

THERMOELECTRIC PRODUCTS

Catalog No.

9

Air Conditioners

Cold Plates

Liquid Chillers

Accessories

Thermoelectric Modules

teca

When heat is the enemy, Teca is your friend.



www.thermoelectric.com



www.thermoelectric.com

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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 and let us show you what we can do to help you.

Sincerely,

A handwritten signature in blue ink, appearing to read "Mike Mikalauskis".

Mike Mikalauskis
President

What We Stand On

A former division of Borg-Warner, TECA was spun-off as an independent company in 1984, 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 2. Since our cooling systems are based on solid-state construction, product life expectancy is exceptionally 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, and the environment in which we live.

How to use this catalog

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



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

Call us at 888-TECA-USA – we're here to help!

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Thermoelectric Technology

The Peltier Effect

Thermoelectric cooling, is a solid-state method of heat transfer through dissimilar semiconductor materials.

It is also called "the Peltier Effect" after the French watchmaker who discovered the phenomenon in the early 19th century. Like their conventional refrigeration counterparts, thermoelectric cooling systems obey the basic laws of thermodynamics. However, the actual system for cooling is different.

In a conventional refrigeration system, the main working parts are the evaporator, condenser, and compressor.

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

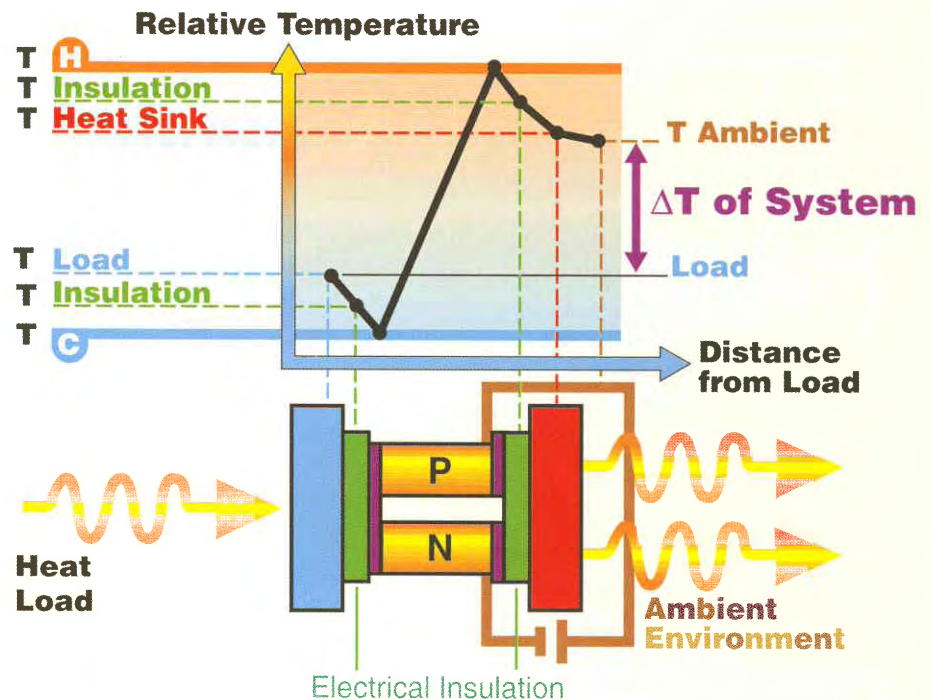
The three main working parts in a thermoelectric refrigeration system are a cold junction, a heat sink, and a DC power source.

Two dissimilar conductors replace the refrigerant in both liquid and vapor form. The cold junction (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 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

Solid state cooling solutions help beat the heat more effectively than traditional refrigeration in a wide range of applications from industrial, food service, military, and aerospace to medical, pharmaceutical, and laboratory. Take a look at just a few of the many successful applications:

- **A Military contractor** was experiencing over-heat conditions. The competition asked for thousands to "start up the line" for a standard product. TECA provided a custom solution that worked, when they needed it and for less.
- **A Medical supply** manufacturer needed a liquid chiller for use in therapeutic settings. TECA provided a solution using a standard product.
- **A laboratory equipment** manufacturer needed a custom product to fill their unique design requirements. TECA worked with them through design to production.
- **A Communication Equipment** manufacturer had specialized cooling needs. They came to TECA and a solution was found within the standard product line. The customers special features can now be supplied within weeks due to these similarities.
- **A laser manufacturer** needed liquid cooling at the laser. TECA provided the design and product which fit within their design constraints and packaging. One of TECA's "Cooling Cubes" was the solution.
- **A government contractor** was in a bind when the bulbs on \$20,000 projectors kept popping. A loaned AHP-1200FF and a few weeks of work provided an off the shelf answer saving time and money.
- **A dairy research center** tempers fat samples prior to pulsed NMR measurement of solid fat content using a standard TECA cold plate.
- **A hospital supply manufacturer** contacted TECA in need. Their current TE partner was supplying poor quality parts that didn't meet specifications. Less than one month after contacting TECA they had a working prototype and a cost effective design.
- **An equipment** manufacturer needed a cooling solution for the printing industry. A few phonecalls and a loaner from engineering provided the answer, TECA's cooling cubes.
- **A camera** manufacturer needed a custom solution and came to TECA. He left with an answer both his budget and his customer liked.
- **Several electronics** manufacturers have found the solution for their direct contact cooling needs on the factory floor in TECA's AHP-301CP and AHP-1200CP.
- **An equipment** manufacturer for the aircraft industry came to TECA in search of a cooler to be used in food refrigeration. Working together with TECA the customer now has satisfied customers of his own.
- **A manufacturer** for the nuclear industry needed a portable air conditioner for their proprietary line of pipe inspection equipment. Discussions soon led to prototypes and eventually a successful product line for TECA's customer.
- **A laser** manufacturer uses a customized AHP-1200CP for direct contact cooling at the laser head itself.
- **A rail road equipment** manufacturer required custom, heavy duty refrigerators. TECA provided the solution.
- **An observatory** required precise temperature control. They found a solution in TECA's TLC-700 liquid chiller.
- **The military** uses a compact thermoelectric assembly designed and built by TECA to cool data recording equipment in fighter aircraft.

Whatever your application, we can use our extensive knowledge, creative design experience, and collaborative approach to help you customize our products to meet your specific design requirements. Call us, write us, check out our website. If you don't see what you need or you're not sure, ask us. We aim to please.

COOL HAPPENINGS

Warming to thermoelectric cooling

Eventually, 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.



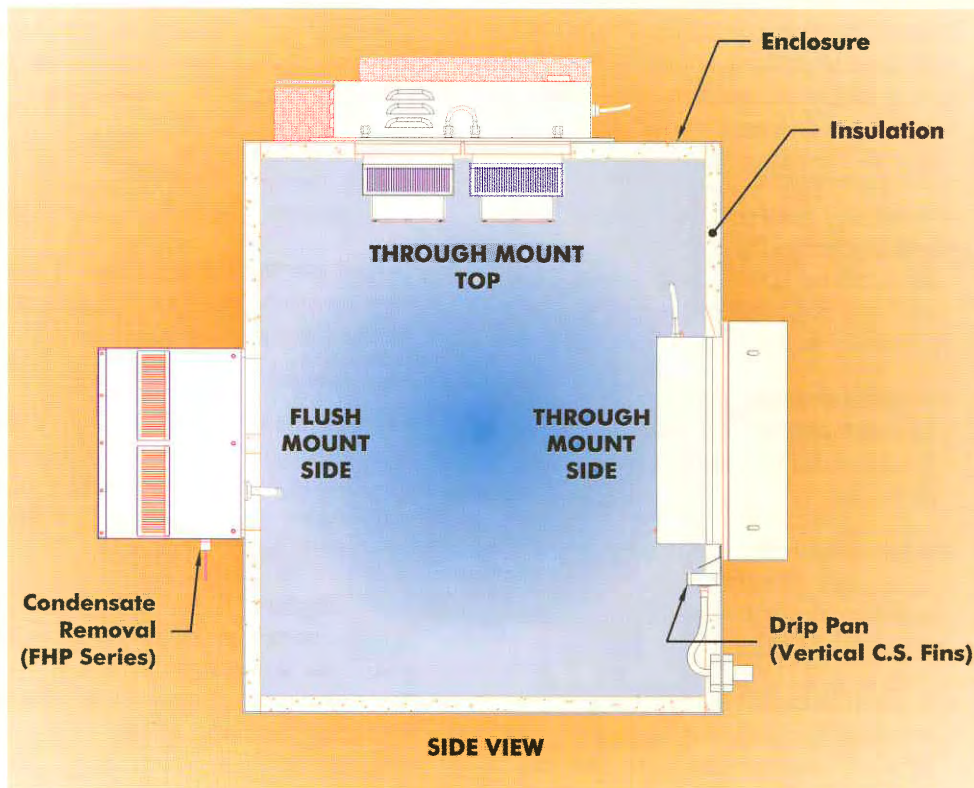
Design Considerations

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 did not or 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-units and AHP-1400) or a drip pan positioned below the cold side fins. Drip pans are optional for thru mount style units.

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

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

• Air Conditioner Sizing

To reduce the possibility of condensation or 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 and AHP-1400 series air conditioners contain a built-in condensate removal system consisting of an anti-fungal 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.

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 one megabyte of disk space.

Just call toll-free 1-888-TECA-USA or visit www.thermoelectric.com.

COOL HAPPENINGS

Exploring Thermoelectric Cooling

Back in the early '60s of the last century, General Electric, Borg-Warner, Westinghouse, 3M, 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 cooled 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.



Using Performance Curves

About Performance Curves: Performance curves are provided for the products in this catalog to help you determine which one is most appropriate for your needs. They 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 delta T.

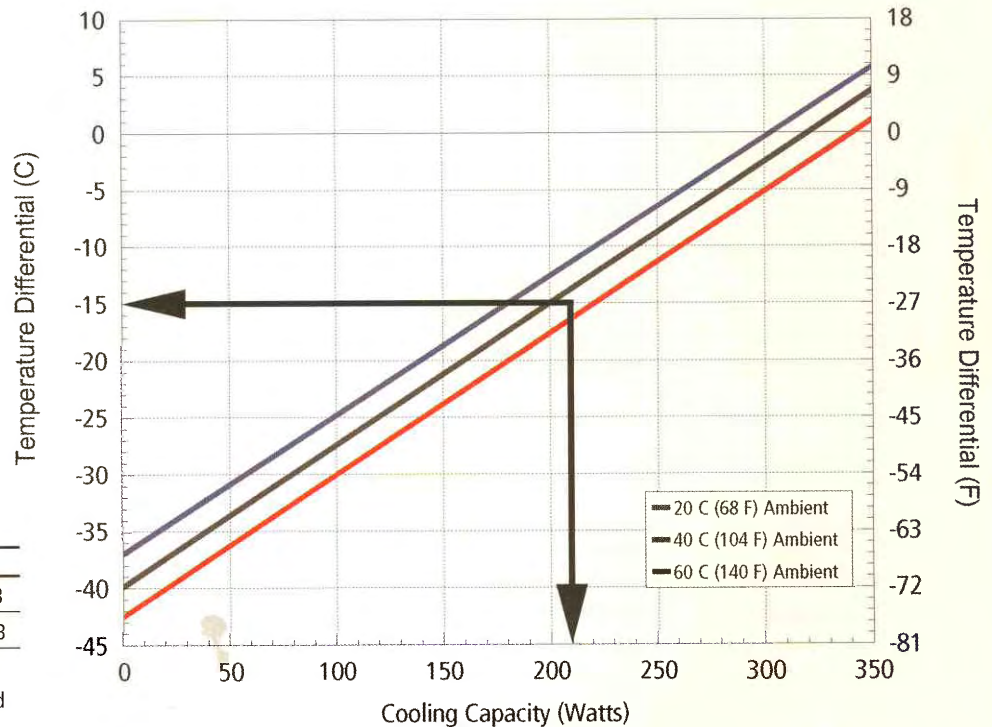
Other loads such as solar loads may need to be considered. The curve or load line is often split into 2 or three individual lines. Each representing the performance of the particular unit at different ambient temperatures.

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:

$y = \Delta T (^{\circ}\text{C})$ $m = \text{slope}$ $x = \text{watts}$ $b = \Delta T @ \text{no load}$

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 industry groups such as NEMA, NEC, UL and CSA for electronic enclosures. 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 XP 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.**

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 FF 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

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_r/Hz. Employed for all NEMA-4X units. **Applies to X models.**

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

Source: Mil-Std 810

NEC – National Electrical Code

CID2 Class I, Division 2 (Hazardous Environments) – a location (1) in which volatile flammable liquids or flammable gases are handled, processed, or used, but in which the liquids, vapors, or gases will normally be confined

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

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

Source: NEC 1993, Article 500, 70-466 to 70-471

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

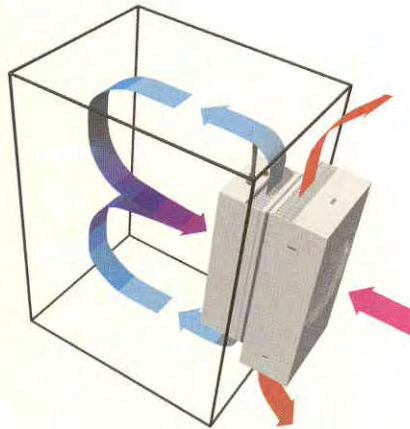
Galley Lavatory (ATGL refrigerators) and personally drove them to the military base in Lexington, Kentucky, for approval. Over the next 2 years we made 500 more, and they're still flying in C130 and C141 military cargo planes.



90-1800 BTU/hr

Air Cooled Air Conditioners

THRU MOUNT



AHP-SERIES

Solid state air conditioners with traditional "thru-wall mount" for closed loop cooling of enclosures.

FEATURES

- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Most units mount in any orientation

APPLICATIONS

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



AHP-1800XP pg10

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 pg10

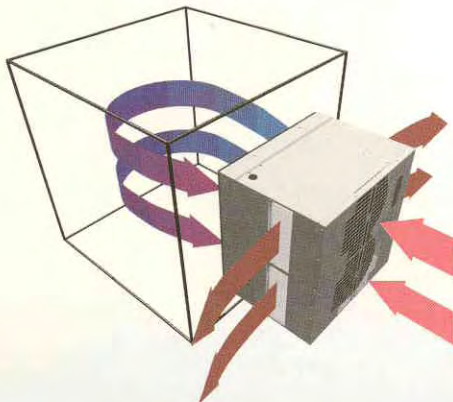
AHP-1800XE

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

AHP-1800 pg10

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

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.

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.



AIR CONDITIONERS

Air Cooled

90-1800 BTU/hr

THRU MOUNT

AHP-1400 pg12
810-900 BTU/hr rating,
12" x 12" mounting area
120 VAC
NEMA-12

AHP-1200XP pg14
500-550 BTU/hr rating,
15" x 7.3" mounting area
120 VAC
Class 1 Div 2, NEMA-4X,
UL-1604

AHP-1200X pg14
AHP-1200XE
500-550 BTU/hr rating,
15" x 7.35" mounting area
120 and 240 VAC
NEMA-4/4X
UL-1995/CSA 22.2

AHP-1200 pg14
500-550 BTU/hr rating,
15" x 7.35" mounting area
120 and 120/240 VAC
NEMA-12,
UL-1995/CSA 22.2

AHP-301FF pg16
160-200 BTU/hr rating,
10" x 5.52" mounting area
120/240 VAC
NEMA-12

AHP-300X pg18
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 pg18
200-220 BTU/hr rating,
10" x 5.37" mounting area
12, 24, and 12/24/48 VDC,
NEMA-12

AHP-150FF pg20
90-105 BTU/hr rating,
7" x 5" mounting area
12, 24, and 12/24 VDC
NEMA-12



AHP-1800XP

FLUSH MOUNT

FHP-2850 pg22
1600-1800 BTU/hr Rating,
12" x 24" mounting area
120 and 240 VAC
NEMA-12

FHP-1450 pg24
800-900 BTU/hr Rating,
12" x 12" mounting area
120 and 240 VAC
NEMA-12

FHP-750 pg26
400-450 BTU/hr Rating,
12" x 6" mounting area
120 VAC
NEMA-12

FHP-450XE pg28
135-165 BTU/hr Rating,
10" x 8" mounting area
120 and 240 VAC
NEMA-4/4X



FHP-2850

AHP-1800

Solid-State Air Conditioner

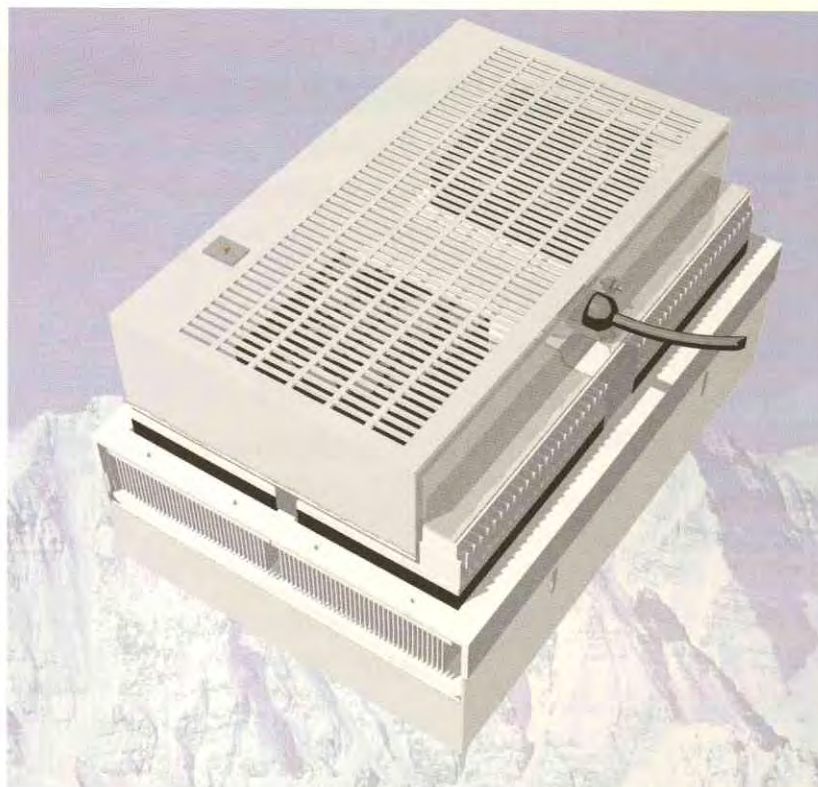
Air Cooled
Thru Mount
Nema-12, 4,4X, Class 1 Div 2

FEATURES

- Compact, (18" L X 12.35" W X 9.69"D)
- Weighs only 46 lbs. (21 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
- Mounting gasket and hardware
- Power input line cord



SPECIFICATIONS

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

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

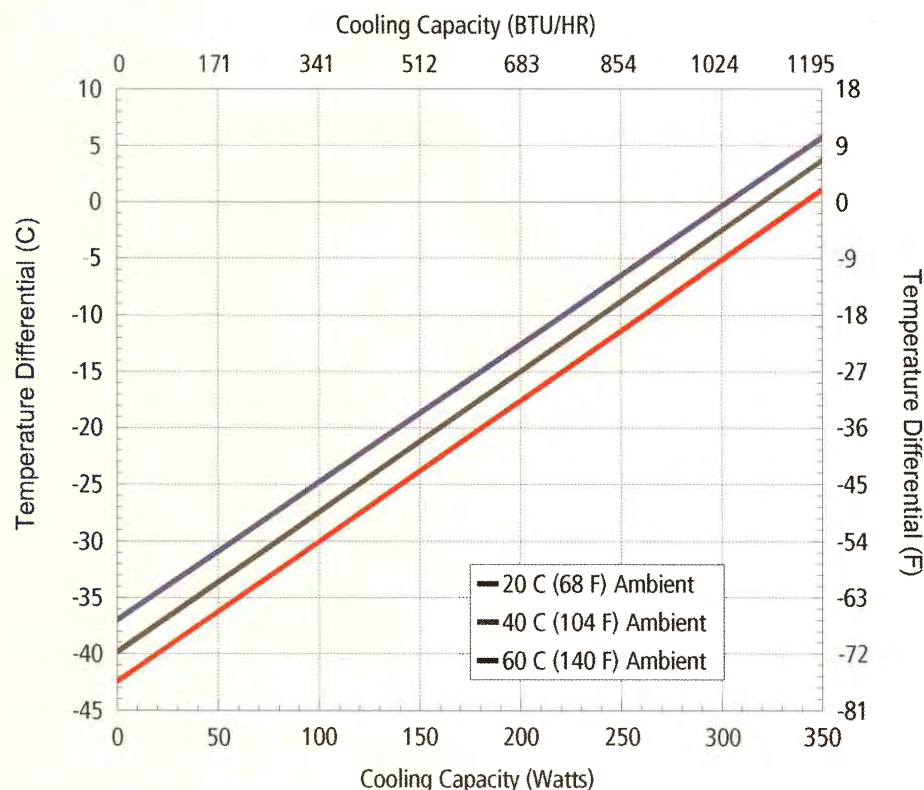
*OPT; Unit is set up for TC-3300 Controller (or similar)

AHP-1800

Thru Mount

Nema-12, 4,4X, Class 1 Div 2

1035-1180 BTU/hr

PERFORMANCE CURVE

	$y = \Delta(^{\circ}\text{C})$ $x = \text{Capacity (Watts)}$		
Ambient Temp	20°C	40°C	60°C
Enclosure Air	$y = .122x - 37.0$	$y = .122x - 39.7$	$y = .122x - 42.3$
Cold Sink	$y = .09x - 37.0$	$y = .09x - 39.7$	$y = .09x - 42.3$

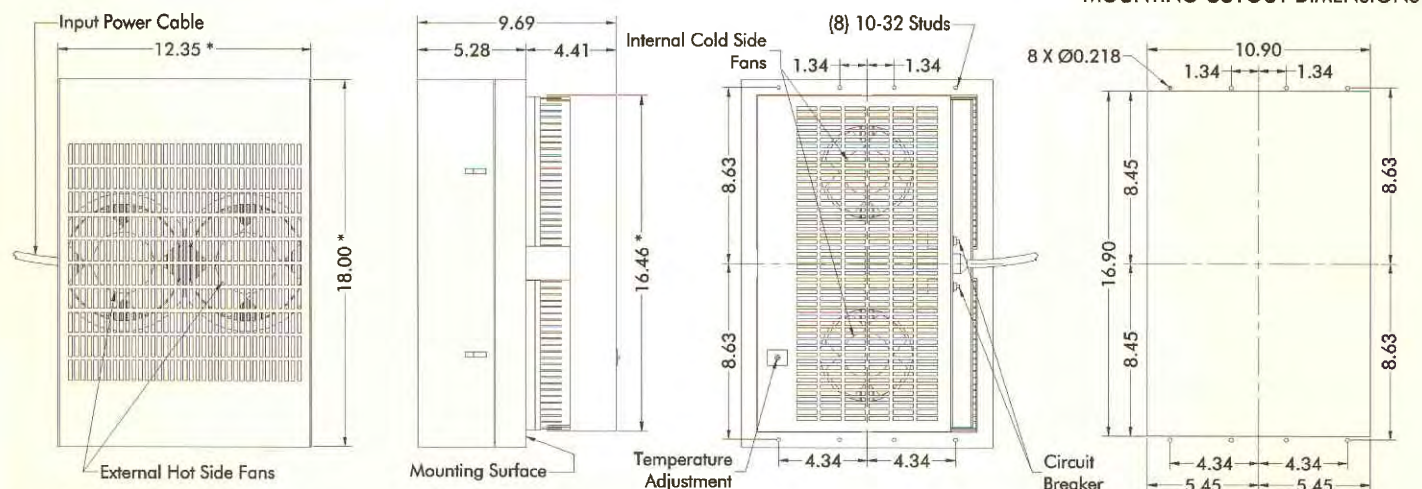
The **Model AHP-1800** is the largest capacity air conditioner for through mount applications that TECA makes.

APPLICATIONS

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

ENVIRONMENTS

Units are available for Nema-12, Nema-4/4X, Class 1 Div 2 applications.

DIMENSIONS

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

Solid-State 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

INCLUDES

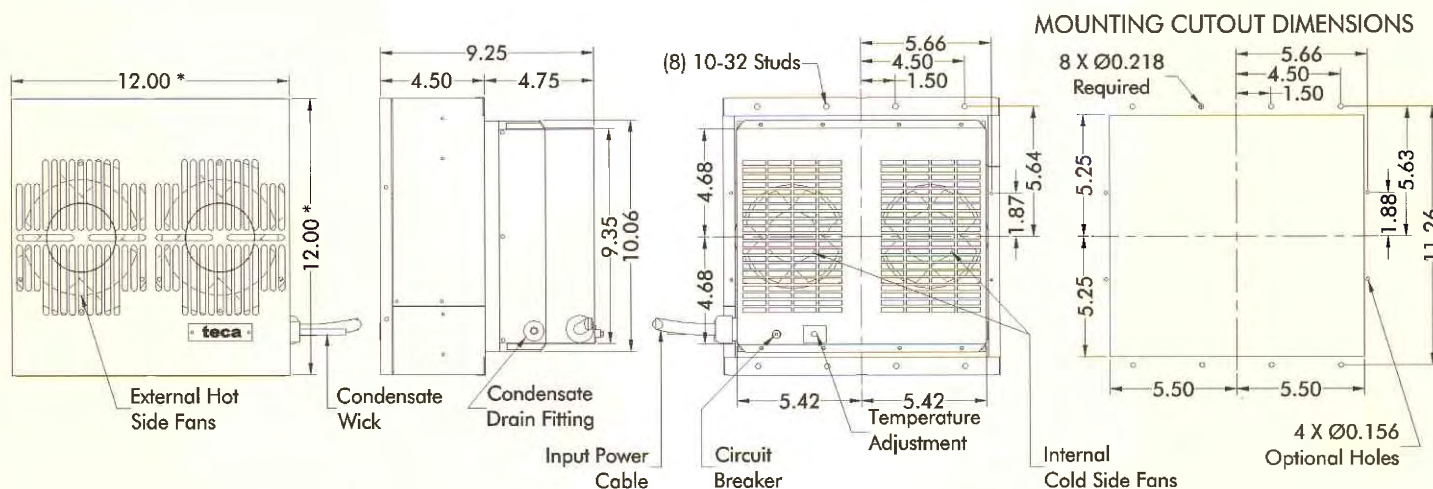
- Temperature control
- Mounting gasket and hardware
- Power input line cord



SPECIFICATIONS

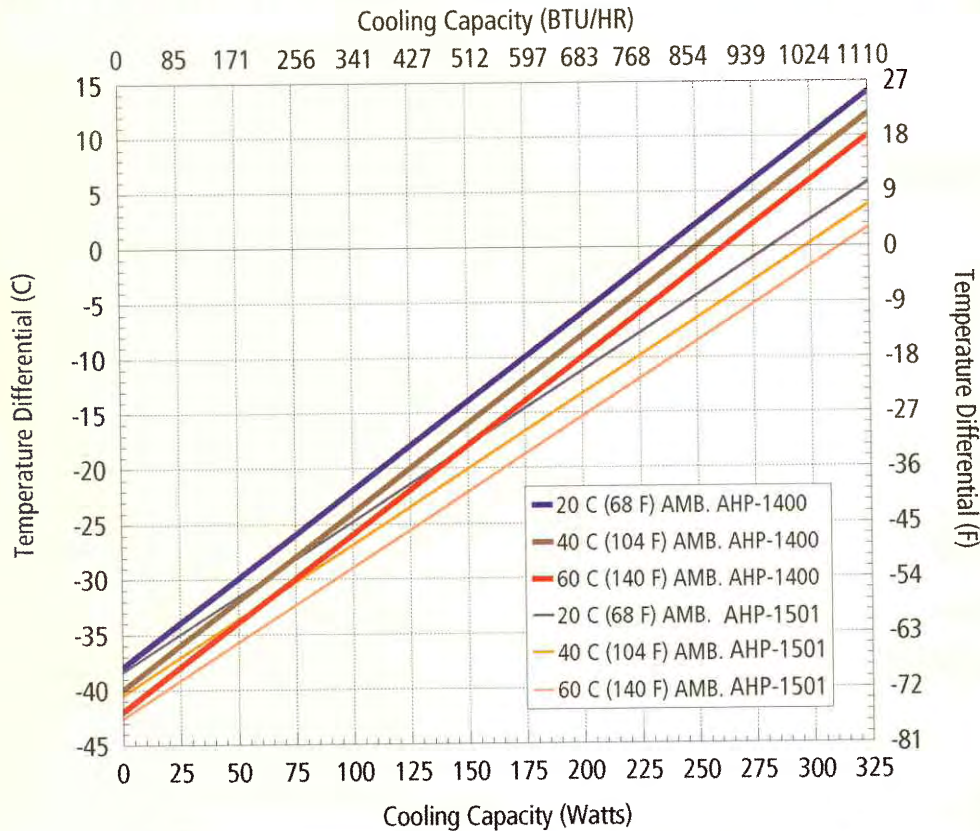
MODEL	PART NUMBER	NOTES	PERFORMANCE RATING BTU/HR	VOLTAGE VAC 50/60HZ	CURRENT AMPS.	WEIGHT LBS.(KG)	TEMP. CONTROL	OPERATING RANGE °C
AHP-1400	0-B480-0-000	Cool only	810-900	120	8.5	31(14)	TC-6F	-10/+70
AHP-1501	0-2171-0-000	Cool Only	1000-1100	120/240	7.5/5.0	52(24)	30 °C	-10/+70

AHP-1400 DIMENSIONS



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

PERFORMANCE CURVE



	$y = \Delta T(^{\circ}\text{C})$ $x = \text{Capacity (Watts)}$		
Ambient Temp	20°C	40°C	60°C
AHP-1400	$y = .16x - 38.0$	$y = .16x - 40.0$	$y = .16x - 42.0$
AHP-1501	$y = .136x - 38.4$	$y = .136x - 40.5$	$y = .136x - 42.6$

AHP-1400

AHP-1501

Thru Mount

Nema-12

810-900 BTU/hr (AHP-1400)

1000-1100 BTU/HR (AHP-1501)

The **Model AHP-1400** is an economical choice with good usable capacity and a built in condensate collection system.

The **Model AHP-1501** has dual input voltage capability plus a single set point control. For added capacity this unit can be mounted in groups of 2 to 6 in a tight configuration.

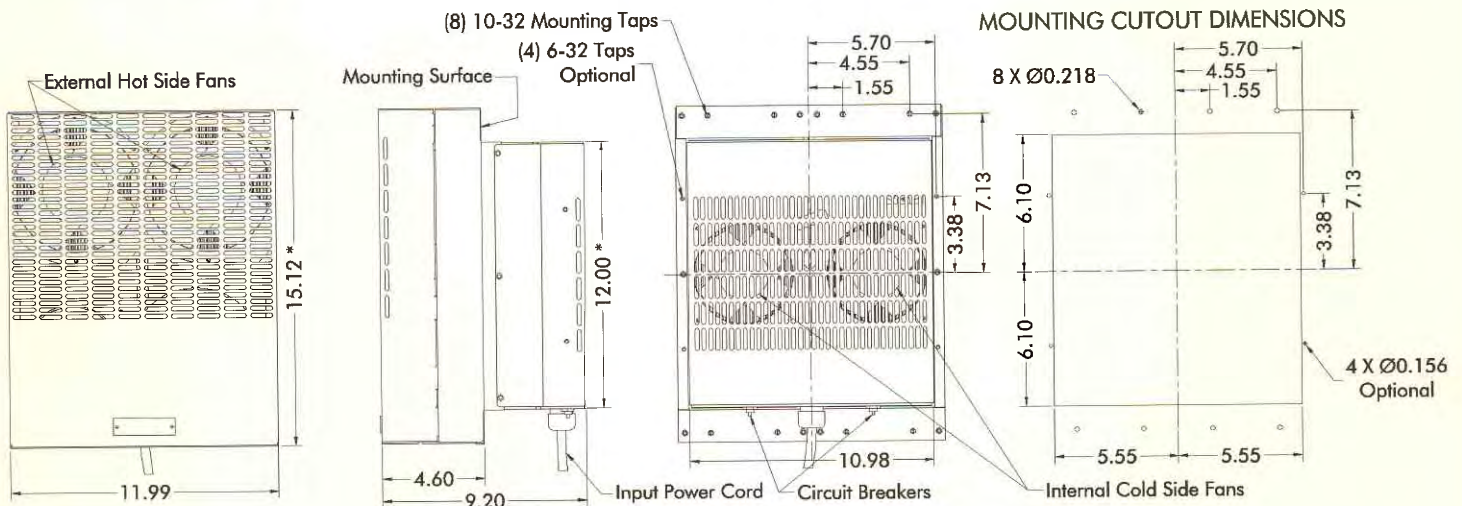
APPLICATIONS

Used to cool electronic enclosures in high humidity and elsewhere.

ENVIRONMENTS

Nema-12 for indoor use only.

AHP-1501 DIMENSIONS



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

AHP-1200 Solid-State Air Conditioner

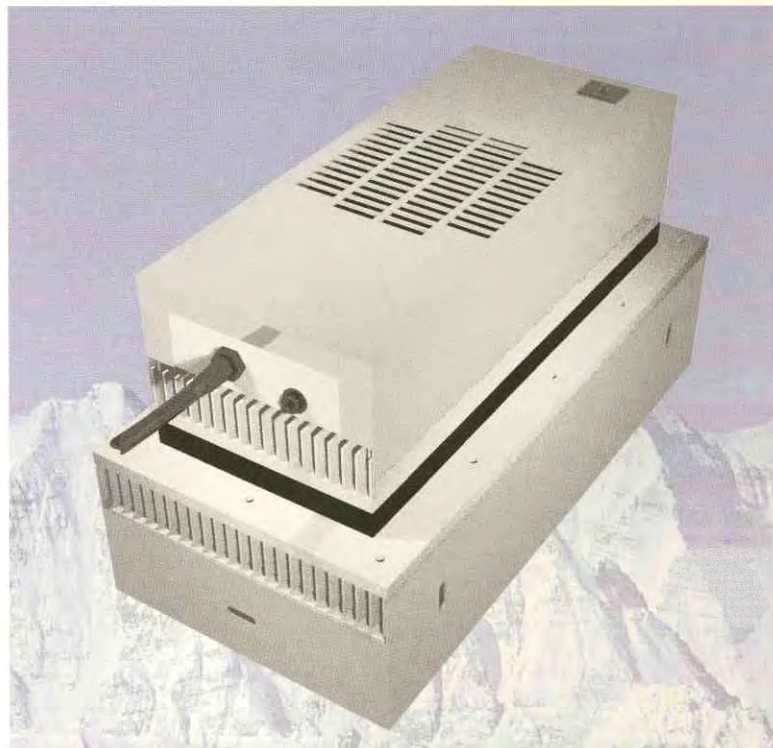
Air Cooled
Thru Mount
Nema-12, 4,4X, Class 1 Div 2

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



SPECIFICATIONS

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

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

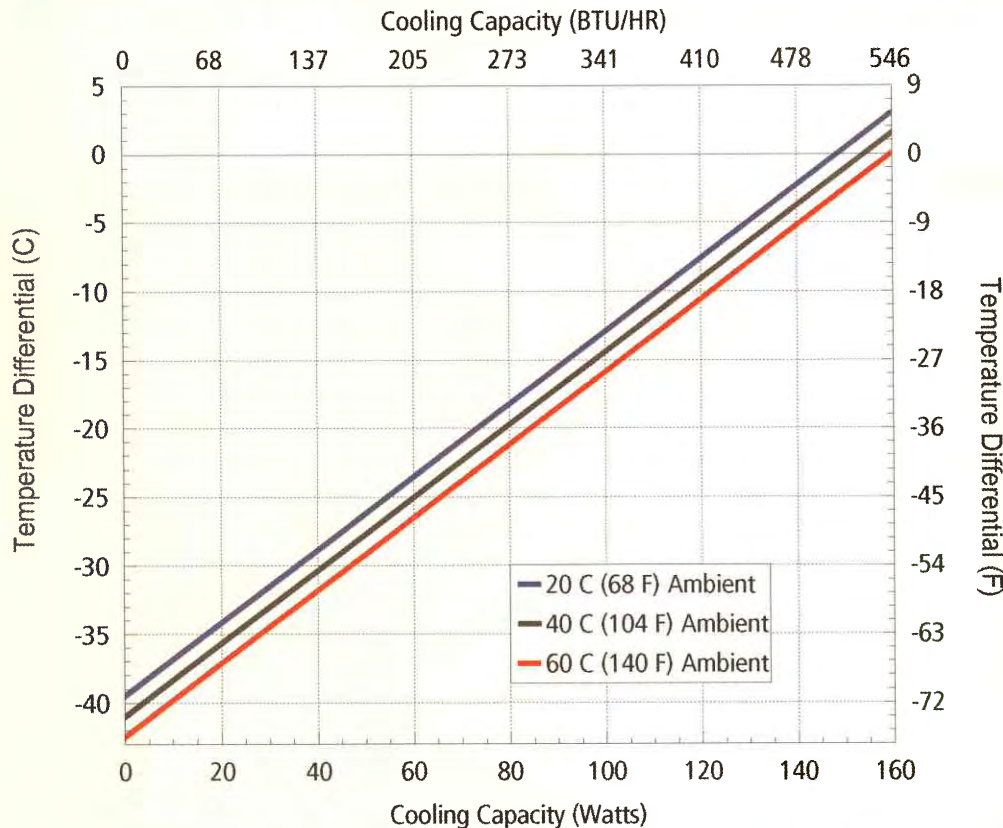
*OPT; Unit is set up for TC-3300 Controller (or similar)

AHP-1200

Thru Mount

Nema-12, 4,4X, Class 1 Div 2

500-550 BTU/hr

PERFORMANCE CURVE

$y = \Delta T(^{\circ}\text{C})$ $x = \text{Capacity (Watts)}$			
Ambient Temp	20°C	40°C	60°C
Enclosure Air	$y = .266x - 39.5$	$y = .266x - 41.0$	$y = .266x - 42.5$
Cold Sink	$y = .173x - 39.5$	$y = .173x - 41.0$	$y = .173x - 42.5$

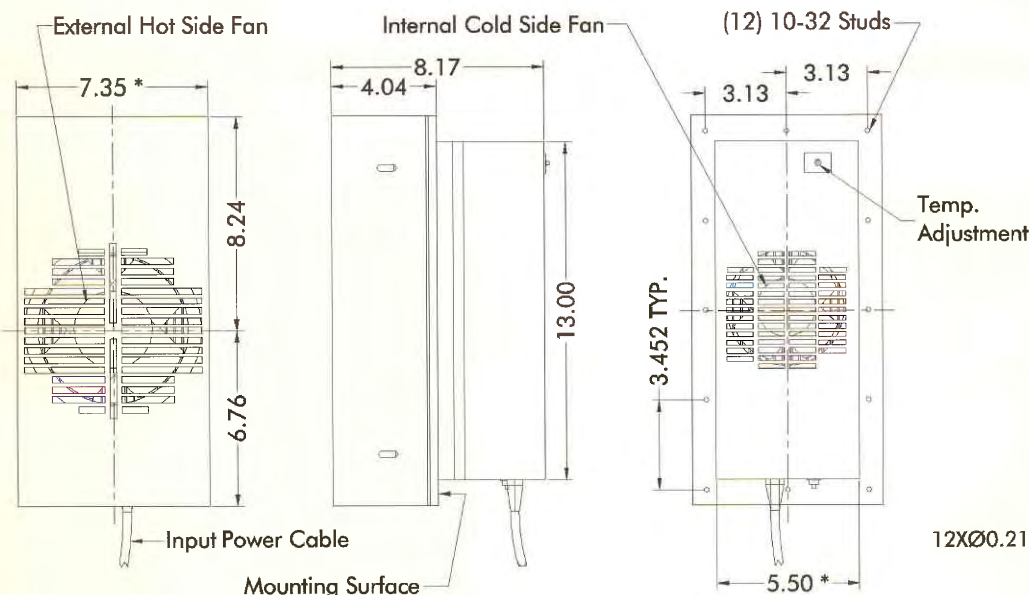
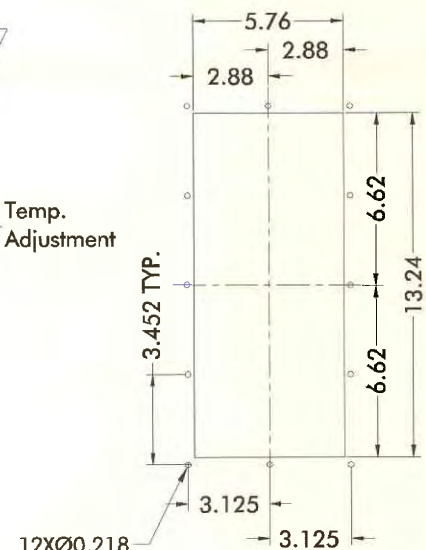
The **Model AHP-1200** is the most popular and versatile member of the TECA family, successfully used in applications throughout the world.

APPLICATIONS

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

ENVIRONMENTS

Units are available for Nema-12, Nema-4/4X, Class 1 Div 2 applications.

DIMENSIONS**MOUNTING CUTOUT DIMENSIONS**

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

AHP-301FF Solid-State Air Conditioner

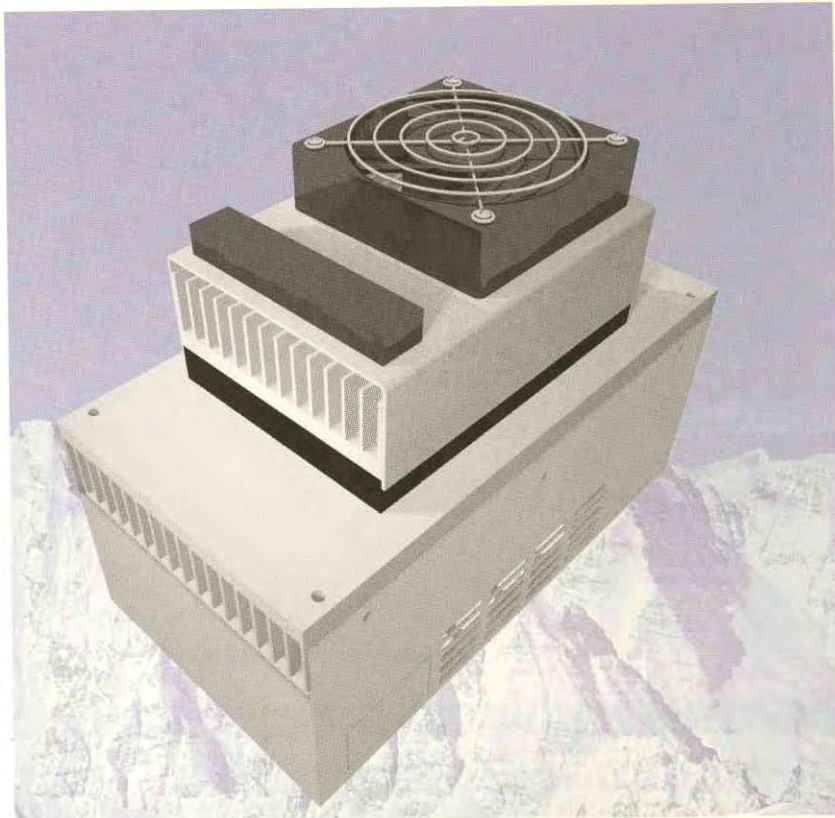
Air Cooled
Thru Mount
Nema-12

FEATURES

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

INCLUDES

- Integral power supply (120/240)
- Gasket and mounting hardware



SPECIFICATIONS

MODEL	PART NUMBER	NOTES	PERFORMANCE RATING BTU/HR	VOLTAGE VAC 50/60HZ	CURRENT AMPS.	WEIGHT LBS.(KG)	TEMP. CONTROL *	OPERATING RANGE °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

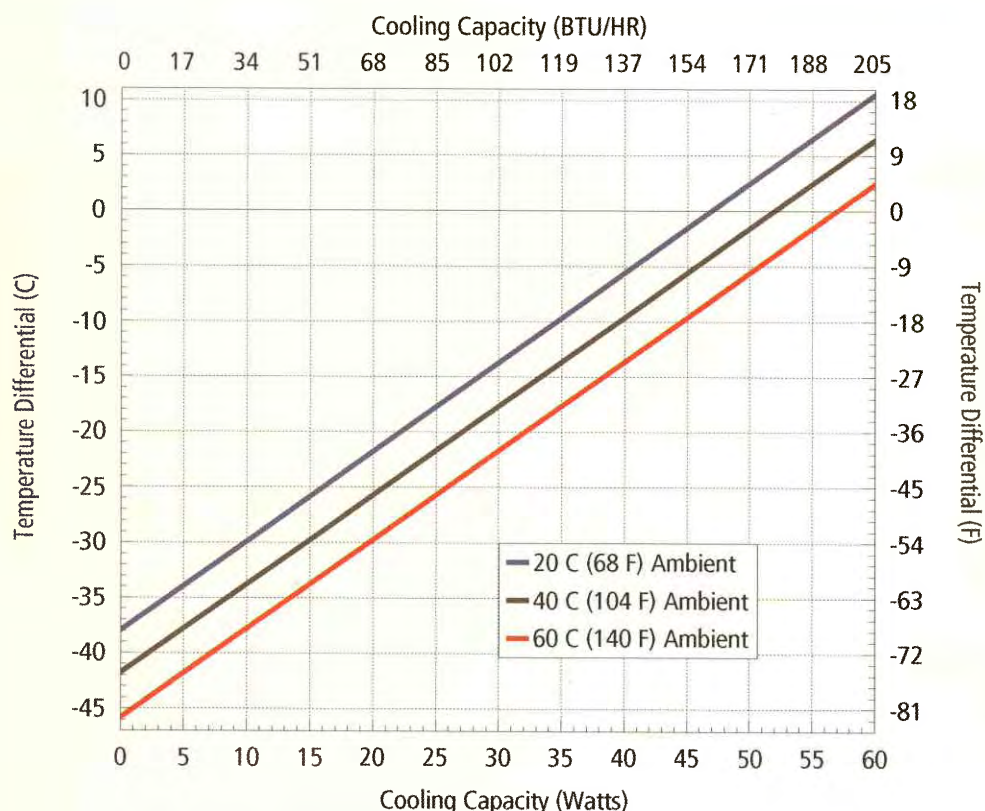
*OPT; Unit is set up for TC-3300 Controller (or similar)

AHP-301FF

Thru Mount

Nema-12

160-200 BTU/hr

PERFORMANCE CURVE

$y = \Delta T(^{\circ}\text{C})$ $x = \text{Capacity (Watts)}$			
Ambient Temp	20°C	40°C	60°C
Enclosure Air	$y = .81x - 38.0$	$y = .81x - 42.0$	$y = .81x - 46.0$
Cold Sink	$y = .62x - 38.0$	$y = .62x - 42.0$	$y = .62x - 46.0$

Model AHP-301FF

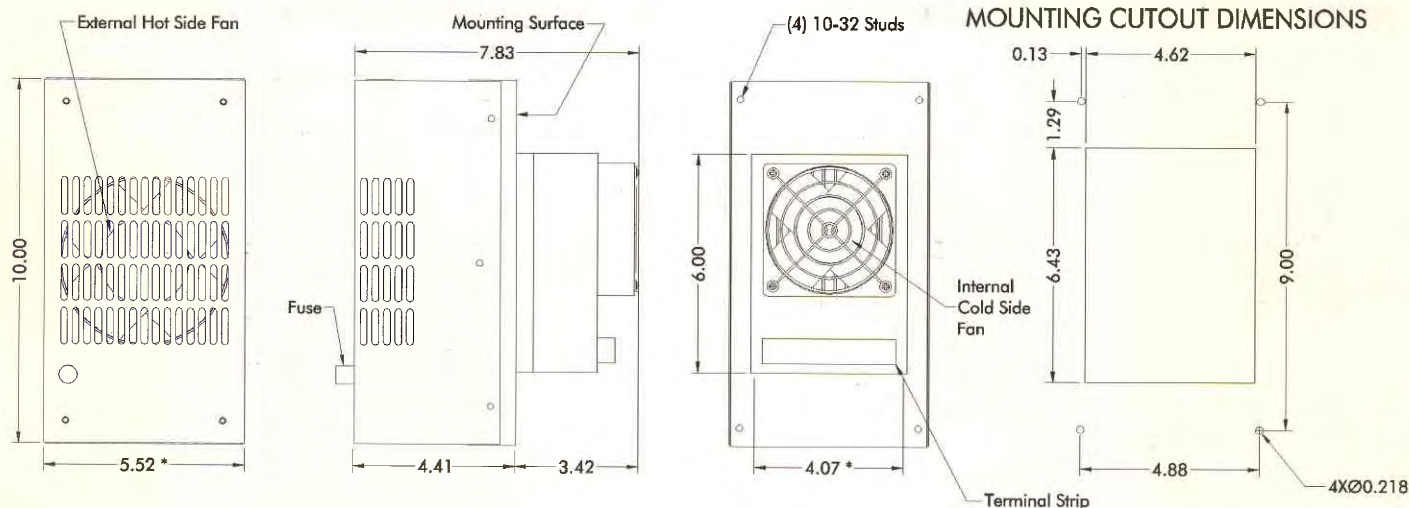
is the smallest thru mount version with integral power supply offered. An external footprint of less than 1/2 ft² makes this unit perfect for small enclosures.

APPLICATIONS

Cools electronic enclosures and control cabinets in factories and elsewhere.

ENVIRONMENTS

Nema-12 for indoor use only.

DIMENSIONS

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

AHP-300FF

Solid-State 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 -10°C to +70°C
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Mounts in any orientation
- X versions use mil-grade fans
- 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 control



SPECIFICATIONS

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

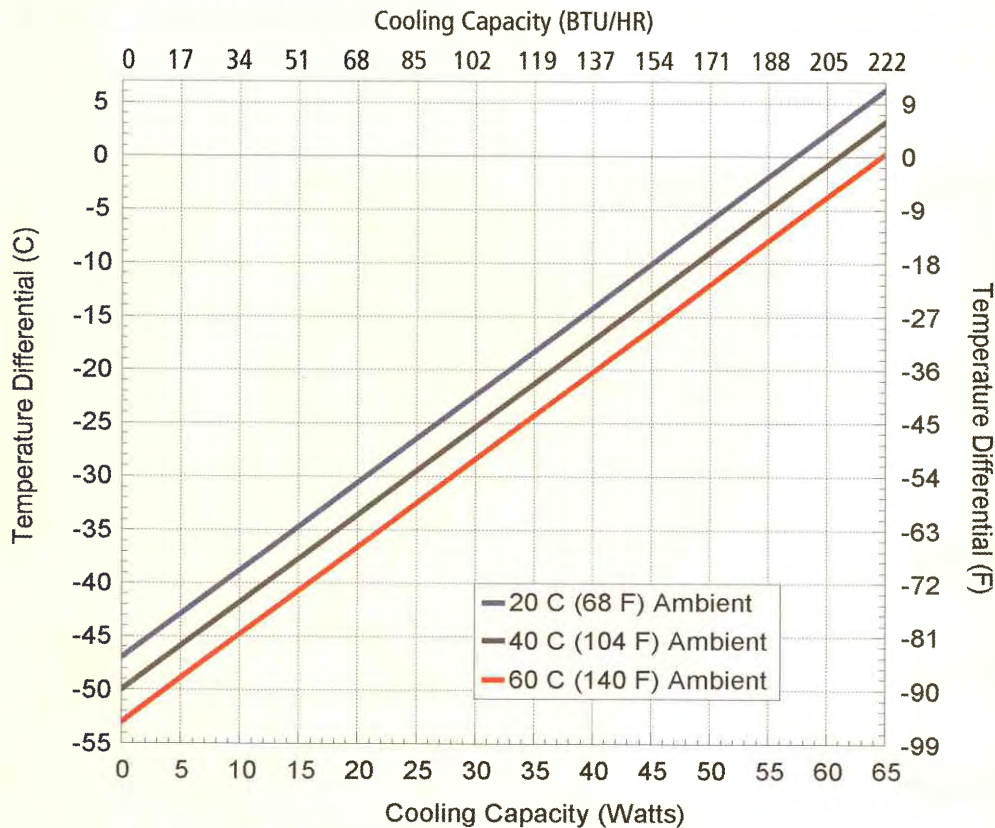
*See also , "Power Supplies", P. 58

AHP-300FF

Thru Mount

Nema-12, 4, and 4x

200-220 BTU/hr

PERFORMANCE CURVE

	$y = \Delta T(^{\circ}\text{C})$ $x = \text{Capacity (Watts)}$		
Ambient Temp	20°C	40°C	60°C
Enclosure Air	$y = .82x - 47.0$	$y = .82x - 50.0$	$y = .82x - 53.0$
Cold Sink	$y = .64x - 47.0$	$y = .64x - 50.0$	$y = .64x - 53.0$

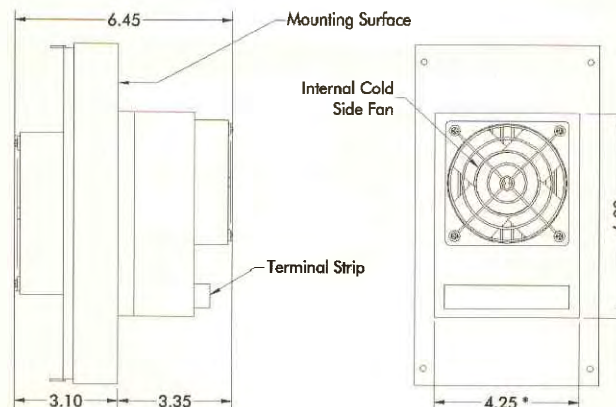
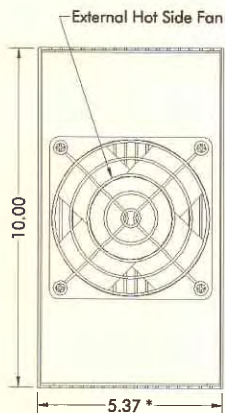
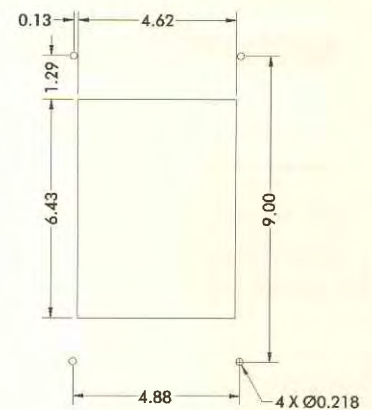
The **Model AHP-300FF** is a versatile air conditioner for those applications where D.C. power is available.

APPLICATIONS

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

ENVIRONMENTS

Units are available for Nema-12, Nema-4/4X enclosures.

DIMENSIONS**MOUNTING CUTOUT DIMENSIONS**

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

AHP-150FF

Air Cooled
Thru Mount
Nema-12

Solid-State Air Conditioner

FEATURES

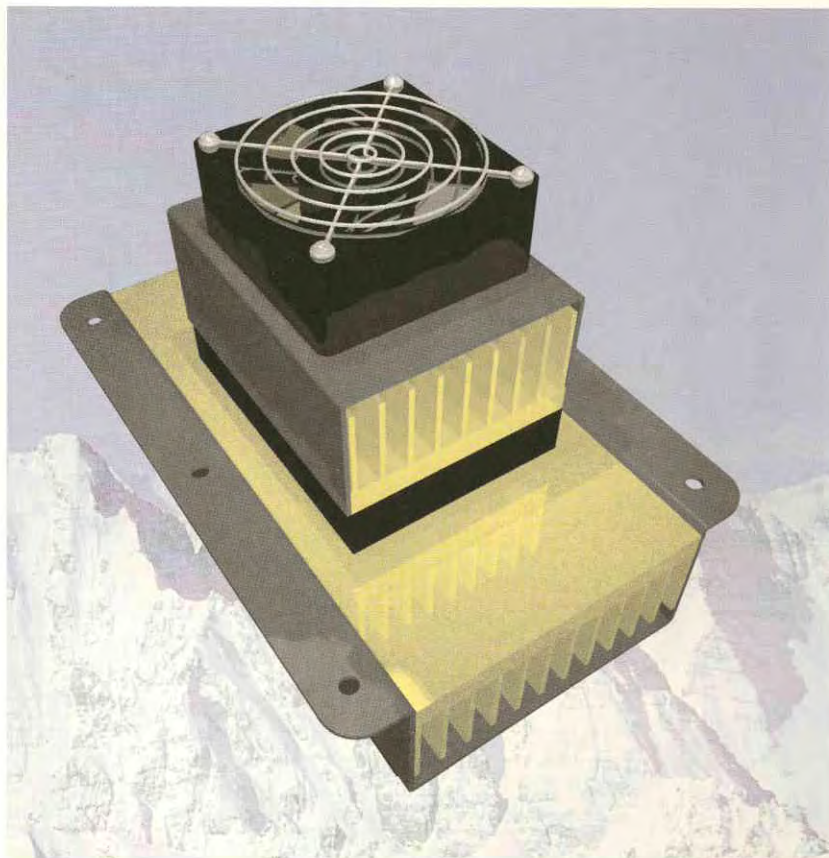
- Compact (only 7"L X 5"W X 6.02"D)
- Weighs only 3.2 lbs. (1.5 kg)
- Ambient range -10°C to +70°C
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Mounts in any orientation

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 controller



SPECIFICATIONS

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

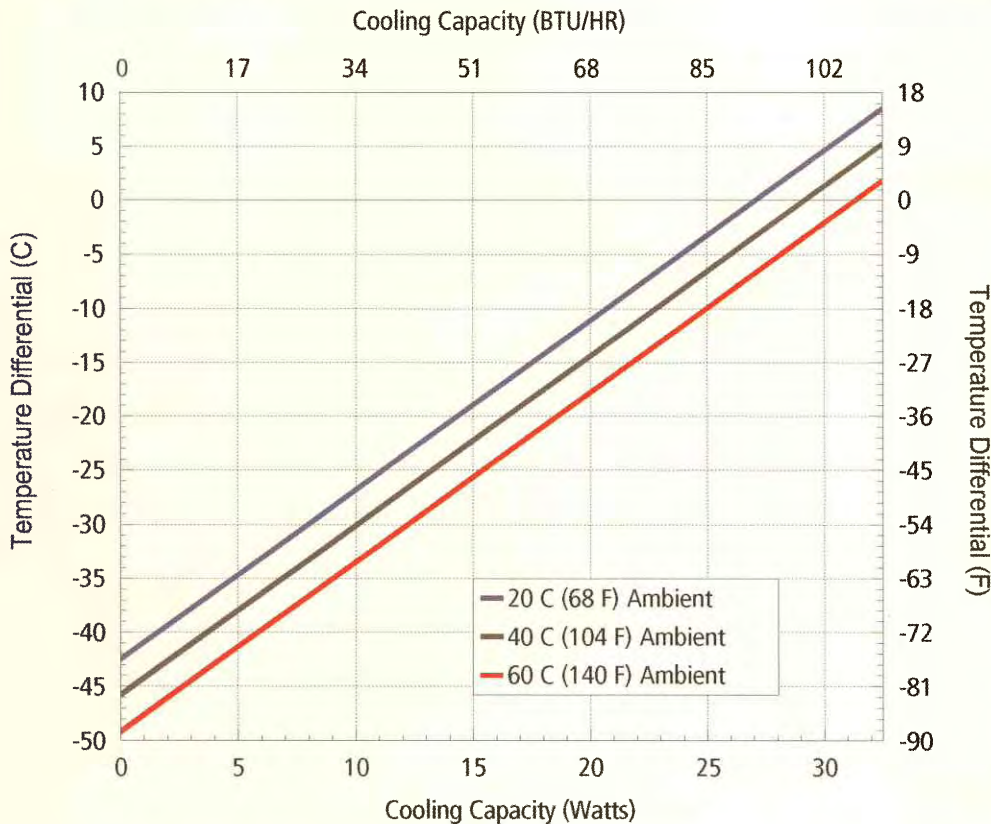
2 *See also , "Power Supplies", P. 58

AHP-150FF

Thru Mount

Nema-12

90-105 BTU/hr

PERFORMANCE CURVE

	$y = \Delta T(^{\circ}\text{C})$ $x = \text{Capacity (Watts)}$		
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	$y = 1.24x - 42.5$	$y = 1.24x - 45.8$	$y = 1.24x - 49.2$

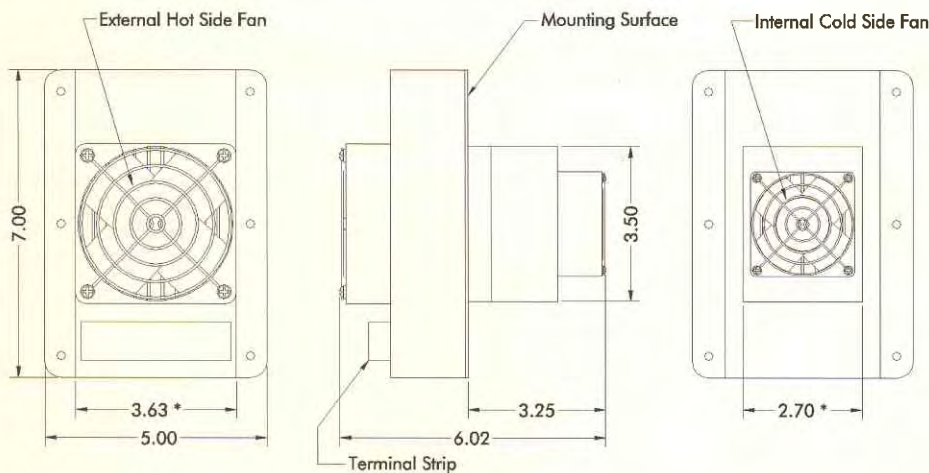
The **Model AHP-150FF** is TECA's smallest stock air-conditioner.

APPLICATIONS

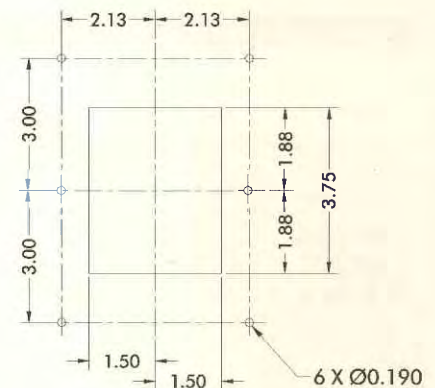
Useful to cool small instrument enclosures. Especially useful where available power is 12VDC or 24VDC.

ENVIRONMENTS

Nema-12 environments such as indoors in factories, laboratories, and certain vehicles.

DIMENSIONS

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

MOUNTING CUTOUT DIMENSIONS

FHP-2850

Air Cooled
Flush Mount
Nema-12

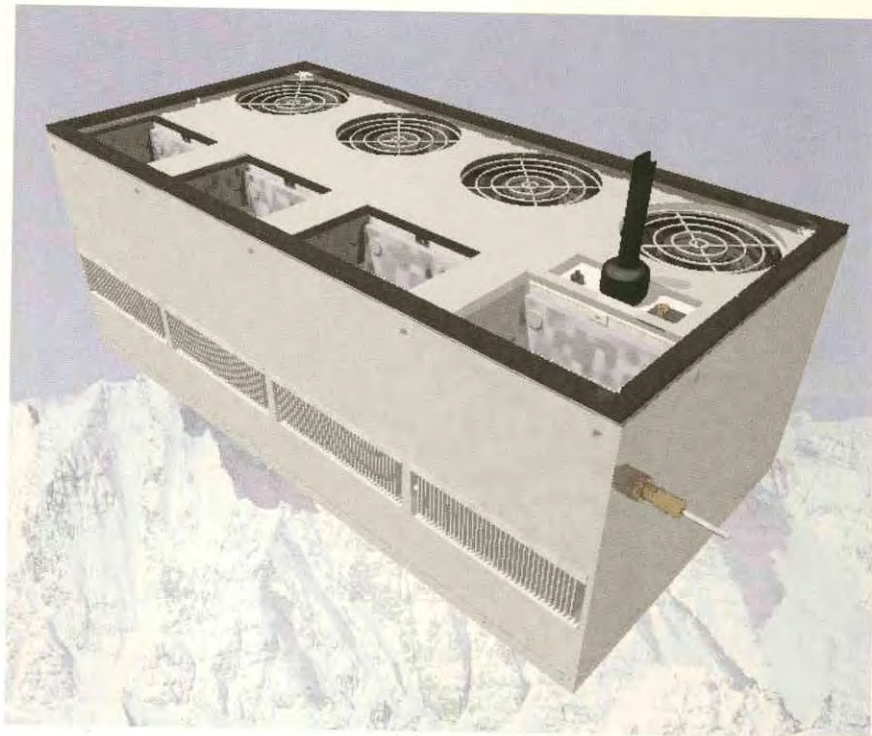
Solid-State Air Conditioner

FEATURES

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

INCLUDES

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



SPECIFICATIONS

	MODEL	PART NUMBER	NOTES	PERFORMANCE RATING BTU/HR	VOLTAGE VAC 50/60 HZ	CURRENT AMPS.	WEIGHT LBS. (kg)	TEMP. CONTROL *	CONDENSATE REMOVAL	OPERATING RANGE °C
N	FHP-2850	7-D580-0-000	Cool only	1600-1800	120	12.5	70(32)	TC-6F	Included	-10/+70
E	FHP-2850	7-D550-0-000	Cool only	1600-1800	120	12.5	70(32)	OPT*	Included	-10/+70
M	FHP-2852	7-D582-0-000	Cool only	1600-1800	240	7.5	70(32)	TC-6F	Included	-10/+70
A	FHP-2852	7-D552-0-000	Cool only	1600-1800	240	7.5	70(32)	OPT*	Included	-10/+70

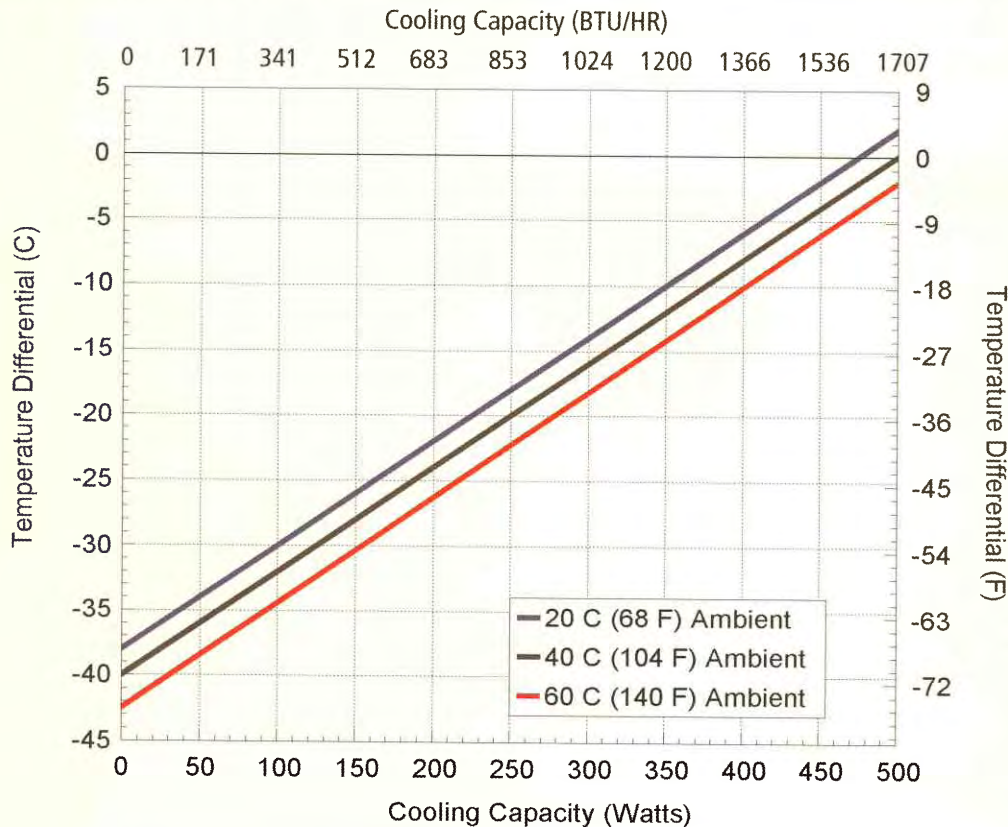
2 *OPT; Unit is set up for TC-3300 Controller (or similar)

FHP-2850

Flush Mount

Nema-12

1600-1800 BTU/hr

PERFORMANCE CURVE

$y = \Delta T(^{\circ}\text{C})$ $x = \text{Capacity (Watts)}$			
Ambient Temp	20°C	40°C	60°C
Enclosure Air	$y = .08x - 38.0$	$y = .08x - 40.0$	$y = .08x - 42.0$
Cold Sink	$y = .05x - 38.0$	$y = .05x - 40.0$	$y = .05x - 42.0$

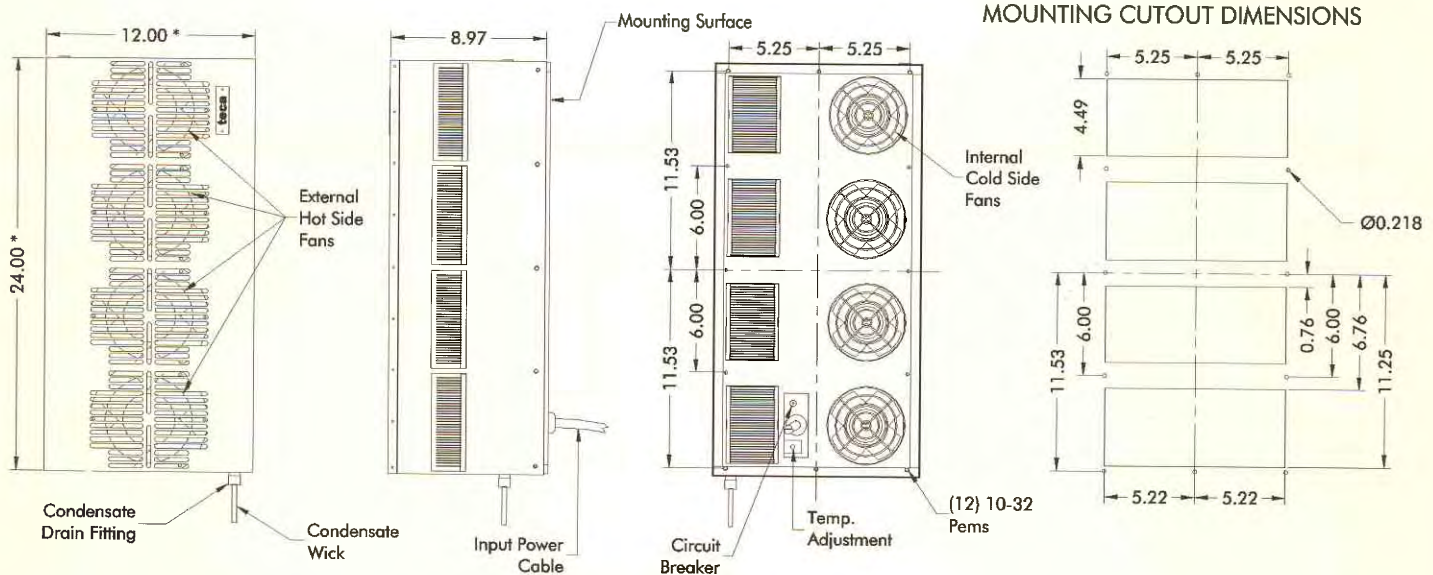
The Model FHP-2850 is the largest flush-mount solid state air conditioner offered in the industry today.

APPLICATIONS

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

ENVIRONMENTS

Nema-12 environments. Indoor in factories, mills and production controls.

DIMENSIONS

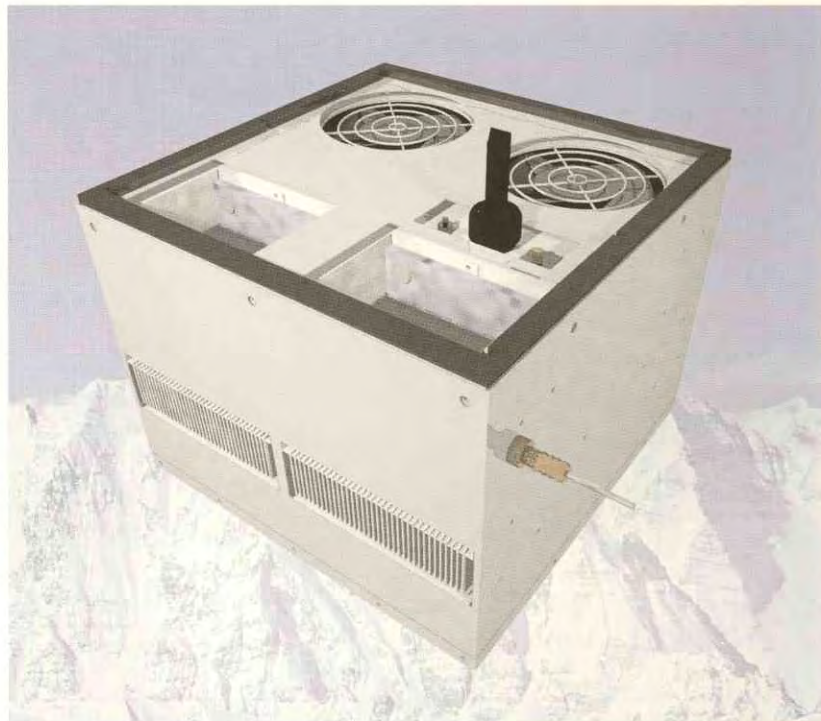
* Dimension does not include hardware. Dimensions: inches, Mounting hardware and gasket not shown.

FHP-1450 Solid-State Air Conditioner

Air Cooled
Flush Mount
Nema-12

FEATURES

- Compact (only 12"L X 12"W X 8.97"D)
- Weighs only 36 lbs. (16 kg)
- Ambient range -10°C to +70°C
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Stainless steel exterior housing
- Mounts in any orientation



INCLUDES

- Integral power supply
- Condensate removal system
- Adjustable temperature control
- Gasket for Nema-12 seal
- Mounting hardware

SPECIFICATIONS

	MODEL	PART NUMBER	NOTES	PERFORMANCE RATING BTU/HR	VOLTAGE VAC 50/60 HZ	CURRENT AMPS.	WEIGHT LBS. (KG)	TEMP. CONTROL *	CONDENSATE REMOVAL	OPERATING RANGE °C
N E M A 1 2	FHP-1450	7-B580-0-000	Cool only	800-900	120	6.0	36(16)	TC-6F	Included	-10/+70
	FHP-1450	7-B550-0-000	Cool only	800-900	120	6.0	36(16)	OPT*	Included	-10/+70
	FHP-1452	7-B582-0-000	Cool only	825-930	240	5.5	36(16)	TC-6F	Included	-10/+60
	FHP-1452	7-B552-0-000	Cool only	825-930	240	5.5	36(16)	OPT*	Included	-10/+60

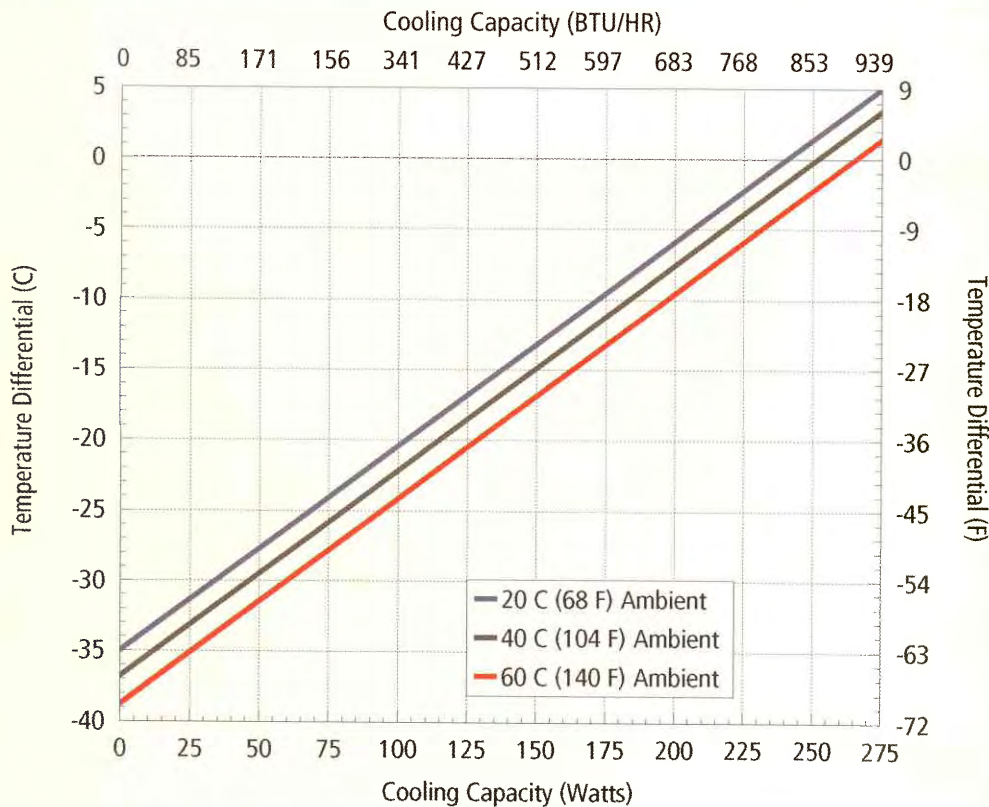
*OPT; Unit is set up for TC-3300 controller (or similar)

FHP-1450

Flush Mount

Nema-12

800-900 BTU/hr

PERFORMANCE CURVE

	y=ΔT(°C) x=Capacity (Watts)		
Ambient Temp	20°C	40°C	60°C
Enclosure Air	y=.15x-35.0	y=.15x-37.0	y=.15x-39.0
Cold Sink	y=.10x-35.0	y=.10x-37.0	y=.10x-39.0

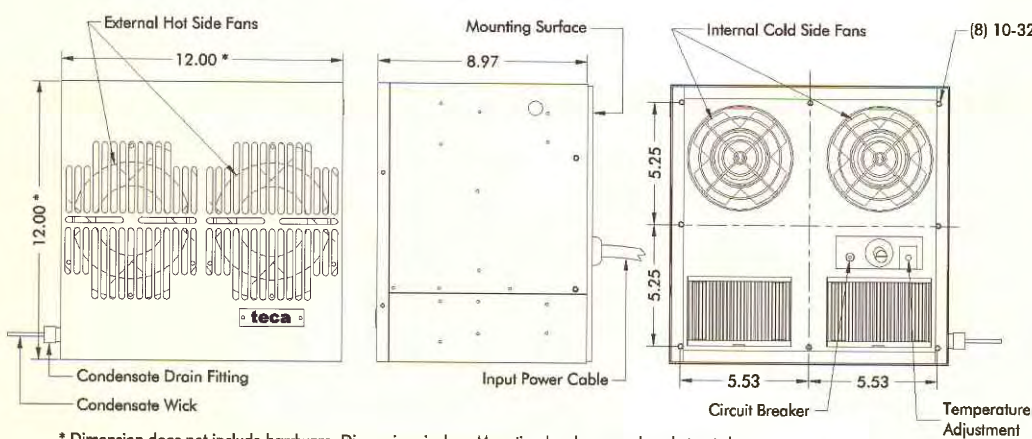
The Model FHP-1450 is a versatile mid range cooler which is available in two voltages. it does not intrude into the enclosure being cooled.

APPLICATIONS

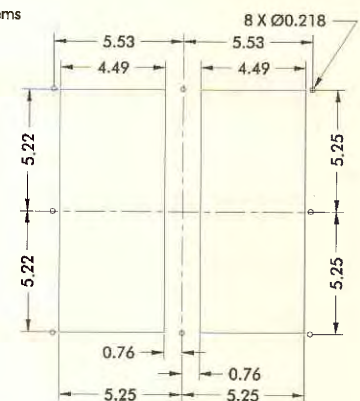
Used to cool electronic enclosures where limited amount of space is available for through mount style.

ENVIRONMENTS

Nema-12 environments. Indoor in factories, mills and production controls.

DIMENSIONS

* Dimension does not include hardware. Dimension: inches, Mounting hardware and gasket not shown.

MOUNTING CUTOUT DIMENSIONS

FHP-750 Solid-State Air Conditioner

Air Cooled
Flush Mount
Nema-12

FEATURES

- Compact (only 12"L X 6"W X 9"D)
- Weighs only 16 lbs. (7.2 kg)
- Ambient range -10°C to +70°C
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Stainless steel exterior housing
- Mounts in any orientation

INCLUDES

- Integral power supply
- Condensate removal system
- Adjustable temperature control
- Gasket for Nema-12 seal
- Mounting hardware



SPECIFICATIONS

	MODEL	PART NUMBER	NOTES	PERFORMANCE RATING BTU/HR	VOLTAGE VAC 50/60 HZ	CURRENT AMPS.	WEIGHT LBS. (KG)	TEMP. CONTROL *	CONDENSATE REMOVAL	OPERATING RANGE °C
N E M A 1 2	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
	FHP-750	7-A550-0-000	Cool only, for remote temperature control	400-450	120	4.5	16 (7.2)	OPT*	Included	-10/+70

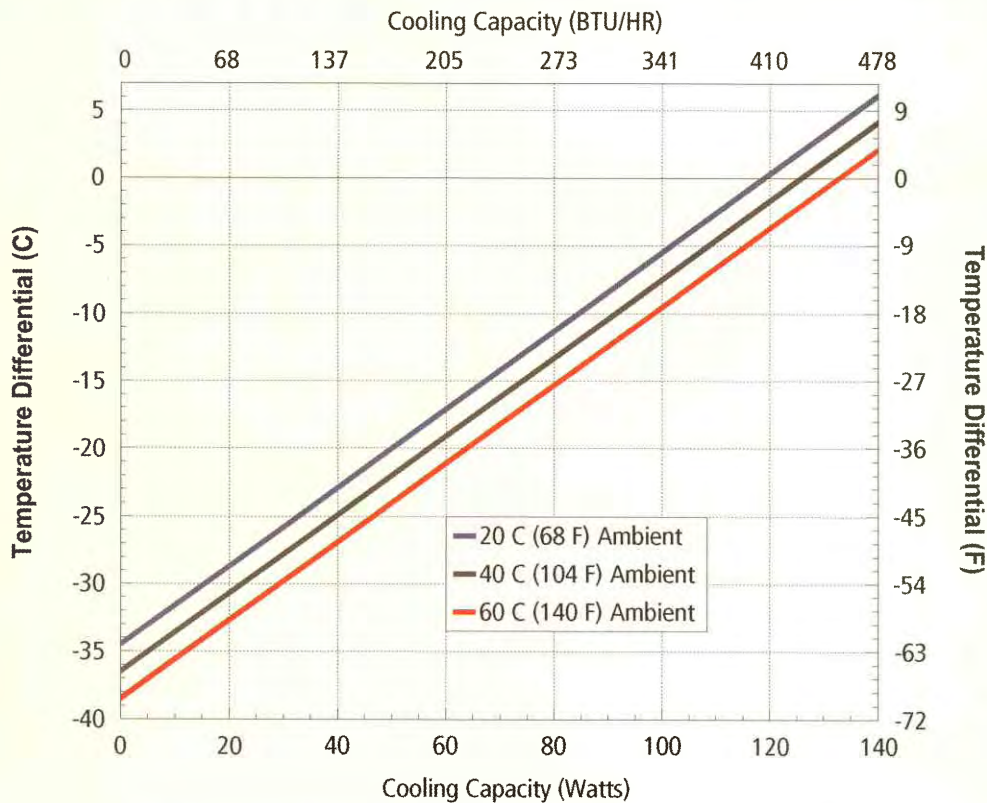
*OPT; Unit is set up for TC-3300 controller (or similar)

FHP-750

Flush Mount

Nema-12

400-450 BTU/hr

PERFORMANCE CURVE

	$y = \Delta T(^{\circ}\text{C})$ $x = \text{Capacity (Watts)}$		
Ambient Temp	20°C	40°C	60°C
Enclosure Air	$y = .29x - 34.5$	$y = .29x - 36.5$	$y = .29x - 38.5$
Cold Sink	$y = .18x - 34.5$	$y = .18x - 36.5$	$y = .18x - 38.5$

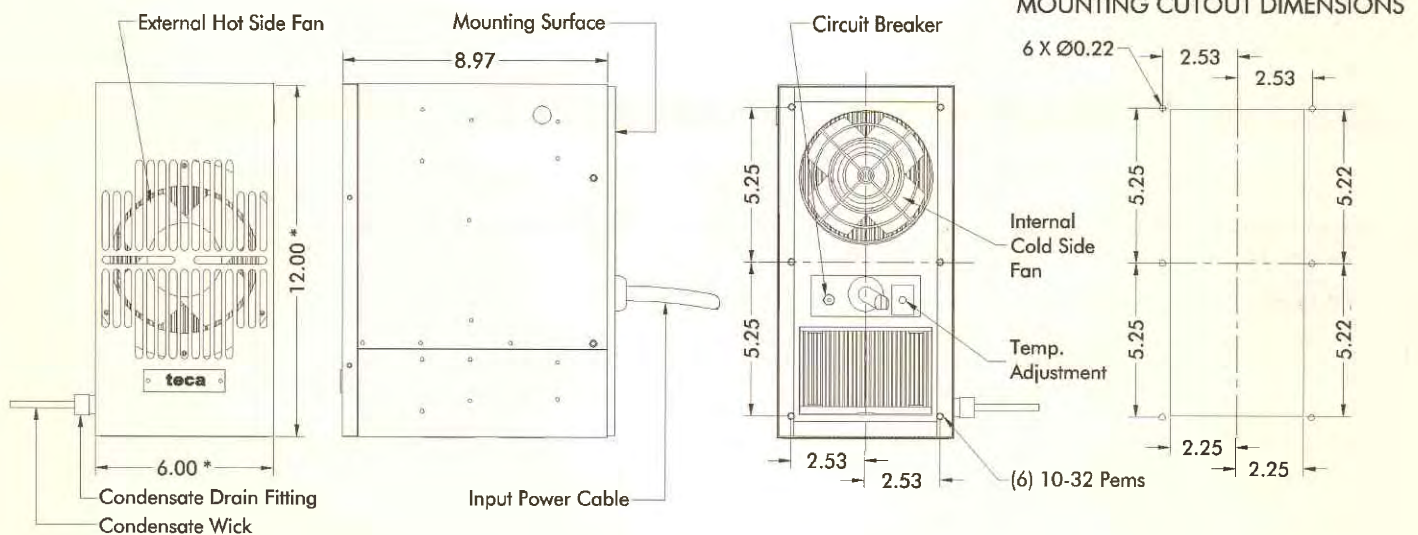
The Model FHP-750 is the smallest flush mount air conditioner for Nema-12. An external footprint of only 0.5 ft² makes this unit perfect for small enclosures.

APPLICATIONS

Used on small enclosures in electronics where space is premium. Telecom, medical and industrial.

ENVIRONMENTS

Nema-12 environments, indoors.

DIMENSIONS

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

FHP-450XE

Air Cooled
Flush Mount
Nema-4, 4x

Solid-State Air Conditioner

FEATURES

- 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
- 120/240 VAC

INCLUDES

- Integral power supply
- Single set point control
- Gasket for Nema-4X seal
- Mounting hardware
- Optional condensate removal



SPECIFICATIONS

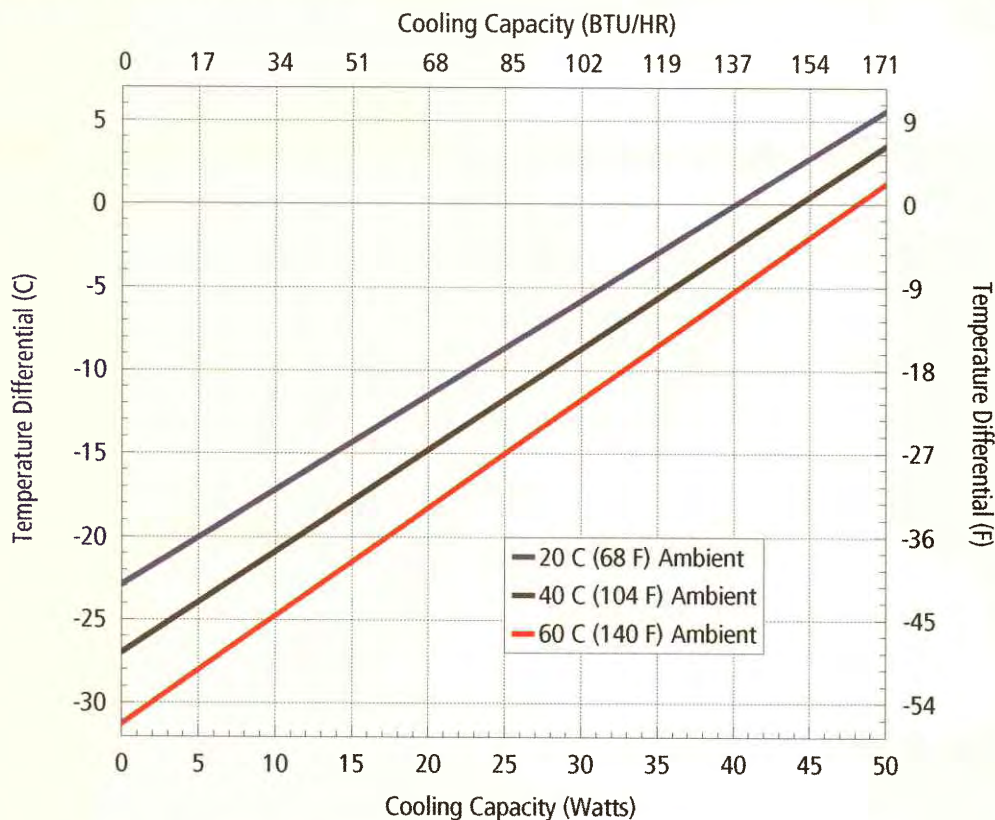
N E M A 4 X	MODEL	PART NUMBER	NOTES	PERFORMANCE RATING BTU/HR	VOLTAGE VAC 50/60 HZ	CURRENT AMPS.	WEIGHT LBS. (KG)	TEMP. CONTROL	CONDENSATE REMOVAL	OPERATING RANGE °C
	FHP-450XE	7-7070-4-000	Cool only temperature control	135-165	120	2.3	19.8(9)	T'stat 85 F	Optional	-10/+70
	FHP-452XE	7-7072-4-000	Cool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

FHP-450XE

Flush Mount

Nema-4, 4x

135-165 BTU/hr

PERFORMANCE CURVE

	$y = \Delta T(^{\circ}\text{C})$ $x = \text{Capacity (Watts)}$		
Ambient Temp	20°C	40°C	60°C
Enclosure Air	$y = .57x - 22.9$	$y = .61x - 27.0$	$y = .65x - 31.3$
Cold Sink	$y = .48x - 22.9$	$y = .51x - 27.0$	$y = .55x - 31.3$

Model FHP-450XE

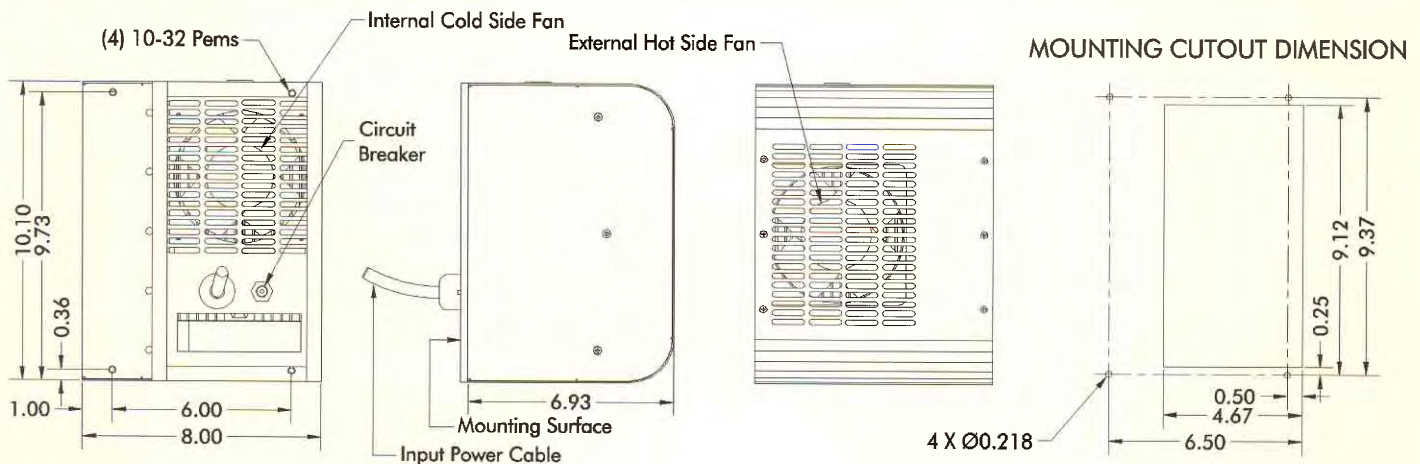
is the only flush-mount, Nema 4x air conditioner we offer. An external footprint less than 1 ft² makes this unit perfect for small enclosures.

APPLICATIONS

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

ENVIRONMENTS

Nema-4 and Nema-4X such as outdoors, shipboard and hose down areas.

DIMENSIONS

Dimensions do not include hardware.
Dimensions: Inches

150-1180 BTU/hr

Liquid Cooled Air Conditioners

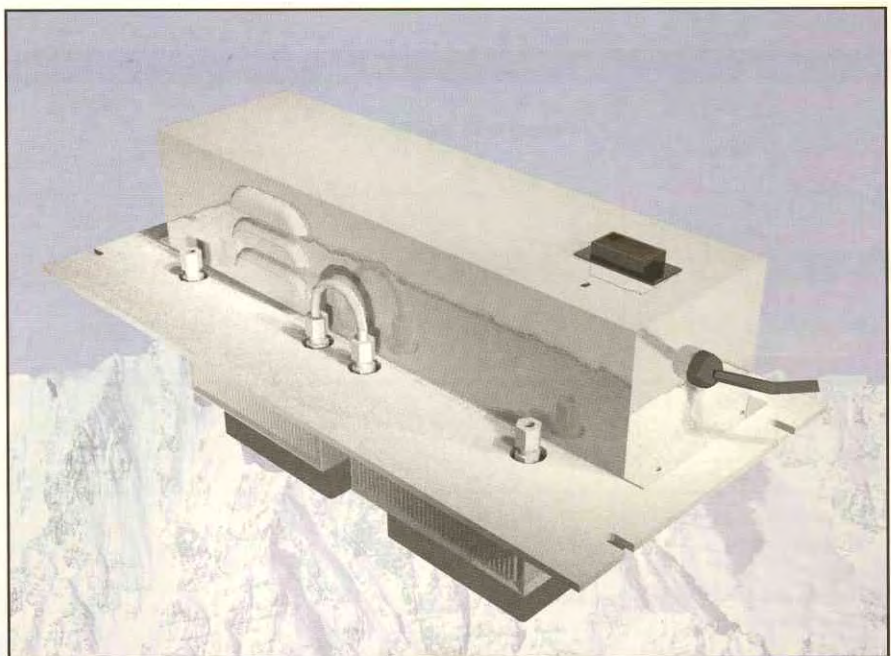
Solid-state liquid-cooled air conditioners work well in tight enclosures.

FEATURES

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

APPLICATIONS

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



AIR CONDITIONERS

Liquid Cooled

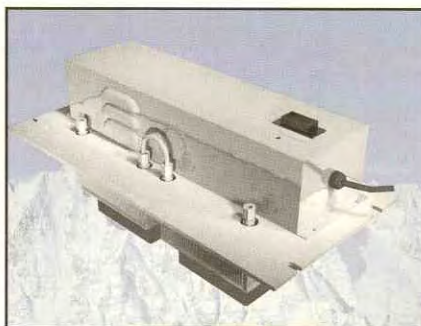
150-1180 BTU/hr

LHP-SERIES

LIQUID COOLED

LHP-1700FF pg32

950-1180 BTU/hr rating,
19" x 8.7" mounting area
120 and 220 VAC



LHP-800FF pg34

460-540 BTU/hr rating,
6.6" x 6.6" mounting area
30 and 130 VDC for TE
115 VAC fan



LHP-300FF pg36

150-175 BTU/hr rating,
4" x 4" mounting area
24 VDC for TE
115 VAC fan



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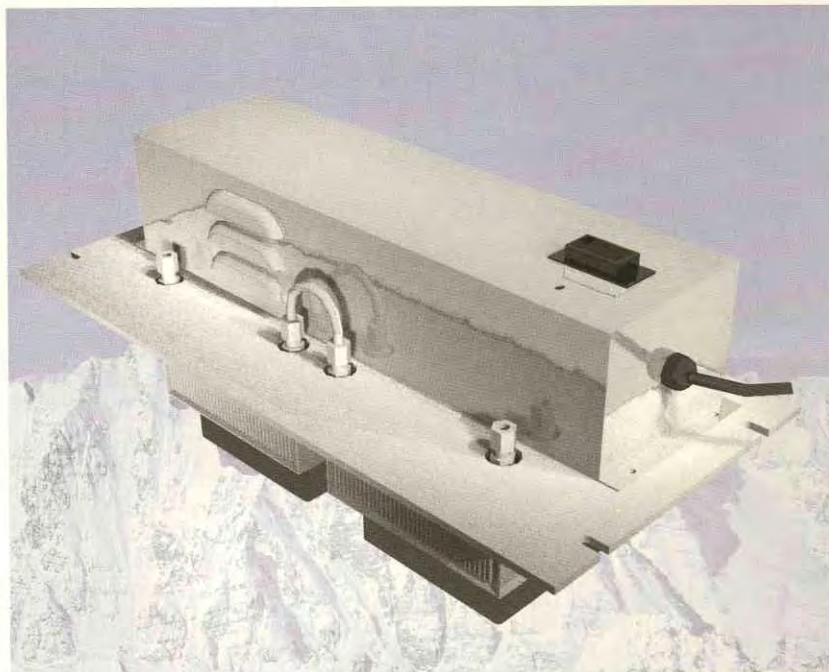
LHP-1700FF

Liquid Cooled
Thru Mount
Nema-12

Solid-State Air Conditioner

FEATURES

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



INCLUDES

- Integral power supply
- Compression fitting
- Line cord

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 RANGE °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

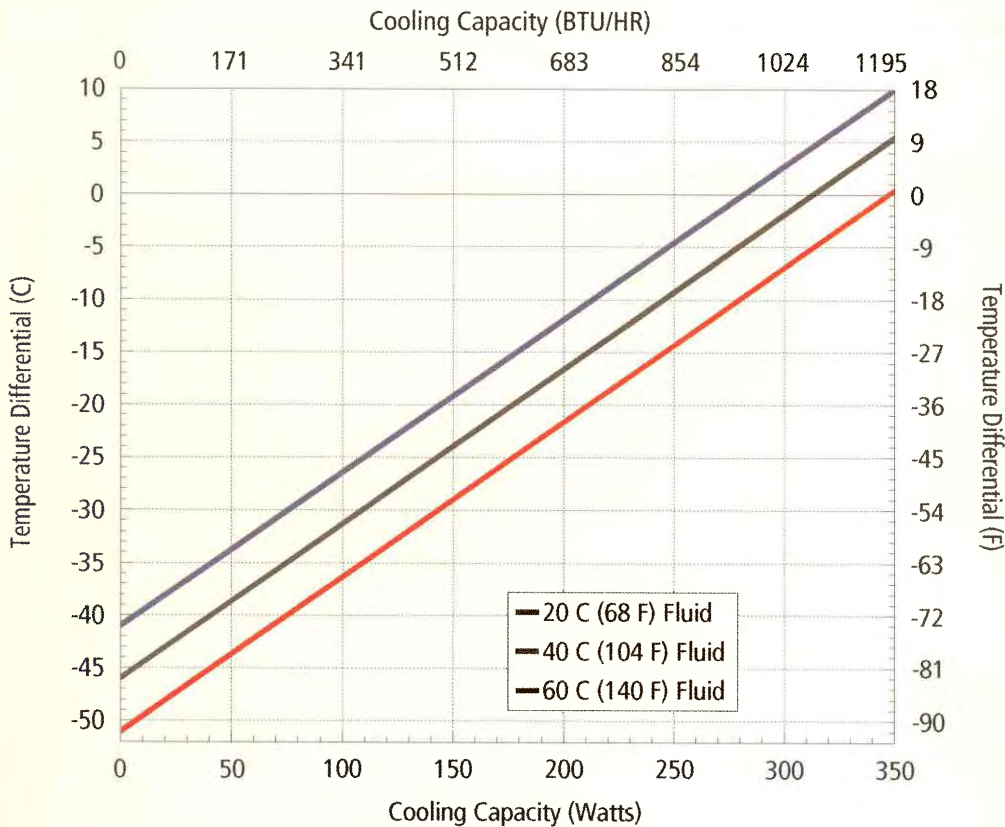
*OPT; Unit is set up for TC-3300 controller (or similar)

LHP-1700FF

Thru Mount

Nema-12

950-1180 BTU/hr

PERFORMANCE CURVE

$y = \Delta T(^{\circ}\text{C})$ $x = \text{Capacity (Watts)}$			
Fluid Temp	20°C	40°C	60°C
Enclosure Air	$y = .147x - 41.0$	$y = .147x - 46.0$	$y = .147x - 51.0$

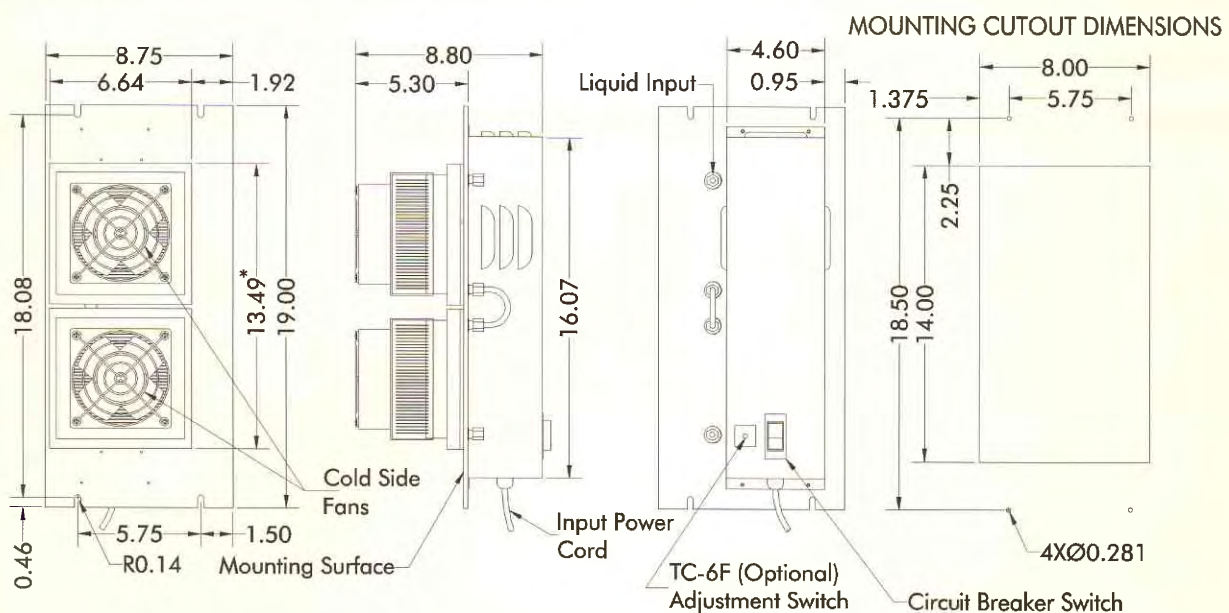
Model LHP-1700FF is a proven larger capacity air conditioner where liquid cooled heat removal is preferred. Available in heat/cool versions, 120 and 240 VAC.

APPLICATIONS

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

ENVIRONMENTS

Nema-12 indoors and Nema-4, C1D1 and C1D2 where installed within rated enclosure.

DIMENSIONS

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

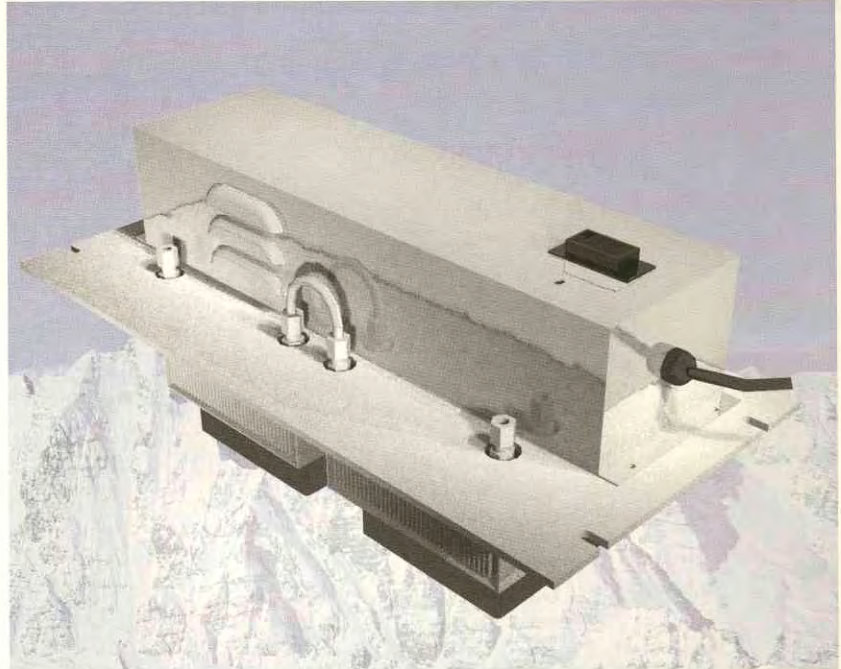
LHP-1700FF

Liquid Cooled
Thru Mount
Nema-12

Solid-State Air Conditioner

FEATURES

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



INCLUDES

- Integral power supply
- Compression fitting
- Line cord

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 RANGE °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

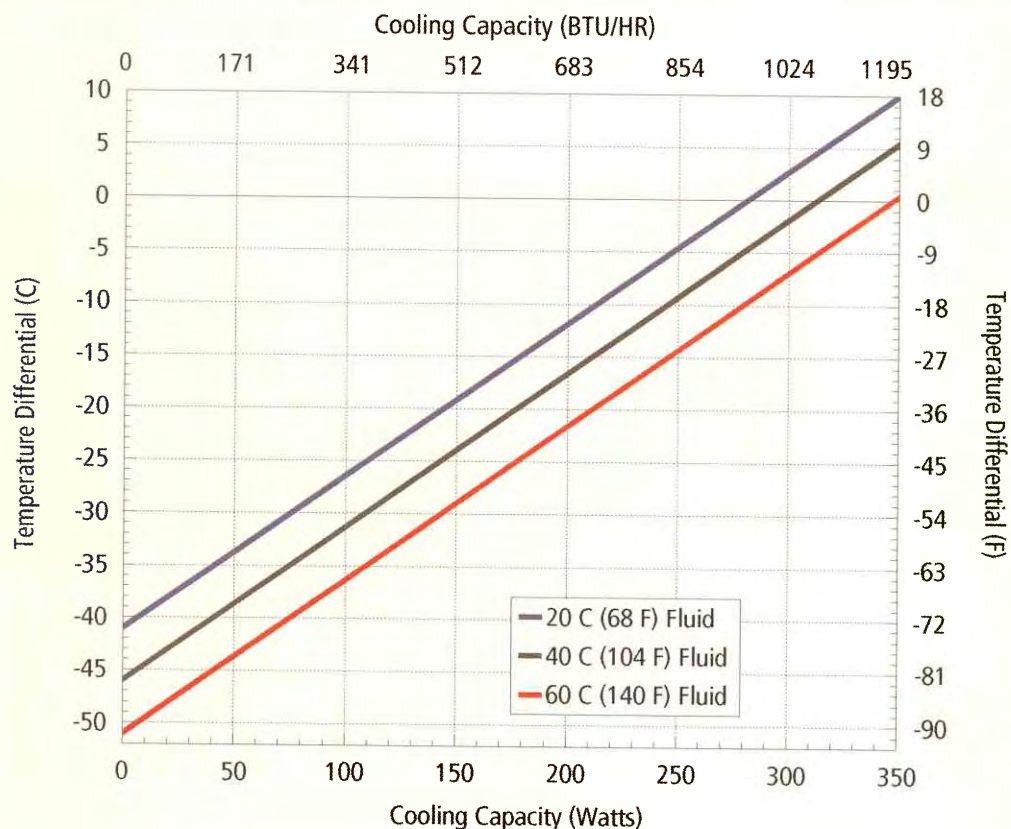
*OPT; Unit is set up for TC-3300 controller (or similar)

LHP-1700FF

Thru Mount

Nema-12

950-1180 BTU/hr

PERFORMANCE CURVE

$y = \Delta T(^{\circ}\text{C})$ $x = \text{Capacity (Watts)}$			
Fluid Temp	20°C	40°C	60°C
Enclosure Air	$y = .147x - 41.0$	$y = .147x - 46.0$	$y = .147x - 51.0$

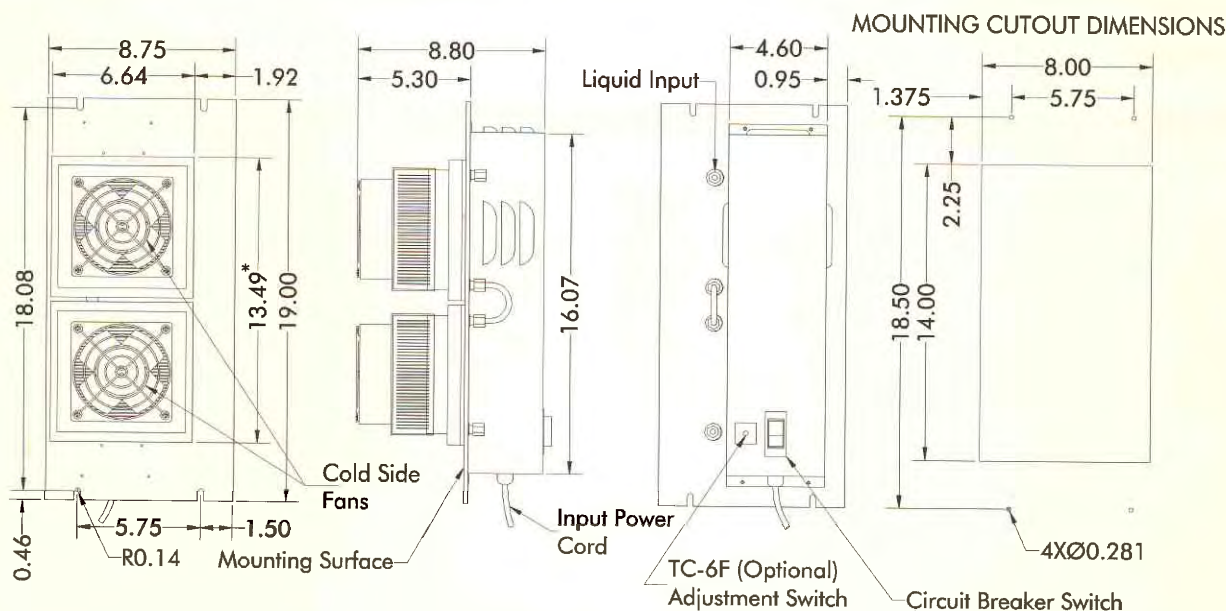
Model LHP-1700FF is a proven larger capacity air conditioner where liquid cooled heat removal is preferred. Available in heat/cool versions, 120 and 240 VAC.

APPLICATIONS

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

ENVIRONMENTS

Nema-12 indoors and Nema-4, C1D1 and C1D2 where installed within rated enclosure.

DIMENSIONS

LHP-800FF

Liquid Cooled
Thru Mount
Nema-12

Solid-State Air Conditioner

FEATURES

- Compact (6.64" L X 6.64" W X 4.92" D)
- Weighs only 6 lbs. (2.7 kg)
- 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 enclosure
- Virtually maintenance-free operation
- Mounts in any orientation

INCLUDES

- Compression fittings
- Terminal strip for wire hook up



SPECIFICATIONS

MODEL	PART NUMBER	NOTES	PERFORMANCE RATING BTU/HR	VOLTAGE VDC	CURRENT AMPS.	FAN VOLTAGE VAC	WEIGHT LBS (kg)	MIN FLOW GPM	OPERATING RANGE °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 (120 VAC Heat)	460-540	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

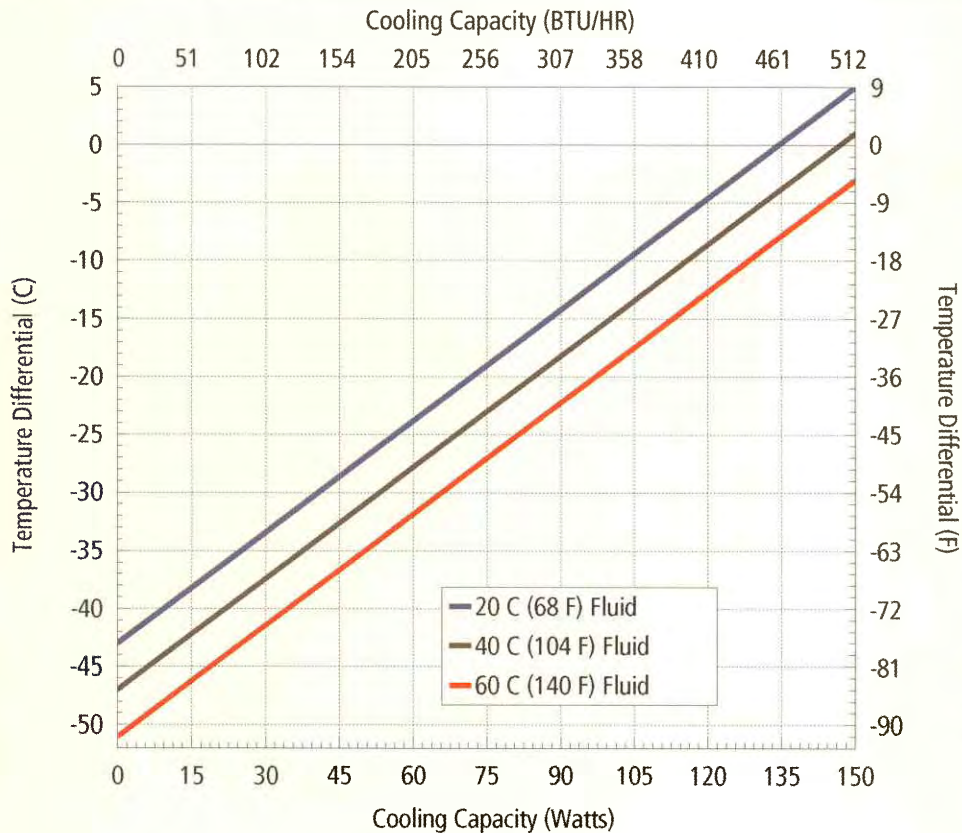
Note: No provision for temperature control is included. Consult factory for options.

LHP-800FF

Thru Mount

Nema-12

460-540 BTU/hr

PERFORMANCE CURVE

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

Ambient Temp	20°C	40°C	60°C
Enclosure Air	$y = .32x - 43.0$	$y = .32x - 47.0$	$y = .32x - 51.0$
Cold Sink	$y = .19x - 43.0$	$y = .19x - 47.0$	$y = .19x - 51.0$

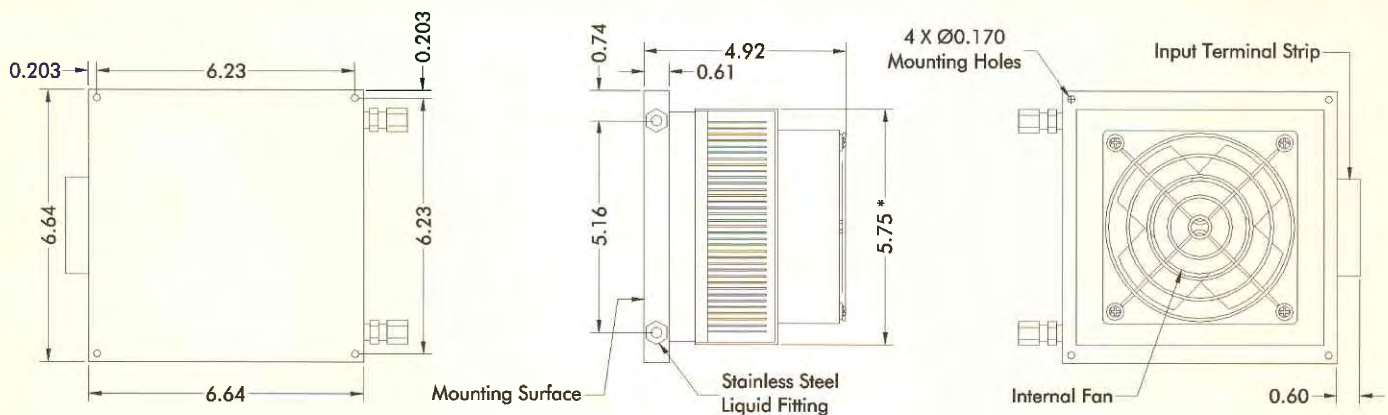
Model LHP-800FF is a mid-capacity liquid cooled air conditioner which is compact and efficient.

APPLICATIONS

Used in laboratory equipment and specialized systems world wide.

ENVIRONMENTS

Units can be mounted partially or totally inside enclosure making it fit virtually any environment.

DIMENSIONS

* Dimension does not include hardware. Dimensions: Inches.

LHP-300FF Solid-State Air Conditioner

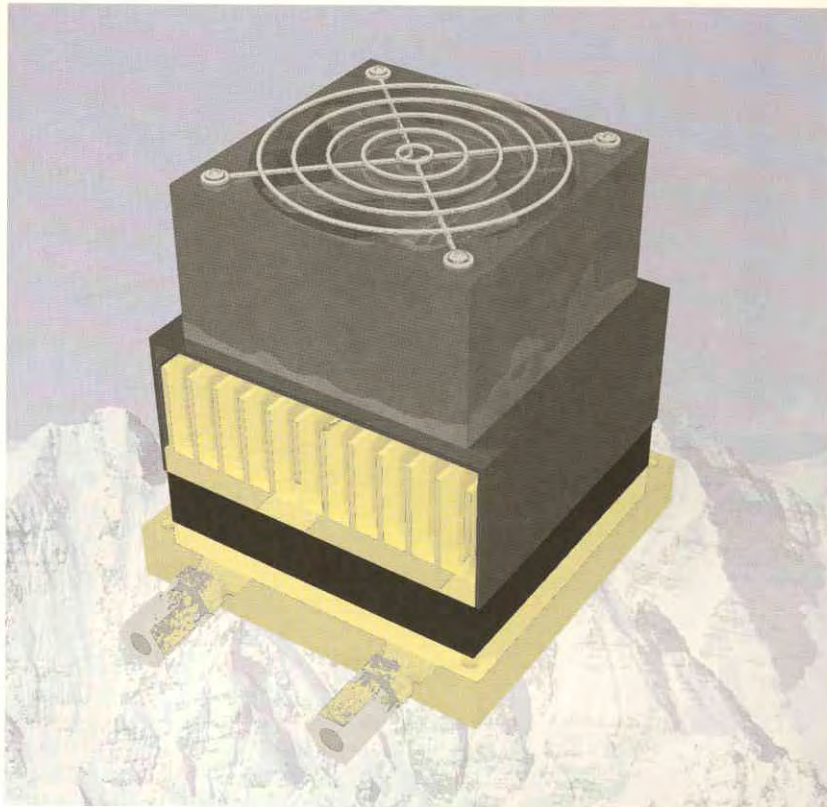
Liquid Cooled
Thru Mount
Nema-12

FEATURES

- Compact (4" L X 4" W X 4.60" D)
- Weighs less than 3 lbs.
- Ambient range 0°C to +70°C
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Adaptable to NEMA-4 and explosion proof applications. Can be mounted entirely inside enclosure
- Mounts in any orientation

INCLUDES

- Compression fittings
- Terminal strip for wire hook up



SPECIFICATIONS

MODEL	PART NUMBER	NOTES	PERFORMANCE RATING BTU/HR	VOLTAGE VDC	CURRENT AMPS.	FAN VOLTAGE	WEIGHT LBS (kg)	MIN FLOW GPM	OPERATING RANGE °C
LHP-300FF	2-7099-0-000	Cool only	150-175	24	4.5	120 VAC	2.75(1.25)	0.3	0/+70
LHP-300FFHC	2-7099-1-001	Heat/Cool 24 VDC Heat	150-175	24	4.5	120 VAC	2.75(1.25)	0.3	0/+70
LHP-300FFHC	2-7099-1-000	Heat/Cool, 120 VAC Heat	150-175	24	4.5	120 VAC	2.75(1.25)	0.3	0/+70
LHP-300FFHC	2-7095-1-000	Heat/Cool, 24 VDC Heat	150-175	24	4.5	24 VDC	2.75(1.25)	0.3	0/+70

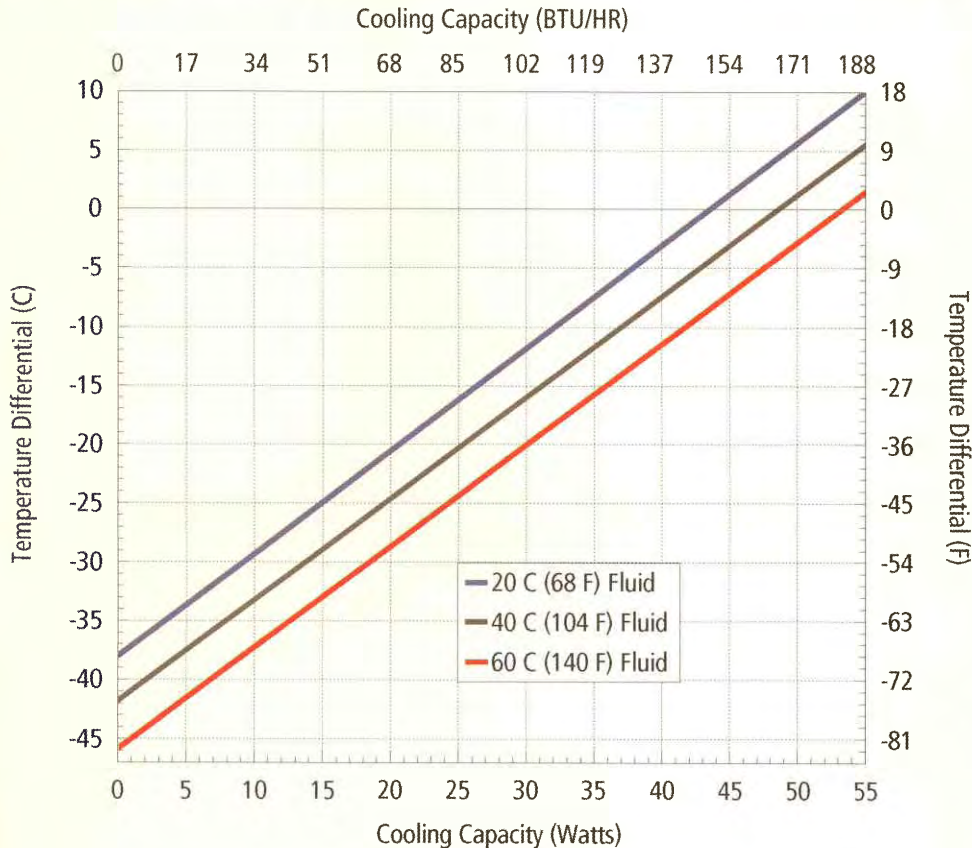
Note: No provision for temperature control is included. Consult factory for options.

LHP-300FF

Thru Mount

Nema-12

150-175 BTU/hr

PERFORMANCE CURVE

	$y = \Delta T(^{\circ}\text{C})$ $x = \text{Capacity (Watts)}$		
Fluid Temp	20°C	40°C	60°C
Enclosure Air	$y = .88x - 38.0$	$y = .88x - 42.0$	$y = .88x - 46.0$
Cold Sink	$y = .51x - 38.0$	$y = .51x - 42.0$	$y = .51x - 46.0$

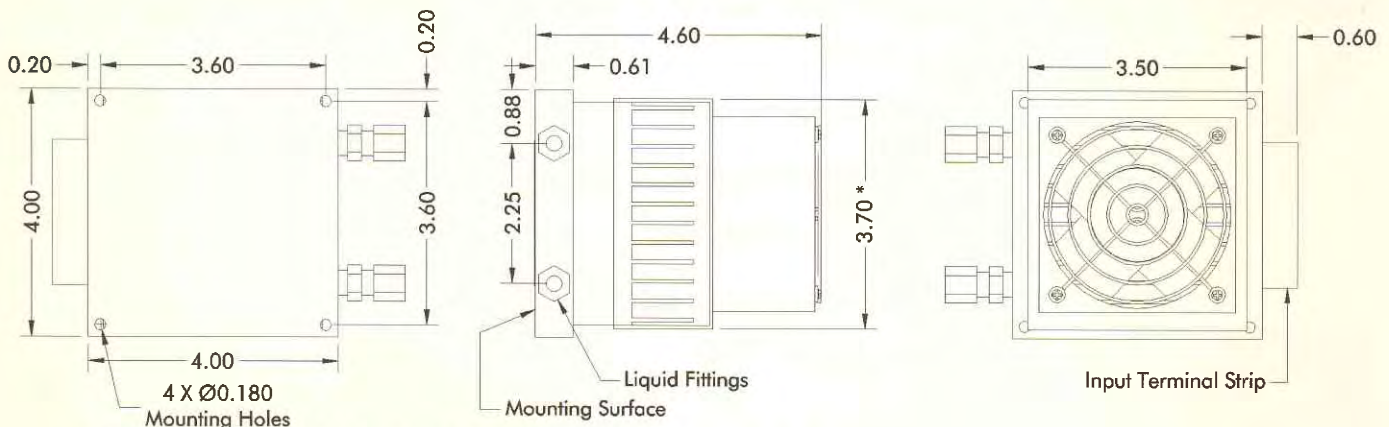
Model LHP-300FF is TECA'S smallest liquid cooled air conditioner.

APPLICATIONS

Used in laboratory equipment and specialized cooling where water is available.

ENVIRONMENTS

Units can be mounted partially or totally inside the enclosure making them fit any environment.

DIMENSIONS

* Dimension does not include hardware. Dimensions: Inches.

Cold Plates

140-1630 BTU/hr

AIR COOLED

AHP-SERIES

FEATURES

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

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

COLD PLATES

Air Cooled

Liquid Cooled

AIR COOLED

AHP-1400SCP pg40

Super Cold Plate,
12" x 14" x 13" size,
3.5" x 3.5" cold plate surface,
120 VAC operation,
Delta T -140 °F



AHP-300CP pg46

290-330 BTU/hr rating,
10" x 5.37" x 4.1" size,
4.5" x 6" cold plate surface,
12/24/48 VDC operation



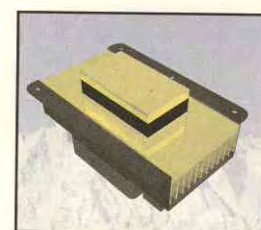
AHP-1200CP pg42

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



AHP-150CP pg46

140-160 BTU/hr rating,
7" x 5" x 3.95" size,
2" x 3.5" cold plate surface,
12/24 VDC operation



AHP-301CP pg44

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



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LIQUID COOLED

LHP-1700CP pg48

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



LHP-300CP pg50

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



LHP-800CP pg50

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



LHP-150CP pg50

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



AHP-1400SCP

Air Cooled

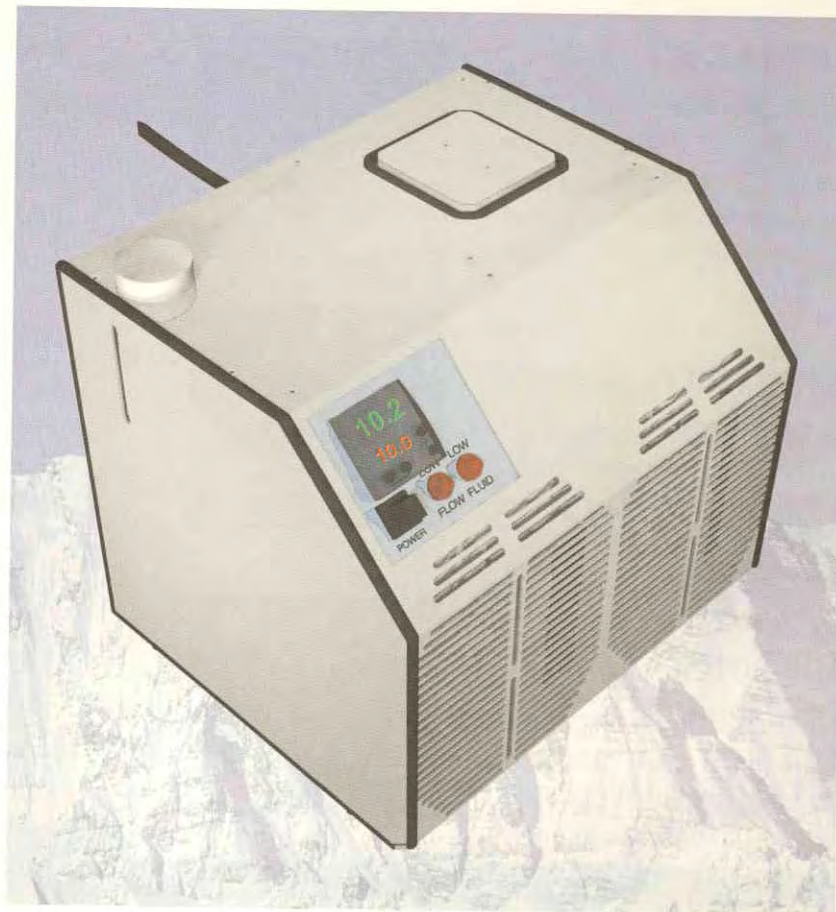
Solid-State Super Cold Plate

FEATURES

- No load delta T over -140°F
- Compact (only 12" x 14" benchtop footprint)
- Ambient range up to 50°C
- Unique air/liquid cooled 3 stage cascade design
- PID temperature control ramp and soak capabilities
- Ramp, soak and cycle capabilities with TC-96 option on HC Version
- Virtually maintenance-free operation
- Stainless steel exterior housing
- Low fluid/flow warning

INCLUDES

- Integral power supply
- PID temperature control
- Power input cord
- 3 1/2" square cold plate

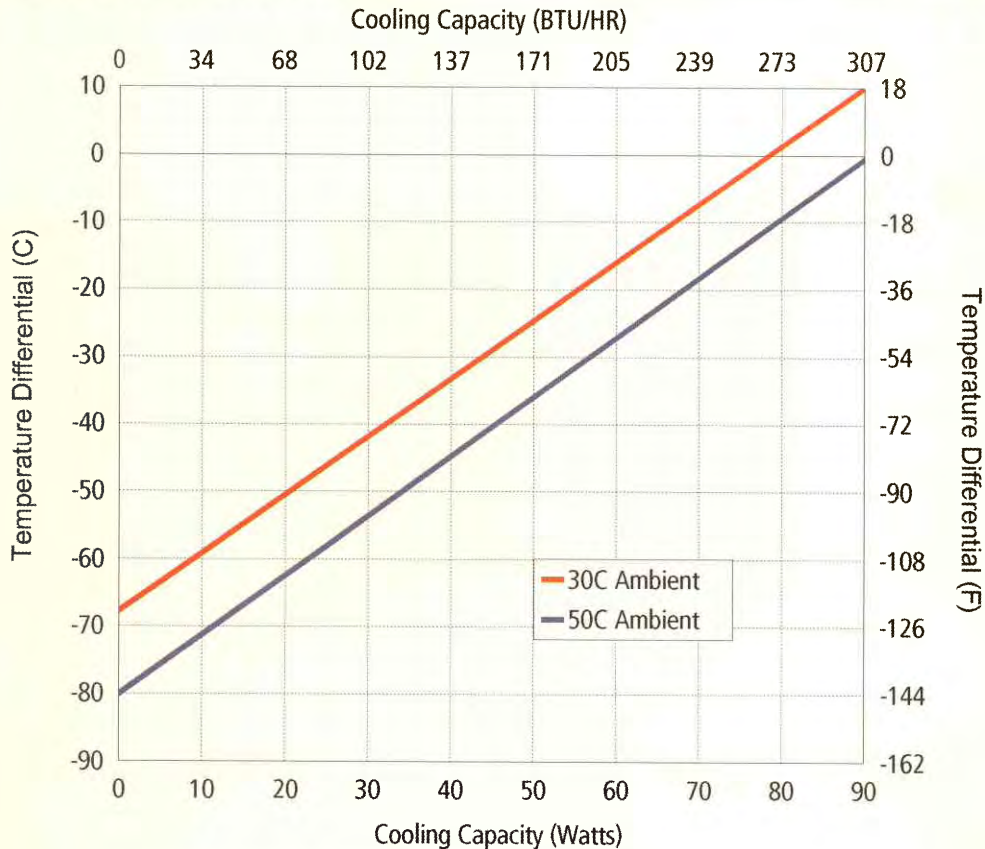


SPECIFICATIONS

MODEL	PART NUMBER	NOTES	PERFORMANCE RATING BTU/HR	VOLTAGE VAC 50/60 HZ	CURRENT AMPS.	WEIGHT LBS. (KG)	MAX OPERATING TEMP °C	OPERATING RANGE °C
AHP-1400SCP	1-B0D0-0-000	Cool only	240-270	120	11.7	68 (31)	50	-10/+70
AHP-1400SCPHC	1-B0D0-1-000	Heat/Cool	240-270	120	11.7	68 (31)	50	-10/+70
TYPICAL CONTROL STABILITY	CONTROL	RAMPING	SIZE					
< +/- 0.5 °C	0.1 °C Indication	none	13.0x14.4x12.2					
< +/- 0.5 °C	0.1 °C Indication	standard	13.0x14.4x12.2					

AHP-1400SCP

250-300 BTU/hr

PERFORMANCE CURVE

	$y = \Delta T(^{\circ}\text{C})$ $x = \text{Capacity (Watts)}$	
Ambient Temp	30°C	50°C
Cold Plate	$y = .89x - 67.7$	$y = .89x - 80.1$

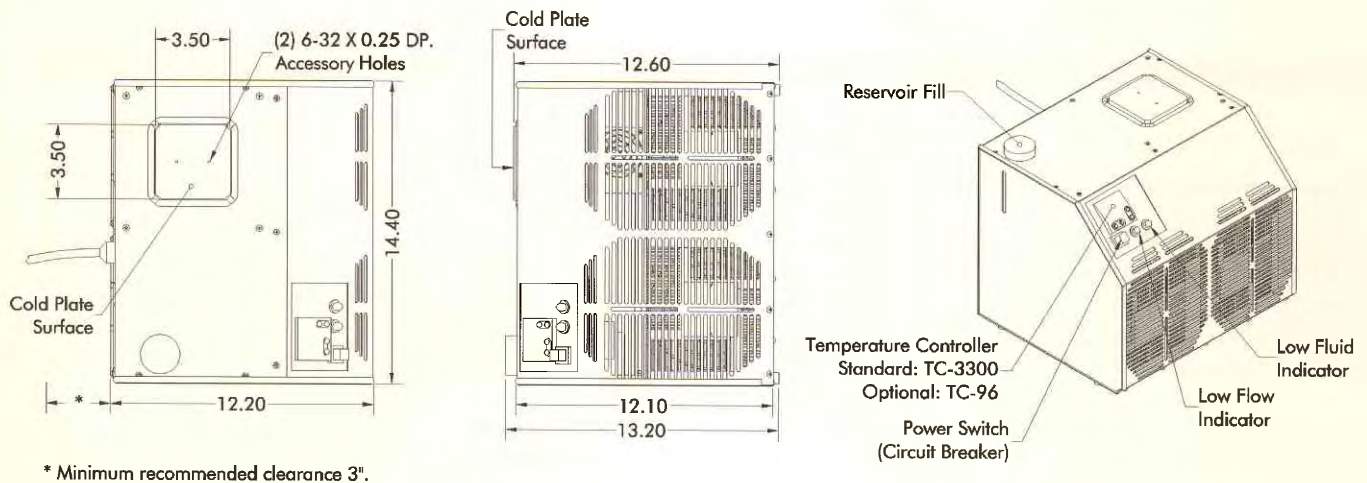
Model TLC-1400SCP is the newest cold plate we offer. Based on a unique 3-stage design it can develop cold temperatures to -40 C right on your bench top.

APPLICATIONS

Stress testing and material evaluations are two common applications.

ENVIRONMENTS

The AHP-1400SCP is designed for laboratory and mild factory settings.

DIMENSIONS

AHP-1200CP

Air Cooled
Flush Mount
Nema-12

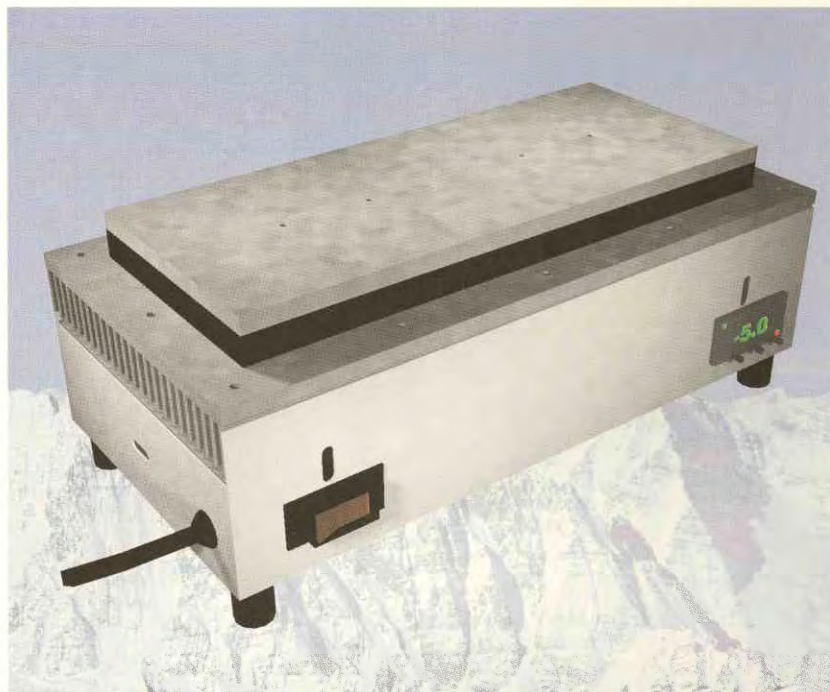
Solid-State Cold Plate

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
- Mounts in any orientation

INCLUDES

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



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

SPECIFICATIONS

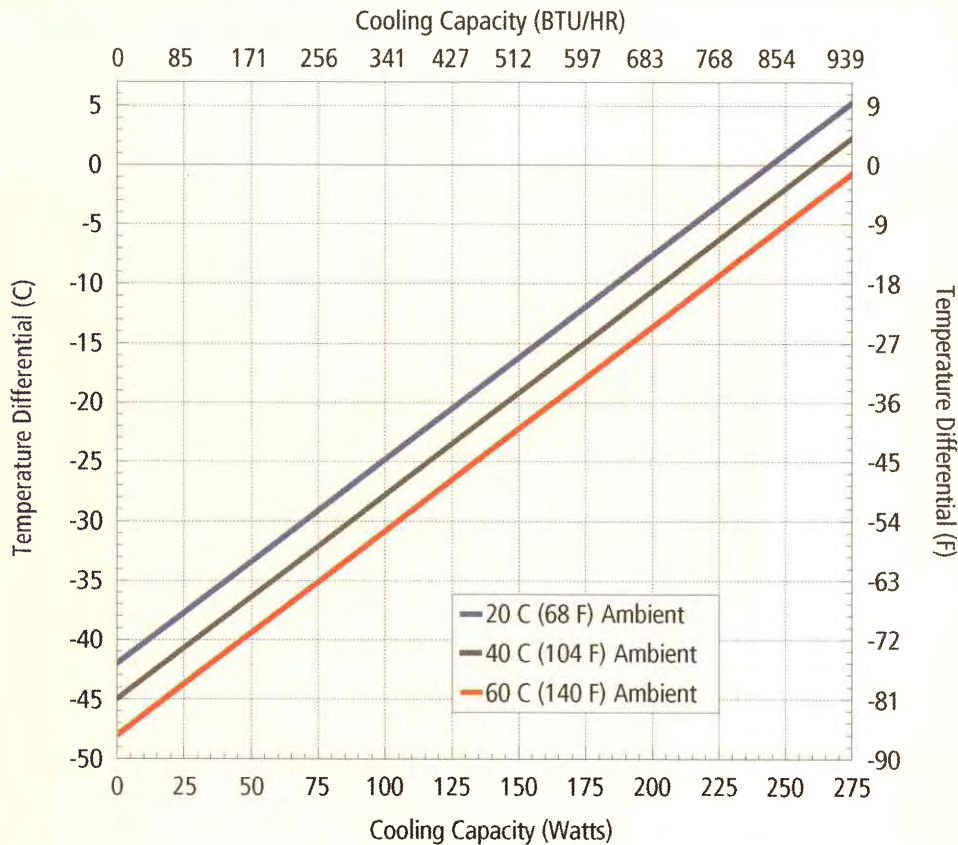
MODEL	PART NUMBER	NOTES	PERFORMANCE RATING BTU/HR	VOLTAGE VAC 50/60 HZ	CURRENT AMPS.	WEIGHT LBS. (KG)	TEMP. CONTROL *	OPERATING RANGE °C
AHP-1200CP	1-3090-0-000	Cool only	830-950	120	4.0	19(8.6)	None	-10/+70
AHP-1200CP	1-3050-0-000	Cool only	830-950	120	4.0	19(8.6)	OPT*	-10/+70
AHP-1200CP	1-30D0-0-000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

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

TC-3300 Temperature controllers are integral (built in)

AHP-1200CP

830-950 BTU/hr

PERFORMANCE CURVE

	$y = \Delta T(^{\circ}\text{C}) \quad x = \text{Capacity (Watts)}$		
Ambient Temp	20°C	40°C	60°C
Cold Plate	$y = .172x - 44.0$	$y = .172x - 45.0$	$y = .172x - 48.0$

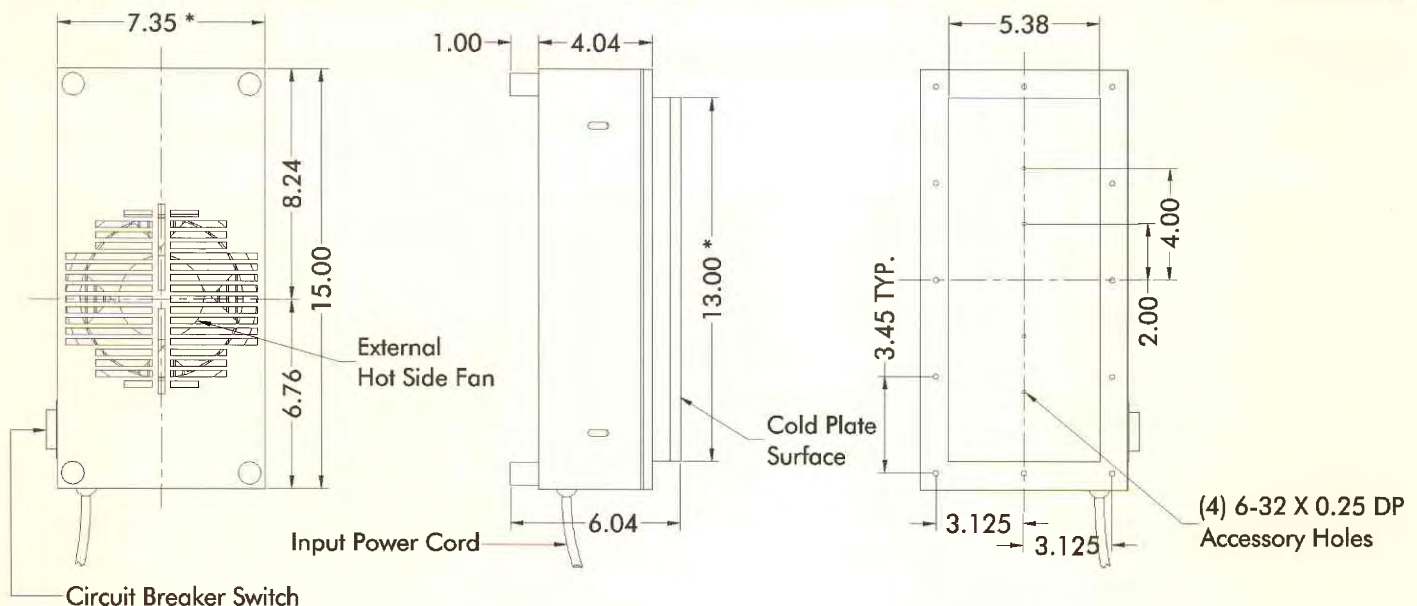
Model AHP-1200CP is TECA'S largest air cooled cold plate.

APPLICATIONS

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

ENVIRONMENTS

Intended for used indoors in laboratories and factories.

DIMENSIONS

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

AHP-301CP Solid-State Cold Plate

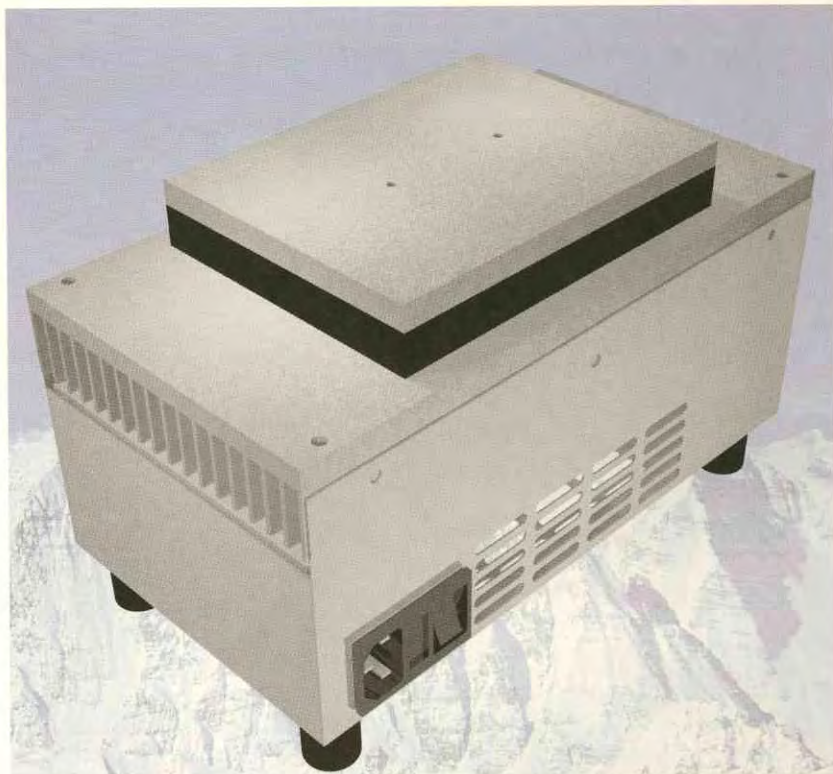
Air Cooled

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
- Mounts in any orientation

INCLUDES

- Cold plate mounting taps
- Rubber feet
- Line cord

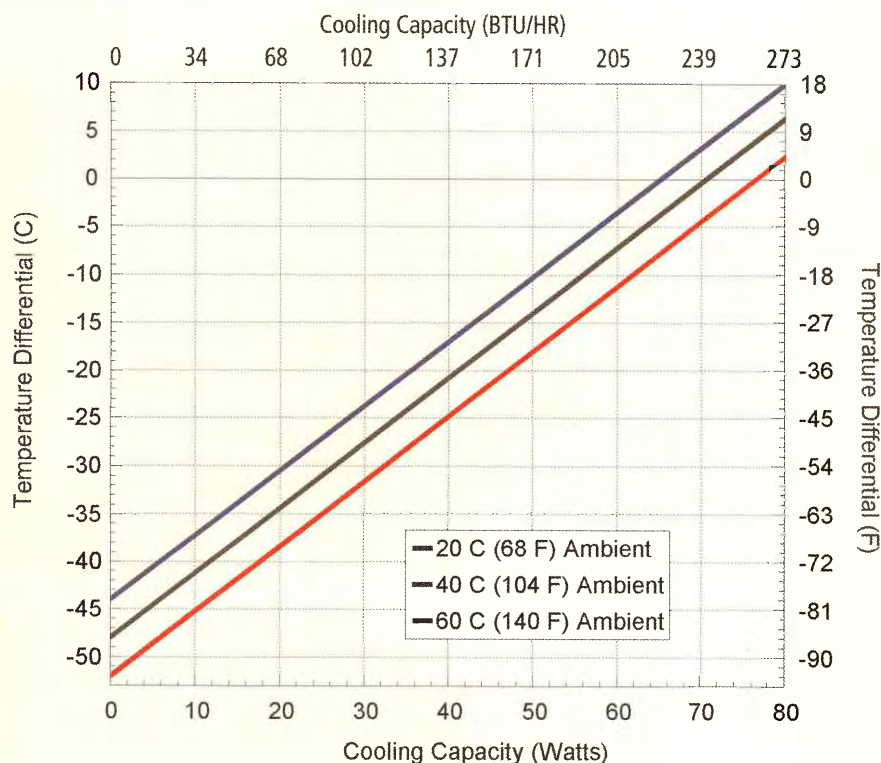


SPECIFICATIONS

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

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

TC-3300 Temperature controllers are integral (built in)

PERFORMANCE CURVE

	$y = \Delta T(^{\circ}\text{C})$ $x = \text{Capacity (Watts)}$		
Ambient Temp	20°C	40°C	60°C
Cold Plate	$y = .68x - 44.0$	$y = .68x - 48.0$	$y = .68x - 52.0$

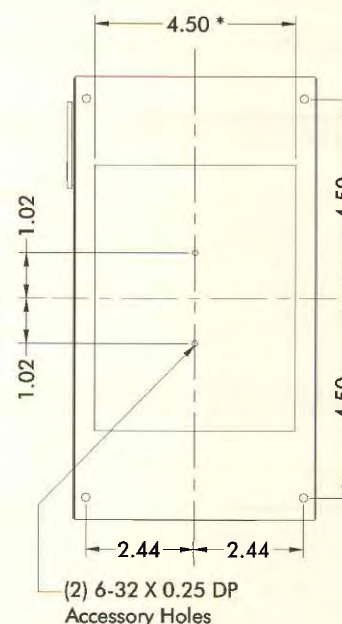
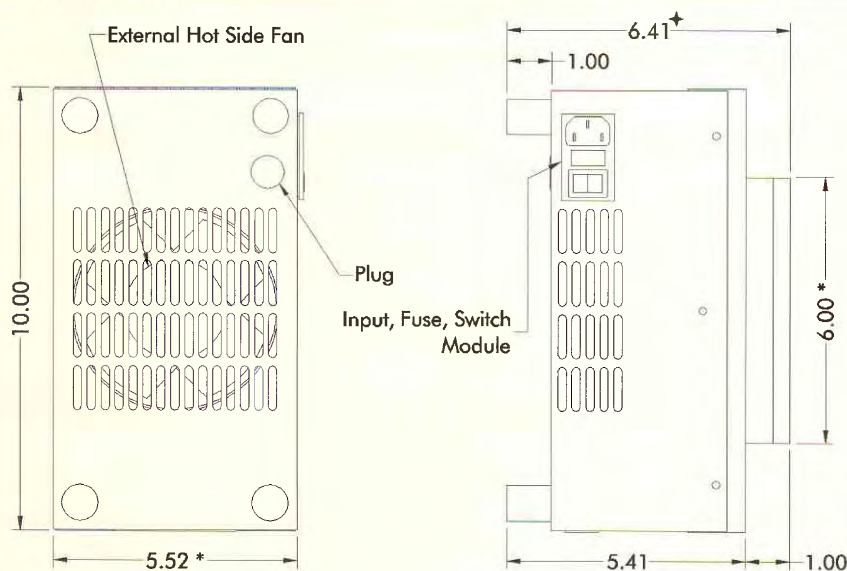
The **Model AHP-301CP** is the smallest cold plate with integral power supply and temperature controller we offer.

APPLICATIONS

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

ENVIRONMENTS

Intended for used indoors in laboratories and factories.

DIMENSIONS

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

† Dimension is 7.20 with integral TC-3300 temperature control.

AHP-300CP AHP-150CP

Air Cooled

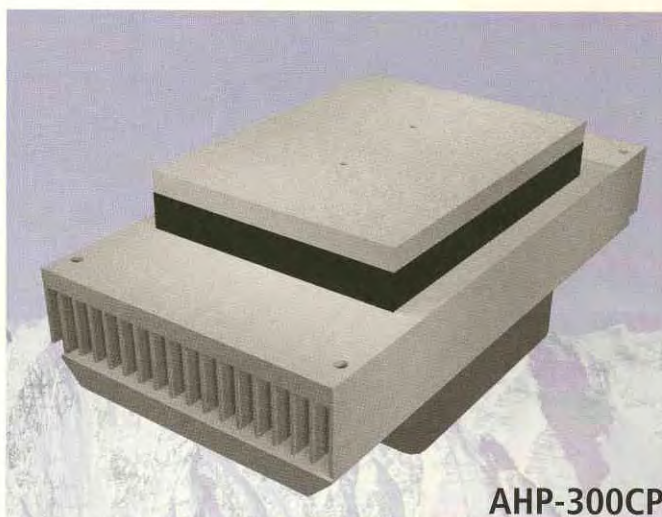
Solid-State Cold Plate

FEATURES

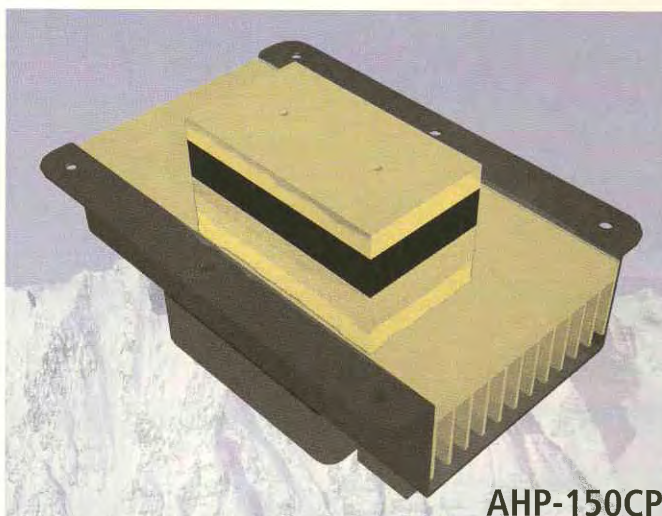
- Direct contact cooling as much as 56°C below room temperature
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Mounts in any orientation

INCLUDES

- Cold plate mounting taps
- Machined surface
- Terminal strip for wire hook up



AHP-300CP



AHP-150CP

SPECIFICATIONS AHP-300CP

MODEL	PART NUMBER	NOTES	PERFORMANCE RATING BTU/HR	VOLTAGE VDC	CURRENT AMPS.	WEIGHT LBS. (KG)	TEMP. CONTROL	OPERATING RANGE °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 RANGE °C
AHP-150CP	1-8098-0-000	Cool only	140-160	12/24	6/3	3.5(1.6)	None	-10/+70
AHP-150CPHC	1-8094-1-000	Heat/Cool	140-160	12	6	3.5(1.6)	None	-10/+70
AHP-150CPHC	1-8095-1-000	Heat/Cool	140-160	24	3	3.5(1.6)	None	-10/+70

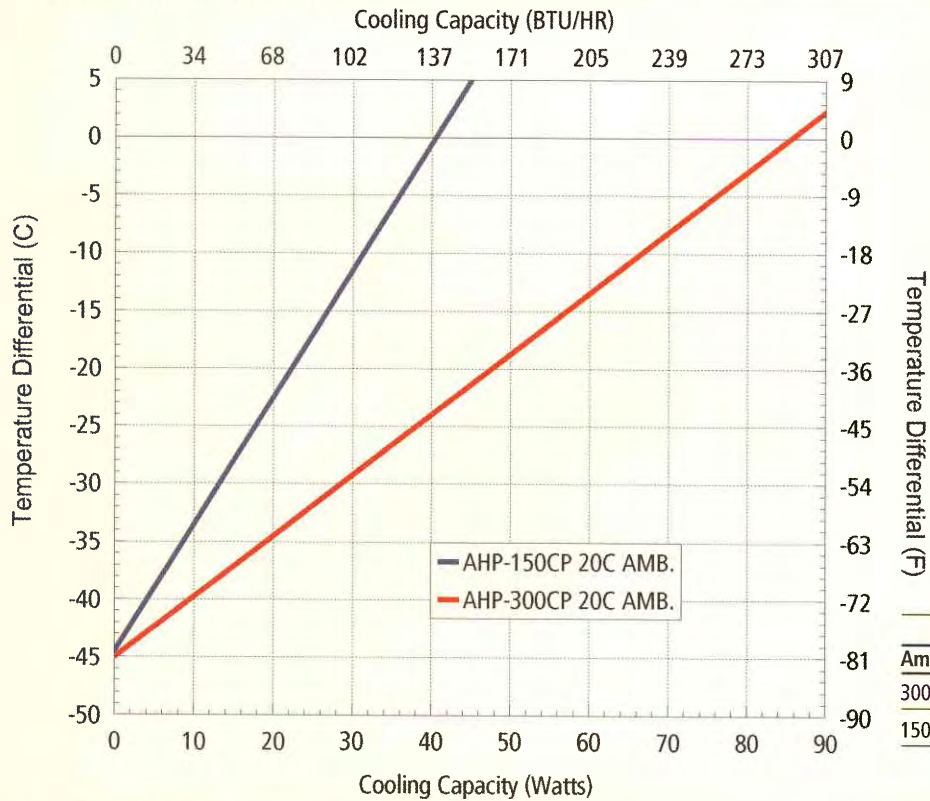
Note: Options for temperature control, consult factory.

AHP-300CP

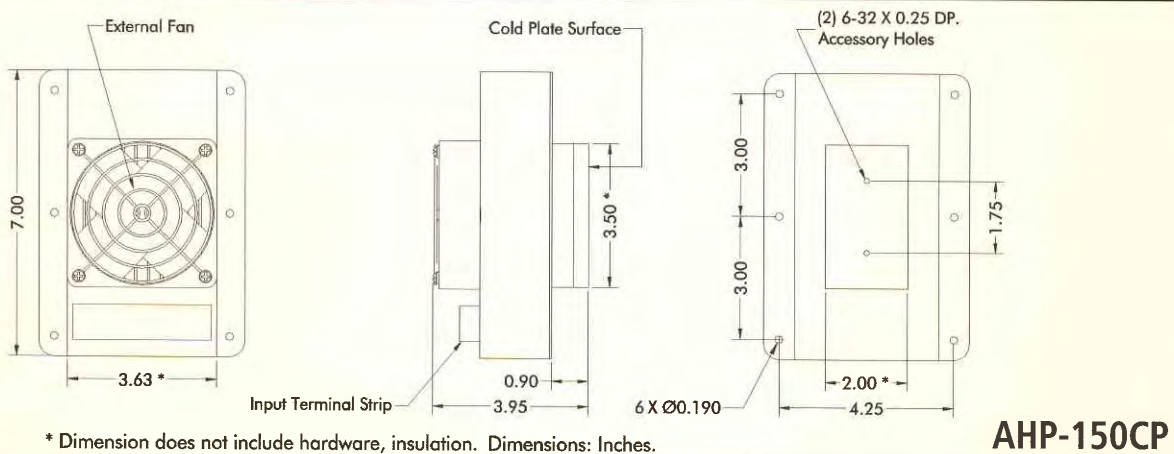
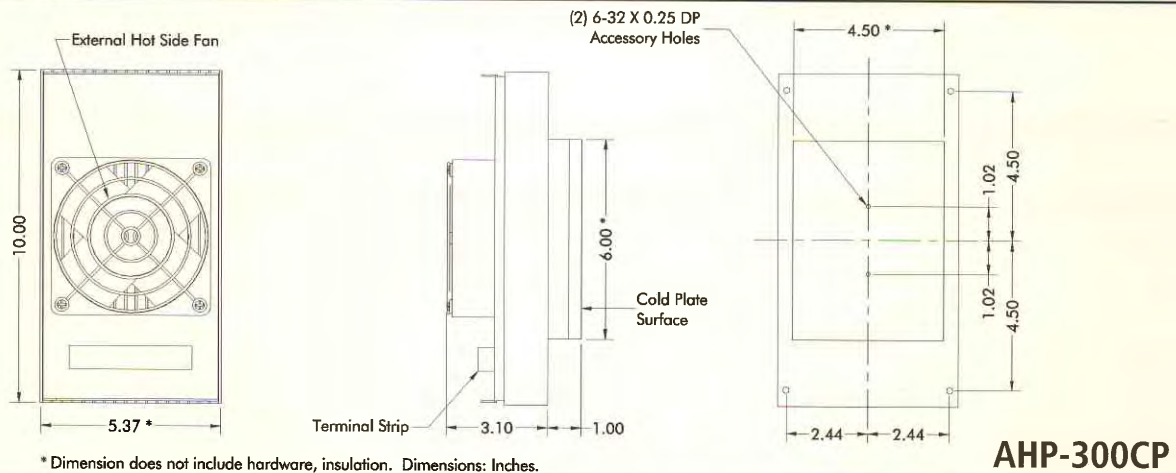
290-330 BTU/hr

AHP-150CP

140-160 BTU/hr

PERFORMANCE CURVE

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

Liquid Cooled

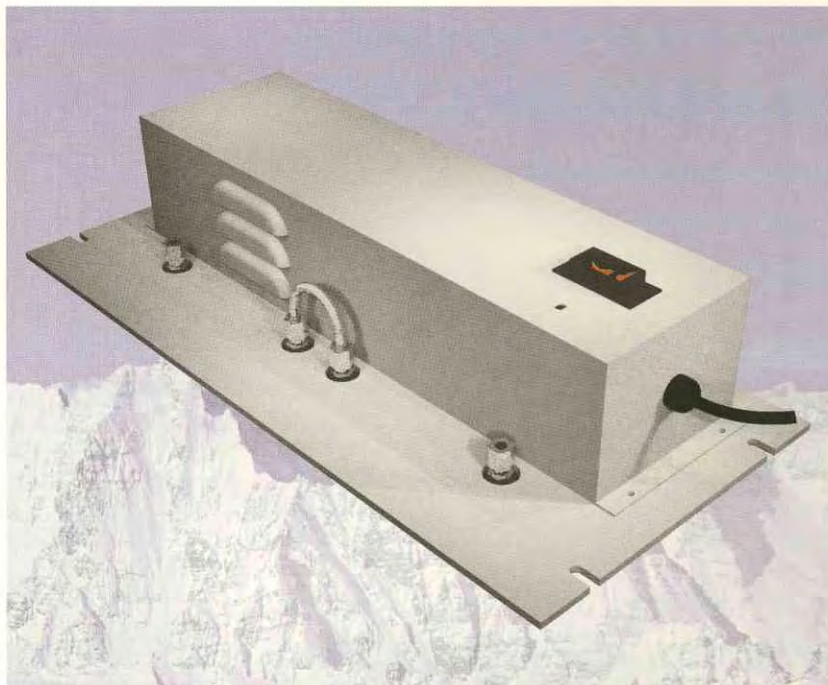
Solid-State Cold Plate

FEATURES

- Standard 19" Rack
- 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

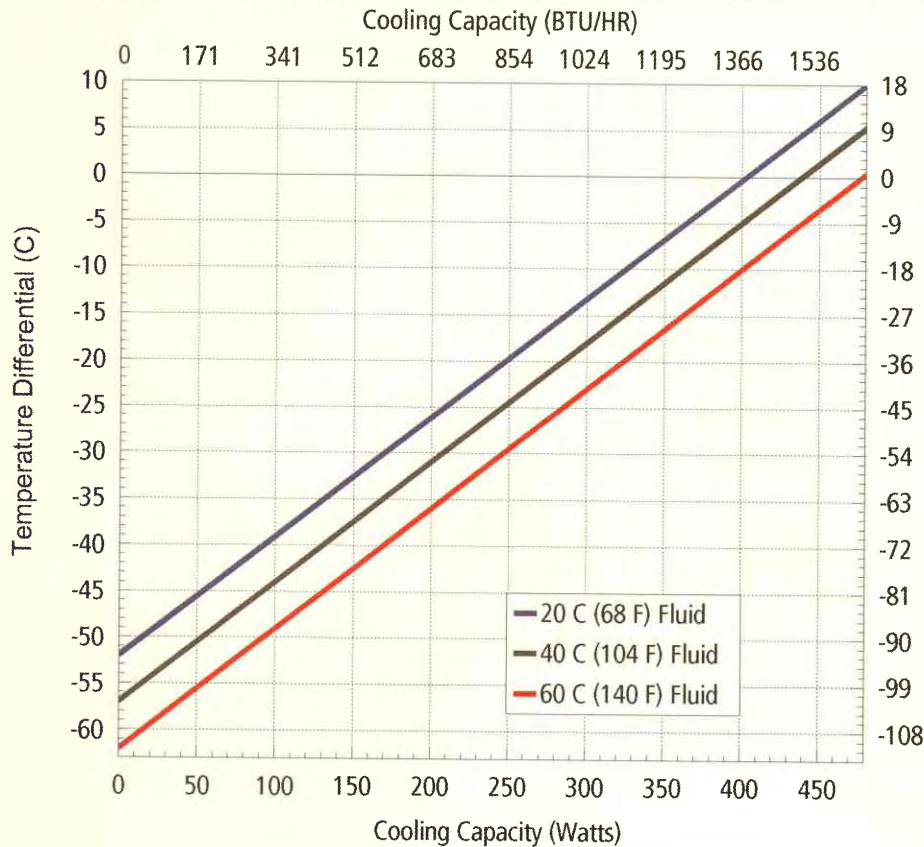
- Compression fittings
- Power cord
- Mounting provision



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 RANGE °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)

PERFORMANCE CURVE

	$y = \Delta T(^{\circ}\text{C})$ $x = \text{Capacity (Watts)}$		
Fluid Temp	20°C	40°C	60°C
Cold Plate Temp	$y = .13x - 52.0$	$y = .13x - 57.0$	$y = .13x - 62.0$

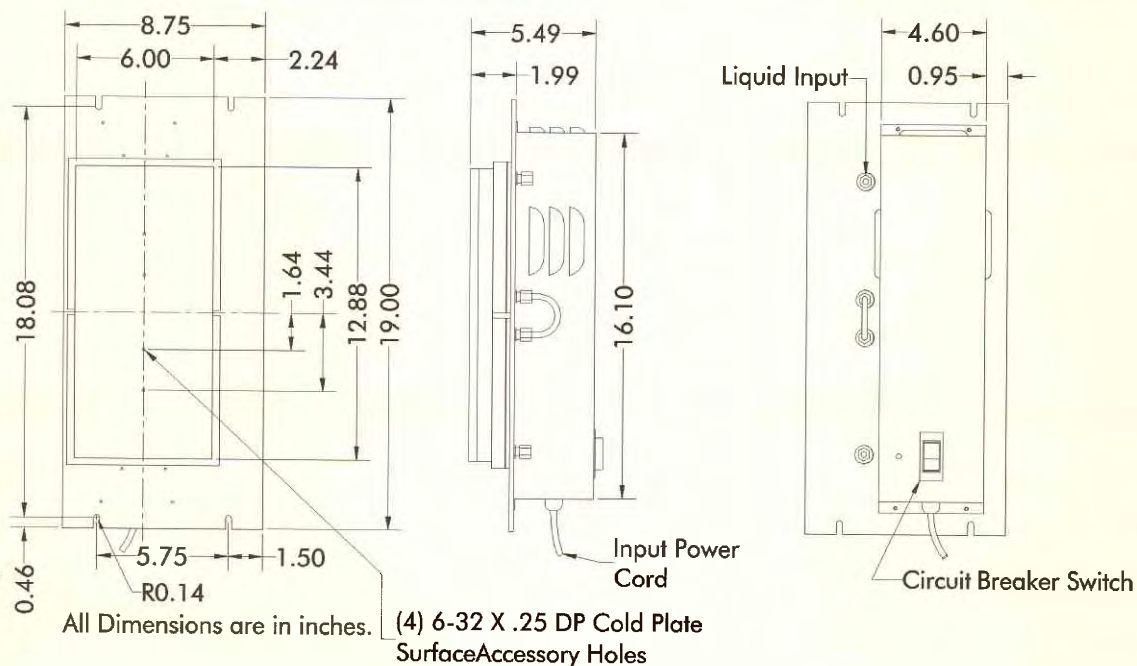
Model LHP-1700CP is the largest liquid cooled cold plate offered by TECA.

APPLICATIONS

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

ENVIRONMENTS

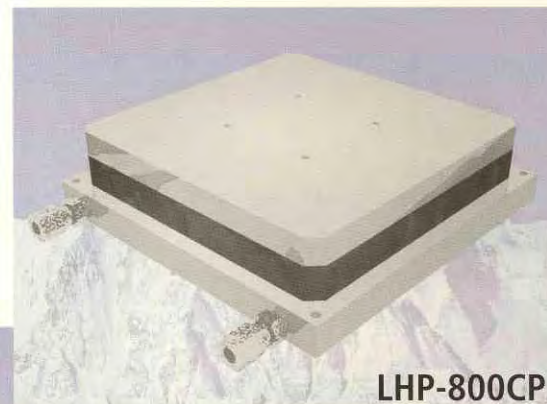
From harsh to benign the LHP-1700CP works in many environments.

DIMENSIONS

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

Liquid Cooled

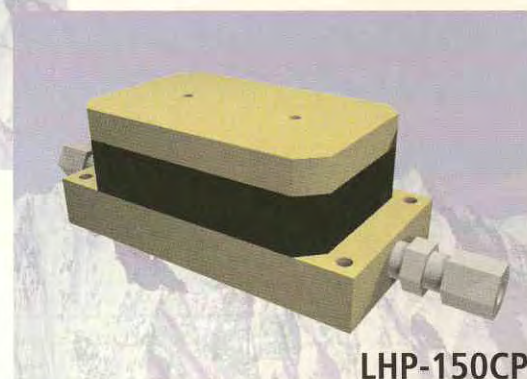
Solid-State Cold Plate



LHP-800CP



LHP-300CP



LHP-150CP

FEATURES

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

INCLUDES

- Compression fittings
- Auxiliary mounting holes
- Machined surfaces

SPECIFICATIONS LHP-800CP

MODEL	PART NUMBER	NOTES	PERFORMANCE RATING BTU/HR	VOLTAGE VDC	CURRENT AMPS.	WEIGHT LBS. (KG)	MIN FLOW GPM	OPERATING RANGE °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-1-000	Cool only	700-830	120	3.5	5.2 (2.3)	0.3	0/+70	N/A

SPECIFICATIONS LHP-300CP

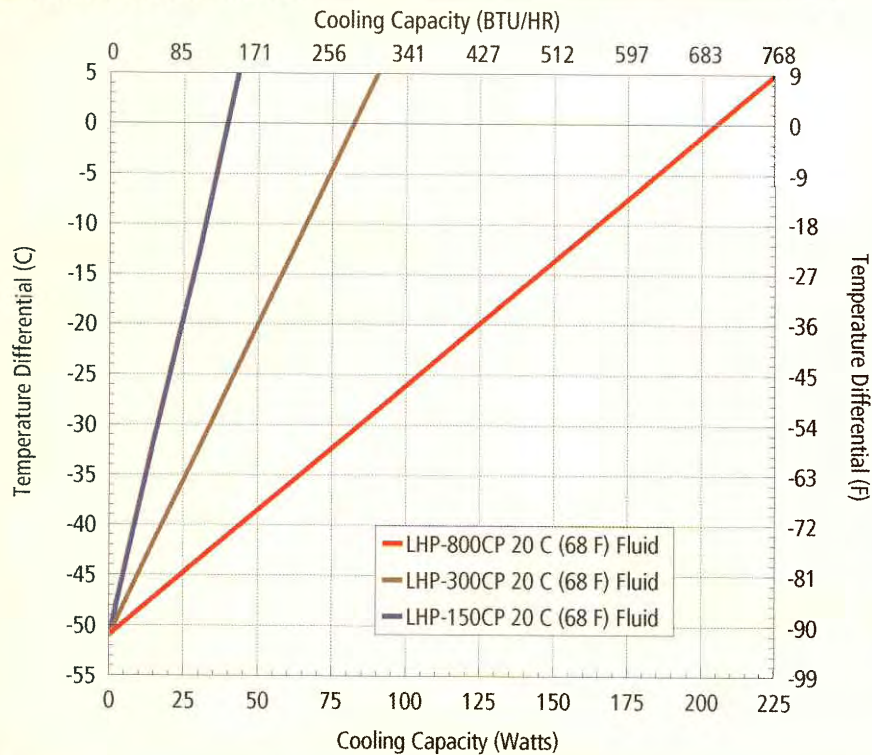
MODEL	PART NUMBER	NOTES	PERFORMANCE RATING BTU/HR	VOLTAGE VDC *	CURRENT AMPS.	WEIGHT LBS. (KG)	MIN FLOW GPM	OPERATING RANGE °C	HEAT VOLTAGE
LHP-300CP	3-7095-0-000	Cool only	280-335	24	4.5	1.8 (.81)	0.2	0/+70	N/A
LHP-300CPHC	3-7095-1-000	Heat/Cool	280-335	24	4.5	1.8 (.81)	0.2	0/+70	24 VDC
LHP-300CPHC	3-7099-1-000	Heat/Cool	280-335	24	4.5	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 RANGE °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. 58

PERFORMANCE CURVE**LHP-800CP**

700-830 BTU/hr

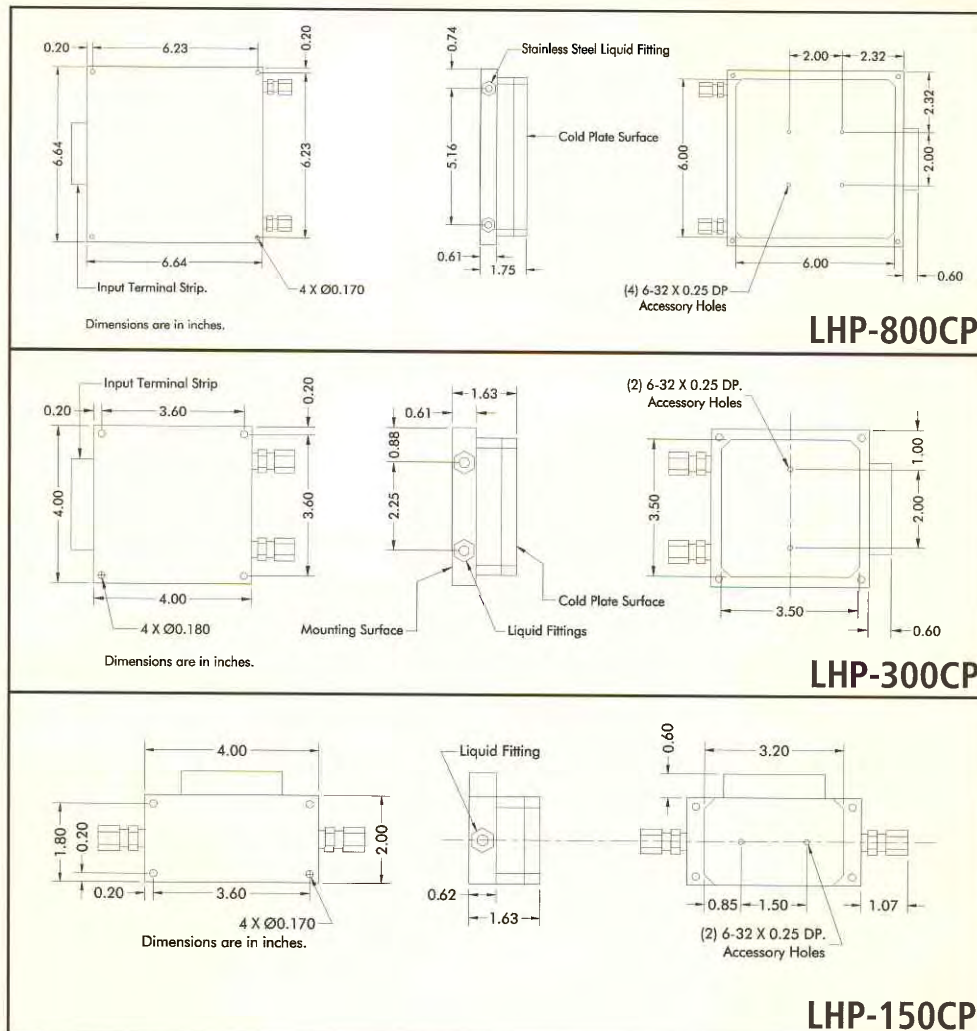
LHP-300CP

280-335 BTU/hr

LHP-150CP

130-160 BTU/hr

$y = \Delta T(^{\circ}\text{C})$ $x = \text{Capacity (Watts)}$			
Fluid Temp	20°	40°C	60°C
LHP-800CP	$y = .25x - 51.0$	$y = .25x - 56.0$	$y = .25x - 61.0$
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

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

Options Available

- Heating
- RS-232 interface
- RS-485 interface
- Computer Communications software

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.

LIQUID CHILLERS

Air Cooled

730-1450 BTH/hr

TLC-SERIES

TLC-1400 pg54

1400-1450 BTU/hr Rating,
12" x 14" footprint
120-240 VAC operation



TLC-700 pg56

730-800 BTU/hr Rating,
12" x 7" footprint
120 VAC operation



TLC-702 pg56

730-800 BTU/hr Rating,
12" x 7" footprint
240 VAC operation



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ENGINEERING
Call us at 888-TECA-USA.
We're here to help!

TLC-1400

Air Cooled

Liquid Chiller

FEATURES

- Compact (only 12" x 14" benchtop footprint)
- Weighs only 26.7 lbs. (59.0 kg)
- Ambient to +50°C
- Integral PID "Tuneable" temperature control
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Stainless steel exterior housing
- Low fluid/flow warning
- Low pressure drop fluid quick connects

INCLUDES

- Integral power supply
- Self priming pump/reservoir
- TC-3300 temperature control

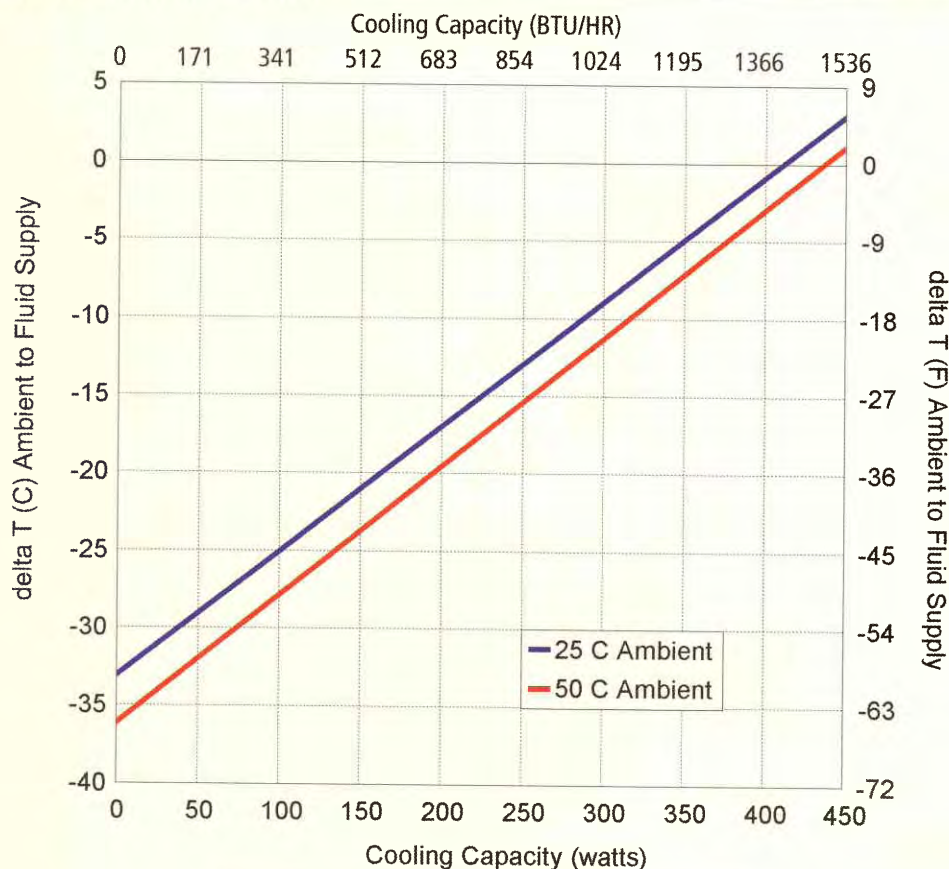
OPTIONS

- Heating
- RS-232 or RS-485 interface
- Computer Communications software



SPECIFICATIONS

MODEL	PART NUMBER	PERFORMANCE RATING BTU/HR	VOLTAGE VAC 50/60 HZ	CURRENT AMPS.	WEIGHT LBS. (KG)	MAX OPERATING TEMP °C	HEATING OPTION (HC SUFFIX)
TLC-1400	6-B0D0-0-000	1400-1450	120 VAC	7.0	26.7(59)	50 C(+122 F)	
TLC-1400HC	6-B0D0-1-000	1400-1450	120 VAC	7.0	26.7(59)	50 C(+122 F)	400 Watt
TLC-1402	6-B0D2-0-000	1400-1450	240 VAC	4.0	26.7(59)	50 C(+122 F)	
TLC-1402HC	6-B0D2-1-000	1400-1450	240 VAC	4.0	26.7(59)	50 C(+122 F)	400 Watt
CONTROL STABILITY	CONTROL	RAMPING	HOUSING	LIQUID JACKET	RESERVOIR CAPACITY	PUMP FLOW	EXTERNAL PLUMBING PROVIDED WITH SHIPMENT
< +/- 0.5 °C (typ)	0.1 °C Indication	ramp and soak no cycling	304 ST ST	Aluminum	500 mL	2 fi LPM (.66 GPM) Open Flow	6 Foot Supply & Return Tubing with Insulation Reinforced 3/8" ID PVC

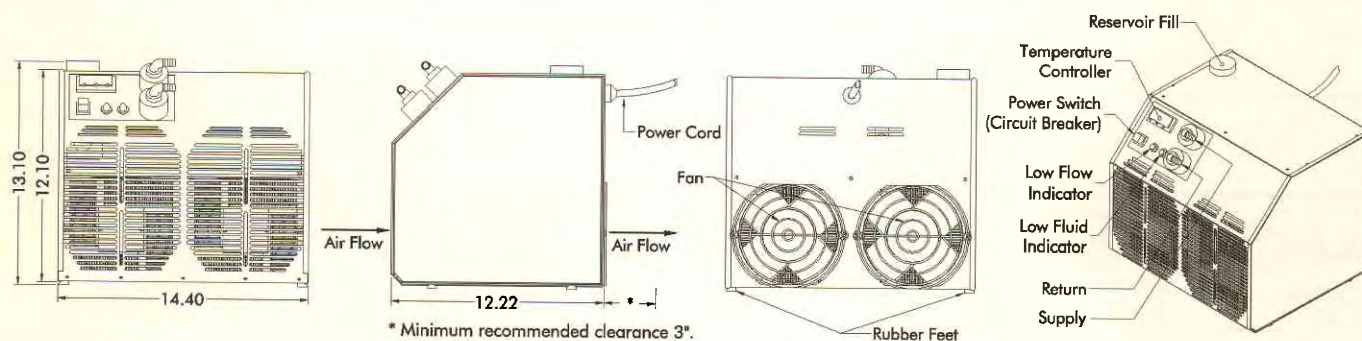
PERFORMANCE CURVE

$y = \Delta T(^{\circ}\text{C})$ $x = \text{Capacity (Watts)}$		
Ambient Temp	25°C	50°C
Fluid Supply	$y = .08x - 33.1$	$y = .08x - 36.1$

The **Model TLC-1400** is our largest air cooled liquid chiller.

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.

DIMENSIONS

TLC-700 Liquid Chiller

Air Cooled

FEATURES

- Compact (only 12" x 7" benchtop footprint)
- Conforms to UL STD 3101-1
- Certified to CAN/CSA STD 22.2 NO. 1010.1, CAN/CSA STD C22.2 NO. 1010.2.010
- Testing available for CE self certification on model TLC-702.
- Integral PID "Tuneable" temperature control
- Ambients to +50°C
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Stainless steel exterior housing
- Low fluid/flow warning
- Low pressure drop fluid quick connects

INCLUDES

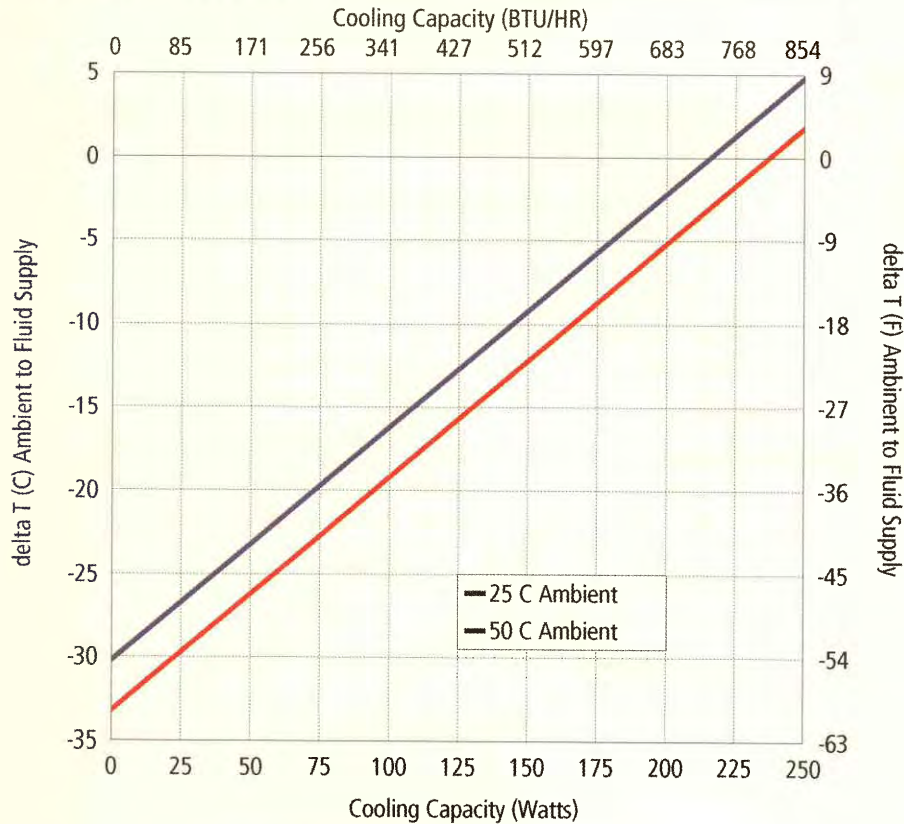
- Integral power supply
- Self priming pump/reservoir
- TC-3300 temperature Control



Model TLC-702 shown above

SPECIFICATIONS

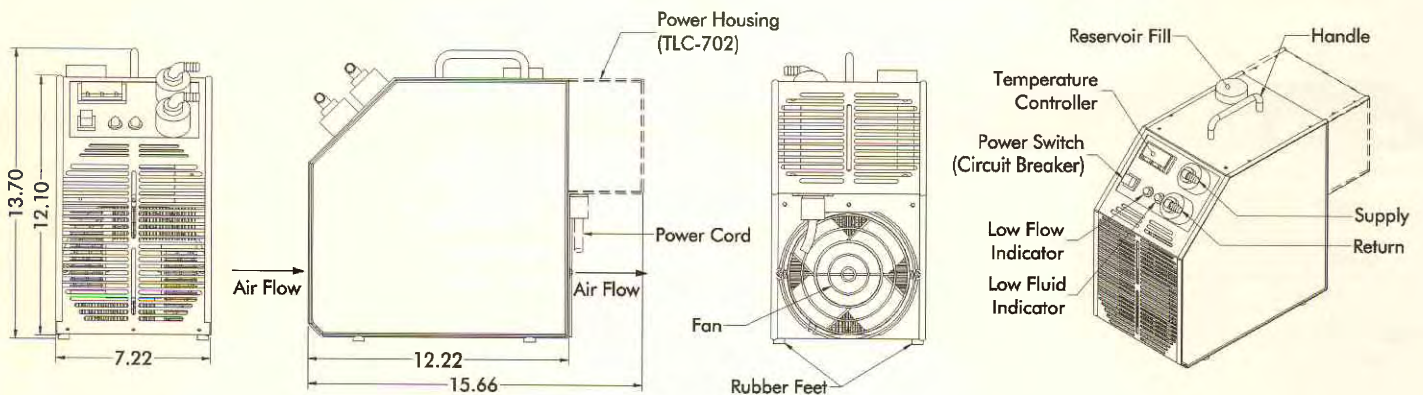
MODEL	PART NUMBER	PERFORMANCE RATING BTU/HR	VOLTAGE VAC 50/60 HZ	CURRENT AMPS.	WEIGHT LBS. (KG)	MAX OPERATING TEMP °C	HEATING OPTION (HC SUFFIX)
TLC-700	6-A0D0-0-000	730-800	120 VAC	4.2	13.6(30)	50 C(+122 F)	
TLC-700HC	6-A0D0-1-000	730-800	120 VAC	4.2	13.6(30)	50 C(+122 F)	200 Watt
TLC-702	6-A0D2-0-000	730-800	240 VAC	2.9	13.6(30)	50 C(+122 F)	
TLC-702HC	6-A0D2-1-000	730-800	240 VAC	2.9	13.6(30)	50 C(+122 F)	200 Watt
CONTROL STABILITY	CONTROL	RAMPING	HOUSING	LIQUID JACKET	RESERVOIR CAPACITY	PUMP FLOW	EXTERNAL PLUMBING PROVIDED WITH SHIPMENT
< +/- 0.5 °C (typ)	0.1 °C Indication	none	304 ST ST	Aluminum	500 mL	2 fi LPM (.66 GPM) Open Flow	6 Foot Supply & Return Tubing with Insulation Reinforced 3/8" ID PVC

PERFORMANCE CURVE

The **Model TLC-700** is compact with a footprint of only 12" X 7" and is virtually maintenance free.

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.

DIMENSIONS

Accessories

Temperature Controllers
Power Supplies
Thermoelectric Modules

TEMPERATURE CONTROLLERS

Reed Switch Thermostats



TC-6F

Model TC-6F (Cool Only) thermostat is designed using two magnetic reed sensing switches in conjunction with a solid state relay. A three position switch is provided to adjust the following settings:

Position	Control Temp.	Tolerance	Reset Differential
1	35 °C	+/-5 °C	10 °C Maximum
2	25 °C	+/-5 °C	10 °C Maximum
3	ON	Position 3 intended for test and set-up only.	

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:

Mode	Control Temp.	Tolerance	Reset Differential
Cooling	35 °C	+/-5 °C	10 °C Maximum
Heating	10 °C	+/-5 °C	10 °C Maximum



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

MODEL	INPUT VOLTAGE VAC	OUTPUT VOLTAGE 47-440 HZ	DC OUTPUT POWER VDC	OUTPUT CURRENT WATTS AMPS.	WEIGHT LBS.	WORKING TEMPERATURE °C 20-90%RH	DIMENSIONS L X W X H INCHES
SP300-12	85-264	12	300	24	2.6	0 - 40	9X4.5X1.9
SP300-24	85-264	24	300	12.5	2.6	0 - 40	9X4.5X1.9
AS150F-12	88-132 OR 170-264*	12	150	12.5	1.76	-10 - 60	7.8X4.3X1.9
AS150F-24	88-132 OR 170-264*	24	150	6.5	1.76	-10 - 60	7.8X4.3X1.9
AS100F-12	88-132 OR 170-264**	12	100	8.5	1.4	-10 - 60	7.8X4.3X1.9
AS100F-24	88-132 OR 170-264**	24	100	4.5	1.4	-10 - 60	7.8X4.3X1.9
AS60-12	85-264	12	60	5	1.2	-10 - 60	6.25X3.8X1.5
AS60-24	85-264	24	60	2.5	1.2	-10 - 60	6.25X3.8X1.5

* Input voltage range is switch selectable. ** Input voltage range is jumper selectable.

ACCESSORIES

Temperature Controllers

Power Supplies

Thermoelectric Modules

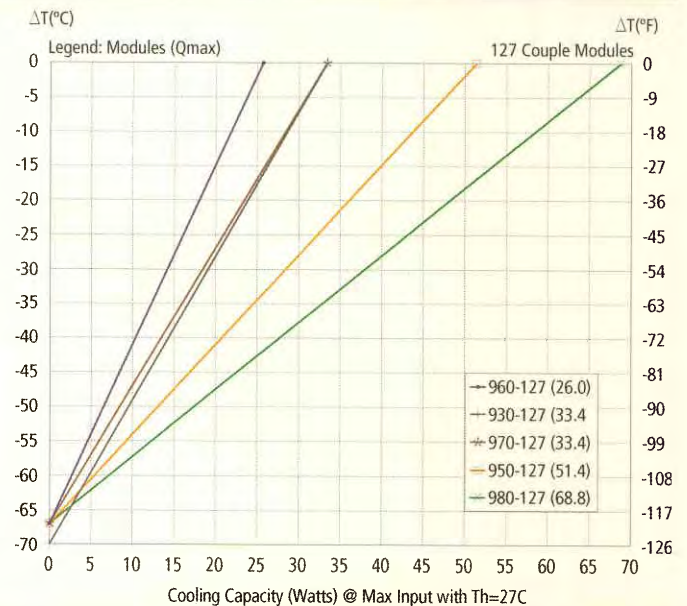
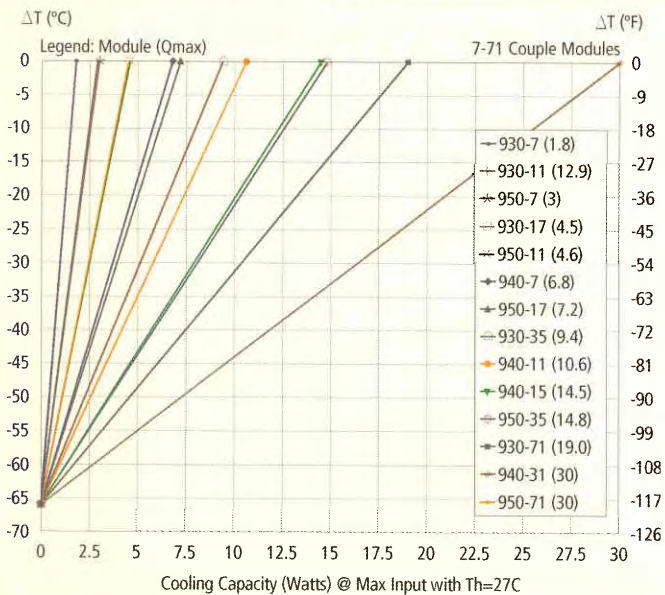
THERMOELECTRIC MODULES

Solid state thermoelectric modules are a silent, compact, and reliable method of heat removal. Applications ranging from missile guidance systems to portable refrigerators are only limited by the imagination of the designer. System simplicity assures

ease of adapting to thermoelectric heat pumping. Thermoelectrics have no compressor or piping, eliminating compressor maintenance and coolant leakage. Modules can be converted from cooling to heating by a reversal of power input.



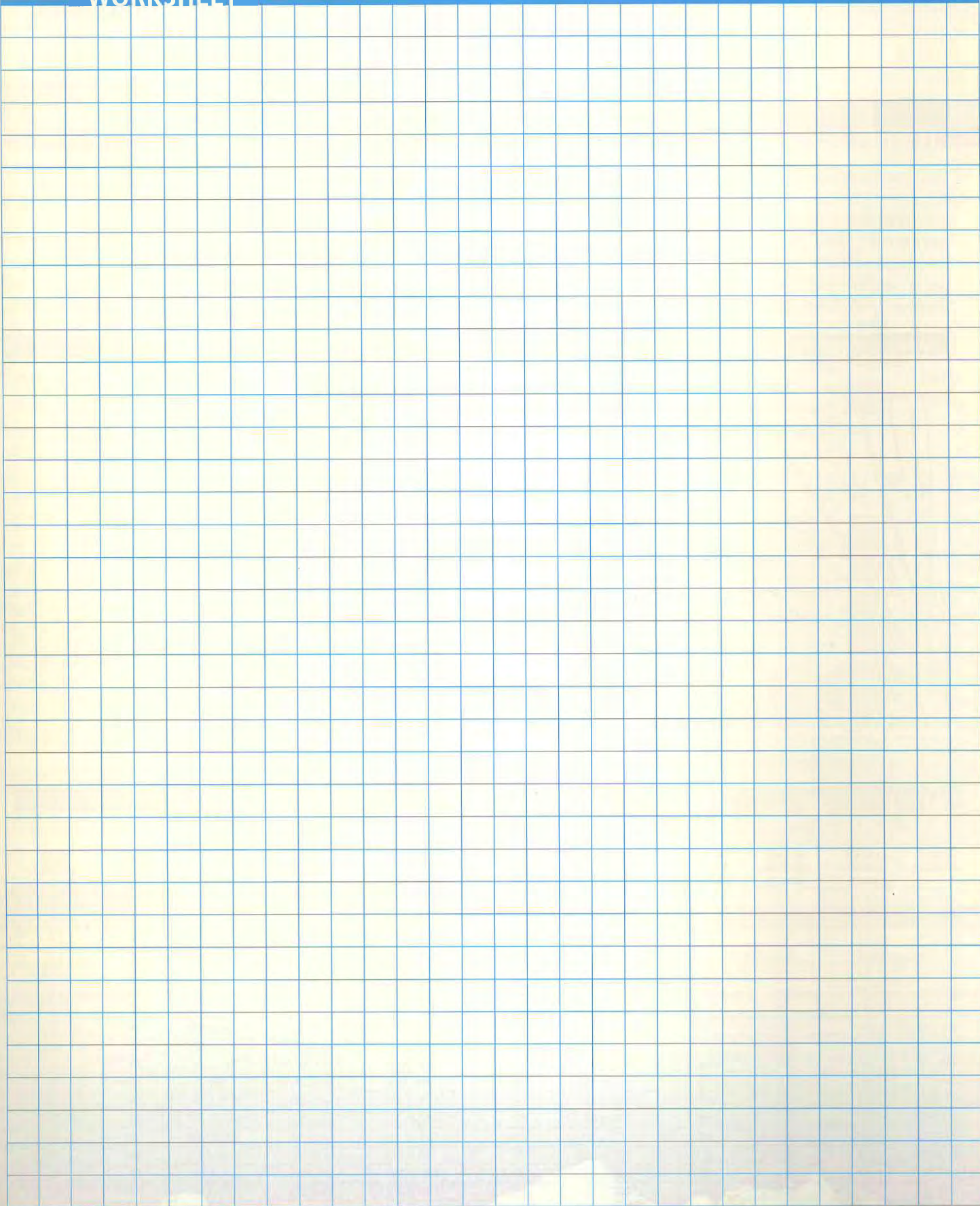
PERFORMANCE CURVES



SPECIFICATIONS

MODEL NUMBER	I MAX CURRENT AMPS	Q MAX COOLING WATTS	V MAX VOLTAGE VOLTS (DC)	NOMINAL RESISTANCE Ω @ 25°C	DT MAX T_h/T_c $^{\circ}\text{C}$	DIMENSION A in (cm) $\pm .042$ (0.11)	DIMENSION B in (cm) $\pm .042$ (0.11)	DIMENSION C in (cm) $\pm .008$ (0.02)	WIRE GAUGE (AWG)	WIRE LENGTH (Inches)
930-7DL	3.7	1.8	0.8	$0.20 \pm .02$	66	0.38 (.965)	0.38 (.965)	0.185 (.47)	20	6
930-11DL	3.7	2.9	1.2	$0.32 \pm .05$	66	0.38 (.965)	0.57 (1.46)	0.185 (.47)	20	6
930-17DL	3.7	4.5	1.9	$0.49 \pm .04$	66	0.57 (1.46)	0.57 (1.46)	0.185 (.47)	20	6
930-35DL	3.7	9.4	3.9	$1.00 \pm .07$	66	0.57 (1.46)	1.18 (3.00)	0.185 (.47)	20	6
930-71DL	3.7	19.0	8.0	$2.03 \pm .15$	66	1.18 (3.00)	1.18 (3.00)	0.185 (.47)	18	4.5
940-7DL	14.0	6.8	0.8	$0.07 \pm .01$	66	0.57 (1.46)	0.57 (1.46)	0.18 (.46)	18	6
940-11DL	14.0	10.6	1.2	$0.08 \pm .01$	66	0.57 (1.46)	0.85 (2.16)	0.18 (.46)	18	6
940-15DL	14.0	14.5	1.7	$0.12 \pm .01$	66	0.57 (1.46)	1.18 (3.00)	0.18 (.46)	18	6
940-31DL	14.0	30.0	3.5	$0.24 \pm .02$	66	1.18 (3.00)	1.18 (3.00)	0.18 (.46)	18	4.5
950-7DL	6.0	3.0	0.8	$0.13 \pm .01$	66	0.38 (.965)	0.38 (.965)	0.15 (.38)	20	6
950-11DL	6.0	4.6	1.2	$0.18 \pm .02$	66	0.38 (.965)	0.57 (1.46)	0.15 (.38)	20	6
950-17DL	6.0	7.2	1.9	$0.32 \pm .03$	66	0.57 (1.46)	0.57 (1.46)	0.15 (.38)	20	6
950-35DL	6.0	14.8	3.9	$0.65 \pm .05$	66	0.55 (1.40)	1.18 (3.00)	0.15 (.38)	20	6
950-71DL	6.0	30.0	8.0	$1.32 \pm .10$	66	1.18 (3.00)	1.18 (3.00)	0.15 (.38)	18	4.5
930-127DL	3.9	33.4	15.4	$3.62 \pm .26$	70	1.57 (3.99)	1.57 (3.99)	0.185 (.47)	18	4.5
950-127DL	6.0	51.4	15.4	$2.36 \pm .17$	66	1.57 (3.99)	1.57 (3.99)	0.15 (.38)	18	4.5
960-127	3.0	26.0	15.4	$4.22 \pm .30$	66	1.18 (3.00)	1.18 (3.00)	0.142 (.36)	24	4.5
970-127	3.9	33.4	15.4	$3.51 \pm .25$	66	1.18 (3.00)	1.18 (3.00)	0.126 (.32)	24	4.5
980-127	8.5	68.8	15.4	$1.63 \pm .12$	66	1.57 (3.99)	1.57 (3.99)	0.13 (.33)	18	4.5

WORKSHEET



Terms and Conditions

Ordering information:

- By telephone during business hours, **1-888-832-2872**.
Monday – Friday 8 AM to 4:30 PM, Central Time.
- By fax or email 24 hours a day.
Fax: **773-342-0191**
email: **sales.teca@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. 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 incurred.
- All returned goods must be sent freight prepaid. A restocking charge of 15% will apply.

Limited Warranty

In the event a 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: (a) TECA is notified of the defect in writing by certified mail within 14 days of the date of discovery; (b) TECA may then either, at its sole discretion, inspect the product at the Buyer's location, or require that the product be made available at Buyer's expense at TECA's premises for TECA's inspection within 14 days of notification; and (c) 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, or credit to buyer the 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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