### Air Conditioners

**Climate Control**

B-Line Systems selected Kooltronic as its air conditioner supplier because the Kooltronic line offers the most extensive selection of cooling capacities, sizes, mounting configurations and power inputs available. Capacities range from 1,000 to 22,000 BTU/H in vertical panel-mounted and horizontal models. Most models use centrifugal blower-driven air systems for maximum penetration. All are engineered for full-capacity performance at ambient temperatures up to 125˚F. Additionally, custom air conditioners can be designed and manufactured to meet your unique specifications.

Closed-loop air conditioners seal enclosures, cool, dehumidify and recirculate the clean air through the electronics to provide protection from high temperatures or airborne contaminants. The TrimLine Air Conditioner line offers a narrow profile complemented by the innovative M/TAB (Mounting Template and Assembly Bracket) mounting system.

All air conditioners feature a Control (hot gas) Bypass Valve, causing “cycle-free” compressor operation for greater reliability, longer life for the compressor and control system and more stable equipment temperature. The continuously operating compressor and non-electric control system provide thermostat-free automatic temperature regulation over a broad range of operating conditions and eliminate the transients produced during compressor start-up. Since many applications require thermostatic control to prevent over cooling, a Low Temperature Control has been made standard on most models and is available on all models.

Each air conditioner is engineered for performance and built for reliability. Most units are UL and cUL listed or recognized and maintain compliance with Type 12, Type 4 or Type 4X enclosure rating as specified.

---

### General Specifications for all Air Conditioners

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Closed-Loop Cooling:</strong></td>
<td>The enclosure interior airflow system is isolated from the ambient airflow or waterflow system. No ambient air can invade the cool, dehumidified sensitive component compartment.</td>
</tr>
<tr>
<td><strong>Ball-Bearing Motors:</strong></td>
<td>All blower motors are UL/CSA recognized and include automatic-reset thermal overload protection and double-sealed or double-shielded precision ball bearings. Special permanent lubricants perform over a broad temperature range: -20˚F(-29˚C) to 250˚F (121˚C).</td>
</tr>
<tr>
<td><strong>Rugged Construction:</strong></td>
<td>Precision-engineered heavy gauge steel construction of all cabinets and blowers ensures air conditioners will stand up under tough applications.</td>
</tr>
<tr>
<td><strong>Baked Epoxy Finish:</strong></td>
<td>Durable, baked-on gray epoxy finish is standard. Other finishes are available.</td>
</tr>
<tr>
<td><strong>Power:</strong></td>
<td>Available in 115 or 230 VAC, 50Hz, 60 Hz or 50/60Hz switchable.</td>
</tr>
<tr>
<td><strong>Refrigerants:</strong></td>
<td>CFC-Free R134a is used where compressors are available. All other units contain low ozone depleting R22. The model number reflects the refrigerant. A 4 between the A and C denotes R134a whereas a 3 denotes R22.</td>
</tr>
<tr>
<td><strong>Permanent Filters:</strong></td>
<td>Multi-layer grid of sturdy, corrugated aluminum in an aluminum frame. May be reused after washing off accumulations and applying with adhesive spray. Filters are not required on water-cooled models.</td>
</tr>
<tr>
<td><strong>Condensate Disposal:</strong></td>
<td>Condensate drain fitting and hose are included. Built-in Condensate Evaporators are standard on Trim-Line models and some standard models, see series sections.</td>
</tr>
<tr>
<td><strong>Power Cord:</strong></td>
<td>All models are supplied with six foot type SJT three-wire power cords. Air conditioners rated at 16.0 amps or less are supplied with plugs. Air conditioners rated at more than 16.0 amps are supplied without plugs for direct wiring to power source.</td>
</tr>
<tr>
<td><strong>Insulation:</strong></td>
<td>All cold components, lines and the evaporator compartment are insulated with high-performance insulation for maximum efficiency and to prevent condensation.</td>
</tr>
<tr>
<td><strong>Gasketing:</strong></td>
<td>All units are fully gasketed for tight, leakproof installation and maintain compliance with Type 12, Type 4 or Type 4X enclosure rating.</td>
</tr>
<tr>
<td><strong>Quality Assurance:</strong></td>
<td>Refrigeration system components are kept sealed until charged with refrigerant; all brazed joints are thoroughly leak tested; each unit is functionally tested at full rated heat load temperatures before shipment; copy of test results is included with each air conditioner.</td>
</tr>
<tr>
<td><strong>Installation:</strong></td>
<td>Detailed Installation and Operator’s Manual, with drawings, mounting plan and spare parts list is included with each unit.</td>
</tr>
</tbody>
</table>

**Notes:** Data subject to change without notice. Consult factory for special requirements.
Air Conditioner Sizing and Selection
Climate Control

Cooling Electronic Control Cabinets
Most electronic control systems generate a substantial amount of heat during operation. This heat factor is intensified as electronic controls are made more compact, perform more functions and are placed in confined areas. Additional problems are encountered when the electronic process control system is located online in an industrial setting, rather than in a clean computer room. The factory environment can be hostile to the point that performance and effective life of the electronic components are materially reduced or the control system fails completely. Ambient temperature might be excessively high, as that found in a steel mill. Moisture-laden air and airborne particulate matter might be present to adversely affect the electronic components, as in the paper manufacturing industry. Air conditioners are designed to perform reliably under many of these harsh conditions and to provide the cooling and environmental protection required by sensitive electronic production control systems.

Factors Affecting Model Selection
This section is presented as a basic outline or checklist of the various application conditions to be considered when choosing a cooling unit. These are the factors which must be considered when selecting a cooling unit:

Internal Heat Load
This is the heat dissipated by the electronic controls. It is expressed in watts. One WATT equals 3.413 BTU/HR. Thus, to obtain the approximate cooling capacity required to remove a specific heat load, the following formula can be used:

\[ \text{Watts} \times 3.413 = \text{BTU/HR} \]

For example, a heat load of 800 watts, require an air conditioner capable of removing at least 2,730 BTU/HR.

Resistance to Air Flow in the Enclosure
Air flow is measured in cubic feet per minute (CFM). To create an air flow of any desired velocity requires that pressure be produced by the blower. Resistance to this blower-produced air flow is created by obstructions within the cabinet in the air flow path. The resistance itself is called static pressure (SP) and is measured in inches of water column. The effect of significant restrictions in the cabinet air flow path are as follows:

- the obstructions cause static pressure drop, or differential, from the air velocity produced by the blower.
- this reduction in cool air flow will decrease the effective capacity of the cooling unit. Allowance must be made for static pressure.

Heat Load from the Surroundings
Ambient conditions can cause a heat gain in the enclosure. The rated capacity of the cooling unit must be sufficient to handle this heat gain. When evaluating the additional heat load gained from the surroundings there are two possible conditions:

- the cabinet is insulated and well sealed
- the cabinet is not insulated.

Cabinet Insulated - Normally, well-insulated cabinets do not gain sufficient heat from the surroundings to affect the air conditioner operation. BTU/HR ratings for Kooltronic air conditioners have been established at the maximum ambient operating temperature of 125°F. A substantial improvement in heat removal occurs when operating in ambient temperatures below 125°F.

Cabinet Not Insulated - Obviously, this design places more of a burden on the cooling unit. Heat is conducted to the cool side. Thus, high ambient heat will be readily transmitted into the cooler enclosure. To determine the additional capacity required of an air conditioner installed in an uninsulated cabinet, the surface area of the enclosure must be calculated to obtain the total effective heat transfer area. For this calculation, use the surface area of the sides, plus the area of the top and omit the bottom area of the cabinet.

Air movement outside the uninsulated cabinet will increase the heat conducted from the ambient into the enclosure. When there is little or no air circulation outside the cabinet, the layer of air immediately adjacent to the exterior cabinet walls acts as an insulating film. Exterior air movement dissipates this insulating layer of air in proportion to the velocity of the air flow. Substantial ambient air circulation will increase the transmitted heat load imposed on the cooling unit. If the cabinet being cooled is not air tight, high ambient relative humidity will adversely affect the cooling effectiveness of the air conditioner. When humid air infiltrates a poorly sealed enclosure, the air conditioner is required to use up valuable capacity just to condense the moisture from the internal air. Conversely, if the cabinet is well sealed, high ambient relative humidity has very little effect on the rated capacity of the air conditioner.

Notes: Data subject to change without notice. Consult factory for special requirements.
Electrical Enclosures

**Air Conditioners Sizing & Selection**

The proper selection of an air conditioner is determined by the following criteria:

1. Required cooling capacity BTU/HR.
2. Mounting requirements (top, side or internal mounting)
3. Dimensions of air conditioner & enclosure

**To determine air conditioner capacity required:**

1. Determine the internal Watts of heat to be dissipated.
2. Calculate the area of the enclosure which is exposed to the ambient air:
   \[
   \text{Area (ft}^2\text{)} = \frac{2H(W+D)+D\times W}{144}
   \]
3. Determine the temperature differential \(\Delta T (\degree F)\) by subtracting the maximum allowable internal cabinet temperature \(T_i\) from the maximum ambient temperature outside of the enclosure \(T_o\):
   \[T_o - T_i = \Delta T\]
4. \(\text{First: (Watts x 3.413) + \{1.25 x \text{Area ft}^2 \times \Delta T (\degree F)\}} = \text{BTU/HR.}\)

**Air Conditioner Accessories and Options**

**Factory Installed Options**

**Cooling Effect Detector:** A thermostat is mounted inside the cabinet and attached to a sensor in the warm air return. When the air temperature increases to the set point, a signal is sent to a terminal block. User-installed wiring from the terminal block to local and/or remote warning devices (light, bell, siren etc.) can be for normally open or normally closed operation. ††

**Lifting Eyes:** A pair of heavy gauge steel lifting eyes attached to the side panels assist in positioning units. †

**Low Ambient Kit:** Maintains sufficient operating pressures when ambient temperatures drop below 50˚F. Effective to a minimum ambient temperature of 0˚F. ††

**Short Cycle Protector:** Protects the compressor from possible damage due to harmful short cycling after a power interruption, by initiating a 5 or 6 minute OFF period before resumption of normal operation. Generally, air conditioners require a 5 minute OFF period for compressor protection after power interruptions of any type, to prevent short cycling and resultant shortened compressor life. These power interruptions include power failures, opening of access doors, and cases where the thermostat activates the compressor in less than five minutes, due to high heat loads generated during OFF times. Particularly recommended for applications that experience frequent, brief power failures or require frequent opening of interlocked cabinet doors. ††

**Customer Installed Accessories**

**Weather Protection Kit:** For outdoor installations subject to invasion by rain, snow or windblown dirt, special defectors shield the condenser air inlet and outlet ports. Air conditioners or heat exchangers installed outdoors require special exterior paint. †

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**Notation Descriptions:**

† = option available for both Air Conditioners and Heat Exchangers.
†† = option available for Air Conditioners only.

**Notes:** Data subject to change without notice. Consult factory for special requirements.
Air Conditioners
Type 12 Mini Panel-Mounted
Climate Control

Application
Mini Air Conditioners are ideal for low-capacity applications with space limitations. Mounted on any vertical panel of equipment enclosures, they occupy minimal floor space and no cabinet space. Hostile ambient air is sealed from the enclosure air by the closed-loop design and gasketed mounting.

Micro-Mini Air Conditioners are suitable for applications that have low static pressures where fans can provide adequate airflow. Outdoor or corrosive environments require weather protection and/or special internal and external protective features. For extreme ambient temperatures and/or severely contaminated environments, water-cooled air conditioners are available. Custom air conditioners can also be designed and manufactured to meet unique specifications. Contact Cooper B-Line about modification and custom-design capabilities.

Features
- All models UL/cUL Listed
- Tested and approved by UL for use with Type 12 enclosures
- Environmentally preferred CFC-Free R134a refrigerant
- Filters
- Heavy-duty steel with baked powder finish
- UL/CSA ball bearing motors
- Six foot (minimum) SJT-3 wire power cord with plug
- Low temperature control (thermostat) and EMI/RFI suppressor are standard
- Condensate drain fitting and hose

Accessories & Options
- Cooling Effect Detector
- Filter Recoating Adhesive
- Filters for replacements
- Internal corrosion-resistant coatings
- Short Cycle Protector
- Special materials or external finishes
- High capacity Condensate Evaporator Kit
- Special motors, line cords or connectors
- Weather Protection Kit (Integral)
- Stainless Steel or Aluminum Shell

Discount Schedule: C2
Subclass: DT0

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>BTU/H Capacity</th>
<th>95/95 Rating BTU/H</th>
<th>Ambient Temp F (max./min.)</th>
<th>Volts</th>
<th>Hz</th>
<th>Running Amps</th>
<th>Weight (lbs.)</th>
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<tr>
<td>KA4C1.0MML</td>
<td>1000</td>
<td>720</td>
<td>125/50</td>
<td>115/100†</td>
<td>60/50</td>
<td>4.5</td>
<td>40</td>
</tr>
<tr>
<td>K2A4C1.0MML</td>
<td>1000</td>
<td>720</td>
<td>125/50</td>
<td>230/200</td>
<td>60/50</td>
<td>2.3</td>
<td>40</td>
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</table>

Notes: Data subject to change without notice. Consult factory for special requirements. Dimensions are in inches. Millimeters shown are for reference only.
Climate Control Products

Air Conditioners
Type 12 Trimline Air-Cooled Panel-Mounted

Description
Innovations in technology have resulted in much denser electronics packaging and smaller available panel sizes on which to mount air conditioners. The TrimLine Series is the response to these new packaging demands with the Narrow 12" and 15" width panel mount air conditioners. In addition to reducing the width of more traditional air conditioner units, the TrimLine Series includes the Condensate Evaporator, Low Temperature Control (thermostat) and EMI/RFI Suppressor as standard features.

The TrimLine Series consists of compact models in 2,000-2,500 BTU/H capacities, mid-size models, 33" height, up to 4,000 BTU/H capacities and the full-size models at 47" height up to 7,000 BTU/H. Each series of models is designed with a minimum width to take up less exterior cabinet space on the panel or door.

Integral to the TrimLine Series is the M/TAB (Mounting Template and Assembly Bracket) system which makes installing the TrimLine Series a simple and less time-consuming task.

Outdoor or corrosive environments require weather protection and/or special internal and external protective coatings. For extreme ambient temperatures and/or severely contaminated environments, the use of water-cooled air conditioners is recommended.

Features
- All models UL/cUL Listed
- Tested and approved by UL for use with Type 12 enclosures
- UL/CSA ball bearing motor
- Filters
- Heavy duty steel with baked powder finish
- Exclusive M/TAB integral mounting system for quick, easy installation
- Built-in Condensate Evaporator eliminates need for draining normal condensate
- Thermostatic Control provides energy-efficient operation and prevents over-cooling
- EMI/RFI Suppressor minimizes transient line spikes during on/off cycling
- Six foot (minimum) SJT-3 wire power cord with plug
- Environmentally preferred CFC-Free R134a refrigerant

Custom air conditioners can be designed and manufactured to meet unique specifications. Contact B-Line about modification and custom-design capabilities.

Discount Schedule: C2
Subclass: DT0
Air Conditioners
Type 12 Trimline Air-Cooled Panel-Mounted
Climate Control

M/TAB Description
A highlight of the TrimLine Series is a new, revolutionary air conditioner mounting system for cabinets and enclosures. The M/TAB is standard on all TrimLine Air Conditioners. This new integral system functions as a mounting template, pre-installation hanger and final assembly bracket. The M/TAB design simplifies the installation process by eliminating the problem of handling flange-mounted air conditioners. The solution is provided by following these installation steps:
1) Use the M/TAB to drill holes for mounting and bolting to the cabinet
2) Cut out the Supply and Return Air openings
3) Hang the air conditioner on the M/TAB
4) Secure the Air Conditioner to the M/TAB.
The M/TAB also allows for the quick removal and transportation of the air conditioner, separate from the equipment, for servicing or change to a different capacity air conditioner or to a same-size heat exchanger.

Features
- No exposed rails or mounting flanges; aesthetically pleasing while conserving cabinet space
- Ease of installation and one-piece design reduce mounting errors and allows installer to operate self-sufficiently

NP17 Series

<table>
<thead>
<tr>
<th>Technical Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalog Number</td>
</tr>
<tr>
<td>KA4C2.0NP17L</td>
</tr>
<tr>
<td>K2A4C2.0NP17L</td>
</tr>
</tbody>
</table>

Discount Schedule: C2
Subclass: DT0

TrimLine Accessories & Options
- Low Air Detectors
- Cooling Effect Detector
- Filter Recoating Adhesive
- Filters for replacement
- Internal corrosion resistant coatings
- Lifting Eyes
- Low Ambient Kit
- Short Cycle Protector
- Special materials or external finishes
- Special motors, line cords or connectors
- Weather Protection Kit
- High capacity condensate evaporator

Notes: Data subject to change without notice. Consult factory for special requirements. Dimensions are in inches. Millimeters shown are for reference only.
Air Conditioners
Type 12 Trimline Air-Cooled Panel-Mounted
Climate Control

NP33 Series

Technical Data

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>BTU/H Capacity</th>
<th>95/95 Rating BTU/H (max./min.)</th>
<th>Ambient Temp F</th>
<th>Volts</th>
<th>Hz</th>
<th>Running Amps</th>
<th>Weight (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K4C4NP33L</td>
<td>4000</td>
<td>125/50</td>
<td>115/100</td>
<td>60/50</td>
<td>12.8</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>K24C4NP33L</td>
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<td>120/50</td>
<td>230/200</td>
<td>60/50</td>
<td>5.5</td>
<td>90</td>
<td></td>
</tr>
</tbody>
</table>

Notes: Data subject to change without notice. Consult factory for special requirements. Dimensions are in inches. Millimeters shown are for reference only.

Performance
KA4C4NP33L

M/TAB

Thermostat Adjustment Access

(1) Filtered condenser air inlet (ambient air in)
(2) Condenser outlet (warm ambient air out)
(3) Warm air return from enclosure
(4) Cool air outlet to enclosure

Mounting Plan

6" Min. (1.83m) Power Cord

Filter

Optional Condensate Drain Locations

Condensate Drain

Optional Condensate Drain (10mm)

(6) .312 (10mm) Dia. Holes

9.00 (228mm)

19.63 (498mm)

32.88 (835mm)

12.50 (314mm)

12.38 (314mm)

8.00 (203mm)

0.94 (24mm)

10.50 (267mm)

7.69 (195mm)

32.88 (835mm)

0.38 (10mm)

2.75 (70mm)

5.00 (127mm)

Notes: Data subject to change without notice. Consult factory for special requirements. Dimensions are in inches. Millimeters shown are for reference only.
Air Conditioners
Type 12 Trimline Air-Cooled Panel-Mounted (cont.)

NP47 Series

Technical Data

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>BTU/H Capacity</th>
<th>95/95 Rating BTU/H</th>
<th>Ambient Temp F (max./min.)</th>
<th>Volts</th>
<th>Hz</th>
<th>Running Amps</th>
<th>Weight (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KA4C7NP47R</td>
<td>7000</td>
<td>4750</td>
<td>125/50</td>
<td>115/100</td>
<td>60/50</td>
<td>16.5</td>
<td>150</td>
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<tr>
<td>K2A4C7NP47L</td>
<td>7000</td>
<td>4750</td>
<td>125/50</td>
<td>230/200</td>
<td>60/50</td>
<td>8.6</td>
<td>150</td>
</tr>
</tbody>
</table>

Performance
KA4C7NP47R

- Filtered condenser air inlet (ambient air in)
- Condenser outlet (warm ambient air out)
- Warm air return from enclosure
- Cool air outlet to enclosure

Drain

Mounting Plan

Notes: Data subject to change without notice. Consult factory for special requirements. Dimensions are in inches. Millimeters shown are for reference only.
Climate Control Products

Air Conditioners
Horizontal Top-Mounted
Climate Control

Accessories & Options
- Air Deflectors
- Airflow Switch
- Cooling Effect Detector
- Filter Recoating Adhesive
- Filters for replacement
- Internal corrosion resistant coatings
- Lifting Eyes
- Low Ambient Kit
- Short Cycle Protector
- Special materials or external finishes
- Special motors, line cords or connectors
- 50/60 Hz Switchable

Description
Horizontal Top-Mounted Air Conditioners provide a full range of cooling capacities where space or other limitations prevent panel or internal rack mounting.

The low profile HT Compact Series is recommended for lower to moderate demand cooling applications in smaller enclosures.

Outdoor or corrosive environments require weather protection and/or special internal and external protective coatings. For extreme ambient temperatures and/or severely contaminated environments, the use of water-cooled air conditioners is recommended.

Custom air conditioners can be designed and manufactured to meet unique specifications. Contact B-Line about modification and custom-design capabilities.

Features
- Capacities: 4,000 BTU/H
- Filters
- Heavy-duty steel with baked powder finish
- UL/CSA ball bearing motors
- Five foot (minimum) SJT-3 wire power cord with plug
- Built-in Condensate Evaporator
- Complete line of accessories
- EMI/RFI Suppressor
- Environmentally preferred CFC-Free R134a refrigerant

Discount Schedule: C2
Subclass: DT0

Technological Data

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>BTU/H Capacity</th>
<th>95/95 Rating BTU/H</th>
<th>Ambient Temp F (max./min.)</th>
<th>Volts</th>
<th>Hz</th>
<th>Running Amps</th>
<th>Weight (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KA4C4HTL</td>
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<td>85</td>
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<tr>
<td>K2A4C4HTL</td>
<td>4000</td>
<td>2250</td>
<td>120/50</td>
<td>230/200</td>
<td>60/50</td>
<td>5.9</td>
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</table>

Discount Schedule:
Subclass: DT0

Notes: Data subject to change without notice. Consult factory for special requirements. Dimensions are in inches. Millimeters shown are for reference only.

Power Cord
Thermostat
Adjustment
Filter
Drain
Mounting Plan
(1) Filtered condenser air inlet
(ambient air in)
(2) Condenser outlet (warm ambient air out)
(3) Warm air return from enclosure
(4) Cool air outlet to enclosure

Courtesy of Steven Engineering, Inc. - 230 Ryan Way, South San Francisco, CA 94080-5370 - Main Office: (650) 588-9200 - Outside Local Area: (800) 258-9200 - www.stevenengineering.com
# Air Conditioners

## Type 12/3R Advantage Series

### Description

The Advantage Series Indoor/Outdoor Air Conditioners are designed specifically for cooling electrical/electronic enclosures and can be used for both indoor and outdoor applications.

The Advantage Series Air Conditioners offer the greatest choice of sizes, voltages and frequencies, with four cooling capacities ranging from 2,000 to 6,000 BTU/H. The Advantage Series air conditioners are available in four heights ranging from 18 to 37 inches, all utilizing the exclusive M/TAB integral mounting system.

The Advantage Series exemplifies a stylish appearance with rounded edges, no visible hardware and a textured baked powder finish to blend easily with contemporary enclosure designs. Integral weather protection eliminates unsightly weather hoods and the pressure switch regulates the unit’s hermetic system and a patented sealing system maintains both a NEMA 12 and a NEMA 3R interface with the enclosure.

Standard features also include heavy-duty galvanized steel construction, environmentally friendly refrigerants, built-in condensate evaporator, thermostatic low temperature control, EMI/RFI surge suppressor and LED temperature display.

### Features

- All models UL/cUL Recognized
- Approved by UL for use with Type 12 and 3R enclosures
- Environmentally preferred CFC-Free R134a refrigerant
- Filters
- Heavy-duty steel with textured baked powder finish
- UL/CSA ball bearing motors
- Six foot (minimum) SJT-3 wire power cord with plug
- Low temperature control (thermostat) and EMI/RFI Surge Suppressor are standard
- Crankcase heater
- Low ambient kit
- Condensate evaporator kit
- Head pressure control switch
- Digital temperature display

### Accessories & Options for all Panel-Mounted Units

- Cooling Effect Detector
- Internal corrosion resistant coatings
- Short Cycle Protector
- Special motors, line cords or connectors
- Painted Metal Grille
- Stainless Steel and Aluminum Shells
- Short Cycle Protector
- Special Paint Finishes

### Discount Schedule: C2

Subclass: DT0

See page 382 for RP17 & RP28 Series dimensions
See page 383 for RP33 & RP36 Series dimensions

### Technical Data

<table>
<thead>
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<th>Catalog Number</th>
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<th>Volts**</th>
<th>Hz**</th>
<th>Running Amps*</th>
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<td>2200</td>
<td>125 - 0</td>
<td>230/200</td>
<td>60/50</td>
<td>5.5/5.6</td>
<td>86</td>
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<td>3340</td>
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<td>5.8</td>
<td>98</td>
</tr>
<tr>
<td>RP36</td>
<td>KA4C6RP36R</td>
<td>6000</td>
<td>4500</td>
<td>125 - 0</td>
<td>115/100</td>
<td>60/50</td>
<td>19.5/20.0</td>
<td>123</td>
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<td>4500</td>
<td>125 - 0</td>
<td>230/200</td>
<td>60/50</td>
<td>8.2/8.5</td>
<td>123</td>
</tr>
</tbody>
</table>

### Notes:

Data subject to change without notice. Consult factory for special requirements. Dimensions are in inches. Millimeters shown are for reference only.
Climate Control Products

Air Conditioners
Type 12/3R Advantage Series
Climate Control

RP17 Series

(1) Filtered condenser air inlet (ambient air in)
(2) Condenser outlet (warm ambient air out)
(3) Warm air return from enclosure
(4) Cool air outlet to enclosure

RP28 Series

(1) Filtered condenser air inlet (ambient air in)
(2) Condenser outlet (warm ambient air out)
(3) Warm air return from enclosure
(4) Cool air outlet to enclosure

Performance
KA4C2RP17R

Cooling Capacity (BTU/H)
Ambient Temperature (°F)
Operation within shaded area not recommended

Performance
KA4C3RP28R

Cooling Capacity (BTU/H)
Ambient Temperature (°F)
Operation within shaded area not recommended

Notes: Data subject to change without notice. Consult factory for special requirements. Dimensions are in inches. Millimeters shown are for reference only.

Unit must be 4" (100mm) minimum above floor for filter access.

Courtesy of Steven Engineering, Inc. - 230 Ryan Way, South San Francisco, CA 94080-5370 - Main Office: (650) 588-9200 - Outside Local Area: (800) 258-9200 - www.stevenengineering.com
Air Conditioners
Type 12/3R Advantage Series

Performance
KA4C4RP33R

Performance
KA4C6RP36R

Notes:
Data subject to change without notice. Consult factory for special requirements. Dimensions are in inches. Millimeters shown are for reference only.

Unit must be 4” (100mm) minimum above floor for filter access.

(1) Filtered condenser air inlet (ambient air in)
(2) Condenser outlet (warm ambient air out)
(3) Warm air return from enclosure
(4) Cool air outlet to enclosure

Unit must be 4” (100mm) minimum above floor for filter access.
Air Conditioners
NEMA 4X Series

Description
For NEMA 4 and 4X Enclosure applications that require hosedown or are subject to outdoor storm conditions, NEMA 4X Air Conditioners protect the integrity of the NEMA 4 or 4X Enclosure rating. These exclusive panel-mounted air conditioners provide superior closed-loop cooling and also protect against the hazards specified for both indoor and outdoor NEMA 4 and 4X Enclosures. Tested and rated by universally recognized Underwriters Laboratories, the uniquely-designed stainless steel air conditioners prevent unwanted environmental penetration of NEMA 4 and 4X enclosures as they provide a clean, cool internal environment.

With the design advantages of the NEMA 4X Series and the inclusion of the unique Mounting Template and Assembly Bracket (M/TAB), this series offers the finest in cooling innovation and technology.

The 32" NEMA 4X Air Conditioner group has the added feature of a center cool air discharge which can be adjusted to direct the cool air either upward or downward. The hot cabinet air can be returned to the air conditioner by either a top or bottom return port in the M/TAB, which determines the cutout location required in the enclosure.

For extreme ambient temperatures and/or severely contaminated environments, the use of water-cooled air conditioners is recommended.

Custom air conditioners can be designed and manufactured to meet unique specifications. Contact B-Line about modification and custom-design capabilities.

Features
• UL/cUL Listed
• NEMA 4/4X Rating Maintained
• Environmentally preferred CFC-Free R134a refrigerant
• Gasketed flanges on all four mounting edges for positive leakproof seal
• Exclusive integral Mounting Template and Assembly Bracket (M/TAB) for quick, easy installation
• Thermostatic Low Temperature Control provides energy efficient operation and prevents over-cooling
• EMI/RFI Suppressor minimizes transient line spikes during on/off cycling
• All applicable components are UL/CSA recognized
• Rugged heavy-duty stainless steel exterior
• Galvanized steel internal construction
• Internal corrosion resistant coating
• Filters
• Low ambient kit
• Six foot (minimum) SJT-3 wire power cord with plug
• Condensate drain fitting and hose

Accessories & Options for all Panel-Mounted Units
• Cooling Effect Detector
• Filter Recoating Adhesive
• Filters for replacement
• Lifting Eyes
• Short Cycle Protector
• Special materials or finishes

Discount Schedule: C2
Subclass: DT0

Technical Data

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>BTU/H Rating</th>
<th>95/95 Rating BTU/H</th>
<th>Ambient Temp F (max./min.)</th>
<th>Volts</th>
<th>Hz</th>
<th>Running Amps</th>
<th>Weight (lbs.)</th>
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<tbody>
<tr>
<td>KNA4C4P32L</td>
<td>4000</td>
<td>2650</td>
<td>125/0</td>
<td>115/100</td>
<td>60/50</td>
<td>13.0/12.0</td>
<td>105</td>
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<tr>
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<td>4000</td>
<td>2650</td>
<td>120/0</td>
<td>230/200</td>
<td>60/50</td>
<td>6.0</td>
<td>105</td>
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<td>KNA4C7P38L</td>
<td>7000</td>
<td>6000</td>
<td>131/0</td>
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<td>60/50</td>
<td>20.0</td>
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<td>230/200</td>
<td>60/50</td>
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<td>180</td>
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<tr>
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<td>6700</td>
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<td>230/200</td>
<td>60/50</td>
<td>10.9/12.5</td>
<td>180</td>
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<td>6000</td>
<td>131/0</td>
<td>115/100</td>
<td>60/50</td>
<td>20.0</td>
<td>205</td>
</tr>
<tr>
<td>K2NA4C7P47L</td>
<td>7000</td>
<td>6000</td>
<td>131/0</td>
<td>230/200</td>
<td>60/50</td>
<td>9.3/9.9</td>
<td>205</td>
</tr>
<tr>
<td>K2NA4C10P47L</td>
<td>10000</td>
<td>6700</td>
<td>131/0</td>
<td>230/200</td>
<td>60/50</td>
<td>10.9/12.5</td>
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<td>6000</td>
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<td>115/100</td>
<td>60/50</td>
<td>20.0</td>
<td>235</td>
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<td>7000</td>
<td>6000</td>
<td>131/0</td>
<td>230/200</td>
<td>60/50</td>
<td>9.3/9.9</td>
<td>235</td>
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<td>K2NA4C10P59L</td>
<td>10000</td>
<td>6700</td>
<td>131/0</td>
<td>230/200</td>
<td>60/50</td>
<td>10.9/12.5</td>
<td>235</td>
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</tbody>
</table>

Notes: Data subject to change without notice. Consult factory for special requirements. Dimensions are in inches. Millimeters shown are for reference only.
Air Conditioners
NEMA 4X Series
Climate Control

Performance KNA4C4P32L

Maximum enclosure air temperature °F

Cooling Capacity (BTU/H) 70 80 90 100 110 120 130
Ambient Temperature (°F)

Operation within shaded area not recommended

Performance KNA4C7P38L

Maximum enclosure air temperature °F

Cooling Capacity (BTU/H) 70 80 90 100 110 120 130
Ambient Temperature (°F)

Operation within shaded area not recommended

(1) Filtered condenser air inlet (ambient air in)
(2) Condenser outlet (warm ambient air out)
(3) Warm air return from enclosure
(4) Cool air outlet to enclosure

Notes: Data subject to change without notice. Consult factory for special requirements. Dimensions are in inches. Millimeters shown are for reference only.
Climate Control Products

Air Conditioners
NEMA 4X Series
Climate Control

Notes: Data subject to change without notice. Consult factory for special requirements. Dimensions are in inches. Millimeters shown are for reference only.

- Operation within shaded area not recommended
- Unit must be 12” (300mm) minimum above floor for filter access.

(1) Filtered condenser air inlet (ambient air in)
(2) Condenser outlet (warm ambient air out)
(3) Warm air return from enclosure
(4) Cool air outlet to enclosure

Performance KNA4C7P47L

Performance K2NA4C7P47L

Courtesy of Steven Engineering, Inc. - 230 Ryan Way, South San Francisco, CA 94080-5370 - Main Office: (650) 588-9200 - Outside Local Area: (800) 258-9200 - www.stevenengineering.com
Heat Exchanger Sizing and Selection

Climate Control

The proper selection of a Heat Exchanger is determined by how many WATTS can be dissipated at a given temperature differential. Since a Heat Exchanger uses ambient air for cooling, the enclosure cannot be cooled below a temperature slightly above the surrounding air temperature. Therefore, the greater the temperature differential, the higher the capacity of the Heat Exchanger.

**NOTE:** This selection process applies only to indoor gasketed enclosures which are uninsulated.

**To determine required Heat Exchanger performance in WATTS/F:**

1. **First**
   - Determine the internal Watts of heat to be dissipated.

2. **Second**
   - Determine the temperature differential by subtracting the maximum ambient temperature outside of the enclosure ($T_o$) from the maximum allowable internal cabinet temperature ($T_i$).
   
   $$T_i - T_o = \Delta T \text{ } ^\circ\text{F}$$

   **Note:** The maximum allowable internal cabinet temperature ($T_i$) should not exceed the heat tolerance specification of the most sensitive component in your system.

3. **Third**
   - Calculate the area of the enclosure which is exposed to the ambient air.
   
   $$2H(W + D) + (DxW) = \text{Area (ft}^2\text{)}$$

   **Fourth:** (Watts /$\Delta$ T$\text{ } ^\circ\text{F}$) - (0.22 x Area ft.$^2$) = WATTS/F (Required Heat Exchanger Performance)

   To calculate the total internal enclosure temperature using the Heat Exchanger selected, add the temperature rise ($\Delta T$) inside the cabinet to the maximum ambient temperature. Divide the internal heat load (WATTS) by the heat exchanger performance (WATTS/F + Area Ft.$^2$ x .22) and add the maximum ambient temperature outside of the enclosure ($T_o$), as in the equation:

   $$\text{Total Cabinet Temperature} = \frac{\text{Internal Heat Load (WATTS)}}{\text{Heat Exchanger Performance (WATTS/F) + (Area Ft}.^2\text{ } x \text{ } .22)} + T_o$$

**Notes:** Data subject to change without notice. Consult factory for special requirements. Dimensions are in inches. Millimeters shown are for reference only.
Heat Exchangers
Type 12 KXHE Air-To-Air

Description
The KXHE Series of Air-To-Air Heat Exchangers combines a state of the art, high-efficiency convoluted aluminum heat transfer element with powerful air movers. This combination uses counterflowing air streams, for maximum heat transfer efficiency, in a closed-loop system, to provide cooling within sealed cabinets. This makes the KXHE an ideal choice for applications in dirty or oil-laden environments. These unique heat exchangers operate effectively when mounted vertically or horizontally, internally or externally, and are available in numerous sizes, capacities, and configurations. KXHE Air-to-Air Heat Exchangers are an excellent choice for all applications requiring a closed-loop system which can tolerate cabinet temperatures slightly above ambient.

Outdoor or corrosive environments require weather protection and/or special internal and external protective coatings.

Custom heat exchangers can be designed and manufactured to meet unique specifications. Contact B-Line about modification and custom-design capabilities.

Features
- All models UL/cUL Listed
- Tested and approved by UL for use with Type 12 enclosures
- Lightweight design
- Closed-loop near-ambient cooling
- Heavy-duty steel enclosures with baked powder finish
- UL/CSA ball bearing motors
- Six foot (minimum) SJT-3 wire power cord with plug

Accessories & Options
- Epoxy Coated Elements
- Cooling Effect Detector
- Filter Recoating Adhesive
- Filters for replacement
- Lifting Eyes
- Low Airflow Detector
- Mounting Hinge
- Other voltages and frequencies
- Special materials or external finishes
- Special motors, line cords or connectors
- Weather Protection Kit

Discount Schedule: C2
Subclass: DT0

Technical Data

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Power</th>
<th>Max Temperature °F</th>
<th>Performance Watts °F (Air In)</th>
<th>Approx. Weight (lbs.)</th>
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<td>Amps</td>
<td>Watts</td>
<td>Enclosure</td>
<td>Ambient</td>
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<td>0.8</td>
<td>75</td>
<td>160</td>
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<tr>
<td>K2XHE120A</td>
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<tr>
<td>KXHE125A</td>
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<td>1.6</td>
<td>300</td>
<td>160</td>
<td>-20 to 131</td>
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</table>

Notes: Data subject to change without notice. Consult factory for special requirements. Dimensions are in inches. Millimeters shown are for reference only.
Heat Exchangers
Type 12 KXHE Air-To-Air
Climate Control

Performance KXHE120A

<table>
<thead>
<tr>
<th>Cooling Capacity (BTU/H)</th>
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<tr>
<td>1600</td>
<td>120</td>
</tr>
<tr>
<td>1400</td>
<td>125</td>
</tr>
<tr>
<td>1200</td>
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<td>800</td>
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<td>145</td>
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<tr>
<td>400</td>
<td>150</td>
</tr>
<tr>
<td>200</td>
<td>155</td>
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</tbody>
</table>

Maximum enclosure air temperature °F

Operation within shaded area not recommended

Performance KXHE125A

<table>
<thead>
<tr>
<th>Cooling Capacity (BTU/H)</th>
<th>Ambient Temperature (°F)</th>
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<tbody>
<tr>
<td>1800</td>
<td>120</td>
</tr>
<tr>
<td>1600</td>
<td>125</td>
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<td>1400</td>
<td>130</td>
</tr>
<tr>
<td>1200</td>
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<td>1000</td>
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<td>800</td>
<td>145</td>
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<tr>
<td>600</td>
<td>150</td>
</tr>
<tr>
<td>400</td>
<td>155</td>
</tr>
</tbody>
</table>

Maximum enclosure air temperature °F

Operation within shaded area not recommended

Notes:
Data subject to change without notice. Consult factory for special requirements. Dimensions are in inches. Millimeters shown are for reference only.
Climate Control Products

Fans
Twin & Triple
Climate Control

Description
In low static pressure applications, these fans provide high airflow in a very thin package. The exclusive design provides exceptionally quiet operation in both intake and exhaust applications. Whether mounted horizontally or vertically, these minimum-vibration fans require little internal cabinet space, leaving virtually the entire cabinet free for power supplies or other components.

Features
- Exceptionally quiet
- Versatile mounting and adaptability
- Heavy-gauge steel construction
- UL/CSA ball-bearing motors
- Attractive stainless steel grilles
- All models can pressurize or exhaust
- Accessories and options

Accessories
All Packaged Fans
- Filter Recoating Adhesive
- Filters for replacement
- Special materials or external finishes
- Special motors, line cords or connectors
- Variable Speed Control
- Adapters
- Grille Assemblies

Discount Schedule: C2
Subclass: DT0

Additional Specifications
Enclosures: Precision-engineered heavy-gauge steel construction. KP500 and KP875: 17 inches wide. EIA-notched flanges extend 17-inch enclosure to 19-inch panel width.

Permanent Filter: Furnished with each packaged fan.

Power Cord: All 115 VAC, 50/60 Hz units include a 36-inch (minimum) type SJT three-wire cord with molded plug, internally grounded and securely locked to case by strain relief bushing. 230 VAC, 50/60 Hz units are supplied without plugs.

Grille/Guard: KP500 and KP875 each include a rear guard and an attractive 19-inch-wide stainless steel grille and knurled captive fasteners for easy removal. Grilles and guards comply with OSHA and UL safety standards.

KP500A = intake
KP500B = exhaust

Technical Data

<table>
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<tr>
<th>Catalog Number</th>
<th>CFM@ 0-inches</th>
<th>RPM nominal</th>
<th>Amps RUN</th>
<th>Watts</th>
<th>Volts</th>
<th>Weight (lbs.)</th>
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<td>KP500*</td>
<td>250</td>
<td>3100</td>
<td>0.6</td>
<td>55</td>
<td>115†</td>
<td>9</td>
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<tr>
<td>KP875*</td>
<td>440</td>
<td>1500</td>
<td>1.2</td>
<td>98</td>
<td>115†</td>
<td>12</td>
</tr>
</tbody>
</table>

† For 230 Volt models add a "2" after the "K" in the catalog number.
* Specify type of discharge, A or B.

Notes: Data subject to change without notice. Consult factory for special requirements. Dimensions are in inches. Millimeters shown are for reference only.
Fans
Twin & Triple
Climate Control

Notes: Data subject to change without notice. Consult factory for special requirements. Dimensions are in inches. Millimeters shown are for reference only.

* For exhaust applications, filter may be removed and used at air intake.
**Description**

High airflow with low noise operations makes these versatile packaged fans very popular in a wide range of applications. Reversible mounting brackets allow user to push or pull air through the enclosure. In addition, these fans can be installed internally or externally, vertically or horizontally, with or without a filter. Utilizing the special motor-mount isolation system, these fans operate virtually vibration-free. Front and rear grilles can be adjusted to accommodate or omit filter. Filter slides in and out easily for cleaning and replacement.

**Technical Data**

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>CFM@ 0-inches</th>
<th>RPM nominal</th>
<th>Running Amps</th>
<th>Watts</th>
<th>Volts</th>
<th>Weight (Lbs.)</th>
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<td>KP60</td>
<td>220</td>
<td>3300</td>
<td>0.29</td>
<td>0.35</td>
<td>33</td>
<td>115†</td>
</tr>
<tr>
<td>KP100</td>
<td>550</td>
<td>1600</td>
<td>0.49</td>
<td>1.30</td>
<td>60</td>
<td>115†</td>
</tr>
</tbody>
</table>

† For 230 volt models add a "2" after the "K" in the catalog number.

**Additional Specifications**

**Permanent Filter:** Furnished with each packaged fan.

**Grille/Guard:** KP40, KP60 and KP100 each include a rear guard and an attractive stainless steel grille and knurled captive fasteners for easy removal. Grilles and guards comply with OSHA and UL safety standards.

**Discount Schedule: C2**

**Subclass: DT0**
Electrical Enclosures

Description
Packaged Twin Blowers achieve exceptional performance through use of the largest possible blower housings and wheels. Each contains a quadruplex centrifugal blower powered by a single precision ball-bearing motor. These widely-used Packaged Twin Blowers deliver air from more that 50% of their 17" width, while conventional blowers deliver air from only about 30%. Internal neoprene isolation mounts reduce transmission of vibration and AC hum to the enclosure. Long service life and trouble-free performance are assured through the use of precision ball-bearing motors in all models and by the dual inlet quadruplex design which uses intake air to cool the motor.

Features
- Capacities: 130 to 800 CFM
- Attractive 19 in. stainless steel grilles

Features (con’t.)
- Heavy-gauge steel enclosures with EIA-notched flanges
- UL/CSA ball-bearing motors
- Dual inlet quadruplex design for maximum airflow
- Inlet air cools motor for longer life
- Permanent filters
- Exhaust guards included
- Three foot (minimum) SJT 3-wire power cord

Accessories & Options
- Adapters
- Airflow Switch
- EMI Shielding
- Filter Recoating Adhesive
- Filters for replacement
- Grille Assemblies for replacement
- Low Airflow Detector
- Other voltages and frequencies
- Recessed front
- Special materials or external finishes
- Special motors, line cords or connectors
- Variable Speed Control

Discount Schedule: C2
Subclass: DT0

Technical Data

<table>
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<th>Catalog Number</th>
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<th>RPM nominal</th>
<th>Amps Run.</th>
<th>L.R.</th>
<th>Watts</th>
<th>Volts</th>
<th>Weight (Lbs.)</th>
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</thead>
<tbody>
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<td>KPS29*</td>
<td>300</td>
<td>3000</td>
<td>1.4</td>
<td>1.9</td>
<td>95</td>
<td>115†</td>
<td>13.0</td>
</tr>
</tbody>
</table>

† For 230 Volt models add a "2" after the "K" in the catalog number.
* Specify type of discharge.

Exhaust and Filter Assembly for Blower Package
To provide a filtered air intake in applications where the enclosure is being exhausted. The mirror-finish stainless steel grille is 65% open with low resistance to air flow. By loosening the captive thumbnuts the permanent filter is instantly available for cleaning. Each kit includes a grille assembly, filter and two EIA-notched brackets.

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Used With</th>
<th>Filter Size</th>
<th>Grille Sizes</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>H x L x D</td>
</tr>
</tbody>
</table>

Notes: Data subject to change without notice. Consult factory for special requirements. Dimensions are in inches. Millimeters shown are for reference only.
Enclosure Heaters are used to maintain minimum operating temperatures and to help prevent failure of electronic components caused by condensation and corrosion.

Follow steps 1-5 to determine the heating requirement of an enclosure (US units - left column, metric - right column)

STEP 1: Determine Surface Area (A) exposed to open air

Enclosure Dimensions: height = feet meters
width = feet meters
depth = feet meters

Assuming a free-standing enclosure ⇒ A = 2 (Height x Width) + 2 (Height x Depth) + 2 (Width x Depth)

STEP 2: Choose the Heat Transmission Coefficient (k) for your enclosure

- painted steel = 0.511 W/(ft² • K)5.5 W/(m² • K)
- stainless steel = 0.344 W/(ft² • K)3.7 W/(m² • K)
- aluminum = 1.115 W/(ft² • K)12 W/(m² • K)
- plastic (or insulated stainless) = 0.325 W/(ft² • K)3.5 W/(m² • K)

STEP 3: Determine the Temperature Differential (ΔT)

Desired interior temperature = °F °C
Lowest ambient temperature = °F °C
Temperature differential = °F °C = K

Calculation requires ΔT to be in Kelvin (K)

Divide ΔT (°F) by 1.8 for

STEP 4: Determine Heating Power (Pᵥ), if any

Pᵥ = components in the enclosure which generates heat (i.e. transformers, power supplies, etc.)

STEP 5: Calculating the Required Heating Power (Pₜ)

If enclosure is located inside:

Pₜ = (A x k x ΔT) - Pᵥ = W

If enclosure is located outside:

Pₜ = 2 x (A x k x ΔT) - Pᵥ = W
Heaters
PTC Fan Heaters
Climate Control

Description
PTC fan heaters are designed to help prevent failure of electronic components caused by condensation, corrosion and low temperatures. Integrated thermostat stabilizes enclosure temperature, improves performance and extends the life of critical components. EFHT series fan heaters are designed for larger applications with high power requirements.

Features
- Compact fan heater in PTC technology
- PTC (Positive Temperature Coefficient) heating element
- Maintains minimum operating temperatures in enclosures
- Helps prevent failure of electronic components caused by condensation and corrosion
- Heating power adjusts to ambient temperature
- Integrated adjustable thermostat and control light
- 35 mm DIN rail mountable
- UL, VDE, and CE

Discount Schedule: C2
Subclass: TG0

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Voltage</th>
<th>Power</th>
<th>Max. current (inrush)</th>
<th>Axial Fan (ball bearing)</th>
<th>Thermostat range</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>EFHT550F-120</td>
<td>110-120 VAC</td>
<td>550 W (60 Hz)</td>
<td>14 A</td>
<td>20 cfm (35 m³/h)</td>
<td>32-140°F</td>
<td>2</td>
</tr>
<tr>
<td>EFHT650F-120</td>
<td>110-120 VAC</td>
<td>650 W (60 Hz)</td>
<td>15 A</td>
<td>26 cfm (45 m³/h)</td>
<td>32-140°F</td>
<td>2.4</td>
</tr>
</tbody>
</table>

For spacing, add 2” clearance to heat sensitive parts.

Technical Data
- Heating element: PTC-Semiconductor/resistor. Self regulating with changing ambient temperature (see graph below)
- Overheat protection: Temperature limiter in case of fan failure
- Function control light: LED
- Housing: Plastic, rated UL94V-0
- Dimensions (HxWxD): 6.5x3.94x5” (165x100x128 mm)
- Connection: 2 pole terminal, AWG 14, max. (2.5 mm²)
- Mounting: Clip for 35 mm DIN rail, EN 50022
- Protection class: II (double insulated)
- Protection type: IP20

Notes: Data subject to change without notice. Consult factory for special requirements. Dimensions are in inches. Millimeters shown are for reference only.
Heaters
PTC Heater
Climate Control

**Description**
PTC heaters are designed to help prevent failure of electronic components caused by condensation, corrosion and low temperatures. EH15 series feature PTC technology and are designed for smaller enclosure applications with lower wattage requirements.

**Features**
- Compact heater in PTC technology
- PTC (Positive Temperature Coefficient) heating element
- Maintains minimum operating temperatures in enclosures
- Helps to prevent failure of electronic components caused by condensation and corrosion
- Push connectors for quick and easy wiring
- 35 mm DIN rail mountable
- UL, VDE, and CE

**Discount Schedule: C2**
Subclass: TG0

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Power(1)</th>
<th>Max. Current(2)</th>
<th>L (in.)</th>
<th>Weight (lbs.)</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EH15</td>
<td>15W</td>
<td>0.5A</td>
<td>2.6</td>
<td>0.66</td>
<td>0.3</td>
</tr>
<tr>
<td>EH30</td>
<td>30W</td>
<td>1.0A</td>
<td>2.6</td>
<td>0.66</td>
<td>0.3</td>
</tr>
<tr>
<td>EH45</td>
<td>45W</td>
<td>1.5A</td>
<td>2.6</td>
<td>0.66</td>
<td>0.3</td>
</tr>
<tr>
<td>EH60</td>
<td>60W</td>
<td>1.5A</td>
<td>5.5</td>
<td>1.10</td>
<td>0.5</td>
</tr>
<tr>
<td>EH75</td>
<td>75W</td>
<td>1.8A</td>
<td>5.5</td>
<td>1.10</td>
<td>0.5</td>
</tr>
<tr>
<td>EH100</td>
<td>100W</td>
<td>2.4A</td>
<td>5.5</td>
<td>1.10</td>
<td>0.5</td>
</tr>
<tr>
<td>EH150</td>
<td>150W</td>
<td>4.5A</td>
<td>8.7</td>
<td>1.76</td>
<td>0.8</td>
</tr>
</tbody>
</table>

(1) At 68°F (20°C) ambient temperature.  (2) Inrush current

**Technical Data**
- Operating voltage: AC/DC 110-250V
- Heating element: PTC resistor, self regulating
- Heating body: Anodized extruded aluminum
- Protection class: IP20
- Connection: Push type terminals for stranded and rigid wire 3 x AWG 20-18GA 16 (0.5-2.5 mm²)
- Mounting: Clip for 35 mm DIN rail, EN 50022
- Agency approvals: UL, VDE

**Easy wiring by using push-type terminals**

**Notes:** Data subject to change without notice. Consult factory for special requirements. Dimensions are in inches. Millimeters shown are for reference only.
## Heaters
### Fan Heaters

**Description**
Fan heaters are designed to help prevent failure of electronic components caused by condensation, corrosion and low temperature. EFH100-120 series feature a wide wattage range for maximum versatility in a small compact design.

**Features**
- Small compact size fan heater
- Maintains minimum operating temperatures in enclosures
- Helps prevent failure of electronic components caused by condensation and corrosion
- Built-in overheat protection
- 35 mm DIN rail mountable

**Discount Schedule:** C2
**Subclass:** TG0

### Technical Data
- **Heating element:** Resistance type heater
- **Heat sink:** Die-cast aluminum, glass bead finish
- **Overheat protection:** Built-in temperature limiter
- **Air exit temperature:** Approx. 113°F (45°C) 2" (50 mm) above heater
- **Wiring compartment:** Plastic UL94V-0
- **Wiring of axial fan:** 2 pole terminal (L2/N2), AWG14 max. (2.5 mm²)
- **Mounting:** Clip for 35 mm DIN rail, EN 50022
- **Protection type/class:** IP44/I (grounded)
- **Weight:** 100/150W: 0.6 lbs. (240 kg) without fan
  200/300/400W: 1.1 lbs. (490 kg) without fan
- **Agency approvals:** UL

**Notes:** Data subject to change without notice. Consult factory for special requirements. Dimensions are in inches. Millimeters shown are for reference only.

---

### Catalog Number

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Power</th>
<th>Voltage</th>
<th>Air Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>EFH100-120</td>
<td>100W</td>
<td>110-120 VAC</td>
<td>20 cfm, 35 m³/h</td>
</tr>
<tr>
<td>EFH150-120</td>
<td>150W</td>
<td>110-120 VAC</td>
<td>20 cfm, 35 m³/h</td>
</tr>
<tr>
<td>EFH200-120</td>
<td>200W</td>
<td>110-120 VAC</td>
<td>63 cfm, 108 m³/h</td>
</tr>
<tr>
<td>EFH300-120</td>
<td>300W</td>
<td>110-120 VAC</td>
<td>63 cfm, 108 m³/h</td>
</tr>
<tr>
<td>EFH400-120</td>
<td>400W</td>
<td>110-120 VAC</td>
<td>63 cfm, 108 m³/h</td>
</tr>
</tbody>
</table>

---

**Caution:** Heater may only be operated with fan.
Temperature & Humidity Controls

Small Thermostat

**Description**
Small thermostats are easy to install and designed to regulate the air temperature inside enclosures. Thermostats increase operating life of fans, heaters and heat exchangers. B-Line’s ESTNC-F (normally closed) thermostat opens at temperature rise and is used to control heaters and low temperature alarms. B-Line’s ESTNO-F (normally open) thermostat closes at temperature rise and is used to control cooling fans, air conditioners and high temperature alarms.

**Features**
- Compact design
- Wide adjustment range
- Color coded temperature dials
- 35 mm DIN rail mountable
- Tolerance ±7.2°F (4K)
- 2-pole terminal for AWG 14 max.
- Protection type: IP30
- Plastic housing UL94V-0

**Discount Schedule:** C2  
**Subclass:** TG0

### Catalog Number | Contact Type | Switching Capacity @ 120 VAC | Switching Capacity @ 250 VAC | Housing Scale | Dimensions
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ESTNC-F</td>
<td>Normally closed</td>
<td>15A resistive/1A inductive</td>
<td>10A resistive/1A inductive</td>
<td>30-140°F</td>
<td>2.4x1.3x1.4 60x33x35</td>
</tr>
<tr>
<td>ESTNO-F</td>
<td>Normally opened</td>
<td>15A resistive/1A inductive</td>
<td>10A resistive/1A inductive</td>
<td>30-140°F</td>
<td>2.4x1.3x1.4 60x33x35</td>
</tr>
</tbody>
</table>

**Electronic Humidity and Temperature Control**

**Description**
Electronic humidity and temperature control regulates the air temperature and relative humidity inside enclosures. Depending on which contact combination is chosen, the control turns on or off a connected device if either the temperature is below, or the humidity is above the set point.

**Features**
- Controls both temperature and humidity
- High switching capacity
- Optical function display
- 35 mm DIN rail mountable
- Tolerance ±3.6°F (2K)
- 5-pole terminal for AWG 14 max.
- Protection type: IP20
- Plastic housing UL94V-0

**Discount Schedule:** C2  
**Subclass:** TG0

### Catalog Number | Temperature Range | Humidity Range | Voltage | Hz | Switching Capacity @ 120 VAC | Switching Capacity @ 240 VAC | Dimensions
|------------------|-------------------|---------------|--------|----|-----------------------------|-----------------------------|----------------|
| EHTC120-F        | 32-140°F adjustable | 50-90% RH adjustable | 120 VAC | 50/60 | 8A Resistive  
7 FLA/45 LRA | 8A Resistive  
5 FLA/30 LRA | 2.6x2.0x1.5 67x50x39 |

### Contacts | close at... | open at... | use for
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3 and 5</td>
<td>humidity rise or temperature drop</td>
<td>humidity drop or temperature rise</td>
<td>heaters de-humidifiers low-temp alarms</td>
</tr>
<tr>
<td>4 and 5</td>
<td>humidity drop or temperature rise</td>
<td>humidity rise or temperature drop</td>
<td>cooling humidifiers high-temp alarms</td>
</tr>
</tbody>
</table>

**Notes:** Data subject to change without notice. Consult factory for special requirements. Dimensions are in inches. Millimeters shown are for reference only.