

Radiant Heaters

RAYMAX Panel Heaters

RAYMAX 1330

The RAYMAX 1330 is the only radiant heater featuring specially insulated heater emitter strips for higher performance. Watlow developed a unique compacted mineral insulation to electrically insulate the element wire, with a result of superior heat transfer and higher operating capabilities.

Because of its rugged stainless steel construction, the RAYMAX 1330 will last longer. Plus, this heater features a high emissivity black coating and a uniform, full surface heat source for better efficiency.

Performance Capabilities

- Maximum face temperature: 1300°F (700°C)
- Maximum watt density: 30 W/in² (4.7 W/cm²)
- Typical peak energy wavelength: 3-3.6 microns
- Maximum voltage to 480V

Features and Benefits

Field replaceable emitter strips

- Prevents the cost of buying a whole new radiant heater

Rugged metal construction

- Protects heater from contaminants

No reflectors

- Eliminates cleaning and replacement

No fragile glass or ceramic elements

- Prevents possible safety hazards

Backside insulation

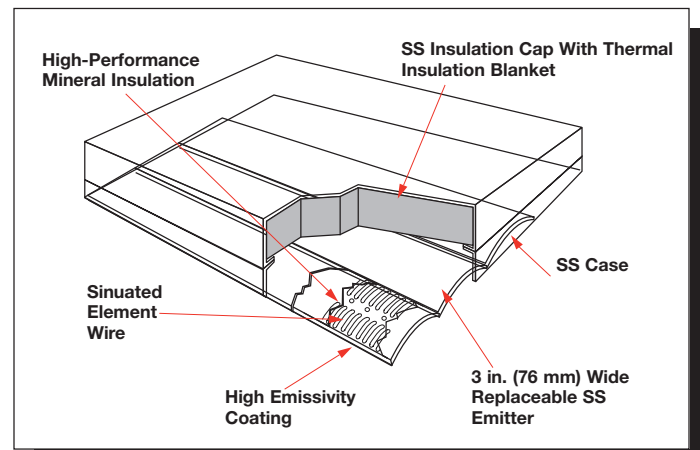
- Results in better heating efficiency

Responsive face temperature sensing options

- Increases accuracy

Typical Applications

- Thermoforming plastics and composites
- Circuit board soldering
- Heat shrinking of plastic



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Applications and Technical Data

Sizes and Ratings

Thickness: 2.46 in. (62.5 mm)

Voltage: Customer specified up to 480V. Balanced 3-phase available on units with three or six emitters.

Note: Small heaters may not be able to be built at high voltages. Contact your Watlow representative for specific application.

Maximum Watt Density: 30 W/in² (4.7 W/cm²)

Maximum Face Temperature: 1300°F (700°C)

Typical Peak Energy Wavelength: 3 microns

Standard Tolerances: ±1/16 in. (1.6 mm)

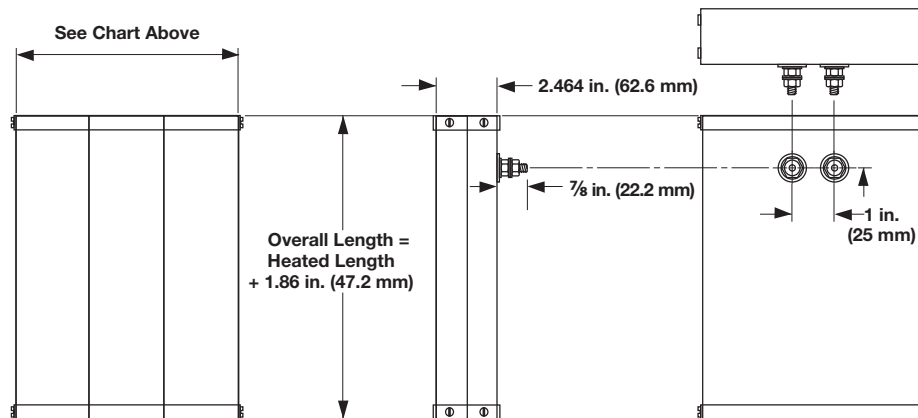
Specifications

Heater Dimensions	Min.	Max.	Increments
Length: in. (mm)	12 (305)	30.5 (775)	0.06 (1.5)

Number of Emitters	Heated Width in. (mm)	Overall Width in. (mm)
1	2.95 (74.9)	3.36 (85.3)
2	6.14 (155.9)	6.54 (166.1)
3	9.33 (236.9)	9.73 (247.1)
4	12.51 (317.8)	12.92 (328.2)
5	15.70 (398.8)	16.11 (409.2)
6	18.89 (479.8)	19.29 (489.9)
7	22.08 (560.8)	22.48 (570.9)
8	25.26 (641.6)	25.67 (652.0)

Options

- Terminal box
- Thermowell
- Thermocouple welded to hot face
- Mounting studs



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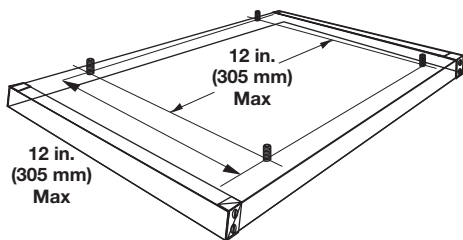
RAYMAX Panel Heaters

Mounting Accessories

Mounting Studs

Standard $\frac{1}{4}$ -20 x $1\frac{1}{2}$ in. (38 mm) or (M6-1 x 40) steel studs are welded to the case. For best support, studs should be approximately located on 12 in. (305 mm) centers. Contact your Watlow representative for exact locations on specific heaters.

Available with RAYMAX 1010, 1120, 1220, 1330 and 2030.

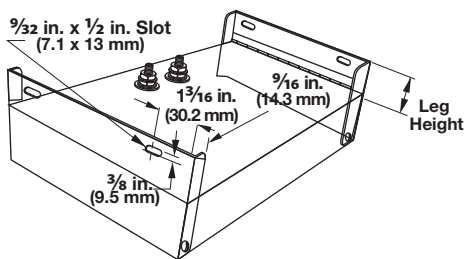


Mounting Legs

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 in. (13 mm) to 3 in. (76 mm). No slots are provided in legs less than 1 in. (25 mm) long.

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

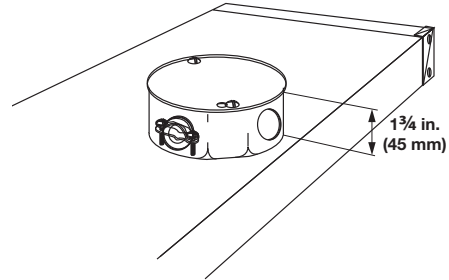
Available with RAYMAX 1120, 1220 and 2030.



Application note: Allow for some thermal expansion of the heater case during operation. An expansion of up to 1 percent can occur when the case reaches its normal maximum limit of 1100°F (595°C). If the equipment has mounting screws to connect to the slots in the mounting legs, allow for a small amount of extra length. If mounting holes are used to interface with the mounting studs on the back of the RAYMAX case, make sure the holes are oversized. Also, use washers and avoid overtightening.

Terminal Accessories

Terminal Box



To protect electrical connections, a standard NEMA octagon terminal box is available. The standard size is $3\frac{3}{16}$ x $3\frac{3}{16}$ x $1\frac{1}{2}$ in. (90.5 x 90.5 x 38 mm) with knockouts for $\frac{1}{2}$ in. (13 mm) conduit. Other NEMA sizes are also available.

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

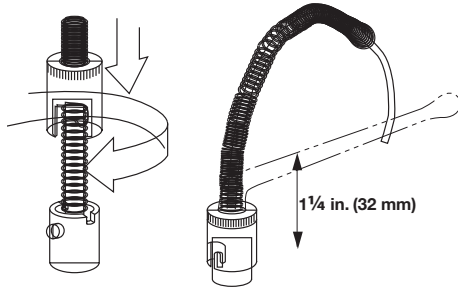
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Temperature Control

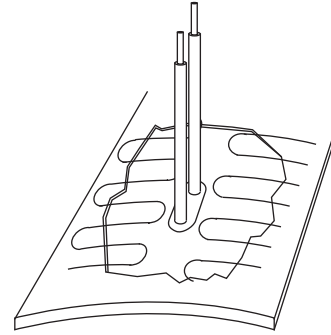
Thermowells



A thermowell allows for the use of 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 is not included.

Available with RAYMAX 1010, 1120 and 1330.

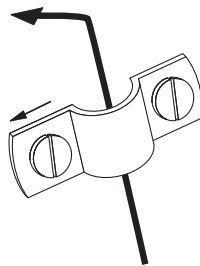
Welded Thermocouple



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. The standard length of the thermocouple wire is 12 in. (305 mm).

Available with RAYMAX 1010, 1120 and 1330.

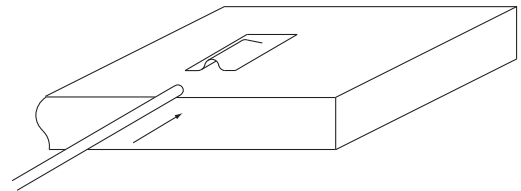
Thermocouple Clamps



A thermocouple mounting clamp can be provided on the end of the heater case. The clamp is suitable for use with 1/8 in. (3.2 mm) and 1/4 in. (6 mm) O.D. sheath thermocouples, which should be bent 90° so the sensing tip is just above and lightly touching the hot face at an element location.

Available with RAYMAX 1220, 1525 [1/8 in. (3.2 mm) only], 1626 [1/8 in. (3.2 mm) only] and 2030.

Thermocouple Pocket



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

Available with RAYMAX 1010, 1120 and 1330.

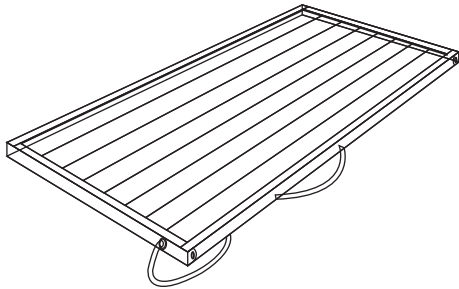
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**EXTENDED
CAPABILITY**

Extended Capability For RAYMAX Panel Heaters

Mounting Accessories

Low Profile

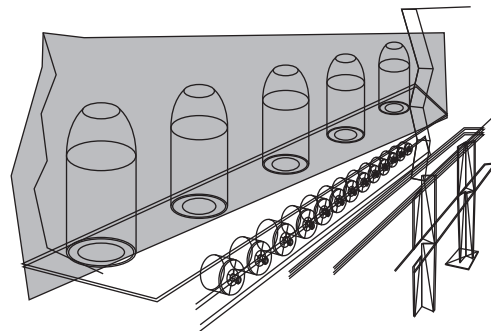


This design may be required where mounting space is limited. For example, when converting existing equipment or designs to radiant panels.

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

Available with RAYMAX 1010, 1120, 1220 and 2030.

Zoning

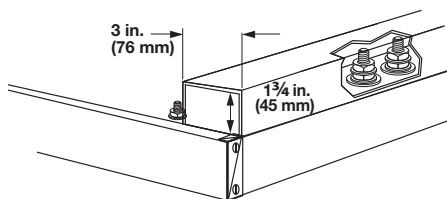


Watt densities can be varied across the entire width of RAYMAX heaters. If desired, each zone can have an individually controlled power supply.

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

Available with RAYMAX 1010, 1120, 1220, 1330 and 2030.

Wiring Raceway



A steel raceway provides electrical and physical protection for all terminal connections. This can be particularly useful for multi-zone panels.

Available with RAYMAX 1010, 1120, 1220, 1330 and 2030.