

# THICK FILM MANIFOLD HEATERS

## Thick Film Manifold Heaters Help Deliver Hot Runner Precision



Watlow's thick film manifold heaters allow hot runner operations to gain more control over temperature uniformity while reducing overall cycle times.

Thick film manifold heaters are designed to clamp directly to the outer surface of the hot runner manifold. This clamp-on design provides many advantages to hot runner molds including:

- Uniform heat distribution
- Smaller-mass hot runner manifolds, since the extra steel required for the tubular heaters is eliminated; smaller manifolds will heat up more quickly, reducing the overall start-up time of the injection molding machine
- Design flexibility
- Shape of the heater matches the shape of the manifold allowing the heater to adapt to any hot runner geometry
- Simpler manufacturing, as the grooves that were traditionally machined in the steel manifold to accept tubular or cable heaters are eliminated

Thick film manifold heaters are manufactured utilizing Watlow's thick film heating technology on stainless steel plates. The basis for the low profile lies in its unique sandwich design. Watlow's thick film resistance heaters are made of several layered materials. A glassy dielectric film coats the substrate and is then covered with a custom-designed resistor circuit and a final dielectric overglaze. The thick film circuitry allows the heater to vary heat output across the entire surface of the heater helping to control and correct virtually any temperature uniformity issues caused by conventional heaters.

### Specifications

- Maximum substrate temperature of 550°C (1025°F)
- Watt densities are application dependent over entire substrate surface
- 10 W/cm<sup>2</sup> (65 W/in<sup>2</sup>) for conductive heating applications
- Up to 480 volts, three phase
- Termination options include contact pad, soldered lead wire or welded stud/lead wire (standard)

### Features and Benefits

#### Low profile package

- Allows heater to be designed to fit around mounting holes, notches, sensors, etc.

#### Quick thermal response within manifold during start-up and operation

- Allows for a more efficient system

#### Heaters not affected by plastic resin leakage and are easily replaced

- Reduces machine downtime

#### Elimination of milled channel required for cartridge, cable or tubular heaters

- Reduces overall mold height and costs

#### Lower overall thermal mass in manifold

- Reduces power consumption
- Allows for faster thermal response

#### Superior thermal profile in the manifold

- Generates higher part quality and yield
- Allows for shorter recovery between cycles

### Applications

- Hot runner manifold systems



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