

Solve Virtually Any Application Requiring Radiant Heat

Watlow's diverse RAYMAX® heater line allows you to solve virtually any application that requires radiant heat. Our capabilities cover a wide range of needs, from contamination resistant surfaces, to fast responding high temperature panels, to replaceable tubular elements.

Applying radiant heaters can be complicated. Watlow's engineering staff has the level of training required to help you meet your application requirements, providing a high degree of technical support such as conducting testing for your application at our facility, calculating your watt density and temperature requirements, and recommending system components such as sensors and controllers. With our experience in a wide range of industries, chances are Watlow has already helped someone handle a radiant heating application like yours.

Applications

- Thermoforming
- Food warming
- Paint and epoxy curing
- Heat treating
- High temperature furnaces
- Tempering and annealing processes

Radiant heaters must not be operated in the presence of flammable vapors, gases or combustible materials without proper ventilation and safety precautions. Radiant heaters must be properly wired and controlled to comply with all applicable electrical codes.



Caution: Fire Hazard



Features and Benefits

The full RAYMAX line

- Offers a variety of styles and capabilities to match the ideal temperature and watt density requirements of your application

Engineering and application support

- Makes your projects run more smoothly

Custom designs

- Can be quickly adapted for particular needs such as special wattage zoning

Watlow sensors and controllers are completely compatible with RAYMAX heaters

- Offers a single source thermal system that is reliable and designed just for your application



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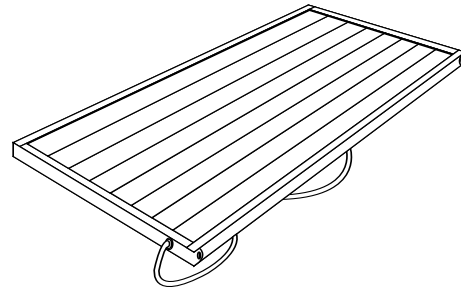


Panel Variations

Low Profile—Available with RAYMAX 1010, 1120, 1220, 1330 and 2030

This design may be required where mounting space is limited, for example, when converting existing equipment or designs to radiant panels.

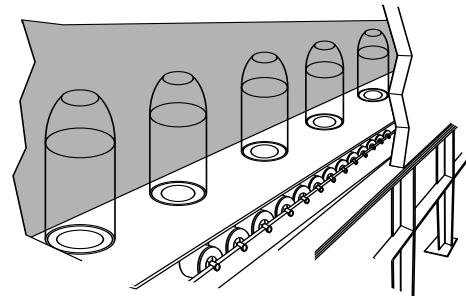
Available options may vary from the standard units when you specify a low profile design. Consult Watlow for further information.



Zoning—Available with RAYMAX 1010, 1120, 1220, 1330 and 2030

Watt densities can be varied across the entire width of RAYMAX heaters. If desired, each zone can have an individually controlled power supply.

Zoning can be very valuable when part of the product requires more heat, or when you must compensate for heat losses at the edges. By separately turning off part of the heated width, you can adjust for various widths of material.

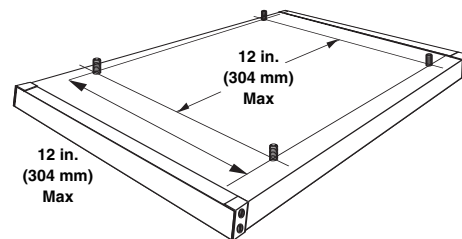


Mounting Accessories

Application Note: Allow for some thermal expansion of the heater case during operation. An expansion of up to one percent can occur when the case reaches its normal maximum limit of 595°C (1100°F). If your equipment has mounting screws to connect to the slots in the mounting legs, allow for a small amount of extra length. If you are using mounting holes to interface with the mounting studs on the back of the RAYMAX case, make sure your holes are oversized. Also, use washers and avoid overtightening.

Mounting Studs— Available with RAYMAX 1010, 1120, 1220, 1330 and 2030

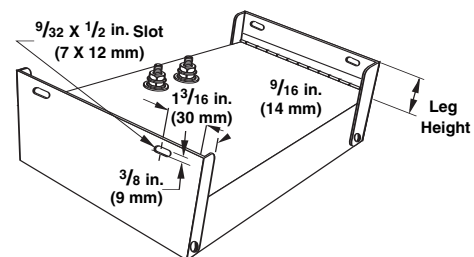
Standard $\frac{1}{4}$ x 20 x $1\frac{1}{2}$ inch (M6 x 40) steel studs are welded to the case. For best support, studs should be approximately located on 12 inch (304 mm) centers. Consult Watlow for exact locations on specific heaters.



Mounting Legs - Available with RAYMAX 1120, 1220 and 2030

Mounting legs are extensions of the steel end caps with mounting slots for bolting directly to field support members. There is no extra charge for legs; they can be supplied in half inch increments from 0.5 inch (12.5 mm) to three inches (76 mm). No slots are provided in legs less than one inch (25 mm) long.

For panels over 24 inches (610 mm) long, mounting studs are recommended for the best panel support.



Terminal Accessories

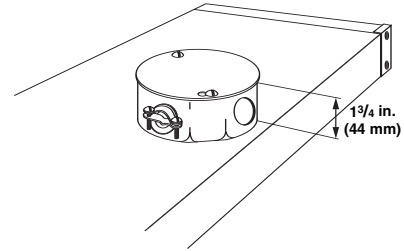
Special Terminal Locations - Available with RAYMAX 1010, 1120, 1220, 1330 and 2030

If the standard terminal locations shown will not meet your needs, special locations can be designed.

Terminal Box - Available with RAYMAX 1010, 1120, 1220, 1330 and 2030

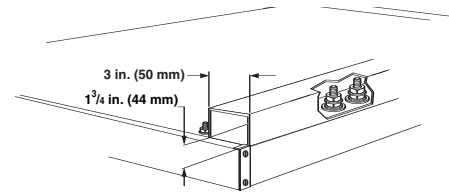
To protect electrical connections, a standard NEMA terminal box is available. The standard size is 4 x 4 x 1 $\frac{1}{2}$ inches (102 x 102 x 41 mm) with knockouts for $\frac{1}{2}$ inch (12.5 mm) conduit. Other NEMA sizes are also available.

Care should be taken to use lead wire capable of withstanding the ambient temperatures.



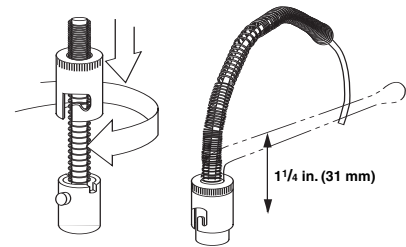
Wiring Raceway - Available with RAYMAX 1010, 1120, 1220, 1330 and 2030

Custom designed to your specific requirements, a steel raceway provides electrical and physical protection for all terminal connections. This can be particularly useful for multi-zone panels.



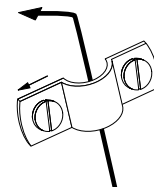
Thermowells - Available with RAYMAX 1010, 1120 and 1330

A thermowell allows you to use a thermocouple with a bayonet fitting to monitor heater temperature. The thermowell is located on the back of the panel to allow easy access for thermocouple replacement. Spring tension holds the tip of the thermocouple in contact for close control of the heater temperature. Thermocouple not included.



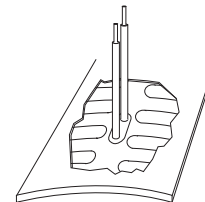
Thermocouple Clamps - Available with RAYMAX 1220 and 2030

A thermocouple mounting clamp can be provided on the end of the heater case. The clamp is suitable for use with $\frac{1}{8}$ inch (3.175 mm) and $\frac{1}{4}$ inch (6.35 mm) O.D. sheath thermocouples, which should be bent 90 degrees so that the sensing tip is just above and lightly touching the hot face at an element location.



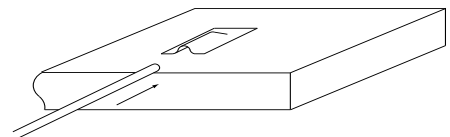
Welded Thermocouple - Available with RAYMAX 1010, 1120 and 1330

A thermocouple junction is welded to the emitting surface to provide optimum temperature sensing accuracy and responsiveness. This option permits the actual radiating face temperature to be precisely monitored and controlled.



Thermocouple Pocket - Available with RAYMAX 1010, 1120 and 1330

A thermocouple pocket is welded to the emitting surface. This pocket accepts a 0.063 inch (1.6 mm) diameter thermocouple (not included). This option provides accurate temperature sensing and easy thermocouple replacement.



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