Available in French Canadian (FC)

Installer's Guide
XB200 Comfort Control

TCONT200AN11AA
1 Heat (Gas, Oil* or Elec) / 1 Cool
Electronic Non-Programmable, 4 Wire Hookup

ALL phases of this installation must comply with NATIONAL, STATE AND LOCAL CODES

Note: Read the entire instruction manual before starting the installation.

Contents

Introduction 1
Application 1
Product Specifications 1
Installation 2
Mounting and Wiring 2
SETUP 4
Checkout 4
Troubleshooting 6
Features 7

⚠ CAUTION

To prevent shortening its service life, the control should not be installed until construction is completed.

Introduction

TCONT200AN11AA is a digital non-programmable 1Heat/1 Cool wall mounted low voltage (24Vac) Comfort Control with backlit LCD and keypad. It maintains room temperature by controlling the operation of heating and cooling systems. The XB Comfort Control is easily configured for Heating Only (gas or electric) or Cooling Only applications via the user friendly Installer Setup menu. The XB Comfort Control features separate heating and cooling setpoints, selectable Auto or Manual Changeover, adjustable Energy Saving mode, adjustable filter reminder and LitePort technology for extended system diagnostics and fault notification. Setup selections and diagnostics are stored indefinitely in the XB Comfort Controls nonvolatile memory eliminating the need for battery backup.

Safety Considerations

Read the following manufacturer instructions carefully. Follow all local codes during installation. All wiring must conform to local and national electrical codes. Improper wiring or installation may damage comfort control.
Recognize safety information. This is the safety alert symbol ⚠. When you see this symbol on the equipment and in the instruction manual, be alert to the potential for personal injury.
Understand the signal words DANGER, WARNING and CAUTION. These words are used with the safety-alert symbol. DANGER indentifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies a hazard which **could** result in personal injury or death. CAUTION is used to identify unsafe practices which **could** result in minor personal injury or product and property damage.

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Application Hook-up diagrams FIG

1 Heat / 1 Cool (Gas or Electric)	Fig. 3, 4, & 5
1 Heat / 0 Cool (Gas or Electric)	Fig. 6
0 Heat / 1 Cool	Fig. 5
1 Heat / 1 Cool (Oil Furnace)	Fig. 7
1 Heat / 0 Cool (Oil Furnace)	Fig. 8

SYSTEM MODE: HEAT, COOL, AUTO and OFF

FAN MODE: AUTO or ON

*** Requires external relay for Oil furnace applications.**

Product Specifications

- **Power Source: 20V-30VAC, 50/60Hz, Load Powered through W and Y.**
- **Cooling setpoint temperature range: 65F - 90F, 18.0C - 33.0C, 1F and 0.5C resolution.**
- **Heating setpoint temperature range: 40F- 85F, 5.0C - 30.0C, 1F and 0.5C resolution.**
- **Default set points: 68F, 20.0C Heat, 78F, 25.5C Cool**
- **Storage Range: -40F to 140F, 5% - 90% RH non-condensing.**
- **Operating Temperature range: 32F - 110F, 5 - 90% RH non-condensing.**
- **Minimum Cycle Off Time Delay: Cooling - 5 minutes, Heating - 1 minute.**
- **Use minimum 18 gauge NEC approved control wiring.**

Installation

Location

The XB Comfort Control should be mounted approximately 60" (1.5m) off the floor on an interior partition wall. Never install the XB Home Comfort Control on an outside wall.

For proper temperature sensing, avoid mounting the XB Comfort Control where it will be exposed to heat radiated from lamps, sun light, fireplaces or any other radiant heat sources.

Avoid locations close to windows, behind doors or alcoves with poor air circulation, adjoining outside walls, or doors that lead to the outside.

Select a location that prevents the XB Comfort Control from being directly exposed to air currents from supply registers or return grills.

Mount the XB Comfort Control on a section of interior wall that does not contain hot and cold water pipes or ductwork.

Mounting and Wiring

1. Turn OFF all power to heating and cooling equipment.
2. If an existing thermostat is being replaced:
   a. Remove existing thermostat from wall.
   b. Disconnect wires from existing thermostat, one at a time. Be careful not to allow wires to fall back into the wall.
   c. As each wire is disconnected, record wire color and terminal marking.
   d. Discard or recycle old thermostat.

Mercury is a hazardous waste and MUST be managed properly. If the XB Comfort Control is replacing a thermostat that contains mercury in a sealed tube, do not place your old thermostat in the trash. Contact your local waste management authority for instructions regarding recycling and the proper disposal of an old thermostat.

3. Separate the control from the mounting base to expose mounting holes by pressing the release button A on the bottom of the control and lift out and up. See Figure 1.

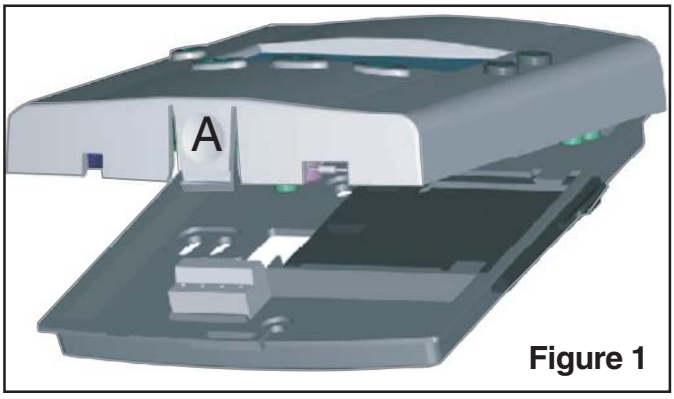


Figure 1

4. Slide the mounting base drawer out to expose all the mounting holes.
   Route control wires through the large hole in mounting base. Level mounting base against wall (for aesthetic value only) and mark wall through 2 mounting holes. See Figure 2.
5. Drill two mounting holes in wall where marked.

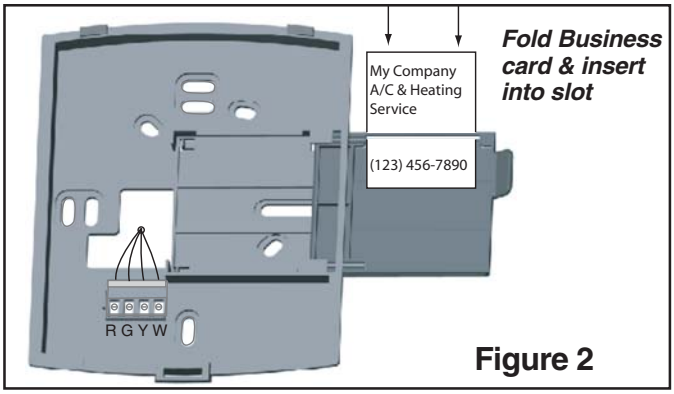


Figure 2

6. Secure mounting base to wall with 2 screws (use anchors provided if needed). Additional mounting holes are available for more secure mounting if needed.
   Make sure all wires extend through hole in mounting base.
7. Adjust length and routing of each wire to reach proper terminal on the connector block on mounting base. Strip only 1/4-in. of insulation from each wire to prevent adjacent wires from shorting together when connected.
8. Match and connect control wires to proper terminals on the connector block. See Figures 3-8.

Two 360 ohm resistors (5 watts) are included with this control. One of them must be installed between the "W" and "B/C" terminal of the indoor unit low voltage terminal block regardless of the application.

The XB control is powered through the loads connected to it. The second resistor is required between "Y" and "B/C" at the indoor unit low voltage terminal block if no outdoor unit is installed or the outdoor unit has a compressor anti-short cycle timer installed. See Figures 3-8.

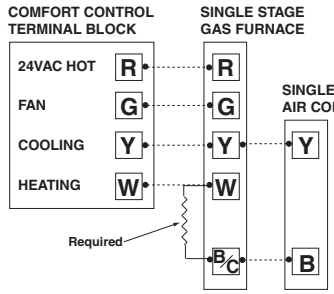
9. Push any excess wire back into the wall and seal the hole to prevent air leaks.

Note: Air leaks in the wall behind the control can cause improper operation.

10. Check the operation of the mounting base drawer. Verify that it slides in and out without binding.
11. Reinstall the control on its mounting base by aligning the control at the top of the mounting base. Swing the control downward and gently press the bottom of control into position until latch button A engages. See Figure 1.
12. Turn ON power to the heating and cooling equipment.

SINGLE STAGE FURNACE / SINGLE STAGE COOLING

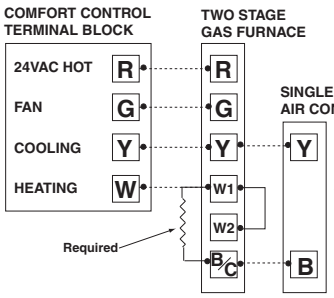
Figure 3



Resistor is required on Y to B at the indoor unit low voltage terminal block when outdoor unit contactor coil is not directly connected to Y or if a compressor anti-short cycle timer has been installed.

TWO STAGE GAS FURNACE - SINGLE STAGE COOLING

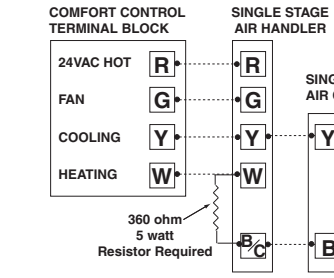
Figure 4



Resistor is required on Y to B at the indoor unit low voltage terminal block when outdoor unit contactor coil is not directly connected to Y or if a compressor anti-short cycle timer has been installed.

SINGLE STAGE AIR HANDLER W/ELECTRIC HEAT - SINGLE STAGE COOLING

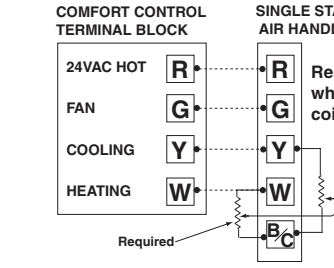
Figure 5



Resistor is required on Y to B at the indoor unit low voltage terminal block when outdoor unit contactor coil is not directly connected to Y or if a compressor anti-short cycle timer has been installed.

SINGLE STAGE AIR HANDLER W/ELECTRIC HEAT (NO OUTDOOR UNIT)

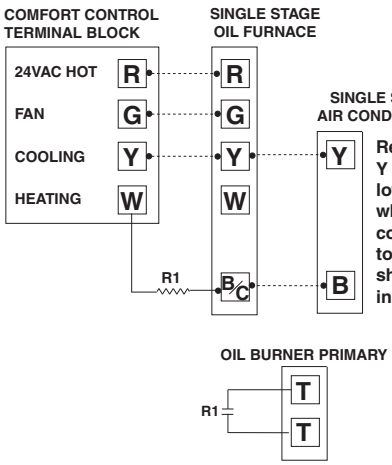
Figure 6



Resistor is required on Y to B when outdoor unit contactor coil is not connected to Y.

SINGLE STAGE OIL FURNACE / SINGLE STAGE COOLING

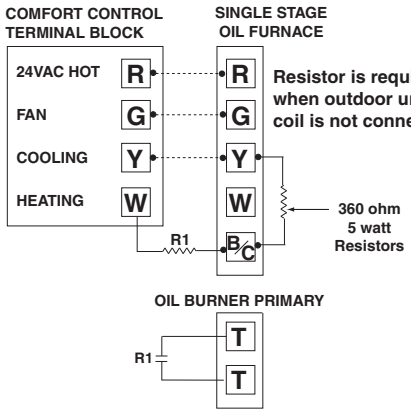
Figure 7



Resistor is required on Y to B at the indoor unit low voltage terminal block when outdoor unit contactor coil is not directly connected to Y or if a compressor anti-short cycle timer has been installed.

Figure 8

SINGLE STAGE OIL FURNACE (NO OUTDOOR UNIT)



Resistor is required on Y to B when outdoor unit contactor coil is not connected to Y.

SETUP

Enter INSTALLER Setup:

(See Table 2, steps 1-50 for option details)

1.) Set System Mode to OFF

2.) Set Fan to AUTO

3.) Press and hold Mode and Up Arrow at the same time.

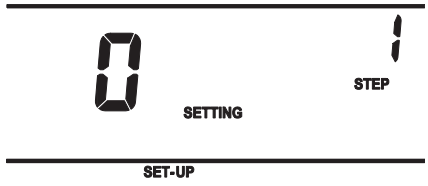
4.) SET-UP will appear on display. See Figure 9.

Enter USER Setup:

(See Table 2, steps 40-49 for option details)

Press and hold Mode and Fan at the same time.

Figure 9



Note: Allow a minimum of 5 seconds after saving selections (Step 99 - SA) for the control to write selections to memory. If power is lost or removed prior to the 5 second elapsed time, the selections may be lost and must be reentered. If the SERVICE icon is flashing on the control LCD, press any key and check / reenter setup choices.

Keypad Navigation:

Use the Mode and Fan buttons to navigate forward and backward through the configuration and Manual Test Mode steps.
Press Mode to advance forward to the next step.
Press Fan to return to the previous step.

Use the Up and Down arrow buttons to select or change setup options.

Lock - Unlock Keypad:

Press and hold Up Arrow and Down Arrow at the same time. ("Keypad Locked" icon will display on LCD screen)

Defeat Equipment Time Delay:

(Current Cycle only) Press Mode and Down Arrow at the same time.

Checkout

There are two methods of verifying that the XB Comfort Control operates the system as intended.

Method 1: Normal Mode

This can be accomplished by pressing the appropriate keypad button(s) to cycle the system through each of the available modes and increasing or decreasing the setpoint to activate and deactivate the cycle.
The minimum on and off cycle time delays, selected during the setup, will be enforced. Press the appropriate keypad button for the filter timer and energy savings features to verify they are set to the end user's desired preference.

Method 2: Manual Test Mode

The XB Comfort Control's load outputs can be verified using the manual test mode. See Table 1 for navigating through the manual test mode steps.

To Enter The Manual Test Mode:

1.) Set System Mode to OFF

2.) Set Fan to AUTO

3.) Press and hold Mode and Down Arrow at the same time.

Table 1 Manual Test Mode

Menu Item (Press MODE or FAN)	Default	Setting (Choices) (Press Up or Down arrow)	Step (Press MODE or FAN)
G - Fan Relay "G"	Off	On/Off	70
Y - Compressor Contactor (G - must be ON) "Y"	Off	On/Off	72
W - Heating relay "W"	Off	On/Off	75
LCD "SC"	----	All icons On (See Fig. 8) All icons Off	78
Factory Use Only	Press and hold MODE to advance to step 80 and press "$" Energy Savings key to exit.		79-82

The manual test mode allows the installer to energize the G fan relay , Table 1, Step 70, and then advance to Step 72 to energize the Y compressor output with the fan still operating. It is recommended that this method be used to prevent damage to the compressor.

The Manual test mode will time out and return to normal operation after 1 minute from the last key press.

XB Control Setup

Table 2 INSTALLER SETUP (ISU)

1. Set System MODE to OFF
2. Set FAN to AUTO
3. Press and hold MODE and UP arrow at the same time.

Menu Item	Factory Setting	Setting (Choices) (Press UP or DOWN arrow)	Step (Press MODE or FAN
Error Count	0	None	1
Software Version		None	2
Configuration Signature - LoByte		None	3
Configuration Signature - HiByte		None	4
Compressor Stages	1	0 = None 1 = Single Stage AC	6
Indoor Heater Type	1	1 = Gas, Oil 2 = Electric	7
Indoor Heater Stages	1	0 = None 1 = Single Stage Heater	8
Cooling Cycle Fan ON Delay	0	0 - 30 Seconds	15
Cooling Cycle Fan OFF Delay	0	0 - 90 Seconds	16
Compressor Cooling Cycles Per Hour	3	2 - 6 Cycles per Hour	19
Compressor Cooling Cycle Minimum On Time - Minutes	3	2 - 4 CPH: 1 - 15 Minutes	20
Heater Cycles Per Hour	3	2 - 6 Cycles per Hour	27
Heater Minimum On Time - Minutes	3	Gas Heat: 3 - 15 Minutes / Electric Heat: 1 - 15 Minutes	28
Control Response Rate	0	0 = Normal 1 = Fast	33
Press MODE to advance to User Setup choices steps 40 - 49 or Press the Energy Savings key ($) to advance to step 99.			
Exit Setup (Press MODE)	SA	SAve = Save selections USer = Default user settings FActory = Factory default settings (Installer Setup only). Clears history from EEprom and returns to step 1 in menu list. CAncel = Cancel	99 (Exit)

USER SETUP (USU)

1. Press and hold MODE and FAN at the same time.

Menu Item	Default	Setting (Choices) (Press UP or DOWN arrow)	Step (Press MODE or FAN
Temperature Display	0	0 = Fahrenheit 1 = Celsius	40
Auto or Manual Changeover	1	0 = Manual 1 = Auto	41
Setpoint Deadband	3	2 - 10 Degrees Fahrenheit 1.5 - 5.0 Degrees Celsius	42
Waiting Icon	0	0 = Disable 1 = Enable	43
Cooling Droop	1	0 = Off 1 = 1 Degree 2 = 2 Degrees	44
Energy Savings - Cooling Setpoint Offset	5	0 - 25 Degrees Fahrenheit 0 - 15 Degrees Celsius	45
Energy Savings - Heating Setpoint Offset	5	0 - 45 Degrees Fahrenheit 0 - 25 Degrees Celsius	46
Indoor Filter Timer Method	0	0 = Calendar Days 1 = Fan Run Time Days	47
Indoor Filter Reminder - Days	30	1 - 180 Days 0 = Disable	48
Calibrate Indoor Temperature	0	Calibrated Room Temperature +/- 5 Degrees (1/2 degree increments)	49
Exit User Setup	SA	SAve = Save selections USer = Default user settings CAncel = Cancel	99 (Exit)

Note: Pressing the Energy Savings Key ($) anytime during setup will advance to step 99.

Step 99 - Make setting selection then press MODE to exit.

SAve = Save selections
USer = Default user settings
FActory = Factory default settings (Installer Setup only). Clears history from EEprom and returns to step 1 in menu list.
CAncel = **Cancel selections** for current session and return to previous session selections.

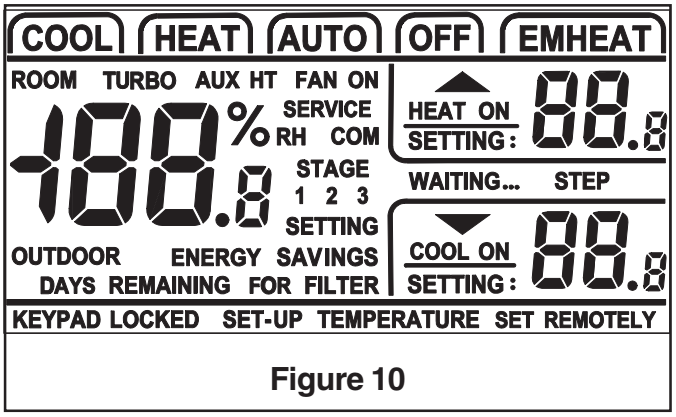


Figure 10

Troubleshooting

Table 3 Troubleshooting

Symptom	Possible Cause	Action
Display will not come on.	1. Blown fuse or tripped circuit breaker. 2. Furnace power switch OFF. 3. Furnace blower compartment door or panel loose or not properly installed. 4. 360 ohm resistor not installed.	1. Replace fuse or reset breaker. 2. Turn switch to ON. 3. Replace door panel in proper position to engage safety interlock or door switch. 4. Install 360 ohm - 5 watt resistor (see figures 3-6 for details).
Display comes on and goes off.	360 ohm resistor not installed.	Install 360 ohm - 5 watt resistor (see figures 3-6 for details).
Temperature display is incorrect.	Temperature display needs calibration.	Calibrate Sensor - User Setup Step 49.
Cannot set Heating setpoint above 80 degrees	Deadband between Heating and Cooling set to high	Decrease Deadband setting - User Setup Step 42.
Service indicator Flashing on and off.	Control EEPROM write error.	Press any key and Check / Re-enter Setup Choices.
Service indicator solid on and "--" in temperature display.	Indoor temperature sensor open or shorted	Replace Control
Temperature setting will not change. (Example: Cannot set heating higher or cooling lower).	1. Upper and/or lower temperature limits were reached. 2. "Keypad locked" is displayed on LCD.	1. Check the temperature setpoints: Heating limits are 40 - 85F. Cooling limits are 65 - 90F. 2. Unlock keypad - press Up+Down arrow together until icon disappears.
Room temperature overshoots when Energy Savings Key ($) is used or the Heat/Cool settings is changed more than 2 degrees.	Oversized heating or cooling equipment. Control can not respond fast enough to prevent overshooting.	Set Control Response rate to "Fast" - Step 33.
Heating will not come on.	1. System Mode not set to Heat. 2. Minimum off time delay being enforced. 3. Loose connection to control or system. 4. Heating system requires service or control requires replacement.	1. Set Mode to heat and raise the setpoint above room temperature. 2. If heating does not come on within 5 minutes, Check Heating. 3. Check / Repair connections. 4. Repair system / Replace control.
Cooling will not come on.	1. System Mode not set to Cool. 2. Minimum off time delay being enforced 3. Loose connection to control or system. 4. Cooling system requires service or control requires replacement.	1. Set Mode to cool and lower the setpoint below room temperature. 2. If cooling does not come on within 15 minutes, contact servicer. 3. Repair connections. 4. Repair system / Replace control.
Cool ON or Heat ON is displayed, but no warm or cool air is coming from the registers.	1. The heating equipment turns on the fan when the furnace has warmed up to a setpoint. 2. Heating or cooling equipment is not operating.	1. Wait one minute after Heat ON is displayed and then check the registers. 2. Check Heating and Cooling system.
Control does not respond to keypad presses.	1. "Keypad locked" is displayed on LCD. 2. Keypad failure.	1. Unlock keypad - press Up+Down arrow together until "Keypad locked" appears. 2. Replace Control.
Fan does not operate properly in heat or cool mode.	1. Incorrect wiring. 2. Heating or cooling equipment inoperative.	1. Correct wiring. 2. Repair system.
Fan runs all the time.	1. Fan mode set to ON. 2. Shorted control wiring.	1. Set fan mode to AUTO. 2. Check / Repair wiring.
Cooling cycle too fast or too slow. (Narrow or wide temperature swing).	The location of the control and/or the size of the cooling system may be influencing the cycle rate.	Verify cycle rate adjustment Step 19.
Heating cycle too fast or too slow. (Narrow or wide temperature swing).	The location of the control and/or the size of the heating system may be influencing the cycle rate.	Verify cycle rate adjustment Step 27.

Features

Cycle Rate

The selected number of system cycles per hour. If the cycle rate were set to 3, each cycle would be 20 minutes long. The total ON and/or OFF times depends on actual indoor space load. A shorter cycle rate (more cycles per hour) may be desired for Heating in order to maintain a tighter control on indoor setpoint. A longer cycle rate may be desirable for Cooling so the system has the opportunity to remove moisture from the air and improve indoor comfort.

Auto Changeover

When the system mode is set to AUTO, the control automatically switches between heating and cooling modes to maintain the desired comfort level.

Setpoint Deadband

The number of degrees separating Heating and Cooling setpoints. The amount of separation between mode setpoints is user defined between 2 and 10 degrees. When the control is set to Auto, and the cooling setpoint is changed to a cooler setting, the heating setpoint also changes to maintain the selected degrees separation. The same action occurs when the heating setpoint is changed to a warmer temperature.

Backlit Display & Keys

The liquid crystal display and the keypad will illuminate whenever a keypad button is pressed to improve control visibility. The back light stays on for 10 seconds after the last key press.

Cooling Droop

Cooling Droop is an automatic function that cycles the compressor on to improve indoor comfort by removing moisture from the air. The Droop cycle is activated when temperature is at or below the cooling temperature setpoint. When this function is active, the control will control temperature at 1 or 2 degrees below cooling setpoint. The Droop cycle is deactivated when the temperature rises above the cooling setpoint.

Energy Savings

The Energy Savings mode provides instant energy savings by offsetting the indoor setpoint to a cooler temperature setting for heating and a warmer temperature setting for cooling.

The Energy Savings mode is activated by pressing the Energy Savings key "$" on the controls keypad. Pressing the Energy Savings key "$" again deactivates the Energy Savings mode. Pressing and holding the Energy Savings key "$" provides quick access to the setpoint offset for both heating and cooling.

Filter Reminder

"FILTER" will automatically flash to remind the homeowner that its time to change the filter once the preset time has expired. Pressing the "Filter" keypad button automatically resets the internal clock timer. Once the timer has been reset, the number of days remaining till the next filter change can easily be determined by simply pressing the "Filter" keypad button. Pressing and holding the "Filter" keypad button provides quick access to the filter timer value.

Keypad Lock

Locking the control's keypad can help prevent unwanted tampering or changing the thermostat settings by pressing the controls UP and DOWN arrow keypad buttons at the same time and holding for 2 seconds. "Keypad Locked" will be displayed on the LCD. Repeating this combination unlocks the keypad and the "Keypad Locked" will disappear.

Business Card Drawer

The drawer attached to the mounting base of the control is designed to provide a convenient location for the home owner to locate their local servicer. A standard business card can be folded and inserted into the slot on the drawer to remind the User whom to call when service is required.

LitePort

LitePort is a patented feature that allows the servicer access to extended real-time and history data events stored in the thermostat's memory.

Manual Test Mode

The built-in Manual Test Mode allows the servicer to quickly and easily test the control's individual control outputs and makes diagnostic procedures a snap.
Set the Mode to OFF, set the Fan to AUTO, and press the MODE and DOWN arrow keypad buttons at the same time and hold for 2 seconds. See Table 1, steps 70-78 for details.

Default Factory Settings

The thermostat is shipped with a set of factory default settings. The factory default settings can be restored at any time using the control configuration menu. See Table 2, step 99.

Service Indicator

The *"SERVICE"* indicator automatically flashes when an internal fault or error has been detected by the thermostat.

Minimum Off Time Delay Override

Minimum Off time delays can be overridden for the current cycle by pressing the Mode and Down arrow keys at the same time for approximately 2 seconds. It may be necessary to lower the indoor setpoint for cooling or increase the setpoint for heating to activate the system. Minimum off time delays will be enforced on the next cycle.

Wait Indicator

"Waiting" will illuminate when the indoor setpoint is moved in the direction of calling for additional system capacity. "Waiting" indicates system time delays are being enforced and that the control is adjusting to the new settings.

Calibrate Indoor Temperature

This option allows calibration (or deliberate miscalibration) of the room temperature sensor. The selected number is number of degrees, plus or minus, which will be added to actual temperature. The number can range between + 5 and - 5 degrees in 1/2 degree increments. Factory default is 0. This adjusted value will be used as actual temperature for both display and control action. For example, if 2 is selected, 72 degrees actual will read 74 degrees.

Control Response Rate

A set of higher gain Proportional-Integral control constants can be chosen to increase the responsiveness of the temperature control performance.

Notes

Trane
6200 Troup Highway
Tyler, TX 75707

For more information contact your local dealer (distributor)

Since the manufacturer has a policy of continuous product and product data improvement, it reserves the right to change design and specifications without notice.