Catalog No.

THERMOELECTRIC PRODUCTS 11

- Air Conditioners
- Cold Plates
- Liquid Chillers
- Accessories
- Temperature Controllers
- Thermoelectric Modules

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

www.teca-usa.com

teca

Thermoelectric Cooling America Corporation

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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

About TECA

What We Stand On

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.

TEAM TECA CUSTOM ENGINEERING

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

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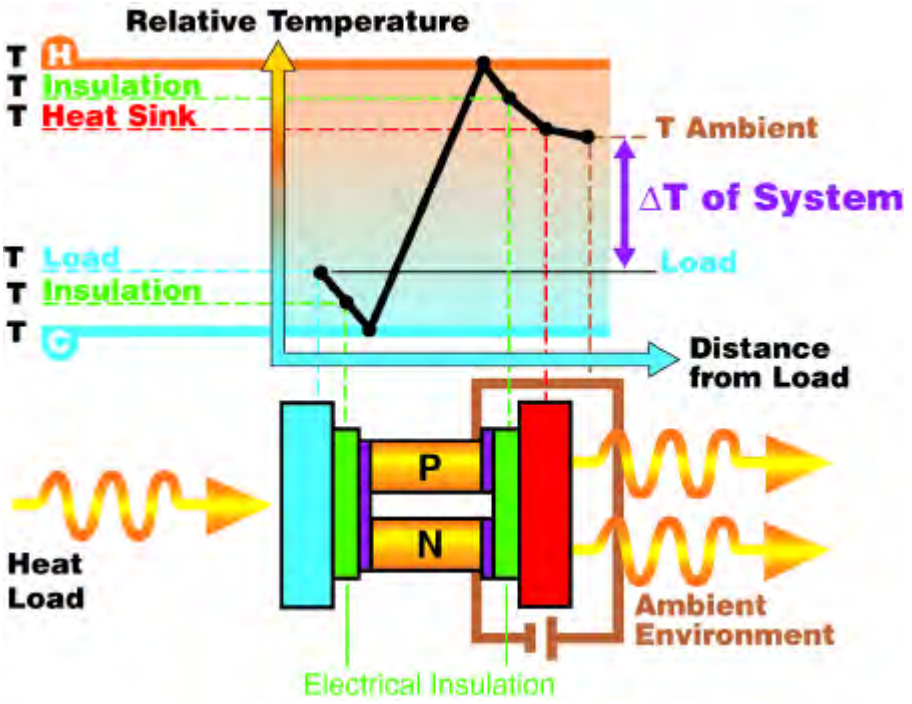
The Peltier Effect

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.

Applications

Application Examples

Solid state cooling solutions help beat the heat more effectively than traditional refrigeration in a wide range of applica tions 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 experi ments 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.

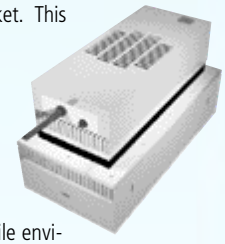
Design Considerations

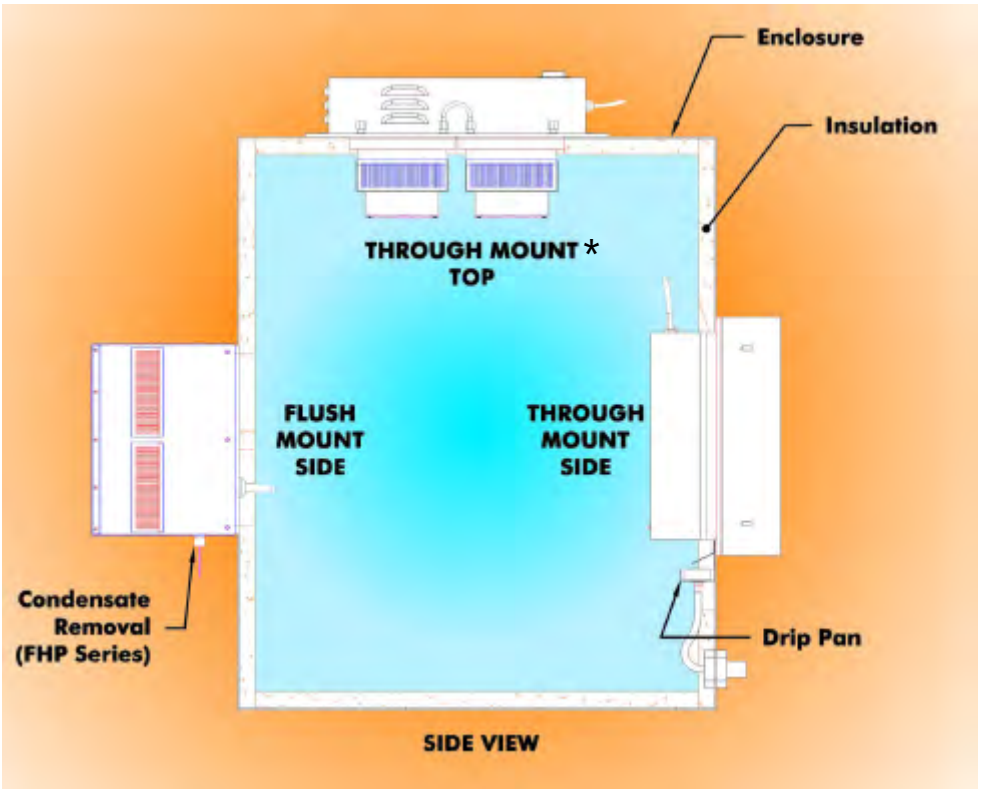
Including: Mounting Orientation • Moisture Removal • Reliability

COOL HAPPENINGS

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.





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 itdifficult 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.

Condensation may form on the cold side fins when their surface temperature goes below the dew point temperature. For all of our products, we provide equations for both enclosure air and fin (cold sink) to help the designer determine if condensation may be a problem.

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

• Air Conditioner Sizing

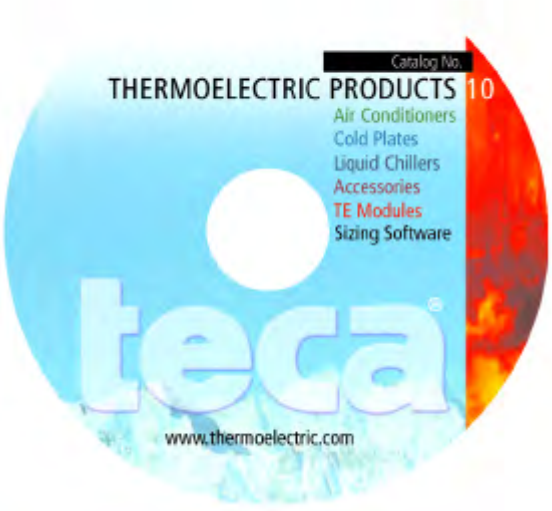
To reduce the possibility of condensation or to transfer condensate to the outside of the enclosure, consider the following:

- 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

COOL HAPPENINGS

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.

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 of 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.

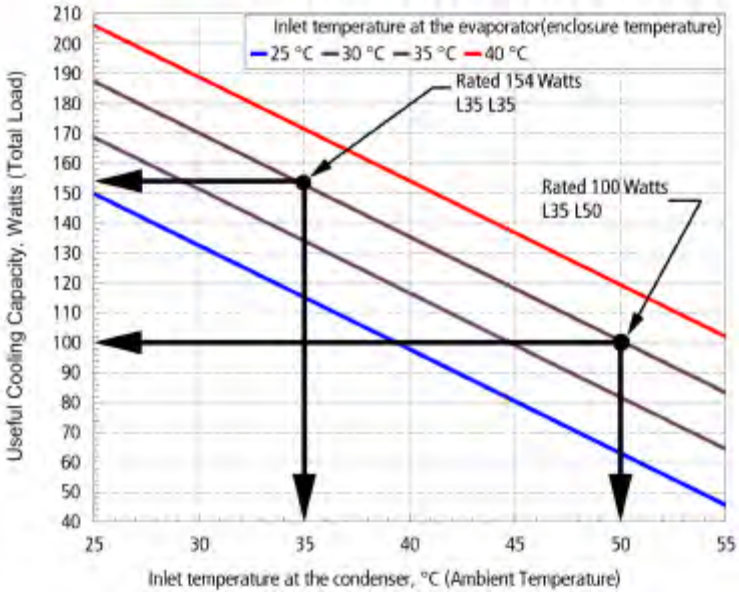
Performance Curves:
The two types of performance curves used throughout the industry are shown on the following page. Both of these curves represent the performance of the **TECA** model **AHP-1200**. The top curve is shown per DIN 3168. In this curve temperatures are represented as absolutes, the x 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.

*****
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.

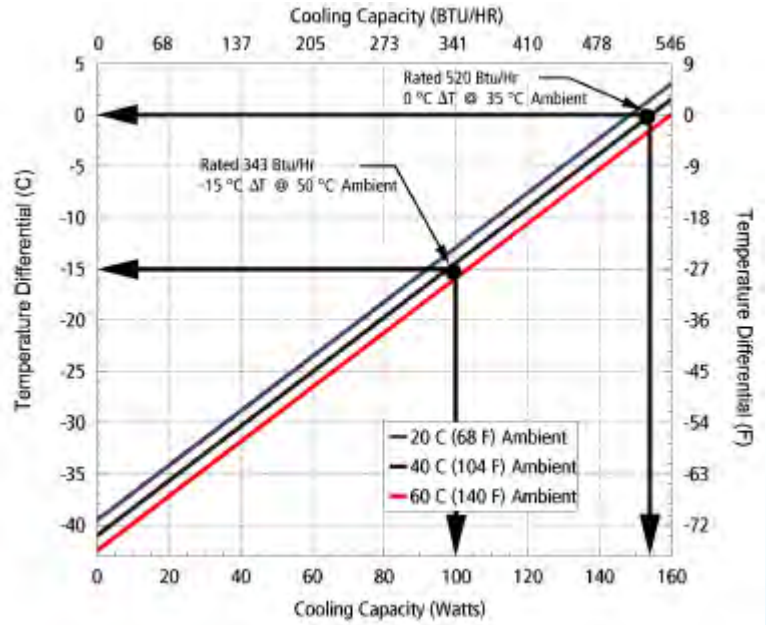
Ratings and Curves

Understanding | Different Curves

Performance curve per Din 3168 (AHP-1200)



TECA's traditional performance curve (AHP-1200)



COOL HAPPENINGS

Warming to thermoelectric cooling

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.

Using Performance Curves

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 **ΔT** 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.

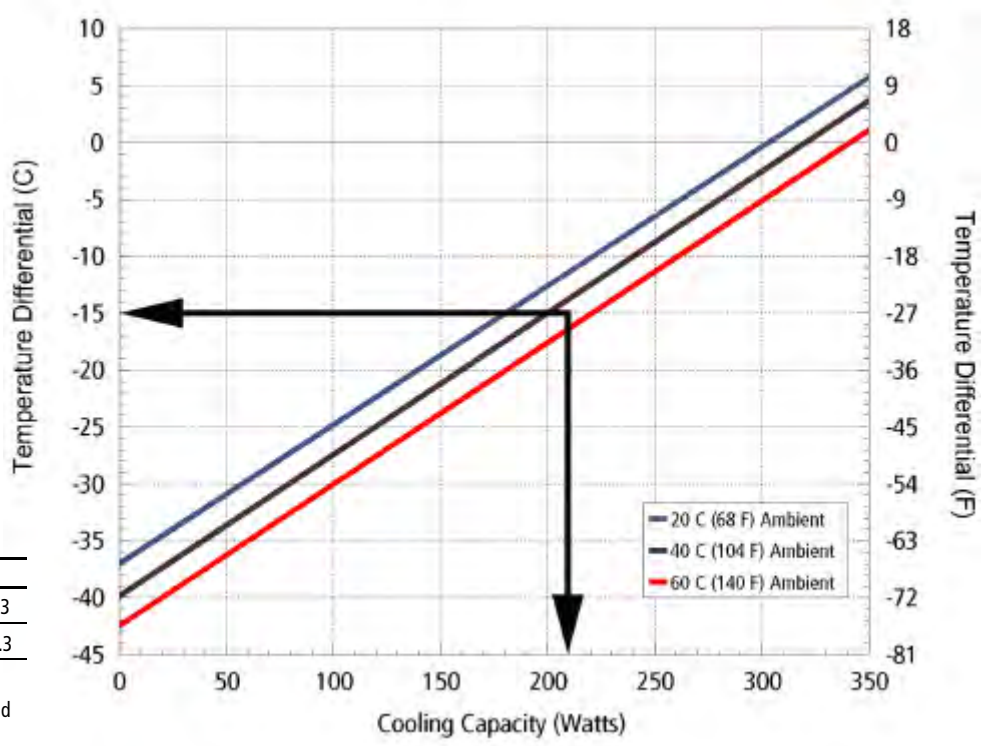
Performance curves can be used in several different ways depending on the information available. One way is by applying the known load and temperature requirements and selecting a unit to fill those needs. Another is to assume a specific unit and use the curve to determine what temperatures can be expected.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

y = m x + b

Ambient Temp	20°C	40°C	60°C
Enclosure Air	y=.122x-37	y=.122x-39.7	y=.122x-42.3
Cold Sink	y=.09x-37	y=.09x-39.7	y=.09x-42.3

Where:
y = Δ T (°C) m = slope x = watts b = Δ T @ no load



Step	Determine	Example
1	Choose the family curve that best approximates your requirements and the specific curve for your ambient air temperature.	+50°C (estimated between 40 & 60)
2	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	Delta T = -15°C
3	Capacity at required Delta T: Please note 1 watt = 3.414 BTU/Hr	200 Watts

Design Environments

Including: Explosion proof • Outdoors • Factory Floor • Shipboard • Shock • Vibration

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.**

UL-1995/CSA 22.2 Heating & Cooling Equipment, Categories 169 & 294, No. 236-M90 Tested through ETL and ETLc Testing Laboratories, Report #532015. **Applies to most AHP-1200 and AHP-1800 products.**

CE – EN60335-1 & EN60335-2-40

Safety of houshold & similar electrical appliances, part 1: General requirements.
Part 2: Particular requirements for electrical heat pumps, airconditioners & dehumidifiers (IEC 335-2-40 : 1992, Modified).
Low voltage directive 73/23/EEC - European union (EU)
EMC directive 89/336/EEC - European union
Tested thru ETL. **Applies to most AHP-1200 AHP-1800 and FHP-750 models.**

EN61326, EN61010-1 and EN61010-2

Application of concil directive: Machinery Directive (89/336/EEC)
Standard EN61326:1997, Class A; EN61436: 1997, Industrial location.
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 G^2/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 cyclopropoane, ethanol, gasoline, hexane, methanol, methane, natural gas, naphtha, propane, or gases or vapors of equivalent hazard. **Applies to XP models.**

Source: NEC 2005, Article 500

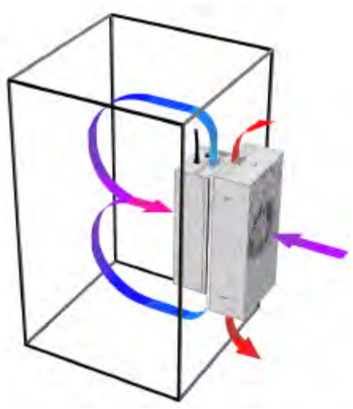
C1D1 Groups B, C, D Class 1, Division 1 (Hazardous Environments) - As an integral part of a larger systems **AHP-1200CXP** has been investigated in accordance with UL 3111-1, First Edition, rev. 6/94 Electrical Equipment for laboratory use and CSA C22.2 No. 1010.1-92 - Safety requirments for Electrical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

THRU MOUNT

AHP-SERIES



Note: Top mounting orientation is not recommended.

AHP-1800XP page 12
1035-1180 BTU/hr rating,
18" x 12.35" mounting area
120 and 120/240 VAC
Class 1 Div 2, NEMA-4X, UL-1604

AHP-1800X page 12
AHP-1800XE
1035-1180 BTU/hr rating,
18" x 12.35" mounting area
120, 240 and 120/220 VAC,NEMA-4/4X
UL-1995/CSA 22.2, CE

AHP-1800 page 12
1035-1180 BTU/hr rating,
18" x 12.3" mounting area
120, 240 and 120/240 VAC,
NEMA-12, UL-1995/CSA 22.2, CE

AHP-1800 DC page 14
1100-1300 BTU/hr rating,
18" x 12.3" mounting area
24 VDC, NEMA-12, NEMA-4/4X

AHP-1802XP page 16
950-1100 BTU/hr rating,
24" x 12.3" mounting area
240 VAC, IP 54, Zone 1, Zone 2
Ex II 2 G; T1-T3

AHP-1501 page 18
1000-1100 BTU/hr rating,
15.2" x 12" mounting area
120/240 VAC, NEMA-12
NEMA-12, UL-1995/CSA 22.2, CE

AHP-1501XE page 18
NEMA-4X, UL-1995/CSA 22.2, CE

AHP-1400 page 20
810-900 BTU/hr rating,
12" x 12" mounting area
120 VAC, NEMA-12

AHP-1200XP page 22
500-550 BTU/hr rating,
15" x 7.3" mounting area
120 VAC, Class 1 Div 2, NEMA-4X
UL-1604

AHP-1200X page 22

AHP-1200XE page 22
500-550 BTU/hr rating,
15" x 7.35" mounting area
120 and 240 VAC
NEMA-4/4X, UL-1995/CSA 22.2, CE

AHP-1200 page 22
15" x 7.35" mounting area
120 and 120/240 VAC
NEMA-12,
UL-1995/CSA 22.2, CE

AHP-1200 DC page 24
15" x 7.35" mounting area
120 and 120/240 VAC
NEMA-12, NEMA-4/4X

AHP-1200CXP (North American)
page 26
307-680 BTU/hr rating,
15" x 7.35" mounting area 120 VAC
for systems requiring NEMA-4X,
Class1, Div 1

AHP-1200CXP (European)
page 28
307-680 BTU/hr rating,
15" x 7.35" mounting area
120 VAC; for systems requiring IP56,
Group II, Catagory 2,

AHP-301FF page 30
160-200 BTU/hr rating,
10 " x 5.52" mounting area
120/240 VAC, NEMA-12

AHP-300X page 32
AHP-300XE
200-220 BTU/hr rating,
10" x 5.37" mounting area
12, 24, and 12/24/48 VDC
NEMA-4/4X

AHP-300FF page 32
200-220 BTU/hr rating,
10" x 5.37" mounting area
12, 24, and 12/24/48 VDC,
NEMA-12

THRU MOUNT

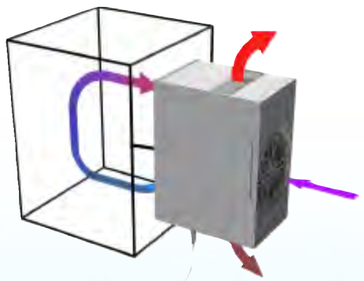
AHP-150FF page 34
90-105 BTU/hr rating,
7" x 5" mounting area
12, 24, and 12/24 VDC
NEMA-12

AHP-1800XP

FLUSH MOUNT

FHP-SERIES

Solid state air conditioners designed for tightly packaged NEMA-12 enclosures. There is no intrusion within the enclosure, allowing for greater design flexibility.



Note: Top mounting orientation is not recommended.

FEATURES

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

APPLICATIONS

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

FLUSH MOUNT

FHP-2850 page 36
1600-1800 BTU/hr rating,
12" x 24" mounting area
120 and 240 VAC
NEMA-12

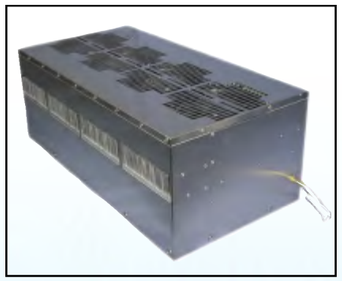
FHP-1501 page 38
1000-1100 BTU/hr rating,
15.2" x 12" mounting area
120/240 VAC
NEMA-12, UL-1995/CSA 22.2, CE

FHP-1501XE page 40
1000-1100 BTU/hr rating,
15.2" x 12" mounting area
120/240 VAC
NEMA-4/4X, UL-1995/CSA 22.2, CE

FHP-750 page 42
400-450 BTU/hr rating,
12" x 6" mounting area
120 and 240 VAC
UL-1995/CSA 22.2, CE

FHP-750XE page 42
400-450 BTU/hr rating,
12" x 6" mounting area
120 and 240 VAC
NEMA-4/4X, UL-1995/CSA 22.2, CE

FHP-450XE page 44
135-165 BTU/hr rating,
10" x 8" mounting area
120 and 240 VAC
NEMA-4/4X



FHP-2850

AHP-1800 Thermoelectric Air Conditioner

Air Cooled
Thru Mount
Nema-12, 4,4X, Class 1 Div 2

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

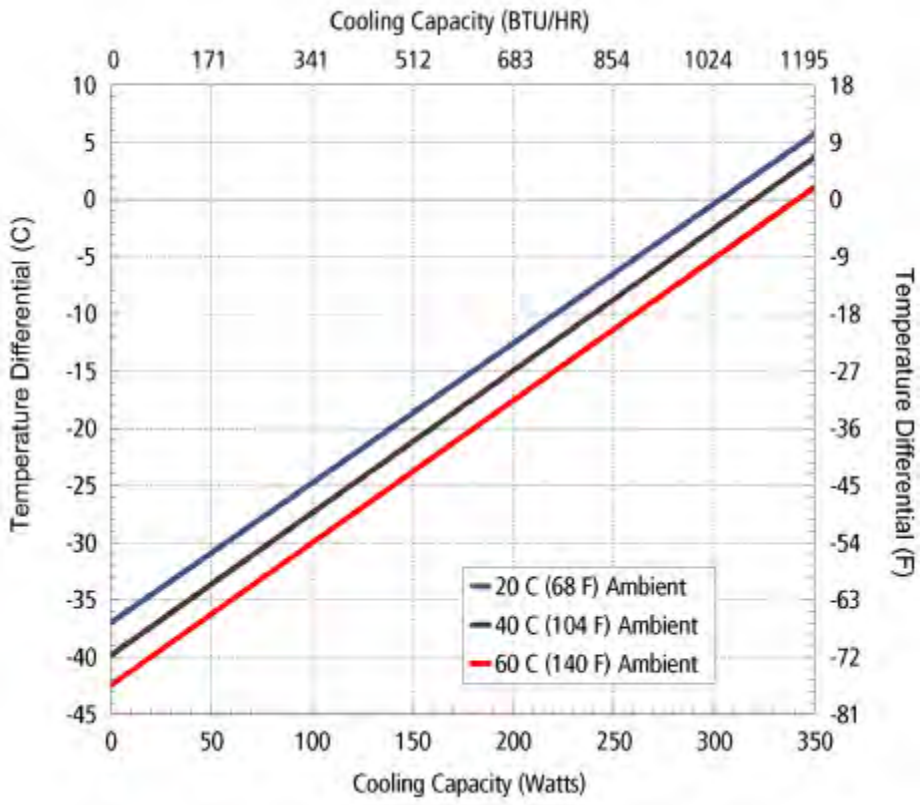
	MODEL	PART NUMBER	NOTES	PERFORMANCE RATING BTU/HR	VOLTAGE VAC 50/60 HZ	CURRENT AMPS.	WEIGHT LBS.(KG)	TEMP. CONTROL *	OPERATING AMBIENT °C	AGENCY APPROVALS (ETL)
NEMA 12	AHP-1800	0-0180-0-000	Cool only	1035-1180	120	8.0	46(21)	TC-6F	-10/+70	UL1995/CSA22.2, CE
	AHP-1800	0-0150-0-000	Cool only	1035-1180	120	8.0	46(21)	OPT*	-10/+70	UL1995/CSA22.2, CE
	AHP-1800HC	0-0130-1-000	Heat/Cool	1035-1180	120	8.0	46(21)	TC-3F	-10/+70	UL1995/CSA22.2, CE
	AHP-1800HC	0-0150-1-000	Heat/Cool	1035-1180	120	8.0	46(21)	OPT*	-10/+70	UL1995/CSA22.2, CE
	AHP-1802	0-0182-0-000	Cool only	1035-1180	240	5.0	46(21)	TC-6F	-10/+70	UL1995/CSA22.2, CE
	AHP-1802	0-0152-0-000	Cool only	1035-1180	240	5.0	46(21)	OPT*	-10/+70	UL1995/CSA22.2, CE
	AHP-1802HC	0-0132-1-000	Heat/Cool	1035-1180	240	5.0	46(21)	TC-3F	-10/+70	UL1995/CSA22.2, CE
	AHP-1802HC	0-0152-1-000	Heat/Cool	1035-1180	240	5.0	46(21)	OPT*	-10/+70	UL1995/CSA22.2, CE
NEMA 4X	AHP-1800XE	0-0180-4-000	Cool only	1035-1180	120	8.0	47(21.4)	TC-6F	-28/+70	UL1995/CSA22.2, CE
	AHP-1800XE	0-0150-4-000	Cool only	1035-1180	120	8.0	47(21.4)	OPT*	-28/+70	UL1995/CSA22.2, CE
	AHP-1800XEHC	0-0130-5-000	Heat/Cool	1035-1180	120	8.0	47(21.4)	TC-3F	-28/+70	UL1995/CSA22.2, CE
	AHP-1800XEHC	0-0150-5-000	Heat/Cool	1035-1180	120	8.0	47(21.4)	OPT*	-28/+70	UL1995/CSA22.2, CE
	AHP-1802XE	0-0182-4-000	Cool only	1035-1180	240	5.0	52(23.6)	TC-6F	-28/+70	UL1995/CSA22.2, CE
	AHP-1802XE	0-0152-4-000	Cool only	1035-1180	240	5.0	52(23.6)	OPT*	-28/+70	UL1995/CSA22.2, CE
	AHP-1802XEHC	0-0132-5-000	Heat/Cool	1035-1180	240	5.0	52(23.6)	TC-3F	-28/+70	UL1995/CSA22.2, CE
	AHP-1802XEHC	0-0152-5-000	Heat/Cool	1035-1180	240	5.0	52(23.6)	OPT*	-28/+70	UL1995/CSA22.2, CE
	AHP-1800X	0-0180-2-000	Cool only	1035-1180	120	7.5	47(21.4)	TC-6F	-28/+70	UL1995/CSA22.2, CE
	AHP-1800X	0-0150-2-000	Cool only	1035-1180	120	7.5	47(21.4)	OPT*	-28/+70	UL1995/CSA22.2, CE
	AHP-1800XHC	0-0130-3-000	Heat/Cool	1035-1180	120	7.5	47(21.4)	TC-3F	-28/+70	UL1995/CSA22.2, CE
	AHP-1800XHC	0-0150-3-000	Heat/Cool	1035-1180	120	7.5	47(21.4)	OPT*	-28/+70	UL1995/CSA22.2, CE
C1D2	AHP-1800XP	0-0180-2-002	Cool only	1035-1180	120	7.5	47(21.4)	TC-6F	-28/+70	UL-1604
	AHP-1800XPHC	0-0130-3-003	Heat/Cool	1035-1180	120	7.5	47(21.4)	TC-3F	-28/+70	UL-1604
	AHP-1801XP	0-0181-2-002	Cool only	1035-1180	120/240	7.5/5.0	52(23.6)	TC-6F	-28/+70	UL-1604
	AHP-1801XPHC	0-0131-3-003	Heat/Cool	1035-1180	120/240	7.5/5.0	52(23.6)	TC-3F	-28/+70	UL-1604
	AHP-1801XPHC-1	0-0171-3-004	Heat/Cool	1035-1180	120/240	7.5/5.0	52(23.6)	OPT*	-28/+70	UL-1604

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

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

AHP-1800

PERFORMANCE CURVE



Equation of line: y=ΔT(°C) x=Capacity (Watts)			
Ambient Temp	**20°C**	**40°C**	**60°C**
Enclosure Air	y=.122x-37.0	y=.122x-39.7	y=.122x-42.3
Cold Sink	y=.09x-37.0	y=.09x-39.7	y=.09x-42.3

MOUNTING STYLE

Thru Mount

ENVIRONMENTS

Nema-12 IP 40 (maintains IP 52)

Nema-4/4X IP 56

Class 1 Div 2 and Nema-4X IP 56

RATING (TRADITIONAL)

1100 BTU/hr @ 0 °F ΔT

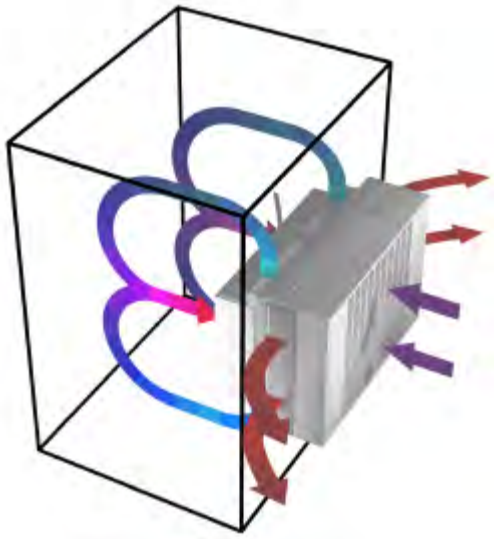
1420 BTU/hr @ +20 °F ΔT *

RATING (DIN 3168)

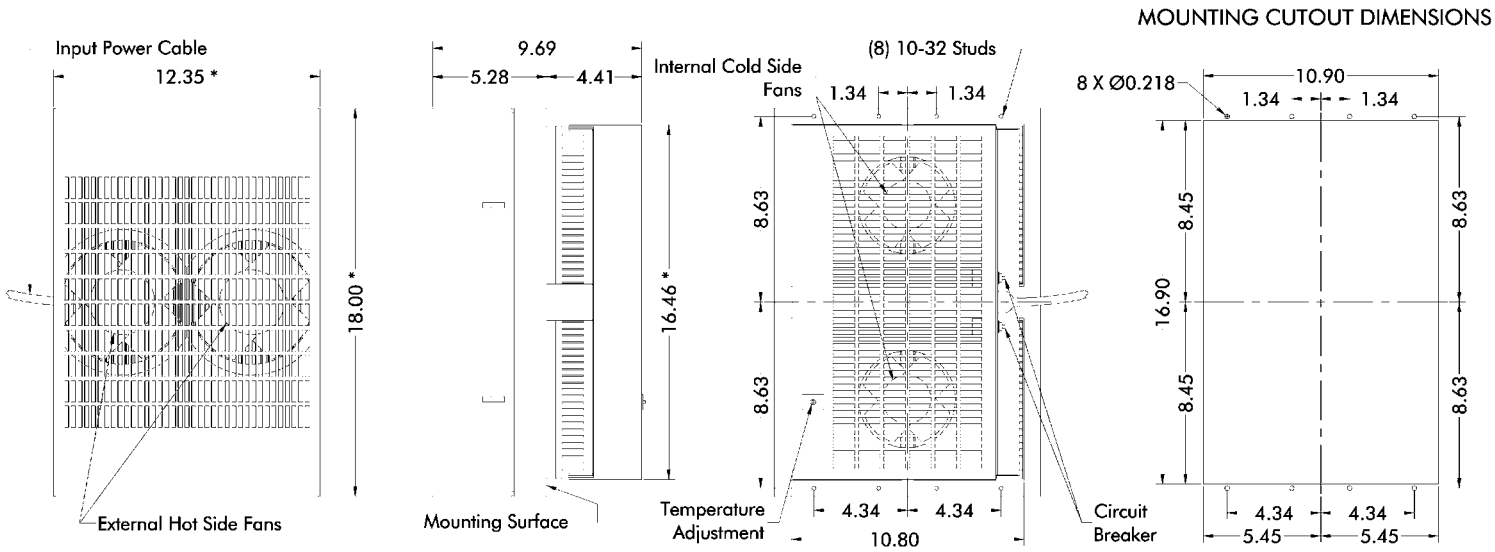
322 Watts L35 L35

210 Watts L35 L50

* See page 6



DIMENSIONS



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

AHP-1800 | DC Thermoelectric Air Conditioner

Air Cooled
Thru Mount
Nema-12, 4,4X

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

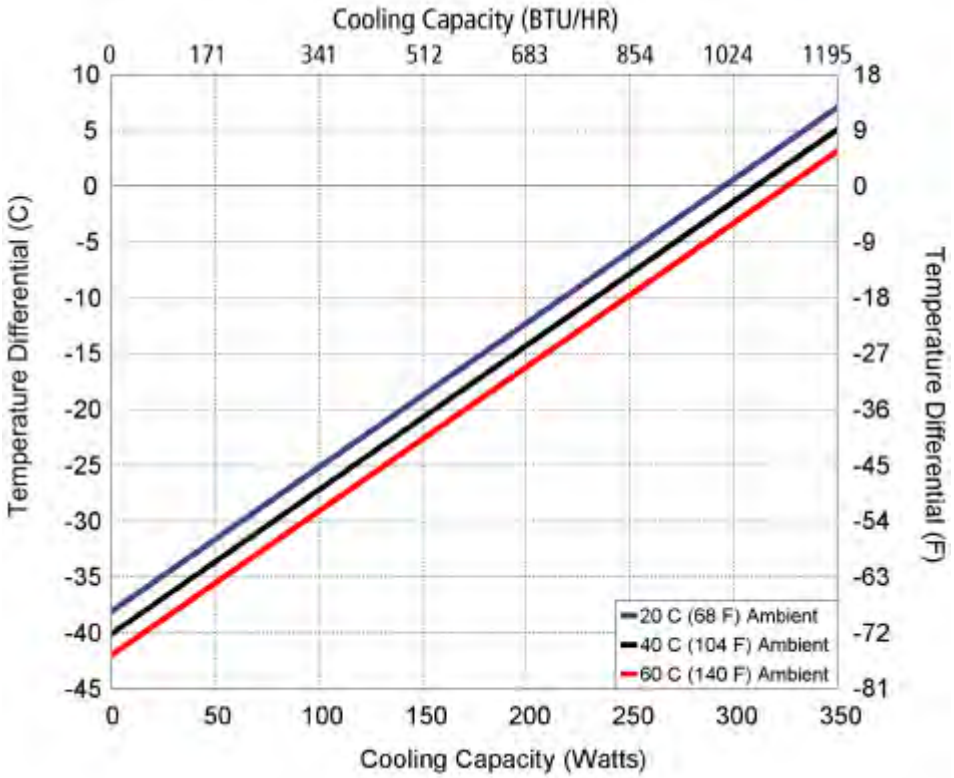
	MODEL	PART NUMBER	NOTES	PERFORMANCE RATING BTU/HR	VOLTAGE VDC ^	RUNING CURRENT AMPS.	WEIGHT LBS.(KG) APPROX.	TEMP. CONTROL *	OPERATING AMBIENT °C	AGENCY APPROVALS (ETL)
NEMA12	AHP-1800	0-0195-0-000	Cool only	1100-1300	24	20	40 (18)	NONE	-10/+70	PENDING
	AHP-1800	0-0185-0-000	Cool only	1100-1300	24	20	40 (18)	TC-6F	-10/+70	PENDING
	AHP-1800	0-01F5-0-000	Cool only	1100-1300	24	20	40 (18)	85°F (30°)	-10/+70	PENDING
	AHP-1800	0-0155-0-000	Cool only	1100-1300	24	20	40 (18)	OPT*	-10/+70	PENDING
	AHP-1800	0-01D5-0-000	Cool only	1100-1300	24	20	40 (18)	TC-3300	-10/+70	PENDING
	AHP-1800HC	0-0135-1-000	Heat/Cool	1100-1300	24	20	40 (18)	TC-3F	-10/+70	PENDING
	AHP-1800HC	0-0155-1-000	Heat/Cool	1100-1300	24	20	40 (18)	OPT*	-10/+70	PENDING
	AHP-1800HC	0-01D5-1-000	Heat/Cool	1100-1300	24	20	40 (18)	TC-3300	-10/+70	PENDING
NEMA4X	AHP-1800XE	0-0195-4-000	Cool only	1100-1300	24	20	40 (18)	NONE	-28/+70	PENDING
	AHP-1800XE	0-0185-4-000	Cool only	1100-1300	24	20	40 (18)	TC-6F	-28/+70	PENDING
	AHP-1800XEHC	0-01F5-4-000	Cool only	1100-1300	24	20	40 (18)	85°F (30°)	-28/+70	PENDING
	AHP-1800XEHC	0-0155-4-000	Cool only	1100-1300	24	20	40 (18)	OPT*	-28/+70	PENDING
	AHP-1802XE	0-0135-5-000	Heat/Cool	1100-1300	24	20	40 (18)	TC-3F	-28/+70	PENDING
	AHP-1802XE	0-0155-5-000	Heat/Cool	1100-1300	24	20	40 (18)	OPT*	-28/+70	PENDING
	AHP-1802XEHC	0-0195-2-000	Cool only	1100-1300	24	20	40 (18)	NONE	-28/+70	PENDING
	AHP-1802XEHC	0-0185-2-000	Cool only	1100-1300	24	20	40 (18)	TC-6F	-28/+70	PENDING
	AHP-1800X	0-01F5-2-000	Cool only	1100-1300	24	20	40 (18)	85°F (30°)	-28/+70	PENDING
	AHP-1800X	0-0155-2-000	Cool only	1100-1300	24	20	40 (18)	OPT*	-28/+70	PENDING
	AHP-1800XHC	0-0135-3-000	Heat/Cool	1100-1300	24	20	40 (18)	TC-3F	-28/+70	PENDING
	AHP-1800XHC	0-0155-3-000	Heat/Cool	1100-1300	24	20	40 (18)	OPT*	-28/+70	PENDING

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

^ For other input voltages consult the factory

AHP-1800

PERFORMANCE CURVE



Equation of line: y=ΔT(°C) x=Capacity (Watts)			
Ambient Temp	**20°C**	**40°C**	**60°C**
Enclosure Air	y=.129x-38.1	y=.129x-40.1	y=.129x-42.0
Cold Sink	y=.09x-38.1	y=.09x-40.1	y=.09x-42.0

MOUNTING STYLE

Thru Mount

ENVIRONMENTS

Nema-12 IP 40 (maintains IP 52)

Nema-4/4X IP 56

RATING (TRADITIONAL)

1100 BTU/hr @ 0 °F ΔT

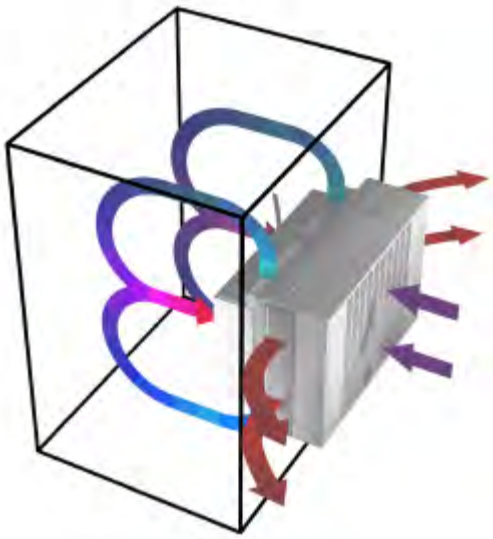
1420 BTU/hr @ +20 °F ΔT *

RATING (DIN 3168)

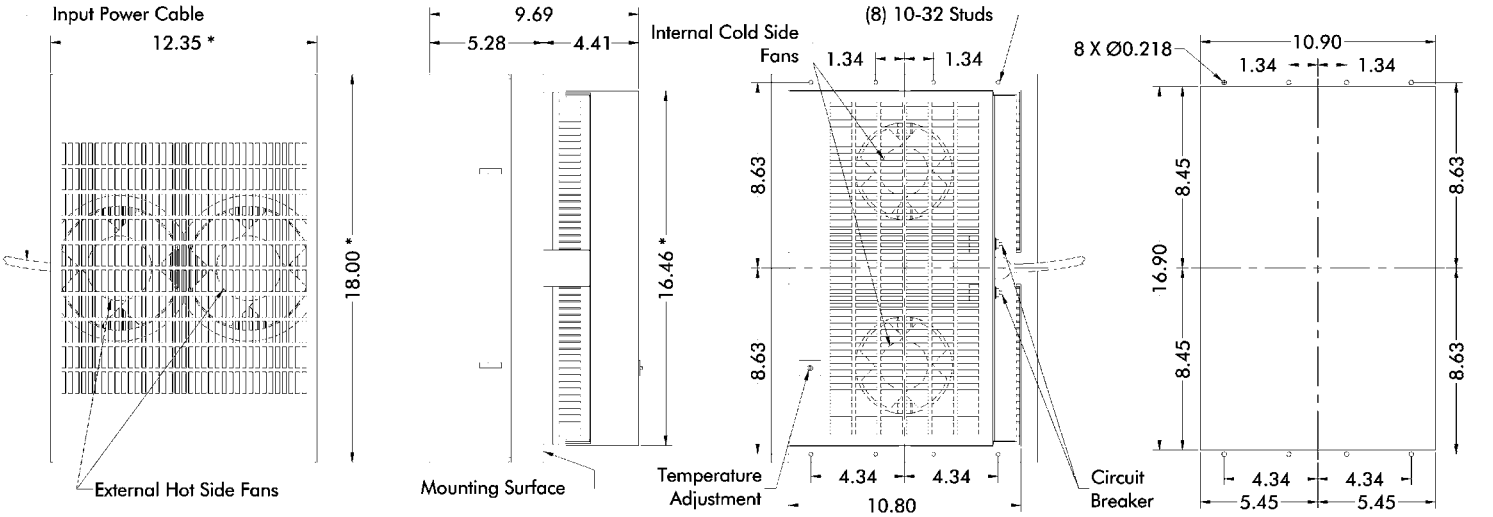
322 Watts L35 L35

210 Watts L35 L50

* See page 6



DIMENSIONS



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

AHP-1802XP

European

Air Cooled
Thru Mount

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

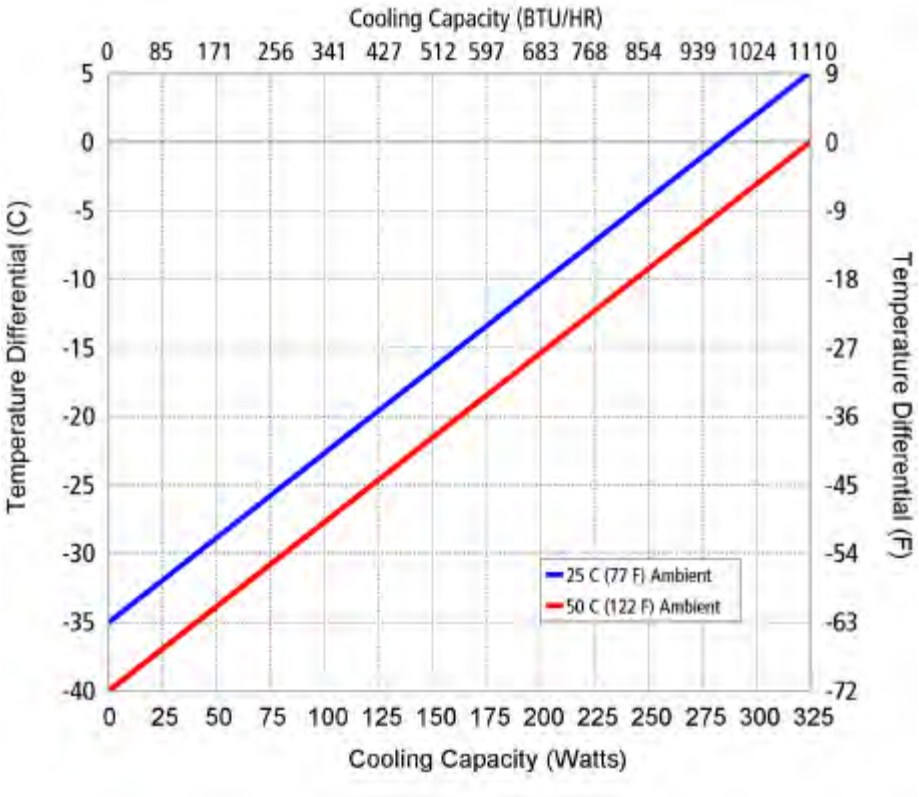
SPECIFICATIONS

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

* Requires 3-32 VDC drive signal

AHP-1802XP

PERFORMANCE CURVE



Equation of line: y=ΔT(°C) x=Capacity (Watts)		
Ambient Temp	**25°C**	**50°C**
Enclosure Air	y=.123x-35.0	y=.123x-40.0
Cold Sink	y=.09x-35.0	y=.09x-40.0

MOUNTING STYLE

Thru Mount

ENVIRONMENTS

IP54

Zone 1, Zone 2 (pending)

Ex II 2 G

T1 - T3

RATING (TRADITIONAL)

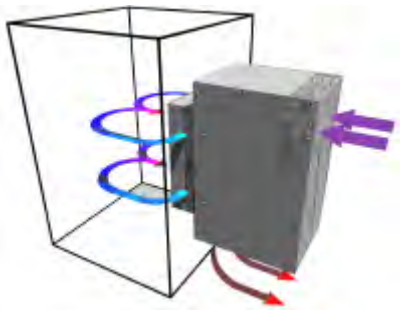
940 BTU/hr @ 0 °F ΔT

1210 BTU/hr @ +20 °F ΔT

RATING (DIN 3168)

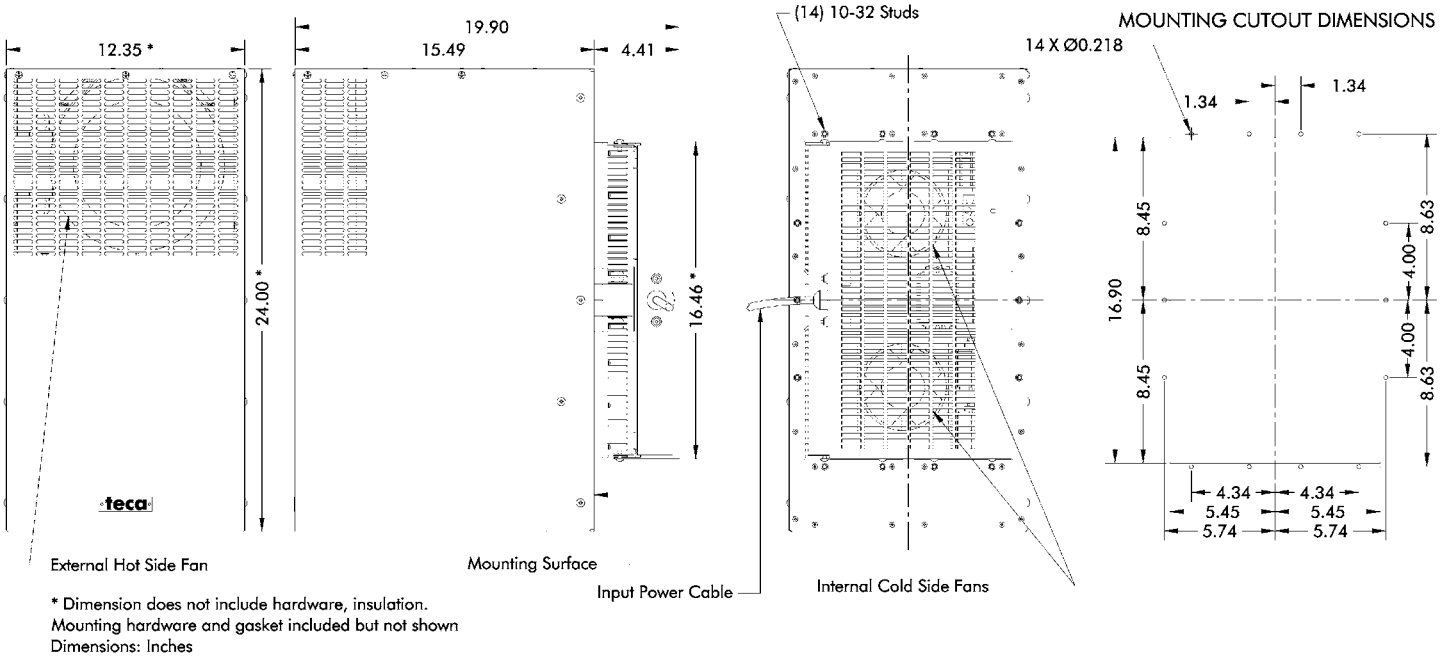
280 Watts L35 L35

160 Watts L35 L50



Air Flow Pattern

DIMENSIONS



AHP-1501 Thermoelectric Air Conditioner

Air Cooled
Thru Mount
Nema-12 & Nema-4/4X

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

	MODEL	PART NUMBER	NOTES	PERFORMANCE RATING BTU/HR	VOLTAGE VAC 50/60HZ	CURRENT AMPS.	WEIGHT LBS.(KG)	TEMP. CONTROL	OPERATING AMBIENT °C	CONDENSATE REMOVAL	AGENCY APPROVALS (ETL)
NEMA 12	AHP-1501	0-2171-0-000	Cool Only	1000-1100	120/240	7.5/5.0	52(24)	30 °C	-10/+70	Wick,Drip Pan	UL1995/CSA22.2, CE
	AHP-1501	0-2181-0-000	Cool Only	1000-1100	120/240	7.5/5.0	52(24)	TC-6F	-10/+70	Wick	UL1995/CSA22.2, CE
	AHP-1501	0-2151-0-000	Cool Only	1000-1100	120/240	7.5/5.0	52(24)	OPT*	-10/+70	Wick	UL1995/CSA22.2, CE
	AHP-1501HC	0-2131-1-000	Heat/Cool	1000-1100	120/240	7.5/5.0	52(24)	TC-3F	-10/+70	Wick	UL1995/CSA22.2, CE
	AHP-1501HC	0-2151-1-000	Heat/Cool	1000-1100	120/240	7.5/5.0	52(24)	OPT*	-10/+70	Wick	UL1995/CSA22.2, CE
NEMA 4X	AHP-1501XE	0-2181-4-000	Cool Only	1000-1100	120/240	7.5/5.0	52(24)	TC-6F	-10/+70	Wick	UL1995/CSA22.2, CE
	AHP-1501XE	0-2151-4-000	Cool Only	1000-1100	120/240	7.5/5.0	52(24)	OPT*	-10/+70	Wick	UL1995/CSA22.2, CE
	AHP-1501XEHC	0-2131-5-000	Heat/Cool	1000-1100	120/240	7.5/5.0	52(24)	TC-3F	-10/+70	Wick	UL1995/CSA22.2, CE
	AHP-1501XEHC	0-2151-5-000	Heat/Cool	1000-1100	120/240	7.5/5.0	52(24)	OPT*	-10/+70	Wick	UL1995/CSA22.2, CE

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

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 ΔT

1300 BTU/hr @ +20 °F ΔT *

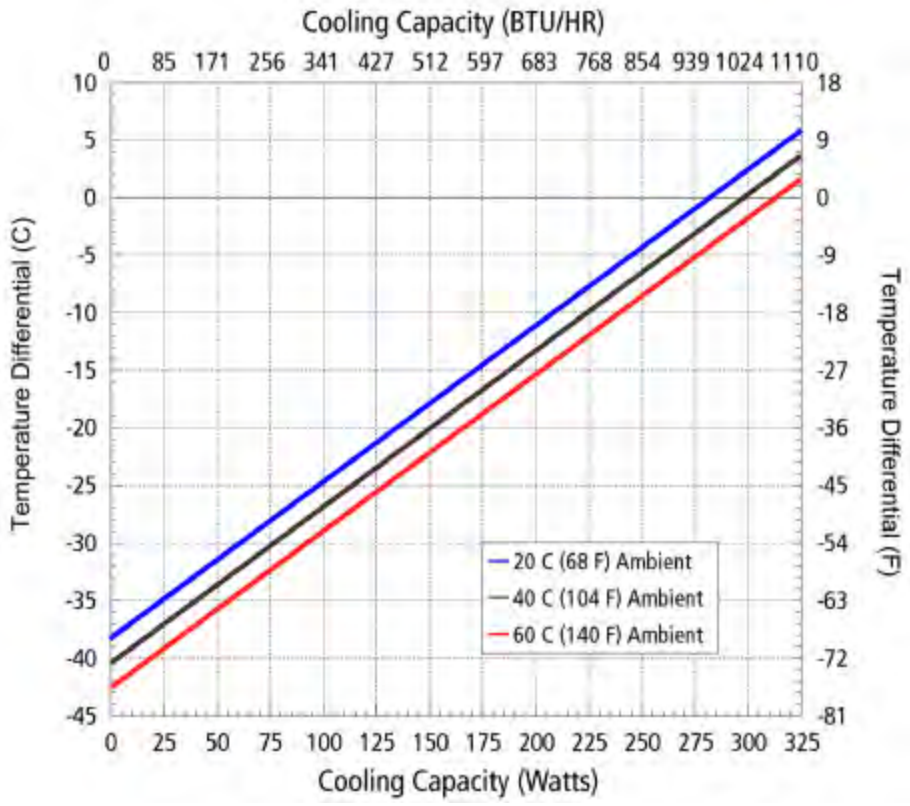
RATING (DIN 3168)

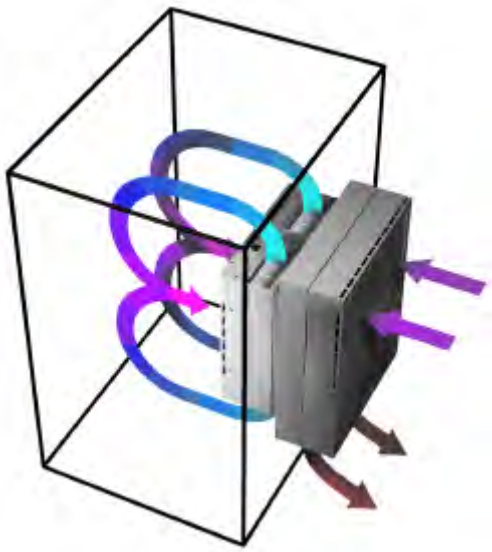
300 Watts L35 L35

187 Watts L35 L50

* See page 6

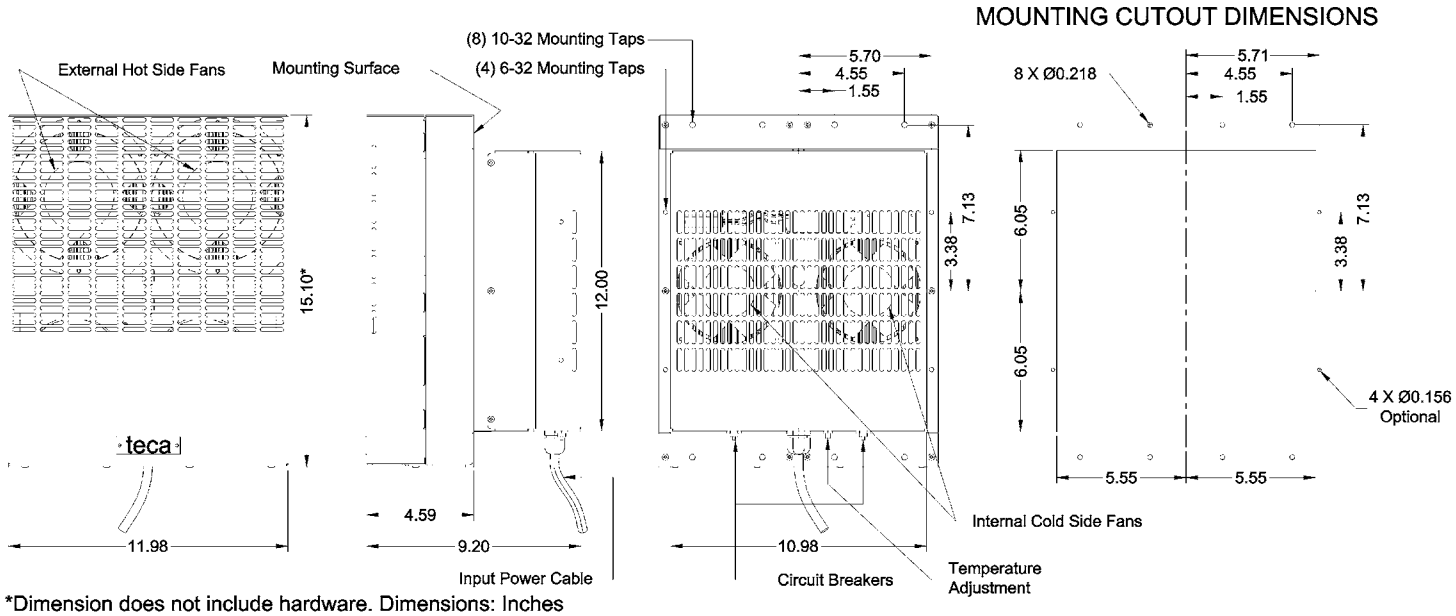
PERFORMANCE CURVE





Equation of line: y=ΔT(°C) x=Capacity (Watts)			
Ambient Temp	**20°C**	**40°C**	**60°C**
Enclosure Air	y=.136x-38.4	y=.136x-40.5	y=.136x-42.6
Cold Sink	y=.10x-38.4	y=.10x-40.5	y=.10x-42.6

AHP-1501 DIMENSIONS



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

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 elswhere.

SPECIFICATIONS

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

AHP-1400

MOUNTING STYLE

Thru Mount

ENVIRONMENTS

Nema-12 IP 40 (maintains IP 52)

RATING (TRADITIONAL)

850 BTU/hr @ 0 °F ΔT

1090 BTU/hr @ +20 °F ΔT *

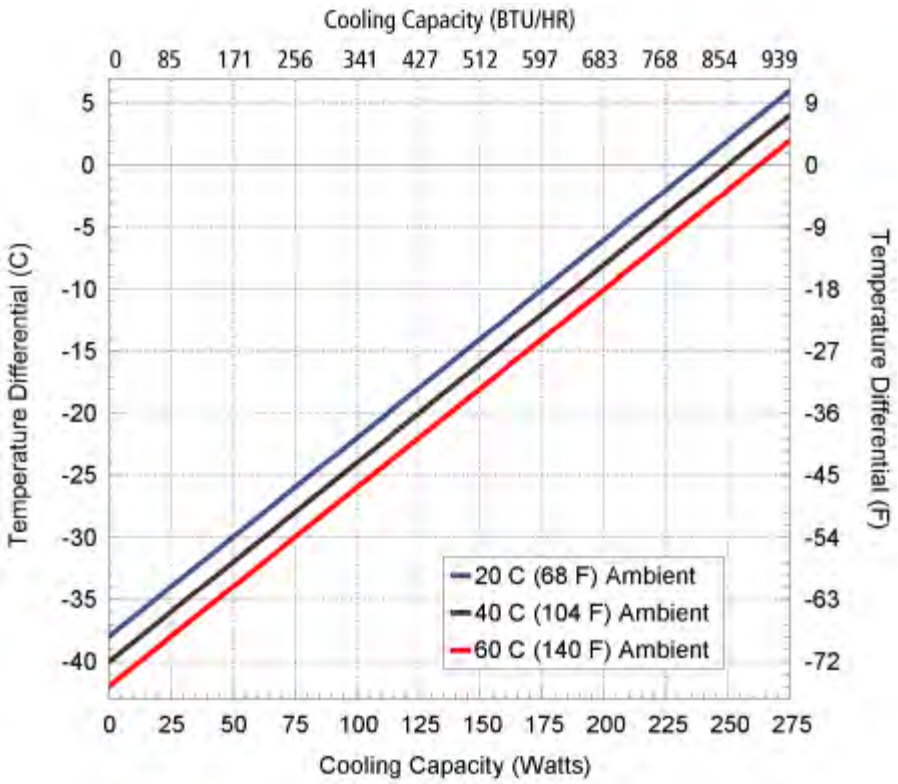
RATING (DIN 3168)

250 Watts L35 L35

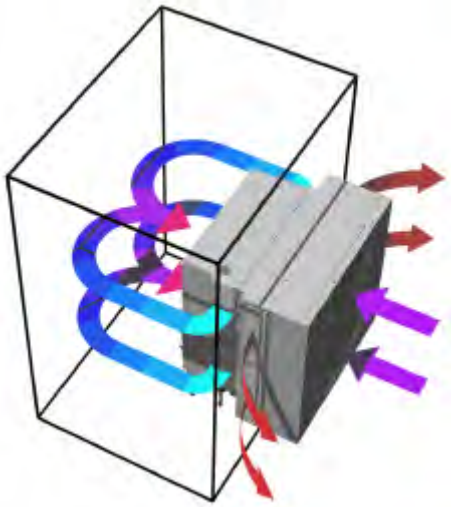
155 Watts L35 L50

* See page 6

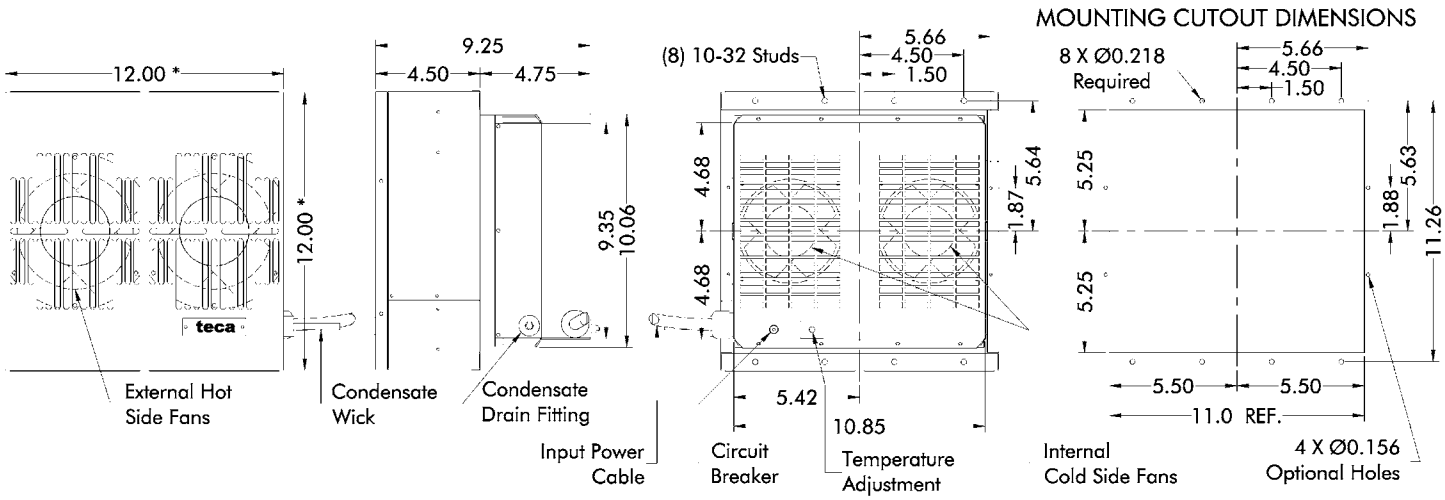
PERFORMANCE CURVE



Equation of Line: y=ΔT(°C) x=Capacity (Watts)			
Ambient Temp	**20°C**	**40°C**	**60°C**
Enclosure Air	y=.16x-38	y=.16x-40	y=.16x-42
Cold Sink	y=.12x-38	y=.12x-40	y=.12x-42



DIMENSIONS



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

AHP-1200 Thermoelectric Air Conditioner

CE

Air Cooled
Thru Mount
Nema-12, 4,4X, Class 1 Div 2

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

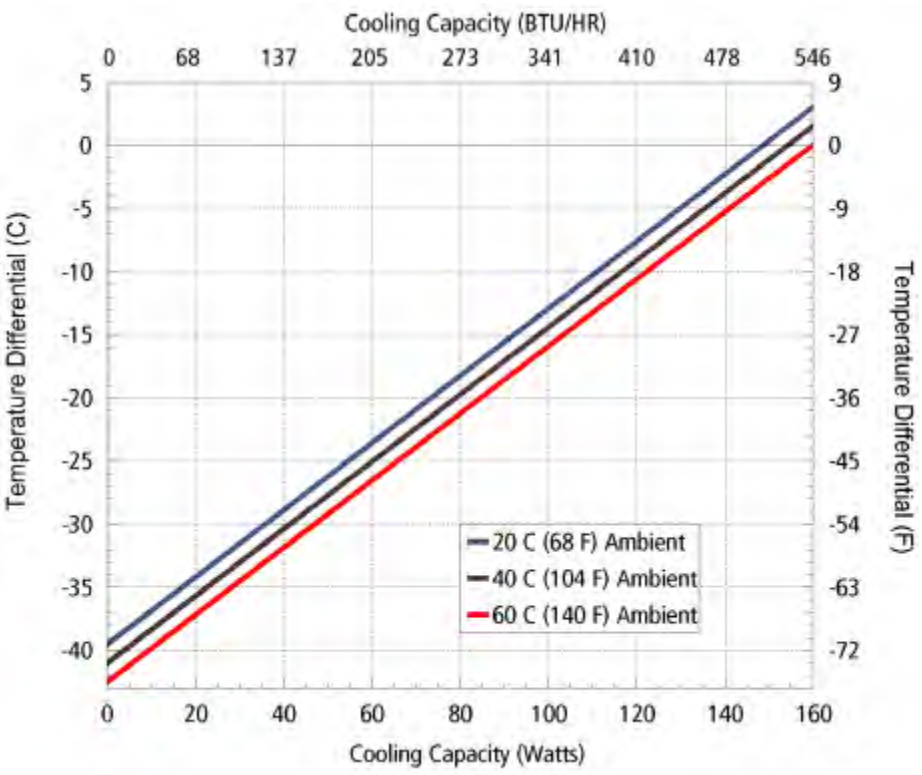
	MODEL	PART NUMBER	NOTES	PERFORMANCE RATING BTU/HR	VOLTAGE VAC 50/60HZ	CURRENT AMPS.	WEIGHT LBS.(KG)	TEMP. CONTROL *	OPERATING AMBIENT °C	AGENCY APPROVALS (ETL)
NEMA12	AHP-1200	0-3080-0-000	Cool only	500-550	120	4.0	21(9.5)	TC-6F	-10/+70	UL1995/CSA22.2, CE
	AHP-1200	0-3050-0-000	Cool only	500-550	120	4.0	21(9.5)	OPT*	-10/+70	UL1995/CSA22.2, CE
	AHP-1200HC	0-3030-1-000	Heat/Cool	500-550	120	4.0	21(9.5)	TC-3F	-10/+70	UL1995/CSA22.2, CE
	AHP-1200HC	0-3050-1-000	Heat/Cool	500-550	120	4.0	21(9.5)	OPT*	-10/+70	UL1995/CSA22.2, CE
	AHP-1201	0-3081-0-000	Cool only	500-550	120/240	4.0/2.2	29(13.2)	TC-6F	-10/+70	UL1995/CSA22.2, CE
	AHP-1201	0-3051-0-000	Cool only	500-550	120/240	4.0/2.2	29(13.2)	OPT*	-10/+70	UL1995/CSA22.2, CE
	AHP-1201HC	0-3031-1-000	Heat/Cool	500-550	120/240	4.0/2.2	29(13.2)	TC-3F	-10/+70	UL1995/CSA22.2, CE
	AHP-1201HC	0-3051-1-000	Heat/Cool	500-550	120/240	4.0/2.2	29(13.2)	OPT*	-10/+70	UL1995/CSA22.2, CE
NEMA4X	AHP-1200XE	0-3080-4-000	Cool only	500-550	120	4.5	23(10.4)	TC-6F	-28/+70	UL1995/CSA22.2, CE
	AHP-1200XE	0-3050-4-000	Cool only	500-550	120	4.5	23(10.4)	OPT*	-28/+70	UL1995/CSA22.2, CE
	AHP-1200XEHC	0-3030-5-000	Heat/Cool	500-550	120	4.5	23(10.4)	TC-3F	-28/+70	UL1995/CSA22.2, CE
	AHP-1200XEHC	0-3050-5-000	Heat/Cool	500-550	120	4.5	23(10.4)	OPT*	-28/+70	UL1995/CSA22.2, CE
	AHP-1202XE	0-3082-4-000	Cool only	500-550	240	2.5	30(13.6)	TC-6F	-28/+70	UL1995/CSA22.2, CE
	AHP-1202XE	0-3052-4-000	Cool only	500-550	240	2.5	30(13.6)	OPT*	-28/+70	UL1995/CSA22.2, CE
	AHP-1202XEHC	0-3032-5-000	Heat/Cool	500-550	240	2.5	30(13.6)	TC-3F	-28/+70	UL1995/CSA22.2, CE
	AHP-1202XEHC	0-3052-5-000	Heat/Cool	500-550	240	2.5	30(13.6)	OPT*	-28/+70	UL1995/CSA22.2, CE
	AHP-1200X	0-3080-2-000	Cool only	500-550	120	4.0	23(10.4)	TC-6F	-28/+70	UL1995/CSA22.2, CE
	AHP-1200X	0-3050-2-000	Cool only	500-550	120	4.0	23(10.4)	OPT*	-28/+70	UL1995/CSA22.2, CE
	AHP-1200XHC	0-3030-3-000	Heat/Cool	500-550	120	4.0	23(10.4)	TC-3F	-28/+70	UL1995/CSA22.2, CE
	AHP-1200XHC	0-3050-3-000	Heat/Cool	500-550	120	4.0	23(10.4)	OPT*	-28/+70	UL1995/CSA22.2, CE
C1D2	AHP-1200XP	0-3080-2-003	Cool only	500-550	120	4.5	23(10.4)	TC-6F	-28/+70	UL-1604
	AHP-1200XPM	0-3080-2-004	Cool only	500-550	120	4.5	23(10.4)	TC-6F	-28/+70	UL-1604
	AHP-1200XPHC	0-3030-3-007	Heat/Cool	500-550	120	4.5	23(10.4)	TC-3F	-28/+70	UL-1604

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

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

AHP-1200

PERFORMANCE CURVE



Equation of line: y=ΔT(°C) x=Capacity (Watts)			
Ambient Temp	**20°C**	**40°C**	**60°C**
Enclosure Air	y=.266x-39.5	y=.266x-41.0	y=.266x-42.5
Cold Sink	y=.173x-39.5	y=.173x-41.0	y=.173x-42.5

MOUNTING STYLE

Thru Mount

ENVIRONMENTS

Nema-12 IP 40 (maintains IP 52)

Nema-4/4X IP 56

Class 1 Div 2 & Nema-4X IP 56

RATING (TRADITIONAL)

530 BTU/hr @ 0 °F ΔT

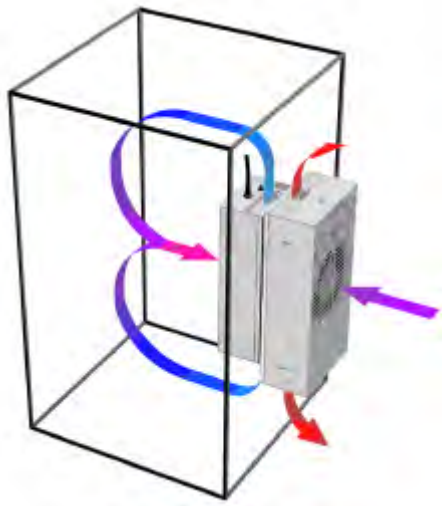
670 BTU/hr @ +20 °F ΔT *

RATING (DIN 3168)

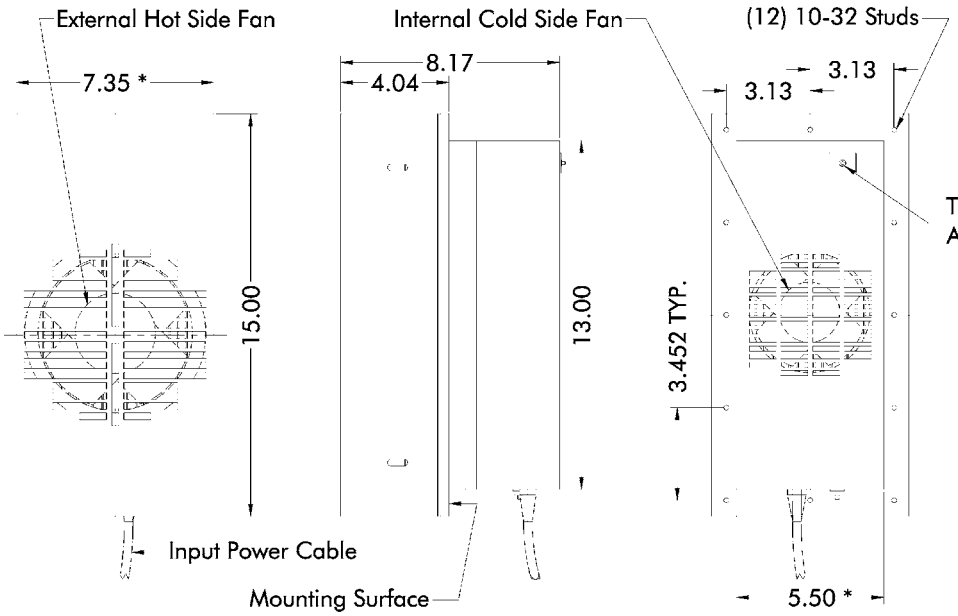
154 Watts L35 L35

100 Watts L35 L50

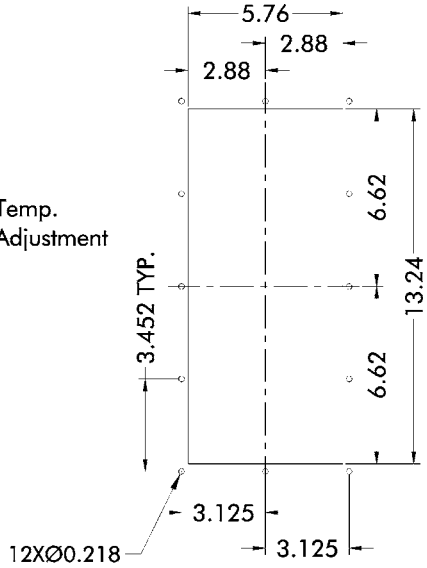
* See page 6



DIMENSIONS



MOUNTING CUTOUT DIMENSIONS



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

AHP-1200 | DC Thermoelectric Air Conditioner

Air Cooled
Thru Mount
Nema-12, 4,4X

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.

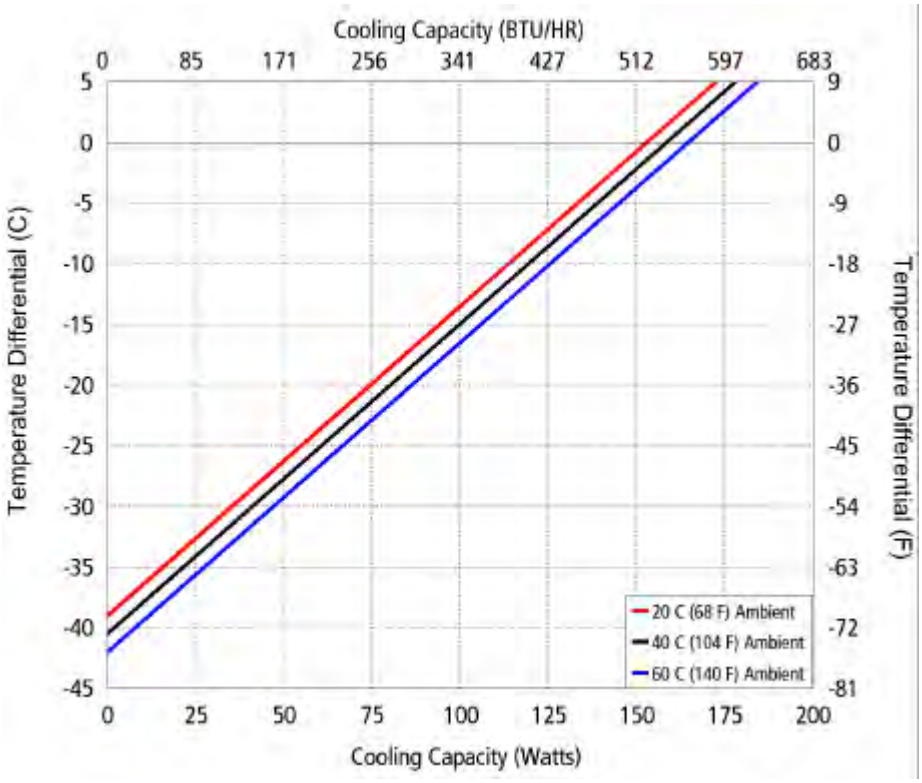
SPECIFICATIONS

	MODEL	PART NUMBER	NOTES	PERFORMANCE RATING BTU/HR	VOLTAGE VDC ^	RUNNING CURRENT AMPS.	WEIGHT LBS.(KG)	TEMP. CONTROL *	OPERATING AMBIENT °C	AGENCY APPROVALS (ETL)
NEMA12	AHP-1200	0-3095-0-000	Cool only	512-580	24	9.0	18 (8.2)	NONE	-10/+70	PENDING
	AHP-1200	0-3085-0-000	Cool only	512-580	24	9.0	18 (8.2)	TC-6F	-10/+70	PENDING
	AHP-1200	0-30F5-0-000	Cool only	512-580	24	9.0	18 (8.2)	85°F (30°)	-10/+70	PENDING
	AHP-1200	0-3055-0-000	Cool only	512-580	24	9.0	18 (8.2)	OPT*	-10/+70	PENDING
	AHP-1200	0-30D5-0-000	Cool only	512-580	24	9.0	18 (8.2)	TC-3300	-10/+70	PENDING
	AHP-1200HC	0-3035-1-000	Heat/Cool	512-580	24	9.0	18 (8.2)	TC-3F	-10/+70	PENDING
	AHP-1200HC	0-3055-1-000	Heat/Cool	512-580	24	9.0	18 (8.2)	OPT*	-10/+70	PENDING
	AHP-1200HC	0-30D5-1-000	Heat/Cool	512-580	24	9.0	18 (8.2)	TC-3300	-10/+70	PENDING
NEMA4X	AHP-1200XE	0-3095-4-000	Cool only	512-580	24	9.0	18 (8.2)	NONE	-28/+70	PENDING
	AHP-1200XE	0-3085-4-000	Cool only	512-580	24	9.0	18 (8.2)	TC-6F	-28/+70	PENDING
	AHP-1200XE	0-30F5-4-000	Cool only	512-580	24	9.0	18 (8.2)	85°F (30°)	-28/+70	PENDING
	AHP-1200XE	0-3055-4-000	Cool only	512-580	24	9.0	18 (8.2)	OPT*	-28/+70	PENDING
	AHP-1200XEHC	0-3035-5-000	Heat/Cool	512-580	24	9.0	18 (8.2)	TC-3F	-28/+70	PENDING
	AHP-1200XE	0-3055-5-000	Heat/Cool	512-580	24	9.0	18 (8.2)	OPT*	-28/+70	PENDING
	AHP-1202XEHC	0-3095-2-000	Cool only	512-580	24	9.0	18 (8.2)	NONE	-28/+70	PENDING
	AHP-1202XEHC	0-3085-2-000	Cool only	512-580	24	9.0	18 (8.2)	TC-6F	-28/+70	PENDING
	AHP-1200X	0-30F5-2-000	Cool only	512-580	24	9.0	18 (8.2)	85°F (30°)	-28/+70	PENDING
	AHP-1200X	0-3055-2-000	Cool only	512-580	24	9.0	18 (8.2)	OPT*	-28/+70	PENDING
	AHP-1200XHC	0-3035-3-000	Heat/Cool	512-580	24	9.0	18 (8.2)	TC-3F	-28/+70	PENDING
	AHP-1200XHC	0-3055-3-000	Heat/Cool	512-580	24	9.0	18 (8.2)	OPT*	-28/+70	PENDING

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)

AHP-1200

PERFORMANCE CURVE



Equation of line: y=ΔT(°C) x=Capacity (Watts)			
Ambient Temp	**20°C**	**40°C**	**60°C**
Enclosure Air	y=.255x-39.0	y=.255x-41.0	y=.255x-42.0
Cold Sink	y=.166x-39.0	y=.166x-41.0	y=.166x-42.0

MOUNTING STYLE

Thru Mount

ENVIRONMENTS

Nema-12 IP 40 (maintains IP 52)

Nema-4/4X IP 56

RATING (TRADITIONAL)

530 BTU/hr @ 0 °F ΔT

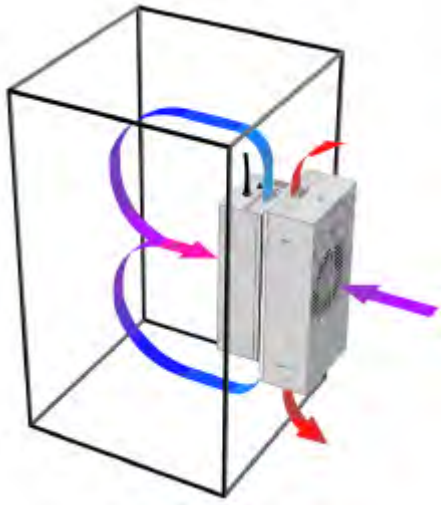
670 BTU/hr @ +20 °F ΔT *

RATING (DIN 3168)

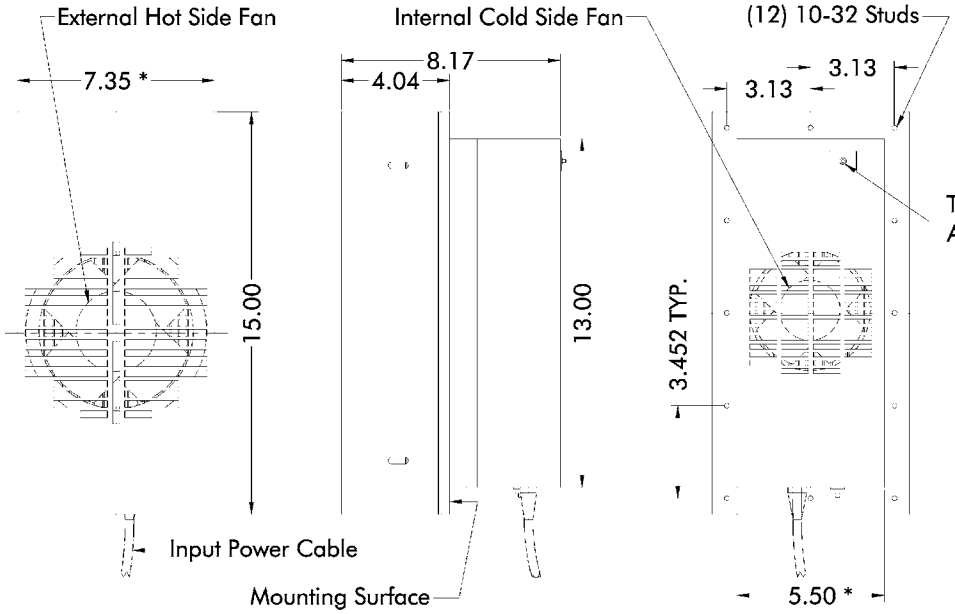
154 Watts L35 L35

100 Watts L35 L50

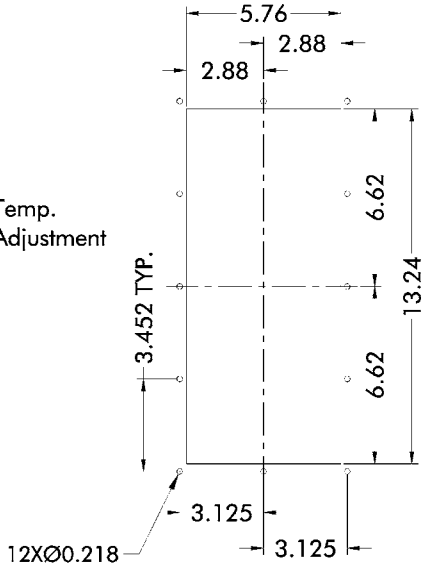
* See page 6



DIMENSIONS



MOUNTING CUTOUT DIMENSIONS



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

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

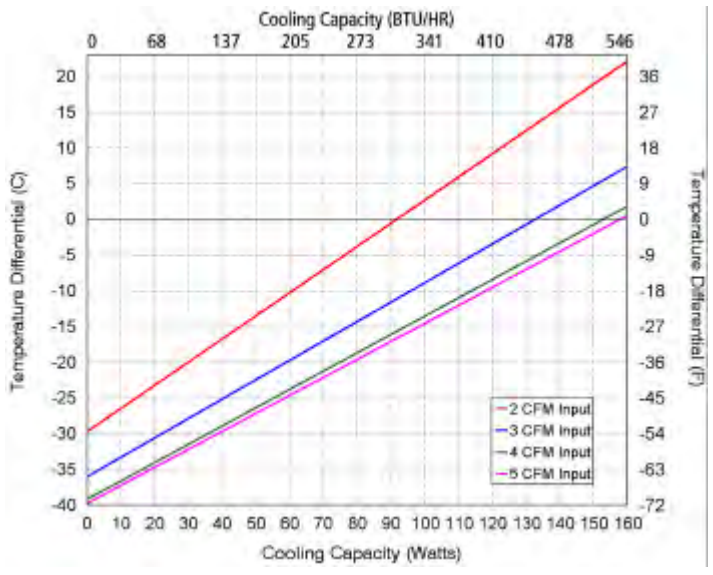
- Clean and dry compressed air supply
- Purged enclosure
- 120 VAC Input voltage
- Temperature control

INCLUDES

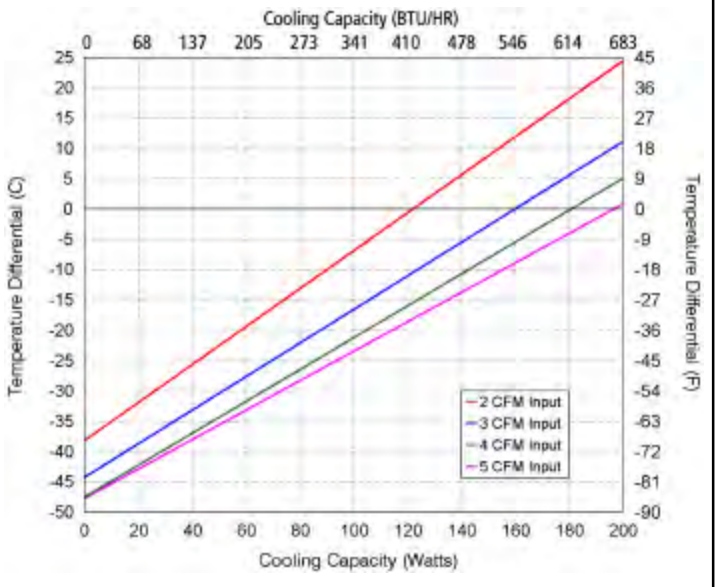
- Mounting gasket and hardware
- Power input line cord

PERFORMANCE CURVE

25°C Ambient



60°C Ambient



AHP-1200CXP

- Thru Mount
- Class 1, Division 1
- Groups B, C, D
- 307-680 BTU/hr
- Nema-4/4X

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.

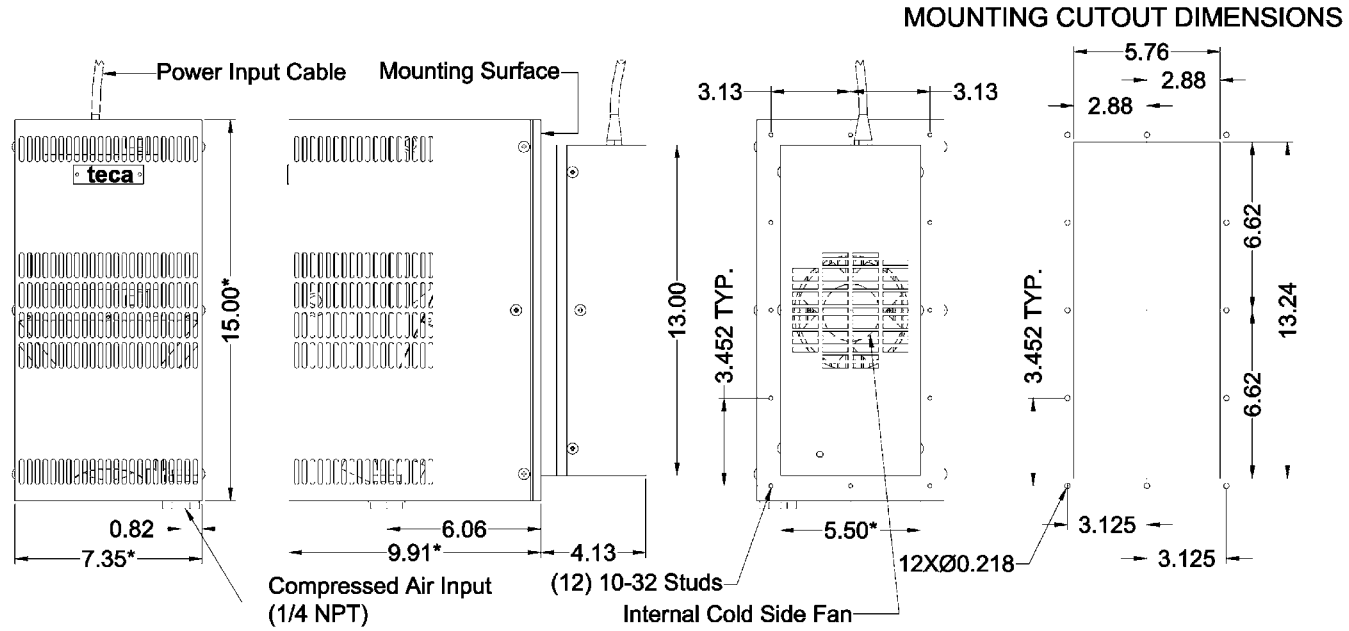
As an integral part of a larger system it has been investigated in accordance with NFPA 496 Edition Purged and pressurized Enclosure for Electrical Equipment.

SPECIFICATIONS

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

* 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, Catagory 2 [1] G
EExd 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

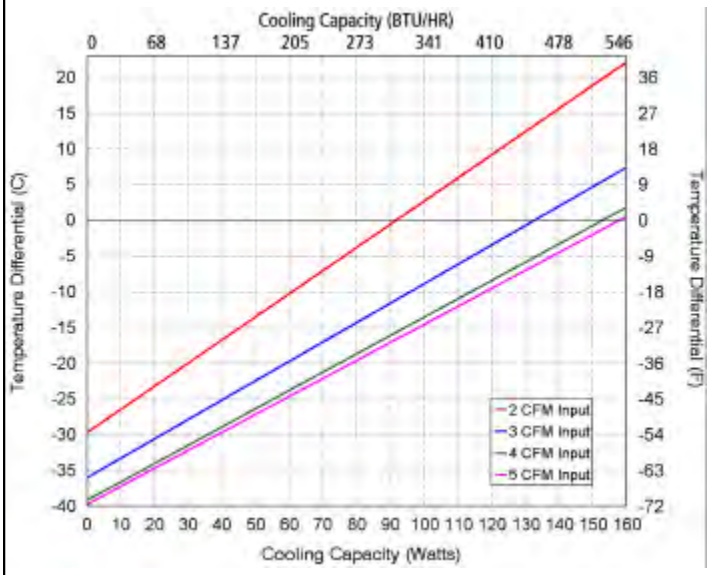
- Clean and dry compressed air supply
- Purged enclosure
- 120 VAC Input voltage

INCLUDES

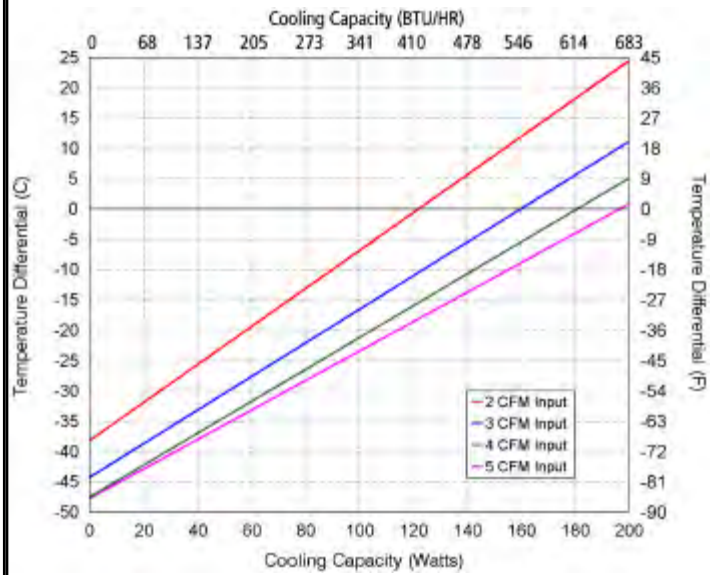
- Mounting gasket and hardware
- Power input line cord
- Temperature control

PERFORMANCE CURVE

25°C Ambient



60°C Ambient



AHP-1200CXP

Thru Mount
Group II, Catagory 2 [1] G
EEx p d [ia] ia IIB+H2 T4
307-680 BTU/hr

LISTING & CLASSIFICATION:

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.

Directive 94/9/EC with reference to EN50014:1997/A2:1999, EN50016:2002.

Procedure XF011, XF013

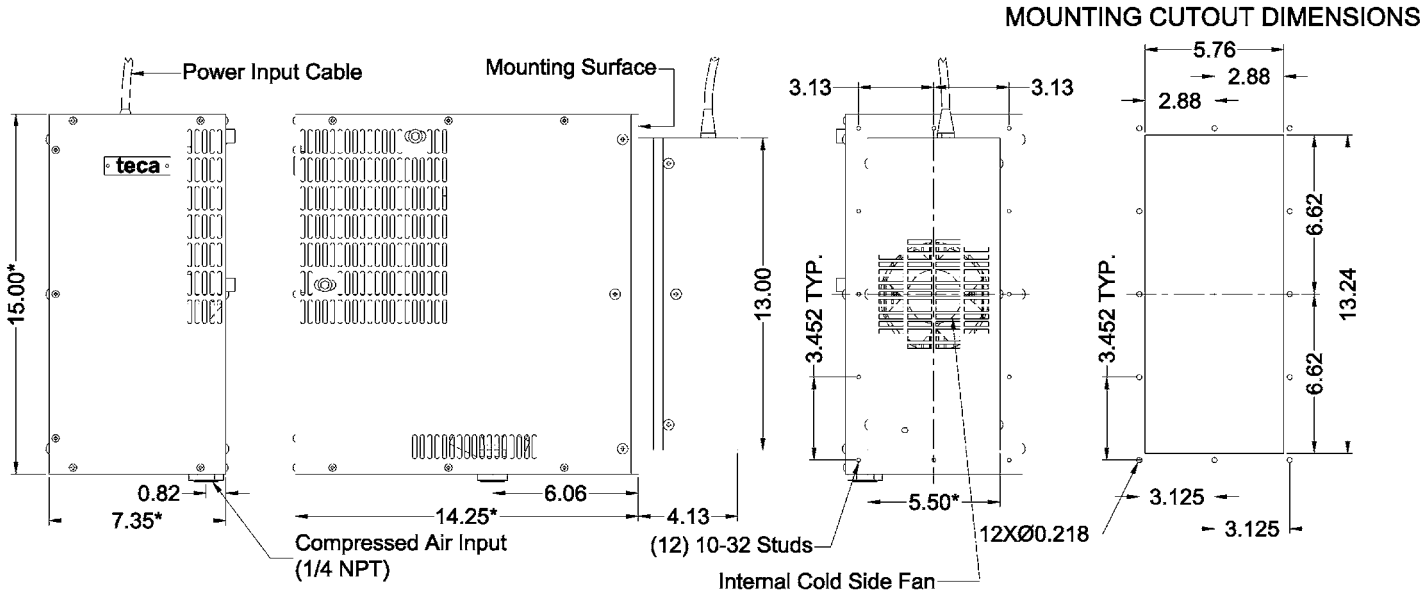
Group II, Category 2 [1] G EEx p d [ia] ia IIB+H2 T4 Ta=-20 °C to +40 °C

SPECIFICATIONS

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

* 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

Air Cooled
Thru Mount
Nema-12

FEATURES

- Compact (only 10"L X 5.52"W X 7.83"D)
- Weighs only 12 lbs. (5.4 kg)
- Ambient range -10ºC to +70ºC
- 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.

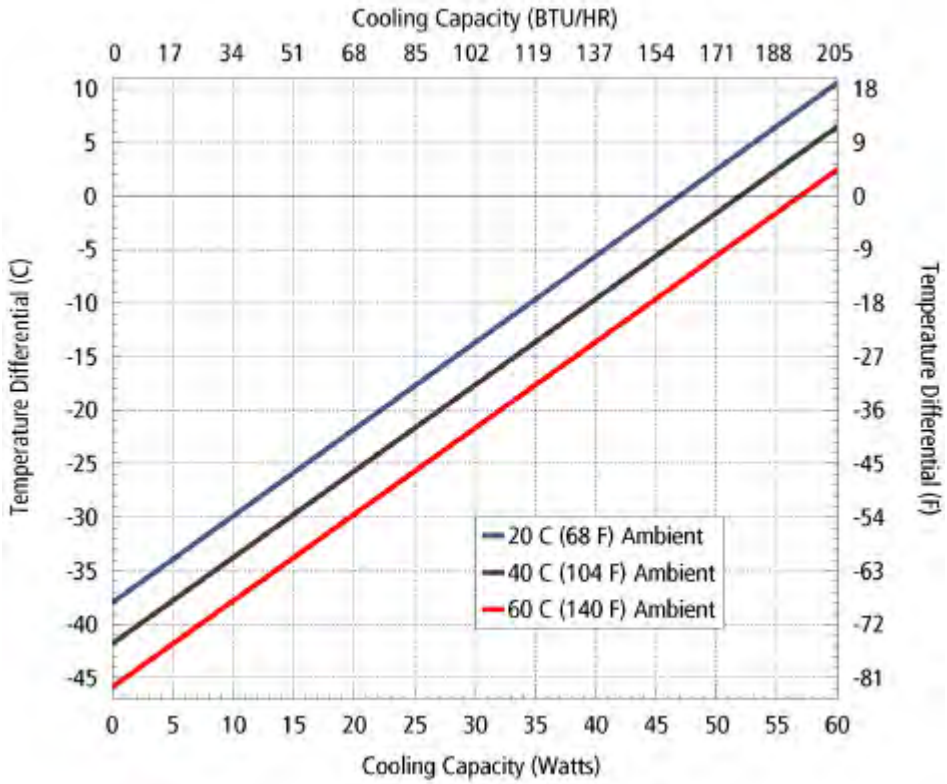
SPECIFICATIONS

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

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

AHP-301FF

PERFORMANCE CURVE



Equation of line: y=ΔT(°C) x=Capacity (Watts)			
Ambient Temp	**20°C**	**40°C**	**60°C**
Enclosure Air	y=.81x-38.0	y=.81x-42.0	y=.81x-46.0
Cold Sink	y=.62x-38.0	y=.62x-42.0	y=.62x-46.0

MOUNTING STYLE

Thru Mount

ENVIRONMENTS

Nema-12 IP 40 (maintains IP 52)

RATING (TRADITIONAL)

180 BTU/hr @ 0 °F ΔT

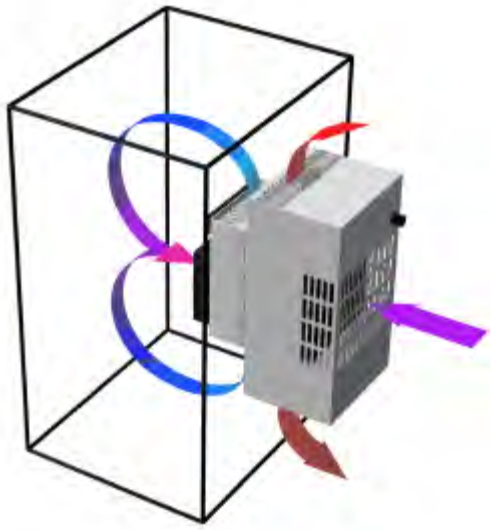
220 BTU/hr @ +20 °F ΔT *

RATING (DIN 3168)

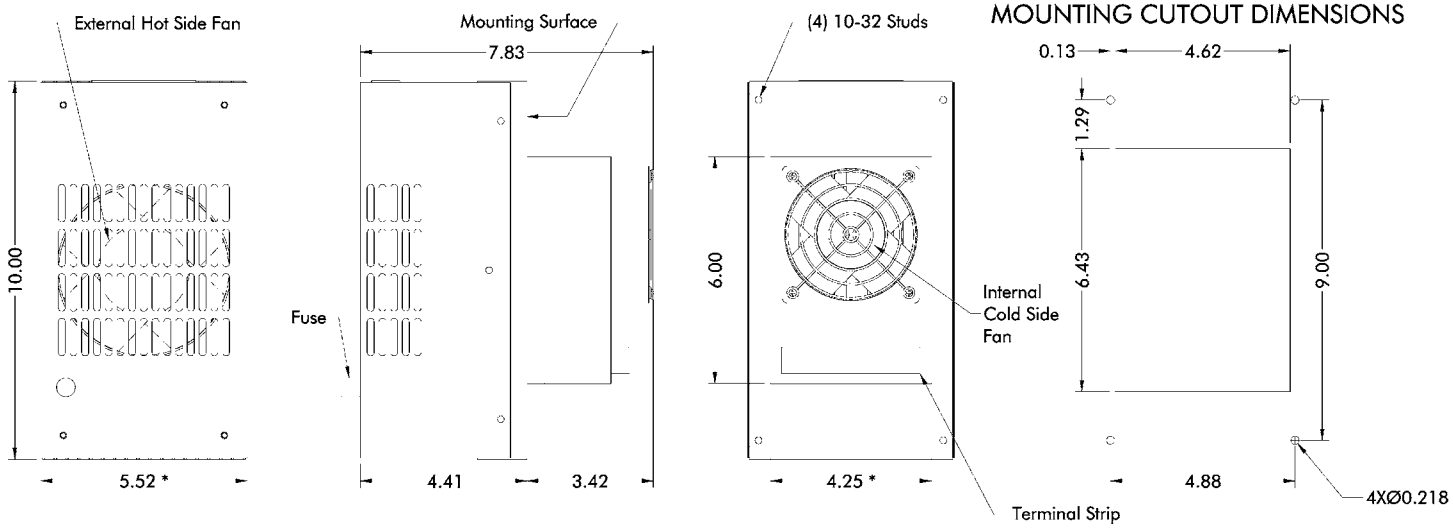
52 Watts L35 L35

36 Watts L35 L50

* See page 6



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

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

APPLICATIONS

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

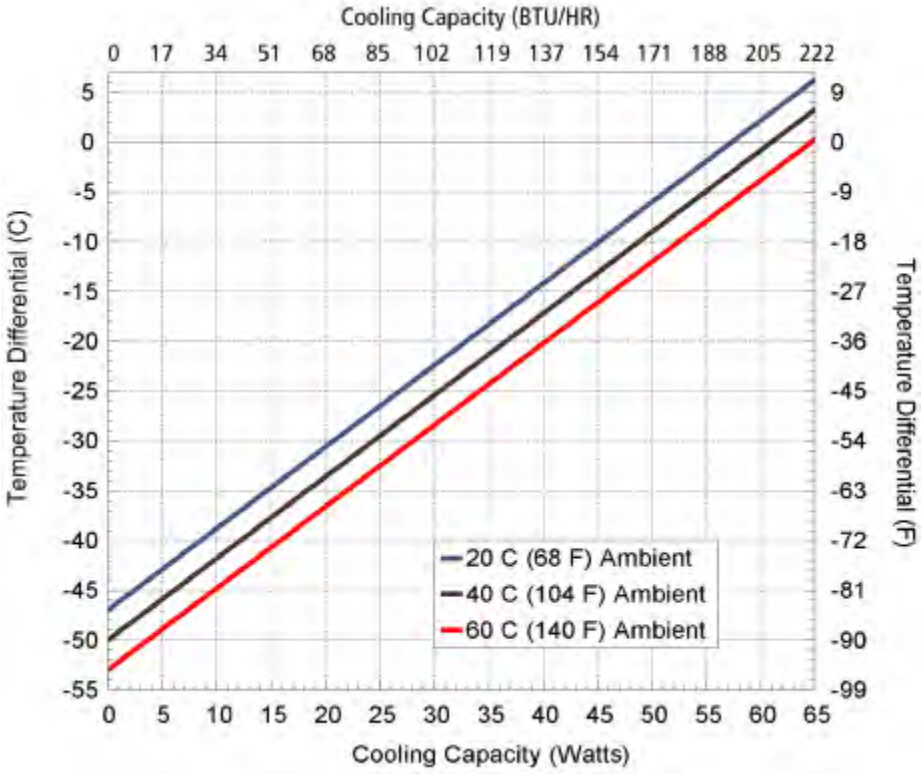
SPECIFICATIONS

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

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

AHP-300FF

PERFORMANCE CURVE



y=ΔT(°C) x=Capacity (Watts)			
Ambient Temp	**20°C**	**40°C**	**60°C**
Enclosure Air	y=.82x-47.0	y=.82x-50.0	y=.82x-53.0
Cold Sink	y=.64x-47.0	y=.64x-50.0	y=.64x-53.0

MOUNTING STYLE

Thru Mount

ENVIRONMENTS

Nema-12 IP 40 (maintains IP 52)

Nema-4/4X IP 56

RATING (TRADITIONAL)

210 BTU/hr @ 0 °F ΔT

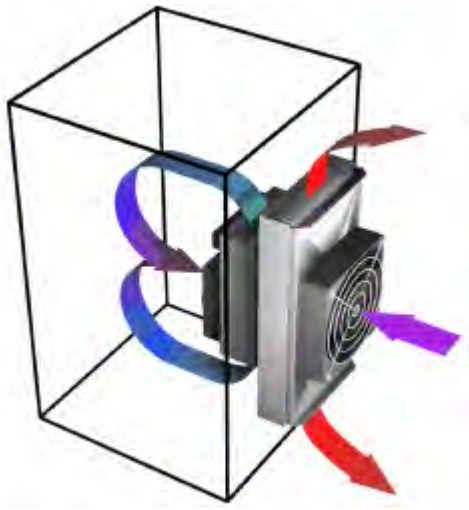
250 BTU/hr @ +20 °F ΔT *

RATING (DIN 3168)

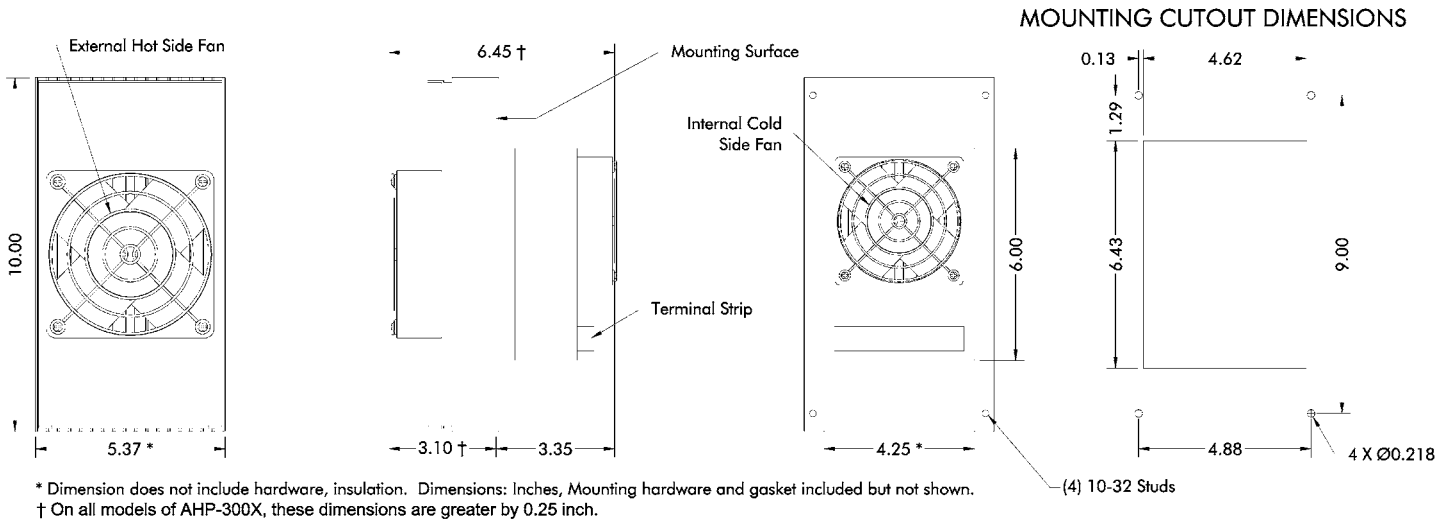
61 Watts L35 L35

44 Watts L35 L50

* See page 6



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-150FF | Thermoelectric Air Conditioner

Air Cooled
Thru Mount
Nema-12
Nema-4/4X

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.

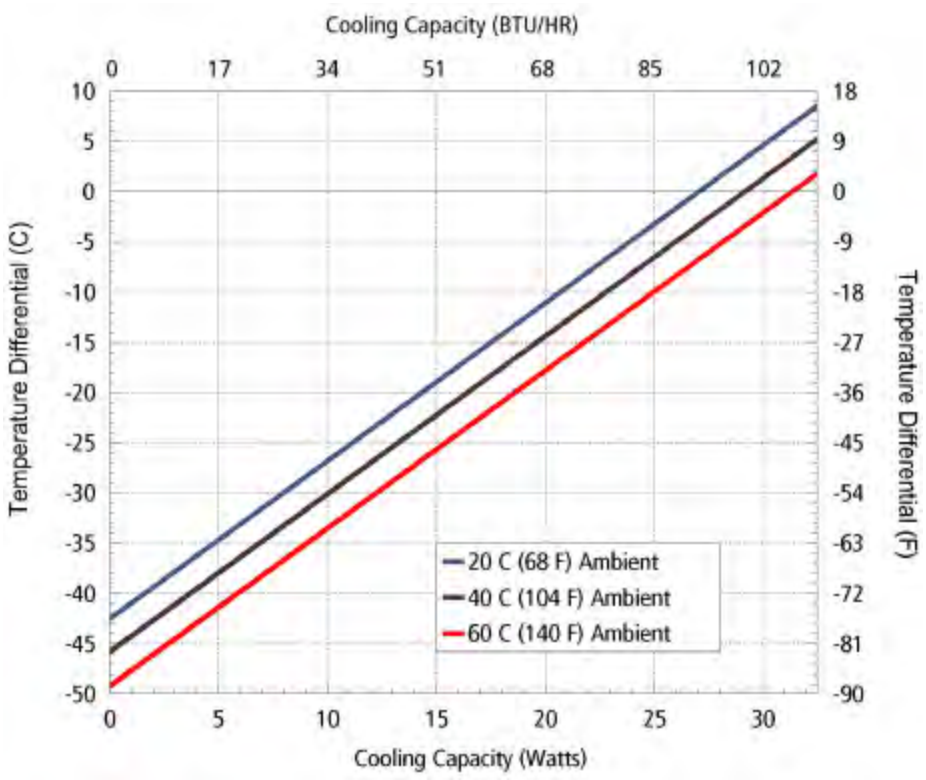
SPECIFICATIONS

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

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

AHP-150FF

PERFORMANCE CURVE



Equation of line: y=ΔT(°C) x=Capacity (Watts)			
Ambient Temp	**20°C**	**40°C**	**60°C**
Enclosure Air	y=1.57x-42.5	y=1.57x-45.8	y=1.57x-49.2
Cold Sink	y=1.24x-42.5	y=1.24x-45.8	y=1.24x-49.2

MOUNTING STYLE

Thru Mount

ENVIRONMENTS

Nema-12 IP 40 (maintains IP 52)

Nema-4/4X IP 54

RATING (TRADITIONAL)

100 BTU/hr @ 0 °F ΔT

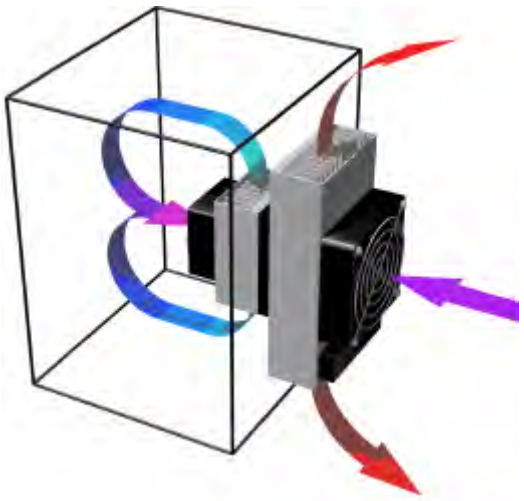
123 BTU/hr @ +20 °F ΔT *

RATING (DIN 3168)

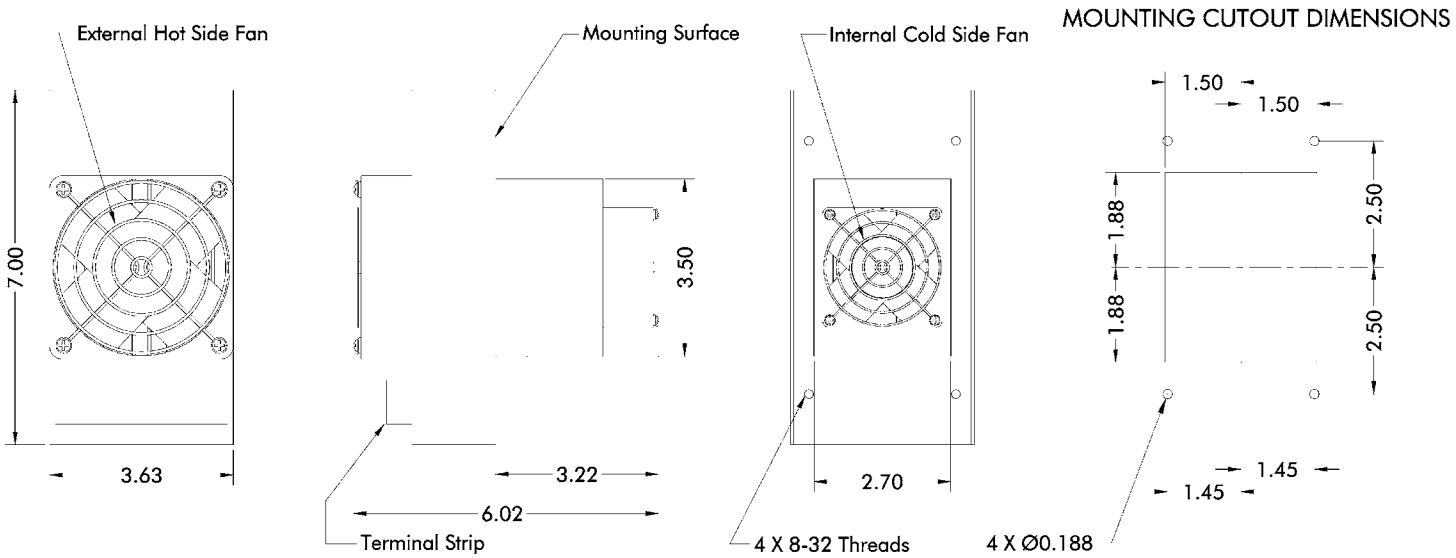
29 Watts L35 L35

21 Watts L35 L50

* See page 6



DIMENSIONS



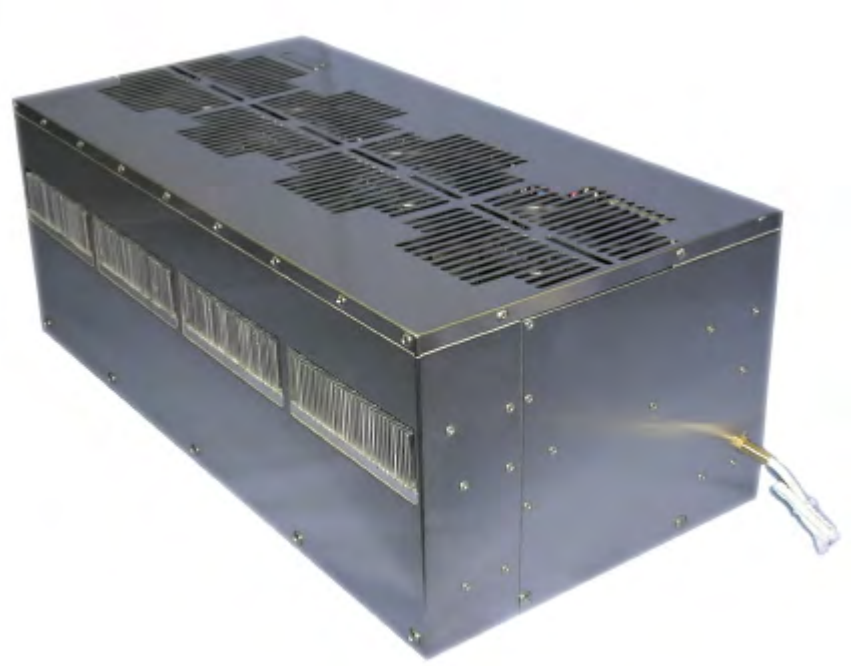
* Dimension does not include hardware, insulation. Dimensions: Inches, Hardware and gasket included but not shown.

FHP-2850 | Thermoelectric Air Conditioner

Air Cooled
Flush Mounted
Nema-12

FEATURES

- Externally mounted, no intrusion
- Ambient range -10ºC to +70ºC
- 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.

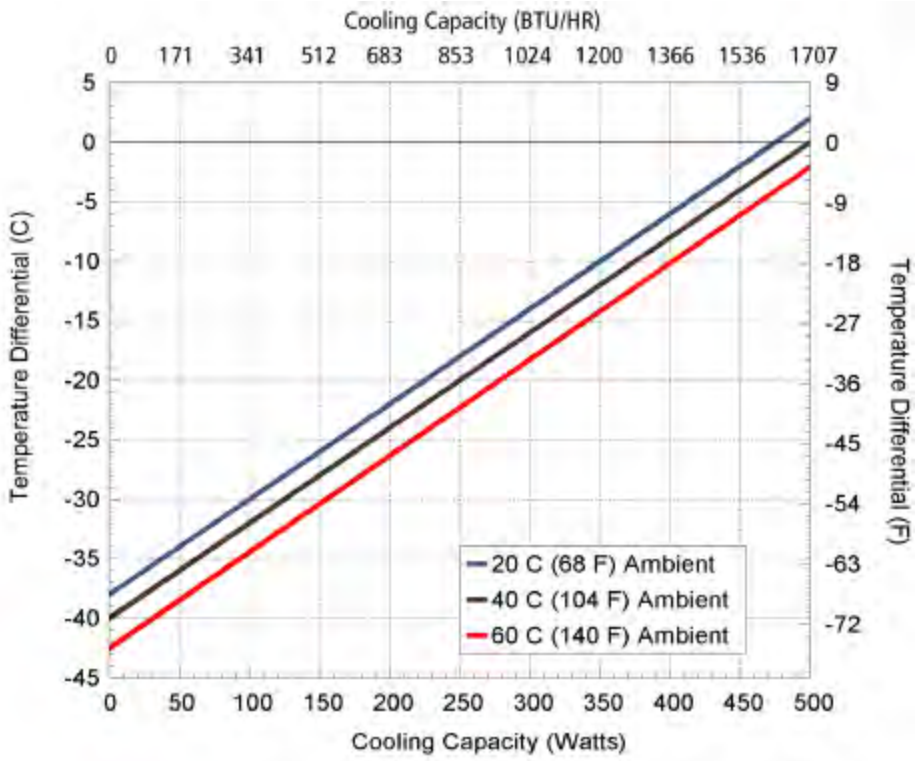
SPECIFICATIONS

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

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

FHP-2850

PERFORMANCE CURVE



Equation of line: y=ΔT(°C) x=Capacity (Watts)			
Ambient Temp	**20°C**	**40°C**	**60°C**
Enclosure Air	y=.08x-38.0	y=.08x-40.0	y=.08x-42.0
Cold Sink	y=.05x-38.0	y=.05x-40.0	y=.05x-42.0

MOUNTING STYLE

Flush Mounted

ENVIRONMENTS

Nema-12 IP 40 (maintains IP 52)

RATING (TRADITIONAL)

1700 BTU/hr @ 0 °F ΔT

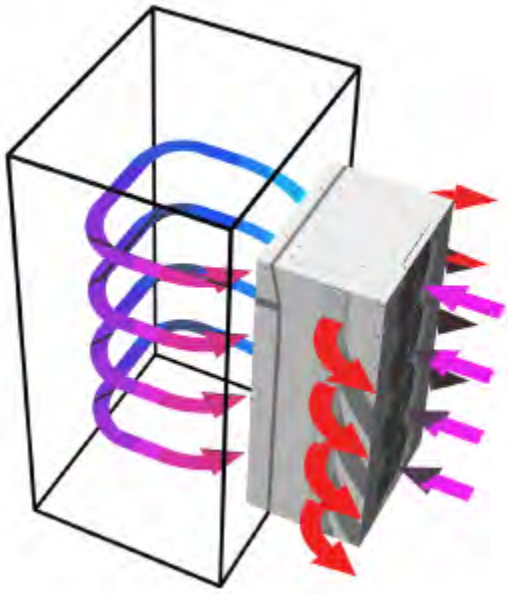
2200 BTU/hr @ +20 °F ΔT *

RATING (DIN 3168)

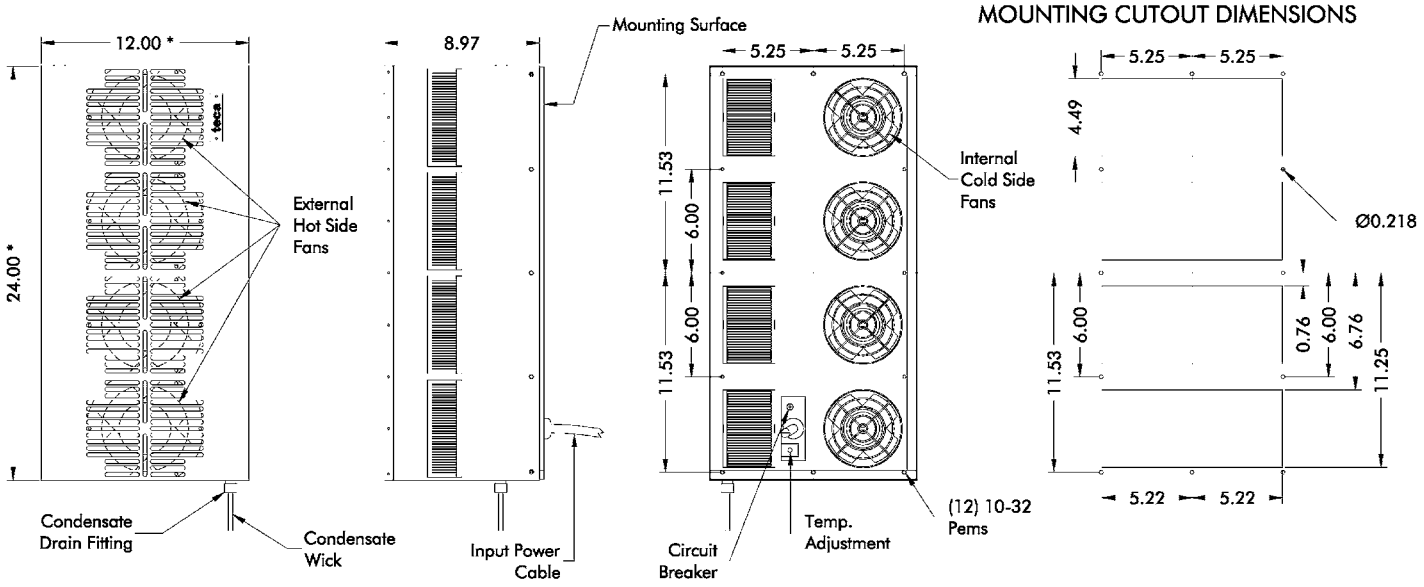
500 Watts L35 L35

325 Watts L35 L50

* See page 6



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
- Environmetally 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.

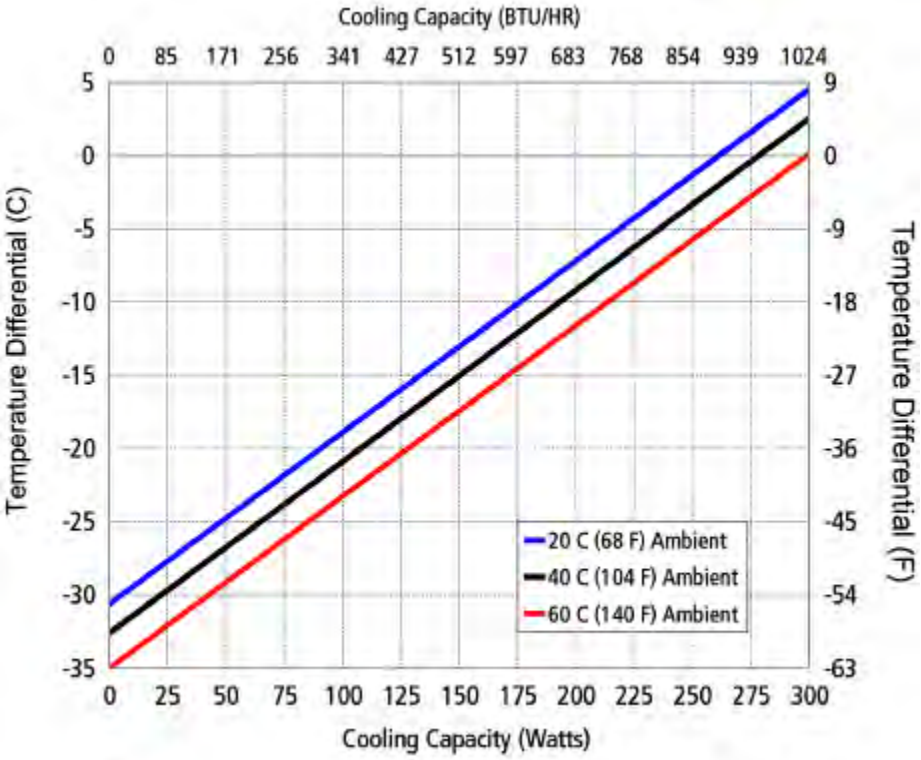
SPECIFICATIONS

	MODEL	PART NUMBER	NOTES	PERFORMANCE RATING BTU/HR	VOLTAGE VAC 50/60 HZ	CURRENT AMPS.	WEIGHT LBS. (KG)	TEMP. CONTROL *	CONDENSATE REMOVAL	OPERATING AMBIENT °C	AGENCY APPROVALS (ETL)
NEMA 12	FHP-1501	7-2181-0-000	Cool only	1000-1100	120/240	7.5/5.0	55(25)	TC-6F	Included	-10/+70	UL1995/CSA22.2, CE
	FHP-1501	7-2151-0-000	Cool only	1000-1100	120/240	7.5/5.0	55(25)	OPT*	Included	-10/+70	UL1995/CSA22.2, CE
	FHP-1501HC	7-2131-1-000	Heat/Cool	1000-1100	120/240	7.5/5.0	55(25)	TC-3F	Included	-10/+70	UL1995/CSA22.2, CE
	FHP-1501HC	7-2151-1-000	Heat/Cool	1000-1100	120/240	7.5/5.0	55(25)	OPT*	Included	-10/+70	UL1995/CSA22.2, CE
NEMA 4X	FHP-1501XE	7-2181-4-000	Cool only	1000-1100	120/240	8.0/5.5	55(25)	TC-6F	Included	-10/+60	UL1995/CSA22.2, CE
	FHP-1501XE	7-2151-4-000	Cool only	1000-1100	120/240	8.0/5.5	55(25)	OPT*	Included	-10/+60	UL1995/CSA22.2, CE
	FHP-1501XEHC	7-2131-5-000	Heat/Cool	1000-1100	120/240	7.5/5.0	55(25)	TC-3F	Included	-10/+70	UL1995/CSA22.2, CE
	FHP-1501XEHC	7-2151-5-000	Heat/Cool	1000-1100	120/240	7.5/5.0	55(25)	OPT*	Included	-10/+70	UL1995/CSA22.2, CE

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

FHP-1501

PERFORMANCE CURVE



Equation of line: y=ΔT(°C) x=Capacity (Watts)			
Ambient Temp	**20°C**	**40°C**	**60°C**
Enclosure Air	y=.127x-30.6	y=.127x-32.6	y=.127x-35.0
Cold Sink	y=.093x-30.6	y=.093x-32.6	y=.093x-35.0

MOUNTING STYLE

Flush Mounted

ENVIRONMENTS

Nema-12 IP 40 (maintains IP 52)

Nema-4/4X IP 56

RATING (TRADITIONAL)

950 BTU/hr @ 0 °F ΔT

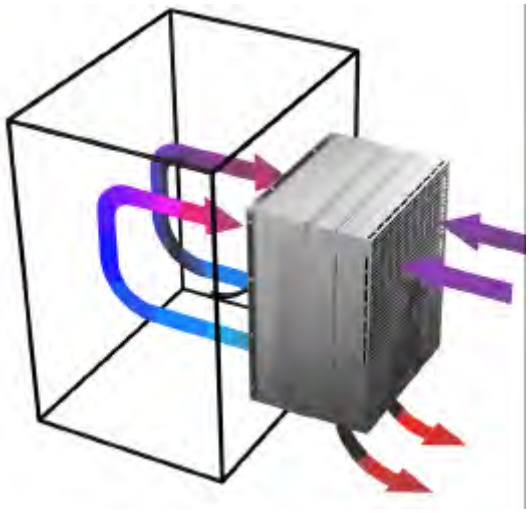
1270 BTU/hr @ +20 °F ΔT *

RATING (DIN 3168)

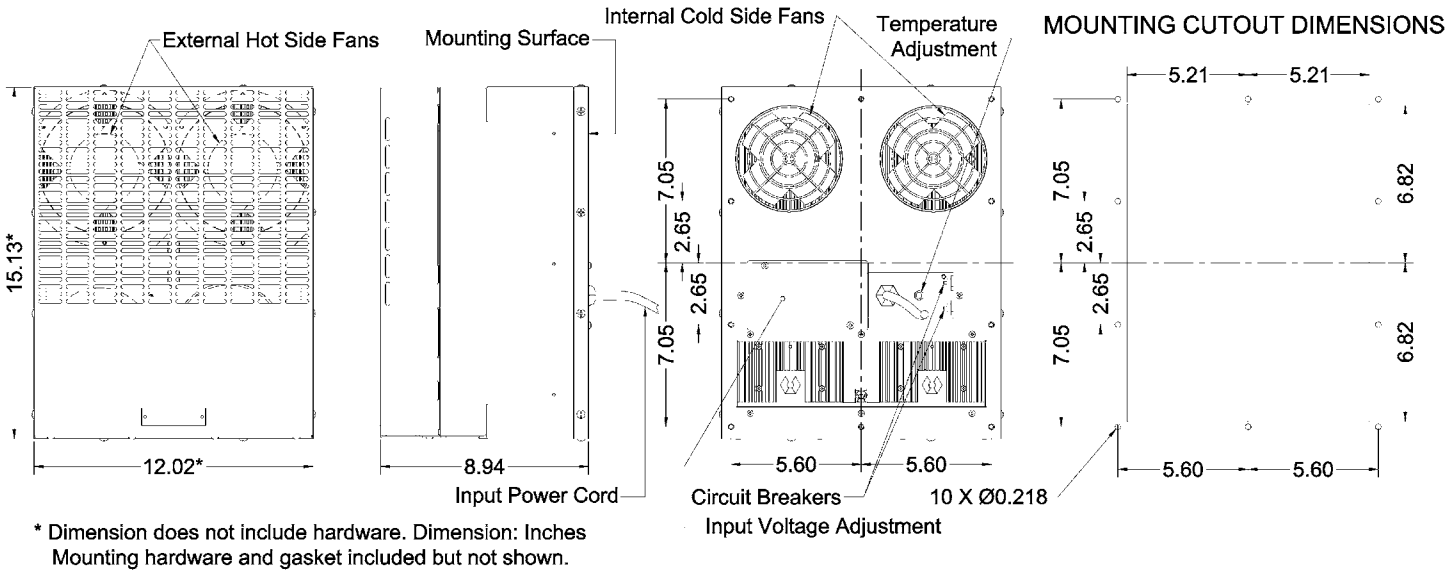
278 Watts L35 L35

162 Watts L35 L50

* See page 6



DIMENSIONS



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

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 -10ºC to +70ºC
- 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.

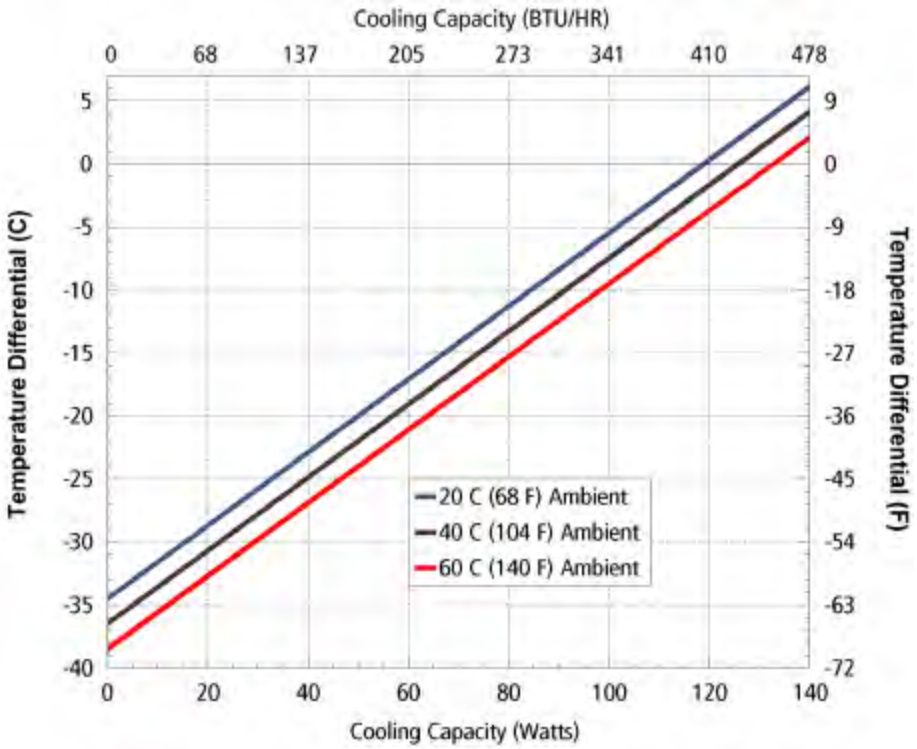
SPECIFICATIONS

	MODEL	PART NUMBER	NOTES	PERFORMANCE RATING BTU/HR	VOLTAGE VAC 50/60 HZ	CURRENT AMPS.	WEIGHT LBS. (KG)	TEMP. CONTROL *	CONDENSATE REMOVAL	OPERATING AMBIENT °C	AGENCY APPROVALS (ETL)
NEMA12	FHP-750	7-A580-0-000	Cool only, built in temperature control	400-450	120	4.5	16 (7.2)	TC-6F	Included	-10/+70	UL1995 CSA22.2, CE
	FHP-750	7-A550-0-000	Cool only, for remote temperature control	400-450	120	4.5	16 (7.2)	OPT*	Included	-10/+70	UL1995 CSA22.2, CE
	FHP-752	7-A582-0-000	Cool only, built in temperature control	400-450	240	2.5	23 (10.5)	TC-6F	Included	-10/+70	UL1995 CSA22.2, CE
	FHP-752	7-A552-0-000	Cool only, for remote temperature control	400-450	240	2.5	23 (10.5)	OPT*	Included	-10/+70	UL1995 CSA22.2, CE
NEMA4X	FHP-750XE	7-A580-4-000	Cool only, built in temperature control	400-450	120	5.0	19(8.6)	TC-6F	Included	-10/+70	UL1995 CSA22.2, CE
	FHP-750XE	7-A550-4-000	Cool only, for remote temperature control	400-450	120	5.0	19(8.6)	OPT*	Included	-10/+70	UL1995 CSA22.2, CE
	FHP-752XE	7-A582-4-000	Cool only, built in temperature control	400-450	240	2.5	25(11.5)	TC-6F	Included	-10/+70	UL1995 CSA22.2, CE
	FHP-752XE	7-A552-4-000	Cool only, for remote temperature control	400-450	240	2.5	25(11.5)	OPT*	Included	-10/+70	UL1995 CSA22.2, CE

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

FHP-750

PERFORMANCE CURVE



Equation of line: y=ΔT(°C) x=Capacity (Watts)			
Ambient Temp	**20°C**	**40°C**	**60°C**
Enclosure Air	y=.29x-34.5	y=.29x-36.5	y=.29x-38.5
Cold Sink	y=.18x-34.5	y=.18x-36.5	y=.18x-38.5

MOUNTING STYLE

Flush Mounted

ENVIRONMENTS

Nema-12 IP 40 (maintains IP 52)

Nema-4/4X IP 56

RATING (TRADITIONAL)

430 BTU/hr @ 0 °F ΔT

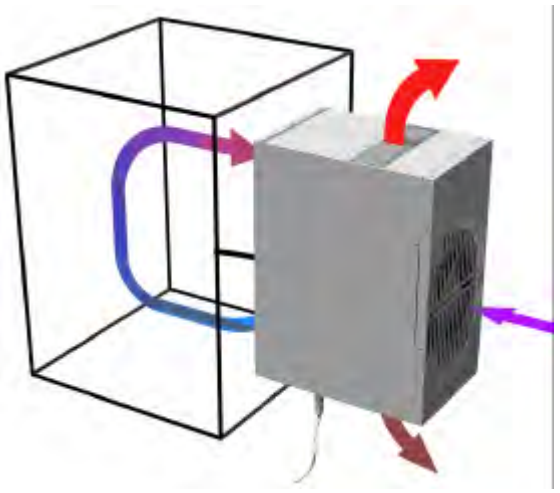
560 BTU/hr @ +20 °F ΔT *

RATING (DIN 3168)

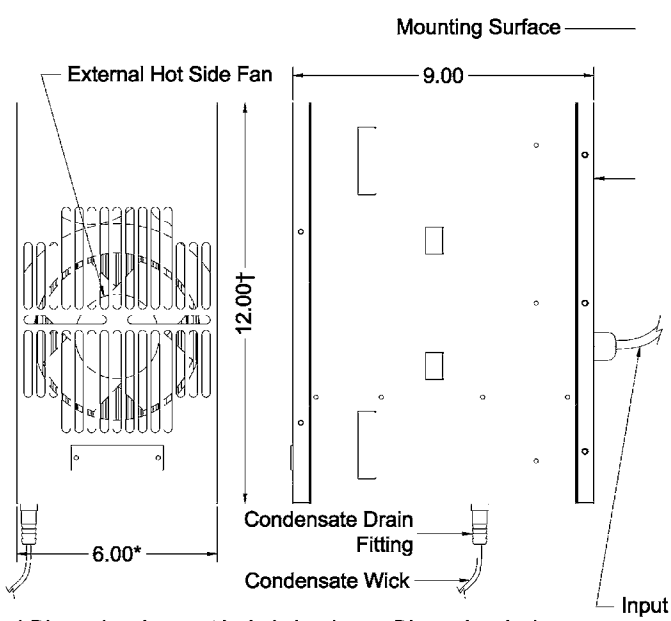
125 Watts L35 L35

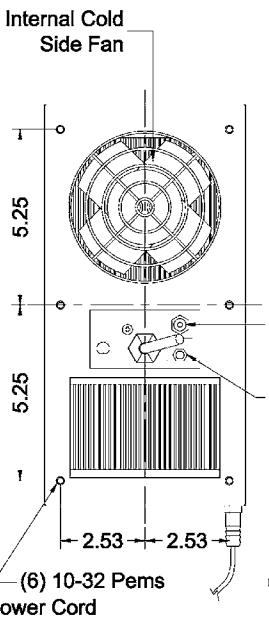
78 Watts L35 L50

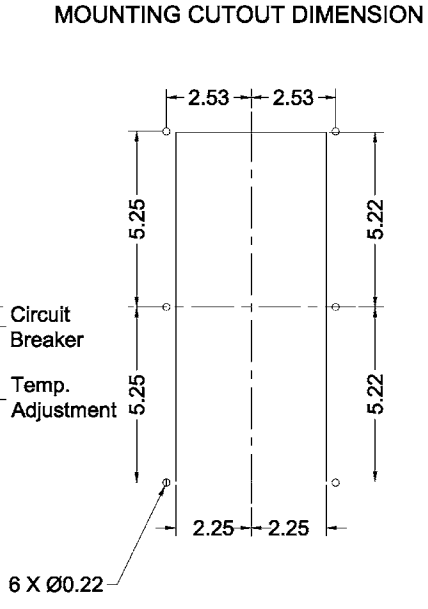
* See page 6



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-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

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

FHP-450XE

MOUNTING STYLE

Flush Mounted

ENVIRONMENTS

Nema-4/4X IP 56

RATING (TRADITIONAL)

150 BTU/hr @ 0 °F ΔT

213 BTU/hr @ +20 °F ΔT *

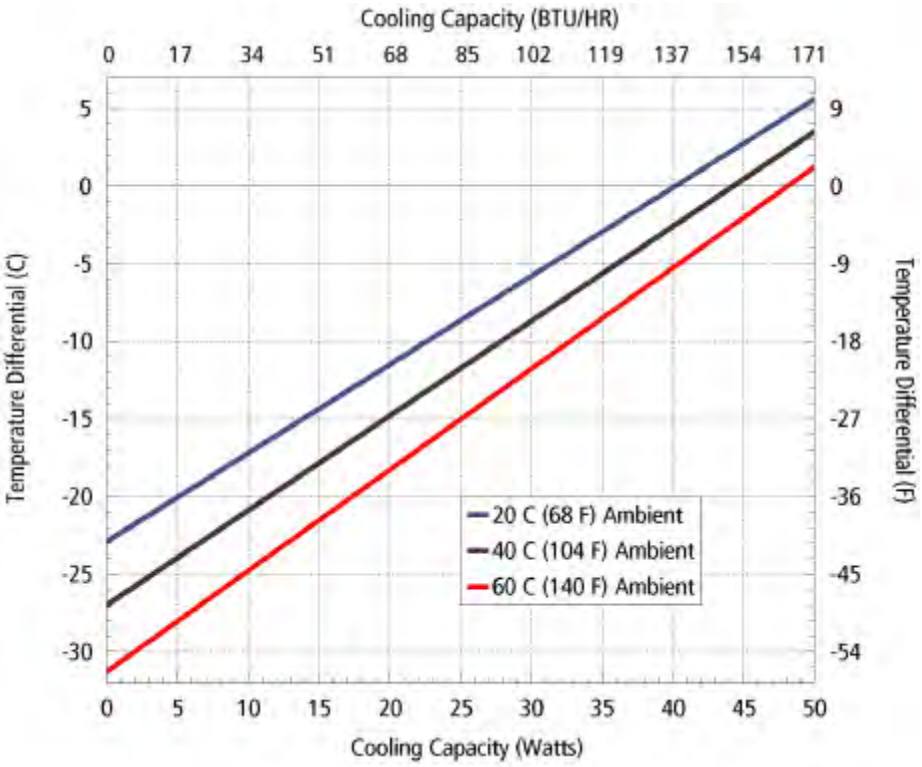
RATING (DIN 3168)

44 Watts L35 L35

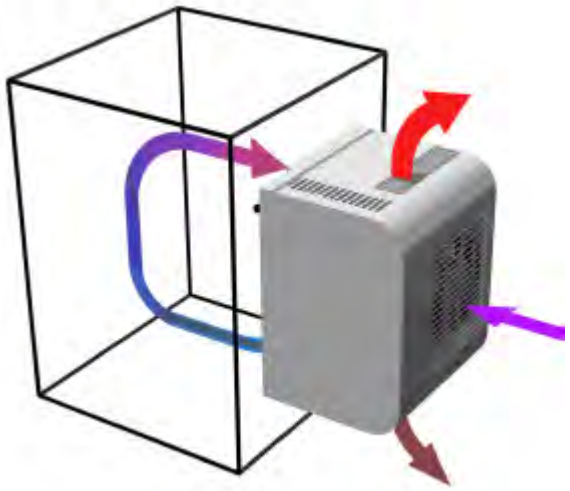
23 Watts L35 L50

* See page 6

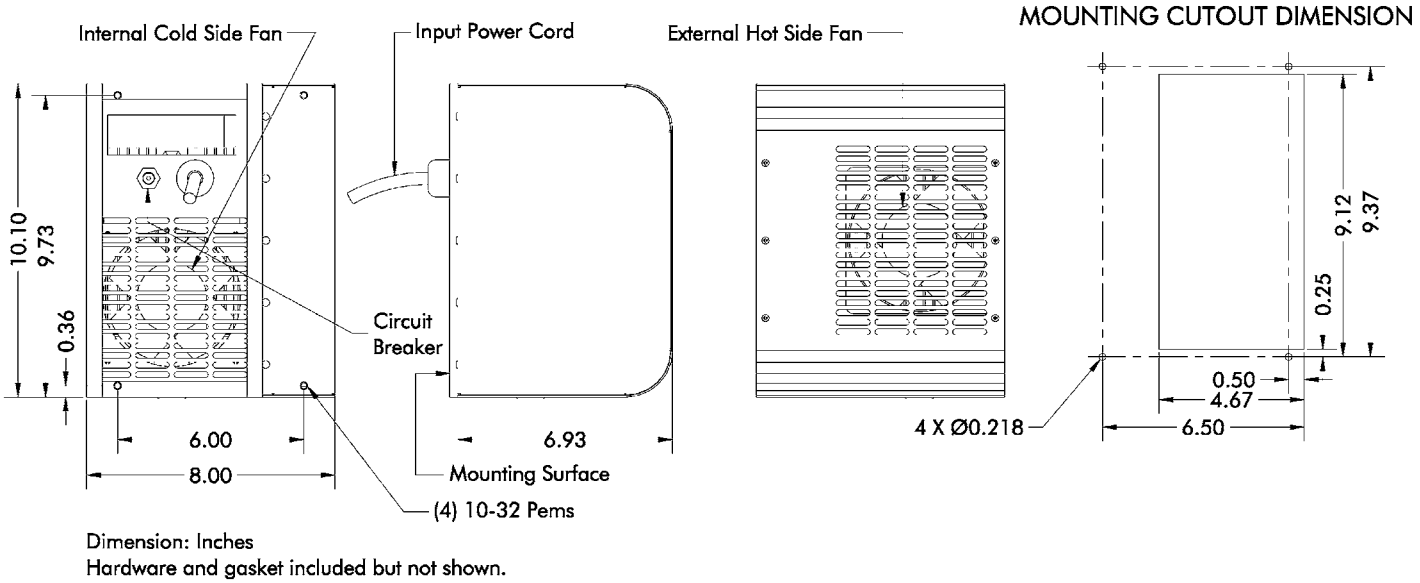
PERFORMANCE CURVE



Equation of line: y=ΔT(°C) x=Capacity (Watts)			
Ambient Temp	**20°C**	**40°C**	**60°C**
Enclosure Air	y=.57x-22.9	y=.61x-27.0	y=.65x-31.3
Cold Sink	y=.48x-22.9	y=.51x-27.0	y=.55x-31.3



DIMENSIONS



Dimension: Inches
Hardware and gasket included but not shown.

Liquid Cooled
Air Conditioners

LHP-SERIES

LIQUID COOLED

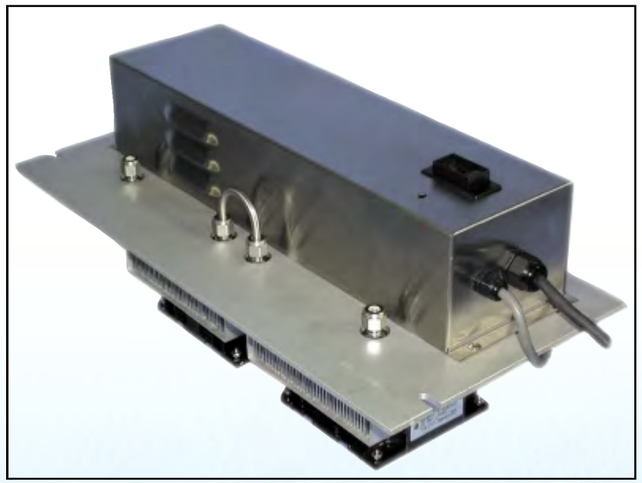
Solid-state liquid-cooled air conditioners work well in tight enclosures.

FEATURES

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

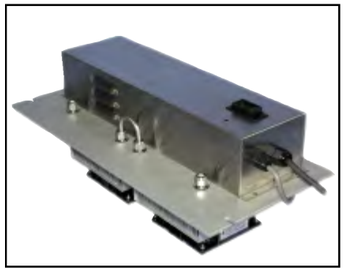
APPLICATIONS

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



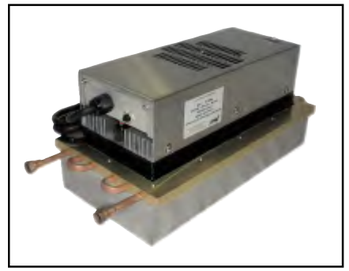
LHP-1700FF page 46

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

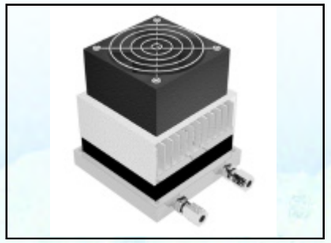


LHP-800FF page 50

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 0ºC to +70ºC
- 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

MODEL	PART NUMBER	NOTES	PERFORMANCE RATING BTU/HR	VOLTAGE VAC 50/60 HZ	CURRENT AMPS.	Min Flow GPM	WEIGHT LBS. (kg)	TEMP. CONTROL *	OPERATING AMBIENT °C
LHP-1700FF	2-1090-0-000	Cool only	950-1180	120	7.0	0.3	46(21)	none	0/+70
LHP-1700FF	2-1080-0-000	Cool only	950-1180	120	7.0	0.3	46(21)	TC-6F	0/+70
LHP-1700FF	2-1050-0-000	Cool only	950-1180	120	7.0	0.3	46(21)	OPT*	0/+70
LHP-1700FFHC	2-1030-1-000	Heat/Cool	950-1180	120	7.0	0.3	46(21)	TC-3F	0/+70
LHP-1700FFHC	2-1050-1-000	Heat/Cool	950-1180	120	7.0	0.3	46(21)	OPT*	0/+70
LHP-1702FF	2-1092-0-000	Cool only	950-1180	240	4.7	0.3	46(21)	none	0/+70
LHP-1702FF	2-1082-0-000	Cool only	950-1180	240	4.7	0.3	46(21)	TC-6F	0/+70
LHP-1702FF	2-1052-0-000	Cool only	950-1180	240	4.7	0.3	46(21)	OPT*	0/+70
LHP-1702FFHC	2-1032-1-000	Heat/Cool	950-1180	240	4.7	0.3	46(21)	TC-3F	0/+70
LHP-1702FFHC	2-1052-1-000	Heat/Cool	950-1180	240	4.7	0.3	46(21)	OPT*	0/+70

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

LHP-1700FF

MOUNTING STYLE

Thru Mount

ENVIRONMENTS

Nema-12 IP 40 (maintains IP 52)

RATING (TRADITIONAL)

1050 BTU/hr @ 0 °F ΔT

1320 BTU/hr @ +20 °F ΔT *

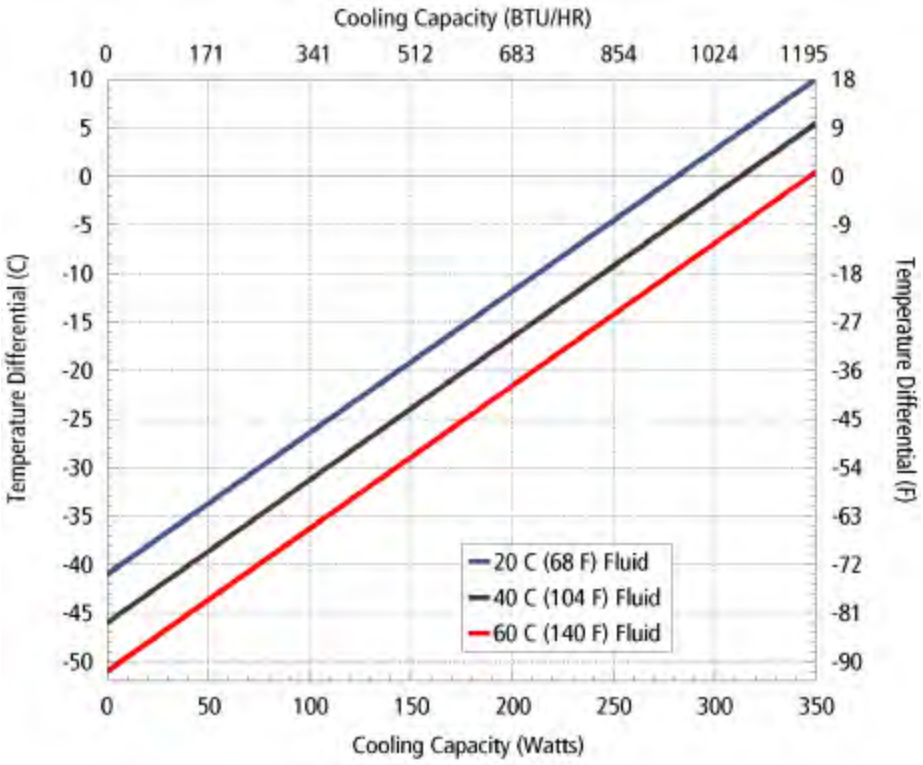
RATING (DIN 3168)

312 Watts L35 L35

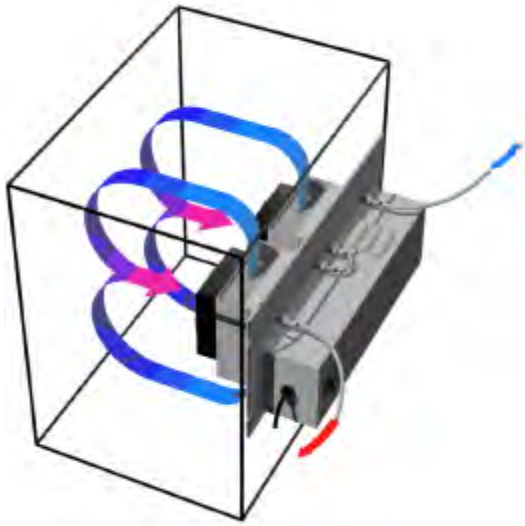
225 Watts L35 L50

* See page 6

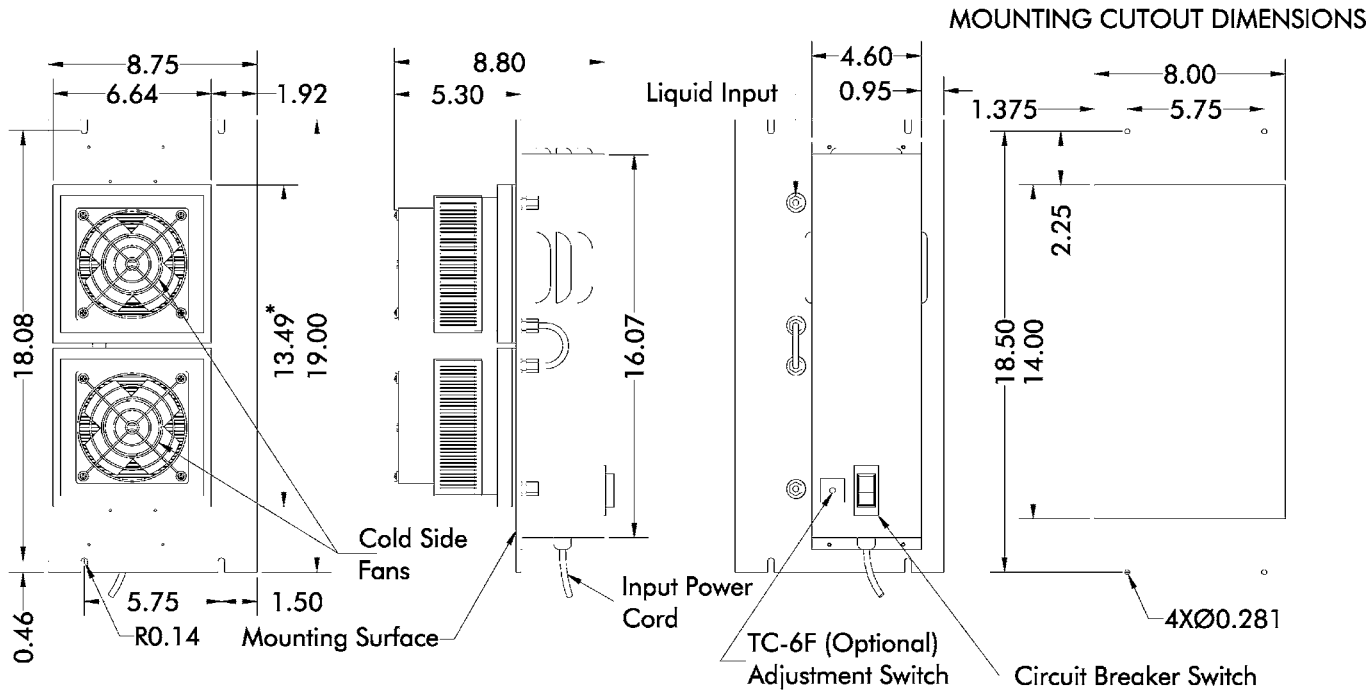
PERFORMANCE CURVE



Equation of line: y=ΔT(°C) x=Capacity (Watts)			
Fluid Temp	**20°C**	**40°C**	**60°C**
Enclosure Air	y=.147x-41.0	y=.147x-46.0	y=.147x-51.0
Cold Sink	y=.11x-41.0	y=.11x-46.0	y=.11x-51.0



DIMENSIONS



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

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 0ºC to +70ºC
- 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.

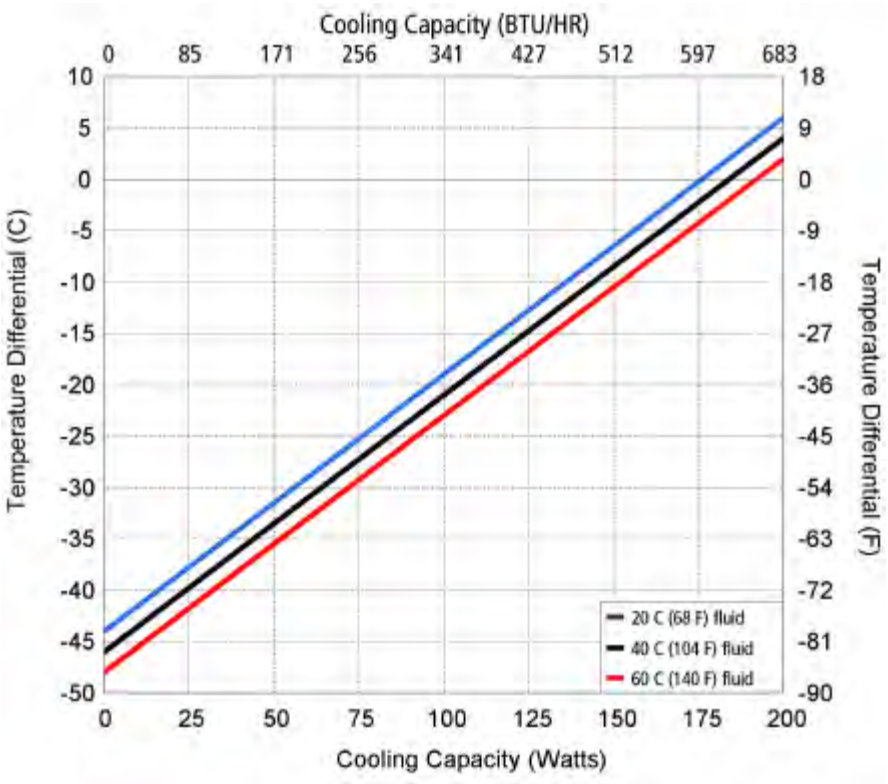
SPECIFICATIONS

MODEL	PART NUMBER	NOTES	PERFORMANCE RATING BTU/HR	VOLTAGE VAC 50/60 HZ	CURRENT AMPS.	Min Flow GPM	WEIGHT LBS. (kg)	TEMP. CONTROL *	OPERATING AMBIENT °C
LHP-1200FF	2-3090-0-000	Cool only	590-640	120	3.7	0.3	21(9.5)	none	0/+70
LHP-1200FF	2-3080-0-000	Cool only	590-640	120	3.7	0.3	21(9.5)	TC-6F	0/+70
LHP-1200FF	2-30F0-0-000	Cool only	590-640	120	3.7	0.3	21(9.5)	85°F (30°)	0/+70
LHP-1200FF	2-3050-0-000	Cool only	590-640	120	3.7	0.3	21(9.5)	OPT*	0/+70
LHP-1200FFHC	2-3030-1-000	Heat/Cool	590-640	120	3.7	0.3	21(9.5)	TC-3F	0/+70
LHP-1200FFHC	2-3050-1-000	Heat/Cool	590-640	240	3.7	0.3	21(9.5)	OPT*	0/+70

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

LHP-1200FF

PERFORMANCE CURVE



Equation of line: y=ΔT(°C) x=Capacity (Watts)			
Fluid Temp	**20°C**	**40°C**	**60°C**
Enclosure Air	y=.25x-44.0	y=.25x-46.0	y=.25x-48.0
Cold Sink	y=.19x-44.0	y=.19x-46.0	y=.19x-48.0

MOUNTING STYLE

Thru Mount

ENVIRONMENTS

Nema-12 IP 40 (maintains IP 52)

RATING (TRADITIONAL)

613 BTU/hr @ 0 °F ΔT

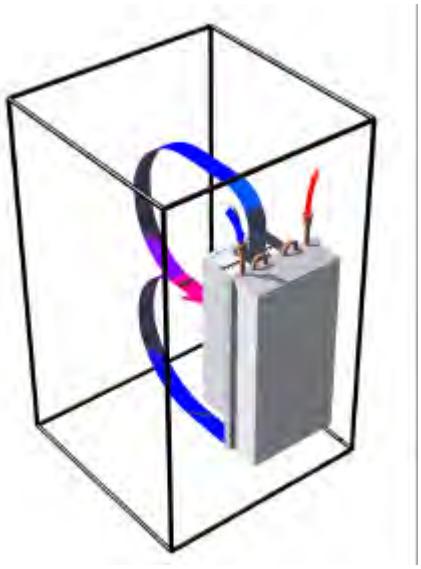
770 BTU/hr @ +20 °F ΔT *

RATING (DIN 3168)

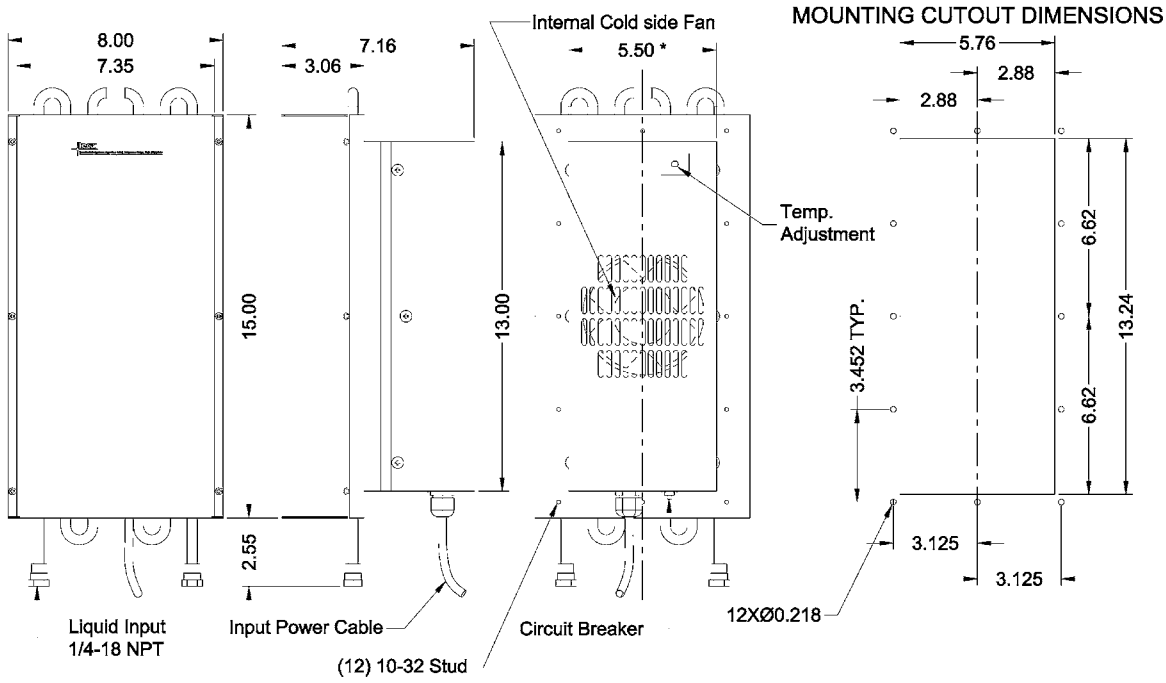
180 Watts L35 L35

125 Watts L35 L50

* See page 6



DIMENSIONS



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

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

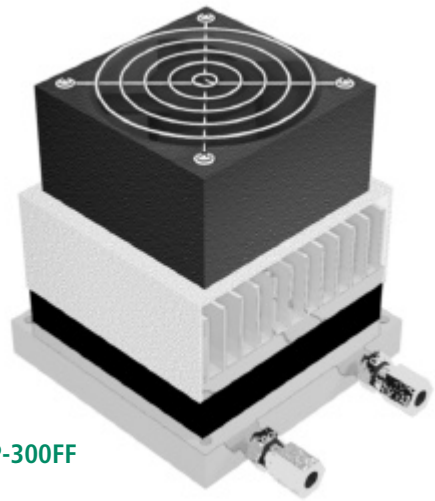
LHP-800FF

INCLUDES

- Compression fittings
- Terminal strip for wire hook up

APPLICATIONS

Used in laboratory equipment and specialized systems world wide.



LHP-300FF

SPECIFICATIONS LHP-800FF

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

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

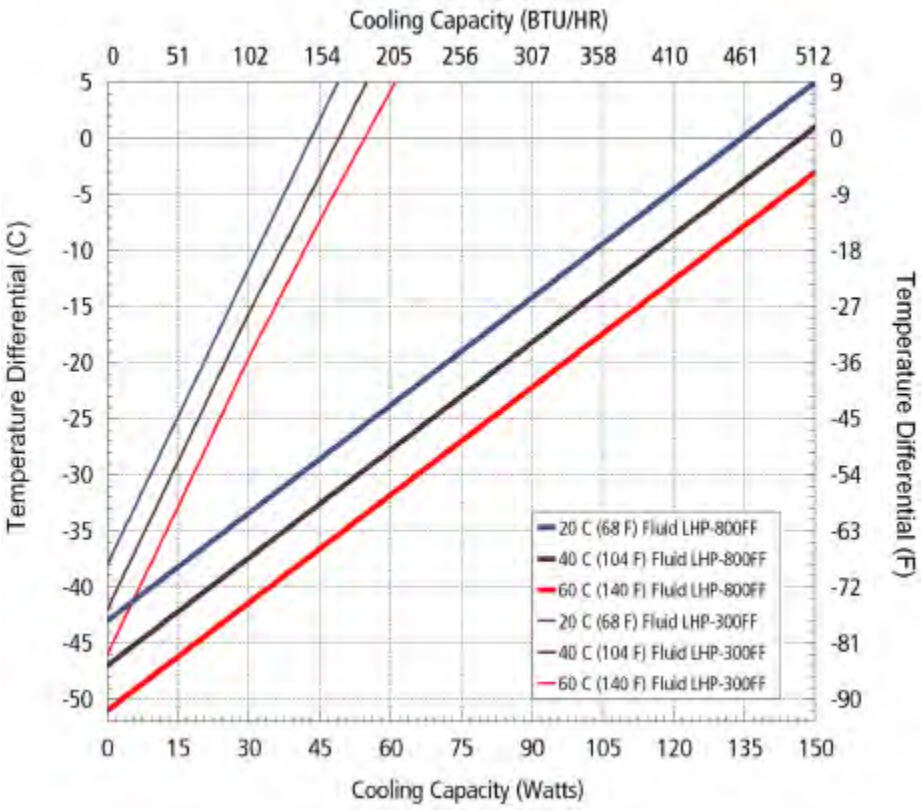
SPECIFICATIONS LHP-300FF

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

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

See also , "Power Supplies" , P. 67

PERFORMANCE CURVE



Equation of line: y=ΔT(°C) x=Capacity (Watts)

Fluid Temp	20°C	40°C	60°C
LHP-800FF	y=.32x-43.0	y=.32x-47.0	y=.32x-51.0
LHP-300FF	y=.88x-38.0	y=.88x-42.0	y=.88x-46.0

LHP-800FF

MOUNTING STYLE

Internal

RATING (TRADITIONAL)

500 BTU/hr @ 0 °F ΔT

615 BTU/hr @ +20 °F ΔT *

RATING (DIN 3168)

146 Watts L35 L35

105 Watts L35 L50

LHP-300FF

MOUNTING STYLE

Internal

RATING (TRADITIONAL)

160 BTU/hr @ 0 °F ΔT

200 BTU/hr @ +20 °F ΔT *

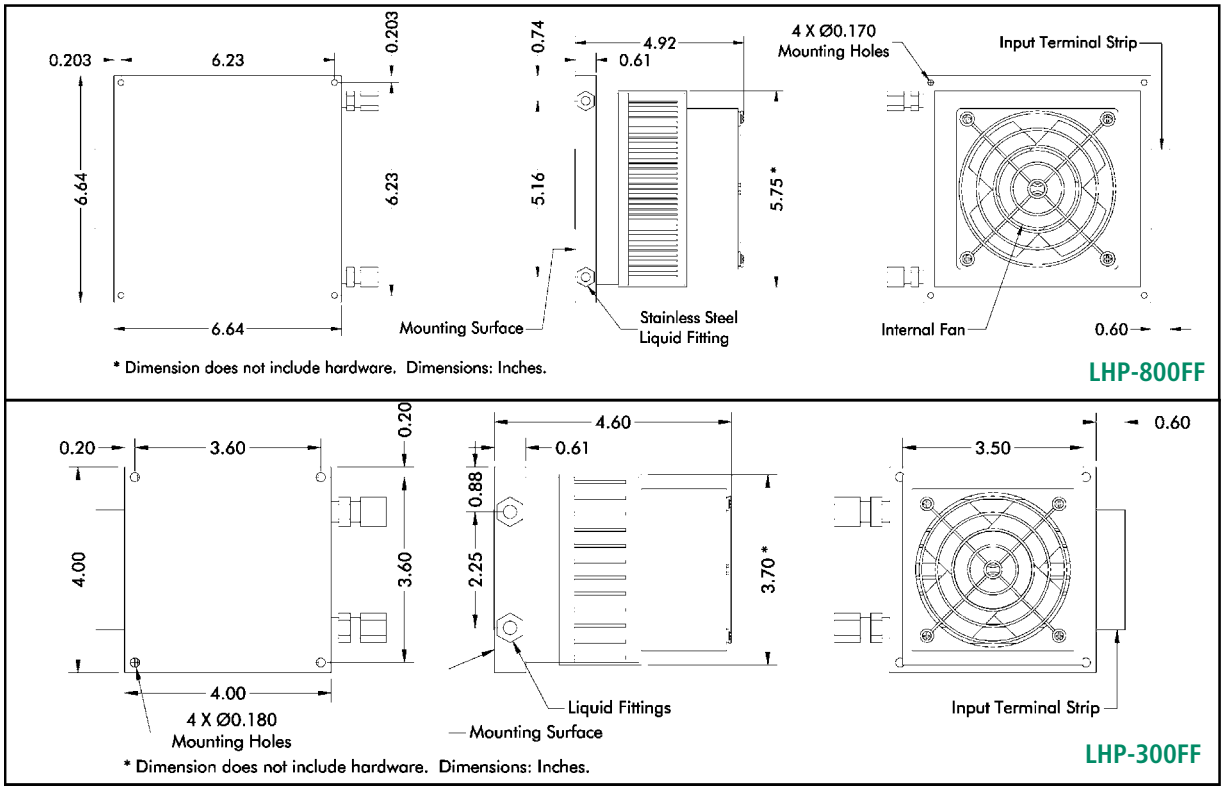
RATING (DIN 3168)

48 Watts L35 L35

34 Watts L35 L50

* See page 6

DIMENSIONS



Cold Plates

140-1630 BTU/hr

AIR COOLED

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

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LIQUID COOLED

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

AIR COOLED

AHP-1200CPV page 54

830-950 BTU/hr rating,
15" x 7.3" x 5" size,
5.38" X 13" cold plate surface,
120/240 VAC operation

AHP-1200CP page 56

830-950 BTU/hr rating,
15" x 7.3" x 5" size,
5.38" x 13" cold plate surface,
120 VAC operation

AHP-800MSP page 58

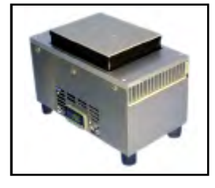
Variable stirring rate,
19" x 9.3" x 10" size,
1 Liter standard bottle,
120/240 VAC operation

AHP-301CPV page 60

225-265 BTU/hr rating,
10" x 9.8" x 6" size,
4.5" x 6" cold plate surface,
120/240 VAC operation

AHP-301CP page 62

225-265 BTU/hr rating,
10" x 5.37" x 4.1" size,
4.5" x 6" cold plate surface,
120 or 240 VAC operation

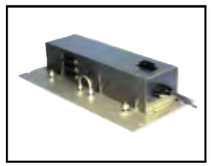


AHP-300CP page 50
AHP-150CP page 50

LIQUID COOLED

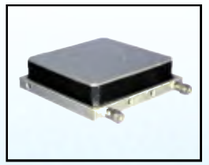
LHP-1700CP page 52

1360-1630 BTU/hr rating,
19" x 8.7" x 5" size,
6.00" x 12.88" cold plate surface,
120 VAC operation



LHP-800CP page 54

700-830 BTU/hr rating,
6.6 " x 6.6" x 1.75" size,
6 " x 6" cold plate surface,
30 VDC operation



LHP-300CP page 54

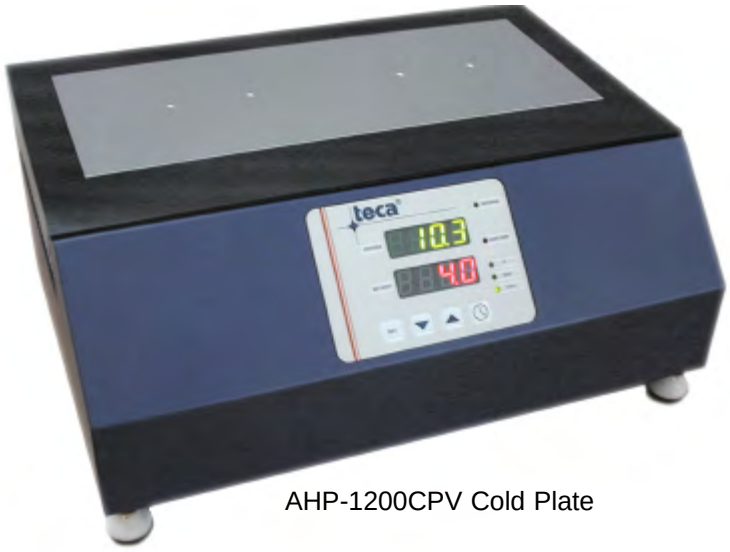
280-335 BTU/hr rating,
4 " x 4" x 1.63" size,
3.5" x 3.5" cold plate surface,
24 VDC operation

LHP-150CP page 54

130-160 BTU/hr rating,
4 " x 2" x 1.63" size,
2" x 3.2" cold plate surface,
12 VDC operation

AHP-1200CPV | Thermoelectric Cold Plate

Air Cooled
Bench Top



AHP-1200CPV Cold Plate

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

AHP-1200CPV Tube Chiller

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

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

AHP-1200CPV

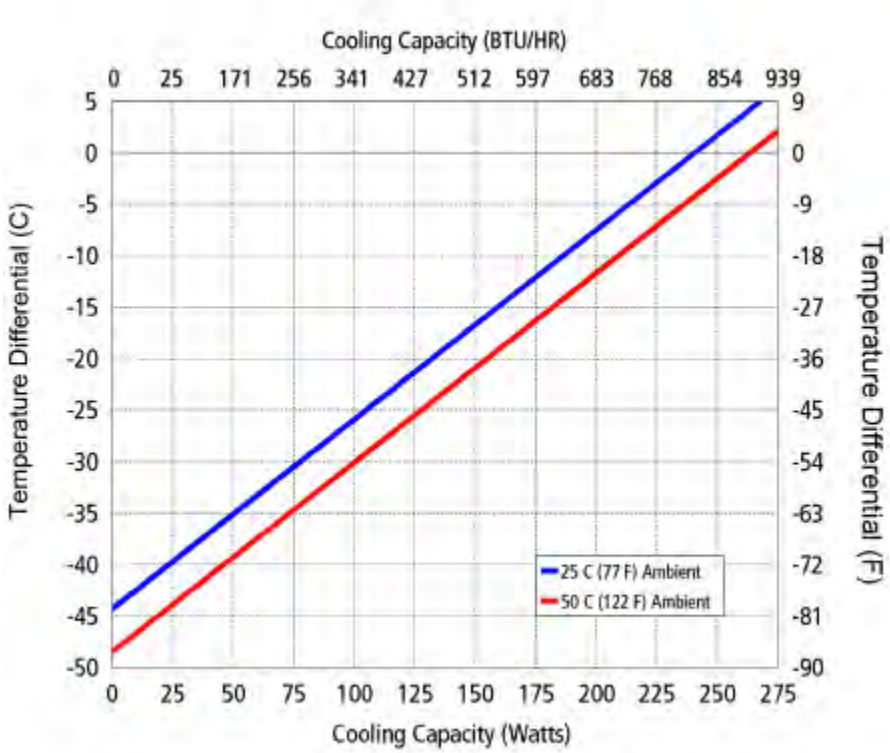
ENVIRONMENTS

Bench top
Laboratory
Industrial

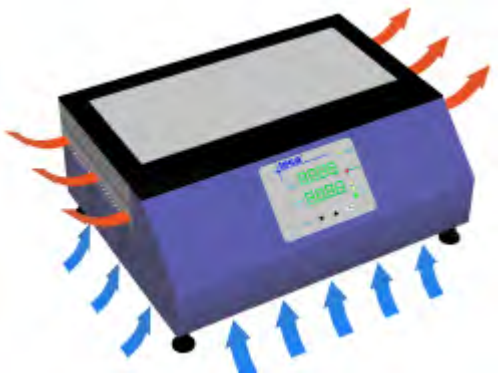
COOLING CAPACITY

250 Watts @ 0 °C ΔT

PERFORMANCE CURVE

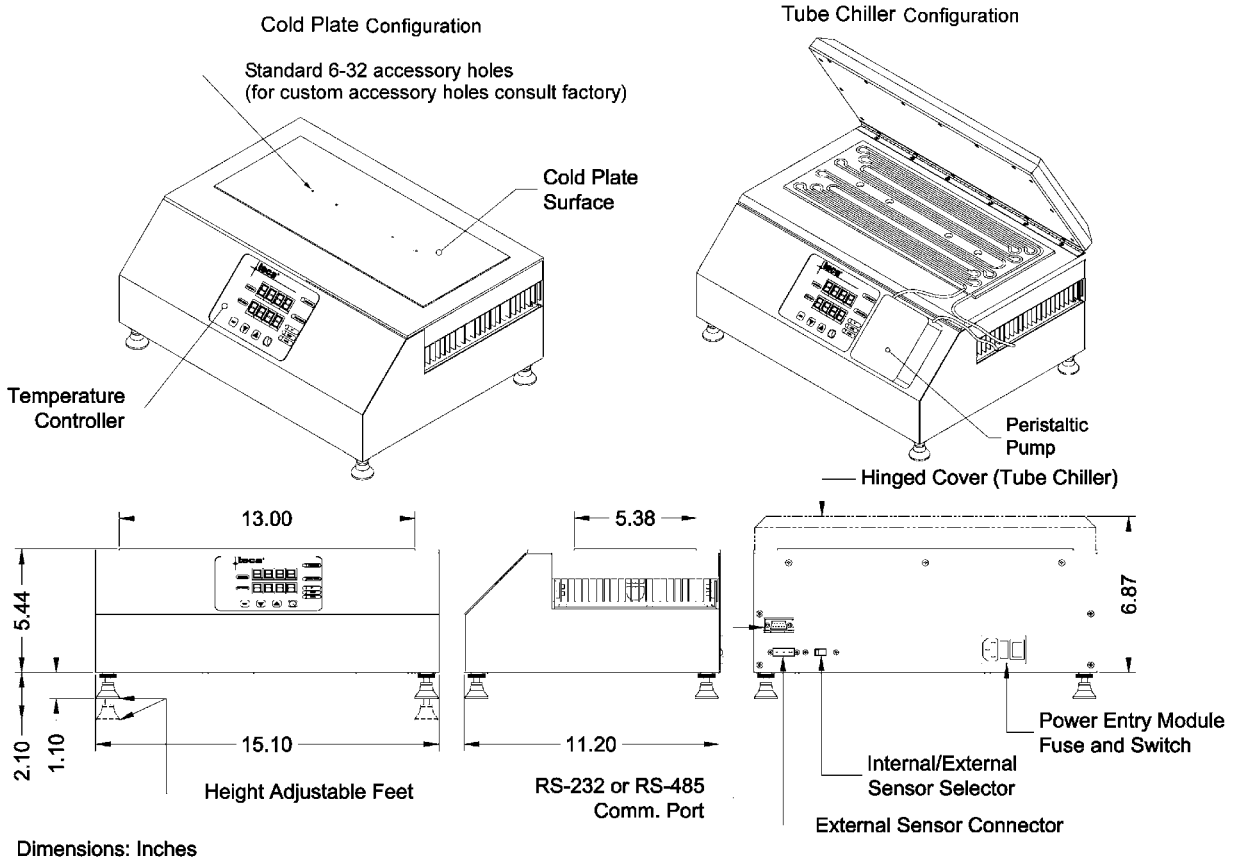


Equation of line: y=ΔT(°C) x=Capacity (Watts)		
Ambient Temp	**25°C**	**50°C**
Cold Plate	y=.184x-44.3	y=.184x-48.5



Ambient Air Path

DIMENSIONS



Dimensions: Inches

AHP-1200CP | Thermoelectric Cold Plate

Air Cooled
Flush Mount
Nema-12

FEATURES

- Direct contact cooling as much as 48 °C 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.

Shown above is the AHP-1200CPHC with integral TC-3300 temperature control.

SPECIFICATIONS

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

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

^TC-3300 Temperature controller is integral (built in).

AHP-1200CP

ENVIRONMENTS

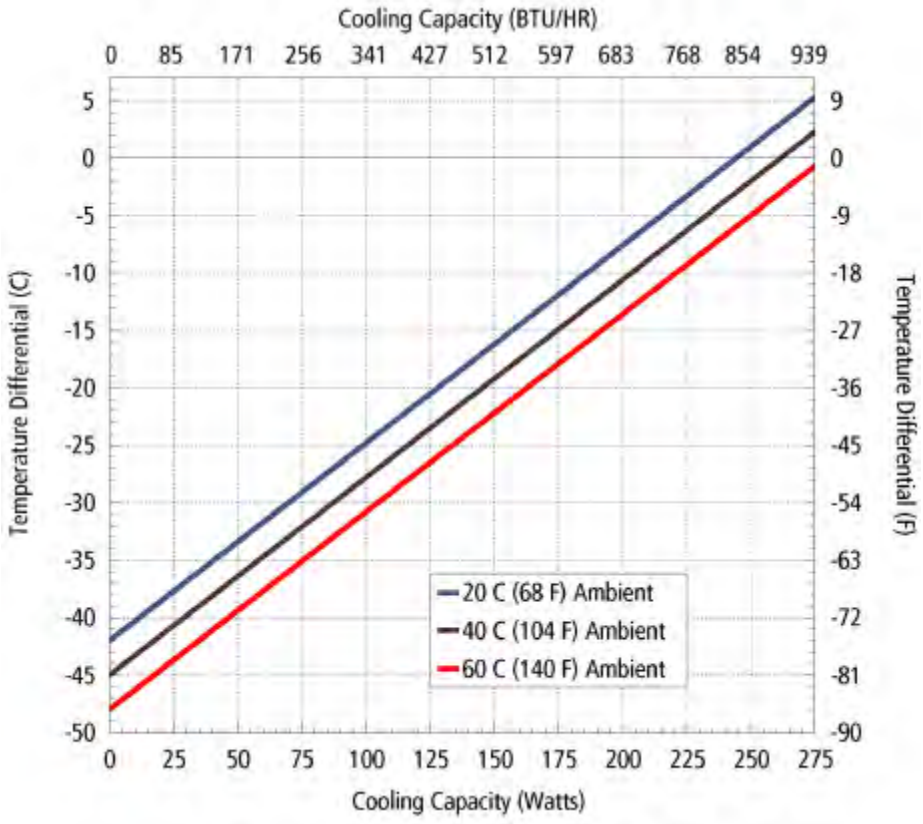
Bench top
Laboratory
Industrial

COOLING CAPACITY

260 Watts @ 0 °C ΔT

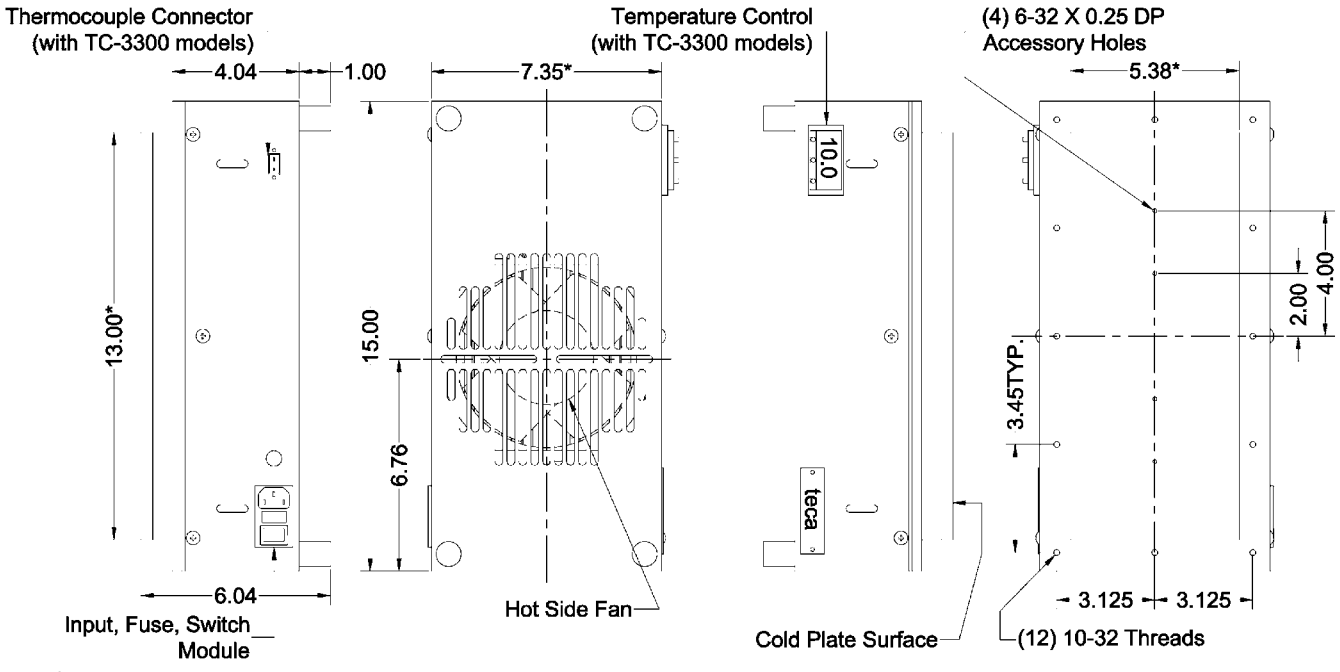
Model AHP-1200CP is TECA'S largest air cooled cold plate.

PERFORMANCE CURVE



Equation of line: y=ΔT(°C) x=Capacity (Watts)			
Ambient Temp	**20°C**	**40°C**	**60°C**
Cold Plate	y=.172x-44.0	y=.172x-45.0	y=.172x-48.0

DIMENSIONS



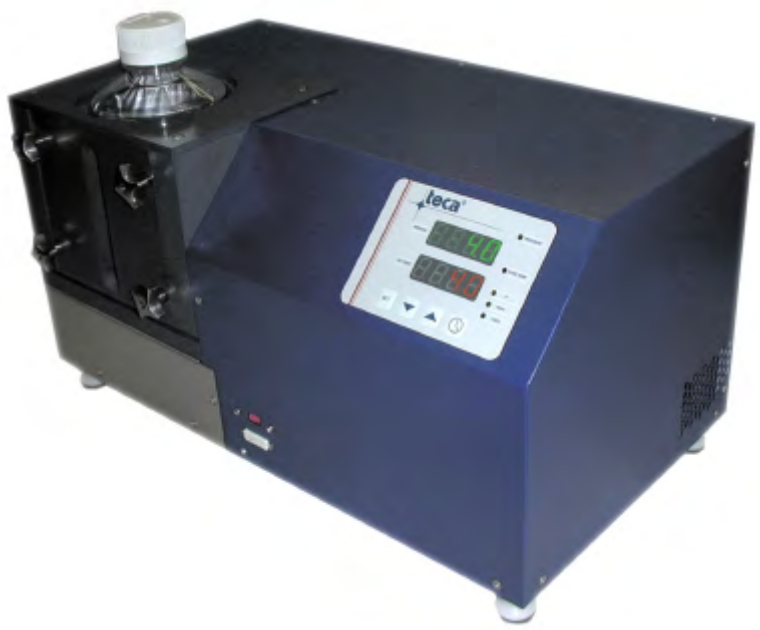
* Dimension does not include hardware, insulation.
Dimension: Inches

AHP-800MSP | Magnetic Stirring Plate

Air Cooled
Bench Top

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

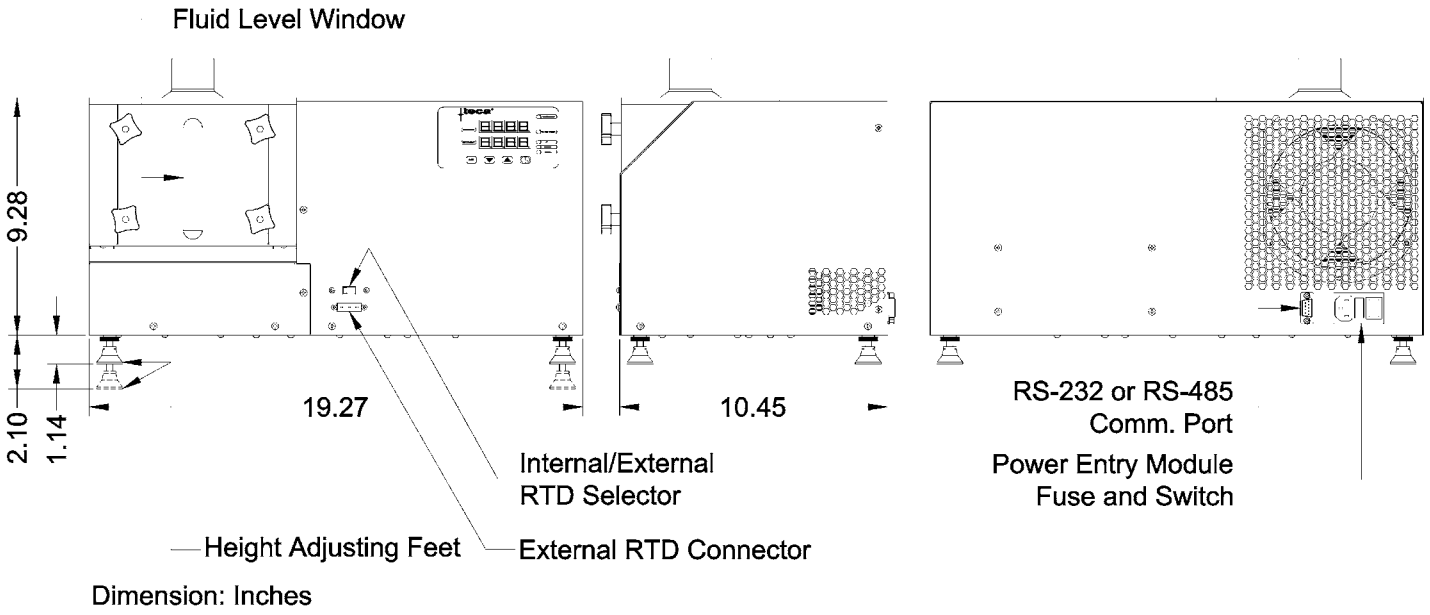
MODEL	PART NUMBER	NOTES	VOLTAGE VAC 50/60 HZ	CURRENT AMPS.	WEIGHT LBS. (KG) *	TEMP. CONTROL	OPERATING AMBIENT °C
AHP-800MSP	9-50EB-1-001	Heat/Cool	100-240	4.0	38 (17.3)	TC-4300	0-45

AHP-800MSP

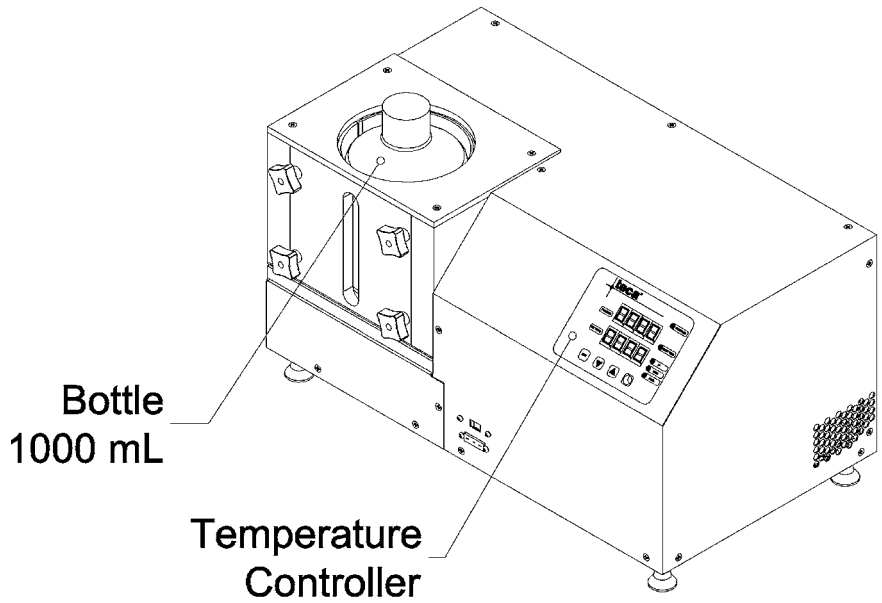
ENVIRONMENTS

Bench top
Laboratory
Industrial

DIMENSIONS



Dimension: Inches



AHP-301CPV | Thermoelectric Cold Plate

Air Cooled
Bench Top

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, fluorocarbons or filters
- Virtually maintenance-free operation
- Painted Enameled stainless steel exterior housing

CONTROL FEATURES

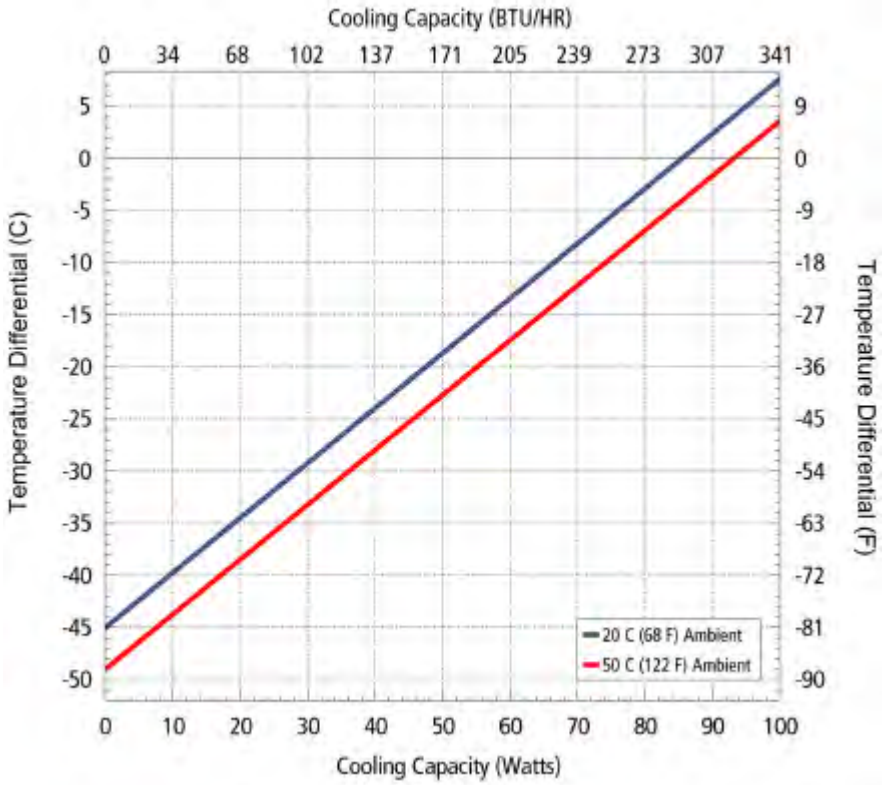
- Integral PID "tunable" temperature control
- One shot smart PID control tuning or Adaptive Smart Continuous Tuning
- Heating and Cooling
- Internal RTD sensor
- Remote Sensibility™ switchable exterior sensor
- Multi-segment ramp and soak programs
- RS-232 communications
- i-tools software for easy 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

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

AHP-301CPV

PERFORMANCE CURVE



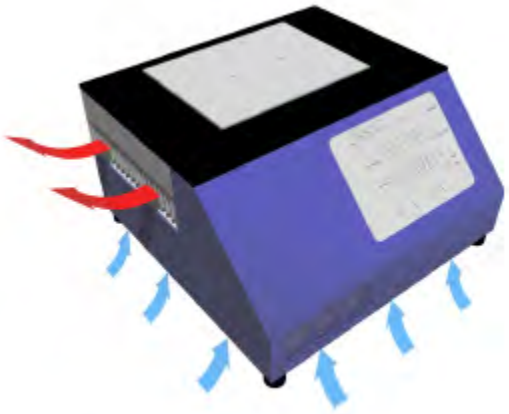
Equation of line: y=ΔT(°C) x=Capacity (Watts)		
Ambient Temp	**25°C**	**50°C**
Cold Plate	y=.526x-45.0	y=.526x-51.0

ENVIRONMENTS

Bench top
Laboratory
Industrial

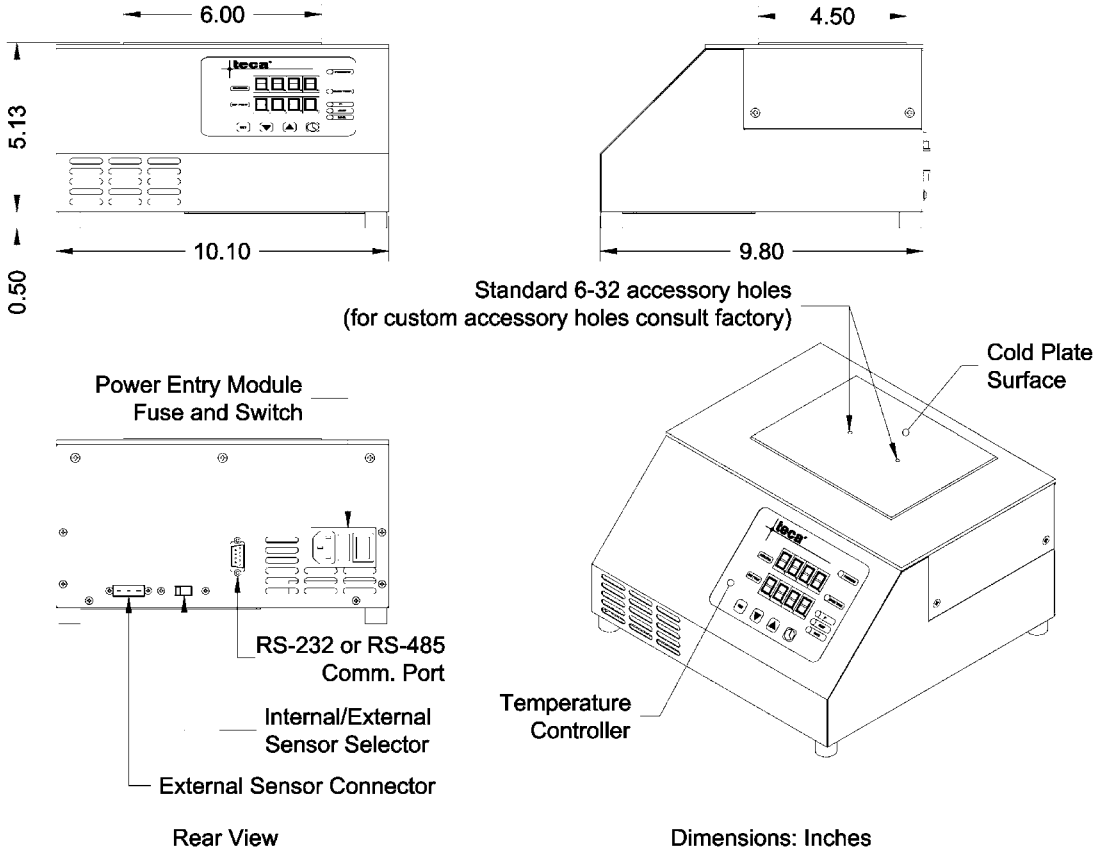
COOLING CAPACITY

85 Watts @ 0 °C ΔT



Ambient Air Path

DIMENSIONS



Rear View

Dimensions: Inches

AHP-301CP | Thermoelectric Cold Plate

Air Cooled

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.

Shown above is the AHP-301CPHC with integral TC-3300 temperature control.

SPECIFICATIONS

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

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

^ TC-3300 Temperature controllers are integral (built in).

AHP-301CP

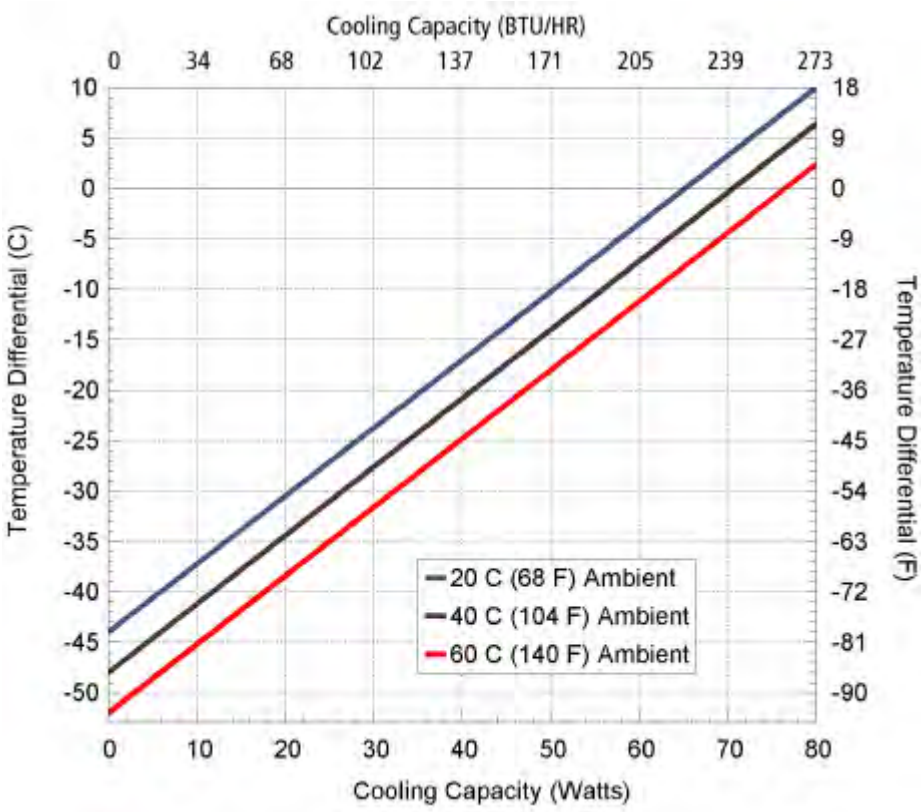
ENVIRONMENTS

Bench top
Laboratory
Industrial

COOLING CAPACITY

70 Watts @ 0 °C ΔT

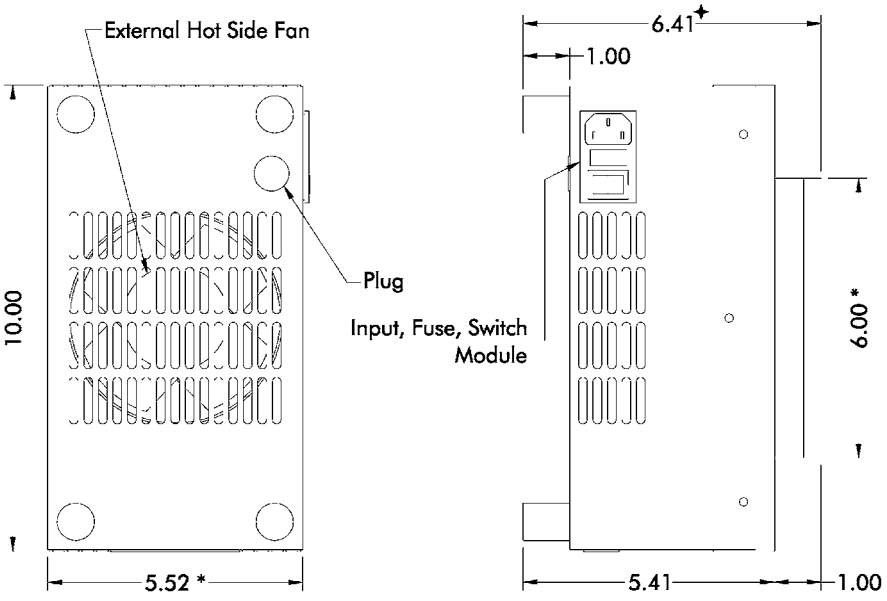
PERFORMANCE CURVE

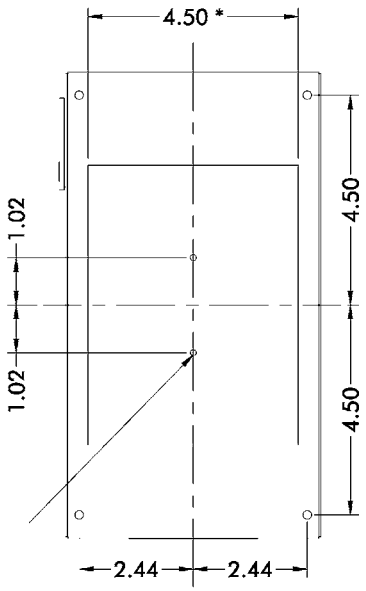


The **Model AHP-301CP** is the smallest cold plate offered with integral power supply and temperature controller.

Equation of line: y=ΔT(°C) x=Capacity (Watts)			
Ambient Temp	**20°C**	**40°C**	**60°C**
Cold Plate	y=.68x-44.0	y=.68x-48.0	y=.68x-52.0

DIMENSIONS





* Dimension does not include hardware, insulation. Dimensions: Inches.
✦Dimension is 7.20 with integral TC-3300 temperature control.

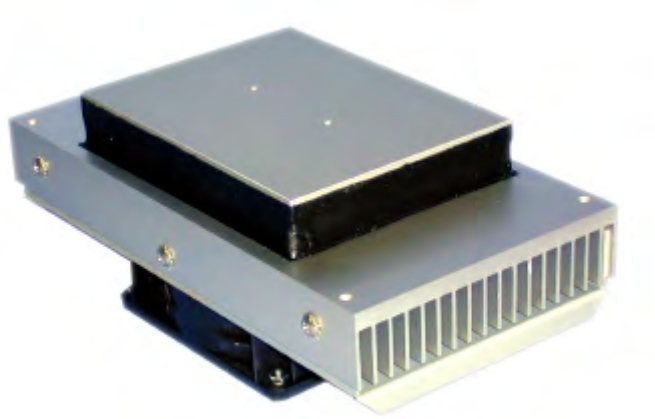
AHP-300CP
AHP-150CP

Thermoelectric Cold Plate

Air Cooled

FEATURES

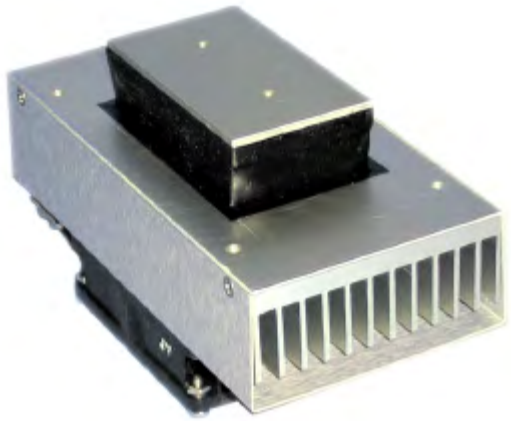
- Direct contact cooling as much as 56°C below room temperature
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Mounts in any orientation



AHP-300CP

INCLUDES

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



AHP-150CP

SPECIFICATIONS AHP-300CP

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

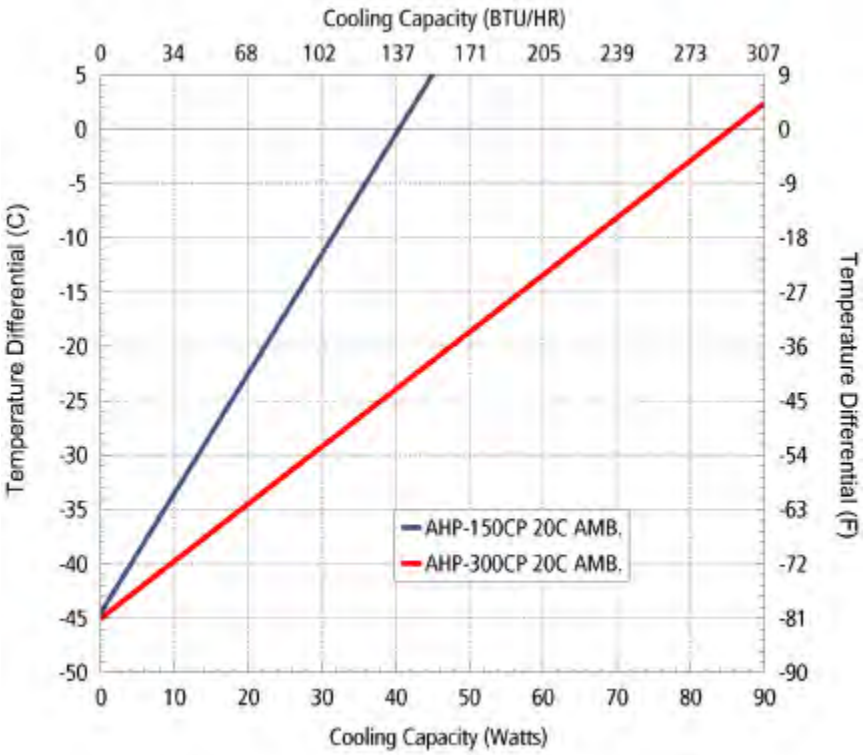
SPECIFICATIONS AHP-150CP

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

Note: Options for temperature control, consult factory.

See also , "Power Supplies" , P. 67

PERFORMANCE CURVE



AHP-300CP

ENVIRONMENTS

Bench Top, Laboratory, Industrial

COOLING CAPACITY

85 Watts @ 0 °C ΔT

AHP-150CP

ENVIRONMENTS

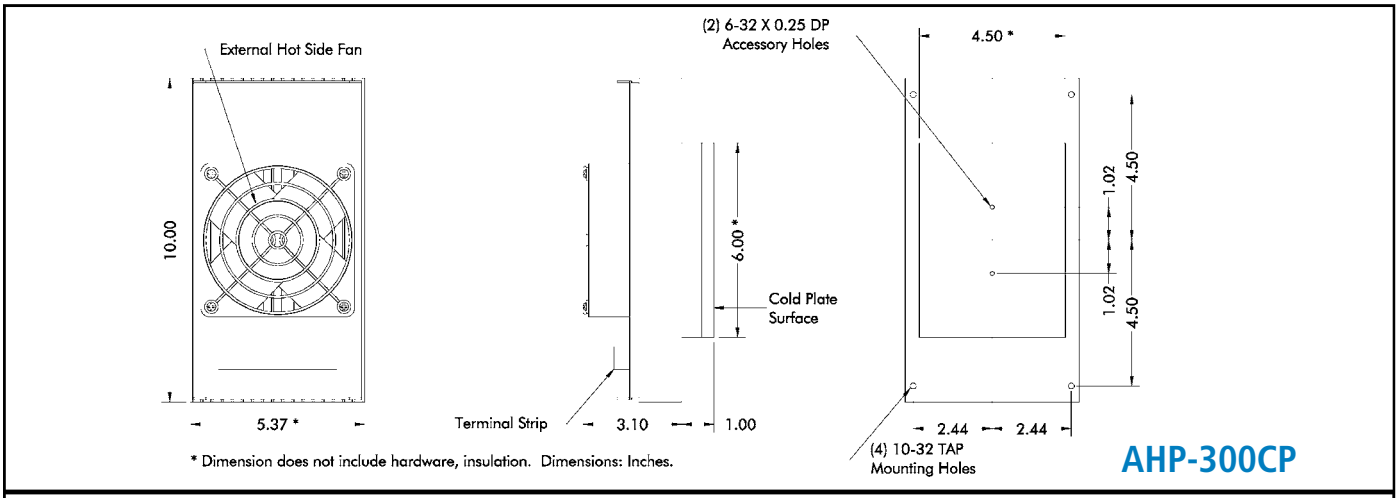
Bench Top, Laboratory, Industrial

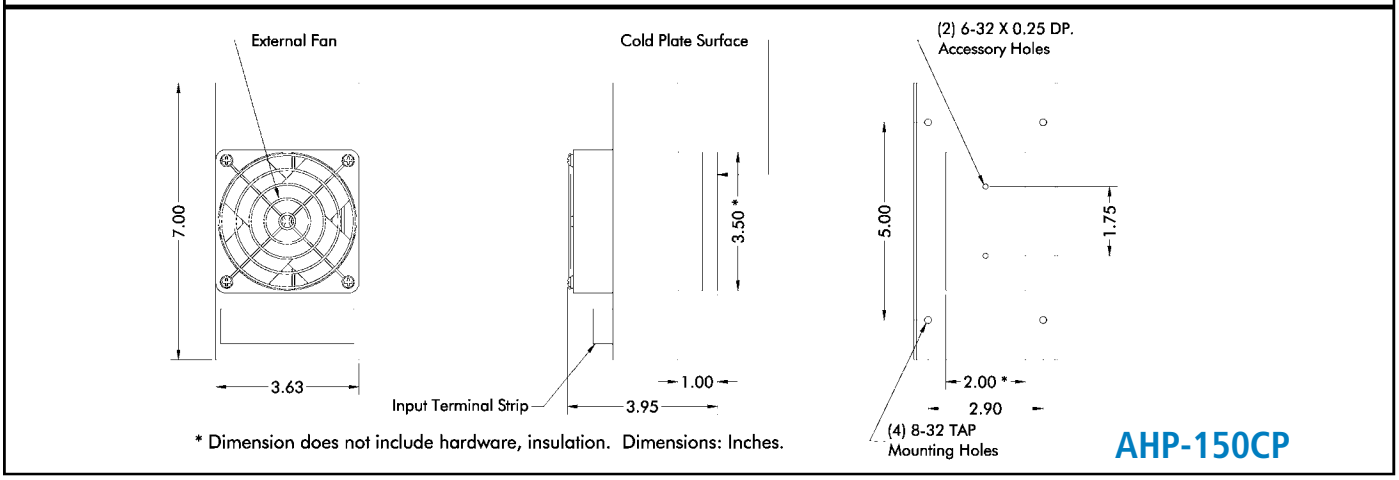
COOLING CAPACITY

40 Watts @ 0 °C ΔT

Equation of line: y=ΔT(°C) x=Capacity (Watts)			
Ambient Temp	**20°C**	**40°C**	**60°C**
300CP Cold Plate	y=.526x-45.0	y=.526x-48.0	y=.526x-51.0
150CP Cold Plate	y=1.1x-44.5	y=1.1x-48	y=1.1x-51.5

DIMENSIONS





LHP-1700CP | Thermoelectric Cold Plate

Liquid Cooled

FEATURES

- Standard 19" Rack mounting
- No moving parts
- Weighs only 20 lbs. (9.1kg)
- Direct contact cooling as much as 62 °C 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

MODEL	PART NUMBER	NOTES	PERFORMANCE RATING BTU/HR	VOLTAGE VAC 50/60 HZ	CURRENT AMPS.	WEIGHT LBS. (KG)	MIN FLOW GPM	TEMP. CONTROL *	OPERATING AMBIENT °C
LHP-1700CP	3-1090-0-000	Cool only	1360-1630	120	7.0	20(9.1)	0.3	none	0/+70
LHP-1700CP	3-1050-0-000	Cool only	1360-1630	120	7.0	20(9.1)	0.3	OPT*	0/+70
LHP-1702CP	3-1092-0-000	Cool only	1360-1630	240	5.0	20(9.1)	0.3	none	0/+70
LHP-1702CP	3-1052-0-000	Cool only	1360-1630	240	5.0	20(9.1)	0.3	OPT*	0/+70
LHP-1700CPHC	3-1050-1-000	Heat/Cool	1360-1630	120	7.0	20(9.1)	0.3	OPT*	0/+70
LHP-1702CPHC	3-1052-1-000	Heat/Cool	1360-1630	240	7.0	20(9.1)	0.3	OPT*	0/+70

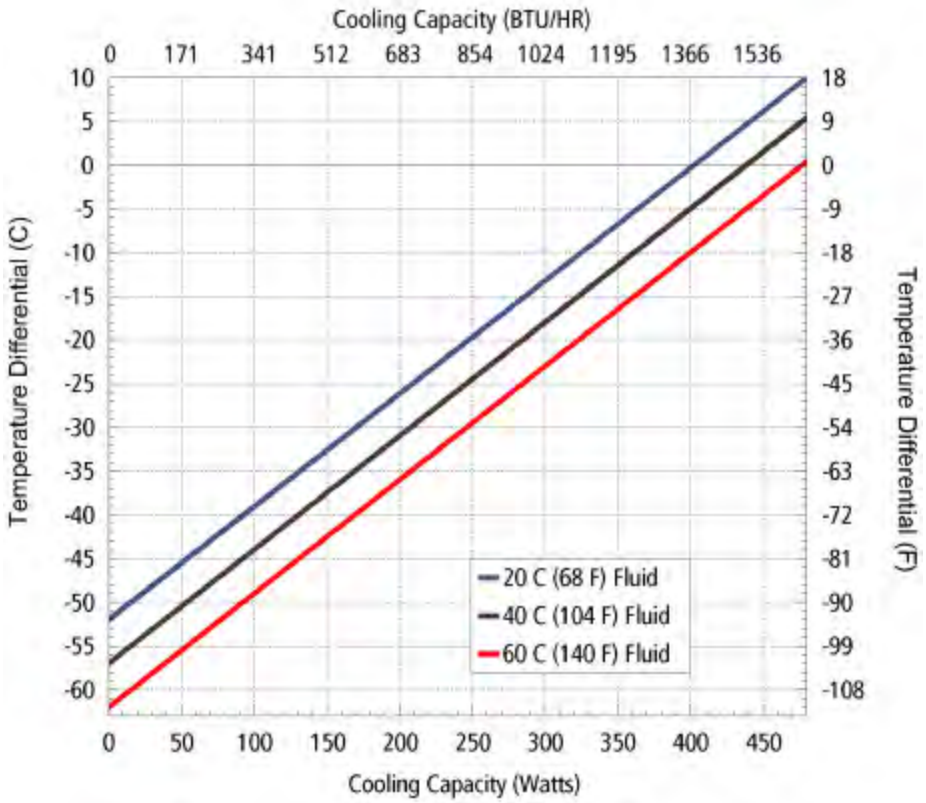
*OPT; Unit is set up for TC-3300 controller (or similar).
Controller not included.

LHP-1700CP

COOLING CAPACITY

440 Watts @ 0 °C ΔT

PERFORMANCE CURVE

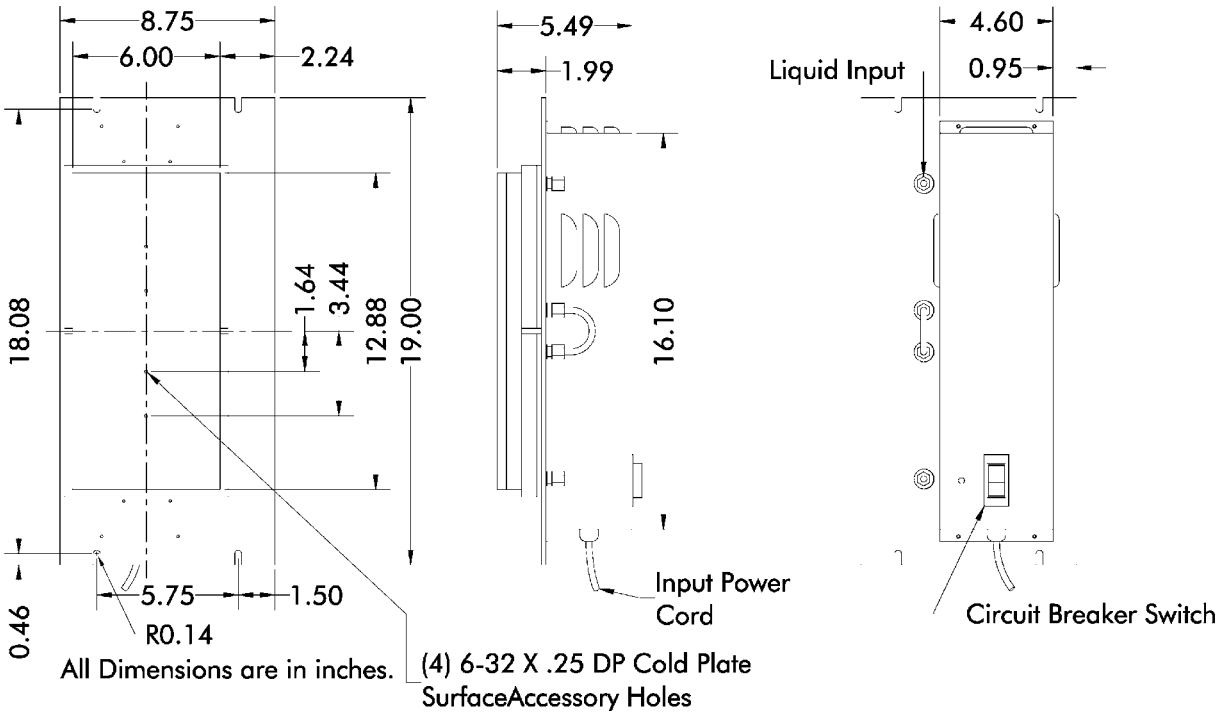


Equation of line: y=ΔT(°C) x=Capacity (Watts)			
Fluid Temp	**20°C**	**40°C**	**60°C**
Cold Plate Temp	y=.13x-52.0	y=.13x-57.0	y=.13x-62.0

ENVIRONMENTS

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

DIMENSIONS



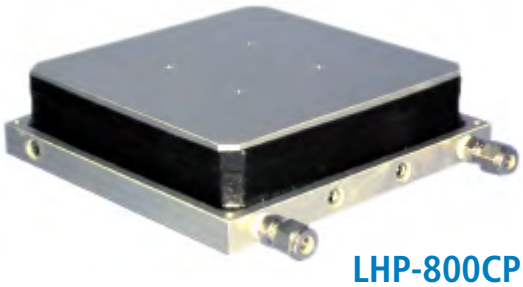
LHP-800CP
LHP-300CP
LHP-150CP

Thermoelectric Cold Plates

Liquid Cooled

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



LHP-800CP

LHP-300CP

INCLUDES

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

LHP-150CP

SPECIFICATIONS LHP-800CP

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

SPECIFICATIONS LHP-300CP

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

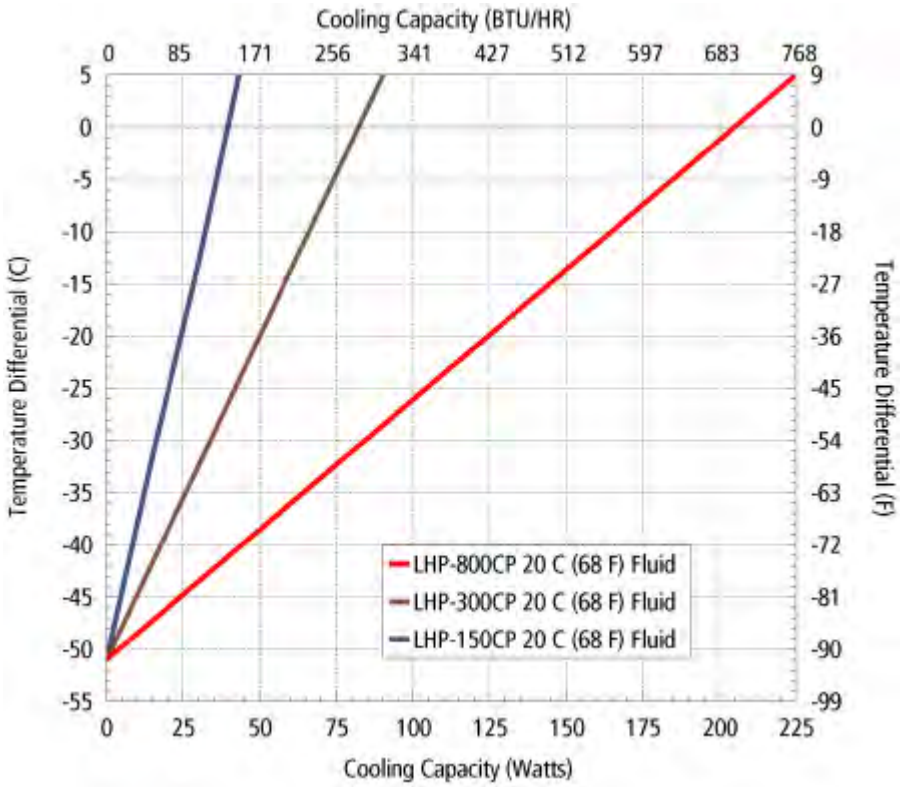
SPECIFICATIONS LHP-150CP

MODEL	PART NUMBER	NOTES	PERFORMANCE RATING BTU/HR	VOLTAGE VDC *	CURRENT AMPS.	WEIGHT LBS. (KG)	MIN FLOW GPM	OPERATING AMBIENT °C	HEAT VOLTAGE
LHP-150CP	3-8094-0-000	Cool only	130-160	12	4.5	.75(.34)	0.2	0/+70	N/A
LHP-150CPHC	3-8094-1-000	Heat/Cool	130-160	12	4.5	.75(.34)	0.2	0/+70	12 VDC
LHP-150CPHC	3-8099-1-000	Heat/Cool	130-160	12	4.5	.75(.34)	0.2	0/+70	120 VAC

Note: Option for temperature control, consult factory.

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

PERFORMANCE CURVE



LHP-800CP

USEFUL COOLING CAPACITY

205 Watts @ 0 °C ΔT

LHP-300CP

USEFUL COOLING CAPACITY

82 Watts @ 0 °C ΔT

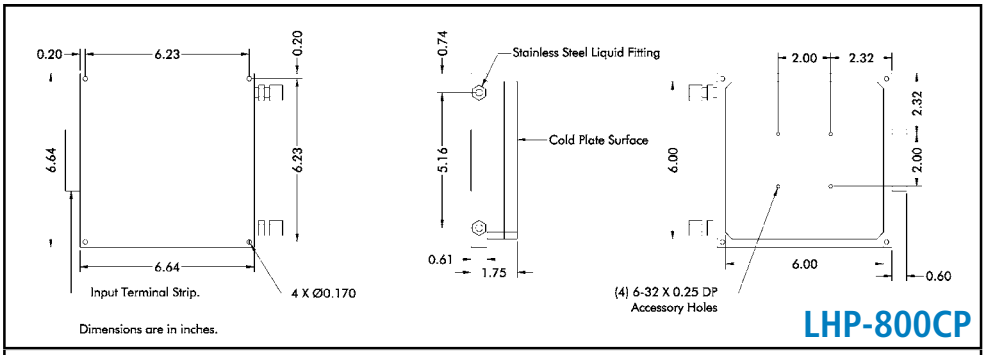
LHP-150CP

USEFUL COOLING CAPACITY

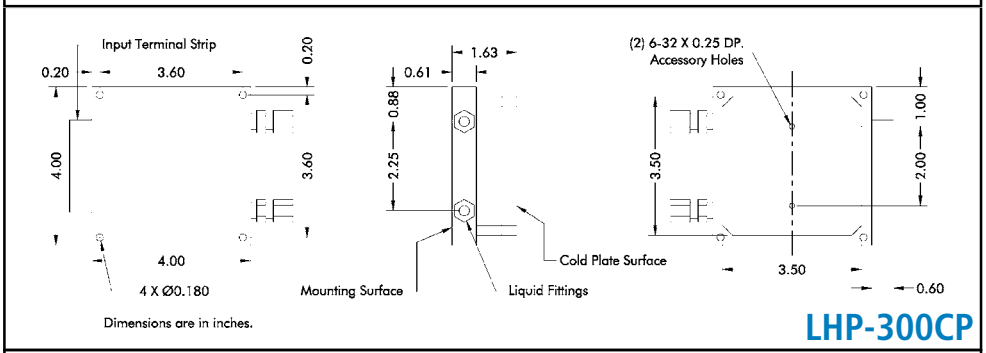
40 Watts @ 0 °C ΔT

Equation of line: y=ΔT(°C) x=Capacity (Watts)			
Fluid Temp	**20°**	**40°C**	**60°C**
LHP-800CP	y=.25x-51.0	y=.25x-56.0	y=.25-61.0
LHP-300CP	y=.62x-51.0	y=.62x-56.0	y=.62x-61.0
LHP-150CP	y=1.3x-51.0	y=1.3x-56.0	y=1.3x-61.0

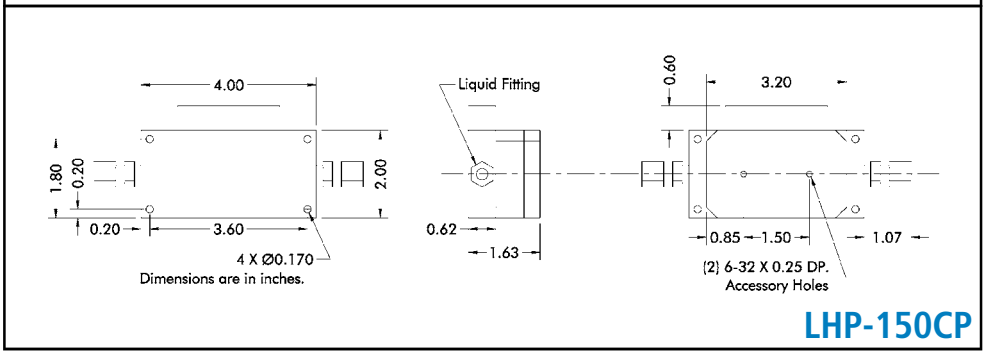
DIMENSIONS



LHP-800CP



LHP-300CP



LHP-150CP

Liquid Chillers

730-1450 BTU/hr

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 operatio

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

TLC-1400 with TC-4300

TC-3300 FEATURES

- Cool Only
- Heat/Cool (Optional)
- RS-232 communications (Optional)
- Communications Software

TLC-1400 with TC-3300

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

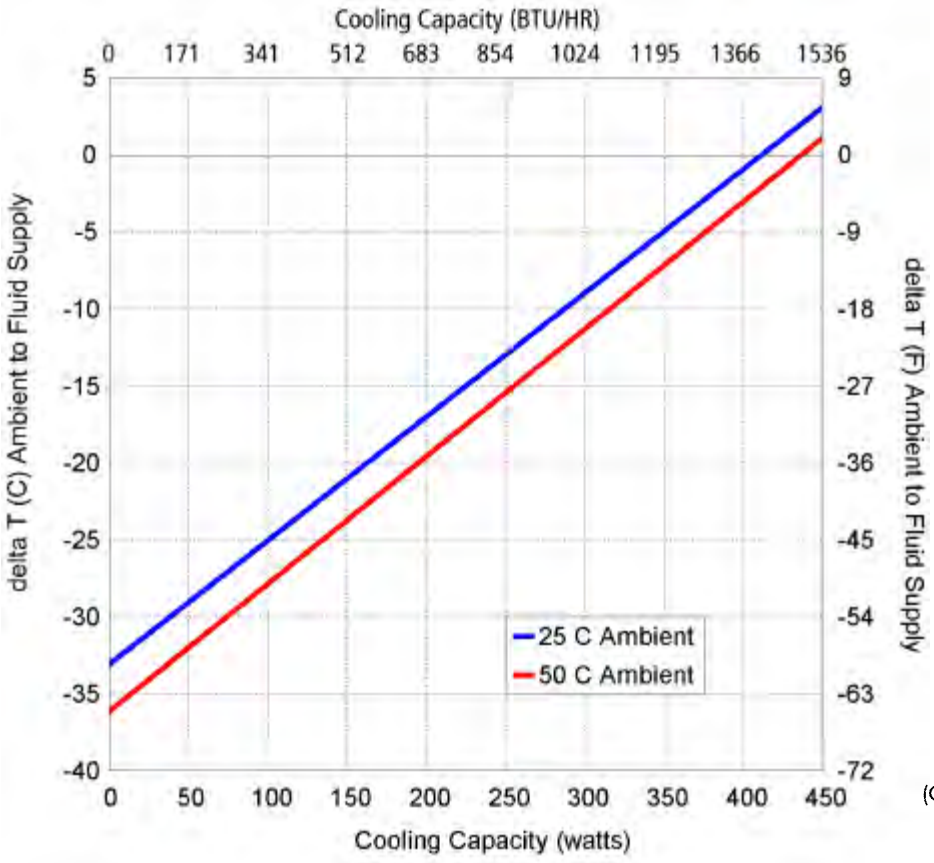
MODEL	PART NUMBER	PERFORMANCE RATING	VOLTAGE VAC BTU/HR	CURRENT AMPS. 50/60 HZ	WEIGHT LBS. (KG)	MAX OPERATING TEMP °C	TEMP. CONTROL	HEATING OPTION (HC SUFFIX) AMBIENT	FLUID TEMP RANGE °C
TLC-1400	6-B0D0-0-000	1400-1450	120 VAC	7.0	59(26.7)	50 °C(+122 F)	TC-3300		-5/65
TLC-1400HC	6-B0D0-1-000	1400-1450	120 VAC	7.0	59(26.7)	50 °C(+122 F)	TC-3300	400 Watt	-5/65
TLC-1402	6-B0D2-0-000	1400-1450	240 VAC	4.0	59(26.7)	50 °C(+122 F)	TC-3300		-5/65
TLC-1402HC	6-B0D2-1-000	1400-1450	240 VAC	4.0	59(26.7)	50 °C(+122 F)	TC-3300	400 Watt	-5/65
TLC-1400	6-B0E0-0-000	1400-1450	120 VAC	7.0	59(26.7)	50 °C(+122 F)	TC-4300		-5/65
TLC-1400HC	6-B0E0-1-000	1400-1450	120 VAC	7.0	59(26.7)	50 °C(+122 F)	TC-4300	400 Watt	-5/65
TLC-1402	6-B0E2-0-000	1400-1450	240 VAC	4.0	59(26.7)	50 °C(+122 F)	TC-4300		-5/65
TLC-1402HC	6-B0E2-1-000	1400-1450	240 VAC	4.0	59(26.7)	50 °C(+122 F)	TC-4300	400 Watt	-5/65

TLC-1400

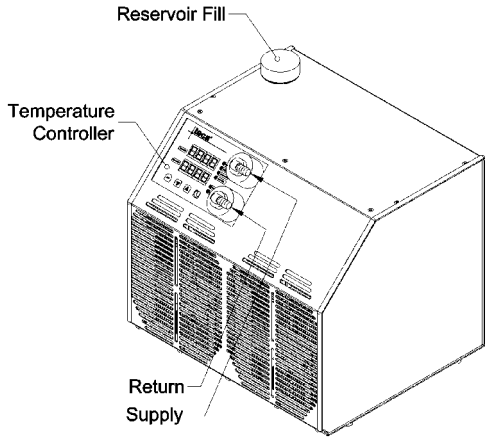
COOLING CAPACITY

410 Watts @ 0 °C ΔT

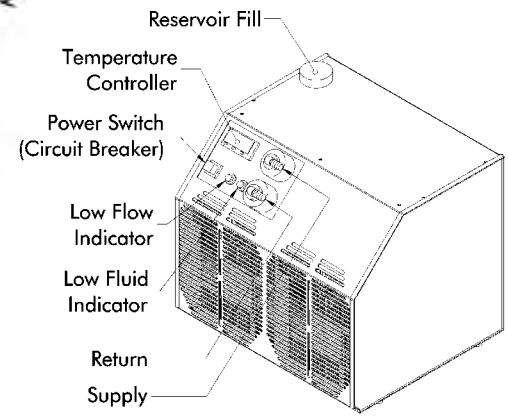
PERFORMANCE CURVE



Equation of line: y=ΔT(°C) x=Capacity (Watts)		
Ambient Temp	**25°C**	**50°C**
Fluid Supply	y=.08x-33.1	y=.08x-36.1

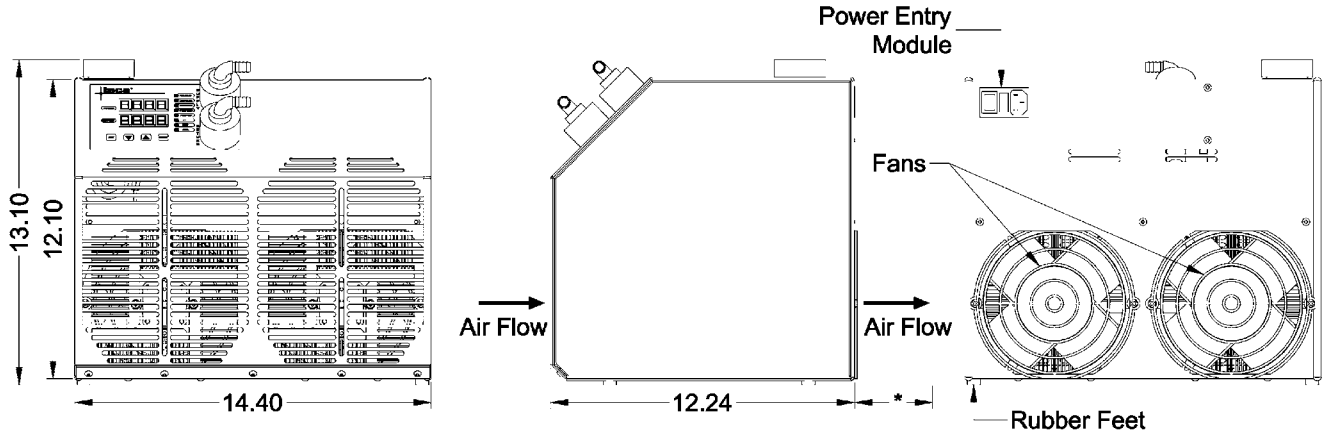


TLC-1400 with TC-4300



TLC-1400 with TC-3300

DIMENSIONS



Dimensions : Inches

* Minimum recommended clearance 3".

TLC-900 | Thermoelectric Liquid Chiller

Air Cooled
Bench Top

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

MODEL	PART NUMBER	PERFORMANCE RATING BTU/HR	VOLTAGE VAC 50/60 HZ	CURRENT AMPS.	WEIGHT LBS. (KG)	MAX OPERATING AMBIENT	FLUID TEMP. RANGE °C
TLC-900	6-E0EB-1-000	1050-1350	100-240	3.5	42 (19)	50 °C (+122 F)	0 - 50 -20 to 90 optional

TLC-900

ENVIRONMENTS

Bench top

Laboratory

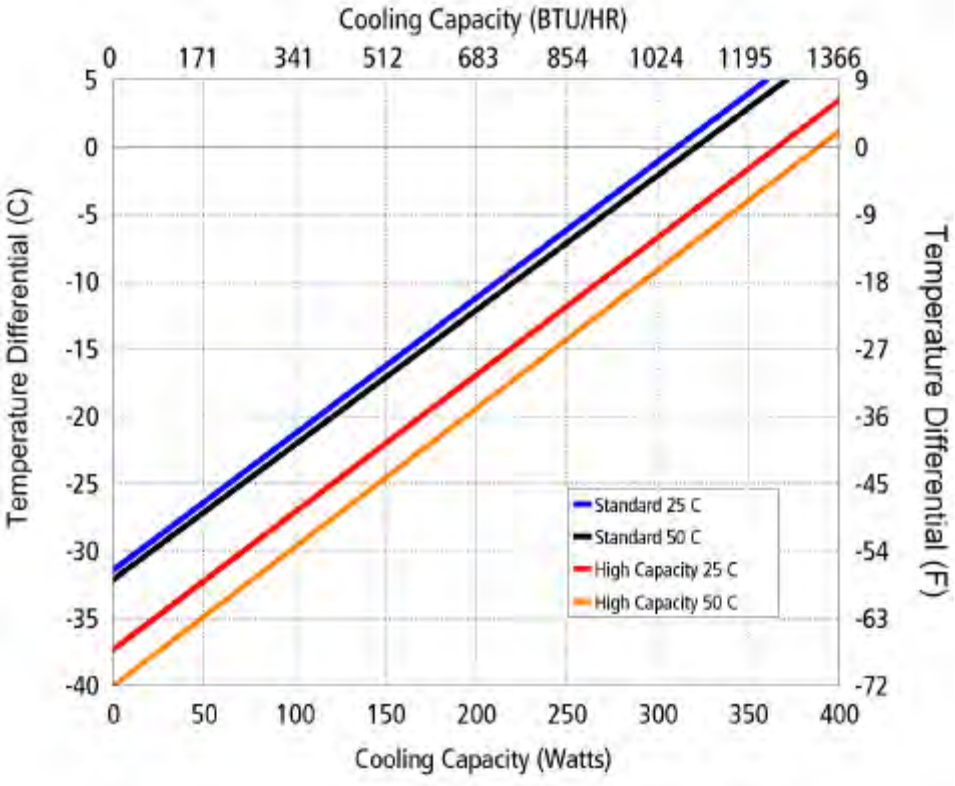
Industrial

COOLING CAPACITY

310 Watts @ 0 °C ΔT (standard)

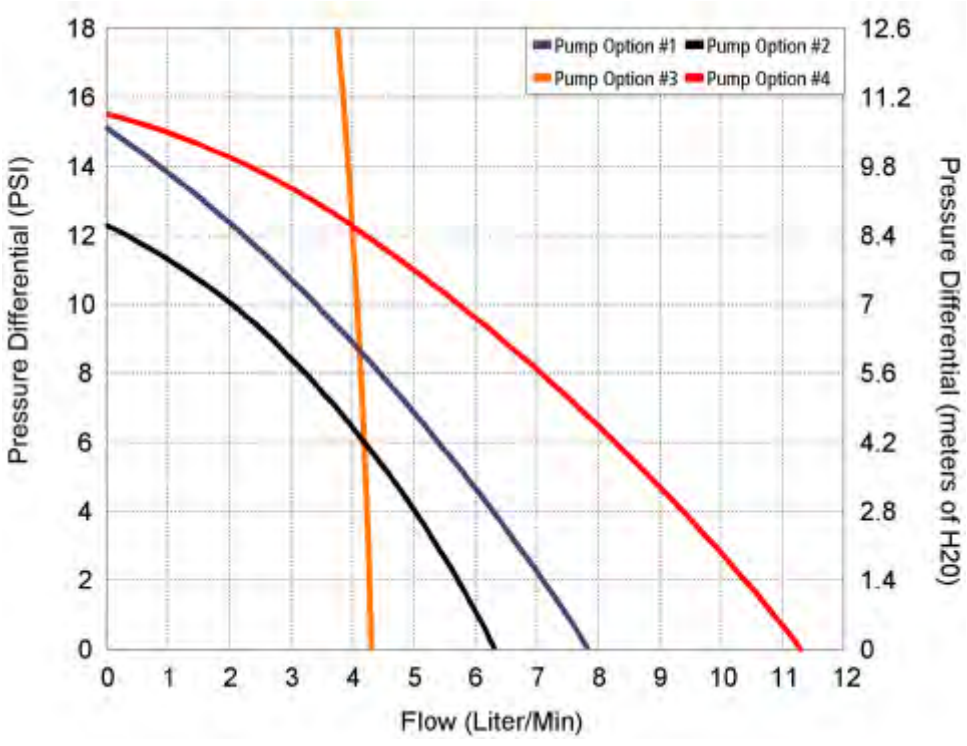
360 Watts @ 0 °C ΔT (high capacity)

PERFORMANCE CURVE

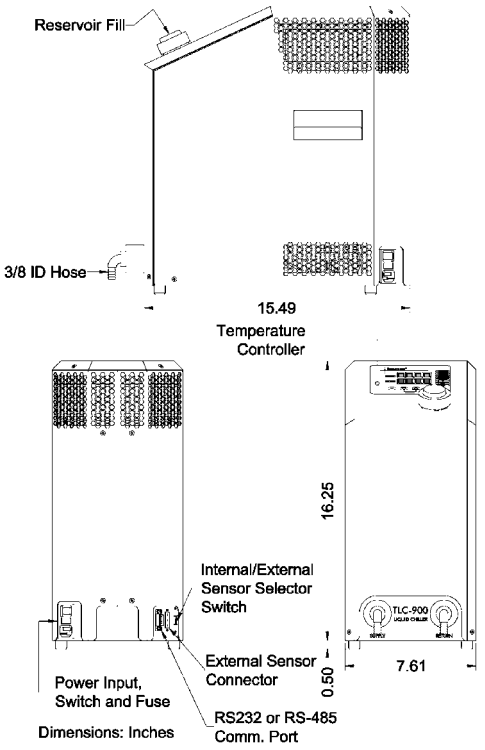


Equation of line: y=ΔT(°C) x=Capacity (Watts)		
Ambient Temp	**25°C**	**50°C**
Standard	y=.101x-31.4	y=.0100x-32.1
High Capacity	y=1.02x-37.3	y=.103x-40.0

PUMP CURVE



DIMENSIONS



Ambient Air Path

TLC-700 | Thermoelectric Liquid Chiller

Air Cooled

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

TLC-700 with TC-4300

TC-3300 FEATURES

- Cool Only
- Heat/Cool (Optional)
- RS-232 communications (Optional)
- Communications Software

TLC-700 with TC-3300

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

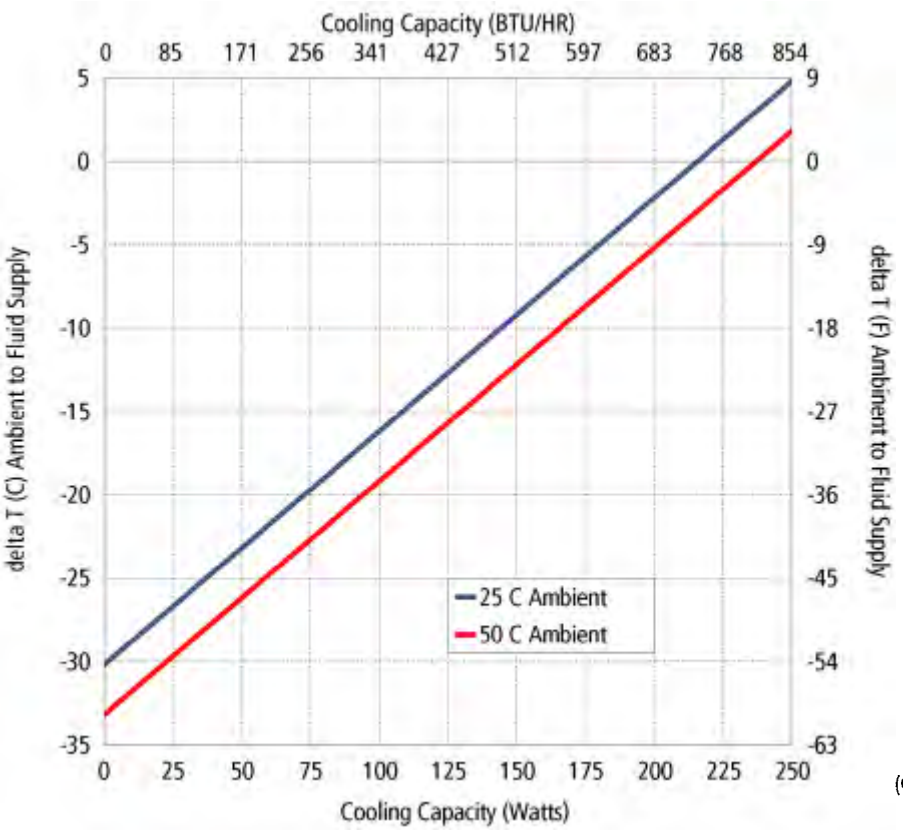
MODEL	PART NUMBER	PERFORMANCE RATING BTU/HR	VOLTAGE VAC 50/60 HZ	CURRENT AMPS.	WEIGHT LBS. (KG)	MAX OPERATING AMBIENT	HEATING OPTION (HC SUFFIX)	TEMP. CONTROL	FLUID TEMP RANGE °C	AGENCY APPROVALS (ETL)
TLC-700	6-A0D0-0-000	730-800	120 VAC	4.2	32(14.5)	50 °C(+122 F)		TC-3300	-5/65	UL3101-1/CSA22.2, CE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

TLC-700

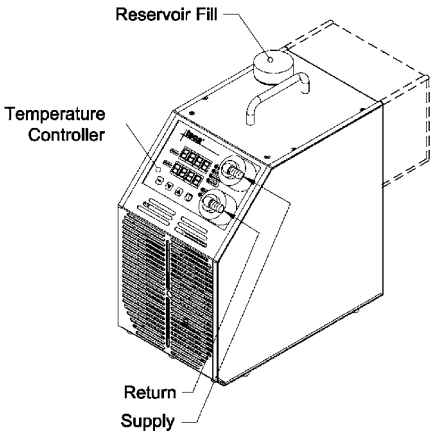
COOLING CAPACITY

215 Watts @ 0 °C ΔT

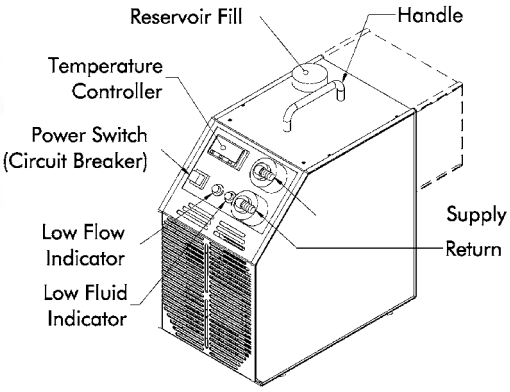
PERFORMANCE CURVE



Equation of line: y=ΔT(°C) x=Capacity (Watts)		
Ambient Temp	**25°C**	**50°C**
Fluid Supply	y=.14x-30.2	y=.14x-33.2

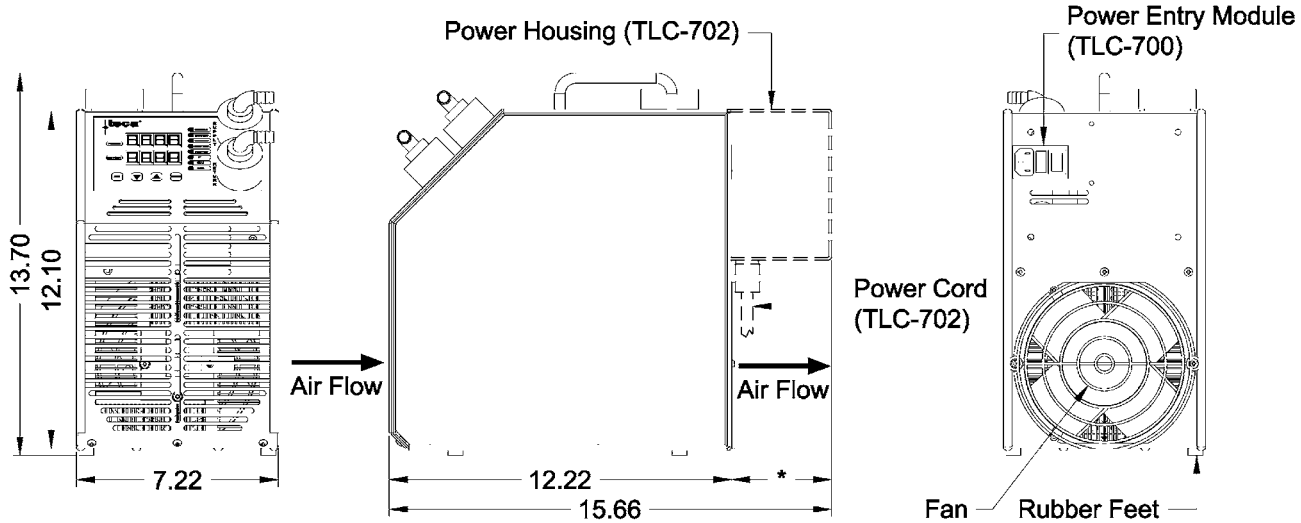


TLC-700 with TC-4300



TLC-700 with TC-3300

DIMENSIONS



Dimensions: Inches

* Minimum recommended clearance 3".

TLC³ Thermoelectric Cooling Cube

Air Cooled

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

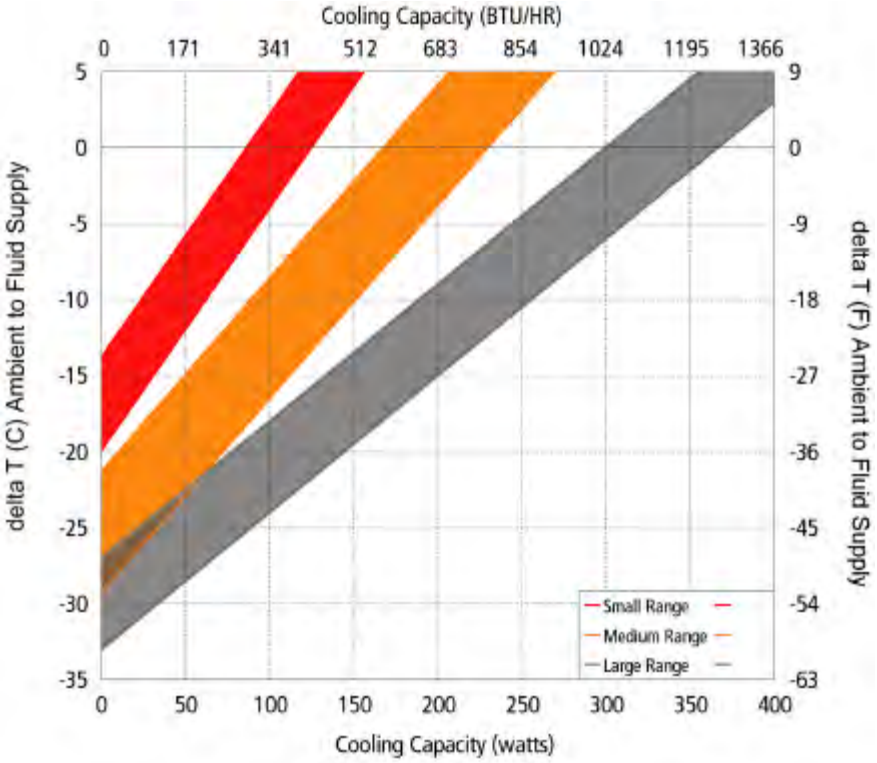
REQUIRED (NOT INCLUDED)

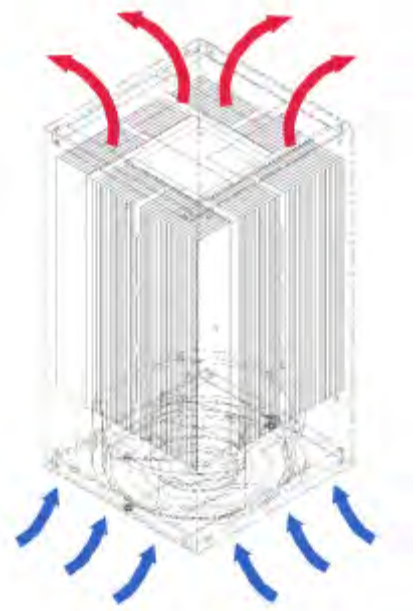
- Pump
- Power supply
- Tubing
- Fan
- Housing

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.

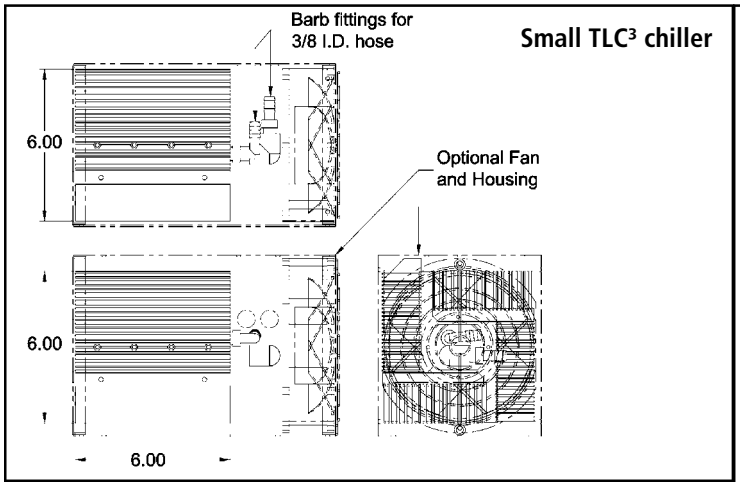
PERFORMANCE CURVE

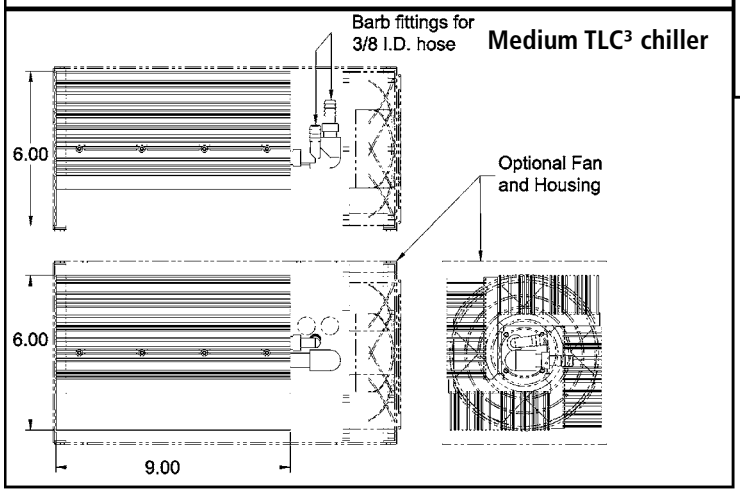


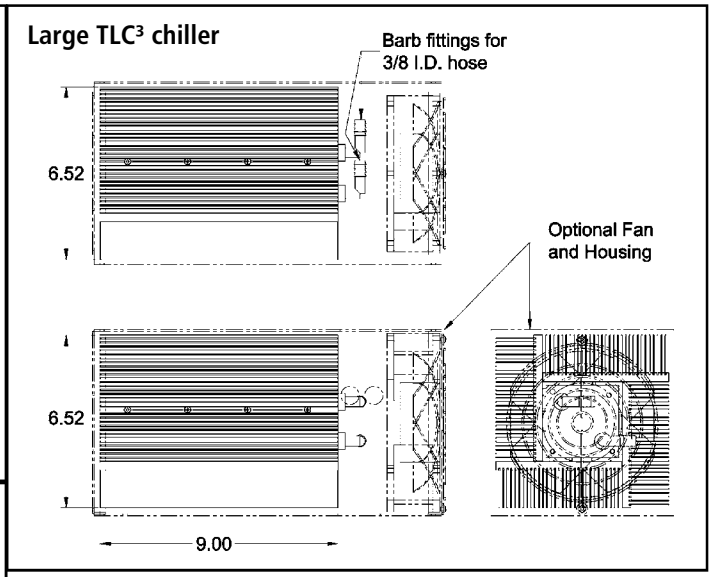


Ambient Air Path

DIMENSIONS







Dimensions: Inches
Housing and fan shown for reference

RLC-1400 | Rack Mount Liquid Chiller

Air Cooled
Rack Mount

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

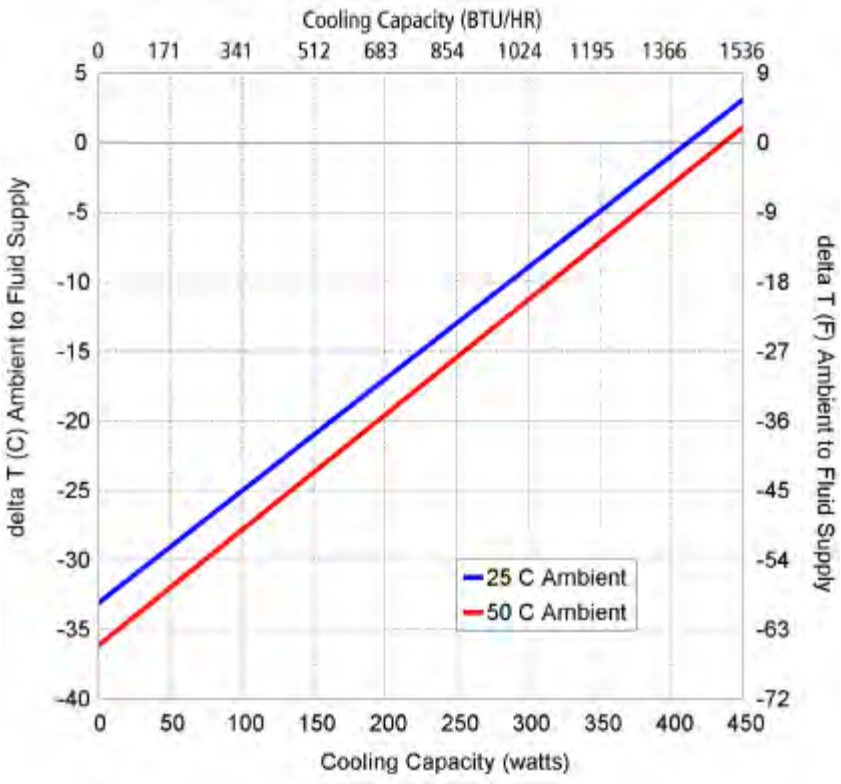
MODEL	PART NUMBER	PERFORMANCE RATING BTU/HR	VOLTAGE VAC 50/60 HZ	CURRENT AMPS.	WEIGHT LBS. (KG)	MAX OPERATING AMBIENT	HEATING OPTION (HC SUFFIX)	FLUID TEMP RANGE °C
RLC-1400	8-B0D0-0-000	1400-1450	120 VAC	7.0	59(26.7)	50 °C(+122 F)		-5/65
RLC-1400HC	8-B0D0-1-000	1400-1450	120 VAC	7.0	59(26.7)	50 °C(+122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

RLC-1400

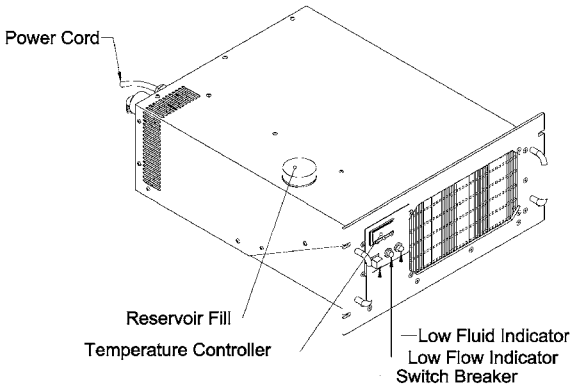
COOLING CAPACITY

410 Watts @ 0 °C ΔT

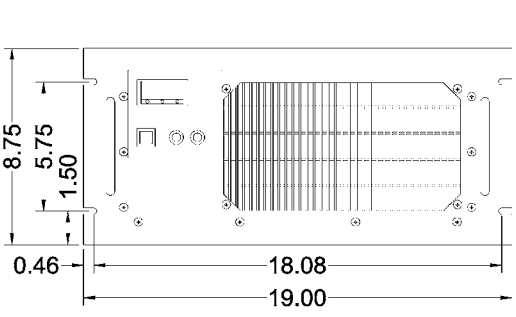
PERFORMANCE CURVE

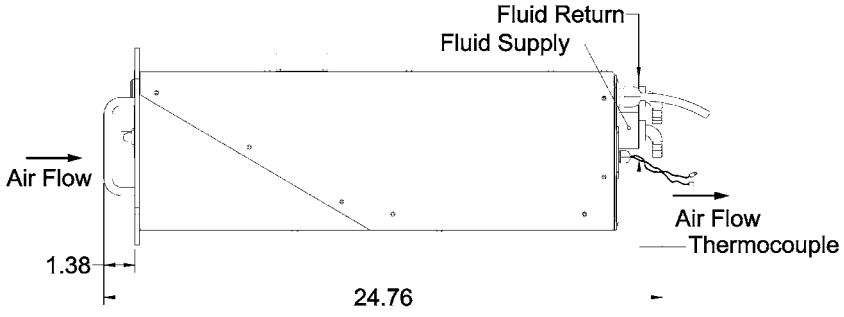


Equation of line: y=ΔT(°C) x=Capacity (Watts)		
Ambient Temp	**25°C**	**50°C**
Fluid Supply	y=.08x-33.1	y=.08x-36.1



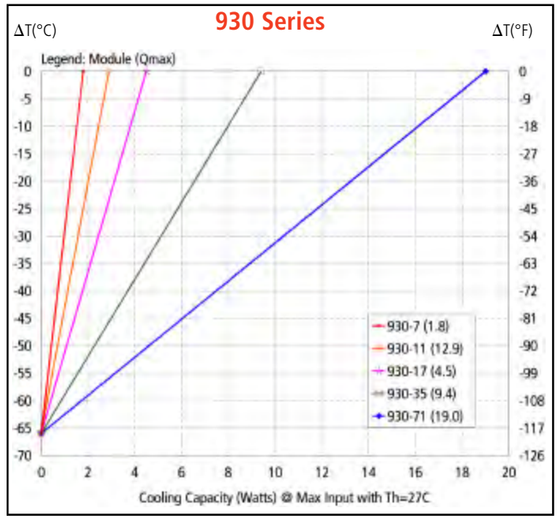
DIMENSIONS

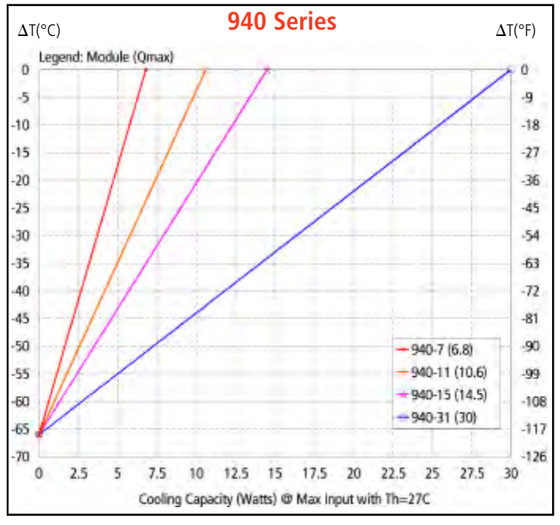


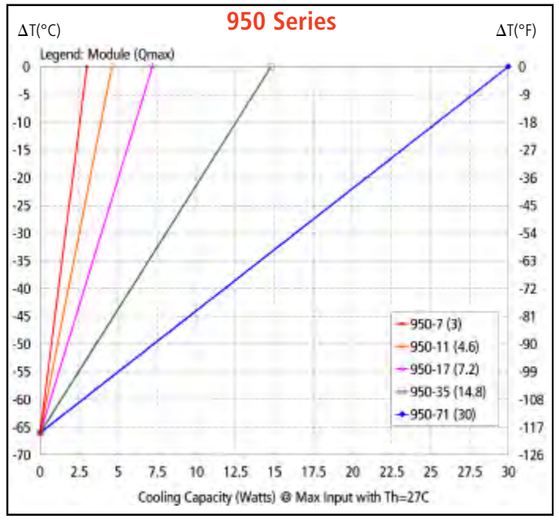


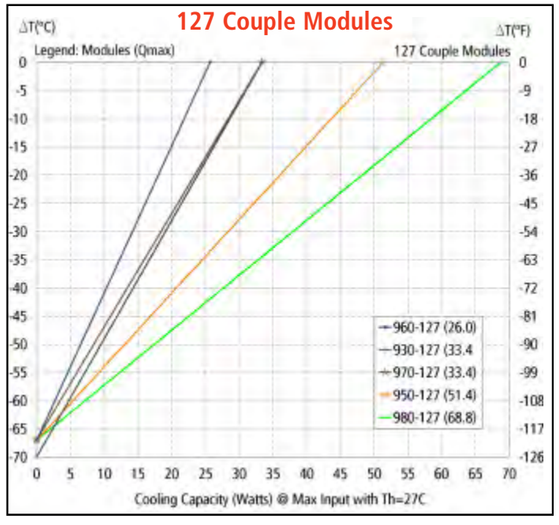
Dimensions are inches

PERFORMANCE CURVES





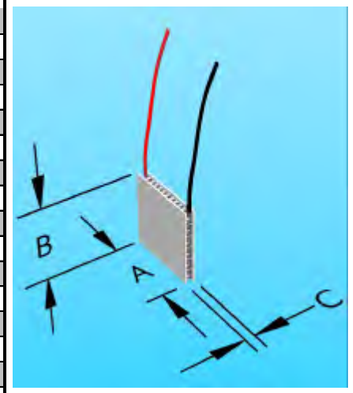




SPECIFICATIONS

Module Series / Couples	Performance								
		Th=27 °C			Th=35 °C			Th=50 °C	
	Max ΔT @Qc=0 (ΔT °C)	Max Qc @ΔT=0 (Qc watts)	Equation of Line	Max ΔT @Qc=0 (ΔT °C)	Max Qc @ΔT=0 (Qc watts)	Equation of Line	Max ΔT @Qc=0 (ΔT °C)	Max Qc @ΔT=0 (Qc watts)	Equation of Line
930-7	66	1.8	ΔT=36.7Qc-66	73.6	1.9	ΔT=38.7Qc-73.6	78.1	2.0	ΔT=39.1Qc-78.1
930-11	66	2.9	ΔT=22.76Qc-66	73.6	3.1	ΔT=23.7Qc-73.6	78.1	3.2	ΔT=24.4Qc-78.1
930-17	66	4.5	ΔT=14.67Qc-66	73.6	4.7	ΔT=15.7Qc-73.6	78.1	5.0	ΔT=15.6Qc-78.1
930-35	66	9.4	ΔT=7.02Qc-66	73.6	9.9	ΔT=7.43Qc-73.6	78.1	10.4	ΔT=7.51Qc-78.1
930-71	66	19.0	ΔT=3.7Qc-66	73.6	20.0	ΔT=3.65Qc-73.6	78.1	21.0	ΔT=3.68Qc-78.1
940-7	66	6.8	ΔT=9.7Qc-66	70.0	7.0	ΔT=10Qc-70	75.4	7.5	ΔT=10.1Qc-75.4
940-11	66	10.6	ΔT=6.23Qc-66	70.0	11.0	ΔT=6.4Qc-70	75.4	11.7	ΔT=6.4Qc-75.4
940-15	66	14.5	ΔT=4.55Qc-66	70.0	15.0	ΔT=4.67Qc-70	75.4	16.0	ΔT=4.71Qc-75.4
940-31	66	30.0	ΔT=2.23Qc-66	70.0	31.0	ΔT=2.25Qc-70	75.4	33.0	ΔT=2.27Qc-75.4
950-7	66	3.0	ΔT=22Qc-66	70.0	3.1	ΔT=2.2Qc-70	75.0	3.3	ΔT=22.7Qc-75
950-11	66	4.6	ΔT=14.35Qc-66	70.0	4.8	ΔT=14.6Qc-70	75.0	5.1	ΔT=14.7Qc-75
950-17	66	7.2	ΔT=9.17Qc-66	70.0	7.4	ΔT=9.46Qc-70	75.0	7.9	ΔT=9.5Qc-75
950-35	66	14.8	ΔT=4.46Qc-66	70.0	15.3	ΔT=4.58Qc-70	75.0	16.3	ΔT=4.6Qc-75
950-71	66	30.0	ΔT=2.3Qc-66	70.0	31.0	ΔT=2.26Qc-70	75.0	33.0	ΔT=2.23Qc-75
930-127	70	33.4	ΔT=2.1Qc-70	75.0	38.1	ΔT=1.97Qc-75	80.0	38.6	ΔT=2.07Qc-80
950-127	66	51.4	ΔT=1.28Qc-66	71.0	54.4	ΔT=1.30Qc-71	74.4	60.0	ΔT=1.24Qc-74.4
960-127	66	26.0	ΔT=2.54Qc-66	75.0	29.4	ΔT=2.55Qc-75	80.0	30.0	ΔT=2.67Qc-80
970-127	66	33.4	ΔT=1.98Qc-66	75.0	37.8	ΔT=1.98Qc-75	80.0	38.6	ΔT=2.07Qc-80
980-127	65	68.8	ΔT=0.94Qc-65	72.2	83.2	ΔT=0.87Qc-72.2	77.2	84.9	ΔT=0.91Qc-77.2

Module Series / Couples	Electrical			Dimensions				
	Max Current (amps)	Max DC Voltage (volts)	Nominal Resistance (Ω) @ 25 °C	Dimension A in (cm) ±0.42 (0.11)	Dimension B in (cm) ±0.42 (0.11)	Dimension C in (cm) ±0.008 (0.02)	Wire Gauge (AWG)	Wire Length (inches)
930-7	3.7	0.8	0.20 ± .02	0.38 (.965)	0.38 (.965)	0.185 (.47)	20	6.0
930-11	3.7	1.2	0.32 ± .05	0.38 (.965)	0.57 (1.46)	0.185 (.47)	20	6.0
930-17	3.7	1.9	0.49 ± .04	0.57 (1.46)	0.57 (1.46)	0.185 (.47)	20	6.0
930-35	3.7	3.9	1.00 ± .07	0.57 (1.46)	1.18 (3.00)	0.185 (.47)	20	6.0
930-71	3.7	8.0	2.03 ± .15	1.18 (3.00)	1.18 (3.00)	0.185 (.47)	18	4.5
940-7	14.0	0.8	0.07 ± .01	0.57 (1.46)	0.57 (1.46)	0.18 (.46)	18	6.0
940-11	14.0	1.2	0.08 ± .01	0.57 (1.46)	0.85 (2.16)	0.18 (.46)	18	6.0
940-15	14.0	1.7	0.12 ± .01	0.57 (1.46)	1.18 (3.00)	0.18 (.46)	18	6.0
940-31	14.0	3.5	0.24 ± .02	1.18 (3.00)	1.18 (3.00)	0.18 (.46)	18	4.5
950-7	6.0	0.8	0.13 ± .01	0.38 (.965)	0.38 (.965)	0.15 (.38)	20	6.0
950-11	6.0	1.2	0.18 ± .02	0.38 (.965)	0.57 (1.46)	0.15 (.38)	20	6.0
950-17	6.0	1.9	0.32 ± .03	0.57 (1.46)	0.57 (1.46)	0.15 (.38)	20	6.0
950-35	6.0	3.9	0.65 ± .05	0.55 (1.40)	1.18 (3.00)	0.15 (.38)	20	6.0
950-71	6.0	8.0	1.32 ± .10	1.18 (3.00)	1.18 (3.00)	0.15 (.38)	18	4.5
930-127	3.9	15.4	3.62 ± .26	1.57 (3.99)	1.57 (3.99)	0.185 (.47)	18	4.5
950-127	6.0	15.4	2.36 ± .17	1.57 (3.99)	1.57 (3.99)	0.15 (.38)	18	4.5
960-127	3.0	15.4	4.22 ± .30	1.18 (3.00)	1.18 (3.00)	0.142 (.36)	24	4.5
970-127	3.9	15.4	3.51 ± .25	1.18 (3.00)	1.18 (3.00)	0.126 (.32)	24	4.5
980-127	8.5	15.4	1.63 ± .12	1.57 (3.99)	1.57 (3.99)	0.13 (.33)	18	4.5

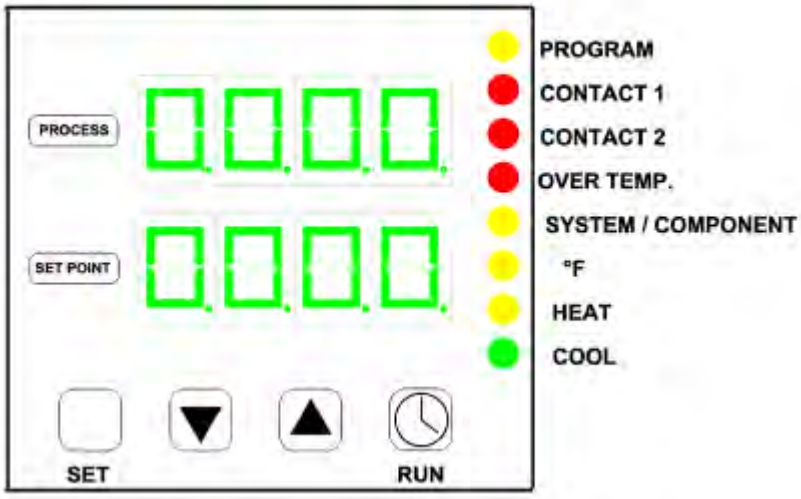


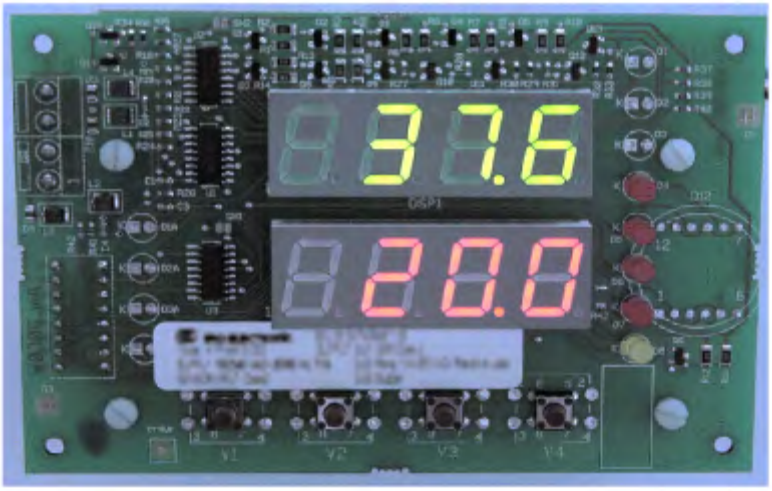
TC-4300 | Temperature Controller

PID Temperature Control

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 Sate 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
- Logic input to acquire an external contact for program hold/run
- 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

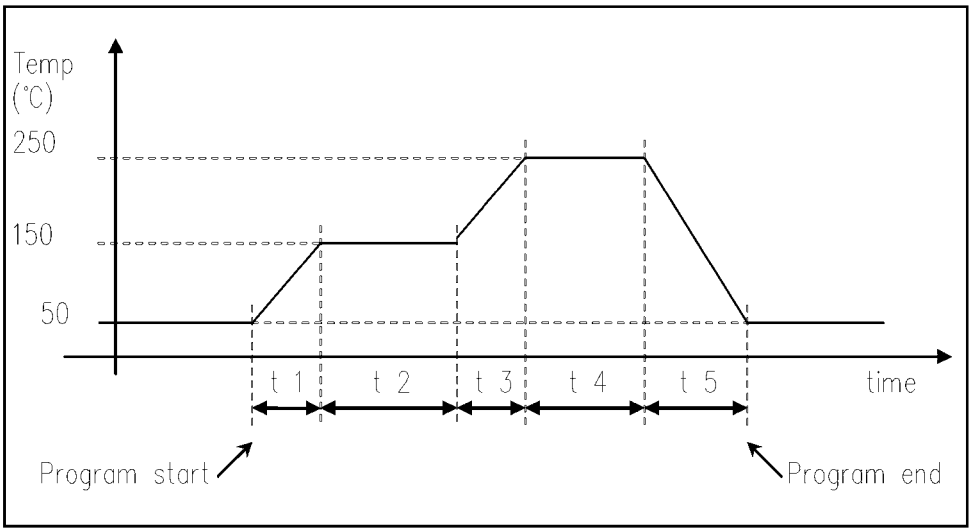
Ambient temperature: From 0 °C to 50 °C
Storage temperature: From -30 °C to 70 °C
Humidity: From 20% to 85% RH non condensing
Power supply: 4 W 7 VA maximum
Construction: Self-extinguishing dgree V0 rated PCB assembly according to UL-94
Installation: Behind panel mounted
Dimension: 120 X 80 X 52 mm depth
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 be not 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
The line must be not longer than 30 meters or leave the building
Out 2: Relay (form A) 10 A @ 250 Vac resistive load
System/Component shut down
Out 3: Logic output for SSR
Logic level 0: < 0.5 V dc
Logic level 1: 14 V dc +20% @ 20ma max
24 V dc +20% @ 1ma The line must be not 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

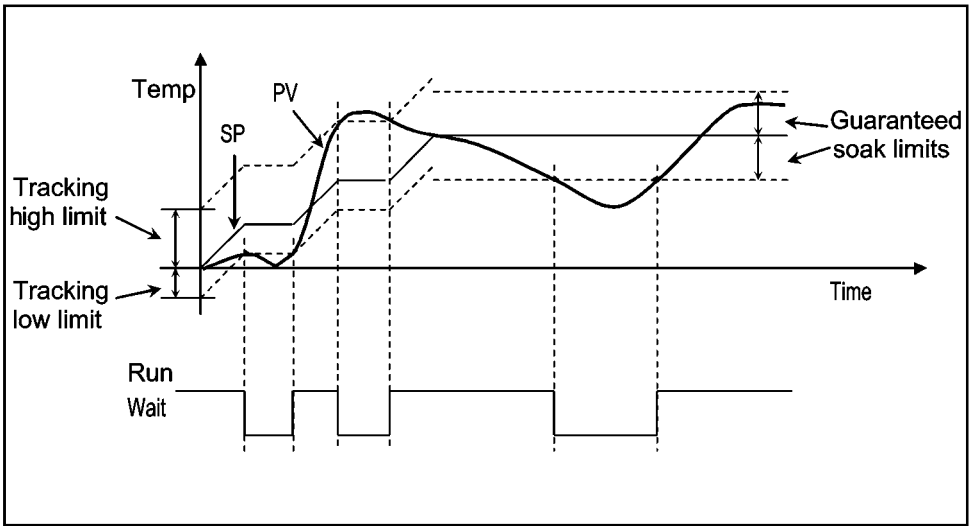
TYPICAL RAMP SOAK PROFILE



Example of programing setting

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

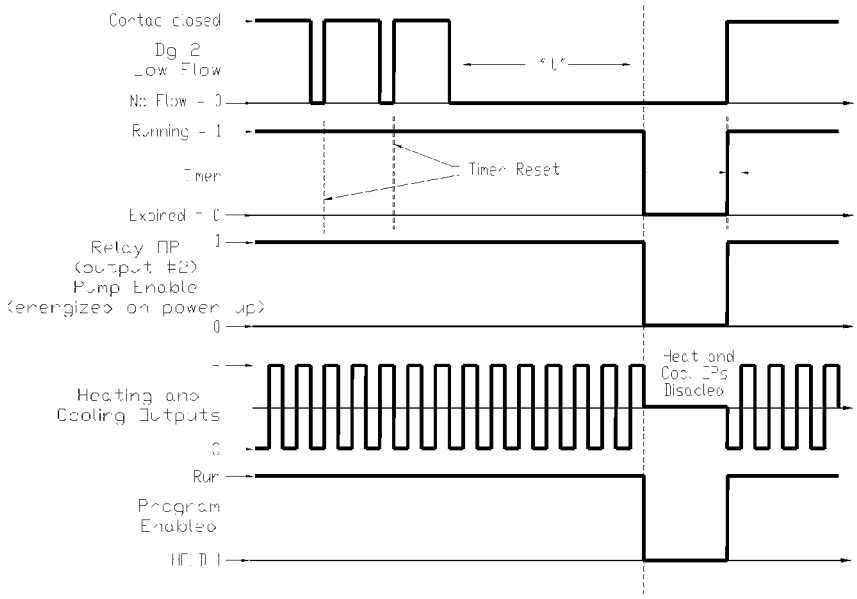
TRACKING AND SOAK LIMITS



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.
This function will disable the system or component if a dry contact is open and has 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 " " + " " pushbutton at the same time
(the program will revert in "RUN" mode)

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

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

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

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

MODEL NUMBER	PART NUMBER	NOTES	TEMP @ T1 °C	TEMP @ T2 °C	T1-T2 °C	RESET (MAX) °C	RESET (TYP) °C	OPERATING VOLTAGE	SWITCHING VOLTAGE	SWITCHING CURREN
TC-3F-AC	6-5232-000	VAC Version	35 +/- 5	15 +/- 5	20 +/- 3 C	6.5 C	3 C	85-250 VAC	24-280 VAC	10 RMS
TC-3F-DC	6-5242-000	12/24 VDC	35 +/- 5	15 +/- 5	20 +/- 3 C	6.5 C	3 C	3.5-32 VDC	0-100 VDC	.02-20 ADC

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

OUTPUT	0	Single Output (Cool Only)
	1	Dual Output (Heat/Cool)
INPUT	0	AC Input (100-240 VAC)
	1	DC Input (12-24 VDC)
Relay Style	0	Internal Relay(s) See "*OPT" on standard products
	1	External Relay(s) AC load switching, 10 amps
	2	External Relay(s) DC load switching, 20 amps
Communication	0	No Communications
	1	RS-232
	2	RS-485

Software (order separately) Windows Based, Part # 100-1GB-300

POWER SUPPLIES

Switching Power Supplies

100, 150, 300 WATTS

FEATURES

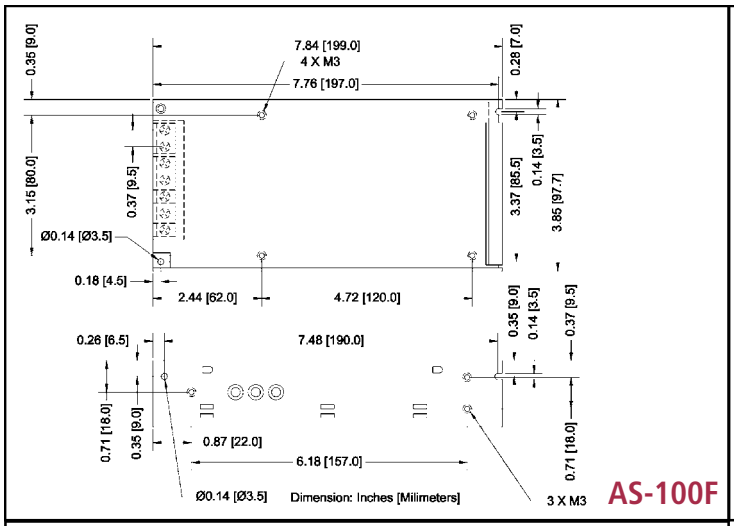
- Universal 88-264 VAC input (SP-300)
- 115/230 VAC switch selectable input (AS-100F, AS-150)
- Regulated outputs
- 3000 V (SP-300, AS-150); 1500 V (AS-100F) Isolation
- Built in PFC circuit 0.99 (SP-300)
- Built in EMI filter (AS-150, AS-100F)

SPECIFICATIONS

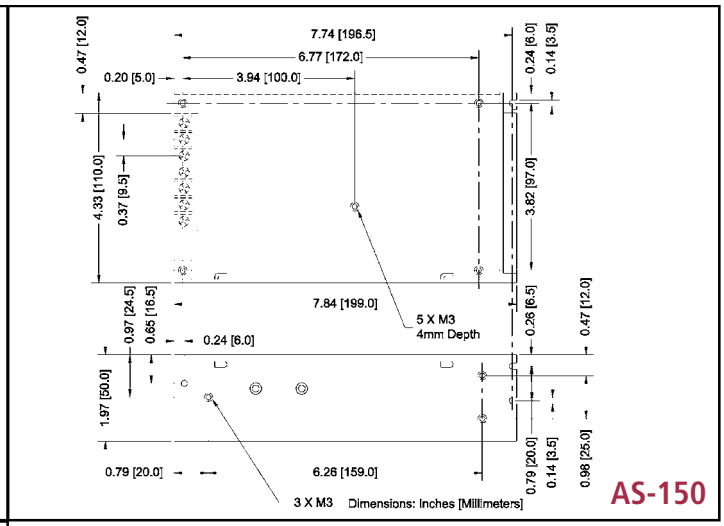
MODEL	INPUT VOLTAGE VAC 47-440 HZ	OUTPUT VOLTAGE VDC	DC OUTPUT POWER WATTS	OUTPUT CURRENT AMPS.	WEIGHT LBS.	WORKING TEMPERATURE °C 20-90%RH	DIMENSIONS L X W X H INCHES
SP300-12	88-264	12	300	24	2.6	-10 - 50	8.6X4.6X2
SP300-24	88-264	24	300	12.5	2.6	-10 - 50	8.6X4.6X2
SP300-48	88-264	48	300	6.25	2.6	-10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

* Input voltage range is switch selectable.

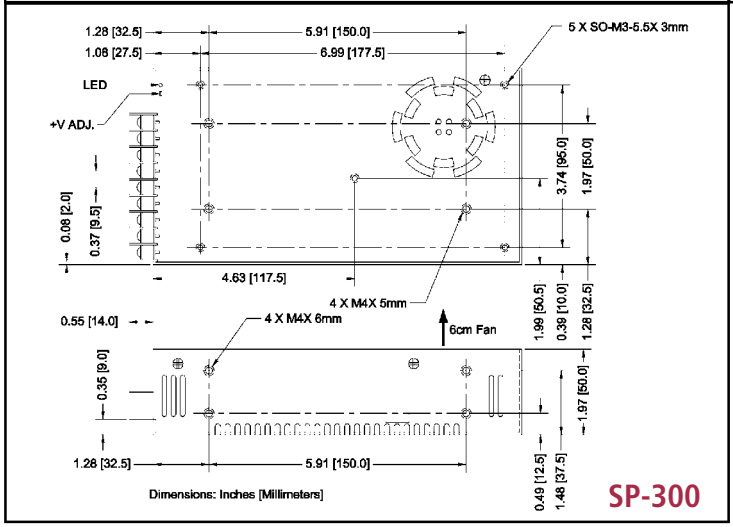
DIMENSIONS



AS-100F



AS-150



SP-300

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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!

- Drawings and 3D solid model of most products.
- 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.

The **TECA** website as a companion to this catalog is intended to help us help you anytime you are considering solid state cooling. Give us a click at www.teca-usa.com; or call (888) teca-usa.

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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:

- Prices are quoted F.O.B. Chicago and do not include sales or other taxes. Applicable taxes will be shown as a separate item on the invoice, as will charges for freight.
- Prices are in US Dollars and are subject to change without notice.

Terms:

- Terms of payment are 30 days after shipment, subject to approved credit. New accounts must furnish necessary credit references. Until credit has been established, payment in full with order or C.O.D. may be requested. American Express, Visa and Mastercard are accepted.

Cancellation, Schedule Changes:

- A charge of 15% of net price will be assessed for cancellation of formally accepted orders. Special part numbers containing a (CD or P) prefix are non-cancelable, non-returnable (NCNR). A 100% cancellation charge applies.
- Requests for schedule changes which defer delivery may be subject to price adjustments or other charges.

Returned Goods, Restocking Charges:

- In order to return merchandise for any reason (repair, replacement or credit), a return authorization number must be issued by TECA.
- New merchandise may not be returned for credit beyond 60 days from shipment. Charges for incidental or other damages may also be made.
- All returned goods must be sent freight prepaid. A restocking charge of 15% will apply.

Limited Warranty

In the event a claimed defect in material or workmanship is discovered in any of TECA's products within one year after the date they are delivered to Buyer, and if TECA is notified of the defect in writing by certified mail within 14 days of the date of discovery, then TECA may either, at its sole discretion; a) inspect the product at the Buyer's location, or; b) require that the product be made available at Buyer's expense at TECA's premises for TECA's inspection within 14 days of notification. If after such inspection TECA deems that the products are defective and the defects result from faulty materials and/or workmanship and not in any way from accident, misuse, misapplication, mishandling, modification or alteration by the Buyer or the shipper, then TECA shall, at its sole option, repair or exchange defective products free of charge to Buyer, and return same to Buyer at Buyer's expense, or credit the Buyer the net price of the defective products. ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, ARE EXCLUDED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL TECA BE LIABLE FOR ANY CLAIM BASED ON BREACH OF EXPRESS OR IMPLIED WARRANTY OR OTHER DAMAGES WHETHER SPECIAL, INDIRECT, INCIDENTAL, CONSEQUENTIAL, LOST PROFITS, BUSINESS INTERRUPTION, OR LOSS OF BUSINESS OR CUSTOMER RELATIONSHIPS.

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