



CNA-SKID Series - Preassembled Industrial Heater Skid Tankless Water Heating Solutions

- Pre-assembled skid system
- Back-to-Back heater models, CNA & CNAR
- High Flow Demand Industrial Applications
- 216 - 288 kW (737,000 - 983,000 BTUs)
- NEMA 4 enclosure standard
- ASME/NB Certified options available
- Internal fusing (included) adds safety and permits single power connection
- Emergency stop button & door cutoff switch

Standard Equipment

Tankless Water Heating Specifications

Keltech, Inc. Industrial Heater Skids are designed to accommodate most heavy industrial fluid heating applications where demand is 216kW - 288kW and flow rates from 3 to 120 GPM are required. Standard units: activation flow \geq 3 GPM. CNA-SKID Series are designed for environments requiring precise temperatures up to 160° - 190°F as an alternative to boilers. CNA-Series units are suited to applications where 480V, 50/60 Hz 3-Phase Delta is required. The heat exchanger features o-ring seals that outlast typical gasket construction. Common 2" brass NPT female inlet & outlet connections with 1-1/4" heater inlet and outlet connections. 2" Y-strainer included with inlet pipe assembly. NEMA 4X and explosion proof purge system options available. Heater operating pressure range: 30 - 150 psi.

Construction

Skid

The skid option includes skid & pre-piped assemblies with 2" shut-off ball valves, 2" inlet Y-strainer and two 1" outlet pressure & temperature relief valves mounted to CNA & CNAR heaters. Skid is #10 gauge electro galvanized steel frame, powder coat painted "safety" yellow.

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.

Electrical

The CNA-SKID Series requires one service feed per heater. 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 skid-mounted cabinet enclosures are NEMA 4 rated and made from 14 gauge mild steel and powder coated with ANSI 61 gray, corrosion resistant paint. The optional NEMA 4X enclosures are corrosion resistant for harsher environments and made from 16 gauge 304 stainless steel. The NEMA 4X enclosures can also be specified with 316 stainless steel. Additional service access panel located on top of cabinet enclosures.



CNA-SKID Series

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.

Heater 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 EXP2CFPM 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.

Certified to NSF/ANSI 372



ASME Certification available. Keltech units 58kW (200,000 btu) and higher are the only electric tankless water heaters National Board certified with the HLW stamp (Requires HLW Option).



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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.

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.

Freeze Protection

The standard ambient temperature is 33°F (0.6°C). For environments lower than 33°F, Keltech offers two levels of freeze protection. ENHT offers protection to -20°F (-28°C). The ENHT30 offers protection to -30°F (-34°C). Each level of protection utilizes the normal heater supply voltage. No additional dedicated circuit to the unit is required during field installation. Freeze protection (ENHT option) includes an internally insulated NEMA 4/4X enclosure and thermostatically controlled forced air heater to maintain internal temperatures above freezing.

ENHT options also include a connection point for DCS monitoring. In the event of a power interruption or ENHT system failure when internal enclosure temperatures reach 40°F (4.4°C) or lower, the unit will notify a facilities control/monitoring system that the unit is unable to maintain freeze protection. Regardless of state of power to the unit, this warning notifies maintenance personnel and provides an opportunity to correct the condition before any damage occurs to the unit.

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
108	480	132	1
108	600	104	2
126	480	152	1/0
126	600	121	1
144	480	174	2/0
144	600	139	1/0

*Applies to EACH CNA and CNAR heater.

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.

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.

Continuous Flow Explosion Proof Purge System

Keltech's EXP2CFPM 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 EXP2CFPM to comply with NFPA 496.

ASME Heat Exchanger

Keltech offers any product above 200,000 btu equivalent (58kw+) the option to be fitted with internal plumbing certified to Section IV of the ASME Boiler and Pressure Vessel Code - an industry exclusive certification. HLW certification represents not only an approved design and method of construction, but an intensively audited construction and documentation process that concludes with a pressure test witnessed by an ASME official. Upon completion of this process, each heat exchanger is issued a unique serial number for registration in the National Board. This information is supplied with the unit via Form "HLW-6 Manufacturer Data Report" for verification and reference by local inspection officials. The HLW options also include additional features such as dry-fire protection, an auto bleed valve, stainless steel bulkheads and boiler drain valves, adding an extra level of quality and durability to Keltech heaters.

Other Product Options

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

CNA-SKID Series Pressure Drop Advantage*

GPM	1.5	2	3	4	5	6	8	10	15	20	25	30	35	40	45	50
72-144 kW PSI	0.0	0.0	0.1	0.2	0.3	0.4	0.8	1.2	2.6	4.7	7.3	10.4	14.2	18.5	23.3	28.7
L-MIN	5.7	7.6	11.3	15.1	18.9	22.7	30.2	37.8	56.7	75.6	94.5	113.4	132.5	151.2	170.1	189
72-144 kW BAR	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.5	0.7	1.0	1.3	1.6	2.0

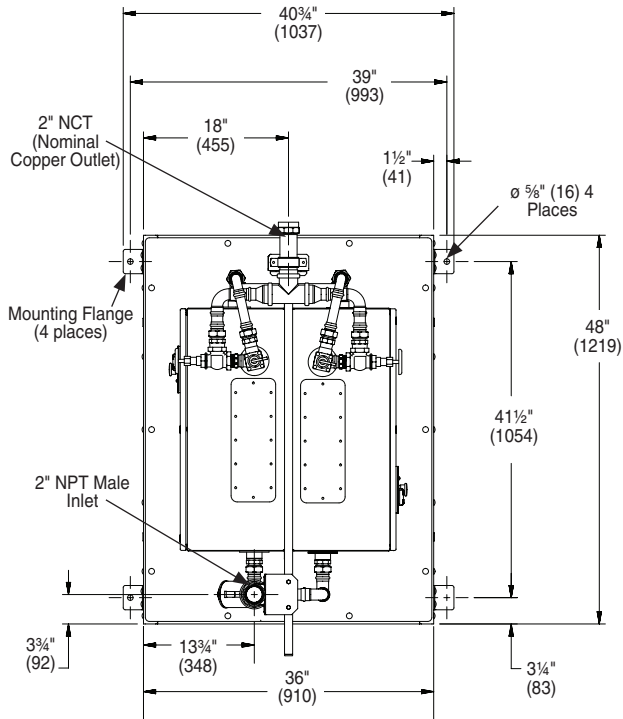


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CNA-SKID Series - Dimensions

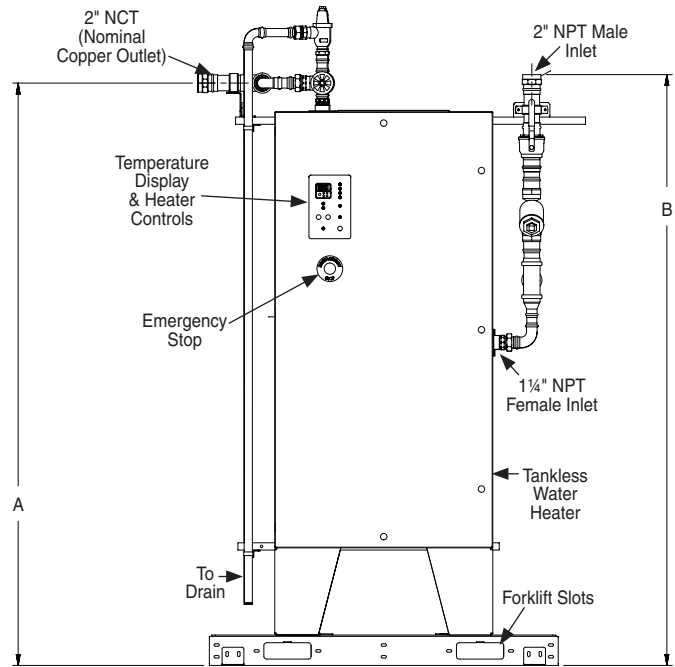
Select product options shown. Other options available.

Top View

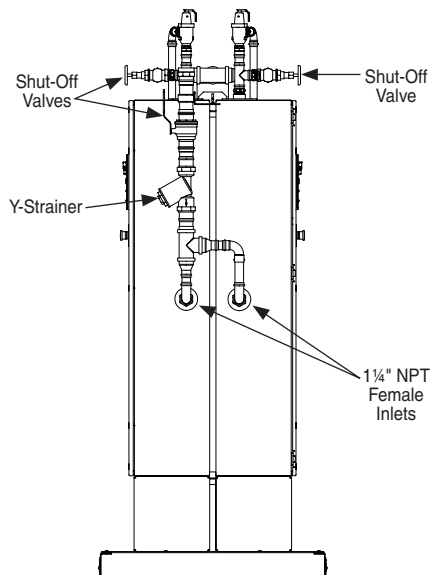


Front View

(mm)



Right Side View



	Dim. "A"	Dim. "B"
108kW	68 1/4" (1734)	69 1/4" (1759)
126kW	80 1/4" (2035)	81 1/4" (2065)
144kW	80 1/4" (2035)	81 1/4" (2065)



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kW Calculator

CNA-SKID Series (kW): 216, 252, 288

		Temperature Δ°F (°C)																											
		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°)	
Flow	GPM L-MIN	5	18.9	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	
	10	37.9	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216
	15	56.8	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216
	20	75.7	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	252	252	288	288	288	288	-	-
	25	95.6	216	216	216	216	216	216	216	216	216	216	216	252	252	288	288	-	-	-	-	-	-	-	-	-	-	-	-
	30	113.6	216	216	216	216	216	216	216	216	252	252	288	288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	35	132.5	216	216	216	216	216	216	216	252	288	288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	40	151.4	216	216	216	216	216	216	252	288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	45	170.3	216	216	216	216	216	252	288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	189.2	216	216	216	216	252	288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	55	208.2	216	216	216	216	252	288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	60	226.8	216	216	216	252	288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	65	246	216	216	216	252	288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	70	264.6	216	216	216/252	288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	75	283.9	216	216	252	288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	80	302.4	216	216	252/288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
85	321.8	216	216	252/288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
90	340.2	216	216/252	288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
95	359.6	216	252	288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
100	378	216	252/288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
105	397.5	216	252/288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
110	416.4	216	252/288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
115	435.3	216/252	288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
120	454.2	216/252	288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

ASME Certification Available

Sizing for the proper flow rate is important. The CNA-SKID Series features two heaters (CNA and CNAR) mounted back-to-back on a skid. For simplicity, the chart above combines the kW of the two individual heaters into one number. 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 ΔT = _____
- 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 CNA-SKID

- CNA** CNA-Series - Industrial Water Heater
- CNAR** CNAR-Series - Industrial Water Heater (reverse configuration as CNA)
- SKID1** Skid & prepiped assemblies with 2" inlet Y-strainer and 2" outlet pressure & temperature relief valve mounted to CNA & CNAR heaters

Standard Selections (Must select one from each category)

Kilowatts

- 108** 108 kilowatts **144** 144 kilowatts
- 126** 126 kilowatts

AC Power Supply

- 3** Three Phase

Voltage

- 480** 480 Volts **380** 380 Volts (down rated from 480V)
- 600** 600 Volts **400** 400 Volts (down rated from 480V)
- 415** 415 Volts (down rated from 480V)

System Controller

- D** Digital Control

Cabinet Enclosure

- N4** NEMA-4 Enclosure (standard)
- N4X** NEMA-4X Enclosure - Stainless Steel
- 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.

Keltech Tankless Water Heater skid systems are non-cancelable, non-refundable and non-returnable.

Verify ASME Code applicability for all installations 58kw (200,000 btu) and higher.

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.

- Process Heating**
- Potable**
- Boosting**
- Re-Circulating**

Asset Tag

- 00** None _____ **03** 3 Asset Tags _____
- 01** 1 Asset Tag _____ **04** 4 Asset Tag _____
- 02** 2 Asset Tags _____ **05** 5 Asset Tags _____

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
- ENHT** Freeze Protection to -20°F
- ENHT30** Freeze Protection to -30°F
- NONE** None
- EXP2CFPM** Continuous Flow Explosion Proof Class1/Division2
- NONE** None
- FDS** Internal Fused Disconnect
- NONE** None
- GF** Ground Fault Package
- NONE** None
- HLW** ASME Heat Exchanger with Level Sensor (63kW and Higher Only)
- NONE** None
- T200** High Temperature Package (Select for Temp Greater than 190°F)
- 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
- TE** PFA Teflon® Coated Heat Exchanger with Bright Annealed Stainless Steel Elements, FDA Approved (Use for deionized water or mild corrosive fluid applications)
- 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
- PRS**** ASME pressure relief valve, stainless steel
- NONE** None
- YSS**** Y-Strainer, stainless steel
- NONE** None

Teflon is a registered trademark of E.I. du Pont de Nemours and Company.
 * Not available with HLW
 ** Inlet y-strainer and bronze pressure and temperature relief valve are included as standard.

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

Model Number CNA-SKID

Configuration

CNA-CNAR-SKID1 3 / D - - - - -

kW Volts

INSTL_ACCESSORY - - - - -

Customer Signoff _____