TSTATD4272C
COMMERCIAL

7 Day Programmable Commercial Digital Thermostat

with Humidity Control ▪ Multi Stage 4+2 ▪ Light Activated

for
Commercial Use

Owner's Manual

and

Installation Instructions

CAUTION

Follow the Installation Instructions before proceeding. Set the thermostat mode to “OFF” prior to changing settings in setup or restoring Factory Defaults.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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LISTED
4Z95

Thermostat TSTATD4272C
FC
Tested to Comply with FCC Standards
FOR HOME OR OFFICE USE

Glossary of Terms

Auto-Changeover: A mode in which the thermostat will turn on the heating or cooling based on room temperature demand.

Cool Setpoint: The warmest temperature that the space should rise to before cooling is turned on (without regard to deadband).

Deadband: The number of degrees the thermostat will wait, once a setpoint has been reached, before energizing heating or cooling.

Dehumidify: To reduce the amount of moisture in the air.

Differential: The forced temperature difference between the *heat setpoint* and the *cool setpoint*.

Heat Setpoint: The coolest temperature that the space should drop to before heating is turned on (without regard to deadband).

Humidify: To increase the amount of moisture in the air.

Icon: The word or symbol that appears on the thermostat display.

Mode: The current operating condition of the thermostat (i.e. Off, Heat, Cool, Auto, Program On).

Non-Programmable Thermostat: A thermostat that does not have the capability of running *Time Period Programming*.

Programmable Thermostat: A thermostat that has the capability of running *Time Period Programming*.

Reheat: Running the cooling and 2nd stage strip heaters at the same time in order to *dehumidify* the air without cooling down the room temperature.

Temperature Swing: *Same as Deadband*.

Time Period Programming: A program that allows the thermostat to automatically adjust the *heat setpoint* and/or the *cool setpoint* based on the time of the day.

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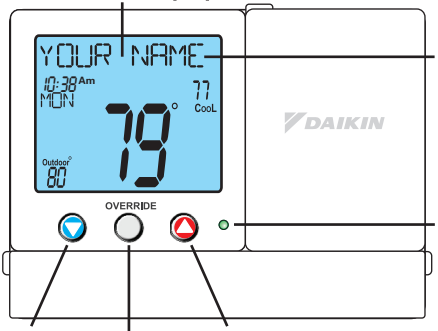
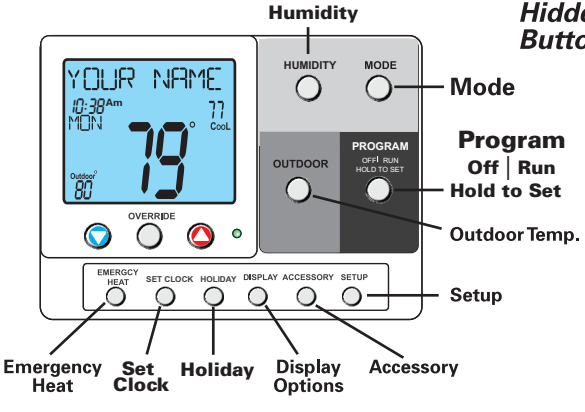
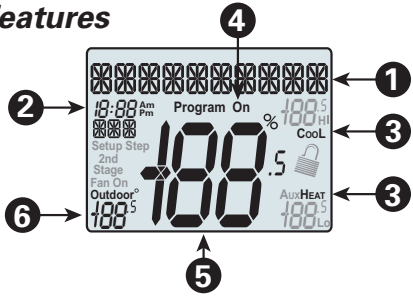
Get to know your thermostat





Get to know your thermostat

Display Features



❶ The scrolling display will be used to help you easily navigate the setup screens in the thermostat.

❷ Clock with Day of the Week
Indicates the current time and day. This clock is also used to program the time period schedules.

❸ Mode Indicators
Selects the operational mode of the equipment.
HEAT - Indicates the heating mode.
COOL - Indicates the air conditioning mode.
HEAT & COOL - Indicates the system will automatically change over between heat and cool modes as the temperature varies.
OFF - Indicates heating and cooling is turned off.

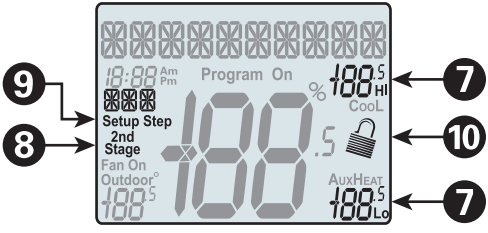
❹ **Program** icon
Indicates that Time Period Programming is running or is enabled to be set.

❺ Room Temperature Display
Indicates the current room temperature and displays the outdoor temperature when selected.

❻ **Outdoor** icon
Indicates the temperature displayed is from the optional outdoor sensor.

Get to know your thermostat

Display Features



❼ Desired Set Temperature
Indicates desired room temperature(s). Also displays the highest and lowest temperatures for the day.

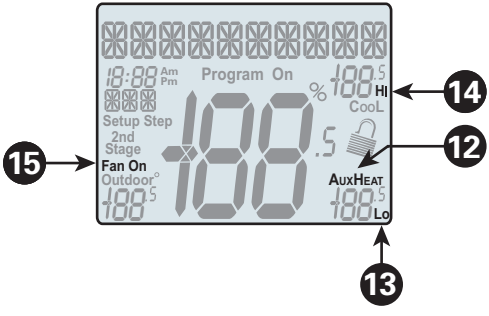
❽ **2nd Stage** icon
Indicates what stage of cooling or heating is currently energized.

❾ **Setup Step** icon
Indicates the step number when the thermostat is in the setup mode.

❿ icon
Indicates the keypad has been locked.

Get to know your thermostat

Display Features



⓬ **AuxHeat** icon

Indicates 2nd stage electric strip heat is being used when the thermostat is programmed for Heat Pump operation. Only the Aux icon will appear during Cool to Dehumidify to indicate Reheat operation.

⓭ **Lo** icon

Indicates the lowest recorded outdoor temperature for the day.

⓮ **Hi** icon

Indicates the highest recorded outdoor temperature for the day.

⓯ **Fan On** icon

Indicates constant, continuous fan operation.
When **Fan On** is not lit - indicates the fan will only operate when necessary to heat or to cool.

Quick Start

During Setup and Programming:

Press the UP or DOWN buttons to modify the selection.

Press the MODE button to advance and confirm through the setup steps.

Setting the Clock and Day

Press the SET CLOCK button. Adjust the clock using the UP or DOWN buttons. Press MODE to advance to the day setting. Adjust the day using the UP or DOWN buttons. Press the SET CLOCK button to confirm settings.

TIP: To adjust the time by hours press and hold the OUTDOOR button while pressingthe UP or DOWN buttons.

Selecting the Heat or Cool Mode

Select mode by pressing the MODE button.

Heating Only -The HEAT setting indicates the temperature the room has to reach before the furnace will turn on to heat the room.

Cooling Only - The COOL setting indicates the temperature the room has to reach before the air conditioner will turn on to cool the room.

Heating or Cooling (Auto-Changeover) - AUTO will automatically select heat or cool based on room temperature demand.

OFF - OFF indicates both heating and air conditioning systems are turned off.

Selecting Your Desired Temperature

AUTO-CHANGEOVER MODE - Pressing the UP or DOWN buttons in Auto or Program mode will adjust **both** the heat and cool setpoints simultaneously. To adjust heat and cool setpoints individually, choose HEAT mode to adjust the heat setpoint and COOL mode to adjust the cool setpoint, then return to AUTO mode.

HEAT OR COOL MODE - Pressing the UP or DOWN buttons in Heat or Cool mode will adjust only the heat **or** cool setpoints individually displayed.

Quick Start

Using the Override Button

NOTE: Override may only be used when the thermostat is set to PROGRAM ON.

Unoccupied Operation - During programmed, unoccupied periods, pressing the OVERRIDE button will force the thermostat into Occupied 1 settings for 30 minutes. Each press of the OVERRIDE button will add another 30 minutes of time for up to 4 hours. If the maximum time has been set, the next press of the OVERRIDE button will reset the timer and return the thermostat to the correct time period program for the day.

Occupied Operation - During programmed, occupied periods, pressing the OVER-RIDE button will force the thermostat into an unoccupied period for the rest of the day. During this forced unoccupied period the OVERRIDE button will operate as described above.

Viewing the Outdoor and Remote Temperature Sensors

OUTDOOR TEMP - Press the OUTDOOR button to view the current outdoor temperature. The high and low temperatures for the day will also be displayed. The high and low temperatures reset at 12:00 am. Press the OUTDOOR button again to display POOL or SPA temperature sensors. Keep pressing the OUTDOOR button to return to normal operation.

Note: If no outdoor sensor is connected, 2 dashes [- -] will appear with the first button press.

REMOTE TEMP - Press the ACCESSORY button to enter the accessory setup screen. Press the UP button to view linked wireless and wired sensors and other accessories. Press the ACCESSORY button to return to the main screen.

Viewing and Setting the Indoor Humidity Sensor

IMPORTANT: Allow at least 2 minutes after the thermostat is powered on for the humidity to read correctly.

Press the HUMIDITY button to display the current humidity measured at the thermostat. The room relative humidity is displayed in the top left corner. The humidification setpoint appears in the larger center display and can be adjusted using dehumidification setpoints. Press the MODE button to view and adjust the settings and return to normal operation.

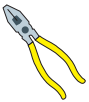
Note: Due to variations in environmental conditions, it is not always possible to achieve the desired humidification or dehumidification setpoint.

Installation Instructions

Remove and Replace the old thermostat

To install the thermostat properly, please follow these step by step instructions. If you are unsure about any of these steps, call a qualified technician for assistance.

- Assemble tools: Flat blade screwdriver, wire cutters and wire strippers.



- Make sure your Heater/Air Conditioner is working properly before beginning installation of the thermostat.
- Carefully unpack the thermostat. Save the screws, any brackets, and instructions.
- Turn off the power to the Heating/Air Conditioning system at the main fuse panel. Most residential systems have a separate breaker for disconnecting power to the furnace.
- Remove the cover of the old thermostat. If it does not come off easily, check for screws.
- Loosen the screws holding the thermostat base or subbase to the wall and lift away.
- Disconnect the wires from the old thermostat. Tape the ends of the wires as you disconnect them, and mark them with the letter of the terminal for easy reconnection to the new thermostat.
- Keep the old thermostat for reference purposes, until your new thermostat is functioning properly.

Installation Instructions

Wire Connections

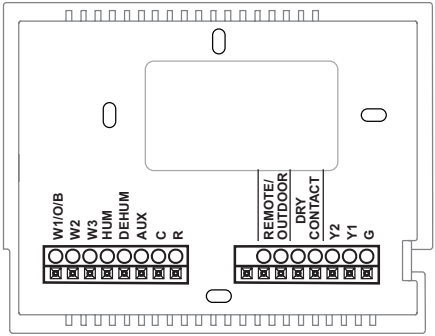
If the terminal designations on your old thermostat do not match those on the new thermostat, **refer to the chart below or the wiring diagrams that follow.**

Wire from the old thermostat terminal marked	Function	Install on the new thermostat connector marked
G or F	Fan	G
Y1, Y or C	Cooling	Y1
W1, W or H	Heating	W1/0/B
Rh, R, M, Vr, A	Power	R
C	Common	C
O/B	Rev. Valve	W1/O/B*
W2	2nd Stage Heat	W2
Y2	2nd Stage Heat	Y2
W3	3rd Stage Cooling	W3
H, HUM	Humidity	HUM
D, DEHUM	Dehumidity	DEHUM
Ck1	Dry Contact Switch	DRY CONTACT
CKGND	Dry Contact Switch	DRY CONTACT
S1, OUT -	Remote/Outdoor Sensor	REMOTE/OUTDOOR
S2, OUT +	Remote/Outdoor Sensor	REMOTE/OUTDOOR
AUX	Auxiliary Output	AUX

* O/B is used if your system is a Heat Pump.

Installation Instructions

The TSTATD4272C Thermostat Backplate



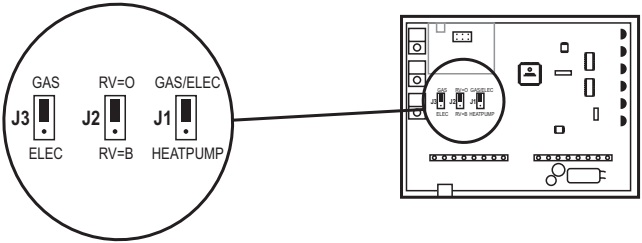
W1/O/B	1st stage heat/reversing valve
W2	2nd stage heat circuit
W3	3rd stage heat circuit
HUM	Humidifier control circuit
DEHUM	Dehumidifier control circuit
AUX	Aux output
C	24 VAC common
R	24 VAC Return
REMOTE/ OUTDOOR	Remote/Outdoor sensor connections
DRY CONTACT	Dry Contact connections
Y2	2nd stage compressor
Y1	1st stage compressor
G	Fan relay

IMPORTANT: This thermostat requires both R (24 VAC Return) and C (24 VAC Common) be connected to the backplate terminals.

Installation Instructions

Explanation of Thermostat Jumpers

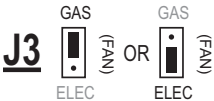
Jumpers are located on the back of the thermostat



This jumper configures the thermostat to control a conventional gas/electric system or a heat pump. If your system is anything other than a heat pump, leave this jumper set for GAS/ELEC.*

**For some commercial heat pumps, this jumper will need to be set for GAS/ELEC. Consult the commercial heat pump literature.*

When J1 is configured to control a heat pump, this jumper (J2) must be set to control the appropriate reversing valve. If RV=O is chosen, the W1/O/B terminal will energize in cooling. If RV=B is chosen, the W1/O/B terminal will energize in heating.



When J1 is set for GAS/ELEC:
This jumper (J3) controls how the thermostat will control the Fan (G) terminal in heating mode. When GAS is chosen, the thermostat will not energize the Fan (G) terminal in heating. When ELEC is chosen the thermostat will energize the fan in heating.

Sample Wiring Diagrams

Conventional Heating and Cooling Systems

3 Wire, Heat Only
Residential & Commercial 1 Stage Heating with no **Fan.**

R	24VAC Power
C	24VAC Common
W1/O/B	1st Stage Heat

J1	=	Gas/Elec
J2	=	O (not used)
J3	=	Gas

4 Wire, Cool Only
Residential & Commercial 1 Stage Cooling.

R	24VAC Power
C	24VAC Common
Y1	1st Stage Cool
G	Fan

J1	=	Gas/Elec
J2	=	O (not used)
J3	=	Gas

5 Wire, 1 Stage Cooling, 1 Stage Heat
Residential & Commercial 1 Stage Cooling, with 1 stage Gas **Heat.**

R	24VAC Power
C	24VAC Common
W1/O/B	1st Stage Heat
Y1	1st Stage Cool
G	Fan

J1	=	Gas/Elec
J2	=	O (not used)
J3	=	Gas

5 Wire, 1 Stage Cooling, 1 Stage Heat
Residential & Commercial 1 Stage Cooling, with 1 stage Elec**tric Heat.**

R	24VAC Power
C	24VAC Common
W1/O/B	1st Stage Heat
Y1	1st Stage Cool
G	Fan

J1	=	Gas/Elec
J2	=	O (not used)
J3	=	Electric

8 Wire, 2 Stage Cooling, 3 Stage Heat
Residential & Commercial 2 Stage Cooling, with 3 stage Gas **Heat.**

R	24VAC Power
C	24VAC Common
W1/O/B	1st Stage Heat
W2	2nd Stage Heat
W3	3rd Stage Heat
Y1	1st Stage Cool
Y2	2nd Stage Cool
G	Fan

J1	=	Gas/Elec
J2	=	O (not used)
J3	=	Gas

Sample Wiring Diagrams

Heat Pump Systems

5 Wire, 1 Stage Cooling, 1 Stage Heat
Residential & Commercial **Heat Pump** with **'O' Reversing Valve**

R	24VAC Power
C	24VAC Common
W1/O/B	Reversing Valve
Y1	1st Stage Compressor (Cool or Heat)
G	Fan

J1 = Heat Pump
J2 = O
J3 = Gas

6 Wire, 1 Stage Cooling, 2 Stage Heat
Residential & Commercial **Heat Pump** with **'O' Reversing Valve**

R	24VAC Power
C	24VAC Common
W1/O/B	Reversing Valve
Y1	1st Stage Compressor (Cool or Heat)
W2	Aux Heat
G	Fan

J1 = Heat Pump
J2 = O
J3 = Electric

7 Wire, 2 Stage Cooling, 3 Stage Heat
Residential & Commercial **Heat Pump** with **'O' Reversing Valve.**

R	24VAC Power
C	24VAC Common
W1/O/B	Reversing Valve
W2	3rd Stage Heat
Y1	1st Stage Compressor (Cool or Heat)
Y2	2nd Stage Compressor (Cool or Heat)
G	Fan

J1 = Heat Pump
J2 = O
J3 = Electric

Setup Step 26 is set to 2
(Number of Compressor Stages)

8 Wire, 2 Stage Cooling, 4 Stage Heat
Residential & Commercial **Heat Pump** with **'O' Reversing Valve.**

R	24VAC Power
C	24VAC Common
W1/O/B	Reversing Valve
W2	3rd Stage Heat
W3	4th Stage Heat
Y1	1st Stage Compressor (Cool or Heat)
Y2	2nd Stage Compressor (Cool or Heat)
G	Fan

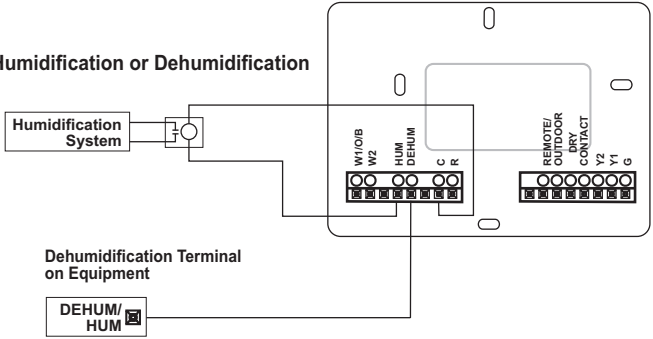
J1 = Heat Pump
J2 = O
J3 = Electric

Setup Step 26 is set to 2
(Number of Compressor Stages)

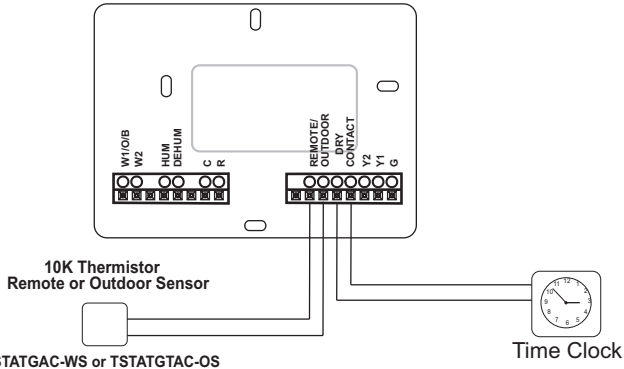
Installation Instructions

Sample Wiring Diagrams

Humidification or Dehumidification



Dry Contact and Remote or Outdoor Sensor



Installation Instructions: Test Operation

This thermostat has a diagnostic feature that enables testing of all outputs. This feature is contained in Technician Setup.

To enter Technician Setup, press and hold the SETUP button for 5 seconds until all the icons appear. Follow the next steps to view settings and test equipment.

1. Press MODE to view the version numbers of the thermostat.
2. Press MODE again to view the jumper settings and current state of the Dry Contact terminals.
3. Press MODE again and the scrolling display will read "TURN ON EQUIPMENT?" Press UP for Yes or DOWN for No.

   If Yes is chosen, press UP to turn on heat or DOWN to turn on Cooling. The scrolling display will read "NOTHING ON." Next:

   Press UP to turn on and cycle up through the heating stages. Press DOWN to turn the heating stages off. Press MODE to exit.

   Press DOWN to turn on and cycle down through the cooling stages. Press UP to turn the cooling stages off. Press MODE to exit.
4. Press MODE until "CALIBRATE SENSORS?" appears on the scrolling display. Press UP for Yes or DOWN for No. Press MODE to select which sensor to calibrate. Use UP or DOWN to modify your selection.
5. Press MODE until "CONTROL HUM?" appears on the scrolling display. Press UP for On or DOWN for Off. Press MODE to continue.
6. Press MODE until "CONTROL DEHUM?" appears on the scrolling display. Press UP for On or DOWN for Off. Press MODE to continue.
7. Press MODE until "CONTROL AUX OUT?" appears on the scrolling display. Press UP for On or DOWN for Off. Press MODE to exit.

To exit Technician Setup at any time, press the SETUP button. Technician Setup will automatically exit after 10 minutes if no buttons are pressed.

User Setup: Backlight Operation

How to Change Settings in the Setup Screens

To enter Advanced Setup, press the SETUP button, then press MODE. Use the UP or DOWN buttons to adjust the value of your selection. Press MODE to advance to the next setup step. Press SETUP again to leave the setup screens.

BACKLIGHT (Setup Step 3)

The thermostat backlight may be set to be always on, on temporarily with any button press, on throughout the evening, or always off. (For always off, see Backlight Level)

Press the SETUP button, then press MODE repeatedly until the Backlight setup step appears. Use the UP or DOWN buttons to make selection. Press MODE to advance to the next step. Press SETUP to leave the setup screens.

Backlight Off - Backlight turns on with any button press and turns off after 8 seconds.

Backlight On - Backlight is on continuously.

Backlight 6pm to 6am - Backlight turns on at 6pm and turns off at 6am.

Backlight Level (Setup Step 4)

The backlight can be adjusted between always off and seven levels of brightness.

Press the SETUP button, then press MODE repeatedly until the Backlight setup step appears. Use the UP or DOWN buttons to adjust the brightness. Press MODE to advance to the next step. Press SETUP to leave the setup screens.

Language (Setup Step 18)

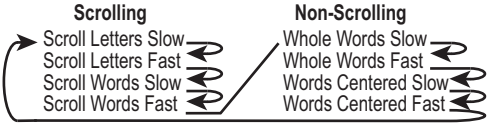
Setup step instructions on the scrolling display can be set for English, Spanish, or French.

Press the SETUP button, then press MODE repeatedly until the Language setupstep appears. Use the UP or DOWN buttons to make selection. Press MODE to advance to the next step. Press SETUP to leave the setup screens.

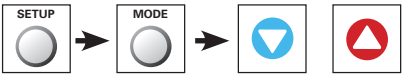
User Setup: Backlight Operation

Scrolling Display Method (Setup Step 19)

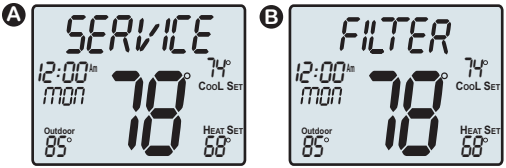
This option allows the user to choose how the scrolling text is displayed. Options are:



Press the SETUP button, then press MODE repeatedly until the Scrolling Method setup step appears. Use the UP or DOWN buttons to make a selection. Press MODE to advance to the next step. Press SETUP to leave the setup screens.



Example of "Whole Words Centered":



Display

This option allows the user to "de-clutter" the thermostat display screen by removing icons from the main display. The room temperature will always be shown. Service information may also be viewed by pressing and holding the DISPLAY button.

Each press of the DISPLAY button will remove icons. Keep pressing DISPLAY to make icons reappear.

Press and hold DISPLAY for 5 seconds to view a name and phone number to call for service.

Any removed icons will be displayed temporarily when a setting change is made.

User Setup

Holiday

The Holiday feature allows the thermostat to use temporary, energy saving setpoints without having to change regular programming.

Press the HOLIDAY button to enter Holiday programming. Use the UP and DOWN buttons to choose the number of days desired to run the Holiday feature. Press HOLIDAY to return to the main screen.

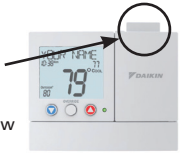
When the thermostat is programmed for Holiday mode, and it is in the Program On mode, it will take effect at 12:00 am of the next day. To turn off Holiday mode, set the number of days to 0.

Emergency Heat

The Emergency Heat function is only available if your thermostat is set to control a Heat Pump.

To initiate the Emergency Heat feature, **Press and hold the EMERGCY HEAT button for 2 seconds.** During Emergency Heat operation the thermostat will turn on the fan and auxiliary stages of heat when there is a demand for heat. The 1st stage of heating and all stages of cooling will be unavailable. To exit Emergency Heat, press the EMERGCY HEAT button.

Accessory



The optional RF Module must be installed to link and view wireless accessories.

The ACCESSORY button allows the user to view wired and wireless sensors and “link” these and other wireless devices to the thermostat via an optional RF module. Press the ACCESSORY button to enter the Accessory setup screen. Press UP to view linked and wired accessories. Follow the instructions included with the wireless accessory to begin linking process. Next, press DOWN to enter the wireless linking mode. Press MODE to initiate linking. Press ACCESSORY to return to the main screen. **NOTE**: A wired outdoor sensor’s temperature reading is updated once every minute; a wireless outdoor sensor’s temperature reading is updated once every 5 minutes.

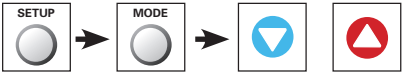
User Setup: System Runtimes

These setup steps allow the user to monitor equipment runtimes and program service alerts.

Runtime hours or days appear in the clock display.

Service Filter Runtime (Setup Steps 6-7, 14-15)

Press the SETUP button, then press MODE repeatedly until the desired setup step appears. Use the UP or DOWN buttons to make a selection. Press MODE to advance to the next step. Press SETUP to leave the setup screens.



Current Service Filter Runtime Hours (Setup Step 6) -This counter keeps track of the number of hours of fan runtime in the Heating mode, Cooling mode, and in stand alone Fan operation. Press OUTDOOR to reset.

Current Service Filter Calendar Days (Setup Step 7) - total number of calendar days that have elapsed since the counter was reset to help the user track Fan runtime. Press OUTDOOR to reset.

Set Service Filter Runtime Hours (Setup Step 14) -This timer allows the user to specify the number of hours the fan will run before the “Replace Filter” alert will be displayed. Press DOWN continuously until OFF is displayed to disable this alert.

Set Service Filter Calendar Days (Setup Step 15) -This timer allows the user to specify the number of calendar days that will elapse before the “Replace Filter” alert will be displayed. Press DOWN continuously until OFF is displayed to disable this feature.

User Setup: System Runtimes

To view, set, or reset System Runtimes, press the SETUP button, then press MODE. Press MODE to advance to the desired setup step. Use the UP or DOWN buttons to adjust the value of your selection. Press SETUP again to leave the setup screens.

Heating and Cooling System Runtime - Energy Watch (Setup Steps 8 - 10)

Current Heat Runtime Hours (Setup Step 8) - This counter keeps track of the number of hours the system has run in Heating. Press OUTDOOR to reset.

Current Aux Strip Heat Runtime Hours (Setup Step 9) - This counter keeps track of the number of hours the system has run in Auxiliary Heating. This setup step is only available when the thermostat jumpers are configured for Heat Pump and Electric Heat. Press OUTDOOR to reset.

Current Cool Runtime Hours (Setup Step 10) - This counter displays the number of hours the system has run in Cooling. Press OUTDOOR to reset.

Current Override Hours (Setup Step 11) - This counter displays the number of hours the system has run in Override. Press OUTDOOR to reset.

UV Lamp Runtime (Setup Steps 12, 16)

Current UV Lamp Calendar Days (Setup Step 12) - number of calendar days that have elapsed to help the user track UV lamp runtime. Press OUTDOOR to reset.

Set UV Lamp Calendar Days (Setup Step 16) - This timer allows the user to specify the number of calendar days the UV Lamp will operate before the “Replace UV Lamp” alert will be displayed. Press DOWN continuously until OFF appears to disable this alert.

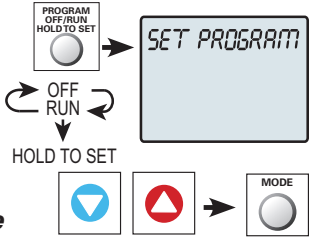
Humidifier Runtime (Setup Steps 13, 17)

Current Humidifier Calendar Days (Setup Step 13) - This counter displays the total number of calendar days that have elapsed to help the user track the Humidifier runtime. Press OUTDOOR to reset.

Set Humidifier Calendar Days (Setup Step 17) - This timer allows the user to specify the number of calendar days the Humidifier will run before the “Service Humidifier” alert will be displayed. Press DOWN continuously until OFF appears to disable this alert.

User Setup: Time Period Programming

To enter Time Period Programming screens, Press and hold PROGRAM until the scrolling prompt appears.



OFF -Time Period Program is off.

RUN -Time Period Program is running.

HOLD TO SET - Press and hold PROGRAM to make Time Period Programming changes.

Programming a Daily Schedule

Select number of Occupied time periods - Press the UP or DOWN buttons to choose the maximum number of Occupied time periods to program. (1-3) Press MODE to advance to the next step.

Select Occupied 1 Cool Setpoint - Press the UP or DOWN buttons to adjust the cool setpoint desired. Press MODE to advance to the next step.

Select Occupied 1 Heat Setpoint - Press the UP or DOWN buttons to adjust the heat setpoint desired. Press MODE to advance to the next step.

Select Unoccupied Cool Setpoint - Press the UP or DOWN buttons to adjust the cool setpoint desired. Press MODE to advance to the next step.

Select Unoccupied Heat Setpoint - Press the UP or DOWN buttons to adjust the heat setpoint desired. Press MODE to advance to the next step.

Select Day of Week to program - Press the UP or DOWN buttons to choose the day of the week to be programmed. Press MODE to advance to the next step.

Select Occupied 1 Start Time - Press the UP or DOWN buttons to adjust the time of day desired. Press MODE to advance to the next step.

Select Occupied 1 Stop Time - Press the UP or DOWN buttons to adjust the time of day desired. Press MODE to advance to the next step.

Select Occupied 1 Enable - Press the UP or DOWN buttons to choose to enable the program to run on that day. Press MODE to advance to the next step.

Copy Current Day to Next - Press the UP button to choose to Copy the current day to another day. Press the UP or DOWN buttons to choose which day to copy to. Press MODE to confirm. Continue to Press MODE to copy to more days. Press the DOWN button to program another day with a different schedule.

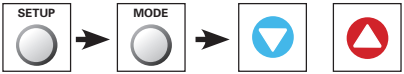
Program Another Day - Press the DOWN button to choose to program another day with a different schedule. Press MODE. Press the UP or DOWN buttons to choose the desired day. Press MODE to advance to the next step.

Press Program Button to exit Time Period Programming

Installer Setup

How to Change Settings in the Setup Screens

To enter Advanced Setup, press the SETUP button, then press MODE. Use the UP or DOWN buttons to adjust the value of your selection. Press MODE to advance to the next setup step. Press SETUP again to leave the setup screens.



Selecting Your Program Mode (Setup Step 1)

This thermostat may be configured to be programmable or non-programmable.

7 Day Program - Allows all seven days to be programmed independently.

Non Program - No advanced time period programming available.

1 Day Program - Allows one 24 hour day to be programmed. This same schedule will be repeated everyday the program is set to run.

5/1/1 Day Program - Allows weekdays, Saturday, and Sunday to be programmed independently.

Selecting Your Available Modes (Setup Step 2)

Auto-Changeover - Allows the thermostat to turn on heating or cooling based on room temperature demand. Also allows the manual selection of HEAT only or COOLonly and OFF.

Heat and Cool - Allows the thermostat to turn on heating or cooling depending on which one has been manually selected. Auto-Changeover is not available when this is selected.

Heat Only - Allows the thermostat to only turn on HEAT or OFF modes.

Cool Only - Allows the thermostat to only turn on COOL or OFF modes.

Installer Setup

Setpoint Limits (Setup Step 20)

This feature allows the user to set 4 different levels of security: (0 - 3).

No Setpoint Limits (0) - When this level is selected, no restrictions are activated.

Use Setpoint Limits (1) - When this level is selected, the heat and cool setpoints can be restricted to preset levels, set in setup steps 21 and 22.

Maximum Heat Setpoint (Setup Step 21) - (35˚ - 99˚).

Minimum Cool Setpoint (Setup Step 22) - (35˚ - 99˚).

Force Program Mode (2) - When this level is selected, the heat and cool setpoints can be restricted to preset levels, set in setup steps 21 **and** 22 and the thermostat is locked into the current mode and time period program setting.

Setpoints Frozen (3) - When this level is selected, the heat and cool setpoints, the current mode, and time period program settings are locked.

Cycles Per Hour (Setup Step 23)

The Cycles Per Hour setting may limit the number of times per hour your HVAC unit may energize. For example, at a setting of 6 cycles per hour the HVAC unit will only be allowed to energize once every 10 minutes. The Cycles Per Hour limit may be overridden and reset by pressing the UP or DOWN buttons on the thermostat. Settings are No Limit, 2, 3, 4, 5, or 6.

Compressor Minimum Off Minutes (Setup Step 24)

This feature allows the user to set a minimum off time for the compressor. Settings are 5 mins., 3 mins., or 0 mins.

Minimum Heat/Cool Setpoint Difference (Setup Step 25)

This feature allows the user to set the minimum gap between Heat and Cool setpoints in **AUTO** mode. Select from 0 to 6. If setup step 2 is not set for **AUTO-CHANGEOVER**, this step will not appear.

Number of Compressor Stages (Setup Step 26)

This feature is for heat pump applications only.

This feature allows the thermostat to control 1 or 2 compressor stages when configured for heat pump.

Deadband Settings (Setup Steps 27 - 36)

The Deadband is the number of degrees or minutes that the thermostat waits before it initiates the stages of heating or cooling.

1st Stage Deadband (Setup Step 27) - Specifies the minimum temperature difference between the room temperature and the desired setpoint before the first stage of heating or cooling is allowed to turn on. (1 - 6 degrees) For example, if the heat setpoint is 68 and the 1st Stage deadband is set to 2 degrees, the room temperature will need to reach 66 degrees before the heat turns on.

2nd Stage Deadband (Setup Step 28) - Specifies the additional minimum temperature difference after the first stage turns on before the second stage is activated. (0 - 10)

3rd Stage Deadband (Setup Step 29) - Specifies the additional minimum temperature difference after the second stage turns on before the third stage is activated. (0 - 10)

4th Stage Deadband (Setup Step 30) - (Two Stage heat pump only) - Specifies the additional minimum temperature difference after the third stage turns on before the final stage of strip heat is activated. (0˚ - 10˚)

Minutes Between 1st and 2nd Stage (Setup Step 31) - Specifies the minimum time (in minutes) after the first stage turns on before the second stage can turn on. (0 - 60)

Minutes Between 2nd and 3rd Stage (Setup Step 32) - Specifies the minimum time (in minutes) after the second stage turns on before the third stage can turn on. (0 - 60)

Delay Between 3rd and 4th Stage (Setup Step 33) - Specifies the minimum time (in minutes) after the third stage turns on before the final stage can turn on. (0 - 60)

Second Stage Turnoff Point (Setup Step 34) - Specifies whether second stage will turn off at first stage deadband or remain on until the room temperature demand is satisfied. Choose between Deadband or Setpoint.

Third Stage Turnoff Point (Setup Step 35) - Specifies whether third stage will turn off at second stage deadband or remain on until the room temperature demand is satisfied. Choose between Deadband or Setpoint.

Fourth Stage Turnoff Point (Setup Step 36) - Specifies whether fourth stage will turn off at third stage deadband or remain on until the room temperature demand is satisfied. Choose between Deadband or Setpoint.

Fan Mode (Setup Step 5)

This feature allows the following options:

Fan Auto - If Fan Auto is selected, the fan will run while there is a call for heating or cooling.

Fan On - If Fan On is selected, the fan will run continuously during Occupied Mode and turn off during Unoccupied Mode.

Minutes of Fan Purge (Setup Step 37)

When this feature is activated, the fan will turn on during an unoccupied period at a preset amount of time prior to Occupied 1. This preoccupancy fan purge timer may be set from zero to three hours, in 15 minute increments. Zero means this feature is turned off.

Fan Off Delay in Seconds (Setup Step 55)

This feature allows the user to increase the cooling or electric strip heating efficiency of the system. The thermostat may be programmed to continue running the fan after a call for cooling or electric strip heating has been satisfied. This delay can be set for 0, 30, 60, 90, or 120 seconds. If set to 0, the fan will not run after a call for cooling or electric strip heating has been satisfied.

Comfort Recovery (Setup step 69)

Comfort Recovery turns on the heat before the Occupied start time to bring the room temperature to the Occupied setpoint at the start of the Occupied time period. Please allow 4-8 days for Comfort Recovery time to adjust. When used with a heat pump, electric strip heat will be disabled while Comfort Recovery is active.

Humidity and Dehumidity (Setup Steps 40-45, 75-76)

Humidity Only With Heat (Setup Step 40) - When this step is set to ON, Humidity will not run without a demand for Heat.

Fan With Humidity Demand (Setup Step 41) - Specifies if the fan should be turned on with a demand for Humidity. (This step will only appear if step 40 is set to OFF.)

Cool To Dehumidify (Setup Step 43) - Specifies if the cooling equipment is allowed to turn on exclusively to lower room humidity. (If set to OFF the following two steps will not appear.)

Max Dehum Overcool (Setup Step 44) - Specifies how many degrees below the Cool setpoint the air conditioning will run to satisfy a Cool to Dehumidify demand. (0 - 5)

Reheat Operation With Cool To Dehumidify (Setup Step 45) - Specifies if electric strip heat is allowed to turn on during a Cool to Dehumidify demand to help maintain desired room temperature. This step is not available if Electric Heat is not present.

Humidty Output Polarity (Setup Step 75)

Humidity Output Normally Open - means no voltage is sent to the HUM output when there is no demand for humidity.

Humidity Output Normally Closed - means voltage is sent to the HUM output when there is no demand for humidity.

Dehumidify Output Polarity (Setup Step 76)

Dehumidify Output Normally Open - means no voltage is sent to the DEHUM output when there is no demand to dehumidify.

Dehumidify Output Normally Closed - means voltage is sent to the DEHUM output when there is no demand to dehumidify.

Installer Setup

Dry Contact Operation (setup step 70 - 71)

Dry Contact Polarity (Setup Step 70)

Open (Normally Open) -The dry contact is open until the connected device closes the circuit.

Closed (Normally Closed) - The dry contact is closed until the connected device opens the circuit.

Dry Contact Use (Setup Step 71)

PAN - If PAN is selected when the dry contact is active, the thermostat will lockout the compressor terminal(s) and "SERVICE DRAIN PAN" will appear on the display.

HOLIDAY/FORCE UNOCCUPIED - If Holiday is selected when the dry contact is active, the thermostat will be forced into Holiday Mode. This setting may be used with time clocks or twist timers to force the thermostat from Occupied to Unoccupied.

Light Activated Operation(setup step 77 - 78)

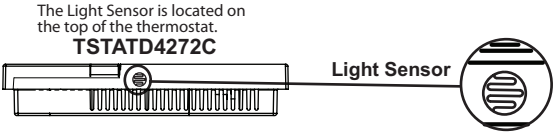
Light Activated (Setup Step 77)

OFF - Light activation is not used.

ON - The thermostat will enter Occupied 1 when a light source is detected.

Light Sensor Sensitivity (Setup Step 78)

Press OUTDOOR to set the sensitivity of the light sensor. The scrolling display will read "Light Sensor Set" when finished.



Wired Sensor Use (setup step 38)

This feature allows the user to choose if the wired sensor will be used as an indoor or outdoor sensor.

Control To Temp Source (Setup Step 39)

This feature allows the user to specify which temperature sensor source the thermostat will use to measure room temperature. The choices are:

Thermostat: Uses the internal thermostat sensor only.

Remote Sensor: Uses wireless or wired sensors only.

Average Of Remote Sensor And Thermostat: Averages the temperatures of the remote sensor(s) and the thermostat.

NOTE: If a remote sensor is being used, the degree icon on the large room temperature display will blink.

Fahrenheit or Celsius (setup step 56)

This feature allows the thermostat to display temperature in Fahrenheit or Celsius.

Auxiliary Output

This thermostat is equipped with a programmable auxiliary output. This output can be configured to be controlled from a variety of sources.

Aux Output Polarity (Setup Step 57)

Specifies if the Auxiliary output will be Open (Normally Open) or Closed (Normally Closed).

Aux Output (Setup Step 58)

Specifies which source will control the Aux output.

Choices are:

Time - Uses the internal clock of the thermostat.

Temp - Uses one of three temperature sources.

External - The Auxiliary Output is controlled from an external accessory source, like Comfort Call.

Error - Uses the thermostat's error processing to signal an active error condition.

Economizer - Used to control an economizer, the Aux Output is active when program is in any occupied time.

Auxiliary Output Programming By Time

If TIME is selected for the Aux Output, the following setup steps will appear:

Aux Output Days (Setup Step 59) - Specifies if the Aux Output will be single day (1 DAY), weekday/weekend (5/2 DAY), or seven day (7 DAY) programmable.

Day Of Week To Program (Setup Step 60) - Specifies which day of the week to program.

Aux Output Start Time (Setup Step 61) - Specifies the time of each day when the Aux output will turn on.

Aux Output Stop Time (Setup Step 62) - Specifies the time of each day when the Aux output will turn off.

Copy (Setup Step 63) - This step only appears if Aux Output Days (Setup Step 59) is set for 7 programmable output days. Press DOWN and then OUTDOOR to copy. Press UP and then OUTDOOR to program another day with a different setting.

Auxiliary Output Programming By Temp

If TEMP is selected for the Aux Output, the following setup steps will appear:

Aux Output Temp Source (Setup Step 64) - Specifies what temperature source will be monitored for controlling the programmable output. The options are:

Thermostat - Temperature is monitored from the thermostat sensor.

Outdoor Sensor - Temperature is monitored from the Outdoor temperature sensor.

Wired Remote - Temperature is monitored from a wired sensor connected to the Remote Sensor terminals.

External - The Auxiliary Output is controlled from an external accessory source.

Aux Output Trigger Point Temp (Setup Step 65) - Specifies the temperature from the above selected source above which the Aux Output is triggered. A non-adjustable two degree deadband is applied to avoid frequent triggering. The 'N.O.' (Normally Open) or 'N.C.' (Normally Closed) function (Setup Step 57) can be altered to make the output trigger below the set temperature. Temps are adjustable from 0 - 120 degrees Fahrenheit.

Aux Output Error Level (Setup Step 66)

When the Aux Output is set for ERROR, three choices of error levels exist:

Level 1 - Aux Output is active if a Critical, Alarm, or Alert error is present.

Level 2 - Aux Output is active if a Critical or Alarm error is present.

Level 3 - Aux Output is active only if a Critical error is present.

Critical Error - Service or immediate attention is required.

Alarm Error - Service or immediate attention is recommended.

Alert Error - Runtimes, Low Battery on wireless remote sensors, etc.

Press Outdoor To Clear All Messages (setup step 79)

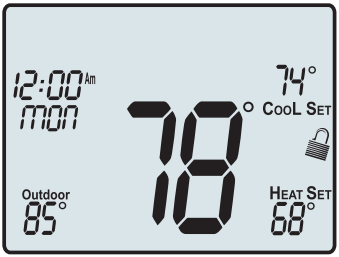
This feature allows the user to clear all current error messages from the display.

Installer Setup

Locking/Unlocking the Keypad

To prevent unauthorized use of the thermostat, the front panel buttons may be disabled. To disable, or 'lock' the keypad, press and hold the MODE button. While holding the MODE button, press the UP and DOWN buttons together. The icon will appear on the display, then release the buttons.

Press all three buttons in the order outlined above for keypad lockout



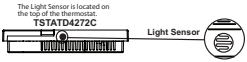
To ***unlock*** the keypad, press and hold the MODE button. While holding the MODE button, press the UP and DOWN buttons together. The icon will disappear from the display, then release the buttons.

Installer Setup

Resetting the Thermostat to the Factory Default Settings (for default values see page 34)

If, for any reason, you desire to return all the stored settings back to the factory default settings, follow the instructions below.

WARNING: This will reset all Time Period and Advanced Programming to the default settings. Any information entered prior to this reset may be permanently lost.



1 Press and hold SETUP for 5 seconds.
All icons will appear on the display.

Keep pressing the SETUP button until you see this screen.

---

2 After all the icons appear, release SETUP. Press and hold OUTDOOR for 5 seconds. DEFAULTS will appear on the display.

Keep pressing the OUTDOOR button until you see this screen.

---

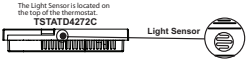
3 After DEFAULTS appears, release OUTDOOR.
Press SETUP to return to normal operation.

Technician Setup

To enter Technician Setup, press and hold the SETUP button for 5 seconds. After all the icons appear, press MODE. The version numbers of the thermostat will appear in the scrolling text. Press MODE to advance to the next step. Use the UP or DOWN buttons to adjust the value of your selection. To leave Technician Setup, press SETUP.

Hold for 5 seconds

All icons appear



Press MODE to advance through the setup steps

Press UP or DOWN to alter the selection

Technician Setup is for diagnostic and testing purposes and is intended for use by a qualified technician. See page 14 for more detailed instructions.

Technician Setup contains the following options:

- View the version number of the thermostat.
- View the jumper setting of **J1** (Gas/Electric or Heat Pump), **J2** (Reversing Valve: RV=O or RV=B), and **J3** (Fan: Gas or Electric) jumpers located on the back of the thermostat. (Remove thermostat from backplate for access)
- View the state of the Dry Contact terminals.
- Turn on equipment outputs for testing.
- Calibrate thermostat, remote, and humidity sensors.
- Control HUM output (On or Off)
- Control DEHUM output (On or Off)
- Control AUX output (On or Off)

Troubleshooting

- **SYMPTOM:** The air conditioning does not attempt to turn on.
  CAUSE: The compressor timer lockout may prevent the air conditioner from turning on for a period of time.
  REMEDY: Consult the Owner's Manual in the Installer Setup section to defeat the Cycles Per Hour (page 22).
- **SYMPTOM:** The display is blank.
  CAUSE: Lack of proper power.
  REMEDY: Make sure the power is on to the furnace and that you have 24vac between **R & C.**
- **SYMPTOM:** The air conditioning does not attempt to turn on.
  CAUSE: The cooling setpoint is set too high.
  REMEDY: Lower the cooling setpoint or lower the cooling set-point limit. *See Setpoint Limits (page 22).*
- **SYMPTOM:** The heating does not attempt to turn on.
  CAUSE: The heating setpoint is set too low.
  REMEDY: Raise the heating setpoint or raise the heating set-point limit. *See Setpoint Limits (page 22).*
- **SYMPTOM:** When controlling a residential heat pump, and asking for cooling, the heat comes on.
  CAUSE: The thermostat reversing valve jumper is set for **"B".**
  REMEDY: Set the reversing valve jumper for **"O".**
- **SYMPTOM:** When calling for cooling, both the heat and cool come on.
  CAUSE: The thermostat equipment jumper is configured for **"HP"** and the HVAC unit is a Gas/Electric.
  REMEDY: Set the equipment jumper for **"Gas".**
- **SYMPTOM:** When the Program button is pressed, the display reads "DISABLED".
  CAUSE: Program mode is set to **"NON PROGRAM".**
  REMEDY: Set Program Mode (Setup 1) to 1, **5/2,** or **7 Day.**
  See Selecting Your Program Mode (page 21).

Advanced Setup Table

Step#	Description	Pg#	Range	Df
1	Prog Mode	21	Non, 1, 5/1/1,7	7
2	Available Modes	21	Heat/Cool/Auto/Off Heat/Cool/Off,Hat/Off, Cool/Off	Heat/Cool/ Auto/Off
3	Backlight	15	On, Off, 6pm-6am	Off
4	Backlight Level	15	Offf-7 levels of brightness	Level 5
5	Fan Mode	24	Auto, On	Auto
6	Current Service Filter Runtime Hours	18	0-1999	0
7	Current Service Filter Calendar Days	18	0-1999	0
8	Current Heat Runtime Hours	19	0-1999	0
9	Current Aux Heat Runtime Hours	19	0-1999	0
10	Current Cool Runtime Hours	19	0-1999	0
11	Current Override Hours	19	0-1999	0
12	Current UV Lamp Calendar Days	19	0-1999	0
13	Current Humidifier Calendar Days	19	0-1999	0
14	Set Service Filter Runtime Hours	18	0-1950	0
15	Set Service Filter Calendar Days	18	0-720	0
16	Set UV Lamp Calendar Days	19	0-720	0
17	Set Humidifier Calendar Days	19	0-720	0
18	Language	15	English, Espanol, Francais	English
19	Scrolling Method	16	L-R Slow, L-R Fast, Word L-R Slow, Word L-R Fast Whole Word L Slow Whole Word L Fast Whole Word Ctr Slow Whole Word Ctr Fast	Whole Word Ctr Fast
20	Setpoint Limits	22	No, Use, Force Program Setpoints Frozen	No
21	Max Heat Setpoint	22	35˚ - 99˚	80˚
22	Min Cool Setpoint	22	35˚ - 99˚	65˚
23	Cycles Per Hour	22	No Limit, 2, 3, 4, 5, 6	6
24	Compressor Minimum Off Minutes	22	0, 3, 5	5
25	Min. Heat/Cool Setpoint Difference	22	0˚ - 6˚	2˚
26	Number Of Compressor Stages	22	1, 2	1
27	1st Stage Deadband	23	1˚ - 6˚	2˚
28	2nd Stage Deadband	23	0˚ - 10˚	2˚
29	3rd Stage Deadband	23	0˚ - 10˚	2˚
30	4th Stage Deadband	23	0˚ - 10˚	2˚
31	Minutes Between 1st and 2nd Stage	23	0 - 60	2
32	Minutes Between 2nd and 3rd Stage	23	0 - 60	2

cont. next page

Advanced Setup Table *(cont.)*

Step#	Description	Pg#	Range	Df
33	Minutes Between 3rd and 4th Stage	23	0 - 60	2
34	2nd Stage Turnoff Point	23	Deadband, Setpoint	Deadband
35	3rd Stage Turnoff Point	23	Deadband, Setpoint	Deadband
36	4th Stage Turnoff Point	23	Deadband, Setpoint	Deadband
37	Minutes of Fan Purge	24	0-3:00	0
38	Wired Sensor Use	27	Indoor, Outdoor	Outdoor
39	Control to Temp Source	27	Tstat, Remote, Average	Tstat
40	Humidity Only with Heat	25	On, Off	Off
41	Fan with Humidity Demand	25	Fan On, Fan Off	Fan Off
43	Cool to Dehumidify	25	On, Off	Off
44	Maximum Dehum Overcool	25	0˚ - 5˚	2˚
45	Reheat Operation w/Cool to Dehum	25	On, Off	Off
55	Fan Off Delay In Seconds	24	0, 30, 60, 90, 120	0
56	F/C	27	Fahrenheit, Celsius	F
57	Aux Ouput Polarity	28	Open, Closed	Open
58	Aux Output	28	Time, Temp, Ext. Error, Economizer	Time
59	Aux Output Program Days	28	1, 5/1/1, 7	1
60	Day of Week to Program	28	M-M	MTWTFSS
61	Aux Output Start Time	28	12a - 12a	7a
62	Aux Output Stop Time	28	12a - 12a	9p
63	Copy	28	Yes, No	No
64	Aux Outdoor Temp Source	29	Tstat, Outdoor, Wired Remote, Ext.	Tstat
65	Aux Output Trigger Point Temp	29	0˚ - 120˚	65˚
66	Aux Output Error Level	29	1-3	3
69	Comfort Recovery	24	On, Off	Off
70	Dry Contact Polarity	26	Open, Closed	Open
71	Dry Contact Use	26	Pan, Holiday	Holiday
75	Humidity Polarity	25	Open, Closed	Open
76	Dehumidify Polarity	25	Open, Closed	Open
77	Light Activation	26	On, Off	Off
78	Press Outdoor to Set Light Level	26	N/A	N/A
79	Press Outdoor to clean all messages	29	N/A	N/A

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Five-Year Warranty - This Product is warranted to be free from defects in material and workmanship. If it appears within five years from the date of original installation, whether or not actual use begins on that date, that the product does not meet this warranty, a new or remanufactured part, at the manufacturer's sole option to replace any defective part, will be provided without charge for the part itself provided the defective part is returned to the distributor through a qualified servicing dealer.

THIS WARRANTY DOES NOT INCLUDE LABOR OR OTHER COSTS incurred for diagnosing, repairing, removing, installing, shipping, servicing or handling of either defective parts or replacement parts. Such costs may be covered by a separate warranty provided by the installer.

THIS WARRANTY APPLIES ONLY TO PRODUCTS IN THEIR ORIGINAL INSTALLATION LOCATION AND BECOMES VOID UPON REINSTALLATION.

LIMITATIONS OF WARRANTIES – ALL IMPLIED WARRANTIES (INCLUDING IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY) ARE HEREBY LIMITED IN DURATION TO THE PERIOD FOR WHICH THE LIMITED WARRANTY IS GIVEN. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE MAY NOT APPLY TO YOU. THE EXPRESSED WARRANTIES MADE IN THIS WARRANTY ARE EXCLUSIVE AND MAY NOT BE ALTERED, ENLARGED, OR CHANGED BY ANY DISTRIBUTOR, DEALER, OR OTHER PERSON WHATSOEVER.

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6. Manufacturer products installed outside the continental U.S.A., Alaska, Hawaii, and Canada.
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8. ANY SPECIAL INDIRECT OR CONSEQUENTIAL PROPERTY OR COMMERCIAL DAMAGE OF ANY NATURE WHATSOEVER. Some states do not allow the exclusion of incidental or consequential damages, so the above may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which may vary from state to state.

Notes

Notes

Programming Worksheet

See page 20

DAY	PERIOD	START TIME	COOL	HEAT	
MONDAY	Unoccupied				
	Occupied 1				
	Occupied 2				
	Occupied 3				
TUESDAY	Unoccupied				*Copy Mon to Tues* ☐ *No* ☐ *Yes*
	Occupied 1				
	Occupied 2				
	Occupied 3				
WEDNESDAY	Unoccupied				*Copy Tues to Wed* ☐ *No* ☐ *Yes*
	Occupied 1				
	Occupied 2				
	Occupied 3				
THURSDAY	Unoccupied				*Copy Wed to Thurs* ☐ *No* ☐ *Yes*
	Occupied 1				
	Occupied 2				
	Occupied 3				
FRIDAY	Unoccupied				*Copy Thurs to Fri* ☐ *No* ☐ *Yes*
	Occupied 1				
	Occupied 2				
	Occupied 3				
SATURDAY	Unoccupied				*Copy Fri to Sat* ☐ *No* ☐ *Yes*
	Occupied 1				
	Occupied 2				
	Occupied 3				
SUNDAY	Unoccupied				*Copy Sat to Sun* ☐ *No* ☐ *Yes*
	Occupied 1				
	Occupied 2				
	Occupied 3				

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