



C2N Series - Light Industrial Heaters

Tankless Water Heating Solutions

- 36-50 kW (122,800 - 170,600 BTUs)
- Low flow activation option at 0.5 GPM (1.9 LPM)
- Certified Lead-Free Design
- Variable Temp Heat Exchanger
- Pressure Drop Advantage
- Ideal for High Temp Recirculation Loop
- NEMA 4 enclosure standard
- 3/4" connections
- Independent Safeties
- ETL and cETL certified to UL and CSA Standards
- Fan-cooled solid state relays
- Internal fusing (included) adds safety and permits single power connection

Standard Equipment

Tankless Water Heating Specifications

Keltech, Inc. C2N Series Tankless Water Heaters are designed to accommodate most light industrial fluid heating applications including booster applications with incoming process temperatures up to 130 degrees, demand is 36kW-50kW and total flow is <10 GPM up to 15 GPM. Standard units feature $\geq .75$ GPM activation; lower flows available. NEMA 4X and explosion proof purge system options available. C2N-Series units are 3 Phase Delta 480V or 600V, 50/60 Hz.

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.

Solid State Relays

Fan-cooled solid state relays provides 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. This feature makes the C2N Series ideal for high temperature recirculation loops.

Electrical

The C2N-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 each heating element with fusing.

Cabinet Enclosure

The standard wall-mounted 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. Optional floor kit available (LK).

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.





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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.

Explosion Proof Purge System

Keltech's EXP2 option makes heaters compliant for classified areas; Class 1, Division 2, Groups A-D, T5. The Purge System requires a supply of clean instrument air or inert gas (provided by installer). This supply maintains a positive internal pressure and prevents the enclosure from filling with flammable gasses, dusts or vapors from the ambient environment. In addition to manufacturer certifications on the purge system, Keltech independently tests and 3rd party certifies all finished product with EXP2 to comply with NFPA 496.

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.

Alarm Selections

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.

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 (3-Phase)



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

Capacity (kW)	Voltage	Maximum Amperage	Minimum AWG Wire Size
36	480	43	6
36	600	35	8
50	480	60	3
50	600	49	4

C2N Pressure Drop Advantage

Pressure Drop										
GPM	1	2	3	4	5	6	8	10	15	
PSI	1	2	3	4	5	6	8	10	10	
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	0.2	0.3	0.3	0.4	0.6	0.7	1.0	



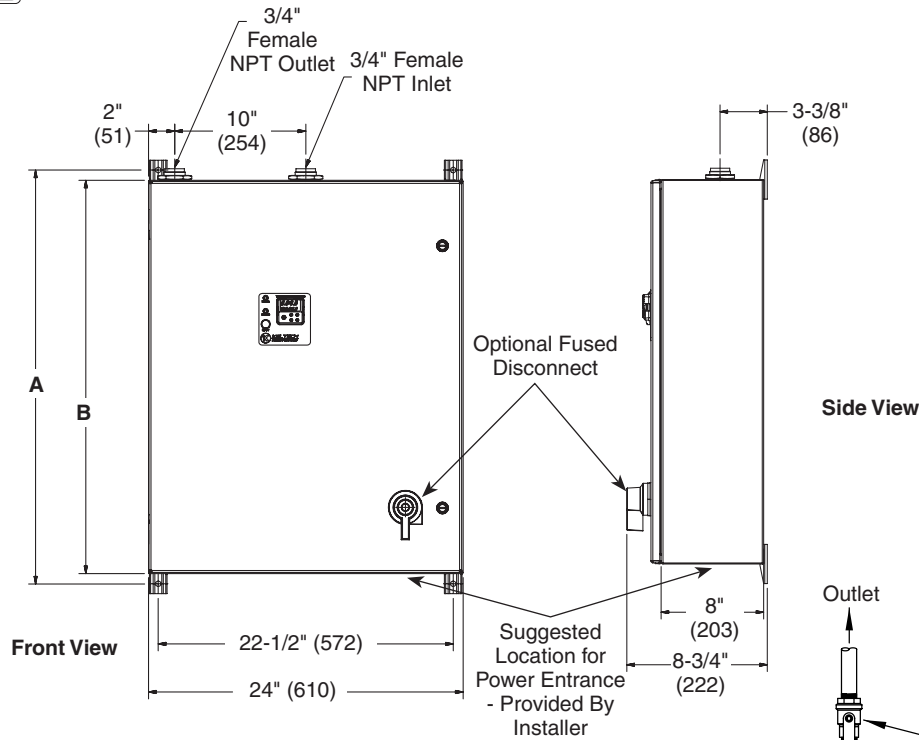
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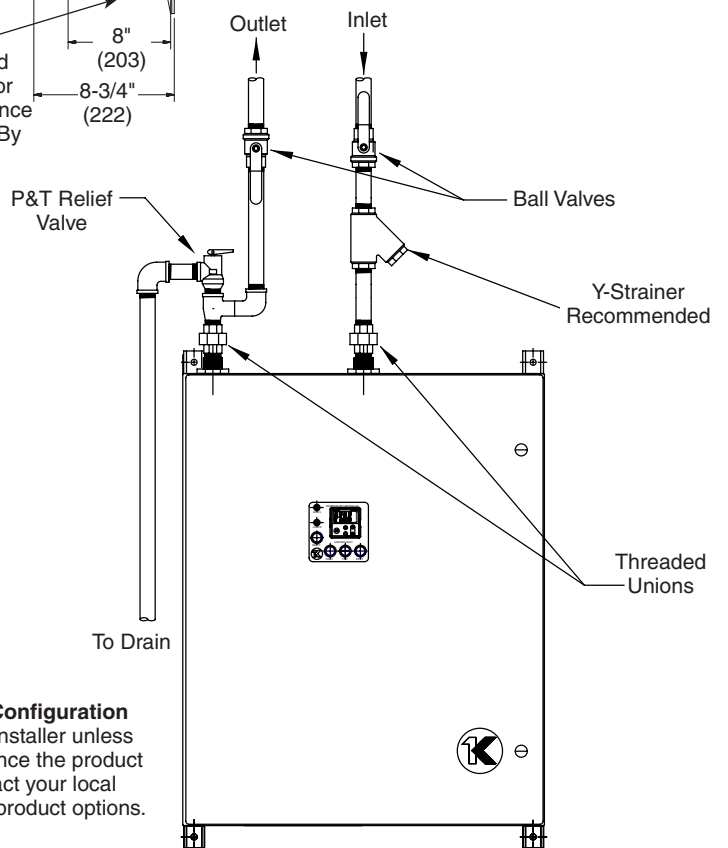
C2N Series - Dimensions

(mm)

Select product options shown. Other options available.



	Dim "A"	Dim "B"
36kW	31-1/2" (800)	30" (762)
50kW	37-1/2" (953)	36" (914)



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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kW Calculator

C2N Series (kW): 36, 50

		Temperature Δ °F (°C)																											
Flow	GPM L-MIN	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°	110°	115°	120°	125°	130°	135°	140°	
		(6°)	(8°)	(11°)	(14°)	(17°)	(19°)	(22°)	(25°)	(28°)	(31°)	(33°)	(36°)	(39°)	(42°)	(44°)	(47°)	(50°)	(53°)	(56°)	(58°)	(61°)	(64°)	(67°)	(69°)	(72°)	(75°)	(78°)	
0.75	2.8	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	
1.0	3.8	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	
1.5	5.7	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	
2	7.6	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	50	50	50	50
3	11.3	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	50	50	50	50	50	50	-	-	-	-	-	
4	15.1	36	36	36	36	36	36	36	36	36	36	36	36	50	50	50	50	50	-	-	-	-	-	-	-	-	-	-	
5	18.9	36	36	36	36	36	36	36	36	36	50	50	50	50	50	-	-	-	-	-	-	-	-	-	-	-	-	-	
6	22.7	36	36	36	36	36	36	36	50	50	50	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
7	26.5	36	36	36	36	36	36	50	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
8	30.2	36	36	36	36	36	50	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
9	34.0	36	36	36	36	50	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
10	37.8	36	36	36	50	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
15	56.8	36	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Sizing for the proper flow rate is important. If the temperature rise requirements exceed a single C2N model, consider using multiple C2N-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 = _____



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Model	
<input type="checkbox"/> C2N C2N-Series Light Industrial Heater	
Standard Selections (Must select one from each category)	
Kilowatts	
<input type="checkbox"/> 36 36 kilowatts	
<input type="checkbox"/> 50 50 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. Contact your local Keltech Representative for power ratio and effective kW.

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

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

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

Teflon is a registered trademark of E. I. du Pont de Nemours and Company
 *LK option not available with EXP2 option.

Model Number Configuration

C2N	/	D-	-	-	-	-
List applicable option codes alphabetically. Do not include Installation Accessories in configuration.						

Product Options (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"/> EXP2	Explosion Proof Class1/Division2
<input type="checkbox"/> NONE	None
<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"/> L5	Low flow .5 GPM Turn on Point
<input type="checkbox"/> NONE	None
<input type="checkbox"/> LK*	Leg Kit Converts Standard Wall-Mount to Floor-Mount
<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

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

Customer Signoff _____