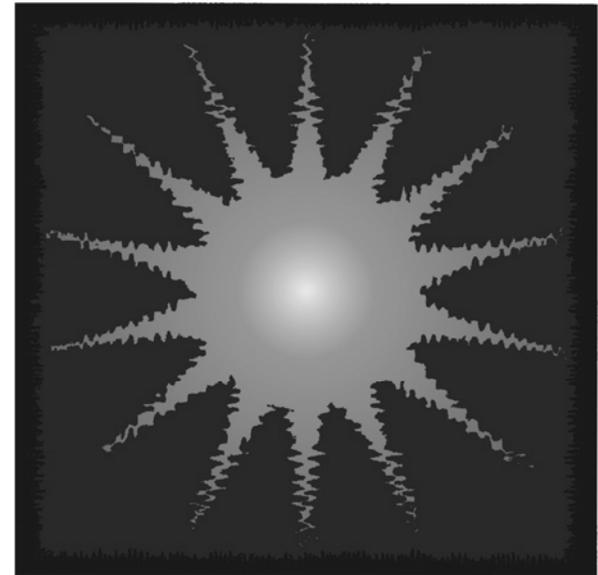


# Owners Manual

Heatizon Systems Low Voltage Products  
CBX7 System



**HEATIZON**  
SYSTEMS



©Heatizon Systems 2007

# Owner's Manual

## Heatizon Systems CBX7 Series

### Low Voltage Products

Congratulations on your decision to purchase the finest floor warming, space heating, roof snow and ice melting and/or snow melting products available today. We are so confident that your decision to purchase our products will provide you with many years of satisfaction that we have backed them up with the longest warranty in the industry. In the event you ever have questions regarding Heatizon Systems products please do not hesitate to contact us.

**Heatizon Systems**  
**4137 South 500 West**  
**Murray, Utah 84123**  
**(801) 293-1232 Phone**  
**(801) 293-3077 Fax**  
[www.Heatizon.com](http://www.Heatizon.com)

#### Heatizon Systems Products

Utilizing state of the art components and low-voltage electricity, Heatizon's products are unprecedented in ease of operation. They are virtually maintenance free and efficient in operation. Tuff Cable has a limited 25 year warranty and is engineered to provide simple and problem-free solutions to your floor warming, in floor space heating, snow melting and roof snow and ice melting needs. Heatizon's Tuff Cable is tried and proven, and has been Warming American's Cold Spots since 1979.

Heatizon Systems products do not use chemicals or potentially explosive gases. The secondary side of all of our low voltage products operates at 65 volt AC or less.

#### The Heating Element

**TUFF CABLE**...is made to go **IN** something... like asphalt, concrete, a sand bed under pavers or a Heatizon heatsink kit. Heatizon Tuff Cable heating element is a very durable coated copper cable that is chemical and gasoline resistant. It is designed to be installed in asphalt, concrete, tile mortar bed, thin set, or a Heatizon Heatsink Kit. Typical installations for Tuff Cable include total space heating, floor warming, snow melting, and roof snow and ice melt.

**Danger.** Do not cut, short, or damage Heatizon Tuff Cable heating element. If you are performing work in the area where the heating element is located:

1. Turn the power off;
2. Identify the exact location of the Tuff Cable heating element; and
3. Contact Heatizon Systems (801-293-1232 or [www.heatizon.com](http://www.heatizon.com)) if the heating element is damaged in any way

# HEATWAVE SYSTEMS LIMITED WARRANTY

Twenty-five Year Limited Warranty for  
Heatizon Systems  
"Tuff Cable" Element (E101), "Z Mesh" Screen Element (E102) and  
Specified Radiant Panel Heating Components

Heatizon Systems warrants to the original purchaser/end user of the following products that for the periods noted such products shall be free from defects in material and workmanship: Tuff Cable (E101) Heating Element and ZMesh (E102) Heating Element for a period of twenty-five (25) years, the Control Unit for a period of one (1) year, and power Transformer for a period of five (5) years. Such warranty periods shall commence on the date of shipment by Heatizon Systems. If any parts are found to be defective in manufacture during such time period, Heatizon Systems will, at its sole option, replace or repair defective parts.

This Limited Warranty applies only if articles sold hereunder (a) are selected, designed, and installed according to instruction and operation manuals furnished by Heatizon Systems and installed in a "workmanlike manner" according to the building association standards adopted by Heatizon Systems, (b) remain in their originally installed location, (c) are connected to proper power supplies, (d) are not misused or abused, (e) show no evidence of tampering, mishandling, neglect, damage (accidental or otherwise), modifications or repair without the approval of Heatizon Systems, or damage done to the product by anyone other than Heatizon Systems, and (f) are installed in accordance with applicable code requirements. Any warranty claims must be made in writing, no later than one (1) month following expiration of the warranty period, and must be accompanied by the warranted part or component. Any claim not made in such manner shall not be honored by Heatizon Systems.

This Limited Warranty does not cover:

1. The workmanship of any installer of Heatizon Systems radiant panel heating products.
2. Any Heatizon Systems radiant heating products that have a failure or malfunction resulting from improper or negligent operation, accident, abuse, misuse, unauthorized alteration or improper repair or maintenance.
3. Any Heatizon Systems radiant heating products that have had components not purchased from Heatizon Systems integrated into or connected to them.
4. Any labor costs for removal of alleged defective part(s) and/or reinstallation of replacement part(s), transportation to and from Heatizon Systems (if necessary) and any other material necessary to perform the exchange or repair.
5. Any Heatizon Systems heating products that have not been properly registered by completion and return of the Warranty Registration Card attached hereto.

#### DISCLAIMER OF WARRANTIES:

This warranty described above is in lieu of all other warranties, express or implied, including but not limited to any implied warranties of fitness for a particular purpose and merchantability. Heatizon Systems expressly disclaims and excludes any liability for losses, expenses, inconveniences, consequential, incidental, indirect, or punitive damages for breach of any express or implied warranty. By installing and/or purchasing Heatizon Systems products, you accept the terms of this limited warranty.

Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above limitations and exclusions may not apply to you. This Limited Warranty gives you specific legal rights, and you may also have other rights which may vary from state to state.

## ROOF INFORMATION

### FOR ROOFING CONTRACTOR AND OTHER TRADES

Please communicate this information directly to anyone who will come into contact with the Tuff Cable heating element after it has been installed. Prior to beginning the installation of any Heatizon Systems product, read the applicable sections of the installation manual in their entirety. In order for Heatizon Systems installation instructions to be followed completely, **Heatizon Systems requires that a copy of this page be given to the Roofing Contractor**, and additional copies be stapled near the Tuff Cable immediately after its installation. The copies and staples should be removed prior to installing the roof covering.

**A Heatizon roof deicing system has been installed on this project. Here are the steps you need to take to insure that the system is installed correctly and is not damaged:**

**Ice and Water Shield.** Heatizon Tuff Cable Heating Element is to be installed on top of the sub-roof and must have Ice and Water Shield installed over them. As an installer option, they may also have Ice and Water Shield installed under them as well. Do not apply roofing material directly on top of either heating element.

**Electrically Conductive Materials.** Heatizon Tuff Cable Heating Element must not come in contact with any other electrically conductive materials on the roof structure. The roofing contractor is responsible for insuring the element is not cut, or damaged in any way and does not come into contact with any conductive material.

- Drip edge, flashing or any other conductive material on the roof structure must not connect to or come in contact with Tuff Cable Heating Element.
- Screws, nails, attachments or any other connectors securing the conductive shingles, drip edge, flashing, valley metal, skylights, etc or any other conductive material must not penetrate, connect to, or come in contact with Tuff Cable Heating Element.
- Do not cut, fold, twist, or alter the Tuff Cable Heating Element.

**Continuity Check.** Tuff Cable Heating Element should have a continuous continuity check performed during the installation of all conductive roofing materials. A Roof Alarm is available for rental or purchase from Heatizon Systems to assist the roofing contractor in performing this continuity check. The circuit must always be open. See Roof Alarm instructions for more detail.

**After the Installation.** Immediately following installation, the Tuff Cable Heating Element is to be tested for continuity and the correct readings recorded in the installation manual. The Roofing Contractor is responsible for any penetration, cutting, or other damage done to the Tuff Cable Heating Element.

**Electrical Codes.** The Cold Leads of the Heatizon Roof Deicing System is considered part of a listed snow melt/deicing system. However, local electrical codes may require Cold Leads to be run in conduit between the Control Unit and the heated section. Consult with a local electrical inspector or other relevant authority prior to installation.

**Warnings.** Heed all warnings in the Heatizon Systems Installation Manual, the product packaging, and attached to or affixed to the product.

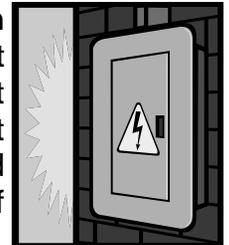
## WARNINGS

The following warning was supplied with your element kit, and should be permanently affixed to an appropriate surface:



Never cut or in any other way damage the Tuff Cable heating element. Never short the Tuff Cable to anything electronically conductive.

It is not recommend that you ever remove any of the covers on the Control Unit. Never open your Heatizon Systems Control Unit without first turning the power to said Control Unit completely off by flipping both the circuit breaker in the electric distribution panel and the power disconnect, if equipped, to the off position.



## WARNINGS

## PERFORMANCE FEATURES

**Energy Savings.** Heatizon Systems low-voltage products utilize an isolated step down transformer and resistance in the Tuff Cable heating element to create the perfect amount of heat necessary to warm floors, heat buildings, remove snow and ice from roofs and melt snow from driveways, walkways, handicap ramps, loading docks, etc. All of our products are nearly 100 percent efficient and are designed to deliver the heat they create to the exact location necessary to accomplish their objective. The following tips will help your Heatizon Systems products conserve energy:



**Snow Melting** - Heatizon Systems recommends that your snow melting system(s) be turned on prior to a snow and/or ice storm whenever possible. Turning the system on prior to a snow and/or ice storm allows for the temperature of the mass of the asphalt, concrete, or pavers to rise in preparation for the snow/ice fall thereby increasing the possibility that it will be able to melt the snow/ice as it falls and avoiding situations where the snow/ice melt system must play catch-up. If your system is equipped with a temperature/moisture sensor it is designed to turn on whenever the temperature is 38 degrees F or lower and constant moisture is present.

Check contents of all boxes immediately upon receipt of your Heatizon shipment and notify Heatizon within 24 hours of any discrepancy or missing part.

Read this Installation Manual in its entirety before attempting to install any Heatizon Systems Products.

Installation of Heatizon Systems products and associated work must be performed by qualified persons and conform to local building codes, ordinances, trade practices, and in accordance with all applicable sections of the National Electric Code (NEC).

**Risk of fire!** Risk of fire possible if installation of system is not completed according to all of the installation instructions contained within this Installation Manual, including but not limited to the warnings and notes throughout. Risk of fire possible if metal or any other conductive material is allowed to come into contact with the Cold Leads and Tuff Cable or ZMesh Heating Element. Risk of fire possible if connections/joints between Cold Leads and Tuff Cable, Colds Leads and ZMesh, Tuff Cable and Tuff Cable, and or ZMesh and ZMesh are not crimped and/or soldered correctly. Risk of fire possible if loose strands of ZMesh or Tuff Cable Heating Element or cuts or other damage to ZMesh or Tuff Cable are not repaired correctly. Note: The safety features incorporated into Heatizon Systems products cannot detect cuts in Cold Leads and ZMesh or Tuff Cable element. Do not allow ZMesh to cross itself—maintain a minimum of 2" distance between adjacent runs of ZMesh Heating Element. Do not allow Tuff Cable to touch or cross itself.

**Risk of shock!** Make sure all power to your Heatizon Systems product and thermostat is shut off at the electric distribution panel before installing, removing covers, servicing, or working on any of the components of any Heatizon System product.

All connections/joints between Colds Leads and Tuff Cable heating element must be embedded into mortar, asphalt, or other acceptable cementitious Heatsink.

Knockout openings shall not be used except with devices that are designed to fill such openings.

Obtain written approval from Heatizon Systems for applications and installations that are different from those described herein.

In order for your Heatizon Systems product to operate correctly, the transformer portion of the Control Unit must be installed so that it can dissipate the heat that it generates

Like all electric products, Heatizon Systems products create a magnetic field that may interfere with certain brands of televisions, computer monitors, etc. Unlike Cathode Ray Tubes ("CRT"), Plasma Display Panels ("PDP") and Liquid Crystal Displays ("LCD") do not seem to be affected by magnetic fields. In the event magnetic field interference is a concern for you please consult Heatizon Systems or your sales representative prior to making your purchase.

Mattresses, Bean Bag Chairs, LoveSacs, Futons, and all other items which have high insulating values should never be placed directly on any surface which has a radiant heating product under it.

Never install Heatizon Systems products in space heating or floor warming applications to deliver more than the 15 watts per square foot (or 160 watts/m<sup>2</sup>) recommended by the Radiant Panel Association.

## TROUBLE SHOOTING PROCEDURES

The following procedures cover most problems that can be encountered when installing or servicing Heatizon Systems products with CBX7 Series Control Units. If your Heatizon Systems product cannot be repaired using the following procedures, contact Heatizon Systems for further assistance.

### **Problem: There is no power to the Control Unit (no LED indication on Control Board)**

- Solution:
1. Test for input power.
  2. Check circuit breaker, reset or turn on as necessary.
  3. If equipped, verify that the power disconnect is in the ON position.
  4. If power is measured at the input of the CBX7 and unit will not turn on, Contact Heatizon Systems at 801-293-1232 for technical assistance

### **Problem: The system is "hard starting" or a breaker trips when the thermostat is activated**

The CBX7 has a soft start that will ramp the current on and off from zero to full current in about two seconds. The soft start eliminates high inrush current or power surge.

- Solution:
1. Check for proper wiring of the transformer primary for the supply voltage you are using. Improper wiring of the primary may trip circuit breaker. Improper wiring of the primary can damage the transformer if allowed to run for any length of time.
  2. If the activator is in the ON position when the power is applied to the CBX7 Control Unit, the unit will turn on with a hard start. Always have the activator in the OFF position before powering the unit.

### **Problem: The Control Unit has power, but the system will not activate**

- Solution:
1. If the activation device is ON, but the green LED is OFF and there are no amps present in element, check activator wiring from the activation device to the Control Unit for continuity.
  2. If the activation device is ON, the green LED is ON, the red LED fault indicator is ON, but there are no amps present in element, system has an SCR short or current over 100 amps. To reset a fault, turn the activation device OFF and the power OFF at the distribution panel or disconnect, if one is installed, and then turn the power back ON and then turn the activation device ON. If the fault recurs, either the secondary Amps are greater than 100, or the SCR has shorted and failed.
  3. If the green LED is ON, red LED is OFF, and there are no amps present in the element and Cold Lead, check Cold Leads connected to the Transformer, check for open element and loose connections.

### **Problem: System is ON, but unable to adjust Amps to an acceptable operating range**

- Solution:
- Check the Transformer/Cold Lead connections. Make certain that the Cold Leads are connected to the highest voltage Transformer tap that does not result in secondary amperage in excess of 96 Amps. Transformer should be set at the highest tap.

### **Problem: System is ON, but the green LED on cover will not light**

- Solution:
- Check the interconnecting cable from the Power Board to the cover.



**Floor Warming** - Heatizon Systems offers completely programmable thermostats with remote sensors with its entire floor warming products. The remote sensor coupled with the programmable thermostat allows you to determine when the system will be on and exactly what the temperature of the floor will be.



**Space Heating** - Heatizon Systems total space heating products provide the comfort of radiant heat without the uncomfortable concrete floors and the maintenance expense of its competitors.



**Roof Snow and Ice Melt** - Heatizon Systems under roof snow and ice melt products are designed to last for many, many years and provide uniform heat everywhere that they are installed. Once they are correctly installed, our products do not come down with sliding snow and ice like roof-top cables. Heatizon Systems recommends that your roof snow and ice melting system(s) be turned on prior to a snow and/or ice storm whenever possible. Turning the system on prior to a snow and/or ice storm allows for the temperature of the Tuff Cable in a Heatsink to rise in preparation for the snow/ice fall, thereby increasing the possibility that it will be able to melt the snow/ice as it falls and avoiding situations where the snow/ice melt system must play catch-up. If your system is equipped with a temperature/moisture sensor it is designed to turn on whenever the temperature is 38 degrees F or lower and constant moisture is present.

**Longevity and Reliability.** There are no moving parts in your Heatizon Systems product. All controls are 100% solid-state for long term life and reliability.

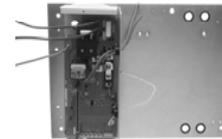
**Maintenance.** Other than keeping the airflow vents on the Control Unit clean and unobstructed, Heatizon Systems products do not require any routine maintenance. In the event your Heatizon Systems products are not operating correctly please call a qualified electrical contractor to make any necessary adjustments or repairs.

**Operation.** Other than setting the activators and turning the breaker, Heatizon Systems products have nothing else that require your attention. In the event your Heatizon Systems products are not operating correctly, call a qualified electrical contractor or Heatizon certified installation professional to make any necessary adjustments or repairs.

**Summer Shut-down.** Heatizon Systems recommends that the circuit breaker (located in your electrical distribution panel) that services your Heatizon Systems product(s) and the remote power disconnect, if equipped, be turned to the “off” position during the summer time and other extended periods of time when it will not be used.

**Comfort and Safety.** Comfort and safety are the main goals for all Heatizon Systems products. Snow and ice free driveways, sidewalks, handicap ramps, loading docks, porches, etc. are safer and last longer when they are not subjected to salt or snow-melting chemicals. Snow and ice falling off of roofs can result in dangerous hazards to both buildings and people. Heatizon Systems in floor radiant heating products provide the utmost in comfort and since no dust is flying around they are good for your health. The comfort of floor warming is the best thing that ever happened to the tile and hardwood industries and your feet are the beneficiaries.

## HEATIZON SYSTEM COMPONENTS



Backplate

**The Rough-In** The Rough-in Kit contains the Control Box and Transformer mounting plate (“Back Plate”), 50 feet of activation wire, Installation Manual, and enough Cold Lead wire to extend the total vertical and horizontal distance between the Back Plate location and the area where the heating element will be installed and back to the Back Plate.



Tuff Cable Element

### The Heating Element

**Tuff Cable** (Heatizon Part Number E101) is a durable 10 ga. coated copper cable that is chemical and gasoline resistant and comes with footage marks, and Heatizon’s name on it.



Transformer

### The Transformer

The Transformer is the powerhouse that allows Tuff Cable to produce up to 12 watts of heat per lineal foot. Tuff Cable systems are powered with transformers from ½ to 6 kVA.



CBX7  
Control Unit

### The Control Unit

This component houses the appropriate sized transformer and the other electronic components necessary to provide low-voltage electricity to the heating element. The Control Unit continually monitors the system’s operation. It is engineered to provide simple and problem free operation. Dimensions for the CBX7 Control Unit are: 17" wide, 12" high and 9" deep;



Various Activation Devices

### Activation Device

Heatizon Systems has Activation Devices that are as simple or complex as necessary to handle your floor warming, space heating, roof snow melt, and snow melt needs. Most Heatizon Activation Devices include a system indicator light (LED) to notify the owner of the system status.