

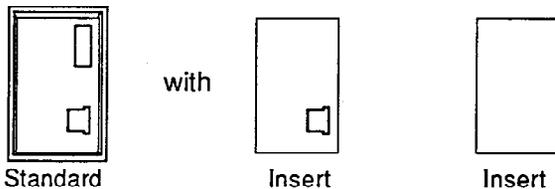
APPLICATION

For low or line voltage on-off control of fan coils, fans, motor starters, contactors, two-position electric actuators.

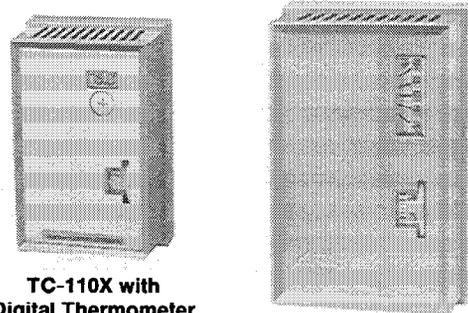
SPECIFICATIONS

Setpoint Dial Range: See Table 1.
Sensing Element: Bimetal.
Differential: 2°F (1°C).
Electrical Switch: Snap action SPDT.
Rating, See Table 3.
Connections: Color coded 6" leads.
Cover: Beige plastic as standard and brushed bronze cover insert.
Location: NEMA Type 1 indoor only.
Mounting: Flush or surface 2 x 4 switch box or directly to wall (24 volt only).
Dimensions: 4 3/8" high x 2 7/8" wide x 1 5/8" deep (111 mm x 73 mm x 41 mm).
Anticipators: Anticipators are recommended for all thermostats mounted on concrete walls, or other wall surfaces that change temperature slowly or have reduced response time to changes in space temperature. Response time is further reduced for thermostats with guards that restrict air flow over the thermostat. Anticipators are recommended on thermostats that are subjected to restricted air flow conditions and in small spaces intended for human occupancy, e.g., hotel guest rooms and offices.

Standard Models Include (Company identification shown on cover and inserts.):



- One (1) Blank cover insert
- One (1) Cover insert with setpoint dial cutout
- One (1) 5/64" Allen head screw for securing cover to thermostat base
- One (1) 5/64" Allen wrench
- Two (2) Dial stop pins to limit setpoint range
- Two (2) Mounting screws



**TC-110X with
 Digital Thermometer
 Kit Installed**



† See Table 2 for Agency Approvals

OPTIONS for Barber-Colman only (for quantities of 24 or more each part number)
 Add "dash-number" (-XXX) suffix to base part number for desired option. For metal covers, specify TC2-110X-XXX. All models include dial stop pins to limit setpoint range.

°F -399	-400	-403	-404
°C -398	-410	-413	-414

TABLE 1. SPECIFICATIONS FOR STANDARD MODELS

Part Number		Setpoint Dial Range	Company Identification
Plastic Cover	Metal Cover		
TC-1101	TC2-1101	55 - 85°F	Barber-Colman
TC-1101-116	TC2-1101-116	13 - 29°C	
TC-1101-500	TC2-1101-500	55 - 85°F	
TC-1101-602	TC2-1101-602	55 - 85°F	
TC-1101-770	-	55 - 85°F	Robertshaw
TC-1102	TC2-1102	45 - 75°F	Barber-Colman
TC-1102-116	TC2-1102-116	7 - 23°C	
TC-1102-500	TC2-1102-500	45 to 75	
TC-1102-602	TC2-1102-602	45 to 75	
TC-1102-770	-	45 to 75	Robertshaw
TC-1103	TC2-1103	75 - 105°F	Barber-Colman
TC-1103-116	TC2-1103-116	24 - 40°C	
TC-1103-500	TC2-1103-500	75 to 105	
TC-1103-602	TC2-1103-602	75 to 105	
TC-1103-770	-	75 to 105	Robertshaw

TABLE 2. AGENCY APPROVALS†

Configuration	Part Number	UL	CSA
Metal Cover Option*	TC2-1101	NO	YES
	TC2-1101-116		
	TC2-1102		
	TC2-1102-116		
	TC2-1103		
TC2-1103-116			
Plastic Cover	TC-1101	YES	NO
	TC-1101-116		
	TC-1101-770		
	TC-1102		
	TC-1102-116		
	TC-1102-770		
	TC-1103		
	TC-1103-116		
TC-1103-770			
24 Vac Parallel Heat Anticipation	TC-1101-500	NO	NO
	TC-1102-500		
	TC-1103-500		
24 Vac Night Depression	TC-1101-602	NO	NO
	TC-1102-602		
	TC-1103-602		

*Only available as factory assembly; do not convert from plastic to metal cover in the field. TC2-110X-500 and TC2-110X-602 are not CSA approved.

TABLE 3. MAXIMUM ELECTRICAL RATINGS

Switch Action	Full Load Amps		Locked Rotor Amps		Pilot Duty (VA)
	24/120 Vac	240 Vac	24/120 Vac	240 Vac	
Make for Heating	4.4 Orange to Brown Lead	2.2 Orange to Brown Lead	26.4 Orange to Brown Lead	13.2 Orange to Brown Lead	40 @ 24 Vac 210 @ 120/240 Vac
Make for Cooling	3.0 Orange to Red Lead	1.5 Orange to Red Lead	18 Orange to Red Lead	9 Orange to Red Lead	

ACCESORIES

- AT-61 Series Brushed bronze cover inserts
- AT-82 Series Digital thermometer plastic cover kit (Barber-Colman)
- AT-82-770 Digital thermometer plastic cover kit (Robertshaw)
- AT-101 Lock cover kit
- AT-104 Dial stop pins (NOTE: Pins included with each unit.)
- AT-504 Plaster hole cover kit (small)
- AT-505 Surface mounting base
- AT-546 Auxiliary mounting base
- AT-602 Selector switch sub-base DP4T
- AT-603 Selector switch sub-base one DP4T, one DPDT
- AT-1100 Series Thermostat guards
- PKG-1093 Digital thermometer battery replacement kit
- TOOL-13 Contact burnishing tool

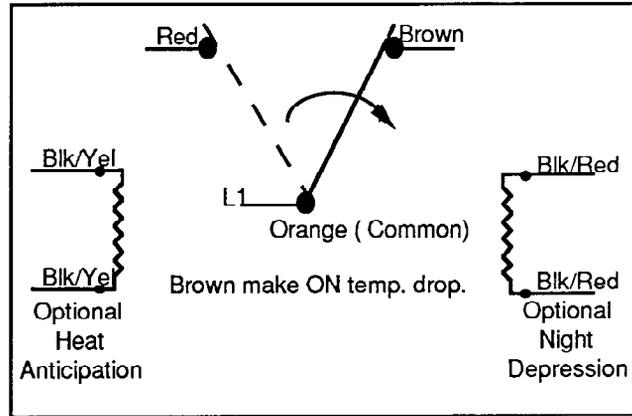


Figure 1. TC-1100 Series Switch Action and Lead Identification

PRE-INSTALLATION

Inspection

Inspection the carton for damage. If damaged, notify the appropriate carrier immediately. If undamaged, open the carton and inspect the device for obvious damage. Return damaged products.

Required Installation Items

- Wiring diagrams
- Tools (not provided):
 - Volt-ohm meter
 - Appropriate screwdriver for mounting screws and terminal connections
- Appropriate accessories
- Mounting screws, two (2) provided for securing to a 2 x 4 conduit box

INSTALLATION

CAUTION

1. Installer must be qualified, experienced technician.
2. Make all connections in accordance with the wiring diagram, and in accordance with national and local electrical codes. Class I wiring is required unless all circuits to contacts are powered from a Class II source. *Use copper conductors only.*
3. Do not exceed ratings of the device.

Mounting

Thermostats require upright mounting on a properly flat vertical surface. Locate the thermostat where it will be exposed to unrestricted circulation of air which represents the average temperature of the controlled space.

CAUTION

Do not locate the thermostat near sources of heat or cold, such as lamps, motors, sunlight or concealed ducts or pipes, or where there is a danger of electrocution (i.e., shower rooms).

The thermostat is designed for service in any normally encountered human environment. Avoid locations where excessive vibration, moisture, corrosive fumes or vapors are present. NEMA Type 1 covers are intended for indoor use primarily to provide a degree of protection against contact with the enclosed equipment.

Thermostats with guards that restrict air flow must have heating or cooling anticipation.

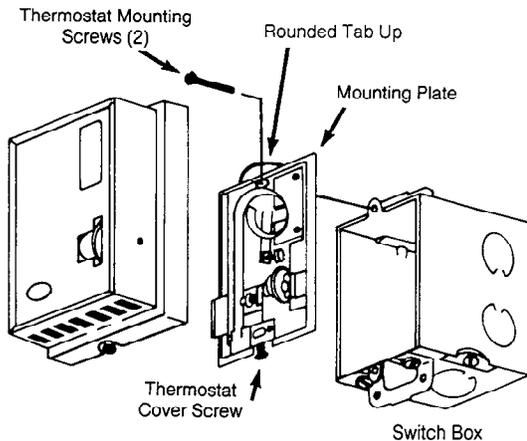


Figure 2. Thermostat Mounting

Procedure

1. Pull all wires.
2. Make electrical connections to thermostat. (Typical heat anticipation and night depression wiring diagrams are shown in Figures 7 through 9.)
3. Remove thermostat cover and fasten thermostat to box or wall.
4. Attach thermostat cover.

CHECKOUT

After installing a thermostat, make an initial check of the switching action. Verify the switch action by listening to and watching the switch contacts or by using a voltmeter between the proper sides of the switch.

1. Run the setpoint dial to a temperature above ambient. This should cause the thermostat to make a circuit between orange and brown leads.

2. Turn the setpoint dial setting down below ambient. This should cause the thermostat to make a circuit between orange and red leads.

CALIBRATION (See Figure 3)

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

1. Turn off control power and power to night depression circuit, where applicable.
2. Set setpoint dial to correspond to actual stable room temperature, as read from an accurate thermometer.
3. Remove thermostat cover. Do not breathe on the thermostat or handle excessively as this will affect the accuracy of the final calibration.
4. If contact blade is made to the left (red) contact, with a small screwdriver, turn calibration screw counterclockwise (looking at head of screw) until blade makes to right (brown) contact.

NOTE

Each complete turn of screw changes calibration approximately 15°F (8°C).

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

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

5. Replace thermostat cover.
6. Connect power to thermostat.
7. Recheck calibration about 30 minutes later to be sure heat from handling of or breathing on bimetal element did not result in an erroneous setting.

HEAT ANTICIPATION (See Figures 7 and 8)

Parallel heat anticipation is recommended for:

- Systems with excess heating capacity that can cause objectionable space temperature swings.
- Thermostats mounted on walls (i.e., concrete) that change temperature slowly and/or have insufficient air flow over the device.

COOLING ANTICIPATION (See Figure 8)

Parallel cooling anticipation is recommended for:

- Cooling anticipations where current draw exceeds 1 ampere. Cooling lockout (self heat of the thermostat causing over cooling of the space) can occur on these applications.
- Systems with excess cooling capacity that can cause objectionable space temperature swings.
- Thermostats mounted on walls (i.e., concrete) that change temperature slowly and/or have restricted air flow over the device.

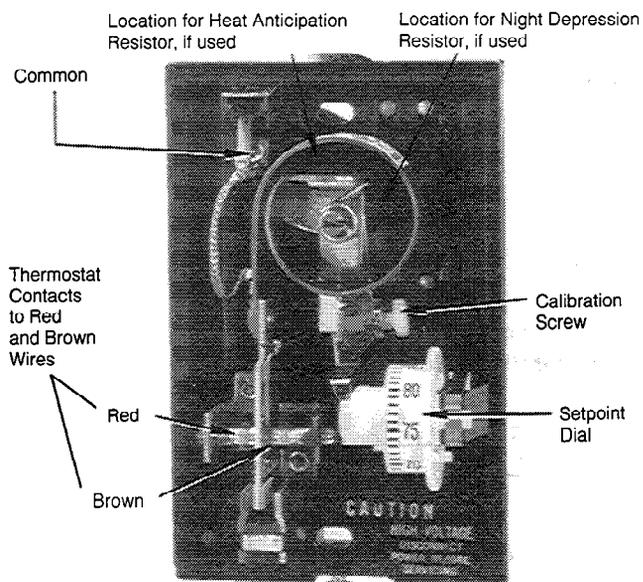


Figure 3.

Thermostat Cover Screw

CONCEALED CONTROL DIAL

Knurled Dial Removal (See Figure 4)

1. Remove thermostat cover.
2. Secure the control dial with hand so that the dial will not rotate.
3. Place needle nose pliers at knurled ring of the control dial at the points where the knurled ring is attached to the control dial.
4. Twist the pliers at each knurled ring attachment point until the entire knurled ring of the control dial is removed.

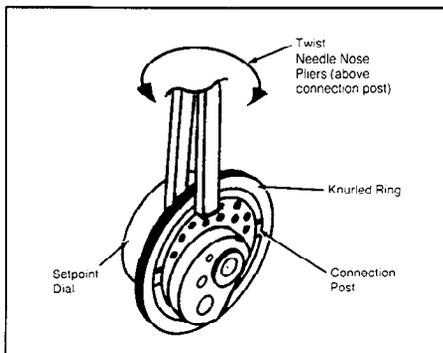


Figure 4. Knurled Dial Removal

LIMIT CONTROL DIAL RANGE

Dial Stop Pin Insertion (See Figure 5)

1. Remove thermostat cover.
2. Secure the control dial with hand so that the dial will not rotate.
3. Place a dial stop pin in the jaws of a needle nose pliers.
4. Insert the dial stop pin in the appropriate hold on either (or both) side(s) of the control dial to restrict dial rotation.

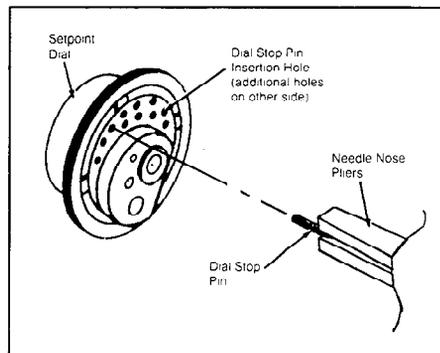


Figure 5. Dial Stop Pin Insertion

COVER INSERT INSTALLATION (See Figure 6)

1. Select appropriate cover insert.

NOTE

If blank insert is used, the knurled ring must be removed from the setpoint dial. See Knurled Dial Removal. Also, remove dial window by sliding and/or pressing window from front of cover.

2. Remove protective backing and protective skin on face of cover insert.
3. Press insert uniformly on thermostat with logo in lower left-hand corner.

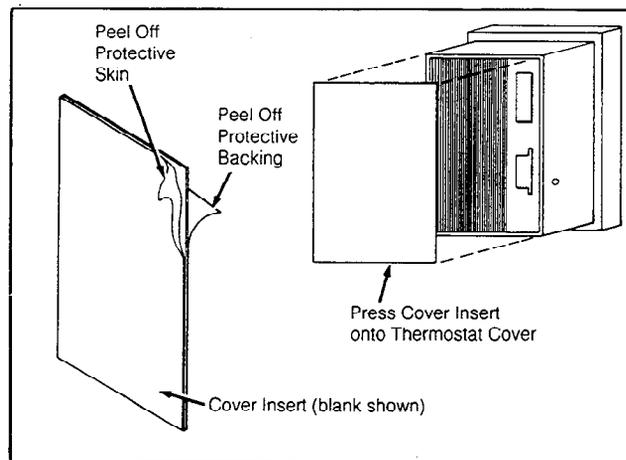


Figure 6. Cover Insert Installation

MAINTENANCE

Regular maintenance of the total system is recommended to assure sustained optimum performance.

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 TOOL-13 (burnishing tool).

NOTE

Thermostat may require calibration after cleaning the contacts.

REPAIR

These thermostats are not field repairable. Replace entire device.

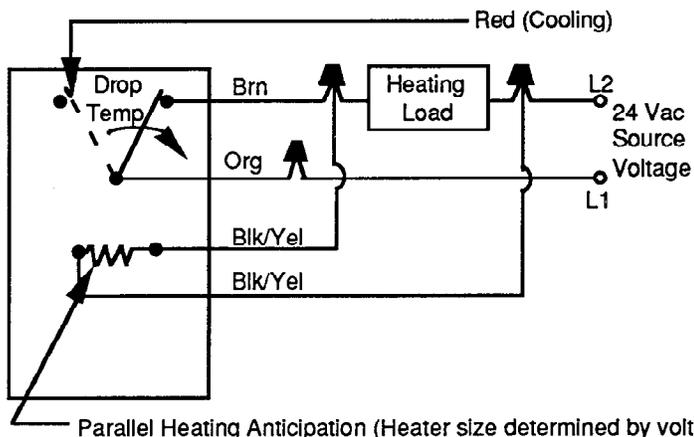


Figure 7. TC-110X-500 Typical of Parallel Heat Anticipation

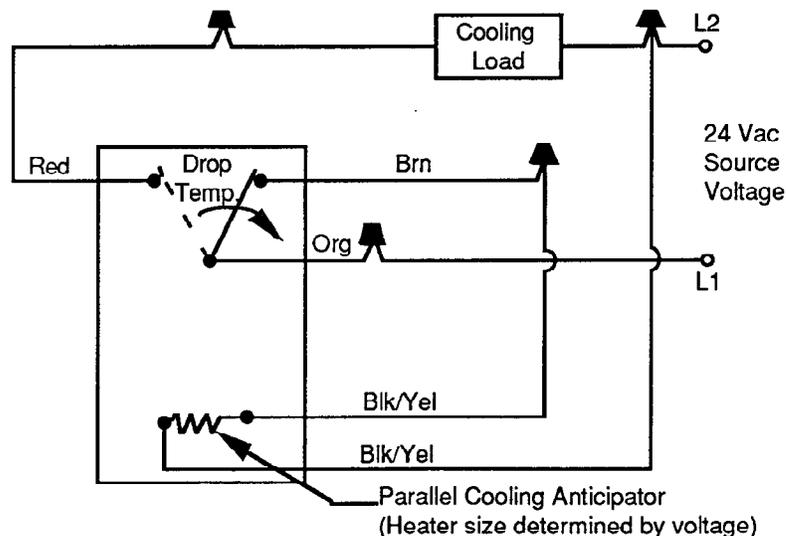


Figure 8. TC-110X-500 Typical of Parallel Cooling Anticipation

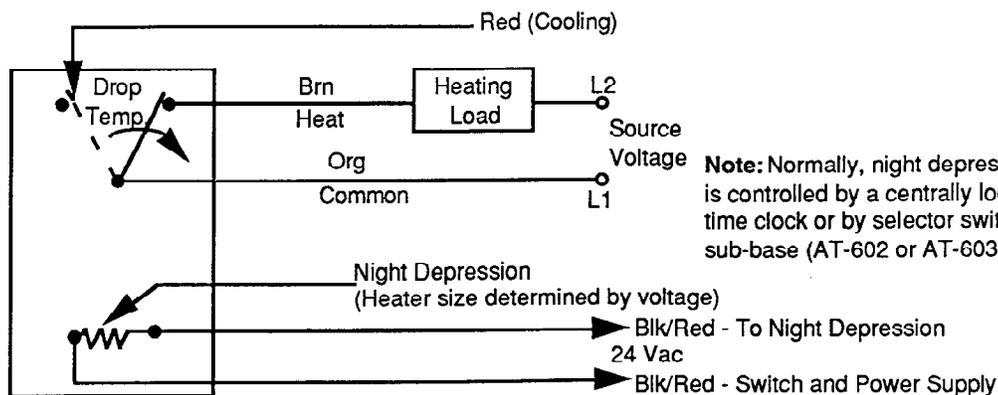


Figure 9. TC-110X-602 Typical of Night Depression

