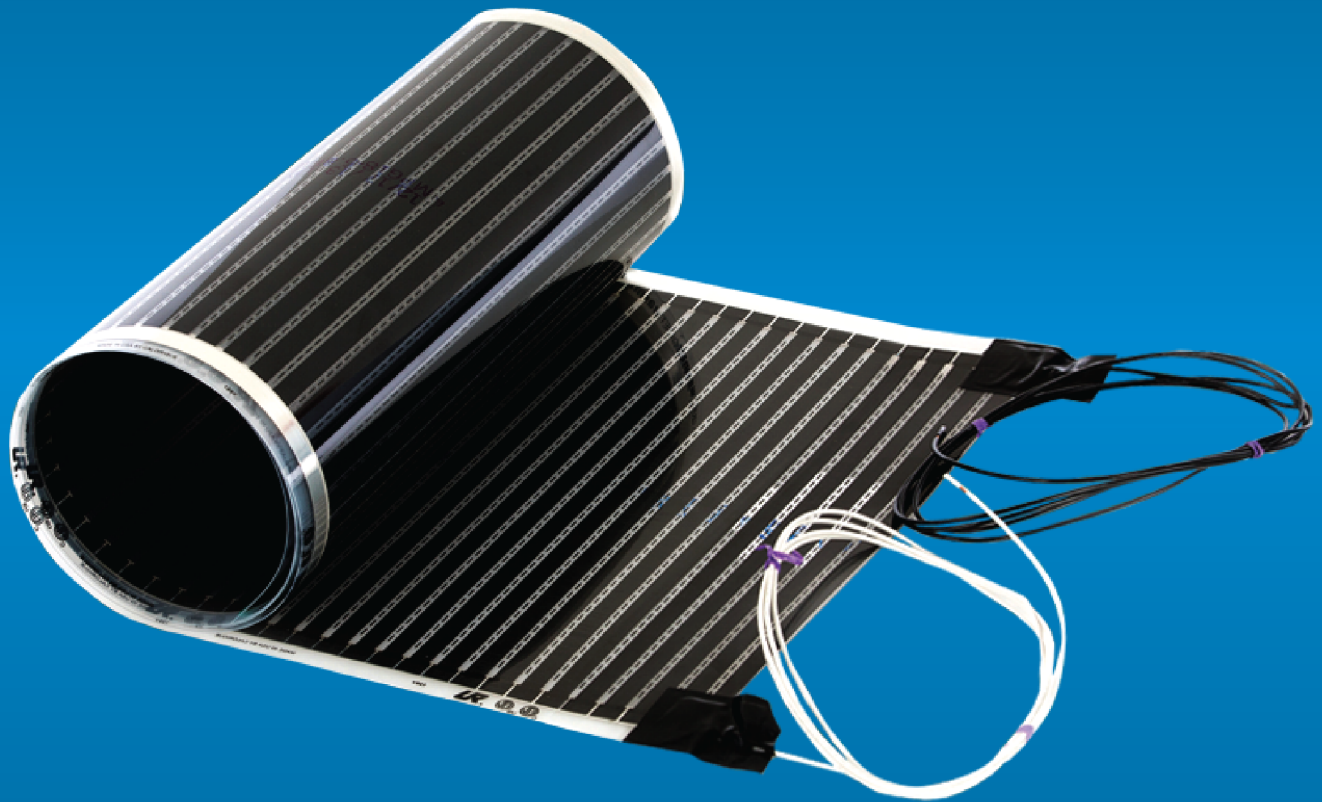


# QUIETwarmth<sup>®</sup>

## FLOAT



### RADIANT HEAT FILM FOR FLOATING FLOORING

**MP**global

**NALFA** nwfa  
NORTH AMERICAN LAMINATE  
FLOORING ASSOCIATION National Wood  
Flooring Association

**W** WORLD FLOOR COVERING  
ASSOCIATION

**TCNA**  
TILE COUNCIL OF NORTH AMERICA, INC.

# Notes Page:

Date Installed: \_\_\_\_\_

General Contractor: \_\_\_\_\_

    Contact Information: \_\_\_\_\_

Electrical Contractor: \_\_\_\_\_

    Contact Information: \_\_\_\_\_

Flooring Contractor: \_\_\_\_\_

    Contact Information: \_\_\_\_\_

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# Table of Contents

## Before You Begin

Safety Information	4
Don'ts	5
Dos	5
Introduction	6
Features	6

## Planning

Approved Floor Coverings	7
Approved Substrates	7
Recommended Underlayments	7
Design the Layout	8
Designing for Large Areas	9
QuietWarmth 2-in-1 Mats	10
My Layout	11
Calculate Total Heated Area	12
Plan Your Control Devices	13
Power Modules	13
Gather Materials Needed	13

## Prep

Prepare the Electrical (Section for Licensed Electrician)	14
GFCI Protection	14
Prepare The Power Supply	14
Additional Power Circuits	14
Locating the Thermostat(s)	15
Install Electrical Boxes	15
Bottom Plate Work	15
Install Conduit	15
Install Thermostat Sensor	15
Connect Junction Boxes	15
Prepare the Subfloor	16
Prep	16
Inspect	16
Clean	16
Create Recesses for Connections/Wires	18
Lead Wire and Connections Channel	18
Thermostat Sensor Channel	18
Install Vapor Barrier and Underlayment	19
Vapor Barrier Requirement (Concrete Subfloor)	19
Underlayment (Glue Down Only)	19

# Table of Contents (cont)

## QuietWarmth Install

Unpack the Mats	20
Anatomy of the Mats	21
Check Resistance	22
Prepare the Mats for Install	23
Altering the Length of the Mats	23
Insulate Cut Ends	24
Check Resistance (AGAIN)	25
Calculate Resistance Based on Number of Bars	26
Install Mats	27
Install Thermostat Sensors	28
Electrical Connection & Testing (Section for Licensed Electrician)	29
Wiring Diagrams	30
Visual Inspection	32
Check Resistance (Third Time)	32
Energize Mat & Test for Heating	33
<b>STOP! Check Your Work!</b>	34
Flooring Install	35
Install Finished Flooring	35
Check Resistance (Fourth Time)	35
Place Caution Stickers	36
Repair/Remodel Information	36
Post Installation	37
Troubleshooting	37
For Additional Help	37
Operating the System	38
Suggestions to Optimize Performance	38
Precautions	38
Documentation	38
Warranty Registration	39



# Before You Begin

## Safety Information

This equipment shall be installed only by qualified personnel who are familiar with the construction and operation of the apparatus and the risks involved.

Throughout this manual you will see icons to draw your attention to important cautions. These highlight conditions, procedures, or other information that require special attention. For a safe and functional installation of QuietWarmth mats, read and follow these important safety precautions. This information must be read and understood by all technicians who will be working with electrical systems or in the area of an installed QuietWarmth mat. Failure to comply may result in damage to the mats, electrical shock, or personal injury.



**Indicates precautions or procedures that should be followed to prevent the possibility of fire.**



**Indicates precautions or procedures that should be followed to prevent the possibility of electrical shock.**



**Indicates an item that you should pay special attention to. For example, notes are used to highlight installation tips.**

QuietWarmth places a strong emphasis on quality assurance through meticulous adherence to a rigorous testing regimen and the enforcement of stringent processes. The company strategically incorporates a minimum of one certified logo on each product or system component, denoting compliance with safety standards set by Nationally Recognized Testing Laboratories (NRTL). This steadfast commitment to avoiding shortcuts or compromises underscores QuietWarmth's dedication to delivering technically sound and dependable solutions. If you have any specific inquiries or require additional technical details about QuietWarmth's products, feel free to inquire without hesitation.



## Don'ts

- ⊗ Don't install in "wet areas", i.e. showers, steam rooms, pool rooms, etc. Bathroom floors are not considered wet areas and are an acceptable location for mats. Locations must be considered dry locations by the National Electrical Code.
- ⊗ Don't fold, bend, or crinkle the mats.
- ⊗ Don't install mats in walls, under walls or partitions, or under cabinets. A vanity with "feet" at least 2 inches tall is acceptable as there is proper airflow.
- ⊗ Don't place mattresses, beanbag chairs, or flat bottom furniture directly over mats. This could trap the heat and cause damage to your flooring or potentially cause a fire.
- ⊗ **Don't use area rugs, floor mats, hampers, etc. over mats.** Similarly, don't leave towels or piles of clothes on the floor where mats are installed for long periods of time. Trapped heat can cause damage to your flooring and potentially lead to a fire.
- ⊗ Don't install toilets, shower pans, bathtubs, or other bathroom fixtures over mats.
- ⊗ Don't install decorative trim, baseboard trim, etc. over top of the mats, or mechanically fasten anything through the mats.
- ⊗ Don't install mats underneath appliances such as refrigerators, dishwashers, stoves, etc as they generate heat.
- ⊗ Don't overlap the mats.
- ⊗ Don't install the mats until ready to install the flooring, as unintentional damage could occur when left exposed to traffic.
- ⊗ Don't route supply leads across the heating elements of the mats.
- ⊗ Don't use a floor covering that exceeds R-value 1.0.

## Dos

- ✓ Do follow all installation instructions. Improper installation techniques and procedures can result in potentially unsafe conditions, including overheating and shock hazards. Improperly installed mats may not work, heat poorly, or cause nuisance GFCI tripping. Failure to follow these instructions will void the manufacturer's warranty.
- ✓ Do follow all National, State, and Local Electrical Codes.
  - In the United States, installation of this product shall be in accordance with Article 424 of the National Electrical Code ANSI/NFPA 70.
  - In Canada, installation of this product shall be in accordance with Section 62 of the Canadian Electrical Code, Part 1.
- ✓ Do maintain a 6 inch (15 cm) clearance between the edge of the mat and the perimeter of the room, as well as vertical obstructions such as cabinets or walls. Clearance may be greater than 6 inches.
- ✓ Do maintain an 8 inch (20 cm) clearance between the heating mats and other heat sources such as hot water pipes, stoves, fireplaces, hot air vents, baseboard heaters, etc. Also ensure your floor temperature sensor is located away from heat sources as well for accurate readings.
- ✓ Do ensure there is airflow to the flooring anywhere where heat mats are installed.
- ✓ Do ensure the flooring is approved for use with radiant heat, and has an R rating of 1 or less for optimal performance.
- ✓ Do install a QuietWarmth thermostat with built-in GFCI to safely operate the system.
- ✓ Do make sure all electrical wiring other than for the heating system is at least 2 inches (5 cm) away from the heating mats and/or separated from the heating mats by insulation or the building structure.
- ✓ Do use copper supply conductors for wiring between breaker and thermostat, and between thermostat and junction box.
- ✓ Do employ a licensed electrician to perform all electrical wiring connections.
- ✓ Do use a floor covering that is 4mm or greater in overall thickness

# Introduction

The QuietWarmth Radiant Heat System works just like the sun. It is the same type of heat that warms you on a cool spring day. Although the air is cool, the radiant heat from the sun keeps you warm. Similarly, QuietWarmth Radiant Heat Mats warm by providing uniform heat throughout your floor, which in turn will warm the air circulating around the floor. This is the opposite of how conventional forced hot air or baseboard heating systems work. In other types of heating systems, the large mass of air in a home is heated while the objects and especially the outside walls remain relatively cool.

QuietWarmth Float is a unique heating system that is installed below floating flooring materials to create warm, comfortable floors and provide supplementary or primary heat. When specifying as primary heat, a heat loss calculation must be performed to determine how many watts are required to heat the space. QuietWarmth Float comes in several sizes which may be modified and cut to shorter lengths in accordance with instructions. QuietWarmth mats are warranted to be free of defects in manufacture for a period of 25 years.

## Canadian Customers

The fourth edition of CSA C22.2 No. 130 Part 2 provides guidelines for electrical resistance trace heating and heating device sets. It replaces the 2003 edition titled "Requirements for electrical resistance heating cable and heating device sets." Please be aware that regional electrical codes may take precedence over the national code that requires the use of a ground shield. Feel free to contact us at 1-888-379-9695 for further assistance.

## Features

- 12 Watts per Square Foot Nominal (Tolerance -10% to +5%)
- 0.016" thick, Easy to install
- Available in 18" and 36" widths in standard mat lengths or custom lengths
- 2-in-1 Mats are available in 18" and 36" widths and feature factory attached leads on both ends of mat. Designed to be cut apart to desired lengths for less waste and versatile coverage.
- 120V or 240V
- Thermostat controlled
- Warranted to be free of defects in manufacture for a period of 25 years

# Planning

## Approved Floor Coverings

- Floating Laminate
- Floating Hardwood
- Floating Luxury Vinyl or Hybrid Resilient
- Floating Tile Systems



**Flooring materials must be rated for use with electric floor warming system.**

**All floor coverings must be 4mm or thicker**

**Ensure floor covering does not exceed a thermal insulation R-value of 1.0.**

## Approved Substrates

- Wood, OSB, or Plywood
- Concrete (vapor barrier required)
- Existing fully adhered hard surface floor coverings such as ceramic tile, sheet vinyl, or epoxy floor coverings. Existing ceramic tile must be skim-coated with a portland-based cementitious floor patch compound to fill grout lines. Cannot be installed over floating floor coverings or carpet.
- All substrates must be clean, level, structurally sound, and deemed suitable by the manufacturer of the intended floor covering. Any necessary leveling, patching, or other prep work should be performed prior to installation of heat mats.
- It is crucial to ensure there are no objects protruding from the subfloor that could cut, tear, or otherwise damage the heat mats. Check meticulously for debris, rocks, nail heads, screw heads, staples, etc.

## Recommended Underlayments

Additional underlayment is not required, however it is highly recommended. Use of an approved underlayment will increase the efficiency of the heating system. It also makes recessing the lead wires and connections easier.

Use of a vapor barrier IS REQUIRED when installing QuietWarmth over a concrete slab.

\*QuietBoard has a metallic film that can interfere with the electrical conductivity of the heating system. It should be installed film side down (facing the subfloor).

RECOMMENDED UNDERLAYMENT				
	Laminate	Luxury Vinyl / WPC / EVP / SPC	Wood	Cork / Bamboo
QuietBoard* / FloorLyft	✓	✓	✓	✓
QuietWalk LV	✓	✓	✓	✓
QuietWalk Plus	✓		✓	✓
QuietWalk	✓		✓	✓

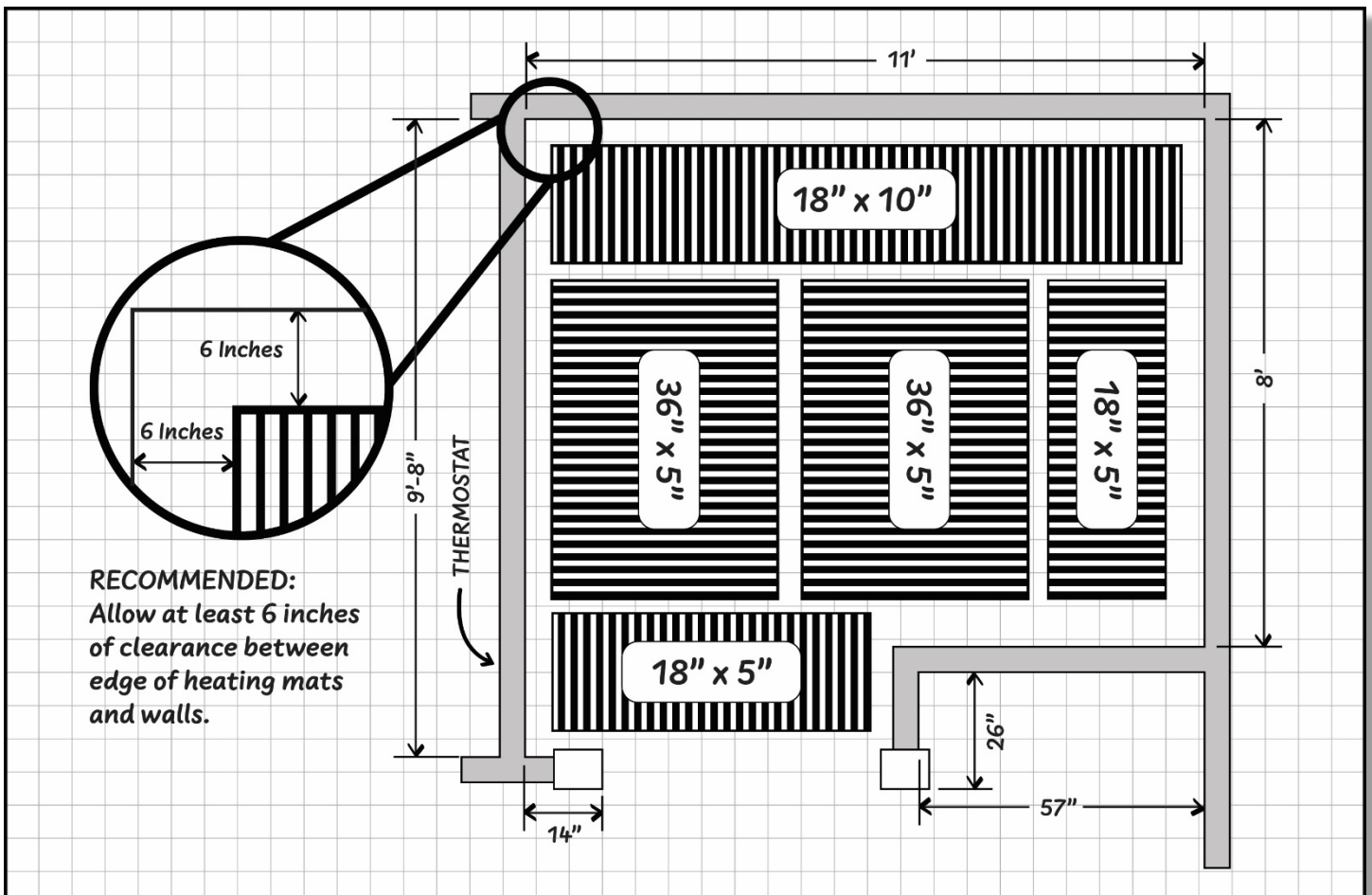
# Design the Layout

Your floor heating assembly consists of four major components: the heating mats, the wiring, the control device and the floor structure. These components work together to create a system that provides comfortable, trouble-free floor warming. Designing your layout is straightforward, and will be your foundation for a simple installation.

Start with a sketch of the room and draw in the mats in the areas to be warmed. Use the sketch below as an example. Allow at least 6 inches clearance between the edge of the mats and the wall, and 8" between the mats and an alternate heat source. The heat will disperse out some from the edge of the mat, but this is all dependent on the flooring material and insulation below the mats. If there is space between your mats, those areas may be cooler than the flooring directly above your mats. It is better to leave a greater space around the perimeter of the room, than to space the mats too far apart.

Plan for where you want your thermostat located, ensuring it is on an interior wall where it will not be subjected to direct sunlight. Consult with your electrician if you are unsure of where your thermostat should be installed.

Non-heating leads (the wires that connect your mats to the electrical source) are 15' long. For single mat applications, your lead wires can be wired directly to the thermostat, provided it is less than 15' away. For multiple mat applications, your electrician will need to install a junction box within 15 feet of the leads. Draw the route your lead wires will take, keeping in mind they cannot cross over/under any of the mats.



# Designing for Large Areas

Large areas will need to be broken down into zones. Each zone will be operated by one thermostat or power module (more on that later). The size of each zone is dependent on the voltage of the mats installed. If your mats are 120V mats, we recommend each zone is 120 square feet or less. If your mats are 240V mats, we recommend each zone is 240 square feet or less.

So, which mats to buy? It depends on the area you want heated, and the available space in your breaker box. Consult your electrician for guidance.

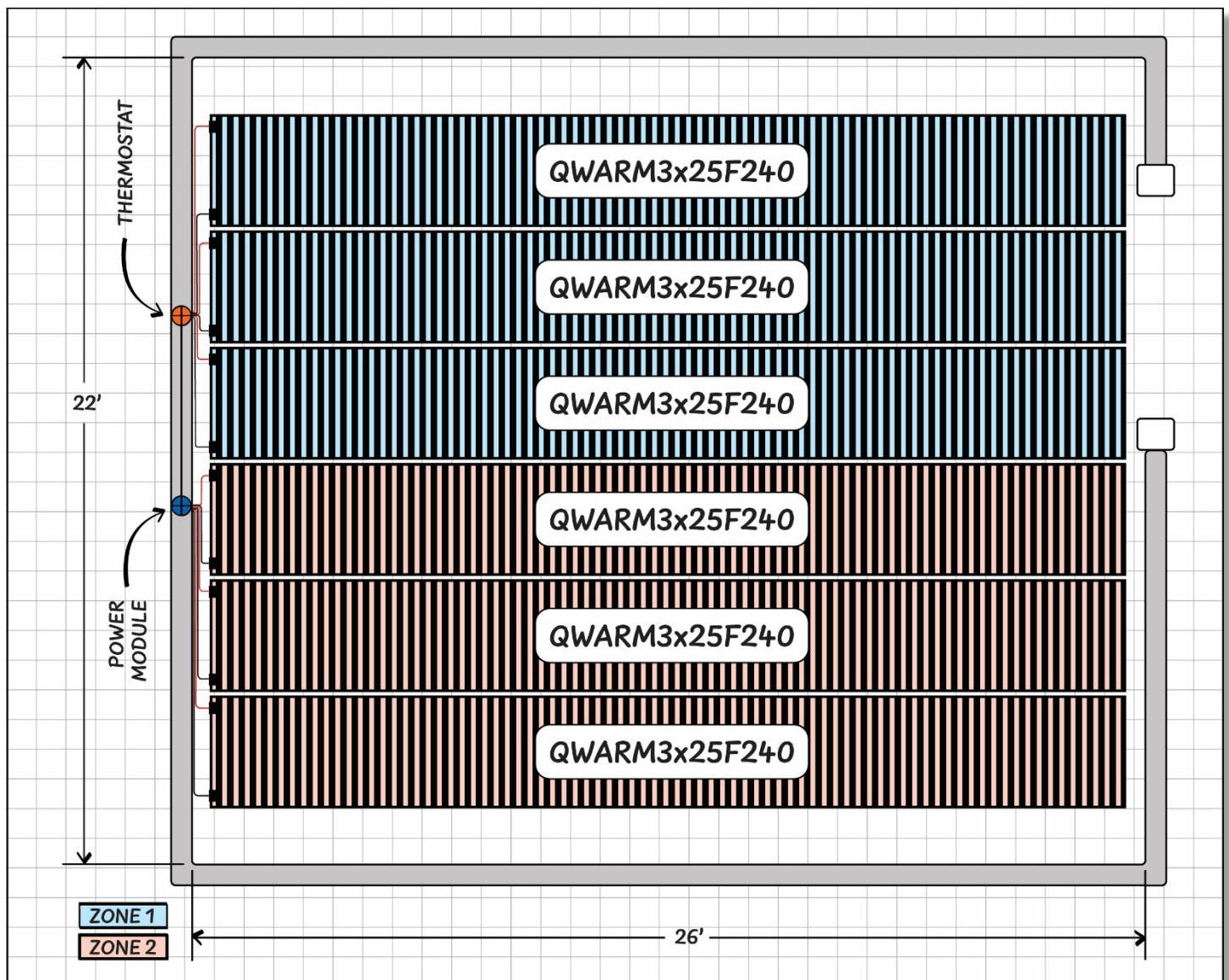
120V- Great for small areas. Only requires one single-pole breaker per zone.

240V- Best for large areas. Requires a double-pole breaker per zone.



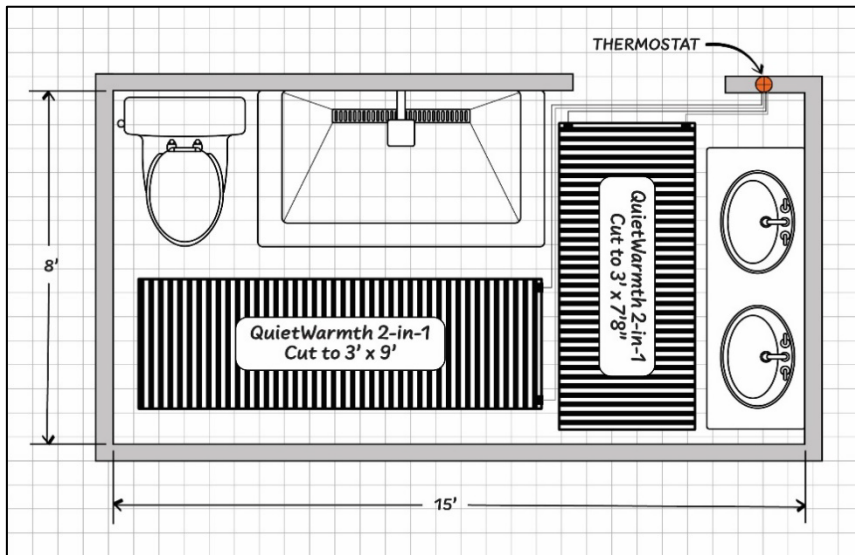
**MATS ARE VOLTAGE SPECIFIC. YOU CANNOT WIRE 120V MATS TO 240V POWER SUPPLY, OR VICE VERSA!**

Large area example:



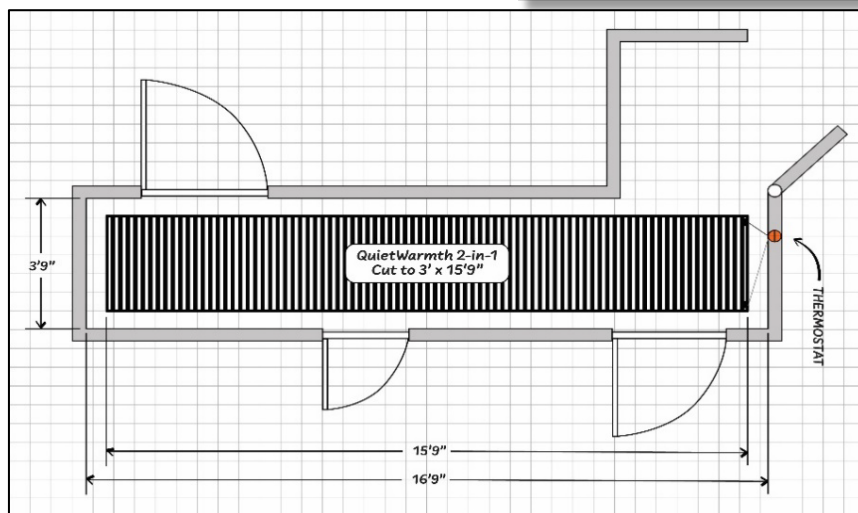
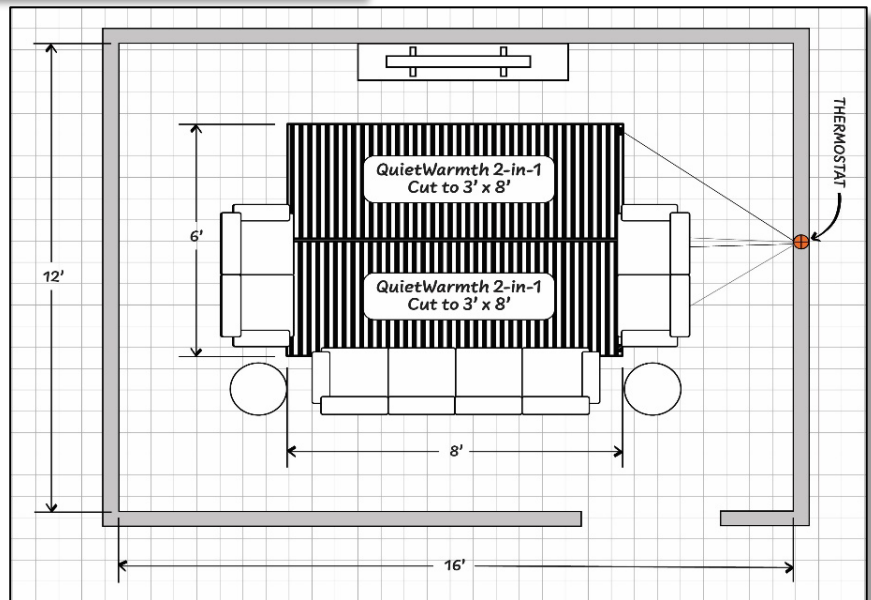
# QuietWarmth 2-in-1 Mats

The 2-in-1 mats are a unique option for tricky layouts. They have lead wires on both ends, giving you the ability to cut them to any length and use both pieces. **QuietWarmth Float 2-in-1 mats MUST be cut to work properly.** If you need to use the full length of the mat, you still need to cut off the extra set of lead wires and insulate the ends (more on that later).



**"L" Shaped Layout**

**Focused heat in seating**



**Using full length of mat**

# My Layout— Keep this page handy throughout the install!

Available Mats

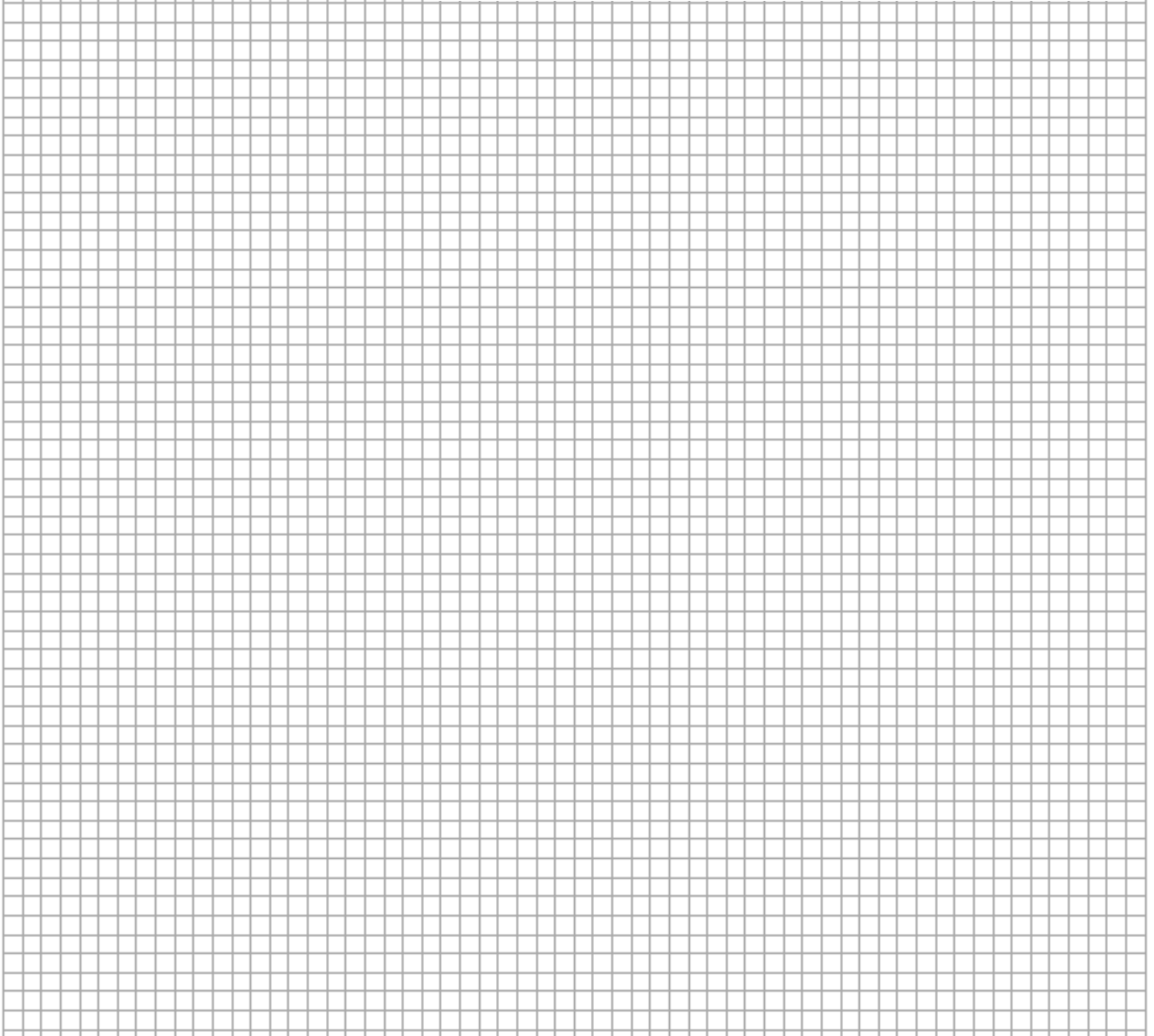
**Standard Sizes:**

1'6"x5'      3'x5'  
1'6"x10'     3'x10'  
              3'x25'

**2-in-1 Sizes:**

1'6"x16'8"    3'x16'8"

The 2-in-1 mats have lead wires attached to both ends. You can cut them at any length in the mat and use both pieces!



**Keep in Mind-**

6" or greater clearance between mats and walls, partitions, cabinets, etc.

8" or greater clearance between mats and a heating source

Mats cannot go underneath flat bottom cabinets or furniture, appliances, etc.

Mats can be cut shorter, but cannot be made narrower!

Mats cannot overlap!



# Calculate Total Heated Area

Tally up how many of each size of mat you have in your layout, depending on the voltage for your system. Fill out only the section for the voltage you are using. Then, multiply the number of mats by the total square footage per mat. Finally add all the square footages together to determine the total square feet of all heating mats.

## 120V System

Size	Model	Qty	Total sq ft
			Qty x sf/mat
1'6"x5'	QWARM1.5x5F120	_____ X 7.5 sf/mat =	_____
1'6"x10'	QWARM1.5x10F120	_____ X 15 sf/mat =	_____
1'6"x25'	QWARM1.5x25F120	_____ X 37.5 sf/mat =	_____
3'x5'	QWARM3x5F120	_____ X 15 sf/mat =	_____
3'x10'	QWARM3x10F120	_____ X 30 sf/mat =	_____
3'x25'	QWARM3x25F120	_____ X 75 sf/mat =	_____
1'6"x16'8"	QWARM1.5x166F120	_____ X 25 sf/mat =	_____
3'x16'8"	QWARM3x166F120	_____ X 50 sf/mat =	_____
<b>Total Square Feet of All Mats</b>			_____

## 240V System

Size	Model	Qty	Total sq ft
			Qty x sf/mat
1'6"x5'	QWARM1.5x5F240	_____ X 7.5 sf/mat =	_____
1'6"x10'	QWARM1.5x10F240	_____ X 15 sf/mat =	_____
1'6"x25'	QWARM1.5x25F240	_____ X 37.5 sf/mat =	_____
3'x5'	QWARM3x5F240	_____ X 15 sf/mat =	_____
3'x10'	QWARM3x10F240	_____ X 30 sf/mat =	_____
3'x25'	QWARM3x25F240	_____ X 75 sf/mat =	_____
1'6"x16'8"	QWARM1.5x166F240	_____ X 25 sf/mat =	_____
3'x16'8"	QWARM3x166F240	_____ X 50 sf/mat =	_____
<b>Total Square Feet of All Mats</b>			_____

# Plan Your Control Devices

For 120V systems, you will need 1 control device per 120 square feet of heating mats.  
For 240V systems, you will need 1 control device per 240 square feet of heating mats.



If your heating mats are in multiple rooms, **a thermostat is required for each individual room.**

Please visit our website at [www.quietwarmth.com](http://www.quietwarmth.com) to view all available thermostat models.

## Power Modules

You may incorporate Power Modules in large rooms to expand coverage of your thermostat. A Power Module serves as a relay point only. It can operate the same size of area as a thermostat, but cannot be independently controlled. It will power the mats under the direction of the thermostat in the room.



## Gather Materials Needed

### What You Will Need

- QuietWarmth Float mats
- QuietWarmth Thermostat(s) w/ Built-In GFCI and Floor Temperature Sensor
- QuietWarmth Power Module (if applicable)
- Vapor Barrier (Class I – 0.1 perm or less) for installations over concrete
- Kapton Discs and Warning Labels (included in QuietWarmth box)
- Underlayment (see chart on page 7 to find suitable underlayment for your flooring type)
- Duct tape
- Tools
  - Digital Ohm Meter (multi-meter)
  - Wire stripper
  - Screwdrivers
  - Wood chisel, drill, or oscillating saw to notch base of wall for lead wires
  - Utility knife
  - Scissors
  - Handheld sweep brush
  - Grinder tool for cutting a lead wire channel in the subfloor
    - Angle grinder or rotary die grinder (Dremel tool) for concrete
    - Router with 1/2" bit for wood subfloor
- Junction Boxes: Minimum of two required for each room or area. One box (3") required for each thermostat or power module, one box (4") required for electrical connections
- 12/2 Romex Wire or a minimum 14-gauge house wiring in emt conduit.

# Prep

## Prepare the Electrical

This section is for your licensed electrician.

This is a general guide and is not intended to supplant the direction of electrical authorities. Follow all local, state, and national building and electrical codes. All wiring, fuses and/or circuit breakers must conform to National Electrical Code requirements.

### GFCI Protection

All heated areas must be protected by a GFCI in either the thermostat or at the service panel. We recommend our QuietWarmth Thermostats, which all have a load of 15A and have a built-in Class A GFCI. Do NOT use a GFCI breaker **and** a thermostat with a built-in GFCI. Having both will cause nuisance tripping.

### Prepare The Power Supply

The fuse or circuit breaker used to protect the circuit supplying power to the QuietWarmth system must be rated for a maximum of 20 amperes (no greater than 16 amp load). If a lower rated fuse or circuit breaker is used, it must be rated at least 25% greater than the heating system load attached to it. If an area requires more than the 16 amperes allowed, additional branch circuits may be used, each having its own overcurrent protection. These branch circuits may all be controlled by a single thermostat if it is used with a system of QuietWarmth Power Modules.

Typical Amperage Requirement: 120V QuietWarmth Float= 0.1 amps per square foot, or 10 amps per 100 square feet of mats. 240V QuietWarmth Float= 0.05 amps per square foot, or 5 amps per 100 square feet of mats.

Note, while QuietWarmth Thermostats are 15A thermostats, we do not recommend installing the maximum square footage per circuit. The trip threshold for the GFCI in the QuietWarmth Thermostats is 5mA. Maxing out the amps per thermostat can cause nuisance tripping. We recommend up to 120 sq. ft. of 120V mats, and up to 240 sq. ft. of 240V mats per circuit.

Install appropriate electrical wire (conductor) from the power source following all codes. Leave extra wire at the control switch/thermostat box for making connections.

### Additional Power Circuits

Depending on the amperage requirements of the mat(s), one or more secondary thermostats or power modules may be required. Do not load the thermostat control with more than 15 amps. The National Electrical Code specifies that each branch circuit used in conjunction with a heating system must be for the exclusive use of the heating system. Do not connect lights, outlets, etc. to any branch circuit used with the QuietWarmth system.

## Locating the Thermostat(s)

Thermostats are usually located near the power leads, however if the thermostat is to be located beyond where the power leads will reach, connection of the mats needs to be made in a 4" junction box. Power leads need to be wired in parallel, and cannot be connected in series or "daisy-chained". Connect the junction box to the thermostat with 12/2 Romex wire or a minimum 14-gauge house wiring in emt conduit. Location of the thermostat should be approximately 60" (152 cm) above the floor on an inside wall and away from direct sunlight. A 3" deep junction box is recommended for the thermostat. If mats are installed in multiple rooms, a thermostat is required for each room.

## Install Electrical Boxes

Install junction box for the control device (thermostat) according to the manufacturer's instructions. This box should be located, unobstructed, on an inside wall so that the device reads accurately. Install a 4x4 inch junction box for making electrical connections between the mats and thermostat. If only using one mat, connection can be made directly from the power supply leads to the thermostat. If connecting multiple mats, it is recommended to join all power leads for that circuit in a junction box, then wire to the thermostat. Power supply leads are 15' long. Locate the junction box where all leads will reach.

## Bottom Plate Work

Drill or saw holes at the bottom plate. One hole is for routing power leads or conduit and the other is for the thermostat sensor (included with the thermostat). These holes should be directly below the electrical box(es). It is recommended that you drill or saw holes at the bottom plate. You may also use a notch technique as an alternative.

## Install Conduit

Place conduit where the power supply leads from the mat will travel from the opening in the bottom plate through the wall cavity up to the junction box. A floor sensor will be included with the thermostat. Install a separate conduit if required for this sensor.

## Install Thermostat Sensor

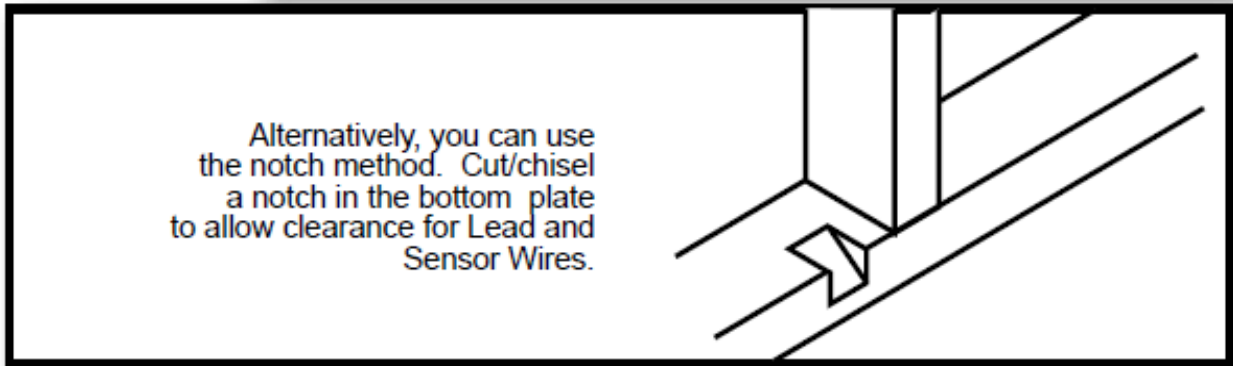
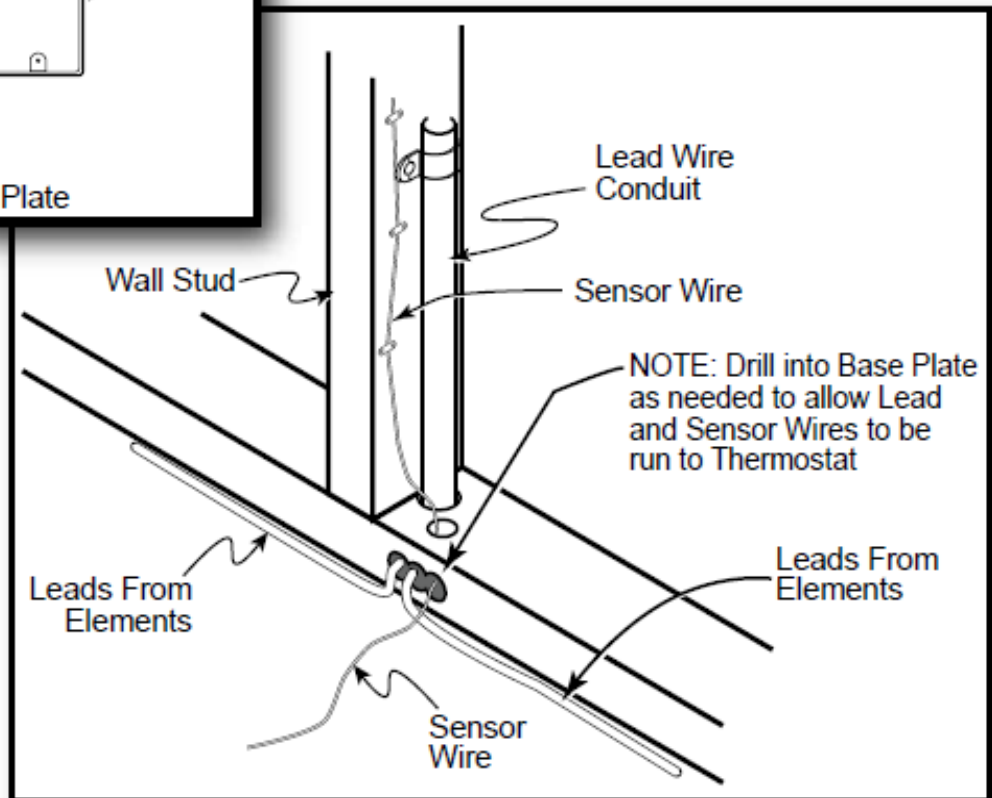
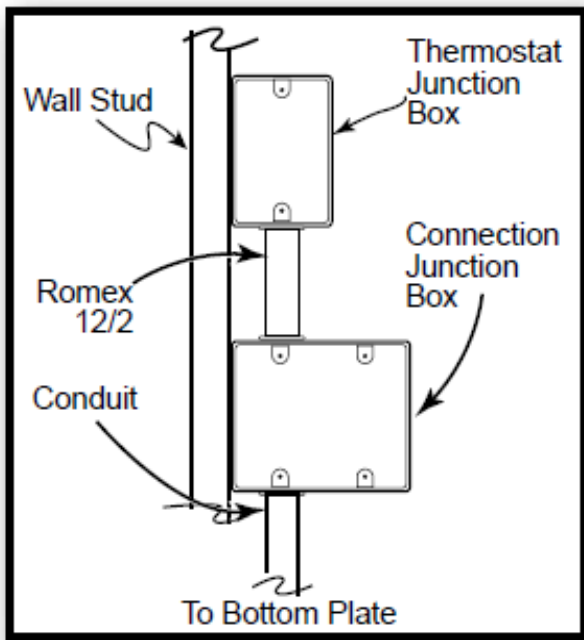
A floor sensor comes with the recommended thermostat control. The sensor wire can be installed without a conduit or in a conduit separate from the electrical power leads if conduit is required by code. Open a second knockout in the bottom of the thermostat box. Feed the sensor (and conduit, if including) through the knockout, down the wall cavity, through the opening in the bottom plate. Temporarily tape the sensor to the slab or subfloor in a location approximately 6" to 12" from the wall---final location of sensor after mat installation will be taped down at the edge of or in between two mats so that the sensor is not directly above a heating mat. Butt the sensor up against the side of the mat for best results. *\*The sensor is located in the thermostat packaging.*

## Wiring Between Junction Boxes

Between thermostat junction box and power module junction box (if applicable), use speaker wire. From junction box(es) that will contain mat power supply leads to the thermostat junction box, use 12/2 Romex or a minimum 14-gauge house wiring in emt conduit..



**Ensure that the breaker supplying power to the heating mats has been turned off before making electrical connections.**



# Prepare the Subfloor

QuietWarmth Float can be installed on any standard subfloor so long as it is flat, smooth, and free from protrusions.

## Prep



Proper subfloor preparation is crucial to the overall performance of your flooring. Follow all flooring manufacturer's instructions regarding floor preparation prior to installing your QuietWarmth Mats. Your subfloor may require sanding, patching or leveling to ensure it is within flooring manufacturer's tolerances.

## Inspect



Carefully inspect subfloor for any sharp objects, such as nails, staples, or screws. Remove any that you find. Subfloor screws should be countersunk and patched with a portland based floor patch compound. Protrusions in the concrete should be ground flat and smooth.

## Clean



Clean the subfloor thoroughly with a handheld brush, ensuring that any rocks and debris is removed. Sharp objects can damage the mats creating a potential shock hazard or inefficient operation of the system. Any mats that become torn or otherwise damaged must be discarded.


## Create Recesses for Lead Wires




### Lead Wire and Connections Channel

Once your subfloor is clean and prepped, check the thickness of your underlayment in comparison to the thickness of the power supply leads and connections on the QuietWarmth Float mats. If you are *not* using an additional underlayment, or your underlayment is not thicker than the leads, you must create a channel in your subfloor to recess the route where the lead wires will run.

If your underlayment is thicker than the lead wires and connections, you do not need to recess your subfloor.



If your underlayment is thinner than the lead wires and connections, you **NEED** to recess your subfloor.



If you need to channel into a concrete subfloor, this must be done prior to installing your vapor barrier and underlayment. Refer to your planned layout to determine where power supply lead wires will route to the junction box. Remember the lead wires cannot run underneath any of the heating mats. Use a grinder tool such as an angle grinder or rotary die grinder (Dremel) in a concrete subfloor.

### Thermostat Sensor Channel



**Sensor is thicker than the heating mat; you must create a recess in the subfloor so that top of sensor sits flush with top of mat!**

Using the same method as you did for the lead wires and connections, you will need to create a relief space to route the thermostat sensor wire. The depth of that relief channel must be such that the sensor is recessed so that it is level with the top of the mat. *\*The sensor is located in the thermostat packaging but the electrician may have already hooked it up to the thermostat.* Ideal location for the thermostat sensor is 6"-12" away from the wall, butted next to the edge of the long side of one mat. Sensor wire cannot run under or above any mat. Refer to planned layout to determine best sensor location.



**Failure to create proper relief space for connections, lead wires, and thermostat sensor may cause wiring to be pinched or compressed. This can result in nuisance tripping or failure of the heating system, which may occur immediately or over time.**

Once you have all channels created in your subfloor, install your vapor barrier and underlayment.

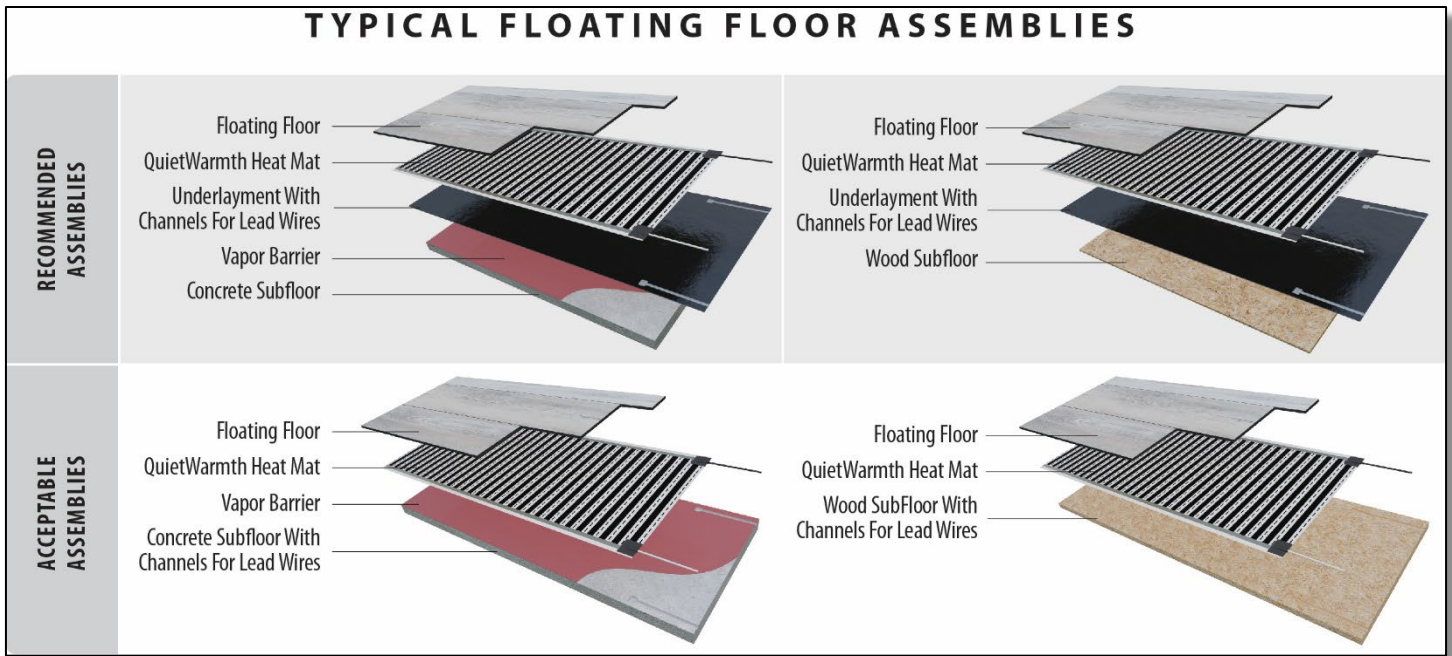
# Install Vapor Barrier and Underlayment

## Vapor Barrier- REQUIRED OVER CONCRETE

You must use a Class I (0.1 perm or less) vapor barrier when installing over Concrete subfloor. A 6mil thick poly sheeting is a suitable vapor barrier. Failure to use a vapor barrier may result in nuisance tripping of the GFCI in the thermostat. If you have a wood subfloor, you can omit the vapor barrier.

## Underlayment- STRONGLY RECOMMENDED

Install the underlayment with the film side up, except when using QuietBoard, QuietWalk Max, or other underlayment with a metallic film. The silver metallic vapor barrier film should be installed facing the subfloor, if not it could interfere with the conductivity of the electricity. Follow installation instructions for the underlayment being used. Installations of QuietWarmth over non-insulated concrete subfloors may require a longer period of time to adjust to your desired temperature.





# QuietWarmth Install

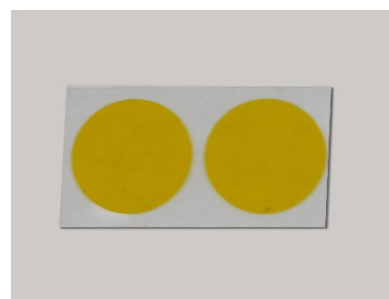
## Unpack the Mats

Unpack the mats and inspect. Make sure there are no loose connections, no damaged wires, no bends/tears/cuts in the mats. If anything is damaged, the mat cannot be installed and needs to be replaced.



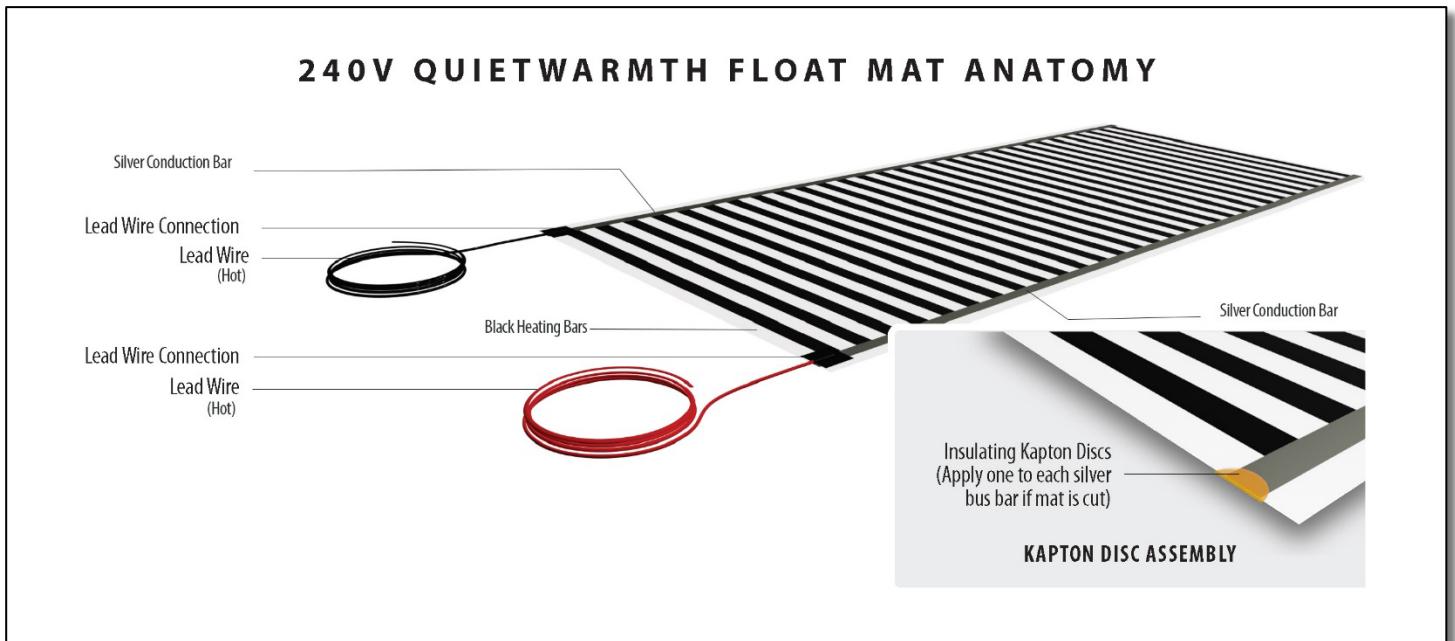
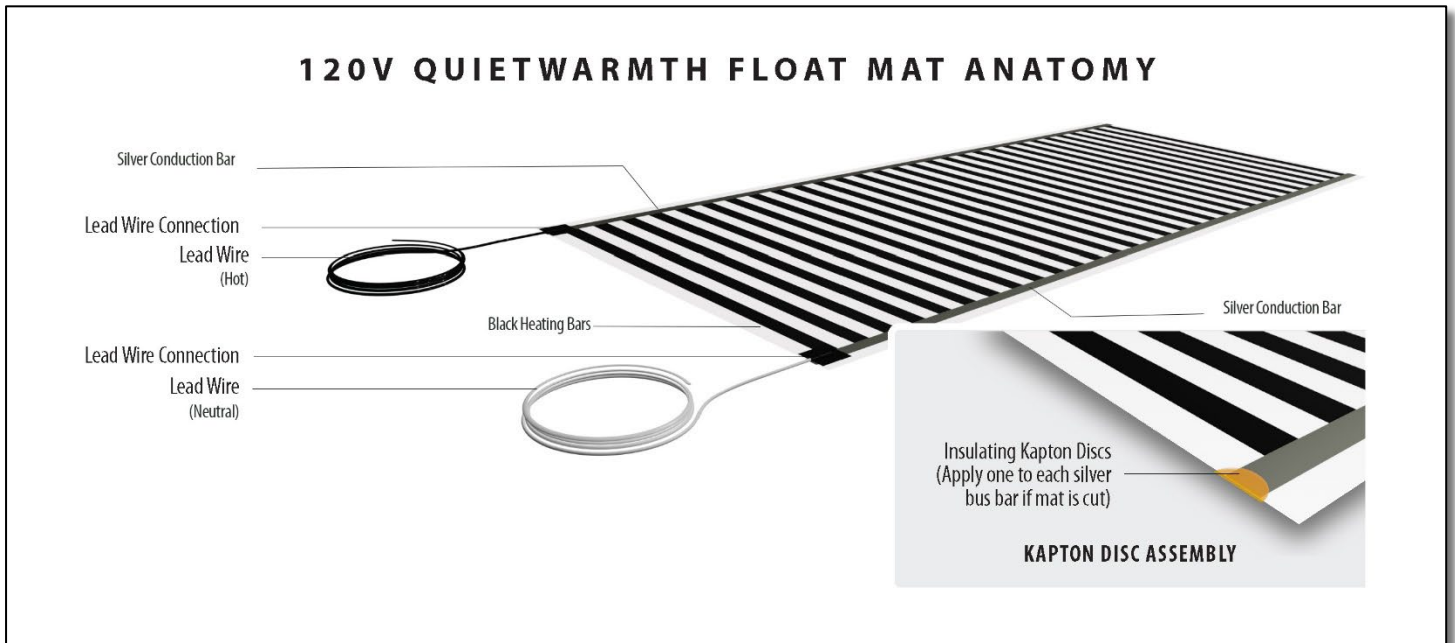
Locate the warning stickers. Do not discard, these are required after installation is complete to maintain the warranty.

In the mat kit, there will be Kapton discs- these are very important! Do not discard!



Upon removing the heating mats from the box, it is important to check and record the resistance of each mat using a digital ohmmeter, and compare those readings with the baseline resistance indicated on the stickers attached to the mats. If any mat shows a resistance reading that is less than 10% or greater than 5% from the baseline value, call the technical support hotline at **1-888-WARM PAD**.

# Anatomy of the Mats



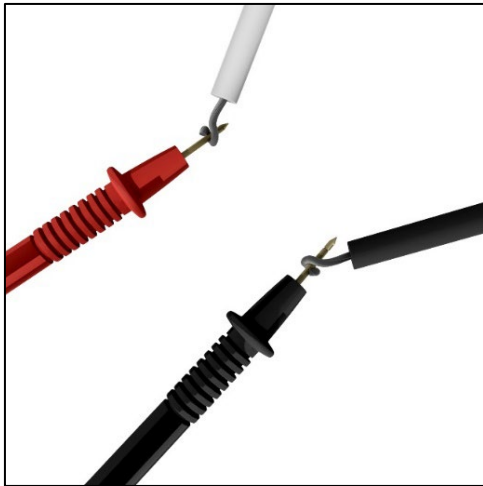
# Check Resistance



## Record Results

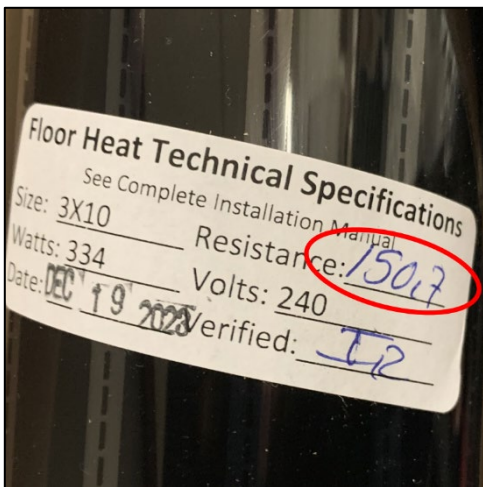
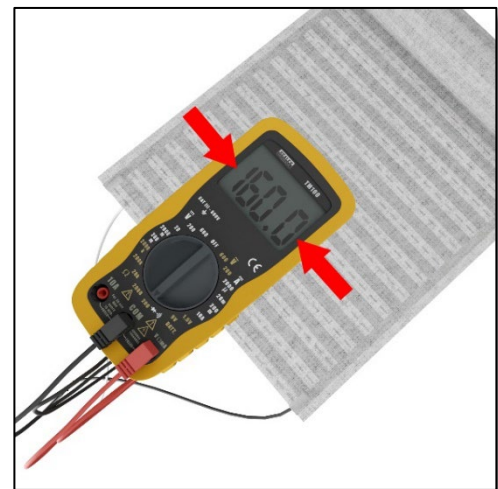


Insert probes into multimeter marked V $\Omega$ mA and COM. Color of probe does not matter. Set multimeter to section marked with the Ohm symbol  $\Omega$  and 200 Ohms or if the heating mat has resistance over 200 Ohms, then set the multi-meter to 2000 (see circle).



Wrap black and white lead wires from 120V mats, or black and red lead wires from 240V mats around the multimeter probes (color of probe does not matter). Avoid touching the probes during measurement as it could affect the accuracy of the resistance value.

Record the resistance value displayed by the multi-meter, in this example 160.



Compare the resistance with the value on the factory label. If the difference is within a range -10%/+5% the mat is okay to use. You can consult chart for lower & upper limits.

# Prepare the Mats for Install

*If you don't need to cut the mat, proceed to Install Mat Section*



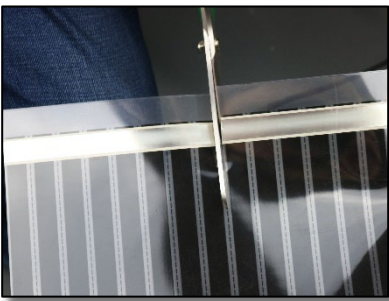
## Altering the Length of the Mats (If necessary)



Consult your diagram and determine if you need to adjust the length of any of your mats. Mats can be cut to length as needed. Mats **cannot** be cut to width.

Use scissors to cut on dotted lines between solid black bars straight across the width of the mat. Do not cut mats in arches, circles, curves, "L" shapes, or angles. Make sure you measure the length you need from the end that has lead wires. Cut off portions of the mats are unusable and should be discarded (except 2-in-1 mat)

**QuietWarmth Float 2-in-1 mats must be cut**, even if you plan to use the full length of the mat. The second set of lead wires cannot remain on the mat. It will affect the function of the mat.



Cut between solid black bars all the way across the mat at the length needed.



**The heating mats can only be cut to fit length. Do not cut or notch to fit around any obstructions or penetrations such as door openings or floor registers.**



Make a cut across the silver metal conductor bar one black heating element from the end of the mat. Do not cut into black heating element bar as this will cause the GFCI to trip. Do **not** cut through the white scrim on the top and bottom of the mat.



Cut through the last black heating element bar to remove the end of the silver bus bar, creating a notch. Do not over-cut into the next black bar. Repeat on both sides.



**Cut only through the clear area between the heating stripes on the dashed line. NEVER cut into the solid black heating elements.**



# Insulate Cut Ends



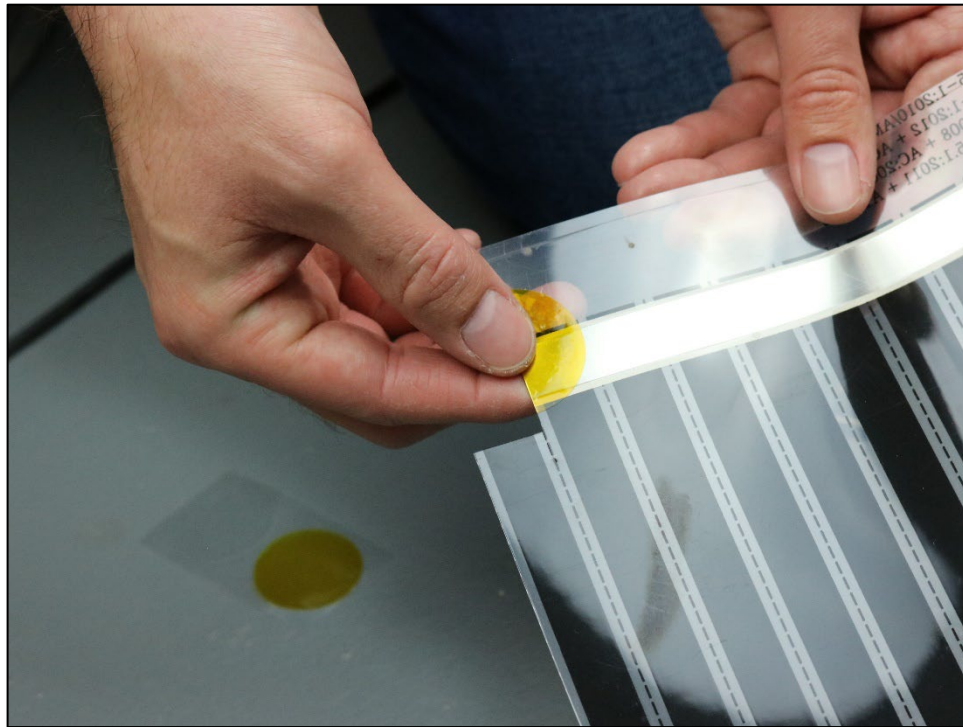
**It is very important to insulate the cut ends of the mat with the provided Kapton discs. Failure to do so will lead to nuisance tripping of the GFCI.**

Use the included Kapton discs to insulate the cut ends of the silver bus bars. The silver bus bars run parallel down the length of each side of the mat and are the electricity conducting component of the mat.

Make sure the ends are clean and free of debris. Fold the Kapton disc in half over the end of the bus bar, so that half the circle is stuck to the front of the mat and the other half is stuck to the back of the mat.

There will be two bus bars per mat to insulate. The 2-in-1 mats will have four ends to insulate.

**If Kapton discs are missing or damaged, use electrical tape as a substitute**



# Check Resistance AGAIN!



## Record Results

A resistance check across the supply leads of each mat using a digital ohm meter must be made to detect any short or open circuits. If you have **not** altered the mat, compare your readings to the **factory** readings. If you alter the length of the mat, the resistance **WILL** change. The value will be different from the original factory reading. Compare your resistance reading to the chart below, based on the **NEW** mat length.

### 120 V Resistance (Ohms)

Size	Amps	Watts	Low Limit	Nominal	High Limit
1.5x1	0.150	18	720.00	800.00	840.00
1.5x2	0.300	36	360.00	400.00	420.00
1.5x3	0.450	54	240.00	266.67	280.00
1.5x4	0.600	72	180.00	200.00	210.00
1.5x5	0.750	90	144.00	160.00	168.00
1.5x6	0.900	108	120.00	133.33	140.00
1.5x7	1.050	126	102.86	114.29	120.00
1.5x8	1.200	144	90.00	100.00	105.00
1.5x9	1.350	162	80.00	88.89	93.33
1.5x10	1.500	180	72.00	80.00	84.00
1.5x11	1.650	198	65.45	72.73	76.36
1.5x12	1.800	216	60.00	66.67	70.00
1.5x13	1.950	234	55.38	61.54	64.62
1.5x14	2.100	252	51.43	57.14	60.00
1.5x15	2.250	270	48.00	53.33	56.00
1.5x16	2.400	288	45.00	50.00	52.50
1.5x17	2.550	306	42.35	47.06	49.41
3x1	0.300	36	360.00	400.00	420.00
3x2	0.600	72	180.00	200.00	210.00
3x3	0.900	108	120.00	133.33	140.00
3x4	1.200	144	90.00	100.00	105.00
3x5	1.500	180	72.00	80.00	84.00
3x6	1.800	216	60.00	66.67	70.00
3x7	2.100	252	51.43	57.14	60.00
3x8	2.400	288	45.00	50.00	52.50
3x9	2.700	324	40.00	44.44	46.67
3x10	3.000	360	36.00	40.00	42.00
3x11	3.300	396	32.73	36.36	38.18
3x12	3.600	432	30.00	33.33	35.00
3x13	3.900	468	27.69	30.77	32.31
3x14	4.200	504	25.71	28.57	30.00
3x15	4.500	540	24.00	26.67	28.00
3x16	4.800	576	22.50	25.00	26.25
3x17	5.100	612	21.18	23.53	24.71
3x18	5.400	648	20.00	22.22	23.33
3x19	5.700	684	18.95	21.05	22.11
3x20	6.000	720	18.00	20.00	21.00
3x21	6.300	756	17.14	19.05	20.00
3x22	6.600	792	16.36	18.18	19.09
3x23	6.900	828	15.65	17.39	18.26
3x24	7.200	864	15.00	16.67	17.50
3x25	7.500	900	14.40	16.00	16.80

### 240 V Resistance (Ohms)

Size	Amps	Watts	Low Limit	Nominal	High Limit
1.5x1	0.075	18	2880.00	3200.00	3360.00
1.5x2	0.150	36	1440.00	1600.00	1680.00
1.5x3	0.225	54	960.00	1066.67	1120.00
1.5x4	0.300	72	720.00	800.00	840.00
1.5x5	0.375	90	576.00	640.00	672.00
1.5x6	0.450	108	480.00	533.33	560.00
1.5x7	0.525	126	411.43	457.14	480.00
1.5x8	0.600	144	360.00	400.00	420.00
1.5x9	0.675	162	320.00	355.56	373.33
1.5x10	0.750	180	288.00	320.00	336.00
1.5x11	0.825	198	261.82	290.91	305.45
1.5x12	0.900	216	240.00	266.67	280.00
1.5x13	0.975	234	221.54	246.15	258.46
1.5x14	1.050	252	205.71	228.57	240.00
1.5x15	1.125	270	192.00	213.33	224.00
1.5x16	1.200	288	180.00	200.00	210.00
1.5x17	1.275	306	169.41	188.24	197.65
3x1	0.150	36	1440.00	1600.00	1680.00
3x2	0.300	72	720.00	800.00	840.00
3x3	0.450	108	480.00	533.33	560.00
3x4	0.600	144	360.00	400.00	420.00
3x5	0.750	180	288.00	320.00	336.00
3x6	0.900	216	240.00	266.67	280.00
3x7	1.050	252	205.71	228.57	240.00
3x8	1.200	288	180.00	200.00	210.00
3x9	1.350	324	160.00	177.78	186.67
3x10	1.500	360	144.00	160.00	168.00
3x11	1.650	396	130.91	145.45	152.73
3x12	1.800	432	120.00	133.33	140.00
3x13	1.950	468	110.77	123.08	129.23
3x14	2.100	504	102.86	114.29	120.00
3x15	2.250	540	96.00	106.67	112.00
3x16	2.400	576	90.00	100.00	105.00
3x17	2.550	612	84.71	94.12	98.82
3x18	2.700	648	80.00	88.89	93.33
3x19	2.850	684	75.79	84.21	88.42
3x20	3.000	720	72.00	80.00	84.00
3x21	3.150	756	68.57	76.19	80.00
3x22	3.300	792	65.45	72.73	76.36
3x23	3.450	828	62.61	69.57	73.04
3x24	3.600	864	60.00	66.67	70.00
3x25	3.750	900	57.60	64.00	67.20

\* Amperage and Wattage listed is the nominal value. Tolerance range is -10%/+5%. Actual acceptable range for resistance may vary based on true amperage and wattage of individual mat.

## Check Resistance (cont)

If your mat is cut to a length not represented in the chart, you can also figure the acceptable resistance range with the following formulas:

- **18 inch wide film** - Each heating bar or stripe =0.86 Watts. Multiply the number of heating bars or stripes of the newly shortened mat by 0.86 and this will equal the total wattage of the mat.
- **36 inch wide film** - Each heating bar or stripe =1.75 Watts. Multiply the number of heating bars or stripes of the newly shortened mat by 1.75 and this will equal the total wattage of the mat.

### 120V Radiant Heat Film Resistance Values

Tolerances for resistance measurements are -10% and +5%. To determine nominal resistance for 120V, divide 14,400 by the total wattage. This will equal Nominal Resistance for the 120V material. Next, multiply nominal resistance by 1.05 to equal the high limit. Then, multiply the nominal resistance by 0.90 to equal the low limit.

### 240V Radiant Heat Film Resistance Values

Tolerances for resistance measurements are -10% and +5%. To determine nominal resistance for 240V, divide 57,600 by the total wattage. This will equal Nominal Resistance for the 240V material. Next, multiply nominal resistance by 1.05 to equal the high limit. Then, multiply the nominal resistance by 0.90 to equal the low limit.

#### **18" Wide 120V Mat**

$14,400 \div (\# \text{ of black heating bars} \times 0.86) = \text{Nominal Resistance}$   
 $\text{Nominal Resistance} \times 0.90 = \text{Low Range}$   
 $\text{Nominal Resistance} \times 1.05 = \text{High Range}$

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#### **36" Wide 120V Mat**

$14,400 \div (\# \text{ of black heating bars} \times 1.75) = \text{Nominal Resistance}$   
 $\text{Nominal Resistance} \times 0.90 = \text{Low Range}$   
 $\text{Nominal Resistance} \times 1.05 = \text{High Range}$

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#### **18" Wide 240V Mat**

$57,600 \div (\# \text{ of black heating bars} \times 0.86) = \text{Nominal Resistance}$   
 $\text{Nominal Resistance} \times 0.90 = \text{Low Range}$   
 $\text{Nominal Resistance} \times 1.05 = \text{High Range}$

---

#### **36" Wide 240V Mat**

$57,600 \div (\# \text{ of black heating bars} \times 1.75) = \text{Nominal Resistance}$   
 $\text{Nominal Resistance} \times 0.90 = \text{Low Range}$   
 $\text{Nominal Resistance} \times 1.05 = \text{High Range}$

Example- I have an 18" wide 120V mat that I have cut down to 4'2" long. It has 27 full black bars on it.

$27 \times 0.86 = 23.22 \text{ Watts}$

$14,400 \div 23.22 = 620.16 \text{ Nominal Resistance}$

$620.16 \times 0.90 = 558.14 \text{ Low Range}$  ← If my resistance falls between these two numbers,

$620.16 \times 1.10 = 651.17 \text{ High Range}$  ← then it is in the correct range!

After performing your second resistance check of each mat, you need to record the values. These measurements are **required** for warranty registration.

- If the resistance check is **BETWEEN** the low and high resistance limits, the mat is reading accurately and you can proceed to install it.
- If the resistance is **HIGHER** than the indicated high resistance limits this indicates a damaged mat. You will need to locate the damage and cut the mat off at that point & reinsulate the ends. If you cannot visually locate the damage, you will need to discard the mat and purchase a new one.
- If the resistance is **LOWER** than the indicated low resistance limits please contact us at 1-888-WARM PAD.
- If the resistance reading is **ZERO**, this indicates a short circuit. Check the path that the wiring is taking and make sure that no wires are pierced or otherwise damaged. Mats with damaged non heating leads must be replaced.



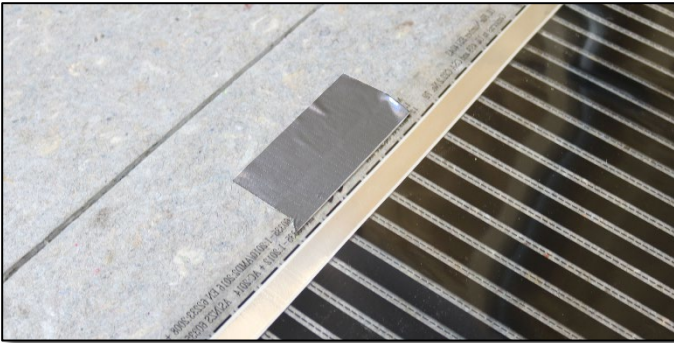
# Install Mats



Room temperature must be above 32°F (0°C) at the time of mat installation, and thereafter.



This equipment shall be installed only by qualified personnel who are familiar with the construction and operation of the apparatus and the risks involved.



Lay the mats out according to your design plan and tape in place with a high quality duct tape on the sides. This step is just to hold the mats in place while you continue working in the area. You don't need to tape on the ends. There is no "top" or "bottom" to the mats.



If you used an underlayment, cut a channel for the power supply lead wires and connections out of the underlayment. If there is a vapor barrier below your underlayment, be careful not to cut the vapor barrier.



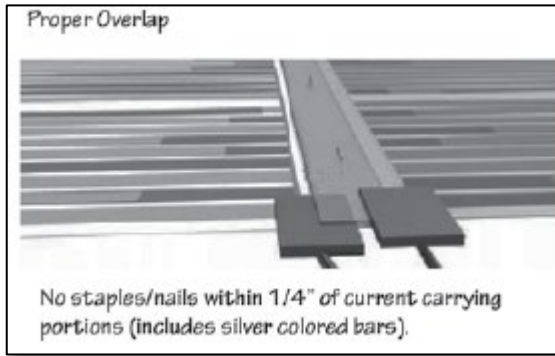
Push the cold leads and connectors down completely so the tops are level with the mat.



Use duct tape to secure in place.



We do not recommend overlapping the mats, however if mats need to be overlapped, only the outer clear edge can be overlapped. No portion of the silver or black heating elements, or the electrical connections or wires should be overlapped.



Elements may be overlapped **ONLY** as shown in the figure. Under no circumstances may current carrying portions of the mats overlap. Overlapping warming sections can result in overheating and potential fire danger.

## Install Thermostat Sensor



The sensor is thicker than the heating mat. You need to cut a channel in the underlayment or subfloor to recess the floor temperature sensor, so that the top of the sensor is flush with the top of the heating mat.



Do not damage the sensor.

Cut another channel for the thermostat sensor out of the underlayment. For best results, the sensor should be positioned parallel to the long edge of one of the mats. It can touch the outer clear edge of the mat, but should **not** touch the silver bus bar (heating element). It should also not cross over, or be installed on top of or under any mats. Use duct tape to secure the sensor in the groove.

*\*The sensor is located in the thermostat packaging, but your electrician may have already hooked it up at this point.*



Take care not to damage the heating mats while they are on the floor. Do not drop items on mats and avoid unnecessary foot traffic in heating areas before finished flooring has been installed.

# Electrical Connection & Testing

This section is for your licensed electrician.

It is important that this manual be followed during the installation procedures and that all warnings be followed. Wiring should be performed by a licensed electrician in accordance with all applicable building and electrical codes during the installation as well as for any trouble shooting of the system. Failure to do so voids warranty.



**Follow all national and local electrical codes for final electrical hook up.**



**Ensure power is turned off to the circuit prior to electrical hook up.**

If installing an individual mat, the mat can be wired directly to the control.

When installing multiple mats, connect the mats together in a junction box. Run the lead wires from the individual mats along the base of the wall and up to the junction box. Mats must be wired in parallel, and cannot be connected in series or “daisy-chained”. From there, connect to the control (thermostat or power module) according to the manufacturer’s instructions using the 12/2 Romex wire or a minimum 14-gauge house wiring in emt conduit.

Refer to the complete thermostat installation guide.

On 120V systems, we recommend no more than 120 sq ft of radiant heat film mats be wired together for one thermostat to run.

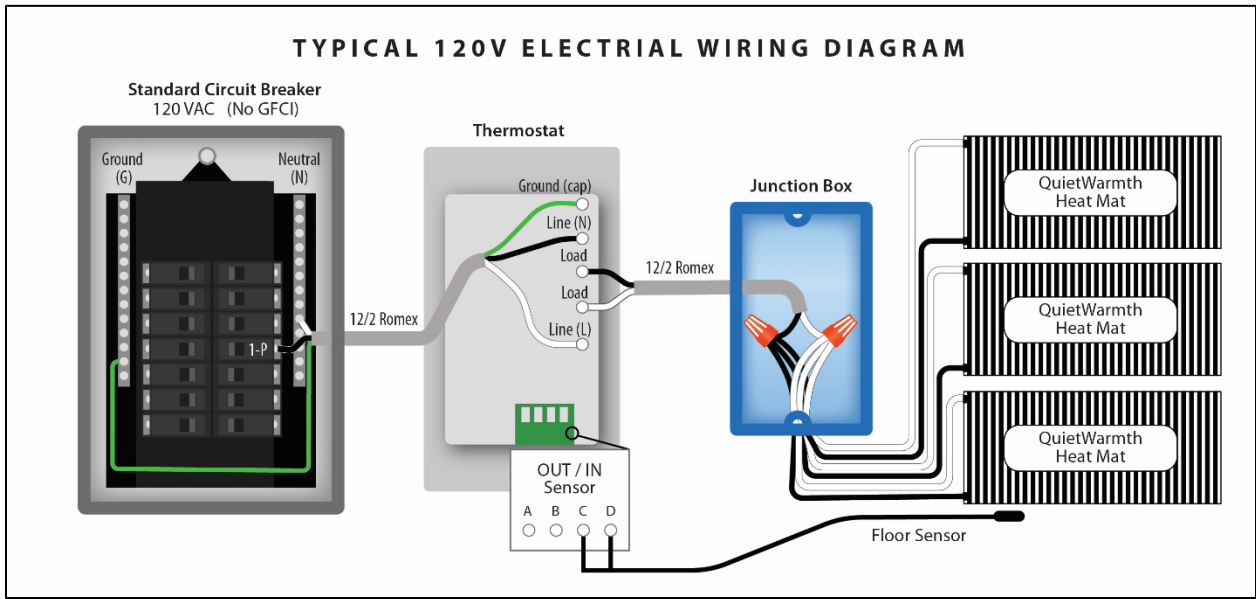
On 240V systems, we recommend no more than 240 sq ft of radiant heat film mats be wired together for one thermostat to run.



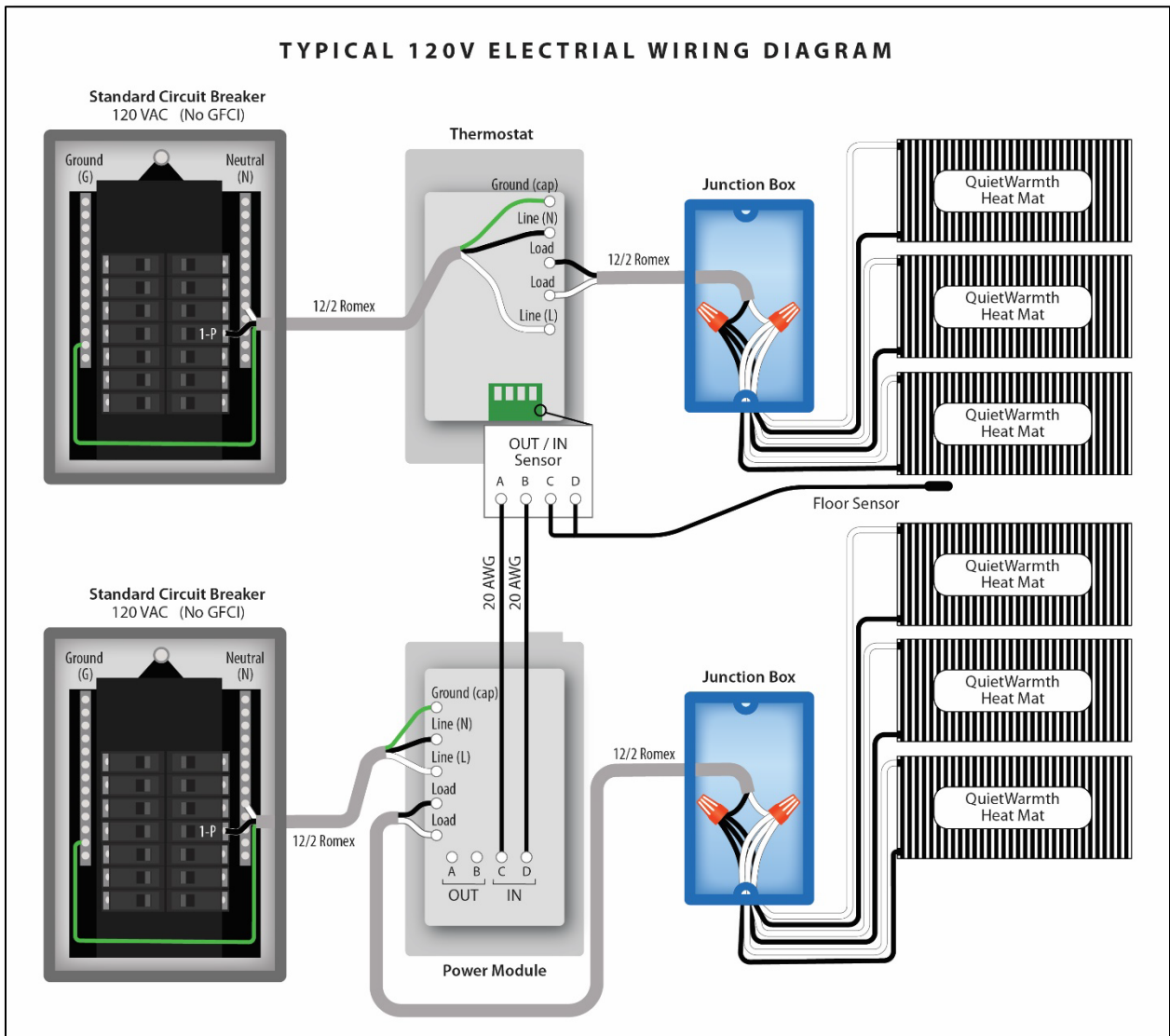
**MATS ARE VOLTAGE SPECIFIC. YOU CANNOT WIRE 120V MATS TO 240VAC POWER SUPPLY, OR VICE VERSA!**

If additional area coverage is needed, a power module may be added. Each circuit running the radiant heat system must be placed on a dedicated 20 amp circuit from the main electrical box. Follow all thermostat manufacturer installation instructions.

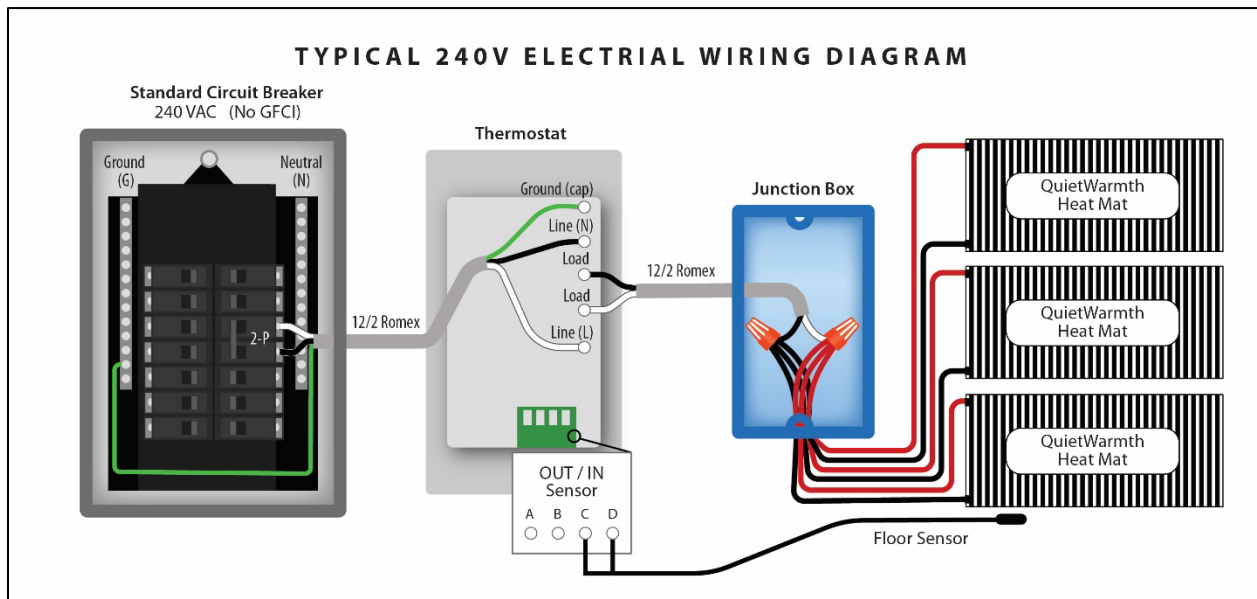
# Typical 120V Electrical Wiring



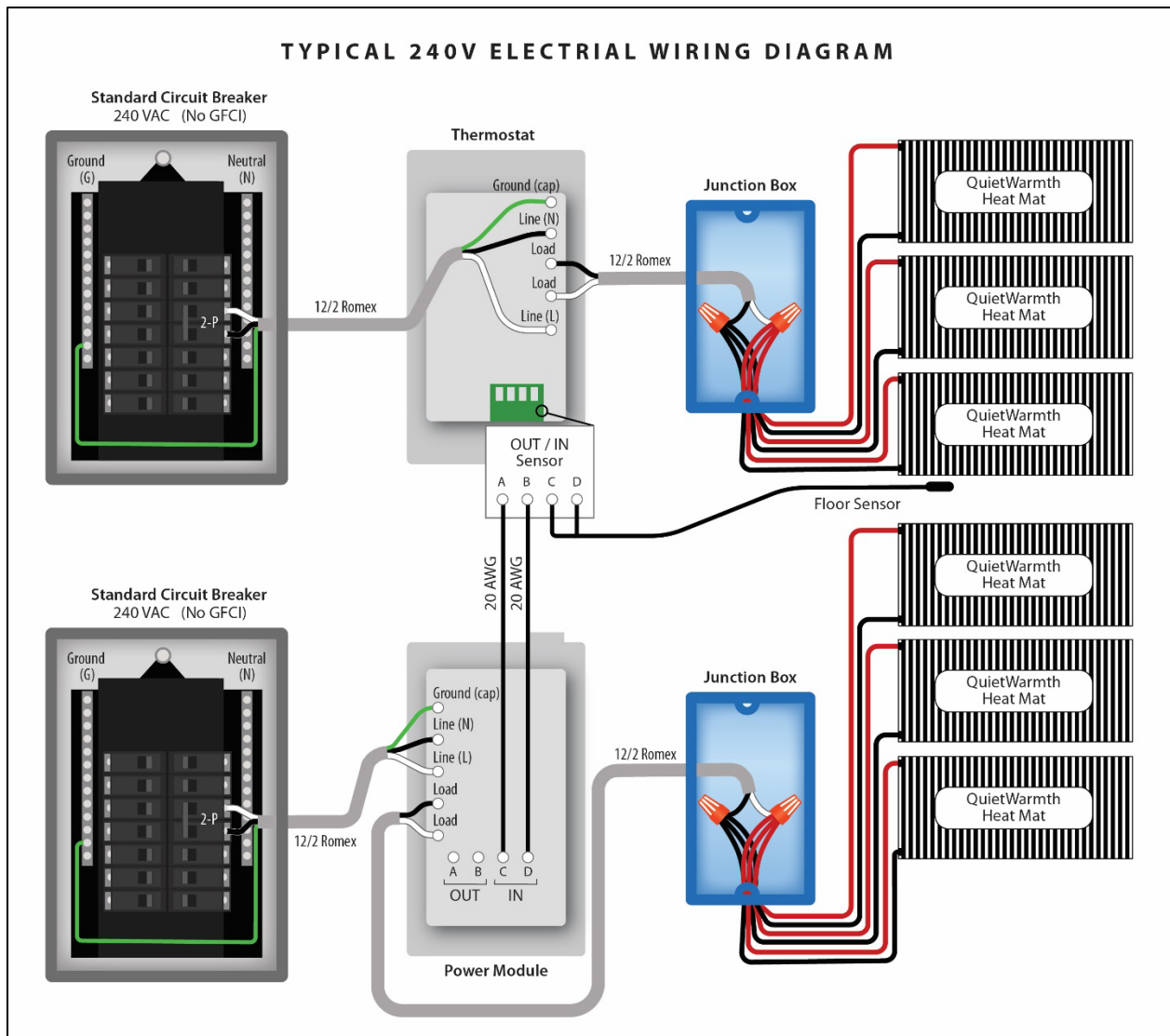
## With Power Module



# Typical 240V Electrical Wiring



## With Power Module



# Visual Inspection

A visual check must be performed on the heating mats prior to electrical activation to look for any signs of damage to the mat or electrical leads that may have occurred during installation. Be especially watchful for any signs of damage, wear, scratches, cuts, etc. that might have occurred during installation. If any portion of a mat appears damaged, replace the entire mat.

The heating test may be required by the floating floor manufacturer based on the type of sub-floor being used (i.e. concrete). Always check with your floating floor manufacturer for any restrictions and/or requirements that they have concerning the use of their product in conjunction with floor warming systems.

## Check Resistance THIRD TIME!



### Record Results

Resistance must be checked and recorded again at this time prior to energizing the mats. Refer back to Check Resistance section for instruction on how to check the reading. Compare this reading to the factory reading if the mat is unaltered, or to the chart on PAGE 25 or the calculated range if the mat length has been altered.



If the resistance check is BETWEEN the low and high resistance limits, the mat is reading accurately and you can proceed.

If the resistance is HIGHER than the indicated high resistance limits this indicates a damaged mat. You will need to locate the damage and cut the mat off at that point & reinsulate the ends. If you cannot visually locate the damage, you will need to discard the mat and purchase a new one.

If the resistance is LOWER than the indicated low resistance limits please contact us at **1-888-WARM PAD**.

If the resistance reading is ZERO, this indicates a short circuit. Check the path that the wiring is taking and make sure that no wires are pierced or otherwise damaged. Mats with damaged non-heating leads must be replaced.



**Record the resistance measurements of each mat after installation. These measurements should be compared to the recorded readings on the product label if mats are unaltered, or to the calculated resistance range if mats were altered, to confirm a successful installation. These measurements are required for warranty registration. If a mat fails the resistance check, it must be retested after any corrective actions.**

# Energize the Mats & Test for Heating

Once all mats have passed the third resistance check, you can energize the mats and check for warming.

A test of the system to make sure all mats are heating properly is recommended prior to installation of finished flooring. The manufacturer will not be responsible for the replacement of the floor heating system if the system operation was not checked, verified, and recorded prior to installation of the flooring.

## Test for Heating

1. Turn on the breaker and adjust the thermostat so that the system begins heating.
2. It may be helpful to set a piece of flooring or an object such as a tool on top of the heating mat during the test to indicate the mat is conducting heat.
3. After the system has been on for several minutes, place your hand on the heating mats and object to ensure that they are warm.
4. If the mats do not become warm, double check all wiring and re-perform the electrical tests above (after turning off power at the breaker).

*Disclaimer: The mats will generate a low, comfortable warmth, which may not be detectable to the touch. The mats are designed to heat the flooring through radiant heating, but without being covered by flooring there is no thermal mass to radiate the heat and they may not feel warm to the touch. If the area is cold during installation it is likely that the mats will not feel warm to the touch, so you will have to rely on the electrical resistance tests alone or the use of an IR thermometer temperature sensing device.*



**The mats will generate a low, comfortable warmth. If area is cold during installation, it is likely that the mats will not seem warm so you will have to rely on the electrical tests. If the mats do not become warm, double-check all wiring and again perform the electrical tests above (after turning off power at the breaker).**



# STOP! Last Chance to Check Your Work!

Before you install your flooring, ask yourself these questions:

**Were you careful not to pull/damage where the lead wires connect to the mats?** Mats with damaged wires or connections should not be installed and need to be replaced. If you install them, they may fail, trip the GFCI, or could potentially lead to risk of fire or electric shock.

**Did you protect your mats from moisture?** When you are installing over concrete, a vapor barrier is required to protect the electrical components from moisture. Moisture can interfere with the electricity and will often cause GFCI tripping.

**Did you install Kapton discs on cut ends?** These insulating discs are extremely important to make sure there is no electrical leakage. Even slight amounts of electrical leakage will cause the GFCI in the thermostat to trip.

**Did you recess an area for your connections and lead wires in the underlayment or subfloor?** It is very important to ensure the connections, lead wires, and floor sensor are not pinched by the finished floor covering. A channel to recess connections and wires must be cut into the underlayment; if no underlayment is used or if the connections are thicker than the underlayment, the channel needs to be in the subfloor. Pinched wires and connections may cause failure of the system.

**Did you perform and record all of the resistance (OHM) readings and ensure they are in the proper range?** This information is required for warranty registration/claims and troubleshooting assistance.

**Did you inspect for any damage to the mats?** Damaged mats should not be installed and need to be replaced.

Please make sure you thoroughly read, understand, and follow all installation instructions.

- Thermostat GFCI “tripping” is often due to improper installation.
- Inadequate heating or mat failure is often due to improper installation.
- Overheating is often caused by improper installation or improper use of materials over flooring. Overheating is dangerous and can ruin your flooring or potentially lead to fire.
  - **REMEMBER!- No flat bottom furniture, mattresses, beanbag chairs, area rugs, hampers, etc are to be placed on flooring above radiant heated areas.**

Employ a licensed electrician for all wiring connections. Remind your electrician that each thermostat needs to be on a dedicated circuit with a standard 20-amp breaker. Any deviation from this could lead to nuisance tripping.

# Flooring Install

Install the finished flooring according to the manufacturer's instructions.



**Be extremely careful when installing the flooring in the area of the mats. Avoid walking or kneeling directly on exposed mats.**



**Do not use sharp tools when installing the flooring over the mats. Plastic trowels are highly recommended for thinset and adhesives. Do not pierce or puncture the flooring in the area of the mats.**



**Use a silicone sealant against all plumbing fixtures and around the perimeter of the room in bathrooms.**



**When installing all basework around the perimeter of the room and transition strips at doorways, do not puncture the mats, connections, lead wires, or thermostat sensor.**

## Check Resistance FOURTH TIME!



### Record Results

Perform another resistance check on all mats after installing your floor covering to ensure nothing was damaged during flooring installation. Record the readings. If any resistance readings have changed from previous test, your mats may have been damaged during flooring installation.



If the resistance is HIGHER than the indicated high resistance limits this indicates a damaged mat. You will need to locate the damage and cut the mat off at that point & reinsulate the ends. If you cannot visually locate the damage, you will need to discard the mat and purchase a new one.




If the resistance is LOWER than the indicated low resistance limits please contact us at **1-888-WARM PAD**.

If the resistance reading is ZERO, this indicates a short circuit. Check the path that the wiring is taking and make sure that no wires are pierced or otherwise damaged. Mats with damaged non heating leads must be replaced.



# Place Caution Stickers

Apply warning stickers provided with mats in appropriate locations, as shown below. These labels are an integral part of this heating system and must be installed for warranty to be in force.

Affix to the electrical panel box. In the space provided, record the numbers of all circuits to which floor heating mats are attached.	Affix adjacent to points of access to all concealed areas in which installed heating products are accessible.	Affix adjacent to the thermostat.
		

## Repair/Remodel Information

Ensure any remodeling and repair technicians are made aware of and use caution when working in the area of heating mats. Keep your design layout to show them approximate locations of the mats. Before performing any remodeling work near a heated floor, carefully read through this manual to understand the clearances, procedures, and materials involved as well as the testing procedures required to ensure system safety.



**This information must be read and understood by all repair and remodeling technicians who will be working on the house structure in the area of an installed QuietWarmth Mat or main electrical systems. Failure to follow these guidelines may result in a risk of electric shock or fire hazard.**



**When installing any other materials on or near a heated floor, ensure that no heating elements are punctured by nails, screws, etc.**

# Post Installation

## Troubleshooting

It is important that this manual be followed during the installation procedures and that all warnings be followed. Wiring should be performed by a licensed electrician in accordance with all applicable building and electrical codes during the installation as well as for any troubleshooting of the system. Failure to do so voids warranty.

A test of the system to make sure all mats are heating properly is recommended prior to installation of finished flooring. The manufacturer will not be responsible for the replacement of the floor heating system if the system operation was not checked and verified prior to installation of the flooring.

Symptom	Corrective Actions
Individual Mat Not Warming	Verify all leads from all mats are properly connected to the power source. Areas within a mat that are not heating could be the result of damage and will require the mat to be replaced.
Slow to Heat	Installations on concrete slabs can require a period of several days to warm up to desired temperature especially if the slab is uninsulated in a cold climate. Set Thermostat to maximum heat to allow the system to continue running until it becomes warm. Then adjust the thermostat down if needed. Verify floor temperature sensor is not directly on top of heating element causing the thermostat to shut off more frequently.
System Too Hot	Adjust thermostat Verify that the correct voltage is being applied to heating elements- 120V mats can only be powered by 120V circuits; you cannot connect 120V mats to 240V power circuits. Verify that the thermostat has not been bypassed. If necessary, reposition the floor temperature sensor. Ensure no pillows, beanbags, mattresses, fabric ottomans, flat bottomed furniture without feet, heavy area rugs, or other objects that can trap the heat are on the floor above the mats.
Thermostat GFCI	If the thermostat trips and will not re-set, check the following:  System MUST be on a dedicated branch circuit separate from any other electrical devices which could overload the circuit or create interference issues resulting in the GFCI to trip. If it is not, you will need to have your electrician change it out. Check that the breaker is a standard breaker. If you have a GFCI at the breaker and in the thermostat, it can cause nuisance tripping. Resolve this by asking your electrician to remove the GFCI breaker and install a standard breaker. Check electrical connections to verify leads from all mats are wired in parallel (black to black / white to white / red to red) and all connections are tight and properly insulated against grounding. Check leads from mats to verify no nicks or cuts have occurred during construction that may be causing a short. Mats with damaged leads need to be replaced.
Thermostat Issues	Refer to thermostat manufacturer's troubleshooting recommendations.

## For Additional Help

Technical Hotline: 1-888-379-9695

Email: [info@MPGlobalProducts.com](mailto:info@MPGlobalProducts.com)





## LIMITED WARRANTY

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MP GLOBAL PRODUCTS, LLC (THE "MANUFACTURER") WARRANTS TO THE ORIGINAL PURCHASER (THE "OWNER") THAT THIS RADIANT HEAT FILM FOR USE UNDER FLOATING OR TILE FLOORS (THE "PRODUCT") will be free of defects in workmanship and materials and will conform in all material respects to any written specification that the Manufacturer provided to that customer before the purchase.

If that customer believes that a shipment of product fails to satisfy the above warranty, that customer must (a) contact the Manufacturer in writing within 25 years after that customer receives the shipment, including a detailed explanation of the alleged nonconformity and (b) return the shipment to the Manufacturer postage prepaid. If The Manufacturer reasonably determines through examination of the returned shipment that the shipment did not satisfy the above warranty, then AS THE MANUFACTURER EXCLUSIVE LIABILITY AND THE CUSTOMER'S SOLE REMEDY, THE MANUFACTURER WILL, WITHIN A REASONABLE PERIOD OF TIME, REPAIR THE PRODUCT, REPLACE THE PRODUCT WITH THE SAME OR SIMILAR PRODUCT, OR CREDIT THE CUSTOMER'S ACCOUNT WITH THE PURCHASE PRICE, WHICHEVER THE MANUFACTURER MAY ELECT IN ITS SOLE DISCRETION. If the Manufacturer determines that the function of the Product caused the failure of the overlying finished floor covering, and installation instructions were properly followed during installation, the Manufacturer will repair or replace the finished floor covering at no cost to the customer.

This warranty does not apply if the Manufacturer reasonably determines that the product has been cut improperly, added to or otherwise altered, stored improperly, misused, damaged, or installed not in accordance with the instruction manual supplied by the Manufacturer. The Manufacturer requires that this product be used ONLY with approved control devices. Use of any other control device will render the provisions of this warranty null and void. This warranty covers only components manufactured by the Manufacturer. Components such as attaching hardware, connecting parts, wire, tape, and other items included in kits or assemblies that are not manufactured by the Manufacturer are excluded from the provisions of this warranty.

Except as expressly provided in this Limited Warranty, the customer is responsible for the cost of labor, service calls, insurance, shipping, installation costs and any other expense or damage incurred.

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