

# Thermal Management

**H**eat builds up rapidly in enclosed environments, compromising the performance and life span of equipment. Like insurance for your electronics, effective thermal management maximizes the efficiency and life cycle of electrical components. As a leader in thermal management, Hoffman offers a wide range of solutions for heating and cooling enclosures, controlling moisture, and filtering or moving air through an enclosure. Whether your enclosure is indoors or out, sealed or open to airflow, there's a reliable, proven Hoffman thermal management solution available.



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# Air Conditioners Sizing and Selection

**B**efore choosing a thermal management solution, you need to carefully consider the specifics of your application in addition to the following factors:

- **F**an packages and blowers may introduce ambient contaminants like oil mist and dust into the enclosure
- **H**eat exchangers cannot cool below the ambient temperature
- **C**losed-loop air conditioners (this section) can cool below ambient temperature and reduce humidity without introducing contaminants
- **S**imple ventilation devices such as louvers or grilles and filters are appropriate if maintaining a cool, constant temperature is not a critical factor

**O**nce you have determined the proper form of cooling equipment you need, selecting the required cooling capacity is outlined in this section.

## How to Read Air Conditioner Catalog Numbers

**CR43 - 06 1 6 - 002**  
1 2 3 4 5

1. Identifies the type/family of air conditioner and the approximate height (i.e., CR43 = CR family, about 43" high).
2. This is the air conditioner's listed capacity in BTU/Hr. (i.e., 06 = 6000 BTU/Hr.)
3. 1 = 115 Volt or 2 = 230 Volt; 4 = 460 Volt
4. 6 = 50/60 Hz or 60 Hz (depending on unit, see Design Data); 5 = 50 Hz
5. Unique set of numbers for each air conditioner which identifies the accessories on a model.

## Selection and Sizing Software

Designed to assist you in determining the most suitable choices of air conditioners, heat exchangers, or fans for your application. Download a free copy of our selection software by visiting our web site: [www.hoffmanonline.com](http://www.hoffmanonline.com).

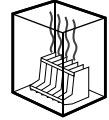


## Sizing Air Conditioners

### Determine internal heat load in watts.

Determine the internal *heat load* produced by equipment as total operating watts.

$$1 \text{ WATT} = 3.413 \text{ BTU/Hr.}$$

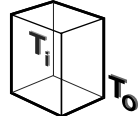


### Determine desired temperature difference in degrees F.

$$1^{\circ}\text{C } \Delta T = 1.8^{\circ}\text{F } \Delta T$$

Determine the  $\Delta T$  ( $^{\circ}\text{F}$ ), the temperature difference between the maximum temperature outside the enclosure ( $T_o$ ) and the *maximum desired* temperature inside the enclosure ( $T_i$ ), which can be calculated as:

$$T_o - T_i = \Delta T \text{ for air conditioners.}$$

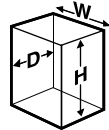


### Determine exposed surface area of the enclosure in square feet.

$$\text{AREA (ft}^2\text{)} \quad 1 \text{ M}^2 = 10.76 \text{ ft}^2$$

Calculate the exposed surface area of the enclosure in Square Feet:

$$\text{AREA (ft}^2\text{)} = 2[(H \times W) + (H \times D) + (W \times D)] \div 144$$



where "H", "W", and "D" are the dimensions of the enclosure in inches.

### Determine required air conditioner capacity.

$$(\text{WATTS} \times 3.413) + [1.25 \times \text{AREA (ft}^2\text{)} \times \Delta T (^{\circ}\text{F})] = \text{BTU/HR.}$$

Use this formula to determine the required cooling capacity needed to maintain the desired operating temperature for your enclosure. This selection procedure applies to uninsulated, sealed, gasketed enclosures in indoor locations.

All industrial air conditioners are rated at their maximum operating point. Operating an air conditioner at temperatures below maximum conditions will result in reduced cooling capacity. In other words, operating 95 $^{\circ}\text{F}$  ambient and 95 $^{\circ}\text{F}$  enclosure temperature results in a 10 percent to 20 percent reduction in the rated capacity. (Note: full cooling capacity is probably not necessary at lower ambient temperatures.)

Air conditioners are appropriate for applications in which:

- The temperature inside the enclosure must be maintained at or below ambient temperature
- Humidity must be removed from the enclosure
- Ambient air contaminants must be kept out of the enclosure

# Air Conditioners Sizing and Selection

## T4 Line Indoor/Outdoor Air Conditioners



| T4 Line | H     |      | W     |     | D     |     | BTU/Hr.   | Watts     |
|---------|-------|------|-------|-----|-------|-----|-----------|-----------|
|         | in.   | mm   | in.   | mm  | in.   | mm  |           |           |
| T15     | 15.75 | 400  | 7.50  | 191 | 6.30  | 160 | 800       | 234       |
| T20     | 20.00 | 508  | 10.00 | 254 | 9.90  | 251 | 2000      | 586       |
| T29     | 29.00 | 737  | 17.00 | 432 | 11.30 | 287 | 4000      | 1172      |
| T43     | 43.00 | 1093 | 15.75 | 400 | 10.99 | 279 | 6680-8600 | 1958-2520 |
| T50     | 50.00 | 1270 | 19.00 | 483 | 11.05 | 281 | 13,100    | 3838      |
| T53     | 52.85 | 1342 | 20.85 | 530 | 13.00 | 330 | 20,000    | 5860      |

## Side-Mount Subcompact Air Conditioners



| Series | H     |     | W    |     | D    |     | BTU/Hr. | Watts |
|--------|-------|-----|------|-----|------|-----|---------|-------|
|        | in.   | mm  | in.  | mm  | in.  | mm  |         |       |
| T15    | 15.75 | 400 | 7.50 | 191 | 6.30 | 160 | 800     | 234   |

## Side-Mount Compact Air Conditioners



| Series | H     |     | W     |     | D    |     | BTU/Hr. | Watts |
|--------|-------|-----|-------|-----|------|-----|---------|-------|
|        | in.   | mm  | in.   | mm  | in.  | mm  |         |       |
| 13     | 13.25 | 337 | 14.25 | 362 | 7.80 | 198 | 1000    | 293   |
| 17     | 17.65 | 448 | 12.00 | 305 | 8.68 | 220 | 1800    | 527   |

## Side-Mount Mid-Size Air Conditioners



| Series | H     |     | W     |     | D     |     | BTU/Hr.   | Watts    |
|--------|-------|-----|-------|-----|-------|-----|-----------|----------|
|        | in.   | mm  | in.   | mm  | in.   | mm  |           |          |
| 28     | 28.50 | 724 | 17.00 | 432 | 11.33 | 288 | 2000-4000 | 586-1172 |
| 33NSM  | 34.37 | 873 | 12.00 | 305 | 9.88  | 251 | 4000      | 1172     |
| 36N    | 38.72 | 984 | 15.00 | 381 | 11.33 | 288 | 6000      | 1758     |

## Side-Mount Full-Size Air Conditioners



| Series | H     |      | W     |     | D     |     | BTU/Hr.     | Watts     |
|--------|-------|------|-------|-----|-------|-----|-------------|-----------|
|        | in.   | mm   | in.   | mm  | in.   | mm  |             |           |
| 52     | 52.63 | 1337 | 17.13 | 435 | 11.33 | 288 | 8000-12,000 | 2344-3516 |

# Air Conditioners

## Sizing and Selection

### 3-Phase 460-Volt Side-Mount Full-Size Air Conditioners



| Series | H     |      | W     |     | D     |     | BTU/Hr.     | Watts     |
|--------|-------|------|-------|-----|-------|-----|-------------|-----------|
|        | in.   | mm   | in.   | mm  | in.   | mm  |             |           |
| 52     | 52.63 | 1337 | 17.13 | 435 | 11.33 | 288 | 3800-10,000 | 1113-2930 |

### Top-Mount Air Conditioners



| Series | H     |     | W     |     | D     |     | BTU/Hr.   | Watts    |
|--------|-------|-----|-------|-----|-------|-----|-----------|----------|
|        | in.   | mm  | in.   | mm  | in.   | mm  |           |          |
| HBII   | 10.25 | 260 | 17.00 | 432 | 21.08 | 535 | 2200-4000 | 645-1172 |

### Compact to Full-Size Air Conditioners



| Series | H     |      | W     |     | D     |     | BTU/Hr.   | Watts     |
|--------|-------|------|-------|-----|-------|-----|-----------|-----------|
|        | in.   | mm   | in.   | mm  | in.   | mm  |           |           |
| CR23   | 23.00 | 584  | 10.00 | 254 | 8.75  | 222 | 1600      | 469       |
| CR29   | 29.50 | 749  | 15.75 | 400 | 8.63  | 219 | 2200-4000 | 645-1172  |
| CR43   | 43.31 | 1100 | 15.75 | 400 | 10.25 | 260 | 6000-8500 | 1758-2490 |

### CR Series Air Conditioner Package Options



| Series | H     |      | W     |     | D     |     | BTU/Hr.   | Watts     |
|--------|-------|------|-------|-----|-------|-----|-----------|-----------|
|        | in.   | mm   | in.   | mm  | in.   | mm  |           |           |
| CR23   | 23.00 | 584  | 10.00 | 254 | 8.75  | 222 | 1600      | 469       |
| CR29   | 29.50 | 749  | 15.75 | 400 | 8.63  | 219 | 2200-4000 | 645-1172  |
| CR43   | 43.31 | 1100 | 15.75 | 400 | 10.25 | 260 | 6000-8500 | 1758-2490 |

### VC Vortex Cooler



| Series | Cooling Capacity |       | Voltage | Frequency (Hz) |
|--------|------------------|-------|---------|----------------|
|        | BTU/Hr.          | Watts |         |                |
| VC04—  | 400              | 117   | 115     | 50/60          |
| VC09—  | 900              | 264   | 115     | 50/60          |
| VC15—  | 1500             | 440   | 115     | 50/60          |
| VC17—  | 1700             | 498   | 115     | 50/60          |
| VC25—  | 2500             | 733   | 115     | 50/60          |

# T4 Line Indoor/Outdoor Air Conditioners



## Application

T4 Air Conditioners provide high-efficiency positive cooling for wall-mount and stand-alone enclosures. Designed for indoor and outdoor applications requiring up to UL Type 4 rating.

## Features

- Equipped with head pressure control for low ambient operation, compressor heater, coated condenser coil, and thermostat
- Surface and internal recess mounting capabilities
- Thermostat located behind front grille
- EMI/RFI noise suppressor is standard
- Reusable and washable air filter is easily accessible without removing front cover
- Broad operating range of -40°F (-40°C) to 131°F (55°C)
- 800-13,100 units use a CFC-free or low ozone-depleting refrigerant (R134A); 20,000 BTU units use R22
- Compact footprints minimize mounting surface requirements

## Construction

- Includes power cord with plug for standard grounded outlet
- Built-in hanging brackets facilitate installation on door, side, or rear of the enclosure
- Condensate management system with base pan and drain
- High performance, industrial grade and efficiency fans provide maximum heat transfer
- Mounting template, hardware, gasket, and instruction manual furnished

## Finish

RAL 7035 smooth light gray polyester powder coating over galvanized steel.

## Industry Standards

*Maintains UL/cUL Type 12, 3R, or 4 rating when properly installed on UL/cUL Type 12 or 4 rated enclosure.*

UL/cUL Listed, UL File Number SA6453  
CE

## Accessories

Replacement Filter

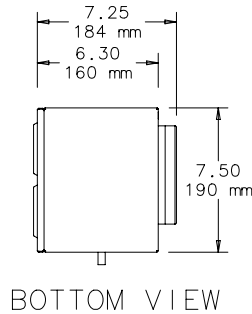
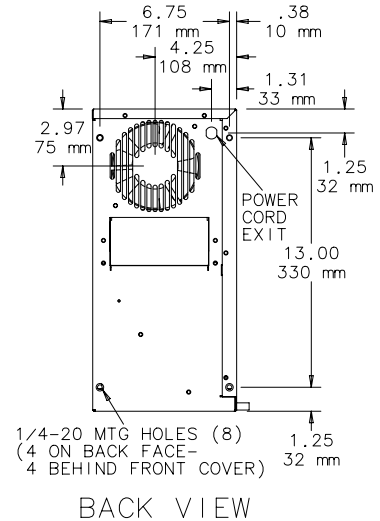
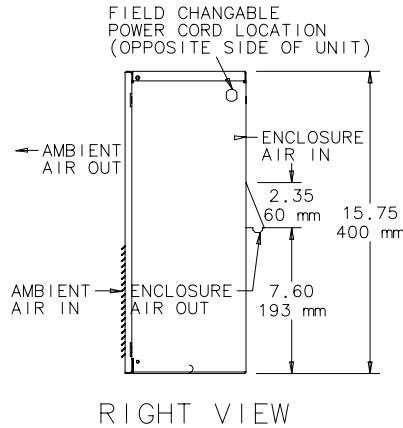
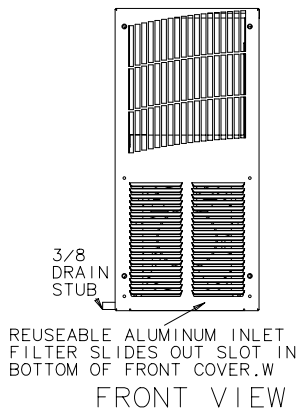
## Closed Loop Cooling

These air conditioners are designed and tested to maintain a UL50-rated separation of the external ambient airflow from the sealed cabinet interior. This protects the electronic controls and equipment from shutdowns caused by heat, humidity, dust, and other contaminants.

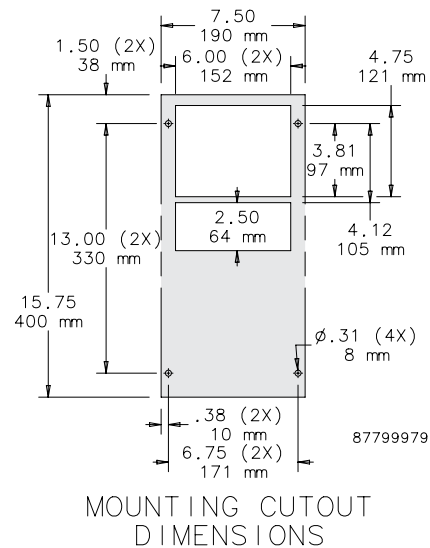
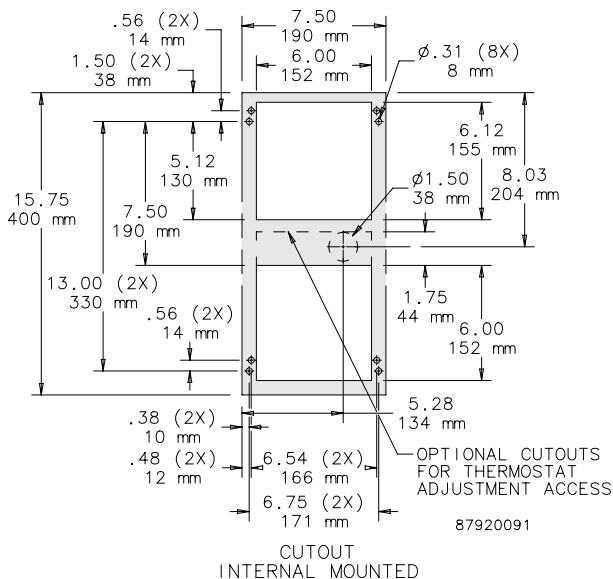
# T4 Line Indoor/Outdoor Air Conditioners

**800 BTU 15.75 x 7.50 x 6.30 (400 x 191 x 160)—Replacement Filter Catalog Number 10100091**

| Catalog Number | Voltage | Hz    | Phase | BTU/Hr. @ Max. Ambient Temp. | Full Load Amps | 50 Hz Max. Amb. Temp |    | 60 Hz Max. Amb. Temp |    | Shipping Weight Lbs./Kgs |
|----------------|---------|-------|-------|------------------------------|----------------|----------------------|----|----------------------|----|--------------------------|
|                |         |       |       |                              |                | °F                   | °C | °F                   | °C |                          |
| T150116G100    | 110/115 | 50/60 | 1     | 800/800                      | 3.8/3.6        | 125                  | 52 | 131                  | 55 | 27/12                    |
| T150126G100    | 220/230 | 50/60 | 1     | 800/900                      | 1.4/1.5        | 125                  | 52 | 131                  | 55 | 27/12                    |



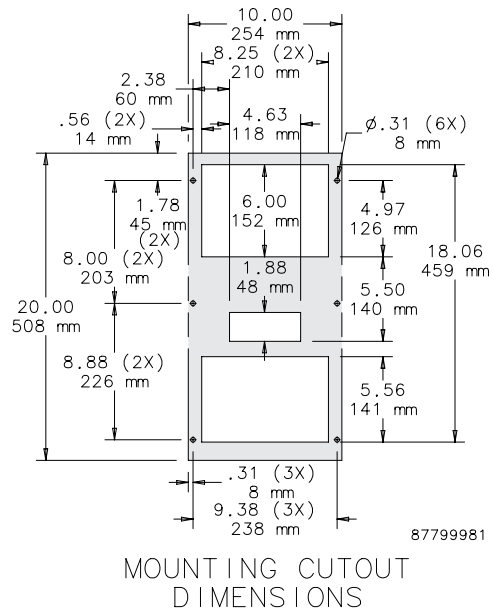
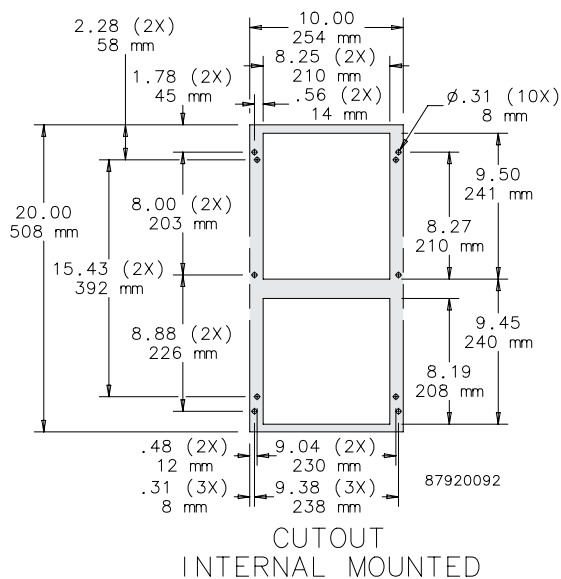
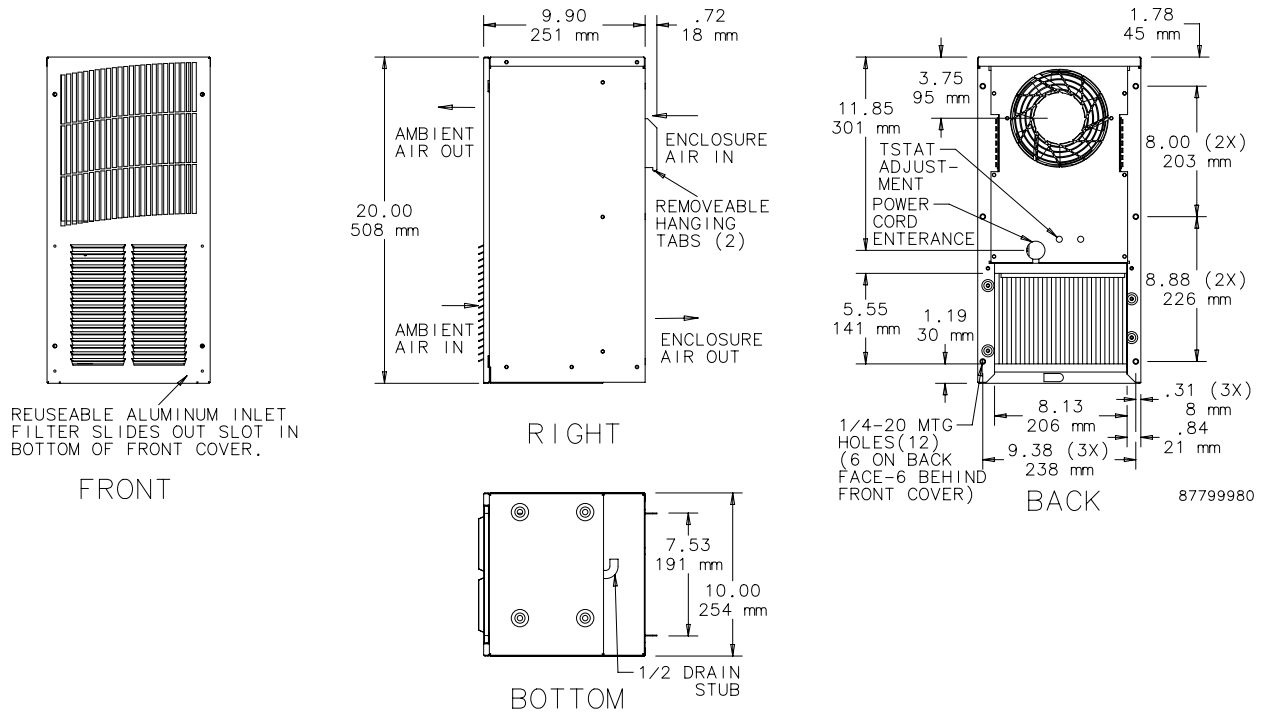
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# T4 Line Indoor/Outdoor Air Conditioners

**2000 BTU 20.00 x 10.00 x 9.90 (508 x 254 x 251)—Replacement Filter Catalog Number 10100090**

| Catalog Number | Voltage | Hz    | Phase | BTU/Hr. @ Max. Ambient Temp. | Full Load Amps | 60 Hz Max. Amb. Temp |    | Shipping Weight<br>Lbs./Kgs |
|----------------|---------|-------|-------|------------------------------|----------------|----------------------|----|-----------------------------|
|                |         |       |       |                              |                | °F                   | °C |                             |
| T200216G100    | 115     | 50/60 | 1     | 1800/2000                    | 7              | 131                  | 55 | 56/25                       |
| T200226G100    | 230     | 50/60 | 1     | 1800/2000                    | 3.5            | 131                  | 55 | 56/25                       |

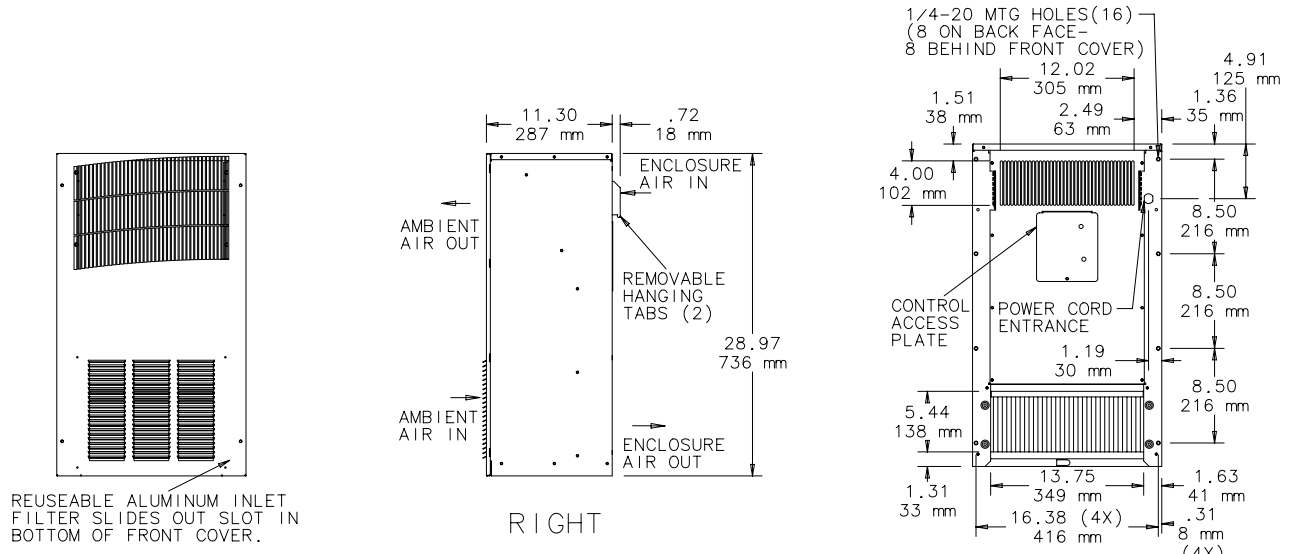


**Thermal Management**

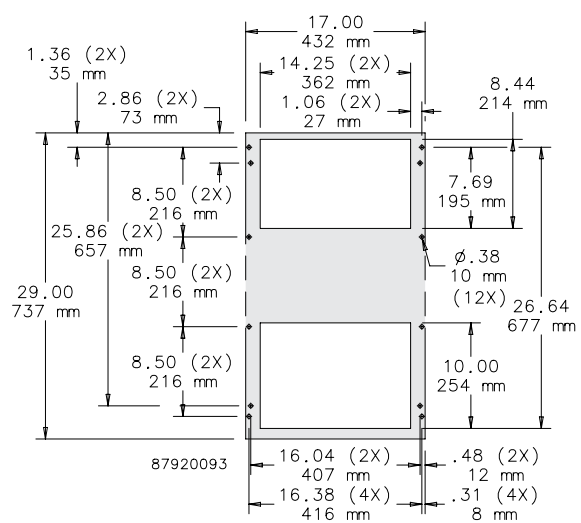
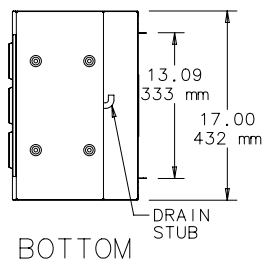
# T4 Line Indoor/Outdoor Air Conditioners

**4000 BTU 29.00 x 17.00 x 11.30 (737 x 432 x 287)—Replacement Filter Catalog Number I0100093**

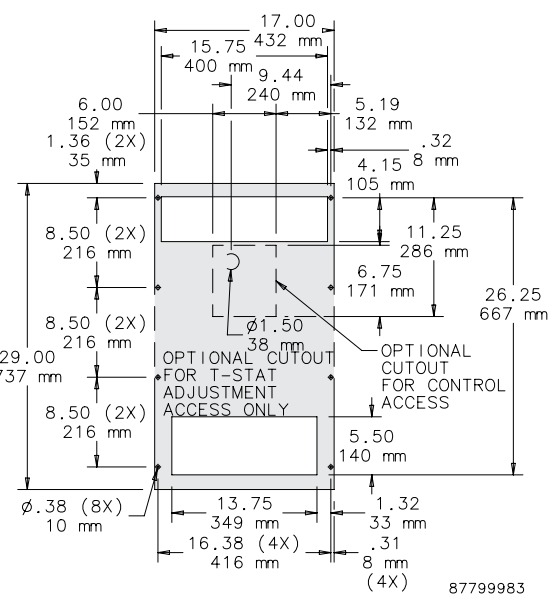
| Catalog Number | Voltage | Hz    | Phase | BTU/Hr. @ Max. Ambient Temp. | Full Load Amps | 60 Hz Max. Amb. Temp |    | Shipping Weight Lbs./Kgs |
|----------------|---------|-------|-------|------------------------------|----------------|----------------------|----|--------------------------|
|                |         |       |       |                              |                | °F                   | °C |                          |
| T290416G100    | 115     | 50/60 | 1     | 3600/4000                    | 13.8/13.6      | 131                  | 55 | 107/49                   |
| T290426G100    | 230     | 50/60 | 1     | 3600/4000                    | 6.9/6.8        | 131                  | 55 | 107/49                   |



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87920093



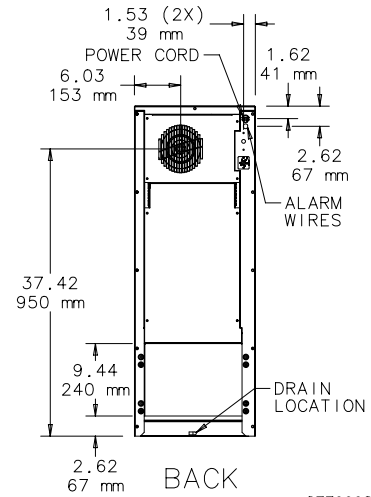
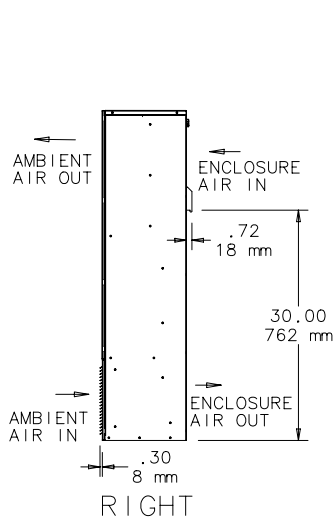
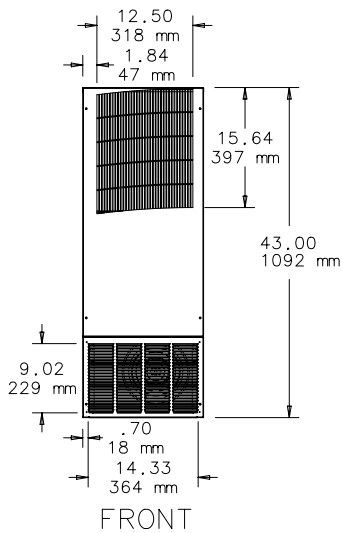
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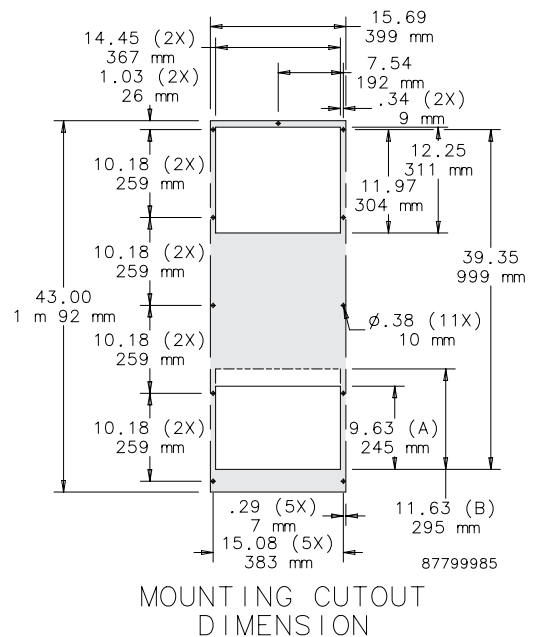
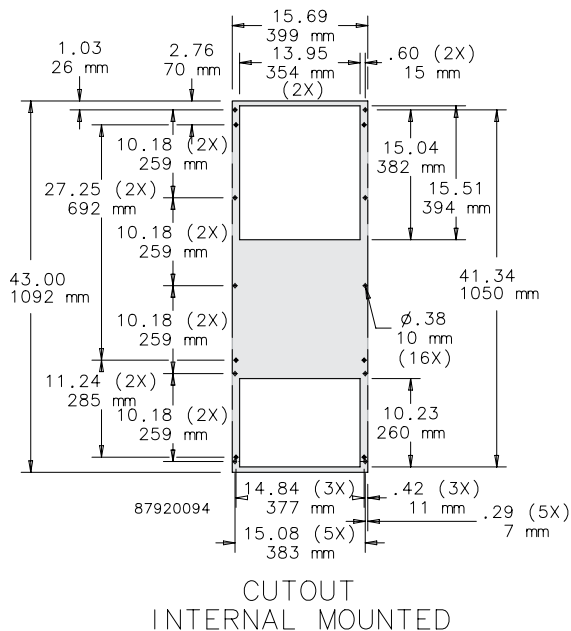
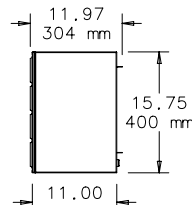
# T4 Line Indoor/Outdoor Air Conditioners

**6680-8600 BTU 43.00 x 15.75 x 10.99 (1093 x 400 x 279)—Replacement Filter Catalog Number I0100096**

| Catalog Number | Voltage | Hz    | Phase | BTU/Hr. @ Max. Ambient Temp. | Full Load Amps | 60 Hz Max. Amb. Temp |    | Shipping Weight Lbs./Kgs |
|----------------|---------|-------|-------|------------------------------|----------------|----------------------|----|--------------------------|
|                |         |       |       |                              |                | °F                   | °C |                          |
| T430616G100    | 115     | 50/60 | 1     | 6310/6680                    | 9.2/8.6        | 131                  | 55 | 125/57                   |
| T430626G100    | 230     | 50/60 | 1     | 6520/6770                    | 4.4/3.8        | 131                  | 55 | 125/57                   |
| T430816G100    | 115     | 50/60 | 1     | 7900/8600                    | 10.4/11.2      | 131                  | 55 | 125/57                   |
| T430826G100    | 230     | 50/60 | 1     | 7400/8200                    | 5.2/5.4        | 131                  | 55 | 125/57                   |



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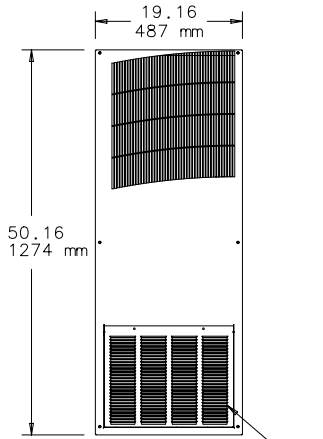
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Thermal  
Management

# T4 Line Indoor/Outdoor Air Conditioners

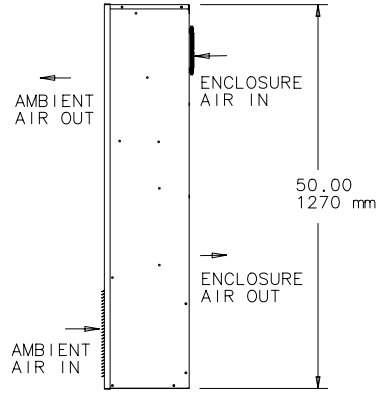
**13,100 BTU 50.00 x 19.00 x 11.05 (1270 x 483 x 281)—Replacement Filter Catalog Number 10100083**

| Catalog Number | Voltage | Hz    | Phase | BTU/Hr. @ Max. Ambient Temp. | Full Load Amps | 60 Hz Max. Amb. Temp |    | Shipping Weight Lbs./Kgs |
|----------------|---------|-------|-------|------------------------------|----------------|----------------------|----|--------------------------|
|                |         |       |       |                              |                | °F                   | °C |                          |
| T501226G100    | 230     | 50/60 | 1     | 11,600/13,100                | 9.0/9.5        | 131                  | 55 | 164/75                   |

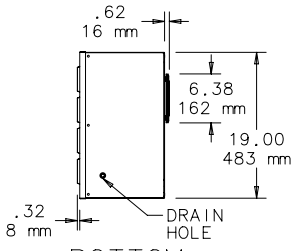


CLEANABLE, REUSABLE, ALUMINUM INLET FILTER BEHIND REMOVABLE LOUVRES

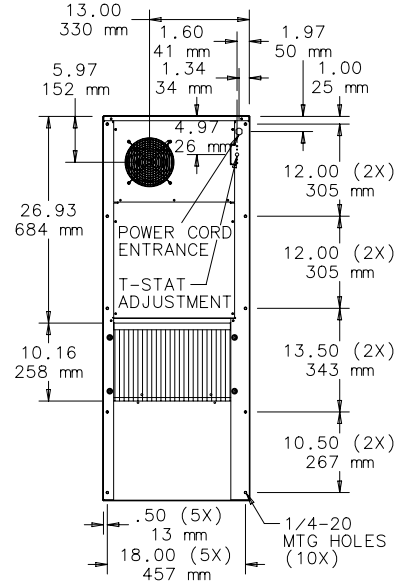
FRONT



RIGHT

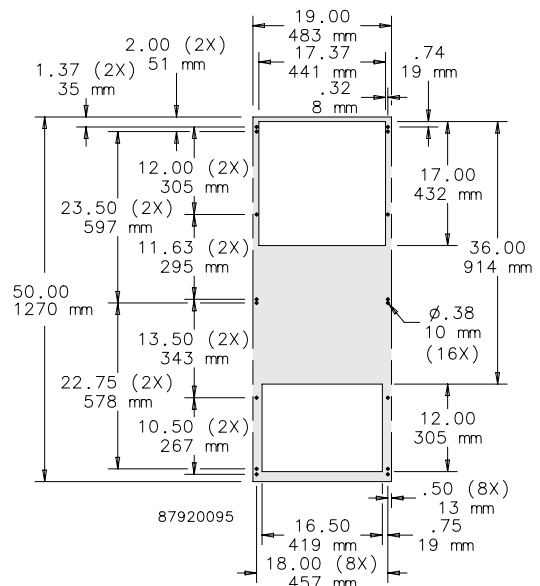


BOTTOM



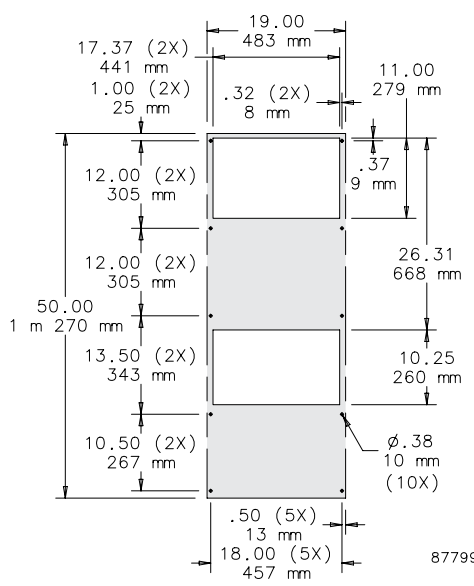
BACK

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CUTOUT  
INTERNAL MOUNTED

87920095



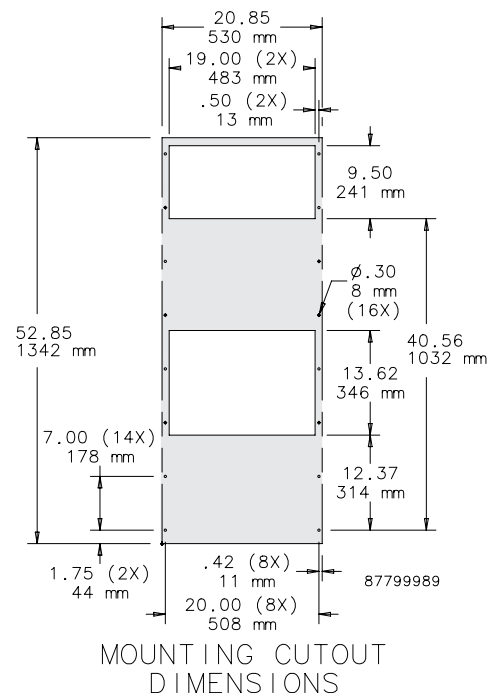
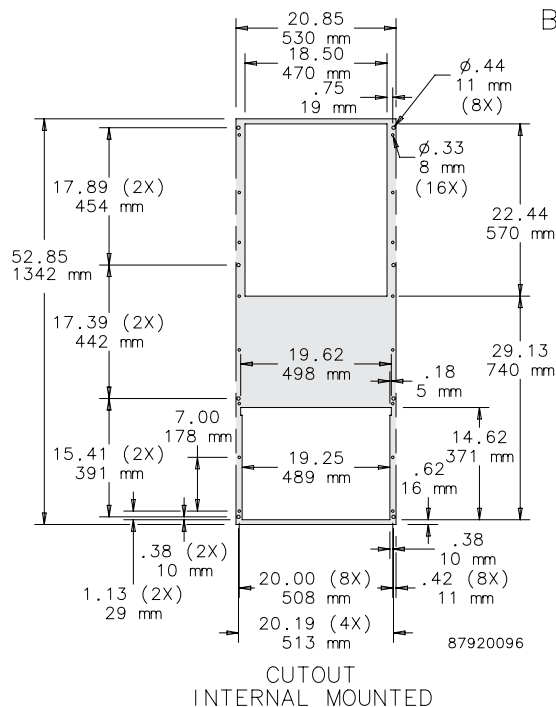
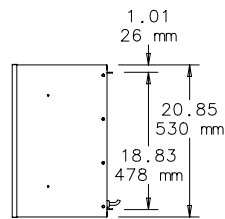
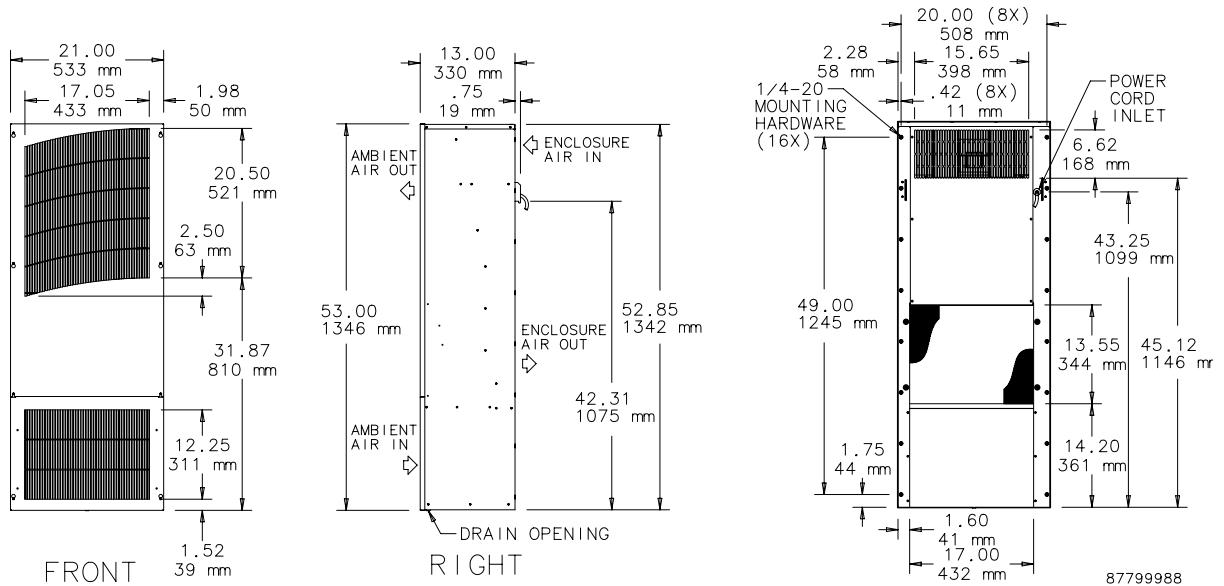
MOUNTING CUTOUT  
DIMENSIONS

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# T4 Line Indoor/Outdoor Air Conditioners

**20,000 BTU 52.85 x 20.85 x 13.00 (1342 x 530 x 330)—Replacement Filter Catalog Number 10100085**

| Catalog Number | Voltage | Hz    | Phase | BTU/Hr. @ Max. Ambient Temp. | Full Load Amps | 60 Hz Max. Amb. Temp |    | Shipping Weight Lbs./Kgs |
|----------------|---------|-------|-------|------------------------------|----------------|----------------------|----|--------------------------|
|                |         |       |       |                              |                | °F                   | °C |                          |
| T531926100     | 230     | 50/60 | 1     | 18,000/20,000                | 17/19          | 131                  | 55 | 197/90                   |



# Side-Mount Subcompact Air Conditioner



## Application

This Side-Mount Subcompact Air Conditioner provides high-efficiency, positive cooling for wall-mount and narrow enclosures, supporting industry trends toward smaller, densely-populated enclosures with greater heat dissipation requirements. Can be side-mounted on enclosures with 8 in. (203mm) or greater depth.

## Construction

- Models are equipped with a screwdriver-adjustable thermostat located behind the front grille
- EMI/RFI noise suppressor is standard
- Subcompact models are ideal for cooling smaller enclosures. The T15 series is only 7.50 in. (191mm) wide, making it ideal for wall-mount enclosures or enclosures with narrow side walls.
- Includes power cord with plug for standard grounded outlet
- Built-in hanging brackets facilitate installation on door, side, or rear of the enclosure
- Reusable and washable air filter is easily accessible without removing front cover
- Condensate management system with base pan side drain
- High-performance, industrial-grade ball-bearing fans provide maximum heat transfer
- All units use CFC-free, environmentally-safe R134A refrigerant
- Mounting hardware, gaskets, mounting template, and instruction manual furnished

## Finish

RAL 7035 light gray polyester powder coating

## Industry Standards

Maintains UL/cUL Type 12 or 3R rating when properly installed on a UL/cUL Type 12 enclosure.

UL/cUL Listed, UL File Number SA6453  
CE

## Accessories

Replacement Filter

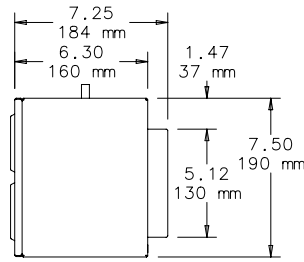
## Closed Loop Cooling

These subcompact air conditioners are designed and tested to maintain a UL50 rated separation of the external ambient airflow from the sealed cabinet interior. This protects the electronic controls and equipment from shutdowns caused by heat, humidity, dust, and other contaminants.

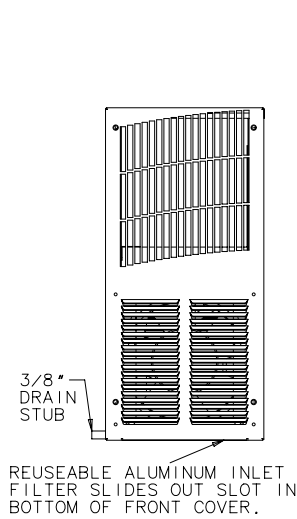
## Standard Sizes Side-Mount Subcompact Air Conditioner—Replacement Filter Catalog Number 1010091

| Catalog Number | Voltage | Hz    | Phase | BTU/Hr. @ Max. Ambient Temp. | Full Load Amps | 50 Hz Max Amb. Temp. °F/°C | 60 Hz Max Amb. Temp. °F/°C | Shipping Weight Lbs./Kgs |
|----------------|---------|-------|-------|------------------------------|----------------|----------------------------|----------------------------|--------------------------|
| T150116G120    | 110/115 | 50/60 | 1     | 800                          | 3.8/3.6        | 125/52                     | 131/55                     | 27/12.25                 |
| T150126G120    | 220/230 | 50/60 | 1     | 800                          | 1.4/1.5        | 125/52                     | 131/55                     | 27/12.25                 |

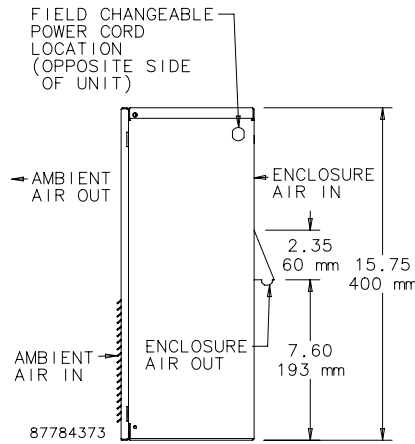
# Side-Mount Subcompact Air Conditioner



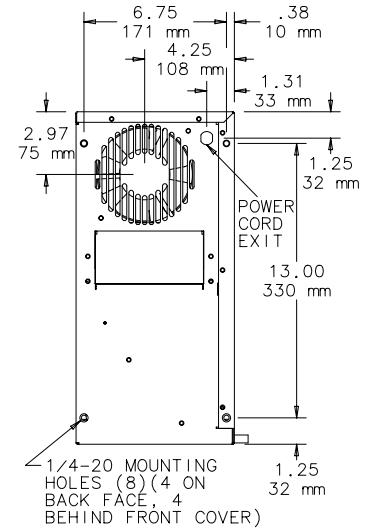
TOP VIEW



FRONT VIEW



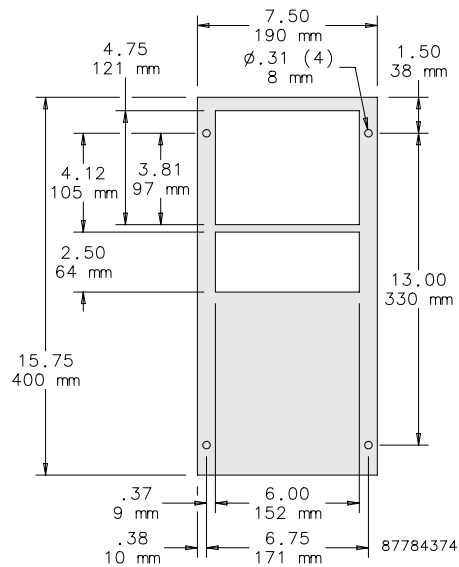
RIGHT VIEW



BACK VIEW

**Notes:**

1. Shaded area represents air conditioner.
2. Cutout dimensions for standard product only.
3. Full-size mounting template provided.



MOUNTING CUTOUT  
DIMENSIONS

**Thermal  
Management**

# Side-Mount Compact Air Conditioners



## Finish

- Body: RAL 7042 smooth gray polyester powder coating
- Grille: RAL 7035 light gray

## Industry Standards

Maintains UL/cUL Type 12 rating when properly installed on a UL/cUL Type 12 enclosure.

UL/cUL Listed, UL File Number SA6453  
CE

## Closed Loop Cooling

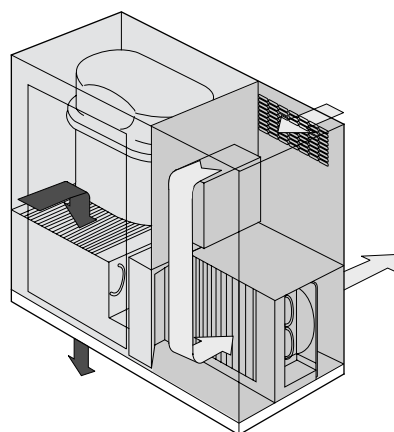
Within the air conditioner, the recirculated clean air is kept separate from the ambient airflow system. This protects the electronic controls and prevents shutdowns caused by heat, humidity, dust, and other contaminants.

## Application

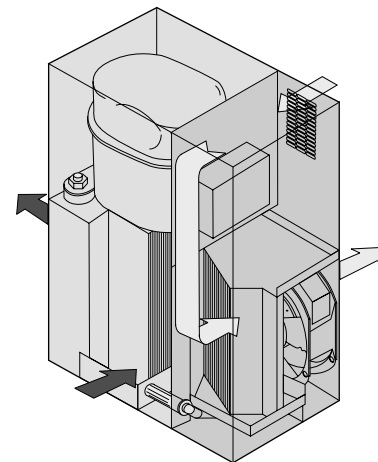
Models are equipped with a thermostat control that offers convenient digital display of enclosure temperature and high temperature alarm (125°F/52°C). Flashing display indicates alarm condition. EMI/RFI noise suppressor is standard. Compact models are ideal for cooling smaller enclosures from 25 cu. ft. to 40 cu. ft. The Series 17 model is only 12 inches wide, making it ideal for enclosures with narrow side walls.

## Features

- Most components accessible by removing grille/filter
- Hanging brackets facilitate installation on door, side, or front of enclosure
- For a typical application, unique condensate management system evaporates moisture from enclosure
- High performance, industrial-grade ball-bearing fans provide maximum heat transfer
- All units use a CFC-free or environmentally safe refrigerant that is universally accepted
- Mounting hardware, gaskets, mounting template and instruction manual furnished



**13 Series**



**17 Series**

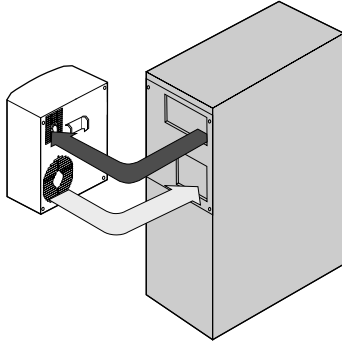
■ Ambient airflow  
□ Clean airflow

NOTE: Hoffman side-mount models are directly interchangeable with comparable Slimboy and GENESIS™ models.

# Side-Mount Compact Air Conditioners

**Side Mount I3 Series 13.25 x 14.25 x 7.8 0 (337 x 362 x 198) Replacement Filter No. 10100057**

| Catalog Number | Voltage | Hz    | Phase | BTU/Hr. @ 125°F/125°F | Full Load Amps | Max. Ambient Temp., °F/°C | Shipping Weight Lbs./Kgs |
|----------------|---------|-------|-------|-----------------------|----------------|---------------------------|--------------------------|
| M130116G1014   | 115     | 50/60 | 1     | 800/1000              | 4.0/4.0        | 125/52                    | 48/22                    |
| M130126G1008   | 230     | 50/60 | 1     | 800/1000              | 2.2/2.1        | 125/52                    | 48/22                    |

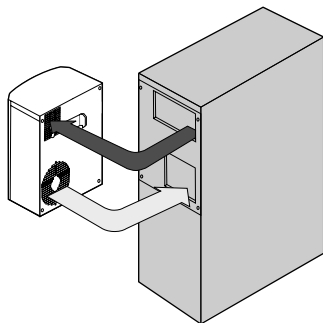


**Side-Mount to Enclosure**

Generally, the I3 Series air conditioners are most effective on enclosures up to 25 cu. ft. unless the application only requires spot cooling in a larger enclosure.

**Side Mount I7 Series 17.65 x 12.00 x 8.68 (448 x 305 x 220) Replacement Filter No. 10100057**

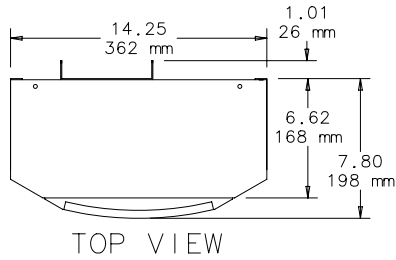
| Catalog Number | Voltage | Hz    | Phase | BTU/Hr. @ 125°F/125°F | Full Load Amps | Max. Ambient Temp., °F/°C | Shipping Weight Lbs./Kgs |
|----------------|---------|-------|-------|-----------------------|----------------|---------------------------|--------------------------|
| M170216G009    | 110/115 | 50/60 | 1     | 1500/1800             | 6.6/6.7        | 125/52                    | 56/25                    |
| M170226G004    | 220/230 | 50/60 | 1     | 1500/1800             | 4.2/3.7        | 125/52                    | 56/25                    |



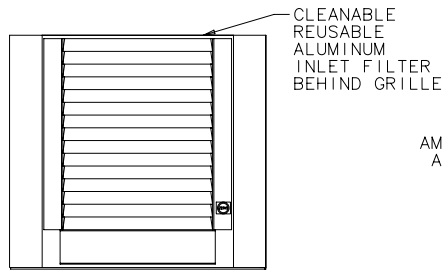
**Side-Mount to Enclosure**

Generally, the I7 Series air conditioners are most effective on enclosures up to 40 cu. ft. unless the application only requires spot cooling in a larger enclosure.

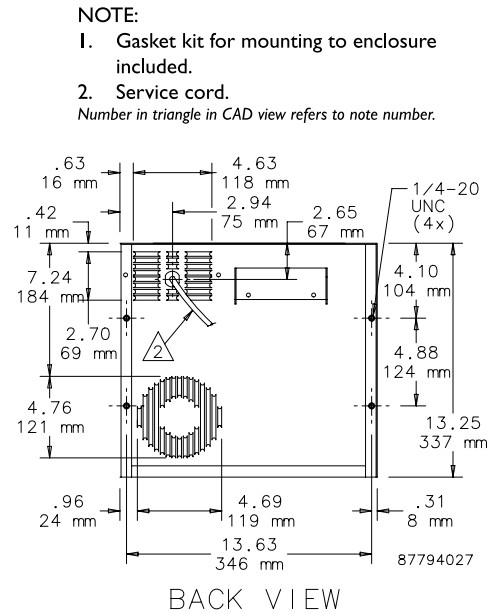
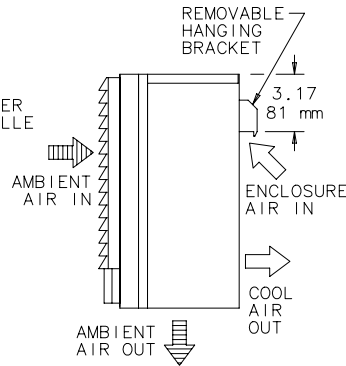
## Side-Mount I3 Series Air Conditioner Drawing



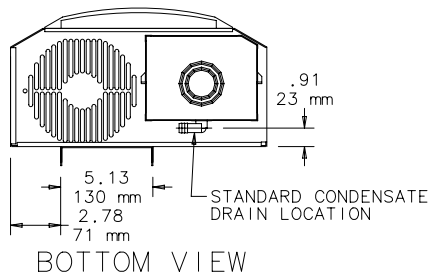
TOP VIEW



FRONT VIEW



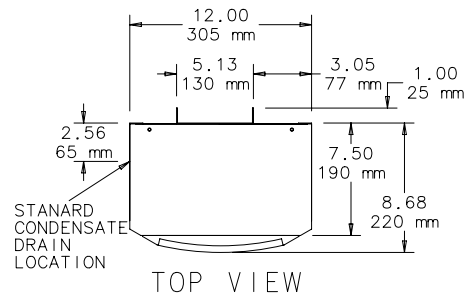
BACK VIEW



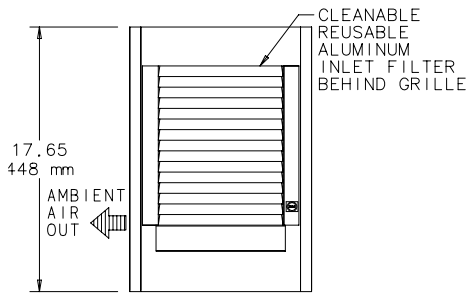
BOTTOM VIEW

- NOTE:**
1. Gasket kit for mounting to enclosure included.
  2. Service cord.
- Number in triangle in CAD view refers to note number.

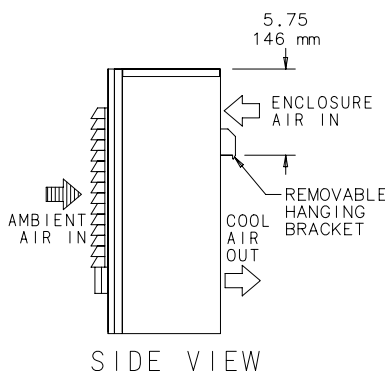
## Side-Mount I7 Series Air Conditioner Drawing



TOP VIEW

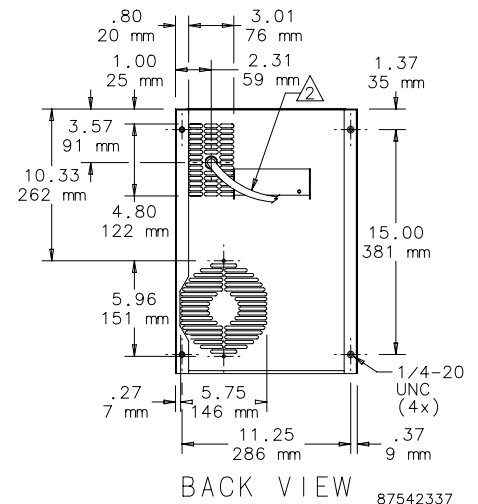


FRONT VIEW



SIDE VIEW

- NOTE:**
1. Gasket kit for mounting to enclosure included.
  2. Service cord.
  3. Condensate from enclosure drains to bottom of unit, where it is evaporated by condenser heat.
- Number in triangle in CAD view refers to note number.



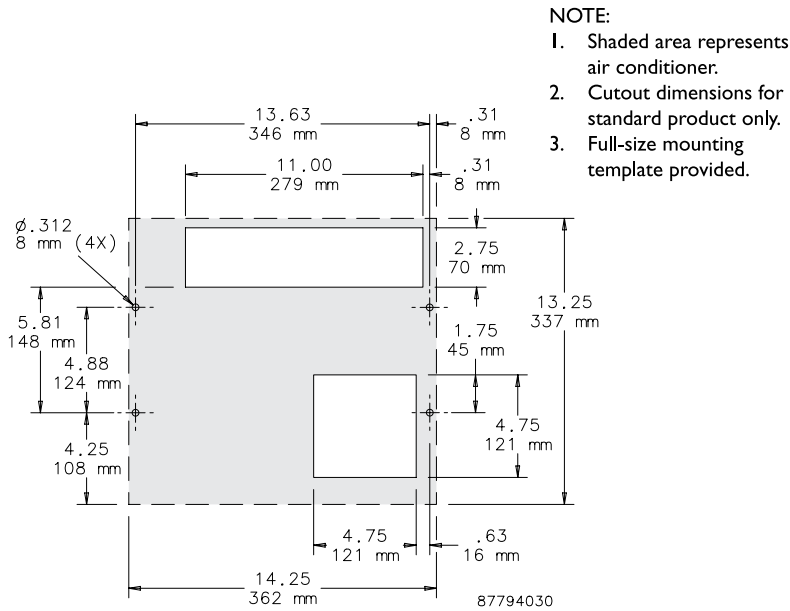
BACK VIEW

87542337

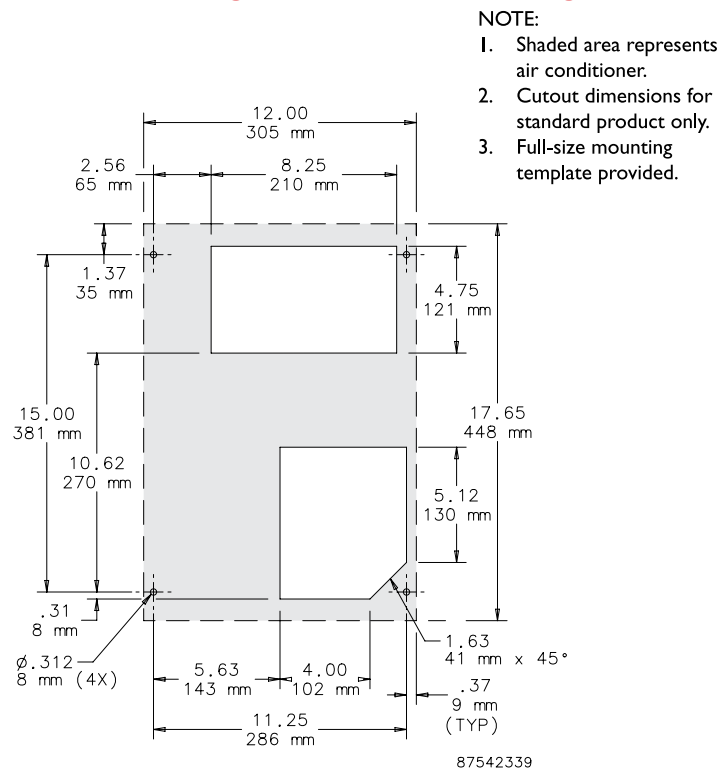


# Side-Mount Compact Air Conditioners

## Side-Mount I3 Series Mounting Cutout Dimensions Drawing



## Side-Mount I7 Series Air Conditioner Mounting Cutout Dimensions Drawing



# Side-Mount Mid-Size Air Conditioners



### Finish

- Body: RAL 7042 smooth gray polyester powder coating
- Grille: RAL 7035 light gray

### Industry Standards

Maintains UL/cUL Type 12 rating when properly installed on a UL/cUL Type 12 enclosure.

UL/cUL Listed, UL File Number SA6453  
CE

### Closed Loop Cooling

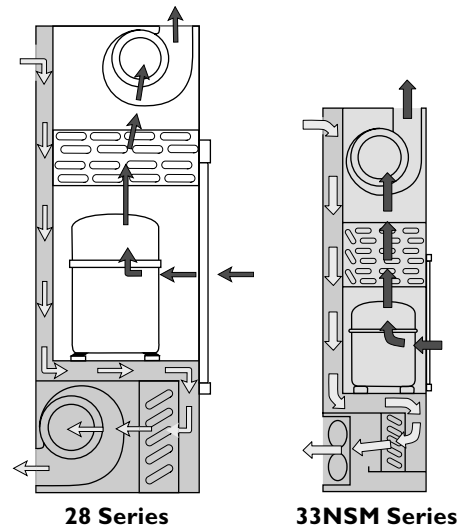
Within the air conditioner, the recirculated clean air is kept separate from the ambient airflow system. This protects the electronic controls and prevents shutdowns caused by heat, humidity, dust, and other contaminants.

### Application

28 Series air conditioners are equipped with a thermostat control that offers convenient digital display of enclosure temperature and high temperature alarm (125°F/52°C). Flashing display indicates alarm condition. EMI/RFI noise suppressor is standard on all models. 33NSM Series and 36N Series offer a broad capacity range with the advantage of mounting on narrow enclosures

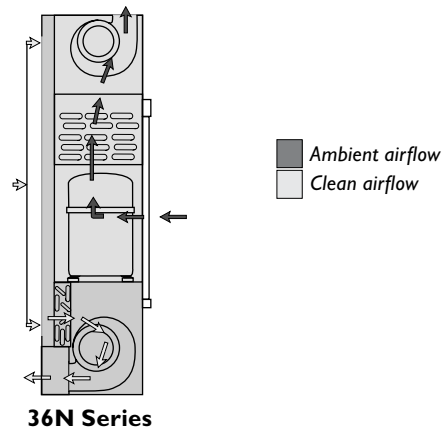
### Features

- The 33NSM Series is only 12 inches wide and the 36N Series is 15 inches wide
- Most components accessible by removing air filter
- Hanging brackets facilitate installation on door, side, or front of enclosure
- For a typical application, unique condensate management system evaporates moisture from enclosure
- High performance, industrial-grade ball bearing fans in the 33 NSM, and high performance centrifugal blowers in the 28 and 36N, provide maximum heat transfer in densely packed enclosures
- All units use a CFC-free or environmentally-safe refrigerant that is universally accepted
- Mounting gaskets and instruction manual furnished



**28 Series**

**33NSM Series**



**36N Series**

# Side-Mount Mid-Size Air Conditioners

**28 Series 28.50 x 17.00 x 11.33 (724 x 432 x 288) Replacement Filter No. 10100056**

| Catalog Number | Voltage | Hz    | Phase | BTU/Hr @<br>125°F/125°F | Full Load Amps | Max. Ambient<br>Temp., °F/°C | Shipping Weight<br>Lbs./Kgs |
|----------------|---------|-------|-------|-------------------------|----------------|------------------------------|-----------------------------|
| M280216G013    | 115     | 50/60 | 1     | 2200/2200               | 9.8/9.0        | 125/52                       | 98/45                       |
| M280226G004    | 230     | 50/60 | 1     | 2200/2200               | 5.0/4.5        | 125/52                       | 98/45                       |
| M280416G007    | 115     | 50/60 | 1     | 3800/4000               | 14.6/14.0      | 125/52                       | 116/53                      |
| M280426G032    | 230     | 50/60 | 1     | 3800/4000               | 7.4/6.9        | 125/52                       | 116/53                      |

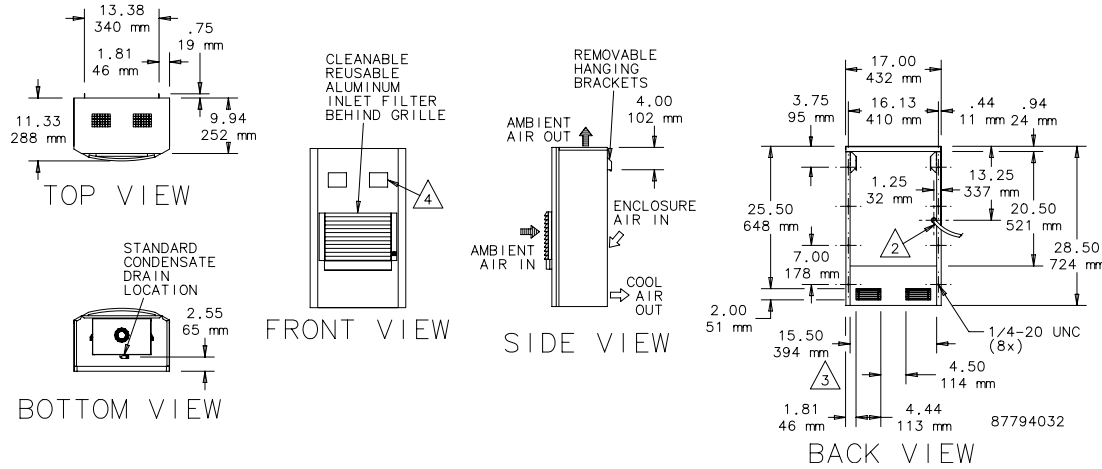
**33NSM Series 34.37 x 12.00 x 9.88 (873 x 305 x 251) Replacement Filter No. 10100057**

| Catalog Number | Voltage | Hz    | Phase | BTU/Hr @<br>125°F/125°F | Full Load Amps | Max. Ambient<br>Temp., °F/°C | Shipping Weight<br>Lbs./Kgs |
|----------------|---------|-------|-------|-------------------------|----------------|------------------------------|-----------------------------|
| M330416G010    | 115     | 50/60 | 1     | 3700/4000               | 13.0/13.2      | 125/52                       | 105/48                      |
| M330426G009    | 230     | 50/60 | 1     | 3700/4000               | 7.2/7.3        | 125/52                       | 105/48                      |

**36N Series 38.72 x 15.00 x 11.38 (984 x 381 x 288) Replacement Filter No. 10100056**

| Catalog Number | Voltage | Hz    | Phase | BTU/Hr @<br>125°F/125°F | Full Load Amps | Max. Ambient<br>Temp., °F/°C | Shipping Weight<br>Lbs./Kgs |
|----------------|---------|-------|-------|-------------------------|----------------|------------------------------|-----------------------------|
| M360616307     | 115     | 50/60 | 1     | 5000/6000               | 14.0/14.0      | 152/52                       | 120/54                      |
| M360626306     | 230     | 50/60 | 1     | 5000/6000               | 7.0/7.0        | 152/52                       | 120/54                      |

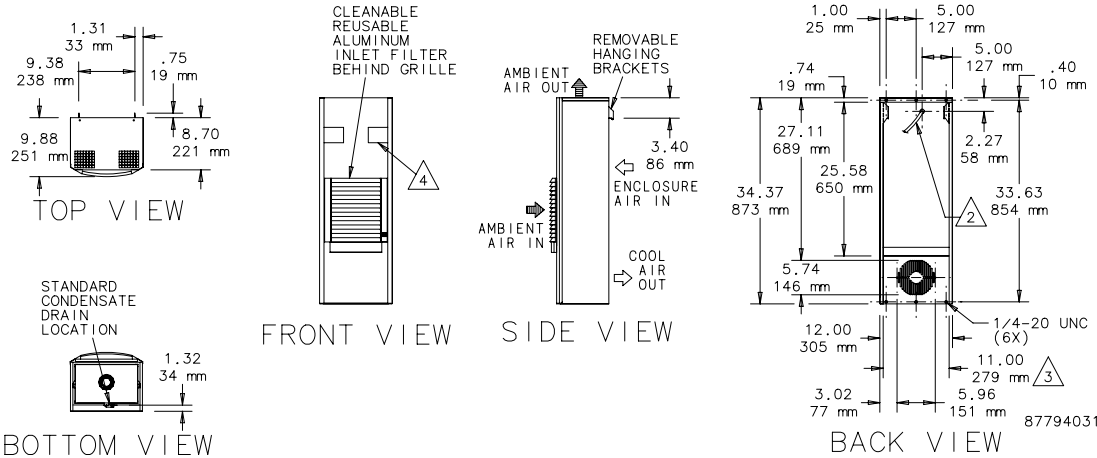
## 28 Series



**NOTE:**

1. Gasket kit for mounting to enclosure included.
2. Service cord.
3. 20.50 x 15.50 inch area is recessed 1.00 inch from rear surface, or plenum.
4. Condenser air discharge out front is optional.  
Number in triangle in CAD view refers to note number.

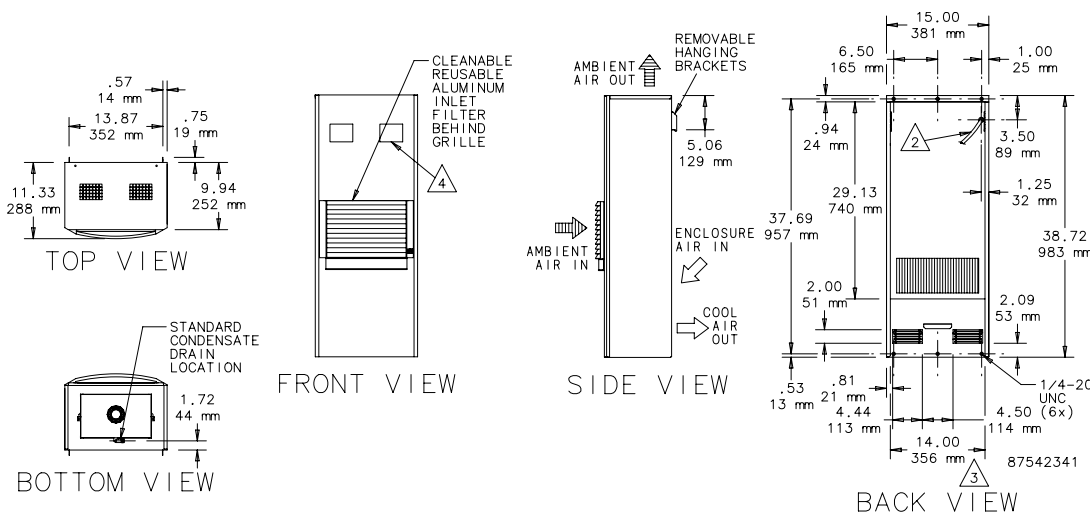
## 33NSM Series



**NOTE:**

1. Gasket kit for mounting to enclosure included.
2. Service cord.
3. 25.58 x 11.00 inch area is recessed 1.12 inches from rear surface, or plenum.
4. Condenser air discharge out front is optional.  
Number in triangle in CAD view refers to note number.

## 36N Series

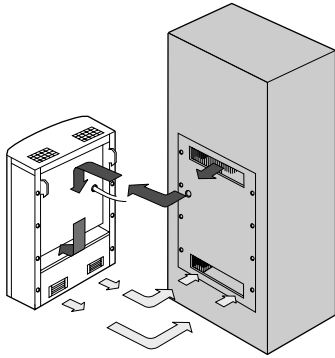


**NOTE:**

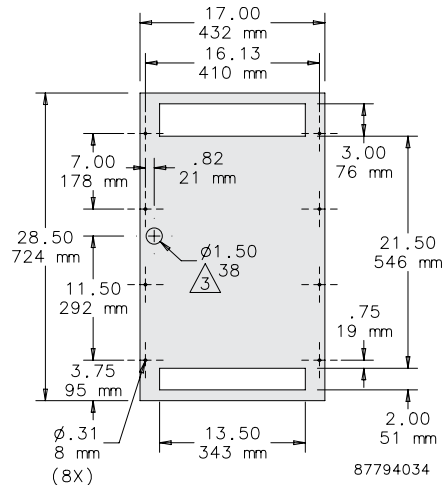
1. Gasket kit for mounting to enclosure included.
2. Service cord.
3. 14.00 x 29.13 inch area is recessed 1.44 inches from rear surface, or plenum.
4. Condenser air discharge out front is optional.  
Number in triangle in CAD view refers to note number.

# Side-Mount Mid-Size Air Conditioners

## 28 Series



**Side-Mount to Enclosure**

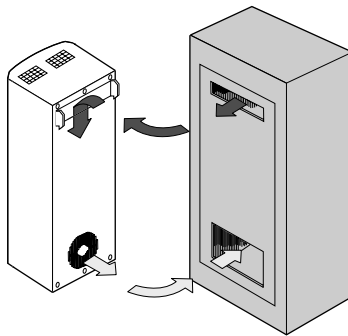


**Mounting Cutout Dimensions**

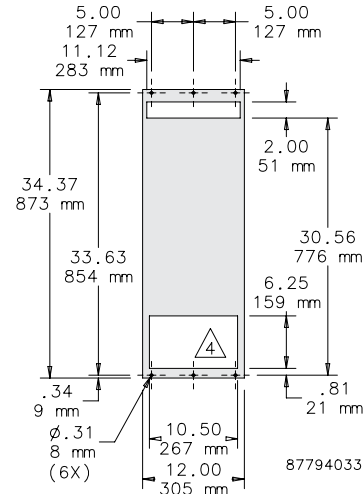
**NOTE:**

1. Shaded area represents air conditioner.
  2. Cutout dimensions for standard products only.
  3. Hole may be deleted if the service cord is routed through the 3.00 x 13.50 inch return air opening.
  4. Full-size mounting template provided.
- Number in triangle in CAD view refers to note number.

## 33NSM Series



**Side-Mount to Enclosure**

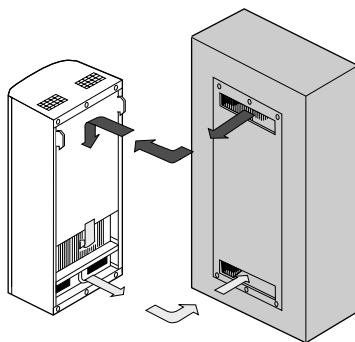


**Mounting Cutout Dimensions**

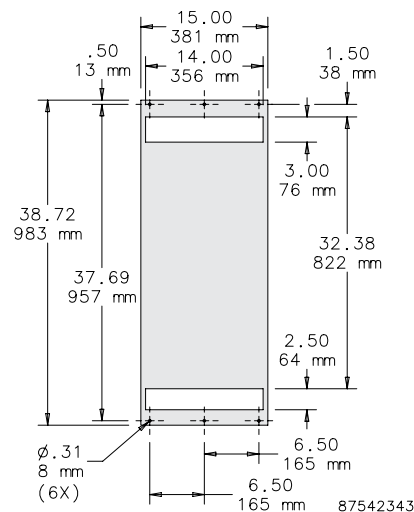
**NOTE:**

1. Shaded area represents air conditioner.
  2. Cutout dimensions for standard products only.
  3. Cord is routed through the 2.00 x 11.12 inch return air opening at top.
  4. Bottom opening will accommodate air conditioner or heat exchanger.
  5. Full-size mounting template provided.
- Number in triangle in CAD view refers to note number.

## 36N Series



**Side-Mount to Enclosure**



**Mounting Cutout Dimensions**

**NOTE:**

1. Shaded area represents air conditioner.
2. Cutout dimensions for standard products only.
3. Cord is routed through the 3.00 x 14.00 inch return air opening.
4. Full-size mounting template provided.

# Side-Mount Full-Size Air Conditioners



- For a typical application, unique condensate management system evaporates moisture from enclosure
- High performance centrifugal blowers are ideal for densely packed enclosures
- All units use a CFC-free or environmentally safe refrigerant that is universally accepted
- Mounting gaskets and instruction manual furnished

### Finish

- Body: RAL 7042 smooth gray polyester powder coating
- Grille: RAL 7035 light gray

### Industry Standards

#### 8000 BTU/HR MODELS (115V and 230V)

Maintains UL/cUL Type 12 rating when properly installed on a UL/cUL Type 12 enclosure.

UL/cUL Listed, UL File Number SA6453  
CE

#### 12,000 BTU/HR MODELS (115V)

Maintains UL/cUL Type 12 rating when properly installed on a UL/cUL Type 12 enclosure.

UL/cUL Recognized, UL File Number SA6453  
CE

#### 12,000 BTU/HR MODELS (230V)

Maintains UL/cUL Type 12 rating when properly installed on a UL/cUL Type 12 enclosure.

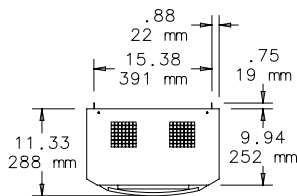
UL/cUL Listed, UL File Number SA6453  
CE

### Application

52 Series air conditioners are equipped with a thermostat control that offers convenient digital display of enclosure temperature and high temperature alarm (125°F/52°C). Flashing display indicates alarm condition. EMI/RFI noise suppressor is standard.

### Features

- Most components accessible by removing air filter
- Mounting brackets facilitate installation on door, side, or front of enclosure

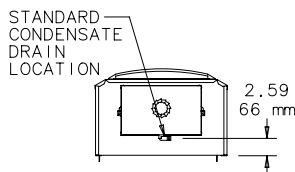


TOP VIEW

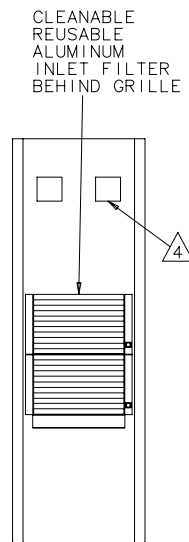
#### NOTE:

1. Gasket kit for mounting to enclosure included.
2. Service cord.
3. 42.06 x 15.63 inch area is recessed 1.44 inches from rear surface, or plenum.
4. Condenser air discharge out front is optional.

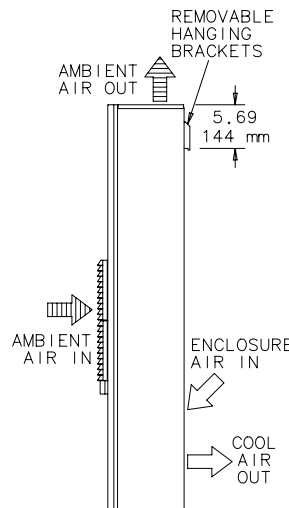
Number in triangle in CAD view refers to note number.



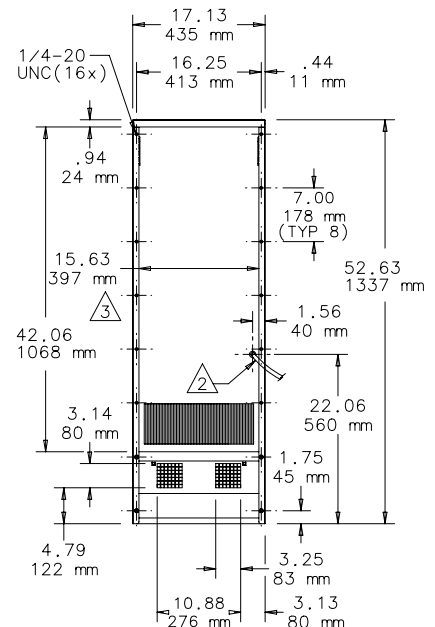
BOTTOM VIEW



FRONT VIEW



SIDE VIEW



BACK VIEW

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# Side-Mount Full-Size Air Conditioners

**52 Series 52.63 x 17.13 x 11.33 (1337 x 435 x 288) Replacement Filter No. 10100056**

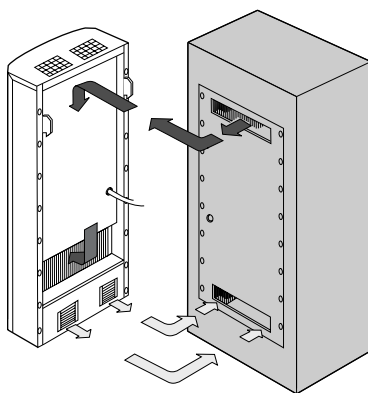
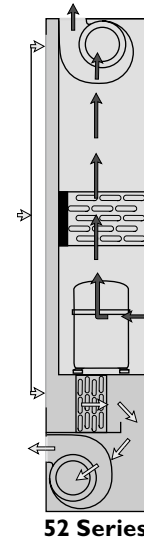
| Catalog Number          | Voltage | Hz    | Phase | BTU/Hr @ 125°F/125°F | Full Load Amps | Max. Ambient Temp., °F/°C | Shipping Weight Lbs./Kgs |
|-------------------------|---------|-------|-------|----------------------|----------------|---------------------------|--------------------------|
| M520816032              | 115     | 50/60 | 1     | 6700/8000            | 14.5/14.5      | 125/52                    | 160/73                   |
| M520826015              | 230     | 50/60 | 1     | 6700/8000            | 8.0/8.0        | 125/52                    | 160/73                   |
| M521216017 <sup>a</sup> | 110/115 | 50/60 | 1     | 10000/12000          | 24.4/23.0      | 125/52                    | 175/79                   |
| M521226034              | 220/230 | 50/60 | 1     | 10000/12000          | 12.2/11.6      | 125/52                    | 175/79                   |

<sup>a</sup> UL Component Recognized and cUL Component Recognized.

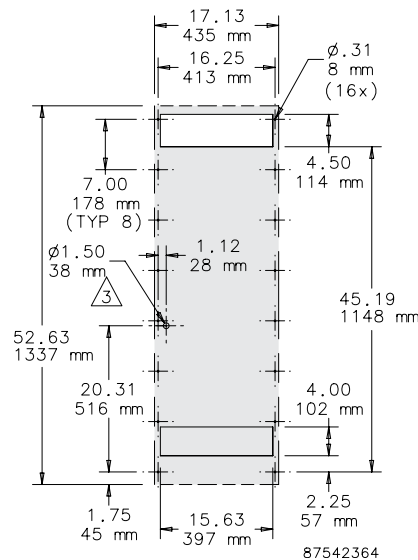
### Closed Loop Cooling

Within the air conditioner, the recirculated clean air is kept separate from the ambient airflow system. This protects the electronic controls and prevents shutdowns caused by heat, humidity, dust, and other contaminants.

■ Ambient airflow  
■ Clean airflow



**Side-Mount to Enclosure**



**Mounting Cutout Dimensions**

**NOTE:**

1. Shaded area represents air conditioner.
  2. Cutout dimensions for standard products only.
  3. Hole may be deleted if the service cord is routed through the 4.50 x 15.63 inch return air opening (except units with electric heat).
  4. Full-size mounting template provided.
- Number in triangle in CAD view refers to note number.

**Thermal Management**



## Application

The 52 Series 460-Volt 3-phase air conditioner mounts to the side of a large enclosure to cool electrical controls in industrial environments. Efficient 460-Volt 3-phase compressor and motors eliminate the need for additional transformers in 460-Volt applications.

## Features

- Thermostat control
- Most components accessible by removing air filter
- Digital display of enclosure temperature
- Mounting brackets facilitate installation to enclosure
- High-temperature alarm
- Unique condensate management system evaporates moisture from enclosure (for a typical application where the enclosure doors are kept closed)
- High-performance centrifugal blowers are ideal for circulating air inside densely-packed enclosures
- All units use a CFC-free, environmentally safe refrigerant that is universally accepted (R134A)
- Mounting gaskets and instruction manual furnished
- EMI/RFI noise suppression is standard

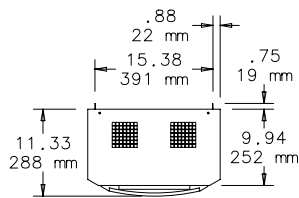
## Finish

- Body: RAL 7042 smooth gray polyester powder coating
- Grille: RAL 7035 light gray

## Industry Standards

Maintains UL/cUL Type 12 or 3R rating when properly installed on a UL/cUL Type 12 enclosure.

UL/cUL Listed, UL File Number SA6453  
CE

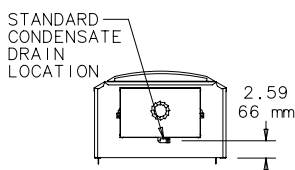


TOP VIEW

### NOTE:

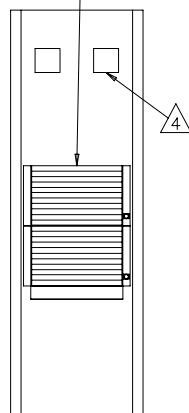
1. Gasket kit for mounting to enclosure included.
2. 4 inch junction box with terminal block.
3. 42.06 x 15.63 inch area is recessed 1.44 inches from rear surface, or plenum.
4. Condenser air discharge out front is optional.

Number in triangle in CAD view refers to note number.

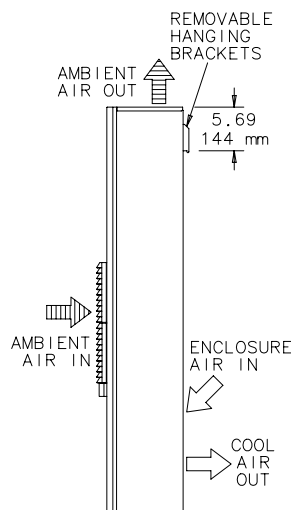


BOTTOM VIEW

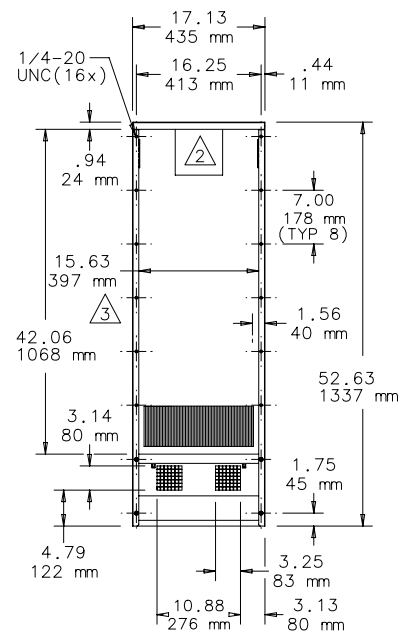
CLEANABLE REUSABLE ALUMINUM INLET FILTER BEHIND GRILLE



FRONT VIEW



SIDE VIEW



BACK VIEW

87793798

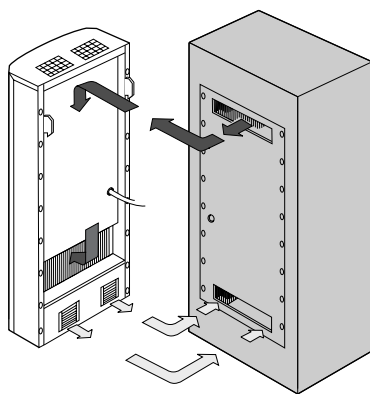
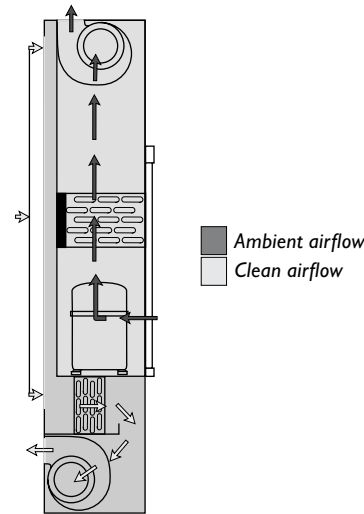


**52 Series 52.63 x 17.13 x 11.33 (1337 x 435 x 288) Replacement Filter No. 1010056**

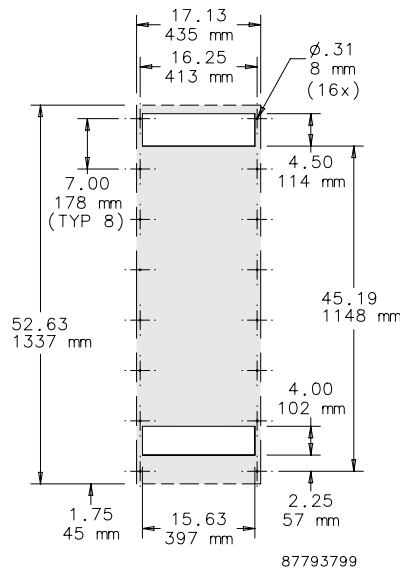
| Catalog Number | Voltage | Hz    | Phase | BTU/Hr @ 125°F/125°F | Full Load Amps | Max. Ambient Temp., °F/°C | Shipping Weight Lbs./Kgs |
|----------------|---------|-------|-------|----------------------|----------------|---------------------------|--------------------------|
| M520446G002    | 460     | 50/60 | 3     | 3800/4100            | 1.8/1.6        | 125/52                    | 162/74                   |
| M520646G002    | 460     | 50/60 | 3     | 5700/6000            | 2.0/1.8        | 125/52                    | 162/74                   |
| M520846G002    | 460     | 50/60 | 3     | 6500/7500            | 3.5/3.2        | 125/52                    | 162/74                   |
| M521046G002    | 460     | 50/60 | 3     | 8000/10000           | 3.7/3.4        | 125/52                    | 165/75                   |

**Closed Loop Cooling**

Within the air conditioner, the recirculated clean air is kept separate from the ambient airflow system. This protects the electronic controls and prevents shutdowns caused by heat, humidity, dust, and other contaminants.



**Side-Mount to Enclosure**



**Mounting Cutout Dimensions**

**NOTE:**

1. Shaded area represents air conditioner.
2. Cutout dimensions for standard products only.
3. Full-size mounting template provided.

**Thermal Management**

# Top-Mount Series Air Conditioners



## Application

Top-mount air conditioners are ideal for use where there is little or no clearance around the enclosure. HB11 top-mount air conditioners are equipped with a thermostat control that offers convenient digital display of enclosure temperature and high temperature alarm (125°F/52°C).

## Features

- Most components accessible by removing air filter
- For a typical application, unique condensate management system evaporates moisture from enclosure
- High-performance CFM ball-bearing centrifugal blowers perform well in densely packed enclosures
- All units use a CFC-free or environmentally safe refrigerant that is universally accepted
- Mounting gaskets and instruction manual furnished

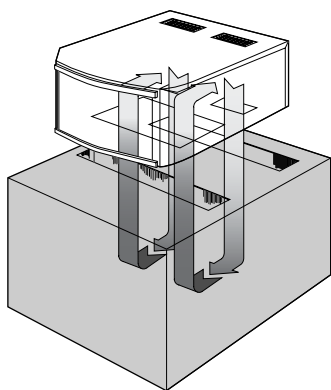
## Finish

- Body: RAL 7042 smooth gray polyester powder coating
- Grille: RAL 7035 light gray

## Industry Standards

Maintains UL/cUL Type 12 rating when properly installed on a UL/cUL Type 12 enclosure.

UL/cUL Recognized, UL File Number SA6453  
CE

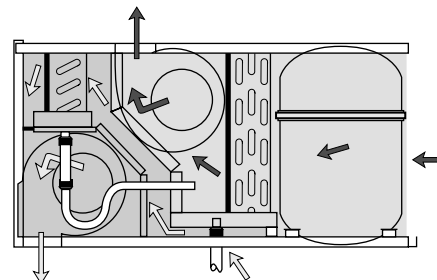


### Top-Mount to Enclosure

For Type 12 enclosure, interfacing air-out and air-in openings are required in the enclosure top.

## Closed Loop Cooling

Within the air conditioner, the recirculated clean air is kept separate from the ambient airflow system. This protects the electronic controls and prevents shutdowns caused by heat, humidity, dust, and other contaminants.



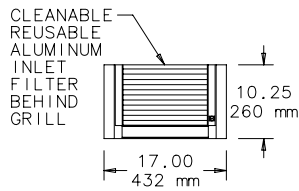
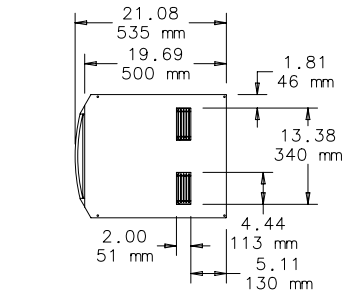
■ Ambient airflow  
■ Clean airflow

NOTES: Hoffman top-mount units are directly interchangeable with comparable GENESIS™ and Slimboy models.

# Top-Mount Series Air Conditioners

## HB11 Series 10.25 x 17.00 x 21.08 (260 x 432 x 536) Replacement Filter No. 10100056

| Catalog Number | Voltage | Hz    | Phase | BTU/Hr (Watts) @ 125°F/125°F | Full Load Amps | Max. Ambient Temp., °F (°C) | Shipping Weight Lbs (Kgs) |
|----------------|---------|-------|-------|------------------------------|----------------|-----------------------------|---------------------------|
| MHB110216G306  | 115     | 50/60 | 1     | 2200/2200                    | 9.7/9.0        | 125/52                      | 104/47                    |
| MHB110226G306  | 230     | 50/60 | 1     | 2200/2200                    | 5.5/4.6        | 125/52                      | 104/47                    |
| MHB110416G307  | 115     | 50/60 | 1     | 3300/4000                    | 14.7/13.6      | 125/52                      | 118/54                    |
| MHB110426G306  | 230     | 50/60 | 1     | 3300/4000                    | 8.0/7.5        | 125/52                      | 118/54                    |

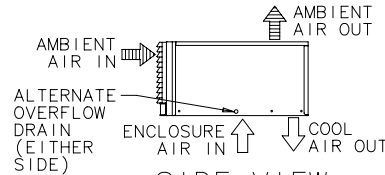


FRONT VIEW

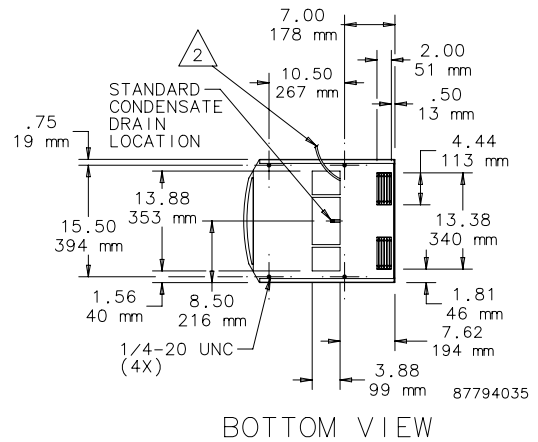
**NOTE:**

1. Gasket kit for mounting to enclosure included.
2. Service cord.
3. Condensate from enclosure drains to bottom of unit, where it is evaporated by condenser heat.
4. Condensate overflow drain hose included.

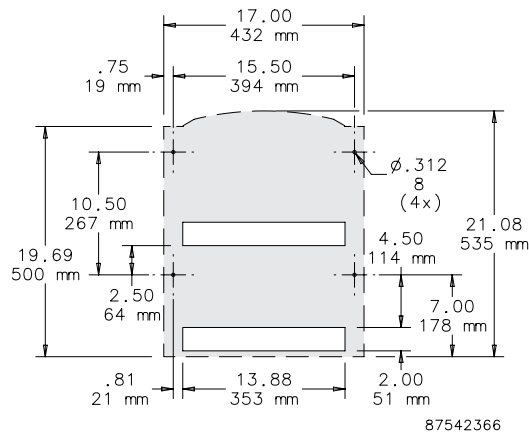
Number in triangle in CAD view refers to note number.



SIDE VIEW



BOTTOM VIEW



Mounting Cutout Dimensions

**NOTE:**

1. Shaded area represents air conditioner.
2. Cutout dimensions for standard products only.
3. Full-size mounting template provided.



## Features

- Thermostat control and EMI/RFI noise suppressor included
- Front cover hinges open for quick access to all components
- Filter can be inverted to double operating time between cleanings and or replacements (models CR23 and CR29 only)
- Filterless operation possible in many applications
- Mounting flanges facilitate installation on door, side, or front of enclosure
- For a typical application, unique condensate management system evaporates moisture from enclosure
- High-performance fans and blowers are ideal for densely-packed enclosures
- All units use a CFC-free or environmentally safe refrigerant that is universally accepted
- Mounting hardware, gaskets, mounting template and instruction manual furnished

## Finish

Available in brushed stainless steel or RAL 7035 light gray polyester powder coating.

## Industry Standards

UL/cUL Listed, UL File Number SA6453  
CE

## Air Conditioner Packages

The CR family of air conditioners is available in six different package combinations.

### Package 1: Basic

Maintains UL/cUL Type 12 or Type 3R rating when properly installed on a UL/cUL Type 12 rated enclosure.

- Standard air conditioner with painted mild steel exterior

### Package 2: Level 2 Controller

Maintains UL/cUL Type 12 or Type 3R rating when properly installed on a UL/cUL Type 12 rated enclosure.

- Standard air conditioner with painted mild steel exterior
- Includes microprocessor-based programmable temperature management, digital display, and remote alarm capability

### Package 3: Low Ambient Temperature

Maintains UL/cUL Type 12 or Type 3R rating when properly installed on a UL/cUL Type 12 rated enclosure.

- Standard air conditioner with painted mild steel exterior
- For use where air conditioner must operate in ambient temperatures below 50°F (10°C)
- Lowest operating temp = 40°F (4.4°C)

### Package 4: Low Ambient Temperature/SST/Corrosion

Maintains UL/cUL Type 12 or Type 3R rating when properly installed on a UL/cUL Type 12 rated enclosure.

- For use where air conditioner must operate in ambient temperatures below 50°F (10°C)
- Lowest operating temp = 40°F (4.4°C)
- Type 304 stainless steel exterior for longer life in corrosive and outdoor applications
- For protection from corrosive environments, thermostat is tinned and a special coating is applied to coils and copper lines exposed to the ambient air

### Package 5: Low Ambient Temperature/SST/Level 2 Controller

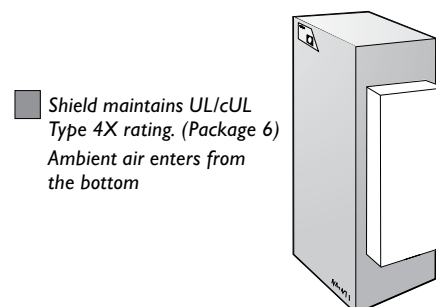
Maintains UL/cUL Type 12 or Type 3R rating when properly installed on a UL/cUL Type 12 rated enclosure.

- For use where air conditioner must operate in ambient temperatures below 50°F (10°C)
- Lowest operating temp = 40°F (4.4°C)
- Type 304 stainless steel exterior for longer life in corrosive and outdoor applications
- Includes microprocessor-based, programmable temperature management, digital display, and remote alarm capability

### Package 6: Outdoor/SST/Corrosion/4X

Maintains UL/cUL Type 4X, 4, or 12 rating when properly installed on a UL/cUL Type 4X, 4, or 12 rated enclosure.

- For use where air conditioner must operate in ambient temperatures below 50°F (10°C)
- Lowest operating temp = 40°F (4.4°C)
- Constructed of 304 stainless steel for increased protection in corrosive and outdoor applications
- For protection from corrosive environments, thermostat is tinned and a special coating is applied to coils and copper lines exposed to the ambient air
- Protective shield, shown below, protects unit in outdoor and hose-down applications and provides 4X rating. Shield protrudes about 2 inches (51mm) from the air conditioner.



**Notes:** Hoffman top-mounted units are directly interchangeable with comparable GENESIS™ and Slimboy models.

# CR Compact, Mid-Size, and Full-Size Air Conditioners

Rev. A 06/07

## Standard Sizes CR Compact, Mid-Size, and Full-Size Air Conditioners

| Catalog Number | BTU/Voltage/Hz             | Package                       |
|----------------|----------------------------|-------------------------------|
| CR230216G002   | 1600 BTU/Hr. 115V-50/60 Hz | 1 - Basic                     |
| CR230216G016   | 1600 BTU/Hr. 115V-50/60 Hz | 2 - Level 2 Controller        |
| CR230216G013   | 1600 BTU/Hr. 115V-50/60 Hz | 3 - Low Ambient Temperature   |
| CR230216G007   | 1600 BTU/Hr. 115V-50/60 Hz | 4 - Low Ambient/SST/Corrosion |
| CR230216G017   | 1600 BTU/Hr. 115V-50/60 Hz | 5 - Low Ambient/SST/Level 2   |
| CR230216G015   | 1600 BTU/Hr. 115V-50/60 Hz | 6 - Outdoor/SST/Corrosion/4X  |
| CR230226G002   | 1600 BTU/Hr. 230V-50/60 Hz | 1 - Basic                     |
| CR230226G030   | 1600 BTU/Hr. 230V-50/60 Hz | 3 - Low Ambient Temperature   |
| CR230226G009   | 1600 BTU/Hr. 230V-50/60 Hz | 4 - Low Ambient/SST/Corrosion |
| CR230226G016   | 1600 BTU/Hr. 230V-50/60 Hz | 5 - Low Ambient/SST/Level 2   |
| CR230226G014   | 1600 BTU/Hr. 230V-50/60 Hz | 6 - Outdoor/SST/Corrosion/4X  |
| CR290216G002   | 2200 BTU/Hr. 115V-50/60 Hz | 1 - Basic                     |
| CR290216G030   | 2200 BTU/Hr. 115V-50/60 Hz | 2 - Level 2 Controller        |
| CR290216G035   | 2200 BTU/Hr. 115V-50/60 Hz | 3 - Low Ambient Temperature   |
| CR290216G013   | 2200 BTU/Hr. 115V-50/60 Hz | 4 - Low Ambient/SST/Corrosion |
| CR290216G036   | 2200 BTU/Hr. 115V-50/60 Hz | 6 - Outdoor/SST/Corrosion/4X  |
| CR290226G002   | 2200 BTU/Hr. 230V-50/60 Hz | 1 - Basic                     |
| CR290226G030   | 2200 BTU/Hr. 230V-50/60 Hz | 2 - Level 2 Controller        |
| CR290226G020   | 2200 BTU/Hr. 230V-50/60 Hz | 3 - Low Ambient Temperature   |
| CR290226G010   | 2200 BTU/Hr. 230V-50/60 Hz | 4 - Low Ambient/SST/Corrosion |
| CR290226G031   | 2200 BTU/Hr. 230V-50/60 Hz | 5 - Low Ambient/SST/Level 2   |
| CR290226G037   | 2200 BTU/Hr. 230V-50/60 Hz | 6 - Outdoor/SST/Corrosion/4X  |
| CR290416G002   | 4000 BTU/Hr. 115V-50/60 Hz | 1 - Basic                     |
| CR290416G047   | 4000 BTU/Hr. 115V-50/60 Hz | 2 - Level 2 Controller        |
| CR290416G045   | 4000 BTU/Hr. 115V-50/60 Hz | 3 - Low Ambient Temperature   |
| CR290416G030   | 4000 BTU/Hr. 115V-50/60 Hz | 4 - Low Ambient/SST/Corrosion |
| CR290416G052   | 4000 BTU/Hr. 115V-50/60 Hz | 5 - Low Ambient/SST/Level 2   |
| CR290416G068   | 4000 BTU/Hr. 115V-50/60 Hz | 6 - Outdoor/SST/Corrosion/4X  |

| Catalog Number | BTU/Voltage/Hz             | Package                       |
|----------------|----------------------------|-------------------------------|
| CR290426G002   | 4000 BTU/Hr. 230V-50/60 Hz | 1 - Basic                     |
| CR290426G027   | 4000 BTU/Hr. 230V-50/60 Hz | 2 - Level 2 Controller        |
| CR290426G022   | 4000 BTU/Hr. 230V-50/60 Hz | 3 - Low Ambient Temperature   |
| CR290426G017   | 4000 BTU/Hr. 230V-50/60 Hz | 4 - Low Ambient/SST/Corrosion |
| CR290426G054   | 4000 BTU/Hr. 230V-50/60 Hz | 6 - Outdoor/SST/Corrosion/4X  |
| CR430616002    | 6000 BTU/Hr. 115V-60 Hz    | 1 - Basic                     |
| CR430616016    | 6000 BTU/Hr. 115V-60 Hz    | 2 - Level 2 Controller        |
| CR430616013    | 6000 BTU/Hr. 115V-60 Hz    | 3 - Low Ambient Temperature   |
| CR430616004    | 6000 BTU/Hr. 115V-60 Hz    | 4 - Low Ambient/SST/Corrosion |
| CR430616031    | 6000 BTU/Hr. 115V-60 Hz    | 6 - Outdoor/SST/Corrosion/4X  |
| CR430626002    | 6000 BTU/Hr. 230V-60 Hz    | 1 - Basic                     |
| CR430626018    | 6000 BTU/Hr. 230V-60 Hz    | 2 - Level 2 Controller        |
| CR430626014    | 6000 BTU/Hr. 230V-60 Hz    | 3 - Low Ambient Temperature   |
| CR430626020    | 6000 BTU/Hr. 230V-60 Hz    | 5 - Low Ambient/SST/Level 2   |
| CR430626034    | 6000 BTU/Hr. 230V-60 Hz    | 6 - Outdoor/SST/Corrosion/4X  |
| CR430816002    | 8500 BTU/Hr. 115V-60 Hz    | 1 - Basic                     |
| CR430816021    | 8500 BTU/Hr. 115V-60 Hz    | 2 - Level 2 Controller        |
| CR430816038    | 8500 BTU/Hr. 115V-60 Hz    | 3 - Low Ambient Temperature   |
| CR430816010    | 8500 BTU/Hr. 115V-60 Hz    | 4 - Low Ambient/SST/Corrosion |
| CR430816023    | 8500 BTU/Hr. 115V-60 Hz    | 5 - Low Ambient/SST/Level 2   |
| CR430816036    | 8500 BTU/Hr. 115V-60 Hz    | 6 - Outdoor/SST/Corrosion/4X  |
| CR430826002    | 8500 BTU/Hr. 230V-60 Hz    | 1 - Basic                     |
| CR430826026    | 8500 BTU/Hr. 230V-60 Hz    | 2 - Level 2 Controller        |
| CR430826007    | 8500 BTU/Hr. 230V-60 Hz    | 3 - Low Ambient Temperature   |
| CR430826037    | 8500 BTU/Hr. 230V-60 Hz    | 4 - Low Ambient/SST/Corrosion |
| CR430826024    | 8500 BTU/Hr. 230V-60 Hz    | 5 - Low Ambient/SST/Level 2   |
| CR430826038    | 8500 BTU/Hr. 230V-60 Hz    | 6 - Outdoor/SST/Corrosion/4X  |

**NOTE:** Some packages are not listed. Verify package before ordering.

### CR23 23.00 x 10.00 x 8.75 (584 x 254 x 222) Replacement Filter No. 23200400

| Catalog Number | Voltage | Hz    | Phase | BTU/Hr. @ 131°F/131°F <sup>a</sup> | Amps @ 131°F/131°F | BTU/Hr. @ 95°F/95°F <sup>a</sup> | Amps @ 95°F/95°F | Max Amb. Temp °F/°C | Shipping Weight <sup>b</sup> Lbs./Kgs |
|----------------|---------|-------|-------|------------------------------------|--------------------|----------------------------------|------------------|---------------------|---------------------------------------|
| CR230216GXXX   | 115     | 50/60 | 1     | 1400/1600                          | 4.1/4.5            | 1500/1700                        | 3.8/3.6          | 131/55              | 57/26                                 |
| CR230226GXXX   | 230     | 50/60 | 1     | 1400/1600                          | 2.2/2.2            | 1500/1700                        | 2.1/1.8          | 131/55              | 57/26                                 |

### CR29 29.50 x 15.75 x 8.63 (749 x 400 x 219) Replacement Filter No. 10100032

| Catalog Number | Voltage | Hz    | Phase | BTU/Hr. @ 131°F/131°F <sup>a</sup> | Amps @ 131°F/131°F | BTU/Hr. @ 95°F/95°F <sup>a</sup> | Amps @ 95°F/95°F | Max Amb. Temp °F/°C | Shipping Weight <sup>b</sup> Lbs./Kgs |
|----------------|---------|-------|-------|------------------------------------|--------------------|----------------------------------|------------------|---------------------|---------------------------------------|
| CR290216GXXX   | 115     | 50/60 | 1     | 2000/2200                          | 7.4/7.4            | 1700/2000                        | 7.0/6.0          | 131/55              | 98/44                                 |
| CR290226GXXX   | 230     | 50/60 | 1     | 2500/2700                          | 4.6/3.9            | 1900/2300                        | 4.4/3.3          | 131/55              | 98/44                                 |
| CR290416GXXX   | 115     | 50/60 | 1     | 3500/4000                          | 13.5/13.5          | 2400/2800                        | 10.7/9.6         | 131/55              | 118/54                                |
| CR290426GXXX   | 230     | 50/60 | 1     | 3500/4000                          | 6.7/6.6            | 2400/2800                        | 5.9/5.3          | 131/55              | 118/54                                |

### CR43 43.31 x 15.75 x 10.25 (1100 x 400 x 260) Replacement Filter No. 10100044

| Catalog Number | Voltage | Hz | Phase | BTU/Hr. @ 131°F/131°F <sup>a</sup> | Amps @ 131°F/131°F | BTU/Hr. @ 95°F/95°F <sup>a</sup> | Amps @ 95°F/95°F | Max Amb. Temp °F/°C | Shipping Weight <sup>b</sup> Lbs./Kgs |
|----------------|---------|----|-------|------------------------------------|--------------------|----------------------------------|------------------|---------------------|---------------------------------------|
| CR430616XXX    | 115     | 60 | 1     | 6000                               | 13.7               | 5100                             | 11.0             | 131/55              | 133/60                                |
| CR430626XXX    | 230     | 60 | 1     | 6000                               | 6.9                | 5100                             | 5.5              | 131/55              | 133/60                                |
| CR430816XXX    | 115     | 60 | 1     | 8500                               | 16.0               | 7500                             | 12.9             | 131/55              | 140/64                                |
| CR430826XXX    | 230     | 60 | 1     | 8500                               | 8.2                | 7500                             | 6.3              | 131/55              | 140/64                                |

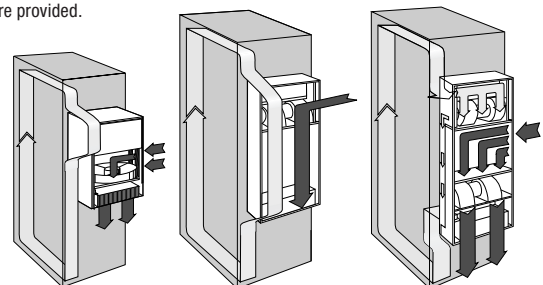
<sup>a</sup>Because air conditioners provide less cooling at lower operating temperatures, two cooling capacity ranges are provided.

<sup>b</sup>For Stainless Steel UL Type 4X models, add approximately 10 lbs. to shipping weight.

### Closed Loop Cooling

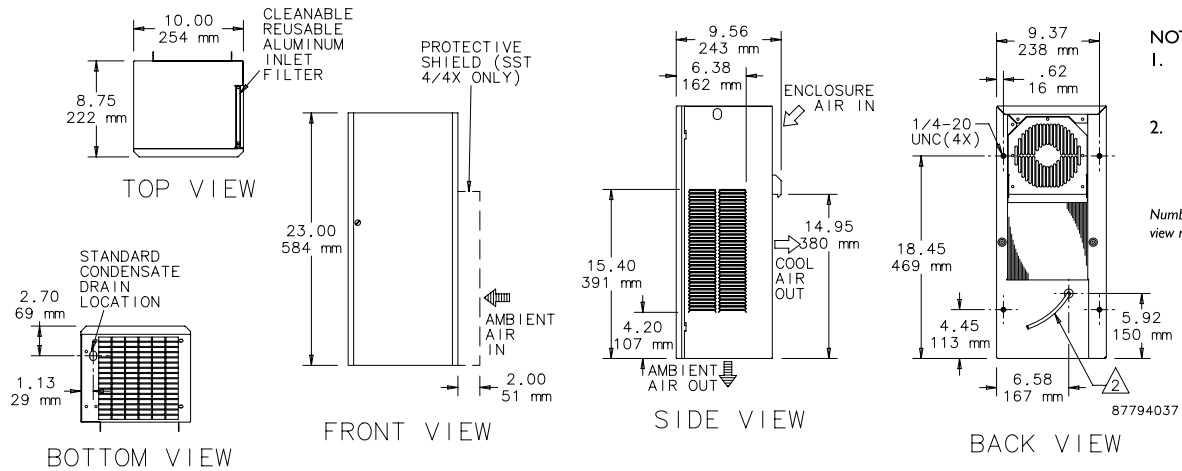
Within the air conditioner, the recirculated clean air is kept separate from the ambient airflow system. This protects the electronic controls and prevents shutdowns caused by heat, humidity, dust, and other contaminants.

■ Ambient airflow  
□ Clean airflow



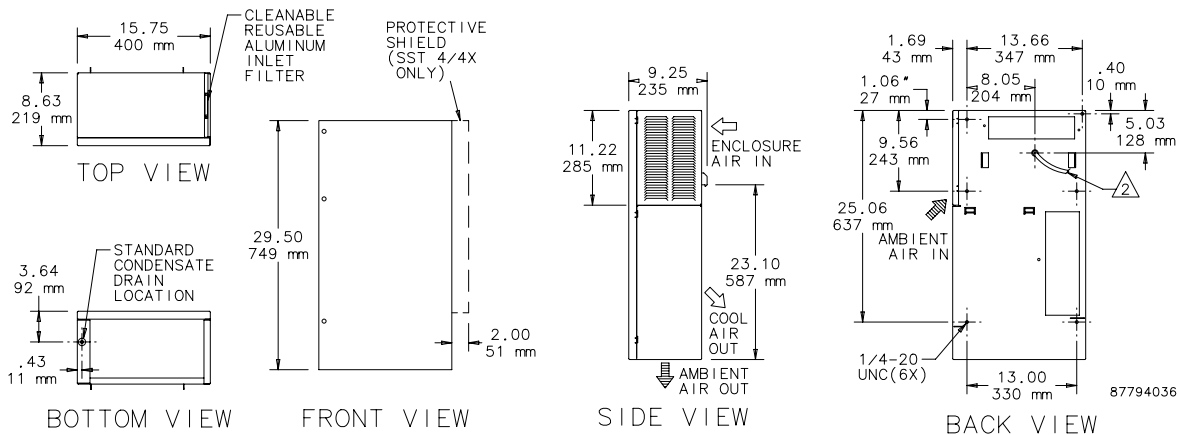
# CR Compact, Mid-Size, and Full-Size Air Conditioners

## CR23



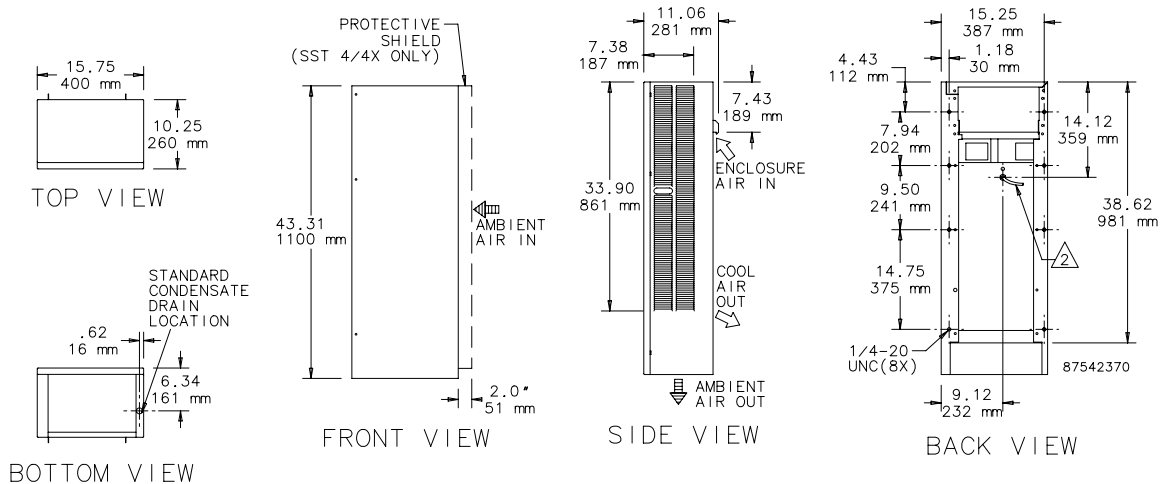
- NOTE:**
1. Gasket kit for mounting to enclosure
  2. Service cord terminated with appropriate plug cap.
- Number in triangle in CAD view refers to note number.

## CR29



- NOTE:**
1. Gasket kit for mounting to enclosure
  2. Service cord terminated with appropriate plug cap.
- Number in triangle in CAD view refers to note number.

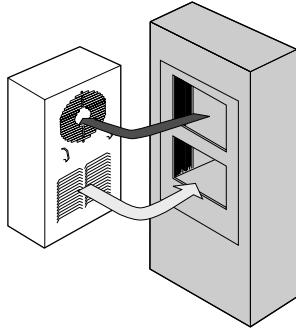
## CR43



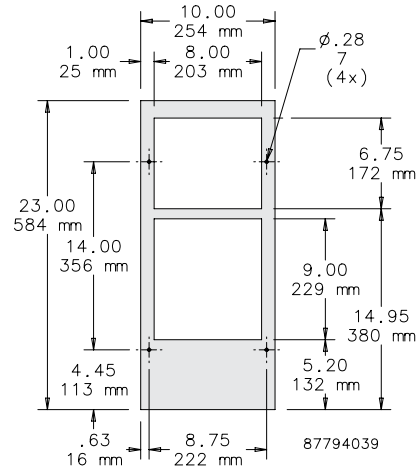
- NOTE:**
1. Gasket kit for mounting to enclosure
  2. Service cord terminated with appropriate plug cap.
- Number in triangle in CAD view refers to note number.

# CR Compact, Mid-Size, and Full-Size Air Conditioners

**CR23**



**CR23 Side-Mount to Enclosure**

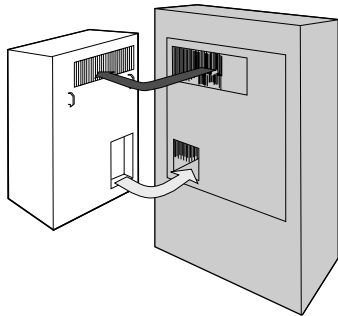


**CR23 Mounting Cutout Dimensions**

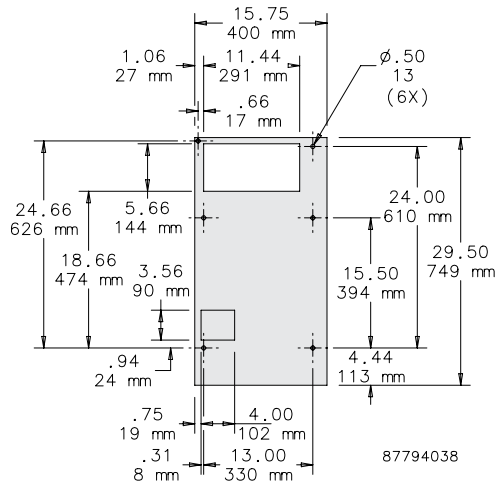
**NOTE:**

1. Shaded area represents air conditioner.
2. Cutout dimensions for standard products only.
3. Full-size mounting template provided.

**CR29**



**CR29 Side-Mount to Enclosure**

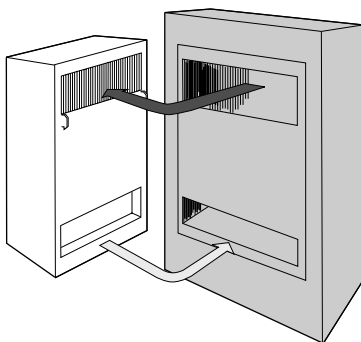


**CR29 Mounting Cutout Dimensions**

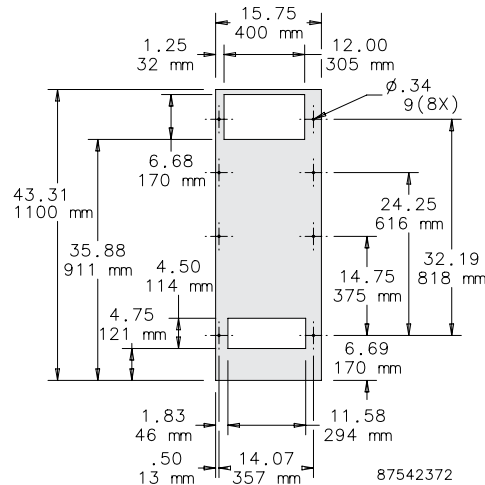
**NOTE:**

1. Shaded area represents air conditioner.
2. Cutout dimensions for standard products only.
3. Full-size mounting template provided.

**CR43**



**CR43 Side-Mount to Enclosure**



**CR43 Mounting Cutout Dimensions**

**NOTE:**

1. Shaded area represents air conditioner.
2. Cutout dimensions for standard products only.
3. Full-size mounting template provided.

**Thermal  
Management**



# Vortex Cooling Systems



## Application

The compact size of VCool vortex cooling systems make them ideally suited for small enclosures. Powered by compressed air (typically 100 psig, not to exceed 150 psig), VCool coolers generate chilled air without refrigerants or moving parts. These coolers provide exceptional reliability with minimal maintenance in even the most harsh or dirty environments.

## Construction

- NEMA models are aluminum
- All models include a 5-micron airline filter, 115V solenoid, thermostat, and a ducting kit to distribute cold air throughout the enclosure
- Thermostatically controlled to save energy by operating only when necessary
- Cooling capacities to 2500 Btu/Hr (733 W).

## Finish

Brushed satin aluminum or stainless steel.

## Industry Standards

### NEMA Type 4 Models:

Maintains UL/cUL Type 4 when properly installed on a UL/cUL Type 4 enclosure.

UL508, File Number E187045: Type 4

### NEMA Type 4X Models:

Maintains UL/cUL Type 4X when properly installed on a UL/cUL Type 4X enclosure.

UL508, File Number E187045: Type 4X

### NEMA Type 12 Models:

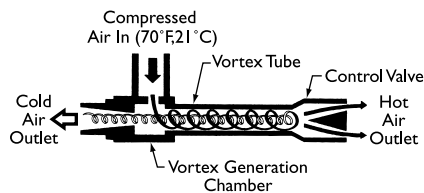
Maintains UL/cUL Type 12 when properly installed on a UL/cUL Type 12 enclosure.

UL508, File Number E187045: Type 12

## Accessories (for the enclosure)

Can be installed on all enclosure product families.

Separate VCool accessories include in-line oil filter and 230V solenoid.



**Vortex Tube Air Flow Schematic**

## How the VCool Vortex Cooling System Works

The VCool Vortex cooling system uses the principle of vortex cooling. A vortex occurs when a fluid (air) rotates around an axis, like a tornado.

A vortex tube creates a vortex from compressed air and then separates it into hot and cold airstreams.

On entering the VCool tube, the compressed air flow first passes through a vortex generation chamber, which starts the air stream rotating. The air stream exiting the chamber rotates at speeds up to 1,000,000 rpm as it is forced along the inner walls of the tube towards the control valve. At the control valve a small portion of the air exits through a needle valve as hot exhaust. The remaining air is forced back through the center of the incoming air stream at a slower speed, where the slower-moving return air gives up heat energy to the faster-moving incoming air. The cooled return air then flows through the center of the vortex generation chamber and exits through the cold air exhaust port.

NOTE: Manufactured for Hoffman by ITW Vortec.



# Vortex Cooling Systems

## Standard Sizes VC Series NEMA Type 12

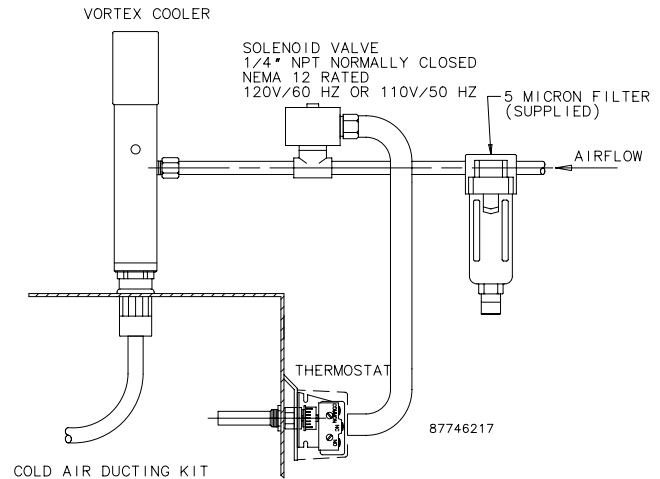
| Catalog Number | Cooling Capacity<br>BTU/Hr. | Cooling Capacity<br>W | Compressed Air<br>Consumption<br>SCFM | Compressed Air<br>Consumption<br>l <sup>3</sup> /m | Noise Level<br>db | Voltage | Frequency<br>Hz | Material | Weight<br>lb. | Weight<br>kg |
|----------------|-----------------------------|-----------------------|---------------------------------------|--|-------------------|---------|-----------------|----------|---------------|--------------|
| VC0416012      | 400                         | 117                   | 8                                     | 227  | 69                | 115     | 50/60           | Aluminum | 5             | 2.27         |
| VC0916012      | 900                         | 264                   | 15                                    | 425  | 80                | 115     | 50/60           | Aluminum | 6             | 2.72         |
| VC1516012      | 1500                        | 440                   | 25                                    | 708  | 83                | 115     | 50/60           | Aluminum | 6             | 2.72         |
| VC2516012      | 2500                        | 733                   | 35                                    | 991  | 90                | 115     | 50/60           | Aluminum | 6             | 2.72         |

## Standard Sizes VC Series NEMA Type 4, 4X

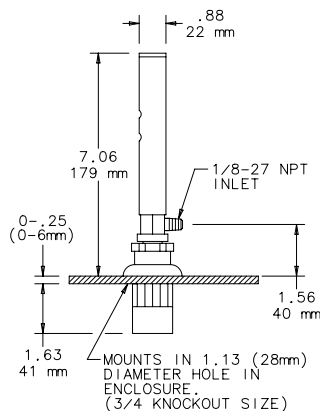
| Catalog Number | Cooling Capacity<br>BTU/Hr. | Cooling Capacity<br>W | Compressed Air<br>Consumption<br>SCFM | Compressed Air<br>Consumption<br>l <sup>3</sup> /m | Noise Level<br>db | Voltage | Frequency<br>Hz | Material        | Weight<br>lb. | Weight<br>kg |
|----------------|-----------------------------|-----------------------|---------------------------------------|--|-------------------|---------|-----------------|-----------------|---------------|--------------|
| VC0916004      | 900                         | 264                   | 15                                    | 425  | 83                | 115     | 50/60           | Aluminum        | 6             | 2.72         |
| VC1716004      | 1700                        | 498                   | 25                                    | 708  | 86                | 115     | 50/60           | Aluminum        | 6             | 2.72         |
| VC2516004      | 2500                        | 733                   | 35                                    | 991  | 90                | 115     | 50/60           | Aluminum        | 6             | 2.72         |
| VC091604X      | 900                         | 264                   | 15                                    | 425  | 83                | 115     | 50/60           | Stainless Steel | 6             | 2.72         |
| VC171604X      | 1700                        | 498                   | 25                                    | 708  | 86                | 115     | 50/60           | Stainless Steel | 6             | 2.72         |
| VC251604X      | 2500                        | 733                   | 35                                    | 991  | 90                | 115     | 50/60           | Stainless Steel | 6             | 2.72         |

| Accessory Catalog Number | Description | Use with VCool Model Capacity |
|--------------------------|-------------|-------------------------------|
| VC0F17                   | Oil filter  | Up to 1700 BTU/Hr.            |
| VC0F25                   | Oil filter  | 2500 BTU/Hr.                  |

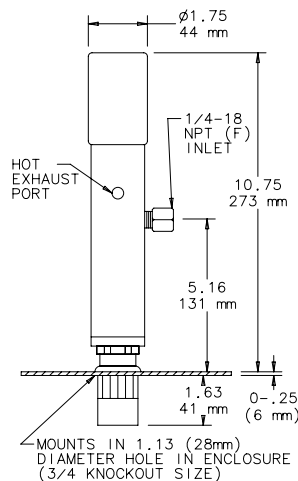
### Typical Installation



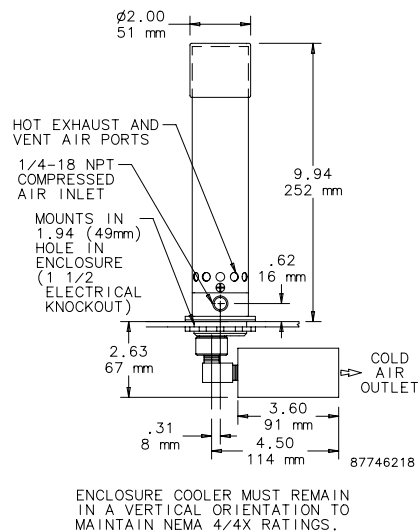
### NEMA Type 12 - 400 BTU/Hr.



### NEMA Type 12 - 900, 1500, 2500 BTU/Hr.



### NEMA Type 4X 900, 1700, 2500 BTU/Hr.



Thermal Management

# Heat Exchangers Sizing and Selection

**B**efore choosing a thermal management solution, you need to carefully consider the specifics of your application in addition to the following factors:

- **F**an packages and blowers may introduce ambient contaminants like oil mist and dust into the enclosure
- **H**eat exchangers (this section) cannot cool below the ambient temperature
- **C**losed-loop air conditioners can cool below ambient temperature and reduce humidity without introducing contaminants
- **S**imple ventilation devices such as louvers or grilles and filters are appropriate if maintaining a cool, constant temperature is not a critical factor

**O**nce you have determined the proper form of cooling equipment you need, selecting the required cooling capacity is outlined in this section.

## When Should You Use a Heat Exchanger?

A heat exchanger is recommended when:

- ambient air contaminants must be kept out of the enclosure
- the integrity of the enclosure must be maintained
- temperature slightly above ambient inside the cabinet is acceptable
- humidity is not a factor

## How to Read Heat Exchanger Catalog Numbers

**XR 29 18 1 6 012**  
1 2 3 4 5 6

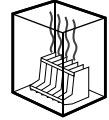
1. Heat Exchanger Series  
XR = XR Modified Heat Pipe Core heat exchanger
2. This is the approximate height of the heat exchanger (i.e., 29 = 29" high).
3. Capacity in W/°F
4. 1 = 115V, 2 = 230V
5. 6 = 50/60 Hz
6. UL Type.

## Sizing Heat Exchangers

### Determine internal heat load in watts.

$$1 \text{ WATT} = 3.413 \text{ BTU/Hr.}$$

Determine the internal *heat load* produced by equipment as total operating watts.

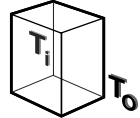


### Determine desired temperature difference in degrees F.

$$1^\circ\text{K } \Delta T = 1.8^\circ\text{F } \Delta T \quad ^\circ\text{K } \Delta T = ^\circ\text{C } \Delta T$$

Determine the  $\Delta T$  (°F), the temperature difference between the maximum temperature outside the enclosure ( $T_o$ ) and the *maximum desired* temperature inside the enclosure ( $T_i$ ), which can be calculated as:

$$T_i - T_o = \Delta T \text{ for heat exchangers.}$$



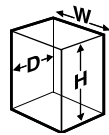
### Determine exposed surface area of the enclosure in square feet.

$$\text{AREA (ft}^2\text{)} \quad 1 \text{ M}^2 = 10.76 \text{ ft}^2$$

Calculate the exposed surface area of the enclosure in *Square Feet*:

$$\text{AREA (ft}^2\text{)} = 2[(H'' \times W'') + (H'' \times D'') + (W'' \times D'')] \div 144$$

where "H", "W", and "D" are the dimensions of the enclosure.



### Determine required heat exchanger performance rating.

$$\text{WATTS} \div \Delta T(^{\circ}\text{F}) - [0.22 \times \text{AREA (ft}^2\text{)}] = \text{WATTS}/^{\circ}\text{F.}$$

Use this formula to determine the required cooling capacity needed to maintain the desired operating temperature for your enclosure. This selection procedure applies to uninsulated, sealed, gasketed enclosures in indoor locations.

It is recommended that the average "Air In" rating be used when sizing an application. However, it may be possible to use a lower-rated heat exchanger by locating the most heat sensitive components in line with the "Air Out" opening of the heat exchanger. The actual performance rating of any heat exchanger may vary slightly because of the airflow impedance of the specific electronics configurations.

Heat exchangers are appropriate for applications in which:

- the electronic controls can operate at a temperature above the ambient temperature
- humidity is not a factor
- ambient air contaminants must be kept out of the enclosure

## Selection and Sizing Software

Designed to assist you in determining the most suitable choices of air conditioners, heat exchangers, or fans for your application. Download a free copy of our selection software by visiting our web site: [www.hoffmanonline.com](http://www.hoffmanonline.com).



# Heat Exchangers Sizing and Selection

## Compact and Mid-Size Heat Exchangers



### XR Compact and Mid-Size

| Series  | A     |      | B     |     | C    |     | Enclosure Air In |      | Enclosure Air Out |      |
|---------|-------|------|-------|-----|------|-----|------------------|------|-------------------|------|
|         | in.   | mm   | in.   | mm  | in.  | mm  | W/°F             | W/°K | W/°F              | W/°K |
| XR2004_ | 20.00 | 508  | 7.50  | 191 | 3.00 | 76  | 4                | 7    | 9                 | 16   |
| XR2908_ | 29.50 | 749  | 10.00 | 254 | 3.09 | 79  | 9                | 16   | 30                | 54   |
| XR2918_ | 29.66 | 753  | 10.24 | 260 | 5.92 | 150 | 18               | 32   | 34                | 61   |
| XR4724_ | 47.16 | 1198 | 10.24 | 260 | 5.92 | 150 | 24               | 43   | 44                | 79   |
| XR4735_ | 47.16 | 1198 | 15.24 | 387 | 5.92 | 150 | 35               | 63   | 77                | 139  |
| XR6055_ | 59.66 | 1515 | 15.24 | 387 | 5.92 | 150 | 55               | 99   | 138               | 248  |
| XR6084_ | 59.66 | 1515 | 15.24 | 387 | 9.92 | 252 | 84               | 151  | 210               | 378  |



## Application

These high-efficiency heat exchangers have a closed-loop design that separates dirty ambient air from the clean air inside the enclosure to maintain the integrity of the enclosure and extend equipment life. Available in 7 sizes, these streamlined units are designed for limited space applications, especially on narrow or shallow enclosures.

## Construction

- Unique cores provide high efficiency and high performance heat transfer
  - Modified heat pipe core on XR20 and XR2908
  - Counterflow aluminum core on XR2918, XR47, and XR60
- Top-quality ball-bearing fans result in extended reliable service
- Streamlined aesthetics with no visible mounting rails or fasteners. The slim design allows for mounting to narrow or shallow enclosures.
- Front cover hinges open for easy access to all components
- Filterless design. The core slides out for easy cleaning
- Mounts vertically or horizontally on front, side or top of enclosure
- Mounts inside or outside the enclosure
- Enclosure air return plenum is provided
- DC voltage available if required. Please contact Hoffman. Service cord provided includes appropriate plug:
  - NEMA 5-15P for 115V units
  - NEMA 6-15P for 230V units
- Mounting gaskets and instruction manual furnished

## Finish

Coated with RAL 7035 polyester powder paint inside and out

## Industry Standards

Maintains UL/cUL Type 12 or Type 3R rating when properly installed on the appropriate UL/cUL Type 12 enclosure.

Note: Maintains Type 3R rating when mounted externally and in a vertical position.

Note: XR200416012 and XR200426012 do not carry Type 3R rating.

UL/cUL Listed, UL File Number SA7402  
CE

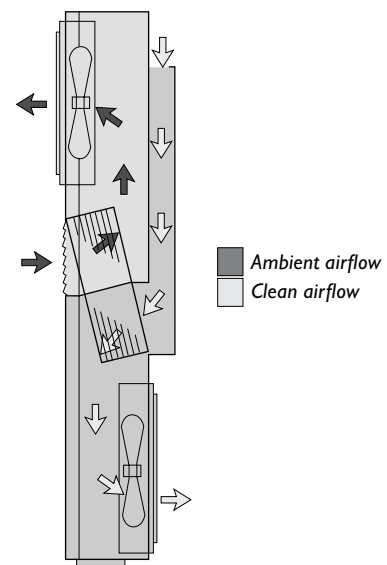
## When Should You Use a Heat Exchanger?

A heat exchanger is recommended when:

- Ambient air contaminants must be kept out of the enclosure
- The integrity of the enclosure must be maintained
- Temperature slightly above ambient inside the cabinet is acceptable
- Humidity is not a factor

## Closed Loop Air Circulation

Within the heat exchanger, the recirculated clean air is kept separate from the ambient airflow system. This protects the electronic controls and prevents shutdowns caused by heat, humidity, dust, and other contaminants.



**XR Series**

NOTE: Hoffman XR units are directly interchangeable with ProAir models.

# XR Series Compact and Mid-Size Heat Exchangers

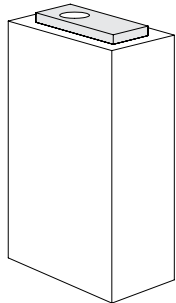
## Standard Sizes XR Series Compact and Mid-Size Heat Exchangers

| Catalog Number           | A x B x C<br>in. (mm)                   | Voltage | Hz    | Phase | Full Load<br>Amps | Max Amb.<br>Temp.<br>° F/°C | Enclosure Air In <sup>a</sup><br>W/°F (W/°K) | Enclosure<br>Air Out <sup>a</sup><br>W/°F (W/°K) | Shipping<br>Weight<br>lb./kg |
|--------------------------|---|---------|-------|-------|-------------------|-----------------------------|--|--|------------------------------|
| XR200416012 <sup>b</sup> | 20.00 x 7.50 x 3.00 (508 x 191 x 76)    | 115     | 50/60 | 1     | 0.6               | 140/60                      | 4 (7)  | 9 (16)   | 16/7                         |
| XR200426012 <sup>b</sup> | 20.00 x 7.50 x 3.00 (508 x 191 x 76)    | 230     | 50/60 | 1     | 0.3               | 140/60                      | 4 (7)  | 9 (16)   | 16/7                         |
| XR290816012              | 29.50 x 10.00 x 3.09 (749 x 254 x 79)   | 115     | 50/60 | 1     | 0.6               | 140/60                      | 8 (14)                                       | 30 (54)  | 27/12                        |
| XR290826012              | 29.50 x 10.00 x 3.09 (749 x 254 x 79)   | 230     | 50/60 | 1     | 0.3               | 140/60                      | 8 (14)                                       | 30 (54)  | 27/12                        |
| XR291816012              | 29.66 x 10.24 x 5.92 (753 x 260 x 150)  | 115     | 50/60 | 1     | 1.0               | 140/60                      | 18 (32)                                      | 34 (61)  | 34/16                        |
| XR291826012              | 29.66 x 10.24 x 5.92 (753 x 260 x 150)  | 230     | 50/60 | 1     | 0.6               | 140/60                      | 18 (32)                                      | 34 (61)  | 34/16                        |
| XR472416012              | 47.16 x 10.24 x 5.92 (1198 x 260 x 150) | 115     | 50/60 | 1     | 1.5               | 140/60                      | 24 (43)                                      | 44 (79)  | 51/24                        |
| XR472426012              | 47.16 x 10.24 x 5.92 (1198 x 260 x 150) | 230     | 50/60 | 1     | 0.8               | 140/60                      | 24 (43)                                      | 44 (79)  | 51/24                        |
| XR473516012              | 47.16 x 15.24 x 5.92 (1198 x 387 x 150) | 115     | 50/60 | 1     | 1.5               | 140/60                      | 35 (63)                                      | 77 (139)   | 63/29                        |
| XR473526012              | 47.16 x 15.24 x 5.92 (1198 x 387 x 150) | 230     | 50/60 | 1     | 0.8               | 140/60                      | 35 (63)                                      | 77 (139)   | 63/29                        |
| XR605516012              | 59.66 x 15.24 x 5.92 (1515 x 387 x 150) | 115     | 50/60 | 1     | 6.7               | 140/60                      | 55 (99)                                      | 138 (248)  | 91/42                        |
| XR605526012              | 59.66 x 15.24 x 5.92 (1515 x 387 x 150) | 230     | 50/60 | 1     | 3.4               | 140/60                      | 55 (99)                                      | 138 (248)  | 91/42                        |
| XR608416012              | 59.66 x 15.24 x 9.92 (1515 x 387 x 252) | 115     | 50/60 | 1     | 6.7               | 140/60                      | 84 (151)                                     | 210 (378)  | 115/53                       |
| XR608426012              | 59.66 x 15.24 x 9.92 (1515 x 387 x 252) | 230     | 50/60 | 1     | 3.4               | 140/60                      | 84 (151)                                     | 210 (378)  | 115/53                       |

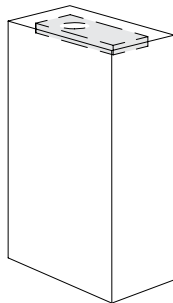
<sup>a</sup>The “enclosure air in” efficiency rating is based on air entering the heat exchanger from the enclosure. The “enclosure air out” efficiency rating is based on air exiting the heat exchanger into the enclosure. All XR exchanger units are rated at 100°F/38°C ambient temperatures with 1500W internal heat load. Heat exchanger efficiency will decrease as ambient temperature and/or internal heat load decreases.

<sup>b</sup>XR200416012 and XR200426012 do not carry Type 3R rating.

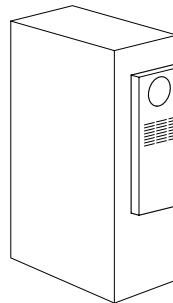
### Mounting Options



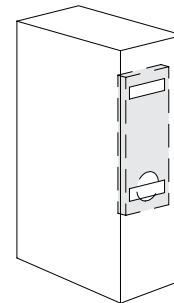
External  
Top-Mount



Internal  
Top-Mount



External  
Vertical-Mount



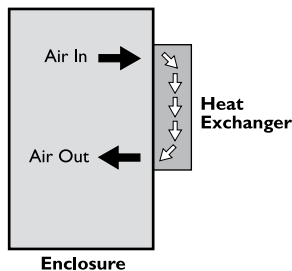
Internal  
Vertical-Mount

Note:  
Internal  
mounting  
requires  
inverting  
the heat  
exchanger  
as shown.

87569532

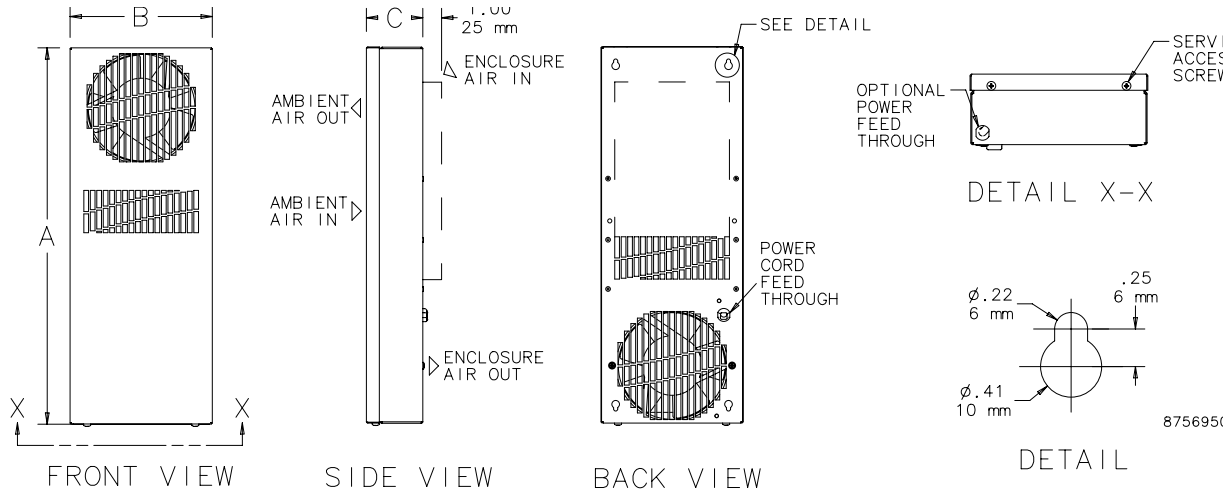
### Application Tip

Locate heat-sensitive components in line with the “Air Out” opening of the heat exchanger.



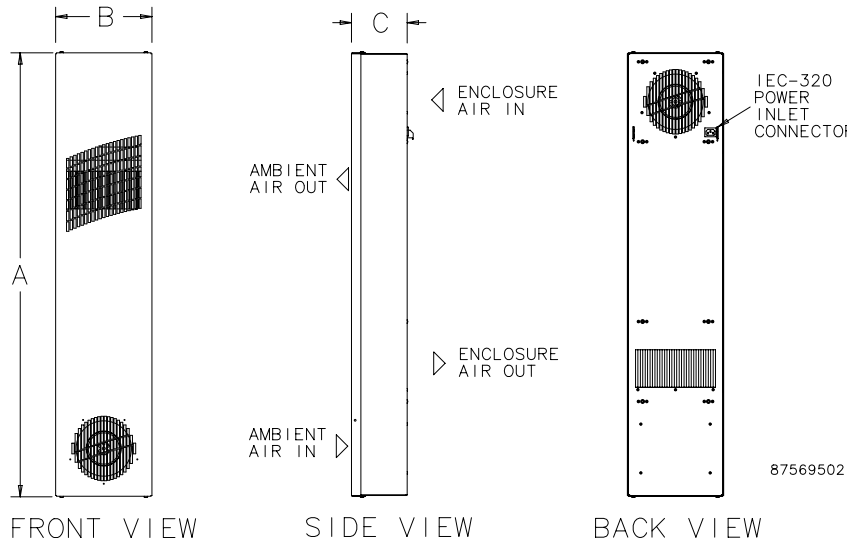
# XR Series Compact and Mid-Size Heat Exchangers

## XR20, XR2908 Heat Exchangers Drawing

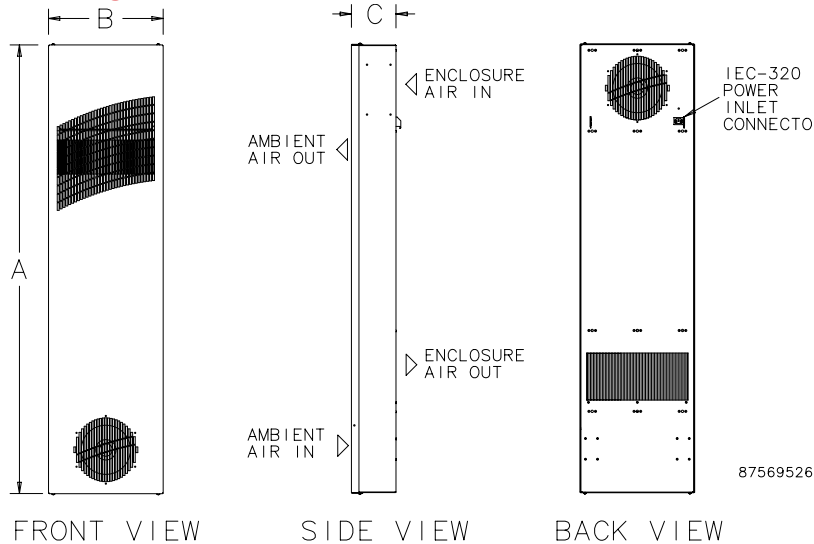


Note: Detachable airflow plenum can be used when mounting the heat exchanger either inside or outside the enclosure.

## XR2918 and XR4724 Heat Exchangers

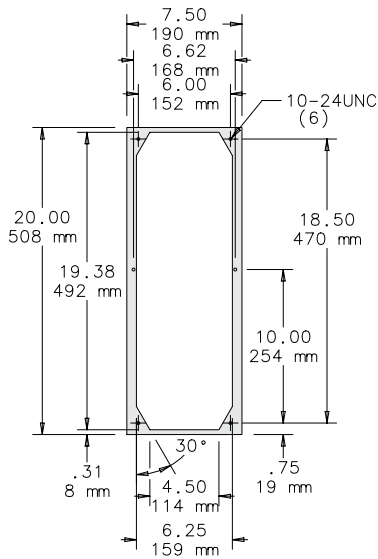


## XR4735 and XR60 Heat Exchangers

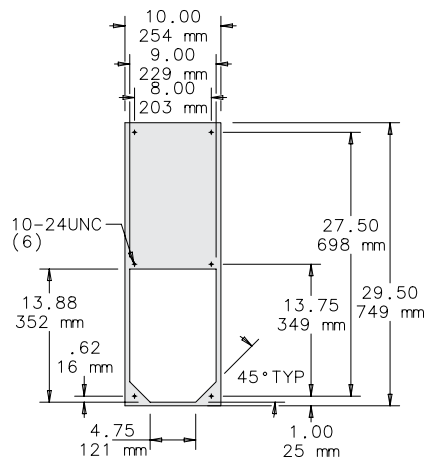


# XR Series Compact and Mid-Size Heat Exchangers

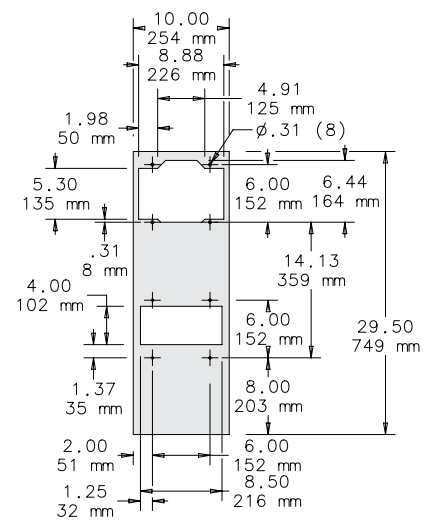
## Enclosure Cutouts



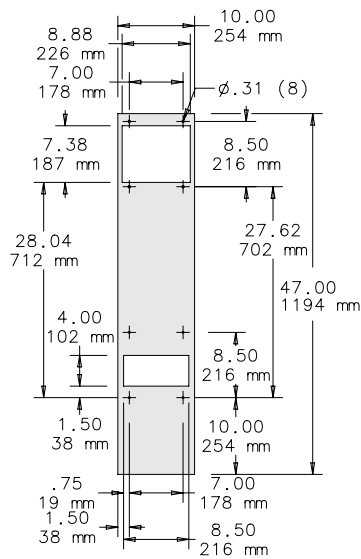
XR20



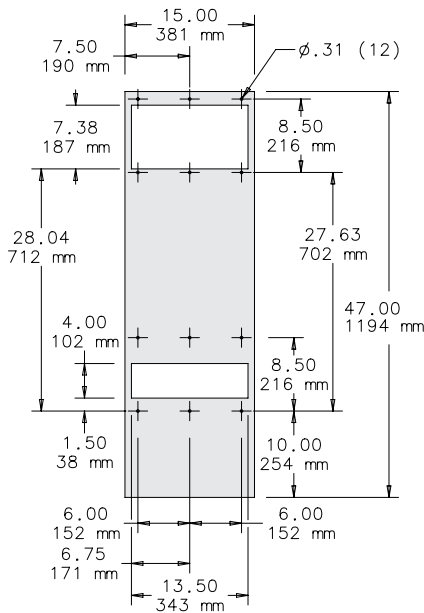
XR2908



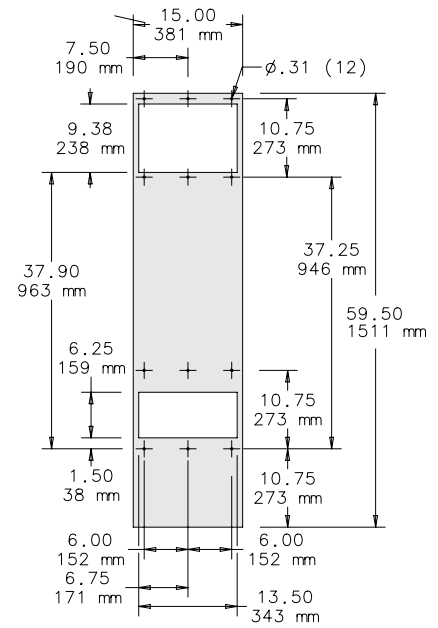
XR2918



XR4724



XR4735



XR60

87569527

**Notes:**

1. Cutouts shown are for external mounting only. For internal mounting, except XR2908, rotate cutout 180 degrees. XR2908 internal mount cutout is not shown.
2. Shaded area represents heat exchanger.

### Determine the required fan/blower size (volume airflow):

#### Step 1 Select the product family which best fits your application:

- Compact Cooling Fans (economical fan with no filter)
- Cooling Fan Packages (economical fan package with low-density filter)
- Type 12 Cooling Fan Package
- Filter Fan Packages (high-tech fan package with high-density filter, for IP54 rating)
- Blower Package (centrifugal blower package with filter for densely-packed enclosures)

#### Step 2 Determine the internal heat load in **WATTS**.

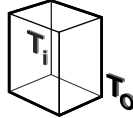
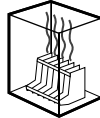
$$1 \text{ WATT} = 3.413 \text{ BTU/Hr.}$$

#### Step 3 Determine desired temperature difference in degrees F.

Determine the  $\Delta T$  (F), the temperature difference between the maximum temperature outside the enclosure ( $T_o$ ) and the *maximum desired* temperature inside the enclosure ( $T_i$ ).

$$T_o - T_i = \Delta T \text{ for heat exchangers and fans}$$

$$\text{NOTE: } 1^\circ\text{C } \Delta T = 1.8^\circ\text{F } \Delta T$$



#### Step 4 Plot your application using the selection graph to the right.

- Find **WATTS** (internal heat load) on the vertical scale
- Draw a horizontal line across to the intersection point with the diagonal line representing your  $\Delta T$
- Extend a vertical line down to the horizontal scale to determine your CFM requirement
- Continue the vertical line to identify applicable fan or blower

A sample line is shown in red for a 400 watt heat load and a  $\Delta T$  of 20°F, which indicates a 70 CFM airflow requirement.

#### Step 5

Make sure the line intersects the bar which includes the exhaust grille kit(s) from the product family chosen in **Step 1**. Remember, actual air flow going through your enclosure may be less depending on how densely packed your enclosure is.

Note: Fan output (CFM) is reduced by 10-15% when operated at 50Hz.

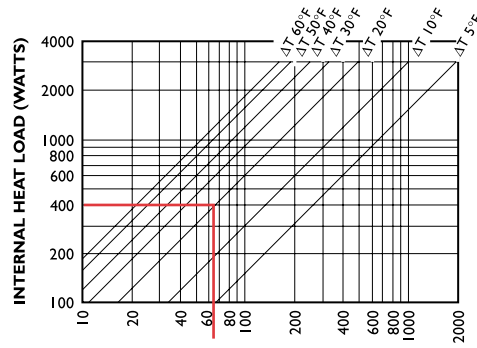
### Cooling Fan and Blower Selection

| CFM <sup>a</sup> | Filter Fan Packages |
|------------------|---------------------|
| 29               | SF05                |
| 57               | SF09                |
| 126              | SF10                |
| 250              | SF13                |

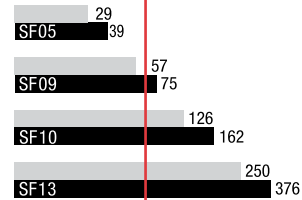
| CFM <sup>a</sup> | Cooling Fan Packages |
|------------------|----------------------|
| 55               | TFP41, TFP42         |
| 140              | TFP61, TFP62         |
| 215              | TFP101, TFP102       |

| CFM <sup>a</sup> | Blower Package |
|------------------|----------------|
| 260              | ADB275         |

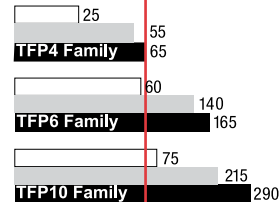
<sup>a</sup>CFM with one exhaust grille @ 60Hz



#### FILTER FAN PACKAGES



#### COOLING FAN PACKAGES



#### BLOWER PACKAGE



70 CFM

TYPE 12

WITH 1 EXHAUST GRILLE

WITH 2 EXHAUST GRILLES

### Selection and Sizing Software

Designed to assist you in determining the most suitable choices of air conditioners, heat exchangers, or fans for your application. Download a free copy of our selection software by visiting our web site: [www.hoffmanonline.com](http://www.hoffmanonline.com).



### How to Read Filter Fan Package Catalog Numbers

#### Filter Fans

1. Filter fan
2. Approximate size of fan frame (i.e., 05 = 5")
3. 1 = 115 Volt, or 2 = 230 Volt
4. 6 = 50/60 Hz
5. Standard Model

**SF - 05 1 6 - 001**  
1 2 3 4 5

#### Exhaust Grille Kit

1. Exhaust grille kit
2. Approximate size of fan frame (i.e., 05 = 5")
3. Standard model

**EG - 0500 - 001**  
1 2 3



# Fans, Blowers, Louvers, and Vents

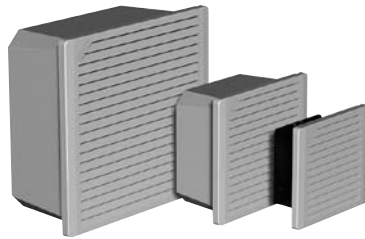
## Sizing and Selection

### Compact Cooling Fans



| Catalog No. | Diameter<br>in. (mm) | Square<br>in. (mm) | Depth<br>in. (mm) | CFM@60Hz<br>(M <sup>3</sup> /Hr.) |
|-------------|----------------------|--------------------|-------------------|-----------------------------------|
| A4AXFN      | —                    | 4.69 (119)         | 1.52 (39)         | 100 (170)                         |
| A6AXFN      | 6.72 (171)           | —                  | 2.00 (51)         | 240 (408)                         |
| A10AXFN     | 10.00 (254)          | —                  | 3.50 (89)         | 560 (951)                         |

### Cooling Fan Packages



| Catalog No. | Diameter<br>in. (mm) | Square<br>in. (mm) | Depth<br>in. (mm) | CFM@60Hz<br>(M <sup>3</sup> /Hr.) |
|-------------|----------------------|--------------------|-------------------|-----------------------------------|
| TFP41       | 6.29 (160)           | 7.37 (187)         | 2.65 (67)         | 55 (95)                           |
| TFP61       | 7.80 (198)           | 8.87 (225)         | 3.75 (95)         | 140 (238)                         |
| TFP101      | 11.81 (300)          | 12.99 (330)        | 5.25 (133)        | 215 (370)                         |

NOTE: CFMs with single exhaust grille installed

### Filter Fan Packages



| Catalog No. | Diameter<br>in. (mm) | Square<br>in. (mm) | Depth<br>in. (mm) | CFM@60Hz<br>(M <sup>3</sup> /Hr.) |
|-------------|----------------------|--------------------|-------------------|-----------------------------------|
| SF05        | 5.83 (148)           | 5.83 (148)         | 2.76 (70)         | 29 (49)                           |
| SF09        | 8.03 (204)           | 8.03 (204)         | 3.78 (96)         | 57 (97)                           |
| SF10        | 9.84 (250)           | 9.84 (250)         | 5.20 (132)        | 126 (214)                         |
| SR13        | 12.72 (323)          | 12.72 (323)        | 6.09 (155)        | 250 (425)                         |

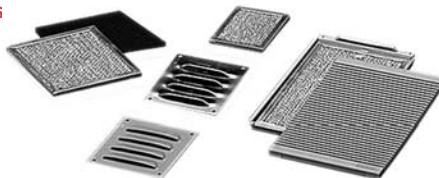
NOTE: CFMs with single exhaust grille installed

### Blower Package



| Catalog No. | Diameter<br>in. (mm) | Square<br>in. (mm) | Depth<br>in. (mm) | CFM@60Hz<br>(M <sup>3</sup> /Hr.) |
|-------------|----------------------|--------------------|-------------------|-----------------------------------|
| ADB275      | 5.75 (146)           | 19.00 (483)        | 7.25 (184)        | 230/275 (135/162)                 |

### Louvers and Vents



Three styles of louvers and vents provide passive cooling.

# Compact Cooling Fans



## Application

Designed for use in enclosures where space is limited and reliable cooling is required. Powered by 115 volt or 230 volt AC, 60/50 Hz single-phase motors and available in three sizes with nominal airflows of 100, 240, and 560 cubic feet per minute (CFM). These fans are ideal for applications where compact and quiet service is desired.

## Features

- Rigid housing eliminates breakage and grounding problems
- Maximum operating temperature is 158° F (70° C)
- 4-inch fan is thermally protected and uses permanently lubricated ball bearings
- 6- and 10-inch fans have ball-bearing construction and split-capacitor motors
- Split-capacitor motors are thermally protected to avoid premature failure
- Engineered for 50,000 hours of continuous operation without lubrication or service

## Construction

- Dynamically balanced impellers molded from polycarbonate material
- One finger guard is furnished (an additional finger guard is recommended for maximum safety)
- All mounting hardware is provided  
NOTE: Fan bracket and additional finger guards must be purchased separately.
- 240 and 560 CFM fans have ball bearing construction and split capacitor motors
- Fans have leadwires with ends stripped 1/2 inch (12 millimeters) or 6 ft (1.83m) cord with polarized plug for power connections.

Consult your local Hoffman sales office for information on modifications to this product.

## Finish

Fan housing is black.

## Industry Standards

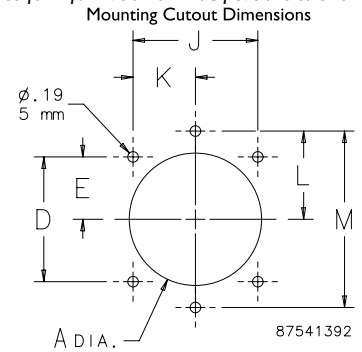
UL Component Recognized  
CSA certified

## Accessories

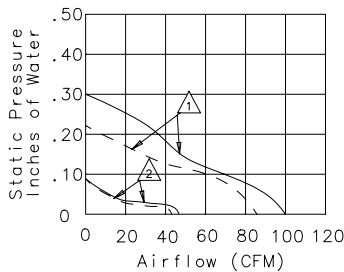
- Fan Brackets
- Finger Guard
- Temperature Control Switch

## Installation

Can be installed on any surface of an enclosure. With the addition of accessory fan brackets, Compact Cooling Fans can also be installed in any position inside the enclosure for spot cooling or air circulation.

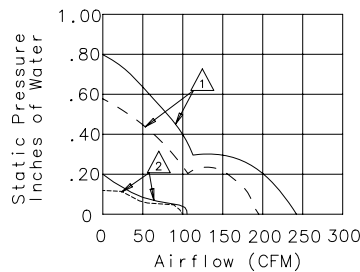


Performance Curve: 4 in. Fans



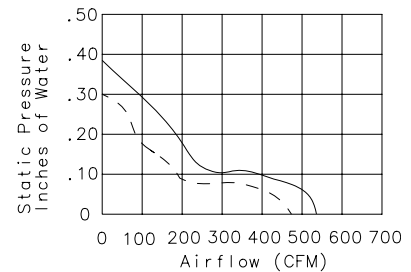
△ FNPG, FN, FN2 models  
□ FNGQ models

Performance Curve: 6 in. Fans



(Curves represent fan performance only.)

Performance Curve: 10 in. Fans



———— 60 Hz  
----- 50 Hz 87744317

## Technical/Performance Data for Compact Cooling Fans

| Catalog Number | Nominal Size    | Power Connection | Voltage (VAC) | Amps @ 50/60 Hz | Watts @ 50/60 Hz | CFM @ 50/60 Hz | Fan Size           | Fan Depth | Max. Motor Operating RPM @ 50/60 Hz | Noise SIL (db) |
|----------------|-----------------|------------------|---------------|-----------------|------------------|----------------|--------------------|-----------|-------------------------------------|----------------|
| A4AXFNGQ       | 4 in. Quiet Fan | Power cord       | 115           | .09/.08         | 6/5              | 46/49          | 4.69 in. square    | 1.52      | 1350/1450                           | 27/28          |
| A4AXFNPG       | 4 in.           | Power cord       | 115           | .26/.21         | 17/15            | 85/100         | 4.69 in. square    | 1.52      | 2415/2900                           | 37/41          |
| A4AXFN         | 4 in.           | Leadwires        | 115           | .26/.21         | 17/15            | 85/100         | 4.69 in. square    | 1.52      | 2415/2900                           | 37/41          |
| A4AXFN2        | 4 in.           | Leadwires        | 230           | .14/.11         | 16/14            | 85/100         | 4.69 in. square    | 1.52      | 2415/2900                           | 37/41          |
| A6AXFNGQ       | 6 in. Quiet Fan | Power cord       | 115           | .16/.19         | 16/18            | 85/102         | 6.77 in. diameter  | 1.50      | 1400/1650                           | 35/38          |
| A6AXFNPG       | 6 in.           | Power cord       | 115           | .45/.36         | 36/32            | 200/240        | 6.77 in. diameter  | 1.50      | 2670/3200                           | 50/56          |
| A6AXFN         | 6 in.           | Leadwires        | 115           | .45/.36         | 36/32            | 200/240        | 6.77 in. diameter  | 1.50      | 2670/3200                           | 50/56          |
| A6AXFN2        | 6 in.           | Leadwires        | 230           | .23/.18         | 39/35            | 200/240        | 6.77 in. diameter  | 1.50      | 2670/3200                           | 50/56          |
| A10AXFNPG      | 10 in.          | Power cord       | 115           | 1.0/.88         | 36/36            | 480/560        | 10.00 in. diameter | 3.50      | 1350/1650                           | 45.8/49        |
| A10AXFN        | 10 in.          | Leadwires        | 115           | 1.0/.88         | 36/36            | 480/560        | 10.00 in. diameter | 3.50      | 1350/1650                           | 45.8/49        |
| A10AXFN2       | 10 in.          | Leadwires        | 230           | .47/.43         | 36/36            | 480/560        | 10.00 in. diameter | 3.50      | 1350/1650                           | 45.8/49        |

# Compact Cooling Fans

## Cutout Dimensions Compact Cooling Fans

| Catalog Number | Nominal Size | Power Connection | Voltage | A (in.) | A (mm) | D (in.) | D (mm) | E (in.) | E (mm) | J (in.) | J (mm) | K (in.) | K (mm) | L (in.) | L (mm) | M (in.) | M (mm) |
|----------------|--------------|------------------|---------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|
| A4AXFNPG       | 4 inch       | Power cord       | 115     | 4.62    | 117    | 4.12    | 105    | 2.06    | 52     | 4.12    | 105    | 2.06    | 52     | —       | —      | —       | —      |
| A4AXFNGQ       | 4 inch       | Power cord/Quiet | 115     | 4.62    | 117    | 4.12    | 105    | 2.06    | 52     | 4.12    | 105    | 2.06    | 52     | —       | —      | —       | —      |
| A4AXFN         | 4 inch       | Leadwires        | 115     | 4.62    | 117    | 4.12    | 105    | 2.06    | 52     | 4.12    | 105    | 2.06    | 52     | —       | —      | —       | —      |
| A4AXFN2        | 4 inch       | Leadwires        | 230     | 4.62    | 117    | 4.12    | 105    | 2.06    | 52     | 4.12    | 105    | 2.06    | 52     | —       | —      | —       | —      |
| A6AXFNPG       | 6 inch       | Power cord       | 115     | 5.88    | 149    | —       | —      | —       | —      | —       | —      | —       | —      | 3.19    | 81     | 6.38    | 162    |
| A6AXFNGQ       | 6 inch       | Power cord/Quiet | 115     | 5.88    | 149    | —       | —      | —       | —      | —       | —      | —       | —      | 3.19    | 81     | 6.38    | 162    |
| A6AXFN         | 6 inch       | Leadwires        | 115     | 5.88    | 149    | —       | —      | —       | —      | —       | —      | —       | —      | 3.19    | 81     | 6.38    | 162    |
| A6AXFN2        | 6 inch       | Leadwires        | 230     | 5.88    | 149    | —       | —      | —       | —      | —       | —      | —       | —      | 3.19    | 81     | 6.38    | 162    |
| A10AXFNPG      | 10 inch      | Power cord       | 115     | 9.00    | 229    | 6.88    | 175    | 3.44    | 87     | 6.88    | 175    | 3.44    | 87     | —       | —      | —       | —      |
| A10AXFN        | 10 inch      | Leadwires        | 115     | 9.00    | 229    | 6.88    | 175    | 3.44    | 87     | 6.88    | 175    | 3.44    | 87     | —       | —      | —       | —      |
| A10AXFN2       | 10 inch      | Leadwires        | 230     | 9.00    | 229    | 6.88    | 175    | 3.44    | 87     | 6.88    | 175    | 3.44    | 87     | —       | —      | —       | —      |

## Fan Cords



Used to power compact cooling fans when positive ground of the cabinet case is

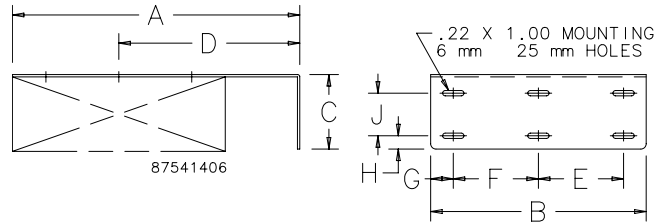
required. Available with connectors for one or two fans. Five-foot (1.52 meter) cord with grounded three-prong plug. Fits A4AXFNPG, A6AXFNPG, A10AXFNPG, A4AXFNGQ, and AGAXFNGQ.

| Catalog Number | Description    |
|----------------|----------------|
| ACORD1         | One connector  |
| ACORD2         | Two connectors |

## Fan Brackets

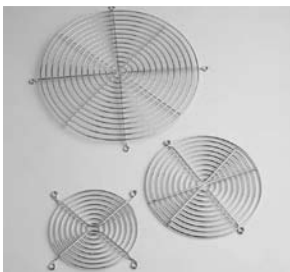


Designed to provide easy mounting of Hoffman cooling fans on enclosure panels. Brackets can be used for general air circulation or to direct air at problem areas. All sizes are .100 inch aluminum. Package quantity of 1 bracket. Fans must be ordered separately.



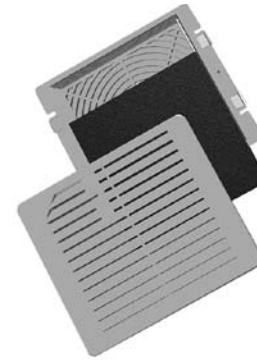
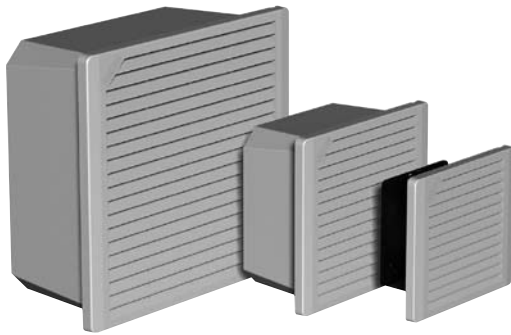
| Catalog Number | Used with Fan Catalog Number               | A x B x C in. (mm)                   | D (in.) | D (mm) | E (in.) | E (mm) | F (in.) | F (mm) | G (in.) | G (mm) | H (in.) | H (mm) | J (in.) | J (mm) |
|----------------|--|--------------------------------------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|
| ABRKT4         | A4AXFNPG, A4AXFNGQ, A4AXFN, or A4AXFN2     | 6.00 x 5.00 x 1.50 (152 x 127 x 38)  | 3.50    | 89     | —       | —      | 3.00    | 76     | 1.00    | 25     | 0.38    | 10     | 0.62    | 16     |
| ABRKT6         | A6AXFNPG, A6AXFNGQ, A6AXFN, or A6AXFN2     | 10.00 x 6.88 x 2.00 (254 x 175 x 51) | 6.50    | 51     | —       | —      | 5.00    | 127    | 0.94    | 24     | 0.38    | 10     | 1.00    | 25     |
| ABRKT10        | A10AXFNPG, A10AXFNGQ, A10AXFN, or A10AXFN2 | 13.5 x 10.12 x 3.5 (343 x 257 x 89)  | 8.50    | 216    | 4.00    | 102    | 4.00    | 102    | 1.06    | 27     | 0.62    | 16     | 2.00    | 51     |

## Finger Guards



One finger guard is included with each Compact Cooling Fan and Cooling Fan Package. Additional finger guards can be mounted on either side of the fan for maximum safety. All guards are chrome-plated and meet UL 507 .25-inch plug gauge test.

| Catalog Number | Use on Compact Cooling Fan Catalog Numbers |
|----------------|--|
| AGARD4         | A4AXFNPG, A4AXFNGQ, A4AXFN, A4AXFN2        |
| AGARD6         | A6AXFNPG, A6AXFNGQ, A6AXFN, A6AXFN2        |
| AGARD10        | A10AXFNPG, A10AXFNQR, A10AXFN, A10AXFN2    |



## Application

Designed for use in enclosures where space is limited and reliable filtered airflow is required. The Cooling Fan Package is the air inlet of a cooling system. It requires at least one Exhaust Package of the same size and type rating to provide the outlet. Where positive air flow through the enclosure is not required, Exhaust Packages can be used on both the inlet and outlet.

*NOTE: fan and exhaust packages must be ordered separately.*

The Cooling Fan Package is available for both Type I and Type I2 enclosures. Type I is recommended in UL Type I environments where the ambient air is cool and clean. Type I2 is recommended in UL Type I2 environments where the ambient air is cool and may contain small amounts of dust, foreign bodies, and splashing water. For both Type I and Type I2 systems a monthly maintenance schedule is recommended to ensure optimal cooling performance.

The cooling fan and exhaust packages come with RAL 7035 composite or brushed stainless steel grilles; replacement black ABS composite and brushed stainless steel grilles are available separately. The optional EMC Upgrade Kit prepares the fan and exhaust packages for use where EMC protection is required.

## Installation

Fan and exhaust packages can be installed on any surface of an enclosure. They are most effective when the fan assembly is located on a lower panel of the enclosure and the exhaust grille is positioned near the top of the opposite side. This installation assists heat transfer by causing slightly more turbulence and also prolongs the working life of the fan since it is located in the path of the cooler air entering the enclosure.

The height and width of the cooling fans and exhaust grilles can be rotated 90° for mounting on narrow enclosures. Allow adequate clearance for servicing the fan when equipment is installed inside the enclosure and for replacing filters on both the fan and the exhaust. Cutout dimensions for both the fan and the exhaust are shown in the order table. Order the fan and exhaust packages separately.

## Features

- Cooling Fan Package includes fan, air filter, composite air plenum, finger guard, and grille
- Exhaust Package includes air filter, filter retainer with integral finger guard, and grille
- EMC Upgrade Kit includes a grille standoff collar and a special EMC shielding grille. It can be used with either fan or exhaust packages that have composite grilles. Cannot be used with stainless steel grilles.
- Optional grilles, available in both brushed stainless steel and black ABS plastic, can be used with either the fan or exhaust package
- Washable foam (Type I) or disposable (Type I2) filter in both fan and exhaust packages provide good arrestment of airborne dirt with minimal pressure drop. Optional washable aluminum air filter is available for Type I applications.

- Durable composite air plenum and grille takes up minimal enclosure space. Plenum permits even airflow through the filter for maximum filtering efficiency. An integral and removable finger guard on either side of the plenum adds safety and convenience.
- Air filters can be accessed for cleaning from outside the enclosure
- Rigid fan housing eliminates breakage and grounding problems
- Engineered for 50,000 hours of continuous operation without lubrication or service

## Construction

- Dynamically-balanced fan impellers molded from polycarbonate material
- 4-in. fan is thermally protected and uses permanently-lubricated ball bearings
- 6- and 10-in. fans have ball bearing construction and split-capacitor motors that are thermally protected to avoid premature failure
- Fans have leadwires for power connection with ends stripped 1/2-in. (12 mm)
- All mounting hardware and installation instructions are furnished

## Filters

Standard Type I air filters are washable foam.

*Note: Type I2 air filters are not washable.*

## Finish

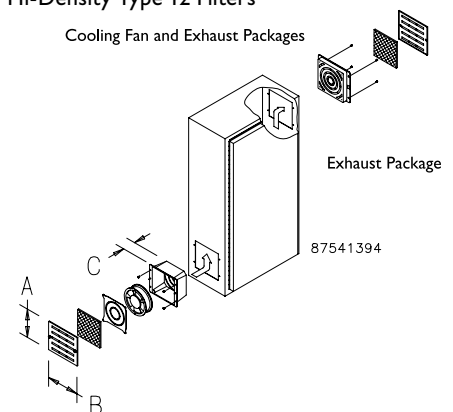
Fan housing, composite plenum, and grille are RAL 7035 light gray. Stainless steel grilles have brushed finish. ABS composite grille is black.

## Industry Standards

UL 508A Component Recognized, File Number E61997  
CSA certified (fan only)  
CE

## Accessories

Temperature Control Switch  
Aluminum Type I and Hi-Density Type I2 Filters  
EMC Upgrade Kit  
Grille Options:  
Stainless Steel  
Black ABS Plastic



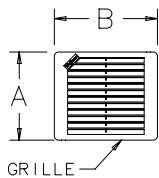
# Cooling Fan and Exhaust Packages

## Standard Sizes and Cutout Dimensions Cooling Fan and Exhaust Packages

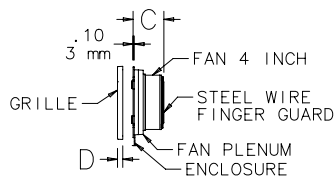
| Catalog Number    | A x B x C<br>in. (mm)                     | Material and Type                       | Use with Exhaust Grille | Nominal Fan Size | D<br>(in.) | D<br>(mm) | F<br>(in.) | F<br>(mm) | H<br>(in.) | H<br>(mm) | T<br>(in.) | T<br>(mm) | W<br>(in.) | W<br>(mm) |
|-------------------|---|---|-------------------------|------------------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|
| <b>TFP41</b>      | 6.29 x 7.37 x 2.65<br>(160 x 187 x 67)    | Composite Grille<br>UL 508 Type 1       | <b>TEP4</b>             | 4 inch           | 0.45       | 11        | 5.66       | 144       | 0.77       | 20        | 4.12       | 105       | 6.39       | 162       |
| <b>TFP41SS</b>    | 6.29 x 7.37 x 2.65<br>(160 x 187 x 67)    | Stainless Steel Grille<br>UL 508 Type 1 | <b>TEP4SS</b>           | 4 inch           | 0.45       | 11        | 5.66       | 144       | 0.77       | 20        | 4.12       | 105       | 6.39       | 162       |
| <b>TFP41UL12</b>  | 6.29 x 7.37 x 2.65<br>(160 x 187 x 67)    | Composite Grille<br>UL 508 Type 12      | <b>TEP4UL12</b>         | 4 inch           | 0.45       | 11        | 5.66       | 144       | 0.77       | 20        | 4.12       | 105       | 6.39       | 162       |
| <b>TFP42</b>      | 6.29 x 7.37 x 2.65<br>(160 x 187 x 67)    | Composite Grille<br>UL 508 Type 1       | <b>TEP4</b>             | 4 inch           | 0.45       | 11        | 5.66       | 144       | 0.77       | 20        | 4.12       | 105       | 6.39       | 162       |
| <b>TFP42SS</b>    | 6.29 x 7.37 x 2.65<br>(160 x 187 x 67)    | Stainless Steel Grille<br>UL 508 Type 1 | <b>TEP4SS</b>           | 4 inch           | 0.45       | 11        | 5.66       | 144       | 0.77       | 20        | 4.12       | 105       | 6.39       | 162       |
| <b>TFP42UL12</b>  | 6.29 x 7.37 x 2.65<br>(160 x 187 x 67)    | Composite Grille<br>UL 508 Type 12      | <b>TEP4UL12</b>         | 4 inch           | 0.45       | 11        | 5.66       | 144       | 0.77       | 20        | 4.12       | 105       | 6.39       | 162       |
| <b>TFP61</b>      | 7.80 x 8.87 x 3.75<br>(198 x 225 x 95)    | Composite Grille<br>UL 508 Type 1       | <b>TEP6</b>             | 6 inch           | 0.49       | 12        | 7.16       | 182       | 1.33       | 34        | 4.50       | 114       | 7.89       | 200       |
| <b>TFP61SS</b>    | 7.80 x 8.87 x 3.75<br>(198 x 225 x 95)    | Stainless Steel Grille<br>UL 508 Type 1 | <b>TEP6SS</b>           | 6 inch           | 0.49       | 12        | 7.16       | 182       | 1.33       | 34        | 4.50       | 114       | 7.89       | 200       |
| <b>TFP61UL12</b>  | 7.80 x 8.87 x 3.75<br>(198 x 225 x 95)    | Composite Grille<br>UL 508 Type 12      | <b>TEP6UL12</b>         | 6 inch           | 0.49       | 12        | 7.16       | 182       | 1.33       | 34        | 4.50       | 114       | 7.89       | 200       |
| <b>TFP62</b>      | 7.80 x 8.87 x 3.75<br>(198 x 225 x 95)    | Composite Grille<br>UL 508 Type 1       | <b>TEP6</b>             | 6 inch           | 0.49       | 12        | 7.16       | 182       | 1.33       | 34        | 4.50       | 114       | 7.89       | 200       |
| <b>TFP62SS</b>    | 7.80 x 8.87 x 3.75<br>(198 x 225 x 95)    | Stainless Steel Grille<br>UL 508 Type 1 | <b>TEP6SS</b>           | 6 inch           | 0.49       | 12        | 7.16       | 182       | 1.33       | 34        | 4.50       | 114       | 7.89       | 200       |
| <b>TFP62UL12</b>  | 7.80 x 8.87 x 3.75<br>(198 x 225 x 95)    | Composite Grille<br>UL 508 Type 12      | <b>TEP6UL12</b>         | 6 inch           | 0.49       | 12        | 7.16       | 182       | 1.33       | 34        | 4.50       | 114       | 7.89       | 200       |
| <b>TFP101</b>     | 11.81 x 12.99 x 5.25<br>(300 x 330 x 133) | Composite Grille<br>UL 508 Type 1       | <b>TEP10</b>            | 10 inch          | 0.55       | 14        | 11.16      | 283       | 2.14       | 54        | 6.88       | 175       | 11.89      | 302       |
| <b>TFP101SS</b>   | 11.81 x 12.99 x 5.25<br>(300 x 330 x 133) | Stainless Steel Grille<br>UL 508 Type 1 | <b>TEP10SS</b>          | 10 inch          | 0.55       | 14        | 11.16      | 283       | 2.14       | 54        | 6.88       | 175       | 11.89      | 302       |
| <b>TFP101UL12</b> | 11.81 x 12.99 x 5.25<br>(300 x 330 x 133) | Composite Grille<br>UL 508 Type 12      | <b>TEP10UL12</b>        | 10 inch          | 0.55       | 14        | 11.16      | 283       | 2.14       | 54        | 6.88       | 175       | 11.89      | 302       |
| <b>TFP102</b>     | 11.81 x 12.99 x 5.25<br>(300 x 330 x 133) | Composite Grille<br>UL 508 Type 1       | <b>TEP10</b>            | 10 inch          | 0.55       | 14        | 11.16      | 283       | 2.14       | 54        | 6.88       | 175       | 11.89      | 302       |
| <b>TFP102SS</b>   | 11.81 x 12.99 x 5.25<br>(300 x 330 x 133) | Stainless Steel Grille<br>UL 508 Type 1 | <b>TEP10SS</b>          | 10 inch          | 0.55       | 14        | 11.16      | 283       | 2.14       | 54        | 6.88       | 175       | 11.89      | 302       |
| <b>TFP102UL12</b> | 11.81 x 12.99 x 5.25<br>(300 x 330 x 133) | Composite Grille<br>UL 508 Type 12      | <b>TEP10UL12</b>        | 10 inch          | 0.55       | 14        | 11.16      | 283       | 2.14       | 54        | 6.88       | 175       | 11.89      | 302       |

An intake grille and filter are included with each Cooling Fan Package. Order at least one Exhaust Package separately for each installation

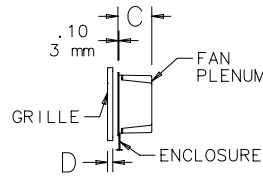
Fan and Exhaust Grille



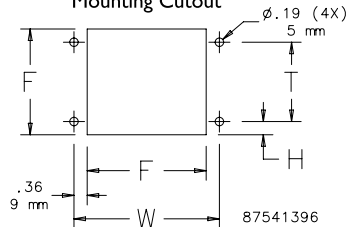
4" Fan  
(Fan Mounted to Back of Plenum)



6" and 10" Fan  
(Box Style Plenum)



Fan and Exhaust Package  
Mounting Cutout



Thermal  
Management

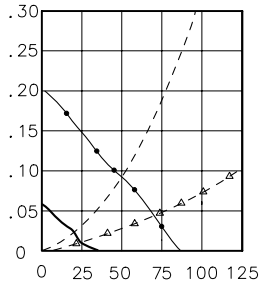
# Cooling Fan and Exhaust Packages

## Technical Performance Data for Cooling Fan Packages

| Catalog Number | CFM <sup>a</sup><br>50/60 Hz | Watts<br>50/60 Hz | Voltage | Hz    | Amps<br>50/60 Hz | Max. Operating Temp. °F | Max. Operating Temp. °C | Max. Operating Noise SIL db | Weight (lb.) | Weight (kg.) |
|----------------|------------------------------|-------------------|---------|-------|------------------|-------------------------|-------------------------|-----------------------------|--------------|--------------|
| TFP41          | 46/55                        | 17/15             | 115     | 50/60 | .26/.21          | 158                     | 70                      | 37/41                       | 4.2          | 1.90         |
| TFP41SS        | 46/55                        | 17/15             | 115     | 50/60 | .26/.21          | 158                     | 70                      | 37/41                       | 4.2          | 1.90         |
| TFP41UL12      | 21/25                        | 17/15             | 115     | 50/60 | .26/.21          | 158                     | 70                      | 37/41                       | 4.2          | 1.90         |
| TFP42          | 46/55                        | 16/14             | 230     | 50/60 | .14/.11          | 158                     | 70                      | 37/41                       | 4.3          | 1.95         |
| TFP42SS        | 46/55                        | 16/14             | 230     | 50/60 | .14/.11          | 158                     | 70                      | 37/41                       | 4.3          | 1.95         |
| TFP42UL12      | 21/25                        | 16/14             | 230     | 50/60 | .14/.11          | 158                     | 70                      | 37/41                       | 4.3          | 1.95         |
| TFP61          | 117/140                      | 36/32             | 115     | 50/60 | .45/.36          | 158                     | 70                      | 50/56                       | 5.3          | 2.40         |
| TFP61SS        | 117/140                      | 36/32             | 115     | 50/60 | .45/.36          | 158                     | 70                      | 50/56                       | 5.3          | 2.40         |
| TFP61UL12      | 50/60                        | 36/32             | 115     | 50/60 | .45/.36          | 158                     | 70                      | 50/56                       | 5.3          | 2.40         |
| TFP62          | 117/140                      | 39/35             | 230     | 50/60 | .23/.18          | 158                     | 70                      | 50/56                       | 5.4          | 2.45         |
| TFP62SS        | 117/140                      | 39/35             | 230     | 50/60 | .23/.18          | 158                     | 70                      | 50/56                       | 5.4          | 2.45         |
| TFP62UL12      | 50/60                        | 39/35             | 230     | 50/60 | .23/.18          | 158                     | 70                      | 50/56                       | 5.4          | 2.45         |
| TFP101         | 180/215                      | 64/80             | 115     | 50/60 | .58/.70          | 167                     | 75                      | 54/61                       | 12.0         | 5.45         |
| TFP101SS       | 180/215                      | 64/80             | 115     | 50/60 | .58/.70          | 167                     | 75                      | 54/61                       | 12.0         | 5.45         |
| TFP101UL12     | 63/75                        | 64/80             | 115     | 50/60 | .58/.70          | 167                     | 75                      | 54/61                       | 12.0         | 5.45         |
| TFP102         | 180/215                      | 64/80             | 230     | 50/60 | .29/.35          | 167                     | 75                      | 54/61                       | 11.4         | 5.17         |
| TFP102SS       | 180/215                      | 64/80             | 230     | 50/60 | .29/.35          | 167                     | 75                      | 54/61                       | 11.4         | 5.17         |
| TFP102UL12     | 63/75                        | 64/80             | 230     | 50/60 | .29/.35          | 167                     | 75                      | 54/61                       | 11.4         | 5.17         |

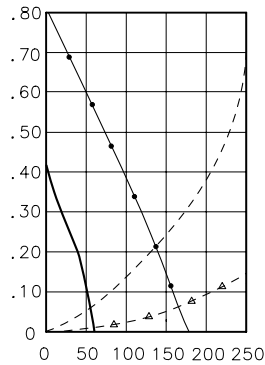
<sup>a</sup>CFM with single exhaust grille installed.

Performance Curve for a 4" Cooling Fan Package @ 60 Hz



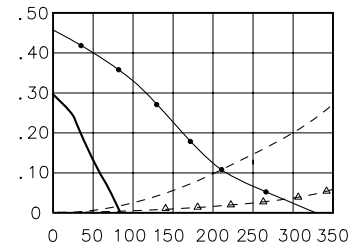
- 4 in. Cooling Fan Package
- - - 4 in. Exhaust Package
- -△- 2 in. Exhaust Packages
- 4 in. Type 12 Cooling Fan Package

Performance Curve for a 6" Cooling Fan Package @ 60 Hz



- 6 in. Cooling Fan Package
- - - 6 in. Exhaust Package
- -△- Two 6 in. Exhaust Packages
- 6 in. Type 12 Cooling Fan Package

Performance Curve for a 10" Cooling Fan Package @ 60 Hz



- 10 in. Cooling Fan Package
- - - 10 in. Exhaust Package
- -△- Two 10 in. Exhaust Packages
- 10 in. Type 12 Cooling Fan Package



# Cooling Fan and Exhaust Packages

## EMC Fan/Grille Upgrade Kit

With the addition of this kit, the cooling fan and exhaust packages are upgraded to provide EMC (electromagnetic compatibility) protection. Consult Hoffman for shielding effectiveness (dB attenuation vs. frequency).

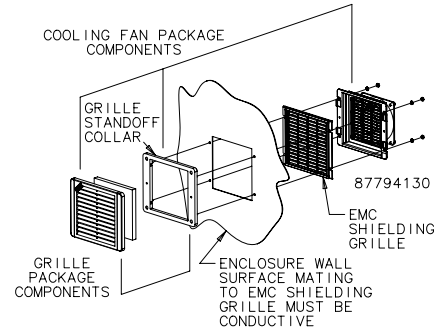
**NOTE:** Separate kits must be installed on both the inlet and outlet. Cooling fan and exhaust package must be ordered separately. EMC upgrade kit will not work with stainless steel grille option.

| Catalog Number | Fits Cooling Fan Package Catalog Number | Fits Exhaust Grille Catalog Number |
|----------------|---|------------------------------------|
| <b>T4EMC</b>   | TFP41/TFP42                             | TEP4                               |
| <b>T6EMC</b>   | TFP61/TFP62                             | TEP6                               |
| <b>T10EMC</b>  | TFP101/TFP102                           | TEP10                              |

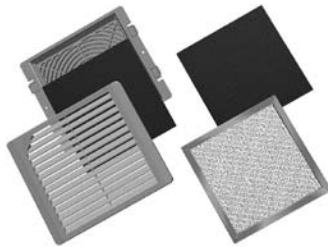
## Filters

Standard Type I air filters are washable foam.

**Note:** Type 12 air filters are not washable.



## Optional Grilles and Replacement Filters



Optional grilles offer the choice of stainless steel or black ABS plastic grilles replace the standard RAL 7035 gray composite or stainless steel grilles on both fan and exhaust packages. Standard replacement filters are washable foam (Type I) or disposable (Type 12). To maintain UL Type 12 rating on the enclosure, UL Type 12 filters

must be used on both the inlet and outlet. Washable aluminum filters are also available. Aluminum filters are compatible with Type I systems only.

| Catalog Number    | Description                                | Fits Fan and Exhaust Nominal Size | Fits Fan and Exhaust Grille Size in. (mm) |
|-------------------|--|-----------------------------------|---|
| <b>TG4SS</b>      | Brushed stainless steel grille             | 4 inch                            | 6.29 x 7.31 x .81<br>(160 x 186 x 21)     |
| <b>TG4B</b>       | Black ABS plastic grille                   | 4 inch                            | 6.29 x 7.37 x .81<br>(160 x 187 x 21)     |
| <b>AFLTR4</b>     | Type 1 filter replacement<br>(5/package)   | 4 inch                            | —   |
| <b>AFLTR4AL</b>   | Aluminum filter replacement<br>(5/package) | 4 inch                            | —   |
| <b>TFLT4UL12</b>  | Type 12 filter replacement<br>(5/package)  | 4 inch                            | —   |
| <b>TG6SS</b>      | Brushed stainless steel grille             | 6 inch                            | 7.80 x 8.81 x .75<br>(198 x 224 x 19)     |
| <b>TG6B</b>       | Black ABS plastic grille                   | 6 inch                            | 7.80 x 8.87 x .49<br>(198 x 225 x 12)     |
| <b>AFLTR6</b>     | Foam filter replacement<br>(5/package)     | 6 inch                            | —   |
| <b>AFLTR6AL</b>   | Aluminum filter replacement<br>(5/package) | 6 inch                            | —   |
| <b>TFLT6UL12</b>  | UL 12 filter replacement<br>(5/package)    | 6 inch                            | —   |
| <b>TG10SS</b>     | Brushed stainless steel grille             | 10 inch                           | 11.81 x 12.92 x .75<br>(300 x 328 x 19)   |
| <b>TG10B</b>      | Black ABS plastic grille                   | 10 inch                           | 11.81 x 12.99 x .75<br>(300 x 330 x 19)   |
| <b>AFLTR10</b>    | Foam filter replacement<br>(5/package)     | 10 inch                           | —   |
| <b>AFLTR10AL</b>  | Aluminum filter replacement<br>(5/package) | 10 inch                           | —   |
| <b>TFLT10UL12</b> | UL 12 filter replacement<br>(5/package)    | 10 inch                           | —   |

# Filter Fan Packages



## Application

Permits densely filtered ambient air to pressurize enclosure so that ambient air cannot be drawn in through poorly sealed doors, panels, and wireways. Positive airflow provides a simple and effective way to protect enclosed electronics from heat and condensation. Ideal for clean environments.

## Construction

- Simple, snap-in mounting
- Slim fan grille protrudes only .25" or less from enclosure mount
- Fan is completely installed inside plastic housing
- Housings are made of heat resistant, self-extinguishing ABS; color RAL 7042 gray (grille only)
- Air filter is accessible for cleaning or replacement from outside the enclosure by simply removing the grille cover
- Easy to install. Mounting hardware, full-size mounting template, drawings, and installation instructions furnished.
- Filter Fan Package includes the fan with grille, filter, and filter sealing gasket. Exhaust Grille Kits are offered for each Filter Fan Package and must be ordered separately. Filter sealing gaskets are supplied with both Filter Fan Package and Exhaust Grille Kit to achieve an IP54 rating.

## Industry Standards

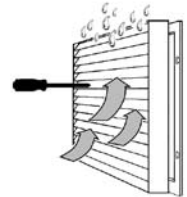
UL Component Recognized, UL File Number SF165154  
CSA Certified (fan only)  
CE

## Installation

Fan Package should be mounted near bottom of enclosure with the exhaust near the top of the opposite side. This will ensure complete airflow distribution through the entire enclosure.

## Added Protection

With the supplied filter sealing gasket installed on both the filter fan package and the exhaust grille kit, an IP54 rating can be maintained according to DIN 40050. This rating is defined as protecting internal electronics from dust, foreign bodies, and splashing water.



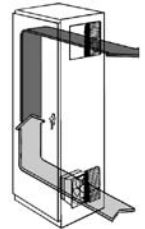
## Replacement Filter Sealing Gasket and Filters

| Filter Sealing Gasket Catalog Number | Replacement Filter | To Fit Fan Packages and Exhaust Grille Kits |
|--------------------------------------|--------------------|---|
| <b>G050000</b>                       | 10100060           | SF0516002<br>SF0526002<br><b>SG0500002</b>  |
| <b>G090000</b>                       | 10100061           | SF0916002<br>SF0926002<br><b>SF0900002</b>  |
| <b>G100000</b>                       | 10100062           | SF1016002<br>SF1026002<br><b>SG1000002</b>  |
| <b>G130000</b>                       | 10100063           | SF1316002<br>SF1326002<br><b>SF1300002</b>  |

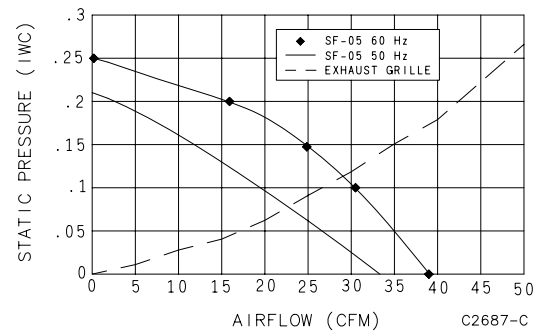
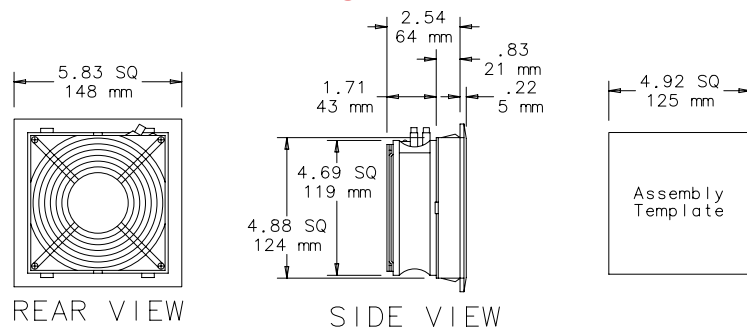
## Filtered Cooling

Filter fan packages are appropriate for applications in which:

- The electronic controls can operate at a temperature differential slightly above the ambient temperature
- Humidity is not a factor
- The quality of filtered ambient air is acceptable to be drawn into the enclosure for cooling



## Series SF-05 Filter Fan Package





# Filter Fan Packages

## Standard Sizes Filter Fan Packages

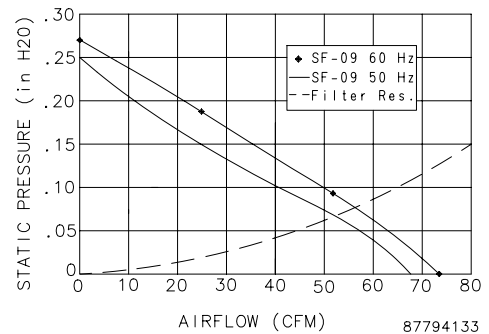
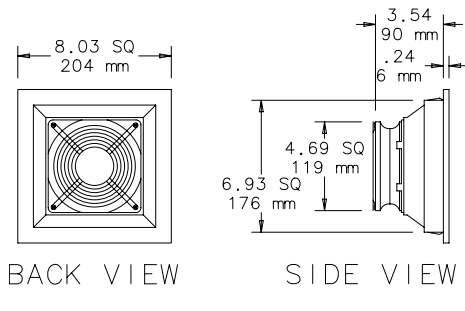
| Catalog Number | A x B x C in. (mm)                        | Replace-ment Filter | Voltage | Hz    | Phase | Full Load Amps | Motor RPM | Service Temp. |          |           |           | Noise dB (A) | Ship. Wt. |       | Exhaust Grille Kit Model Number | Air Flow <sup>a</sup> | Air Flow <sup>b</sup> |
|----------------|---|---------------------|---------|-------|-------|----------------|-----------|---------------|----------|-----------|-----------|--------------|-----------|-------|---------------------------------|-----------------------|-----------------------|
|                |   |                     |         |       |       |                |           | Low (°F)      | Low (°C) | High (°F) | High (°C) |              | (lbs.)    | (kgs) |                                 |                       |                       |
| SF0516002      | 5.83 x 5.83 x 2.76<br>(148 x 148 x 70)    | 10100060            | 115     | 50/60 | 1     | .22            | 2650/3100 | 14            | -10      | 131       | 55        | 42           | 1.87      | .85   | SG0500002                       | 39                    | 29                    |
| SF0526002      | 5.83 x 5.83 x 2.76<br>(148 x 148 x 70)    | 10100060            | 230     | 50/60 | 1     | .11            | 2650/3100 | 14            | -10      | 131       | 55        | 42           | 1.87      | .85   | SG0500002                       | 39                    | 29                    |
| SF0916002      | 8.03 x 8.03 x 3.78<br>(204 x 204 x 96)    | 10100061            | 115     | 50/60 | 1     | .22            | 2650/3100 | 14            | -10      | 131       | 55        | 51           | 2.56      | 1.16  | SG0900002                       | 75                    | 57                    |
| SF0926002      | 8.03 x 8.03 x 3.78<br>(204 x 204 x 96)    | 10100061            | 230     | 50/60 | 1     | .11            | 2650/3100 | 14            | -10      | 131       | 55        | 51           | 2.56      | 1.16  | SG0900002                       | 75                    | 57                    |
| SF1016002      | 9.84 x 9.84 x 5.20<br>(250 x 250 x 132)   | 10100062            | 115     | 50/60 | 1     | .53            | 2760/3030 | 14            | -10      | 131       | 55        | 52           | 4.39      | 1.99  | SG1000002                       | 162                   | 126                   |
| SF1026002      | 9.84 x 9.84 x 5.20<br>(250 x 250 x 132)   | 10100062            | 230     | 50/60 | 1     | .30            | 2760/3030 | 14            | -10      | 131       | 55        | 52           | 4.39      | 1.99  | SG1000002                       | 162                   | 126                   |
| SF1316002      | 12.72 x 12.72 x 6.09<br>(323 x 323 x 155) | 10100063            | 115     | 50/60 | 1     | .89            | 2550/2800 | 14            | -10      | 131       | 55        | 61           | 8.38      | 3.80  | SG1300002                       | 376                   | 250                   |
| SF1326002      | 12.72 x 12.72 x 6.09<br>(323 x 323 x 155) | 10100063            | 230     | 50/60 | 1     | .45            | 2550/2800 | 14            | -10      | 131       | 55        | 61           | 8.38      | 3.80  | SG1300002                       | 376                   | 250                   |

<sup>a</sup>Free air, CFM

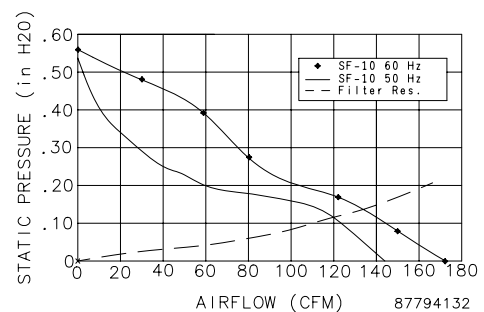
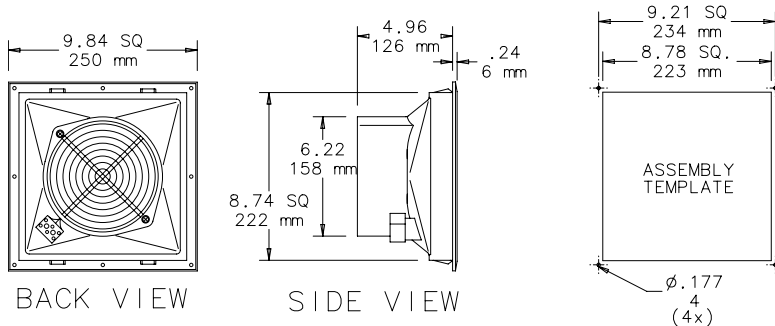
<sup>b</sup>With 1 exhaust grille kit, CFM. Order exhaust grille kit separately.

NOTE: Actual airflow may vary depending on system impedance

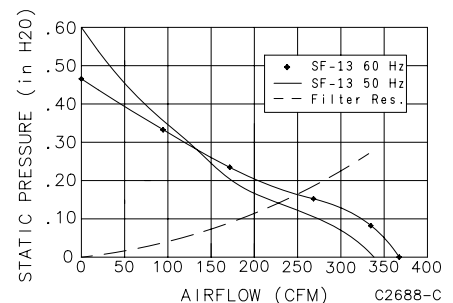
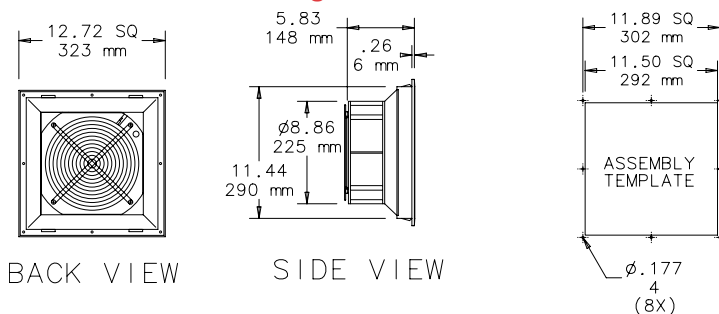
### Series SF-09 Filter Fan Package



### Series SF-10 Filter Fan Package



### Series SF-13 Filter Fan Package



Thermal Management



## Application

For use in outdoor or indoor applications where warm air must be dissipated.

## Features

- Ball bearing axial fan, service life 50,000 hours at 77°F (25°C) and 65 percent RH
- Aluminum fan body, plastic impeller
- Airflow 11.8 cfm (20m<sup>3</sup>/h) free blowing
- High-impact plastic is highly weatherproof and resistant to UV light
- F5 filter mat is easy to remove from outside for cleaning and changing
- Lockable door in hood for security
- Two-sided tape provided for mounting ease
- Filter hood permanently fixed to enclosure from inside using screws
- 2 lead wires, 3.94 inches (100mm) long, with pressure clamps, 14 gauge max. (2.5mm)
- Synthetic filter material, temperature resistant to 212°F (100°C), self-extinguishing class FI, moisture resistant to 100 percent RH
- Filter mat: Fine grade F5 to DIN EN779 filtering degree: 98 percent of particles larger than 10µm (10 microns)

## Finish

Light gray plastic, UL94H-B

## Industry Standards

CE  
cURus File No. E234324  
NEMA Type 3R  
IEC/EN 60529, IP55

## Standard Sizes Outdoor Filter Fan and Exhaust Package

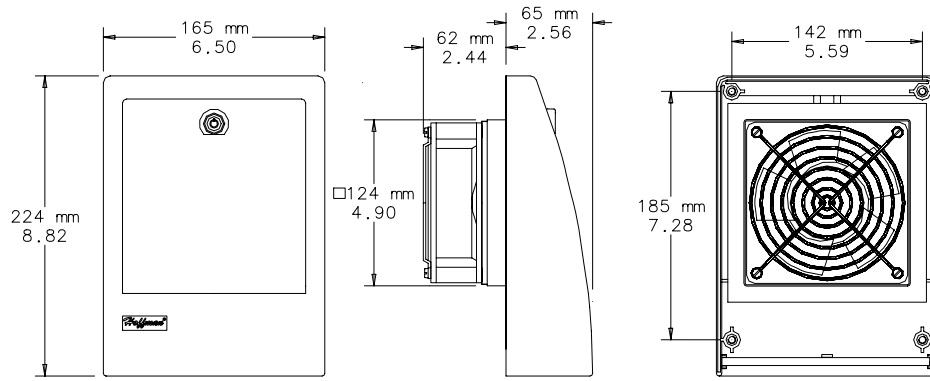
| Catalog Number | Enclosure Cutout |                 | Description    | External Mounting Depth |    | Internal Mounting Depth |    | Voltage        |
|----------------|------------------|-----------------|----------------|-------------------------|----|-------------------------|----|----------------|
|                | in.              | mm              |                | in.                     | mm | in.                     | mm |                |
| AOFF118        | 4.92 x 4.92      | 125 x 125 (+.4) | Filter Fan     | 2.56                    | 65 | 2.44                    | 62 | 120 VAC, 60 Hz |
| AOEFG118       | 4.92 x 4.92      | 125 x 125 (+.4) | Exhaust Filter | 2.56                    | 65 | 0.71                    | 18 |                |

NOTE: AOEFG118 does not include a fan.

## Replacement Filter

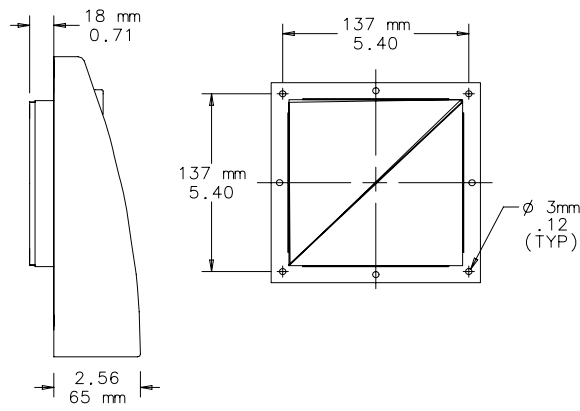
| Catalog Number | Filter Mat 122 x 122mm |
|----------------|------------------------|
| AOFILTER       | F5 (3 per package)     |

# Outdoor Filter Fan and Exhaust Package



87921431

FILTER FAN



EXHAUST  
FILTER

MOUNTING  
FRAME

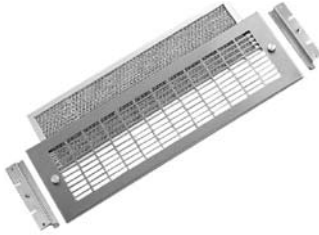


# Blower Fan Package; Fan and Blower Accessories

## Standard Sizes Blower Fan Package

| Catalog Number | A x B x C in. (mm)                       | Free Air CFM | Watts | Voltage | Hz    | Amps | Motor RPM | Noise SIL (dB) | Weight (lb.) | Weight (kg) |
|----------------|--|--------------|-------|---------|-------|------|-----------|----------------|--------------|-------------|
| <b>ADB275</b>  | 5.75 x 17.00 x 7.25<br>(146 x 483 x 184) | 230/275      | 84    | 115     | 50/60 | 1.2  | 2580/3100 | 56             | 15.00        | 7.00        |

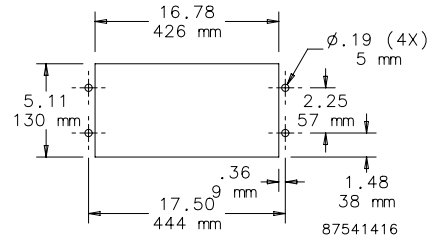
## Exhaust Grille and Filters for Blower Package



Located at air discharge side of an enclosure using Blower Package ADB275. Polished stainless steel grille is 65% open and offers low resistance to airflow. Expanded aluminum filter (included with each grille) is easily removed for cleaning from outside the enclosure. Mounting hardware is furnished.

| Catalog Number    | A x B (in.)                                 | A x B (mm) | Filter Size (in.) | Filter Size (mm) |
|-------------------|---|------------|-------------------|------------------|
| <b>AEXGR275</b>   | 5.75 x 19.00                                | 146 x 483  | 4.98 x 16.56      | 126 x 421        |
| <b>AFLTR275AL</b> | Aluminum Filter Replacement (5 per package) |            |                   |                  |

Mounting and Cutout Dimensions



# Louvers and Vents

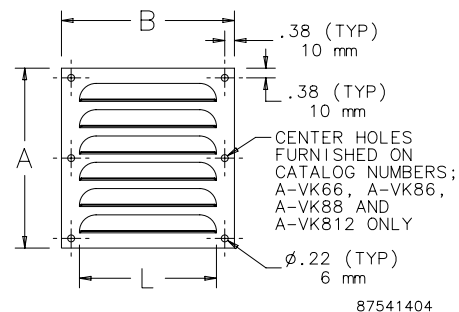
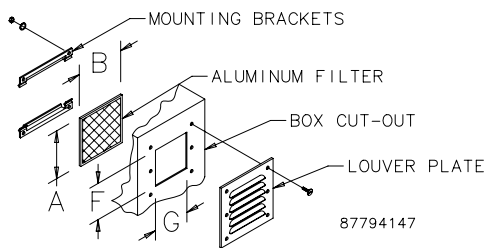
## Louver Plate Kits



Designed to provide ventilation in enclosures where excessive internal heat or excessive moisture is a problem. Although louvers cannot keep all moisture out of an enclosure, gasketing or sealing the perimeter of the louver plate reduces problems associated with moisture intrusion. These kits may be easily installed in the field by making a cutout of the proper size and attaching the louver plate in place. Louver plates are made from 14 gauge steel with an ANSI 61 gray polyester powder finish over phosphatized surfaces or 316 stainless steel. Hardware is furnished for mounting. Custom sizes, materials, finishes, etc., can be provided on special order.

| Catalog Number | A x B<br>in. (mm)           | Number of Louvers | Depth D (in.) | Depth D (mm) | Length L (in.) | Length L (mm) | Opening Area sq. in. | Opening Area sq. cm | Cutout Size F (in.) | Cutout Size F (mm) | Cutout Size G (in.) | Cutout Size G (mm) |
|----------------|-----------------------------|-------------------|---------------|--------------|----------------|---------------|----------------------|---------------------|---------------------|--------------------|---------------------|--------------------|
| AVK23          | 3.25 x 3.25<br>(83 x 83)    | 3                 | 0.19          | 5            | 2.00           | 51            | .86                  | 5.54                | 2.00                | 51                 | 1.75                | 44                 |
| AVK23SS6       | 3.25 x 3.25<br>(83 x 83)    | 3                 | 0.19          | 5            | 2.00           | 51            | .86                  | 5.54                | 2.00                | 51                 | 1.75                | 44                 |
| AVK33          | 3.88 x 4.50<br>(98 x 114)   | 3                 | 0.25          | 6            | 3.00           | 76            | 1.32                 | 8.52                | 2.62                | 67                 | 3.00                | 76                 |
| AVK33SS6       | 3.88 x 4.50<br>(98 x 114)   | 3                 | 0.25          | 6            | 3.00           | 76            | 1.32                 | 8.52                | 2.62                | 67                 | 3.00                | 76                 |
| AVK34          | 4.75 x 4.50<br>(121 x 114)  | 4                 | 0.25          | 6            | 3.00           | 76            | 1.76                 | 11.35               | 3.50                | 89                 | 3.00                | 76                 |
| AVK34SS6       | 4.75 x 4.50<br>(121 x 114)  | 4                 | 0.25          | 6            | 3.00           | 76            | 1.76                 | 11.35               | 3.50                | 89                 | 3.00                | 76                 |
| AVK43          | 4.50 x 5.50<br>(114 x 140)  | 3                 | 0.25          | 6            | 4.00           | 102           | 1.88                 | 12.10               | 3.25                | 83                 | 4.00                | 102                |
| AVK43SS6       | 4.50 x 5.50<br>(114 x 140)  | 3                 | 0.25          | 6            | 4.00           | 102           | 1.88                 | 12.10               | 3.25                | 83                 | 4.00                | 102                |
| AVK44          | 5.62 x 5.50<br>(143 x 140)  | 4                 | 0.25          | 6            | 4.00           | 102           | 2.50                 | 16.13               | 4.38                | 111                | 4.00                | 102                |
| AVK44SS6       | 5.62 x 5.50<br>(143 x 140)  | 4                 | 0.25          | 6            | 4.00           | 102           | 2.50                 | 16.13               | 4.38                | 111                | 4.00                | 102                |
| AVK64          | 5.62 x 7.50<br>(143 x 191)  | 4                 | 0.31          | 8            | 6.00           | 152           | 5.21                 | 33.61               | 4.38                | 111                | 6.00                | 152                |
| AVK64SS6       | 5.62 x 7.50<br>(143 x 191)  | 4                 | 0.31          | 8            | 6.00           | 152           | 5.21                 | 33.61               | 4.38                | 111                | 6.00                | 152                |
| AVK66          | 7.88 x 7.50<br>(200 x 191)  | 6                 | 0.31          | 8            | 6.00           | 152           | 7.82                 | 50.45               | 6.62                | 168                | 6.00                | 152                |
| AVK66SS6       | 7.88 x 7.50<br>(200 x 191)  | 6                 | 0.31          | 8            | 6.00           | 152           | 7.82                 | 50.45               | 6.62                | 168                | 6.00                | 152                |
| AVK84          | 5.81 x 9.50<br>(148 x 241)  | 4                 | 0.31          | 8            | 8.00           | 203           | 8.08                 | 52.12               | 4.56                | 116                | 8.00                | 203                |
| AVK84SS6       | 5.81 x 9.50<br>(148 x 241)  | 4                 | 0.31          | 8            | 8.00           | 203           | 8.08                 | 52.12               | 4.56                | 116                | 8.00                | 203                |
| AVK86          | 8.19 x 9.50<br>(208 x 241)  | 6                 | 0.31          | 8            | 8.00           | 203           | 12.11                | 78.13               | 6.94                | 176                | 8.00                | 203                |
| AVK86SS6       | 8.19 x 9.50<br>(208 x 241)  | 6                 | 0.31          | 8            | 8.00           | 203           | 12.11                | 78.13               | 6.94                | 176                | 8.00                | 203                |
| AVK88          | 10.56 x 9.50<br>(268 x 241) | 8                 | 0.31          | 8            | 8.00           | 203           | 16.15                | 104.19              | 9.31                | 236                | 8.00                | 203                |
| AVK88SS6       | 10.56 x 9.50<br>(268 x 241) | 8                 | 0.31          | 8            | 8.00           | 203           | 16.15                | 104.19              | 9.31                | 236                | 8.00                | 203                |
| AVK812         | 15.31 x 9.50<br>(389 x 241) | 12                | 0.31          | 8            | 8.00           | 203           | 24.22                | 156.26              | 14.06               | 357                | 8.00                | 203                |
| AVK812SS6      | 15.31 x 9.50<br>(389 x 241) | 12                | 0.31          | 8            | 8.00           | 203           | 24.22                | 156.26              | 14.06               | 357                | 8.00                | 203                |

SS6 in catalog number indicates louver plate is Type 316 stainless steel.



# Louvers and Vents

## Filters for Louver Plate Kits



Designed for use with Louver Plate Kit. Mounting holes on filter bracket align with louver mounting holes. Hardware supplied with louvers also secure filter brackets in place. Aluminum air filters provide good

arrestment of airborne dust and dirt. Filter media is composed of layers of slit and expanded aluminum providing hundreds of adhesive coated baffle surfaces for trapping impurities. Impurities are held throughout the depth of the filter. Washing with warm water will keep the filter clean. To achieve best results, Hoffman Filter Adhesive is recommended.

| Catalog Number | A x B (in.)  | A x B (mm) | Use with Steel Louver | Use with Stainless Steel Louver |
|----------------|--------------|------------|-----------------------|---------------------------------|
| AFLT33         | 3.22 x 3.25  | 82 x 83    | AVK33                 | AVK33SS6                        |
| AFLT34         | 4.09 x 3.25  | 104 x 83   | AVK34                 | AVK34SS6                        |
| AFLT43         | 3.84 x 4.25  | 98 x 108   | AVK43                 | AVK43SS6                        |
| AFLT44         | 4.97 x 4.25  | 126 x 108  | AVK44                 | AVK44SS6                        |
| AFLT64         | 4.45 x 6.25  | 113 x 159  | AVK64                 | AVK64SS6                        |
| AFLT66         | 6.72 x 6.25  | 171 x 159  | AVK66                 | AVK66SS6                        |
| AFLT84         | 4.64 x 8.25  | 118 x 210  | AVK84                 | AVK84SS6                        |
| AFLT86         | 7.02 x 8.25  | 178 x 210  | AVK86                 | AVK86SS6                        |
| AFLT88         | 9.39 x 8.25  | 239 x 210  | AVK88                 | AVK88SS6                        |
| AFLT812        | 14.14 x 8.25 | 359 x 210  | AVK812                | AVK812SS6                       |

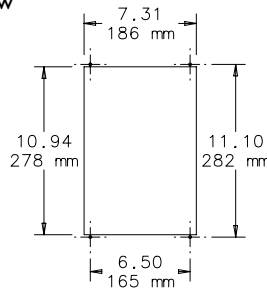
## Vent Kit



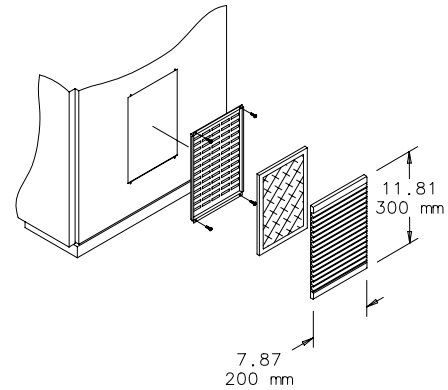
Includes a stylized louvered cover and filter package. Use as an air inlet when a cooling fan is mounted in an enclosure or use two vent kits to allow passive airflow. Mounting hardware included. Vent Kit

requires cutout shown in diagram. Available in gray (RAL 7042) or black.

| Catalog Number | H x W x D (in.)     | H x W x D (mm) | Color |
|----------------|---------------------|----------------|-------|
| XPV32          | 11.81 x 7.88 x 1.03 | 300 x 200 x 26 | Gray  |
| PPV32B         | 11.81 x 7.88 x 1.03 | 300 x 200 x 26 | Black |



Cutout Dimensions



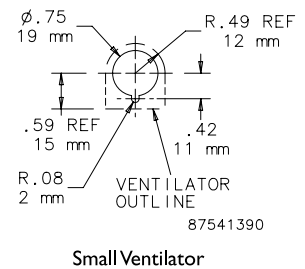
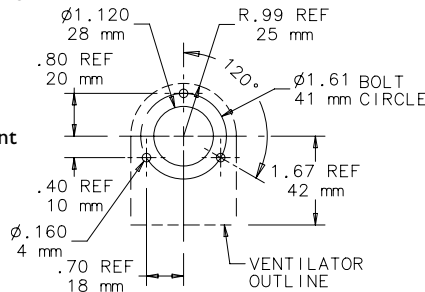
## Ventilators



Designed to fit most metallic and non-metallic enclosures. Proper installation will provide rainproof ventilation but will not meet Type 4 or I2 requirements. Kit includes a ventilator made of fire-retardant thermoplastic material, mounting hardware, and instructions.

NOTE: Supplied screws are 13mm (.515 inch) long. Some applications may require longer screws.

| Catalog Number | Description            |
|----------------|------------------------|
| ANMV6          | Large nonmetallic vent |
| ANMV3          | Small nonmetallic vent |



Small Ventilator

## Filter Adhesive



Designed to maximize the efficiency of all expanded aluminum air filters. Use of Filter Adhesive doubles the dust-retention capacity of the filter. Adhesive contains a low-viscosity water-soluble oil which absorbs dirt particles trapped on the surface of the filter. Through the circulation of the oil, a renewed impurity-absorbing surface is constantly established. Washing with water will remove dust, dirt, and other impurities. Once the filter is dry, re-coat with adhesive.

| Catalog Number | Description    |
|----------------|----------------|
| AFLTAD         | Spray Adhesive |



# Filter and Fan Airflow Monitor



Airflow monitor integrated in protective grille

## Application

Airflow monitor provides simple, reliable method to indicate loss of airflow of fans. Simple mechanical operation makes these usable alternatives to electronic monitoring systems.

## Features

- Bi-directional switch activates an electrical contact if the airflow of the fan falls below 8.2 ft./sec.
- Easy to install
- Monitors airflow to 164 ft./sec. (50m/s) max.

## Construction

- Reed/magnet contact
- Switching threshold of air flow speed > 8.2 ft./sec. (2.5m/s)
- Maximum switching:  
capacity = 10W (resistive load)  
voltage = NC: DC 240V; NO: DC 60V  
current = NC: DC 500mA; NO: DC 170mA
- Hysteresis 3.3 ft./sec. (1m/s) fixed

- Contact resistance, including wire, 370mΩ
- 2 x single strand AWG 26 connection, 19.69 in. (500mm) long; 0.20 in. (5mm) tip of stranded wire stripped/tinned
- Mount with attachment clamp and/or clip or integrated in protective grille (see drawing)
- Mount airflow monitor opening perpendicular to airflow in dust-free and contamination-free environment
- AAFMCNC can be attached directly to Cooling and Exhaust Package Grilles
- AAFMI20NO can be attached to any 4-inch standard fan

## Finish

Black plastic, UL94H-B

## Industry Standards

CE  
cURus File No. E250507  
UL File No. E250507

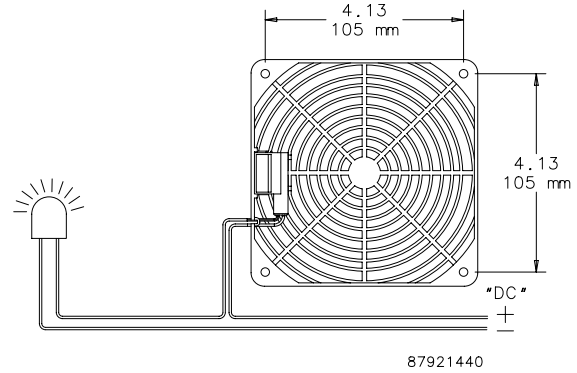
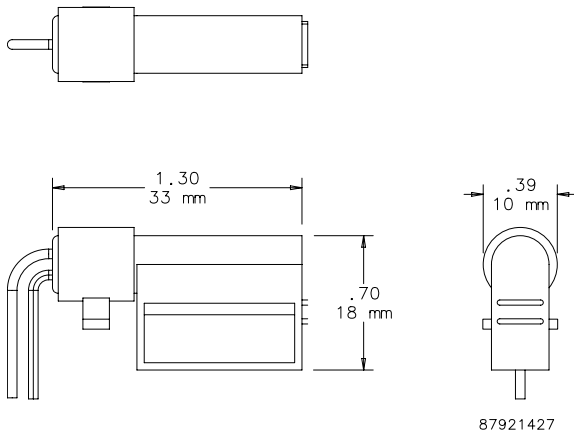
## Standard Sizes Filter and Fan Airflow Monitor

| Catalog Number   | Dimensions         |                | Description   | Operating/Storage Temperature |           |
|------------------|--------------------|----------------|---|-------------------------------|-----------|
|                  | in.                | mm             |   | °F                            | °C        |
| <b>AAFMCNC</b>   | 1.34 x 0.71 x 0.31 | 34 x 18 x 8    | Airflow Monitor Normally Closed                         | -4.0 to 122                   | -20 to 50 |
| <b>AAFMI20NO</b> | 4.72 x 4.72 x 0.39 | 120 x 120 x 10 | Airflow Monitor with 120mm (4 in.) Grille Normally Open | -4.0 to 176                   | -20 to 80 |

*NOTE: Maximum Voltage and switching current must not exceed 10 watts. The resulting voltage and current peaks of inductive or capacitive loads must be restricted by a contact protection circuit.*



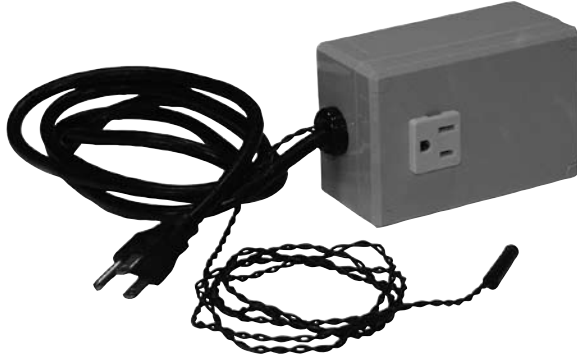
# Filter and Fan Airflow Monitor



|           | Flap Position |           | Contact    |           |
|-----------|---------------|-----------|------------|-----------|
|           | ≤ 8.2 ft/s    | >8.2 ft/s | ≤ 8.2 ft/s | >8.2 ft/s |
| AAFMCNC   | <br>Closed    | <br>Open  |            |           |
| AAFM12ON0 | <br>Closed    | <br>Open  |            |           |

87921540

| Description   | Recommended use   |
|---|---|
| NC - Normally Closed<br>Contact opens when airflow > 8.2 ft./sec. | Use to turn an alarm or signaling device ON to indicate loss of air flow (≤ 8.2 ft./sec.) |
| NO - Normally Open<br>contact closes when air flow > 8.2 ft./sec. | Use to turn a signaling device ON to indicate sufficient airflow (> 8.2 ft./sec.)         |



## Application

These Hoffman Fan Speed Controls provide a means to optimize airflow in a cabinet or rack, balancing air volume requirements with noise level and power use. The AFANTSC Panel Mount Fan Speed Control adjusts fan speed automatically based on remote temperature sensor inputs. The AI9FANSC 19 in. Rack Mount Fan Speed Control allows manual control over fan speed. Both units are designed to work with Hoffman 4-, 6-, and 10-in. Compact Cooling Fans and with 19 in. fan trays, as well as door- and top-mount fan trays. These fan speed controls are ideal for offices, classrooms, and other acoustic noise-sensitive areas.

## Features

### AFANTSC Panel Mount Fan Speed Control

- Automatically adjusts fan speed depending on remote temperature sensor input
- Temperature sensitivity is field adjustable; preset at 35°C (95°F)
- Idle speed and temperature slope are field adjustable
- Push-to-reset thermal circuit breaker inside control housing
- Compact polycarbonate control housing can be mounted in any position
- NEMA 5-15R outlet provides power to fan
- Six ft (1.83m) power cord plugs into standard 120V, 50 or 60 Hz outlet
- Remote probe with 10 ft (3.05m) lead mounts in airflow
- Mounting brackets included

### AI9FANSC 19 In. Rack Mount Fan Speed Control

- Continuously variable fan speed control knob with minimum speed adjustment
- Uses 1 RU rack space
- Steel construction
- Two NEMA 5-15R outlets provide power to fan
- Six ft (1.83m) power cord plugs into standard 120V 60 Hz outlet

## Finish

AFANTSC: Light gray polycarbonate control housing

AI9FANSC: RAL 9005 black polyester powder paint

## Industry Standards

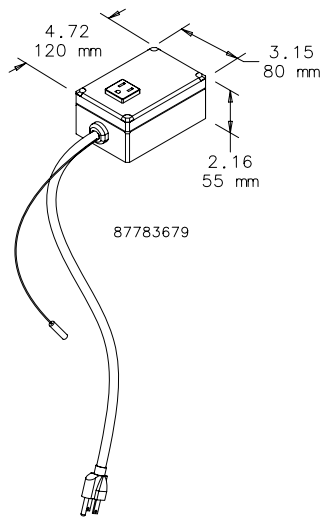
(both controls)  
UL 508A, File No. E249700  
cUL C22.2 No. 14, File No. E249700

# DataCom Fan Speed Controls

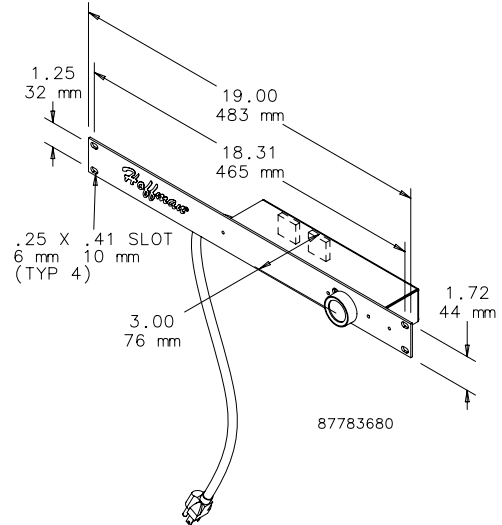
## Standard Sizes DataCom Fan Speed Controls

| Catalog Number  | Description                         | Application   | Voltage and Frequency | Current Draw | Temperature Settings (°C) | Temperature Settings (°F) |
|-----------------|-------------------------------------|---|-----------------------|--------------|---------------------------|---------------------------|
| <b>AFANTSC</b>  | Panel Mount Fan Speed Control       | Fan speed controlled automatically with remote temperature sensor | 120V, 50/60 Hz        | 2A max .     | 30, 35, 40, 45            | 86, 95, 104, 113          |
| <b>A19FANSC</b> | 19 in. Rack Mount Fan Speed Control | Fan speed adjusted manually                                       | 120V, 60 Hz           | 4A max .     | Continuously variable     | Continuously variable     |

Panel Mount Fan Speed Control



19 inch Rack Mount Fan Speed Control





### Application

Fan trays enhance natural convection airflow within the cabinet when installed with other 19-in. rack mount equipment. These trays mount directly to 19-in. rack mounts and occupy one rack unit (1.75 in.) of rack height. They are made of steel with an RAL 9005 black lightly textured polyester powder paint finish. Order rack mounting hardware separately.

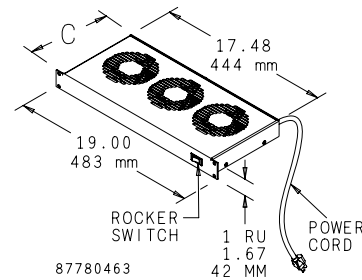
### Construction

- Fan trays available with either three or six 4-in. fans
- Includes 6 ft (1.83m) power cord with NEMA 5-15P plug
- Power cord plugs into standard 115 VAC outlet
- Lighted rocker switch provides on-off control and indicates when fans are on

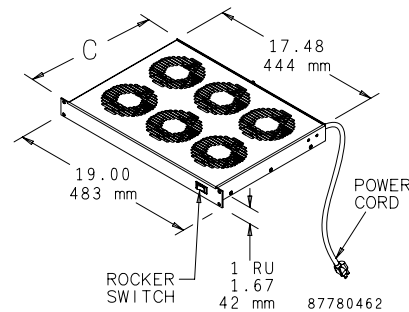
### Finish

RAL 9005 black lightly-textured polyester powder paint

### 19 Inch Rack Mount Fan Tray with 3 Fans



### 19 Inch Rack Mount Fan Tray with 6 Fans



### Standard Sizes 19 Inch Rack Mount Fan Tray

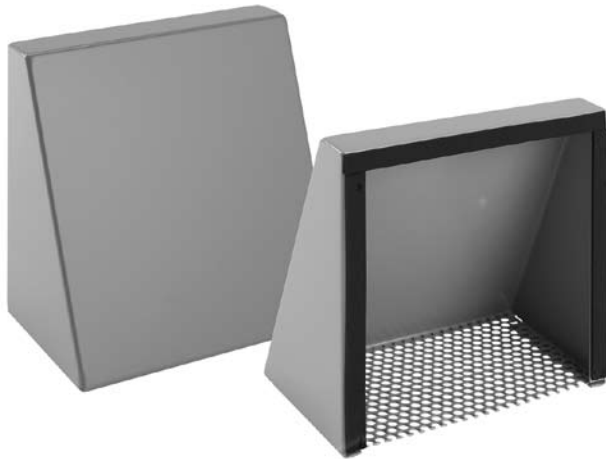
| Catalog Number | Number of Fans | Power (watts) | Max Airflow <sup>a</sup> (cfm) | C (in.) | C (mm) |
|----------------|----------------|---------------|--------------------------------|---------|--------|
| A19FT3B        | 3              | 45            | 253                            | 8.10    | 206    |
| A19FT6B        | 6              | 90            | 506                            | 12.96   | 329    |

### Technical Performance per 4 in. Fan

| Operating Voltage (VAC) | Operating Frequency (Hz) | Nominal Airflow Capacity <sup>a</sup> (CFM) | Noise Level (dB) | Max. Static Pressure (in. WC) | Max. Operating Pressure (°F) | Max. Operating Pressure (°C) | Power Consumption (W) |
|-------------------------|--------------------------|---|------------------|-------------------------------|------------------------------|------------------------------|-----------------------|
| 115                     | 60                       | 102   | 41               | 0.27                          | 158                          | 70                           | 15                    |

<sup>a</sup> Airflow rating shown applies to fans before installation in fan tray.

# Type 3R Fan Shroud Kit



## Application

Fan shroud kits are available for outdoor enclosure applications requiring Type 3R protection from falling rain, sleet, and snow. Fan shroud kits include two fan shrouds, gasketing, and mounting hardware. These fan shrouds can be used over any opening that fits the shroud size.

## Features

- Shrouds are easily installed over appropriately-sized openings using the supplied hardware and gasket
- Two fan shrouds per package to manage intake and exhaust ventilation

## Construction

- 16 gauge mild steel or Type 304 stainless steel
- Perforated ventilation screen
- Pressure-sensitive adhesive-backed gasket and mounting hardware

## Finish

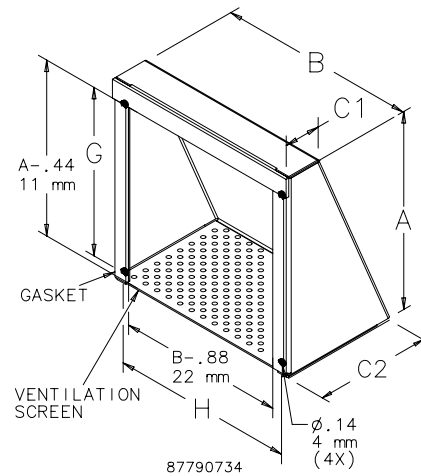
ANSI 61 gray polyester powder coating over mild steel; smooth #4 brushed finish on stainless steel.

## Industry Standards

Maintains UL/cUL Type 3R rating when properly installed on UL/cUL Type 3R enclosure.

UL 508A Listed, File No. E61997: Type 3R  
cUL CSA C22.2 No. 94, File No. E61997: Type 3R  
NEMA/EEMAC Type 3R  
IEC 60529, IP22

| Catalog Number | Compact Cooling (muffin) Fans |       |        | Cooling and Exhaust Fan Packages |       | Filter Fan Packages |       |       |
|----------------|-------------------------------|-------|--------|----------------------------------|-------|---------------------|-------|-------|
|                | 4 in.                         | 6 in. | 10 in. | TFP4_                            | TFP6_ | SF05_               | SF09_ | SF10_ |
| T4S3R          | •                             |       |        |                                  |       |                     |       |       |
| T6S3R          | •                             | •     |        |                                  |       | •                   |       |       |
| T10S3R         | •                             | •     | •      | •                                | •     | •                   | •     | •     |
| T4S3RSS        | •                             |       |        |                                  |       |                     |       |       |
| T6S3RSS        | •                             | •     |        |                                  |       | •                   |       |       |
| T10S3RSS       | •                             | •     | •      | •                                | •     | •                   | •     | •     |



## Standard Sizes Type 3R Fan Shroud Kit

| Catalog Number | Material        | A (in.) | A (mm) | B (in.) | B (mm) | C1 (in.) | C1 (mm) | C2 (in.) | C2 (mm) | G (in.) | G (mm) | H (in.) | H (mm) |
|----------------|-----------------|---------|--------|---------|--------|----------|---------|----------|---------|---------|--------|---------|--------|
| T4S3R          | Steel           | 6.00    | 152    | 6.00    | 152    | 1.44     | 37      | 4.69     | 119     | 4.69    | 119    | 5.25    | 133    |
| T6S3R          | Steel           | 8.00    | 203    | 8.00    | 203    | 1.44     | 37      | 4.69     | 119     | 6.69    | 170    | 7.25    | 184    |
| T10S3R         | Steel           | 12.00   | 305    | 12.00   | 305    | 1.44     | 37      | 4.71     | 120     | 10.69   | 272    | 11.25   | 286    |
| T4S3RSS        | Stainless Steel | 6.00    | 152    | 6.00    | 152    | 1.44     | 37      | 4.69     | 119     | 4.69    | 119    | 5.25    | 113    |
| T6S3RSS        | Stainless Steel | 8.00    | 203    | 8.00    | 203    | 1.44     | 37      | 4.69     | 119     | 6.69    | 170    | 7.25    | 184    |
| T10S3RSS       | Stainless Steel | 12.00   | 305    | 12.00   | 305    | 1.44     | 37      | 4.71     | 120     | 10.69   | 272    | 11.25   | 286    |

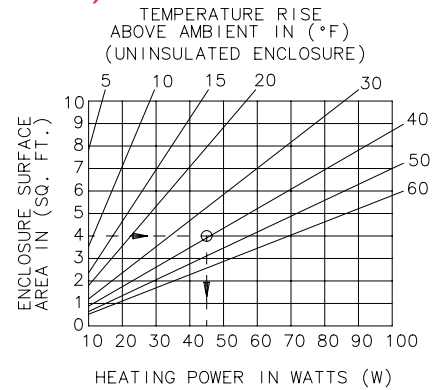
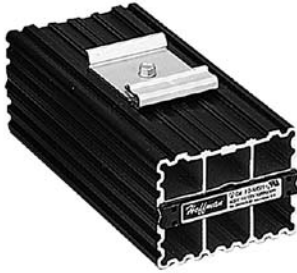
# Heaters

## 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)



87541410

#### Step 1:

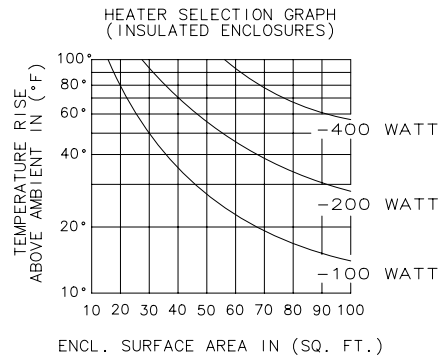
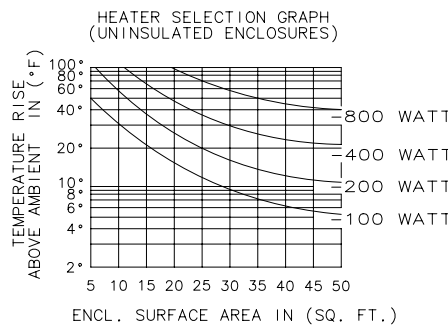
Plot your application using the graph above.

- Find surface area (4 ft.<sup>2</sup>) on the vertical scale
- Draw a horizontal line across to the intersection point with the diagonal line representing  $\Delta T = 40^\circ\text{F}$
- 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 DAH30I 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)



87793520

#### Example:

Which electric heater would most efficiently maintain a 60°F temperature in an insulated 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.

$$\text{Area (ft.}^2\text{)} = 2[(A \times B) + (A \times C) + B \times C] \div 144$$

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

In our example,

$$\text{Area} = 2[(24 \times 24) + (24 \times 10) + (24 \times 10)] \div 144$$

#### 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 percent.

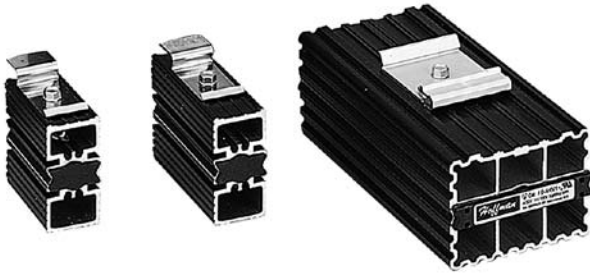
#### Step 3:

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



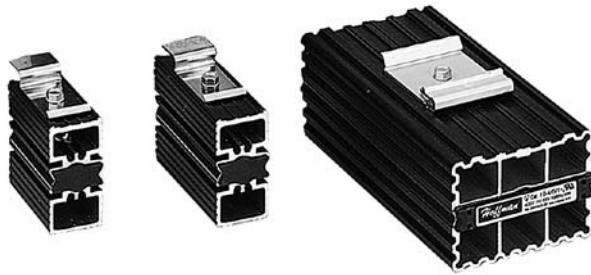
| Catalog Number | Watts |
|----------------|-------|
| DAH101         | 10    |
| DAH301         | 30    |
| DAH601         | 60    |

### Electric Heaters



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

# 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

## 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 thermostat can be installed.

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

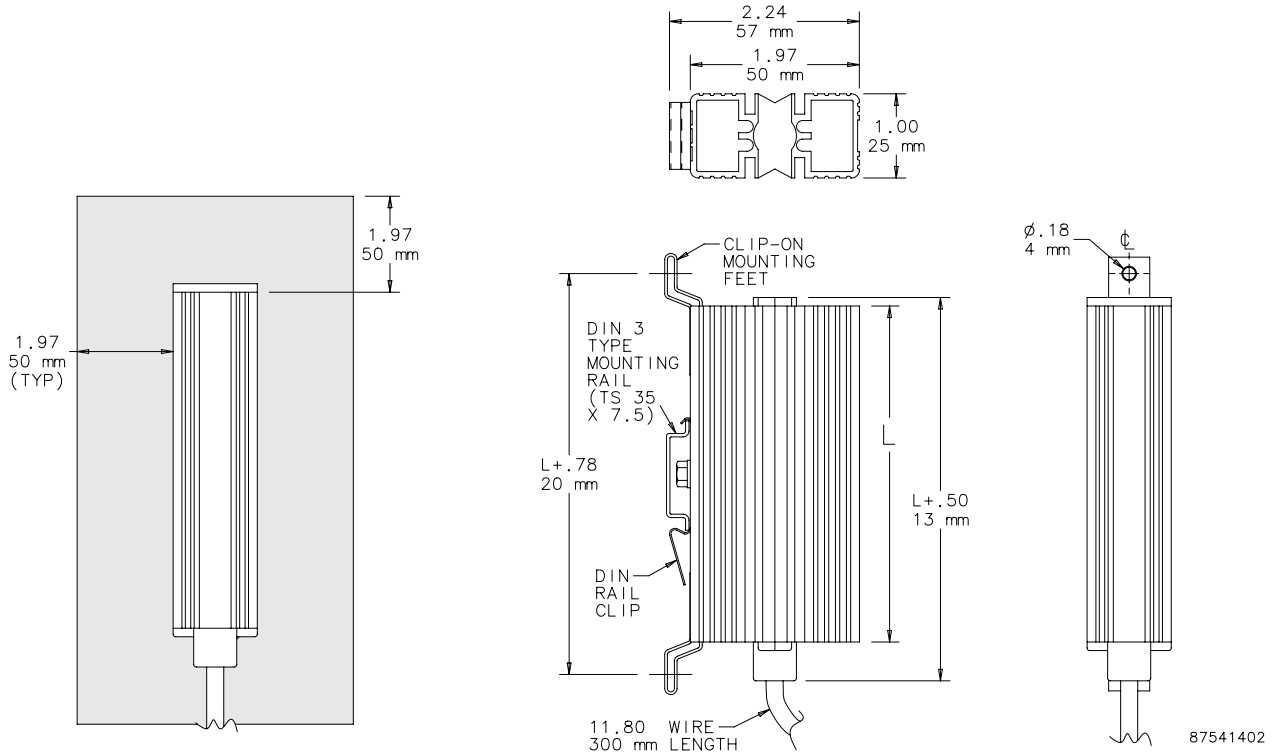
## Standard Sizes Semiconductor Control Panel Heaters

| Catalog Number | Watts | Voltage       | Amps Starting Current | L (in.) | L (mm) | Weight (lbs.) | Weight (kg) |
|----------------|-------|---------------|-----------------------|---------|--------|---------------|-------------|
| DAH101         | 10    | AC/DC 110/120 | .8                    | 1.97    | 50     | .45           | .20         |
| DAH301         | 30    | AC/DC 110/120 | 1.2                   | 3.93    | 100    | .66           | .30         |
| DAH601         | 60    | AC/DC 110/120 | 2.5                   | 5.5     | 140    | 1.10          | .50         |

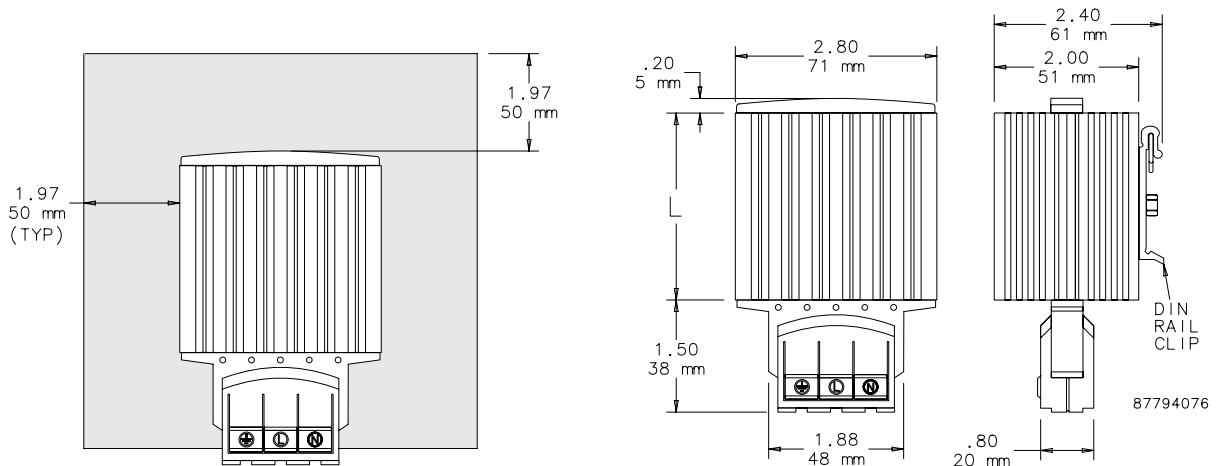


# Semiconductor Control Panel Heaters

## Dimensions and Clearance Range for DAH101 and DAH301 Drawing



## Dimensions and Clearance Range for DAH601 Drawing



**Thermal  
Management**

# 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 x 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. 42186  
CE

## Standard Sizes Electric Heaters

| Catalog Number | Watts | Voltage | Hz    | Amps | Weight (lb.) | Weight (kg) |
|----------------|-------|---------|-------|------|--------------|-------------|
| DAH1001A       | 100   | 115     | 50/60 | 0.98 | 4.00         | 181         |
| DAH1002A       | 100   | 230     | 50/60 | 0.49 | 4.00         | 181         |
| DAH2001A       | 200   | 115     | 50/60 | 1.89 | 4.00         | 181         |
| DAH2002A       | 200   | 230     | 50/60 | 0.95 | 4.00         | 181         |
| 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        |

## 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.**

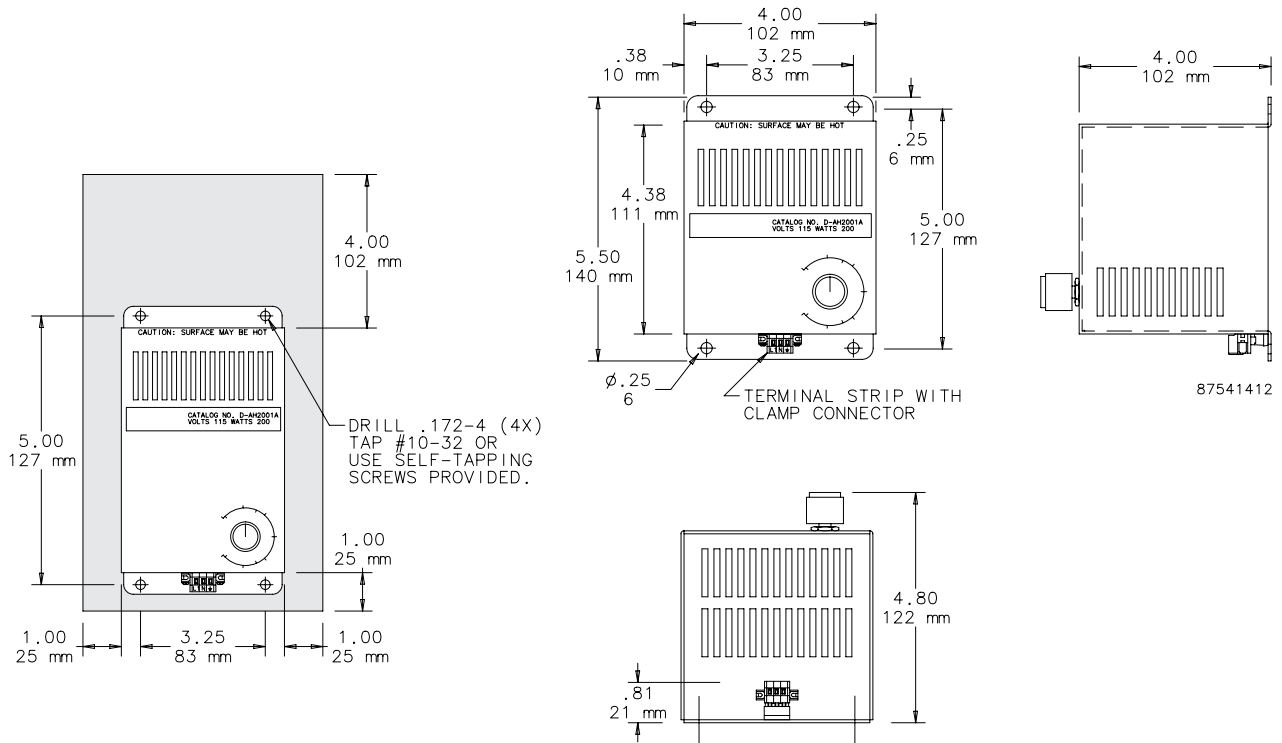
Hoffman electric heaters should be centered as low as possible on an interior enclosure panel. This permits the unit to heat the cool air located at the bottom of the enclosure. For maximum efficiency and longevity, the heater should be mounted in a vertical position with the terminal block to the bottom 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. Although enclosure panels are preferable, heaters may be installed on any flat sheet metal surface.

### **DO NOT INSTALL HEATERS ON WOOD PANELS.**

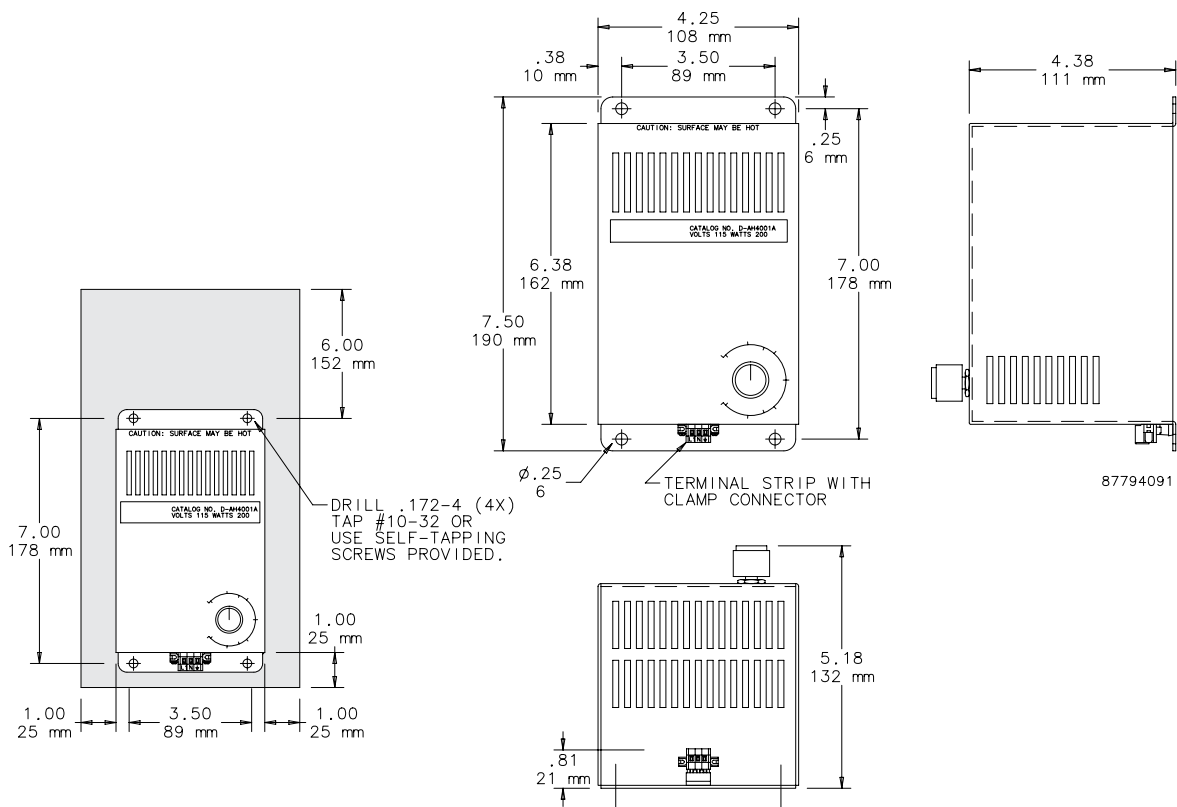
Heat sensitive components should not be placed near the heater discharge area since this air can be quite warm. The clearance range defines the space that must be kept free of these components for proper and safe operation of the heater.

# Electric Heaters

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



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



Thermal  
Management

# Electronic Hygrotherm

Bulletin  
**D85**



## Application

Senses ambient temperature and relative air humidity and turns on or off a connected device if temperature is below or humidity is above the set point. Integrated LED in each adjustment knob indicates active function.

## Features

- Temperature (32°-140°F) and humidity (50%-90% RH) adjustment
- High switching capacity
- Optical function displays (LED) in each control
- Long service life (100,000 cycles, NO) (50,000 cycles, NC))
- Mounting clip for 35mm DIN rail
- Change-over contact (relay)
- Connection: 5-pole terminal for AWG 14 max. (2.5mm<sup>2</sup>)
- Plastic housing UL94V-0
- Vertical mounting
- Max. switching capacity:
  - 120 VAC 8A (Resistive Load)
  - 240 VAC 8A (Resistive Load)
  - 120 VAC 3A (Inductive Load)
  - 240 VAC 3A (Inductive Load)
  - 24 VDC 4A

## Finish

Light gray plastic, UL94V-0

## Industry Standards

CE  
cURus File No. EI64102

## Standard Sizes Electronic Hygrotherm

| Catalog Number | A x B x C          |              | Hysteresis                          | Humidity range (adjustable) | Operating Temperature (adjustable) |         | Storage Temperature |           |
|----------------|--------------------|--------------|-------------------------------------|-----------------------------|------------------------------------|---------|---------------------|-----------|
|                | in.                | mm           |                                     |                             | °F                                 | °C      | °F                  | °C        |
| ATEMHUM        | 3.03 x 2.36 x 1.69 | 77 x 60 x 43 | ~ 3.6°F (2K) ± 1.8°F (1K) tolerance | 50-90% RH                   | 32 to 140                          | 0 to 60 | -4 to 176           | -20 to 80 |

# Electronic Hygrotherm

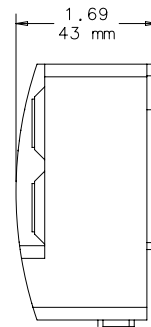
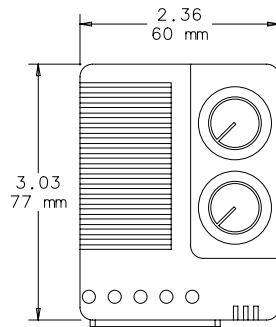
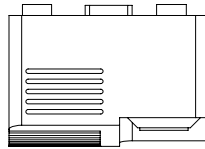
**Input:**

Contacts 1 and 2: Supply voltage 120 VAC or 230 VAC

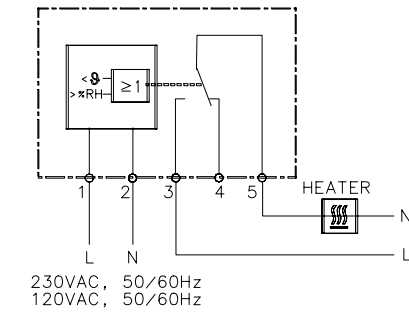
**Relay Output:**

Contacts 3 and 5 and contacts 4 and 5 (see table)

| Contacts | Close at...                       | Open at...                        | Use for                                 |
|----------|-----------------------------------|-----------------------------------|---|
| 3 and 5  | humidity rise or temperature drop | humidity drop or temperature rise | heaters, dehumidifiers, low-temp alarms |
| 4 and 5  | humidity drop or temperature rise | humidity rise or temperature drop | cooling, humidifiers, high-temp alarms  |

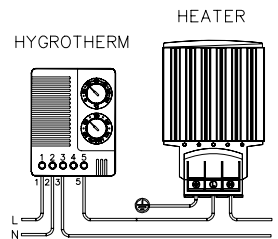


87921429



CONNECTION DIAGRAM

87921468



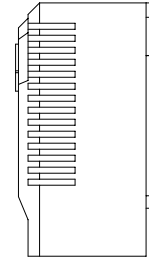
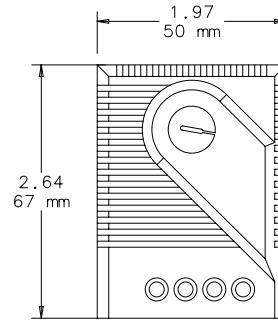
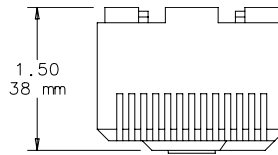
EXAMPLE OF CONNECTION

87921469

**Thermal Management**

# Mechanical Hygrostat

**Bulletin  
D85**



879214.30

## Application

Designed to control relative air humidity inside enclosures. When connected to an enclosure heater (dehumidifier), it will turn on the heater at the set humidity level to raise the dew point. Prevents damage and malfunction of electronic components caused by condensation and corrosion. Can also be used to control cooling fans, warning lights, or other devices.

*NOTE: The critical relative humidity (RH) for most components is 65 percent. Above 65 percent RH, condensation can cause malfunction of electronic equipment.*

## Features

- Adjustable relative humidity range
- High switching capacity
- Long service life (50,000 cycles)
- Maximum permissible air velocity of 50 ft./sec. (15m/s)
- Maximum switching voltage = 250 VAC  
*NOTE: 250 V should be switched only in a non-condensing environment*
- Change-over contact
- Contact resistance < 10mΩ
- Connection: 3-pole terminal, for AWG 14 max. (2.5mm<sup>2</sup>)
- Mounting clip for 35mm DIN rail

## Finish

Light gray plastic, UL94V-0

## Industry Standards

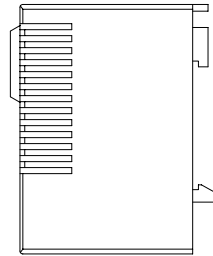
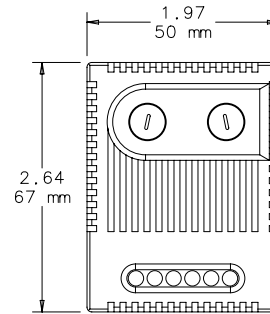
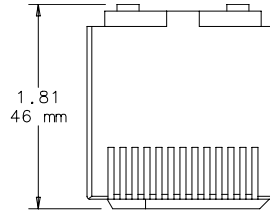
CE

## Standard Sizes Mechanical Hygrostat

| Catalog Number | A x B x C          |              | Switching Capacity |   | Operating Temperature (adjustable) |         | Storage Temperature |           |
|----------------|--------------------|--------------|--------------------|---|------------------------------------|---------|---------------------|-----------|
|                | in.                | mm           | Minimum            | Maximum   | °F                                 | °C      | °F                  | °C        |
| AMHUM          | 2.64 x 1.97 x 1.50 | 67 x 50 x 38 | 100mA @ AC/DC 20 V | 5A @ AC 230 V (resistive load)<br>0.2A @ AC 230 V (inductive load at cos Ω = 0.8)<br>DC 20W | 32 to 140                          | 0 to 60 | -4 to 176           | -20 to 80 |

# Dual Thermostat

**Bulletin  
D85**



87921428

## Application

Houses two separate thermostats, allowing independent control of heating and cooling of equipment. Both thermostats offer a wide adjustment range and are color coded for easy function recognition.

## Features

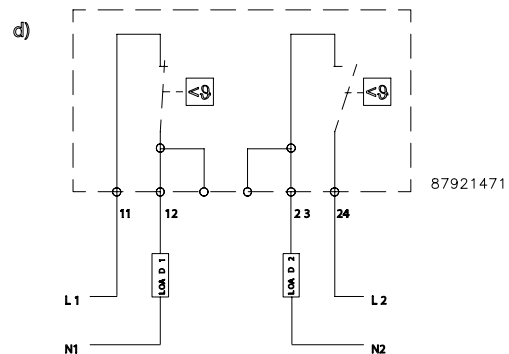
- Two thermostats; one normally closed (NC), red, and one normally open (NO), blue, in one casing
- Wide adjustable temperature range (32°-140°F)
- Wiring terminal easily accessible
- Thermostatic bimetallic sensor element
- Connection: 4-pole terminal for AWG 14 max. (2.5mm<sup>2</sup>)
- Mounting clip for 35mm DIN rail

## Finish

Light gray plastic, UL94V-0

## Industry Standards

CE  
cURus File No. EI64102  
CSA File No. 215952  
UL File No. EI64102



87921471

## Standard Sizes Dual Thermostat

| Catalog Number | A x B x C          |              | Switching Capacity  | Setting Range   |               |
|----------------|--------------------|--------------|---|-----------------|---------------|
|                | in.                | mm           |   | Normally Closed | Normally Open |
| ADLTEMP        | 2.64 x 1.97 x 1.81 | 67 x 50 x 46 | NC: 10A resistive/2A inductive @250 VAC<br>NO: 5A resistive/2A inductive @250 VAC<br>DC 30W | 32-140 °F       | 32-140 °F     |

# Temperature Control Switches

**Bulletin  
D85**

## Temperature Control Switches (Thermostats)



### Application

These easy-to-install thermostats are designed to regulate and monitor air temperature in enclosures that are set up to operate with heaters, fans, filter ventilators, heat exchangers, and/or signal transmitters. Thermostat ATEMNC is specifically designed for use with heaters (contacts open on temperature rise), while thermostat ATEMNO is designed to control fans, filter ventilators, or for switching signal transmitters in the event of overheating (contacts close on temperature rise). Both thermostats have an adjustable set point range of 30°F to 140°F. An additional label is provided to convert set point range to degrees Celsius. A preset label is also provided to cover the set point range label after the thermostat is put at desired temperature.

When the enclosure reaches the pre-determined set point, temperature contacts in the thermostat are activated and the fan or heater begins to operate. Thermostats prolong the life expectancy of heaters and fans by curtailing their operating hours and also increase the working efficiency of electrical components by exposing them to fewer contaminants from the surrounding environment. Connections consist of tubular screw terminals for AWG 14 (0.04 sq. in.). Provision for both panel mounting and DIN rail mounting. Housing is plastic.

### Features

- Labels included:
  - Additional label for conversion to Celsius scale
  - Blank label to cover set point range label when adjustment after initial setting is not desired

### Construction

- Bimetal temperature sensor
- Plastic housing
- Connections consist of tubular screw terminals for AWG 14 (0.04 sq. in.)
- Provision for both panel mounting and DIN rail mounting

### Finish

Molded Plastic housing is black

### Industry Standards

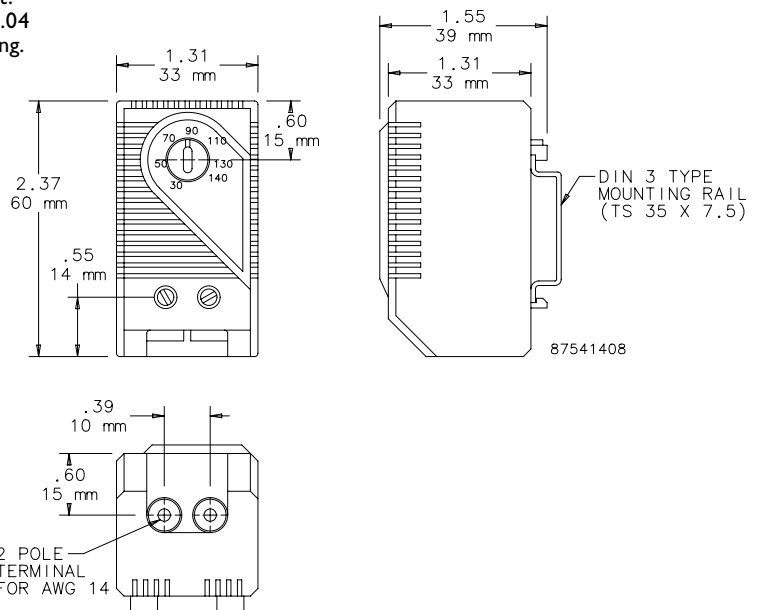
UL94-VO  
Protection rating IEC IP30  
UL/cUL Component Recognized, File Number E164102  
CSA Certified, File Number 215952  
CE

## Temperature Control Switches (Thermostats)

| Catalog Number | Contact Type                       |
|----------------|------------------------------------|
| ATEMNC         | NC (normally closed), quick acting |
| ATEMNO         | NO (normally open), quick acting   |

### Load Rating

| Amp | Volts      | Contact Type |
|-----|------------|--------------|
| 15  | 120 AC     | Resistive    |
| 16  | 250 AC     | Resistive    |
| 1   | 120-250 AC | Inductive    |
| 10  | 12-24 DC   | Resistive    |
| 1   | 12-24 DC   | Inductive    |





# Industrial Corrosion Inhibitors



## Industrial Corrosion Inhibitors

Hoffman corrosion inhibitors protect

- Interior components of electrical enclosures, boxes, consoles, and wireways
- Interior components of electronic enclosures
- Electrical and electronic equipment and controls
- Parts and components that are packaged in crates during shipping and storage
- Switch gear and relay cabinets
- Interiors of pipes, conduits, and fuse boxes
- Process control computers, instruments, and recording devices
- Tool chest interiors and contents
- Equipment stored at construction sites

## Chief Advantages

- Protects against salt and high humidity
- Eliminates the need of oiling, plating, or dipping metal
- Puts protected equipment to use immediately without degreasing or coating removal
- Provides durable protection for up to 12 months

## How They Work

Each inhibitor contains a special chemical combination that vaporizes and condenses on all surfaces in an enclosed area. Vapors will redeposit as needed in the event of condensation of moisture on surfaces. These vapors reach every part of an enclosure, protecting all interior components. Spraying, wiping, or greasing are not required. This eliminates pre-coating, special wraps, and drying agents. Protection is effective even in salt-water atmospheres. The AHCI15E and AHCI10E emitters have additional red-metal inhibitors for further protection. Enclosures containing corrosion inhibitors must be reasonably sealed.

| Metal               | Protected by Chemical                          | Unprotected by Chemical                 |
|---------------------|--|---|
| Aluminum            | Marked reduction of surface attack; no pitting | Severe surface attack; tarnish; pitting |
| Brass <sup>a</sup>  | Decreased tarnish; very minor surface attack   | Surface discoloration; pitting          |
| Steel, Iron         | No change                                      | Severe corrosion                        |
| Copper <sup>a</sup> | Slight staining                                | Heavy corrosive attack                  |
| Zinc Plate          | Slight discoloration                           | Severe corrosion                        |
| Tin Plate           | Slight discoloration                           | Moderate corrosive attack               |

<sup>a</sup>AHCI15E and AHCI10E emitters are recommended for these materials

## Life Expectancy and Usage

The normal useful life-span of Hoffman corrosion inhibitors is in excess of one year. However, inhibitor life expectancy is shortened by approximately 25% when exposed to temperatures above 104° F (40°C). This product is not recommended for use where temperature exceeds 199°F. Ventilated enclosures or enclosures not sealed properly, as well as frequent door openings, also shorten the product life. Additional inhibitors should be used if these conditions exist. Since Hoffman corrosion inhibitors are vapor-phase protective, all surfaces to be protected should be accessible to the vapors. The maximum distance the vapors can travel is approximately 1.50 feet (.46 meters). Protection of long narrow enclosures can be achieved with tape or multiple inhibitors.

## Storage and Handling

Each Hoffman corrosion inhibitor is individually packaged in a resealable bag for maximum effectiveness at the time of usage. Corrosion inhibitors should be stored at temperatures not exceeding 120°F (45 C ). Recommended shelf life under normal conditions is one year. Hoffman corrosion inhibitors are not returnable. When determining the proper corrosion inhibitor for your application, assume the enclosure volume to be protected is greater than calculated if (1) cabinet doors are opened frequently, (2) cabinet is located in an extremely corrosive area, and/or (3) cabinet length divided by depth is greater than four.

**AHCI1DV** Foam device protects one cubic foot (28 liters) of enclosure volume for approximately one year.

Size: .25 in. x 1.25 in. x 3.00 ft. (6mm x 32mm x 76mm)

**AHCI60R** Tape protects sixty cubic feet of enclosure volume per roll. Use approximately 2.50 in. (6.3cm) of tape per cubic foot (28 liters) of enclosure volume to be protected. Each roll of tape is packaged individually in a resealable bag.

Size: .25 in. x .75 in. x 12.00 ft. (6mm x 19mm x 3.6m)

**AHCI240R** Tape protects 240 cubic feet of enclosure volume per roll. Use approximately 1.00 in. (2.5cm) of tape per cubic foot (28 liters) of enclosure volume to be protected. Each roll of tape is packaged individually in a resealable bag.

Size: .25 in. x 2.00 in. x 20.00 ft. (6mm x 51mm x 6.1m)

**AHCI15E** Emitter protects five cubic feet (142 liters) of enclosure volume for approximately one year. Emitters contain additional red metal (non-ferrous) inhibitors.

Size: 2.50 in. (diameter) x 1.50 in. (high) (63mm x 38mm)

**AHCI10E** Emitter protects ten cubic feet (283 liters) of enclosure volume for approximately one year. Emitters contain additional red metal (non-ferrous) inhibitors.

Size: 2.50 in. (diameter) x 2.00 in. (high) (63mm x 51mm)

**AHCI238S** Spray is a non-conductive, nonflammable, vapor phase film and is non-toxic. It has essentially neutral pH value. Application provides instant protection against corrosion. Spray is water soluble and can be easily flushed away with water if desired. This product should be kept from freezing, and has a shelf life of 2+ years in normal warehouse conditions.

| Catalog Number  | Enclosure Volume Protected         |
|-----------------|------------------------------------|
| <b>AHCI1DV</b>  | 1 cu. ft. (28.32 liters)           |
| <b>AHCI15E</b>  | 5 cu. ft. (141.6 liters)           |
| <b>AHCI10E</b>  | 10 cu. ft. (283.2 liters)          |
| <b>AHCI60R</b>  | 60 cu. ft. per roll (1699 liters)  |
| <b>AHCI240R</b> | 240 cu. ft. per roll (6797 liters) |
| <b>AHCI238S</b> | Corrosion Inhibitor Spray          |