



HEATIZON SYSTEMS

RADIANT HEATING AND SNOW MELTING SYSTEMS

Floorizwarm System Installation Manual



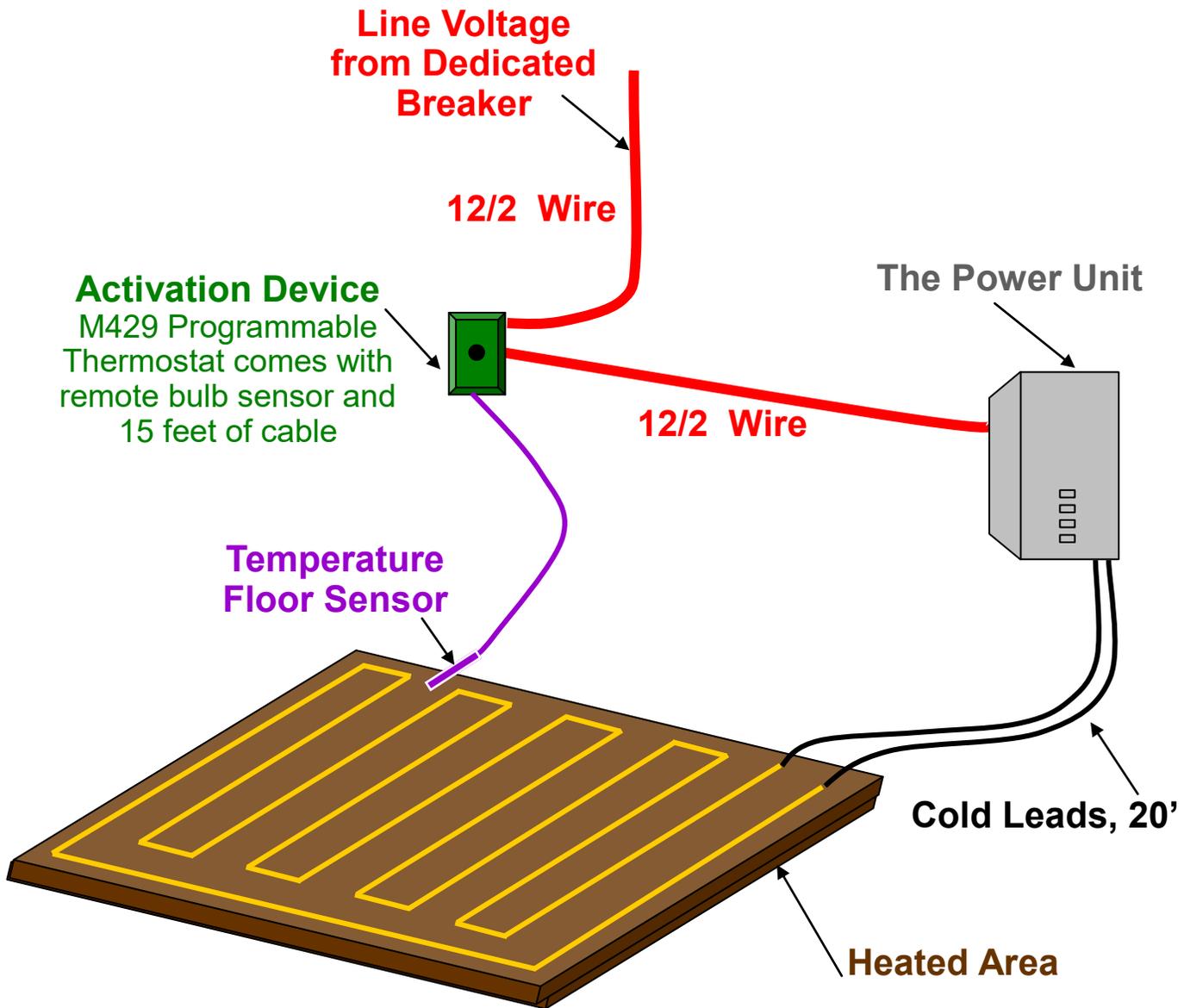
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Congratulations on your purchase of the Floorizwarm Heating System, which utilizes state-of-the-art components and low-voltage electricity to provide products that are easy to operate, virtually maintenance free, safe, and 99% efficient. The Floorizwarm Tuff Cable heating element has a limited 25-year warranty and is engineered to provide simple, problem-free, long term solutions to floor warming and space heating needs. Heatizon Systems has been “Warming America’s Cold Spots” since 1979.



Floorizwarm Tuff Cable Heating Element

Tuff Cable, a durable coated copper cable, is installed **IN** something, like concrete, thinset, or other mortar applications. This system is perfect for bathroom floors or other small areas of 15 to 110 square feet.

SYSTEM DESCRIPTION



System Information—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.

Model #	Power Unit Dimensions
FLZ1520AC	8.25"H x 6.5"W x 4.75"D
FLZ2030AC	8.25"H x 6.5"W x 4.75"D
FLZ3536AC	8.25"H x 6.5"W x 4.75"D
FLZ3650AC	8.25"H x 6.5"W x 4.75"D
FLZ5064AC	8.25"H x 6.5"W x 4.75"D
FLZ6475AC	9.75"H x 7.5"W x 6"D
FLZ75110AC	9.75"H x 7.5"W x 6"D

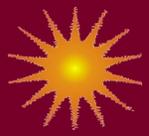
2. The Heating Element— The Floorizwarm Heating Element is a durable coated copper cable that is chemical and gasoline resistant. Floorizwarm Heating Element (referred to herein as both "Floorizwarm Heating Element" and "Tuff Cable") comes in various lengths and gauges, depending on system size and area 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.

3. Activation Device— The Floorizwarm System is activated by an M429 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.

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.

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.



SYSTEM APPLICATION INFORMATION

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. Floor warming 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 Floor Sensor.

ELECTRICAL SERVICE REQUIREMENTS

The Floorizwarm Power Unit requires an input of 120 VAC.

INSULATION

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

SYSTEM SIZING INFORMATION

Model Number	Area to be Heated	Cable length	Element Spacing	Watts Per Square Foot
FLZ1520AC	15 ft ² to 20 ft ²	50 feet	3.6" to 5.0"	14.7 to 11.03
FLZ2030AC	20 ft ² to 30ft ²	80 feet	2.5" to 3.5"	14.9 to 9.9
FLZ2536AC	25 ft ² to 36 ft ²	70 feet	3.8" to 5.5"	14.8 to 10.3
FLZ3650AC	36 ft ² to 50 ft ²	160 feet	2.7" to 3.5"	14.7 to 10.6
FLZ5064AC	50 ft ² to 64 ft ²	125 feet	4.8" to 6.1"	13.5 to 10.59
FLZ6475AC	64 ft ² to 75 ft ²	260 feet	2.8" to 3.3"	14.9 to 12.99
FLZ75110AC	75 ft ² to 110ft ²	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 Tuff Cable Heating Element, which is attached to the floor prior to the application of mortar. The Tuff Cable spacing is varied to fit a specific area within the intended range of sizes. One non-heating Cold Lead is spliced to each end of the Tuff Cable Heating Element at the factory. Each Cold Lead is run to the power unit by the installer. Cold Leads are connected to the appropriate Transformer wires using wire nut connectors.

WARNINGS



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 Floorizwarm Tuff Cable Heating Element. Risk of fire possible if connections/joints are not crimped and/or soldered correctly. Risk of fire possible if cuts or other damage to FloorizwarmTuff Cable are not repaired correctly. Note: The safety features and testing procedures incorporated into Heatizon Systems products cannot detect cuts in Cold Leads or Tuff Cable 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.



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/m²) recommended by the Radiant Panel Association.



Field installed wiring must be in compliance with the National Electrical Code (NFPA-70) and/or ordinances, or all local building codes and trade practices.

Please call Heatizon Systems Technical Support Department at (801) 293-1232 with any questions you have regarding these Design and Installation Instructions and The Customer Information Sheet, or the installation, operation, and maintenance of Heatizon Systems products.

HEATWAVE SYSTEMS LIMITED WARRANTY



Twenty-five Year Limited Warranty for Heatizon Systems Floorizwarm AC and Specified Radiant Panel Heating Components

Heatizon Systems warrants to the end users of the following products that for the periods noted such products shall be free from defects in material and workmanship: Floorizwarm Cable Heating Element (E101-14) for a period of twenty-five (25) years, the Control Box Transformer for a period of five (5) years, and the Activation Device(s) for a period of one (1) year. Such warranty periods shall commence on the date of shipment by Heatizon Systems. If any parts are found to be defective in manufacture material or workmanship 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, accidental damage, 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:

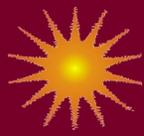
1. The workmanship of any installer of Heatizon Systems products.
2. Any Heatizon Systems products that have a failure or malfunction resulting from improper or negligent operation, installation, accident, abuse, misuse, unauthorized alteration or improper repair or maintenance.
3. Any Heatizon Systems 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 provided with your product.

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 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.

INSTALLATION INSTRUCTIONS



A. VERIFY PROPER FLOORIZWARM SYSTEM SIZING

The Floorizwarm Tuff Cable Heating Element comes in pre-established lengths that have been designed to deliver a specified heat density. Therefore, it is essential that **ALL** of the Floorizwarm Tuff Cable Heating Element contained in your kit be installed. To insure that the Floorizwarm Model you have purchased is the correct size for your project, complete this simple worksheet prior to beginning the installation process.

STEP 1. Calculate Square Footage. Determine the square footage of the area to be warmed. Enter the total square footage on line A.

Line A _____
(Square Footage)

STEP 2. Determine Watts Per Square Foot. Determine the Watts per square foot that you will need for your application. Heatizon Systems suggests the following Watts per square foot:

Floor Warming—7.5 to 15 Watts per square foot

Space Heating—Watts per square foot and spacing between element runs should be determined by a heat loss calculation. Contact Heatizon Systems for information on how to obtain a heat loss calculation.

Enter the desired total Watts per square foot on Line B.

Line B _____
(Watts per Square Foot)

STEP 3. Calculate Total Watts. Calculate total Watts by multiplying Line A by Line B, and enter the result on Line C.

Line C _____
(Total Watts)

STEP 4. Select the Correct Floorizwarm Model. Select the Floorizwarm model that will deliver the total watts calculated in Step 3. Heatizon Systems recommends that you select the next larger Floorizwarm Model if the total Watts calculated in Step 3 is between two models. Check the model number, and write the corresponding “Length of Element” on Line D.

Line D _____
(Length of Element)

Floorizwarm Model	Total Watts	Length of Element
<input type="checkbox"/> Floorizwarm 1520	228	50 feet
<input type="checkbox"/> Floorizwarm 2030	324	80 feet
<input type="checkbox"/> Floorizwarm 2536	360	70 feet
<input type="checkbox"/> Floorizwarm 3650	528	160 feet
<input type="checkbox"/> Floorizwarm 5064	688	125 feet
<input type="checkbox"/> Floorizwarm 6475	980	260 feet
<input type="checkbox"/> Floorizwarm 75110	1204	225 feet

STEP 5. Calculate Element Spacing. Calculate the amount of space Between the runs of element for your application and the Floorizwarm Model you have selected. Note that spacing between element runs should not exceed 6 inches. Enter the element spacing on Line E.

$$\underline{\hspace{2cm}} \div \underline{\hspace{2cm}} \times 12 = \underline{\hspace{2cm}}$$

Line E _____ inches
(Element Spacing)

Square footage From Line A Above	÷	Length of Element from Line D Above	× 12 =	Element Spacing (Enter on Line E)
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This worksheet should confirm that you have purchased the correct Floorizwarm model, and also assist you in the installation process by determining the amount of spacing between that should be placed between element runs. In the event that you have not purchased the correct Floorizwarm model, call Heatizon Systems at 888-239-1232, or contact your Heatizon Distributor.



B. SELECT LOCATION FOR THE FLOORIZWARM POWER UNIT, THERMOSTAT, AND FLOOR SENSOR

Note: When installing Heatizon Systems products, strict compliance with the National Electrical Code, local Building Codes, and Heatizon Floorizwarm System Installation Manual is essential.

Determining the placement location of the Floorizwarm Power Unit Back Plate, thermostat and remote sensor is the first step in the installation process. Do not install these components now; just determine the location where they will be installed.

The placement of the Floorizwarm Power Unit back plate must allow for easy future access, good air flow, and protection from moisture. Acceptable locations include garages, basements, utility rooms, or mechanical rooms.

The Floorizwarm Power Unit must be located within 20 total vertical and horizontal feet from where the Floorizwarm Tuff Cable heating Element will begin and end.

The provided thermostat should be located in a convenient location in close proximity to the area where the Floorizwarm Heating Element will be located. A single gang box is required for the installation of the thermostat, and should be installed at this time.

It is recommend that the floor sensor for the provided thermostat be installed at the midpoint between two runs of Floorizwarm Heating Element. This will be done at the same time the Floorizwarm Tuff Cable Heating Element is installed..

Use the following guidelines for locating the Floorizwarm Power Unit Back Plate:

Location must be easily accessible for installation, service and maintenance.

Maintain a minimum of 6 inches of clearance between the Back Plate and any ceiling, wall, floor or adjacent Back Plate.

Do not locate Back Plate in an area where it will be covered.

Do not place in an area where high humidity is present, or where Control Unit may be exposed to water.



C. COMPLETE ELECTRICAL POWER REQUIREMENTS AND WIRING TO THERMOSTAT AND FLOORIZWARM POWER UNIT

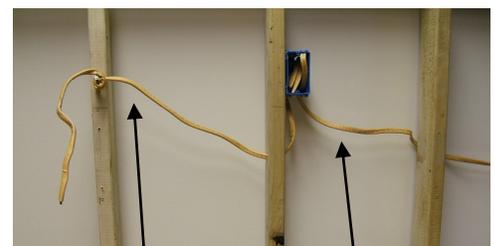
The Floorizwarm Power Unit requires an input power of 120 VAC (see table below to calculate breaker requirements). One AWG #12/2 with ground wire electrical conductor must extend from the electrical distribution panel to the thermostat, and another AWG #12/2 wire from the thermostat to the Floorizwarm Power Unit.

Model Number	Total Watts
Floorizwarm 1520	228
Floorizwarm 2030	324
Floorizwarm 2536	360
Floorizwarm 3650	528
Floorizwarm 5064	688
Floorizwarm 6475	980
Floorizwarm 75110	1204

Run the line voltage wires the total horizontal and vertical distance from the distribution panel to the Thermostat, and from the Thermostat to the Floorizwarm Power Unit Back Plate in accordance with the NEC and local building codes.

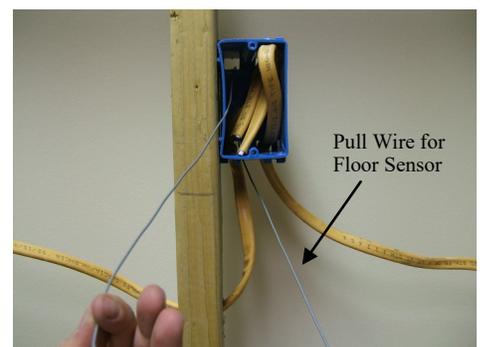
If there is a possibility that the wall may be sheetrocked or otherwise closed in prior to completion of the Floorizwarm installation, you may wish to install a "pull wire" as a precaution to facilitate correct installation of the floor sensor and/or heating element cold leads.

caution to facilitate correct installation of the floor sensor and/or heating element cold leads.



To Floorizwarm Power Unit

To Electrical Distribution Panel





D. INSTALL FLOORIZWARM TUFF CABLE HEATING ELEMENT

Note: A continuous continuity check should be conducted on the Floorizwarm Tuff Cable Heating Element and all electrically conductive material prior to and during the pouring of concrete, installation of floor coverings, and immediately prior to energizing all Floorizwarm products. The circuit should always be open. Always complete a Heatizon systems "After Installation Element Test Form" (see forms in the back of this manual) immediately following the installation of the Floorizwarm Heating Element, immediately prior to covering the Floorizwarm Heating Element, and again just prior to energizing your Floorizwarm Power Unit.

Note: In order to minimize the risk of damage to the Floorizwarm Tuff Cable Heating Element, Heatizon Systems recommends that the Floorizwarm Tuff Cable Heating Element be installed immediately prior to the installation of the thinset concrete, mortar or other cementitious material that goes over it.

Note: The Floorizwarm Tuff Cable Heating Element comes in pre-established lengths that have been designed to deliver a specified heat density. Therefore, it is essential that all of the Floorizwarm Tuff Cable Heating Element contained in your kit be installed.

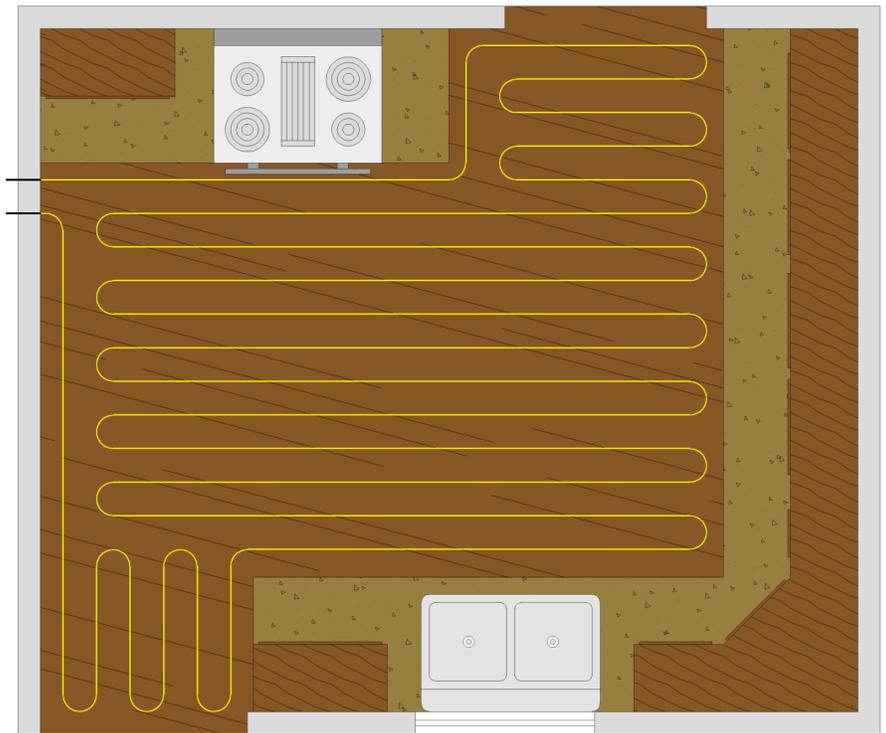
Begin by designing the layout of the Floorizwarm Heating Element. The design and installation of the Floorizwarm Tuff Cable Heating Element will be easier if you:

Purchase the correct Floorizwarm product with the proper amount of Floorizwarm Heating Element for your project.

Plan the layout of the Floorizwarm Heating Element before you begin the actual installation

Begin and end the Floorizwarm Heating Element in the same area, adjacent to the location you have selected for the Floorizwarm Power Unit.

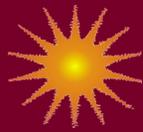
Run the Floorizwarm Heating Element in evenly spaced runs parallel to each other.



SAMPLE FLOORIZWARM TUFF CABLE HEATING ELEMENT LAYOUT

Note: When installing Heatizon Systems products, strict compliance with the National Electrical Code, local Building Codes, and Heatizon Floorizwarm Installation Manual is essential.

Warning: Never cross the Floorizwarm Heating Element over itself, the in-floor sensor wire, or any other conductive material or wire.

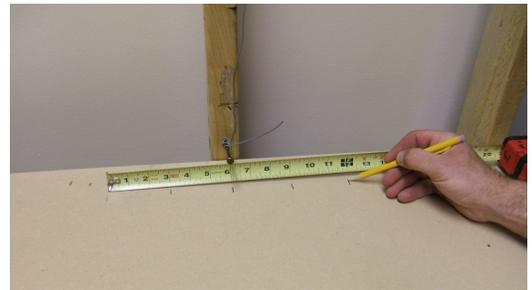


FLOORIZWARM TUFF CABLE HEATING ELEMENT INSTALLATION:

- Make sure you have verified that you have purchased the correct Floorizwarm System to heat the area you have selected and that you have determined the correct spacing for the area you are heating, the Watts you need the system to deliver, and the size of system you purchased (see "Verify Proper Floorizwarm System Sizing").



- Plan room layout using tape measure, marking pencil, and chalk line. Lay out perimeter of area to be heated first, keeping a minimum of 3 inches from walls and or cabinets and the first run of element. Once the layout is complete, roll out the Floorizwarm Tuff Cable Heating Element, making sure that both ends of the heating element (where the Floorizwarm Tuff Cable Heating Element is pre-connected to the Cold Lead segment) are within 20 vertical and horizontal feet of the Power Unit location to accommodate Cold Lead length.

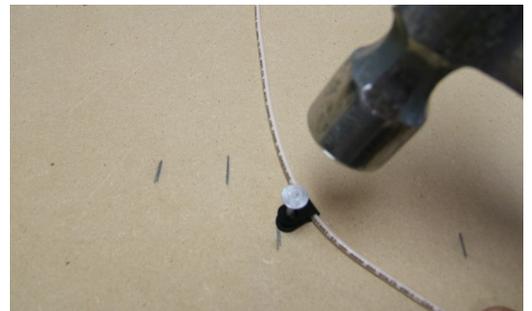


- Tie off one Cold Lead at the location where the Floorizwarm Power Unit will be located. Continue by laying out Floorizwarm Tuff Cable Heating Element on the predetermined layout, and fasten with plastic clips as described below for your floor surface.

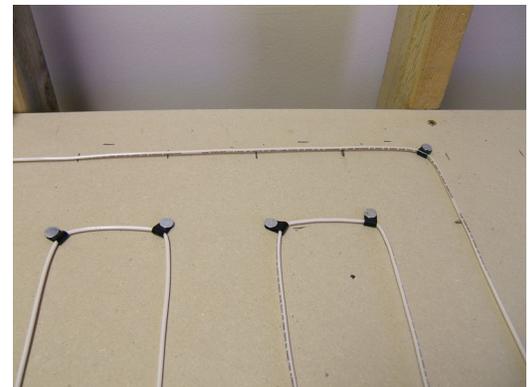


Note: All of the Floorizwarm Tuff Cable Heating Element and the connection between the Tuff Cable and Cold Lead must be surrounded by cementitious material.

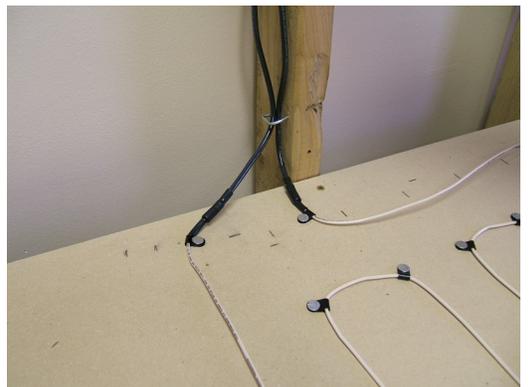
- Anchor the Floorizwarm Tuff Cable Heating Element using the Plastic Clips and nails provided in the Floorizwarm Hardware Kit to hold Floorizwarm Tuff Cable Heating Element to wood subfloors. Never use any attachment that will compromise the Floorizwarm Tuff Cable Heating Element or its insulation in any way. Each 90E bend and each 180E turn requires two Heatizon Plastic Clips. Heatizon Plastic Clips should be spaced approximately every 24 inches along the length of the heating element. Heatizon Plastic Clips can be inserted around Floorizwarm Tuff Cable Heating Element, and secured to sub floor by hammering nail through anchor ends until both plastic tails are flat against sub floor surface. Repeat with each Heatizon Plastic Clip until all clips are secure.



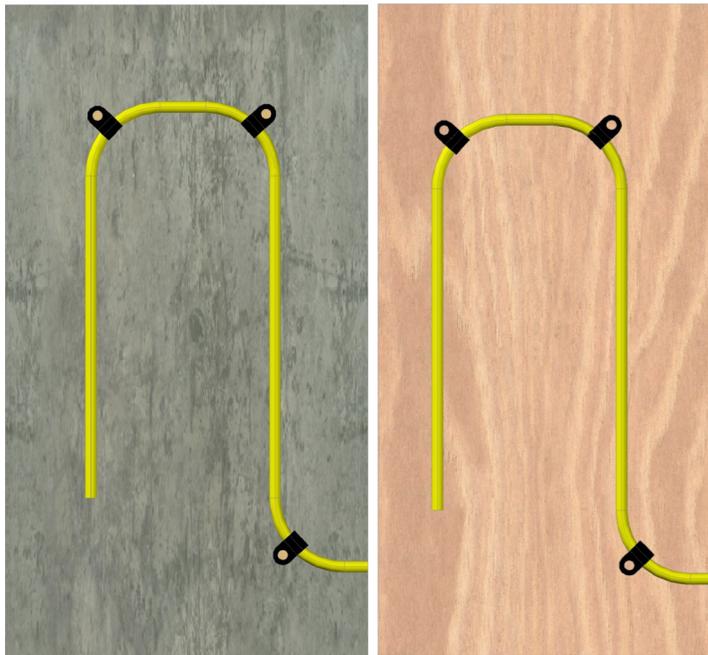
- If Floorizwarm Tuff Cable Heating Element is being installed directly on existing concrete, a Heatizon Anchoring Plug Kit may be purchased. Use a 1/4" cement drill bit to drill holes 1" deep in every location where a Heatizon Plastic Clip will be located. Install one Tuff Cable Anchoring Plug into each pre-drilled hole by tapping plugs until they are flush with the surface of the concrete. Tuff Cable Anchoring Plugs should fit tightly in pre-drilled holes. Insert Heatizon Plastic Clips around Tuff Cable element and secure by hammering nail through anchor ends directly into Tuff Cable plug, until both plastic tails of the clip are flat against the concrete and plug. Repeat with each Heatizon Plastic Clip until all clips are secure.



- Continue laying out and anchoring Floorizwarm Tuff Cable Heating Element until complete. Make certain both ends of Cold Lead attached to the Floorizwarm Tuff Cable Heating Element return to the Power Unit location. When all of the Floorizwarm Tuff Cable Heating Element has been installed and secured, run the second Cold Lead parallel to the first Cold Lead back to the Power Unit, and secure both Cold Leads to the stud nearest the chosen location for the Power Unit.



- Conduct the first After Element Installation Test at this time.

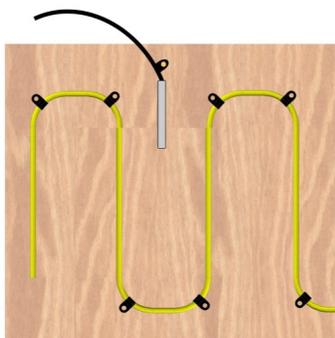
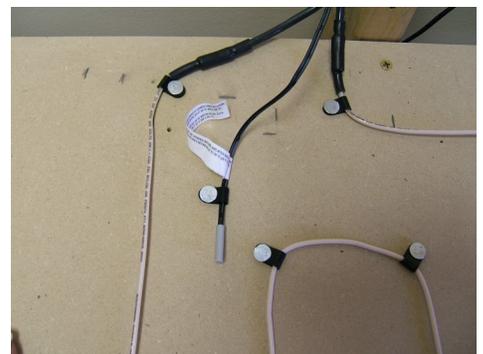
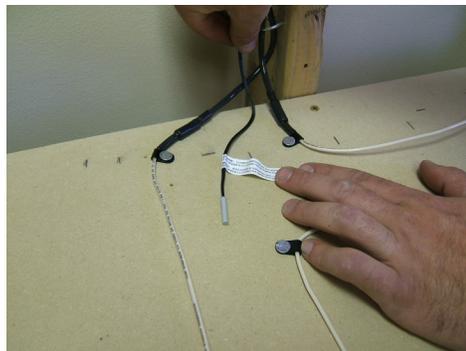
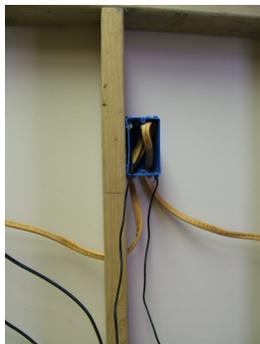


Warning: Never cut or otherwise attempt to alter the length of the Floorizwarm Tuff Cable Heating Element. Always inspect the Cold Leads and the Floorizwarm Heating Element just prior to embedding in the light-weight concrete or mortar material. In the event the Floorizwarm Tuff Cable Heating Element gets cut, nicked, or otherwise damaged it must be replaced with new Floorizwarm Heating Element with factory attached Cold Leads from Heatizon Systems. Do not use Floorizwarm Tuff Cable Heating Element that has been altered, cut, nicked or otherwise damaged in any way.

Note: Floorizwarm Tuff Cable Heating Element must not be installed in ceilings, closets (floor areas that are or will be covered or obstructed by shelves, cabinets, clothing, storage items, bean bags, LoveSacs, etc.) nor over or in walls or partitions.

Note: Always allow a minimum of 1.5 inches of distance between the runs of Floorizwarm Heating Element.. Minimum, maximum and ideal spacing between Floorizwarm Tuff Cable Heating Element is determined by the size of the system purchased.

E. INSTALL THE TEMPERATURE FLOOR SENSOR



Install the floor sensor provided with the thermostat from the single gang box to the area where the heating element is installed. It is recommend that the floor sensor probe be installed at the midpoint between two runs of Floorizwarm Heating Element.

The floor sensor probe portion should be secured using a plastic clip and nail on the wire just above the floor sensor probe. Run the other end of the wire through the single gang box located at the chosen thermostat location.

Make sure the floor sensor probe does not come into contact with the Floorizwarm Tuff Cable Heating Element.



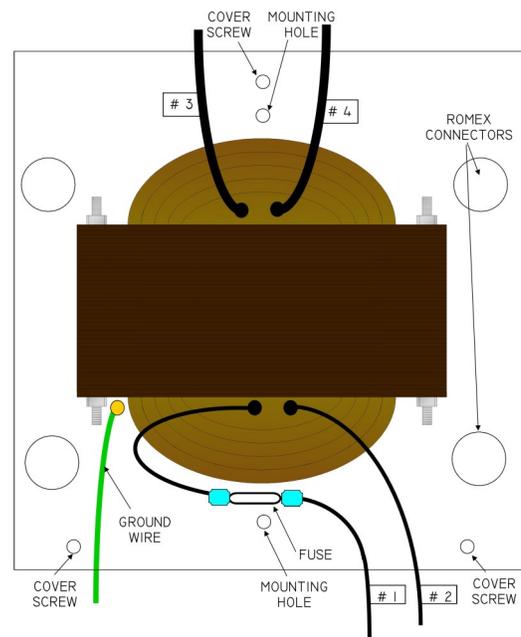
F. INSTALL THE FLOORIZWARM POWER UNIT BACK PLATE

Note: Make certain power supply is off before proceeding with installation of the Floorizwarm Power Unit.

The Floorizwarm Power Unit requires an input power of 120 VAC (see table below to calculate breaker requirements). One AWG #12/2 with ground wire electrical conductor must extend from the electrical distribution panel to the thermostat, and another AWG #12/2 wire from the thermostat to the Floorizwarm Power Unit.

Remove the cover screws from the top and bottom of the Power Unit, remove the cover and set cover aside.

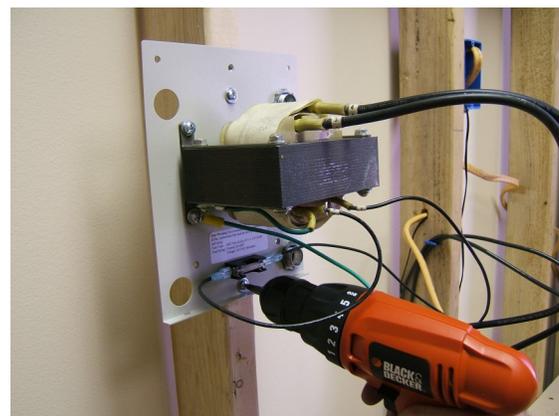
Familiarize yourself with the Transformer and its associated wires. The two large black wires on top of the Transformer are labeled #3 and #4. These wires will eventually connect to the two Cold Leads coming from the Floorizwarm Tuff Cable Heating Element. The two small black wires at the bottom of the Transformer are labeled #1 and #2, and are used to connect to the hot and common wires from the thermostat. One of these wires runs through a fuse at the bottom of the Floorizwarm Power Unit back plate. The green wire is used to ground electrical connection for the Floorizwarm System.

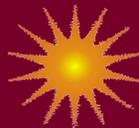


Install Romex Connectors into two of the pre-drilled holes or knock outs in the Floorizwarm Power Unit back plate. One of the upper pre-drilled holes or knock outs will be used for the Cold Leads, and one of the lower pre-drilled holes or knock outs for the primary power. Push through the back to the front, and tighten down the locking nut on the front of back plate.

Using the provided #8 panhead screws, mount the Floorizwarm Power Unit back plate onto a stud or other adequate surface. The Power Unit should be mounted using the two designated holes in the center of the Floorizwarm Power Unit back plate. Note: The two holes in the upper corners of the back plate may also be used for mounting if needed.

Run the #12/2 electrical conductor wire through the bottom hole





G. MAKE THE FLOORIZWARM POWER UNIT CONNECTIONS

with Romex Connector. Trim end of #12/2 to needed length, and strip 4" to 5" of plastic insulation from the protruding end of the wire. This will expose three wires: a copper ground wire, a white common line and a black hot line.

Run both Cold Leads through the top hole with Romex Connector. Trim the end of both Cold Leads to needed length and strip approximately 1" of insulation from the end of each Cold Lead.

Locate the green ground wire, located at the bottom side of the Transformer, and strip approximately 1" of insulation from the end of the wire. Using one of the provided yellow wire nuts, connect the bare copper wire from the 12/2 electrical conductor to the end of the green ground wire.

Trim end of the large black transformer wires (# 3 and #4) to the appropriate length. Strip approximately 1" of insulation from the end of the white common line and black hot line, as well as the four black wires coming from the transformer (line #1, #2, #3, and #4)

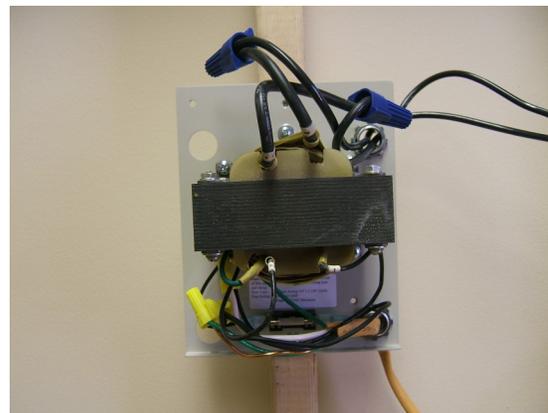
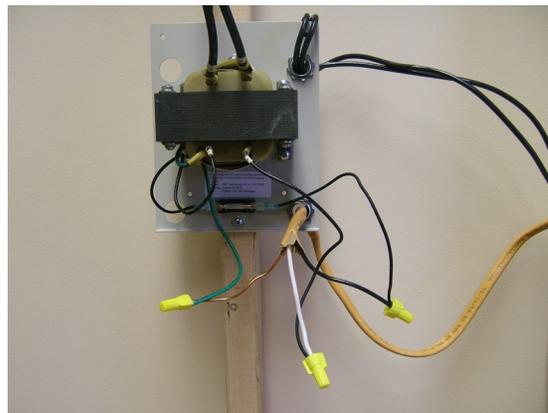
Connect the black hot line from the #12/2 to the line that contains the fuse (small transformer line #1) using a yellow wire nut,

Connect the white common line from the #12/2 to small transformer line #2 using a yellow wire nut..

Connect one large transformer wire (#3) to one of the Cold Lead ends and the other large transformer wire (#4) to the other Cold Lead end, using blue wire nuts.

Tuck the wires in and replace the Power Unit cover. All connections must be contained inside the Floorizwarm Power Unit. Do not allow any wire to be pinched between the back plate and the cover.

Mark the appropriate circuit breaker reference label indicating which branch circuit supplies the circuit to your Floorizwarm Power Unit and thermostat.





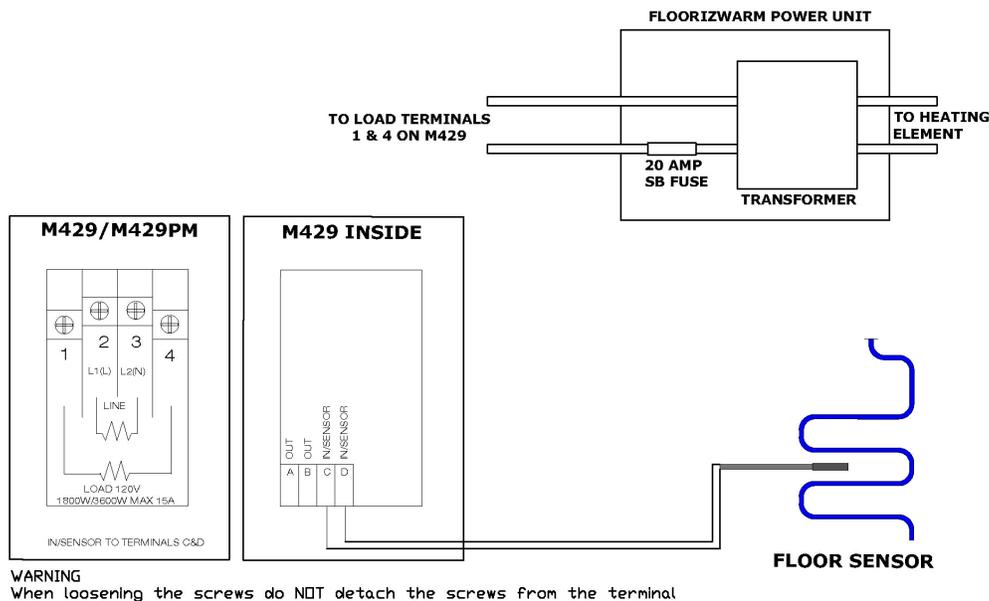
H. INSTALL THE FLOORIZWARM THERMOSTAT

Power the thermostat with a dedicated power supply directly from the electrical distribution panel using AWG #12-2 electrical conductor with ground wire and a 15 or 20 Amp breaker and following the thermostat manufacturer's instructions. See the installation Instructions and diagrams that follow, or refer to thermostat packaging for details.

Tips: The back of the thermostat has two sets of black and white wires: One pair (one black and one white on the same side of the thermostat) for the line voltage (incoming power) and one pair for load output to Floorizwarm Power Unit). Follow the diagram in the instructions, insuring that the outer black and white wires will be wired to corresponding black and white wires connecting to the Floorizwarm Power Unit, and the inner black and white wires will be wired to corresponding black and white wires connecting the thermostat to the power supply.

The two copper ground wires will be connected using the wire nut (supplied with thermostat), and tucked inside the thermostat electrical gang box.

Program the thermostat.



I. COVER THE TUFF CABLE

Apply enough light-weight concrete, mortar, thinset, or other cementitious material over the Floorizwarm Tuff Cable Heating Element to completely cover it in its entirety and to cover the connections of the Cold Leads and the Floorizwarm Heating Element.

Conduct the third After Element Installation Test at this time.

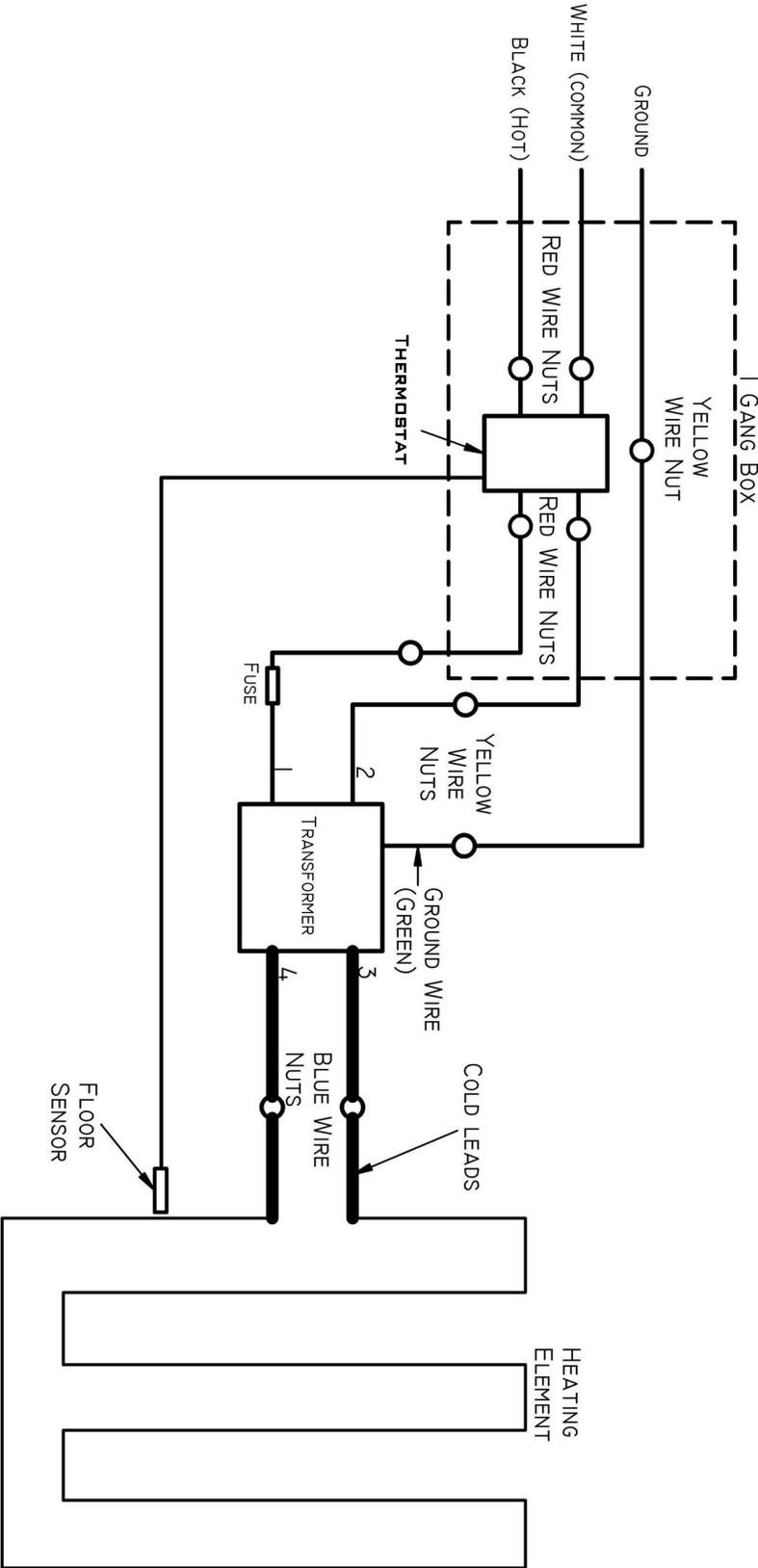
Note: All connections between Cold Leads and Tuff Cable must be embedded in mortar, asphalt, concrete, a Heatizon Heatsink Kit, or other acceptable cementitious heat sink material.

Note: Three After Element Installation Tests should have been performed by this point in the installation.

Note: Complete and return your Warranty Registration card to Heatizon Systems.



FLOORIZWARM WIRING DIAGRAM





M429

Programmable Thermostat with
Remote Bulb Sensor Instructions are included in
its packaging and should be followed



HEATIZON

SYSTEMS

M429 & M429PM

Electronic Floor Warming Programmable Thermostat

Features:

- Up to 4 event programming
- Simple user interface
- Pre-programmed for quick set up
- Monitored energy consumption
- Simple operation — no need for manual
- Multi voltage: 120/208/240 V
- Output Relay 15A
- Large back-lit display for easy reading
- Can be set to automatic, manual, or comfort mode
- Maximum and minimum temperature limitations
- Includes 2 sensors: a built-in air sensor and floor sensor thermistor with 10 feet of NTC (12K Ω) sensor cable
- Compatible with existing floor sensors
- c-UL-us Listed

Additional Power Module Option — In large applications, thermostats can be extended with additional power modules (Part Number M429PM) with built-in Class A GFCI. Output can be increased by 15A per module.

Applications:

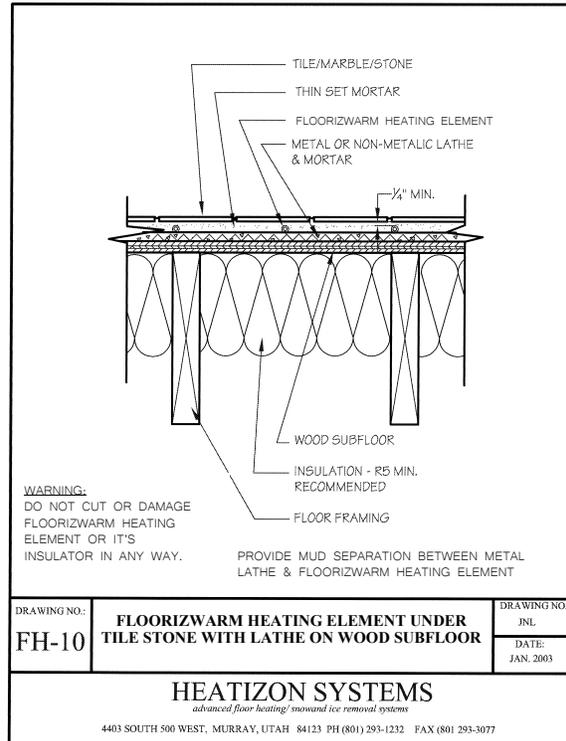
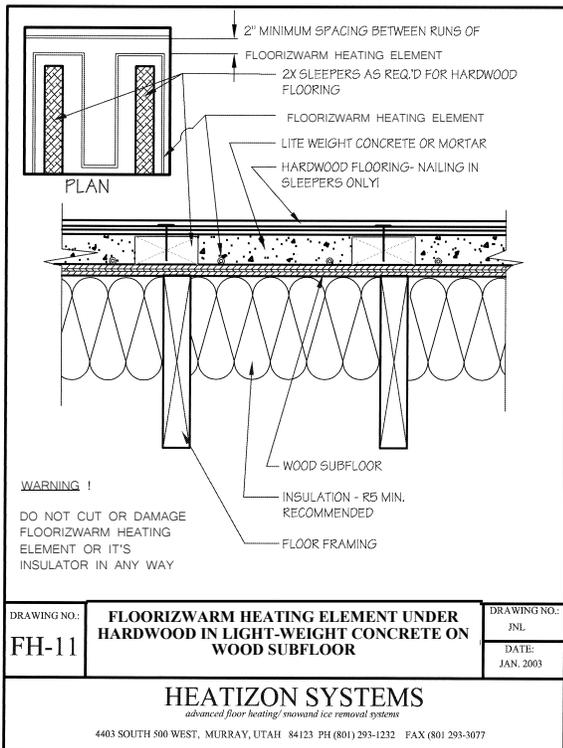
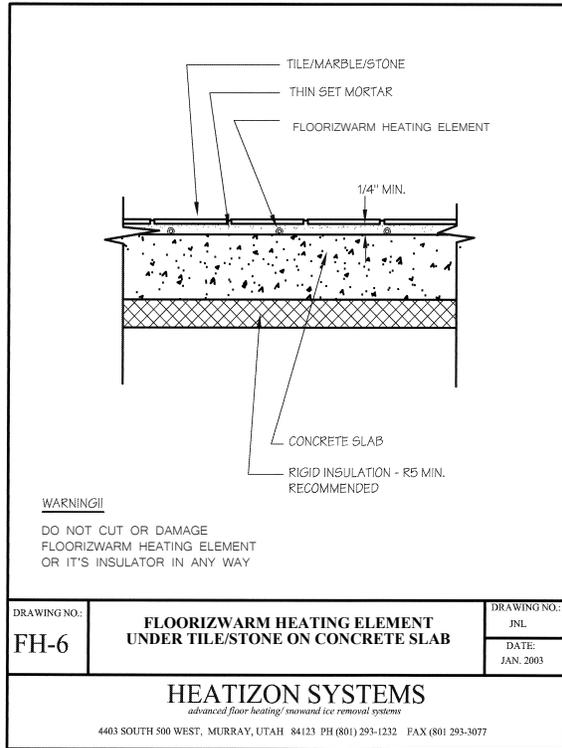
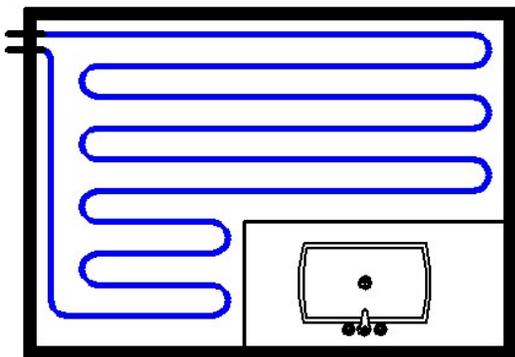
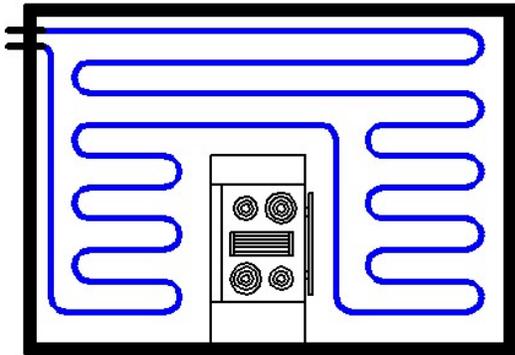
- Interior and Floor Warming
- Line Voltage Activation
- Floorizwarm

Specifications:

- 4.8" wide x 3" tall x 1" deep
- Supply 120-240 VAC 50/60Hz
- Temperature control range: 41°F to 104°F
- Class A GFCI (5 mA trip level)
- On/Off differential 0.7°F
- Nema 2 (IP21) Housing
- 15 Amp maximum resistive load



SAMPLE FLOORIZWARM SYSTEM APPLICATION DIAGRAMS



TROUBLE SHOOTING PROCEDURES



WARNING: HIGH VOLTAGE PRESENT! TROUBLE-SHOOTING PROCEDURES AND MEASUREMENTS MUST BE PERFORMED WITH THE SYSTEM ENERGIZED AND THE COVERS REMOVED. ALWAYS MAKE CERTAIN THAT THE PERSON PERFORMING THESE PROCEDURES IS FAMILIAR WITH SAFE PRACTICES REQUIRED FOR WORKING WITH HIGH VOLTAGE EQUIPMENT. A QUALIFIED TECHNICIAN OR ELECTRICIAN SHOULD PERFORM THE FOLLOWING PROCEDURES!

NOTE: Always turn power off prior to removing or reinstalling covers.

NOTE: Prior to trouble-shooting the system, check for obvious problems such as loose connections, cut or broken wires, etc.

TROUBLE-SHOOTING PROCEDURES:

Problem: If the Floorizwarm Unit does not heat, and there is no power in the Floorizwarm Power Unit:

Solution:

- Turn circuit breaker to the “off” position. Check for proper power connection to the Power Unit.
- Turn circuit breaker to the “off” position. Check all connections in control unit.
- Check that the 20 amp circuit breaker panel is in the “on” position.

Problem: If the Floorizwarm Unit does not heat, but there is power in the Floorizwarm Power Unit:

Solution:

- Check the fuse in the Floorizwarm Power Unit.
- Check that the Thermostat is wired properly.
- Check that the Thermostat is programmed correctly and is calling for heat.
- Check for 120 VAC on primary of Transformer (line #1 and line #2).
- Check for proper voltage on secondary of Transformer (line #3 and line #4).
- Using a clamp on Amp meter, check for current in the heating element. If not amperage is present, turn the circuit breaker to the Power Unit to the “off” position, disconnect the Cold Lead from the Transformer, and check for continuity of the Floorizwarm Heating Element.

Problem: If the circuit breaker flips:

Solution:

Call Heatizon systems at 801-293-1232



HEATIZON SYSTEMS

After Installation Element Test

WARNING: This test will not detect cuts in ZMesh, Tuff Cable, or Floorizwarm Heating Element.

Attached please find three forms titled "Heatizon Systems After Installation Element Test". Heatizon Systems requires that the measurements be taken and the attached forms be completed on all zones on three different occasions. It is important that the same source be used to energize the ZMesh, Tuff Cable and Floorizwarm Heating Element for all tests taken.

- Element Test #1— must be conducted immediately after the Cold Lead and ZMesh, Tuff Cable, or Floorizwarm Heating Element has been installed and before it has been covered up with floor covering, roofing material, concrete, etc.
- Element Test #2 — must be conducted following the covering of the heating element and immediately prior to installing the Control Unit.
- Element Test #3 — must be conducted immediately following the energizing of the system but prior to placing it in service.

All of these tests may be conducted by using either the Control Box and Transformer, or just the Transformer provided as part of your Heatizon Systems Product, or by using Heatizon Systems Element Tester (Part Number NI113). It is Heatizon Systems' recommendation that each test be completed by the party responsible for the installation and witnessed by a representative of the party which contracted for the installation. It is essential that all of the blanks on each After Installation Element Test form be completely filled out and that the form be signed by both the party completing the test and the party witnessing the test.

Conducting these tests will help insure that a third party or an unknown event has not adversely impacted the heating element. In addition the results of these tests may help you in any troubleshooting that must be performed on the system(s).

Warning: In the event any of the measurements taken during the three "After Installation Element Tests" are different, a problem may exist. Do not energize your Heatizon Systems product due to risk of fire and call Heatizon Systems Technical Support at (801) 293-1232 to discuss the options available.

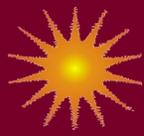
Element Tester Instructions

Part Number NI113

1. Connect one of the welding cable leads from the Element Tester to one of the Cold Leads near the point where the Cold Leads will eventually connect to the transformer. (Note: Cold leads are the #2 (or #8 for Floorizwarm) wires extending from the heating element to the transformer).
2. Connect the other welding cable lead from the Element Tester to the other Cold Lead near the point where the Cold Leads will eventually connect to the transformer.
3. Plug the Element Tester power cord into a 120 VAC power source.
4. Turn the Tester to the ON@ position or power to the transformer if using the provided transformer with the system
5. Using an Ammeter, read the secondary amperage (Amps) and Voltage (Volts) and record them on the form titled Heatizon Systems After Installation Element Test. The voltage is to be read at the connection of the Cold Leads and the welding cable lead from the Element Tester or at the Transformer Taps. Amperage can be read anywhere along either Cold Lead.
6. Read and record the temperature of the area where the heating element is located.
7. Using the numbers recorded on the form titled "Heatizon Systems After Installation Element Test" and the "Operating Table" below the proper output can be verified. Outputs are based on 120V primary and may vary slightly.

Note: When using the Control Box and Transformer or just the Transformer provided as part of your Heatizon product to conduct the "Heatizon Systems After Installation Element Tests," the entire product must be installed per this manual. Once installation is complete, conduct three Element Tests by following steps 4 through 6 above.

Model	Watts	Secondary Volts	Approx. Secondary Amps	Total Resistance Ω
FLZ1520AC	228	6VAC	38	0.158
FLZ2030AC	324	9VAC	36	.0250
FLZ2536AC	360	9VAC	40	0.225
FLZ3650AC	528	16VAC	33	0.485
FLZ5064AC	688	16VAC	43	0.372
FLZ6475AC	980	28VAC	35	0.80
FLZ75110AC	1204	28VAC	43	.651



HEATIZON SYSTEMS

After Installation Element Test Test #1

Complete a separate test for each Control Unit or zone

Date: _____

Current Time: _____

This test is for Zone Number _____ of _____ (Total Number of Control Units/Zones in this system)

Length of Cold Leads including Jumpers: _____ Feet on Side 1 _____ Feet on Side 2*

<u>Model</u>	<u>Serial Number</u>	<u>Length of Heating Element</u>	<u>Number of 90° Folds (ZMesh Only)</u>
<input type="checkbox"/> CBX6	_____	_____ Feet	_____
<input type="checkbox"/> CBX23	_____	_____ Feet on Side 1 and _____ Feet on Side 2*	_____
<input type="checkbox"/> CBX7	_____	_____ Feet	_____
<input type="checkbox"/> Radiant 8	_____	_____ Feet on Side 1 and _____ Feet on Side 2*	_____
<input type="checkbox"/> Floorizwarm	_____	_____ Floorizwarm Model Number	_____

Type of Heating Element: 9" ZMesh 12" ZMesh Tuff Cable Floorizwarm

Description of Area Covered by the Heating Element:

Step 1: Visually inspect the Cold Lead and Tuff Cable or ZMesh Heating Element and properly repair any and all nicks, cuts, tears, and/or other damage to the heating element or Cold Lead.

Step 2: Make certain that communication does not exist between the Cold Lead or Heating Element and any and all electrically conductive material including but not limited to drip edge, valley metal, door thresholds, flashing, metal roofing material, metal studs, rebar, etc. In other words, identify any and all shorts, eliminate them and properly repair any and all damage to the Cold Lead or Heating Element.

Step 3: Measure and record the Primary/Input Power Amps _____ Volts _____

Step 4: Measure and record the surface temperature of the area to be heated or snow melted: _____ degrees F.

Step 5: Measure and record the Secondary/Output Power being delivered by the Transformer:
Side 1: Amps _____ Volts _____ Side 2*: Amps _____ Volts _____

Step 6: Measure and record the surface temperature of the area to be heated or snow melted: _____ degrees F.

Step 7: Sign this form and have a witness sign this form in the appropriate space below.

Test Completed by: _____ Daytime Telephone # _____

Test Witnessed by: _____ Dated: _____, 20____

*For two-sided or "dual" systems only.



HEATIZON SYSTEMS

After Installation Element Test Test #2

Complete a separate test for each Control Unit or zone

Date: _____

Current Time: _____

This test is for Zone Number _____ of _____ (Total Number of Control Units/Zones in this system)

Length of Cold Leads including Jumpers: _____ Feet on Side 1 _____ Feet on Side 2*

<u>Model</u>	<u>Serial Number</u>	<u>Length of Heating Element</u>	<u>Number of 90° Folds (ZMesh Only)</u>
<input type="checkbox"/> CBX6	_____	_____ Feet	_____
<input type="checkbox"/> CBX23	_____	_____ Feet on Side 1 and _____ Feet on Side 2*	_____
<input type="checkbox"/> CBX7	_____	_____ Feet	_____
<input type="checkbox"/> Radiant 8	_____	_____ Feet on Side 1 and _____ Feet on Side 2*	_____
<input type="checkbox"/> Floorizwarm	_____	_____ Floorizwarm Model Number	_____

Type of Heating Element: 9" ZMesh 12" ZMesh Tuff Cable Floorizwarm

Description of Area Covered by the Heating Element:

Step 1: Visually inspect the Cold Lead and Tuff Cable or ZMesh Heating Element and properly repair any and all nicks, cuts, tears, and/or other damage to the heating element or Cold Lead.

Step 2: Make certain that communication does not exist between the Cold Lead or Heating Element and any and all electrically conductive material including but not limited to drip edge, valley metal, door thresholds, flashing, metal roofing material, metal studs, rebar, etc. In other words, identify any and all shorts, eliminate them and properly repair any and all damage to the Cold Lead or Heating Element.

Step 3: Measure and record the Primary/Input Power Amps _____ Volts _____

Step 4: Measure and record the surface temperature of the area to be heated or snow melted: _____ degrees F.

Step 5: Measure and record the Secondary/Output Power being delivered by the Transformer:
Side 1: Amps _____ Volts _____ Side 2*: Amps _____ Volts _____

Step 6: Measure and record the surface temperature of the area to be heated or snow melted: _____ degrees F.

Step 7: Sign this form and have a witness sign this form in the appropriate space below.

Test Completed by: _____ Daytime Telephone # _____

Test Witnessed by: _____ Dated: _____, 20 ____

*For two-sided or "dual" systems only.



HEATIZON SYSTEMS

After Installation Element Test Test #3

Complete a separate test for each Control Unit or zone

Date: _____

Current Time: _____

This test is for Zone Number _____ of _____ (Total Number of Control Units/Zones in this system)

Length of Cold Leads including Jumpers: _____ Feet on Side 1 _____ Feet on Side 2*

<u>Model</u>	<u>Serial Number</u>	<u>Length of Heating Element</u>	<u>Number of 90° Folds (ZMesh Only)</u>
<input type="checkbox"/> CBX6	_____	_____ Feet	_____
<input type="checkbox"/> CBX23	_____	_____ Feet on Side 1 and _____ Feet on Side 2*	_____
<input type="checkbox"/> CBX7	_____	_____ Feet	_____
<input type="checkbox"/> Radiant 8	_____	_____ Feet on Side 1 and _____ Feet on Side 2*	_____
<input type="checkbox"/> Floorizwarm	_____	_____ Floorizwarm Model Number	_____

Type of Heating Element: 9" ZMesh 12" ZMesh Tuff Cable Floorizwarm

Description of Area Covered by the Heating Element:

Step 1: Visually inspect the Cold Lead and Tuff Cable or ZMesh Heating Element and properly repair any and all nicks, cuts, tears, and/or other damage to the heating element or Cold Lead.

Step 2: Make certain that communication does not exist between the Cold Lead or Heating Element and any and all electrically conductive material including but not limited to drip edge, valley metal, door thresholds, flashing, metal roofing material, metal studs, rebar, etc. In other words, identify any and all shorts, eliminate them and properly repair any and all damage to the Cold Lead or Heating Element.

Step 3: Measure and record the Primary/Input Power Amps _____ Volts _____

Step 4: Measure and record the surface temperature of the area to be heated or snow melted: _____ degrees F.

Step 5: Measure and record the Secondary/Output Power being delivered by the Transformer:
Side 1: Amps _____ Volts _____ Side 2*: Amps _____ Volts _____

Step 6: Measure and record the surface temperature of the area to be heated or snow melted: _____ degrees F.

Step 7: Sign this form and have a witness sign this form in the appropriate space below.

Test Completed by: _____ Daytime Telephone # _____

Test Witnessed by: _____ Dated: _____, 20____

*For two-sided or "dual" systems only.



Roof De-icing—Non Metal Roofing

ZMesh Heating Element is easily installed under most non-metallic roof coverings, including asphalt, shake, or tile shingles to provide “invisible” eave and valley ice melting and prevention of snow build up and ice

Roof De-icing—Metal Roofing

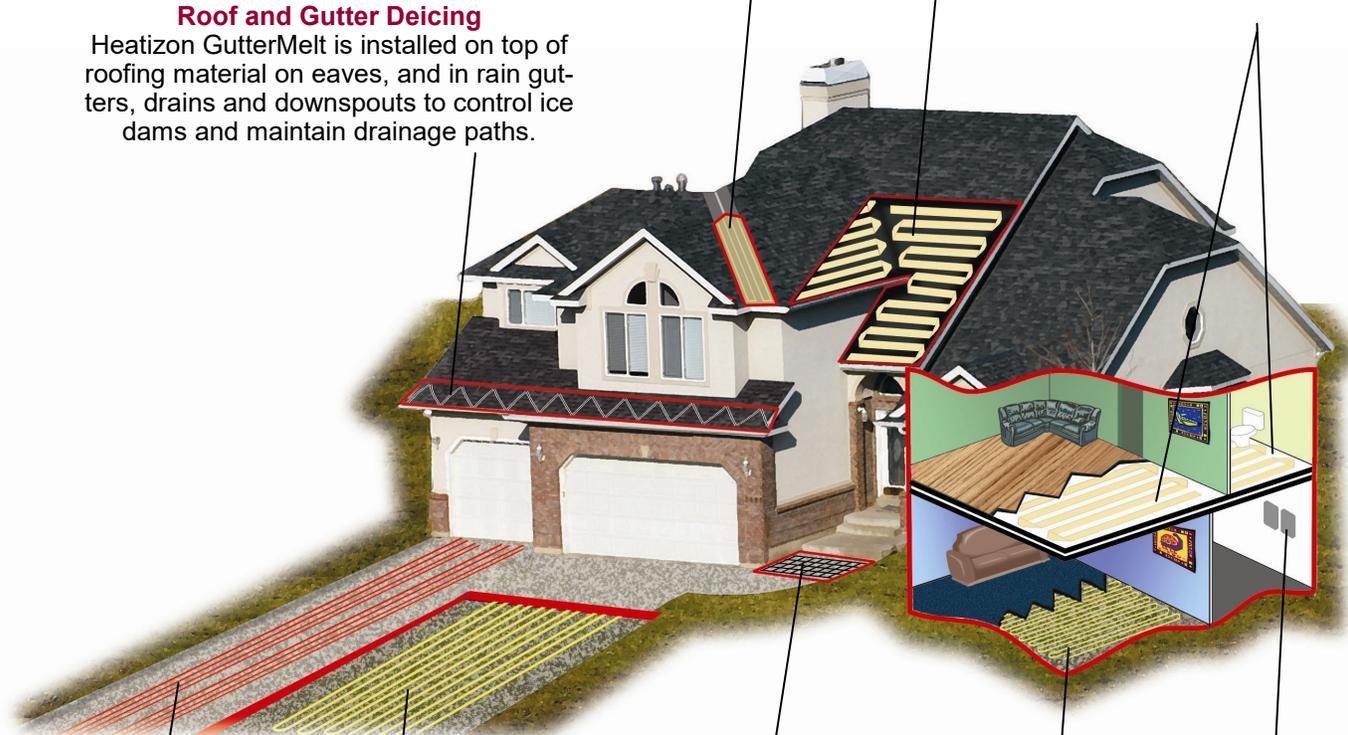
Tuff Cable Heating Element is installed in a Patented Heatizon Heatsink Kit or Heatizon Invizimelt Kit when metal roofing materials are used.

Roof and Gutter Deicing

Heatizon GutterMelt is installed on top of roofing material on eaves, and in rain gutters, drains and downspouts to control ice dams and maintain drainage paths.

Floor Warming/Space Heating

ZMesh Heating Element is installed on a wood or concrete subfloor under carpet, laminate flooring, hardwood, or tile. Two or more smaller rooms can easily be “jumped” together to heat multiple areas with one system.



Snow Melting—New Pour

Tuff Cable or Hott-Wire Heating Element is installed in concrete, asphalt, or under pavers for safe and convenient snow melting solutions.

Snow Melting—Retrofit

Tuff Cable or Hott-Wire Heating Element is installed in saw cuts in existing concrete or asphalt; cuts are then filled with sealant.

Snow Melting—Stairs & Sidewalks

Tuff Cable or Hott-Wire Heating Element is installed in sidewalks and stairs, access ramp, in/under concrete, asphalt, or under pavers.

Floor Warming/Total Space Heating

Tuff Cable or Cozy Heat is installed in concrete of basement (or on a concrete or wood subfloor embedded in a cementitious material) directly under carpet, tile, hardwood, and laminate floorings.

The Control Unit (Low Voltage Only)

The Heatizon Control Unit is the “brains” of the system, and houses the necessary electrical components to provide low voltage electricity to the heating elements. Because the largest Control Unit is only 17” x 12” x 9”, it can be mounted easily on a garage, utility room or mechanical room wall.