# THERMOELECTRIC PRODUCTS

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Cooling products and systems for industrial, commercial, laboratory and military applications

www.teca-usa.com
Hello!

Sometimes I think my interest in thermoelectric cooling and excitement about its potential for so many different applications has a genetic basis. I vividly remember back in the early '60s, my dad—an inveterate tinkerer—came home from work with an armful of thermoelectric components and a fascination with the possibilities they presented. Of course, little did I suspect at the time that I was glimpsing my future.

Thermoelectric cooling has come a long way since the early research conducted by some of the biggest names in the industry, such as Westinghouse, Borg-Warner, General Electric, and 3M. I take great pride in TECA’s pioneering role in developing solid-state air conditioners for electronic enclosures. As you’ll see in this catalog, today we offer a full line of cooling products from air-cooled and liquid-cooled air conditioners, to cold plates and liquid chillers, plus a wide range of accessories.

But our versatile, quality products are only part of the picture. I am also extremely proud of the dedication that the entire TECA team consistently demonstrates to you, our customers. We are committed to understanding your needs and working with you to design solutions that exceed your expectations.

Remember, when heat is your enemy—TECA is your friend. Give us a call at 888-TECA-USA (888-832-2872) and let us show you what we can do to help you.

Sincerely,

Mike Mikalauskis
President
A former division of Borg-Warner, TECA was spun-off as an independent company in 1984. Since then, we have been leading the way in developing and marketing solid-state air conditioners for electronic enclosures. Today the Chicago-based corporation manufactures a wide range of solid state cooling products, including air-cooled and liquid-cooled air conditioners, cold plates, and liquid chillers. Products are also available for harsh environments such as NEMA-4X as well as hazardous locations such as Class 1, Division 1 and 2. Since our cooling systems are based on solid-state construction, product life expectancy is extremely high and maintenance requirements are exceptionally low.

Our mission
TECA’s fundamental purpose is to provide world-class products of superior quality. Our goal is to continue setting the standard in thermoelectric cooling by monitoring and improving our operations to meet our customers’ needs and exceed their expectations.

Our guiding principles
Quality is our top priority. We are “TEAM TECA,” recognizing that our success depends upon the involvement, commitment, and performance of every team member, including suppliers.

Our solutions
We can fulfill all of your cooling requirements, whatever your application. In fact, our engineers may have already developed a solution for an application similar to yours. We offer complete engineering services, prototype development, and custom-built cooling equipment on an exclusive and confidential basis, enabling us to meet the needs of all our customers, including those in the Original Equipment Market.

We will continue to focus our efforts on the people we serve and the products we produce in order to ensure quality without sacrificing health, safety, or the environment in which we live.

How to use this catalog
We hope you’ll view this catalog as a working guide to the possibilities of thermoelectric cooling. We’ve included a foundation of information designed to help you think about the applications for your company, in addition to detailed descriptions of the off-the-shelf products we offer.

Please keep in mind that we are always willing and available to customize existing products or to design and build new products to meet your needs.

Call us at 888-TECA-USA – we’re here to help! 888-832-2872
Thermoelectric Technology

The Peltier Effect

Thermoelectric cooling, is a solid-state method of heat transfer through dissimilar semiconductor materials. It is also called “the Peltier Effect” after the French watchmaker who discovered the phenomenon in the early 19th century. Like their conventional refrigeration counterparts, thermoelectric cooling systems obey the basic laws of thermodynamics. However, the actual system for cooling is different.

In a conventional refrigeration system, the main working parts are the evaporator, condenser, and compressor. The evaporator surface is where the liquid refrigerant boils, changes to vapor, and absorbs heat energy. The compressor circulates the refrigerant and applies enough pressure to increase the temperature of the refrigerant above ambient level. The condenser helps discharge the absorbed heat into surrounding room air.

The three main working parts in a thermoelectric refrigeration system are a cold junction, a heat sink, and a DC power source. Two dissimilar conductors replace the refrigerant in both liquid and vapor form. The cold sink (evaporator surface) becomes cold through absorption of energy by the electrons as they pass from one semiconductor to another, instead of energy absorption by the refrigerant as it changes from liquid to vapor. The DC power source pumps the electrons from one semiconductor to another, and the heat sink (condenser) discharges the accumulated heat energy from the system.

Therefore, the thermoelectric cooling system refrigerates without refrigerant and without the use of mechanical devices, except perhaps in the auxiliary sense. The semiconductor materials used in thermoelectric cooling are N and P type, named because they either have more electrons than necessary to complete a perfect molecular lattice structure (N-type) or not enough electrons (P-type). The extra electrons in the N-type material and the holes left in the P-type material are called “carriers,” responsible for moving the heat energy from the cold to the hot junction. Good thermoelectric semiconductor materials such as bismuth telluride greatly impede conventional heat conduction from hot to cold areas, yet provide an easy flow for the carriers.
Solid state cooling solutions help beat the heat more effectively than traditional refrigeration in a wide range of applications from industrial, food service, military, and aerospace to medical, pharmaceutical, and laboratory. Take a look at just a few of the many successful applications:

The U.S. Navy had a need for cooling a small enclosure containing a voice communication system. The shipboard system had to be resistant to salt water corrosion as well as pass shock and vibration testing. Modifications to the TECA model AHP-300X solid state air conditioner allowed the unit to pass these tests. The next hurdle to overcome was the small available space both inside and outside the enclosure. The heat sinks were turned so that the heat rejection air flow and internal cold side air flow moved in different directions. This unit is a prime example of how flexible Team TECA is when customer needs require customization of standard products.

When handling and processing various fluids in laboratory and electronic environments cleanliness is a must. Peristaltic pumps have been developed for the purpose of creating a fluid flow without contacting the fluid itself. TECA has developed liquid chillers to cool a fluid while satisfying the same cleanliness requirements. The solution, based on our successful cold plate product line, has proven to be versatile and effective. Applications range from laboratory to medical to industrial.

An original equipment manufacturer required a small cooling solution for outdoor information kiosks before manufacturing could start. We consulted with the customer’s engineers and recommended TECA model AHP-300XE, to provide the necessary cooling in a compact size. AHP300XE is a NEMA4 solid state air conditioner, good for this customer because it is designed for outdoor use.

An automation manufacturer requires exact temperature control in a system for pharmaceutical research and development. TECA model FHP-2850 solid state air conditioners provide temperature control for a plate storage/imaging system. Up to 754 plates are stored in the system, with random access for scheduled internal plate imaging. The remainder of the system generates the plates used in various experiments and dispenses small-volumes of chemicals, then seals and returns the plates to storage.

The U.S. Air Force had an overheating problem with a high-tech radio inside the wing of a fighter aircraft. TECA provides the solution by making custom cold plates that withstand the shock, vibration, and G forces created by one of the most technically advanced aircraft. In order to assure maximum strength with minimum weight, TECA’s advanced machining center makes the finned heat sink for each cooler from a single block of material.

A special purpose vehicle manufacturer needs to maintain the temperature of a battery bank in a Class 1 Division 2 explosion proof environment. They are deploying portable communications systems at car racing venues. With our recommendation, this customer has chosen TECA model AHP1800XP, because ours is the only NEMA4 air conditioner available off-the-shelf which is certified for C1D2 use.

A European manufacturer of special equipment for processing fruits and vegetables uses TECA model AHP1200XE solid state air conditioners to cool sensitive electronics on their line of produce processing machines which sort products by color, size and weight. The equipment in use is washed down frequently, so the model AHP1200XE is ideal because it is certified for NEMA4 and wash-down, while it also carries the CE Mark.

A leading manufacturer of video cameras and mobile electronics communications for law enforcement was thrown for a loop when the thermoelectric vendor they selected admitted that they couldn’t meet the delivery promised on a standard cooling assembly. When faced with the question, “Who do you think can help us?” An engineer for the vendor responded that TECA was the best choice if they wanted quality and delivery. One week and several phone calls later 16 custom assemblies based on TECA’s model AHP-150FF were delivered in time for testing and installation. Now TECA produces these units for the customer in lots of 100.
Design Considerations

Including:

Mounting Orientation • Moisture Removal • Reliability

Mounting Orientation & Moisture Removal

Side, front, or back mounting is recommended for applications with high humidity or incomplete cabinet seals. Condensation can be removed via moisture collection systems (standard on FHP models and model AHP-1400), or a drip pan positioned below the cold side fins. Drip pans are optional for thru mount style units.

Top mounting can make it difficult to collect condensation due to fin orientation and gravity. If a drip pan is used, it must be placed far enough away from the internal fan to minimize the restriction of air flow. The pan should cover the fin ends as well as the fan area. When possible, side orientation is preferred by most users in high humidity environments.

* Top mount orientation is not recommended if there is any possibility of dripping condensate.

Resourceful is our middle name

Creativity and resourcefulness have been the hallmarks of TECA since our founding in 1984. Working with one of our earliest customers, we developed a thermoelectric cooler for the computer numerical control (CNC) on his punch tape equipment. The customer preferred an AC power supply to the DC one required, so we built the power supply as part of the air conditioner. Eventually, we reduced the size of the unit and designed it so it could simply plug into a wall socket. This product offered an ideal solution for customers who had electronics in a hostile environment where compressor based air conditioners did not work, or in a dirty environment where filters could not be changed.
Air Conditioner Sizing

To reduce the possibility of condensation or to transfer condensate to the outside of the enclosure, consider the following:

• Regulate the fin temperature above the dew point
• Keep the enclosure closed and sealed from outside humidity
• Use desiccant (moisture absorbing granules)
• Do not set the controller for continuous on operation.
• Employ condensate removal system or drip pan.

All FHP-series, AHP-1400 and AHP-1501 series air conditioners contain a built-in condensate removal system consisting of an antifungal sponge with a condensate wick. PVC tubing is provided for drainage. The wick should extend below the cooling assembly to allow for a gravity feed. On all other AHP series equipment optional drip pans are available.

Reliability/Mean Time Between Failure

The life expectancy of a thermoelectric device is exceptionally high due to its solid state construction. Service life typically exceeds five years under normal conditions. For individual modules, MTBF’s on the order of 200,000 to 300,000 hours at room temperature and 100,000 hours at elevated ambients of 80° C have been calculated.

Our FREE sizing software makes it easy to calculate your cooling needs.

It is available for use on a PC running Microsoft Windows. It requires only about eight megabyte of disk space.

Just call toll-free 1-888-TECA-USA (832-2872) or visit www.TECA-USA.com.

COOL HAPPENINGS

Exploring Thermoelectric Cooling

Back in the early 1960’s Borg-Warner, General Electric, Westinghouse, 3M, RCA and other major research centers focused a lot of energy (so to speak) on thermoelectrics.

In 1961 issues of U.S. News & World Report and Time, Borg-Warner ran prominent ads featuring a happy family taking advantage of a small thermoelectric refrigerator in their hotel room.

Although this was not the direction the company ultimately pursued, it signaled excitement about the potential for the new technology.
Ratings

Understanding Air Conditioner Ratings

Thermoelectric Modules:
Traditionally thermoelectric modules have been rated at two points under two conditions. The first point is the maximum load (Qmax) at zero degrees delta T (dT=0) and the second point is the maximum delta T (dTmax) at a no load (Q=0). The load is defined as the amount of energy removed from the cold side ceramic. The delta T is defined as the temperature difference between the cold side and hot side ceramics. Extensive curves showing the performance under other conditions are often available.

Thermoelectric systems:
Reputable system manufacturers rate thermoelectric systems in watts or btu/hr under zero degree delta T conditions. In this case the load is defined as the amount of energy removed from the cooling medium. For air cooled systems the delta T is the temperature difference between the cooled medium and the ambient air. The cooled medium would be a cold plate in direct contact applications, a fluid such as water in liquid chiller applications and the enclosure air return temperature in air conditioner applications.

Air Conditioners, U.S.:
Standards have not yet been created for enclosure air conditioners in the United States. The portions of the standards which deal with ratings and test conditions can still be interpreted for enclosure air conditioners. Too complex to display here, these standards define, among other parameters, the temperature conditions under which ratings are supposed to be made. These temperatures are generally defined as the room temperature and the ambient temperature. Typically the room temperature is either below or equal to the ambient temperature.

Air Conditioners, Europe:
The Europeans have developed a standard, DIN 3168, which specifically addresses enclosure air conditioners or coolers for distribution boxes. This standard does contain temperature information specific to the rating of such air conditioners. The load or the “useful cooling capacity”, is only the useful sensible heat flow which is taken up by the appliance for lowering the inside temperature of the distribution box. The temperature rating conditions for DIN 3168 are for the evaporator inlet (enclosure) temperature and condenser inlet to be an equal 35 C, or for the evaporator temperature to be 35 C and the condenser temperature to be 50 C, stated L35 L50.

Performance Curves:
The two types of performance curves used throughout the industry are shown on the following page. Both of these curves represent the performance of the TECA model AHP-1200. The top curve is shown per DIN 3168. In this curve temperatures are represented as absolutes, the x axis represents the inlet temperature at the condenser (the enclosure temperature), the vertical axis represents the useful cooling capacity, and separate load lines represent various evaporator inlet temperatures (ambient temperatures). Plotting a vertical line from the condenser inlet temperature to a specific evaporator temperature line and from that intersection horizontally, provides the useful cooling capacity. The bottom curve is for the same product represented in the traditional format. Here the temperatures are presented as differentials. Plotting a horizontal line from a desired delta T to intersect with the selected performance curve and then vertically to the x axis provides the cooling capacity under that condition. Both types of curves accurately represent the performance of a thermoelectric cooling system.

Going the extra mile

Not only has TECA strived to stay a step ahead, consistently setting the standard in product development and quality – we also go the extra mile in customer service.

Within 60 days, we made two prototypes of Air Transportable Galley Lavatory (ATGL refrigerators) and personally drove them to the military base in Lexington, Kentucky, for approval. Over the next 2 years we made 500 more, and they’re still flying in C130 and C141 military cargo planes.

The rated performance value shown for a positive 20 degree F delta T condition is true. However, TECA does not consider a 20 degree F delta T to be a valid rating condition for an air conditioner. This value is only shown for purpose of competitive parity with those manufacturers who choose this condition for rating their products.

A performance rating stated at the positive 20 degree F delta T condition is more appropriate for above ambient heat exchangers such as heat pipes or for specific applications where it should be clearly stated.
Historically, thermoelectric coolers began demonstrating their usefulness in a variety of challenging situations.

For example, in 1975 they were used to cool the electronic instrumentation in oil well equipment 20,000 feet under the earth’s surface.

At the other end of the spectrum, thousands of miles above the earth, compact thermoelectric cooling systems have been used to control temperatures of experiments conducted on NASA’s space shuttle as well as the Mars Viking lander.
### About Performance Curves

Performance curves are provided for the products in this catalog to help you determine which product is most appropriate for your needs. Curves are plotted on an X-Y axis with the X axis representing the total load and the Y axis the delta T or temperature difference between the surrounding ambient temperature and the enclosure temperature.

The following example is for enclosure cooling.

The total load most often consists of two components: the active load, defined as the heat generated inside the enclosure and the enclosure or ambient load which is that heat entering or leaving the enclosure due to the temperature difference, or $\Delta T$ between the inside of the enclosure and the ambient.

Other loads such as solar loads may need to be considered. The curve or load line is often split into 2 or three individual lines. Each representing the performance of the particular unit at different ambient temperatures.

Performance curves can be used in several different ways depending on the information available. One way is by applying the known load and temperature requirements and selecting a unit to fill those needs. Another is to assume a specific unit and use the curve to determine what temperatures can be expected. This often involves some iteration involving the enclosure load.

In our example shown below we are assuming a 24" x 24" x 24" enclosure with 1/2" of insulation. Our maximum ambient is 50°C with a desired enclosure temperature of 35°C. Our active load has been calculated to be 100 watts under full load conditions and using TECA sizing software the enclosure load has been estimated to be 45 watts for a total of 145 watts. Shown below is the curve for the AHP-1800 family plotted to determine the capacity at a -15°C delta T. This shows that this unit has more than enough capacity. Depending on the ambient conditions and mounting restrictions the AHP-1400 or the FHP-1400 would also do the job.

### Example Table

<table>
<thead>
<tr>
<th>Step</th>
<th>Determine</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Choose the family curve that best approximates your requirements and the specific curve for your ambient air temperature.</td>
<td>+50°C (estimated between 40 &amp; 60)</td>
</tr>
<tr>
<td>2</td>
<td>From the desired -15°C delta T plot a horizontal line until you intersect the correct ambient line (shown is intersection at estimated 50°C line). From there plot a vertical line to determine the capacity under those conditions</td>
<td>Delta T = -15°C</td>
</tr>
<tr>
<td>3</td>
<td>Capacity at required Delta T: Please note 1 watt = 3.414 BTU/Hr</td>
<td>200 Watts</td>
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</tbody>
</table>

### Performance Curves Equation

$$y = mx + b$$

<table>
<thead>
<tr>
<th>Ambient Temp</th>
<th>20°C</th>
<th>40°C</th>
<th>60°C</th>
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<tbody>
<tr>
<td>Enclosure Air</td>
<td>y = .12x - 37</td>
<td>y = .12x - 39.7</td>
<td>y = .12x - 42.3</td>
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<tr>
<td>Cold Sink</td>
<td>y = .09x - 37</td>
<td>y = .09x - 39.7</td>
<td>y = .09x - 42.3</td>
</tr>
</tbody>
</table>

Where:
- $y = \Delta T$ (°C)
- $m = \text{slope}$
- $x = \text{watts}$
- $b = \Delta T$ @ no load
Many TECA products have been engineered to meet or exceed rigorous standards established by the United States military and by industry groups such as NEMA, NEC, UL, CSA and CE. Some typical environments include factories, mills, benign and harsh outdoor environments, shipboard, aircraft and laboratory.

**UL/CSA – Underwriters Laboratory/Canadian Standards Association**

**UL-1604** Hazardous duty operation, Class I and II, Division 2; Class III, Division 1 and 2. Tested through ETL and ETLc Testing Laboratories, Report #532015. Applies to AHP-1200XP and AHP-1800XP models.


**CE – EN60335-1 & EN60335-2-40**


Low voltage directive 73/23/EEC - European union (EU)

EMC directive 89/336/EEC - European union

Tested thru ETL. Applies to most AHP-1200 and AHP-1800 products.

**EN61326, EN61010-1 and EN61010-2**


Low voltage directive EN61010-1-A1: 97; EN61010-2-010-A1: 97

Tested thru ETL. Applies to TLC-700 and TLC-702 models.

**NEMA – National Electrical Manufacturers Association**

**NEMA-12** Type 12 enclosures are intended for indoor use primarily to provide a degree of protection against dust, falling dirt, and dripping noncorrosive liquids. Applies to all models.

**NEMA-4X** Type 4X enclosures are intended for indoor and outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, and hose-directed water. TECA products with the "X" designation have Mil-Spec fans, o-ring sealed power supplies, no exposed electronic components, stud/gasket mounting, and Mil-Spec finishes. Products with the "XE" designation have sealed fans, sealed components, stud/gasket mounting, and Mil-Spec finishes. They are designed to maintain the enclosure rating and perform in the rated environment. Applies to X and XE models.

Source: NEMA Publication No. 250, Part 1, Page 1

**Military Standards Mil-Std 810**

**Corrosion:** (Salt Fog Testing) Method 509.2, 168 Hours. Applies to X models.

**Vibration:** Method 514.3, 2 hours, x, y, z axis 8.9 G’S. 10-2000 Hz with a magnitude of 0.04 G²/Hz. Applies to XM models.

**Shock:** Method 516.2, with 30 G’s peak amplitude, 11ms pulse duration, half-sine waveform, and three (3) shocks in each direction along three (3) mutually orthogonal axes. Employed for all XM-versions. Standard models are designed to withstand 2.2 G’s. Applies to X models.

Source: Mil-Std 810

**NEC – National Electrical Code**

**CID2** Class I, Division 2 (Hazardous Environments) – a location (1) in which volatile flammable liquids or flammable gases are handled, processed, or used, but in which the liquids, vapors, or gases will normally be confined within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown of such containers or systems, or in case of abnormal operation of equipment; or (2) in which ignitable concentrations of gases or vapors are normally prevented by positive mechanical ventilation, and which might become hazardous through failure or abnormal operation of the ventilating equipment; or (3) that is adjacent to a Class I, Division 1 location, and to which ignitable concentrations of gases or vapors might occasionally be communicated unless such communication is prevented by adequate positive-pressure ventilation from a source of clean air, and effective safeguards against ventilation failure are provided. Applies to XP models.

**Groups (A-D)** Atmospheres containing the following: acetylene, hydrogen, fuel, and combustible process gases containing more than 30% hydrogen by volume, or gases or vapors of equivalent hazard such as butadiene, ethylene oxide, propylene oxide, acrolein, ethyl ether, ethylene, or gases or vapors of equivalent hazard such as acetone, ammonia, benzene, butane cyclopropane, ethanol, gasoline, hexane, methanol, methane, natural gas, naphtha, propane, or gases or vapors of equivalent hazard. Applies to XP models.

**C1D1 Groups B, C, D** Class I, Division 1 (Hazardous Environments) - As an integral part of a larger systems AHP-1200CXP has been investigated in accordance with UL 3111-1, First Edition, rev. 6/94 Electrical Equipment for laboratory use and CSA C22.2 No. 1010.1-92 - Safety requirements for Electrical Equipment for Measurement, Control, and Laboratory use.

As an integral part of a larger system it has been investigated in accordance with NFPA 496 Edition - Purged and pressurized Enclosure for Electrical Equipment.
**Air Cooled Air Conditioners**

**FHP-SERIES**

**APPLICATIONS**

- Cools equipment racks, PCs, drives, amplifiers, motor controls and other electronic equipment.

**FEATURES**

- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Stainless steel exterior housing

**AHP-SERIES**

**APPLICATIONS**

- Cools equipment racks, PCs, drives, amplifiers, motor controls and other electronic equipment.

**FEATURES**

- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Stainless steel exterior housing

Note: Top mounting orientation is not recommended.
AHP-1800 Thermoelectric Air Conditioner

**Features**
- Compact, (18” L X 12.35” W X 9.69”D)
- Excels in high ambient temperatures
- Environmentally Safe
- Dual voltage versions available, consult factory.
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Stainless steel exterior housing
- Versions to withstand corrosive environments, shock and vibration
- Mounts and operates in any orientation

**Includes**
- Adjustable temperature control
- Mounting gasket and hardware
- Power input line cord

**Applications**
Cools electronic enclosures and control cabinets in factories, mines and on ship board.

**Specifications**

<table>
<thead>
<tr>
<th>Model</th>
<th>Part Number</th>
<th>Notes</th>
<th>Performance Rating BTU/HR</th>
<th>Voltage VAC 50/60 Hz</th>
<th>Current Amps</th>
<th>Weight LBS.(KG)</th>
<th>Temp. Control °C</th>
<th>Operating Ambient °C</th>
<th>Agency Approvals ETL</th>
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<td>AHP-1800XEHC</td>
<td>0-0150-5-000</td>
<td>Heat/Cool</td>
<td>1035-1180</td>
<td>120</td>
<td>8.0</td>
<td>47(21.4)</td>
<td>OPT*</td>
<td>-28/+70</td>
<td>UL1995/CSA22, CE</td>
</tr>
<tr>
<td>AHP-1802XE</td>
<td>0-0182-4-000</td>
<td>Cool only</td>
<td>1035-1180</td>
<td>240</td>
<td>5.0</td>
<td>52(23.6)</td>
<td>TC-6F</td>
<td>-28/+70</td>
<td>UL1995/CSA22, CE</td>
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<tr>
<td>AHP-1802XE</td>
<td>0-0152-4-000</td>
<td>Cool only</td>
<td>1035-1180</td>
<td>240</td>
<td>5.0</td>
<td>52(23.6)</td>
<td>OPT*</td>
<td>-28/+70</td>
<td>UL1995/CSA22, CE</td>
</tr>
<tr>
<td>AHP-1802XEHC</td>
<td>0-0132-5-000</td>
<td>Heat/Cool</td>
<td>1035-1180</td>
<td>240</td>
<td>5.0</td>
<td>52(23.6)</td>
<td>TC-3F</td>
<td>-28/+70</td>
<td>UL1995/CSA22, CE</td>
</tr>
<tr>
<td>AHP-1802XEHC</td>
<td>0-0152-5-000</td>
<td>Heat/Cool</td>
<td>1035-1180</td>
<td>240</td>
<td>5.0</td>
<td>52(23.6)</td>
<td>OPT*</td>
<td>-28/+70</td>
<td>UL1995/CSA22, CE</td>
</tr>
<tr>
<td>AHP-1800X</td>
<td>0-0180-2-000</td>
<td>Cool only</td>
<td>1035-1180</td>
<td>120</td>
<td>7.5</td>
<td>47(21.4)</td>
<td>TC-6F</td>
<td>-28/+70</td>
<td>UL1995/CSA22, CE</td>
</tr>
<tr>
<td>AHP-1800X</td>
<td>0-0150-2-000</td>
<td>Cool only</td>
<td>1035-1180</td>
<td>120</td>
<td>7.5</td>
<td>47(21.4)</td>
<td>OPT*</td>
<td>-28/+70</td>
<td>UL1995/CSA22, CE</td>
</tr>
<tr>
<td>AHP-1800XHC</td>
<td>0-0130-3-000</td>
<td>Heat/Cool</td>
<td>1035-1180</td>
<td>120</td>
<td>7.5</td>
<td>47(21.4)</td>
<td>TC-3F</td>
<td>-28/+70</td>
<td>UL1995/CSA22, CE</td>
</tr>
<tr>
<td>AHP-1800XHC</td>
<td>0-0150-3-000</td>
<td>Heat/Cool</td>
<td>1035-1180</td>
<td>120</td>
<td>7.5</td>
<td>47(21.4)</td>
<td>OPT*</td>
<td>-28/+70</td>
<td>UL1995/CSA22, CE</td>
</tr>
<tr>
<td>AHP-1800XP</td>
<td>0-0180-2-002</td>
<td>Cool only</td>
<td>1035-1180</td>
<td>120</td>
<td>7.5</td>
<td>47(21.4)</td>
<td>TC-6F</td>
<td>-28/+70</td>
<td>UL-1604</td>
</tr>
<tr>
<td>AHP-1800XP</td>
<td>0-0180-2-002</td>
<td>Cool only</td>
<td>1035-1180</td>
<td>120/240</td>
<td>7.5/5.0</td>
<td>52(23.6)</td>
<td>TC-6F</td>
<td>-28/+70</td>
<td>UL-1604</td>
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<td>AHP-1801XP</td>
<td>0-0181-2-002</td>
<td>Cool only</td>
<td>1035-1180</td>
<td>120/240</td>
<td>7.5/5.0</td>
<td>52(23.6)</td>
<td>TC-3F</td>
<td>-28/+70</td>
<td>UL-1604</td>
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<td>120/240</td>
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<td>52(23.6)</td>
<td>TC-3F</td>
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<td>UL-1604</td>
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<td>0-0171-3-004</td>
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<td>120/240</td>
<td>7.5/5.0</td>
<td>52(23.6)</td>
<td>OPT*</td>
<td>-28/+70</td>
<td>UL-1604</td>
</tr>
</tbody>
</table>

Consult us for 120/240 VAC versions, model AHP-1801, with similar features.

*OPT; Unit is set up for TC-3300 Controller (or similar)
**Equation of line:** $y = \frac{-5}{3}T(°C) \quad x =$ Capacity (Watts)

<table>
<thead>
<tr>
<th>Ambient Temp</th>
<th>20°C</th>
<th>40°C</th>
<th>60°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure Air</td>
<td>$y = 0.122x - 37.0$</td>
<td>$y = 0.122x - 39.7$</td>
<td>$y = 0.122x - 42.3$</td>
</tr>
<tr>
<td>Cold Sink</td>
<td>$y = 0.09x - 37.0$</td>
<td>$y = 0.09x - 39.7$</td>
<td>$y = 0.09x - 42.3$</td>
</tr>
</tbody>
</table>

**DIMENSIONS**

- **Input Power Cable:** 12.35 in
- **External Hot Side Fans:** 18.0 in
- **Internal Cold Side Fans:** 9.69 in
- **Temperature Adjustment:** 6.63 in
- **Circuit Breaker:** 16.45 in
- **Mounting Cutout Dimensions:** 8 x 0.218 in

* Dimension does not include hardware, insulation. Dimensions: Inches. Mounting hardware and gasket included but not shown.

---

**AHP-1800**

**Mounting Style**
- Thru Mount

**Environments**
- Nema-12 \ IP 40 (maintains IP 52)
- Nema-4/4X \ IP 56
- Class I Div 2 and Nema-4X \ IP 56

**Rating (Traditional)**
- 1100 BTU/hr @ 0 °F $\Delta T$
- 1420 BTU/hr @ +20 °F $\Delta T$

**Rating (DIN 3168)**
- 322 Watts L35 L35
- 210 Watts L35 L50

* See page 6
AHP-1800 DC Thermoelectric Air Conditioner

FEATURES
- Compact, (18" L X 12.35" W X 9.69" D)
- Excels in high ambient temperatures
- Environmentally Safe
- Dual efficiency versions available, consult factory
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Stainless steel exterior housing
- Versions to withstand corrosive environments, shock and vibration
- Mounts and operates in any orientation

INCLUDES
- Adjustable temperature control
- Mounting gasket and hardware
- Power input leads

APPLICATIONS
Cools electronic enclosures and control cabinets in factories, mines and on ship board.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING BTU/HR</th>
<th>VOLTAGE DC</th>
<th>RUNNING CURRENT AMPS.</th>
<th>WEIGHT LBS (KG) APPROX.</th>
<th>TEMP. CONTROL</th>
<th>OPERATING AMBIENT °C</th>
<th>AGENCY APPROVALS (ETL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHP-1800</td>
<td>0-0195-0-000</td>
<td>Cool only</td>
<td>1100-1300</td>
<td>24</td>
<td>20</td>
<td>40 (18)</td>
<td>NONE</td>
<td>-10/-70</td>
<td>PENDING</td>
</tr>
<tr>
<td>AHP-1800</td>
<td>0-0185-0-000</td>
<td>Cool only</td>
<td>1100-1300</td>
<td>24</td>
<td>20</td>
<td>40 (18)</td>
<td>TC-6F</td>
<td>-10/-70</td>
<td>PENDING</td>
</tr>
<tr>
<td>AHP-1800</td>
<td>0-0155-0-000</td>
<td>Cool only</td>
<td>1100-1300</td>
<td>24</td>
<td>20</td>
<td>40 (18)</td>
<td>OPT*</td>
<td>-10/-70</td>
<td>PENDING</td>
</tr>
<tr>
<td>AHP-1800</td>
<td>0-01D5-0-000</td>
<td>Cool only</td>
<td>1100-1300</td>
<td>24</td>
<td>20</td>
<td>40 (18)</td>
<td>TC-3300</td>
<td>-10/-70</td>
<td>PENDING</td>
</tr>
<tr>
<td>AHP-1800HC</td>
<td>0-0135-1-000</td>
<td>Heat/Cool</td>
<td>1100-1300</td>
<td>24</td>
<td>20</td>
<td>40 (18)</td>
<td>TC-3F</td>
<td>-10/-70</td>
<td>PENDING</td>
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<tr>
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<td>0-0155-1-000</td>
<td>Heat/Cool</td>
<td>1100-1300</td>
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<td>20</td>
<td>40 (18)</td>
<td>OPT*</td>
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<td>PENDING</td>
</tr>
<tr>
<td>AHP-1800X</td>
<td>0-0195-4-000</td>
<td>Cool only</td>
<td>1100-1300</td>
<td>24</td>
<td>20</td>
<td>40 (18)</td>
<td>NONE</td>
<td>-28/-70</td>
<td>PENDING</td>
</tr>
<tr>
<td>AHP-1800XE</td>
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<td>24</td>
<td>20</td>
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<td>PENDING</td>
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<td>AHP-1800XEHC</td>
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<td>Cool only</td>
<td>1100-1300</td>
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<td>20</td>
<td>40 (18)</td>
<td>OPT*</td>
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<td>PENDING</td>
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<td>AHP-1800XHC</td>
<td>0-0135-5-000</td>
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<td>TC-3F</td>
<td>-28/-70</td>
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<td>Cool only</td>
<td>1100-1300</td>
<td>24</td>
<td>20</td>
<td>40 (18)</td>
<td>OPT*</td>
<td>-28/-70</td>
<td>PENDING</td>
</tr>
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<td>AHP-1802X</td>
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<td>Cool only</td>
<td>1100-1300</td>
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<td>20</td>
<td>40 (18)</td>
<td>NONE</td>
<td>-28/-70</td>
<td>PENDING</td>
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<tr>
<td>AHP-1802XEHC</td>
<td>0-0185-2-000</td>
<td>Cool only</td>
<td>1100-1300</td>
<td>24</td>
<td>20</td>
<td>40 (18)</td>
<td>TC-6F</td>
<td>-28/-70</td>
<td>PENDING</td>
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<td>AHP-1802XHC</td>
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<td>Cool only</td>
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<td>20</td>
<td>40 (18)</td>
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<td>PENDING</td>
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<tr>
<td>AHP-1800X</td>
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<td>1100-1300</td>
<td>24</td>
<td>20</td>
<td>40 (18)</td>
<td>TC-3F</td>
<td>-28/-70</td>
<td>PENDING</td>
</tr>
<tr>
<td>AHP-1800XHC</td>
<td>0-0135-3-000</td>
<td>Cool only</td>
<td>1100-1300</td>
<td>24</td>
<td>20</td>
<td>40 (18)</td>
<td>OPT*</td>
<td>-28/-70</td>
<td>PENDING</td>
</tr>
</tbody>
</table>

*OPT; Unit is set up for TC-3300 Controller (or similar)

^ For other input voltages consult the factory
**PERFORMANCE CURVE**

Equation of line: \( y = \Delta T (°C) \times x = \text{Capacity (Watts)} \)

<table>
<thead>
<tr>
<th>Ambient Temp</th>
<th>20°C</th>
<th>40°C</th>
<th>60°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure Air</td>
<td>( y = 0.129x - 38.1 )</td>
<td>( y = 0.129x - 40.1 )</td>
<td>( y = 0.129x - 42.0 )</td>
</tr>
<tr>
<td>Cold Sink</td>
<td>( y = 0.09x - 38.1 )</td>
<td>( y = 0.09x - 40.1 )</td>
<td>( y = 0.09x - 42.0 )</td>
</tr>
</tbody>
</table>

**DIMENSIONS**

*Dimension does not include hardware, insulation. Dimensions: Inches
Mounting hardware and gasket included but not shown.*
AHP-1802XP
Thermoelectric Air Conditioner

FEATURES

• Designed for European Zone 1 and Zone 2
• Compact (24” L X 12.35” W X 19.9” D)
• Weighs approximately 100 lbs. (45 kg)
• Heavy gauge aluminum and stainless steel construction
• Ambient temperature up to +50°C
• No compressor, fluorocarbons or filters
• Virtually maintenance-free operation
• Integral power supply
• Environmentally safe
• Mounts and operates in any orientation

INCLUDES

• Semi-Centrifugal duct fan, DN 220, AC, explosion proof, zones 1and 2
• Integral linear power supply
• TC-6F adjustable cool only controller
• TC-3F Heat/Cool controller available
• Versions for customer supplied control
• Gasket and mounting hardware included
• Power input line cord

SPECIFICATIONS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING (BTU/HR)</th>
<th>VOLTAGE (VAC) 50 Hz</th>
<th>CURRENT AMPS.</th>
<th>WEIGHT LBS.(KG)</th>
<th>TEMP. CONTROL</th>
<th>MAX. OPERATING AMBIENT (°C)</th>
<th>APPROVALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHP-1802XP</td>
<td>0-0182-2-007</td>
<td>Cool only</td>
<td>950-1100</td>
<td>230</td>
<td>5.3</td>
<td>98 (44)</td>
<td>TC-6F</td>
<td>50 °C pending</td>
<td></td>
</tr>
<tr>
<td>AHP-1802XPHC</td>
<td>0-0132-3-008</td>
<td>Heat/Cool</td>
<td>950-1100</td>
<td>230</td>
<td>5.3</td>
<td>98 (44)</td>
<td>TC-3F</td>
<td>50 °C pending</td>
<td></td>
</tr>
<tr>
<td>AHP-1802XP</td>
<td>0-0172-3-009</td>
<td>Cool only</td>
<td>950-1100</td>
<td>230</td>
<td>5.3</td>
<td>98 (44)</td>
<td>OPT*</td>
<td>50 °C pending</td>
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</tr>
<tr>
<td>AHP-1802XPHC</td>
<td>0-0172-3-010</td>
<td>Heat/Cool</td>
<td>950-1100</td>
<td>230</td>
<td>5.3</td>
<td>98 (44)</td>
<td>OPT*</td>
<td>50 °C pending</td>
<td></td>
</tr>
</tbody>
</table>

* Requires 3-32 VDC drive signal
**PERFORMANCE CURVE**

![Performance Curve](image)

**EQUATION OF LINE:**

\[ y = \Delta T \degree C \times \text{Capacity (Watts)} \]

<table>
<thead>
<tr>
<th>Ambient Temp</th>
<th>25°C</th>
<th>50°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure Air</td>
<td>( y = 0.123x - 35.0 )</td>
<td>( y = 0.123x - 40.0 )</td>
</tr>
<tr>
<td>Cold Sink</td>
<td>( y = 0.09x - 35.0 )</td>
<td>( y = 0.09x - 40.0 )</td>
</tr>
</tbody>
</table>

**DIMENSIONS**

![Dimension Diagram](image)

* Dimension does not include hardware, insulation. Mounting hardware and gasket included but not shown. Dimensions: Inches

**MOUNTING CUTOUT DIMENSIONS**

![Cutout Diagram](image)
AHP-1501 Thermoelectric Air Conditioner

**FEATURES**
- Compact
- Mounts in multi-unit array for incremental capacity
- Dual voltage 120/240 VAC
- Environmentally safe
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Stainless steel exterior housing

**INCLUDES**
- Temperature control
- Mounting gasket and hardware
- Power input line cord
- Condensate removal system including drip pan

**APPLICATIONS**
Used to cool electronic enclosures in high humidity and elsewhere.

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING BTU/HR</th>
<th>VOLTAGE VAC 50/60HZ</th>
<th>CURRENT AMPS.</th>
<th>WEIGHT LBS.(KG)</th>
<th>TEMP CONTROL</th>
<th>OPERATING AMBIENT °C</th>
<th>CONDENSATE REMOVAL</th>
<th>AGENCY APPROVALS (ETL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHP-1501</td>
<td>0-2171-0-000</td>
<td>Cool Only</td>
<td>1000-1100</td>
<td>120/240</td>
<td>7.5/5.0</td>
<td>52(24)</td>
<td>30</td>
<td>-10/+70</td>
<td>Wick, Drip Pan</td>
<td>UL1995/CSA22.2, CE</td>
</tr>
<tr>
<td>AHP-1501</td>
<td>0-2181-0-000</td>
<td>Cool Only</td>
<td>1000-1100</td>
<td>120/240</td>
<td>7.5/5.0</td>
<td>52(24)</td>
<td>TC-6F</td>
<td>-10/+70</td>
<td>Wick</td>
<td>UL1995/CSA22.2, CE</td>
</tr>
<tr>
<td>AHP-1501</td>
<td>0-2151-0-000</td>
<td>Cool Only</td>
<td>1000-1100</td>
<td>120/240</td>
<td>7.5/5.0</td>
<td>52(24)</td>
<td>OPT*</td>
<td>-10/+70</td>
<td>Wick</td>
<td>UL1995/CSA22.2, CE</td>
</tr>
<tr>
<td>AHP-1501HC</td>
<td>0-2131-1-000</td>
<td>Heat/Cool</td>
<td>1000-1100</td>
<td>120/240</td>
<td>7.5/5.0</td>
<td>52(24)</td>
<td>TC-3F</td>
<td>-10/+70</td>
<td>Wick</td>
<td>UL1995/CSA22.2, CE</td>
</tr>
<tr>
<td>AHP-1501HC</td>
<td>0-2151-1-000</td>
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<tr>
<td>AHP-1501XC</td>
<td>0-2181-4-000</td>
<td>Cool Only</td>
<td>1000-1100</td>
<td>120/240</td>
<td>7.5/5.0</td>
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</tr>
<tr>
<td>AHP-1501XE</td>
<td>0-2151-4-000</td>
<td>Cool Only</td>
<td>1000-1100</td>
<td>120/240</td>
<td>7.5/5.0</td>
<td>52(24)</td>
<td>OPT*</td>
<td>-10/+70</td>
<td>Wick</td>
<td>UL1995/CSA22.2, CE</td>
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<tr>
<td>AHP-1501XHC</td>
<td>0-2131-5-000</td>
<td>Heat/Cool</td>
<td>1000-1100</td>
<td>120/240</td>
<td>7.5/5.0</td>
<td>52(24)</td>
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<td>0-2151-5-000</td>
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<td>Wick</td>
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</tr>
</tbody>
</table>

*OPT: Unit is set up for TC-3300 Controller (or similar)
**PERFORMANCE CURVE**

Equation of line: \( y = \Delta T(\degree C) \times \text{Capacity (Watts)} \)

<table>
<thead>
<tr>
<th>Ambient Temp</th>
<th>20°C</th>
<th>40°C</th>
<th>60°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure Air</td>
<td>( y = 0.136x - 38.4 )</td>
<td>( y = 0.136x - 40.5 )</td>
<td>( y = 0.136x - 42.6 )</td>
</tr>
<tr>
<td>Cold Sink</td>
<td>( y = 0.10x - 38.4 )</td>
<td>( y = 0.10x - 40.5 )</td>
<td>( y = 0.10x - 42.6 )</td>
</tr>
</tbody>
</table>

**AHP-1501 DIMENSIONS**

*Dimension does not include hardware. Dimensions: Inches
Mounting hardware, drip pan and gasket included but not shown.*

**MOUNTING CUTOUT DIMENSIONS**

**AHP-1501**

MOUNTING STYLE

Thru Mount

ENVIRONMENTS

- Nema-12  IP 40 (maintains IP 52)
- Nema-4/4X  IP 56

RATING (TRADITIONAL)

- 1000 BTU/hr @ 0 °F \( \Delta T \)
- 1300 BTU/hr @ +20 °F \( \Delta T \)

RATING (DIN 3168)

- 300 Watts L35 L35
- 187 Watts L35 L50

See page 6
AHP-1400  Thermoelectric Air Conditioner

Air Cooled  Thru Mount  Nema-12

FEATURES

• Compact
• Excels in high ambient temperatures
• Environmentally safe
• No compressor, fluorocarbons or filters
• Virtually maintenance-free operation
• Stainless steel exterior housing
• Nema-12 rating maintained
• Mounts in any orientation

INCLUDES

• Integral power supply (120 VAC input)
• Condensate removal system
• TC-6F thermostat

APPLICATIONS

Used to cool electronic enclosures in high humidity and elsewhere.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING (BTU/HR)</th>
<th>VOLTAGE (VAC) 50/60 (Hz)</th>
<th>CURRENT AMPS.</th>
<th>WEIGHT LBS. (Kg)</th>
<th>TEMP. CONTROL</th>
<th>CONDENSATE REMOVAL</th>
<th>OPERATING AMBIENT °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHP-1400</td>
<td>0-B480-0-000</td>
<td>Cool only, built in temperature control</td>
<td>810-900</td>
<td>120</td>
<td>8.5</td>
<td>33 (15)</td>
<td>TC-6F</td>
<td>Included</td>
<td>-10/+70</td>
</tr>
</tbody>
</table>
**PERFORMANCE CURVE**

Equation of Line: \( y = \Delta T(°C) \times x = \text{Capacity (Watts)} \\

<table>
<thead>
<tr>
<th>Ambient Temp</th>
<th>20°C</th>
<th>40°C</th>
<th>60°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure Air</td>
<td>( y = .16x - 38 )</td>
<td>( y = .16x - 40 )</td>
<td>( y = .16x - 42 )</td>
</tr>
<tr>
<td>Cold Sink</td>
<td>( y = .12x - 38 )</td>
<td>( y = .12x - 40 )</td>
<td>( y = .12x - 42 )</td>
</tr>
</tbody>
</table>

**DIMENSIONS**

* Dimension does not include hardware. Dimensions: Inches. Mounting hardware and gasket included but not shown.

**MOUNTING STYLE**

Thru Mount

**ENVIRONMENTS**

Nema-12  IP 40 (maintains IP 52)

**RATING (TRADITIONAL)**

850 BTU/hr @ 0 °F \( \Delta T \)
1090 BTU/hr @ +20 °F \( \Delta T \)

**RATING (DIN 3168)**

250 Watts  L35 L35
155 Watts  L35 L50

* See page 6

**MOUNTING CUTOUT DIMENSIONS**

8 X Ø0.218 Required
5.66
4.50
1.50

4 X Ø0.156 Optional Holes
5.50
11.0 REF.

www.teca-eu.com 1-800-TECA-USA (832-2872)
AHP-1200 Thermoelectric Air Conditioner

FEATURES
- Compact, (only 15” L X 7.35” W X 8.17” D)
- Weighs only 21 lbs. (9.5 kg)
- Excels in high ambient temperatures
- Environmentally safe
- Dual voltage versions available
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Stainless steel exterior housing
- Versions to withstand corrosive environments, shock and vibration
- Mounts and operates in any orientation

INCLUDES
- Adjustable temperature control
- Gasket and mounting hardware
- Power input line cord

APPLICATIONS
Cools electronic enclosures and control cabinets in factories, mines and on ships.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING BTU/HR</th>
<th>VOLTAGE VAC 50/60HZ</th>
<th>CURRENT AMPS.</th>
<th>WEIGHT LBS.(KG)</th>
<th>TEMP. CONTROL</th>
<th>OPERATING AMBIENT °C</th>
<th>AGENCY APPROVALS (ETL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHP-1200</td>
<td>0-3080-0-000</td>
<td>Cool only</td>
<td>500-550</td>
<td>120</td>
<td>4.0</td>
<td>21(9.5)</td>
<td>TC-6F</td>
<td>-10/+70</td>
<td>UL1995/CSA22.2, CE</td>
</tr>
<tr>
<td>AHP-1200</td>
<td>0-3050-0-000</td>
<td>Cool only</td>
<td>500-550</td>
<td>120</td>
<td>4.0</td>
<td>21(9.5)</td>
<td>OPT*</td>
<td>-10/+70</td>
<td>UL1995/CSA22.2, CE</td>
</tr>
<tr>
<td>AHP-1200HC</td>
<td>0-3030-1-000</td>
<td>Heat/Cool</td>
<td>500-550</td>
<td>120</td>
<td>4.0</td>
<td>21(9.5)</td>
<td>OPT*</td>
<td>-10/+70</td>
<td>UL1995/CSA22.2, CE</td>
</tr>
<tr>
<td>AHP-1201</td>
<td>0-3051-0-000</td>
<td>Cool only</td>
<td>500-550</td>
<td>120/240</td>
<td>4.0/2.2</td>
<td>29(13.2)</td>
<td>TC-6F</td>
<td>-10/+70</td>
<td>UL1995/CSA22.2, CE</td>
</tr>
<tr>
<td>AHP-1201HC</td>
<td>0-3031-1-000</td>
<td>Heat/Cool</td>
<td>500-550</td>
<td>120/240</td>
<td>4.0/2.2</td>
<td>29(13.2)</td>
<td>OPT*</td>
<td>-10/+70</td>
<td>UL1995/CSA22.2, CE</td>
</tr>
<tr>
<td>AHP-1201HC</td>
<td>0-3051-1-000</td>
<td>Heat/Cool</td>
<td>500-550</td>
<td>120/240</td>
<td>4.0/2.2</td>
<td>29(13.2)</td>
<td>OPT*</td>
<td>-10/+70</td>
<td>UL1995/CSA22.2, CE</td>
</tr>
<tr>
<td>AHP-1202XE</td>
<td>0-3080-4-000</td>
<td>Cool only</td>
<td>500-550</td>
<td>120</td>
<td>4.5</td>
<td>23(10.4)</td>
<td>TC-6F</td>
<td>-28/+70</td>
<td>UL1995/CSA22.2, CE</td>
</tr>
<tr>
<td>AHP-1200XE</td>
<td>0-3050-4-000</td>
<td>Cool only</td>
<td>500-550</td>
<td>120</td>
<td>4.5</td>
<td>23(10.4)</td>
<td>OPT*</td>
<td>-28/+70</td>
<td>UL1995/CSA22.2, CE</td>
</tr>
<tr>
<td>AHP-1200XEHC</td>
<td>0-3030-5-000</td>
<td>Heat/Cool</td>
<td>500-550</td>
<td>120</td>
<td>4.5</td>
<td>23(10.4)</td>
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<td>-28/+70</td>
<td>UL1995/CSA22.2, CE</td>
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<tr>
<td>AHP-1202XEH</td>
<td>0-3082-4-000</td>
<td>Cool only</td>
<td>500-550</td>
<td>240</td>
<td>2.5</td>
<td>30(13.6)</td>
<td>TC-6F</td>
<td>-28/+70</td>
<td>UL1995/CSA22.2, CE</td>
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<tr>
<td>AHP-1202XEH</td>
<td>0-3052-4-000</td>
<td>Cool only</td>
<td>500-550</td>
<td>240</td>
<td>2.5</td>
<td>30(13.6)</td>
<td>OPT*</td>
<td>-28/+70</td>
<td>UL1995/CSA22.2, CE</td>
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<td>0-3032-5-000</td>
<td>Heat/Cool</td>
<td>500-550</td>
<td>240</td>
<td>2.5</td>
<td>30(13.6)</td>
<td>TC-3F</td>
<td>-28/+70</td>
<td>UL1995/CSA22.2, CE</td>
</tr>
<tr>
<td>AHP-1202XEH</td>
<td>0-3052-5-000</td>
<td>Heat/Cool</td>
<td>500-550</td>
<td>240</td>
<td>2.5</td>
<td>30(13.6)</td>
<td>OPT*</td>
<td>-28/+70</td>
<td>UL1995/CSA22.2, CE</td>
</tr>
<tr>
<td>AHP-1200X</td>
<td>0-3080-2-000</td>
<td>Cool only</td>
<td>500-550</td>
<td>120</td>
<td>4.0</td>
<td>23(10.4)</td>
<td>TC-6F</td>
<td>-28/+70</td>
<td>UL1995/CSA22.2, CE</td>
</tr>
<tr>
<td>AHP-1200X</td>
<td>0-3050-2-000</td>
<td>Cool only</td>
<td>500-550</td>
<td>120</td>
<td>4.0</td>
<td>23(10.4)</td>
<td>OPT*</td>
<td>-28/+70</td>
<td>UL1995/CSA22.2, CE</td>
</tr>
<tr>
<td>AHP-1200XHC</td>
<td>0-3030-3-000</td>
<td>Heat/Cool</td>
<td>500-550</td>
<td>120</td>
<td>4.0</td>
<td>23(10.4)</td>
<td>OPT*</td>
<td>-28/+70</td>
<td>UL1995/CSA22.2, CE</td>
</tr>
<tr>
<td>AHP-1200XHC</td>
<td>0-3050-3-000</td>
<td>Heat/Cool</td>
<td>500-550</td>
<td>120</td>
<td>4.0</td>
<td>23(10.4)</td>
<td>OPT*</td>
<td>-28/+70</td>
<td>UL1995/CSA22.2, CE</td>
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<td>120</td>
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<td>500-550</td>
<td>120</td>
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<td>23(10.4)</td>
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<td>UL1604</td>
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<td>500-550</td>
<td>120</td>
<td>4.5</td>
<td>23(10.4)</td>
<td>TC-3F</td>
<td>-28/+70</td>
<td>UL1604</td>
</tr>
</tbody>
</table>

Consult us for model AHP-1200XM, full shock and vibration version

*OPT; Unit is set up for TC-3300 Controller (or similar)
PERFORMANCE CURVE

Equation of line: \( y = \Delta T(\degree C) \times \text{Capacity (Watts)} \)

<table>
<thead>
<tr>
<th>Ambient Temp</th>
<th>20°C</th>
<th>40°C</th>
<th>60°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure Air</td>
<td>( y = \frac{266x}{10} - 39.5 )</td>
<td>( y = \frac{266x}{10} - 41.0 )</td>
<td>( y = \frac{266x}{10} - 42.5 )</td>
</tr>
<tr>
<td>Cold Sink</td>
<td>( y = \frac{173x}{10} - 39.5 )</td>
<td>( y = \frac{173x}{10} - 41.0 )</td>
<td>( y = \frac{173x}{10} - 42.5 )</td>
</tr>
</tbody>
</table>

DIMENSIONS

External Hot Side Fan

Internal Cold Side Fan

(12) 10-32 Studs

5.76

2.88

2.88

3.452 TYP.

3.13

3.13

13.00

15.00

4.04

8.17

Temp. Adjustment

12XØ0.218

3.125

3.125

6.62

3.125

3.125

6.62

13.24

5.50

* Dimension does not include hardware. Dimensions: Inches, Mounting hardware and gasket included but not shown.
## FEATURES
- Compact, (only 15”L X 7.35”W X 8.17”D)
- Weighs only 18 lbs. (8.2 kg)
- Excels in high ambient temperatures
- Environmentally safe
- Dual efficiency versions available
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Stainless steel exterior housing
- Versions to withstand corrosive environments, shock and vibration
- Mounts and operates in any orientation

## INCLUDES
- Adjustable temperature control
- Gasket and mounting hardware
- Power input leads

## APPLICATIONS
Cools electronic enclosures and control cabinets in factories, mines and on ships.

## SPECIFICATIONS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING BTU/HR</th>
<th>VOLTAGE VDC ^</th>
<th>CURRENT AMPS.</th>
<th>WEIGHT LBS (KG)</th>
<th>TEMP CONTROL *</th>
<th>OPERATING AMBIENT °C</th>
<th>AGENCY APPROVALS (ETL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHP-1200</td>
<td>0-3095-0-000</td>
<td>Cool only</td>
<td>512-580</td>
<td>24</td>
<td>9.0</td>
<td>18 (8.2)</td>
<td>NONE</td>
<td>-10/+70</td>
<td>PENDING</td>
</tr>
<tr>
<td>AHP-1200</td>
<td>0-3085-0-000</td>
<td>Cool only</td>
<td>512-580</td>
<td>24</td>
<td>9.0</td>
<td>18 (8.2)</td>
<td>TC-6F</td>
<td>-10/+70</td>
<td>PENDING</td>
</tr>
<tr>
<td>AHP-1200</td>
<td>0-30F5-0-000</td>
<td>Cool only</td>
<td>512-580</td>
<td>24</td>
<td>9.0</td>
<td>18 (8.2)</td>
<td>85°F (30°)</td>
<td>-10/+70</td>
<td>PENDING</td>
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<tr>
<td>AHP-1200</td>
<td>0-3055-0-000</td>
<td>Cool only</td>
<td>512-580</td>
<td>24</td>
<td>9.0</td>
<td>18 (8.2)</td>
<td>OPT*</td>
<td>-10/+70</td>
<td>PENDING</td>
</tr>
<tr>
<td>AHP-1200</td>
<td>0-30DS-0-000</td>
<td>Cool only</td>
<td>512-580</td>
<td>24</td>
<td>9.0</td>
<td>18 (8.2)</td>
<td>TC-3300</td>
<td>-10/+70</td>
<td>PENDING</td>
</tr>
<tr>
<td>AHP-1200HC</td>
<td>0-3035-1-000</td>
<td>Heat/Cool</td>
<td>512-580</td>
<td>24</td>
<td>9.0</td>
<td>18 (8.2)</td>
<td>TC-3F</td>
<td>-10/+70</td>
<td>PENDING</td>
</tr>
<tr>
<td>AHP-1200HC</td>
<td>0-3055-1-000</td>
<td>Heat/Cool</td>
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<td>AHP-1200HC</td>
<td>0-30DS-1-000</td>
<td>Heat/Cool</td>
<td>512-580</td>
<td>24</td>
<td>9.0</td>
<td>18 (8.2)</td>
<td>TC-3300</td>
<td>-10/+70</td>
<td>PENDING</td>
</tr>
<tr>
<td>AHP-1200XE</td>
<td>0-3095-4-000</td>
<td>Cool only</td>
<td>512-580</td>
<td>24</td>
<td>9.0</td>
<td>18 (8.2)</td>
<td>NONE</td>
<td>-28/+70</td>
<td>PENDING</td>
</tr>
<tr>
<td>AHP-1200XE</td>
<td>0-3085-4-000</td>
<td>Cool only</td>
<td>512-580</td>
<td>24</td>
<td>9.0</td>
<td>18 (8.2)</td>
<td>TC-6F</td>
<td>-28/+70</td>
<td>PENDING</td>
</tr>
<tr>
<td>AHP-1200XE</td>
<td>0-30F5-4-000</td>
<td>Cool only</td>
<td>512-580</td>
<td>24</td>
<td>9.0</td>
<td>18 (8.2)</td>
<td>85°F (30°)</td>
<td>-28/+70</td>
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</tr>
<tr>
<td>AHP-1200XE</td>
<td>0-3055-4-000</td>
<td>Cool only</td>
<td>512-580</td>
<td>24</td>
<td>9.0</td>
<td>18 (8.2)</td>
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<td>PENDING</td>
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<tr>
<td>AHP-1200XEHHC</td>
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<td>Heat/Cool</td>
<td>512-580</td>
<td>24</td>
<td>9.0</td>
<td>18 (8.2)</td>
<td>TC-3F</td>
<td>-28/+70</td>
<td>PENDING</td>
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<tr>
<td>AHP-1202XEHHC</td>
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<td>Heat/Cool</td>
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<td>24</td>
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<td>0-3085-2-000</td>
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<td>0-30F5-2-000</td>
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<td>AHP-1200XHC</td>
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<td>512-580</td>
<td>24</td>
<td>9.0</td>
<td>18 (8.2)</td>
<td>OPT*</td>
<td>-28/+70</td>
<td>PENDING</td>
</tr>
</tbody>
</table>

Consult us for model AHP-1200XM, full shock and vibration version

^ Consult us for other input voltage availability

*OPT; Unit is set up for TC-3300 Controller (or similar)
**PERFORMANCE CURVE**

![Performance Curve Graph](image)

Equation of line: \( y = \Delta T(°C) \times \text{Capacity (Watts)} \)

<table>
<thead>
<tr>
<th>Ambient Temp</th>
<th>20°C</th>
<th>40°C</th>
<th>60°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure Air</td>
<td>( y = 0.255x - 39.0 )</td>
<td>( y = 0.255x - 41.0 )</td>
<td>( y = 0.255x - 42.0 )</td>
</tr>
<tr>
<td>Cold Sink</td>
<td>( y = 0.166x - 39.0 )</td>
<td>( y = 0.166x - 41.0 )</td>
<td>( y = 0.166x - 42.0 )</td>
</tr>
</tbody>
</table>

**DIMENSIONS**

![Dimension Diagram](image)

* Dimension does not include hardware. Dimensions: Inches, Mounting hardware and gasket included but not shown.

**MOUNTING STYLE**

Thru Mount

**ENVIRONMENTS**

Nema-12  IP 40 (maintains IP 52)
Nema-4/4X  IP 56

**RATING (TRADITIONAL)**

- 530 BTU/hr @ 0 °F \( \Delta T \)
- 670 BTU/hr @ +20 °F \( \Delta T \) *

**RATING (DIN 3168)**

- 154 Watts L35 L35
- 100 Watts L35 L50

* See page 6

**MOUNTING CUTOUT DIMENSIONS**

![Mounting Cutout Diagram](image)
AHP-1200CXP
Thermoelectric Air Conditioner
North American  Air Cooled
Thru Mount
Class 1, Division 1 Groups B, C, D

FEATURES

• Compact, (only 15”L X 7.35”W X 14”D)
• Weighs only 36 lbs. (16.4 kg)
• Excels in high ambient temperatures
• Environmentally safe
• Vortex Air Amplifier included
• Virtually maintenance-free operation
• Stainless steel exterior housing
• Mounts and operates in any orientation

REQUIREMENTS

• Clean and dry compressed air supply
• Purged enclosure
• 120 VAC Input voltage
• Temperature control

INCLUDES

• Mounting gasket and hardware
• Power input line cord

PERFORMANCE CURVE

25°C Ambient

60°C Ambient
LISTING & CLASSIFICATION:
The AHP-1200CXP by TECA is the first solid state air conditioner designed for use in Class 1 Division 1 Groups B, C and D hazardous environments in North America. The AHP-1200CXP features a unique air moving device that eliminates static discharge that traditional fans can generate. A compressed air line is required for the air moving device. The AHP-1200CXP has been used successfully in pharmaceutical plants on analyzers that monitor chemical reactions.

As an integral part of a larger system AHP-1200CXP has been investigated in accordance with UL 3111-1, First Edition, Rev. 6/94 Electrical Equipment for laboratory Use and CSA C22.2 No. 1010.1-92 Safety requirements for Electrical Equipment for Measurement, Control, and Laboratory Use.

As an integral part of a larger system it has been investigated in accordance with NFPA 496 Edition Purged and pressurized Enclosure for Electrical Equipment.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING (BTU/HR)</th>
<th>VOLTAGE (VAC 50/60 Hz)</th>
<th>CURRENT AMPS.</th>
<th>WEIGHT LBS. (KG)</th>
<th>TEMP. CONTROL</th>
<th>OPERATING AMBIENT °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHP-1200CXP</td>
<td>0-3070-2-016</td>
<td>Cool Only</td>
<td>307-680</td>
<td>120</td>
<td>4.0</td>
<td>36 (16.4)</td>
<td>OPT*</td>
<td>-20/+40</td>
</tr>
</tbody>
</table>

* Requires 3-32 VDC drive signal

DIMENSIONS

* Dimension does not include hardware. Dimensions: Inches

Mounting hardware and gasket included but not shown.
AHP-1200CXP Thermoelectric Air Conditioner

European Air Cooled Thru Mount
Group II, Category 2 [I] G
Exd p d [ia] ia IIB+H2 T4

FEATURES

• Compact, (only 15”L X 7.35”W X 18.4”D)
• Weighs only 39 lbs. (17.7kg)
• Excels in high ambient temperatures
• Environmentally safe
• Vortex Air Amplifier included
• Virtually maintenance-free operation
• Stainless steel exterior housing
• Mounts and operates in any orientation

REQUIREMENTS

• Clean and dry compressed air supply
• Purged enclosure
• 120 VAC Input voltage

INCLUDES

• Mounting gasket and hardware
• Power input line cord
• Temperature control

PERFORMANCE CURVE

25°C Ambient

60°C Ambient
The AHP-1200CXP is TECA's first solid state air conditioner designed for use in hazardous environments in the United Kingdom and European Union. The AHP-1200CXP features a unique air moving device that eliminates static discharge that traditional fans can generate. A compressed air line is required for the air moving device. The AHP-1200CXP has been successfully implemented with a purged enclosure and other approved equipment in pharmaceutical, petrochemical and other similar applications.


Procedure XF011, XF013

Group II, Category 2 [1] G EEx p d [ia] ia IIB+H2 T4  Ta=-20 °C to +40 °C

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING (BTU/HR)</th>
<th>VOLTAGE (VAC 50/60 HZ)</th>
<th>CURRENT AMPS.</th>
<th>WEIGHT LBS.(KG)</th>
<th>TEMP. CONTROL</th>
<th>OPERATING AMBIENT (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHP-1200CXP</td>
<td>0-3070-2-018</td>
<td>Cool Only</td>
<td>307-680</td>
<td>120</td>
<td>4.0</td>
<td>39(17.7)</td>
<td>OPT*</td>
<td>-20/+40</td>
</tr>
</tbody>
</table>

* Requires 3-32 VDC drive signal

**DIMENSIONS**

* Dimension does not include hardware. Dimensions: Inches

Mounting hardware and gasket included but not shown.
AHP-301FF Thermoelectric Air Conditioner

FEATURES
- Compact (only 10"L X 5.52"W X 7.83"D)
- Weighs only 12 lbs. (5.4 kg)
- Ambient range -10°C to +70°C
- Mounts and operates in any orientation: horizontal, vertical, etc.
- Low vibration and noise
- No moving parts except fans
- Environmentally safe
- Dual voltage
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Stainless steel exterior housing

INCLUDES
- Integral power supply 120/240 VAC
- Gasket and mounting hardware

APPLICATIONS
Cools electronic enclosures and control cabinets in factories and elsewhere.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING BTU/HR</th>
<th>VOLTAGE VAC 50/60HZ</th>
<th>CURRENT AMPS</th>
<th>WEIGHT LBS.(KG)</th>
<th>TEMP. CONTROL</th>
<th>OPERATING AMBIENT °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHP-301FF</td>
<td>0-7091-0-000</td>
<td>Cool only</td>
<td>160-200</td>
<td>120/240</td>
<td>1.4/.70</td>
<td>12(5.4)</td>
<td>none</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-301FF</td>
<td>0-7081-0-000</td>
<td>Cool only</td>
<td>160-200</td>
<td>120/240</td>
<td>1.4/.70</td>
<td>12(5.4)</td>
<td>TC-6F</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-301FFHC</td>
<td>0-7031-1-000</td>
<td>Heat/Cool</td>
<td>160-200</td>
<td>120/240</td>
<td>1.4/.70</td>
<td>12(5.4)</td>
<td>TC-3F</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-301FF</td>
<td>0-7051-0-000</td>
<td>Cool only</td>
<td>160-200</td>
<td>120/240</td>
<td>1.4/.70</td>
<td>12(5.4)</td>
<td>OPT*</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-301FFHC</td>
<td>0-7051-1-000</td>
<td>Heat/Cool</td>
<td>160-200</td>
<td>120/240</td>
<td>1.4/.70</td>
<td>12(5.4)</td>
<td>OPT*</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-301FF/85</td>
<td>0-70F1-0-000</td>
<td>Cool only</td>
<td>160-200</td>
<td>120/240</td>
<td>1.4/.70</td>
<td>12(5.4)</td>
<td>85°F (30°C)</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-301FF/3300</td>
<td>0-70D1-0-000</td>
<td>Cool only</td>
<td>160-200</td>
<td>120/240</td>
<td>1.4/.70</td>
<td>14(6.4)</td>
<td>TC-3300</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-301FFHC/3300</td>
<td>0-70D1-1-000</td>
<td>Heat/Cool</td>
<td>160-200</td>
<td>120/240</td>
<td>1.4/.70</td>
<td>14(6.4)</td>
<td>TC-3300</td>
<td>-10/+70</td>
</tr>
</tbody>
</table>

*OPT; Unit is set up for TC-3300 Controller (or similar)
**PERFORMANCE CURVE**

Equation of line: $y = \Delta T(°C) = \text{Capacity (Watts)}$  

<table>
<thead>
<tr>
<th>Ambient Temp</th>
<th>20°C</th>
<th>40°C</th>
<th>60°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure Air</td>
<td>$0.81x-38.0$</td>
<td>$0.81x-42.0$</td>
<td>$0.81x-46.0$</td>
</tr>
<tr>
<td>Cold Sink</td>
<td>$0.62x-38.0$</td>
<td>$0.62x-42.0$</td>
<td>$0.62x-46.0$</td>
</tr>
</tbody>
</table>

**DIMENSIONS**

* Dimension does not include hardware, insulation. Dimensions: Inches, Mounting hardware and gasket included but not shown.
AHP-300FF Thermoelectric Air Conditioner

Air Cooled
Thru Mount
Nema-12, 4, and 4x

**FEATURES**
- Compact (only 10”L X 5.37”W X 6.45”D)
- Weighs only 7.5 lbs. (3.4 kg)
- Ambient range -10ºC to +70ºC
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Mounts in any orientation
- X versions use mil-grade hot side fan
- XE versions use industrial grade high quality sealed fans

**INCLUDES**
- Gasket and mounting hardware
- Hook-up leads
- Mounting hardware

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING BTU/HR</th>
<th>VOLTAGE VDC *</th>
<th>CURRENT AMPS</th>
<th>WEIGHT LBS.(KG)</th>
<th>TEMP CONTROL</th>
<th>OPERATING AMBIENT °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHP-300FF</td>
<td>0-7097-0-000</td>
<td>Cool only</td>
<td>200-220</td>
<td>12/24/48</td>
<td>12/6/3</td>
<td>7.5(3.4)</td>
<td>none</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-300FFHC</td>
<td>0-7094-1-000</td>
<td>Heat/Cool</td>
<td>200-220</td>
<td>12</td>
<td>12</td>
<td>7.5(3.4)</td>
<td>none</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-300FFHC</td>
<td>0-7095-1-000</td>
<td>Heat/Cool</td>
<td>200-220</td>
<td>24</td>
<td>6</td>
<td>7.5(3.4)</td>
<td>none</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-300XE</td>
<td>0-7097-4-000</td>
<td>Cool only, sealed fan</td>
<td>200-220</td>
<td>12/24/48</td>
<td>12/6/3</td>
<td>7.5(3.4)</td>
<td>none</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-300XEHC</td>
<td>0-7095-5-000</td>
<td>Heat/Cool, sealed fan</td>
<td>200-220</td>
<td>24</td>
<td>6</td>
<td>7.5(3.4)</td>
<td>none</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-300X</td>
<td>0-7097-2-000</td>
<td>Cool only, Mil grade fan</td>
<td>200-220</td>
<td>12/24/48</td>
<td>12/6/3</td>
<td>9.2(4.2)</td>
<td>none</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-300XHC</td>
<td>0-7094-3-000</td>
<td>Heat/Cool, Mil grade fan</td>
<td>200-220</td>
<td>12</td>
<td>12</td>
<td>9.2(4.2)</td>
<td>none</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-300XHC</td>
<td>0-7095-3-000</td>
<td>Heat/Cool, Mil grade fan</td>
<td>200-220</td>
<td>24</td>
<td>6</td>
<td>9.2(4.2)</td>
<td>none</td>
<td>-10/+70</td>
</tr>
</tbody>
</table>

*See also, "Power Supplies", P. 67

**APPLICATIONS**
Cools electronic enclosures and control cabinets in telecommunications and telecom applications.

**OPTIONS**
- Temperature Control TC-6F DC for cool only
- Temperature Control TC-3F DC for heat/cool
- Adaptable for TC-3300 and TC-4300 control

**TECA**
1-888-TECA-USA (832-2872)
www.teca-usa.com
PERFORMANCE CURVE

\[ y = \Delta T (°C) \quad x = \text{Capacity (Watts)} \]

<table>
<thead>
<tr>
<th>Ambient Temp</th>
<th>20°C</th>
<th>40°C</th>
<th>60°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure Air</td>
<td>( y = 0.82x - 47.0 )</td>
<td>( y = 0.82x - 50.0 )</td>
<td>( y = 0.82x - 53.0 )</td>
</tr>
<tr>
<td>Cold Sink</td>
<td>( y = 0.64x - 47.0 )</td>
<td>( y = 0.64x - 50.0 )</td>
<td>( y = 0.64x - 53.0 )</td>
</tr>
</tbody>
</table>

DIMENSIONS

* Dimension does not include hardware, insulation. Dimensions: Inches. Mounting hardware and gasket included but not shown. † On all models of AHP-300X, these dimensions are greater by 0.25 inch.

AHP-300FF

MOUNTING STYLE
Thru Mount

ENVIRONMENTS
Nema-12 IP 40 (maintains IP 52)
Nema-4/4X IP 56

RATING (TRADITIONAL)
210 BTU/hr @ 0 °F \( \Delta T \)
250 BTU/hr @ +20 °F \( \Delta T \)

RATING (DIN 3168)
61 Watts L35 L35
44 Watts L35 L50

* See page 6

Air Conditioner
AHP-150FF Thermoelectric Air Conditioner

**FEATURES**
- Compact (only 7”L X 5”W X 6.02”D)
- Weighs only 3.2 lbs. (1.5 kg)
- Ambient range -10ºC to +70ºC
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Mounts in any orientation

**INCLUDES**
- Gasket for Nema-12 seal
- Hook-up leads
- Mounting Hardware

**OPTIONS**
- Temperature control TC-6F DC for cool only
- Temperature control TC-3F DC for heat/cool
- Adaptable for TC-3300 and TC-4300 controller

**APPLICATIONS**
Useful to cool small instrument enclosures. Especially useful where available power is 12VDC or 24VDC, telecom applications.

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING</th>
<th>VOLTAGE VDC BTU/HR</th>
<th>CURRENT AMPS.</th>
<th>WEIGHT LBS.(KG)</th>
<th>TEMP CONTROL</th>
<th>OPERATING AMBIENT °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHP-150FF</td>
<td>0-8098-0-000</td>
<td>Cool only</td>
<td>90-105</td>
<td>12/24</td>
<td>6/3</td>
<td>3.2(1.5)</td>
<td>none</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-150FFHC</td>
<td>0-8094-1-000</td>
<td>Heat/Cool</td>
<td>90-105</td>
<td>12</td>
<td>6</td>
<td>3.2(1.5)</td>
<td>none</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-150FFHC</td>
<td>0-8095-1-000</td>
<td>Heat/Cool</td>
<td>90-105</td>
<td>24</td>
<td>3</td>
<td>3.2(1.5)</td>
<td>none</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-150XE</td>
<td>0-8094-4-000</td>
<td>Cool only</td>
<td>90-105</td>
<td>12</td>
<td>6</td>
<td>3.2(1.5)</td>
<td>none</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-150XEHC</td>
<td>0-8094-5-000</td>
<td>Heat/Cool</td>
<td>90-105</td>
<td>12</td>
<td>6</td>
<td>3.2(1.5)</td>
<td>none</td>
<td>-10/+70</td>
</tr>
</tbody>
</table>

*See also, "Power Supplies", P. 67
PERFORMANCE CURVE

Equation of line: \( y = \Delta T(\degree C) \)  \( x = \) Capacity (Watts)

<table>
<thead>
<tr>
<th>Ambient Temp</th>
<th>20°C</th>
<th>40°C</th>
<th>60°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure Air</td>
<td>( y = 1.57x - 42.5 )</td>
<td>( y = 1.57x - 45.8 )</td>
<td>( y = 1.57x - 49.2 )</td>
</tr>
<tr>
<td>Cold Sink</td>
<td>( y = 1.24x - 42.5 )</td>
<td>( y = 1.24x - 45.8 )</td>
<td>( y = 1.24x - 49.2 )</td>
</tr>
</tbody>
</table>

DIMENSIONS

Mounted on 4 x 0.188" bolts

* Dimension does not include hardware, insulation. Dimensions: Inches, Hardware and gasket included but not shown.
FHP-2850 Thermoelectric Air Conditioner

Air Cooled
Flush Mounted
Nema-12

FEATURES

• Externally mounted, no intrusion
• Ambient range -10°C to +70°C
• No compressor, fluorocarbons or filters
• Virtually maintenance-free operation
• Stainless steel exterior housing
• Mounts in any orientation
• No moving parts except fans
• Environmentally safe

INCLUDES

• Integral power supply
• Condensate removal system
• TC-6F thermostat
• Mounting hardware
• Gasket for NEMA-12 seal

APPLICATIONS

This unit has been employed for larger cooling loads such as overhead cranes in rolling mills and in mobile applications for military camera cooling.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING BTU/HR</th>
<th>VOLTAGE VAC 50/60 HZ</th>
<th>CURRENT AMPS.</th>
<th>WEIGHT LBS. (kg)</th>
<th>TEMP. CONTROL</th>
<th>CONDENSATE REMOVAL</th>
<th>OPERATING AMBIENT °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>FHP-2850</td>
<td>7-D580-0-000</td>
<td>Cool only</td>
<td>1600-1800</td>
<td>120</td>
<td>12.5</td>
<td>68(31)</td>
<td>TC-6F</td>
<td>Included</td>
<td>-10/+70</td>
</tr>
<tr>
<td>FHP-2850</td>
<td>7-D550-0-000</td>
<td>Cool only</td>
<td>1600-1800</td>
<td>120</td>
<td>12.5</td>
<td>68(31)</td>
<td>OPT*</td>
<td>Included</td>
<td>-10/+70</td>
</tr>
<tr>
<td>FHP-2852</td>
<td>7-D582-0-000</td>
<td>Cool only</td>
<td>1600-1800</td>
<td>240</td>
<td>7.5</td>
<td>68(31)</td>
<td>TC-6F</td>
<td>Included</td>
<td>-10/+70</td>
</tr>
<tr>
<td>FHP-2852</td>
<td>7-D552-0-000</td>
<td>Cool only</td>
<td>1600-1800</td>
<td>240</td>
<td>7.5</td>
<td>68(31)</td>
<td>OPT*</td>
<td>Included</td>
<td>-10/+70</td>
</tr>
</tbody>
</table>

*OPT; Unit is set up for TC-3300 Controller (or similar)
PERFORMANCE CURVE

Equation of line: \( y = \Delta T(°C) \times \text{Capacity (Watts)} \)

<table>
<thead>
<tr>
<th>Ambient Temp</th>
<th>20°C</th>
<th>40°C</th>
<th>60°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure Air</td>
<td>(y = .08x - 38.0)</td>
<td>(y = .08x - 40.0)</td>
<td>(y = .08x - 42.0)</td>
</tr>
<tr>
<td>Cold Sink</td>
<td>(y = .05x - 38.0)</td>
<td>(y = .05x - 40.0)</td>
<td>(y = .05x - 42.0)</td>
</tr>
</tbody>
</table>

DIMENSIONS

MOUNTING CUTOUT DIMENSIONS

* Dimension does not include hardware. Dimensions: inches. Mounting hardware and gasket included but not shown.
FHP-1501 Thermoelectric Air Conditioner

Air Cooled
Flush Mounted
Nema-12, 4/4X

FEATURES
- Externally mounted (no intrusion)
- Mounts in multi-unit array for incremental capacity
- Compact (only 15" L X 12"W X 9"D)
- Weighs only 55 lbs. (25 kg)
- Ambient range -10°C to +70°C
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Stainless steel exterior housing
- Dual voltage (120/240 VAC)
- No moving parts except fans
- Environmentally safe

INCLUDES
- Integral power supply
- Condensate removal system
- Adjustable temperature control
- Mounting gasket for Nema-12, Nema-4 seal
- Mounting hardware

APPLICATIONS
Used to cool electronic enclosures where limited amount of space is available for through mount style.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING BTU/HR</th>
<th>VOLTAGE VAC 50/60 HZ</th>
<th>CURRENT AMPS.</th>
<th>WEIGHT LBS. (KG)</th>
<th>TEMP. CONTROL</th>
<th>CONDENSATE REMOVAL</th>
<th>OPERATING AMBIENT °C</th>
<th>AGENCY APPROVALS (ETL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FHP-1501</td>
<td>7-2181-0-000</td>
<td>Cool only</td>
<td>1000-1100</td>
<td>120/240</td>
<td>7.5/5.0</td>
<td>55(25)</td>
<td>TC-6F</td>
<td>Included</td>
<td>-10/+70</td>
<td>UL1995/CSA22.2, CE</td>
</tr>
<tr>
<td>FHP-1501</td>
<td>7-2151-0-000</td>
<td>Cool only</td>
<td>1000-1100</td>
<td>120/240</td>
<td>7.5/5.0</td>
<td>55(25)</td>
<td>OPT*</td>
<td>Included</td>
<td>-10/+70</td>
<td>UL1995/CSA22.2, CE</td>
</tr>
<tr>
<td>FHP-1501HC</td>
<td>7-2131-1-000</td>
<td>Heat/Cool</td>
<td>1000-1100</td>
<td>120/240</td>
<td>7.5/5.0</td>
<td>55(25)</td>
<td>TC-3F</td>
<td>Included</td>
<td>-10/+70</td>
<td>UL1995/CSA22.2, CE</td>
</tr>
<tr>
<td>FHP-1501HC</td>
<td>7-2151-1-000</td>
<td>Heat/Cool</td>
<td>1000-1100</td>
<td>120/240</td>
<td>7.5/5.0</td>
<td>55(25)</td>
<td>OPT*</td>
<td>Included</td>
<td>-10/+70</td>
<td>UL1995/CSA22.2, CE</td>
</tr>
<tr>
<td>FHP-1501XE</td>
<td>7-2181-4-000</td>
<td>Cool only</td>
<td>1000-1100</td>
<td>120/240</td>
<td>8.0/5.5</td>
<td>55(25)</td>
<td>TC-6F</td>
<td>Included</td>
<td>-10/+60</td>
<td>UL1995/CSA22.2, CE</td>
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<tr>
<td>FHP-1501XE</td>
<td>7-2151-4-000</td>
<td>Cool only</td>
<td>1000-1100</td>
<td>120/240</td>
<td>8.0/5.5</td>
<td>55(25)</td>
<td>OPT*</td>
<td>Included</td>
<td>-10/+60</td>
<td>UL1995/CSA22.2, CE</td>
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<tr>
<td>FHP-1501XEHC</td>
<td>7-2131-5-000</td>
<td>Heat/Cool</td>
<td>1000-1100</td>
<td>120/240</td>
<td>7.5/5.0</td>
<td>55(25)</td>
<td>TC-3F</td>
<td>Included</td>
<td>-10/+70</td>
<td>UL1995/CSA22.2, CE</td>
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<tr>
<td>FHP-1501XEHC</td>
<td>7-2151-5-000</td>
<td>Heat/Cool</td>
<td>1000-1100</td>
<td>120/240</td>
<td>7.5/5.0</td>
<td>55(25)</td>
<td>OPT*</td>
<td>Included</td>
<td>-10/+70</td>
<td>UL1995/CSA22.2, CE</td>
</tr>
</tbody>
</table>

*OPT; Unit is set up for TC-3300 controller (or similar)
PERFORMANCE CURVE

Equation of line: \( y = \Delta T(\degree C) \) x=Capacity (Watts)

<table>
<thead>
<tr>
<th>Ambient Temp</th>
<th>20°C</th>
<th>40°C</th>
<th>60°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure Air</td>
<td>( y = 0.127x - 30.6 )</td>
<td>( y = 0.127x - 32.6 )</td>
<td>( y = 0.127x - 35.0 )</td>
</tr>
<tr>
<td>Cold Sink</td>
<td>( y = 0.093x - 30.6 )</td>
<td>( y = 0.093x - 32.6 )</td>
<td>( y = 0.093x - 35.0 )</td>
</tr>
</tbody>
</table>

MOUNTING STYLE
Flush Mounted

ENVIROMENTS
Nema-12 IP 40 (maintains IP 52)
Nema-4/4X IP 56

RATING (TRADITIONAL)
- 950 BTU/hr @ 0 °F \( \Delta T \)
- 1270 BTU/hr @ +20 °F \( \Delta T \)

RATING (DIN 3168)
- 278 Watts L35 L35
- 162 Watts L35 L50

See page 6

DIMENSIONS

* Dimension does not include hardware. Dimension: Inches
Mounting hardware and gasket included but not shown.

MOUNTING CUTOUT DIMENSIONS
FHP-750 Thermoelectric Air Conditioner
Air Cooled
Flush Mounted
Nema-12, Nema-4/4X

**FEATURES**
- Externally mounted, no intrusion
- Compact (only 12"L X 6"W X 9"D)
- Weighs only 16 lbs. (7.2 kg)
- Ambient range -10°C to +70°C
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Stainless steel exterior housing
- Nema-4 and Nema-12 versions
- Both 120 VAC and 240 VAC available
- CE marked

**INCLUDES**
- Integral power supply
- Power input cable
- Condensate removal system
- Adjustable temperature control
- Gasket for mounting
- Mounting hardware

**APPLICATIONS**
Used on small enclosures in electronics where space is premium. Telecommunications, medical and industrial.

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING BTU/HR</th>
<th>VOLTAGE VAC 50/60 HZ</th>
<th>CURRENT AMPS</th>
<th>WEIGHT LBS. (KG)</th>
<th>TEMP. CONTROL</th>
<th>CONDENSATE REMOVAL</th>
<th>OPERATING AMBIENT °C</th>
<th>AGENCY APPROVALS (ETL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FHP-750</td>
<td>7-A580-0-000</td>
<td>Cool only, built in temperature control</td>
<td>400-450</td>
<td>120</td>
<td>4.5</td>
<td>16 (7.2)</td>
<td>TC-6F</td>
<td>Included</td>
<td>-10/+70</td>
<td>UL1995 CSA22.2, CE</td>
</tr>
<tr>
<td>FHP-750</td>
<td>7-A550-0-000</td>
<td>Cool only, for remote temperature control</td>
<td>400-450</td>
<td>120</td>
<td>4.5</td>
<td>16 (7.2)</td>
<td>OPT*</td>
<td>Included</td>
<td>-10/+70</td>
<td>UL1995 CSA22.2, CE</td>
</tr>
<tr>
<td>FHP-752</td>
<td>7-A582-0-000</td>
<td>Cool only, built in temperature control</td>
<td>400-450</td>
<td>240</td>
<td>2.5</td>
<td>23 (10.5)</td>
<td>TC-6F</td>
<td>Included</td>
<td>-10/+70</td>
<td>UL1995 CSA22.2, CE</td>
</tr>
<tr>
<td>FHP-752</td>
<td>7-A552-0-000</td>
<td>Cool only, for remote temperature control</td>
<td>400-450</td>
<td>240</td>
<td>2.5</td>
<td>23 (10.5)</td>
<td>OPT*</td>
<td>Included</td>
<td>-10/+70</td>
<td>UL1995 CSA22.2, CE</td>
</tr>
<tr>
<td>FHP-750XE</td>
<td>7-A580-4-000</td>
<td>Cool only, built in temperature control</td>
<td>400-450</td>
<td>120</td>
<td>5.0</td>
<td>19(8.6)</td>
<td>TC-6F</td>
<td>Included</td>
<td>-10/+70</td>
<td>UL1995 CSA22.2, CE</td>
</tr>
<tr>
<td>FHP-750XE</td>
<td>7-A550-4-000</td>
<td>Cool only, for remote temperature control</td>
<td>400-450</td>
<td>120</td>
<td>5.0</td>
<td>19(8.6)</td>
<td>OPT*</td>
<td>Included</td>
<td>-10/+70</td>
<td>UL1995 CSA22.2, CE</td>
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<td>FHP-752XE</td>
<td>7-A582-4-000</td>
<td>Cool only, built in temperature control</td>
<td>400-450</td>
<td>240</td>
<td>2.5</td>
<td>25(11.5)</td>
<td>TC-6F</td>
<td>Included</td>
<td>-10/+70</td>
<td>UL1995 CSA22.2, CE</td>
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<tr>
<td>FHP-752XE</td>
<td>7-A552-4-000</td>
<td>Cool only, for remote temperature control</td>
<td>400-450</td>
<td>240</td>
<td>2.5</td>
<td>25(11.5)</td>
<td>OPT*</td>
<td>Included</td>
<td>-10/+70</td>
<td>UL1995 CSA22.2, CE</td>
</tr>
</tbody>
</table>

*OPT; Unit is set up for TC-3300 controller (or similar)
**PERFORMANCE CURVE**

Equation of line: \( y = \Delta T(\text{°C}) \) \( x = \text{Capacity (Watts)} \)

<table>
<thead>
<tr>
<th>Ambient Temp</th>
<th>20°C</th>
<th>40°C</th>
<th>60°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure Air</td>
<td>( y = 0.29x - 34.5 )</td>
<td>( y = 0.29x - 36.5 )</td>
<td>( y = 0.29x - 38.5 )</td>
</tr>
<tr>
<td>Cold Sink</td>
<td>( y = 0.18x - 34.5 )</td>
<td>( y = 0.18x - 36.5 )</td>
<td>( y = 0.18x - 38.5 )</td>
</tr>
</tbody>
</table>

**DIMENSIONS**

* Dimension does not include hardware. Dimension: Inches
† For FHP-752 this dimension is 14.55. Mounting hardware and gasket included but not shown.

**FHP-750**

**MOUNTING STYLE**
Flush Mounted

**ENVIRONMENTS**
- Nema-12 IP 40 (maintains IP 52)
- Nema-4/4X IP 56

**RATING (TRADITIONAL)**
- 430 BTU/hr @ 0 °F \( \Delta T \)
- 560 BTU/hr @ +20 °F \( \Delta T \) *

**RATING (DIN 3168)**
- 125 Watts L35 L35
- 78 Watts L35 L50

* See page 6
FHP-450XE Thermoelectric Air Conditioner

Air Cooled
Flush Mounted
Nema-4, 4X

FEATURES
• Externally mounted, no intrusion
• Maintains Nema-4X rating
• Compact (only 10”L X 8”W X 6.93”D)
• Weighs less than 20 lbs.
• Ambient range -10°C to +70°C
• No compressor, fluorocarbons or filters
• Virtually maintenance-free operation
• Stainless steel exterior housing
• Mounts in any orientation
• 120 VAC and 240 VAC input versions

INCLUDES
• Integral power supply
• Single set point control
• Gasket for Nema-4X seal
• Mounting hardware
• Optional condensate removal
• Power input cable

APPLICATIONS
Intended for use in the communications industry for cooling small outdoor enclosures, also used in food and chemical industries for washdown areas.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING BTU/HR</th>
<th>VOLTAGE VAC 50/60 HZ</th>
<th>CURRENT AMPS.</th>
<th>WEIGHT LBS. (KG)</th>
<th>TEMP. CONTROL</th>
<th>CONDENSATE REMOVAL</th>
<th>OPERATING AMBIENT °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>FHP-450XE</td>
<td>7-7070-4-000</td>
<td>Cool only temperature control</td>
<td>135-165</td>
<td>120</td>
<td>2.3</td>
<td>19.8(9)</td>
<td>T’stat 85 F</td>
<td>Optional</td>
<td>-10/+70</td>
</tr>
<tr>
<td>FHP-452XE</td>
<td>7-7072-4-000</td>
<td>Cool only temperature control</td>
<td>135-165</td>
<td>240</td>
<td>1.1</td>
<td>19.8(9)</td>
<td>T’stat 85 F</td>
<td>Optional</td>
<td>-10/+70</td>
</tr>
</tbody>
</table>
PERFORMANCE CURVE

Equation of line: $y = \Delta T (°C)$, $x = \text{Capacity (Watts)}$

<table>
<thead>
<tr>
<th>Ambient Temp</th>
<th>20°C</th>
<th>40°C</th>
<th>60°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure Air</td>
<td>$y = 0.57x - 22.9$</td>
<td>$y = 0.61x - 27.0$</td>
<td>$y = 0.65x - 31.3$</td>
</tr>
<tr>
<td>Cold Sink</td>
<td>$y = 0.48x - 22.9$</td>
<td>$y = 0.51x - 27.0$</td>
<td>$y = 0.55x - 31.3$</td>
</tr>
</tbody>
</table>

DIMENSIONS

MOUNTING CUTOUT DIMENSION

Dimension: Inches
Hardware and gasket included but not shown.
Liquid Cooled
Air Conditioners

Solid-state liquid-cooled air conditioners work well in tight enclosures.

FEATURES
• No compressor, fluorocarbons or filters
• Virtually maintenance free operation
• Stainless steel exterior housing
• Mounts in any orientation
• No air exhaust

APPLICATIONS
Cools equipment racks, PCs, Drives, Amplifiers, Motor Controls and other electronic equipment.

LHP-1700FF page 46
950-1180 BTU/hr rating,
19.0” x 8.7” mounting area
120 and 240 VAC input.

LHP-1200FF page 48
590-640 BTU/hr rating,
15.0” x 7.3” mounting area
120 VAC input

LHP-800FF page 50
460-540 BTU/hr rating,
6.6” x 6.6” mounting area
30 and 130 VDC for TE
120 VAC fan

LHP-300FF page 50
150-175 BTU/hr rating,
4” x 4” mounting area
24 VDC for TE
120 VAC fan
LHP-1700FF Thermoelectric Air Conditioner

Liquid Cooled
Thru Mount
Nema-12

FEATURES
• Standard 19” rack mount
• Weighs only 46 lbs. (21 kg)
• Ambient range 0°C to +70°C
• Available in 120 or 240 VAC
• Adaptable to NEMA-4 and explosion proof applications
• Can be mounted entirely inside purged enclosure
• No compressor, fluorocarbons or filters
• Virtually maintenance-free operation
• Stainless steel exterior housing
• Mounts in any orientation

INCLUDES
• Integral power supply
• Compression fittings
• Power cord

APPLICATIONS
Useful where ambient air can not be used for heat removal such as paper processing at paper mills, and abrasives processing plants.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING BTU/HR</th>
<th>VOLTAGE VAC</th>
<th>CURRENT AMPS</th>
<th>Min Flow GPM</th>
<th>WEIGHT LBS. (kg)</th>
<th>TEMP. CONTROL °C</th>
<th>OPERATING AMBIENT °C</th>
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</thead>
<tbody>
<tr>
<td>LHP-1700FF</td>
<td>2-1090-0-000</td>
<td>Cool only</td>
<td>950-1180</td>
<td>120</td>
<td>7.0</td>
<td>0.3</td>
<td>46(21)</td>
<td>none</td>
<td>0/+70</td>
</tr>
<tr>
<td>LHP-1700FF</td>
<td>2-1080-0-000</td>
<td>Cool only</td>
<td>950-1180</td>
<td>120</td>
<td>7.0</td>
<td>0.3</td>
<td>46(21)</td>
<td>TC-6F</td>
<td>0/+70</td>
</tr>
<tr>
<td>LHP-1700FF</td>
<td>2-1050-0-000</td>
<td>Cool only</td>
<td>950-1180</td>
<td>120</td>
<td>7.0</td>
<td>0.3</td>
<td>46(21)</td>
<td>OPT*</td>
<td>0/+70</td>
</tr>
<tr>
<td>LHP-1700FFHC</td>
<td>2-1030-1-000</td>
<td>Heat/Cool</td>
<td>950-1180</td>
<td>120</td>
<td>7.0</td>
<td>0.3</td>
<td>46(21)</td>
<td>TC-3F</td>
<td>0/+70</td>
</tr>
<tr>
<td>LHP-1700FFHC</td>
<td>2-1050-1-000</td>
<td>Heat/Cool</td>
<td>950-1180</td>
<td>120</td>
<td>7.0</td>
<td>0.3</td>
<td>46(21)</td>
<td>OPT*</td>
<td>0/+70</td>
</tr>
<tr>
<td>LHP-1702FF</td>
<td>2-1092-0-000</td>
<td>Cool only</td>
<td>950-1180</td>
<td>240</td>
<td>4.7</td>
<td>0.3</td>
<td>46(21)</td>
<td>none</td>
<td>0/+70</td>
</tr>
<tr>
<td>LHP-1702FF</td>
<td>2-1082-0-000</td>
<td>Cool only</td>
<td>950-1180</td>
<td>240</td>
<td>4.7</td>
<td>0.3</td>
<td>46(21)</td>
<td>TC-6F</td>
<td>0/+70</td>
</tr>
<tr>
<td>LHP-1702FF</td>
<td>2-1052-0-000</td>
<td>Cool only</td>
<td>950-1180</td>
<td>240</td>
<td>4.7</td>
<td>0.3</td>
<td>46(21)</td>
<td>OPT*</td>
<td>0/+70</td>
</tr>
<tr>
<td>LHP-1702FFHC</td>
<td>2-1032-1-000</td>
<td>Heat/Cool</td>
<td>950-1180</td>
<td>240</td>
<td>4.7</td>
<td>0.3</td>
<td>46(21)</td>
<td>TC-3F</td>
<td>0/+70</td>
</tr>
<tr>
<td>LHP-1702FFHC</td>
<td>2-1052-1-000</td>
<td>Heat/Cool</td>
<td>950-1180</td>
<td>240</td>
<td>4.7</td>
<td>0.3</td>
<td>46(21)</td>
<td>OPT*</td>
<td>0/+70</td>
</tr>
</tbody>
</table>

*OPT; Unit is set up for TC-3300 controller (or similar)
PERFORMANCE CURVE

Equation of line: \( y=\Delta T(\degree C) \times \) Capacity (Watts)

<table>
<thead>
<tr>
<th>Fluid Temp</th>
<th>20°C</th>
<th>40°C</th>
<th>60°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure Air</td>
<td>( y=0.147x-41.0 )</td>
<td>( y=0.147x-46.0 )</td>
<td>( y=0.147x-51.0 )</td>
</tr>
<tr>
<td>Cold Sink</td>
<td>( y=0.11x-41.0 )</td>
<td>( y=0.11x-46.0 )</td>
<td>( y=0.11x-51.0 )</td>
</tr>
</tbody>
</table>

DIMENSIONS

MOUNTING CUTOUT DIMENSIONS

* Dimension does not include hardware, insulation. Dimensions: inches.

LHP-1700FF

AIR CONDITIONER

MOUNTING STYLE
Thru Mount

ENVIRONMENTS
Nema-12 IP 40 (maintains IP 52)

RATING (TRADITIONAL)
1050 BTU/hr @ 0 °F \( \Delta T \)
1320 BTU/hr @ +20 °F \( \Delta T \)

RATING (DIN 3168)
312 Watts L35 L35
225 Watts L35 L50

* See page 6
LHP-1200FF  Thermoelectric Air Conditioner
Liquid Cooled
Thru Mount
Nema-12

FEATURES
- Compact, (only 15" L X 8" W X 7.3" D)
- Weighs only 21 lbs. (9.5 kg)
- Ambient range 0°C to +70°C
- Adaptable to NEMA-4 and explosion proof applications
- Can be mounted entirely inside purged enclosure
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Stainless steel exterior housing
- Mounts in any orientation

INCLUDES
- Integral power supply
- Compression fittings
- Power cord

APPLICATIONS
Useful where ambient air can not be used for heat removal such as paper processing at paper mills, and abrasives processing plants.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING (BTU/HR)</th>
<th>VOLTAGE VAC</th>
<th>CURRENT AMPS</th>
<th>Min Flow GPM</th>
<th>WEIGHT LBS. (kg)</th>
<th>TEMP. CONTROL</th>
<th>OPERATING AMBIENT °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>LHP-1200FF</td>
<td>2-3090-0-000</td>
<td>Cool only</td>
<td>590-640</td>
<td>120</td>
<td>3.7</td>
<td>0.3</td>
<td>21(9.5)</td>
<td>none</td>
<td>0/+70</td>
</tr>
<tr>
<td>LHP-1200FF</td>
<td>2-3080-0-000</td>
<td>Cool only</td>
<td>590-640</td>
<td>120</td>
<td>3.7</td>
<td>0.3</td>
<td>21(9.5)</td>
<td>TC-6F</td>
<td>0/+70</td>
</tr>
<tr>
<td>LHP-1200FF</td>
<td>2-30F0-0-000</td>
<td>Cool only</td>
<td>590-640</td>
<td>120</td>
<td>3.7</td>
<td>0.3</td>
<td>21(9.5)</td>
<td>85°F (30°)</td>
<td>0/+70</td>
</tr>
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<td>LHP-1200FF</td>
<td>2-3050-0-000</td>
<td>Cool only</td>
<td>590-640</td>
<td>120</td>
<td>3.7</td>
<td>0.3</td>
<td>21(9.5)</td>
<td>OPT*</td>
<td>0/+70</td>
</tr>
<tr>
<td>LHP-1200FFHC</td>
<td>2-3030-1-000</td>
<td>Heat/Cool</td>
<td>590-640</td>
<td>120</td>
<td>3.7</td>
<td>0.3</td>
<td>21(9.5)</td>
<td>TC-3F</td>
<td>0/+70</td>
</tr>
<tr>
<td>LHP-1200FFHC</td>
<td>2-3050-1-000</td>
<td>Heat/Cool</td>
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<td>240</td>
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<td>0.3</td>
<td>21(9.5)</td>
<td>OPT*</td>
<td>0/+70</td>
</tr>
</tbody>
</table>

*OPT; Unit is set up for TC-3300 controller (or similar)
**PERFORMANCE CURVE**

Equation of line: $y = \Delta T°C$  
$x =$ Capacity (Watts)

<table>
<thead>
<tr>
<th>Fluid Temp</th>
<th>20°C</th>
<th>40°C</th>
<th>60°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure Air</td>
<td>$y = 0.25x - 44.0$</td>
<td>$y = 0.25x - 46.0$</td>
<td>$y = 0.25x - 48.0$</td>
</tr>
<tr>
<td>Cold Sink</td>
<td>$y = 0.19x - 44.0$</td>
<td>$y = 0.19x - 46.0$</td>
<td>$y = 0.19x - 48.0$</td>
</tr>
</tbody>
</table>

**DIMENSIONS**

* Dimension does not include hardware. Dimensions: Inches, Mounting hardware and gasket included but not shown.

**MOUNTING CUTOUT DIMENSIONS**

* See page 6
LHP-800FF
LHP-300FF

Thermoelectric Air Conditioner

Liquid Cooled
Thru Mount
Nema-12

FEATURES

• Compact
• Light weight
• Ambient range 0°C to +70°C
• No compressor, fluorocarbons or filters
• Adaptable to NEMA-4 and explosion proof applications. Can be mounted entirely inside purged enclosure
• Virtually maintenance-free operation
• Mounts in any orientation

INCLUDES

• Compression fittings
• Terminal strip for wire hook up

APPLICATIONS

Used in laboratory equipment and specialized systems world wide.

SPECIFICATIONS LHP-800FF

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING BTU/HR</th>
<th>VOLTAGE VDC</th>
<th>CURRENT AMPS</th>
<th>FAN VOLTAGE VAC</th>
<th>WEIGHT LBS (kg)</th>
<th>MIN FLOW GPM</th>
<th>OPERATING AMBIENT °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>LHP-800FF</td>
<td>2-5099-0-000</td>
<td>Cool only</td>
<td>460-540</td>
<td>30</td>
<td>10</td>
<td>120</td>
<td>6(2.7)</td>
<td>0.3</td>
<td>0/+70</td>
</tr>
<tr>
<td>LHP-800FFHC</td>
<td>2-5099-1-000</td>
<td>Heat/Cool</td>
<td>460-540 (120 VAC Heat)</td>
<td>30</td>
<td>10</td>
<td>120</td>
<td>6(2.7)</td>
<td>0.3</td>
<td>0/+70</td>
</tr>
<tr>
<td>LHP-810FF</td>
<td>2-509A-0-000</td>
<td>Cool only</td>
<td>460-540</td>
<td>120</td>
<td>3.5</td>
<td>120</td>
<td>6(2.7)</td>
<td>0.3</td>
<td>0/+70</td>
</tr>
</tbody>
</table>

Note: No provision for temperature control is included. Consult factory for options.

SPECIFICATIONS LHP-300FF

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING BTU/HR</th>
<th>VOLTAGE VDC</th>
<th>CURRENT AMPS</th>
<th>HEAT WATTS</th>
<th>WEIGHT LBS (kg)</th>
<th>MIN FLOW GPM</th>
<th>OPERATING AMBIENT °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>LHP-300FF</td>
<td>2-7098-0-000</td>
<td>Cool only</td>
<td>150-175</td>
<td>12/24</td>
<td>12/6</td>
<td>N/A</td>
<td>2.75(1.25)</td>
<td>0.3</td>
<td>0/+70</td>
</tr>
<tr>
<td>LHP-300FFHC</td>
<td>2-7095-1-000</td>
<td>Heat/Cool, 24 VDC Heat</td>
<td>150-175</td>
<td>24</td>
<td>6</td>
<td>75</td>
<td>2.75(1.25)</td>
<td>0.3</td>
<td>0/+70</td>
</tr>
</tbody>
</table>

Note: No provision for temperature control is included. Consult factory for options.

See also, “Power Supplies”, P. 67
PERFORMANCE CURVE

**Equation of line: \( y = \Delta T(\degree C) \) \( x = \) Capacity (Watts)**

<table>
<thead>
<tr>
<th>Fluid Temp</th>
<th>LHP-800FF</th>
<th>LHP-300FF</th>
</tr>
</thead>
<tbody>
<tr>
<td>20°C</td>
<td>( y = 0.32x - 43.0 )</td>
<td>( y = 0.88x - 38.0 )</td>
</tr>
<tr>
<td>40°C</td>
<td>( y = 0.32x - 47.0 )</td>
<td>( y = 0.88x - 42.0 )</td>
</tr>
<tr>
<td>60°C</td>
<td>( y = 0.32x - 51.0 )</td>
<td>( y = 0.88x - 46.0 )</td>
</tr>
</tbody>
</table>

MOUNTING STYLE

**INTERNAL**

RATING (TRADITIONAL)

- LHP-800FF
  - 500 BTU/hr @ 0 °F \( \Delta T \)
  - 615 BTU/hr @ +20 °F \( \Delta T \)

- LHP-300FF
  - 146 Watts L35 L35
  - 105 Watts L35 L50

RATING (DIN 3168)

- LHP-800FF
  - 146 Watts L35 L35
  - 105 Watts L35 L50

- LHP-300FF
  - 48 Watts L35 L35
  - 34 Watts L35 L50

DIMENSIONS

*Dimension does not include hardware. Dimensions: Inches.*

---

LHP-800FF

LHP-300FF
Cold Plates

140-1630 BTU/hr

**AHP-SERIES**

**FEATURES**
- No load cooling to -20°C (in 22°C Amb)
- Optional heating
- Temperature control
- Low maintenance
- No compressor, fluorocarbons or filters
- Compact
- Lightweight
- Durable
- Reliable

<table>
<thead>
<tr>
<th>Model</th>
<th>Page</th>
<th>BTU/hr Rating</th>
<th>Dimensions</th>
<th>VAC Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHP-1200CPV</td>
<td>54</td>
<td>830-950</td>
<td>15” x 7.3” x 5”</td>
<td>120/240</td>
</tr>
<tr>
<td>AHP-1200CP</td>
<td>56</td>
<td>830-950</td>
<td>15” x 7.3” x 5”</td>
<td>120 VAC</td>
</tr>
<tr>
<td>AHP-301CPV</td>
<td>60</td>
<td>225-265</td>
<td>10” x 9.8” x 6”</td>
<td>120/240</td>
</tr>
<tr>
<td>AHP-301CP</td>
<td>62</td>
<td>225-265</td>
<td>10” x 9.8” x 6”</td>
<td>120 or 240 VAC</td>
</tr>
<tr>
<td>AHP-800MSP</td>
<td>58</td>
<td>Variable stirring rate</td>
<td>19” x 9.3” x 10”</td>
<td>1 Liter standard bottle, 120/240 VAC operation</td>
</tr>
<tr>
<td>AHP-300CP</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AHP-150CP</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LHP-SERIES**

**FEATURES**
- No load cooling to -25°C (25°C Fluid)
- Optional heating
- Temperature control, optional
- Low maintenance
- No compressor, fluorocarbons or filters
- Compact
- Lightweight
- Durable
- Reliable

<table>
<thead>
<tr>
<th>Model</th>
<th>Page</th>
<th>BTU/hr Rating</th>
<th>Dimensions</th>
<th>VAC Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>LHP-1700CP</td>
<td>52</td>
<td>1360-1630</td>
<td>19” x 8.7” x 5”</td>
<td>120 VAC</td>
</tr>
<tr>
<td>LHP-800CP</td>
<td>54</td>
<td>700-830</td>
<td>6.6” x 6.6” x 1.75”</td>
<td>30 VDC operation</td>
</tr>
<tr>
<td>LHP-300CP</td>
<td>54</td>
<td>280-335</td>
<td>4” x 4” x 1.63”</td>
<td>24 VDC operation</td>
</tr>
<tr>
<td>LHP-150CP</td>
<td>54</td>
<td>130-160</td>
<td>4” x 2” x 1.63”</td>
<td>12 VDC operation</td>
</tr>
</tbody>
</table>
FEATURES

- Cools and heats
- 100-240 VAC universal integrated power supply
- Low-profile design with ergonomic sloped front
- Variable fan speed for quieter operation
- Weighs only 25 lbs. (11.4 kg)
- Compact bench top unit, 11.2" X 15.1" footprint
- No compressor, fluorocarbons or filters.
- Virtually maintenance-free operation
- Painted Enameled stainless steel exterior housing
- Rubber feet

CONTROL FEATURES

- Integral TC-4300 PID “tunable” temperature control
- One shot smart PID control tuning or Adaptive Smart Continuous Tuning
- Heating and Cooling
- Internal RTD sensor
- Remote Sensibility™ switchable exterior sensor
- Multi-segment ramp and soak programmable
- RS-232 communications
- i-tools software for easy programming and tuning
- Optional software for charting and data acquisition

COLD PLATE FEATURES

- Precision machined cold plate surface
- Cold plate accessory tapped holes
- Easy clean top surface
- Accessories for glassware (beaker/test tube) cooling
- Direct contact cooling down to 52°C below room temperature
- 100-240 VAC universal integrated power supply

TUBE CHILLER FEATURES

- Precision machined cold plate surface accepts 5mm tubing
- 16 pass heat exchanger plate
- Consult factory for other tubing sizes
- Integral peristaltic pump with speed control
- Hinged Cover
- 100-240 VAC universal integrated power supply

SPECIFICATIONS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>CONFIGURATION</th>
<th>PERFORMANCE RATING BTU/HR</th>
<th>VOLTAGE 50/60 HZ</th>
<th>CURRENT AMPS</th>
<th>WEIGHT (LBS. (KG))</th>
<th>TEMP. CONTROL °C</th>
<th>OPERATING AMBIENT °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHP-1200CPV</td>
<td>9-30EB-1-000</td>
<td>Heat/Cool</td>
<td>Cold Plate</td>
<td>830-950</td>
<td>100-240</td>
<td>4.0</td>
<td>25 (11.4)</td>
<td>TC-4300</td>
<td>0-45</td>
</tr>
<tr>
<td>AHP-1200CPV</td>
<td>9-30EB-1-001</td>
<td>Heat/Cool</td>
<td>Tube Chiller</td>
<td>830-950</td>
<td>100-240</td>
<td>4.3</td>
<td>30 (13.6)</td>
<td>TC-4300</td>
<td>0-45</td>
</tr>
</tbody>
</table>
PERFORMANCE CURVE

Equation of line: \( y = \Delta T(\degree C) \)  \( x = \text{Capacity (Watts)} \)

<table>
<thead>
<tr>
<th>Ambient Temp</th>
<th>25°C</th>
<th>50°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cold Plate</td>
<td>( y = 0.184x - 44.3 )</td>
<td>( y = 0.184x - 48.5 )</td>
</tr>
</tbody>
</table>

DIMENSIONS

- **Cold Plate Configuration**
  - Standard 6-32 accessory holes (for custom accessory holes consult factory)
  - Temperature Controller
  - Cold Plate Surface

- **Tube Chiller Configuration**
  - Hinged Cover (Tube Chiller)
  - Internal/External Sensor Selector
  - External Sensor Connector
  - Power Entry Module
  - Fuse and Switch

**ENvironments**
- Bench top
- Laboratory
- Industrial

**Cooling Capacity**
- 250 Watts @ 0 °C ΔT
**AHP-1200CP**
Thermoelectric Cold Plate

**FEATURES**
- Direct contact cooling as much as 48 ºC below room temperature
- Weighs only 19 lbs. (8.6 kg)
- Compact bench top units
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Stainless steel exterior housing
- Integral temperature controller option (shown)
- Mounts in any orientation

**INCLUDES**
- Integral power supply (120 VAC input)
- Cold plate mounting taps
- Rubber feet
- Power input cord

**APPLICATIONS**
Cooling of components, processors, and various assemblies and products.

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING BTU/HR</th>
<th>VOLTAGE VAC 50/60 HZ</th>
<th>CURRENT AMPS</th>
<th>WEIGHT LBS. (KG)</th>
<th>TEMP CONTROL</th>
<th>OPERATING AMBIENT °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHP-1200CP</td>
<td>1-3090-0-000</td>
<td>Cool only</td>
<td>830-950</td>
<td>120</td>
<td>4.0</td>
<td>18(8.2)</td>
<td>None</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-1200CP</td>
<td>1-3050-0-000</td>
<td>Cool only</td>
<td>830-950</td>
<td>120</td>
<td>4.0</td>
<td>18(8.2)</td>
<td>OPT*</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-1200CP</td>
<td>1-30D0-0-000</td>
<td>Cool only</td>
<td>830-950</td>
<td>120</td>
<td>4.0</td>
<td>19(8.6)</td>
<td>TC-3300^</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-1200CPHC</td>
<td>1-3050-1-000</td>
<td>Heat/Cool</td>
<td>830-950</td>
<td>120</td>
<td>4.0</td>
<td>18(8.2)</td>
<td>OPT*</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-1200CPHC</td>
<td>1-30D0-1-000</td>
<td>Heat/Cool</td>
<td>830-950</td>
<td>120</td>
<td>4.0</td>
<td>19(8.6)</td>
<td>TC-3300^</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-1202CP</td>
<td>1-3092-0-000</td>
<td>Cool only</td>
<td>830-950</td>
<td>240</td>
<td>2.5</td>
<td>23(10.5)</td>
<td>None</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-1202CP</td>
<td>1-3052-0-000</td>
<td>Cool only</td>
<td>830-950</td>
<td>240</td>
<td>2.5</td>
<td>23(10.5)</td>
<td>OPT*</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-1202CPHC</td>
<td>1-3052-1-000</td>
<td>Heat/Cool</td>
<td>830-950</td>
<td>240</td>
<td>2.5</td>
<td>23(10.5)</td>
<td>OPT*</td>
<td>-10/+70</td>
</tr>
</tbody>
</table>

*OPT; Unit is setup for TC-3300 controller (or similar). Controller not included.
^TC-3300 Temperature controller is integral (built in).
PERFORMANCE CURVE

Equation of line: \( y = \Delta T \degree C \)  \( x = \) Capacity (Watts)

<table>
<thead>
<tr>
<th>Ambient Temp</th>
<th>20°C</th>
<th>40°C</th>
<th>60°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cold Plate</td>
<td>( y = 0.172x - 44.0 )</td>
<td>( y = 0.172x - 45.0 )</td>
<td>( y = 0.172x - 48.0 )</td>
</tr>
</tbody>
</table>

ENVIRONMENTS

- Bench top
- Laboratory
- Industrial

COOLING CAPACITY

- 260 Watts @ 0 °C \( \Delta T \)

Model AHP-1200CP is TECA'S largest air cooled cold plate.

DIMENSIONS

- Thermocouple Connector (with TC-3300 models)
- Temperature Control (with TC-3300 models)
- Accessory Holes

* Dimension does not include hardware, insulation. Dimension: Inches
AHP-800MSP
Magnetic Stirring Plate

FEATURES

- Heating and cooling
- Unique high-performance side mounting cold plate for added cooling and uniform temperatures
- Magnetic drive for stir bars from underneath the bottle
- Magnetic stir offers 5 speed settings
- Designed to cool a standard 1 liter filter bottle (Nalgene 4551000) to 4 °C (with visible level window)
- 100-240 VAC universal, Integral power supply
- Height adjusting rubber feet
- Power input cord set
- Weighs only 38 lbs. (17.3 kg)
- Compact bench-top design
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Painted stainless steel exterior housing

INCLUDES

- Integral PID “tunable” temperature control
- One shot smart PID control tuning or Adaptive Smart Continuous Tuning
- Internal RTD sensor
- Remote Sensibility™ switch able exterior RTD sensor
- Multi-segment ramp and soak programs
- RS-232 communications
- i-tools software for easy programming and control tweaking
- Optional software for charting and data acquisition

APPLICATIONS

Laboratory or industrial environments. Testing of specimens, drugs and industrial chemicals. Process testing. Quality control.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>VOLTAGE VAC 50/60 HZ</th>
<th>CURRENT AMPS.</th>
<th>WEIGHT LBS. (KG)</th>
<th>TEMP. CONTROL</th>
<th>OPERATING AMBIENT °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHP-800MSP</td>
<td>9-50EB-1-001</td>
<td>Heat/Cool</td>
<td>100-240</td>
<td>4.0</td>
<td>38 (17.3)</td>
<td>TC-4300</td>
<td>0-45</td>
</tr>
</tbody>
</table>
DIMENSIONS

Fluid Level Window

Height Adjusting Feet

Internal/External RTD Selector

External RTD Connector

Dimension: Inches

Air Cooled Stirring Cold Plate

AHP-800MSP

ENvironments
Bench top
Laboratory
Industrial

RS-232 or RS-485 Comm. Port
Power Entry Module
Fuse and Switch

Bottle 1000 mL

Temperature Controller
FEATURES

- Cools and heats
- 100-240 VAC universal integrated power supply
- Low-profile design with ergonomic sloped front
- Variable fan speed for quieter operation
- Precision machined cold plate surface
- Cold plate accessory tapped holes
- Easy clean top surface
- Direct contact cooling down to 48 °C below room temperature
- Weighs only 12 lbs. (5.4 kg)
- Compact bench-top unit, 9.8” x 10.1” footprint
- No compressor, fluoro- carbons or filters
- Virtually maintenance-free operation
- Painted Enameled stainless steel exterior housing

CONTROL FEATURES

- Integral PID “tunable” temperature control
- One shot smart PID control tuning or Adaptive Smart Continuous Tuning
- Heating and Cooling
- Internal RTD sensor
- Remote Sensibility™ switchable exterior sensor
- Multi-segment ramp and soak programs
- RS-232 communications
- i-tools software for easy programming and control tweaking
- Optional software for charting and data acquisition
- Expect to control within +/- 0.2 or 0.1 under steady state conditions

SPECIFICATIONS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING BTU/HR</th>
<th>VOLTAGE VAC 50/60 HZ</th>
<th>CURRENT AMPS.</th>
<th>WEIGHT LBS. (KG)</th>
<th>TEMP. CONTROL °C</th>
<th>OPERATING AMBIENT °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHP-301CPV</td>
<td>9-70EB-1-000</td>
<td>Heat/Cool</td>
<td>260-280</td>
<td>100-240</td>
<td>2.0</td>
<td>12 (5.4)</td>
<td>TC-4300</td>
<td>0-45</td>
</tr>
</tbody>
</table>
PERFORMANCE CURVE

Ambient Temp | 25°C | 50°C
--- | --- | ---
Cold Plate | $y = 0.526x - 45.0$ | $y = 0.526x - 51.0$

DIMENSIONS

Standard 6-32 accessory holes
(for custom accessory holes consult factory)

Power Entry Module
Fuse and Switch

RS-232 or RS-485 Comm. Port
Internal/External Sensor Selector
External Sensor Connector

Temperature Controller

Dimensions: Inches
**FEATURES**

- Direct contact cooling as much as 52°C below room temperature
- Weighs only 11 lbs. (5.0 kg)
- Compact bench top units
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Stainless steel exterior housing
- Integral temperature controller option (shown)
- Mounts in any orientation

**INCLUDES**

- Cold plate accessory tapped holes
- Rubber feet
- Power input cord
- Machined cold plate surface

**APPLICATIONS**

Cooling of components in telecom, labs, factories, etc.

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING BTU/HR</th>
<th>VOLTAGE 50/60 Hz</th>
<th>CURRENT AMPS</th>
<th>WEIGHT LBS. (KG)</th>
<th>TEMP. CONTROL</th>
<th>OPERATING AMBIENT °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHP-301CP</td>
<td>1-7090-0-000</td>
<td>Cool only</td>
<td>225-265</td>
<td>120</td>
<td>1.2</td>
<td>11(5)</td>
<td>none</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-301CP</td>
<td>1-7050-0-000</td>
<td>Cool only</td>
<td>225-265</td>
<td>120</td>
<td>1.2</td>
<td>11(5)</td>
<td>OPT*</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-301CP</td>
<td>1-70D0-0-000</td>
<td>Cool only</td>
<td>225-265</td>
<td>120</td>
<td>1.2</td>
<td>12(5.5)</td>
<td>TC-3300^</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-301CPHC</td>
<td>1-7050-1-000</td>
<td>Heat/Cool</td>
<td>225-265</td>
<td>120</td>
<td>1.2</td>
<td>11(5)</td>
<td>OPT*</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-301CPHC</td>
<td>1-70D0-1-000</td>
<td>Heat/Cool</td>
<td>225-265</td>
<td>120</td>
<td>1.2</td>
<td>12(5.5)</td>
<td>TC-3300^</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-301CP</td>
<td>1-7092-0-000</td>
<td>Cool only</td>
<td>225-265</td>
<td>240</td>
<td>0.6</td>
<td>11(5)</td>
<td>none</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-301CP</td>
<td>1-7052-0-000</td>
<td>Cool only</td>
<td>225-265</td>
<td>240</td>
<td>0.6</td>
<td>11(5)</td>
<td>OPT*</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-301CP</td>
<td>1-70D2-0-000</td>
<td>Cool only</td>
<td>225-265</td>
<td>240</td>
<td>0.6</td>
<td>12(5.5)</td>
<td>TC-3300^</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-301CPHC</td>
<td>1-7052-1-000</td>
<td>Heat/Cool</td>
<td>225-265</td>
<td>240</td>
<td>0.6</td>
<td>11(5)</td>
<td>OPT*</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-301CPHC</td>
<td>1-70D2-1-000</td>
<td>Heat/Cool</td>
<td>225-265</td>
<td>240</td>
<td>0.6</td>
<td>12(5.5)</td>
<td>TC-3300^</td>
<td>-10/+70</td>
</tr>
</tbody>
</table>

*OPT; Unit is set up for TC-3300 controller (or similar). Controller not included.

^ TC-3300 Temperature controllers are integral (built in).
The Model AHP-301CP is the smallest cold plate offered with integral power supply and temperature controller.
AHP-300CP
AHP-150CP

Thermoelectric Cold Plate

Air Cooled

FEATURES

• Direct contact cooling as much as 56°C below room temperature
• No compressor, fluorocarbons or filters
• Virtually maintenance-free operation
• Mounts in any orientation

INCLUDES

• Cold plate accessory tapped holes
• Machined surface
• Terminal strip for wire hook up

SPECIFICATIONS AHP-300CP

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING BTU/HR</th>
<th>VOLTAGE VDC</th>
<th>CURRENT AMPS</th>
<th>WEIGHT LBS. (KG)</th>
<th>TEMP. CONTROL</th>
<th>OPERATING AMBIENT °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHP-300CP</td>
<td>1-7097-0-000</td>
<td>Cool only</td>
<td>290-330</td>
<td>12/24/48</td>
<td>12/6/3</td>
<td>6(2.7)</td>
<td>none</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-300CPHC</td>
<td>1-7094-1-000</td>
<td>Heat/Cool</td>
<td>290-330</td>
<td>12</td>
<td>12</td>
<td>6(2.7)</td>
<td>none</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-300CPHC</td>
<td>1-7095-1-000</td>
<td>Heat/Cool</td>
<td>290-330</td>
<td>24</td>
<td>6</td>
<td>6(2.7)</td>
<td>none</td>
<td>-10/+70</td>
</tr>
</tbody>
</table>

Note: Options for temperature control, consult factory.

See also, “Power Supplies”, P. 67

SPECIFICATIONS AHP-150CP

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING BTU/HR</th>
<th>VOLTAGE VDC</th>
<th>CURRENT AMPS</th>
<th>WEIGHT LBS. (KG)</th>
<th>TEMP. CONTROL</th>
<th>OPERATING AMBIENT °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHP-150CP</td>
<td>1-8098-0-000</td>
<td>Cool only</td>
<td>140-160</td>
<td>12/24</td>
<td>6/3</td>
<td>2.5(1.2)</td>
<td>None</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-150CPHC</td>
<td>1-8094-1-000</td>
<td>Heat/Cool</td>
<td>140-160</td>
<td>12</td>
<td>6</td>
<td>2.5(1.2)</td>
<td>None</td>
<td>-10/+70</td>
</tr>
<tr>
<td>AHP-150CPHC</td>
<td>1-8095-1-000</td>
<td>Heat/Cool</td>
<td>140-160</td>
<td>24</td>
<td>3</td>
<td>2.5(1.2)</td>
<td>None</td>
<td>-10/+70</td>
</tr>
</tbody>
</table>

Note: Options for temperature control, consult factory.

See also, “Power Supplies”, P. 67
PERFORMANCE CURVE

Equation of line: \( y = \Delta T(°C) \)  \( x = \) Capacity (Watts)

<table>
<thead>
<tr>
<th>Ambient Temp</th>
<th>20°C</th>
<th>40°C</th>
<th>60°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>300CP Cold Plate</td>
<td>( y = 0.526x - 45.0 )</td>
<td>( y = 0.526x - 48.0 )</td>
<td>( y = 0.526x - 51.0 )</td>
</tr>
<tr>
<td>150CP Cold Plate</td>
<td>( y = 1.1x - 44.5 )</td>
<td>( y = 1.1x - 48 )</td>
<td>( y = 1.1x - 51.5 )</td>
</tr>
</tbody>
</table>

DIMENSIONS

AHP-300CP

AHP-150CP
**FEATURES**
- Standard 19” Rack mounting
- No moving parts
- Weighs only 20 lbs. (9.1kg)
- Direct contact cooling as much as 62 ºC below liquid temperature
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Mounts in any orientation

**INCLUDES**
- Compression fittings
- Power cord
- Mounting provision

**APPLICATIONS**
This cold plate has been used successfully in laboratory and semiconductor manufacturing settings.

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING</th>
<th>VOLTAGE</th>
<th>CURRENT AMPS</th>
<th>WEIGHT LBS. KG</th>
<th>MIN FLOW GPM</th>
<th>TEMP CONTROL</th>
<th>OPERATING AMBIENT ºC</th>
</tr>
</thead>
<tbody>
<tr>
<td>LHP-1700CP</td>
<td>3-1090-0-000</td>
<td>Cool only</td>
<td>1360-1630</td>
<td>120</td>
<td>7.0</td>
<td>20(9.1)</td>
<td>0.3</td>
<td>none</td>
<td>0/+70</td>
</tr>
<tr>
<td>LHP-1700CP</td>
<td>3-1050-0-000</td>
<td>Cool only</td>
<td>1360-1630</td>
<td>120</td>
<td>7.0</td>
<td>20(9.1)</td>
<td>0.3</td>
<td>OPT*</td>
<td>0/+70</td>
</tr>
<tr>
<td>LHP-1702CP</td>
<td>3-1092-0-000</td>
<td>Cool only</td>
<td>1360-1630</td>
<td>240</td>
<td>7.0</td>
<td>20(9.1)</td>
<td>0.3</td>
<td>none</td>
<td>0/+70</td>
</tr>
<tr>
<td>LHP-1702CP</td>
<td>3-1052-0-000</td>
<td>Cool only</td>
<td>1360-1630</td>
<td>240</td>
<td>7.0</td>
<td>20(9.1)</td>
<td>0.3</td>
<td>OPT*</td>
<td>0/+70</td>
</tr>
<tr>
<td>LHP-1700CPhC</td>
<td>3-1050-1-000</td>
<td>Heat/Cool</td>
<td>1360-1630</td>
<td>120</td>
<td>7.0</td>
<td>20(9.1)</td>
<td>0.3</td>
<td>OPT*</td>
<td>0/+70</td>
</tr>
<tr>
<td>LHP-1702CPhC</td>
<td>3-1052-1-000</td>
<td>Heat/Cool</td>
<td>1360-1630</td>
<td>240</td>
<td>7.0</td>
<td>20(9.1)</td>
<td>0.3</td>
<td>OPT*</td>
<td>0/+70</td>
</tr>
</tbody>
</table>

*OPT: Unit is set up for TC-3300 controller (or similar). Controller not included.
**PERFORMANCE CURVE**

Equation of line: \[ y = \Delta T(°C) \quad x = \text{Capacity (Watts)} \]

<table>
<thead>
<tr>
<th>Fluid Temp</th>
<th>20°C</th>
<th>40°C</th>
<th>60°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cold Plate Temp</td>
<td>(y = 0.13x - 52.0)</td>
<td>(y = 0.13x - 57.0)</td>
<td>(y = 0.13x - 62.0)</td>
</tr>
</tbody>
</table>

**ENVIRONMENTS**

From harsh to benign the LHP-1700CP works in many environments.

**DIMENSIONS**

All Dimensions are in inches.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>440 Watts @ 0 °C ΔT</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.75</td>
<td></td>
</tr>
<tr>
<td>6.00</td>
<td></td>
</tr>
<tr>
<td>2.24</td>
<td></td>
</tr>
<tr>
<td>5.49</td>
<td></td>
</tr>
<tr>
<td>1.99</td>
<td></td>
</tr>
<tr>
<td>4.60</td>
<td></td>
</tr>
<tr>
<td>0.95</td>
<td></td>
</tr>
<tr>
<td>0.46</td>
<td></td>
</tr>
</tbody>
</table>

(4) 6-32 X .25 DP Cold Plate SurfaceAccessory Holes

Liquid Input

Input Power Cord

Circuit Breaker Switch
**LHP-800CP**

**LHP-300CP**

**LHP-150CP**

**Thermoelectric Cold Plates**

**FEATURES**

- No moving parts
- Direct contact cooling as much as 51 °C below liquid temperature
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Mounts in any orientation

**INCLUDES**

- Compression fittings
- Auxiliary mounting holes
- Machined cold plate surfaces

**SPECIFICATIONS LHP-800CP**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING BTU/HR</th>
<th>VOLTAGE VDC</th>
<th>CURRENT AMPS.</th>
<th>WEIGHT LBS. (KG)</th>
<th>MIN FLOW GPM</th>
<th>OPERATING AMBIENT °C</th>
<th>HEAT VOLTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LHP-800CP</td>
<td>3-5099-0-000</td>
<td>Cool only</td>
<td>700-830</td>
<td>30</td>
<td>10</td>
<td>5.2 (2.3)</td>
<td>0.3</td>
<td>0/+70</td>
<td>N/A</td>
</tr>
<tr>
<td>LHP-800CPHC</td>
<td>3-5099-1-000</td>
<td>Heat/Cool</td>
<td>700-830</td>
<td>30</td>
<td>10</td>
<td>5.2 (2.3)</td>
<td>0.3</td>
<td>0/+70</td>
<td>120 VAC</td>
</tr>
<tr>
<td>LHP-810CP</td>
<td>3-509A-0-001</td>
<td>Cool only</td>
<td>700-830</td>
<td>120</td>
<td>3.5</td>
<td>5.2 (2.3)</td>
<td>0.3</td>
<td>0/+70</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**SPECIFICATIONS LHP-300CP**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING BTU/HR</th>
<th>VOLTAGE VDC</th>
<th>CURRENT AMPS.</th>
<th>WEIGHT LBS. (KG)</th>
<th>MIN FLOW GPM</th>
<th>OPERATING AMBIENT °C</th>
<th>HEAT VOLTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LHP-300CP</td>
<td>3-7098-0-000</td>
<td>Cool only</td>
<td>280-335</td>
<td>12/24</td>
<td>12/6</td>
<td>1.8 (.81)</td>
<td>0.2</td>
<td>0/+70</td>
<td>N/A</td>
</tr>
<tr>
<td>LHP-300CPHC</td>
<td>3-7095-1-000</td>
<td>Heat/Cool</td>
<td>280-335</td>
<td>24</td>
<td>6</td>
<td>1.8 (.81)</td>
<td>0.2</td>
<td>0/+70</td>
<td>24 VDC</td>
</tr>
<tr>
<td>LHP-300CPHC</td>
<td>3-7098-1-000</td>
<td>Heat/Cool</td>
<td>280-335</td>
<td>12/24</td>
<td>12/6</td>
<td>1.8 (.81)</td>
<td>0.2</td>
<td>0/+70</td>
<td>120 VAC</td>
</tr>
</tbody>
</table>

**SPECIFICATIONS LHP-150CP**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>PERFORMANCE RATING BTU/HR</th>
<th>VOLTAGE VDC</th>
<th>CURRENT AMPS.</th>
<th>WEIGHT LBS. (KG)</th>
<th>MIN FLOW GPM</th>
<th>OPERATING AMBIENT °C</th>
<th>HEAT VOLTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LHP-150CP</td>
<td>3-8094-0-000</td>
<td>Cool only</td>
<td>130-160</td>
<td>12</td>
<td>4.5</td>
<td>.75 (.34)</td>
<td>0.2</td>
<td>0/+70</td>
<td>N/A</td>
</tr>
<tr>
<td>LHP-150CPHC</td>
<td>3-8094-1-000</td>
<td>Heat/Cool</td>
<td>130-160</td>
<td>12</td>
<td>4.5</td>
<td>.75 (.34)</td>
<td>0.2</td>
<td>0/+70</td>
<td>12 VDC</td>
</tr>
<tr>
<td>LHP-150CPHC</td>
<td>3-8094-2-000</td>
<td>Heat/Cool</td>
<td>130-160</td>
<td>12</td>
<td>4.5</td>
<td>.75 (.34)</td>
<td>0.2</td>
<td>0/+70</td>
<td>120 VAC</td>
</tr>
</tbody>
</table>

Note: Option for temperature control, consult factory.

*See also, "Power Supplies", P. 67*
PERFORMANCE CURVE

Cooling Capacity (BTU/HR)

<table>
<thead>
<tr>
<th>Fluid Temp</th>
<th>Capacity (Watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20°C</td>
<td>205</td>
</tr>
<tr>
<td>40°C</td>
<td>82</td>
</tr>
<tr>
<td>60°C</td>
<td>40</td>
</tr>
</tbody>
</table>

USEFUL COOLING CAPACITY

LHP-800CP

LHP-300CP

LHP-150CP

DIMENSIONS

LHP-800CP

LHP-300CP

LHP-150CP
Teca Liquid Chillers are compact and reliable alternatives to conventional recirculating coolers. A complete integrated package is now offered in a standard configuration.

**FEATURES**
- Precise temperature control
- External plumbing lines with quick connectors
- 12’ of tubing and insulation included
- Self priming pumps

**Options Available**
- Heating
- RS-232 interface
- RS-485 interface
- Computer Communications software
- Ramping and soaking

**APPLICATIONS**
Teca Liquid Chillers are ideal for bench-top or portable applications such as laboratory, laser, x-ray, out-patient and medical therapy as well as many others.

**TLC-SERIES**
- **TLC-1400** page 72
  1400-1450 BTU/hr Rating, 12” x 14” footprint
  120-240 VAC operation
- **TLC-700** page 76
  730-800 BTU/hr Rating, 12” x 7” footprint
  120 VAC operation
- **TLC-702** page 76
  730-800 BTU/hr Rating, 12” x 7” footprint
  240 VAC operation
- **TLC-900** page 74
  1050-1350 BTU/hr Rating, 15.4” x 7.6” footprint
  120/240 VAC operation
- **TLC³** page 78
  330-1250 BTU/hr Rating, various size and voltages

**RLC-SERIES**
- **RLC-1400** page 80
  1400-1450 BTU/hr Rating, 19” x 25” x 9” Size
  120-240 VAC operation
TLC-1400 Thermoelectric Liquid Chiller
Air Cooled

**FEATURES**
- Compact (only 12” x 14” bench top footprint)
- Weighs approximately 59 lbs. (27 kg)
- Easy prime pump design
- Integral PID “tunable” temperature control (two styles)
- Ambient temperature up to +50°C
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Remote Sensibility™ remote temperature sensing
- Un-cooled, 500mL reservoir
- Front to back air-flow system
- Stainless steel exterior housing
- Ergonomic sloping front design
- Low fluid level and low flow warning
- Integral power supply
- Self priming pump/reservoir
- Low pressure drop fluid quick connects
- Tubing and insulation
- 3/8” CPC low pressure drop shut off fittings

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>PERFORMANCE RATING</th>
<th>VOLTAGE</th>
<th>AMPS</th>
<th>CURRENT AMPS</th>
<th>WEIGHT</th>
<th>MAX OPERATING TEMP °C</th>
<th>TEMP CONTROL</th>
<th>HEATING OPTION (HC SUFFIX)</th>
<th>FLUID TEMP RANGE °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>TLC-1400</td>
<td>6-B0D0-0-000</td>
<td>1400-1450</td>
<td>120 VAC</td>
<td>7.0</td>
<td>59(26.7)</td>
<td>50 °C(+122 F)</td>
<td>TC-3300</td>
<td>-5/65</td>
<td>400 Watt</td>
<td></td>
</tr>
<tr>
<td>TLC-1400HC</td>
<td>6-B0D0-1-000</td>
<td>1400-1450</td>
<td>120 VAC</td>
<td>7.0</td>
<td>59(26.7)</td>
<td>50 °C(+122 F)</td>
<td>TC-3300</td>
<td>-5/65</td>
<td>400 Watt</td>
<td></td>
</tr>
<tr>
<td>TLC-1402</td>
<td>6-B0D2-0-000</td>
<td>1400-1450</td>
<td>240 VAC</td>
<td>4.0</td>
<td>59(26.7)</td>
<td>50 °C(+122 F)</td>
<td>TC-3300</td>
<td>-5/65</td>
<td>400 Watt</td>
<td></td>
</tr>
<tr>
<td>TLC-1402HC</td>
<td>6-B0D2-1-000</td>
<td>1400-1450</td>
<td>240 VAC</td>
<td>4.0</td>
<td>59(26.7)</td>
<td>50 °C(+122 F)</td>
<td>TC-3300</td>
<td>-5/65</td>
<td>400 Watt</td>
<td></td>
</tr>
<tr>
<td>TLC-1400</td>
<td>6-B0E0-0-000</td>
<td>1400-1450</td>
<td>120 VAC</td>
<td>7.0</td>
<td>59(26.7)</td>
<td>50 °C(+122 F)</td>
<td>TC-4300</td>
<td>-5/65</td>
<td>400 Watt</td>
<td></td>
</tr>
<tr>
<td>TLC-1400HC</td>
<td>6-B0E0-1-000</td>
<td>1400-1450</td>
<td>120 VAC</td>
<td>7.0</td>
<td>59(26.7)</td>
<td>50 °C(+122 F)</td>
<td>TC-4300</td>
<td>-5/65</td>
<td>400 Watt</td>
<td></td>
</tr>
<tr>
<td>TLC-1402</td>
<td>6-B0E2-0-000</td>
<td>1400-1450</td>
<td>240 VAC</td>
<td>4.0</td>
<td>59(26.7)</td>
<td>50 °C(+122 F)</td>
<td>TC-4300</td>
<td>-5/65</td>
<td>400 Watt</td>
<td></td>
</tr>
<tr>
<td>TLC-1402HC</td>
<td>6-B0E2-1-000</td>
<td>1400-1450</td>
<td>240 VAC</td>
<td>4.0</td>
<td>59(26.7)</td>
<td>50 °C(+122 F)</td>
<td>TC-4300</td>
<td>-5/65</td>
<td>400 Watt</td>
<td></td>
</tr>
</tbody>
</table>

**TC-3300 FEATURES**
- Cool Only
- Heat/Cool (Optional)
- RS-232 communications (Optional)
- Communications Software

**TC-4300 FEATURES**
- Heating and Cooling
- Integral PID “tunable” temperature control
- One shot smart PID control tuning or Adaptive Smart Continuous Tuning
- Internal RTD sensor
- Remote Sensibility™ switchable exterior sensor
- Multi-segment ramp and soak programs
- RS-232 communications
- i-tools software for easy programming and control tweaking
- Low fluid level and low flow warning
- Process fluid “out of temperature range” warning
- Variable fan speed for quietest operation
- Easy prime/pump reset feature
- No flow system shut down
- Optional software for charting and data acquisition
PERFORMANCE CURVE

Equation of line: $y = \Delta T (^\circ C)$  $x = \text{Capacity (Watts)}$

<table>
<thead>
<tr>
<th>Ambient Temp</th>
<th>Fluid Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>25°C</td>
<td>$y = 0.08x - 33.1$</td>
</tr>
<tr>
<td>50°C</td>
<td>$y = 0.08x - 36.1$</td>
</tr>
</tbody>
</table>

DIMENSIONS

Dimensions: Inches
* Minimum recommended clearance 3".
**TLC-900 Thermoelectric Liquid Chiller**

**STANDARD FEATURES**
- 90-265 VAC universal integrated power supply
- Heating and cooling
- 1 Liter un-cooled reservoir
- Low pressure drop 3/8 I.D. fluid quick connects
- Variable fan speed for quieter operation
- User-friendly front-fill design
- Easy prime/pump reset feature
- Wide process fluid temperature range
- Multiport bottom to top air-flow for easier bench use
- Hardwired over-temperature protection
- Stainless steel painted exterior housing
- Ergonomic sloping front design
- Compact (only 15.5" X 7.6" bench top footprint)
- Weighs approximately 42 lbs. (19 kg)
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- High capacity versions (consult factory)

**CONTROL FEATURES**
- Integral PID "tunable" temperature control
- One shot smart PID control tuning or Adaptive Smart Continuous Tuning
- Internal RTD sensor
- Remote Sensibility™ switch able exterior sensor
- Multi-segment ramp and soak programs
- RS-232 communications
- i-tools software for easy programming and tuning
- Low fluid level and low flow warning
- Process fluid "out of temperature range" warning
- No flow system shut down
- Optional software for charting and data acquisition

**ACCESSORIES**
- 50 micron external filter
- External RTD sensors (consult factory)
- Various size liquid quick connects
- Stainless steel liquid heat exchanger
- 3/8" Tubing and insulation

**PUMP OPTIONS**
- Option #1 - Standard Magnetic Drive, Can Pump, 0 to 50 °C process temperature
- Option #2 - Low Temperature Magnetic Drive, Impeller Pump, -20 to 90 °C process temperature
- Option #3 - Gear pump, 3.75 Liter/Min, -20 to 90 °C process temperature
- Option #4 - High Flow Magnetic Drive, Can Pump, 0 to 50 °C process temperature

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>PERFORMANCE RATING BTU/HR</th>
<th>VOLTAGE VAC 50/60 HZ</th>
<th>CURRENT AMPS</th>
<th>WEIGHT LBS. (KG)</th>
<th>MAX OPERATING AMBIENT</th>
<th>FLUID TEMP. RANGE °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>TLC-900</td>
<td>6-E0EB-1-000</td>
<td>1050-1350</td>
<td>100-240</td>
<td>3.5</td>
<td>42 (19)</td>
<td>50 °C (+122 F)</td>
<td>0 - 50</td>
</tr>
</tbody>
</table>

-20 to 90 optional
**PERFORMANCE CURVE**

<table>
<thead>
<tr>
<th>Cooling Capacity (Watts)</th>
<th>Temperature Differential (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-40</td>
</tr>
<tr>
<td>50</td>
<td>-35</td>
</tr>
<tr>
<td>100</td>
<td>-30</td>
</tr>
<tr>
<td>150</td>
<td>-25</td>
</tr>
<tr>
<td>200</td>
<td>-20</td>
</tr>
<tr>
<td>250</td>
<td>-15</td>
</tr>
<tr>
<td>300</td>
<td>-10</td>
</tr>
<tr>
<td>350</td>
<td>-5</td>
</tr>
<tr>
<td>400</td>
<td>0</td>
</tr>
<tr>
<td>450</td>
<td>5</td>
</tr>
</tbody>
</table>

**ENVIRONMENTS**

- Bench top
- Laboratory
- Industrial

**COOLING CAPACITY**

- 310 Watts @ 0 °C ΔT (standard)
- 360 Watts @ 0 °C ΔT (high capacity)

---

**DIMENSIONS**

- Reservoir Fil
- 3/8 ID Hose
- Internal/External Sensor Selector Switch
- Power Input, Switch and Fuse
- External Sensor Connector
- Dimensions: Inches
- Communication Port

---

**TLC-900**

**Thermoelectric Liquid Chiller**

**PUMP CURVE**

Equation of line: $y = \Delta T(°C)$, $x = \text{Capacity (Watts)}$

<table>
<thead>
<tr>
<th>Ambient Temp</th>
<th>25°C</th>
<th>50°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>$y = 0.101x - 31.4$</td>
<td>$y = 0.0100x - 32.1$</td>
</tr>
<tr>
<td>High Capacity</td>
<td>$y = 1.02x - 37.3$</td>
<td>$y = 1.03x - 40.0$</td>
</tr>
</tbody>
</table>
TLC-700 Thermoelectric Liquid Chiller

**FEATURES**
- Compact (only 15.5" X 7.6" bench top footprint)
- Weighs approximately 27 lbs. (59 kg)
- Easy prime pump design
- Integral PID “tunable” temperature control (two styles)
- Ambient temperature up to +50°C
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Remote Sensibility™ remote temperature sensing
- Un-cooled, 500mL reservoir
- Front to back air-flow system
- Stainless steel exterior housing
- Ergonomic sloping front design
- Low fluid level and low flow warning
- Integral power supply
- Self priming pump/reservoir
- Low pressure drop fluid quick connects
- Tubing and insulation
- 3/8” CPC low pressure drop shut off fittings

**TC-3300 FEATURES**
- Cool Only
- Heat/Cool (Optional)
- RS-232 communications (Optional)
- Communications Software

**TC-4300 FEATURES**
- Heating and Cooling
- Integral PID “tunable” temperature control
- One shot smart PID control tuning or Adaptive Smart Continuous Tuning
- Internal RTD sensor
- Remote Sensibility™ switchable exterior sensor
- Multi-segment ramp and soak programs
- RS-232 communications
- i-tools software for easy programming and control tweaking
- Low fluid level and low flow warning
- Process fluid “out of temperature range” warning
- Variable fan speed for quietest operation
- Easy prime/pump reset feature
- No flow system shut down
- Optional software for charting and data acquisition

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>PERFORMANCE RATING BTU/HR</th>
<th>VOLTAGE VAC 50/60 HZ</th>
<th>CURRENT AMPS.</th>
<th>WEIGHT LBS. (KG)</th>
<th>MAX OPERATING AMBIENT</th>
<th>HEATING OPTION (HC SUFFIX)</th>
<th>TEMP. CONTROL</th>
<th>FLUID TEMP RANGE °C</th>
<th>AGENCY APPROVALS (ETL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TLC-700</td>
<td>6-A0D0-0-000</td>
<td>730-800</td>
<td>120 VAC</td>
<td>4.2</td>
<td>32(14.5)</td>
<td>50 °C (+122 °F)</td>
<td>TC-3300</td>
<td>-5/65</td>
<td>UL3101-1/CSA22.2, CE</td>
<td></td>
</tr>
<tr>
<td>TLC-700HC</td>
<td>6-A0D0-1-000</td>
<td>730-800</td>
<td>120 VAC</td>
<td>4.2</td>
<td>32(14.5)</td>
<td>50 °C (+122 °F)</td>
<td>200 Watt</td>
<td>TC-3300</td>
<td>-5/65</td>
<td>UL3101-1/CSA22.2, CE</td>
</tr>
<tr>
<td>TLC-702</td>
<td>6-A0D2-0-000</td>
<td>730-800</td>
<td>120 VAC</td>
<td>2.9</td>
<td>42(19)</td>
<td>50 °C (+122 °F)</td>
<td>TC-3300</td>
<td>-5/65</td>
<td>UL3101-1/CSA22.2, CE</td>
<td></td>
</tr>
<tr>
<td>TLC-702HC</td>
<td>6-A0D2-1-000</td>
<td>730-800</td>
<td>240 VAC</td>
<td>2.9</td>
<td>42(19)</td>
<td>50 °C (+122 °F)</td>
<td>200 Watt</td>
<td>TC-3300</td>
<td>-5/65</td>
<td>UL3101-1/CSA22.2, CE</td>
</tr>
<tr>
<td>TLC-700</td>
<td>6-A0E0-0-000</td>
<td>730-800</td>
<td>120 VAC</td>
<td>4.2</td>
<td>32(14.5)</td>
<td>50 °C (+122 °F)</td>
<td>TC-4300</td>
<td>-5/65</td>
<td>PENDING</td>
<td></td>
</tr>
<tr>
<td>TLC-700HC</td>
<td>6-A0E0-1-000</td>
<td>730-800</td>
<td>120 VAC</td>
<td>4.2</td>
<td>32(14.5)</td>
<td>50 °C (+122 °F)</td>
<td>200 Watt</td>
<td>TC-4300</td>
<td>-5/65</td>
<td>PENDING</td>
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<tr>
<td>TLC-702</td>
<td>6-A0E2-0-000</td>
<td>730-800</td>
<td>240 VAC</td>
<td>2.9</td>
<td>42(19)</td>
<td>50 °C (+122 °F)</td>
<td>TC-4300</td>
<td>-5/65</td>
<td>PENDING</td>
<td></td>
</tr>
<tr>
<td>TLC-702HC</td>
<td>6-A0E2-1-000</td>
<td>730-800</td>
<td>240 VAC</td>
<td>2.9</td>
<td>42(19)</td>
<td>50 °C (+122 °F)</td>
<td>200 Watt</td>
<td>TC-4300</td>
<td>-5/65</td>
<td>PENDING</td>
</tr>
</tbody>
</table>
**PERFORMANCE CURVE**

Equation of line: \( y = \Delta T(°C) \times \) Capacity (Watts)

<table>
<thead>
<tr>
<th>Ambient Temp</th>
<th>Capacity (Watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25°C</td>
<td>( y = 0.14x - 30.2 )</td>
</tr>
<tr>
<td>50°C</td>
<td>( y = 0.14x - 33.2 )</td>
</tr>
</tbody>
</table>

**DIMENSIONS**

Dimensions: Inches
- Minimum recommended clearance 3”.
FEATURES

- Customized to fit your application
- In process fluid cooling
- Gas cooling/drying
- Aluminum hot side heat exchanger
- Aluminum cold side heat exchanger
- Various DC inputs and efficiencies
- Special finishes and materials on request
- Many fan options
- 4 and 6 pass heat exchanger
- Input/output fitting options
- Heating options

REQUIRED (NOT INCLUDED)

- Pump
- Power supply
- Tubing
- Fan
- Housing

NOTES

TECA model TLC³ cooling cubes are thermoelectric cooling “engines” that the engineer or designer can use in OEM systems. Generally these are made in 100, 200 and 300 Watts capacity range, they work with a variety of fans. Small or large quantities available.
PERFORMANCE CURVE

Ambient Air Path

DIMENSIONS

Dimensions: Inches
Housing and fan shown for reference
FEATURES
• Compact only 19” x 25” x 9”
• Standard 19” rack mounting
• Integral PID “Tuneable” temperature control
• Remote sense capability
• Ambients to +50°C
• No compressor, fluorocarbons
• Virtually maintenance-free operation
• Stainless steel exterior housing
• Low fluid/flow warning

INCLUDES
• Integral power supply
• Self priming pump/reservoir
• TC-3300 temperature Control
• Remote sense capability
• Low pressure drop fluid quick connects

OPTIONS
• Heating
• RS-232 or RS-485 interface
• Computer communication software

APPLICATIONS
Teca Liquid Chillers are ideal for rack mount applications such as laboratory, laser, x-ray, out-patient, medical therapy and electronics.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PART NUMBER</th>
<th>PERFORMANCE RATING BTU/HR</th>
<th>VOLTAGE VAC 50/60 HZ</th>
<th>CURRENT AMPS</th>
<th>WEIGHT LBS. (KG)</th>
<th>MAX OPERATING AMBIENT</th>
<th>HEATING OPTION (HC SUFFIX)</th>
<th>FLUID TEMP RANGE °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>RLC-1400</td>
<td>8-B0D0-0-000</td>
<td>1400-1450</td>
<td>120 VAC</td>
<td>7.0</td>
<td>59(26.7)</td>
<td>50 °C(+122 F)</td>
<td>400 Watt</td>
<td>-5/65</td>
</tr>
<tr>
<td>RLC-1400HC</td>
<td>8-B0D0-1-000</td>
<td>1400-1450</td>
<td>120 VAC</td>
<td>7.0</td>
<td>59(26.7)</td>
<td>50 °C(+122 F)</td>
<td>400 Watt</td>
<td>-5/65</td>
</tr>
<tr>
<td>RLC-1402</td>
<td>6-B0D2-0-000</td>
<td>1400-1450</td>
<td>240 VAC</td>
<td>7.0</td>
<td>59(26.7)</td>
<td>50 °C(+122 F)</td>
<td>400 Watt</td>
<td>-5/65</td>
</tr>
<tr>
<td>RLC-1402HC</td>
<td>6-B0D2-1-000</td>
<td>1400-1450</td>
<td>240 VAC</td>
<td>7.0</td>
<td>59(26.7)</td>
<td>50 °C(+122 F)</td>
<td>400 Watt</td>
<td>-5/65</td>
</tr>
</tbody>
</table>
PERFORMANCE CURVE

**Equation of line:** \( y = \Delta T(°C) \times \text{Capacity (Watts)} \)

<table>
<thead>
<tr>
<th>Ambient Temp</th>
<th>25°C</th>
<th>50°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid Supply</td>
<td>( y = 0.08x - 33.1 )</td>
<td>( y = 0.08x - 36.1 )</td>
</tr>
</tbody>
</table>

**DIMENSIONS**

Dimensions are inches

---

**RLC-1400**

**COOLING CAPACITY**

410 Watts @ 0 °C \( \Delta T \)

---

**Air Cooled Liquid Chillers**

www.teca-eu.com

1-888-TECA-USA (832-2872)
**TECA**

**Percent of NFL players who have a concussion**

- **Total Players**: 2,220
- **Concussions**: 3,340
- **Percentage**: 15%

---

**Performance Curves**

**930 Series**

- **Max. ΔT (°C)**: 3.9
- **Max. Qc (Watts)**: 15.4
- **±0.42 (0.11)**

**940 Series**

- **Max. ΔT (°C)**: 3.0
- **Max. Qc (Watts)**: 15.4
- **±0.42 (0.11)**

**950 Series**

- **Max. ΔT (°C)**: 3.0
- **Max. Qc (Watts)**: 15.4
- **±0.42 (0.11)**

---

**Specifications**

- **Module Series / Couples**
- **Performance**
  - **Max. ΔT (°C)**: 3.9
  - **Max. Qc (Watts)**: 15.4
  - **±0.42 (0.11)**

---

**Electrical Dimensions**

- **Module Series / Couples**
- **Max. Current (amps)**
- **Max. DC Voltage (volts)**
- **Nominal Resistance (Ω) @ 25°C**
- **Dimension A (in) ±0.42 (0.11)**
- **Dimension B (in) ±0.42 (0.11)**
- **Dimension C (in) ±0.42 (0.11)**
- **Wire Gauge (AWG)**
- **Wire Length (inches)**
TC-4300 Temperature Controller

MAIN FEATURES

- Dual printed circuit board design to be easily fitted on the equipment panel
- Dual four digits display
- Universal Thermocouple (TC) and Resistance Temperature Detector (RTD) input
- On-Off, Proportional-Integral-Derivative (PID) or Heating/Cooling control actions
- Smart automatic tuning algorithm
- Two points automatic and manual system calibration capability
- Two Solid State Relay (SSR) drive output for heating and cooling or alarm
- A buzzer to signal end of program
- 85-264 Vac or 24V +/- 10 % ac/dc power supply
- 0-10 VDC analog or 5-20 mA speed control output (typically for fans)
- Two dry contact inputs for warning lights
- One dry contact input for system/component shut down and reset
- One 10 A relay output for system/component shut down and reset
- Configuration port interface (CPI) for fast configuration by PC based software
- RS232 or RS485 communication interfaces through appropriate modules
- Ramp and soak programmable
- Programmer configurable as 4 programs with eight segments, 1 program with 32 segments or 2 programs with 16 segments
- Program execution repetitions: from 0 (one execution only) to 9999 and endless executions
- Configurable ramp tracking and guaranteed soak functions
- Configurable servo to PV function for smooth recovery from hold or power down
- Made for your custom Front Panel Overlay

SPECIFICATIONS

Ambient temperature: From 0 °C to 50 °C
Storage temperature: From -30 °C to 70 °C
Humidity: From 20% to 85% RH non condensing
Power supply: 4 W 7 VA maximum
Construction: Self-extinguishing degree V0 rated PCB assembly according to UL-94
Installation: Behind panel mounted
Dimension: 120 X 80 X 52 mm depth
Weight: Maximum 200 g
Sampling time: 500 ms typical
Accuracy: +0.3% fsv + 1 digit @ 25 °C and nominal power supply voltage range
Temperature drift: < 200 ppm/°C of full scale for L, J, K, N thermocouple type (reference junction excluded)
< 400 ppm/°C of full scale for RTD and T thermocouple type (reference junction excluded)
< 500 ppm/°C of full scale for R and S thermocouple type (reference junction excluded)
Reference junction drift: 0.1°C/°C

Common mode
rejection ratio: ≥120 dB @ 50/60 Hz
Normal mode
rejection ratio: ≥60 dB @ 50/60 Hz
PV input: Thermocouple J, L, K, N, T, R, S or Resistance Temperature Detector (RTD) Pt100
The input type is keyboard selectable
The line must not be longer than 30 meters or leave the building

Resolution: One decimal figure is available for temperature display and setting from 199.9 to 999.9 °C or °F. This auto-ranging feature can be disabled to remove the presentation of the decimal digit in the whole operating range.
Operating mode: ON/OFF or PID;
Automatic operation; Self-tuning function

Out 1: Logic output for SSR (Typically Heat function)
Logic level 0: < 0.5 V dc
Logic level 1: 8 V dc +20% @ 12mA max

Out 2: Relay (form A) 10 A @ 250 Vac resistive load
System/Component shut down
Logic level 0: < 0.5 V dc
Logic level 1: 14 V dc +20% @ 20ma max
24 V dc +20% @ 1ma
The line must not be longer than 30 meters or leave the building

Serial interface: Optional, RS-232 or RS-485 standard, opto-isolated
Protocol type: Modbus (RTU mode)
Device address: From 1 to 254
Baud rate: 600 up to 19200 baud
Format: 1 start bit; 8 bit with/without parity;
1 stop bit
Parity: Even/Odd
Watch-dog: Hardware / software watch-dog is provided for automatic restart
**TC-4300 PID Temperature Controller**

**TYPICAL RAMP SOAK PROFILE**

The Out 2 is used in association with a timer to control the system or specific component function as shown below. This function will disable the system or component if a dry contact is open and has existed for more than "t" time. Otherwise, Out 2 will remain energized.

Once the timer has expired and the component or system is OFF, the Out 1(Heat) and Out 3(Cool) are also OFF. The program will be forced in "HOLD 1" if it is "RUN" status.

The component or system is reset by pressing "HOLD" + "RUN" pushbutton at the same time.

The diagram shown in the left is made for pump shut down and reset based on flow or no flow conditions.

---

**Example of programing setting**

<table>
<thead>
<tr>
<th>Segment number</th>
<th>Temperature (°C)</th>
<th>Segment</th>
<th>Time (hh.mm)</th>
<th>Segment type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial</td>
<td>50</td>
<td>2.0 °C/min</td>
<td>0.50</td>
<td>Dwell</td>
</tr>
<tr>
<td>1</td>
<td>150</td>
<td>3.00 h.mm</td>
<td>3.00</td>
<td>Ramp up, set-up in gradient</td>
</tr>
<tr>
<td>2</td>
<td>150</td>
<td>0.50 h.mm</td>
<td>0.50</td>
<td>Dwell</td>
</tr>
<tr>
<td>3</td>
<td>250</td>
<td>3.00 h.mm</td>
<td>3.00</td>
<td>Ramp up, set-up in time</td>
</tr>
<tr>
<td>4</td>
<td>250</td>
<td>2.0 °C/min</td>
<td>1.40</td>
<td>Dwell</td>
</tr>
<tr>
<td>5</td>
<td>50</td>
<td></td>
<td></td>
<td>Ramp down, set-up in gradient</td>
</tr>
<tr>
<td>6</td>
<td>End</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**TRACKING AND SOAK LIMITS**

The ramp tracking function - if enabled - pauses the ramp execution when the control error (difference between the process variable and the operative set point) is larger than a specific threshold. The ramp restarts when the control error falls below the prefixed value. Two different thresholds for ramp tracking can be specified: a tracking low limit (when the process variable is lower than the operative set point) and a tracking high limit (when the process variable is greater than the operative set point).

When a fault is detected on measure and tracking is configured the ramp is always stopped, independently of configured value.

The guaranteed soak function is similar to the ramp tracking one, but it works during dwell segments. It can be separately enabled by means of a proper threshold that specifies the maximum absolute control error.

When a fault is detected on measure and guaranteed soak is configured the time is always stopped, independently of configured value.

---

**SYSTEM / COMPONENT SHUT DOWN RELATIONSHIP**

The Out 2 is used in association with a timer to control the system or specific component function as shown below.

The diagram shown in the left is made for pump shut down and reset based on flow or no flow conditions.
Temperature Controllers

TEMPERATURE POWER SENSOR

TC-6F

Model TC-6F (Cool Only) thermostat is designed using two temperature power switches in conjunction with a solid state relay. A three position switch is provided to adjust temperature settings.

TC-6F SPECIFICATION

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>TEMP @ T1 °C</th>
<th>TEMP @ T2 °C</th>
<th>T1-T2 MAX °C</th>
<th>RESET TEMP °C</th>
<th>RESET</th>
<th>TEMP @ T3 °C</th>
<th>OPERATING VOLTAGE</th>
<th>SWITCHING VOLTAGE</th>
<th>SWITCHING CURRENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>TC-6F</td>
<td>6-5211-000</td>
<td>No Relay</td>
<td>35 +/- 5</td>
<td>25 +/- 5</td>
<td>10 +/- 3</td>
<td>6.5 °C</td>
<td>3 °C</td>
<td>Continuous On</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>TC-6F-AC</td>
<td>6-5232-000</td>
<td>VAC Version</td>
<td>35 +/- 5</td>
<td>25 +/- 5</td>
<td>10 +/- 3</td>
<td>6.5 °C</td>
<td>3 °C</td>
<td>Continuous On</td>
<td>85-250 VAC</td>
<td>24-280 VAC</td>
<td>10</td>
</tr>
<tr>
<td>TC-6F-DC</td>
<td>6-5242-000</td>
<td>12/24 VDC</td>
<td>35 +/- 5</td>
<td>25 +/- 5</td>
<td>10 +/- 3</td>
<td>6.5 °C</td>
<td>3 °C</td>
<td>Continuous On</td>
<td>3.5-32 VDC</td>
<td>0-100 VDC</td>
<td>.02-20 ADC</td>
</tr>
<tr>
<td>TC-6F-DC</td>
<td>6-5252-000</td>
<td>48 VDC</td>
<td>35 +/- 5</td>
<td>25 +/- 5</td>
<td>10 +/- 3</td>
<td>6.5 °C</td>
<td>3 °C</td>
<td>Continuous On</td>
<td>3.5-32 VDC</td>
<td>0-100 VDC</td>
<td>.02-20 ADC</td>
</tr>
</tbody>
</table>

TC-3F

Model TC-3F (Heat/Cool) thermostat incorporates the same technology as the TC-6F. It contains a single setting each for both heating and cooling as referenced below:

TC-3F SPECIFICATION

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
<th>PART NUMBER</th>
<th>NOTES</th>
<th>TEMP @ T1 °C</th>
<th>TEMP @ T2 °C</th>
<th>T1-T2 °C</th>
<th>RESET TEMP °C</th>
<th>RESET</th>
<th>OPERATING VOLTAGE</th>
<th>SWITCHING VOLTAGE</th>
<th>SWITCHING CURRENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>TC-3F-AC</td>
<td>6-5232-000</td>
<td>VAC Version</td>
<td>35 +/- 5</td>
<td>15 +/- 5</td>
<td>20 +/- 3 C</td>
<td>6.5 C</td>
<td>3 C</td>
<td>85-250 VAC</td>
<td>24-280 VAC</td>
<td>10 RMS</td>
</tr>
<tr>
<td>TC-3F-DC</td>
<td>6-5242-000</td>
<td>12/24 VDC</td>
<td>35 +/- 5</td>
<td>15 +/- 5</td>
<td>20 +/- 3 C</td>
<td>6.5 C</td>
<td>3 C</td>
<td>3.5-32 VDC</td>
<td>0-100 VDC</td>
<td>.02-20 ADC</td>
</tr>
</tbody>
</table>

DIGITAL CONTROLLER

TC-3300 Temperature Controller

Model 3300 is a digital, microprocessor based temperature controller designed to be used in conjunction with TECA products. When ordering a complete package, simply plug in the control cable and with factory preset tuning and you are ready to go! All models are designed with Nema-4X front panel for corrosion and water resistance. This is ideal for applications such as food processing where equipment needs to be cleaned frequently. Features such as auto-tuning, dual output, and single input are available from these controllers. Each unit comes with factory default programming, but can be user modified through a setup menu.

Part Number: 3300 - X X X X

<table>
<thead>
<tr>
<th>OUTPUT</th>
<th>INPUT</th>
<th>Relay Style</th>
<th>Communication</th>
<th>Software (order separately) Windows Based, Part # 100-1GB-300</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Windows Based, Part # 100-1GB-300</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Windows Based, Part # 100-1GB-300</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>2</td>
<td>Windows Based, Part # 100-1GB-300</td>
</tr>
</tbody>
</table>

Part Number: 3300 - X X X X
POWER SUPPLIES
Switching Power Supplies
100, 150, 300 WATTS

FEATURES
• Universal 88-264 VAC input (SP-300)
• 115/230 VAC switch selectable input (AS-100F, AS-150)
• Regulated outputs
• 3000 V (SP-300, AS-150); 1500 V (AS-100F) Isolation
• Built in PFC circuit 0.99 (SP-300)
• Built in EMI filter (AS-150, AS-100F)

SPECIFICATIONS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>INPUT VOLTAGE 47-440 HZ</th>
<th>OUTPUT VOLTAGE VDC</th>
<th>DC OUTPUT POWER WATTS</th>
<th>OUTPUT CURRENT AMPS</th>
<th>WEIGHT LBS.</th>
<th>TEMPERATURE °C</th>
<th>WORKING HUMIDITY 20-90%RH</th>
<th>DIMENSIONS L X W X H INCHES</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP300-12</td>
<td>88-264</td>
<td>12</td>
<td>300</td>
<td>24</td>
<td>2.6</td>
<td>-10 - 50</td>
<td>-10 - 50</td>
<td>8.6X4.6X2</td>
</tr>
<tr>
<td>SP300-24</td>
<td>88-264</td>
<td>24</td>
<td>300</td>
<td>12.5</td>
<td>2.6</td>
<td>-10 - 50</td>
<td>-10 - 50</td>
<td>8.6X4.6X2</td>
</tr>
<tr>
<td>SP300-48</td>
<td>88-264</td>
<td>48</td>
<td>300</td>
<td>6.25</td>
<td>2.6</td>
<td>-10 - 50</td>
<td>-10 - 50</td>
<td>8.6X4.6X2</td>
</tr>
<tr>
<td>AS150F-12</td>
<td>88-132 OR 176-264*</td>
<td>12</td>
<td>150</td>
<td>12.5</td>
<td>1.76</td>
<td>-10 - 60</td>
<td>-10 - 60</td>
<td>7.96X4.4X2</td>
</tr>
<tr>
<td>AS150F-24</td>
<td>88-132 OR 176-264*</td>
<td>24</td>
<td>150</td>
<td>6.5</td>
<td>1.76</td>
<td>-10 - 60</td>
<td>-10 - 60</td>
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</tr>
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<td>AS150F-48</td>
<td>88-132 OR 176-264*</td>
<td>48</td>
<td>150</td>
<td>3.2</td>
<td>1.76</td>
<td>-10 - 60</td>
<td>-10 - 60</td>
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</tr>
<tr>
<td>AS100F-12</td>
<td>88-132 OR 176-264*</td>
<td>12</td>
<td>100</td>
<td>8.5</td>
<td>1.4</td>
<td>-10 - 60</td>
<td>-10 - 60</td>
<td>7.96X3.9X1.52</td>
</tr>
<tr>
<td>AS100F-24</td>
<td>88-132 OR 176-264*</td>
<td>24</td>
<td>100</td>
<td>4.5</td>
<td>1.4</td>
<td>-10 - 60</td>
<td>-10 - 60</td>
<td>7.96X3.9X1.52</td>
</tr>
</tbody>
</table>

* Input voltage range is switch selectable.

DIMENSIONS
This catalog and much more can be accessed by visiting our website, www.teca-usa.com.

The home page for TECA is illustrated here.

You can use the interactive navigation buttons to find information about this company, about thermoelectric technology, about our products and much more.

Of course, if you know what product you are looking for; you might prefer to simply scroll down the product headings in the center of the page and in two clicks you will find the product you want.

Any way you go, the interactive navigation buttons always remain on the screen, and every page has a "home" key so you can navigate the site with ease.

There are numerous things you can get from the web site that you cannot get from this catalog!

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- Product Information Packets are downloadable. These are the installation and service documents and schematics which are shipped with the products when you buy them.

- This catalog is downloadable, so you can print pages or sections of interest for your own use.

- The site is often updated with news and other current items of interest ...articles, stories, links, etc.

- Teca Sizing Software is downloadable. This is a handy, easy to use program which is very helpful in choosing air conditioners of the appropriate capacity for your job.

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Ordering information:

• By telephone during business hours, 773-342-4900 and 888-832-2872. Monday – Friday 8 AM to 4:30 PM, Central Time.

• By fax or email 24 hours a day. Fax: 773-342-0191 email: sales@thermoelectric.com

• By mail on your purchase order or company letterhead. Thermoelectric Cooling America Corporation 4048 West Schubert, Chicago, Illinois 60639

All orders are subject to written acceptance on our form “Acceptance of Order” with our required terms and conditions, depending upon quantity, price, availability of parts and other considerations.

Prices:

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