CTE-5202

Electronic Room Thermostat w/ LCD Display

Description and Application

The KMC CTE-5202 thermostat is a dual-setpoint, analog electronic room controller with a digital LCD display for use in many electronic room temperature control applications. It provides two independent electronic Proportional + Integral (PI) control loops with heating and cooling setpoints. The thermostat drives two (adjustable span) 0–12 VDC analog outputs for control of external devices. The easy to understand LCD display and push buttons enable viewing of current temperature, changing of setpoints, and simple device configuration.

The thermostat is typically used with KMC CEP/CSP-4000 and CSP-5000 series of electronic pressure-independent VAV controllers, MEP-4002 proportional electronic actuators in pressure-dependent VAV applications, and VEB-43/46 series proportional control valves in baseboard and other heating/cooling applications. Application sequences may be selected for the following types of room and terminal unit control:

- Single-duct pressure-independent VAV terminals, with or without reheat and auxiliary minimum airflow (see Sequence 2 on *page 3*)
- Single-duct pressure-dependent VAV terminals with or without reheat (Sequence 1 for single setpoint or Sequence 2 for dual setpoint and/or aux. minimum)
- Single-duct fan-powered VAV terminals with or without reheat using REE-5xxx staging modules (Sequence 1)
- Dual-duct VAV applications with independent control of heating and cooling outputs (Sequence 3)
- Proportional heating and cooling applications, such as baseboard heating and chilled beams (Sequence 1 and 3)

Common application features for morning warm-up, changeover, and unoccupied/night setback are provided via an external temperature sensor and/or contact closure provided by a remote building automation system.

NOTE: For many examples of new and retrofit applications, see the **CTE-5202 Applications Guide**.

(Shown adjusting the Cooling setpoint—during normal operation, only room temperature is shown in the upper right of the screen)

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Models

CTE-5202	Light almond
CTE-5202W	White

Features

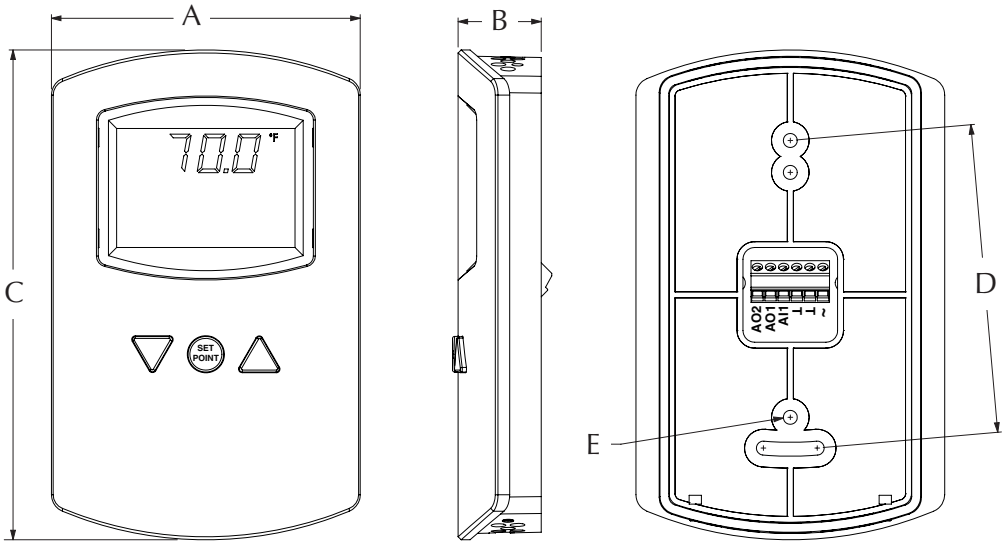
- Large LCD display for easy viewing (or can be blanked if desired) and configuration
- Display room temperature in either degrees Fahrenheit or Celsius
- Easy setpoint adjustment via front Up and Down buttons
- Heating and cooling setpoints with three selectable sequences
- Outputs configurable to conventional spans between 0 and 12 VDC
- Adjustable min./max./aux. limits (span), deadband, proportional band, integral, temperature offset, setback offset, and changeover
- External input for changeover sensor and setback contact
- Functionally replaces most Barber Colman TP-81xx, KMC CTE-1x0x/CTE-50xx/CTE-51xx, and other room thermostats with a more contemporary version that includes an LCD display and configurable sequences and limits (see *Cross-References on page 4*)

Specifications

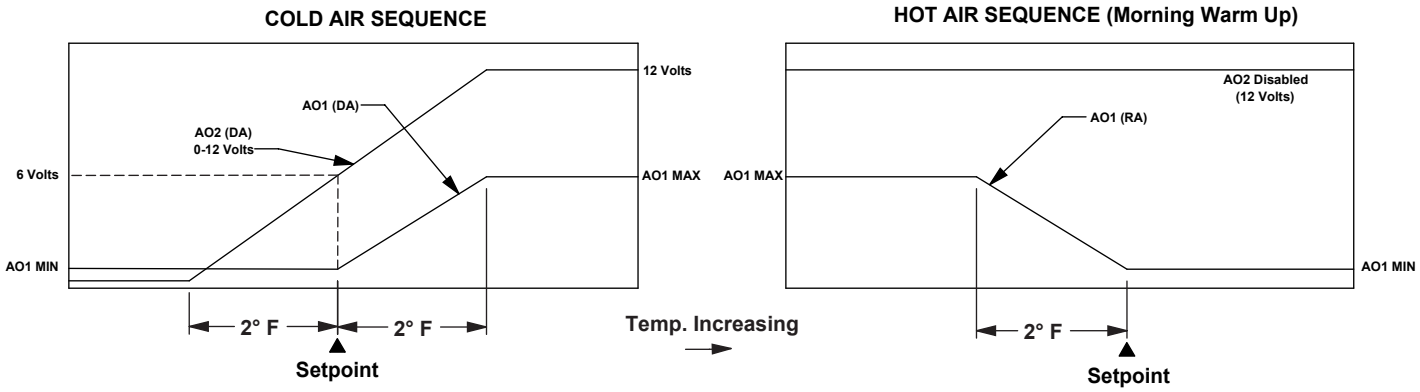
Supply Voltage	24 VAC (+20/–15%), Class 2, or 14 to 35 VDC (for full output; @ 9.1 VDC thermostat is fully functional except that AO1 and AO2 max. output voltage is reduced to about 5.3 VDC)
Supply Power	1 VA (VAC) or 0.5 W (VDC)
Temperature Sensor	10K ohm Type II thermistor with ±0.36° F (±0.2° C) accuracy
Ext. Input (AI1)	Analog Input (10K ohm pull-up resistor for Type III thermistor as optional changeover sensor—or a contact to initiate setback)
Outputs (AO1/AO2)	(Adjustable span) 0 to 12 VDC (10K ohm max. load)
Output Limits/Span	Minimum, maximum, and auxiliary limits adjustable 0 to 12 VDC (defaults min. = 0, max. = 12, aux. = 0)
Setpoint Range	55 to 85° F (13 to 30° C), with default 74° (for cooling or 70° for heating)
Changeover	Adjustable from 55 to 85° F, with 77° F default
Deadband	Minimum setpoint differential adjustable 1 to 10° F (0.5 to 5.5° C), with default of 2° F
Proportional Band	Adjustable from 1 to 10° F (0.5 to 5.5° C), with 2° F default
Integral Time	0 to 60 minutes; default setting is 30; 0 = cancel integral action
Offsets	Room temperature offset (adjustable ±5° F) and standby setback offset (adjustable 1 to 10° F, default 2° F, does not apply to morning warm-up)
Display	Multifunctional LCD, 1.88 x 1.25 inches (48 x 32 mm) with temperature continuously updated (can be blanked); heat/cool icons and other information displayed when relevant
Connector Type	Wire clamp terminals, 16 to 26 AWG
Weight	4.2 ounces (119 grams), including backplate
Material	Light almond or white flame-resistant plastic
Mounting	Thermostat secured to backplate by two concealed screws; backplate mounts to vertical 2 x 4 inch standard handy box; mounts to most other boxes with an HMO-1161 wall plate
Approvals	UL 873 Temperature Indicating and Regulating Equipment; FCC Class B, Part 15, Subpart B and complies with Canadian ICES-003 Class B; SASO PCP Registration KSA R-103263; CE listing pending

Environmental Limits

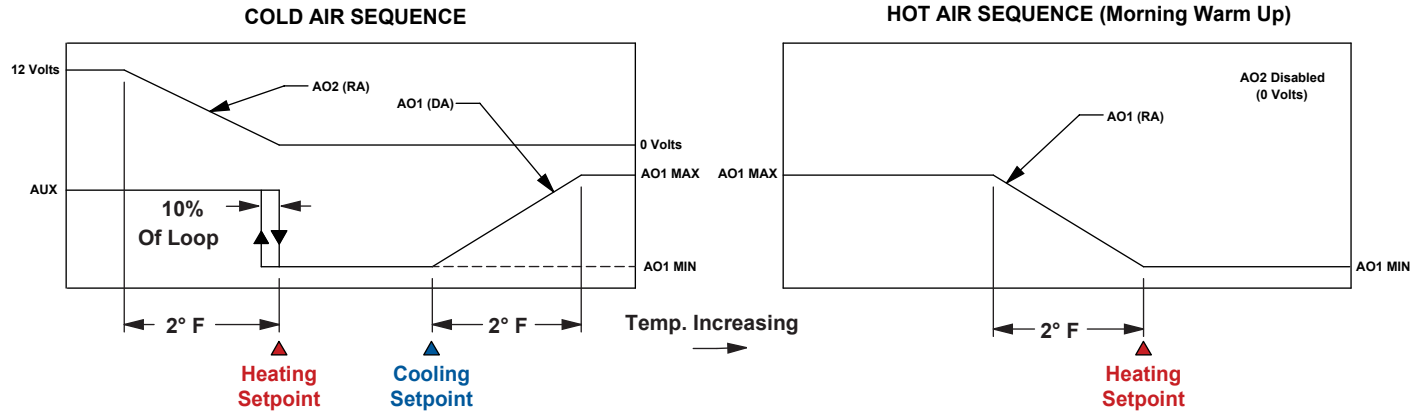
Operating	32 to 140° F (0 to 49° C)
Humidity	0 to 95% RH, non-condensing
Shipping	–40 to 160° F (–40 to 71° C)



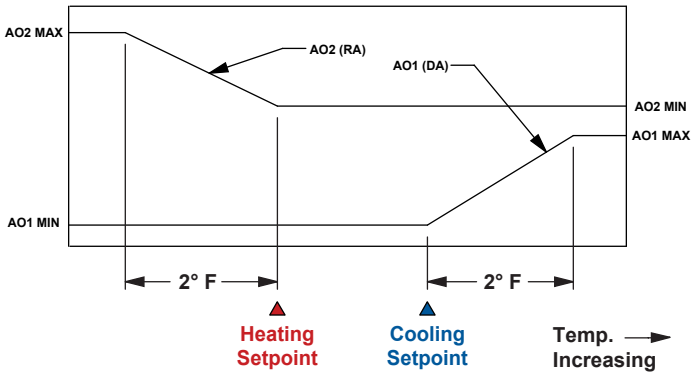
A	3.25 in.	83 mm
B	0.88 in.	22 mm
C	5.16 in.	116 mm
D	3.25 in.	83 mm
E	0.15 in. dia.	3.81 mm dia.



SEQUENCE # 1: SINGLE DUCT COOLING, FAN BOX (with REE-5002, REE-5017, or REE-5024)



SEQUENCE # 2: SINGLE DUCT COOLING WITH REHEAT AND AUXILIARY FLOW



SEQUENCE # 3:
INDEPENDENT HEATING AND COOLING CONTROL
(Dual Duct VAV, Baseboard, Single Zone AHU)

NOTE: **AO1** is typically used to control the **cooling** output (primary air damper or cooling valve), and **AO2** is used to control the **heating** output (VAV reheat or heating valve).

Hot/Cold Changeover

For hot/cold changeover on Sequence 1 or 2, connect a changeover sensor to the AI1 input. The sensor should be a Type III thermistor (10K ohm @ 77° F), such as KMC **STE-140x** duct or **STE-1454/1455** strap-on sensors. (An internal 10K ohm pullup resistor is provided on AI1.)

Leave sensor off for continuous cold air mode.

Unoccupied/Standby Setback

Contact closure across AI1 and Common initiates the unoccupied/standby setback sequence, which causes the cooling setpoint to increase and the heating setpoint (where applicable) to decrease by the amount of the (selectable) setback offset. In Sequence 2 or 3, it would shift both the cooling setpoint and the heating setpoint. (This setback does not apply during the morning warm-up sequence.)

Cross-References

NOTE: For detailed information, including sequences to select and sample applications, see the CTE-5202 Applications Guide.

The CTE-5202 is a functional replacement/upgrade for the following thermostats:

- KMC (Nailor, Dynacon) **CTE-100x** and **CTE-110x** series
- KMC **CTE-500x** (except CTE-5003/5013) series
- KMC (Nailor, Dynacon) **CTE-51xx** series
- Anemostat (East/West) 13-27, 13-28, 13-29, 13-33, 13-34, 13-35, 004100, 004643
- ASC / Titus 10269601, 10269603, 10269604, 10269606, 10269607, 10269608, 10269609, 10269610, 10027401, 10027403, 10027411, 10027413, 10027415
- Barber Colman (Schneider Electric, TAC, Invensys) TP-8101, TP-8102, TP-8103, TP-8124, and TP-8125
- Carnes 999-2662, 999-2663, 999-2664
- Honeywell TB7980 (check application and specifications)
- Johnson Controls (various—check application and specifications)
- Kele RTC-2P (with one or less remote inputs—check application and specifications)
- Metal Industries 01EC-2119, 01EC-2120, 01EC-2122, 01EC-2129, 01EC-2146, 01EC-9229
- Metalaire THM1004, THM1005, THM1101, THM1103, THM1105
- Nailor B3-3001-191 (B3-191), B3-3001-186 (B3-186), B3-3001-015 (B3-015), H1-981
- PEKO (various—check application and specifications)
- Price Industries 019726-001, 019810-001, 019814-001, 019816-001, 019822-001
- Siemens (various—check application and specifications)
- Viconics (various—check application and specifications)

Accessories

HMO-1161	Wall plate, allows mounting to horizontal 2 x 4", 4 x 4", or other boxes, light almond	
HMO-1161W	HMO-1161 in white	
HPO-0044	Replacement cover hex screws	
HPO-1161	Foam insulating gasket	
REE-50xx	Electric relay modules, staging and reheat	
STE-140x	Duct temperature (Type III) sensors	
STE-1454/1455	Strap-on temperature (Type III) sensors	

NOTE: For information about use of accessories, see the CTE-5202 Applications Guide.

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