

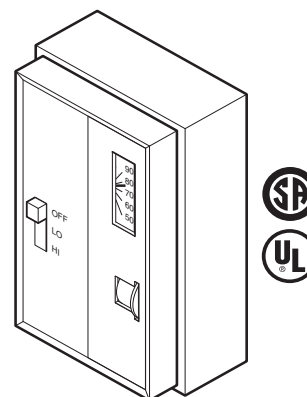
Two-Position Electric Room Thermostats
General Instructions

Application

These units are used for on-off control of line voltage fan coil or zone valves on heating, cooling, and heating and cooling systems. A two-pole, three-position switch is provided for fan control.

Features

- Separate units for °C and °F.
- Parallel heat and/or cooling anticipation capability.
- Dial stop pins to limit range.
- Lock cover screw/sets available.
- Agency approval.
- Switch bases AT-602 and AT-603 available for custom applications.
- Fan switch option standard.

**TC-195**
TC-199**Applicable Literature**

- Cross-Reference Guide, F-23638
- Reference Manual, F-21683
- Application Manual, F-21335

SPECIFICATIONS

Anticipators: Thermostats mounted on concrete wall or surfaces that change temperature slowly, have reduced response to changes in air temperature. Response is further delayed by guards that restrict air flow to the thermostat. Anticipators are required (parallel for cooling, series or parallel for heating) for any of these conditions and in spaces intended for continuous occupancy; i.e., hotel guest rooms and offices.

Fan Switch: Markings, Off-Lo-Hi. Off position de-energizes thermostat and fan.

Construction: Integral two-pole three-position.

Sensing Element: Bimetal.

Mounting: Flush or 2 x 4 wall box.

Locations: NEMA Type 1.

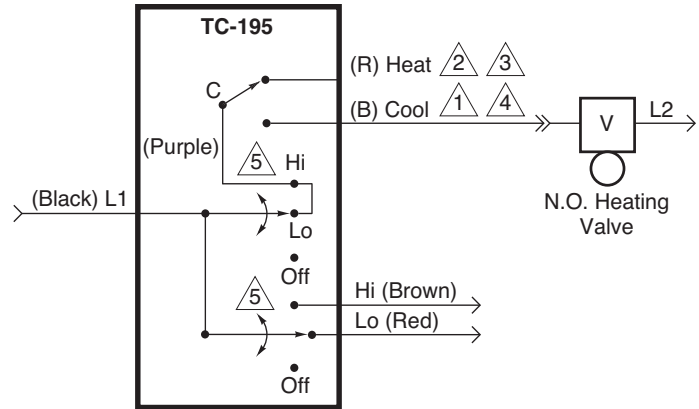
Table-1 Model Chart.

Model No.	Application	Setpoint °F (°C)	Differential °F (°C)	Electrical Switch (Refer to Electrical Ratings Table)	Connections	Cover	Dimensions in. (mm) H x W x D
TC-195	On-off control of line voltage fan coil or zone valves on heating and cooling systems.	55 to 85 (13 to 29)	1.5 (0.8)	SPDT snap action	Coded screw terminals and color-coded 6 in. leads	Beige metal with metal brushed bronze insert	4-3/8 x 2-3/4 x 1-5/8 (111 x 70 x 41)
TC-199			Heat, 2 (1.1) Cool, 2 (1.1) Neutral, 2 (1.1)	SPDT zero energy band (neutral center)			

Table-2 Electrical Ratings.

Model No.	Fan Switch			Thermostat Contacts				
	Volts AC	Full Load Amps	Locked Rotor Amps	Volts AC	Full Load Amps	Locked Rotor Amps	Non-inductive Amps	Pilot Duty (VA)
TC-195	120	6	36	120	3	18	3	125
TC-199	120	6	36	120	1.0	6	1.0	48

TYPICAL APPLICATIONS



- 1 Heating with N.O. valve – Connect B to valve.
- 2 Heating with N.C. valve – Connect R to valve.
- 3 Cooling with N.O. valve – Connect R to valve.
- 4 Cooling with N.C. valve – Connect B to valve.
- 5 Fan Switch: Off position of fan switch is interlocked to deenergize controlled devices.

Figure-1 TC-195 Series Heating or Cooling Applications.

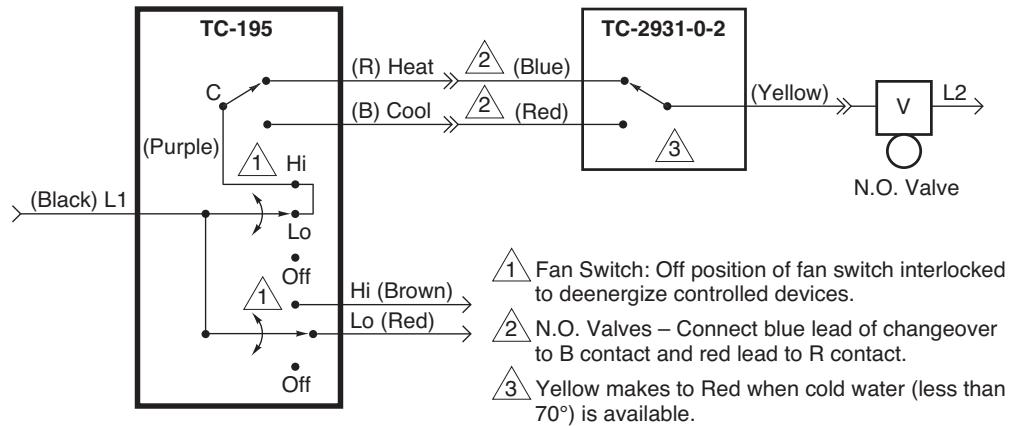
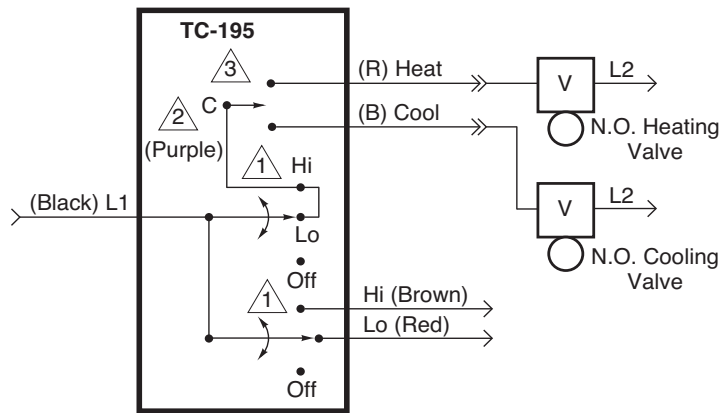


Figure-2 TC-195 Series Heating and Cooling Applications, Single Valve Only, Requires Changeover (automatic changeover shown).



- △1 Fan Switch: Off position of fan switch interlocked to deenergize controlled devices.
- △2 Where applications of TC-195 and TC-199 require the thermostat to control heating and/or cooling with the fan off, it is necessary to disconnect and tape the purple lead from the C terminal of the thermostat and to connect the C terminal to L1.
- △3 Neutral center.

Figure-3 TC-199 Series Sequenced Heating and Cooling Applications (no changeover)

INSTALLATION

Inspection

Inspect the carton for damage. If damaged, notify the appropriate carrier immediately. Inspect the device for obvious damage. An ohmmeter may be used to check the fan and bimetal switch action. Return damaged products.

Requirements

Each thermostat package contains a mounting plate with two screws, and one thermostat mounting screw. Color-coded leads are provided on switch, coded terminals on the thermostat.

Mounting

Requirements are indicated by the dimensions shown in Figure-5. Installation may be on a flush or surface switch box. Locate the thermostat where it will be exposed to unrestricted circulation of air which represents the average temperature of the controlled space. Do not locate the thermostat near sources of heat or cold such as lamps, motors sunlight or concealed ducts or pipes. The thermostat is designed for service in any normally encountered human environment.

1. Pull all wires.
2. Fasten mounting plate to box or wall.
3. Make electrical connections to switch leads and thermostat terminals. Make all connections in accordance with the job wiring diagram and in compliance with national and local electrical codes. Class I wiring is required.
4. Refer to Figure-1 through Figure-3 for wiring of various applications. Hook thermostat on top of mounting plate and swing down into place.
5. Tighten thermostat mounting screw.

CHECKOUT

After installing a thermostat, make an initial check of the switching action. Place switch in low and high positions and check fan speed at each position. With switch in low or high, rotate thermostat setpoint knob and observe controlled devices and valves. Turning the setpoint dial to a temperature above ambient must cause the thermostat to switch, closing the R contact. Turning the setpoint dial setting down gradually to below ambient must cause the unit to switch, closing the B contact.

CALIBRATION

All thermostats are precision calibrated at the factory and normally will not require further attention. However, if recalibration is necessary for any reason at all, proceed as follows:

TC-195 Series

1. Set the adjustment dial to correspond to actual room temperature.
2. Place fan switch in low position. Remove thermostat cover and insulator screw, swing insulator aside, and remove contact cover. Do not breathe on the thermostat or handle excessively as this will affect the accuracy of the final calibration. If not desired to have fan on or power to thermostat contacts, move fan switch to off position.
3. If contact blade is made to the left (R) contact, with a 3/16" open end wrench turn calibration screw counterclockwise (looking at head of screw) until blade makes to right (B) contact.

NOTE

Each complete turn of screw changes calibration approximately 30°F.

Now turn screw very slowly clockwise until blade just makes the left (R) contact. Thermostat is now properly calibrated.

If contact blade is originally made to the right (B) contact, turn calibration screw slowly clockwise until contact blade just makes the left (R) contact. Thermostat is now properly calibrated.

4. Replace contact cover, insulator, and thermostat cover. Fan switch lever must be in the low position.

TC-199 Series

1. Set the temperature dial 2°F above the actual room temperature.
2. Place fan switch in low position. Remove thermostat cover and insulator screw, swing insulator aside, and remove contact cover. Do not breathe on the thermostat or handle excessively as this will affect the accuracy of the final calibration. If not desired to have fan on or power to thermostat contacts, move fan switch to off position.
3. If contact blade is made to the left (R) contact, use a 3/16" open end wrench and turn calibration screw counterclockwise (looking at head of screw) until blade floats between contacts.

NOTE

Each complete turn of screw changes calibration approximately 20°F.

Now turn screw very slowly clockwise until blade just makes the left (R) contact. Thermostat is now properly calibrated.

4. Replace contact cover, insulator, and the thermostat cover. Fan switch lever must be in the low position.

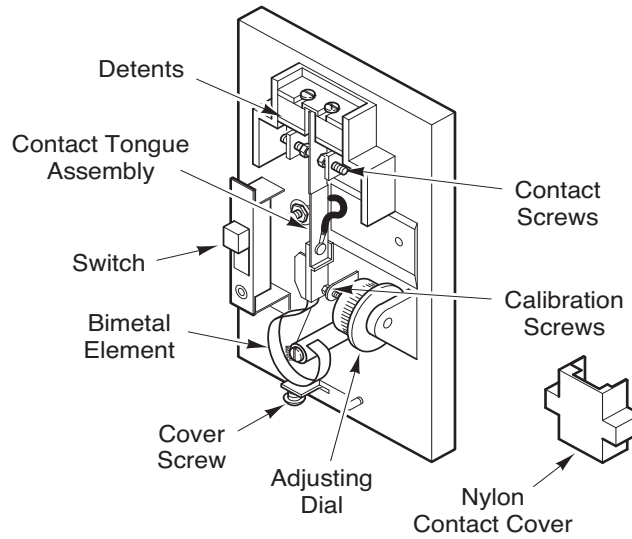


Figure-4 Part Identification.

MAINTENANCE

Open areas at bottom and around base of thermostat should be kept clean and free from obstructions to allow proper flow of air. If switch contacts need cleaning, this may be done with a contact burnishing tool. Thermostat must be recalibrated after cleaning contacts.

FIELD REPAIR

These thermostats are not field repairable. Replace entire device.

DIMENSIONAL DATA

All dimensions are in inches (millimeters in brackets). See Figure-5.

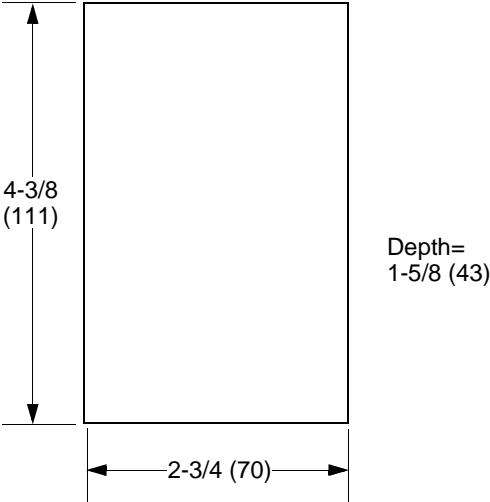


Figure-5 Mounting Dimensions.

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