

# System Description, Design Information, and Requirements



**Floorizwarm Heating Element Layout**

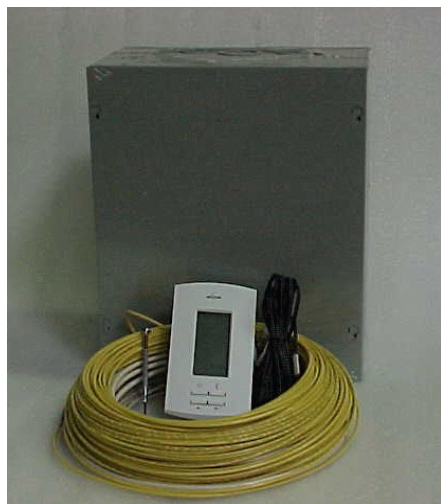
## SYSTEM DESCRIPTION

The Floorizwarm System is a low voltage, resistance type heating system which is ideal for floor warming and space heating in areas 110 square feet and smaller. Floorizwarm Systems are designed to deliver approximately 10 to 15 watts per square foot, and to cover 15 to 110 square feet of floor area. A Floorizwarm System consists of **three** primary components:

**1. The Power Unit--** The Floorizwarm Power Unit includes a step-down transformer and other electronic components necessary to provide low-voltage electricity to the heating element. It is engineered to provide simple and problem free operation. The Power Unit measures 12" x 10" x 6".

**2. The Heating Element – The Floorizwarm Heating Element** is a durable coated copper cable that is chemical and gasoline resistant. Floorizwarm Heating Element (referred to herein as both "Floorizwarm Heating Element" and "Tuff Cable") comes in various lengths and gauges, depending on system size and area to be heated. The Floorizwarm Heating Element is factory-connected to non heating **Cold Leads**, which are 20 feet long, and are connected to the Power Unit by the installer.

**5. Activation Device** – The Floorizwarm System is activated by an M337 Programmable Thermostat which includes a remote bulb sensor with 15' of cable. This thermostat requires 120 VAC power to operate. The thermostat provides a digital readout, and can be used in auto mode or manual mode.



**Floorizwarm Cable, Power Unit and Thermostat**

## DESIGN INFORMATION

Heatizon Floorizwarm system is a low-voltage electric radiant heating system. Installations include:

- concrete, light-weight concrete or mortar bed
- Heatizon Heatsink Kit

Floorizwarm utilizes AC power supply for various sized heating applications. Floorizwarm Heating Element is designed to be spaced at specific intervals and lengths to produce a specified amount of heat per square foot. Floorizwarm Heating Element must always be installed in a heat sink, such as concrete, light-weight concrete or mortar bed, or a Heatizon Heatsink Kit.



**M337  
Programmable Thermostat with  
Remote Bulb Sensor**

The heat density per square foot of the Floorizwarm System is dependent on the spacing between adjacent runs of Floorizwarm Heating Element, the length of the heating element, and the size of the Power Unit.

## APPLICATIONS

### System Sizing Information

Model #	Area to be Heated	Cable Length	Element Spacing	Watts Per Square Foot
FLZ1520AC	15 ft <sup>2</sup> to 20 ft <sup>2</sup>	50 feet	3.6" to 5.0"	14.7 to 11.03
FLZ2030AC	20 ft <sup>2</sup> to 30ft <sup>2</sup>	80 feet	2.5" to 3.5"	14.9 to 9.9
FLZ2536AC	25 ft <sup>2</sup> to 36 ft <sup>2</sup>	70 feet	3.8" to 5.5"	14.8 to 10.3
FLZ3650AC	36 ft <sup>2</sup> to 50 ft <sup>2</sup>	160 feet	2.7" to 3.5"	14.7 to 10.6
FLZ5064AC	50 ft <sup>2</sup> to 64 ft <sup>2</sup>	125 feet	4.8" to 6.1"	13.5 to 10.59
FLZ6475AC	64 ft <sup>2</sup> to 75 ft <sup>2</sup>	260 feet	2.8" to 3.3"	14.9 to 12.99
FLZ75110AC	75 ft <sup>2</sup> to 110ft <sup>2</sup>	225 feet	3.7" to 5.5"	14.8 to 10.5

**Floorizwarm is configured and packaged in the seven different area sizes listed above. Floorizwarm comes complete with a pre-measured length of the appropriate gauge Floorizwarm Heating Element, which is attached to the floor prior to the application of mortar. The cable spacing is varied to fit a specific area within the intended range of sizes. The non-heating Cold Leads are spliced to the element at the factory, and are run to the power supply by the installer. Cold Leads are connected to the modules using wire nut connectors.**

#### SPACE HEATING

Floorizwarm products can provide total space heating. Like all other space-heating products, heat-loss calculations should be performed prior to selecting the appropriate Floorizwarm System. Heat-loss calculations define the amount of heat which must be delivered in order to heat the given space. Heatizon Systems Floorizwarm products are suitable for installation under most floor coverings.

#### FLOOR WARMING

Floorizwarm products can be used in conjunction with a primary heat source to provide warm floors or supplemental heat. Floorwarming applications typically provide approximately 10 to 15 Watts per square foot. Heatizon Systems Floorizwarm products are suitable for installation under most floor coverings.

#### SYSTEM SIZING INFORMATION

The adjacent table indicates the Floorizwarm packages that are available. Each Floorizwarm package contains a pre-measured length of Floorizwarm Heating Element with attached Cold Lead, the appropriate sized Power Unit, and a Programmable Thermostat with Remote Bulb Sensor.

#### ELECTRICAL SERVICE REQUIREMENTS

The Floorizwarm Power Unit requires an input of 120 VAC with a dedicated single pole, 20-Amp breaker.

#### INSULATION

Properly installed insulation is always recommended by Heatizon to enhance the efficiency and improve the performance of all Heatizon Systems products.

## CUSTOMER INFORMATION

**WARNING:** The installation of all Heatizon Systems products must be done in accordance with the instructions provided in the Heatizon Systems Installation Instructions or Installation Manual and the Sales Agreement. After you have completely read the installation manual, Heatizon Systems encourages you to call our Technical Support Department at (801) 293-1232 with any comments or questions you have regarding our products or the installation and operation thereof. All work must be done by a qualified person and conform to local building codes, ordinances, trade practices and in accordance with all applicable sections of the National Electric Code (NEC).

### Heatizon Tuff Cable System (including Floorizwarm products)

● *Tuff Cable in concrete* – All concrete forms, insulation, chairs or dobies and remesh are to be in place prior to installation of Heatizon's Tuff Cable. Heatizon recommends 6"x6" - 4 gauge remesh for 6" spacing and 4"x4" – 4 gauge remesh for 4" spacing. The Tuff Cable is to be installed so that it will be 1.5 to 2 inches below the finished surface. Tuff Cable is to be installed prior to the concrete pour. Do not attempt to raise the Tuff Cable during the concrete pour. Caution must be exercised such that the Tuff Cable is not damaged before, during or after the concrete pour. Never run the Tuff Cable through cold/expansion, crack control, saw cut or any other joints regardless of whether the joints are created prior to, during or after the pour. Heatizon does not warrant damage to the Tuff Cable caused by actions of others, including but not limited to, saw cutting of expansion or control joints, core cutting or any other penetration of concrete, movement of concrete, cracking of concrete, abuse of the Tuff Cable prior to the pour, etc.

● *Tuff Cable in mortar, asphalt, or Heatsink roof application* – Tuff Cable must always be imbedded completely in asphalt, concrete, a mortar bed or Heatsink Kit regardless of which floor covering or roofing material is going over it. Heatizon Systems manufactures a Heatsink Kit that should be used whenever Tuff Cable is used for roof deicing and snow melt. Tuff Cable should never be installed in open-air applications.

### Heatizon Z Mesh System

● *Z Mesh is not insulated* – Electrically conductive materials, other than nails or screws that are not in anyway also touching any other electronically conductive material, must never come in contact with the Z Mesh. Any time electrically conductive materials are allowed to come in contact with the Z Mesh a risk of fire will result. Examples of electrically conductive materials include, but are not limited to, metal thresholds, metal lathe, metal carpet strips, metal fasteners for metal roofing, drip edge, valley metal, any other metal object, etc. Once the Z Mesh is installed, it should be covered as soon as possible to avoid damage.

● *Z Mesh under tile, marble, etc.* – Z Mesh is to be installed under thinset mortar, Duralock, Wonderboard or Hardi Backerboard. Z Mesh should not be installed when metal lathe is used in the flooring installation.

● *Z Mesh on concrete and wood sub-floors* – Z Mesh is suitable for installation under most floor coverings. Heatizon Systems recommends an overlayment be installed over the Z Mesh prior to the installation of the floor covering anytime a danger of cutting or damage to the Z Mesh exists or may exist in the future.

To avoid danger of fire, NEVER cut Z Mesh. If Z Mesh is cut, use Heatizon Systems approved methods and materials to immediately repair damage.

### Heatizon Roof De-icing System

● *Z Mesh under non-metal roof* – One layer of ice and water shield layer must be installed on the sub roof prior to the installation of the Z Mesh and a second layer must be installed over the Z Mesh. As stated above under the section headed "Heatizon Z Mesh System" electrically conductive materials must not come in contact with the Z Mesh or a risk of fire will result. Examples of some electrically conductive materials commonly used on roofs include valley metal, drip edge, metal roofing material, etc. Z Mesh is not recommended for use under metal roofing material.

● *Z Mesh over drip edge* – One layer of ice and water shield must be installed under the drip edge and a layer of EPDM over the drip edge and under the Z Mesh as shown in Heatizon's diagram labeled "Eave Detail with Z Mesh Over Drip Edge." A final layer of ice and water shield must cover all Z Mesh. Nails cannot be placed through the drip edge and Z Mesh simultaneously.

● *Z Mesh near conductive materials* – The drip edge, flashing, and valley metal and the screws or other attachments securing the drip edge, flashing or valley metal to the roof must not penetrate the Z Mesh or a risk of fire will result. A continuous continuity check should be made between any and all electronically conductive material or metal being placed over Z Mesh and one of the cold leads of the Heatizon system. The circuit should always be open.

● *Metal Roof* – Tuff Cable is recommended whenever metal roofing or other electronically conductive material is to be used or greater heat density is required. When Tuff Cable is installed in a roofing application it should always be imbedded in Heatizon Systems ¼ inch thick Heatsink kit. Prior to the Tuff Cable being installed, the roofing contractor must place ¼ inch thick sleepers in all areas where the roof will be attached to the sub-roof.

### General

● *Electrical Requirements* – Floorizwarm AC, Floorizwarm DC and SLC500 products require a single pole, 120 V power supply with 20 amp breaker and with proper conductors run from the breaker to each Control Unit. Heatizon Systems CBX products sized ½ and 1kVA can operate on 120V, single pole, 15 amp breaker or 240V, double pole, 15 amp breaker. Heatizon Systems CBX products sized 2kVA and 3kVA require a 2-pole, 208/240V, 20 amp breaker with proper conductors run from the breaker to each Heatizon Control Unit and products sized 4kVA, 5kVA, 6kVA, 2x2kVA and 2x3kVA require a 2-pole, 208/240/277V, 30 amp breaker with proper conductors run from the breaker to each Control Unit. Heatizon Systems products requiring 208/240/277 V do not use a Neutral.

● *Insulation* – Properly installed insulation is always recommended by Heatizon to enhance the efficiency and improve the performance of your Heatizon Systems product.

● *Continuity Check* – A continuous continuity check should be conducted on the Tuff Cable or Z Mesh Screen and all electrically conductive material prior to, during the pouring of concrete, installation of floor coverings or roofing materials, and immediately prior to energizing all Heatizon System products. The circuit should always be open. It is highly recommended that an alarm buzzer, (available for purchase from Heatizon Systems), or other warning device be used at all times the danger of damaging or shorting the heating element to something conductive is present.

● *Element Test* – Always complete a Heatizon Systems "After Installation Element Test Form" immediately following the installation of the Tuff Cable or Z Mesh, and again just prior to energizing your Heatizon Systems product.

● *Magnetic Field* – 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 your sales representative about the Heatizon Systems DC Alternatives, prior to making your purchase.