Not all thermal management solutions are about dissipating heat. Frigid temperatures and the accompanying condensation can also affect sensitive electrical components. That's why Hoffman offers heaters to battle the extremes. The right heater will keep the enclosure environment warmer and drier. It's another way Hoffman works to deliver thermal management solutions for your electronics that ensure optimum performance and longevity.

Heaters

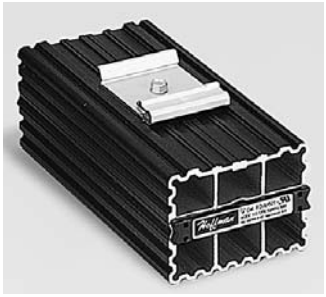
Hoffman®
A Pentair Company

Heaters
Sizing and Selection

When temperatures dip below the minimally-acceptable ranges for electronics, our electric heaters can raise the temperature inside enclosures to appropriate levels. Heaters are designed to protect sensitive mechanical, electrical, and electronic equipment from the harmful effects of condensation and corrosion. Two styles offer heating powers from 10 watts to 800 watts.

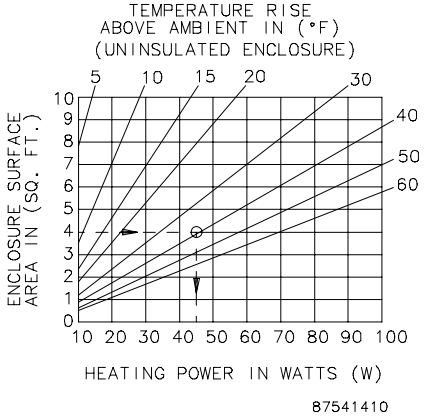
The graphs represent a painted steel enclosure mounted in a calm air building interior. The lowest temperature differential between room temperature and enclosure interior must be 10°F+ to prevent humidity and condensation. For outdoor applications, double the heating power requirement.

Semiconductor Control Panel Heaters (for 10-60 Watt Heating Applications)



Example:

For a painted steel enclosure with an exposed surface area of 4 ft.^{2} containing electrical components that use 20 watts, determine which semiconductor heater will provide a 40°F rise over the outside ambient temperature.



Step 1

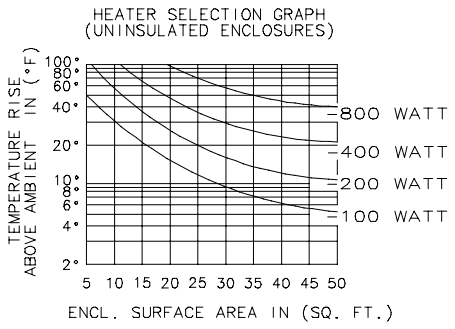
Plot your application using the graph above.

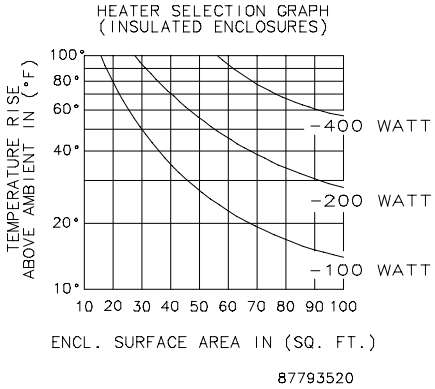
- Find surface area (4 sq. ft.) on the vertical scale
- Draw a horizontal line across to the intersection point with the diagonal line representing ΔT = 40°F
- Extend a vertical line down to the horizontal scale to determine your total heating power required (W = 45 watts)

Step 2

From the total watts required, subtract the 20 watts from pre-existing components to arrive at the minimum heater power of 25 watts. The 30 watt D-AH301 heater should be selected in this case since it is the nearest size that exceeds the requirement.

Electric Heaters (for 100-800 Watt Heating Applications)





Example: Which electric heater would most efficiently maintain a 60°F temperature in an uninsulated 24 x 24 x 10 enclosure that is exposed to a temperature not less than 30°F?

Step 1

Calculate the total enclosure surface area.

Area (ft^2) = 2[(AxB)+(AxC)+(BxC)] ÷144

where "A", "B", "C" are the dimensions of the enclosure.

In our example,

Area = 2[(24x24)+(24x10)+(24x10)]÷144

Step 2

Using the graphs, draw a vertical line through the enclosure surface area and determine the temperature rise given by each heater.

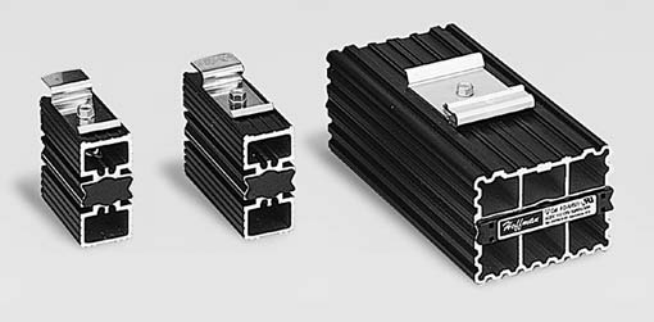
For enclosures exposed to windy conditions, heaters should be oversized by approximately 50%.

Step 3

Select the electric heater that achieves the desired temperature rise. In our example, the desired temperature rise is 30°F (60°F - 30°F). The 200 watt heater should be selected since its temperature rise (35°F) exceeds the requirement.

Heaters
Sizing and Selection

Semiconductor Control Panel Heaters



Semiconductor Control Panel **Page 66**

Catalog Number	Watts
DAH101	10
DAH301	30
DAH601	60

Electric Heaters

Electric **Page 68**

Catalog Number	Watts
DAH1001A, DAH1002A	100
DAH2001A, DAH2002A	200
DAH4001B, DAH4002B	400
DAH8001B, DAH8002B	800

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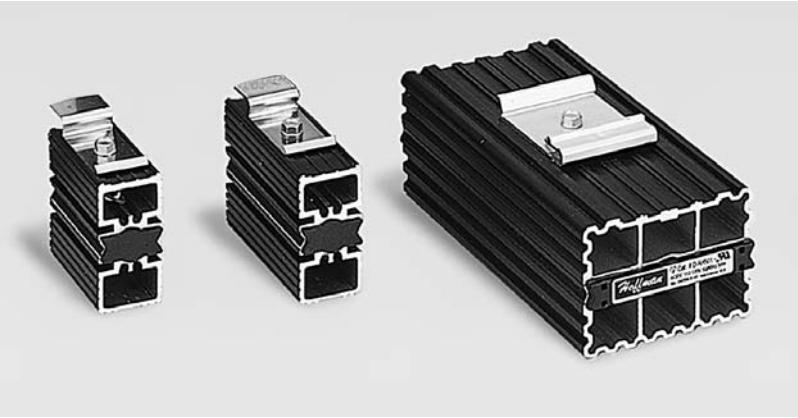
Semiconductor Control Panel Heaters



Application

Designed to meet the demands of electronic, pneumatic, hydraulic, and mechanical equipment requiring protection from low temperatures, condensation, and corrosion. The Positive Temperature Coefficient heater unit will maintain a stable temperature environment within enclosures, allowing critical components to perform with consistent reliability for longer periods.

Construction

- PTC (Positive Temperature Coefficient) heating element
- Mounting clip for 35mm DIN rails EN 50022

Finish

Black anodized extruded aluminum.

Industry Standards

UL Component Recognized
CSA Component Recognized
IEC IP54
CE

UL File Number E150057

Installation

Mount unit at or near the bottom of the cabinet. Improved heat dissipation will be achieved by using two or more smaller heaters wired in parallel. If a technical requirement exists for a specific temperature, regardless of the external ambient temperature, a temperature regulator can be installed.

Caution: Do not mount on wooden structures. Avoid placement near heat-sensitive components.

Standard Sizes Semiconductor Heaters

Catalog Number	Watts	Voltage	Amps Starting Current	L in.	mm	Weight Lbs.	Kg.
DAH101	10	AC/DC 110/120	0.8	1.97	50	0.45	.20
DAH301	30	AC/DC 110/120	1.2	3.93	100	0.66	.30
DAH601	60	AC/DC 110/120	2.5	5.5	140	1.10	.50

Bulletin
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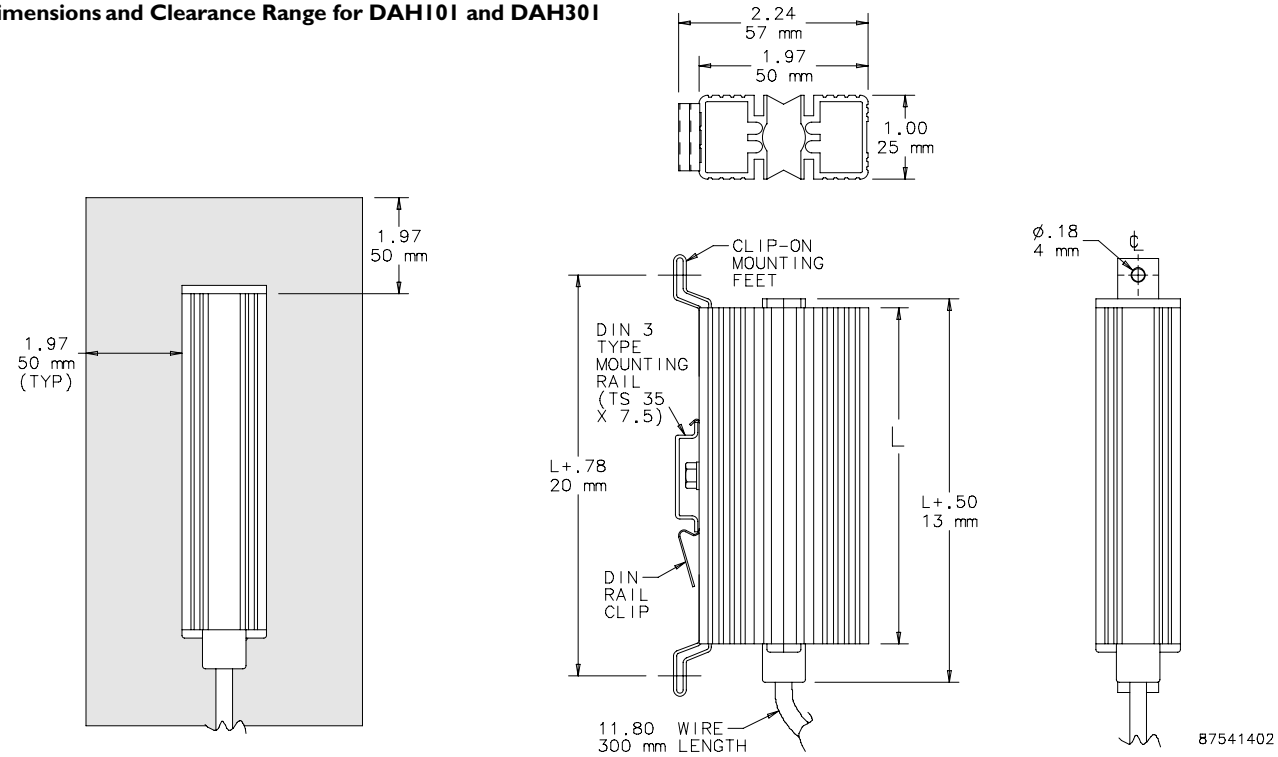
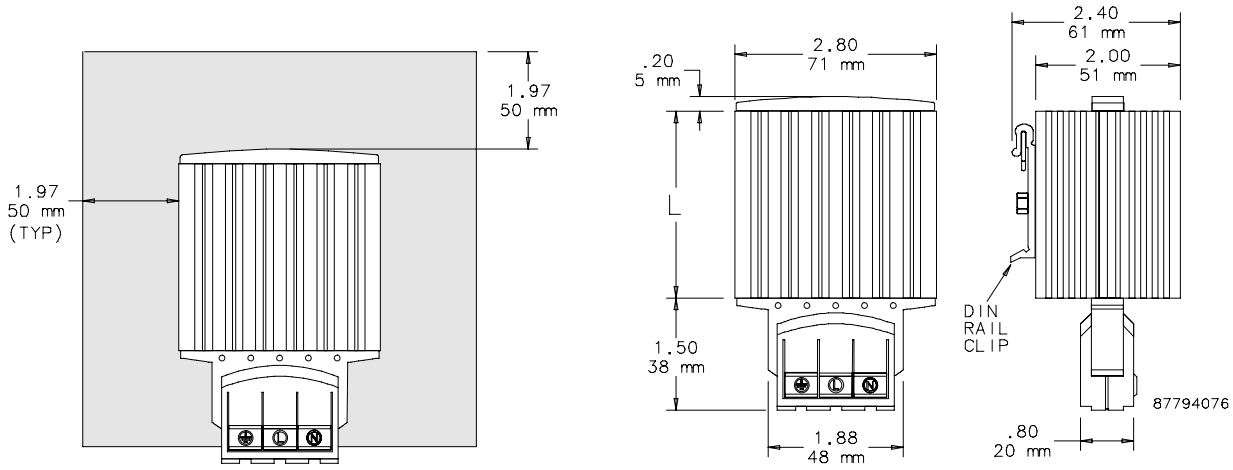
Semiconductor Control Panel Heaters

Dimensions and Clearance Range for DAH101 and DAH301



Dimensions and Clearance Range for DAH601



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D85

Electric Heaters

Application

Designed to protect sensitive mechanical, electrical, and electronic equipment from the harmful effects of condensation, corrosion, and low temperatures. Thermostatically-controlled fan-driven heater units maintain a stable temperature within enclosures so critical components can perform more reliably over a longer period of time.

Construction

- Attractive and durable aluminum housing
- Thermostat, standard on all units, is adjustable from 0°F to 100°F (-18°C to 38°C)
- Fan draws cool air from the bottom of the enclosure and passes this air across the thermostat and heating elements before being released into enclosure cavity
- Heated air is discharged through the top of the heater unit
- Four 10-32 self-tapping screws are included with each heater
- Ball bearing fan runs continuously for even temperature distribution
- Terminal strip with clamp connector that accepts both solid and stranded wire

Finish

Brushed aluminum

Industry Standards

UL Component Recognized, UL File No. E61997
CSA Certified, CSA File No. LR42186
CE

Installation

CAUTION

These electric heaters are not designed for use in dusty, dirty, corrosive, or hazardous locations.

Portions of the heater can get hot. Adequate protection must be taken to protect people from potential burns and to protect other components from this heat.

Hoffman recommends this heater only be installed in a totally-enclosed metal enclosure.

Do not install heaters on wood panels.

Hoffman electric heaters should be centered as low as possible on an interior enclosure panel. This permits the unit to heat the cool air located at the bottom of the enclosure. For maximum efficiency and longevity, the heater should be mounted in a vertical position with the terminal block to the bottom and the air outlet openings at the top in a sealed enclosure free from dust or debris. However, the unit will also effectively distribute heat if turned 90 degrees with the terminal block out the bottom and the air outlet at the side. Although enclosure panels are preferable, heaters may be installed on any flat sheet metal surface. **Do not install heaters on wood panels.**

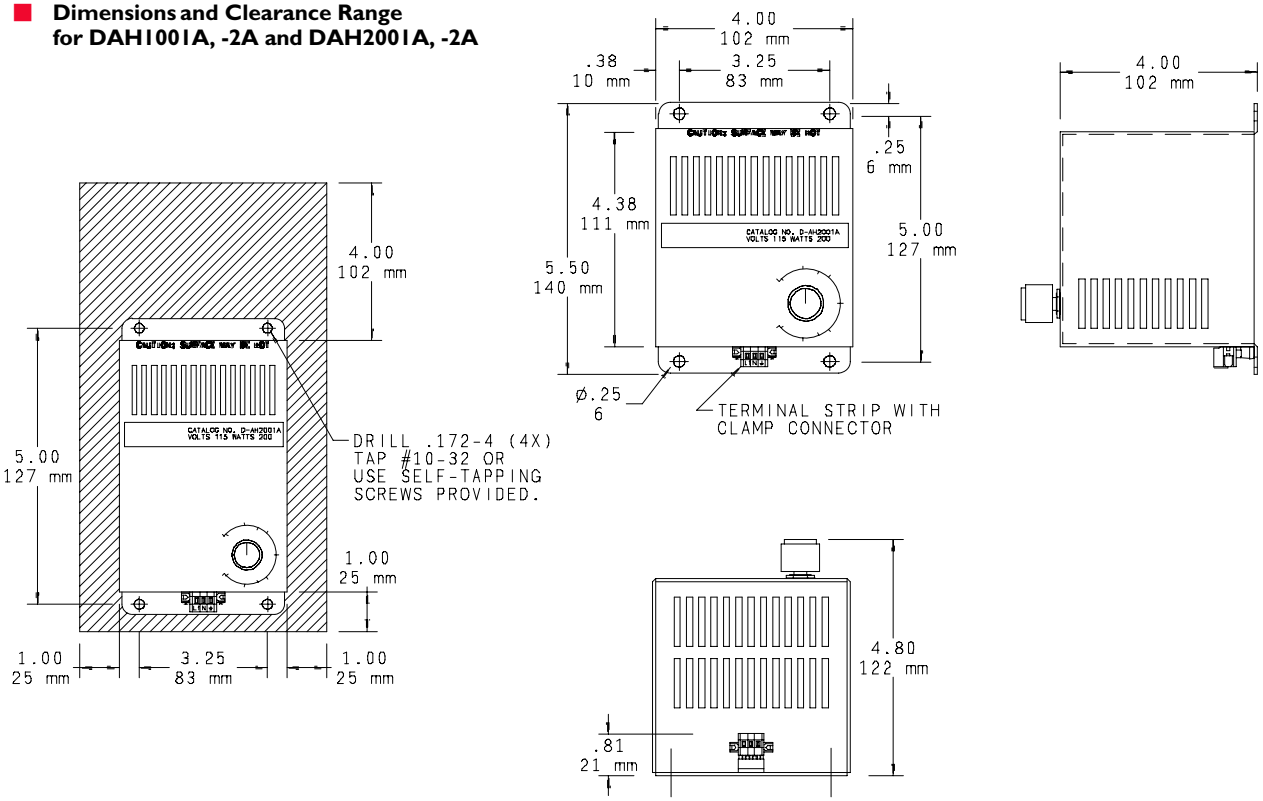
Heat-sensitive components should not be placed near the heater discharge area since this air can be quite warm. The clearance range defines the space that must be kept free of these components for proper and safe operation of the heater.

Standard Sizes Electric Heaters

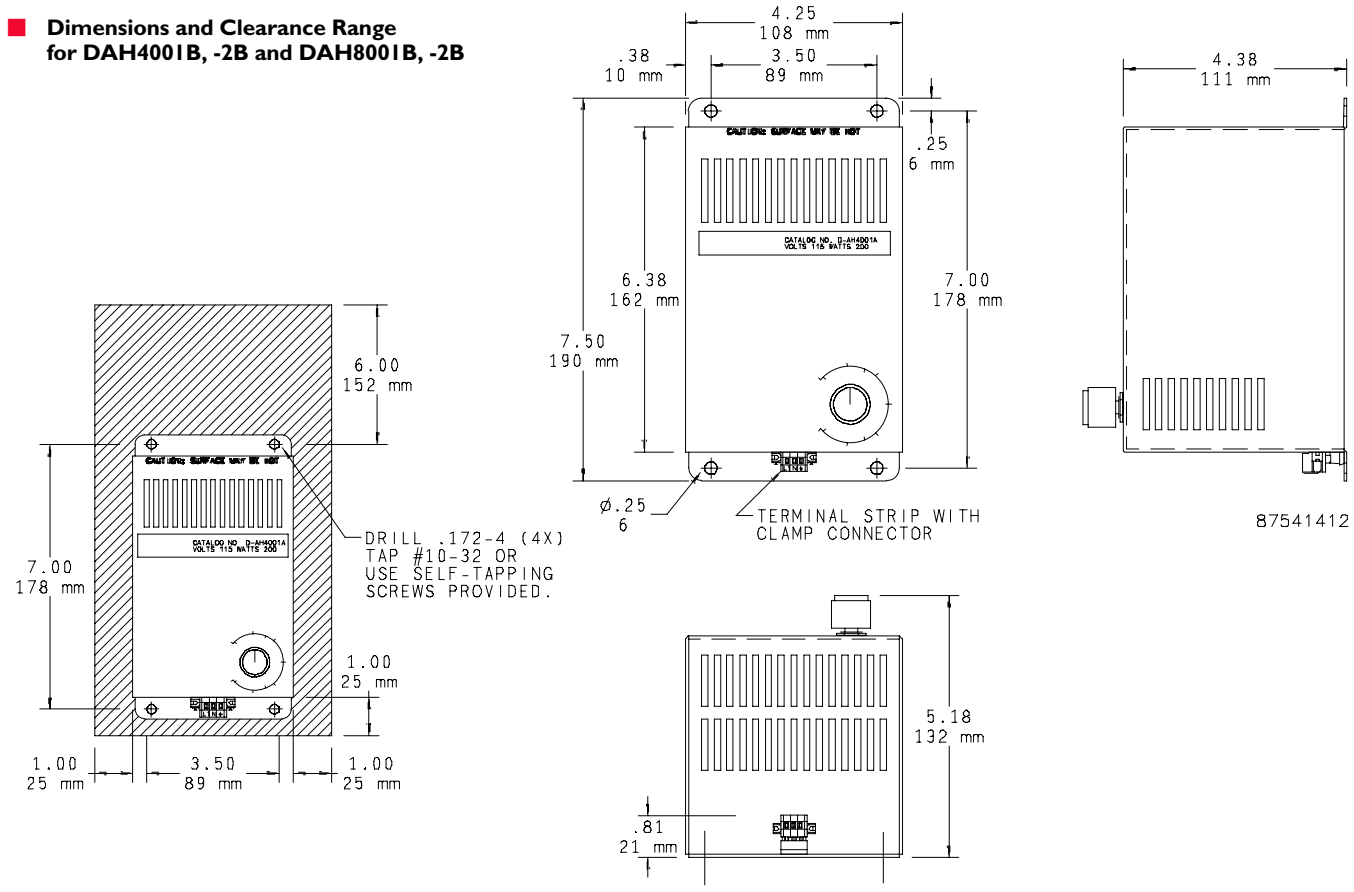
Catalog Number	Watts	Voltage	Hz	Max Amp Draw	Weight lb.	Weight kg.
DAH1001A	100	115	50/60	0.98	4.00	1.81
DAH1002A	100	230	50/60	0.49	4.00	1.81
DAH2001A	200	115	50/60	1.89	4.00	1.81
DAH2002A	200	230	50/60	0.95	4.00	1.81
DAH4001B	400	115	50/60	3.72	6.00	2.72
DAH4002B	400	230	50/60	1.86	6.00	2.72
DAH8001B	800	115	50/60	7.37	6.00	2.72
DAH8002B	800	230	50/60	3.69	6.00	2.72

Electric Heaters

Dimensions and Clearance Range for DAH1001A, -2A and DAH2001A, -2A



Dimensions and Clearance Range for DAH4001B, -2B and DAH8001B, -2B



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