

SmartRooms

Thermal Comfort System

By Therma-Ray

Floor Warming Installation Guide Using Therma-Ray Ceiling Panels

Whether you're a contractor, architect, builder or homeowner, creating the perfect indoor environment has always been a challenge.

Therma-Ray, the world's #1 name in thermal comfort systems introduces you to the ultimate solution, **SmartRooms**. Please take the time to read this installation guide carefully before you begin. Remember, accurate measurements are the key to success for a proper installation!

NOTE: This application is used in existing homes where the owner wants warm floors but does not want to replace the floor covering. The existing finished floor can be any type of wood flooring or natural stone finish such as ceramic tile, stone, slate, etc or vinyl flooring. Please check with the manufacturer of the floor covering may occur. Use under properly installed ceramic tile, stone or slate is perfectly acceptable.

This method is not recommended for floors with carpets.

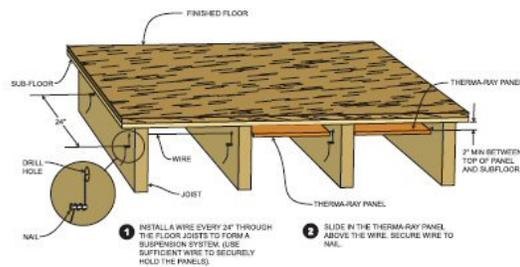
MECHANICAL INSTALLATION

Therma-Ray panels are placed between the floor joists. Panels are to be installed in open, unobstructed floor joists. The panels are held in place by a wire (0.5cm). The panels must be a minimum of 2 inches from the floor. Drill holes through the joists so that you can install wire every 24 inches. Be sure to use sufficient wire to securely hold the panels in place. The number of panels needed should fill the floor joist spaces in the area to be heated. Do not install panels below cabinet, appliances etc. Slide the Therma-Ray Ceiling Panels above the wire. Once the panels are in place, secure the wire to a nail or hook.

BRANCH CIRCUIT CONNECTION

Drill holes in the joists near the lead wires of the Therma-Ray panel.

Therma-Ray panels are connected in parallel to the branch circuit. Canadian installation shall be made according to the provision of Section 62 of the Canadian Electrical Code, part 1 and to regulations of all authorities having jurisdiction. U.S. installations are to be made in accordance with the National Electrical Code and local codes where applicable. Installations outside North America should conform to applicable local codes. The heater load, once determined, can be divided into as many circuits as needed. 12AWG (2.0 mm) copper conductor, non-metallic sheathed cable is recommended for installation of panels. In areas where type NM cable is not permitted, metal enclosures are available for use with rigid or flexible, metallic conduit or tubing. (See Installation Instructions Supplement for Metal Wiring Enclosures.) When determining the number of branch circuits required to accommodate the heating load, note that the branch circuit must be de-rated in accordance with either the Canadian Electric Code, National Electrical Code, or local coded as applicable. It is not recommended that wire size greater than 12AWG (2.0 mm) be used to connect the panels to the branch circuit. After the panels are secured in



Install a wire every 24" through the floor joist to form a suspended system. Use sufficient wire to securely hold the panels.

Slide the Therma Ray panel above wire. Secure wire to the nail.

Drill holes in joists near the Therma-Ray panel lead wires and connect wiring.

The difference between heat and comfort.

Connection the main feed to the individual panel is easily done using tap-on connectors. Note that ONLY the outer insulation jacket of the main feed is removed.

place and the number of branch circuits determined, they are connected to the branch circuit. For proper performance ensure the supply voltage matches the voltage stamped on the panel. DO NOT connect heating panel to a higher voltage. Connection to lower voltages is permitted, but will cause the panel to operate at a reduced wattage and may lead to a system with insufficient capacity to heat the intended area. The supply wire of 12AWG (2.0mm) non-metallic cable is connected to the transient lead (pigtail lead) of the heater panels with 3M Scotchlok® self-stripping electrical tap connectors (Type 567). Upon completion of the wiring assembly, the panel connectors are visible and available for inspection by local authorities.

PANEL OPERATION TEST

Each heater has been individually checked at the factory. After panel installation, the entire circuit should be tested, to check the on-site electrical work. Two methods of testing will be discussed in the following paragraphs.

Full Power Available- Apply rated voltage to the heater load circuit. Branch loads are to be read with a suitable ammeter. The ammeter value should be the same as that calculated for the heating load and, if the values agree, all panels are operating. If the values do not agree, installation should be re-checked. For a physical check without a meter, it is only necessary to feel the panels. If they are warm, they are working.

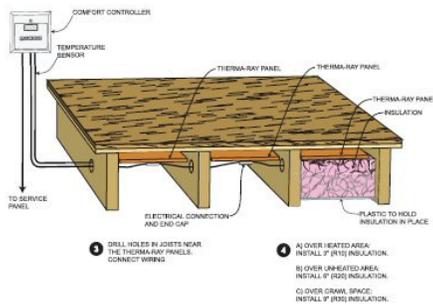
Without Power Available- This check of the panel installation requires the use and knowledge of an ohmmeter. A resistance measurement is taken at the load circuit, with all other circuits isolated. This will give the total resistance of the heater load. Knowing the total heater load of the panel in watts and heater rated voltage, a simple calculation will give the same values as that read on the ohmmeter.

Example: for the branch circuit of 1500 watts and panel rated voltage of 240, the resistance will be 38.4 ohms:

$$\text{Formula: } \frac{\text{voltage} \times \text{voltage}}{\text{Wattage}} = \text{resistance in ohms, Example: } \frac{240 \times 240}{1500} = 38.4 \text{ ohm}$$

Final Installation

After inspection and completion of the equipment check, the wiring enclosure (Endcap) is completely filled with drywall ready-mixed compound, quick-setting drywall compound, or fireproof caulking compound. The Endcap is then placed over the connector and slid onto the panel. Alternatively, a bulk-loading caulking gun may be used to completely fill the enclosure from each end, after it has been mechanically attached to the panel.



To attach the Endcap to the panel, slide the Endcap over the panel, connectors and feed wire. Align the hole in the Endcap with the Fastener Line marked on the panel. The Fastener Line is located between (and marks the location of) the two cold panel connection leads. Then use the screw supplied with the Endcap to secure the Endcap to the panel. (Endcap, screw and connectors are available from the distributor for each panel).

The use of high quality **SmartRooms** Comfort Controllers are recommended for proper system performance and warranty. The sensor must be placed over a panel with a heat shield. The heat shield could be something as simple as a piece of aluminum foil. The heat shield stops the radiant heat from directly affecting the sensor, which in turn would affect temperature accuracy. The **SmartRooms** Comfort Controller can be placed anywhere that is convenient for the owner. Warning sticker must be attached to the electrical service panel. Ensure that all branch circuits supplying radiant heating are clearly marked as such.

Panel installation is now complete. Insulation must then be installed over an A) heated area use 3" (R10) insulation B) unheated area use 6" (R20) insulation C) crawl space use 9" (R30) insulation.

CAUTION:

- Panels must be turned off until joint compound has fully cured.
- Therma-Ray panels must not be placed over wood framing members, partitions, cupboards, or other obstructions or come in contact with plastic piping.
- Cellulose insulation is not recommended unless it meets or exceeds standard CGSB 510GP-60M or equivalent and must not contact face of heater panel.
- Use only copper conductor supply wire.
- Do not install heating panels in a room over an unheated crawl space unless floor is properly insulated.

FLOOR PANEL SYSTEM

CATALOGUE #	WATTS	LENGTH	WIDTH	WEIGHT
RC8A-130-240	130	8	9	12
RC6A-095-240	95	6	9	9
RC4A-070-240	70	4	9	6
RC9B-195-240	195	9	12	18
RC8B-175-240	175	8	12	16
RC7B-150-240	150	7	12	14
RC6B-130-240	130	6	12	12
RC5B-105-240	105	5	12	10
RC4B-085-240	85	4	12	8
RC3B-070-240	70	3	12	6
RC8C-260-240	260	8	18	24
RC6C-195-240	195	6	18	18
RC5C-160-240	160	5	18	15
RC4C-130-240	130	4	18	12
RC3C-095-240	95	3	18	9
RC2C-070-240	70	2	18	6

100, 120, 200, 208, 220, 230, 240, 277 volts available.



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ACCESSORIES

- PC-1 Endcaps regular
- 3M567 Connector for #12 Wire
- SR-LV **SmartRooms** Comfort Controller low voltage c/w sensors
- SR-240/120 **SmartRooms** Comfort Controller 240/120 volt c/w sensors

Printed in Canada

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