

OPERATING MANUAL

T8000 Non-Programmable Models

T8500 Programmable Models



Performance PRO™ Series



- *Large 8 square inch blue display*
- *7 available outputs, including economizer*
- *SD memory card interface*
- *365-day, 20 holiday programmability*
- *7-day, 5-1-1, 5-2 programming*



Oil



Electric



Gas



Heat Pump

T8000
Series

THE PECO PERFORMANCE PRO T8000 SERIES

Thank you for choosing a PECO® Performance PRO™ thermostat. The Performance PRO T8000 Series is intended for use in residential and commercial environments. It is designed for and can support up to 3-HEAT/ 2-COOL configurations in conventional systems and heat pump applications. The Performance PRO also provides the capability to meet the requirements for ASHRAE 90.1-2004 and California Building Code Title 24 (2008 edition).

The Performance PRO T8000 Series is comprised of the T8000 non-programmable thermostat models and the T8500 programmable thermostat models. The T8500 model features an 8 square inch blue backlit display with dynamic menus, accessed using soft keys. All Performance PRO T8000 Series offer the following standard features: auto-changeover, optional remote sensors, occupancy sensors, three levels of keypad lockout, a PIN access code, filter replacement reminder, and a heat/cool Demand Indicator. The T8500 programmable models contain: up to four scheduled events per day, a 365-day calendar, 20 holidays, holiday override, temporary override, a Power Harvesting feature (also known as “power stealing”) to preserve battery life, Secure Digital (SD) card capability (card not included), and optional humidity control (T8532-IAQ only).

The T8000 Series can be powered by 24 VAC or batteries or both (recommended). The T8000 Series can control up to 7 outputs and monitor three external sensors. The T8000 Series mounts onto any PECO Performance PRO Series wallplate.

Table of Contents

T8000 Thermostat

The PECO Performance PRO T8000 Series.....	2
Quick reference: Default Display mode	5
Quick reference: Home Display mode & navigation	6
Quick reference: T8000 Home Display screen	7
Key operation.....	8
Set the clock, month, and day	11
Select Fahrenheit or Celsius temperature	12
Select the fan mode.....	13
Select system mode	14
Reset filter timer.....	15

T8500 Thermostat

Program the thermostat (T8500 models only)	16
Program scheduled events	17
Program override	19
Select humidity setpoints	20
Program a holiday	21
Load SD Card settings.....	23

T8000 Series Product Specifications.....	24
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CAUTION!

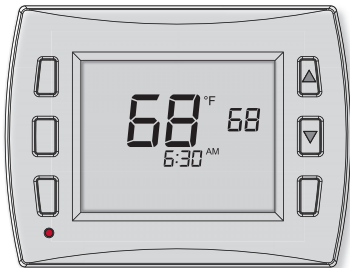
- READ INSTRUCTIONS CAREFULLY BEFORE ATTEMPTING TO OPERATE THIS THERMOSTAT.
- FOLLOW THE PERFORMANCE PRO INSTALLATION INSTRUCTIONS BEFORE PROCEEDING.
- Failure to observe safety information and comply with instructions could result in PERSONAL INJURY, DEATH AND/OR PROPERTY DAMAGE.
- Use this thermostat only as described in this manual.
- This is a 24 VAC low-voltage thermostat. Do not install on voltages higher than 30 VAC.
- Contact a qualified service person if at any time the thermostat does not operate properly.
- Use care to avoid static discharge to the thermostat.
- To avoid electrical shock or damage to equipment, disconnect power before installing or servicing and use only wiring with insulation rated for full thermostat operating voltage.
- To avoid potential fire and/or explosion, do not use in potentially flammable or explosive atmospheres.
- This product, when installed, will be part of an engineered system whose specifications and performance characteristics are not designed nor controlled by PECO.
- All wiring and applications must conform to local and national building codes and ordinances Applications and national codes must be reviewed prior to installation to assure the installation is functional and safe.

IMPORTANT NOTE: This thermostat was shipped with factory default settings. The thermostat's installer may have configured the thermostat differently from the factory-default settings, and may have modified or disabled certain features. Contact the installer or a service technician if there are questions about the thermostat's configuration.

QUICK REFERENCE: DEFAULT DISPLAY MODE

Default Display

The factory programmed settings show the time, temperature, and setpoint. This is called the Default Display. The Default Display appears after a short period of inactivity. The Default Display can be custom configured to show user-selected items only (see Service Menu 520 in “Performance PRO T8000 Series Installation Guide”).

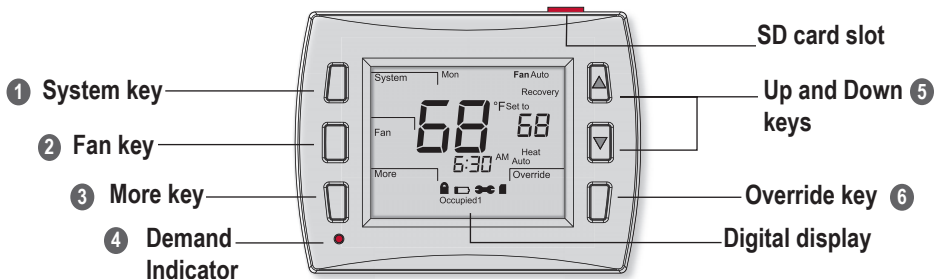


i Note: The Battery Indicator, Service Indicator, Filter Indicator, and Secure Digital (SD) icons appear at bottom of digital display if user action is required.

QUICK REFERENCE: HOME DISPLAY MODE & NAVIGATION

Home Display

The Performance PRO T8000 Series has two ▲ / ▼ (Up and Down) keys and four soft keys (1-3; 6 below). **Press any key to enter Home Display from Default Display.** Press soft keys to enter submenus. Soft keys have multiple functions; available submenus depend on menu navigation.



Navigate submenu options to customize thermostat settings. Available options are:

Next - Advances to the next menu item in sequence; current selections are held in temporary memory until user completes the menu sequence by pressing “Done.”

Go Back - Returns back one step in menu sequence or reverts to Home Display.

Changes are not saved if user selects “Go Back” from the first option in sequence.

Done - Saves settings and reverts to the Home Display.

Cancel - Discards changes and reverts to the Home Display.

QUICK REFERENCE: T8000 HOME DISPLAY SCREEN

System key

Press to enter system settings:
Off/Heat/Cool/
Auto (see pp. 8, 14)

Current day

(see p. 11)

Current temperature

(see p. 12)

Fan

Displays Fan/Auto/
On when activated
(see pp. 9, 13)

System

Mon

Fan Auto

Recovery

Recovery

Indicates thermostat
is in recovery mode

Fan key

Press to enter
fan display
(see pp. 9, 13)

Fan

68

°F Set to

68

**Setpoint
temperature**
(see pp. 16-22)

More key

Press to view more
options from Home
Display (see p. 9)

More

6:30 AM

Heat
Auto

System mode
Displays current
system mode
(see pp. 8, 14)

Current time
(see p. 11)

**Keypad
Lockout**
(see p. 10)

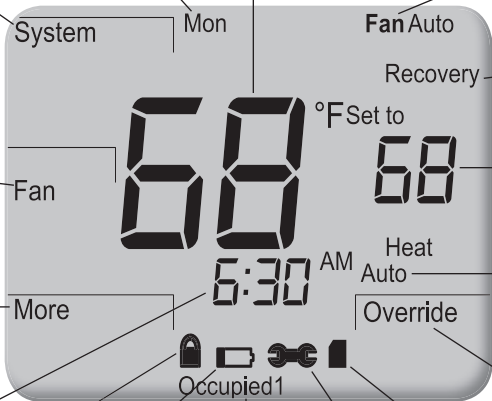
Battery Indicator
Appears when
battery is low
(see p. 10)

**Program
scheduled
events**
(see p. 17)

**Service
Indicator**
(see p. 10)

SD card
(see p. 10)

Override key
Press to override
scheduled events
(see pp. 9, 19)



KEY OPERATION

1 System key

Used to control the operating mode of the Performance PRO T8000 Series thermostats. The options available are dependent on System Type selected in Service Menu 110 (see Advanced Configuration in “Performance PRO T8000 Series Installation Guide”).

System modes are:

HEAT – Select for the system to operate in heating mode only. Only one setpoint is displayed.

COOL – Select for system to operate in cooling mode only. Only one setpoint is displayed.

AUTO – Allows system to control to both the Heat and Cool Setpoints. The system will automatically changeover between heating and cooling modes as room temperature varies. Cool Setpoint must always be greater than Heat Setpoint by the deadband value.

OFF – Disables all thermostat outputs; only zone temperature and time are displayed.

EMERGENCY (Em)– Emergency heat can be used when the Heat Pump cannot keep up with the heat load. Use Service Menu 110 (System Type 6 & 11) to enable.

Note: Deadband is the user-defined minimum difference between the Cool Setpoint and Heat Setpoint (see Service Menu 380).

KEY OPERATION (CONT.)

2 Fan key

Used with two different menu options:

ON - Continuous fan operation.

AUTO - Fan is activated only when there is demand for heat or cool, with some exceptions.

Note: Several Service Menu options affect the fan operation (See Advanced Configuration in the “Performance PRO T8000 Series Installation Guide.”)

3 More key

Used to view more menu options. From the Default Display, press More to show more menu options that may be accessed by pressing the soft keys.

4 Demand Indicator

Light emitting diode (LED) on lower left front panel that displays red when heating and green when cooling. Available only when 24 VAC power is connected to the thermostat.

5 Up and Down keys (▲ /▼)

Used in menus to increase or decrease variable settings, or switch to the next input.

Note: Pressing ▲ /▼ keys show the Override display unless Holiday mode is set.

6 Override key

Used to create a temporary override of current setpoint temperature. Pressing Override will display the “Next” and “Done” options and the setpoint will begin flashing.

KEY OPERATION (CONT.)

Temporary Override – The active setpoint is taken from setpoints defined in the Override menu. (In Home Display, “Override” flashes during the override time period if selected.)

Service Indicator

Icon appears to notify the user that the remote temperature sensors are reading out of range.

Battery Indicator

Icon appears only when the battery level is low and flashes when the battery level is critically low. Two AA alkaline batteries (2.6 – 3.1VDC) have an approximate 1-year life expectancy.

Keypad Lockout

Icon appears if any type of keypad lockout is active. Keypad lockout blocks access to certain features of the thermostat. (See Service Menu 340 to enable Keypad Lockout).

Filter Filter Indicator

Icon appears in the Default Display when the reminder timer expires (see Service Menu 230). The thermostat will continue to return to the filter menu until the Done key is pressed. After the Filter Indicator icon appears, pressing Done will restart the filter timer.

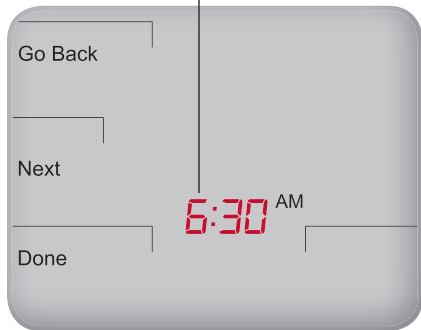
Secure Digital (SD)

Icon appears (flashes) when SD card is inserted. Optional SD card not provided. SD card functionality allows user to upload/download settings to/from a PECO-formatted SD card (see also “Load SD card settings”).

SET THE CLOCK, MONTH, AND DAY

PRESS ANY KEY TO BEGIN

In clock mode press ▲ / ▼ to select clock hour.

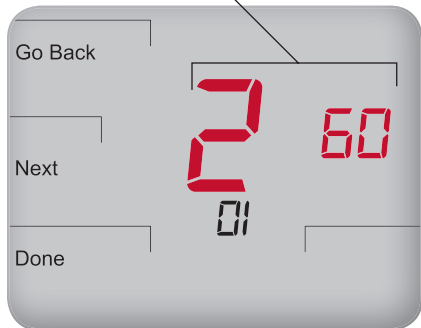


i Note: At any time, press **Go Back** to return to the previous menu, **Next** to advance and view more options, or **Done** to save changes and return home.

1. Press **More** to view menu options.
2. Press **Clock** to access menu options.
3. Press ▲ / ▼ to select 12 or 24 HR format, then press **Next**.
4. Press ▲ / ▼ to select clock hour, then press **Next**.
5. Press ▲ / ▼ to select clock minutes, then press **Next**.
6. Press ▲ / ▼ to select clock year, then press **Next**.
7. Press ▲ / ▼ to select current month, then press **Next**.
8. Press ▲ / ▼ to select current date. **Days** and **Mo** (month) appears.
9. Press **Done** to finish clock mode.

SELECT FAHRENHEIT OR CELSIUS TEMPERATURE

After entering the Service Menu mode, press **Next** continuously until menu “260” appears.



1. Press the lower left and lower right keys simultaneously for about five seconds. **Go Back**, **Next**, and **Done** appear.
2. Press **Next** continuously until menu “260” appears.
3. In Service Menu 260, Press ▲ / ▼ to select the desired temperature display:
 - “1” for Fahrenheit (default)
 - “0” for Celsius
4. Press **Done** when you have completed your selection.

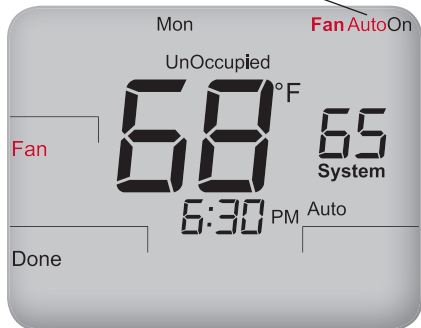
i Note: To custom configure thermostat settings, access more Service Menus (See Table 2. Advanced Configuration in the “Performance PRO T8000 Series Installation Guide”).

i Note: After you complete your selection, the Home Display will appear with temperature in the format selected.

SELECT THE FAN MODE

PRESS ANY KEY TO BEGIN

In Fan mode, press ▲ / ▼ to select desired option.



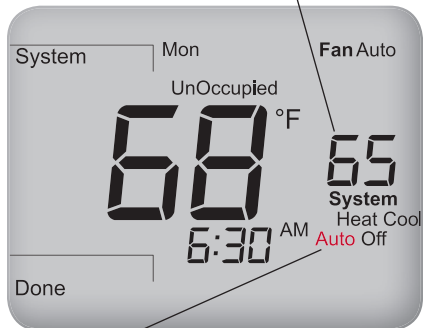
1. Press **Fan** to set fan operation.
2. Press ▲ / ▼ to select “On,” or “Auto.”
Note: Selected option flashes.
3. Select **Done** to save changes.

i Note: “On” mode indicates continuous output. “Auto” mode indicates that fan is activated only when there is demand for heat or cool. Some exceptions apply (see Advanced Configuration in the “Performance PRO T8000 Series Installation Guide”).

SELECT SYSTEM MODE

PRESS ANY KEY TO BEGIN

Setpoint is displayed on the right side of the screen.



Press ▲ / ▼ to scroll through options for system preferences. The selected option flashes.

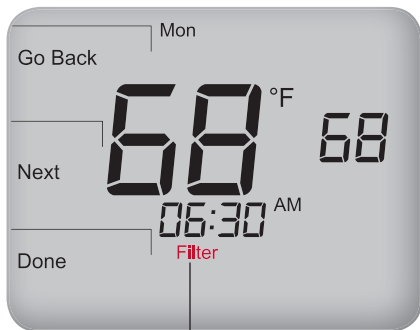
i Note: System modes available depend upon which system type is selected in Service Menus.

1. Press **System** to select system preferences.
Note: Selected option flashes.
2. Press ▲ / ▼ to select **Heat, Cool, Auto, Off, or Em (Emergency)**.
3. Press **Done** to save changes.

In “Heat” and “Cool” modes, only one setpoint is displayed for each, and only the selected mode (e.g., Heat) is applied. “Auto” mode switches automatically between Heat and Cool. Auto mode controls the room’s temperature to the programmed Heat and Cool Setpoints. “Off” mode disables all thermostat outputs; and only the zone temperature and clock are displayed. If Emergency (Em) heat is enabled in a Heat Pump system, Emergency acts as the primary heat source.

RESET FILTER TIMER

PRESS ANY KEY TO BEGIN



When the filter expires, the Home Display will automatically show the **Filter Indicator** icon.

The Filter Indicator serves as a reminder to change the furnace filter (see note below). When the filter timer expires, the Filter Indicator will be lit continuously.


1. From the Default Display, press any key to enter the **Filter** mode. (**Filter**, **Go Back** and **Done** appear)
2. Press **Done** to reset the filter timer. Note: Pressing Done restarts filter timer with previous time value selected.
3. Press **Go Back** to bypass the reminder and return to the Home Display.


i Note: The thermostat will return to the Filter menu from the Default Display until **Done** is selected (see Service Menu 230 in the “Performance PRO T8000 Series Installation Guide”).

PROGRAM THE THERMOSTAT (T8500 MODELS ONLY)

Each day has two or four scheduled events (Occupied1, Occupied2, Unocc1, and Unocc2) per day, depending on Service Menu configuration. Each event can be programmed with a start time and Heat and Cool Setpoints. Heat Setpoint controls system heating during cold weather. Cool Setpoint controls the cooling system during hot weather. The T8500 is preprogrammed with factory default settings for seven days of the week as follows:

Time Period	Start Time	Heat Setpoint Temperature	Cool Setpoint Temperature
Occupied1	8:00 am	70° F (21° C)	75° F (24.0° C)
Unocc1	10:00 pm	55° F (10° C)	85° F (29.5° C)
Occupied2	—	—	—
Unocc2	—	—	—

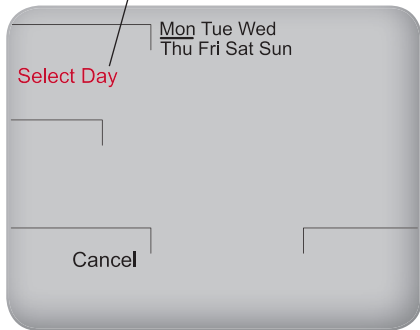
 **Note:** To change the preprogrammed times and/or setpoint temperatures, follow the instructions under “Program scheduled events.”

 **Note:** See Service Menu 240 to enable two or four scheduled events per day.

PROGRAM SCHEDULED EVENTS

PRESS ANY KEY TO BEGIN

Press **Select Day** to underline highlighted day to which a scheduled event will be applied.



i Note: At any time, press **Go Back** to return to the previous menu, **Next** to advance and view more options, or **Done** to save changes and return home.

Schedule two or four events per day:
Occupied1, Occupied2, Unocc1, and Unocc2.

1. Press **More** to view options.
2. Press **Schedule** to enter main menu.
3. Press **▲ / ▼** to highlight day.
Note: Selected day flashes. (Optional: Select **View** to modify existing event.)
4. Press **Edit** to apply scheduled events for the selected day(s).
5. Press **Select Day**. **Note:** Selected day flashes. (Continue pressing **▲ / ▼** then press **Select Day** for multiple days.)
6. Press **▲ / ▼** to highlight the day(s) to be programmed. **Note:** Selected day(s) for scheduled events must be underlined.
7. Press **Next** to advance to event.

PROGRAM SCHEDULED EVENTS

PRESS ANY KEY TO BEGIN

Press ▲ / ▼ to select a desired Heat Setpoint for the currently selected scheduled event (Occupied1).



- i Note:** To return to the menu of scheduled events and continue programming, select **Next** after Step 11.
- i Note:** To program 5-1-1 day or 5-2 days, see Service Menu 100 (“Performance PRO T8000 Series Installation Guide”). Block-programmed days flash as a group.

8. Press ▲ / ▼ to select a scheduled event (e.g., Occupied1, etc.), then **Next**.
9. Press ▲ / ▼ to schedule *start time* for event (in 15-minute periods), then **Next**.

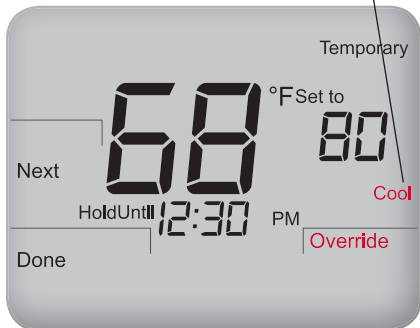
Now select a Heat Setpoint and/ or Cool Setpoint for the scheduled event (available options depend upon system type selected).

10. Press ▲ / ▼ to select desired Heat Setpoint, then press **Next**.
11. Press ▲ / ▼ to select desired Cool Setpoint, then press **Next**. **Note:** The next event (e.g., Unocc1) begins flashing after **Next** is selected. Complete steps 3-11 for each scheduled event.
12. Press **Done** to exit schedule mode. **Note:** Pressing **Go Back** after step 11 will show **Select Day** on display.

PROGRAM OVERRIDE

PRESS ANY KEY TO BEGIN

Example shows how to select a **Cool Setpoint** for a temporary period in System Auto mode.



Override allows application of temporary heat or cool settings. (Example uses System Auto.)

1. Press **Override**, or ▲ / ▼ key.
Note: Setpoint flashes. “Hold until” time appears and is changed to show length of override (up to the maximum hold time specified in Service Menu 395).
2. Press ▲ / ▼ to select a Cool Setpoint, then press **Next**.
3. Press ▲ / ▼ to select a Heat Setpoint, then press **Next**.
4. Press ▲ / ▼ to adjust time (in 15-minute periods) until override remains in effect.
5. Press **Done** to save changes and exit.
Note: **Override** remains (flashing) in effect until the time period ends.
Note: Press **Cancel** to exit Override.

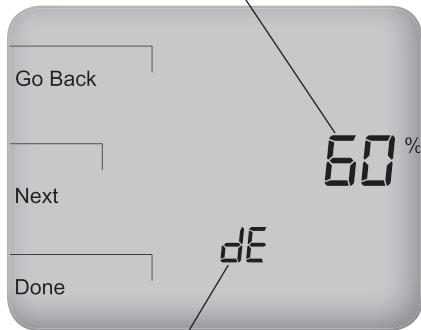
i Note: Setpoints available depend on the system mode selected (see “Select System Preferences”). Override display options can be defined in Service Menus.

i Note: The installer setup can limit the length of time for an override to 1, 2, 3, or 4 hours beyond the current time.

SELECT HUMIDITY SETPOINTS

PRESS ANY KEY TO BEGIN

Adjust the Dehumidify Setpoint.



Press Humidity to view more options and to select a Dehumidify Setpoint.

i Note: Instruction assumes a humidity sensor is installed and dehumidifier is enabled (see Service Menu 490). T8532-IAQ models must be ordered separately.

If the thermostat is model T8532-IAQ, a humidity sensor is present. A humidity sensor allows user to set dehumidify and humidify control setpoints.

1. Press **More** to view options.
2. Press **Humidity** to view more options.
Note: “DE” appears in clock area. The Dehumidify Setpoint shows with %.
3. Press **▲ / ▼** to select the desired Dehumidify Setpoint.
4. Press **Next**.
5. Press **▲ / ▼** to select the desired Humidify Setpoint.
6. Press **Done**. Settings are saved.

PROGRAM A HOLIDAY

PRESS ANY KEY TO BEGIN

20 holidays may be programmed. System type shown supports 1-HEAT and 1-COOL.



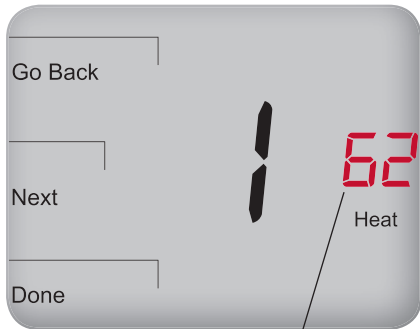
Press ▲ / ▼ to select the day (e.g., 31) that the holiday starts (Example used is Holiday 1).

i Note: Performance PRO supports 20 holidays, leap years, and daylight-saving time.

1. Press **More** to view more options.
2. Press **Holiday** to enter menu.
3. Press ▲ / ▼ to select holiday number (1-20). **Note:** Month number and day of month appear below in clock area.
4. Press **Edit** to select holiday month (“**Mo**” icon will appear).
5. Press ▲ / ▼ to select a month (numerical), then press **Next**.
6. Press ▲ / ▼ to select day (numerical) that holiday starts (**Days** icon will appear), then press **Next**.
7. Press ▲ / ▼ to select holiday length, which is number of days that the holiday period lasts (1-99), then press **Next**.

PROGRAM A HOLIDAY (CONT.)

PRESS ANY KEY TO BEGIN



i Note: Select the Heat Setpoint (and the Cool Setpoint) for the holiday after selecting the number of days the holiday period lasts.

Now select the Heat and Cool Setpoints for the same holiday number (e.g., “1”).

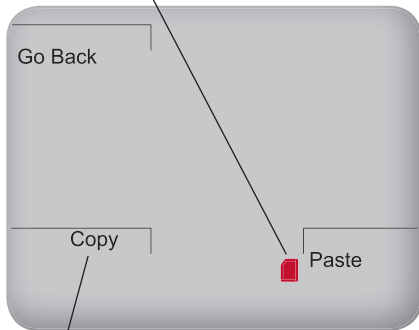
8. Press ▲ / ▼ to select the Heat Setpoint, then **Next**.
9. Press ▲ / ▼ to select the Cool Setpoint, then **Next**.
Optional: To program multiple holidays, wait for the Holiday number to flash (after step 9). Press ▲ / ▼ to select a new Holiday number; repeat steps 3-9.
10. Press **DONE** to complete the holiday display mode.

i Note: If “Heat” or “Cool” flashes during process, the deadband value will be enforced; the opposing Heat or Cool Setpoints will be automatically adjusted (for an explanation of deadband value, see Key operation).

LOAD SD CARD SETTINGS

PRESS ANY KEY TO BEGIN

When the SD card is inserted, the **SD icon** begins flashing. Icon stops flashing when processing data.



Press **Paste** to copy the settings from SD card to the thermostat.

i Note: If SD card is locked, only **Paste** appears; user may only copy from SD card to thermostat.

Use the SD card to transfer customized settings *to* or *from* the thermostat. Insert the SD card into the thermostat only from Home or Default Display.

1. Insert the SD card into the slot located on top of the thermostat where indicated. (SD icon begins flashing).
Note: **Copy** and **Paste** options appear.
2. Press **Paste** to copy the settings *from* SD card to the thermostat.
3. Press **Copy** to transfer the settings *from* the thermostat to the SD card.
4. Press **Go Back** to complete process.

i Note: After selecting one of the above options, the SD card display remains active until user selects **Go Back** and the SD card is removed (or menu reverts to Default Display).

T8000 SERIES PRODUCT SPECIFICATIONS

Temperature Control Range:	50° to 90° F (10° to 32° C)
Differential:	1° F (0.5°C)
Input Power:	24 VAC (20-30 VAC) or 50/60Hz (+/-10%) AA alkaline batteries (both recommended); 5mm terminals accept 14-24 AWG stranded/solid wire.
Output Ratings:	20-30 VAC 0.02-1.0A per terminal; W1 (B/O), W2 (AUX), G, A, E, Y1, Y2. Note: Collectively, total current draw must not exceed 2.5A.
Operational Temperature:	0° to 120° F (-17° to 48°C)
Shipping Temperature:	-20° to 130°F (-29°to 54°C)
Operating Humidity:	5% to 95% RH, non-condensing
Physical dimensions:	T8000/T8500 Thermostat: 4.3" H x 5.7" W x 1.3"D with 3.2" x 2.5" / 8 square inch viewable liquid crystal display (LCD)



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