

# Heating Products

## General Information and Sizing

### General Information

Heating products protect electronic and electrical components from temperature problems that are below acceptable tolerances. There are obvious circumstances when extremely low ambient (outside cabinet) temperatures would require a heater, but there are also less apparent times that a heater should be considered. For example, a system may run all day having its components generate heat, but once the system shuts down for the night, the quick drop in temperature could cause condensation and possibly corrosion - a heater could maintain a safe, constant temperature.

### Combined Cooling and Heating

Some components today are sensitive enough that both cooling and heating could be required in the same enclosure. When designing your system, be aware of the need to maintain a relatively constant temperature inside the enclosure as ambient temperatures swing from cool to very hot. Hammond thermostats (one for heaters and one for cooling products) can control both systems automatically.

### Heater Sizing Information

- $P_H$  = Total power required for this application (W)  
 $P_V$  = Existing power from components (W)  
 $DT$  = Temperature differential (Kelvin) ambient to cabinet interior (1°Kelvin = 1°C = 1.8°F)  
 $A$  = Free-standing cabinet surface area (ft<sup>2</sup>)  
 $k$  = Heat transmission coefficient (W/ft<sup>2</sup> K) convection in quiet air:  
     Painted steel approx. 0.51 W/ft<sup>2</sup> K  
     Aluminum approx. 1.115 W/ft<sup>2</sup> K  
     Plastic approx. 0.325 W/ft<sup>2</sup>  
     Stainless Steel approx. .344 W/ft<sup>2</sup>

### Formula

$$P_H = (DT \times k \times A) - P_V$$

If enclosure located **outside**, use **x2** (DT x k x A)

### Sample with solution:

$DT = 10K$   
 $k = \text{Painted steel} = 0.51 \text{ W/ft}^2$   
 $A = 50 \text{ ft}^2$   
 $P_V = 45 \text{ W}$   
 $P_H = (10 \times 0.51 \times 45) - 50$   
 $= 229.5 - 50$   
 $= 179.5 \text{ W}$

**Recommend:** FLHTF200A115

Climate Control



### Fan Heater with Thermostat

- Designed to prevent condensation or maintain minimum temperature in enclosures.
- Built in Thermostat. (-18 C to +38 C) (0 F to +100 F)
- Fan Auto/On switch with pilot light for Heat On indication
- 20 CFM airflow
- High temperature safety protection
- Aluminum alloy outer casing
- Connection via terminal block.



Part No.	Watts	Voltage	Hz	Overall Dimensions Height x Width x Depth	Ship Wt. lbs
FLHTF125A115	125 W	120 V	60	5.5" x 4.0" x 5.3"	2.2
FLHTF125A230	105/125 W	220/240 V	50/60	5.5" x 4.0" x 5.3"	2.2
FLHTF200A115	200 W	120 V	60	5.5" x 4.0" x 5.3"	2.2
FLHTF200A230	165/200 W	220/240 V	50/60	5.5" x 4.0" x 5.3"	2.2
FLHTF400A115	400 W	120 V	60	7.5" x 4.0" x 5.3"	3.0
FLHTF400A230	335/400 W	220/240 V	50/60	7.5" x 4.0" x 5.3"	3.0
FLHTF800A115	800 W	120 V	50	7.5" x 4.0" x 5.3"	3.0
FLHTF800A230	670/800 W	220/240 V	50/60	7.5" x 4.0" x 5.3"	3.0