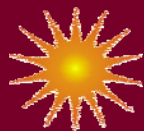


STEP 4 — CONTROL UNIT



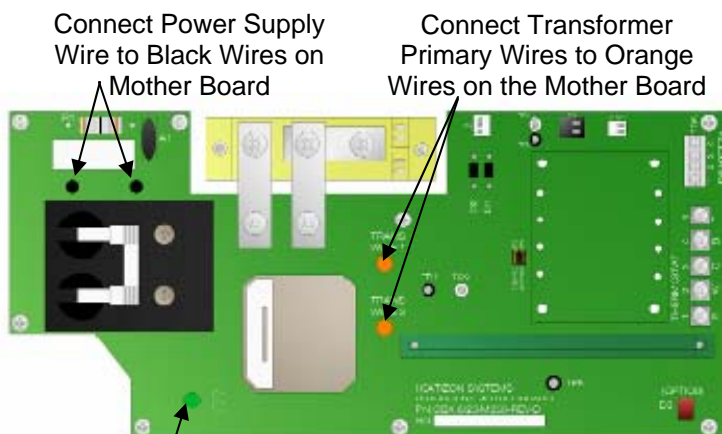
Installation of Control Unit- CBX6, CBX6T, CBX23, & CBX23T, CBX7

The Control Unit is the brains of the Heatizon System, and contains all of the system safeties and provides for a soft start to the Transformer. Make sure the primary power to the Control Unit is still off before proceeding with Control Unit Installation.

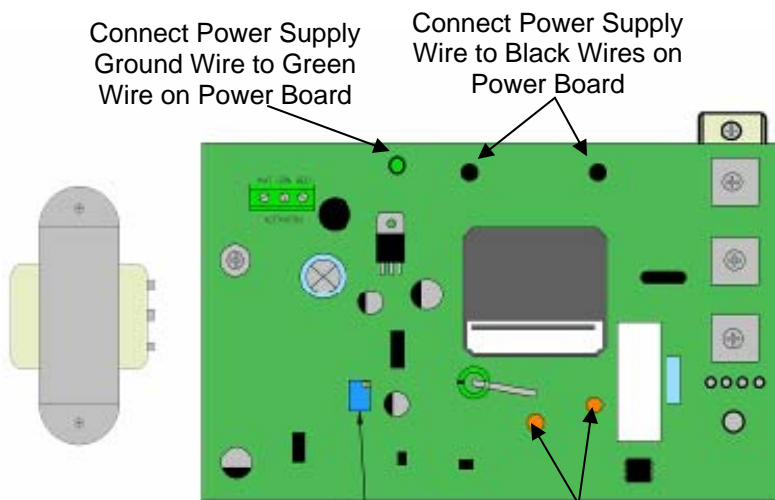
Locate Power Supply and Thermostat Wire. Run the power supply conductor through the round hole in the upper left corner of the Control Unit. Run the Thermostat Wire through the round hole in the lower center of the Control Unit.

Mount Control Unit. The Control Unit will mount on the left side of the Back Plate. Rotate the Control Unit so that the switch is at the top. Make certain that the power supply conductor and Thermostat Wire pass through access holes in the Control Unit and are not behind it. Carefully slide the Control Unit back over the bushing around the power supply line. Mount the Control Unit to the Back Plate using two (2) #6-32x3/8" screws provided in Hardware Kit.

Connect Power Supply to Control Unit. Once again, verify that the primary power at the circuit breaker is in the "Off" position. Cut the primary power wires that come from the service panel to the desired length. Strip 1/2 inch of insulation from the end of each wire. Connect the power supply wires to the black wires from the Control Unit, using the Primary Power Supply tables below. Connect the Primary Power Supply Ground Wire to the Green Wire on the CBX6 and CBX23 Mother Board, or the CBX7 Power board. Locate power supply wire locations on the CBX6 and CBX23 Mother Board or the CBX7 Power Board with diagrams, right. Use the provided #10 insulated Butt Splice Connectors or wire nuts to make these connections.



Connect Power Supply Ground Wire to Green Wire on Mother Board **CBX6 and CBX23 Series Mother Board**



CBX7 Power Board Connect Transformer Primary Wires to Orange Wires on the Power Board

Note: Refer to the diagram on the Transformer to connect primary wiring. Wiring configuration will change with Transformer size and supply voltage.

Primary Power Supply Voltage Connections

Two Hots with Ground	208VAC
Two Hots with Ground	240VAC
Hot & Neutral Hot with Ground	277VAC

Primary Power Supply Connections

White (Common) and Red	208VAC
White (Common) and Black	240VAC
White (Common) and Yellow	277VAC

CONTROL UNIT

Connect Transformer to Control Unit. Once the primary Transformer wires are installed through the Control Unit side plate, strip 1/2" of wire insulation off of the end of each wire, and connect each one of the two primary wires of the Transformer to one of the two orange wires in the Control Unit using the provided #10 insulated Butt Splice connectors or wire nuts. It is not necessary to observe polarity when making this connection. Use the label information on the transformer to select the proper wiring for the supply voltage used. Cap off all unused wires individually with a provided wire nut.

Connect Thermostat Wire. Cut the Thermostat Wire to desired length. Strip about 2" of outer jacket from end of cable. **USE CAUTION WHEN STRIPPING OUTER JACKET. DO NOT CUT OR NICK INDIVIDUAL WIRES.** Strip 3/4 inch of insulation from each of the Red, White, and Green wires in the cable and connect them to the terminals labeled R, W, and G located in the lower left-hand section of the CBX6 or CBX23 Control Unit Mother Board, or labeled RED, WHT, GRN on the J2 Activation Device Connect on the CBX7 Power Board. Place the wire under the left hand side of the terminal screw, and tighten in the clockwise direction.

If you have a CBX6T or CBX23T and use an Activation Device that requires 24VAC power, strip 3/4" from the Blue and Yellow wires, and connect them to the terminals labeled B and Y. Place wire under screw in a clockwise direction and tighten.

WARNING: Anytime the Blue and Yellow wires are connected to the B and Y terminals, and the Control Unit is energized, the other ends of the Blue and Yellow wires must be insulated (isolated) from one another and all other conductive material in order to avoid damage to the CBX6/CBX23 Control Unit Mother Board.

Connect Thermistor. (CBX6 and CBX23 Series Control Units Only—CBX7 Control Units do not have this feature.) The Overtemp Sensor, also known as a thermistor, senses the Transformer operating temperature and will turn off the system if the temperature exceeds the Transformer's rating. Connect the end of the thermistor to the P2 terminal on the Mother Board and then pass the black bulb of the thermistor through the bushing in side of Control Unit panel and into the Transformer cavity. Insert the black bulb of the thermistor into the space between the laminations and the belly of the Transformer.

Connect Torroid. (CBX6 and CBX23 Series Control Units Only—CBX7 Control Units do not have this feature.) Pass the end of the torroid through the bottom opening in the Control Unit board mount plate, and connect it to the P3 terminal on the CBX6/23 Control Unit Mother Board.

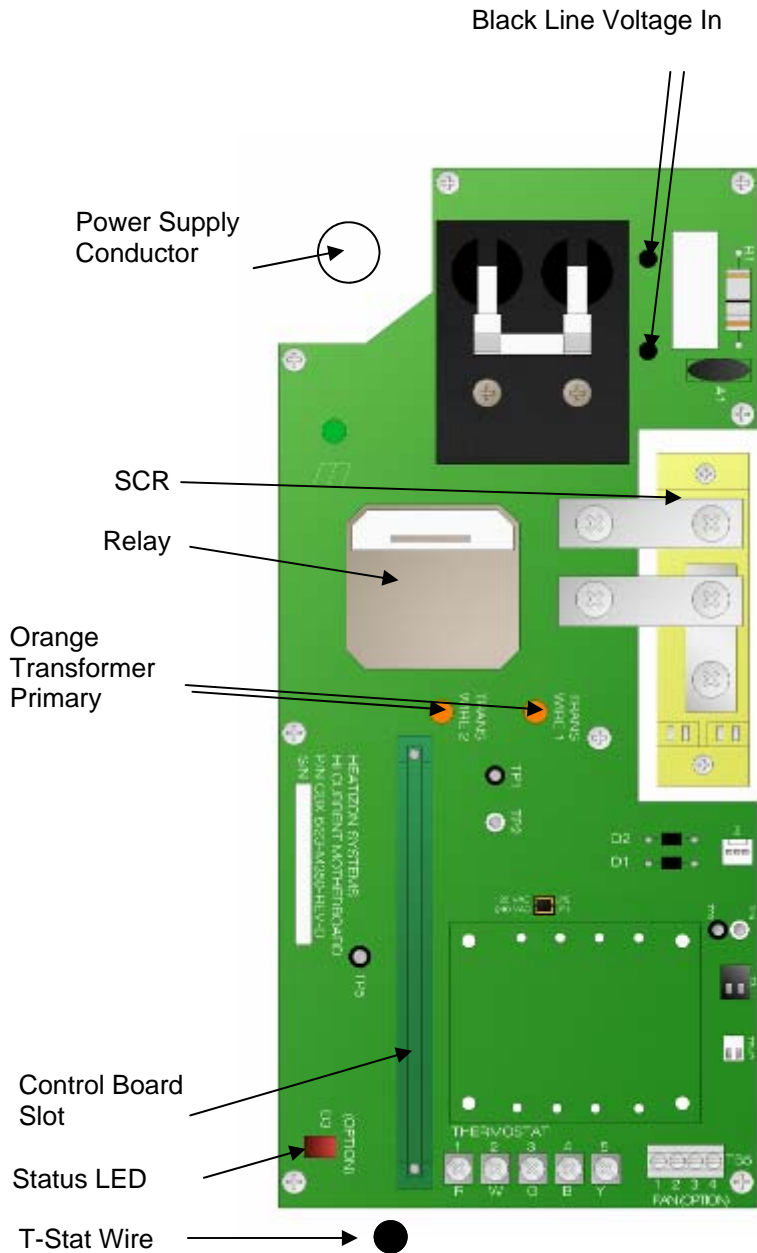
Check all Connections. Check all connections at this time for tightness and proper location. Check all wire nuts, and check all screws on the SCR; tighten as needed.



CONTROL UNIT

CBX6 AND CBX23 CONTROL UNITS

NOTE: Any time CBX6T or CBX23T Control Units are operating at 120VAC, the Jumper on the Control Board connection JP1 (directly above 24vac transformer) must be moved to the JP2 position. For 208/240VAC powered CBX6T or CBX23T, leave the Jumper on connection JP1. See Control Board illustration. Do not use CBX6T or CBX23T with 277VAC power. If you require 24VAC and are using 277VAC power, Heatizon Part # M360 is available for purchase.



CBX6/23 MOTHER BOARD

NOTE: Control Units CBX6T or CBX23T are identical to the CBX6 and CBX23 Control Units in every respect except for one: The CBX6T and CBX23T Control Units are equipped with 24VAC to power an activation device that requires 24VAC power. Terminals for load are located in the lower portion of the Control Unit Mother Board and are labeled B and Y.

NOTE: Control Units CBX6F and CBX23F that feature a cooling fan option, connect fan harness wires to pins 1 and 4 (two outside terminals) at the "fan option" terminal block located at the lower right-hand portion of the Control Unit Mother Board.

WARNING: DO NOT INSTALL OR REMOVE CONTROL BOARD WHEN THE CONTROL UNIT IS ENERGIZED. INSTALLING BOARD UNDER POWER WILL CAUSE SIGNIFICANT DAMAGE TO MOTHER BOARD AND/OR CONTROL BOARD.

WARNING: INSTALL CONTROL BOARD FOR CBX6 and CBX23 CONTROL UNITS WITH COMPONENTS FACING LEFT, INSTALLING BOARD IMPROPERLY WILL CAUSE PERMANENT DAMAGE TO MOTHER BOARD AND/OR CONTROL BOARD.

CONTROL UNIT

SET UP THE CBX6/CBX23 CONTROL BOARD

- Set the JP12, JP13, and JP14 jumpers on the Control Board before installing Control Board into the Mother Board using the tables below. Refer to Input Voltage Select Table below for jumper locations on the Control Board.

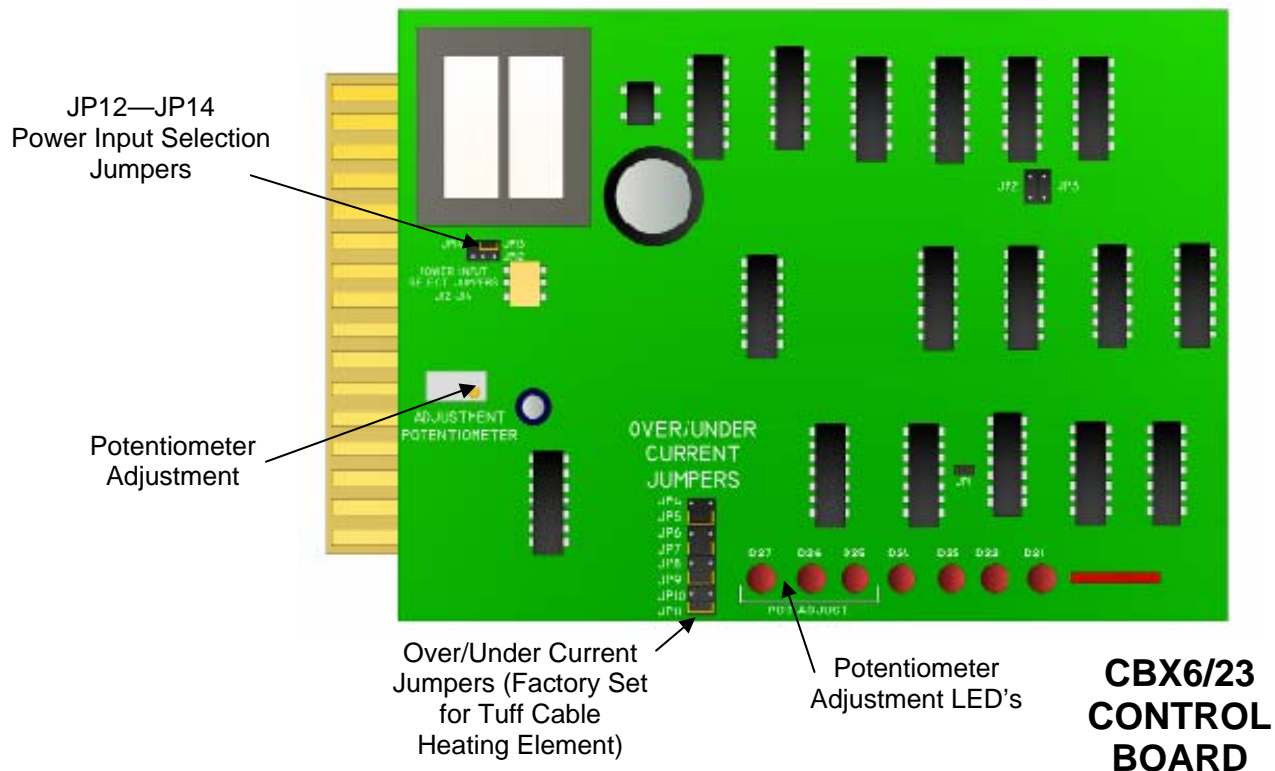
- Verify that all jumpers are installed on the appropriate settings for your specific application before inserting Control Board into the Mother Board of the Control Unit.

- **Control Boards have been preset at the factory on the JP13 208/240V incoming power setting, and the JP5, JP7, JP9, and JP11 settings for Tuff Cable Heating Element or for ZMesh Heating Element when being used for snow melt and roof deicing applications.** If your application uses 120VAC or 277VAC incoming powers and/or ZMesh Heating Element is being used for interior applications, the jumpers will need to be repositioned. If using 240VAC incoming power and Tuff Cable heating element, verify that the factory installed jumpers are on appropriate settings.



Over/Under Current Settings				
ZMesh Interior	(5%/10%)	JP4	JP6	JP8 JP10
Tuff Cable	(10%/20%)	JP5	JP7	JP9 JP11
ZMesh Exterior	(10%/20%)	JP5	JP7	JP9 JP11

Input Voltage Select Table	
120VAC	JP12
208/240VAC	JP13
277VAC	JP14



INSTALL THE CONTROL BOARD

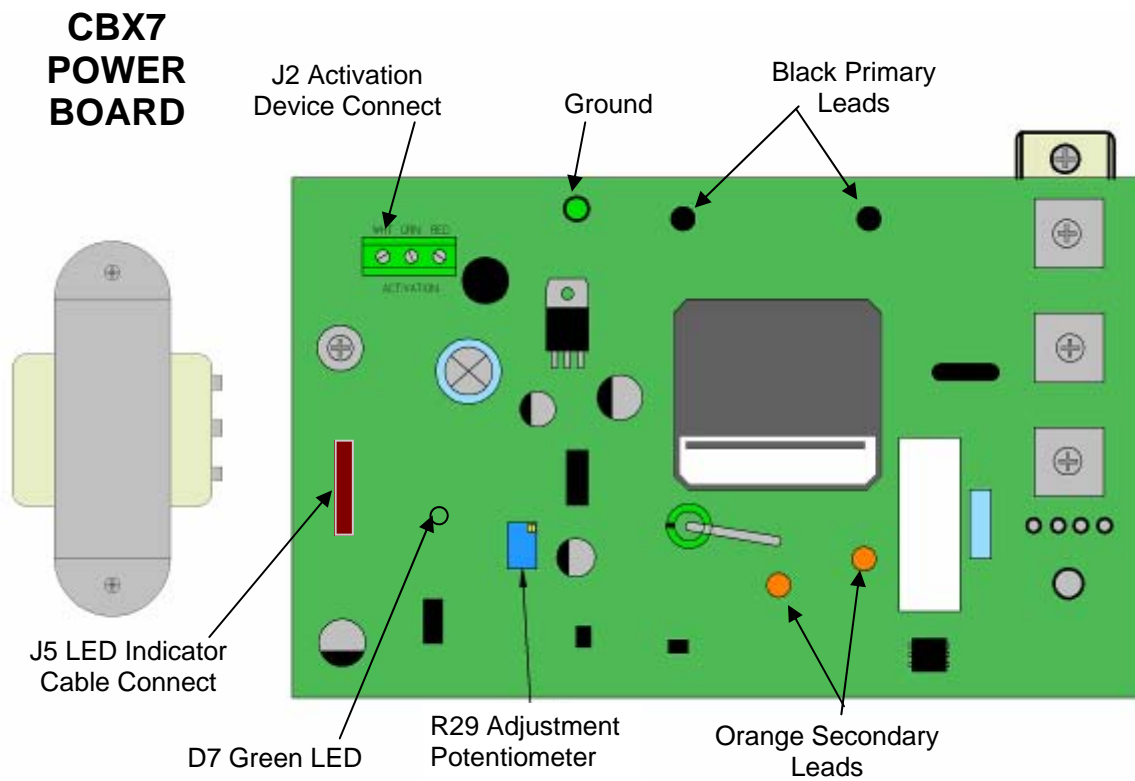
Make certain that the primary power to the Control Unit is off, and then insert the Control Board fully into the edge connector, making certain that the components on the Control Board are facing left.

CONTROL UNIT

CBX7 CONTROL UNITS

NOTE: CBX7 Control Units are to be used to energize Tuff Cable Heating Element applications other than roofs.

Connect the chosen activation device to pins 1 and 3 on terminal J2 on the CBX7 Power Board. Connect the activation device to pin 2 on terminal J2 on the CBX7 Power Board if the selected activation device contains an LED Feature. The system will operate with any of Heatizon Systems activation devices.



NOTE: CBX7 Control Units have no over/under current protection and no transformer over temperature sensor.

