

Product Information Packet

Model FHP-2250XE

Solid State, NEMA 4, Air Conditioner

with TC-4F Temperature Control

Part #7-H4J0-4-000

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

Wiring Drawing # SK130212

Installation Drawing # SK130710

Temperature Control Information

Warranty Information



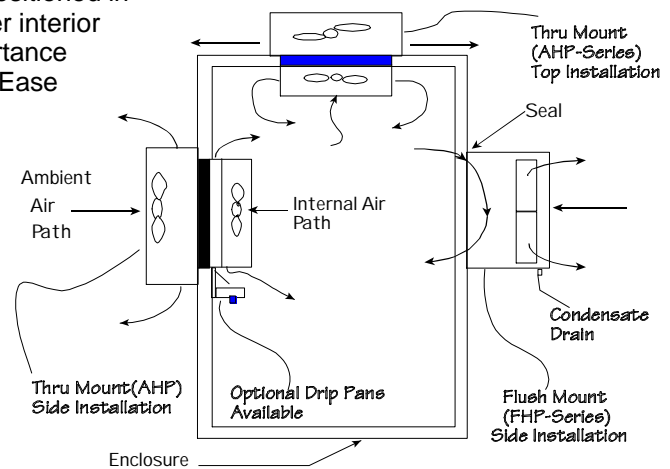
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Important Installation Notes for Air Conditioners

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. PVC tubing is also provided for drainage. Drip pans are optional for thru mount units which must be evaluated on an individual basis. Equations defining a relationship between the cold side fin and enclosure temperatures are provided to assist in the evaluation.

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.

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.

Notes on condensation:

Condensation occurs at the cold side fins when the surface temperature goes below the dew point. To reduce or remove condensate, consider the following:

- Regulate the Fin Temperature above the Dewpoint.
- Keep Enclosure Closed and Sealed from Outside Humidity.
- Use Desiccant (Moisture absorbing Granules.)
- Employ Condensate Removal System/Drip Pans.

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



FHP-2250

Air Conditioner/Heat Exchanger

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

120 VAC Input
High Efficiency
1220 BTU/HR

FEATURES

- High capacity thermoelectric design
- Power saving air to air heat exchanger mode (ECO-Mode)
- Heavy duty full perimeter mounting
- No intrusion into enclosure
- Central input cord for easy mounting
- Closed loop design
- Condensate control and evaporation system
- Compact (20.5" L X 13" W X 8.5" D)
- Increased efficiency at higher ambients by as much as 10%
- Virtually maintenance free
- No compressor
- Environmentally friendly and safe
- Stainless Steel exterior housing
- Mounts and operates in any orientation
- Integral temperature controller
- Weight 66 LBS.

CONTROL TEMPERATURES

| | |
|---------------------------|------------|
| Active Cooling | 35 °C |
| Heat Exchanger (ECO-Mode) | 25 °C |
| Active Heating | 10 °C |
| Typical Hysteresis | 5 °C |
| Operating Ambient | -40/+65 °C |
| Operating Enclosure | -10/+60 °C |

POWER INPUTS

| | |
|--------------------|----------|
| Voltage | 120 VAC |
| Current, Active | 3.6 AMPS |
| Current , ECO-Mode | 1 AMP |
| Frequency | 50/60 Hz |

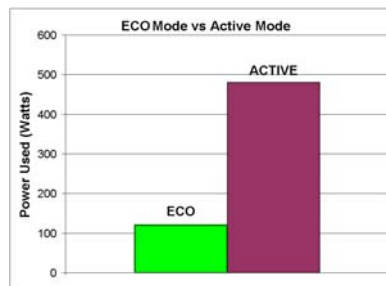
PERFORMANCE RATINGS

| | |
|---------------------------|---------------|
| Cooling (Traditional) | 1220 BTU/HR |
| Cooling (Din 3168) | 358 WATTS |
| Cooling COP (at L35 L35) | 0.83 |
| Heating (Traditional) | > 1640 BTU/HR |
| Heating (Din 3168) | > 480 WATTS |
| Heating COP | > 1.0 |
| Heat Exchanger (ECO-Mode) | 12.5 W/°C |



INCLUDES

- Power supply
- Temperature controller
- Power saving heat exchanger mode (ECO-Mode)
- Mounting gasket
- Mounting hardware
- Power input cord
- Circuit breaker



250 VDC configuration for crane applications available

CONFIGURATIONS

| MODEL | PART NUMBER | NOTES | TEMPERATURE CONTROL | ENVIRONMENT |
|--------------|--------------|--|---------------------|----------------|
| FHP-2250 | 7-H4J0-0-000 | Cool only, industrial fans & power supply | TC-4F | NEMA-12, IP 52 |
| FHP-2250 | 7-H450-0-000 | Cool only, industrial fans & power supply | EXT* | NEMA-12, IP 52 |
| FHP-2250HC | 7-H4I0-1-000 | Heat/Cool, industrial fans & power supply | TC-7F | NEMA-12, IP 52 |
| FHP-2250HC | 7-H450-1-000 | Heat/Cool, industrial fans & power supply | EXT* | NEMA-12, IP 52 |
| FHP-2250XE | 7-H4J0-4-000 | Cool only, sealed hot side fans & power supply | TC-4F | NEMA-4, IP 56 |
| FHP-2250XE | 7-H450-4-000 | Cool only, sealed hot side fans & power supply | EXT* | NEMA-4, IP 56 |
| FHP-2250XEHC | 7-H4I0-5-000 | Heat/Cool, sealed hot side fans & power supply | TC-7F | NEMA-4, IP 56 |
| FHP-2250XEHC | 7-H450-5-000 | Heat/Cool, sealed hot side fans & power supply | EXT* | NEMA-4, IP 56 |
| FHP-2250X | 7-H4J0-2-000 | Cool only, Mil. grade hot side fans & power supply | TC-4F | NEMA-4X, IP 56 |
| FHP-2250X | 7-H450-2-000 | Cool only, Mil. grade hot side fans & power supply | EXT* | NEMA-4X, IP 56 |
| FHP-2250XHC | 7-H4I0-3-000 | Heat/Cool, Mil. grade hot side fans & power supply | TC-7F | NEMA-4X, IP 56 |
| FHP-2250XHC | 7-H450-3-000 | Heat/Cool, Mil. grade hot side fans & power supply | EXT* | NEMA-4X, IP 56 |

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

TECA

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

www.thermoelectric.com

FHP-2250**MOUNTING STYLE**

Flush Mounted

ENVIRONMENTS SERVED

NEMA-12 IP 52

NEMA-4,4X IP 56

RATING (TRADITIONAL)

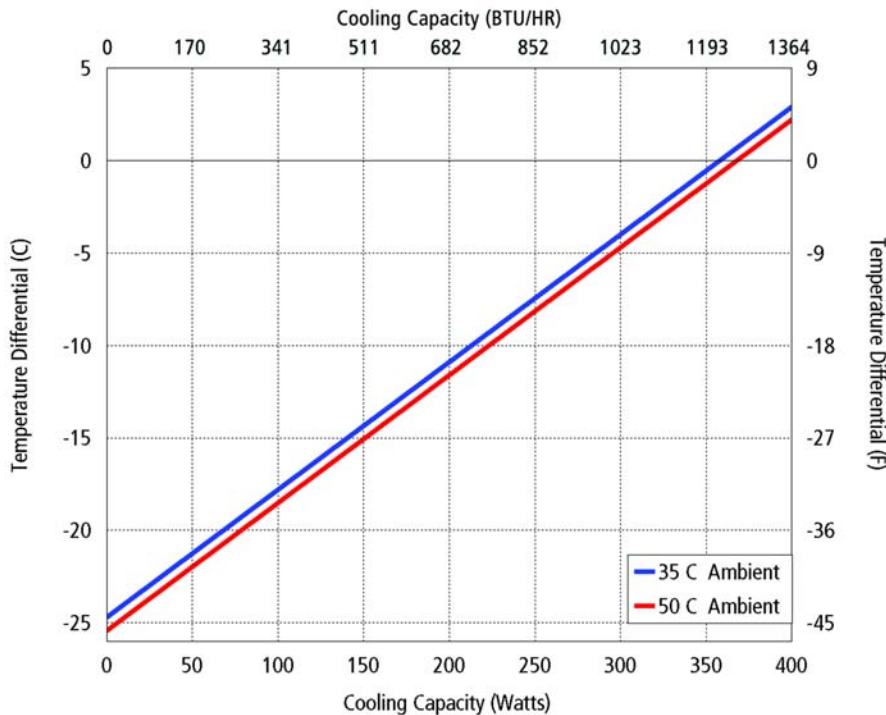
1220 BTU/hr @ 0 °F ΔT

1770 BTU/hr @ +20 °F ΔT

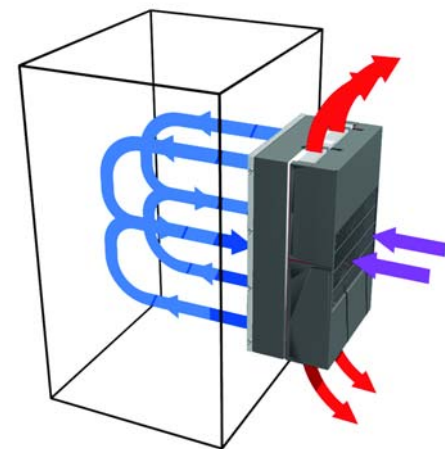
RATING (DIN 3168)

358 Watts L35 L35

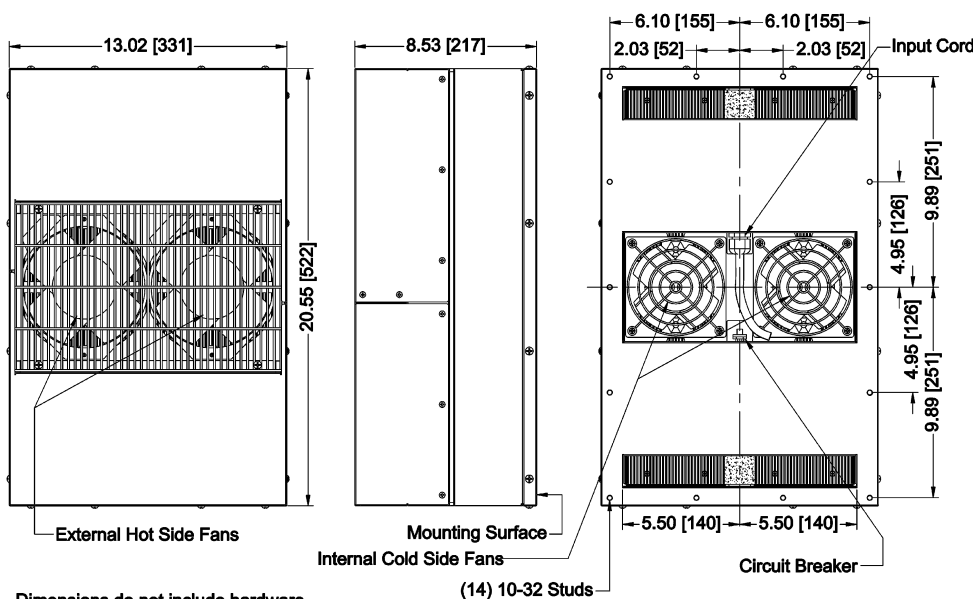
150 Watts L35 L50



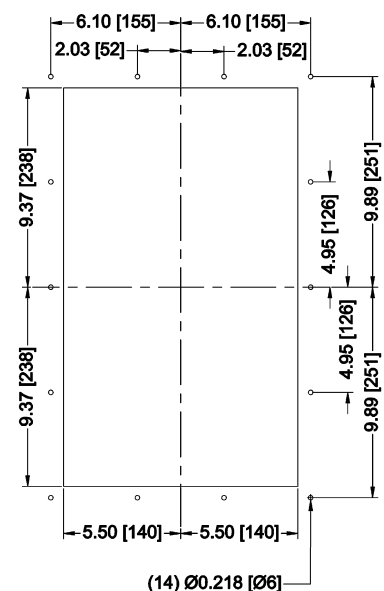
Temperature Differential (°F)

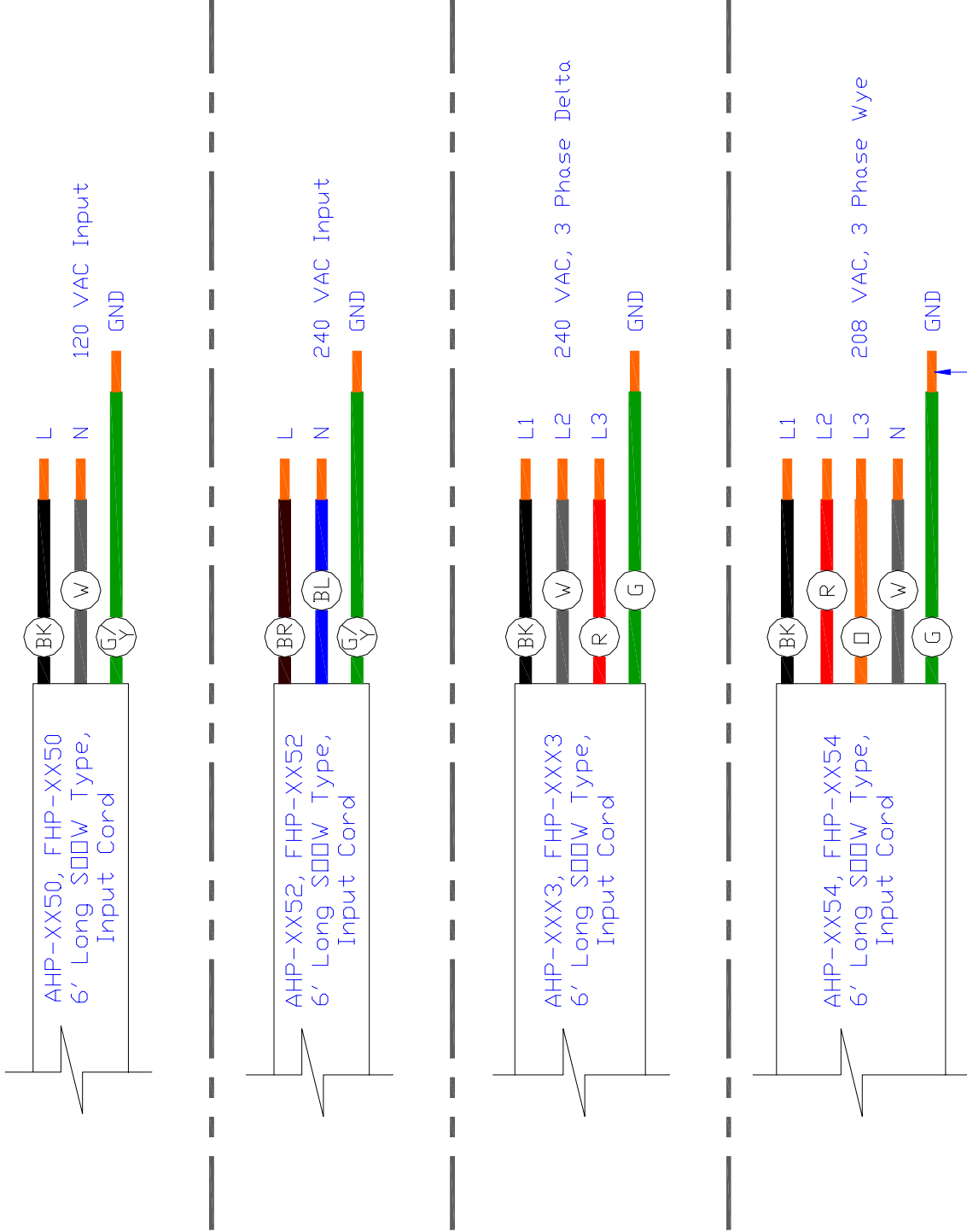


Air Flow Pattern

DIMENSIONS

Dimensions do not include hardware
Mounting hardware and gasket included but not shown
Dimensions: Inches [Millimeters]

MOUNTING CUTOUT DIMENSIONS



| REV | DESCRIPTION | Date | APPROVED | THERMOELECTRIC COOLING AMERICA CORP | | | |
|--|-------------|------|----------|---|---------------------------------|---|--|
| INFORMATION DISCLOSED HEREIN IS THE CONFIDENTIAL PROPERTY OF TECA CORP. RECIPIENT SHALL NOT USE THE INFORMATION IN ANY UNAUTHORIZED MANNER. FINISH: | | | | UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: | | | |
| | | | | DECIMALS .XX +/- .XXX +/- | ANGLE +/- FRACTION +/- | DRAWN BY: AA DATE: 04/10/2014 D9122 | |
| | | | | MATERIAL: | | DRAWING # SK140431 | |
| | | | | | | SCALE MASTER | |
| | | | | | | REV LEVEL | |
| | | | | | | SHEET | |

Enclosure, Armoire, Gehäuse, Armadi

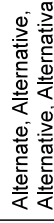
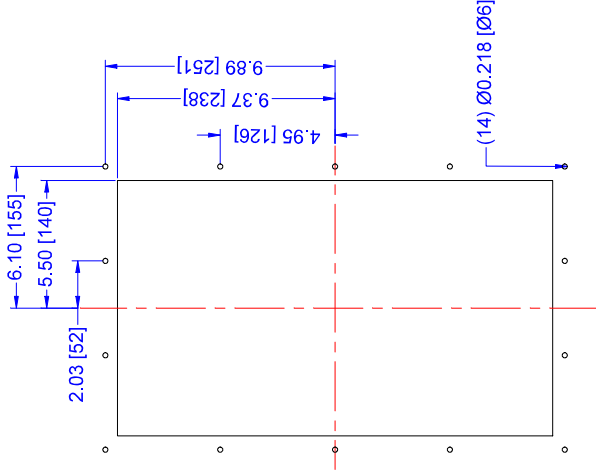
Gasket, Joint, Dichtung, Guarnizione

Intake Air, Air d'entrée, Einlaßluft, Aria di presa

Insulation, Isolation, Isolierstoff, Isolamento

Exhaust, Echappement, Abluft, Scarico

Exhaust, Echappement, Abluft, Scarico



—(14) Ø0.218 [Ø6]

| | | | |
|---|----------|----------|-----|
| SHALL NOT USE THE INFORMATION IN ANY UNAUTHORIZED MANNER. | DECIMALS | ANGLE | +/- |
| | .XX +/- | FRACTION | +/- |
| | .XXX +/- | | |

APPROVED

DESCRIPTION

REV

MASTER: MASTER

| | |
|-----|-------|
| REV | LEVEL |
|-----|-------|

SHEET

Power Temperature Controllers

TC-1F POWER TEMPERATURE SWITCHES

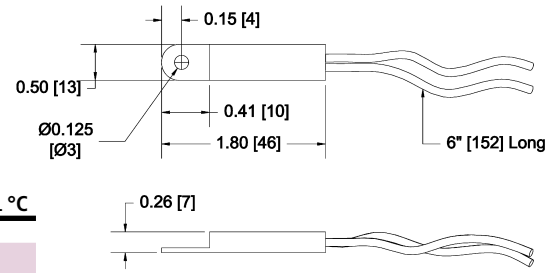
Models TC-1F power temperature controller, with small tolerance and reset differential, are the simplest and most cost effective way to control a cooling or heating device (VAC or VDC) without a need for a relay. For circuits that have higher current draw simply use them in conjunction with a solid state relay.

Part Numbers:

| Mode | Part Number | Note |
|------|-------------|-----------------------------------|
| Cool | TC-1C-XX | switch closes on temperature rise |
| Heat | TC-1H-XX | switch closes on temperature drop |

XX: Specify temperatures 20 °C, 25 °C, 30 °C, 35 °C for cool mode and 10°C, 15 °C for heat mode
Example: TC-1C-20 and TC-1H-10

| VOLTAGE | CURRENT AMPS | SET POINT TOLERANCE °C | RESET DIFFERENTIAL °C |
|---------|--------------|------------------------|-----------------------|
| 125 VAC | 2 | +/- 3 | 3 - 6 |
| 250 VAC | 1.3 | +/- 3 | 3 - 6 |
| 12 VDC | 2 | +/- 3 | 3 - 6 |
| 24 VDC | 1.3 | +/- 3 | 3 - 6 |



Dimensions: Inches [Millimeters]

TC-4F COOL ONLY WITH ECO-MODE

Model TC-4F is similar to TC-1F plus it has a 2nd power switch for heat exchanger mode (ECO-Mode). The active cool set point for TC-4F is 35 °C and for heat exchanger mode (ECO-Mode) is 25 °C.

| MODEL NUMBER | PART NUMBER | NOTES | HX TEMP. °C | COOL TEMP. °C | RESET (MAX) °C | RESET (TYP) °C | OPERATING VOLTAGE | SWITCHING VOLTAGE | ACTIVE MODE SWITCHING CURRENT MAX. | ECO-MODE SWITCHING CURRENT |
|--------------|---------------|--------------|-------------|---------------|----------------|----------------|-------------------|-------------------|------------------------------------|----------------------------|
| TC-4F-DC | 4F-24C-00-000 | 12/24/48 VDC | 25 +/- 3 | 35 +/- 3 | 6.5 | 3 | 12/24/24 VDC | 0-100 VDC | 12 ADC | 1.3 ADC |
| TC-4F-DC | 4F-24D-00-000 | 12/24/48 VDC | 25 +/- 3 | 35 +/- 3 | 6.5 | 3 | 12/24/48 VDC | 0-100 VDC | 20 ADC | 1.3 ADC |
| TC-4F-DC | 4F-24E-00-000 | 12/24/48 VDC | 25 +/- 3 | 35 +/- 3 | 6.5 | 3 | 12/24/48 VDC | 0-100 VDC | 40 ADC | 1.3 ADC |

TC-6F COOL ONLY

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

| MODEL NUMBER | PART NUMBER | NOTES | TEMP @ T1 °C | TEMP @ T2 °C | T1-T2 (MAX) °C | RESET (TYP) °C | RESET °C | TEMP @ T3 | OPERATING VOLTAGE | SWITCHING VOLTAGE | SWITCHING CURRENT MAX. |
|--------------|---------------|-------------|--------------|--------------|----------------|----------------|----------|---------------|-------------------|-------------------|------------------------|
| TC-6F | 6F-00A-00-000 | No Relay | 35 +/- 5 | 25 +/- 5 | 10 +/- 3 | 6.5 | 3 | Continuous On | NA | NA | NA |
| TC-6F-AC | 6F-03T-00-000 | VAC Version | 35 +/- 5 | 25 +/- 5 | 10 +/- 3 | 6.5 | 3 | Continuous On | 85-250 VAC | 24-280 VAC | 10 |
| TC-6F-DC | 6F-43D-00-000 | 12/24 VDC | 35 +/- 5 | 25 +/- 5 | 10 +/- 3 | 6.5 | 3 | Continuous On | 12/24 VDC | 0-100 VDC | 20 ADC |
| TC-6F-DC | 6F-33D-00-000 | 48 VDC | 35 +/- 5 | 25 +/- 5 | 10 +/- 3 | 6.5 | 3 | Continuous On | 48 VDC | 0-100 VDC | 20 ADC |

TC-3F HEAT AND COOL

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:

| MODEL NUMBER | PART NUMBER | NOTES | COOL TEMP. °C | HEAT TEMP. °C | RESET (MAX) °C | RESET (TYP) °C | OPERATING VOLTAGE | SWITCHING VOLTAGE | SWITCHING CURRENT MAX. | H-BRIDGE RELAYS |
|--------------|---------------|-------------|---------------|---------------|----------------|----------------|-------------------|-------------------|------------------------|-----------------|
| TC-3F-AC | 3F-04R-00-000 | VAC Version | 35 +/- 5 | 15 +/- 5 | 6.5 | 3 | 85-280 VAC | 24-280 VAC | 10 AMPS | N/A |
| TC-3F-DC | 3F-44G-00-000 | 12/24 VDC | 35 +/- 5 | 15 +/- 5 | 6.5 | 3 | 3.5-32 VDC | 0-100 VDC | 20 ADC | N/A |
| TC-3F-DC | 3F-44P-00-000 | 12/24 VDC | 35 +/- 5 | 15 +/- 5 | 6.5 | 3 | 3.5-32 VDC | 0-100 VDC | 20 ADC | Solid State |

TC-7F HEAT/COOL WITH ECO-MODE

Model TC-7F (Heat/Cool) thermostat incorporates the same technology as the TC-3F. It contains a single setting each for both heating and cooling and a heat exchanger mode (ECO-Mode).

| MODEL NUMBER | PART NUMBER | NOTES | COOL TEMP. °C | HX TEMP. °C | HEAT TEMP. °C | RESET (MAX) °C | RESET (TYP) °C | OPERATING VOLTAGE | SWITCHING VOLTAGE | SWITCHING CURRENT MAX. | H-BRIDGE RELAYS |
|--------------|---------------|--------|---------------|-------------|---------------|----------------|----------------|-------------------|-------------------|------------------------|------------------------|
| TC-7F-DC | 7F-24G-00-000 | 24 VDC | 35 +/- 3 | 25 +/- 3 | 10 +/- 3 | 6.5 | 3 | 24 VDC | 24 VDC | 20 ADC | N/A |
| TC-7F-DC | 7F-24O-00-001 | 24 VDC | 35 +/- 3 | 25 +/- 3 | 10 +/- 3 | 6.5 | 3 | 24 VDC | 24 VDC | 12 ADC | Solid State |
| TC-7F-DC | 7F-24S-00-000 | 12 VDC | 35 +/- 3 | 25 +/- 3 | 10 +/- 3 | 6.5 | 3 | 12 VDC | 12 VDC | 20 ADC | Solid State/Mechanical |
| TC-7F-DC | 7F-24T-00-000 | 24 VDC | 35 +/- 3 | 25 +/- 3 | 10 +/- 3 | 6.5 | 3 | 24 VDC | 24 VDC | 20 ADC | Solid State/Mechanical |
| TC-7F-DC | 7F-24U-00-000 | 48 VDC | 35 +/- 3 | 25 +/- 3 | 10 +/- 3 | 6.5 | 3 | 48 VDC | 48 VDC | 20 ADC | Solid State/Mechanical |

For custom variations of any of the controls, contact TECA.

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.

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