

TC20 Series Digital Room Thermostats with LCD

Features

- Stylish appearance to match any decor
- Large easy to read Liquid Crystal Display (LCD)
- Selectable °C or °F temperature display
- Retain last entered settings on power resumption
- Dual-output models with auto cooling/heating changeover (dead zone operation), 2-stage heating or 2-stage cooling
- For 2-wire or 3-wire on-off controlled devices in 2-pipe or 4-pipe systems
- Adjustable unoccupied set point capability to conserve energy
- Output relays to provide high current ratings and performance
- Universal mounting for both European and American standard electrical boxes

General

The TC20 Series digital room thermostats are available in different models for line voltage on-off control of valves, relays and/or fan motors in fan coil units, heat pumps and packaged air-conditioning units for commercial, industrial and residential installations.

A fan-speed control switch allows control of a 3-speed fan. In the "Hi", "Med" or "low" position, the fan runs continuously at the selected speed. A system switch provides "on-off", "auto-off" or "heat-off-cool" mode selection, depending on the model selected.

A setup key is available and located underneath the cover's top air vent slots to allow field change of operating parameters. Use a small-blade screwdriver to operate the key momentarily to access the various parameters in sequence.



Ordering

To order, specify complete model numbers.

Specifications

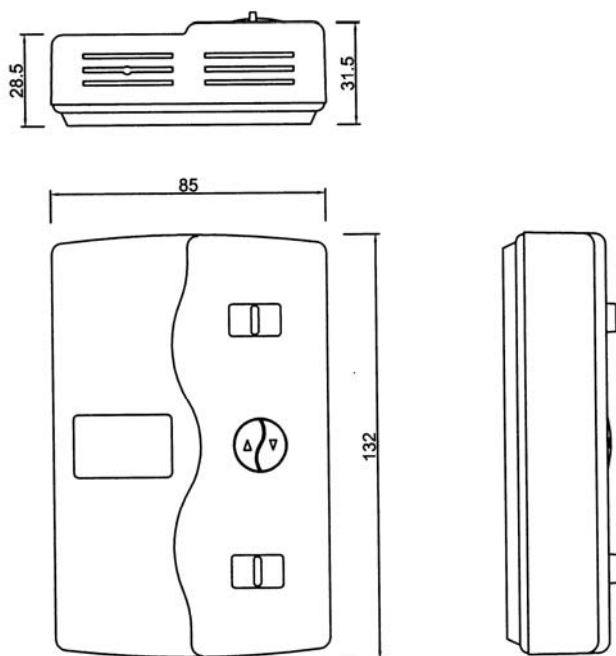
Product Model Numbers	See Fig.1: TC20 Series Model Number Selection Guide	
Power Requirements	Choice of 120 V and 220 V $\pm 15\%$, 50/60 Hz Models	
Operating Temperature Differential	Adjustable from 1 to 3 K (2 to 6 F°) at 1 K (2 F°) intervals	
Temperature Display Range	0-50 °C (32 to 122 °F)	
Temperature Set Point Range	5-30 °C (41 to 86 °F)	
Dead Zone Bandwidth	Selectable at 0, 1 or 2 K (0, 2 or 4 F°) between Set Point and Cooling (or Heating) Mode	
Sensing Element	NTC Thermistor, 10 k Ω @ 25°C	
Unoccupied Mode	Input Signal from External Voltage-free Contact	
Body Material	Fire-retardant, Molded ABS	
Finish	Off White	
Electrical Ratings	Relay Output Contacts	6 A Resistive, 1.9 A Inductive, 250 V, 50/60 Hz
	Fan Switch	6.5 A Resistive, 2.5 A Inductive, 250 V 50/60 Hz
Ambient/Storage Temperature Limits	5 to 30 °C / -30 to 50°C , 10% to 90% RH Non-condensing	
Wire Connections	Color-coded 18 AWG Stranded Copper Wire Leads	
Agency Approval	CE Mark Compliant to EMC and Low Voltage Directives	
Shipping Weight	0.235 kg (0.52 lb)	
Dimensions	See Figure 2: Dimensions in mm	

The performance specifications above are nominal and subject to tolerances and application variables of generally acceptable industry standards. The Manufacturer shall not be liable for damages resulting from misapplication or misuse of its products.

Figure 1: TC20 Series Model Number Selection Guide

Model Number	Outputs	Applications	Controlled Devices	Cooling/Heating Mode	External Seasonal Changeover	System Switch	Fan Control Switch	Unoccupied Mode
TC2x-21	Single	Cooling Only or Heating Only (2-Pipe System)	2-Wire	By External Device Only	Yes	On-Off	Hi-Med-Low	Yes
TC2x-31	Single	Cooling Only or Heating Only (2-Pipe System)	3-Wire	Not Applicable	No	On-Off	Hi-Med-Low	Yes
TC2x-22	Single	Cooling/Heating (2-Pipe System) or Cooling/Heating (4-Pipe System)	2-Wire	Manual	No	Heat-Off-Cool	Hi-Med-Low	Yes
TC2x-23	Dual	Cooling and Heating (4-Pipe System)	2-Wire	Auto	No	Auto-Off	Hi-Med-Low	Yes
TC2x-24	Dual	2-Stage Heating or 2-Stage Cooling	2-Wire	Auto	No	Auto-Off	Hi-Med-Low	Yes
TC2x-33	Dual	Cooling and Heating (4-Pipe System)	3-Wire	Auto	No	Auto-Off	Hi-Med-Low	Yes
Where x = 1 for 110/120 V 50/60 Hz Power Supply = 2 for 220/240 V 50/60 Hz Power Supply								

Figure 2: Dimensions in mm

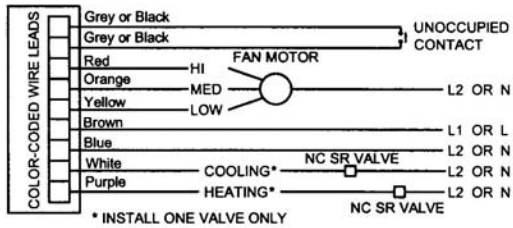


Wiring Notes

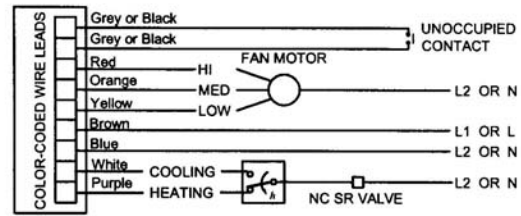
- Run the wiring away from any electrical motors or heavy power wiring. Failure to do so may result in poor thermostat performance due to electrical noise.
- Incorrect wiring connection may cause permanent equipment damages to the thermostat.

Figure 3: TC20 Series Digital Room Thermostat Wiring Diagrams

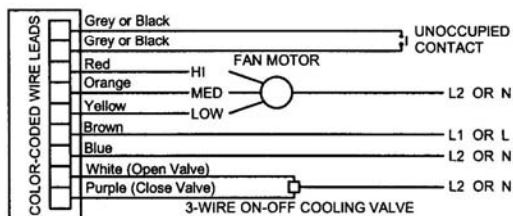
TC2x-21 ON-OFF, 2-WIRE
FOR HEATING ONLY OR COOLING ONLY
2-PIPE SYSTEM



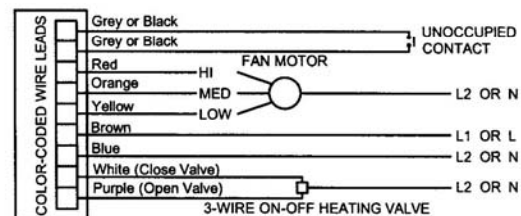
TC2x-21 ON-OFF, 2-WIRE
WITH EXTERNAL CHANGEOVER SWITCH
FOR HEATING/COOLING 2-PIPE SYSTEM



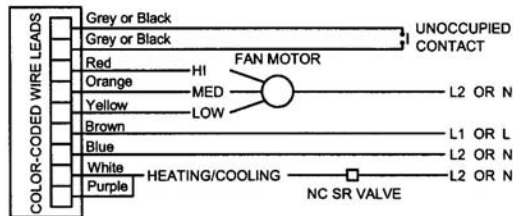
TC2x-31 ON-OFF, 3-WIRE
FOR COOLING ONLY 2-PIPE SYSTEM



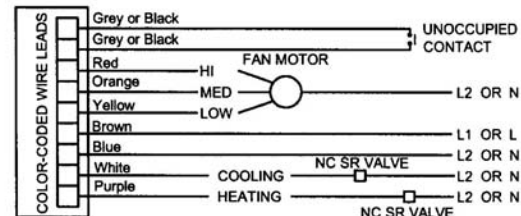
TC2x-31 ON-OFF, 3-WIRE
FOR HEATING ONLY 2-PIPE SYSTEM



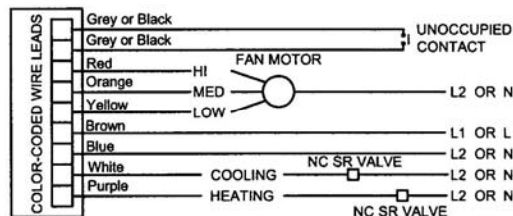
TC2x-22 HEAT-OFF-COOL, 2-WIRE, MANUAL
FOR HEATING/COOLING 2-PIPE SYSTEM



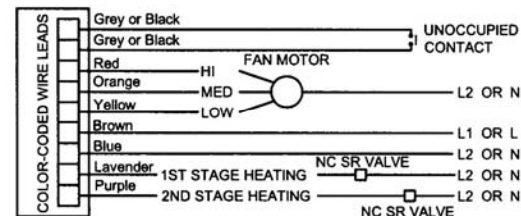
TC2x-22 HEAT-OFF-COOL, 2-WIRE, MANUAL
FOR HEATING/COOLING 4-PIPE SYSTEM



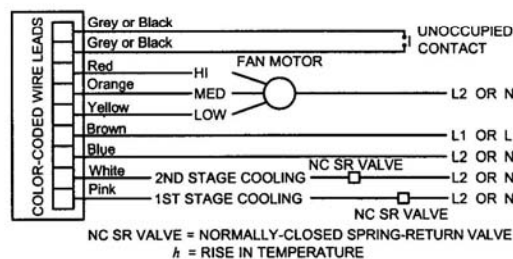
TC2x-23 AUTO-OFF, 2-WIRE, AUTO CHANGEOVER
FOR HEATING/COOLING 4-PIPE SYSTEM



TC2x-24 AUTO-OFF, 2-WIRE
FOR 2-STAGE HEATING 2-PIPE SYSTEM



TC2x-24 AUTO-OFF, 2-WIRE
FOR 2-STAGE COOLING 2-PIPE SYSTEM



TC2x-33 AUTO-OFF, 3-WIRE, AUTO CHANGEOVER
FOR HEATING/COOLING 4-PIPE SYSTEM

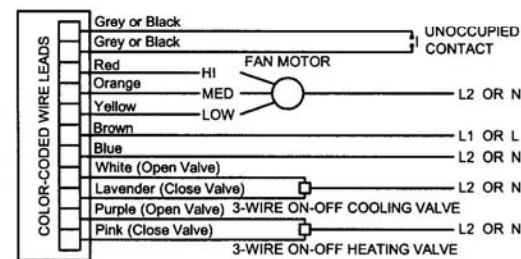
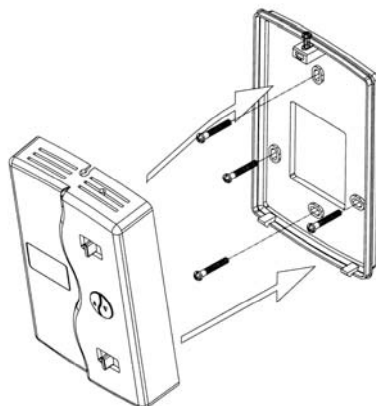


Figure 4: Mounting Details




Mounting


The TC20 Series digital thermostats can be surface mounted or secured to a standard European 75x75x35 mm or a standard American 2-1/2"x 4-1/8"x 1-7/8" single-gang electrical box. See Fig. 4: Mounting Details. Mounting screws are included.

Operation Notes

TEMPERATURE SET POINT ADJUSTMENT

Toggle either set point adjustment key		To display current temperature set point
Toggle ▲ or ▼ key		To increase or decrease temperature set point

FIELD SETUP PROCEDURE FOR OPERATING PARAMETERS

Press Setup Key	Function	Toggle Set Point Adjustment Key 	Factory Setting
Once	To display temperature in °C or °F	To select display of °C or °F	°C
Twice	To display unoccupied mode set point	To adjust unoccupied mode set point	28 °C (82 °F)
Three times	To display Relay No.1 temperature differential	To adjust Relay No. 1 differential setting, 1, 2 or 3 K (2, 3, 4, 5 or 6 F°)	2 K (4 F°)
Four times	To display Relay No.2 temperature differential	To adjust Relay No. 2 differential setting, 1, 2 or 3 K (2, 3, 4, 5 or 6 F°)	2 K (4 F°)
Five Times	To display temperature differential between relays	Heating/Cooling Applications: To select dead bands between set point and heating mode and between set point and cooling mode. 2-Stage Heating or 2-Stage Cooling Applications: To select differentials between set point and Stage 1 Relay and between set point and Stage 2 Relay. Settings: 0, 1 or 2 K (0, 1, 2, 3 or 4 F°)	2 K (4 F°)
Six times	To constantly display temperature set point or ambient temperature	To select constant display of temperature set point or ambient temperature	Ambient temperature
Seven times	To return to normal state	No action	

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