



## Ducoterra Radiant Heating Panel Installation Manual

### 1. Introduction

Your new radiant heating panels are designed to heat living and working spaces rapidly and efficiently by radiant heating. Like the sun, these panels will create a warm environment rapidly for all objects within line of sight of the panel surface. They are designed to be surface mounted on ceilings or for installation in a T-bar grid.

### 2. Installation Layout Guidelines

In a standard 8' ceiling room, these heating panels will cover approximately 10 times the floor square footage as panel size (e.g. a 2x4 panel will cover approximately 80 square feet of floor space). They may be installed at zero clearance to adjoining walls and adjacent panels, but optimal coverage is obtained by spacing the panels to cover the floor space efficiently.

As maximum panel efficiency is obtained within at 45 degree angle of the panels, spacing panels 2' off walls and approximately 4' from other panels will generally cover a room sufficiently. Panels may need to be positioned differently depending on specific room configurations, insulation, heating requirements, and other factors.

### 3. Environment Insulation Requirements

For proper functionality, the heated space should be insulated appropriately. Optimal panel operation is achieved if walls and ceilings are insulated according to ASHRAE 189 standards in accordance with your local climate zone. Heating panel connection box must not be covered with insulation material after installation to allow for inspection. Heating panel itself has an insulation value of R-5.

### 4. Wiring Requirements and Guidelines

Heating panel has two 10" 12 AWG leads for connecting to standard #12 power supply with wire nuts inside the attached connection box. See appropriate wiring diagrams for details (Fig 3).

**WARNING: To avoid the risk of electrical shock, personal injury or death, disconnect all electrical power before installing or performing maintenance on this panel.**

The wiring, installation, and electrical hookup of this panel must conform to local and national codes. Total wattage of heating panels per circuit must not exceed 80% of circuit capacity. Panels should be installed in conjunction with a line voltage or 24V thermostat. Measure voltage and branch circuit amperage to determine wattage and panel circuit load.

**CAUTION: Wiring procedures and connections shall be in accordance with the national and local codes having jurisdiction**

**WARNING: Panel must NOT be wired to higher voltage than label voltage**



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## 5. Surface Mounting Guidelines

**WARNING: DO NOT puncture panel with screws, nails, or any other device. Panel must be mounted through provide mounting holes.**

Panels may be mounted to joists, wood, or other penetrable surfaces using appropriate hardware. Included in our installation kit are toggle bolts to attach the panels to standard drywall ceilings. Alternatively, the mounting holes are designed to accommodate #8 – 2" pan head screws. Install provided nylon washers inside the mounting holes, between panel and screw head.



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## IMPORTANT INSTRUCTIONS

When using electrical appliances, basic precautions should always be followed to reduce the risk of fire, electric shock, and injury to persons, including the following:

- 1) **Read all instructions before installing and using this heater.**
- 2) **Extreme caution is necessary when any heater is used by or near children or invalids and whenever the heater is left operating and unattended.**
- 3) **Do not operate any heater after it malfunctions. Disconnect power at service panel and have heater inspected by a reputable electrician before reusing.**
- 4) **Do not use outdoors.**
- 5) **To disconnect heater, turn controls to off, and turn off power to heater circuit at main disconnect panel.**
- 6) **A heater has hot and arcing or sparking parts inside. Do not use it in areas where gasoline, paint, or flammable vapors or liquids are used or stored.**
- 7) **Use this heater only as described in this manual. Any other use not recommended by the manufacturer may cause fire, electric shock, or injury to persons.**
- 8) **SAVE THESE INSTRUCTIONS**



## SURFACE MOUNTING INSTALLATION

- Wiring procedures and connections shall be in accordance with the national and local codes having jurisdiction.
  - To reduce the risk of fire, do not store or use gasoline or other flammable vapors and liquids in the vicinity of the heater.
1. Cut appropriate sized hole for panel connection box and insure clearance from insulating material.
  2. Attach connection box to back of panel using provided hardware.
  3. Attach power supply leads to the panel leads in connection box.
  4. Position on ceiling in desired mounting location.
  5. Attach panel to ceiling using provided mounting hardware.
  6. Insert plastic caps to close mounting holes after allowing time to adjust installation if necessary. Caps are non-removable.

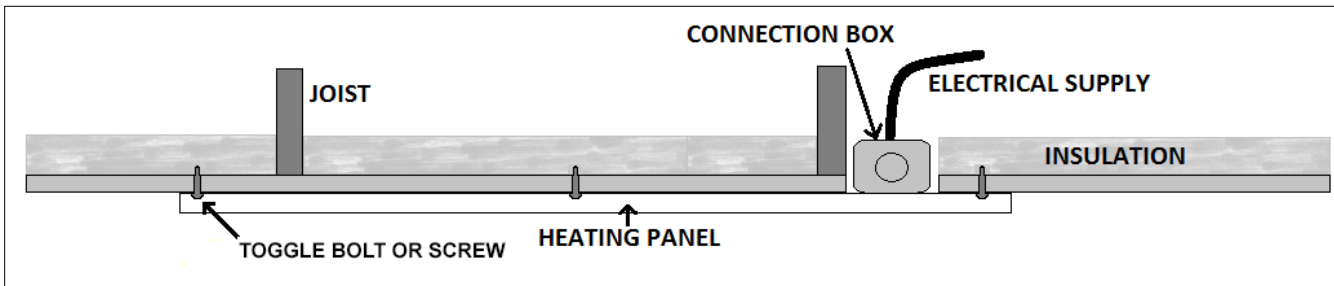


FIGURE 1 – Surface Mounting

## T-BAR MOUNTING INSTALLATION

1. Attach connection box to back of panel using provided hardware.
2. Lay panel onto the T-Bar grid and secure with hold-down clips (not included) if necessary
3. Attach power supply leads to the panel leads in connection box.

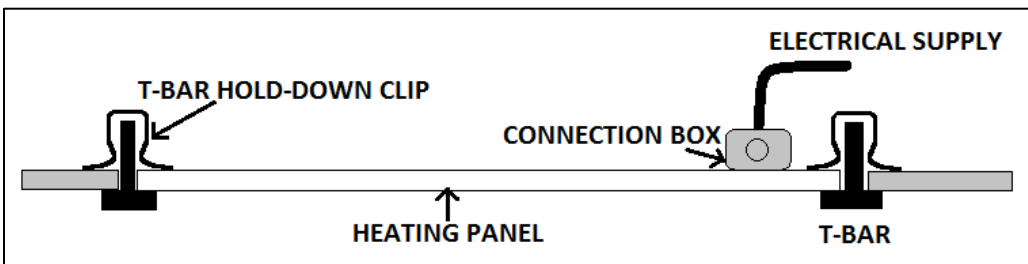


FIGURE 2 – T-Bar Mounting



## Testing Installation

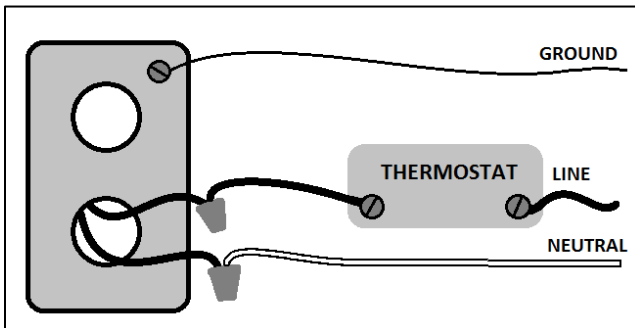
After installation, the heating circuit should be checked to ensure all panels have been installed properly and are functioning normally. With power available, measure the branch load with an amp meter. The amp meter value should agree with calculated load – if not, recheck the installation. A physical check of operation can also be made – with power to the panels, they should be warm to the touch and prolonged contact should be uncomfortable.

If no power is available to test the circuit, the use of an ohmmeter is required. Measure the resistance of the load circuit, isolated from other circuits. The measured resistance of the heating circuit should match the calculated resistance. The resistance can be calculated with the following formula:

$$\text{Resistance} = \frac{\text{Volts} * \text{Volts}}{\text{Watts}}$$

### WIRING DIAGRAMS

120 VOLTS



240 VOLTS

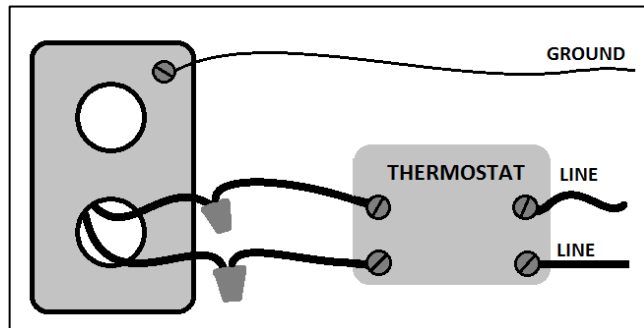


FIGURE 3 – Wiring connections for panels



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## Heating Panel Operation

Ensure panels have been properly installed prior to operation. Radiant heat ceiling panels function best in a zone heating configuration. Use a programmable thermostat to apply appropriate setbacks to spaces that are unoccupied. Optimal comfort with a radiant system is typically obtained at air temperatures of around 60-62F.

It is recommended that the panels are dusted & cleaned with a damp cloth every 6 months. Do not use harsh cleaners or abrasives or damage to panel surface may result. Do not lubricate. Make sure to disconnect power to panels at breaker box before cleaning, and allow panel to reach room temperature.

Heater may be stored when not in use in a cool, dry location.

**Panel contains no user serviceable parts and opening the heating unit will void the warranty.**



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## Heating Panel Maintenance

Ducoterra heating panels require no maintenance and carry a lifetime limited warranty. An occasional dusting & wipe down with a damp cloth every 6 months to maintain appearances is all that is necessary. Do not use harsh cleaners or abrasives or damage to panel surface may result. Make sure to disconnect power to panels at breaker box before cleaning, and allow panel to reach room temperature. If your panel ceases to operate at any time during the warranty period, contact Ducoterra to obtain a replacement panel at no charge (installation costs not covered). **Panels contain no user serviceable parts and opening the heating unit will void the warranty.**