

T8168 OPERATING MANUAL



ON/OFF & Proportional Control

- Programmable or Non-programmable
- 0-10 VDC, Three Wire Floating, ON-OFF Control
- Keypad Lock Out
- Large 8 square inch blue display
- Easy User Interface

Performance PRO™

THE PECO PERFORMANCE PRO T8168

Thank you for choosing a PECO® Performance PRO™ thermostat. This thermostat is intended for use in residential and commercial environments. It is designed for and can support up to 2-HEAT/2-COOL conventional, Three Wire Floating, and 0-10VDC thermostat applications.

The Performance PRO™ T8168 is configurable to meet different operational requirements, including settings for programmable or non-programmable operation. Features include an 8 square inch blue backlit display with dynamic menus accessed using soft keys, auto-changeover, optional remote sensors, occupancy sensors, three levels of keypad lockout, a PIN access code, and a heat/cool demand indicator. When set up for programmable mode the system provides two or four scheduled events per day, a 365-day calendar, 20 holidays, holiday override, and temporary override.

The T8168 is powered by 24 VAC. This thermostat includes memory for permanent storage of user settings in the event of a power failure.

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CAUTION!

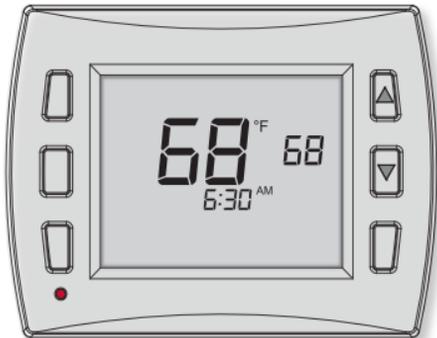
- READ INSTRUCTIONS CAREFULLY BEFORE ATTEMPTING TO OPERATE THIS THERMOSTAT.
- FOLLOW THE PERFORMANCE PRO INSTALLATION INSTRUCTIONS BEFORE PROCEEDING.
- Failure to observe safety information and comply with instructions could result in PERSONAL INJURY, DEATH AND/OR PROPERTY DAMAGE.
- Use this thermostat 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 Installation Guide”).



Note: Indicator notifications may appear in the digital display if user action is required.

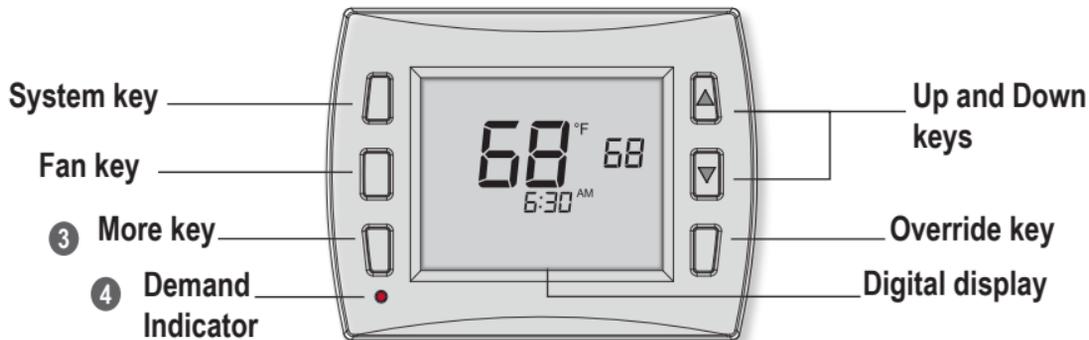
QUICK REFERENCE: HOME DISPLAY MODE & NAVIGATION

Home Display

The Performance PRO™ T8168 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.

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

Done - Saves settings and reverts to the Home Display.

Cancel - Discards set point override and reverts to the Home Display.

Exit- Discards changes and reverts to the Home Display.

QUICK REFERENCE: T8168 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 & Speed when
activated
(see pp. 9, 13)

Fan key

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

System

Mon

Fan Auto
HI

Fan

68 °F

68

+2

Set Point Temperature

(see pp. 16-22)

Stage 2

If Available

More key

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

More

6:30 AM

Auto

System mode

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

Override

Occupied1



Exit

Override key

Press to override
scheduled events
(see pp. 9, 18)

Current time

(see p. 11)

Program scheduled events

(see p.16)

Wi-Fi Signal

(Optional)

Exit

(see p.10)



KEY OPERATION

System Key

Used to control the operating mode of the thermostats. The options available are dependent on System Type selected in Service Menu 110 (see the Installation Guide).

System modes are:

HEAT – Select for the system to operate in heating mode only.

COOL – Select for system to operate in cooling mode only.

AUTO – Allows the system to automatically changeover between heating and cooling modes as room temperature varies. Changeover requires the thermostat to transition through the deadband. The user selected set point is the control point unless the system is running to a schedule.

OFF – Turns all outputs off; only zone temperature and time are displayed.

Note: Deadband is set in the service menu and is used when scheduling events (see Service Menu 380).

KEY OPERATION (CONT.)

Fan key

ON - Continuous fan operation.

AUTO - Cycled Fan operation. Fan cycles off when the set point is satisfied.

HI-MED-LO - Selectable speeds based on system.

In fan staged operation the user does not have access to speed selection.

More key

Used to view more menu options. From the Home Display, press

“More” to show more menu options that may be accessed by pressing the soft keys.

Demand Indicator

An indicator light on lower left front panel will display red when heating and green when cooling.

Up and Down keys (▲ / ▼)

Used in menus to increase or decrease set point or for menu navigation.

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

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.)

Additional Key Operation

Cancel - Used to Cancel a user Override. Thermostat will resume normal operation.

Exit - Discards changes and returns to the Home display.

Setback - Thermostat is operating at Setback values. (See Service Menus 310 & 320)

Display Messages

This thermostat can be set to display the following codes:

Fdd - Indicates an economizer fault*, thermostat continues normal operation.

Door - Indicates a door/window is open, all outputs are turned off until door/window is closed.

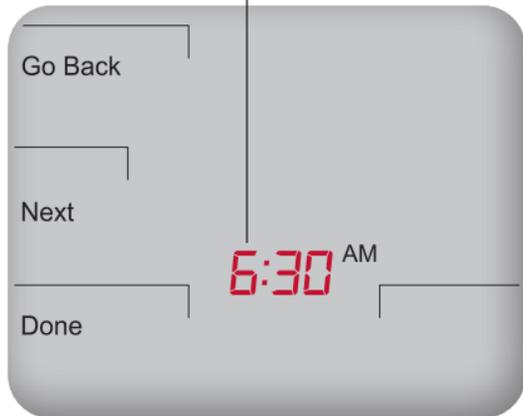
Err - Indicates a contact closure at S1 and SC*. All outputs are turned off.

* Indicate that your system may require service.

SET THE CLOCK, MONTH, AND DAY

PRESS ANY KEY TO BEGIN

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

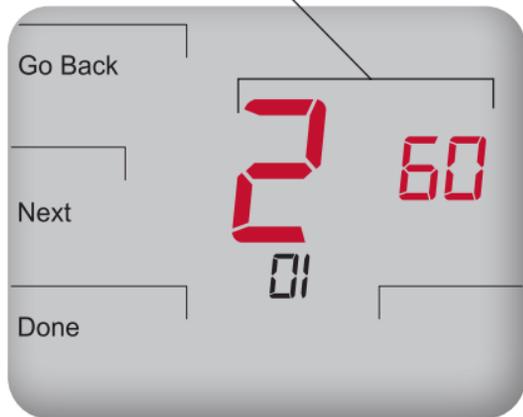


Note: At any time, press **Go Back** to return to the previous menu, **Next** to advance and view more options, or **Done** to save changes and return home.

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.

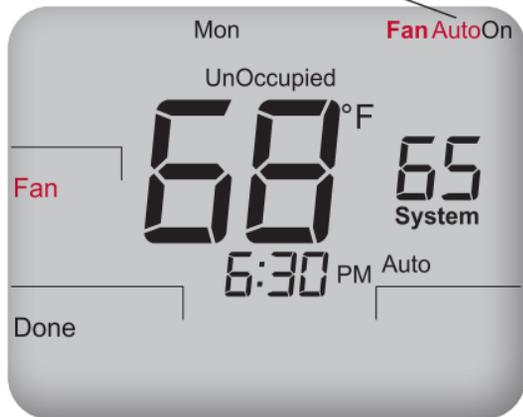
i Note: To custom configure thermostat settings, access more Service Menus see the T8168 Installation Guide.

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 “**Fan On**”, “**Fan Auto**”, may also include selections of “**HI**”, “**MED**”, “**LO**.” Fan speeds may be disabled or visible but not selectable. Access depends on fan setup at installation.
3. **Note:** Selected option flashes.
4. Select **Done** to save changes.

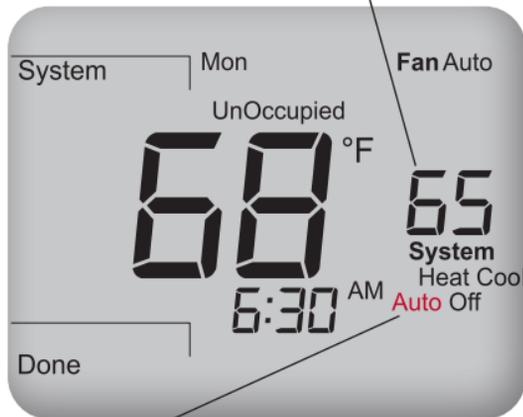


Note: “On” mode indicates continuous output. “Auto” mode indicates that fan is activated only when there is demand for heat or cool.

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.

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**, or **Off**.
3. Press **Done** to save changes.

The current setpoint is displayed 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 or user selected set point. "Off" mode disables all thermostat outputs; and only the zone temperature and clock are displayed.

PROGRAM THE THERMOSTAT

Each day has two or four scheduled events (Occupied1, Occupied2, Unocc1, and Unocc2) per day. Each event can be programmed with a start time, along with a Heat and Cool Setpoints. The preprogrammed factory daily default settings are as follows:

2-Event Default Schedule

Time Period	Start Time	Heat Setpoint	Cool Setpoint
Occupied1	6:00 am	70° F (21° C)	78° F (24.0° C)
Unocc1	5:00 pm	62° F (10° C)	82° F (29.5° C)

4-Event Default Schedule

Time Period	Start Time	Heat Setpoint	Cool Setpoint
Occupied1	6:00 am	70° F (21° C)	78° F (24.0° C)
Unocc1	8:00 am	62° F (10° C)	85° F (29.5° C)
Occupied2	6:00 pm	70° F (21° C)	78° F (24.0° C)
Unocc2	10:00 pm	62° F (10° C)	82° F (29.5° C)

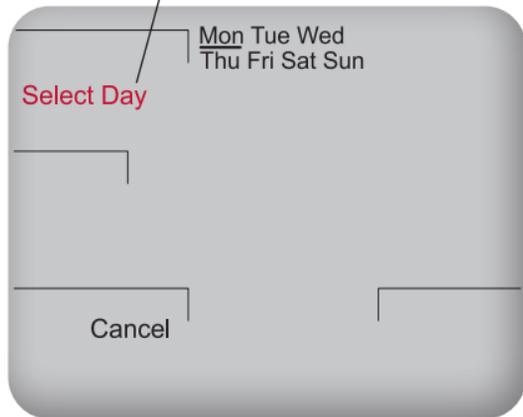
Note: To change the preprogrammed times and/or setpoint temperatures, follow the instructions under “Program scheduled events.”

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.
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 (CONT.)

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 (See the 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**.

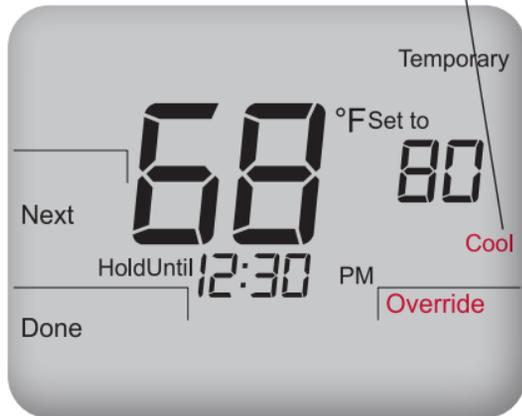
Now select a Heat Setpoint and/ or Cool Setpoint for the scheduled event (available options depend upon system type selected).

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 **Setpoint** for a temporary period in System Auto mode.



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

Override allows application of temporary set

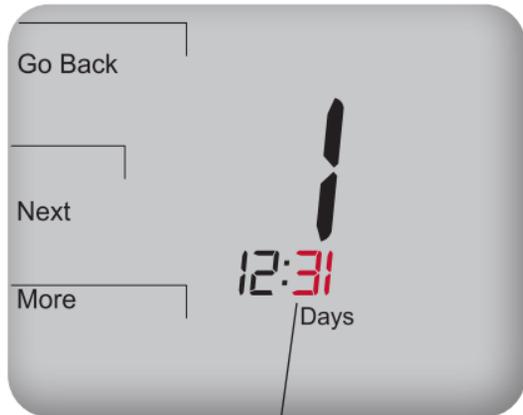
point setting. (Example uses System Auto.)

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 the Setpoint, then press **Next**.
3. Press ▲ / ▼ to adjust time (in 15-minute periods) until override remains in effect.
4. Press **Done** to save changes and exit.
Note: **Override** remains (flashing) in effect until the time period ends.
Note: Press **Cancel** to exit Override.

PROGRAM A HOLIDAY

PRESS ANY KEY TO BEGIN

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



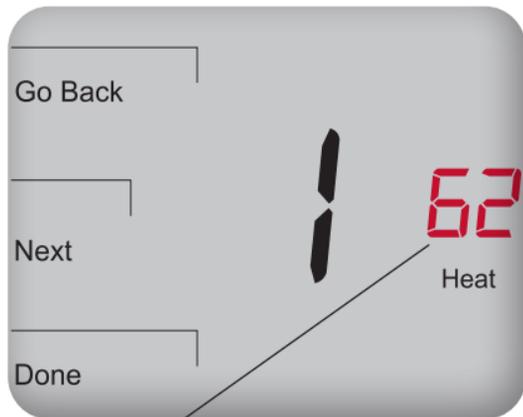
Press ▲ / ▼ to select the day (e.g., 31) that the holiday starts (Example used is Holiday 1).

i Note: The T8168 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



Note: Set the Heat and Cool Setpoint after selecting the number of days the holiday period lasts.

Note: The Holiday is not retained and is deleted after being activated.

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: There is a forced separation between heat and cool, equal to the deadband value; the opposing Heat or Cool Setpoints will be automatically adjusted (for an explanation of deadband value, see Key operation).

THERMOSTAT FEATURES

This thermostat offers special features to support advanced control requirements.

Fan Control - One 0-10 VDC and up to three 24 VAC ON/OFF outputs.

Heat Outputs - Up to two Stages of ON/OFF and one 0-10VDC/4-20mA.

Fault Detection - For indication of an Economizer fault, Door open, or user defined Error.

Keypad Lockout - Three levels of lockout with optional PIN requirement.

Proportional Integral Algorithm - Controls heat and cool operation on proportional outputs.

WiFi - Some models feature Wi-Fi operation.

BACnet - Some models feature BACnet communication over IP or MSTP.

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T8168 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%) 5mm terminals accept 14-24 AWG stranded/solid wire.
Output Ratings:	20-30 VAC Terminals Y1, Y2, W1, W2, G, G1: 10 VA each Terminals YD,WD,GD: 0-10VDC Loads must be 1.2K ohms minimum 4-20mA Loads must be 600 ohms maximum
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:	T8168 Thermostat: 4.3" H x 5.7" W x 1.3"D



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