

# Installation Guide

## Mounting

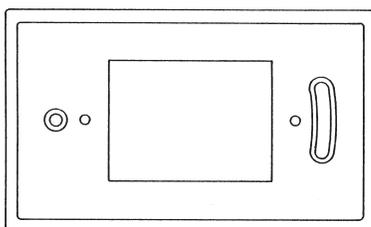
### General

CTE-5100 series thermostats **require a scale plate assembly and a cover**, which must be ordered separately. To ensure accurate temperature sensing, mount thermostats on interior walls and away from heat sources, sunlight, windows, air vents, and air circulation obstructions (e.g., curtains and furniture).

These thermostats may be mounted horizontally or vertically to a standard 2 x 4" (51 x 102 mm) handy box using a HMO-5024/5026/5030/5031 backplate or directly to a hollow wall using an HMO-5023 kit.

### Electrical Box Mounting

1. Install, but **DO NOT TIGHTEN**, the HMO-5024/5026/5030/5031 backplate to a handy box using the two 6-32 screws (included).
2. Adjust and level the backplate using the slotted mounting hole.
3. Tighten the two mounting screws.
4. Pull all thermostat wires and cable through the backplate and decorative trim plate opening (of the HMO-5024/5026/5030/5031). Be careful not to damage the trim plate while wiring.
5. Connect the thermostat's wires according to its particular application. See the Connections and Wiring section.
6. Position the trim plate between the backplate and the thermostat (with the cover removed).
7. Align the mounting holes and secure the assembly with the two 6-32 x 2" self-tapping screws (included).

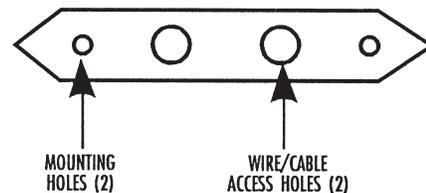


HMO-5024/5026/5030/5031 Back Plate

### Hollow Wall Mounting

Thermostats may be mounted on a hollow wall up to 5/8" thick using the HMO-5023 hollow wall mounting kit.

1. Using the template, cut a 1-1/2 x 2-11/16" opening in the drywall.
2. Loosely mount the HMO-5023 bracket to the thermostat (with cover removed) using the two 6-32 x 2" screws.
3. Pull all thermostat wires or cable through the bracket's wiring/cable access hole(s).
4. Connect the thermostat wires according to its particular application. See the Connections and Wiring section.
5. Insert bracket diagonally, through the wall opening, and then center and tighten the screws.

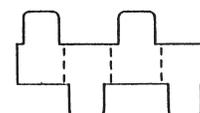


HMO-5023 Hollow Wall Mounting Kit (Screws Not Shown)

### Setpoint Stops

Optional setpoint stops can be used to lock or limit the setpoint range. Each HFO-0027 setpoint stop strip (accessory sold separately) contains four stops.

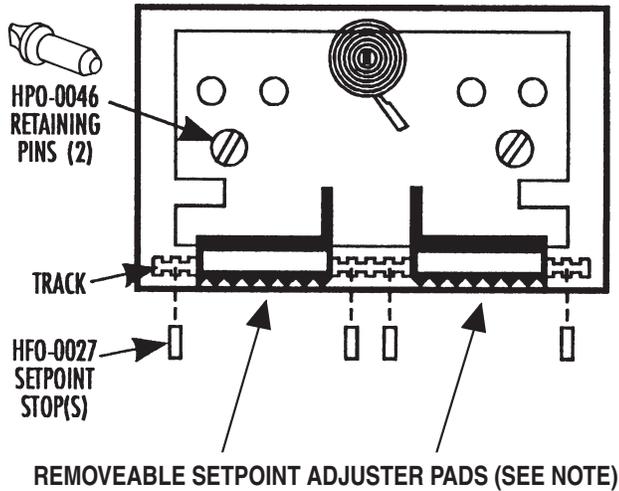
1. Break a stop from the strip by gently folding on the seam with pliers.
2. Insert a stop into the slider track on one or both sides of the slider.
3. Repeat for second slider.



HFO-0027 Setpoint Stop Strip

## Scale Plate

1. Install scale plate under the setpoint indicators.
2. Align mounting holes.
3. Insert the two (supplied) HPO-0046 retaining pins into the holes.
4. Twist pins 1/4 turn to firmly seat.



*Retaining Pins, Setpoint Stops, and Setpoint Sliders*

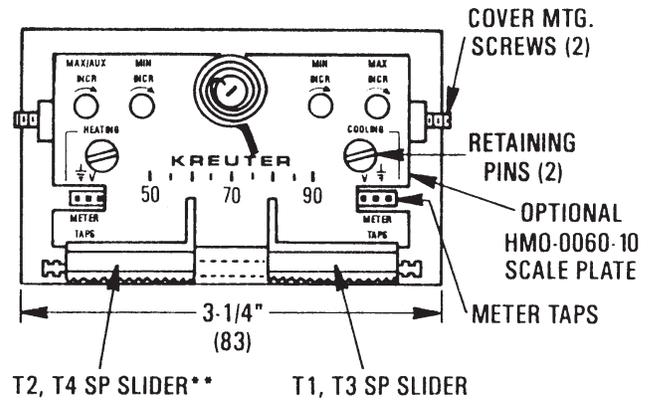
## Cover

**NOTE:** When using a blank cover (without a window), remove the finger pads on the setpoint sliders. Hold the slider in place, insert a small flat blade screwdriver into the slot in the metal slider. Twist the screwdriver slightly to pop the pad off.

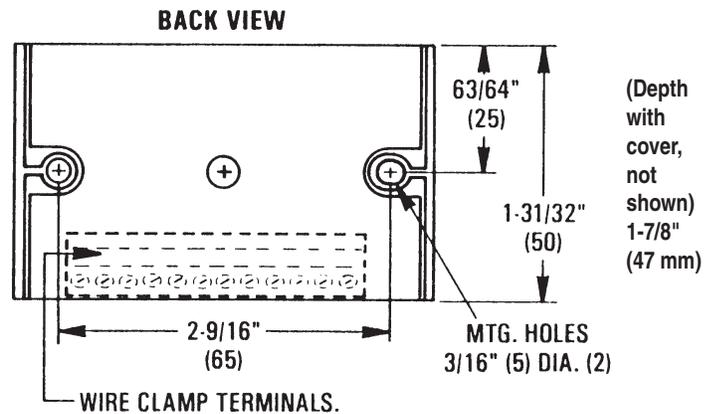
With the window style covers, a symbol-coded label strip is included to apply to the covers for setpoint indication.

1. Remove the window from the cover by applying light pressure on its underside and flexing upward.
2. Peel off correct identity label from the strip of labels provided.
3. Position the label on the cover's recessed area.
4. Snap window back in place.
5. Slide cover onto base.
6. Locate the setscrew on each of the thermostats short sides.
7. Using a 1/16" hex wrench, turn setscrews outward CCW until the cover is secure. (Turn setscrews CW to remove cover.)

## Connections and Wiring

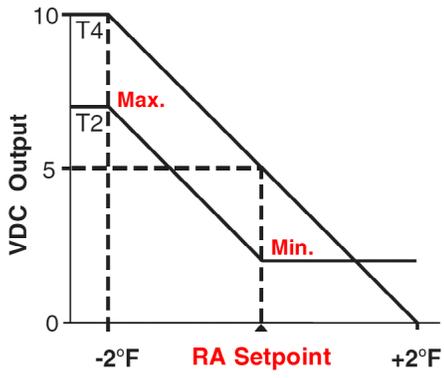


\*\*MODEL CTE-5104 DOES NOT INCLUDE T4 OUTPUT

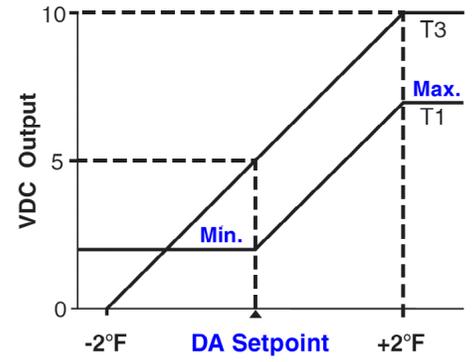


Terminal	CTE-5101	CTE-5102	CTE-5103/5105	CTE-5104	Description
V1	X		X	X	Velocity input for read-out
T3	X		X	X	Upper setpoint output without limits
R1	X		X	X	T1 override, connect to "-" if unused
T1	X		X	X	Upper setpoint output with limits
+	X	X	X	X	16 VDC power supply input
12V	X	X	X	X	12 VDC power output
A	X	X	X	X	Temp. averaging input
-	X	X	X	X	Ground reference
T2*		X	X	X	Lower setpoint output with limits*
R2*		X	X	X	T2 override (voltage applied to R2 subtracts from T2), connect to "-" if unused*
T4		X	X		Lower setpoint out without limits
V2		X	X		Velocity input for read-out

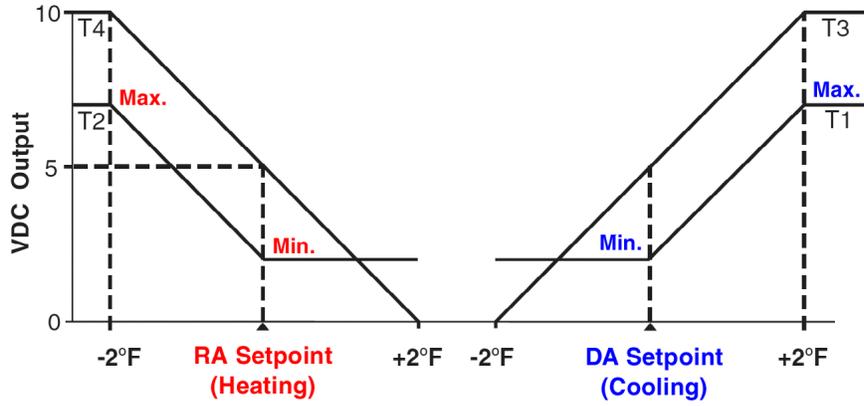
\*Except CTE-5104, in which T2 lower setpoint output is without limits. Also CTE-5104's R2 is auxiliary limit trigger, in which voltage above 1 VDC to R2 indexes T1 to the auxiliary flow limit.



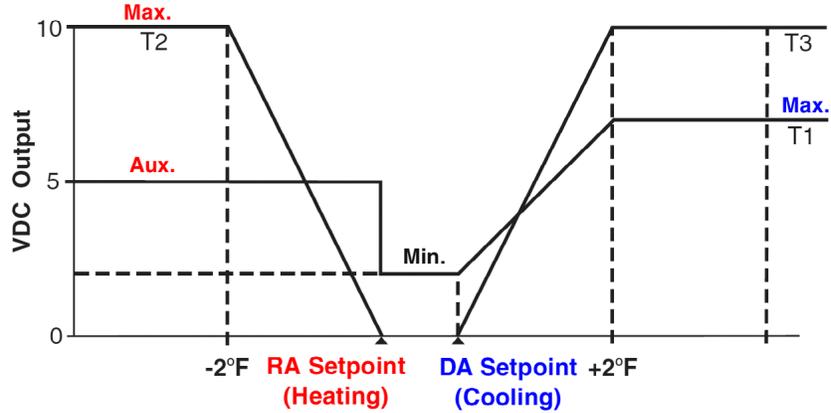
CTE-5102 Thermostat



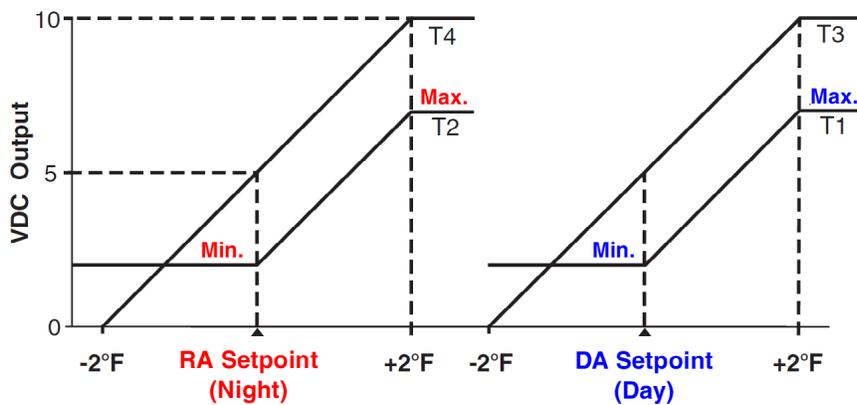
CTE-5101 Thermostat



CTE-5103 Thermostat



CTE-5104 Thermostat



CTE-5105 Thermostat

## Adjustments and Calibration

Thermal calibration is not required. Minimum and maximum control points can be calibrated before or after the thermostat has been installed.

1. Turn setscrews CW and remove cover.
2. Verify 16 VDC between the “+” and “-” terminals.
3. Remove setpoint slider stops (HFO-0027) if necessary.
4. Measure “Tx” to “-” for output voltage. (See the table on page 2 and the graphs on pages 3 and 4 to determine the correct T terminal.)
5. Maximum limits **MUST** be greater than minimum limits. If in doubt, turn maximum limit fully clockwise (increase) before proceeding.

**NOTE: Dials rotate approximately 200° (8:00–4:00). DO NOT force dial beyond stop.**

6. Connect a voltmeter to the meter taps (using an HSO-5001):
  - a. The two holes on the right are for the minimum and maximum.
  - b. Measure actual flow in left holes. The thermostat must be wired to a controller for this option.
7. Always adjust the minimum first. Adjust setpoint to request minimum flow using the minimum dial:
  - DA Cooling; Set point > Room Temp.
  - RA heating; Set point < Room Temp.

**NOTE : Limits may be set at the CSP series controller or the thermostat.** If setting min./max. limits at the thermostat, the CSP's Min. dial must be turned fully CCW to “0” **AND** the Max. dial must be turned fully CW to “100.” This ensures that the CSP will not affect the limits.

8. Adjust the setpoint to request maximum flow using the Max. dial:
  - RA Heating; Set point > Room Temp.
  - DA Cooling; Set point < Room Temp.
9. Reinstall the cover and turn setscrews CCW until the cover is secure.

## Maintenance

Remove dust as necessary from the holes in the cover. Clean the window with a soft, damp cloth and mild soap if needed.

## More Information

For more wiring and calibration details as well as sample applications, see the [CSP-5001/5002 Applications Guide](#).



For specifications, accessories list, and other information, see the [CTE-5100 Series Data Sheet](#).



## Important Notices

The material in this document is for information purposes only. **The contents and the product it describes are subject to change without notice.** KMC Controls, Inc. makes no representations or warranties with respect to this document. In no event shall KMC Controls, Inc. be liable for any damages, direct or incidental, arising out of or related to the use of this document.

**KMC Controls, Inc.**  
19476 Industrial Drive  
New Paris, IN 46553  
574.831.5250  
[www.kmcccontrols.com](http://www.kmcccontrols.com)  
[info@kmcccontrols.com](mailto:info@kmcccontrols.com)