Tantalus ST-1480 Smart Thermostat

Operating and Installation Manual

ENERGY STAR PARTNER

Operating and

Installation Manual

Congratulations on the purchase of your new thermostat. It has been designed for easy programming to save you on energy costs and allow a comfortable living environment.

Features:

- Auto Mode programming of your yearly Heating and Cooling needs
- Easy adjustment of temperature and schedule
- EnergyStar® compliant presets to help reduce heating and cooling costs
- Wirelessly communicates with your utility
- Notifies you and automatically responds to utility demand response programs
- Single button Conserve Mode operation
- Large, easy to read backlit display
- Silent operation
- Protection against installation short circuits

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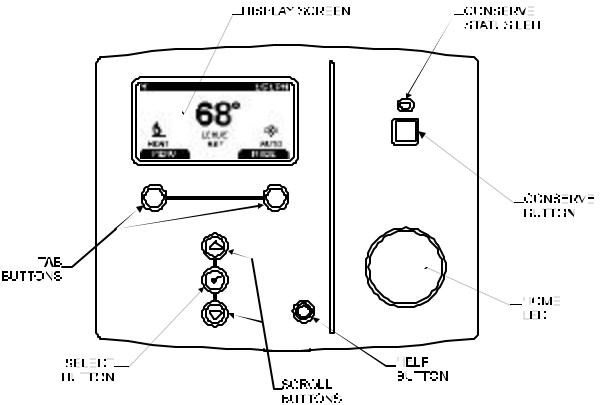
OPERATING THE THERMOSTAT

Working Modes

The thermostat has two working modes:

- **Normal Operating Mode**: In this mode you can program the SETPOINT temperatures, the schedules and remaining parameters of the thermostat configuration.
- **Conservation Mode:** When set in this mode by either you or through a remote request from your utility, the scheduled SETPOINT values are modified to save energy; you cannot modify any settings that may affect the objective temperatures or the HVAC equipment operation.

NORMAL OPERATING MODE

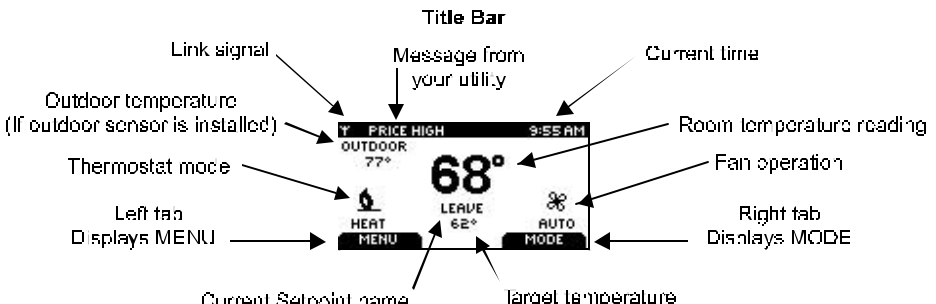


Navigating the Controls

The function of the *LEFT* and *RIGHT TAB* buttons appears on the bottom of the display screen. Use the *SCROLL* (? ?) buttons to move through the menu items and options, and to change highlighted values. Press the *SELECT* (v) button to select or accept highlighted menu items. You can always go back or cancel prior to saving changes.

Home Screen

The Home Screen displays current temperature and operation data. To view this screen when the backlight is off just press any of the buttons . Icons such as the heat or fan are animated when the equipment is running.



Title Bar

The current time is displayed in the upper right corner of the Title Bar while in the upper left corner there is an icon showing the communications link status between the thermostat and the utility meter:

 means Link OFF,  means Link ON,

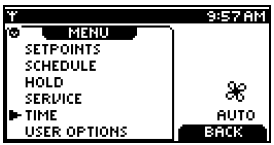
The Title Bar also displays messages sent through the communications link to you by your utility (e.g., the Electricity Rate).

HELP button

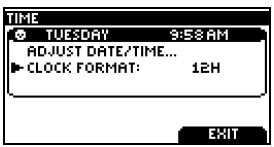
The HELP (?) button provides you with information on how to navigate through the individual menu screens. It will help you quickly change settings without referring to this user manual; however, it does not replace it so please keep this manual for future reference.

Setting the Time

The current date and time need to be set at initial installation and after battery replacement. You can change the day, time, enable a 24h clock readout, and change from daylight saving to standard time by selecting TIME from the Main Menu. You can always change between 12H or 24H clock format.



Press the Left Tab button on the home screen to view the Main Menu
Use the *SCROLL* buttons to select the TIME menu.
Press *SELECT* to enter the TIME menu.



Use the *SCROLL* buttons to select between the ADJUST DATE/TIME and the CLOCK FORMAT menus.
To change between 12 and 24 hour clock formats, press SELECT on the CLOCK FORMAT menu item. The setting will be underlined. You can change it using the *SCROLL* buttons and then pressing SELECT.

To adjust the date and time, press SELECT on the ADJUST DAY/TIME menu item.
The underlined selection will be changed using the *SCROLL* buttons.
Press *SELECT* to move between hour and minute adjustment.
Press SAVE CHANGES to accept the new settings and return to the TIME menu.

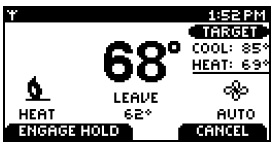
Default Schedule

The thermostat's Schedule is factory programmed in accordance with EnergyStar guidelineswhich define the START TIMES and SETPOINTS listed below (Note that a SETPOINT is defined by a NAME, and HEAT & COOL temperatures). The thermostat anticipates the time required to reach a desired temperature prior to the start of the SETPOINT time; therefore, you only need to set the desired time for the SETPOINT temperature.

SCHEDULE							
Mon. to Fri.				***Sat. & Sun.***			
START TIMES	***SETPOINT***			***START TIMES***	***SETPOINT***		
	NAME	HEAT	COOL		NAME	HEAT	COOL
6:00 am	Wake	70°F (21°C)	78°F (26°C)	8:00 am	Wake	70°F (21°C)	78°F (26°C)
8:00 am	Leave	62°F (17°C)	85°F (29°C)				
6:00 pm	Return	70°F (21°C)	78°F (26°C)	11:00 pm	Sleep	62°F (17°C)	82°F (28°C)
10:00 pm	Sleep	62°F (17°C)	82°F (28°C)				

Temporary HOLD

You temporarily adjust the temperature warmer or cooler, without affecting the pre-set programming, through the use of a temporary hold. The thermostat will remain at the temporary HOLD temperature until the next scheduled SETPOINT.



From the home screen, press either of the *SCROLL* buttons to view this screen. Continue to press either of the SCROLL buttons to highlight the operating target SETPOINT (HEAT or COOL), which will be underlined.

Press the SELECT button to toggle between the HEAT and COOL temperatures.

Set the desired temperature using the *SCROLL* buttons.

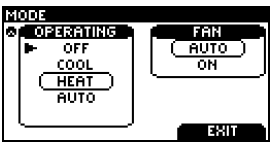
Press the *LEFT TAB* to ENGAGE HOLD, or *RIGHT TAB* to CANCEL and return to the normal Home Screen.

When TEMPORARY HOLD is engaged the screen will be as shown below:

To cancel a HOLD, press a *SCROLL* button to return to this screen.
Press the *RIGHT TAB* to CANCEL HOLD, or *LEFT TAB* to ENGAGE HOLD (continue the HOLD) and return to the normal Home Screen.

Heating and Cooling Modes

The thermostat is pre-set for heating operation (HEAT). You can manually change the operating mode between AUTO, HEAT, COOL, OFF, and, for heat pump applications with auxiliary heat, EMERG.



Press the RIGHT TAB button on the home screen to view this screen.

Use the *SCROLL* buttons to select the desired operating mode. Press *SELECT* to engage the operating mode.

AUTO: The thermostat automatically selects heating or cooling depending on the indoor temperature.

HEAT: The thermostat controls only the heating system.

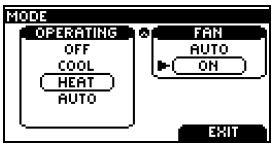
COOL: The thermostat controls only the cooling system.

OFF: Heating and cooling systems are off.

EMERG: **Note: only for heat pumps with auxiliary heat**. The thermostat only controls the Emergency (Auxiliary) heat which leaves the heat pump's compressor locked out. Use this setting only when you suspect the heat pump is out of service or the outdoor conditions render inefficient the operation of the heat pump.

Fan Modes

You can manually change the fan mode between AUTO and ON.



Press the Right Tab button on the home screen to view this screen

SCROLL through the operating modes to get to the fan modes, then press *SELECT* to engage the desired fan mode.

AUTO: The fan runs only when the heating, cooling, or emergency systems are on. For conventional systems with the option FAN ON IN HEAT set to NO, the fan is not controlled by the thermostat but by the furnace.

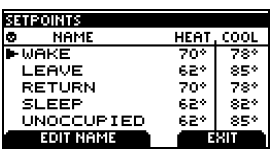
ON: The fan runs continuously.

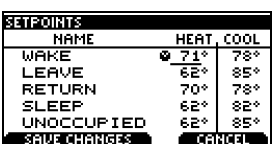
Temperature Settings

A SETPOINT is defined by a NAME, and HEAT & COOL temperatures.

Example: If the SETPOINT is set to WAKE, a thermostat operating in AUTO mode will keep your dwelling's temperature at the predefined HEAT or COOL temperature. In the summer, the thermostat will COOL your dwelling down to 78°F. In the fall, the thermostat will engage the HEAT mode, heating your dwelling up to 70°F throughout the winter. In the spring, when temperatures rise again, the thermostat will change back to COOL mode.

The SETPOINT's HEAT and COOL temperatures can be changed using the SETPOINTS screen.





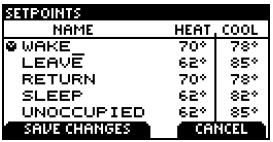
Choose SETPOINTS from the Main Menu to view this screen.

To change the HEAT and COOL temperature settings, *SCROLL* to the SETPOINT you want to change and press *SELECT*.

SCROLL to change the temperature, or press *SELECT* to move between the HEAT and COOL settings.

Press the *LEFT TAB* to SAVE temperature changes.

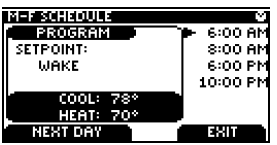
Temperature Settings (continued)



To change the name of a SETPOINT, press EDIT NAME and change the SETPOINT's name by using the S*CROLL* and *SELECT* buttons. Use *SELECT* to move the cursor to the next position and *SCROLL* to find the desired letter or blank (empty) character.

Schedule

The SCHEDULE determines when a SETPOINT such as WAKE begins. Only the start times are defined. The SETPOINT ends when the next SETPOINT starts. To delete a start time, SCROLL down the list of start times, and SELECT it; press SELECT again to underline the associated SETPOINT name and SCROLL until NOT USED is underlined, i.e. the SETPOINT will be NOT USED in this case.

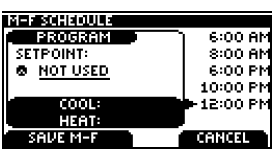


The PROGRAM window displays the SETPOINT associated with the start time on the right.

Adjust the start time by pressing *SELECT* and *SCROLLING* the time.

Press *SELECT* to move within the PROGRAM window. Here the SETPOINT can be *SCROLLED* to choose the name of a different SETPOINT.

Press *SELECT* to return to the start times on the right.



You can have up to 6 scheduled start times.
To add a start time, *SCROLL* to a blank row, *SELECT* it, and change the start time.

Change the name NOT USED to an appropriate SETPOINT after you have added the start time.

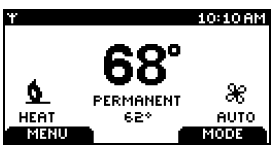
Choose SCHEDULE from the main MENU to view this screen.

Permanent, Timed, and Vacation HOLDs

The SCHEDULE can be modified to maintain a desired SETPOINT through either a:

- Permanent HOLD (HOLD until cancelled)
- Timed HOLD (HOLD for 1 to 99 hours, or 1 to 99 days)
- Vacation HOLD (HOLD until a set date)

Choose HOLD from the main Menu then select the HOLD TYPE, press *SELECT*, then *SCROLL* to the desired HOLD TYPE and press *SELECT* again.

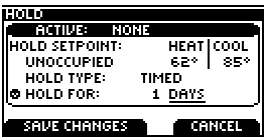


Permanent HOLD

Using the arrow keys, change the HOLD TYPE to PERMANENT and press the SELECT key. SCROLL to the line above HOLD TYPE and press the SELECT key again, scroll to choose the desired SETPOINT NAME.

Press SAVE CHANGES to accept the new settings and initiate the HOLD. To cancel the HOLD, return to the HOLD menu and press CANCEL HOLD.

Permanent, Timed, and Vacation HOLDs (continued)

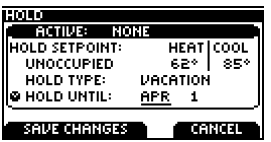


Timed HOLD

In TIMED HOLD, choose between 1 and 99 (in hours or days). You can also choose the SETPOINT to HOLD.

Press SAVE CHANGES to accept the new settings and initiate the HOLD.

To cancel the HOLD, return to the HOLD menu and press CANCEL HOLD.



Vacation HOLD

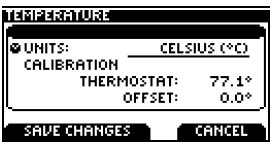
Choose the HOLD UNTIL date in VACATION HOLD. You can also choose the SETPOINT to HOLD.

Press SAVE CHANGES to accept the new settings and initiate the HOLD.

To cancel the HOLD, return to the HOLD menu and press CANCEL HOLD.

Temperature Units and Calibration

The display can be set to display Fahrenheit (°F) or Celsius (°C) units. If you measure the temperature yourself or believe this thermostat's displayed temperature is off slightly, then you can easily calibrate the thermostat's display temperature by up to +/- 5.4°F (+/- 3°C) using these steps.



SELECT TEMPERATURE from the Main Menu.
Change the UNITS by pressing *SELECT* on the UNITS line, then SCROLL between FAHRENHEIT (°F) and CELSIUS (°C).
To calibrate the thermostat, select the OFFSET line. Press *SELECT*, then *SCROLL* to change the offset.
Press SAVE CHANGES to accept the new settings.

Service Information

Information regarding your service contractor can be programmed into the thermostat for future reference.

Choose SERVICE INFO from the main Menu.

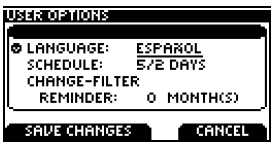
Press EDIT NAME and enter the name and contact information using the *SCROLL* and *SELECT buttons* .

After pressing SAVE CHANGES scroll to the next line if you need to enter additional information; then follow the procedure just described.

User Options

Languages

The thermostat can be set to English or Spanish through the USER OPTIONS menu.



To change from ENGLISH to SPANISH, SCROLL to the USER OPTIONS on the Main Menu.

Press SELECT on the LANGUAGES line. SCROLL to the ESPAÑOL choice (underlined).

Press SAVE CHANGES to save.

Schedule

There are three choices for the weekly schedule. To change between the three scheduling options, *SELECT* the SCHEDULE line in the USER OPTIONS menu, and *SCROLL* between these three choices:

5/2 DAYS	Mon. – Fri. schedule is the same. Sat. & Sun. schedule is the same
7 DAYS	Every day of the week has an individual schedule.
5/1/1 DAYS	Mon. – Fri. schedule is the same. Sat. has an individual schedule, and Sun. has an individual schedule.

Change Filter Reminder

A CHANGE FILTER reminder may also be set in the USER OPTIONS menu. It can be set from 0 to 12 months. Setting it to 0 months effectively disables the CHANGE FILTER reminder.

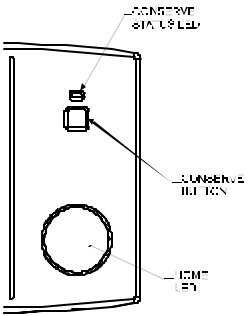
After the CHANGE FILTER reminder is enabled, the value shown by this screen will decrease each month. When it reaches 0, the CHANGE FILTER reminder alarmappears. You can clear the alarm by touching CLEAR ALARM. In order to re-enable the CHANGE FILTER reminder, set the desired period and touch SAVE CHANGES.

Power Outages

In the event of a power failure, the thermostat will retain information for proper operation of the heating and cooling equipment as well as maintaining the time. It will not display information on the display screen during the power outage. Once power is restored, the thermostat will resume operation maintaining all previously stored settings.

THERMOSTAT CONSERVATION MODE

The Conservation Mode of the thermostat allows either you or your utility to modify scheduled and HOLD SETPOINTs to reduce energy consumption.



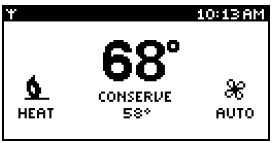
These controls are active when in the Conservation Mode:

- CONSERVE Status Light
- CONSERVE Button
- HOME Led

There are two Conservation Modes: User Conserve and Utility Conserve.

User Conserve Mode

You can initiate the User Conserve Mode in your thermostat by pressing the Conserve Button. This action will turn ON the Conserve Status light Green.



At this point, the thermostat will set back the current SETPOINT (HOLD or scheduled SETPOINT) by a fixed value of 1°C to conserve energy. The SETPOINT's name at the Home Screen of the thermostat will be replaced by a label showing "Conserve".

The purpose of the User Conserve Mode is to save energy by incrementing, in the case of Cooling, or decrementing, in the case of Heating, the scheduled target temperature by a specified fixed value.

If a temporary HOLD or the current scheduled SETPOINT expires, the incremental temperature change is applied to the next scheduled SETPOINT.
Note that you will not be able to change any scheduled or HOLD SETPOINTs while you are in the User Conserve Mode, you will have to exit this mode before you can make those changes.

During the Conserve Mode you will only be able to modify the following parameters:

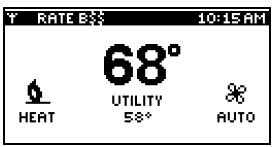
Language
24 hour Time Format
Change Filter Reminder
Contact Information
Exit from User Conserve Mode

To exit the User Conserve Mode, press the Conserve Button again and the thermostat will go back to its regular schedule or applicable HOLD. The Green Conserve Status light will turn OFF.

When the thermostat exits the User Conserve Mode, it enters the Normal Operation Mode, w here the SETPOINTs are as programmed by the Schedule or HOLD and you are able again to modify any configuration parameter of the thermostat.

Utility Conserve Mode

If your utility offers a energy reduction plan and you are enrolled in the program, your utility can start a Utility Conserve Mode. This allows your utility to send a signal over the communications link to increment the temperature a few degrees (when using the cooling system) or decrement it a few degrees (when using the heating system).



At this point, the thermostat will set back the current SETPOINT (HOLD or scheduled SETPOINT) by a fixed value of 2°C to conserve energy. The SETPOINT's name at the Home Screen of the thermostat will be replaced by a label showing "Conserve".

When entering a Utility Conserve Mode, your thermostat will show the word "UTILITY" under the room temperature and the Conserve Status Light turns on Amber

If a temporary HOLD or the current scheduled SETPOINT expires, the incremental temperature change is applied to the next scheduled SETPOINT.

Note that you will not be able to change any scheduled or HOLD SETPOINTs while you are in the Utilty Conserve Mode, you will have to exit this mode before you can make those changes.

During the Utility Conserve Mode you will only be able to modify the following parameters:

Language
24 hour Time Format
Change Filter Reminder
Contact Information
Exit from Utility Conserve Mode

The Utility Conserve Mode ends when your utility sends a signal to the thermostat to end the Utility Conserve Mode, or you opt-out of the Utility Conserve Mode by pushing the Conserve Button.

In the case you opt-out of the Utility Conserve Mode, you will not be able to go back to it. The only Conserve Mode you will be able to enter is the User Conserve Mode

When the thermostat exits the Utility Conserve Mode, it enters the Normal Operation Mode, w here the SETPOINTs are as programmed by the Schedule or HOLD and you are able again to modify any configuration parameter of the thermostat.

The thermostat must be in the **Normal Operating Mode** in order to access to the configuration settings required for the installation and maintenance.

Mounting the Thermostat

Install the thermostat at 5 feet (1.5m) above the floor in an area with good air circulation at average temperature. Avoid locations with drafts or dead spots behind doors, hot or cold air ducts, sunlight or radiant heat from appliances, concealed pipes or chimneys and unconditioned areas such as outside walls behind the thermostat.

The 2 wallplate anchors should be spaced 3.5 inches (90 mm) apart in a vertical direction. Pull wires through the backplate and connect to the appropriate terminals as defined in the Wiring Configuration.

Mounting the Remote Sensors

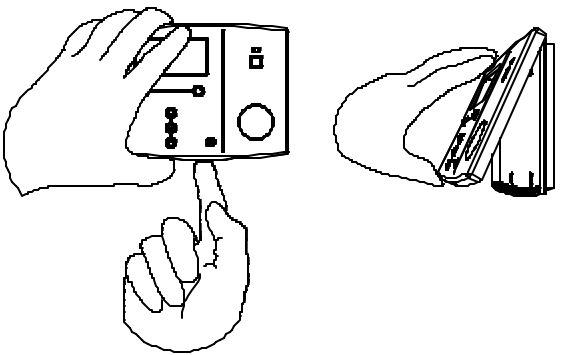
Outdoor sensors should be mounted in shaded locations, out of direct sunlight. The thermostat will automatically detect an external sensor and display its readings.

Cleaning the Thermostat

The thermostat can be cleaned with a soft cloth **lightly dampened** with isopropyl alcohol *(IPA)*.
Excessive IPA or use of other solvents may damage the LCD!

Removing Thermostat Front Housing from Backplate

To remove the thermostat front housing from the backplate, press the plastic tab located at the bottom of the thermostat. Pull the bottom of the front housing forward and remove.



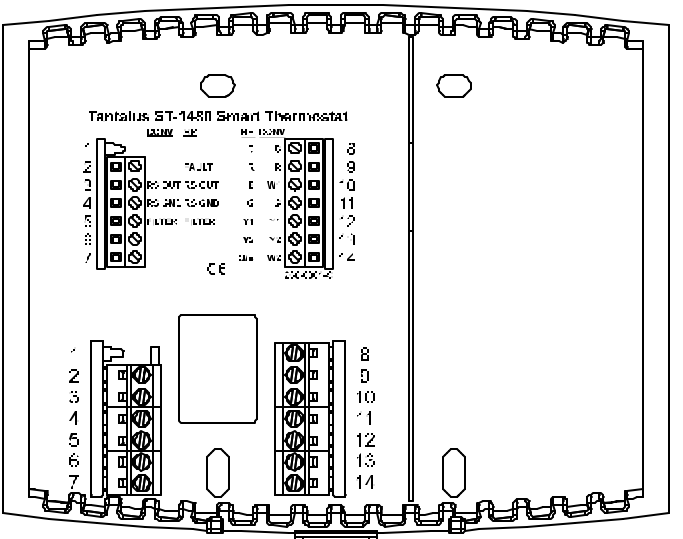
Replacing the Battery

A LOW BATTERY WARNING will appear when the battery falls below 10% of its rated capacity. This procedure does not lose the thermostat settings; however, time settings will require re-programming. Replace with a CR-2032 battery.

Warning: Do not use metallic tools when removing battery or backplate; this may damage the thermostat.

Wiring Configuration

See Wiring Table on the next page.



Wiring Configuration (Continued)

This thermostat should be wired by a licensed technician familiar with HVAC installation.

Conventional Systems (CONV)					
1			Common(GND)	C	8
2			Power (24VAC)	R	9
3	RS OUT	Outdoor Sensor	1st Stage Heat	W1	10
4	RS GND	Sensor Ground	Fan	G	11
5	FILTER	Filter	1st Stage Cool	Y1	12
6			2nd Stage Cool	Y2	13
7			2nd Stage Heat	W2	14

Heat Pump Systems (HP)					
1			Common (GND)	C	8
2	FAULT	Heat Pump Fault	Power (24VAC)	R	9
3	RS OUT	Outdoor Sensor	Auxiliary Heat	E	10
4	RS GND	Sensor Ground	Fan	G	11
5	FILTER	Filter	1st Stage Heat Pump	Y1	12
6			2nd Stage Heat Pump	Y2	13
7			Changeover Valve	O/B	14

Setup Menu Options

WARNING: Changing settings in the SETUP can damage the HVAC system and should only be done by a qualified HVAC technician.

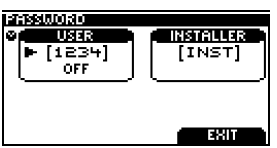
Password

Two levels of password protection are programmed in this thermostat: USER and INSTALLER. Both password levels will timeout after 20 minutes of the last button press and force you to re-enter a password.

The default INSTALLER password is INST. The INSTALLER password limits access to critical thermostat settings which include:

- Password
- SETPOINT Range
- Equipment Type
- Equipment Settings
- Control
- Reset

The passwords can be changed in the PASSWORD menu.



SCROLL to change either USER or INSTALLER password.

SCROLL through the letters to change the password, or use the blank letter to set the password to a blank.

SETPOINT Range

The SETPT RANGE sub menu defines the Maximum and Minimum temperatures allowed in the HEAT and COOL modes. Adjusting these temperatures limits the temperature ranges allowed when setting SETPOINT temperatures.

Equipment Type

WARNING: The thermostat must be configured correctly to match the equipment type. The number of cooling and heating stages must be defined in the Conventional or Heat Pump setting.

EQUIPMENT TYPE		DEFAULT	OPTION
CONVENTIONAL	# OF COOL STAGES	0	0-2
	# OF HEAT STAGES	1	0-2
HEAT PUMP	# OF COOL STAGES	1	1-2
	# OF HEAT STAGES	1	1-3*
	REV. VALVE	ON IN COOL	ON IN HEAT

*For Heat Pumps, defining one more heat stage than cool stages means that Emergency Heat (Auxiliary Heat) is installed.

Equipment Settings

Conventional Systems

You must enter an Installer Password to access the EQUIPMENT SETTINGS from the Main Menu. The following settings can be changed for Conventional Systems:

	DEFAULT	OPTION
MIN ON/OFF TIME	3 MIN	1-6 MIN
	Minimum cycle time for the furnace/air conditioner.	
FAN ON IN HEAT	YES	NO
(this option only applies to the furnace)	The fan turns on when the thermostat sends the fan on signal. If the Fan Mode is AUTO the thermostat will turn the fan on whenever the furnace is turned on.	The furnace waits until enough heat is built up before turning on the plenum fan. The furnace controls the fan when the Fan Mode is AUTO.

Heat Pump Systems

You must enter an Installer Password to access the EQUIPMENT SETTINGS from the Main Menu. The following settings can be changed for Heat Pump Systems:

	DEFAULT		OPTION
MIN ON/OFF TIME	3 MIN		1-6 MIN
	Minimum cycle time for the heat pump/auxiliary heater.		
ALLOW HP+AUX ON	YES		NO
	Allows the Heat Pump and Auxiliary Heat to be on at the same time.		Does not allow Heat Pump and Auxiliary Heat to be on at the same time (add-on configuration).
BALANCE POINTS	HIGH	122°F (50°C)	-38 – 122°F -39 – 50°C
	The High Balance Point defines the outdoor temperature above which the Auxiliary Heater is disabled. An external temperature sensor must be installed for the Balance Points to operate.		
	LOW	-40°F (-40°C)	-40 – 120°F -40 – 49°C
	The Low Balance Point defines the outdoor temperature below which the Heat Pump compressor is disabled. An external temperature sensor must be installed for the Balance Points to operate.		

Control Options

You must enter an Installer Password to access the CONTROL menu from the Main Menu. The following settings can be changed:

	DEFAULT	OPTION
CHANGE HYSTERESIS	2°F (1°C)	0-6°F (0-3°C)
	Defines the number of degrees the temperature must go beyond a SETPOINT prior to changing from HEAT to COOL mode or vice versa in AUTO mode.	
ANTICIPATION TIME	60 MIN	0 – 180 MIN
	The time limit the thermostat is allowed to engage the equipment to reach a desired temperature. The algorithm determines the time required to reach the temperature, and engages the equipment prior to the next Scheduled SETPOINT in order to reach the desired temperature at the appropriate time. The temperature may not be reached if the ANTICIPATION TIME is less than the time required to heat (or cool) to the desired temperature.	
MAX RECOVERY TIME	90 MIN	0 – 180 MIN
	The maximum time the thermostat allows the equipment to reach a desired temperature in 1ST stage heating (or cooling). If the thermostat determines that the desired temperature will not be reached, it will engage the second (or further) stage of heating (or cooling).	

Reset

A SETPOINT's RESET restores the thermostat's default EnergyStar SETPOINTs.
A FULL SYSTEM RESET restores the thermostat to the following original manufacturer settings.

		HEAT	COOL
SETPOINTS	WAKE	70ºF	78ºF
	LEAVE	62ºF	85ºF
	RETURN	70ºF	78ºF
	SLEEP	62ºF	82ºF
	UNOCCUPIED	62ºF	85ºF
	OCCUPIED	70ºF	78ºF
	SETPOINT 7	62ºF	85ºF
	SETPOINT 8	62ºF	85ºF
USER OPTIONS	LANGUAGE	ENGLISH	
	CHANGE FILTER REMINDER	0 MONTH(S)	
TEMPERATURE	UNITS	FAHRENHEIT (ºF)	
PASSWORD		USER	INSTALLER
	PRESET	[1234] OFF	[INST]
SETPOINT RANGE		MAX	MIN
	HEAT	93ºF	41ºF
	COOL	95ºF	43ºF
EQUIPMENT TYPE	CONVENTIONAL	# OF COOL STAGES	1
		# OF HEAT STAGES	1
EQUIPMENT SETTINGS	MIN ON/OFF TIME	3 MIN	
	FAN ON IN HEAT	YES	
CONTROL	CHANGE HYSTERESIS	2ºF	
	ANTICIPATION	60 (MINUTES)	
	MAX RECOVERY TIME	90 (MINUTES)	
MODE		OPERATING	FAN
		HEAT	AUTO

Conventional System Test

This procedure allows the installer to bypass delays associated with the minimum on/off times.

OUTPUT TESTED	PROCEDURE	EXPECTED RESULT
Fan	Mode = Off Fan = change from AUTO to ON	Fan should turn on and off
1ST stage cooling	Mode = COOL Modify the temperature by - 5°F (-3°C) from room temperature and *SELECT* ENGAGE HOLD	First stage cooling should engage
2ND stage cooling*	Remain in COOL mode Return to the Temporary HOLD function and *SELECT* ENGAGE HOLD again	Second stage cooling should engage
1ST stage heating	Change mode to HEAT and modify the temperature by +5°F (+3°C) and ENGAGE HOLD	First stage heating should engage
2ND stage heating**	Remain in HEAT mode and return to the Temporary HOLD function and *SELECT* ENGAGE HOLD	Second stage heating should engage

* Only in two stage cooling systems.
** Only in two stage heating systems.

Heat-Pump System Test

This procedure allows the installer to bypass delays associated with the minimum on/off times.

OUTPUT TESTED	PROCEDURE	EXPECTED RESULT
Fan	Mode = Off Fan = change from AUTO to ON	Fan should turn on and off
1ST stage cooling	Mode = COOL Modify the SETPOINT by at least 5°F (3°C) below room temperature and *SELECT* ENGAGE HOLD	First stage cooling should engage
2ND stage cooling*	Remain in COOL mode Return to the Temporary HOLD function and *SELECT* ENGAGE again	Second stage cooling should engage
1ST stage heating	Mode = HEAT Modify the SETPOINT by at least 5°F (3°C) above room temperature and SELECT ENGAGE HOLD	First stage heating should engage
2ND stage heating**	Remain in HEAT mode Return to the Temporary HOLD function and *SELECT* ENGAGE HOLD again	Second stage heating should engage.
Heating using Auxiliary Heat**	Remain in HEAT mode Return to the Temporary HOLD function and *SELECT* ENGAGE HOLD again	Auxiliary heating should engage (if there are more heat stages than cool stages)

* Only in two stage heat pump systems;
** Only with Heat-Pump systems equipped with an Auxiliary Heater.

Product Conformity

This equipment, if installed in strict accordance with the manufacturer's instructions, complies with the limits for a Class B computing device pursuant to Part 15 of FCC rules.

This equipment, if installed in strict accordance with the manufacturer's instructions, complies with the requirements of IEC 60730-1 for EMC emissions and immunity.

This equipment is RoHS compliant.

The battery in this thermostat may contain perchlorate material - special handling may be necessary.

www.dtsc.ca.gov/hazardouswaste/perchlorate

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notes