heating <input type="checkbox"/> Potable <input type="checkbox"/> Boosting <input type="checkbox"/> Re-Circulating

Keltech Tankless Water Heaters are non-cancelable, non-refundable and non-returnable.

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

<b>Installation Accessories</b>	
<input type="checkbox"/> BSPP Stainless steel thread adapter converts NPT to BSPP**	
<input type="checkbox"/> NONE None	
<input type="checkbox"/> PR Pressure and temperature relief valve	
<input type="checkbox"/> PRS ASME pressure relief valve, stainless steel	
<input type="checkbox"/> NONE None	
<input type="checkbox"/> YS Y-Strainer	
<input type="checkbox"/> YSS Y-Strainer, stainless steel	
<input type="checkbox"/> NONE None	

\*\* Requires NEMA 4 or NEMA 4X Enclosure

<b>Application Attributes (MANDATORY)</b>
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-	-	-	-	-	-	-	-
List applicable option codes alphabetically. Do not include Installation Accessories in configuration.									

Customer Signoff \_\_\_\_\_



# HL Series - Commercial Heaters

## Tankless Water Heating Solutions

### HL Series - Three Phase Product Selections and Options

<b>Model - Three Phase</b>	
<input type="checkbox"/> HL HL-Series - Three Phase Commercial Tankless Water Heater	
<b>Standard Selections</b> (Must select one from each category)	
<b>Kilowatts</b>	
<input type="checkbox"/> 10 10 kilowatts	<input type="checkbox"/> 18 18 kilowatts
<input type="checkbox"/> 15 15 kilowatts*	<input type="checkbox"/> 25 25 kilowatts**
<b>AC Power Supply</b>	
<input checked="" type="checkbox"/> 3 Three Phase	
<b>Voltage</b>	
<input type="checkbox"/> 208 208 Volts	<input type="checkbox"/> 380 380 Volts (down rated from 480V)
<input type="checkbox"/> 240 240 Volts	<input type="checkbox"/> 400 400 Volts (down rated from 480V)
<input type="checkbox"/> 480 480 Volts	<input type="checkbox"/> 415 415 Volts (down rated from 480V)
<b>System Controller</b>	
<input checked="" type="checkbox"/> D Digital Control	
<b>Cabinet Enclosure</b>	
<input type="checkbox"/> N1 NEMA-1 Enclosure (standard)	
<input type="checkbox"/> N4 NEMA-4 Enclosure	
<input type="checkbox"/> 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 Keltech Representative for power ratio and effective kW.

<b>Enhanced Performance Tuning</b>
Please select your type of application. Keltech will precisely "tune" your heater specifically to your application for the highest level of performance at no additional charge.
<input type="checkbox"/> Process Heating <input type="checkbox"/> Potable <input type="checkbox"/> Boosting <input type="checkbox"/> Re-Circulating

Keltech Tankless Water Heaters are non-cancelable, non-refundable and non-returnable.

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

<b>Installation Accessories</b>	
<input type="checkbox"/> BSPP	Stainless steel thread adapter converts NPT to BSPP†
<input type="checkbox"/> NONE	None
<input type="checkbox"/> PR	Pressure and temperature relief valve
<input type="checkbox"/> PRS	ASME pressure relief valve, stainless steel
<input type="checkbox"/> NONE	None
<input type="checkbox"/> YS	Y-Strainer
<input type="checkbox"/> YSS	Y-Strainer, stainless steel
<input type="checkbox"/> NONE	None

† Requires NEMA 4 or NEMA 4X Enclosure

<b>Application Attributes (MANDATORY)</b>
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 \_\_\_\_\_