

- Heavy duty industrial cart options simplify moving heater to various locations
- 18-25 kW (61,4000 - 85,300 BTUs)
- Low flow activation options at 0.25 and 0.50 GPM (1.0 and 1.9 LPM)
- Certified Lead-Free Design
- Variable Temp Heat Exchanger
- Pressure Drop Advantage
- NEMA 4 enclosure standard
- 3/4" connections
- Independent Safeties
- Heater ETL and cETL certified to UL and CSA Standards
- Liquid-Cooled Solid State Relays
- Internal fusing (included) adds safety and permits single power connection

Standard Equipment

Keltech Portables - Tankless Water Heating Specifications

Certain Keltech, Inc. C1N Series Tankless Water Heaters can now be paired up with heavy duty industrial carts to make a portable solution for temporary or semi-permanent heating needs. The heater and cart combination (shipped separately) are designed to accommodate most light industrial fluid heating applications, where the demand is 18kW - 25kW and total flow is <10 GPM up to 15 GPM. Standard units feature $\geq .75$ GPM activation. NEMA 4X and explosion proof purge system options available. C1N-Series units are 3 Phase Delta 480V or 600V, 50/60 Hz.

Construction

Portable Cart

Keltech Portables feature a heavy-duty industrial cart for moving the heater into a temporary or semi-permanent location. Cart features push handle and forklift pockets to assist in moving heater from place to place. Carts are powder coated and constructed from welded steel tubing. All carts include 8" polyurethane casters.

Standard cart package includes lockable heater enclosure, tamper resistant inspection cover over control panel to prevent tampering by unauthorized personnel, cart push handle, forklift pockets, pigtail wire cable with plate and cable gland (shipped loose). Installer attaches heater to cart and provides final connections.

Deluxe cart package includes lockable heater enclosure, tamper resistant inspection cover over control panel to prevent tampering by unauthorized personnel, cart push handle, forklift pockets, Hubbell electrical connectors (shipped loose), welded tool box and truck brake to lock cart in place. Installer attaches heater to cart and provides final connections.

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.

Solid State Relays

The liquid cooled solid state relays provide silent switching, which has a fast response and works in conjunction with the PID controller to infinitely modulate and add to the life of the heater.



Deluxe Cart Shown

Electrical

The C1N-Series requires only one service feed per unit. Includes internal fusing as standard, which provides superior protection. Keltech protects each heating element with fusing.

Cabinet Enclosure

The standard wall cabinet enclosure is NEMA 4 rated and made from 16 gauge mild steel and powder coated with ANSI 61 gray, corrosive resistant paint. The optional NEMA 4X enclosures are for harsher environments and made from 16 gauge 304 stainless steel. The NEMA 4X enclosure can also be specified with 316 stainless steel (at additional price). Keltech Portable Heaters include tamper resistant latches with matching quarter-turn tools to inhibit unauthorized access.

Independent Safeties

The internal thermostat with auto reset high limit switch ensures that when the temperature limit is reached, the unit will power down a bank of elements; when the temperature drops back down to the set point, power is restored. The surface mounted bi-metal thermostat with manual reset acts as a fail-safe and must be manually reset before power can be restored to the elements if the temperature limit is exceeded.

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

ETL listed to UL 50E



ETL listed to NFPA 496 (Requires EXP2 Option)

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.



Product Options

Fused Disconnect

Internal fused disconnect interlocks with enclosure door when energized, prohibiting access to a live cabinet. Select the FDS option for an additional level of safety and convenience at the heater location.

Ground Fault

Optional equipment protection ground fault senses leakage current to ground >1 Amp. In the event a fault is detected, this device will terminate the high voltage power supply to heating elements and disable operation of the unit. Fault status is communicated EXTERNALLY at the control interface. Personnel may also test the Ground Fault system and reset any nuisance trips without opening the cabinet.

Other Product Options

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

Electrical Specifications for the Heater

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

Capacity (kW)	Voltage	Maximum Amperage	Minimum AWG Wire Size
18	480	22	10
18	600	18	10
25	480	30	8
25	600	24	10

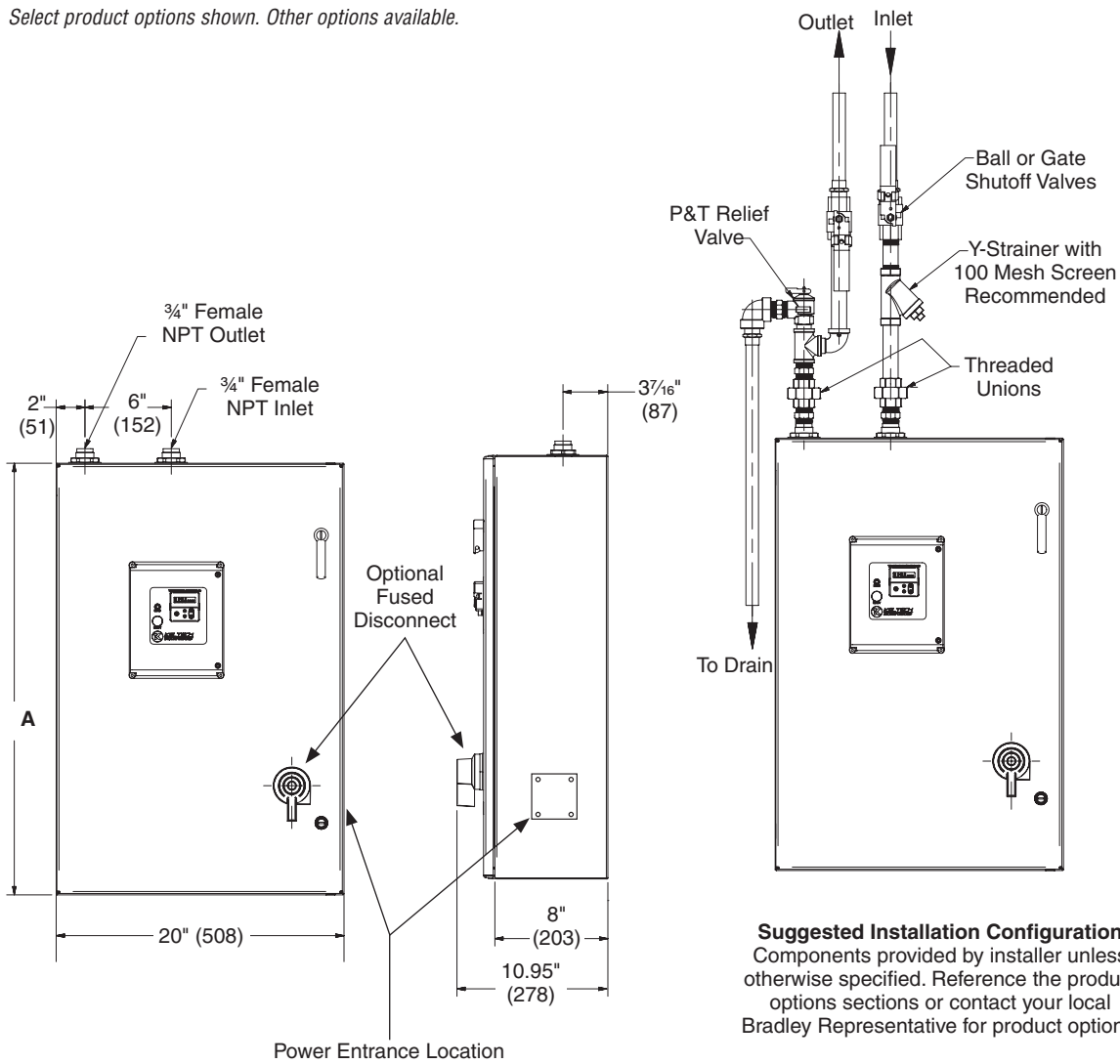
C1N Pressure Drop Advantage

Pressure Drop									
GPM	1	2	3	4	5	6	8	10	15
PSI	0	1	2	3	4	5	7	10	15
L-MIN	3.8	7.6	11.3	15.1	18.9	22.7	30.2	37.8	56.8
BAR	0.0	0.1	0.1	0.2	0.3	0.4	0.5	0.7	1.0

Portable C1N Series - Dimensions

(mm)

Select product options shown. Other options available.

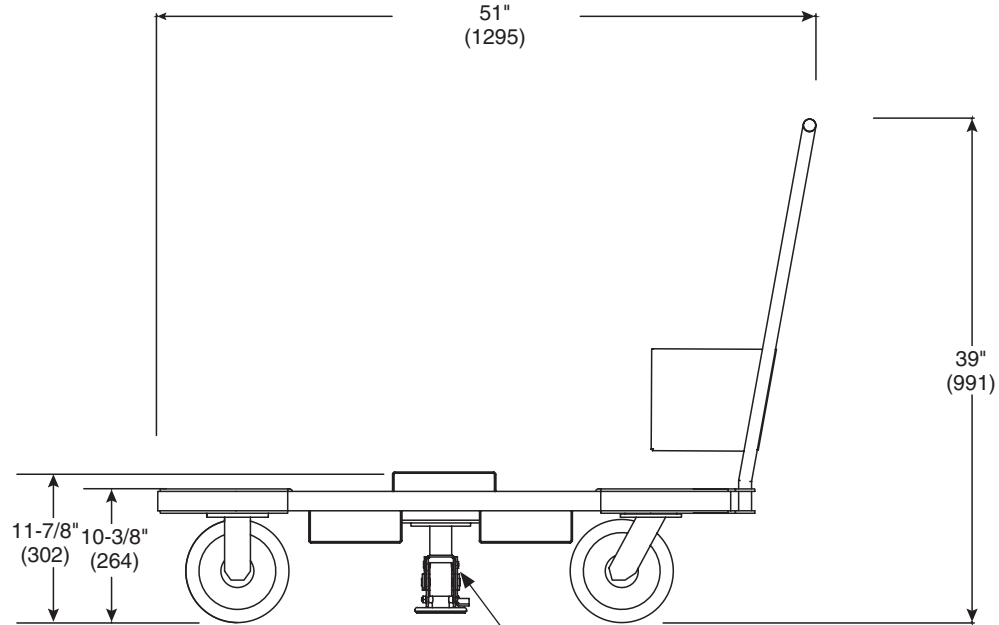
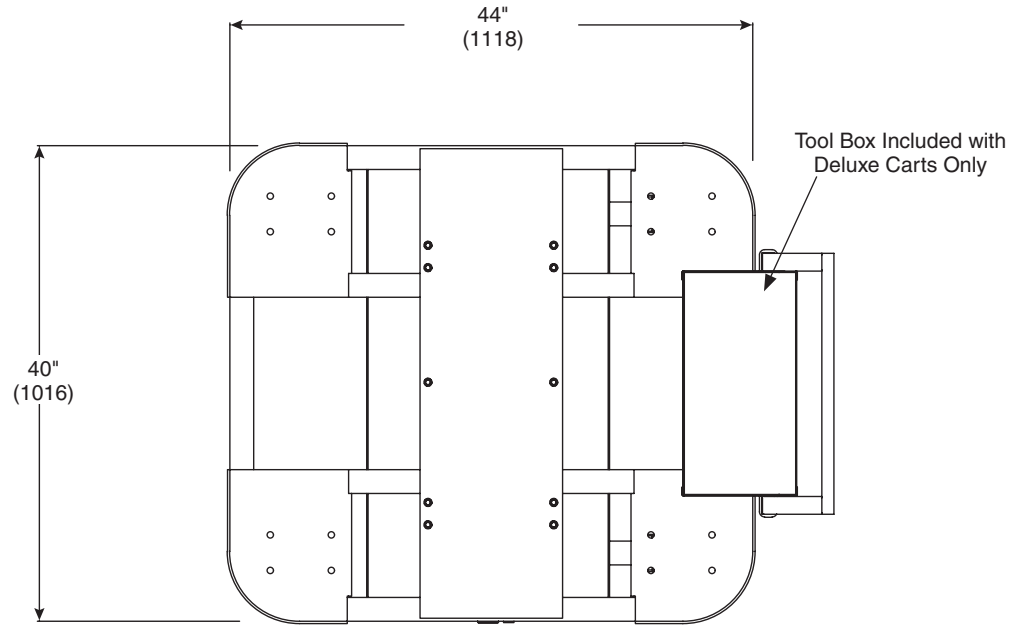


Suggested Installation Configuration
Components provided by installer unless otherwise specified. Reference the product options sections or contact your local Bradley Representative for product options.

kW	A
18	30" (762)
25	36" (914)

Portable C1N Series - Cart Dimensions

Deluxe cart shown with tool box and truck brake, standard cart dimensions are identical.



kW Calculator

C1N Series (kW): 18, 25

		Temperature Δ °F (°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	0.75	2.8	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	
	1.0	3.8	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	25	25	25	25
	1.5	5.7	18	18	18	18	18	18	18	18	18	18	18	18	18	18	25	25	25	25	25	25	25	-	-	-	-	-	-
	2	7.6	18	18	18	18	18	18	18	18	18	18	25	25	25	25	25	-	-	-	-	-	-	-	-	-	-	-	-
	3	11.3	18	18	18	18	18	18	18	18	25	25	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4	15.1	18	18	18	18	18	25	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5	18.9	18	18	18	25	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6	22.7	18	18	18	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7	26.5	18	18	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8	30.2	18	18	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9	34.0	18	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10	37.8	18	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15	56.8	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Sizing for the proper flow rate is important. If the temperature rise requirements exceed a single C1N model, consider using multiple C1N-Series units. Please contact your Keltech 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 = _____



Portable C1N Series - Light Industrial Heaters

Tankless Water Heating Solutions

Model	
<input type="checkbox"/> C1N C1N-Series Light Industrial Heater	
Standard Selections (Must select one from each category)	
Kilowatts	
<input type="checkbox"/> 18 18 kilowatts	
<input type="checkbox"/> 25 25 kilowatts	
AC Power Supply	
<input checked="" type="checkbox"/> 3 Three Phase	
Voltage	
<input type="checkbox"/> 480 480 Volts (standard)	<input type="checkbox"/> 380 380 Volts (down rated from 480V)
<input type="checkbox"/> 600 600 Volts (standard)	<input type="checkbox"/> 400 400 Volts (down rated from 480V)
	<input type="checkbox"/> 415 415 Volts (down rated from 480V)
System Controller	
<input checked="" type="checkbox"/> D Digital Control	
Cabinet Enclosure	
<input type="checkbox"/> N4 NEMA-4 Enclosure (standard)	
<input type="checkbox"/> N4X NEMA-4X Enclosure - Stainless Steel	
<input type="checkbox"/> N4X316 NEMA-4X Enclosure - 316 Stainless Steel	

Heaters listed above can be down rated in 380, 400 and 415 volts.

Enhanced Performance Tuning
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 <input type="checkbox"/> Sinks/Lavs

Asset Tag	
<input type="checkbox"/> 00 None	<input type="checkbox"/> 03 3 Asset Tags _____
<input type="checkbox"/> 01 1 Asset Tag _____	<input type="checkbox"/> 04 4 Asset Tag _____
<input type="checkbox"/> 02 2 Asset Tags _____	<input type="checkbox"/> 05 5 Asset Tags _____

Heater Product Options (must select one from each category)	
<input type="checkbox"/> FDS	Internal Fused Disconnect
<input type="checkbox"/> NONE	None
<input type="checkbox"/> GF	Ground Fault Package
<input type="checkbox"/> NONE	None
<input type="checkbox"/> L25	Low flow .25 GPM Turn on Point
<input type="checkbox"/> L5	Low flow .5 GPM Turn on Point
<input type="checkbox"/> NONE	None
<input type="checkbox"/> T200	High Temperature Package (Select for Temp Greater than 190°F)
<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"/> TE	PFA Teflon® Coated Heat Exchanger with Bright Annealed Stainless Steel Elements, FDA Approved (Use for deionized water or mild corrosive fluid applications)
<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

Teflon is a registered trademark of E. I. du Pont de Nemours and Company

Heater Installation Accessories	
<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

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

Heater Model Number Configuration

C1N _____ / _____ D- _____ - _____ - _____ - _____
INSTL_ACCESSORY - _____ - _____ - _____
List applicable option codes alphabetically. Do not include Installation Accessories in configuration. Select one or two cart options below.

Cart Product Options (must select one)	
<input type="checkbox"/> Standard	Standard cart package includes lockable heater enclosure, tamper resistant inspection cover over control panel to prevent tampering by unauthorized personnel, cart push handle, forklift pockets, pigtail wire cable with plate and cable gland (shipped loose). Installer attaches heater to cart and provides final connections.
<input type="checkbox"/> Deluxe	Deluxe cart package includes lockable heater enclosure, tamper resistant inspection cover over control panel to prevent tampering by unauthorized personnel, cart push handle, forklift pockets, Hubbell electrical connectors (shipped loose), welded tool box and truck brake to lock cart in place. Installer attaches heater to cart and provides final connections.

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

Customer Signoff _____