Honeywell

T8131A,B Programmable Thermostat

OWNER'S GUIDE

Weekday/Weekend (5-day/ 2-day)
Programmable Heat and/or Cool
Low Voltage (20 to 30 Vac)
Thermostat and Mounting Plate

69-0887-1

Welcome to the world of comfort and energy savings with your new Honeywell programmable thermostat.

By following the programing instructions in this manual, your new thermostat will automatically control the temperature in your home, keeping you comfortable while saving energy.

Direct any questions concerning the application of this thermostat to Honeywell Customer Assistance at 1-800-468-1502, Monday-Friday 7:00 a.m.-5:30 p.m., Central time.

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RECYCLING

If this thermostat is replacing a thermostat that contains mercury in a sealed tube, do *not* place your old thermostat in the trash. See Fig. 1. Contact your local waste management authority for instructions regarding recycling and the proper disposal of your old thermostat.

If you have questions, call Honeywell Inc. at 1-800-468-1502.

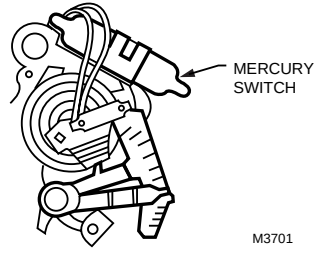


Fig. 1. Typical location of a mercury switch in a thermostat.

Prepare for Installation

❶ Check Table 1 to make sure this thermostat is compatible with your system. For more information, call Honeywell Customer Assistance, toll-free 1-800-468-1502.

Table 1. Compatibility Chart.

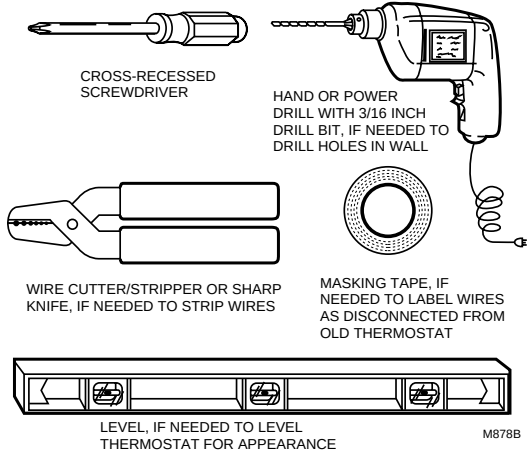
System Type	Compatible With T8131
Gas—Standing Pilot	Yes
Gas—Electronic Ignition	Yes
Gas-Fired Boilers	Yes[a,b]
Gas—Millivolt	*No*
Oil-Fired Boilers	Yes[a,b]
Oil-Fired Furnace	Yes
Electric Furnace	Yes
Electric Air Conditioning	Yes
Baseboard Electric (120/240 Line Volt)	*No*
Heat Pumps/Multistage Equipment	*No*

NOTE: Not compatible with any 120/240 volt circuit.

[a] Compatible with 2-wire Honeywell zone valves. Isolating relay required for 3-wire thermostats for zone valves. Not compatible with 2-wire White-Rodgers no. 1361 Valves.

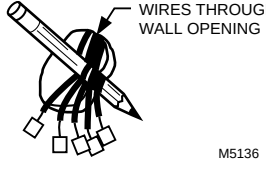
[b] Compatible with *hot water* baseboard systems. **Will not work efficiently on steam or gravity systems.**

❷ Acquire tools and items (below) as needed. Also purchase two AA alkaline batteries; we recommend Energizer® batteries.



Remove Old Thermostat

1. Test to make certain that your heating and cooling systems are working properly. If either does not work, contact your local heating/air conditioning dealer. To avoid compressor damage, do not operate the cooling system when outdoor temperature is below 50°F (10°C).
2. Turn off power to the system at the furnace, or at the fuse/circuit breaker panel.
3. Carefully unpack your new thermostat and mounting plate; save the package of screws, the instructions and the receipt.
4. Remove the cover from the old thermostat. If it does not snap off when pulled firmly from the bottom, check for a screw used to lock on the cover.
5. Loosen screws holding thermostat to subbase, wallplate or wall, and lift away.
6. Disconnect wires from old thermostat or subbase. As you disconnect each wire, use masking tape to label it with the old terminal designation. If there are only two wires, they do not require labeling. If there is an extra wire that is not connected to your old thermostat, you *also will not be connecting* it to your new thermostat. Keep the wires from falling back into the wall by wrapping them around a pencil as shown.



Replacing a Clock Thermostat that has C or C1 Clock Terminals?

If you are replacing a Honeywell Chronotherm® Thermostat, you may find one or two wires that go to the C or C1 clock terminals on the Chronotherm® Thermostat wiring wallplate. Do not allow them to touch, or you can damage your transformer. Disconnect the wires and wrap them *separately,* using electrical tape. *Do not wrap them together*. Place the wires where they do not interfere with the operation of the new thermostat. Record the colors and terminal designation labels of the remaining wires.

Six or More Wires?

If there are six or more wires (excluding clock wires attached to terminals), you most likely have a variation of a heat pump or multistage system. This thermostat is *not* compatible with such systems. If you would like information about which programmable thermostats will work with your system, call Honeywell Customer Assistance at 1-800-468-1502.

Three Thermostat Wires?

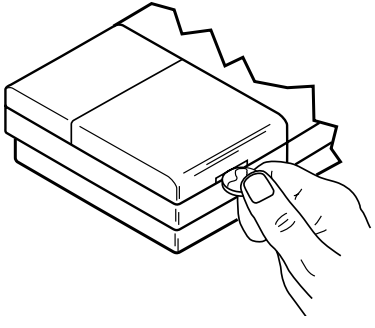
If you have three wires for heating only and can operate the fan using the fan ON switch, this thermostat will work with your system; however, some hot water (zoned) heating systems have three thermostat wires. The thermostat will not work without installing an isolating relay on these systems. For details, call Honeywell Customer Assistance at 1-800-468-1502.

Install Batteries

IMPORTANT

Batteries must be installed for programming and operating the thermostat and heating/cooling system.

1. Use two AA alkaline batteries; non-alkaline batteries will not last as long, and can leak, causing damage to the thermostat or the wall surface. We recommend Energizer® batteries.
2. Make sure the thermostat is set to the OFF position.
3. Use a coin to remove the battery door.
4. Install the fresh batteries as shown, making sure positive and negative terminals are oriented correctly.
5. Replace the battery door.



REMOVING BATTERY DOOR

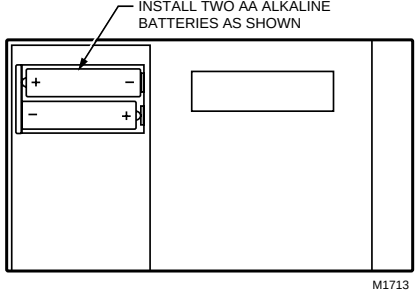
M1719C

As the batteries are running low, a *bAt Lo* indicator flashes for one to two months before the batteries run out completely. Replace the batteries as soon as possible after the indicator starts flashing. If you do not replace the batteries sometime during the flashing *bAt Lo*, the

indicator eventually stops flashing. *bAt Lo* stays on without flashing to indicate the thermostat and heating/cooling system have stopped working and the batteries are almost completely dead.

After the batteries are completely dead, the *bAt Lo* indicator disappears, leaving a completely blank display.

Press down on the left ends of batteries to remove them. If you insert the new batteries within 20 to 30 seconds of removing the old ones, you do not need to reprogram the thermostat. However, if the display is blank, the batteries are dead or incorrectly installed and you need to reprogram. See pages 16 to 19 to reprogram.



IMPORTANT

Although the thermostat has a low battery indicator, replace the batteries once a year to prevent the thermostat and heating/cooling system from shutting down due to lack of battery power.

As a precaution, when leaving home for longer than a month, change the batteries before you leave to prevent the system from shutting down due to lack of battery power.

Program the Thermostat

When batteries are installed, your thermostat can be programmed in your hand, before it is mounted on the wall.

If you would prefer to program the thermostat after it is mounted on the wall, go to page 22, and return later to this programming section.

Refer to the personal Program Schedule (pages 14 and 15) to program your time and temperature settings for various times of the day.

Four time periods are available during weekdays—WAKE, LEAVE, RETURN, and SLEEP. During weekends, only the WAKE and SLEEP time periods are available. These periods can be seen individually on the display as you press the **Set Schedule** key.

WAKE is the time period you want the house at a comfortable temperature when you get up and while you get ready for work or school. When deciding what time to set for your WAKE period, include extra lead time, depending on the outside temperature and your furnace response time, to give the furnace a head start to heat the house before you get up. (This will be a higher temperature during heating season, or a lower temperature during cooling season.)

LEAVE is the time period you can set for an energy-saving temperature while you are away

at work or school. (This will be a lower temperature during heating season, or a higher temperature during cooling season.)

RETURN is the time period you want the house at a comfortable temperature for activities before bedtime. When deciding what time to set for your RETURN period, include extra lead time, depending on the outside temperature and your furnace response time, to give the furnace a head start to heat the house before you arrive home. (Again, higher for heating or lower for cooling.)

SLEEP is the time period you can set for an energy-saving temperature while you are sleeping. (Again, lower for heating or higher for cooling. For more comfortable sleeping, some homeowners choose not to raise the cool temperature during the night.)

You will set one schedule for weekdays and another for weekends, because your requirements are probably different for each.

Fill in the times and temperatures you desire for weekdays and weekends. If you decide not to program the thermostat, it automatically controls heating at 68°F (20°C), and cooling at 78°F (26°C), 24 hours a day. Also, you do not need to enter a time and temperature program for all periods if your schedule does not require

it. For example, a house that is occupied during weekdays would only require programs for WAKE and SLEEP.

Before programming, remove the clear plastic overlay covering the display.

When pressing the keys, use the ball of your finger or a soft pencil eraser.

NOTE: Using sharp fingernails or pencil points can damage the keypad.

If you make an error at any time during programming, press the Run Program key and continue again at the last step.

Program Schedule

HEATING PROGRAM SCHEDULE

Weekdays	**Start Time**	**Heating Temperature** [2]
WAKE [1]	_____	_____
LEAVE	_____	_____
RETURN [1]	_____	_____
SLEEP	_____	_____
Weekends		
WAKE [1]	_____	_____
SLEEP	_____	_____

[1] WAKE and RETURN start times should include extra lead time, based on outside temperature and furnace response time, to give your furnace a head start to heat the house.

[2] The temperatures cannot be set any higher than 88°F (31°C) or any lower than 45°F (7°C).

COOLING PROGRAM SCHEDULE

Weekdays	**Start Time**	**Cooling Temperature** ⚠2
WAKE ⚠1	_____	_____
LEAVE	_____	_____
RETURN ⚠1	_____	_____
SLEEP	_____	_____
Weekends		
WAKE ⚠1	_____	_____
SLEEP	_____	_____

⚠1 WAKE and RETURN start times should include extra lead time, based on outside temperature and furnace response time, to give your furnace a head start to heat the house.

⚠2 The temperatures cannot be set any higher than 88°F (31°C) or any lower than 45°F (7°C).

NOTE: If you decide not to program the thermostat, it automatically controls heating at 68°F (20°C), and cooling at 78°F (26°C), 24 hours a day.

This guide can be used for programming your new thermostat.

NOTE: Batteries are required for operation and programming. When inserting batteries, set the system switch to OFF. Remove the battery door (on the thermostat left side) using a coin at the bottom. Follow the instructions on pages 9 and 10.

Set Current Time/Day

To set the time, press and release Set Clock/Day once, Time Ahead Back until current time shows; to set day, press and release Set Clock/Day again, Time Ahead Back until current day shows; then press Run Program .

Heating Program

With system switch at HEAT, press and release Set Schedule once. WAKE, MON-FRI and SET appear on the display.

Use Time Ahead / Back to program WAKE time and Temp Warmer / Cooler to program WAKE temperature for Mon-Fri.

Repeat sequence for LEAVE, RETURN, and SLEEP.

Press Set Schedule until SAT, SUN, WAKE and SET appear on the display. Use Time Ahead / Back to program WAKE time and Temp Warmer / Cooler to program WAKE temperature for SAT-SUN. Repeat sequence for SLEEP.

Cooling Program

With system switch at COOL, follow the same instructions as for the Heating Program.

After programming, adjust fan and system switches, as desired. Press and release Run Program to start the program.

A quick guide for operating or making changes follows:

NOTE: Set system switch to Heat or Cool to perform the following:

Temporarily Change temperature *for current period only*—press Temp Warmer / Cooler ; TEMPORARY indicator shows on display; this is cancelled at next scheduled change, or to cancel sooner, press Run Program .

Hold a temperature indefinitely (such as when you are on vacation)—press Hold Temp , Temp Warmer / Cooler ; HOLD appears on display; to cancel, press Run Program .

Check Current Temperature Setting—press Run Program . (When using TEMPORARILY CHANGE or HOLD, pressing this cancels your change.)

Check Programs—press Set Schedule repeatedly to see each time and temperature; then press Run Program.

Cancel a program—press Set Schedule until program to cancel shows; then press Time Ahead Back together.

Permanently Change a program—Repeat steps in Heating Program or Cooling Program (page 16 and 17), as applicable.

Return to normal program or start program—press Run Program.

Questions?
Call Honeywell
Customer Assistance
1-800-468-1502.

Adjust Fan Operation Switch

❶ The thermostat fan operation switch, labeled FUEL SWITCH (see illustration on page 21), is factory-set in the F position. This is the correct setting for most systems. If your system is an electric heat system, set the switch to E. The E setting allows the fan to turn on immediately with the heating or cooling in a system where the G terminal is connected.

Adjust System On-Time, °F/°C

❶ The thermostat on-time is factory-set for a warm air, gas or oil heating system. If you are installing it on another type of system, adjust the on-time accordingly by setting screws A and B on the back of the thermostat. Use the heating system table shown in the illustration (page 21) as a guide.

Optimize the system on-time according to the type of system to minimize room temperature swings. Setting the screw *out one turn* means turning the screw approximately 360° counter-clockwise, or about one complete turn.

In the unlikely event that you want a longer furnace on-time, readjust screws A and/or B as follows:

First, turn in both screws completely, then adjust for system type:

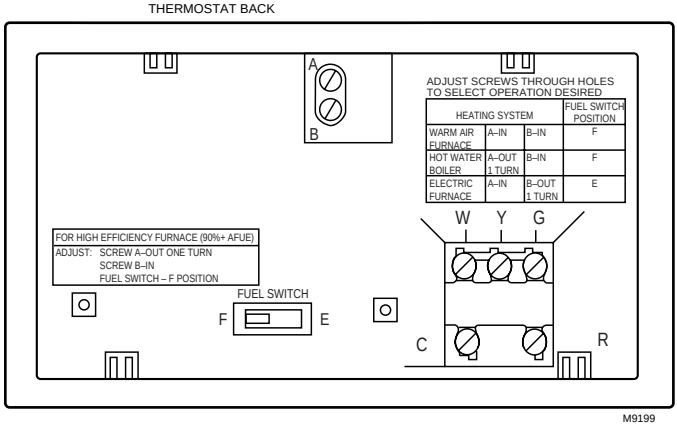
- Warm Air Furnace—set at the Hot Water setting (A—out one turn, B—leave in).

- Electric Furnace—leave at the Warm Air Furnace setting (A—leave in, B—out one turn).

NOTE: This thermostat does not have a setting for steam/gravity air. Cycles would not be long enough for accurate temperature control.

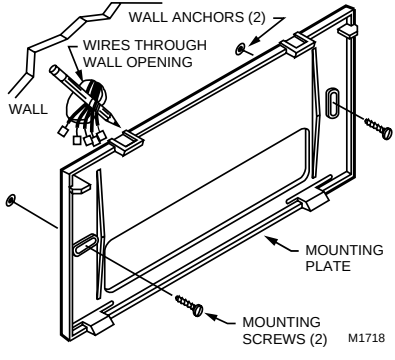
IMPORTANT

When using a high efficiency furnace such as a 90% or greater AFUE (Average Fuel Utilization Efficiency) unit, adjust screw A out one turn and leave screw B in.

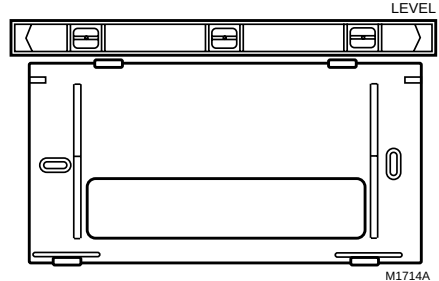


Mount Thermostat Mounting Plate

1. Position mounting plate on the wall. Use a level to make sure mounting plate is level. Use a pencil to mark the two mounting holes.
2. Remove mounting plate from the wall, and drill 3/16 in. holes in the wall (if drywall) as marked. For firmer material such as plaster or wood, drill 7/32 in. holes. Gently tap the anchors (provided) into the drilled holes until flush with the wall.



3. Reposition the mounting plate over the holes, pulling the wires through the wiring opening. Loosely insert the two mounting screws into the holes.
4. Level for appearance only; thermostat functions properly even when not level. Tighten the mounting screws.



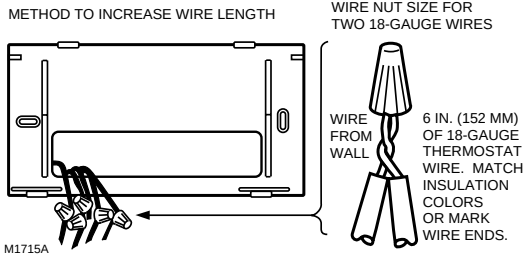
Wire Thermostat Terminals

NOTE: All wiring must comply with local codes and ordinances. If unsure about household wiring procedures, call your local heating/air conditioning contractor.

Refer to the masking tape labels you placed on the wires when you removed your old thermostat.

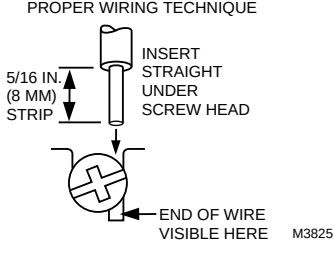
❶ Match the letter of your old thermostat wire with the terminal of the corresponding letter on the back of your new thermostat. Refer to the illustrations on pages 26 through 27. Hold the thermostat as shown to minimize the need for wire extenders.

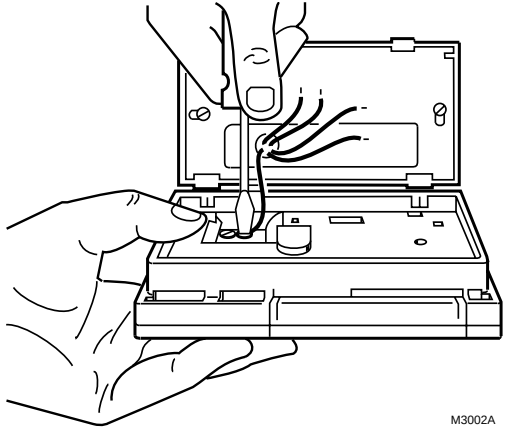
If the wires are still too short, use the wire connectors (purchased locally) to extend the wires. See figure for guidelines on using wire extenders.



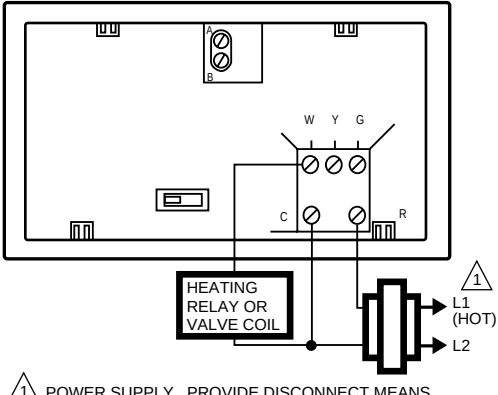
❷ Loosen the terminal screws and slip each wire beneath its matching terminal. See illustration (below) for proper wiring technique. Securely tighten the terminals.

❸ Plug the hole in the wall with insulation to help prevent drafts from adversely affecting thermostat operation.



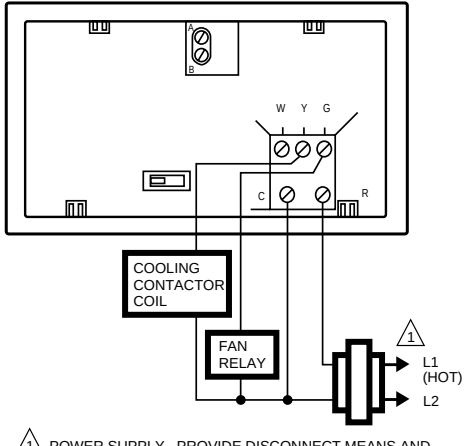


3-WIRE HEAT-ONLY



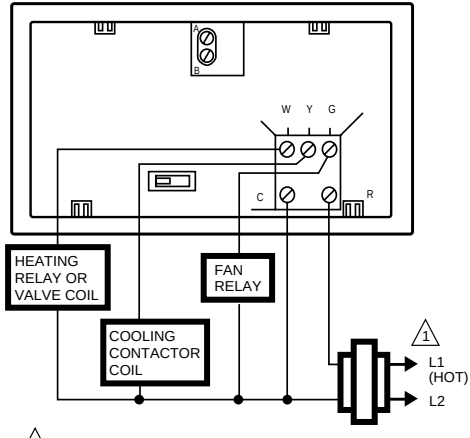
1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED. M9213

4-WIRE COOL-ONLY



1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED. M9212

5-WIRE HEAT/COOL



1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.

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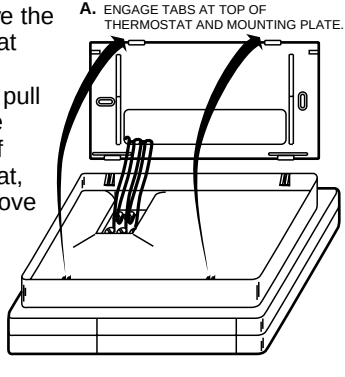
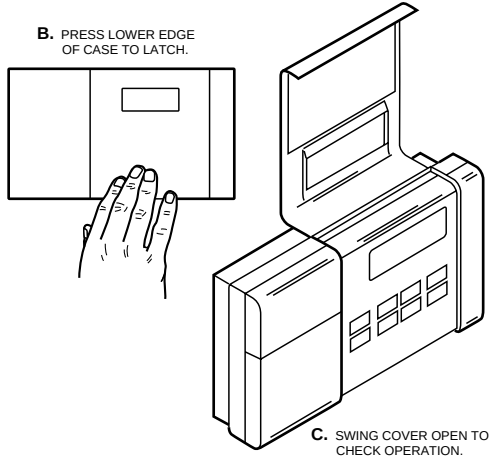
Mount Thermostat

NOTE: To remove the thermostat from the wall, first pull out at the bottom of thermostat, then remove the top.



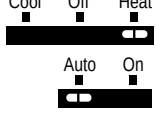


Check Thermostat Operation After Programming and Installing

Heating

Do not check heating system operation such as the gas valve, zone valve or oil burner control by jumpering thermostat terminals at the primary control. This damages the thermostat. Instead, jumper R and W wires at the thermostat.

Move the system switch to HEAT and the fan switch to AUTO.



Press key until the setting is about 10°F (6°C) above room temperature. Heating should start and the fan should run after a short delay (immediately if fan operation switch is set in E position).

Warmer

Press key until setting is about 10°F (6°C) below room temperature. The heating equipment should shut off.

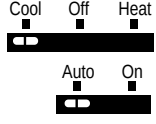
Cooler

Cooling

To avoid possible compressor damage, do not operate the cooling system when the outside temperature is below 50°F (10°C). See compressor manufacturer instructions for further information.

NOTE: When cooling setting is changed, thermostat can delay up to five minutes before turning on the air conditioner. This delay protects the compressor.

Move the system switch to COOL and the fan switch to AUTO.



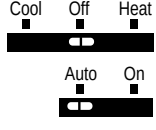
Press the key until the setting is about 10°F (6°C) below room temperature. The cooling equipment and fan should start.

Cooler

Press the key until the setting is about 10°F (6°C) above room temperature. The cooling equipment and fan should stop.

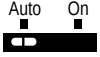
Warmer

Move the system switch to OFF, keeping the fan switch at AUTO. The system and fan should be off.



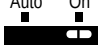
Set Fan and System Switches

First set the fan switch.



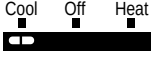
AUTO: Normal setting for most homes. A single-speed fan turns on automatically with the air conditioner or furnace. A two-speed fan usually runs on high with the air conditioner and on low with the furnace.

Exception: If Fan Operation Switch on the back of the thermostat is set to the E position (see page 21), the fan operates with furnace only.



ON: The fan runs continuously. Use for improved air circulation during special occasions or for more efficient electronic air cleaning. (In a heat-only system, the fan runs continuously only when the fan relay is connected to the thermostat.)

Then set the system switch.



COOL: The thermostat controls your air conditioning system.

OFF: Both the heating and air conditioning systems are off.

HEAT: The thermostat controls your heating system.

Troubleshooting Guide

IF...	THEN...
Display will not come on.	■ Check that the green light emitting diode (LED) located to the left of the LCD is lit, indicating the thermostat is powered properly.
Temperature display will not go lower than 45°F (7°C) or higher than 88°F (31°C) during programming.	■ You have reached the temperature setting limit. The setting range is 45°F to 88°F (7°C to 31°C).
Temperature change occurs at the wrong times.	■ Check the program times for the period in question. Be sure that AM and PM indications are correct. Make sure the current day and time are correct. Reprogram if necessary.
Heating will not come on.	■ Check that the green LED is lit. ■ Check that the switch on the thermostat is set to HEAT.

Heating will not come on (Cont).	■ Check the system fuse or circuit breaker and replace or reset, if necessary. ■ Check for correct wiring and good connections. ■ If temperature setting is higher than current temperature and displays HEAT, contact Honeywell Customer Assistance at 1-800-468-1502.
Cooling will not come on.	■ Check that the green LED is lit. ■ Check that the switch on the thermostat is set to COOL. ■ Check the system fuse or circuit breaker and replace or reset, if necessary. ■ Check for correct wiring and good connections. ■ The thermostat has a built-in time delay on cooling. Allow five to ten minutes after changing the setting before the air conditioner starts.

Cooling will not come on (Cont).	■ If temperature setting is lower than current temperature, and displays COOL, move system switch from COOL to OFF for ten minutes. After ten minutes, return switch to COOL position. If the air conditioner comes on, compressor could have reached its high limit temperature protection and shut down. If the air conditioner does not come on after ten minutes and displays COOL, contact Honeywell Customer Assistance at 1-800-468-1502.
The house is too warm or too cool.	■ Press **Present Setting** key to check the current temperature setting. ■ If desired, change the temperature setting. See page 18.
SYSTEM ON indicator is lit, but no heat is coming from the registers.	■ Allow time for the furnace to heat up and the fan to come on before checking for heat at the register. (Check to make sure system on-time is set correctly according to pages 20 and 21.)

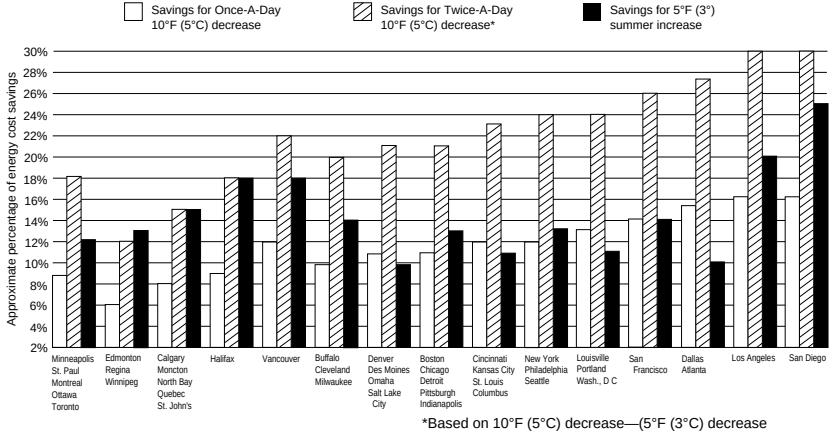
The furnace or air conditioner on-time is too short or too long.	■ Contact your heating or air conditioner contractor. If further assistance is needed, call Honeywell Customer Assistance at 1-800-468-1502.
The thermostat's current setting does not match the display temperature.	■ Check that the wiring hole in the wall behind the wallplate was plugged with insulation to prevent drafts that could adversely affect thermostat operation. ■ Be aware that it is normal for the current setting and display temperature to differ occasionally.
***bAt Lo* remains on display after fresh batteries are installed.**	■ Remove batteries. Wait one hour. Install fresh alkaline batteries.

Toll-free Customer Assistance

For all questions concerning this thermostat, please read and follow the instructions. If additional assistance is needed, call Honeywell Customer Assistance toll-free at 1-800-468-1502, Monday-Friday, 7:00 a.m.-5:30 p.m. Central time.

Before you call, please have the following information available—thermostat model number and date code, type of heating/cooling system (for example, hot water, warm air, oil, or gas), and number of wires connected to the thermostat.

TYPICAL ENERGY SAVINGS FOR REPRESENTATIVE CITIES IN THE U.S. AND CANADA



*Based on 10°F (5°C) decrease—(5°F (3°C) decrease gives approximately 55 percent of these savings).

M2416A

Limited One-Year Warranty

Honeywell warrants this product, excluding battery, to be free from defects in the workmanship or materials, under normal use and service, for a period of one (1) year from the date of purchase by the consumer. If, at any time during the warranty period, the product is defective or malfunctions, Honeywell shall repair or replace it (at Honeywell's option) within a reasonable period of time.

If the product is defective,

(i) return it, with a bill of sale or other dated proof of purchase, to the retailer from which you purchased it, or

(ii) package it carefully, along with proof of purchase (including date of purchase) and a short description of the malfunction, and mail it, postage prepaid, to the following address:

Honeywell Inc.
Return Goods Department
1050 Berkshire Lane
Plymouth, MN 55441-4437

in Canada: Honeywell Limited/Honeywell Limitée
Product Services ON15-FFE
155 Gordon Baker Road
North York Ontario M2H 2C9

This warranty does not cover removal or reinstallation costs. This warranty shall not apply if it is shown by Honeywell that the defect or malfunction was caused by damage which occurred while the product was in the possession of a consumer.

Honeywell's sole responsibility shall be to repair or replace the product within the terms stated above. HONEYWELL SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE OF ANY KIND, INCLUDING ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING, DIRECTLY OR INDIRECTLY, FROM ANY BREACH OF ANY WARRANTY, EXPRESS OR IMPLIED, OR ANY OTHER FAILURE OF THIS PRODUCT. Some states do not allow the exclusion or limitation of incidental or consequential damages, so this limitation may not apply to you.

THIS WARRANTY IS THE ONLY EXPRESS WARRANTY HONEYWELL MAKES ON THIS PRODUCT. THE DURATION OF ANY IMPLIED WARRANTIES, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IS HEREBY LIMITED TO THE ONE YEAR DURATION OF THIS WARRANTY. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

If you have any questions concerning this warranty, please write our Customer Assistance Center, Honeywell Inc., P.O. Box 524, Minneapolis, MN 55440-0524 or call 1-800-468-1502, Monday-Friday, 7:00 a.m. to 5:30 p.m., Central time. In Canada, write Retail Products ON30, Honeywell Limited/ Honeywell Limitée, 155 Gordon Baker Road, North York, Ontario M2H 2C9.

NOTICE: This equipment is a Class B digital apparatus, which complies with Canadian Radio Interference Regulations, CRC c.1374.

Honeywell

Home and Building Control
Honeywell Inc.
1985 Douglas Drive North
Golden Valley, MN 55422

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