CABLE
Electric Floor Heating Cables with TRM Guides Installation Guide

Introduction

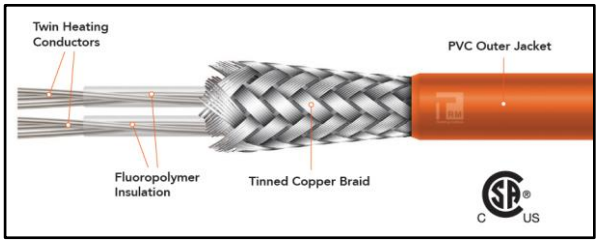
TRM electric floor heating cables are normally sold as a system with TRM uncoupling membrane. In some instances an installer may need to install the heating cables using cable guides; This is also an approved installation method for securing the cable prior to embedding.

Heating systems can be designed for these types of applications:

- Heat Loss Replacement – Intended to neutralize the feeling of a cold floor.
- Comfort Floor Warming – Intended to heat the floor surface to feel warm when standing on.
- Primary Heating – Intended to heat the floor surface, which will then radiate the heat up into the room air.
    - Please contact TRM if you are unsure what type of system you may need.

Heating Cable Information

TECHNICAL SPECIFICATIONS	
Cable Construction	PVC jacket, braided ground, with outer jacket, 2 conductor
Voltage	120V, 208/240V
Wattage per foot	3.7 watts per foot of cable
Watts per sq foot	10 / 12 / 15 watts per sq foot
Temperature ratings	5 deg C to 30 deg C installation temperatures
Cold Lead Cable	2 conductor, 10 foot long lead



TRM Heating cables consist of:

- **Cold Lead –** Black (unheated) section of cable consisting of 2 conductors and a ground braid; to be routed from the floor to the thermostat junction box – (10’ long)
    - The cold lead can be terminated in an accessible junction box and extended to the thermostat junction box location using the appropriate gauge of residential wire.

- **Splice Joint –** Black heat shrink, located where the black cold lead is joined to the orange heating cable.
    - Must be embedded in modified thinset/self leveler within the floor assembly.

- **Heating Cable –** Orange heating cable which is to be fully embedded below the finished floor; Includes a sticker at the midway point of the heating cable – (lengths very per kit)

Heating Cable Spacing Patterns

10w/sqft: 34 BTU’s/sqft – Generally adequate for heat loss replacement.
- The spacing pattern for 10W/sqft is alternating 4”/5”/4”/5”.
- Output is approx. 34 BTU’s/sqft

12w/sqft: 41 BTU’s/sqft – Industry standard for interior comfort warming.
- The spacing pattern for a 12W/sqft system is alternating 3”/4”/3”/4”.
- Output is approx. 41 BTU’s/sqft

15w/sqft: 51 BTU’s/sqft – The highest output for a TRM heating cable.
- The spacing pattern for a 15W/sqft system is 3” o/c.
- Output is approx. 51 BTU’s/sqft

Blended Spacing: A blended spacing pattern allows for a cables coverage area to be adjusted slightly, while maintaining an even heating output across the finished floor.
- A system with blended spacing will output in between 10 and 15 W/sqft.
- Ensure any extra runs of heating cable are evenly distributed throughout the floor layout.
- The heating cable **cannot** be spaced closer than 3” apart and **should not** be spaced wider than 4”/5” spacing.

Testing the Heating Cables

The heating cable must be tested before and during the installation process, as well as after the top flooring surface is finished.

Please refer to the '***TRM Cable – Electric floor heating – For uncoupling membrane systems – installation guide';*** Page 27 for complete testing details and note the cable readings on the 'testing log' located on page 38.

Tools & Materials Required

- Heating cable
- Cable Guides
- Thermostat & Sensor Probe
- Digital Multimeter
- Industrial-grade hot glue (If being used to secure Cable Guides)
- Fasteners and appropriate tools (If being used to secure Cable Guides)
- Duct tape
- Tools to create a recess in the subfloor, if required (chisel or drill)
- Flat trowel
- Grouting float/lightweight roller
- Sponge
- Thinset mixer
- Large bucket
- Latex-modified thinset or self leveler

Installation Steps

1) Preparing for the installation:

Ensure the subfloor is level, clean and prepared to the required installation standards outlined by the embedding /flooring material manufacturers. Protrusions such as nails or screw heads sticking above the floor level must be removed and ridges levelled smooth. Review the thinset manufacturer's recommended floor preparation requirements.

The cross-sectional height of the TRM cable guide which fully encases the TRM heating cable, is 0.25" (6.35 mm). The guide is adhered to the sub-floor with fasteners or adhesive. The cable is installed in the guides and the cable/guide assembly is encased (just covering the top of the cable guides) using modified thin set or self leveler. If an engineered/laminate floor is being installed above the cable/guide assembly, you will need to ensure the embedding material is applied to a minimum of ¼" above the height of the cable guides prior to proceeding with installation of the approved engineered/laminate flooring materials.

TRM recommends a drawing is created to help the installer layout the thermostat/sensor, and heating cable/guide locations.

2) Installing the cable guides:

- Use fasteners or adhesive to affix the cable guides along two opposite walls in the room
    - ***Note – Heating cables cannot cross expansion joints, so utilize guides to route the cable within the defined area.***

3) Installing the heating cables:

- Test cables as previously noted
- Select the appropriate spacing pattern **(noted on page 1 of this guide)** based on the desired heating output.
    - ***Note - The heating cable will need to be installed using even consistent spacing.***
- Begin the cable installation at the thermostat location to ensure the cold lead will reach the junction box location.
- Maintain the safe routing distances noted on page 3.
- Extra TRM cable guides should be installed along the length of the heating cable runs at 3'-4' intervals to prevent the cable from floating when embedded in Self-leveler or Modified thinset.
- The entire portion of the heating cable (including the splice joint) must be fully embedded in modified thinset or self leveler prior to laying the floor.
- ***Note – You cannot cut or modify the heating cable.***

TRM Heating Cables

Installation Steps (Continued)

4) Installing the floor temperature probe(s):

- Follow the floor heating thermostat manufacturer's recommended installation/wiring instructions for sensor routing and placement.
    - ***Note: The floor sensor probe(s) should be installed between (2) runs of heating cable a minimum of 12-14" from the perimeter of the heated area.***

5) Embedding the heating cable/guide assembly:

- **Self-Leveler method (Recommended)** – Pour self-leveler to encase the heating cable/ guide assembly and allow to cure.
- **Modified thin-set method** – Use the flat side of a trowel (at a 45˚angle) to apply a thin layer of modified thinset over/around the cable.

Note: The entire heating cable and hot/cold splice must be encased/ embedded, with no air pockets around the heating cable.

6-A) Installing the finished floor surface:

- Ensure all floor covering materials are appropriate for installation above an embedded electric radiant heat source.
    - ***Note: Some flooring materials are more appropriate then others and may affect the performance of your heating system, please contact TRM if you have any questions.***
- Follow the manufacturer's recommended installation instructions for the selected flooring type.
- Ensure the heating cable is no more than 1.5"-1.75" from the finished floor surface.

6-B) Direct embedding in mortar or decorative concrete:

- Ensure the embedding material has been tested for used with an electric in-floor heating cable.
    - ***Note: Some flooring materials are more appropriate then others and may affect the performance of your heating system, please contact TRM if you have any questions.***
- Select a product that has zero aggregate (decorative grade) to ensure the heating cables are not damaged by rough/sharp edges.
- Following the manufactures recommended directions prepare the product and site, ensuring not to damage or disturb the cable assembly.
- Finish the floor by fully embedding/encapsulate the heating cables in the medium.
- Ensure the heating cable is no more than 1.5"-1.75" from the finished floor surface.

7) Installing the thermostat:

- Follow the manufacturer's recommended installation/wiring/operating instructions for the floor heating thermostat.

Important notes

The installer must read and follow all pertinent sections of the 'TRM Cable – Electric floor heating – For uncoupling membrane systems – installation guide' in concert with this addendum, which outlines installation of TRM heating cable using TRM cable guides.

- Do not install the TRM heating cable(s) closer than 3" to: Walls, permanent floor fixtures, adjacent heating devices or floor vents.
- Do not install the TRM heating cable(s) closer than 6" from drains (4"from a toilet wax ring)
- Do not install the TRM heating cable(s) closer than 1" from combustible surfaces (not including wood-based substrates)
- Do not install TRM heating cable(s) in/on/underneath walls, in/on ceilings, under permanent floor fixtures or under any materials which prevent air flow and proper heat transfer away from the floor surface.
- Ensure that any object(s) placed above the heated floor area are appropriate for use with electric radiant heat and will not insulate the floor surface (trapping heat underneath), as this may cause unsafe floor temperatures to be reached between the object and the flooring material.
- TRM Heating cables are approved for installation in wet areas.
- TRM recommends the maximum R-value for floor covering layer(s) installed above the heating system be limited to:
- 2.0-R for 10W/sqft systems
- 1.5-R for 12W/sqft systems
- 1.0-R for 15W/sqft systems
- A total maximum value of 2.5-R for areas with throw carpets or similar type covering where most of the floor is uncovered.

Warranty

We believe in the superior quality of all of our TRM floor heating products. That's why we offer a **25 year warranty** to cover all potential product defects, when installed by a certified professional, and a 3 year warranty on all TRM thermostats.

TRM is a Canadian-owned leading designer, and manufacturer of premium heating cable and systems in the commercial, industrial, and residential sectors.