

## Programmable Touch-Screen Thermostat (Part No. 910121750)

Used With:

Accessory Remote Sensors

- Indoor (Part No. 910129095)
- Outdoor (Part No. 910129096)



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# Introduction

## Overview

The Touch Screen thermostat is used in conjunction with the MicroTech III equipped water source heat pump units as described in the Application Section below. This thermostat may be used for control of temperature, humidity, occupancy, fan mode, and system mode, while providing alarm annunciation when there is the need to call for service. Intuitive menu-driven set-up is provided for easy programming and

operation, with audio prompt for Touch Screen entry confirmation. Maintenance features includes time driven display of “Change Filter”/“Change Pad”/“Change UV Lamp” as a reminder to change or clean filter/humidity pad or to replace the UV lamp. Remote indoor or outdoor temperature sensing is also available with the accessory remote sensors (Part No. 910129095 and 910129096).

## Applications

The programmable touch screen thermostat can be used on the products shown in [Table 1](#).

**Table 1: Product usage guide**

Units	Product		Models	Controls	Used with Programmable Touch Screen Thermostat and Humidity Display
Water Source Heat Pumps	Horizontal	Enfinity™	W. CCH, CCW	MicroTech III Unit Controller	Yes
	Vertical		W. VFC, VFW LVC, LVW		
	Vertical Stacked		W. VHC		
	Console		W. MHC, MHW		
	Horizontal & Vertical	SmartSource 1-Stage	W. GSH, GSV	MicroTech III SmartSource Unit Controller	
		SmartSource 2-Stage	W. GTH, GTV		

The programmable touch screen thermostat for water source heat pump applications is shown in [Table 2](#)

**Table 2: Water source heat pump application guide**

Units	Product	Models	Applications											
			Cooling	Heating	Dehumidification					Electric Heat			Water-side Economizer	
			Stages	Smart Dehumidification	Hot Gas Reheat	Simplified	Humidistat Controlled	Dehumidification Only	Boilerless	Supplemental	Primary	3-Way Valve Control		
Water Source Heat Pumps	Horizontal	Enfinity	W. CCH, CCW	1	1	No	No	No	No	No	No	No	No	No
	Vertical		W. VFC, VFW, LVC, LVW	1	1	No	Yes	No	No	No	Yes <sup>1</sup>	Yes	No	No
	Vertical Stacked		W. VHC	1	1	No	No	No	No	No	No	No	No	No
	Console		W. MHC, MHW	1	1	No	No	No	No	No	Yes <sup>1</sup>	Yes	No	No
	Horizontal & Vertical	Smart-Source 1-Stage	W. GSH, GSV	3	4	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Horizontal & Vertical	Smart-Source 2-Stage	W. GTH, GTV	3	4	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

**Note:** <sup>1</sup>With optional Boilerless controls

# Safety

## ⚠ WARNING

Wiring connections must be made in accordance with all applicable electrical codes. Failure to read and follow all instructions carefully before installing or operating this control could cause personal injury and/or property damage.

## ⚠ CAUTION

To prevent electrical shock, disconnect electric power to system at main fuse or circuit breaker box until installation is complete.

## NOTICE

If in doubt about whether your wiring is millivolt, line, or low voltage, have it inspected by a qualified heating and air conditioning contractor or electrician.

Do not exceed the specification ratings.

All wiring must conform to local and national electrical codes and ordinances.

This control is a precision instrument, and should be handled carefully. Rough handling or distorting components could cause the control to malfunction.

The remote sensors cannot be used with systems where power interruptions are part of normal system operation.

## NOTICE

### MERCURY NOTICE

This product does not contain mercury. However, this product may replace a product that contains mercury. Mercury and products containing mercury must not be discarded in household trash. Do not touch any spilled mercury. Wearing non-absorbent gloves, clean up any spilled mercury and place in a sealed container. For proper disposal of a product containing mercury or a sealed container of spilled mercury, place it in a suitable shipping container. Refer to [www.thermostat-recycle.org](http://www.thermostat-recycle.org) for location to send the product containing mercury.

## Installation

### Remove Old Thermostat

Before removing wires from old thermostat, mark wires for terminal identification so the proper connections will be made to the new thermostat.

### Installing New Thermostat

1. Pull the thermostat body off the thermostat base. Forcing or prying on the thermostat will cause damage to the unit.
2. Place base over hole in wall and mark mounting hole locations on wall using base as a template.
3. Move base out of the way. Drill mounting holes. If you are using existing mounting holes and the holes drilled are too large and do not allow you to tighten base snugly, use plastic screw anchors to secure the base.

4. Fasten base snugly to wall using mounting holes shown in [Figure 1 on page 4](#) and two mounting screws. Leveling is for appearance only and will not affect thermostat operation.
5. Connect wires to terminal block on base using appropriate wiring schematic.
6. Push excess wire into wall and plug hole with a fire resistant material (such as fiberglass insulation) to prevent drafts from affecting thermostat operation.
7. Carefully line the thermostat up with the base and snap into place.

### Battery Location

2 “AA” alkaline batteries are included in the thermostat at the factory with a battery tag to prevent power drainage. Remove the battery tag to engage the batteries.

To replace batteries, set system to OFF, remove thermostat from wall and install the batteries in the rear along the top of the thermostat (see [Figure 1](#)). For best results, use a premium brand “AA” alkaline battery such as Duracell® or Energizer®. If the zone is going to be unoccupied for an extended period (over 3 months) and  is displayed, the batteries should be replaced before leaving.

### Power Stealing Switches

The Power Stealing Switches ([Figure 1 on page 4](#)) should be left in the “On” position for most systems. The information in the following table details the thermostat power method and switch options.

**Table 8: Thermostat power method & switch position**

Thermostat Power Method	Switch Position/Description
<b>Battery Powered</b> , no 24-volt system power available.	Switches “On”, thermostat runs on batteries.
<b>Hardwired with Battery Back-up</b> , for 24-volt systems with common connection from transformer to “C” terminal on thermostat.	Switches “On”, thermostat runs on power directly from transformer with battery backup. (Recommended application)
<b>*Battery Powered with Power Stealing Assist</b> , for 24-volt systems with no common connection from transformer to “C” terminal on thermostat.	Switches “On”, thermostat runs on batteries and supplemental power drawn through the heat or cool circuit.

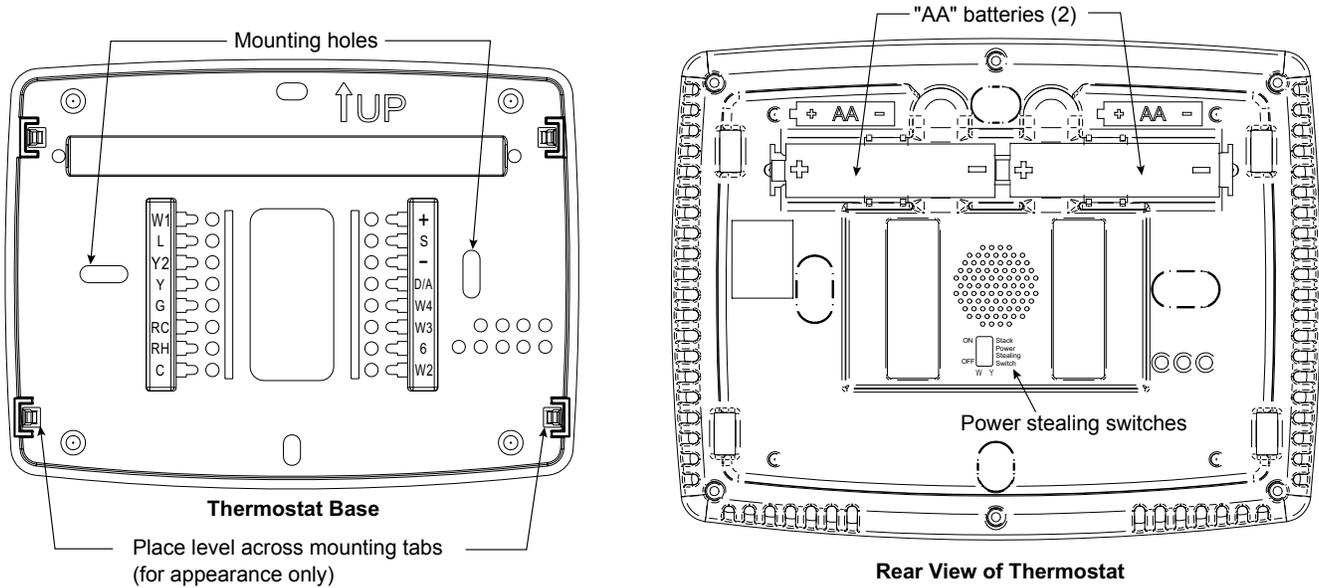
\*Power Stealing Assist is very reliable to increase battery life, but on a small number of heating or cooling systems with high impedance electronic modules you may observe one of the following conditions:

1. The fan may turn on with no call for heat or may not turn off.
2. The water source heat pump may not turn off when the call for heat ends.
3. The water source heat pump may not turn off when the call for cool ends.

If the Power Stealing Assist method is not compatible with your system, place the Power Stealing Switches to “Off”. This cancels Power Stealing Assist, operates the thermostat on batteries and corrects the condition.

# Installation

Figure 1: Base & rear view of thermostat



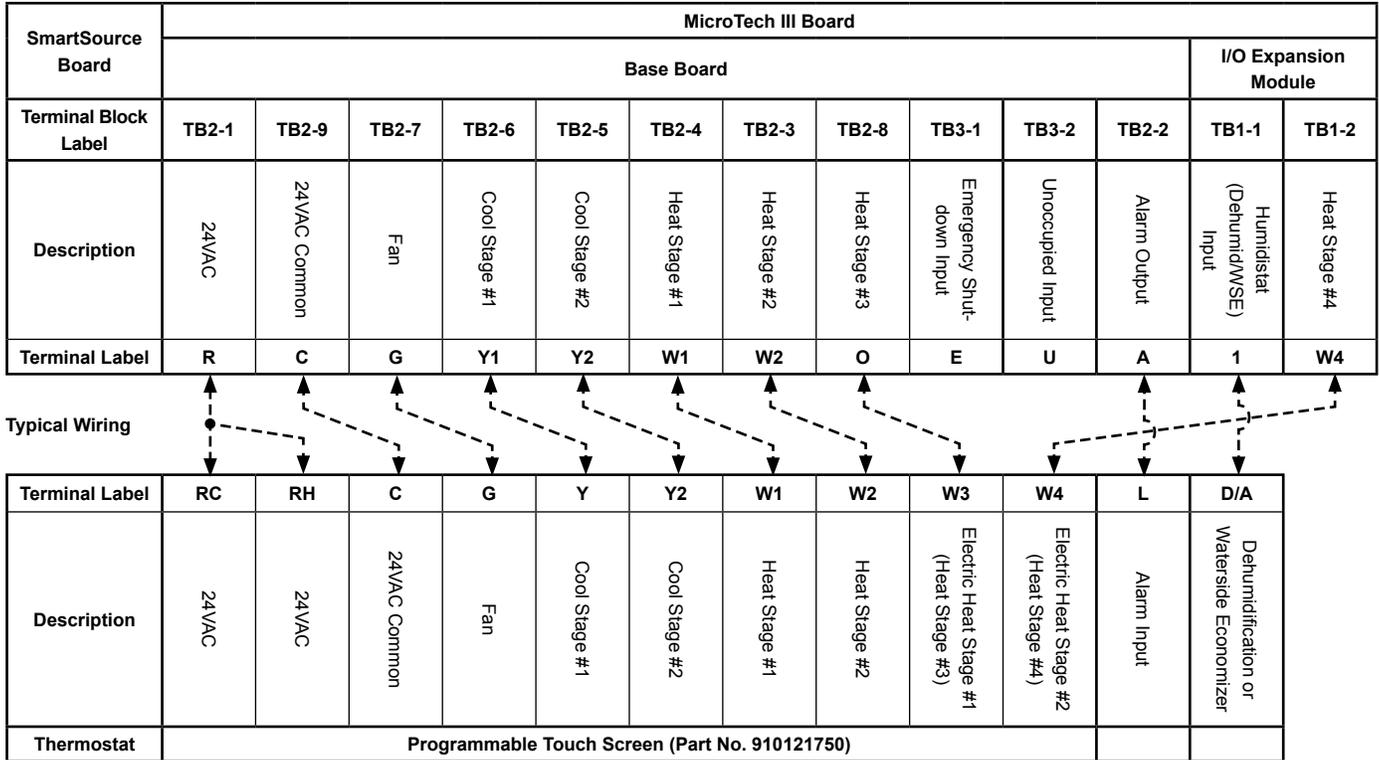
## Wiring

Table 4: Thermostat wiring terminals & systems operation

Thermostat Terminal	System	
	HP1 Operation	HP2 Operation
RC	24V power for cooling	24V power for cooling
RH	24V power for heating	24V power for heating
C	24V common	24V common
Y	Compressor cool 1st stage	Compressor cool 1st stage
Y2	No output	Compressor cool 2nd stage
W1	Compressor heat 1st stage	Compressor heat 1st stage
W2	No output	Compressor heat 2nd stage
W3	Auxiliary heat 1st stage (heat 2nd stage)	Auxiliary heat 1st stage (heat 3rd stage)
W4	Heat 2nd stage (heat 3rd stage)	Heat 2nd stage (heat 4th stage)
G	Fan	Fan
DMA/A1	Dehumidification or waterside economizer, configurable terminal configuration menu	Dehumidification or waterside economizer, configurable terminal configuration menu
6	Powered close connection for SPDT 3-wire zone valve	Powered close connection for SPDT 3-wire zone valve
L	System diagnostic indicator	System diagnostic indicator

# Wiring

Figure 2: SmartSource MicroTech III board to programmable touch screen thermostat wiring



## Heat Pump Connections

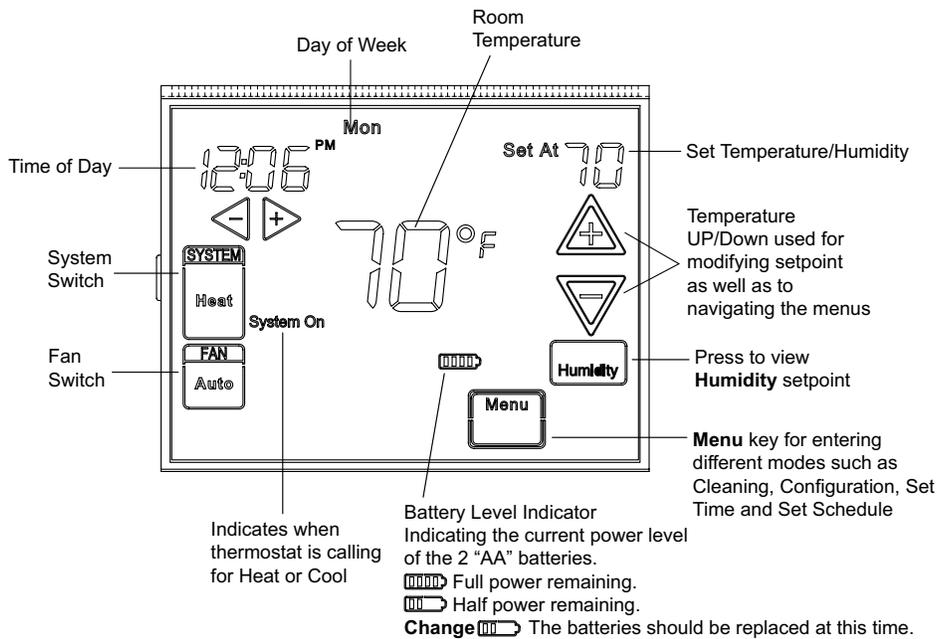
The thermostat can be configured for use with the following heat pump systems:

- Heat Pump Type 1 (HP1) – Single stage compressor system with electric backup
- Heat Pump Type 2 (HP2) – 2-stage compressor system with electric backup

**Note:** After wiring, see *Installer Configuration* section for probe thermostat configuration.

## Thermostat Quick Reference

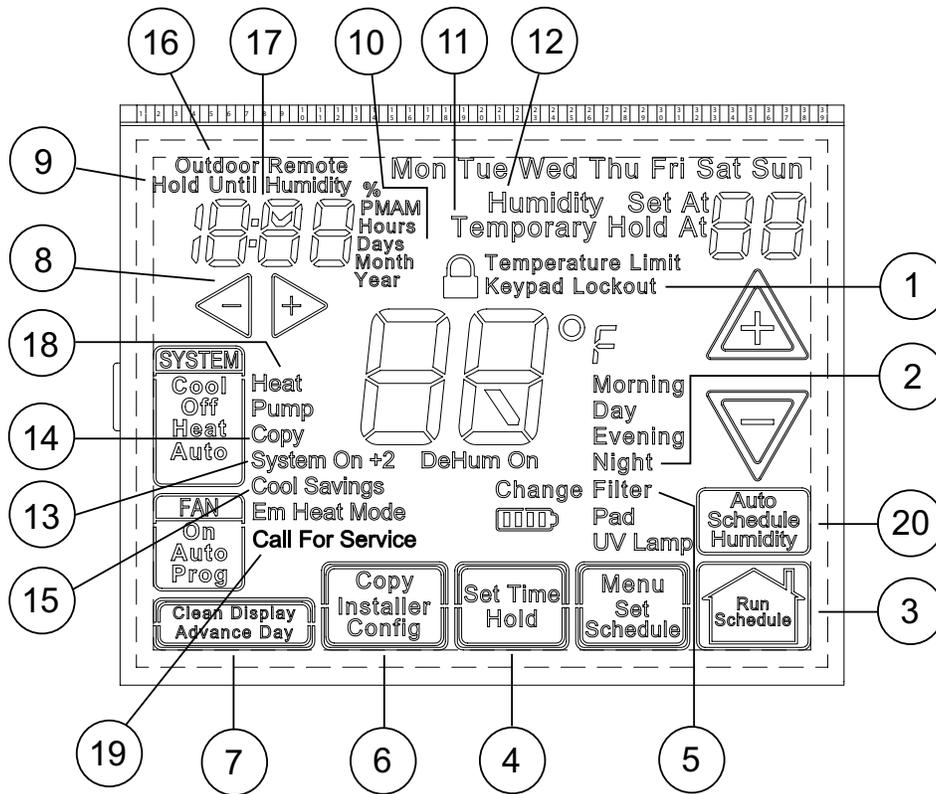
Figure 3: Home screen display and descriptions



**Note:** If [||||] is displayed, the thermostat is battery powered. When battery power remaining is approximately half, [||||] will be displayed. If the zone is going to be unoccupied for an extended period (over 3-months) and [||||] is displayed, the batteries should be replaced before leaving.

# Thermostat Quick Reference

Figure 4: Programming and configuration items



## Programming And Configuration Items

1. Displays and “Keypad Lockout” when in keypad lockout mode.  
Displays and “Temperature Limit” and “Keypad Lockout” when limited range is activated and locked.  
Displays only “Temperature Limit” when limited range is activated.
2. Indicates period of day being programmed.
3. RUN SCHEDULE (run program) key.
4. SET TIME key or HOLD temperature key.
5. Displays “Change Filter”/“Change Pad”/“Change UV Lamp” when the system has run for the programmed filter/humidity pad/UV lamp time period as a reminder to change or clean your filter/humidity pad or to replace UV lamp.
6. COPY key or INSTALLER CONFIG key.
7. CLEAN DISPLAY key allows 30 seconds to wipe off the display or ADVANCE DAY key for programming.
8. Used in programming to set time and in configuration menu to change selections.
9. “Hold Until” indicates the time when a temporary hold period will end.
10. “Hours” and “Days” displays during steps in installer configuration.
11. The words “Hold At” are displayed when the thermostat is in the HOLD mode. “Temporary Hold At” is displayed when the thermostat is in a temporary HOLD mode.
12. “Humidity” indicates that the “Set At” display is Humidity setpoint.
13. “System On” indicates when heating or cooling stage is energized. “+2” indicates when a second stage is energized.
14. “Copy” indicates the copy program feature is being used during programming.
15. A steady “Cool Savings” display indicates the feature is enabled in the installer menu. A flashing “Cool Savings” display indicates the feature is active.
16. “Remote” indicates that the indoor remote temperature sensor, is being accessed. “Outdoor Remote” indicates the outdoor remote temperature sensor is being accessed.
17. Display time, remote temperature or humidity.
18. “Heat Pump” displays when the system configuration is set in HP1/HP2.
19. “Call for Service” indicates a fault in the heating/cooling systems. It does not indicate a fault in the thermostat.
20. Auto Schedule key for Auto Schedule function or Humidity key to display current Humidity and Humidity setpoint.

# Installer/Configuration Menu

To enter the configuration menu: Press the Menu touch key. Press and hold for 5 seconds the Installer Config touch key. This displays screen reference #1 in the table below. Screen Reference numbers appear in top right corner of display. Press  to advance to the next menu item or  to return to a previous menu item. Press  or  to change a menu item option. Shaded items are not available if selected for Non-Programmable.

Screen Reference Number	HP1 HP2	Press Key	Displayed Factory (Default)	Press  or  to select from listed options	Comments
1	•		HP2	HP1	Selects Heat Pump 1 (HP1, 1 compressor), Heat Pump 2 (HP2, 2 compressor or 2 speed compressor)
2	•		Days, (7) P	5 or 0	Programs per week. (7 days, 5-1-1 days or non-programmable)
3	•		(4) PS	2	Programs per day. 4 = Morning, Day, Evening, Night, 2 = Day, Night, Not available if 4 is 0
4	•		Cool-Off-Heat-Auto	Cool-Off-Heat, Off-Auto	System switch configuration
5	•		(On) E	OFF	Selects Energy Management Recovery. Not available if 4 is 0
6	•		(FA) Heat, Cr	SL	Selects Adjustable Anticipation, cycle rate, Heat
7	•		(FA) Cool, Cr	SL	Selects Adjustable Anticipation, cycle rate, Cool
8	•		(FA) AU/Cr	SL	Selects Adjustable Anticipation, cycle rate auxiliary
9	•		(OFF) CL	On	Selects Compressor Lockout
10	•		(On) dL	OFF	Selects Continuous Display backlight.
11	•		0 (Temperature)	5, LO to 5, HI	Selects Adjustable Ambient Temperature Display {range -5 (LO) to +5 (HI)}.
12	•		°F	°C	Selects °F/°C Display (temperature units in Fahrenheit or Celsius)
13	•		(On) b	OFF	Selects audible Beeper On/Off.
14	•		(On) ds	OFF	Selects Daylight Saving Time calculation.
15	•		(On) Heat, AS	OFF	Selects Automatic Schedule for comfort temperature programming, heat mode. Not available if 4 is 0.
16	•		(On) Cool, AS	OFF	Selects Automatic Schedule for comfort temperature programming, cool mode. Not available if 4 is 0.
17	•		(OFF) CS	On	Selects Cool Savings Feature On or Off.
18	•		CS Cool Savings (3)	1-2-3-4-5-6	Selects amount of Cool Savings adjustment. CS will not be displayed if CS is Off
19	•		(99) Heat, HL	62-98	TEMPERATURE LIMIT, HEAT (max. heat set point). The limit can be adjusted up to 99°
20	•		(45) Cool, LL	46-82	TEMPERATURE LIMIT, COOL (min. cool set point). The limit can be adjusted down to 45°
21	•		OFF,  Keypad Lockout	L (total), P (partial), Temperature Limit (limited temperature range)	Selects Keypad Lockout.
22	•		000	001-999	Selects Keypad Lockout Combination (active only if keypad Lockout is selected)
23	•		(On) Heat, FS	OFF	Fast second stage of heat
24	•		(On) Cool, FS	OFF	Fast second stage of cool
25	•		Remote (OFF)	On	Remote temperature sensor, enable/disable
26	•		Remote, in	Outdoor Remote	Remote temperature sensor (Indoor/Outdoor)
27	•		(On) LS	OFF	Local temp. Sensor enable/disable (only when Indoor Remote is selected On)
28	•		(80) AO	-5 – 79	Selects Auxiliary Heat cut-out temperature. This item appears if outdoor sensor is installed and enabled
29	•		dM	dM and EC	Selects dehumidification or economizer thermostat option
30	•		(OFF) Hd	On	Selects Humidity Display alternate with time
31	•		Humidity 00 (Room Humidity)	-18 LO, 20 HI	Selects Humidity Display adjustment
32	•		(OFF) Change UV Lamp	On	Selects Change UV Lamp feature
33	•		350 Days	25–1975	Change UV Lamp duration days
34	•		OFF Change Filter	On	Selects Change Filter feature
35	•		200 Hrs	25–1975	Selects Change Filter feature

# Installer/Configuration Menu

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- This control can be configured for:  
**HP1** – Heat Pump with one stage of compressor (2 heat/1 cool)  
**HP2** – Heat Pump with two stage compressor system, Electric backup; (4 heat/2 cool)
- Programs per week** – This control can be configured for 7 independent day or 5/1/1 day programming or non-programmable modes. Default is 7-day mode. The display indicates “7 Days” as default. Other options “5 Days” or “0 Days” can be selected. If “0 Days” is selected for non-programmable mode, the step for EMR will be skipped, as this feature will not be available in this mode.
- Program Steps per day** – Not available if configured for non-programmable. This control can be configured for 4 or 2 program steps per day. Default is “4 PS” and can be toggled between 4 PS and 2 PS.
- System Switch Configuration** – This thermostat is configured for Heat and Cool with Auto changeover default (Cool-Off-Heat-Auto). It can be configured as Heat & Cool (Cool-Off-Heat), or Heat Only (Off-Heat), or Cool Only (Cool-Off).
- Energy Management Recovery (EMR)** – (this step is skipped if configured as non-programmable). When set to “On” causes the thermostat to start heating or cooling early to make the building temperature reach the program setpoint at the time you specify.  
Example: The heating program is 65°F at night and 70° at 7 AM. If the building temperature is 65°F, the difference is 5°F. Allowing 5 minutes per °F rise, the thermostat setpoint will change to 70° at 6:35 AM. Cooling allows more time per °F, because it takes longer to reach temperature.
- 6, 7 & 8. **Cycle Rate Selection** – The factory default setting is fast cycle (FA Cr) in all modes (Heat, Cool, Em). To change to slow cycling (SL, Cr), press touch keys  $\triangleright$  or toggle  $\triangleleft$  between FA & SL. The cycle rates are below:

Mode	Med	Slow
Heat	0.6°F	1.5°F
Cool	1.2°F	1.7°F
Heat Pump	1.2°F	1.7°F
Emer Heat	0.6°F	1.7°F
- Select Compressor Lockout (CL)** – Selecting (CL On) will cause the thermostat to wait 5 minutes between cooling cycles. This is intended to help protect the compressor from short cycling. The water source heat pump MicroTech® III unit controller has a time delay built in and does not require this feature to be activated in the thermostat. When the thermostat compressor time delay is activated, it will flash the set point for up to five minutes.

- Select Continuous Display Lighting (dL)** – In low lighting conditions, display backlight improves the display contrast. When C terminal is connected, selecting dL On will turn the display light on continuously. Selecting dL Off will turn the display light on momentarily after any key is pressed. When C terminal is not powered (battery only), dL On enables the momentary backlight whenever a key is pressed.

**Continuous Display Lighting without common wire connection** – When thermostat is Battery Powered with Power Stealing assist with low voltage 24V connections to both W and Y terminals, selecting dL “On” will provide continuous display light.

- Note:** *If power stealing operation is not compatible with either the W or Y connection (see “Power Stealing Switches” on page 3), or if only a single connection to W or Y, continuous display light will be interrupted when the active power stealing connection (W or Y) is operating the system. In power stealing mode, the continuous display light will increase in brightness when a button is pressed. And on some systems with high impedance, the display light may dim slightly when thermostat is calling for heat or cool.*
- Select Temperature Display Adjustment 5 LO to 5 HI.** This allows you to adjust the room temperature display by -5°F to +5°F in 1° steps. Your thermostat was accurately calibrated at the factory, however you have the option to change the display temperature value to match the previous thermostat, if you so prefer.
  - Select °F or °C Readout** – Changes the display readout to Celsius or Fahrenheit as required.
  - Select Audio Prompting (Beeper) On or Off** – Factory default setting is b, On. If you wish to turn off the beeper select OFF.
  - Select Daylight Saving Time Calculation** – This feature will allow the thermostat to calculate the DST automatically and apply it to the Real Time Clock display. Default is On.
  - 15 & 16. **Select Automatic Schedule** – Not available if configured for non-programmable. This feature allows programming a “Comfort Temperature” into all program periods with the Auto Schedule key. When Heat AS (for Heat mode) or Cool AS (for Cool mode) is selected On, the Auto Schedule feature is ready to be set. Off indicates that the feature is not ready to be used or a “Comfort Temperature” is already set. See Auto Schedule in Programming section.

## Installer/Configuration Menu

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17 & 18. **Select Cool Savings™** – Cool Savings™ provides an energy saving temperature offset (from 1-6 degrees) under peak cooling load conditions (high outdoor temperatures). If selected on, Cool Savings™ becomes active when the water source heat pump runs for periods of longer than 20 minutes. When active, Cool Savings™ gradually offsets the indoor temperature display downward. The first 1° of adjustment will take one hour of continuous water source heat pump run time with subsequent 1° adjustments occurring with each additional half hour of run time (ex for a 2° offset, the water source heat pump would need to run continuously for 1½ hours). The offset is limited to the number of degrees you select from 1 up to 6. When an offset starts or is active, “Cool Savings” will flash on the display.

The principle of this energy saving feature takes advantage of the long air conditioning run times lowering the indoor humidity allowing a slightly higher temperature to feel comfortable. As the peak load subsides, this feature also takes advantage of the water source heat pump's increased capacity under more efficient conditions to gradually reduce the offset back to zero and return control to the selected setpoint temperature.

If Cool Savings is selected off, no temperature offset will occur.

19. **Heat Temperature Limit Range** – This feature adjusts the highest setpoint temperature for heat. The default setting is 99°F. It can be changed to a setting between 62°F and 98°F. The “temperature limit” icon will be displayed to the left of your setpoint temperature when using this feature. The “temperature limit” icon will flash if an attempt is made to adjust the temperature beyond the range selected.

20. **Cool Temperature Limit Range** – This feature adjusts the lowest setpoint temperature for cool. The default setting is 45°F. It can be changed to a setting between 46°F and 82°F. The “temperature limit” icon will be displayed to the left of your setpoint temperature when using this feature. The “temperature limit” icon will flash if an attempt is made to adjust the temperature beyond the range selected.

21 & 22. **Keypad Lockout** – This step allows you to select the type of lockout or limited range security required. If no lockout or limited range security is required, press to advance the menu.

Three security settings are available in this menu item.

Use the  or  keys to select the lockout desired.

**Lockout selections are:**

“Keypad Lockout and L” = Total Lockout. Total Lockout locks all keys.

“Keypad Lockout and P” = Partial Lockout. Partial Lockout allows only the  or  keys to operate within your set temperature limits.

“Temperature Limit/Keypad Lockout” prevents changing the temperature limits in the Configuration Menu. After the type of lockout is selected, press .

**Keypad Lockout Combination Number Selection** Display will read “000” “Keypad Lockout”.

Skip this step and continue through the remainder of the configuration menu if you require an Air Filter Change out indicator or Humidifier Pad Change out indicator by pressing the  key to advance.

Return to this point when you are ready to start your selected lock-out and continue by:

Pressing  or  keys to select your keypad lockout combination number. **Note:** “000” is not a valid combination choice.

**Record the number you select for future use.**

Press  to exit the menu. The security feature you select will start in 10 seconds. The system key will remain active for 10 seconds to allow setting Heat, Off, Cool or Auto.

To unlock the keypad, press Menu, then press Installer Config. Display will show “000” and keypad lock. Enter the code used to lock the keypad and press .

23 & 24. **Select Fast Second Stage, ON or OFF** – Not available if configured for SS1. Selecting FA ON forces additional heat stages to come on quickly when  is used to raise the temperature a few degrees above the room. Select this setting if you want the heat to increase quickly when you manually raise the temperature.

Selecting FA OFF allows the thermostat to calculate an optimal time to bring on additional stages of heat. When the  is used to raise the setting above the room temperature additional heat stages may come on very quickly or very slowly (up to 30 minutes later) depending on recent system performance. Select this setting if you do not require the additional heat stages to come on quickly when you manually raise the setting and want to allow the thermostat to stage based on recent system performance.

The Fast Cool feature operates the cooling stages in the same manner as Fast Heat, On or Off when the temperature is lowered below the room setting.

25. **Select Remote Temperature Sensor Enabled** – ON enables a remote sensor connected to thermostat and displays the sensor temperature in the clock digits. OFF (default) indicates no remote sensor connected or enabled.

## Installer/Configuration Menu

26. **Select Remote Sensor as Indoor or Outdoor** – If 30 is enabled, select the remote to be Remote In (Indoor, P/N 910129095) or Outdoor Remote (Outdoor, P/N 910129096). Default is Remote In.
27. **Select Local Sensor Disable** – If 31 is selected Indoor, the thermostat Local Sensor can be disabled so the displayed temperature will be from the Remote Sensor. Default is On LS. To disable the Local Sensor, change selection to OFF LS.
28. **Select Auxiliary Off (AO)** – Applicable with HP1 or HP2 selected with outdoor sensor. Select the temperature that will inhibit the auxiliary heating stage. As long as the outdoor temperature is above the selected temperature, the auxiliary heat will not turn on. The default setting is 80°(disabled), but can be set in the range of -5 ° to 79°. Thermostat will not allow a setting at or below the (dF) dual fuel setting.
- If the indoor temperature drops below 45°F and the “call for service icon” is flashing, the thermostat will turn on all of its heat outputs, W1 through W4, in an attempt to warm up the space. The WSHP will respond by providing what heating capacity is available under current operating conditions. If the low space temperature condition persists a qualified service technician must be called to analyze and repair the problem.
- There are two ways the thermostat will return to normal heat pump operation:
- Press any key to retry the pump and erase the “call for service icon.
  - When setpoint is achieved on Auxiliary, system will return to heat pump operation on next call for heat.
29. **Dehumidification/Economizer (dM)** – Selecting dM configures the thermostat for dehumidification control. Selecting EC configures the thermostat for waterside economizer control.
30. **Humidity Display (Hd)** – Selecting HD On enables the display to alternately show the current time and the humidity.
- If HD is selected OFF, the display will not show the humidity.
31. **Adjustable Humidity Display** – The display will show the ambient humidity and 00 (default). The setting can be changed from -18 and LO to 20 and HI. The displayed humidity will change as the offset is changed. In Run mode, the displayed humidity will be the ambient humidity adjusted by the setting selected.
- 32 & 33. **Change UV Lamp** – This feature allows the thermostat to display the words “**Change UV Lamp**” (Call for Service of UV bulb) after a set time of UV bulb operation.
- This is a reminder to maintain your UV system at optimum level of operation. When enabled, the factory set interval for “**Change UV Lamp**” to be displayed is 350 days of UV bulb operation and can

be adjusted in 25 day increments. This should be adjusted with respect to the bulb’s recommended maintenance schedule.

When “**Change UV Lamp**” is displayed, you can clear it by pressing Clean Display.

- 34 & 35. **Select Change Filter Run Time** – This feature allows thermostat to display “**Change Filter**” after a set time fan operation. This is a reminder to change or clean your air filter. This time can be set from 25 to 1975 hours in 25 hour increments. A selection of OFF will cancel this feature. When “**Change Filter**” is displayed, you can clear it by pressing Clean Display. In a typical application, 200 hours of run time is approximately 30 days.

## Operating Your Thermostat

### Check Thermostat Operation

#### NOTICE

To prevent static discharge problems, touch side of thermostat to release static build-up before touching any keys.

If at any time during testing your system does not operate properly, contact a qualified service person.

### Fan Operation

If your system does not have a G terminal connection, skip to Heating System.

1. Turn on power to system.
2. Press FAN key to ON position. The fan should begin to operate.
3. Press FAN key to AUTO position. The fan should stop immediately.

### Heating

1. Press SYSTEM key to select HEAT. If the auxiliary heating system has a standing pilot, be sure to light it.

Press to adjust thermostat setting to 1° above the room temperature. The heat pump system should begin to operate. The display should show “System On”. However, if the system configuration is set to HP1 or HP2 and setpoint temperature display is flashing, the 5 minute compressor lockout feature is operating (see [page 8](#), #11. Select Temperature Display Adjustment 5 LO to 5 HI).

2. Adjust temperature setting to 3° above room temperature. If your system configuration is set at HP1 or HP2, the auxiliary heat system should begin to operate and the display will show “System On +2”.
3. Press to adjust the thermostat below room temperature. The heating system should stop operating.

**Note:** *If Auto Schedule is displayed instead of Humidity, Auto Schedule must be turned off in the Configuration Menu.*

# Operating Your Thermostat

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## Cooling/Dehumidifier

1. Press SYSTEM to select “Cool”.
2. Press to adjust the thermostat setting below room temperature. The fan should come on immediately on high speed, followed by cold air circulation. The display should show “System On”. If the setpoint temperature display is flashing, the compressor lockout feature is operating (see [page 8](#), #11. Select Temperature Display Adjustment 5 LO to 5 HI on).
3. Adjust temperature setting to 3° below room temperature. The second stage cooling should begin to operate and the display should show “System On +2”.
4. Press to adjust the temperature setting above room temperature. The cooling system should stop operating.

### If The Thermostat Is Configured For Dehumidification:

To check the dehumidifier when System On appears and the cooling system is running press \*HUMIDITY button once.

Press to adjust the humidity 2% or more below the room humidity level. DeHum On will appear indicating it is calling for the dehumidification.

If the room humidity is lower than the adjustment range, press to 40% and hold it for four seconds. This will force the De-Hum On for one complete cooling cycle to test the dehumidification equipment.

After adjusting the humidity setting the display will return to temperature in approximately 10 seconds. To switch the display back to temperature immediately after adjusting humidity setting press HUMIDITY again.

**Note:** *If Auto Schedule is displayed instead of Humidity, Auto Schedule must be turned off in the Configuration Menu.*

### If The Thermostat Is Configured For Economizer:

When the cool set point is 1.0 degree F below the space temperature the DH/A output is enabled and the System On icon flashes

## Choose The Fan Setting (Auto or On)

Fan Auto is the most commonly selected setting and runs the fan only when the heating or cooling system is on.

Fan On selection runs the fan continuously for increased air circulation or to allow additional air cleaning.

**Tip:** *Running the fan more frequently will increase your energy consumption. Most systems use a 1/2 or 1/3 HP electric motor to power the fan.*

## Choose The System Setting (Cool, Off, Heat, Auto)

Press the SYSTEM key to select:

**Cool:** Thermostat controls only the cooling system.

**Off:** Heating and Cooling systems are off.

**Heat:** Thermostat controls only the heating system.

**Auto:** Auto Changeover is used in areas where both heating and cooling may be required on the same day. AUTO allows the thermostat to automatically select heating or cooling depending on the indoor temperature and the selected heat

and cool temperatures. When using AUTO, be sure to set the Cooling temperatures more than 1° Fahrenheit higher than the heating temperature.

## Manual Operation For Non-Programmable Mode

Press the SYSTEM key to select “Heat” or “Cool” and use the keys to adjust the temperature to your desired setting.

After selecting your desired settings you can also press the SYSTEM key to select AUTO to allow the thermostat to automatically change between “Heat” and “Cool”.

## Manual Operation (Bypassing The Program) Programmable Mode

Manual operation will bypass the program and allow you to adjust the temperature as you desire. The temperature you set in Hold will be maintained indefinitely. Press or to adjust the temperature. The HOLD key will appear. Press the HOLD key. “Hold At” will appear next to the setpoint temperature and the thermostat will maintain the new setpoint temperature until Run Schedule is pressed to resume program operation.

## Program Override (Temporary Override)

Press or keys to adjust the temperature. This will override the temperature setting for a (default) four hour override period. The override period can be shortened by pressing or lengthened by pressing. Program Override period can range from 15 minutes to 7 days.

**Example:** If you turn up the heat during the morning program, it will be automatically lowered later, when the temporary hold period ends. To cancel the temporary setting at any time and return to the program, press Run Schedule.

If the SYSTEM key is pressed to select AUTO the thermostat will change to “Heat” or “Cool”, whichever ran last. If it switches to “Heat”, but you want “Cool”, or it changes to “Cool”, but you want “Heat”, press both keys simultaneously to change to the other mode.

## Set Current Time And Day

1. Press Menu key to enter installer menu. Then press Set Time once to indicate hour & AM or PM designation in clock display.
2. Press and hold either the  or  touch key until you reach the correct hour and AM or PM designation.
3. Press Set Time again to display minutes only in clock display.
4. Press and hold either the  or  touch keys until you reach the correct minutes.
5. Press Set Time once again to display year.
6. Press either the  or  touch key until you reach the correct year.
7. Press Set Time once again to display month.
8. Press either the  or  touch key until you reach the correct month.
9. Press Set Time once again to display date of the month along with day of the week at top row (which is automatic).

# Operating Your Thermostat

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10. Press and hold either the  or  touch key until you reach the correct day of the month and day of the week displayed at the top row.
11. Press Run Schedule once or twice to remove the key. Now the display will show the correct time and room temperature.

## Automatic Daylight Saving Calculation

The Real Time Clock will adjust automatically for daylight savings time, in the following manner:

Increment one hour at 2 AM on the second Sunday of March and decrement one hour at 2 AM on the first Sunday of November.

The daylight saving feature can be enabled or disabled in installer configuration menu. Default is DS ON (enabled).

After entering installer configuration mode, momentarily press touch key until the display indicates dS (in actual temperature digits) and on (default – in clock digits), and keys will toggle display and operation from on to OFF.

## Programming Tip: Copy Program

When programming your thermostat, you may copy the program from one day to another day or group of days using the Copy key. In 7-day programming mode, a day can be copied to another day or all six other days. In 5/1/1 day programming mode the weekday (Mon – Fri) program can be copied into Sat and Sun or either Sat or Sun.

### To copy a program from one day to another:

1. In Set Schedule mode, enter the program for the day or select the day you wish to copy by pressing Advance Day.
2. Press Copy. The display will show “Copy” next to the SYSTEM key and the day of the week that will be copied.
3. Press Advance Day. The day being copied will be indicated and the other days will be flashing.
4. If you wish to copy to all days skip to next step or press Advance Day until the day you wish to copy to is flashing.
5. Press Copy. “Copy” will disappear, the day you copied from will disappear and the day(s) you copied to will be on.
6. If you wish to copy this same program into other days, press Copy and repeat steps 3, 4 and 5.
7. Press Run Schedule to return to normal operation.

Fill in the blank schedule on [page 14](#) then:

## Enter the Heating Program

1. Press the Menu key and then press Set Schedule. Press SYSTEM key to select “Heat” in the system switch area indicating the active mode being programmed. You can switch to the other mode by pressing the system switch at any time.
2. The top of the display will show the day(s) being programmed. The time and set at temperature are also displayed. “Morning” will also be displayed to indicate the period.
3. Press  or  key to change the temperature to your selected temperature for the 1st heating period (Morning).
4. Press  or  key to adjust the start time for period. The time will change in 15 minute increments.
5. Press FAN to select Auto or Prog.
6. After you have set the time and the temperature for the period to begin, press Set Schedule to advance to the next program period.
7. Repeat steps 2 through 6 until all of the program times and temperatures are set for all program periods on that day.
8. Press “Advance Day” to change to the next day and repeat steps 2 through 8.
9. When programming is complete and all of the times and temperatures match your desired heating schedule, press Run Schedule. The thermostat will now run your program.

## Enter The Cooling Program

1. Press the SYSTEM key until the “Cool” icon appears.
2. Follow Enter Heating Program instructions for entering cooling times and temperatures.

## Automatic Schedule

Auto Schedule Heat is a fast way to program all the heating temperatures during the day to a comfortable temperature and then lower the temperature 6° at night. Auto Schedule Cool will program all of the cooling time periods to the same temperature.

**Note:** *Auto Schedule is available only when the thermostat is first powered on, after the thermostat has been reset, or anytime you turn AS on in the Configuration Menu (item 17 AS Heat or 18 AS Cool). After use in heating and cooling, Auto Schedule on the display will change to Humidity.*

# Operating Your Thermostat

## Heating Example:

1. In Heat mode, press Auto Schedule once.
2. Press ▲ or ▼ to select a comfortable day time temperature (example 72°).
3. Press Auto Schedule again. Your thermostat is now programmed for 72° from 6:30 AM until 10:30 PM at 72°. At 10:30 PM, your thermostat will set back 6° to 66°.

Your heating program for each day of the week will look like this:

6:30	72°
8:00	72°
5:00	72°
10:30	66°

## Programming

### Cooling Example:

1. In cool, press Auto Schedule once.
2. Press ▲ or ▼ to select a comfortable cooling temperature (example 75°).
3. Press Auto Schedule again. Your thermostat is now programmed for 75° for all cooling time periods.

Your cooling program for each day of the week will look like this:

6:30	75°
8:00	75°
5:00	75°
10:30	75°

### Programmable Fan Option

In the Set Schedule mode, the Fan key is used to select the fan operation during a program period. The default state of the Fan key is FAN Auto (fan runs during a call for cool but not on a call for heat). It can be changed to FAN Prog (fan runs during a program period). Each press of the FAN key will change the mode of the fan between Auto and Prog.

In the Run mode, when a program period that has FAN Prog begins, the fan will turn on and stay on during the complete period. The display will show FAN On Prog. Pressing the FAN key will change FAN On Prog to On (fan running continuously) or Auto. To return to FAN On Prog, press Run Schedule.

### Energy Saving Factory Pre-Program

The thermostats are programmed with the energy saving settings shown in the table below for all days of the week.

If this program suits your needs, simply set the thermostat clock and press the RUN key.

The [Table 4](#) shows the factory set heating and cooling schedule for all days of the week.

### Planning Your Program – Important

The Heating and Cooling Program schedules below allow you to pencil in your own program times and temperatures.

The thermostat comes configured for 7-day programming and can also be configured for 5+1+1 programming (see configuration section).

Factory settings are listed on Monday, Saturday and Sunday. If you are re-programming a 5+1+1 day schedule, pencil in your own times and temperatures directly below the factory times and temperatures.

If you are re-programming a 7-day schedule, fill in all lines with the times and temperatures you want.

Keep the following guidelines in mind when planning your program.

- In Heating, lower temperatures will save energy.
- In Cooling, higher temperatures will save energy.
- If you plan on using Auto Changeover, do not program the heating temperature higher than the cooling temperature.

**Table 4: Pre-programmed Touch Screen energy saving factory settings**

	*Wake Up (Morning)		Occupied (Day)		*Return Home (Evening)		Unoccupied (Night)	
<b>Heating Program</b>	6:00 AM	70°F	8:00 AM	62°F	5:00 PM	70°F	10:00 PM	62°F
<b>Cooling Program</b>	6:00 AM	75°F	8:00 AM	83°F	5:00 PM	75°F	10:00 PM	78°F

\* Typical commercial applications will be occupied during the day and unoccupied during the night. To eliminate these two program periods in the configuration menu (set reference #5 to OFF) if the building is occupied all day. Day period will change to 6:00 AM and 70° and can be programmed as required.

# Programming

**Table 5: Worksheet for re-programming 5+1+1 and 7-day program (Heating)**

Heating Program	Occupied		Fan	Unoccupied		Fan
Monday	8:00 AM	62°F	Auto	10:00 PM	62°F	Auto
Tuesday						
Wednesday						
Thursday						
Friday						
Saturday	8:00 AM	62°F	Auto	10:00 PM	62°F	Auto
Sunday	8:00 AM	62°F	Auto	10:00 PM	62°F	Auto

**Table 6: Worksheet for re-programming 5+1+1 and 7-day program (Cooling)**

Cooling Program	Occupied		Fan	Unoccupied		Fan
Monday	8:00 AM	83°F	Auto	10:00 PM	78°F	Auto
Tuesday						
Wednesday						
Thursday						
Friday						
Saturday	8:00 AM	83°F	Auto	10:00 PM	78°F	Auto
Sunday	8:00 AM	83°F	Auto	10:00 PM	78°F	Auto

## Wired Remote Temperature Sensing

One remote temperature sensor can be installed indoor or outdoor and connected to the thermostat by a maximum cable length of 100 meters (300 feet). Terminals +, S and - on the terminal block allow connection of the remote sensor.

The thermostat must have 24 VAC Common connection to terminal C for the remote sensor to operate. The remote sensor can be enabled or disabled in the Installer/Configuration menu, item 29.

When remote sensor, Remote, is selected Off (factory default), no remote sensor is enabled. When remote sensor is selected On, the next step is to select the remote as indoor, Remote In, or outdoor, Outdoor Remote. If the remote is selected as Remote In, an additional step will be to select if the temperature shown on the display will be from the thermostat, LS On, or the remote sensor LS Off.

In normal operation, when a remote sensor is enabled the time digits of the display will alternate between the time and the remote temperature for three seconds each. Above the remote temperature will be Remote, for indoor sensor or Outdoor Remote, for outdoor sensor. If the remote sensor is an indoor sensor and the local display has been disabled, the temperature displayed as the room temperature will be the remote sensor temperature.

### Sensing Range:

Outdoor temperature range is -40°F to 140°F

Indoor temperature range is 32°F to 99°F

## Programming

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### Averaging or Weighing Remote Sensors

The thermostat will weight or average the temperature of the indoor remote sensor with the local sensor in the thermostat for each program period. The averaging will be active only when the local sensor and the indoor remote sensor are both functional and enabled in the Installer/Configuration menu.

When the thermostat is in the Set Schedule mode, the weight of the indoor sensor will be shown in the current temperature digits of the display. The weight will show as A2 (average and default), H4 (high) or L1 (low). Pressing the and keys at the same time will change the weight for the program period. The weight of the thermostat sensor is fixed.

In normal operation of the thermostat, the current temperature displayed will be the weighted average of the local sensor and the remote sensor using the formula (local sensor weight × local sensor temperature) + (remote sensor weight × remote sensor temperature) / (local sensor weight + remote sensor weight).

**Example:** Local sensor temperature is 80° and the remote sensor is 70°.

If weight is selected H4, the averaged temperature of 72° will be displayed.

$$(1 \times 80) + (4 \times 70) / 5 = 72^\circ$$

If weight is selected A2, the average temperature of 73° will be displayed.

$$(1 \times 80) + (2 \times 70) / 3 = 73.3^\circ$$

If weight is selected L1, the average temperature of 75° will be displayed.

$$(1 \times 80) + (1 \times 70) / 2 = 75^\circ$$

The example shows that the weight selected would prioritize the overall averaged temperature between the two sensors.

The high weight selection caused the remote sensor to have a higher influence in the calculated temperature average than the local sensor and the low weight selection caused the remote sensor to have less influence.

# Troubleshooting

## Reset Operation

**Note:** 1. When thermostat is reset, installer configuration menu settings and programming will reset to factory settings.

If a voltage spike or static discharge blanks out the display or causes erratic thermostat operation, you can reset the thermostat by removing the wires from terminals R and C (do not short them together) and removing batteries for 2 minutes. After resetting the thermostat, replace the wires and batteries. If the thermostat has been reset and still does not function correctly contact your heating/cooling service person or place of purchase.

2. Be sure to review the installer configuration menu settings.

To reset the programming, clock and configuration settings, press the  and  and SYSTEM keys simultaneously. The thermostat should go blank and then all segments will be displayed momentarily.

Symptom	Possible Cause	Corrective Action
<b>No Heat/No Cool/No Fan (common problems).</b>	<ol style="list-style-type: none"> <li>Blown fuse or tripped circuit breaker.</li> <li>Power switch to OFF.</li> <li>Fan compartment door or panel loose or not properly installed.</li> <li>Loose connection to thermostat or system.</li> </ol>	<ol style="list-style-type: none"> <li>Replace fuse or reset breaker.</li> <li>Turn switch to ON.</li> <li>Replace door panel in proper position to engage safety interlock or door switch.</li> <li>Tighten connections</li> </ol>
<b>No Heat</b>	<ol style="list-style-type: none"> <li>Lock-Out Condition. Heat may also be intermittent.</li> <li>Heating system requires service or thermostat requires replacement.</li> </ol>	<p>If the heat works intermittently, contact a local HVAC service person for assistance.</p> <p><b>Diagnostic:</b> Set SYSTEM Switch to <b>HEAT</b> and raise the setpoint above room temperature. Within a few seconds the thermostat should make a soft click sound. This sound usually indicates the thermostat is operating properly. If the thermostat does not click, try the reset operation listed above. If the thermostat does not click after being reset, replace the thermostat and contact an HVAC service person to verify the heating is operating correctly.</p>
<b>No Cool</b>	<ol style="list-style-type: none"> <li>Cooling system requires service or thermostat requires replacement.</li> </ol>	<p>Same as diagnostic for No Heat condition except set the thermostat to <b>COOL</b> and lower the setpoint below the room temperature. There may be up to a five minute delay before the thermostat clicks in Cooling.</p>
<b>Heat, Cool or Fan Runs Constantly</b>	<ol style="list-style-type: none"> <li>Possible short in wiring.</li> <li>Possible short in thermostat.</li> <li>Possible short in heat/cool/fan system.</li> <li>FAN switch set to Fan ON.</li> </ol>	<p>Check each wire connection to verify they are not shorted or touching together. No bare wire should stick out from under terminal block. Try resetting the thermostat as described above. If the condition persists, test the Heat/Cool system for correct operation. If the system operates correctly, replace the thermostat.</p>
<b>Thermostat Setting &amp; Thermostat Thermometer Disagree</b>	<ol style="list-style-type: none"> <li>Thermostat thermometer setting requires adjustment.</li> </ol>	<p>The thermometer can be adjusted +/- 5 degrees. See "11. Select Temperature Display Adjustment" on <a href="#">page 8</a>.</p>
<b>Water Source Heat Pump Cycles Too Fast or Too Slow (narrow or wide temperature swing)</b>	<ol style="list-style-type: none"> <li>The location of the thermostat and/or the size of the Heating System may be influencing the cycle rate.</li> </ol>	<p>Digital thermostats provide precise control and cycle faster than older mechanical models. The system turns on and off more frequently but runs for a shorter time so there is no increase in energy use. If you would like an increased cycle time, choose SL for slow cycle in the "Installer/Configuration Menu" on <a href="#">page 7</a>, step 6 (heat) or 7 (cool). If an acceptable cycle rate is not achieved, contact a local HVAC service person for additional suggestions.</p>
<b>Forgot Keypad Lockout Code</b>		<p>Press the menu key (key will disappear) and hold in for 20 seconds. This unlocks the thermostat.</p>
<b>Blank display any or keypad not responding</b>	<ol style="list-style-type: none"> <li>Voltage Spike or static discharge</li> </ol>	<p>Use the Reset Operation shown above.</p>
<b>Thermostat does not have Menu Screen Numbers</b>	<ol style="list-style-type: none"> <li>Earlier version of thermostat</li> </ol>	<p>Contact your local Daikin factory representative.</p>

