

# Product Information Packet

Model FHP-1501

Flush Mount, Solid State, NEMA-12, Air Conditioner

With TC-6F Temperature Control

Part # 7-2185-0-000

Thank you for your purchase. Information has been enclosed regarding the installation, specifications, and wiring of your solid-state assembly. Please read and follow all instructions carefully before installation. Only qualified technicians should install this equipment.

If you have any questions regarding your equipment, please do not hesitate to call us at 773-342-4900, and we will be happy to assist you. We are open from 8:00 am-4:30 pm Central Time.

Included in this packet you will find:

Installation Notes for Air Conditioners

Product Literature and Specifications

Assembly Drawing # SK050521

Wiring Drawing # SK100814

Installation Drawing # SK050520

Temperature Control Information

Warranty Information

The logo for Teca, featuring the word "teca" in a bold, lowercase, sans-serif font. The letter "t" is stylized with a vertical line extending upwards from its stem. The logo is positioned on the left side of the page, above a horizontal line.

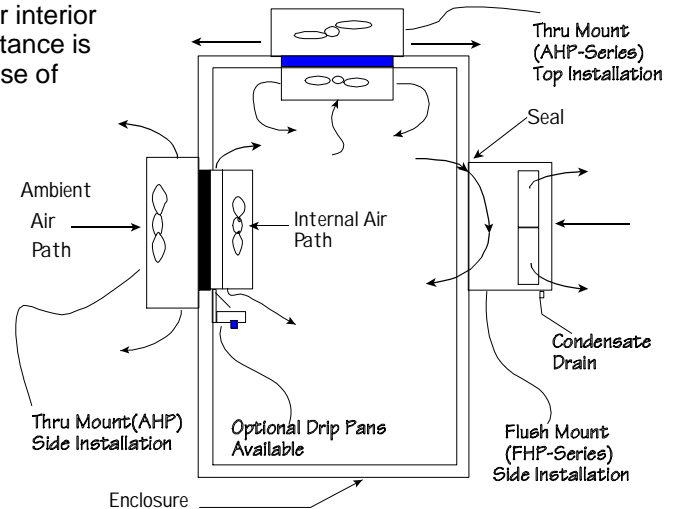
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sales@thermoelectric.com www.thermoelectric.com

# Installation Notes for 1501XE Series Air Conditioners

**Mounting Styles:** Both 'thru mount' and 'flush mount' units can be positioned in any orientation and on any enclosure surface. It is important to consider interior air flow patterns when determining the mounting location. Also of importance is an unrestricted flow of ambient air thru the hot side heat exchanger. Ease of access and inspection must be considered for those applications in particularly severe environments which may require occasional maintenance.

## Vertical (Side/Front/Back) Mounting:

Vertical mounting refers to the vertical direction of the cold side or interior fins and is recommended for applications with high humidity, poor and incomplete cabinet seals or any condition which may cause the cold side fins to be maintained at temperatures below the dew point for long periods of time allowing for the formation of condensation. The vertical fin direction provides a drip path whereupon condensation can be collected via a moisture removal system (standard on FHP-units) or a drip pan positioned below the cold side fins. Drip pans are optional for thru mount units.



## Condensate Removal System:

All FHP-Series and AHP-1400 air conditioners contain a built-in condensate removal system. The condensate kit consists of a antifungal sponge with a condensate wick. Moisture is absorbed into the wick at the cold side heat exchanger and "wicked" to the hot side heat exchanger to be evaporated.

## Top Mounting:

Though often the easiest location to mount it is often the most difficult to protect from condensation in this orientation due to the fin orientation, gravity and any susceptible components below. If a drip pan is employed by the end user use caution to place the pan 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 there is a choice, the vertical orientation is preferred by most users.

## Maintenance:

Since the technology is solid-state, there are no filters, compressors, or fluorocarbons to maintain. The only moving parts are the fans. It is recommended for harsh or dirty environments that the heat sinks be cleaned from time to time. This can be accomplished by directing compressed air over the external fins or on NEMA 4 versions by hosing the unit down. This will increase the overall life and performance of the system.

## Mounting:

- Thread 10-32 mounting hardware (included) into 10-32 mounting holes on the air conditioner.
- Apply a thin bead of Dow RTV 737 Clear Silicone Adhesive or equivalent on the interface surface of the air conditioner and gasket when the mounting surface can flex.
- Install gasket on the air conditioner using 10-32 studs and clearance holes on the gasket as guide.
- Apply a thin bead of Dow RTV 737 Clear Silicone Adhesive or equivalent on the interface of gasket and enclosure when the mounting surface can flex.
- Install the air conditioner on the enclosure, use 10-32 Hex Nut (included), 10-32 Star Washers (included) and 6-32 screws (for AHP-1501 only) to secure the air conditioner on the enclosure.
- To seal the air conditioner/enclosure interface gradually increase the torque to the screws in an alternating pattern to 10-15 in-lb [1.13-1.70 N.m] or until the gasket is compressed by 1/2 it's thickness..

## Cautions:

Take care when mounting not to damage the seal between the hot and cold side sinks. Do not attempt to mount a unit to a warped surface or try to make the units mounting surface conform to an unflat surface. Do not pinch or damage any leads when mounting. Do not over tighten any installation screw, use reasonable force. Always mount with any condensate drain down. Do not compress the cold side between the hot side and any other surface. Do not obstruct the airflow on either side. When mounting consider the natural air flows of the enclosure. Connect power only after the installation is complete.

If you have any questions regarding your installation, Please feel free to contact our technical department for assistance at 773-342-4900.

# FHP-1501 Air Conditioner

Air Cooled  
Flush Mounted  
NEMA-12, NEMA-4

24 VDC Input



## FEATURES

- Externally mounted (no intrusion)
- Mounts in multi-unit array for incremental capacity
- Compact (only 15" L X 12" W X 9" D)
- Weighs only 55 lbs. (25 kg)
- Ambient range -10°C to +70°C
- No compressor, fluorocarbons or filters
- Virtually maintenance-free operation
- Stainless steel exterior housing
- No moving parts except fans
- Environmentally safe
- Mounts and operates in any orientation (condensate removal system may not work properly in all orientations)

## INCLUDES

- Condensate removal system
- Adjustable temperature control
- Mounting gasket for NEMA-12, NEMA-4 seal
- Mounting hardware

## OPTIONS

- 250 VDC configuration for crane applications available
- Other voltage configuration available (contact TECA)
- Other temperature settings for single set point controls
- Custom finishes

## SPECIFICATIONS

|                            | MODEL          | PART NUMBER  | NOTES     | COP @ 0 °C ΔT<br>L35 L35 | VOLTAGE<br>VDC | CURRENT<br>AMPS. | TEMP.<br>CONTROL | OPERATING<br>AMBIENT<br>TEMPERATURE<br>RANGE °C | OPERATING<br>ENCLOSURE<br>TEMPERATURE<br>RANGE °C |
|----------------------------|----------------|--------------|-----------|--------------------------|----------------|------------------|------------------|---|---|
| N<br>E<br>M<br>A<br>1<br>2 | → FHP-1501     | 7-2185-0-000 | Cool only | 0.64                     | 24(16-28)      | 18               | TC-6F            | -40/+70   | -10/+60   |
|                            | FHP-1501       | 7-2155-0-000 | Cool only | 0.64                     | 24(16-28)      | 18               | EXT*             | -40/+70   | -10/+60   |
|                            | FHP-1501       | 7-21F5-0-000 | Cool only | 0.64                     | 24(16-28)      | 18               | 85°F (30°C)      | -40/+70   | -10/+60   |
|                            | FHP-1501HC     | 7-2135-1-000 | Heat/Cool | 0.64                     | 24(16-28)      | 18               | TC-3F            | -40/+70   | -10/+60   |
|                            | FHP-1501HC     | 7-21I5-1-000 | Heat/Cool | 0.64                     | 24(16-28)      | 18               | TC-7F            | -40/+70   | -10/+60   |
|                            | FHP-1501HC     | 7-2155-1-000 | Heat/Cool | 0.64                     | 24(16-28)      | 18               | EXT†             | -40/+70   | -10/+60   |
|                            | → FHP-1501HC   | 7-21H5-1-000 | Heat/Cool | 0.64                     | 24(16-28)      | 18               | TC-4600          | -40/+70   | -10/+60   |
| N<br>E<br>M<br>A<br>4      | → FHP-1501XE   | 7-2185-4-000 | Cool only | 0.64                     | 24(16-28)      | 18               | TC-6F            | -40/+60   | -10/+60   |
|                            | FHP-1501XE     | 7-2155-4-000 | Cool only | 0.64                     | 24(16-28)      | 18               | EXT*             | -40/+60   | -10/+60   |
|                            | FHP-1501XE     | 7-21F5-4-000 | Cool only | 0.64                     | 24(16-28)      | 18               | 85°F (30°C)      | -40/+70   | -10/+60   |
|                            | FHP-1501XEHC   | 7-2135-5-000 | Heat/Cool | 0.64                     | 24(16-28)      | 18               | TC-3F            | -40/+70   | -10/+60   |
|                            | FHP-1501XEHC   | 7-21I5-5-000 | Heat/Cool | 0.64                     | 24(16-28)      | 18               | TC-7F            | -40/+70   | -10/+60   |
|                            | FHP-1501XEHC   | 7-2155-5-000 | Heat/Cool | 0.64                     | 24(16-28)      | 18               | EXT†             | -40/+70   | -10/+60   |
|                            | → FHP-1501XEHC | 7-21H5-5-000 | Heat/Cool | 0.64                     | 24(16-28)      | 18               | TC-4600          | -40/+70   | -10/+60   |

\* Unit is set for 5-32 VDC external signal, relay(s) included

† Unit is set for 5-32 VDC external signal, H-Bridge relay(s) included

# FHP-1501

## MOUNTING STYLE

Flush Mounted

## ENVIRONMENTS SERVED

NEMA-12 IP 52

NEMA-4 IP 56

## RATING (TRADITIONAL)

950 BTU/hr @ 0 °F ΔT

1270 BTU/hr @ +20 °F ΔT \*

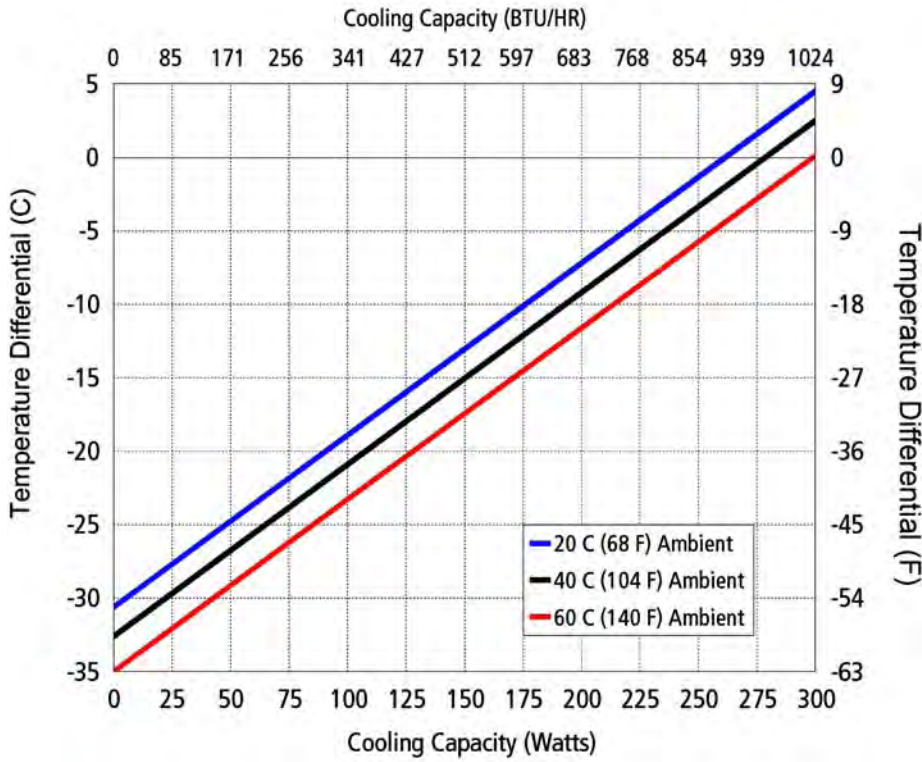
## RATING (DIN 3168)

278 Watts L35 L35

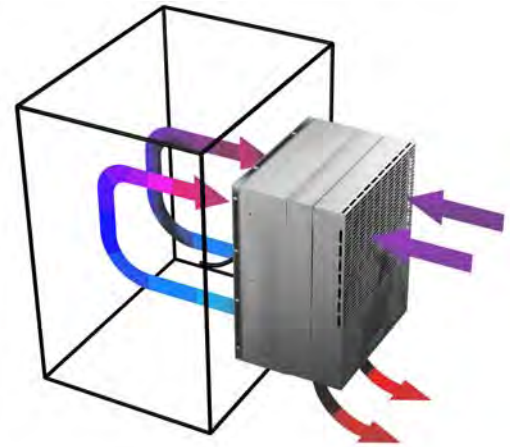
162 Watts L35 L50

\* See page 10

## PERFORMANCE CURVE

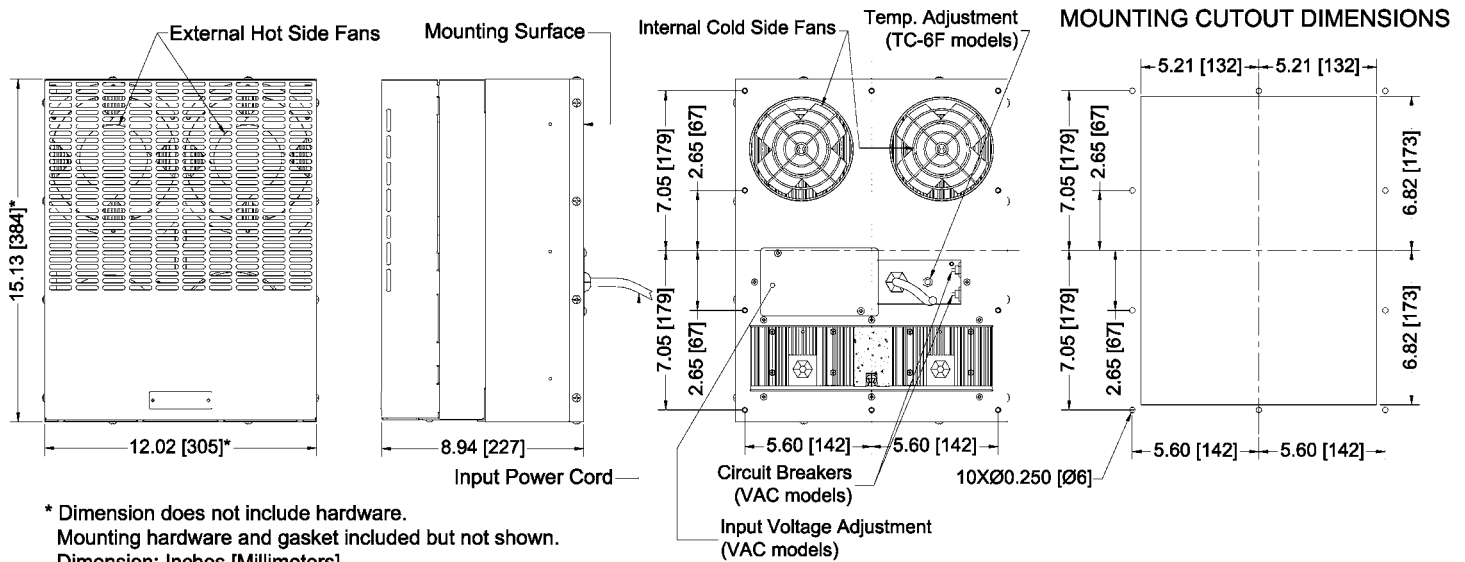


| Equation of line: $y = \Delta T(^{\circ}C)$ $x = \text{Capacity (Watts)}$ |                    |                    |                    |
|---|--------------------|--------------------|--------------------|
| Ambient Temp  | 20°C               | 40°C               | 60°C               |
| Enclosure Air   | $y = .117x - 30.6$ | $y = .117x - 32.6$ | $y = .117x - 35.0$ |
| Cold Sink   | $y = .093x - 30.6$ | $y = .093x - 32.6$ | $y = .093x - 35.0$ |

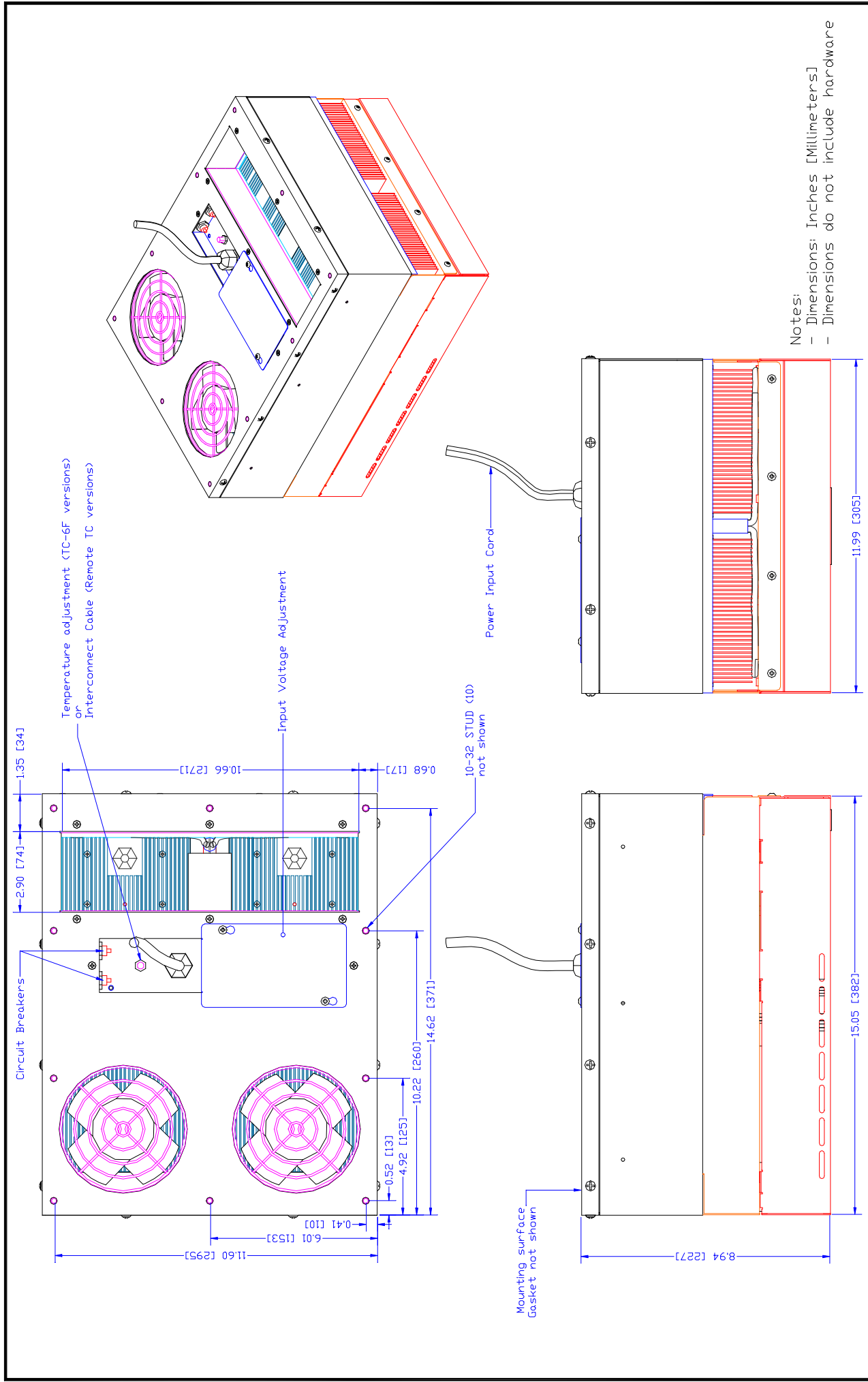


Air Flow Pattern

## DIMENSIONS



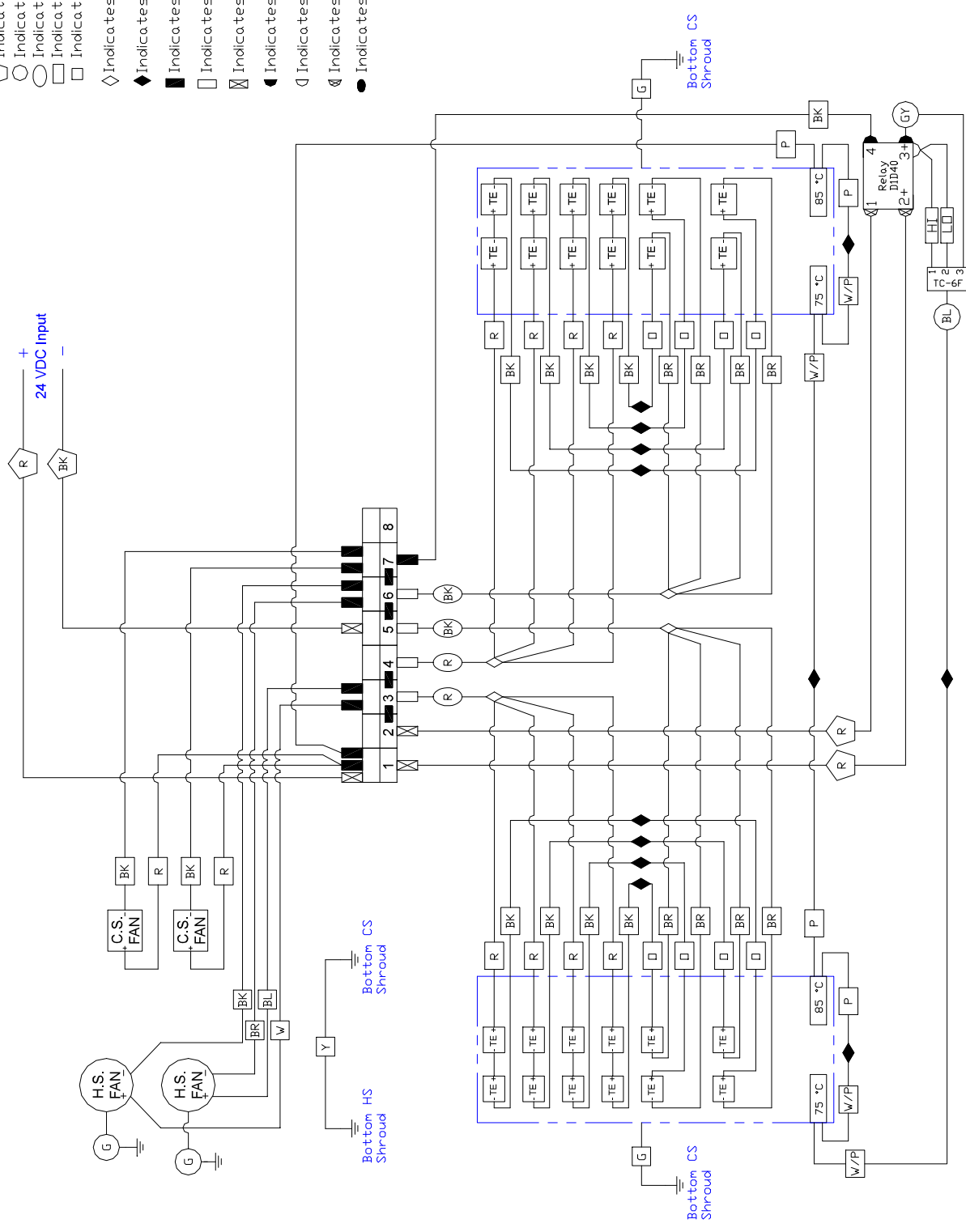
\* Dimension does not include hardware.  
Mounting hardware and gasket included but not shown.  
Dimension: Inches [Millimeters]



Notes:  
 - Dimensions: Inches [Millimeters]  
 - Dimensions do not include hardware

|   |             |      |          |   |          |           |                  |
|---|-------------|------|----------|---|----------|-----------|------------------|
| REV   | DESCRIPTION | Date | APPROVED | DRAWING #   |          | REV LEVEL | SHEET            |
|   |             |      |          | AA  | SK050521 |           |                  |
|   |             |      |          | D6448   | SCALE    |           | MASTER: SK050106 |
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| <b>THERMoeLECTRIC COOLING AMERICA CORP.</b><br>FHP-1501 / FHP-1501XE<br>ASSEMBLY  |             |      |          | DRAWN BY: AA<br>DATE: 05/20/05<br>D6448   |          |           |                  |

- ◇ Indicates 10 AWG wire
- Indicates 18 AWG wire
- Indicates 16 AWG wire
- Indicates 22 AWG wire
- Indicates Ribbon Cable wire
- ◇ Indicates AMP 321519 closed end splice
- ◆ Indicates AMP 55843-1 closed end splice
- Indicates red fork terminal
- Indicates blue fork terminal
- ⊗ Indicates yellow fork terminal
- ◐ Indicates red ring terminal
- ◑ Indicates blue ring terminal
- ◒ Indicates yellow ring terminal
- ◓ Indicates solder & shrink tube connection

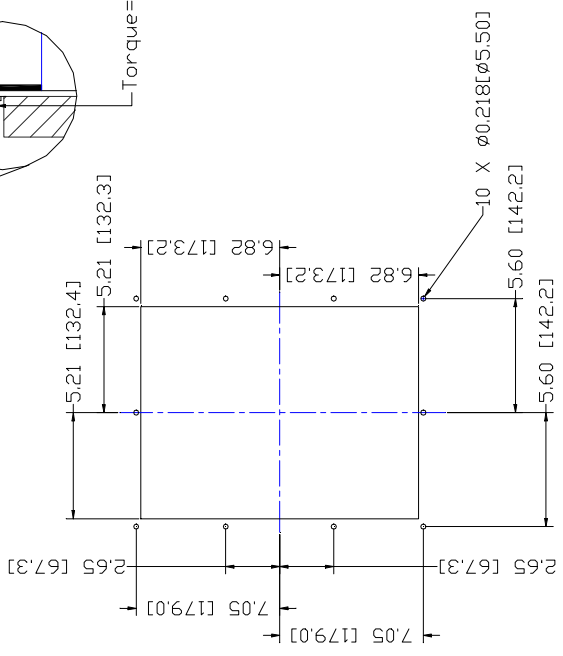
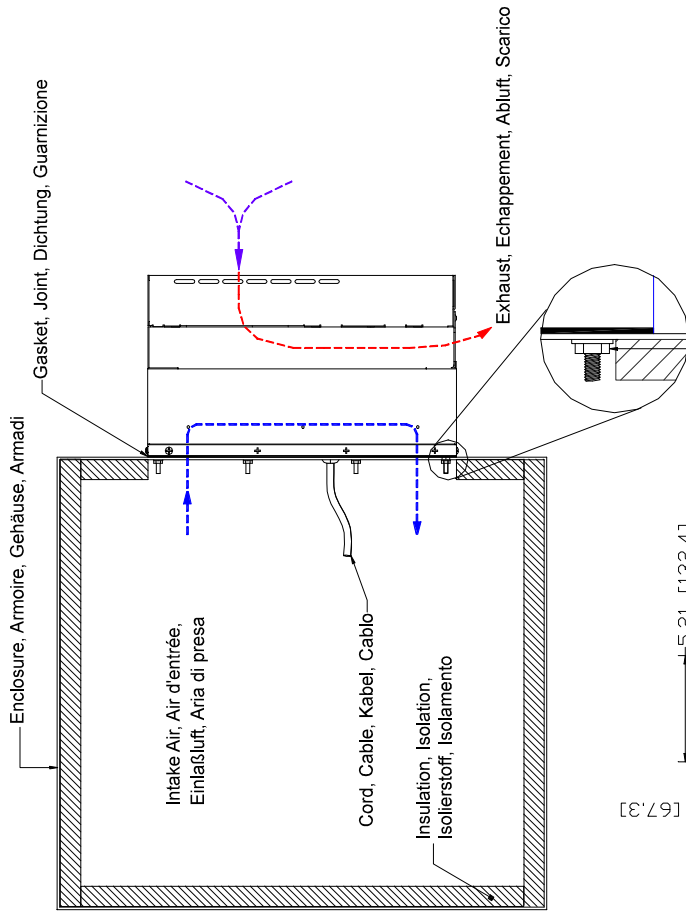
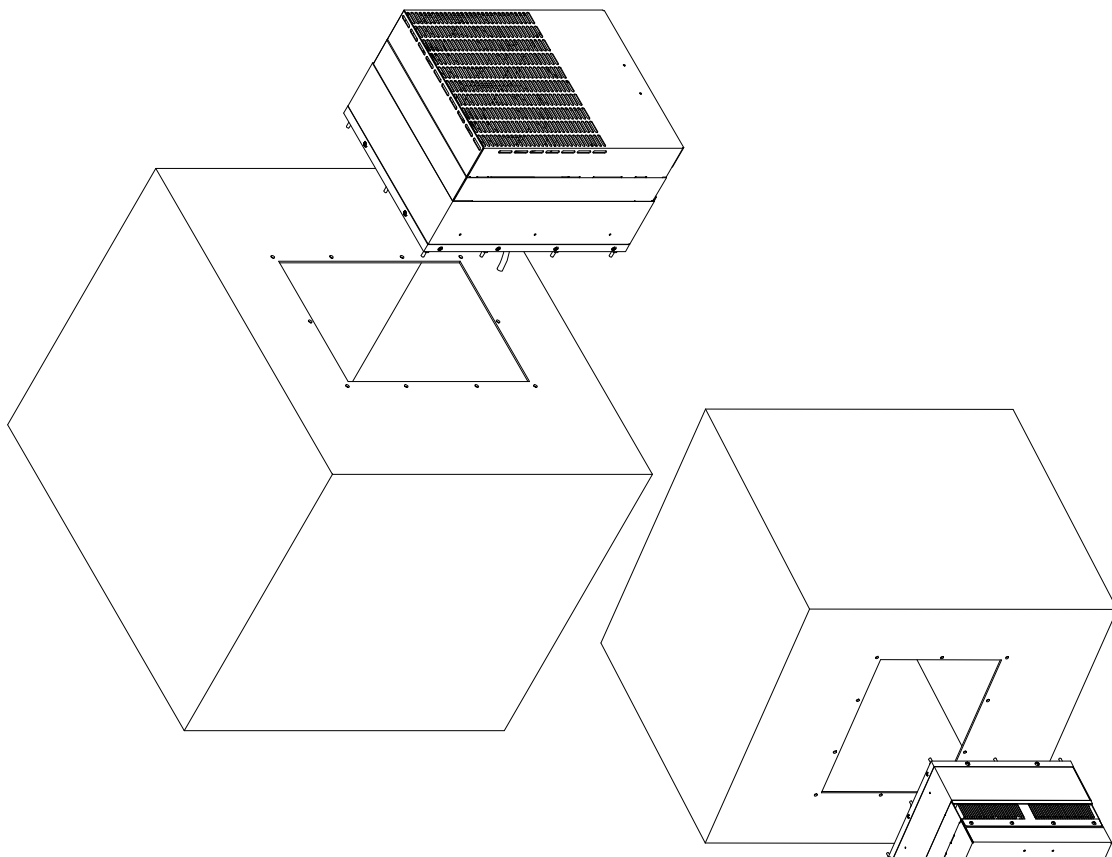


|   |                       |  |                                 |
|---|-----------------------|--|---------------------------------|
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|   |                       | DECIMALS<br>.XX +/-<br>.XXX +/-  | ANGLE<br>+/-<br>FRACTION<br>+/- |
| MATERIAL:   | DRAWING #<br>SK100814 | DRAWN BY:<br>AA  | REV LEVEL<br>SHEET              |
| DATE:<br>08/20/2010   | SCALE<br>D7881        | MASTER:<br>MASTER  | REV LEVEL<br>SHEET              |
| DESCRIPTION   | Date                  | APPROVED   | REV LEVEL<br>SHEET              |

**THERMOELECTRIC COOLING AMERICA CORP.**

FHP-1501 DC WITH TC-6F  
 WIRING DIAGRAM

# Mounting, Monture, Montage, Montaggio



Torque=10-15 in.lb [1.13-1.70 N.m]

Alternate, Alternative, Alternativa  
 English, Français, Deutsch, Italiano  
 Dimensions: Inches [Millimeters]

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 INFORMATION IN ANY  
 UNAUTHORIZED MANNER.  
 FINISH:

|  |                     |                 |
|--|---------------------|-----------------|
| UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES | DECIMALS<br>.XX +/- | ANGLE<br>+/-    |
| TOLERANCES ARE:  | FRACTION<br>XXX +/- | FRACTION<br>+/- |

MATERIAL:

**THERMOELECTRIC COOLING AMERICA CORP.**

**FHP-1501 SERIES  
 FIELD MOUNTING**

|                |                     |          |           |           |                |
|----------------|---------------------|----------|-----------|-----------|----------------|
| REV            | DESCRIPTION         | Date     | AA        | REV LEVEL | SHEET          |
| A              | Added torque value. | 12/13/05 | AA        | A         |                |
| DRAWN BY: AA   |                     |          | DRAWING # | SK050520  | MASTER: MASTER |
| DATE: 05/19/05 |                     |          | SCALE     |           |                |
|                |                     |          | D6447     |           |                |

# Control/Thermostats

The model **TC-6F** (Cool Only) thermostat is designed using two magnetic reed switches in conjunction with a solid state relay. A three position switch is provided to adjust between 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        | Constant On   |           |                    |

The 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 | 15 °C         | +/-5°C    | +10°C Maximum      |

## 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 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 the date 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 UPON BREACH OF EXPRESS OR IMPLIED WARRANTY OR ANY OTHER DAMAGES WHETHER SPECIAL, INDIRECT, INCIDENTAL, CONSEQUENTIAL, LOST PROFITS, BUSINESS INTERRUPTION, OR LOSS OF BUSINESS OR CUSTOMER RELATIONSHIPS.

## RETURNED GOODS, RESTOCKING CHARGES

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