



## SPECIFICATION SHEET

## FLUENT® In-line Heater

# High Performance Fluid Heating Solution Featuring Watlow's Thermal Spray Technology Improves System Performance

The new FLUENT® in-line heater from Watlow® is a small, lightweight, high-performance heater that can replace both a traditional immersion type heater or a heater wrapped around a tube as part of a thermal system. Watlow's FLUENT heater is designed as an integrated solution that replaces multiple components in a system. This heater design reduces overall system cost and complexity. Because of its high watt density, it offers ultra-fast response leading to higher system performance. Featuring Watlow's thermal spray technology, the heater makes use of its entire surface to produce heat, which optimizes heat transfer and temperature uniformity.



## Features and Benefits

### Small, lightweight, robust heater construction

- Replaces multiple components in a system
- Reduces overall system size
- Lowers total cost of ownership

### Unique circuit patterning process

- Facilitates customizable heating profiles
- Enables distributed wattage and/or multiple zones
- Assures precise and repeatable power distribution

### High watt density, low mass heater

- Contributes to fast response time
- Allows for efficient heat transfer
- Enables on-demand process start-up

## Typical Applications

- Hemodialysis fluid heating
- Food cooking equipment
- Semiconductor purge gas heating
- Ink preheating systems
- On demand fluid heating

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*Powered by Possibility*

To be automatically connected to the nearest  
North American Technical Sales Office:

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### International Technical Sales Offices:

|                |                   |               |                  |                  |                  |
|----------------|-------------------|---------------|------------------|------------------|------------------|
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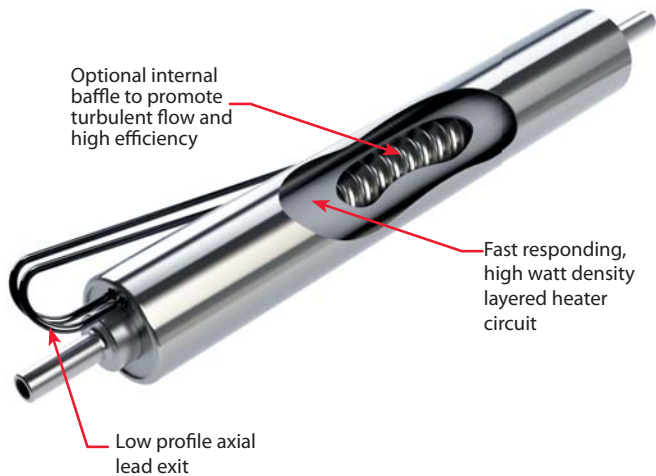
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STL-FIH-0517



## Specifications

- Substrate tube material: 444 SS
- Fitting and baffle material: 316L SS
- Voltage up to 240V
- Amperage up to 15A per zone
- Resistance tolerance +10%, -5%
- Typical maximum watt densities
  - Air 150 W/in<sup>2</sup> (23 W/cm<sup>2</sup>)
  - Water 450 W/in<sup>2</sup> (70 W/cm<sup>2</sup>)
- Maximum pressure: 150psi (10.2 bar)
- Maximum heater temperature: 250°C as measured by internal Type K T/C
- UL®/cUL® (pending) and CE



## Standard Product Offering — (5 Day Lead Time)

| Volts | Watts | Protection Tube Length<br>in. (mm) | Number of Heating Circuits | Watt Density (W/in <sup>2</sup> ) |
|-------|-------|------------------------------------|----------------------------|-----------------------------------|
| 240   | 500   | 3.00 (76)                          | 1                          | 210                               |
| 120   | 250   | 4.25 (108)                         | 1                          | 57                                |
| 240   | 1,000 | 4.25 (108)                         | 1                          | 228                               |
| 120   | 375   | 5.25 (133)                         | 1                          | 62                                |
| 240   | 1,500 | 5.25 (133)                         | 1                          | 247                               |
| 120   | 500   | 6.50 (165)                         | 1                          | 63                                |
| 240   | 2,000 | 6.50 (165)                         | 1                          | 250                               |
| 120   | 750   | 6.50 (165)                         | 2                          | 94                                |
| 240   | 3,000 | 6.50 (165)                         | 2                          | 375                               |
| 120   | 1,000 | 7.75 (197)                         | 2                          | 100                               |
| 240   | 4,000 | 7.75 (197)                         | 2                          | 400                               |
| 240   | 500   | 6.50 (165)                         | 1                          | 63                                |

**Note:** Go to [www.watlow.com/fluent](http://www.watlow.com/fluent) for the latest list of standard designs and product information.

## Application Orientation

**Gas Heating—**  
(Any orientation)



**Liquid Heating—**  
(Heater must be vertical with inlet at the bottom)



## Inlet/Outlet Fitting Options

