

BOXER™ - 3 PHASE
INSTALLATION AND OPERATION
INSTRUCTIONS
(208-600V 3Φ MODELS)



TABLE OF CONTENTS

Technical Information 2

Dimensional Data 3

Installation 4-6

Specifications 7-8

Auxiliary Contact Option (A) 9

GFCI Option (G) 10-11

NEMA 4 & 4X 12

Troubleshooting 13

Warranty Information 14

**REQUIRED ITEMS FOR INSTALLATION
NOT SUPPLIED**

- ✂ Electrical Supply Conduit
- ✂ Electrical Supply Wire
- ✂ 1-1/4" Ball Valves
- ✂ 1-1/4" Y-Strainer
- ✂ Carpenters Level
- ✂ Wall Fasteners

Acorn Engineering Company™ assumes no responsibility for use of void or superseded data.
© Copyright Acorn Engineering, City of Industry, CA Member of Morris Group International.
Please visit www.chronomite.com for most current specifications.

3100-011-001
2026-5 03/2022 RVG

COMPLIES WITH
STANDARDS



CALGreen



Federal Public Law 111-380 (No Lead)

Intertek
5001365

CHRONOMITE
Instantaneous
Water Heaters

17451 Hurley St.
City of Industry, CA
91744 U.S.A.
Phone 800-447-4962
626-937-4270

Member of
MORRIS GROUP
INTERNATIONAL™

www.chronomite.com

BOXER™ - 3 PHASE SPECIFICATIONS



Before installation of heater, review electrical requirements needed for model of heater selected.

x = (L) - Low Activation
(S) - Standard Activation
(H) - High Activation

TABLE 1 - ELECTRICAL SPECIFICATIONS

MODEL	WATTAGE	3Φ VOLTAGE	AMPS PER PHASE	3 POLE CIRCUIT BREAKER	
				INTERMITTENT DUTY	CONTINUOUS DUTY
ERB-360x/208_3P	75,000	208	208	225 amp	300 amp
ERB-360x/240_3P	86,000	240	208	225 amp	300 amp
ERB-180x/380_3P	77,000	380	104	110 amp	150 amp
ERB-270x/380_3P	115,000	380	156	175 amp	200 amp
ERB-360x/380_3P	154,000	380	208	225 amp	300 amp
ERB-180x/415_3P	74,700	415	104	110 amp	150 amp
ERB-270x/415_3P	112,100	415	156	175 amp	200 amp
ERB-360x/415_3P	149,400	415	208	225 amp	300 amp
ERB-160x/480_3P	77,000	480	93	100 amp	125 amp
ERB-240x/480_3P	115,000	480	138	150 amp	175 amp
ERB-320x/480_3P	154,000	480	185	200 amp	250 amp
ERB-128x/600_3P	77,000	600	74	75 amp	100 amp
ERB-192x/600_3P	115,000	600	111	125 amp	150 amp
ERB-256x/600_3P	154,000	600	148	150 amp	200 amp

TABLE 2 - FLOW SWITCH ACTIVATION

Flow Switch Activation	9 Module Heaters
Low Activation (L)	2.60 GPM
Standard Activation (S)	6.00 GPM
High Activation (H)	9.00 GPM

NOTES:

1. BEFORE INSTALLATION, COMPARE ELECTRICAL REQUIREMENTS NEEDED FOR THE MODEL OF THE HEATER SELECTED.
2. THE MANUFACTURER OF THIS WATER HEATER WILL NOT BE LIABLE FOR ANY DAMAGE CAUSED BY THE FAILURE TO FOLLOW THESE INSTALLATION AND OPERATION INSTRUCTIONS.

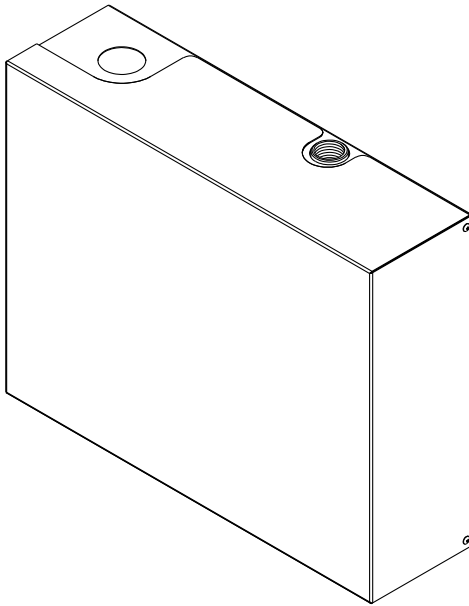
CHRONOMITE - BOXER™ - 3 PHASE SPECIFICATIONS:

DIMENSIONS:	21" (H) [533 mm] X 26-3/4" [679 mm] X 7-1/2" [191 mm]
WEIGHT:	76 LBS. [34.5 Kg]
MATERIALS:	RUGGED STAINLESS STEEL STEEL HOUSING, CELCON PLASTIC ELEMENT ASSEMBLY WITH NICHROME COILS
COLOR:	STAINLESS STEEL
PIPE FITTINGS:	FEMALE 1-1/4" NPT
OPERATING PRESSURE RATING:	25 PSI [172 kPa] MINIMUM, 80 PSI [551.6 kPa] MAXIMUM
MAXIMUM PRESSURE RATING:	150 PSI [1034.2 kPa]
NO PRESSURE RELIEF VALVE NEEDED UNLESS REQUIRED BY LOCAL CODES.	
MAXIMUM WATER TEMPERATURE:	160°F [71°C]
MAXIMUM AMBIENT OPERATING TEMPERATURE:	140°F [60°C]
LISTINGS:	UL, IAPMO, UPC, ADA, ETL

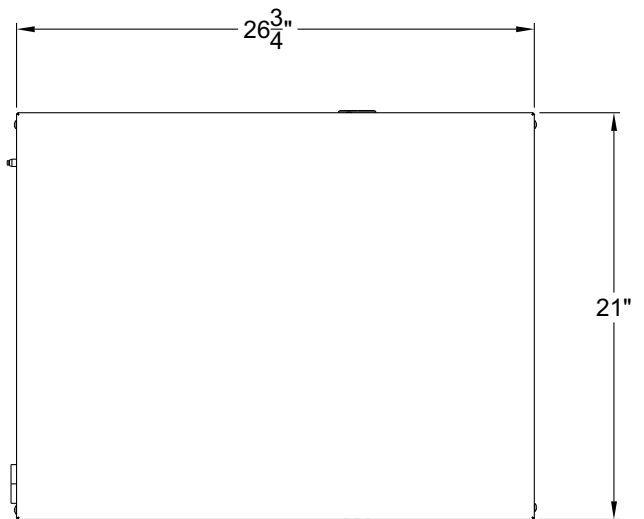
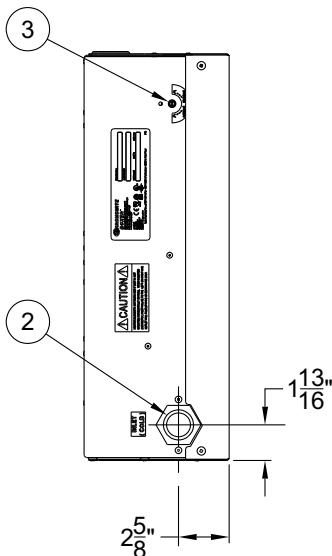
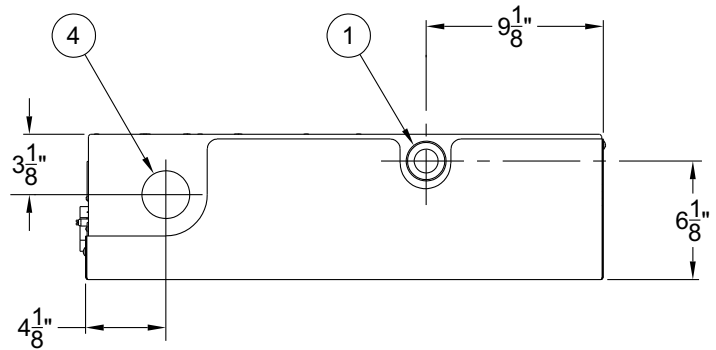
HOW THE BOXER INSTANT-TEMP WORKS

The engineered plastic case(s) houses a series of ingeniously designed coils that instantly heat water as it flows through the vessel. A unique power switch automatically applies electrical current to the coils when hot water is requested. The electrical current is not applied when the heater is below the activation point or not in use.

BOXER™ - 3 PHASE WATER HEATER DIMENSIONAL DATA



- ① 1-1/4" NPT Female Outlet Connection
- ② 1-1/4" NPT Female Inlet Connection
- ③ Temperature Adjustment Knob (L & S Activations only)
- ④ Punch for 2" Conduit



BOXER™ - 3 PHASE WATER HEATER INSTALLATION

PRIOR TO INSTALLATION:

1. Turn off Circuit Breaker to avoid dangerous electrical shocks.
2. Turn off water supply.

HEATER INSTALLATION:

1. Before installation, compare electrical requirements needed for the model of heater selected in Table 1.
2. Remove heater cover. Mount unit horizontally flush against the wall (See Fig. 1). Inlet Water connections will be either on right hand side or left hand side only. If water connections are at top or bottom, heater is not in correct position. Mount with four screws through the mounting holes located on the base plate housing using molly anchors or fasteners. **CAUTION:** Heating elements may burn out if unit is not mounted with heater modules horizontally.
3. Insure placement of heater allows 5" clearance for screwdriver access to remaining 3 sides of heater to allow cover removal, and future servicing if needed. (See Fig. 1).
4. Attach electrical conduit and fittings to the 2" electrical access hole on either top or bottom of base plate. Access hole can be enlarged to next trade size if needed. **Do not attach wiring yet.**
5. Connect plumbing. Use 1-1/4 inch tapered national pipe thread at cold-water inlet and hot water outlet (See Fig. 1). Use unions, Y-Strainer and valve(s) for ease of installation and possible servicing. Use Teflon tape or pipe sealing compound. **Do not apply heat to these fittings, as damage to the heater modules will occur and void warranty.** Rough out plumbing with heater in place, then remove heater during soldering of connections.
6. Run water through the unit to expel all air bubbles. Cycle downstream faucet 10x to assist removing air bubbles. This will also pressurize unit. Check for leaks at all fitting joints and also inside heater.
7. If no leaks, proceed to Electrical Installation Section and Figure 2.

BOXER™ - 3 PHASE WATER HEATER INSTALLATION

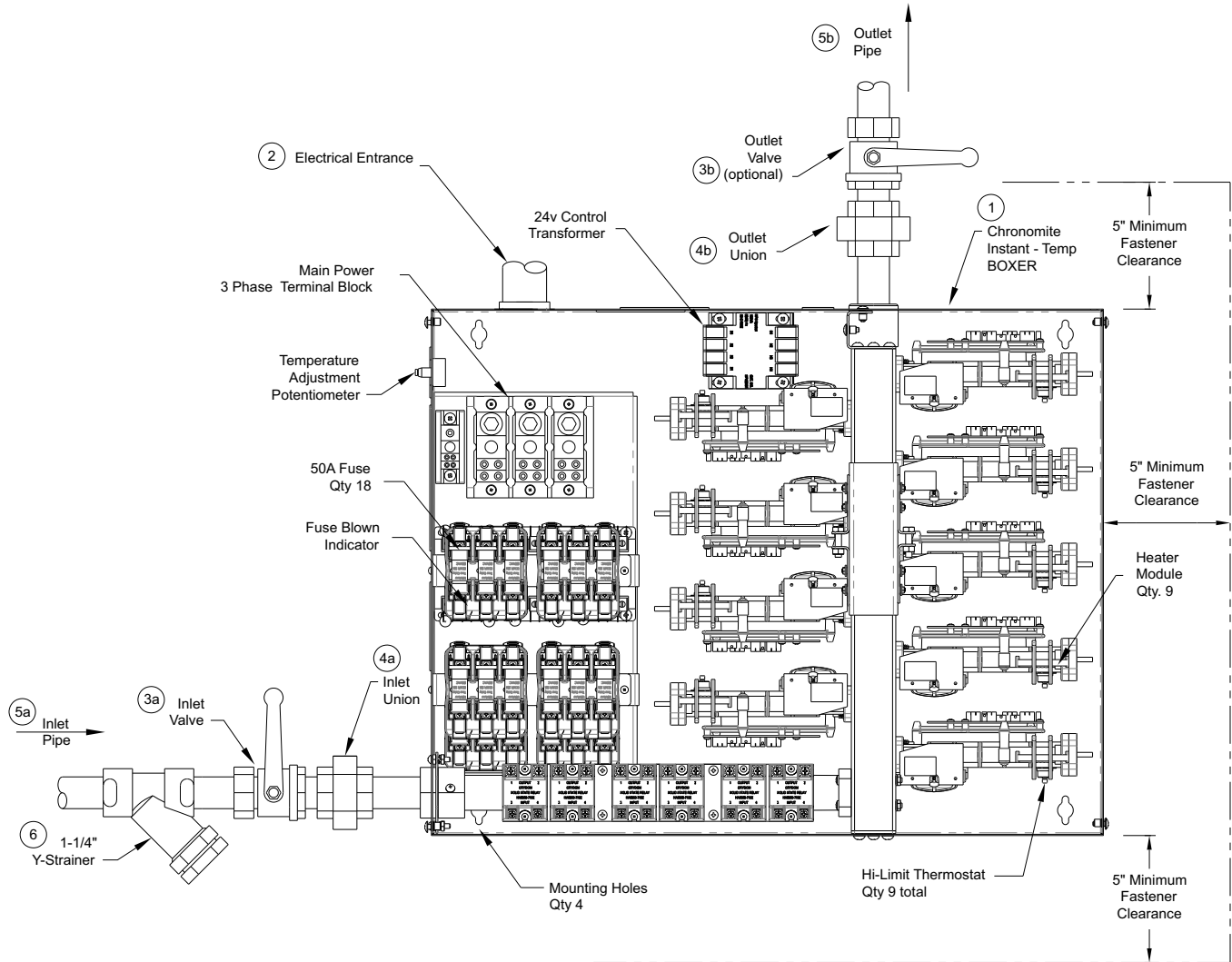


FIGURE 1 - HEATER INSTALLATION

Items Needed for Installation

Item	Part No.	Title	Qty	Description
1	ERB-	Chronomite Instant-Temp BOXER	1	See Figure 1
2		Electrical Conduit	Length as required	Enter via Top or Bottom
3a/b		Inlet/Outlet Valve - 1-1/4" NPT	2	Outlet Valve optional
4a/b		Inlet/Outlet Union - 1-1/4" NPT	2	
5a/b		Copper Inlet/Outlet Pipe - 1-1/4"	Length as required	
6		Y-Strainer - 20 Mesh	1	

Items 1 and 6 are supplied by installer

BOXER™ - 3 PHASE WATER HEATER INSTALLATION



The manufacturer of this water heater will not be liable for any damages due to the failure to follow these installation and operation instructions.

ELECTRICAL INSTALLATION:

1. Connect power supply wires appropriately sized and protected by a three pole circuit breaker to the input terminals on the heater (hard wired) as shown in the Figure 2 wiring diagrams below. Refer to Table 1 above on Page 2 for the voltage, amp and phase ratings of the supply power. Use 3 wires plus ground for 3 phase heaters.
2. Ensure each wire L1, L2, and L3 are connected to the respective contactor terminals.
3. Ensure water inlet/outlet valves are both fully open.
4. Turn on circuit breaker. Turn on water flow to exceed activation point listed in Table 2. Carefully ensure the red LED is illuminated at each circuit board modules. The unit is almost ready for use. Shut off circuit breaker.
5. Check for leaks at all fitting joints and also inside heater.
6. Install cover. Install the (4) cover mounting screws. Turn on circuit breaker. Unit is now ready for use.
7. Local plumbing and electrical codes must be followed in this installation of water heater and the accessories. Failure to comply with code requirements voids warranty.
8. Temperature adjustment potentiometer is standard equipment on (L) Low Activation and (S) Standard Activation models.

NOTES:

1. Failure to comply with code requirements voids the warranty.
2. Failure to install faucet flow control as shown on (Figure 3 page 6) may cause unsatisfactory operation of the heater.
3. Do not use SR series as a booster heater. Use CM or M series.

3 Module Units / 74-208 amps/phase
A=L1 B=L2 C=L3

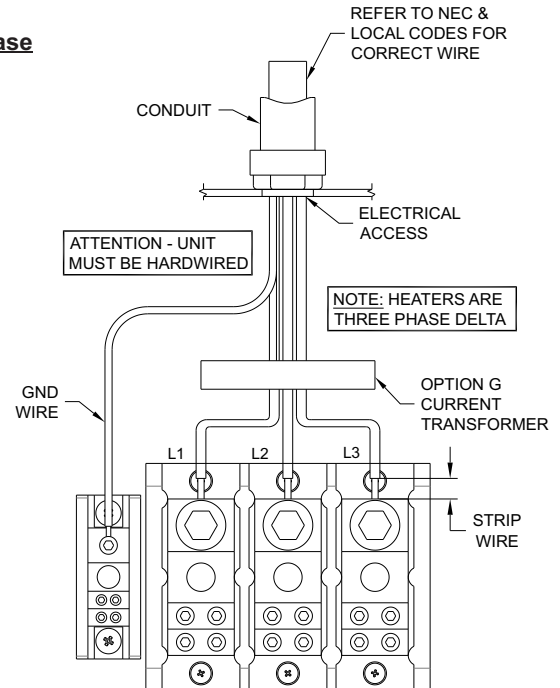


FIGURE 2 - WIRING CONNECTION



Air in the heater may cause the elements to burn out. If the water lines are drained, allowing air into the heater, be sure to follow the following start-up procedure:

START UP PROCEDURE:

1. Turn off electrical supply - open circuit breaker
2. Turn on water supply. Cycle hot side of faucet 10 times to assist in removing air bubbles.
3. Expel all air from lines and heater. Check for leaks at all fittings, joints and at water heater.
4. Turn on electrical power supply - close circuit breaker.

BOXER™ - 3 PHASE WATER HEATER INSTALLATION

OPERATION INSTRUCTIONS:

- Turn on the hot water faucet / drench shower / Fixture to activate the flow switches in heater. See Table 2 for activation chart depending on L, S, H model for the minimum flow requirements. If activation is not met, heater will still flow water thru it. No solenoids are built into the water path, and this design ensures cold water bypass if needed.
- Once minimum activation is achieved, heater will automatically engage 3 electrical contactors to distribute power to each module set. If flow rate is increased slowly at the activation point, it is normal to hear each contactor engage separately, as they are independent of each other.
 - Contactor 1 powers heater modules 1 thru 3
 - Contactor 2 powers heater modules 4 thru 6
 - Contactor 3 powers heater modules 7 thru 9
- Cold water can always be mixed when using a two handle faucet. Keep in mind that the heater activates on water flowing thru the heater only and does not include the cold side water flow for hot and cold fixtures, including mixing valves.
- The individual module microprocessor will supply the correct amount of power (amperage and voltage) to maintain the outlet temperature at the pre-selected temperature with varying flow rates within the activation range.
- Each heater module has a red LED light indicating power to that module only. If module is at 50% power, the LED will be at 50% illumination. Full bright (100%) illumination is achieved when flow rate and temperature rise require the heater to be at 100% power.
- Once you decrease the flow rate thru heater below the GPM activation point, the unit will deactivate. If flowrate is below activation point, heater will still flow water thru it. No solenoids are built into the water path, and this design ensures cold water bypass if needed.
- Periodically inspect the supply lines, connections and heater for any moisture, corrosion or other potential preventable problems. Periodically is defined at least every 3 months.
- Prior to shutting off water valves for servicing, winterization, etc, always disconnect power from unit 1st. Prior to restart, follow procedure to remove air entrapment from heater.
- Unit is intended to heat water only and does not provide a means of cooling if inlet temperature exceeds set point temperature of heater.

Temperature Adjustment Potentiometer - (L) and (S) Activation Models

The potentiometer allows the factory preset temperature of the heater to be changed in the field. The potentiometer will adjust water temperature between 70°F and 125°F provided the wattage of the heater selected is capable of producing the temperature increase at the requested flow rate. See Table 3 temperature chart for each model to determine the temperature range of the heater installed.

When using the potentiometer please use the following operation instructions:

1. To increase temperature:
 - a. Loosen nut
 - b. Using a screwdriver, turn screw in small increments clockwise (to the right)
 - c. Once temperature of the water is acquired, tighten the nut
2. To decrease water temperature:
 - a. Loosen nut
 - b. Using a screwdriver, turn screw in small increments counter clockwise (to the left)
 - c. Once temperature is acquired, tighten the nut

BOXER™ - 3 PHASE WATER HEATER SPECIFICATIONS

Temperature Adjustment - (H) Activation Models

The H model is factory preset for 84°F only and is designed for tepid water use. See Table 3 temperature chart for each model to determine the temperature range of the heater installed.

Temperature Adjustment - Factory Preset (F) Models

The F option is factory preset for desired temperature selected at time of manufacture. 84°F tepid water, 104°F, 110°F, 120°F, 140°F, or other. See Table 3 temperature chart for each model to determine the temperature range of the heater installed.

Note:

For servicing a Eye Face Drench Shower combination unit, the L activation with F=84°F should be selected.
For servicing a Drench Shower unit only, the H activation should be selected.

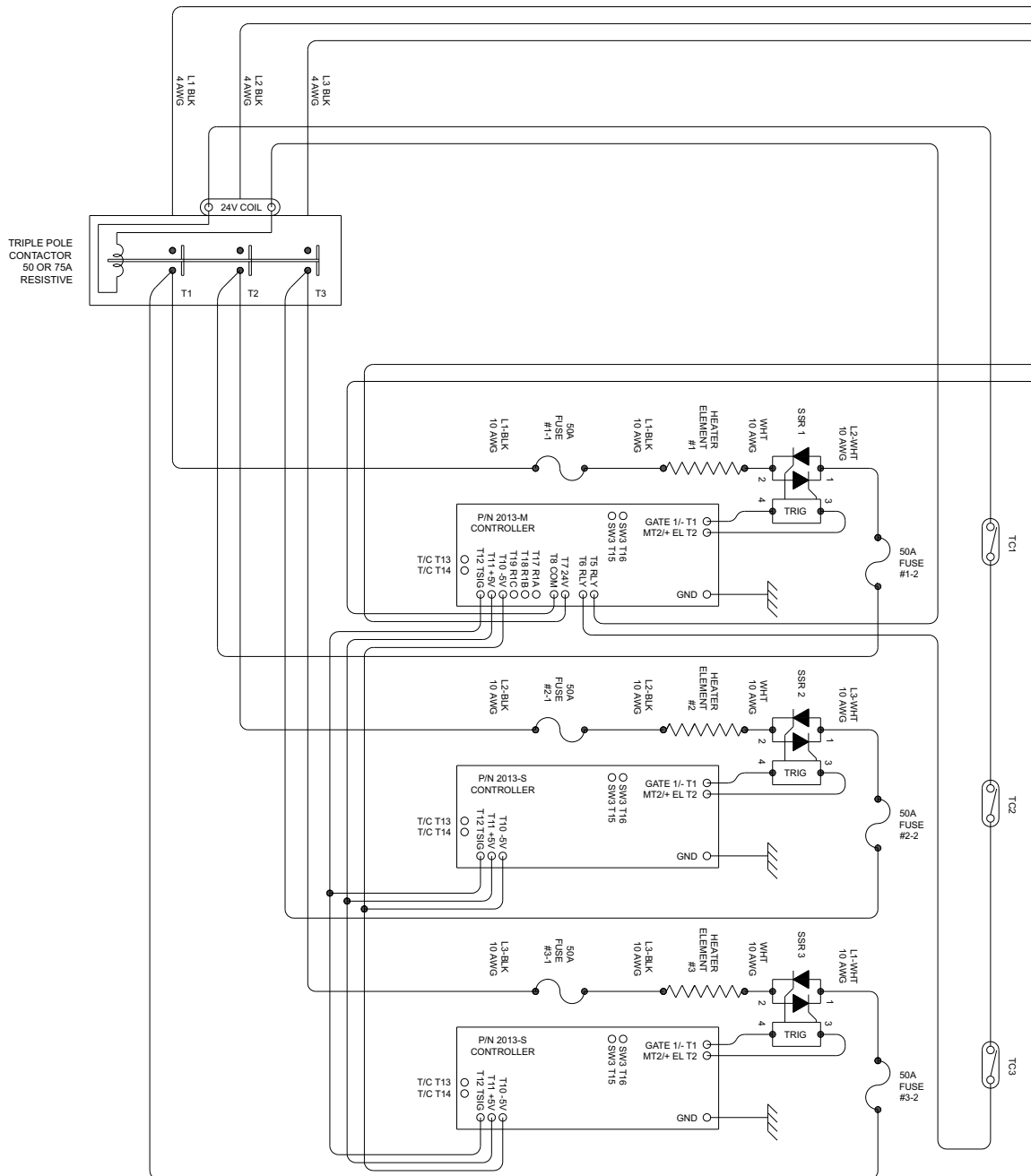
TABLE 3 - TEMPERATURE RISE CHART				
MODEL	WATTAGE	3Φ VOLTAGE	°F TEMPERATURE RISE @	
			20.0 GPM	23.0 GPM
ERB-360x208_3P	75,000	208	26	22
ERB-360x240_3P	86,000	240	30	26
ERB-180x380_3P	68,400	380	23	20
ERB-270x380_3P	102,600	380	35	30
ERB-360x380_3P	136,800	380	47	41
ERB-180x415_3P	74,700	415	25	22
ERB-270x415_3P	112,100	415	38	33
ERB-360x415_3P	149,400	415	51	44
ERB-160x480_3P	77,000	480	26	23
ERB-240x480_3P	115,000	480	39	34
ERB-320x480_3P	154,000	480	52	45
ERB-128x600_3P	77,000	600	26	23
ERB-192x600_3P	115,000	600	39	34
ERB-256x600_3P	154,000	600	52	45

x = (L) - Low Activation
(S) - Standard Activation
(H) - High Activation

NOTE: MICROPROCESSOR LIMITS TEMPERATURE INCREASE ACCORDING TO THE PRE-SELECTED OUTLET TEMPERATURE.

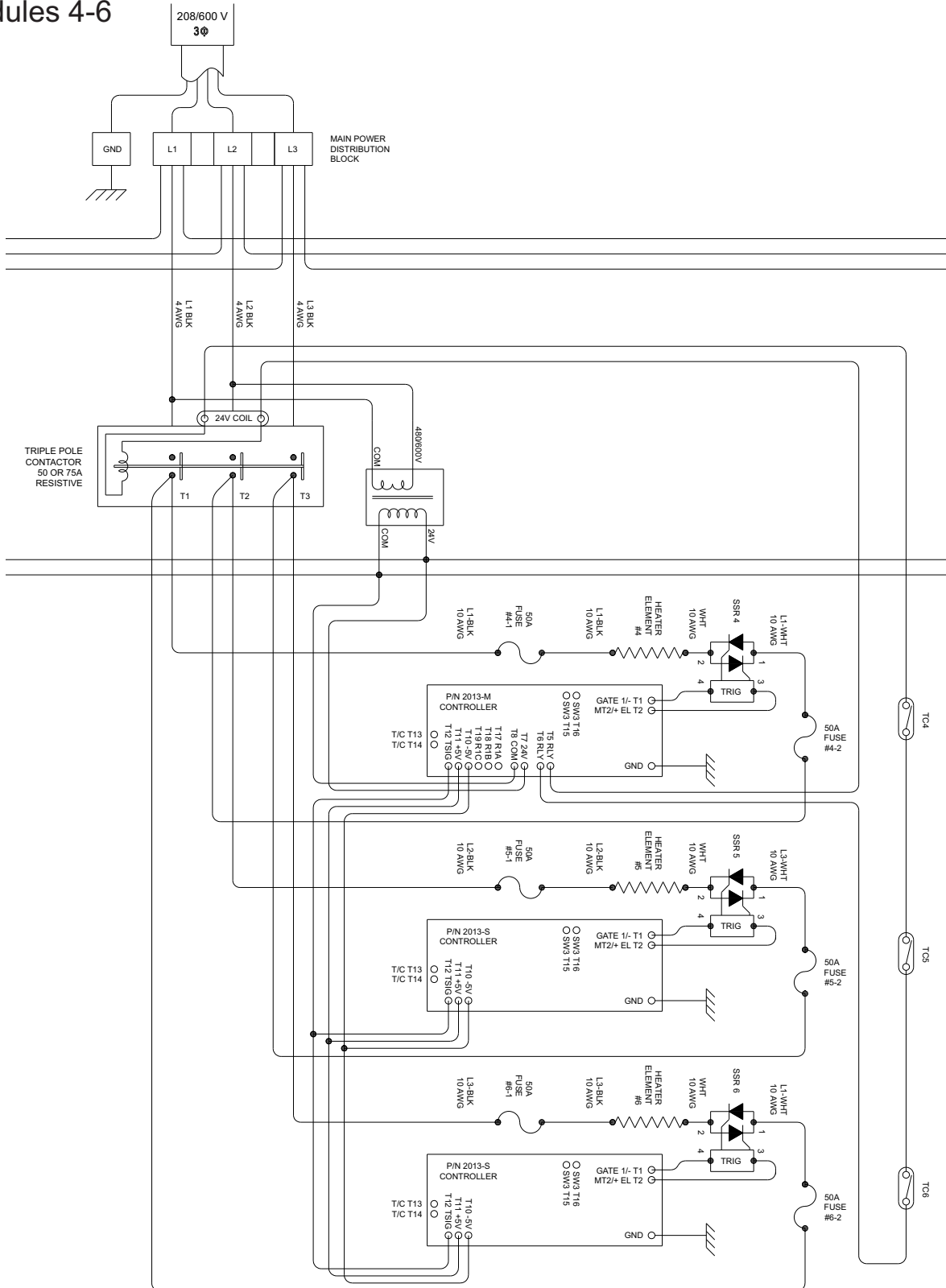
BOXER™ - 3 PHASE WATER HEATER SCHEMATIC

Modules 1-3



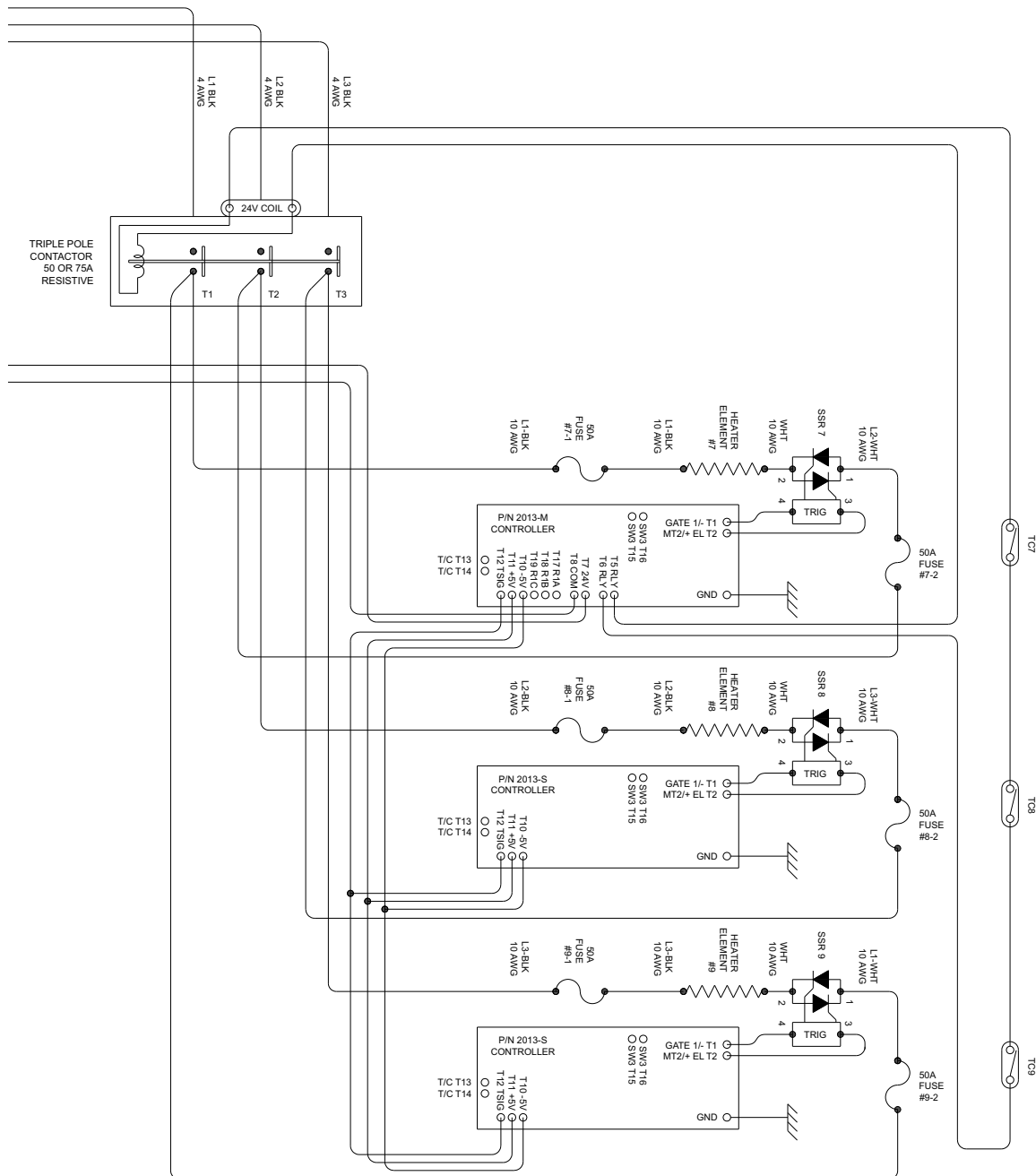
BOXER™ - 3 PHASE WATER HEATER SCHEMATIC

Modules 4-6



BOXER™ - 3 PHASE WATER HEATER SCHEMATIC

Modules 7-9

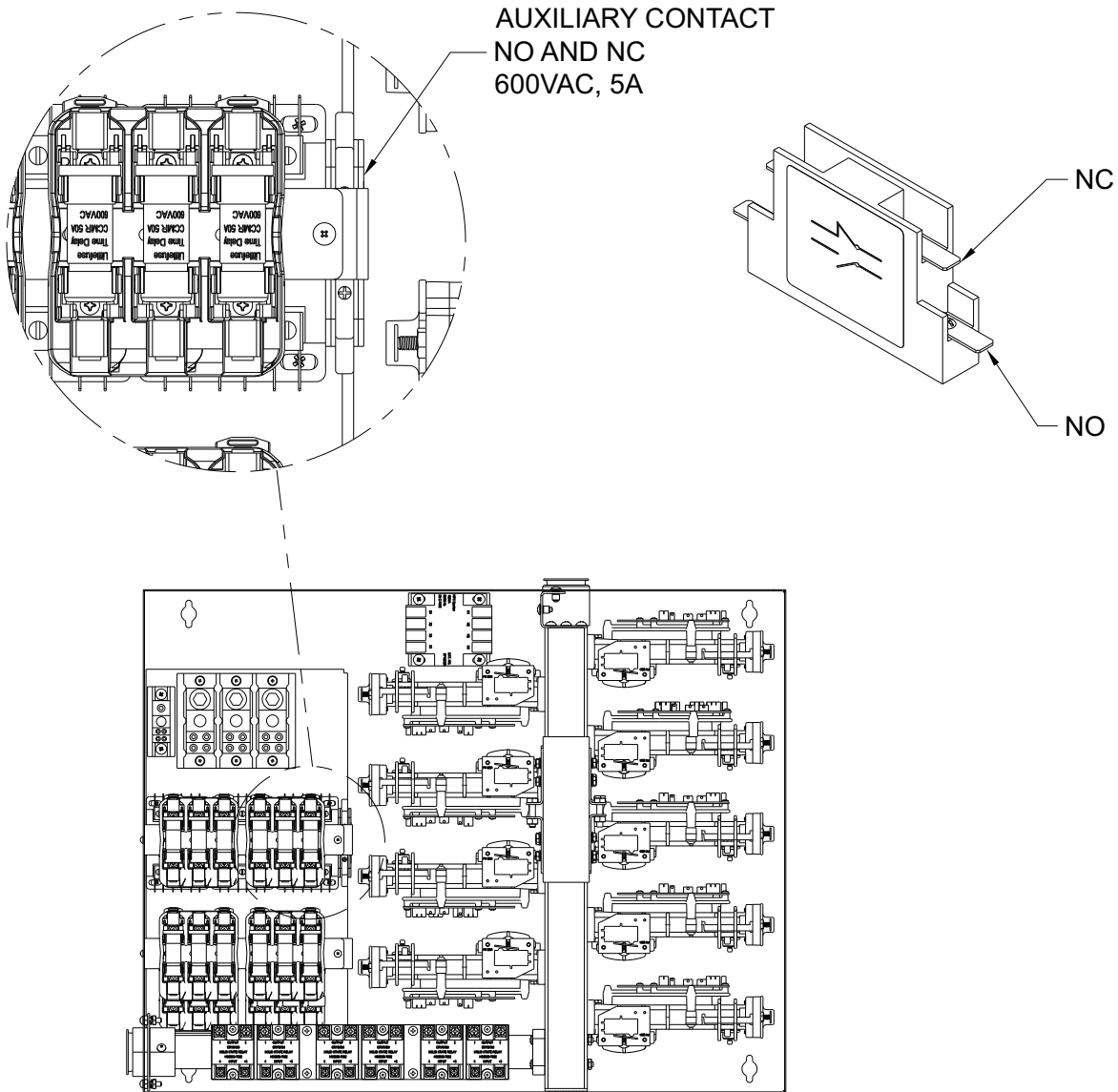


BOXER™ - AUXILIARY CONTACT OPTION (A)

1.0 Description

The Auxiliary Contact is designed for signal monitoring and is activated on (minimum water flowrate) heater contactor engagement. Connect the NO and/or NC ¼" spade QC to power supply and device (supplied by others).

2.0 Detail



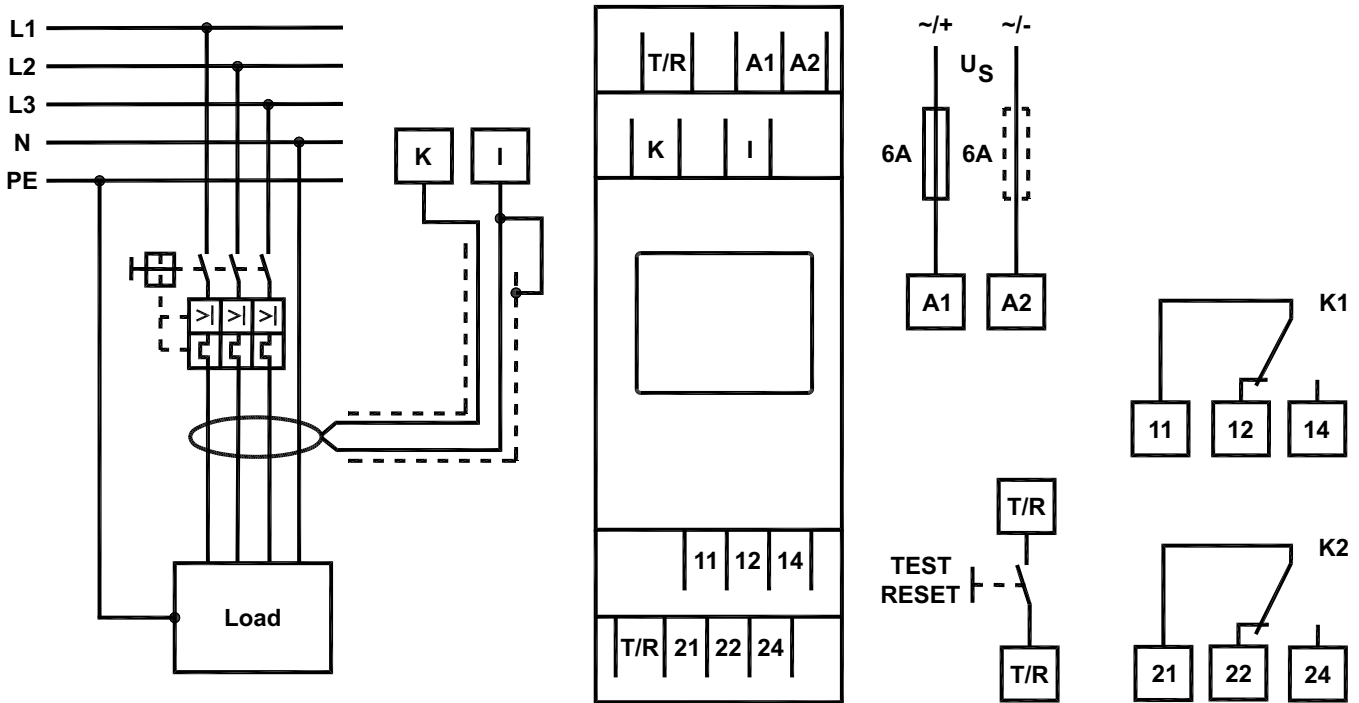
BOXER™ - GFCI OPTION (G)

1.0 Description

The AC and pulsed DC sensitive residual current monitor RCM420 (Type A) is designed for fault and residual current monitoring in earthed power supply systems (TN/TT systems) where K1 will disconnect power and K2 alarm is to be activated in the event of a fault.

K2 Alarm Relay is for external customer use.

2.0 Schematic

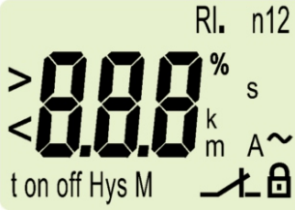



Terminal	Connections
A1, A2	Connection to supply voltage U_S
K, I	Connection of measuring current transformers
T / R	Connection to the combined test and reset button
11, 12, 14	Disconnect Relay K1
21, 22, 24	Alarm Relay K2

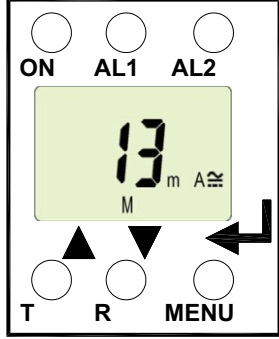
BOXER™ - GFCI OPTION (G) (Continued)

3.0 Display Elements

A detailed description of the meaning of the display elements is given in the table below.

Display Elements	Element	Function
	RL	Reload function with memory = off (L=I.)
	I2	Respond Value $I_{\Delta n1}$ as mA (Alarm 2)
	I1	Respond Value $I_{\Delta n1}$ % of $\Delta n2.d$ (Alarm 1, Pre-Warning)
	r1, 1 r2, 2	Disconnect relay K1 Alarm relay K2
	I Hys, %	Response Value hysteresis as %.
	ton 1, ton 2, t, toff	Response delay Ton1 (K1) Response delay Ton2 (K2) Starting delay t, Delay on release toff for K2
	M	fault memory active
		Relay operating mode K2

4.0 Function of the Operating Element

Device Font	Element	Function
	ON, green	lights continuously: Power On LED Flashes: System Fault or connection System fault or connection monitoring fault
	AL1, AL2	LED Disconnect 1 lights (yellow): Response value 1 reached ($I_{\Delta n1}$) LED Alarm 2 lights (yellow): Response value 2 reached ($I_{\Delta n2}$)
	13 mA M	13 mA flow through the measuring current transformer, fault memory active
	T, ▲	Test button (> 1.5 s): To indicate the available display elements, to start a self test; Up key (< 1.5 s): Menu items/values
	R, ▼	Reset button (> 1.5 s): Deleting the fault memory; Down key (< 1.5 s): Menu items/values
	MENU, ↩	MENU key (> 1.5 s): Starting the menu mode; Enter key (< 1.5 s): Confirm menu item, submenu item and value. Enter key (> 1.5 s): Back to the next higher menu level.

BOXER™ - NEMA 4 & 4X - 3 PHASE

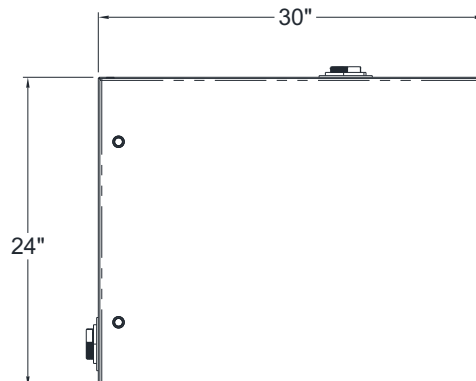
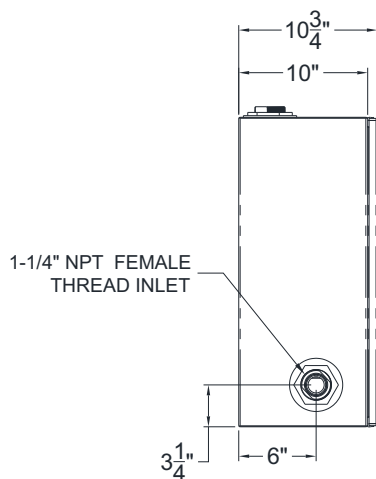
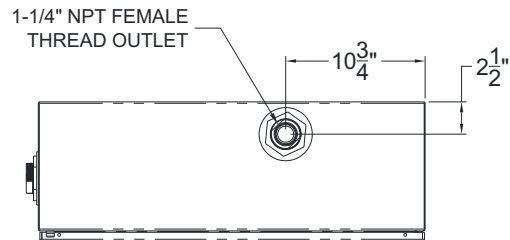
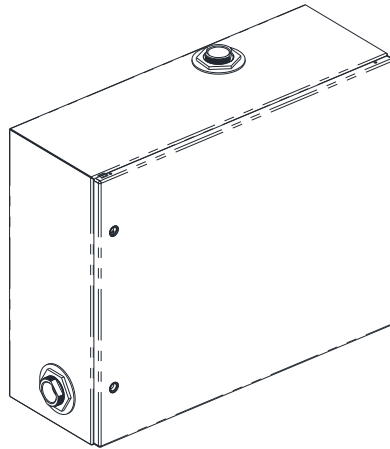
CABINET PRODUCT OPTIONS

- N4 Gray Finish
- N4X Stainless Steel Finish

CABINET PRODUCT FEATURES

- Unit is fabricated of 16 gage material with a continuous weld seam ground to a smooth finish
 - N4 - ANSI 61 Gray Painted Steel
 - N4X - 304 Stainless Steel
- Door is fabricated of 14 gage material and contains high-torque thread-less studs and fasteners with quarter-turn slotted latches
- Removable door with hidden hinges for clean, aesthetic appearance
- Unit is sealed with seamless foam-in place gasket
- Unit provides maximum body opening with minimum width body flanges
- Mounting holes in back of body for direct mounting
- Bonding provision on door; grounding stud on body
- Furnished hardware kit consists of panel-mounting nuts, panel grounding hardware and sealing washers for wall-mounting holes
- UL 508A listed; Type 3R, 4, 4X, 12; File No. E61997
- cUL Listed per CSA C22.2 No 94; Type 3R, 4, 4X, 12; File No. E61997
- NEMA/EEMAC Type 3R, 4, 4X, 12, 13
- CSA File No. 42186: Type 4, 4X, 12
- VDE IP66

TECHNICAL DIMENSIONS



CHRONOMITE TECHNICAL SUPPORT

TOLL FREE 800-447-4962 • LOCAL 626-937-4270 • FAX 626-937-4279

BOXER™ - 3 PHASE WATER HEATER TROUBLESHOOTING GUIDE

TROUBLESHOOTING GUIDE

Your Boxer Instant-Temp water heater has internal user serviceable parts. Contact the factory for guidance on repair or replacement. It can be also returned to the factory for repair or replacement. Please contact factory for return authorization. If after following the Installation Instructions, your Boxer Instant-Temp does not heat water in accordance with this literature, please check the following:

1. **Check Flow Rate** – Controlling flow rate is essential to insure proper temperature rise and heater activation. Check Model for activation type (L), (S), and (H) and refer to Table 2 for flow switch activation points. Relay will engage at the activation point. If relay clicks on, proceed to step 2.
 - a. At 3.00 GPM, it will take approximately 20 seconds to fill a 1 gallon container.
 - b. At 6.00 GPM, it will take approximately 10 seconds to fill a 1 gallon container.
2. **Check Power LED Indicator** – If individual circuit board(s) LED does not illuminate with maximum water flow, check circuit breaker, and 18 fuses inside heater.
3. **Low Power** – Make sure of your exact voltage by using a voltmeter. You should obtain your reading off any two box lug terminals on line side of contactor. This reading should be the voltage specified for your model on the silver rating label (208v thru 600v). Compare this reading against the voltage specified in Table 1.
4. **Low Voltage** – The percentage of reduction in voltage will result in a like reduction in temperature rise. Note: 480v models when operated at 440v will have approximately a 15% wattage decrease.
5. **Low Amperage Draw** – Check amperage draw at full water flow using an Amperage probe. Please compare your results with Table 1 to determine if the heater is operating correctly.
6. **High-Limit Thermostat** – Shut off power on breaker. Remove cover. Push in reset button on each module. Refer to Figure 1 for location(s).
7. **Heater Element(s)** – Shut off power on circuit breaker. Remove cover. Measure element resistance by using an ohmmeter or multi-meter. Obtain your reading off of termination rods with brass nuts on each heater module. This reading should be between 6 and 30 ohms for each element.
8. **Length of pipe** – Length of pipe run will affect time to temperature at the faucet. This HCH heater should be mounted strategically when possible to minimize pipe length to the faucet points.
9. **Check Shut-Off Valve(s)** – Check inlet and outlet valves and make sure valve is open 100% to allow full water pressure to heater. Models require a minimum of 25 PSI.
10. **Freezing** – Instant-Temp heaters cannot be installed in a location subject to freezing and must be protected. Winterize if stored in a location subject to freezing. Disconnect power and the inlet/outlet fittings. Blow air through the highest fitting to assist draining. Install RV antifreeze for protection. Failure to winterize will result in freezing and cracking. Re-commission heater start up procedure on page 5.
11. **Problems?** – Call our toll-free hot line (800) 447-4962 or (626) 937-4270.

WARNING

- This water heater is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the water heater by a person responsible for their safety.
- Children should be supervised to ensure that they do not play with the water heater.
- The water resistivity must not be less than 1100 OHM-CM.
- The water heater must be earth grounded.
- The water heater is not to be installed in locations where freezing can occur.



MAIL ADDRESS

P.O. BOX 3527
CITY OF INDUSTRY, CA 91744 U.S.A.

PHYSICAL ADDRESS

17451 HURLEY STREET
CITY OF INDUSTRY, CA 91744 U.S.A.

TOLL FREE 800-447-4962 • LOCAL 626-937-4270
FAX 626-937-4279 • WEB www.chronomite.com

WARRANTY INFORMATION

Your Boxer Instant-Temp water heater has been engineered and built to the highest quality standards and is backed by a full, factory warranty. Every HC Instant-Temp water heater is guaranteed to be free from defects in material and workmanship for a period of one (1) year from the date of purchase. The above warranty applies to original purchaser if unit is installed following Chronomite Laboratories, Inc.'s Installation Instructions provided. Chronomite Laboratories, Inc. will repair or exchange parts at the factory at no cost. This warranty is limited to repairing or replacing said products which prove to be defective upon factory inspection FOB City of Industry, CA

EXCLUSION OF COVERAGE FROM THIS LIMITED WARRANTY:

1. Chronomite is not liable under this limited warranty or otherwise if the water heater has not been installed or maintained in accordance with Chronomite's printed instructions or installed with improper installation materials. In addition, the water heater or any of its component parts have been subject to misuse, neglect, alteration or accident and the water heater has not been installed in accordance with the applicable local plumbing and or building codes and/or regulations.
2. Chronomite is not liable under this warranty if the water heater has not been continuously supplied with potable water or the water inlet temperature is above Chronomite's recommended maximum temperature. In addition, water heater experiences any water pressure or flow interruptions, normal operation inlet water pressure is outside of the published specification (UPC 2009), or exposed to any condition that causes the heater to turn on before the air is purged from the heater also known as "dry fire."
3. Chronomite is not liable if the water heater has been exposed to conditions resulting from floods, earthquakes, winds, fire, freezing, lightning or circumstances beyond Chronomite's control, or has been used for other than the intended purpose.

If violation occurs from the stated exclusions of coverage from this limited warranty or thereafter; owner, and not Chronomite or its agent/representative, is liable for and shall pay for all field charges, labor, water heater, damage or other expenses incurred in the repair or replacement of the water heater.