

T385

Manual

Thermostat Application Guide

Description	
Gas or Oil Heat	Yes
Electric Furnace	Yes
Heat Pump (No Aux. or Emergency Heat)	Yes
Heat Pump (With Aux. or Emergency Heat)	Yes
Multi-Stage Systems	Yes
Heat Only Systems	Yes
Cool Only Systems	Yes
Millivolt	Yes

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Power Type

Battery Power
 Hardwire (Common Wire)
 Hardwire (Common Wire) with
 Battery Backup

A trained, experienced technician must install this product.

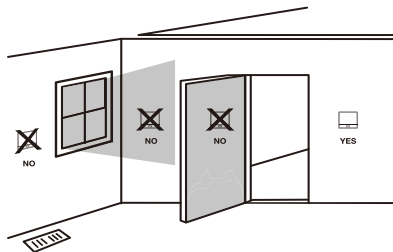
Carefully read these instructions. You could damage this product or cause a hazardous condition if you fail to follow these instructions.

Specifications

The display range of temperature	32°F to 99°F (0°C to 40°C)
The control range of temperature.....	41°F to 90°F (5°C to 32°C)
Load rating.....	1 amp per terminal, 1.5 amp maximum all terminals combined
Swing (cycle rate or differential)	Heating is adjustable from 0.2° to 2.0° Cooling is adjustable from 0.2° to 2.0°
Power source	18 to 30 VAC, NEC Class II, 50/60 Hz for hardwire - Battery power from 2 AAA Alkaline batteries
Operating ambient	32°F to +105°F (0°C to +41°C)
Operating humidity	90% non-condensing maximum
Dimensions of thermostat	4.7"W x 4.4"H x 1"D

Wall Locations

The thermostat should be installed approximately 4 to 5 feet above the floor. Select an area with average temperature and good air circulation.



Installation Tip

Pick an installation location that is easy for the user to access. The temperature of the location should be representative of the building.

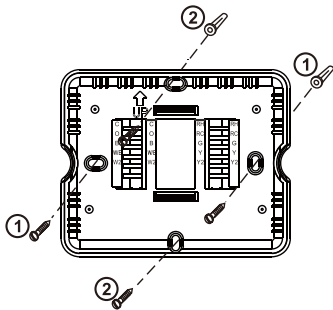
Do not install thermostat in locations:

- Close to hot or cold air ducts
- That are in direct sunlight
- With an outside wall behind the thermostat
- In areas that do not require conditioning
- Where there are dead spots or drafts (in corners or behind doors)
- Where there might be concealed chimneys or pipes

Installation Tips

Subbase Installation

- ① Horizontal Mount
- ② Vertical Mount



For vertical mount put one screw on the top and one screw on the bottom.
For horizontal mount put one screw on the left and one screw on the right.

Installation Tip: Electrical Hazard

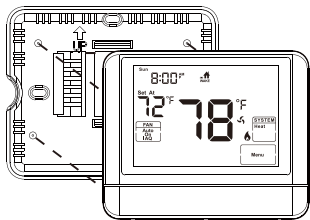
Failure to disconnect the power before beginning to install this product can cause electrical shock or equipment damage.

Mercury Notice

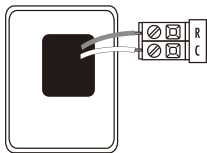
All of our products are mercury free. However, if the product you are replacing contains mercury, dispose of it properly. Your local waste management authority can give you instructions on recycling and proper disposal.

Mount Thermostat

Align the 4 tabs on the subbase with corresponding slots on the back of the thermostat, then push gently until the thermostat snaps in place.

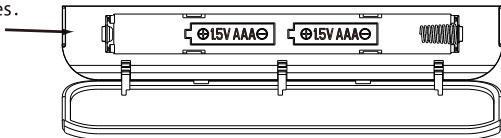


Battery Installation



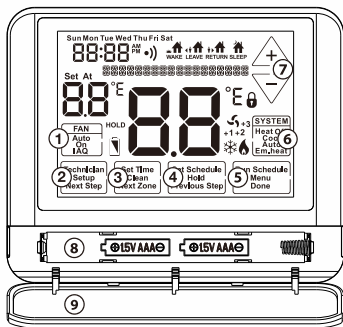
Battery installation is optional if thermostat is hardwired (R and C terminal connected to 24V power).

Insert 2 AAA Alkaline batteries. High quality alkaline batteries are recommended.



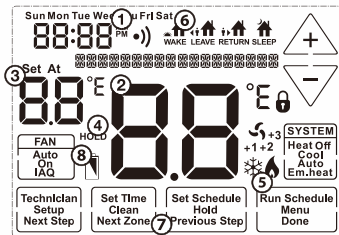
Thermostat Quick Reference

Getting to know your thermostat



- 1 Fan Buttons
- 2 Next step Buttons
- 3 Set time Buttons
- 4 Program Buttons
- 5 Menu Buttons
- 6 System Buttons
- 7 Setpoint Buttons
- 8 Battery Cover
- 9 Button/Battery Access Door

Getting to know your thermostat



- Days of the week and time
- Indicates the current room temperature
- Displays the user selectable setpoint temperature
- Hold is displayed when thermostat program is permanently overridden.
- System Operation Indicators:** The compressor delay is active if these are flashing.
- Programmable Time Periods:** Residential uses 4 time periods - **WAKE, RETURN, LEAVE** and **SLEEP**.
- Program Menu Options:** Shows different options during programming.
- Low Battery Indicator:** Replace batteries when this indicator is shown.



Caution: Electrical Hazard

Failure to disconnect the power before beginning to install this product can cause electrical shock or equipment damage.



Warning:

All components of the control system and the thermostat installation must conform to Class II circuits per the NEC Code.

Wiring

1. If you are replacing a thermostat, make note of the terminal connections on the thermostat that is being replaced. In some cases the wiring connections will not be color coded. For example, the green wire may not be connected to the **G** terminal.
2. Loosen the terminal block screws. Insert wires then retighten the terminal block screws.
3. Place nonflammable insulation into the wall opening to prevent drafts.



Installation Tip

Do not overtighten terminal block screws, as this can damage the terminal block. A damaged terminal block can keep the thermostat from fitting on the subbase correctly or cause system operation issues.

Max Torque = 6in-lbs.

Wiring Tips

C Terminal

The C (common wire) terminal does not have to be connected when the thermostat is powered by batteries.

Wire Specifications

Use shielded or non-shielded 18-22 gauge thermostat wire.

Terminal Designations

This thermostat is shipped from the factory to operate a conventional heating and cooling system. This thermostat may also be configured for a heat pump system. See the “heat pump” configuration step on page 14 of this manual to configure the thermostat for heat pump applications.

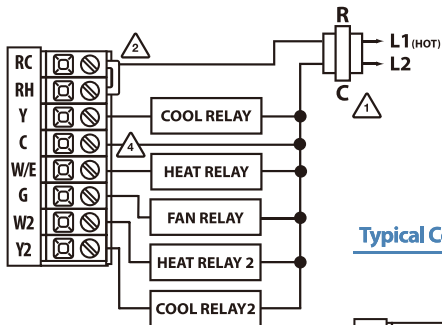
Note:

In many heat pump systems with no emergency heat relay, a jumper can be installed between **E** and **W2** to turn thermostat into a single stage control for Emergency Heat Operation.

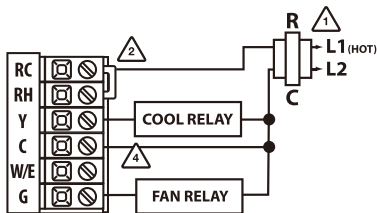
Terminal	2 Heat 2 Cool Conventional System	2 Heat 1 Cool Heat Pump System	3 Heat 2 Cool Heat Pump System
RC	Transformer power (cooling)	Transformer power (cooling)	Transformer power (cooling)
RH	Transformer power (heating)	Transformer power (heating)	Transformer power (heating)
C	Transformer common	Transformer common	Transformer common
B	Reversing valve / configerable terminal	Reversing valve / configerable terminal	Reversing valve / configerable terminal
O	Reversing valve / configerable terminal	Reversing valve / configerable terminal	Reversing valve / configerable terminal
G	Fan relay	Fan relay	Fan relay
W/E	First stage of heat	Emergency Heat	First stage of auxiliary heat
Y	First stage of cool	First stage of heat & cool	First stage of heat & cool
Y2	Second stage of cool	N/A	Second stage of heat & cool
W2	Second stage of heat	Auxiliary heat	Secodn stage of auxiliary heat

- 1 Power supply
- 2 Factory-installed jumper. Remove only when installing on 2-transformer systems

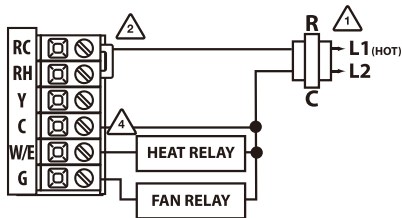
Typical 2H/2C System: 1 Transformer



Typical Cool-Only System With Fan



Typical Heat Only System With Fan

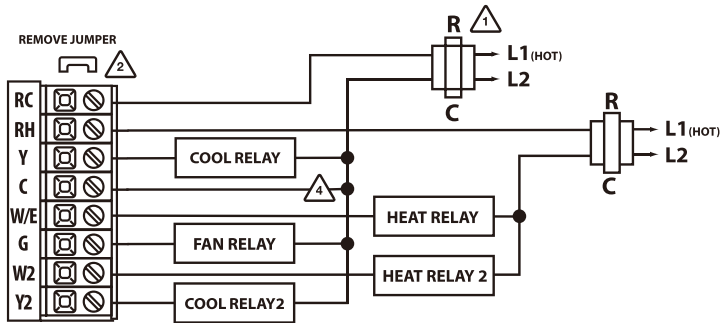


Note:

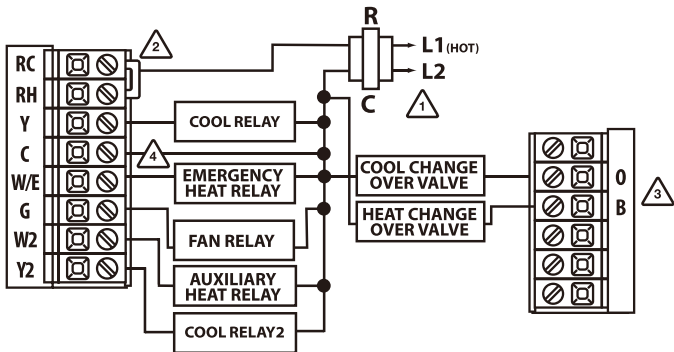
In many systems with no emergency heat relay a jumper can be installed between E and W2.



- 3** Use either O or B terminals for changeover valve
- 4** Optional 24 VAC common connection when thermostat is used in battery power mode .

Typical 2H/2C System: 2 Transformer



Typical 3H/2C or 2H/1C Heat Pump System




1. Press MENU button
2. Press and hold **TECHNICIAN SETUP** button for 3 seconds. This 3 second delay is designed so that homeowners do not accidentally access the installer settings.
3. Configure the installer options as desired using the table below.
4. Use the  or  keys to change settings and the NEXT STEP or PREV STEP key to move from one step to another. Note: Only press DONE key when you want to exit the Technician Setup options.

Tech Setup Steps		LCD Will Show	Adjustment Options	Default
Filter Change Reminder	This feature will flash a reminder in the display after the elapsed run time to remind the user to change the filter. A setting of "OFF" will disable this feature.	FILTER OFF SE	You can adjust the filter change reminder from OFF to 2000 hours of runtime in 50 hour increments.	OFF
Room Temperature Calibration	This feature allows the installer to change the calibration of the room temperature display. For example, if the thermostat reads 70° degrees and you would like it to read 72° then select +2.	CALIBRATE 0°F	You can adjust the room temperature display to read 4° above or below the factory calibrated reading.	0
Minimum Compressor On Time	This feature allows the installer to select the minimum run time for the compressor. For example: a setting of 4 will force the compressor to run for at least 4 minutes every time the compressor turns on, regardless of the room temperature.	MIN COMP OF	You can select the minimum compressor run time from "off", "3", "4", or "5" minutes. If 3, 4, or 5 is selected, the compressor will run for at least the selected time before turning off.	OFF

Technician Setup

Tech Setup Steps	LCD Will Show	Adjustment Options	Default
Compressor Short Cycle Delay The compressor short cycle delay protects the compressor from short cycling. This feature will not allow the compressor to be turned on for 5 minutes after it was last turned off.	COMP DELAY 05	Selecting "ON" will not allow the compressor to be turned on for 5 minutes after the last time the compressor was switched off. Select "OFF" to remove this delay.	05
Cooling Swing The swing setting often called "cycle rate," "differential" or "anticipation" is adjustable. A smaller swing setting will cause more frequent cycles and a larger swing setting will cause fewer cycles.	COOL SWING 0.5°F	The cooling swing setting is adjustable from 0.2° to 2°. For example: A swing setting of 0.5° will turn the cooling on at approximately 0.5° above the setpoint and turn the cooling off at approximately 0.5° below the setpoint.	0.5
Heating Swing The swing setting often called "cycle rate," "differential" or "anticipation" is adjustable. A smaller swing setting will cause more frequent cycles and a larger swing setting will cause fewer cycles.	HEAT SWING 0.4°F	The heating swing setting is adjustable from 0.2° to 2°. For example: A swing setting of 0.5° will turn the heating on at approximately 0.5° below the setpoint and turn the heating off at approximately 0.5° above the setpoint.	0.4











Tech Setup Steps	LCD Will Show	Adjustment Options	Default
<p>Heat Pump</p>	<p>When turned on the thermostat will operate a heat pump. EM. Heat will show as an option in the system switch tech setting. Use the [+] and [-] button to adjust.</p>	<p>HEAT PUMP</p> <p>OF</p> <p>OFF configures the thermostat for conventional systems.</p> <p>ON configures the thermostat for heat pump systems.</p>	<p>OFF</p>
<p>System Set</p>	<p>You can configure the system switch for the particular application. Heat - Off - Cool, Heat - Off, Cool - Off, Heat - Off - Cool - Auto.</p> <p>Note: Emergency Heat is available in heat pump mode only.</p>	<p>SYSTEM SET</p>  <p>Use the [+] or [-] buttons until the desired application is flashing. AUTO = (Auto Changeover)</p>	<p>OFF</p>
<p>Stages of Heat + Cool</p>	<p>You can configure this thermostat to operate up to a 2H/2C conventional, or up to a 4H/2C heat pump system.</p> <p>This step is shown only if heat pump is set to ON.</p>	<p>2H2C</p> <p>STRGS OF HEAT + COOL</p> <p>Use the [+] or [-] key to first select stages of heat, press next- then select stages of cool. 3 or 4 heat will use Y1 and Y2 as 1st and 2nd stage of heat.</p>	<p>2 STAGES</p>

Technician Setup

Tech Setup Steps	LCD Will Show	Adjustment Options	Default
Cooling Fan Delay	<p>COOL FAN DELAY</p> <p>0F</p>	You can set the cooling fan delay to OFF, 15, 30, 60 or 90 seconds. If 15, 30, 60, or 90 is selected the fan will not turn on for that many seconds when there is a call for cool and will run for that many seconds after satisfying a call for cool.	OFF
Heating Temperature Setpoint Limit	<p>HEAT LIMIT</p> <p>90°F</p>	Use the <input type="checkbox"/> or <input type="checkbox"/> key to select the maximum heat setpoint. Range 41°F - 90°F	90°
Cooling Temperature Setpoint Limit	<p>COOL LIMIT</p> <p>41°F</p>	Use the <input type="checkbox"/> or <input type="checkbox"/> key to select the minimum cool setpoint. Range 41°F - 90°F	41°

Tech Setup Steps	LCD Will Show	Adjustment Options	Default
<p>F° or C°</p>	<p>Select F for Fahrenheit read out or select C for Celsius read out.</p>	<p>OF F OR C SET</p> <p>83°F</p> <p>°F for Fahrenheit °C for Celsius</p>	<p>F°</p>
<p>12 or 24 Hour Clock</p>	<p>You can select either 12 or 24 hour clock setting.</p>	<p>12H</p> <p>12 HOUR CLOCK SETTING</p> <p>Use the <input type="checkbox"/>- or <input type="checkbox"/>+ key to select 12 or 24 hour clock.</p>	<p>12 Hour Clock</p>
<p>Fan Operation</p>	<p>Select GAS for systems that control the fan during a call for heat. Select ELEC to have the thermostat control the fan during a call for heat.</p>	<p>GAS</p> <p>FAN OPERATION</p> <p>Gas or Elec</p>	<p>GAS</p>
<p>Morning Recovery</p>	<p>This feature will start heating early to bring the building temperature to its programmed setpoint by the beginning of the WAKE time period.</p>	<p>MORNING RECOVERY</p> <p>ON</p> <p>Use the <input type="checkbox"/>- or <input type="checkbox"/>+ key to turn on or off.</p>	<p>ON</p>

Technician Setup

Tech Setup Steps		LCD Will Show	Adjustment Options	Default
Program Options	You can configure this thermostat to have a 7 day program, a 5+1+1 program or nonprogrammable.	PROGRAM OPTIONS 	Use the  or  key to select 7d for 7 day, 5d for 5+1+1, or 0d for non-programmable.	5d
Display Light	The display light can be configured to operate 2 different ways. To come on only when the light key is pressed, when any key is pressed, or stay on ALL of the time.	 	'AUTO' - Any key ON 'ON' - Always ON	AUTO
Contractor Call Number	Allows you to put your phone number in the display. Selecting "ON" will enable this feature. "OFF" will disable this feature.	PHONE NUM 	If selected on, you will see the input screen after pressing next step. Use the  or  keys to select the desired number and the FAN or SYSTEM key to move from one character to another. See Note on page 12 for operation.	OFF
Beep	When any key is pressed an audible beep will sound. There is an ON or an OFF.	BEEP 	If ON is selected the beep will sound. If OFF is selected, there is no sound.	ON
Factory Default Reset	This step resets all WIFI settings to factory default.	RESET TO DEFAULT 	Press YES to reset.	

Swing Setting Tip

The second stage will turn on at 2x the swing setting. The second stage will turn off when 1x the swing is reached. For example, if the swing setting is 0.5 degrees for heating and the thermostat is set at 70°F, the first stage will turn on at approximately 69.5°F. The second stage will turn on at 69°F. The second stage will turn off at 69.5°F and the first will turn off at 70.5°F. If the third stage is used, it will turn on at 68.5°F and turn off at approximately 69°F.

A Note About Keypad Lockout:

The function of activating your lockout choice takes place after you have exited tech setup. To lock or unlock the keypad hold down the MENU for 3 seconds.

Contractor Call Number Note:

If contractor call number is selected ON, your phone number will show in the display if there has been a continuous call for heating or cooling for 24 hours or if the FAN button is held down for 3 seconds. To remove the phone number from the display, hold the fan button down for 3 seconds.

Set Time (If using programming)

1. Press the **MENU** button
2. Press **SET TIME**
3. Day of the week will be flashing. Use the or key to select the current day of the week.
4. Press **NEXT**
5. The current hour is flashing. Use the or key to select the current hour. When using 12-hour time, make sure the correct a.m. or p.m. choice is selected.
6. Press **NEXT**
7. Minutes are now flashing. Use the or key to select current minutes.
8. Press **DONE** when completed.

Set Program Schedule

To customize your 5+1+1 program schedule, follow these steps

Weekday:

1. Select **HEAT** or **COOL** with the system switch. **Note:** You have to program heat and cool each separately.
2. Press the **MENU** button (If menu does not appear first press **RUN SCHED**)
3. Press **SET SCHED**. Note: Monday-Friday is displayed and the **WAKE** icon is shown. You are now programming the wake time period for the weekday setting.
4. Time is flashing. Use the or key to make your time selection for the weekday **WAKE** time period. If you want the fan to run continuously during this time period, select **ON** with the fan key.
5. Press **NEXT**
6. The setpoint temperature is flashing. Use the or key to make your setpoint selection for the weekday wake period.
7. Press **NEXT**
8. Repeat steps 4 thru 7 for weekday **LEAVE** time period, for weekday **RETURN** time period, and for weekday **SLEEP** time period.

Continued on next page...

Saturday:

Repeat steps 4 thru 7 for the Saturday **WAKE** time period, **LEAVE** time period, **RETURN** time period, and for the Saturday **SLEEP** time period.

Sunday:

Repeat steps 4 thru 7 for the Sunday **WAKE** time period, **LEAVE** time period, **RETURN** time period, and for the Sunday **SLEEP** time period.

To customize your 7 Day Program schedule, follow these steps:

1. Select **HEAT** or **COOL** using the system key. **Note:** You have to program heat and cool each separately.
2. Press **MENU**
3. Press **SET SCHED.** **Note:** Monday is displayed and the **WAKE** icon is shown. You are now programming the **WAKE** time period for that day.
4. Time is flashing. Use the or key to make your time selection for that day's **WAKE** time period. **Note:** If you want the fan to run continuously during this time period, select **ON** with the **FAN** key.
5. Press **NEXT.**
6. The setpoint temperature is flashing. Use the or key to make your setpoint selection for that day's **WAKE** period.
7. Press **NEXT.**
8. Repeat steps 4 through 7 for that day's **LEAVE** time period, **RETURN** time period, and **SLEEP** time period.

Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday

Repeat steps 4 thru 7 for the remaining days of the week.

Programming

All of our programmable thermostats are shipped with an energy saving pre-program. Your thermostat can be programmed to have all the weekdays the same, a separate program for Saturday, and a separate program for Sunday. There are four time periods for each program (**WAKE, LEAVE, RETURN, SLEEP**).

Factory Default Program				
Day of the Week	Events	Time	Setpoint Temperature (HEAT)	Setpoint Temperature (COOL)
Weekday	Wake	6 AM	70°F (21°C)	75°F (24°C)
	Leave	8 AM	62°F (17°C)	83°F (28°C)
	Return	6 PM	70°F (21°C)	75°F (24°C)
	Sleep	10 PM	62°F (17°C)	78°F (26°C)
Saturday	Wake	6 AM	70°F (21°C)	75°F (24°C)
	Leave	8 AM	62°F (17°C)	83°F (28°C)
	Return	6 PM	70°F (21°C)	75°F (24°C)
	Sleep	10 PM	62°F (17°C)	78°F (26°C)
Sunday	Wake	6 AM	70°F (21°C)	75°F (24°C)
	Leave	8 AM	62°F (17°C)	83°F (28°C)
	Return	6 PM	70°F (21°C)	75°F (24°C)
	Sleep	10 PM	62°F (17°C)	78°F (26°C)



A Note About Auto Changeover:

If in Auto you have the ability to switch between Auto Heat or Auto Cool by pressing the System key. This can be done once the current mode has reached its set-point. For example: If in Auto Heat, the heat setpoint must be satisfied before the thermostat will allow you to switch to Auto Cool. You can switch out of Auto by holding down the System key. To get back into Auto, you must toggle the System key to Auto.



Reminders Note:

Once a Reminder has been turned on and set, the elapsed time can be checked by navigating to it's tech setup step. The elapsed time will then appear in the text field. It can also be reset at that time by a press and hold of the third button from the left for 3 seconds. Resetting an expired Reminder can be done without entering tech setup, by a press and hold of the 3rd button from the left for 3 seconds.

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