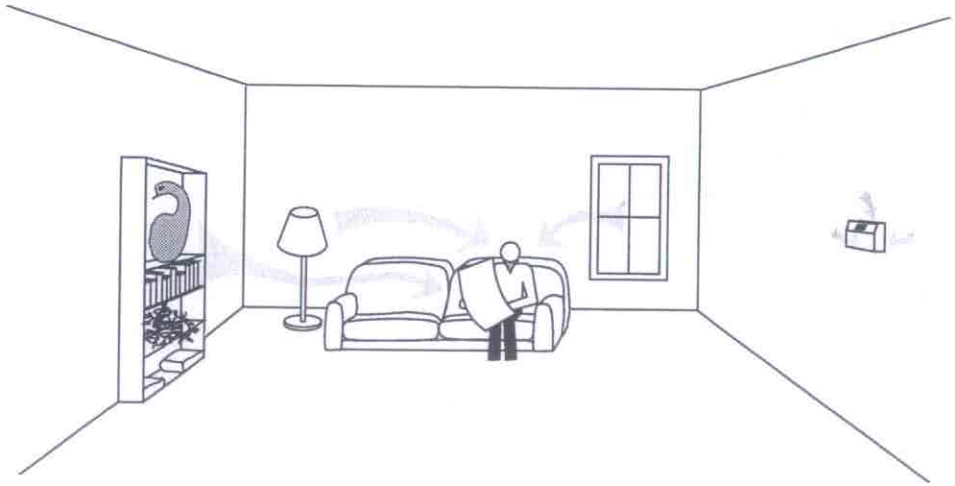
UNDERSTANDING ADAPTIVE INTELLIGENT RECOVERY™

ADAPTIVE INTELLIGENT RECOVERY™—BREAKTHROUGH TECHNOLOGY SENSES TEMPERATURE MORE LIKE YOU DO

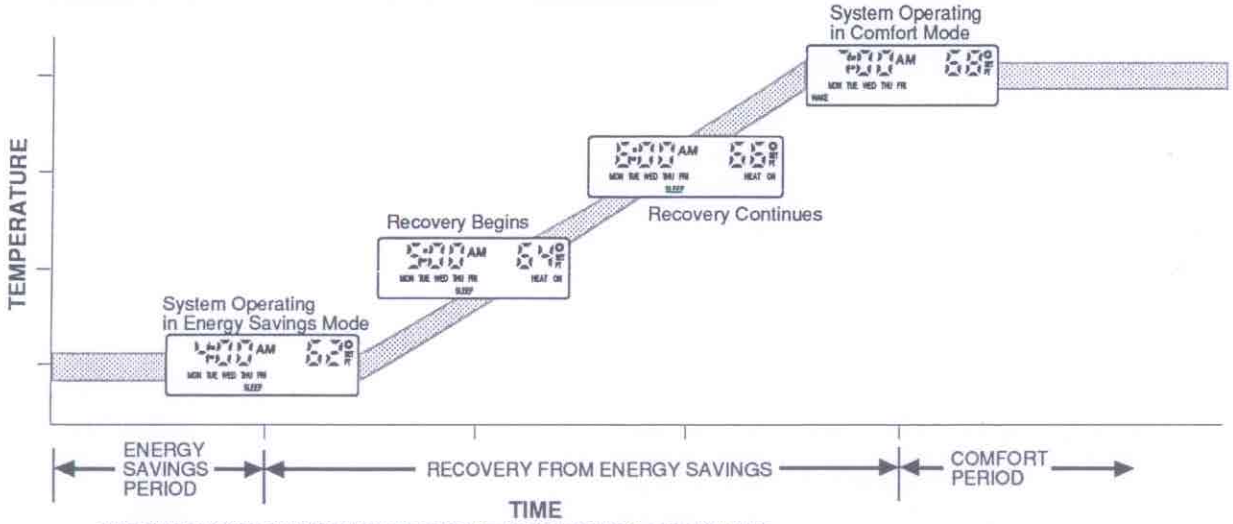


The Chronotherm III Thermostat is so smart, it's almost human.

- *Your body perceives temperature* from a variety of sources, not only from the air in the room, but also from your surroundings—walls, windows and furnishings.
- *Human beings feel differences* in temperature as slight as two degrees Fahrenheit.
- *Common household thermometers and standard thermostats* sense only dry bulb air temperature, which may or may not reflect how hot or cold the room actually *feels* to a human being.
- *The Chronotherm III Thermostat* reads the temperature of the wall as well as the air—and responds to temperature changes as little as one degree Fahrenheit—so room temperature is more likely to "feel right" to you and your family.

UNDERSTANDING ADAPTIVE INTELLIGENT RECOVERY™

THE CHRONOTHERM III THERMOSTAT—THE OPTIMUM COMFORT AND ENERGY SAVINGS SOLUTION



THE THERMOSTAT USES THE SAME SCHEME TO RETURN GRADUALLY TO LOWER COMFORT TEMPERATURE DURING THE COOLING SEASON.

- *The Chronotherm III Thermostat is actually a small but powerful computer.* When calculating the exact time to turn on your furnace or air conditioner, it considers (1) air temperature, (2) the temperature of the wall and (3) when you want the comfort temperature established.
- *During recovery the thermostat increases the control temperature gradually and turns the equipment on and off* several times to save energy by avoiding "overshooting" the comfort temperature. You can see the current control temperature anytime during recovery by pressing the PRESENT SETTING key. On some models, both the SYSTEM and ENERGY SAVING lights may be lit at the same time during recovery.
- *This "smart" control learns from experience.* Each day it checks how closely it "hit the target" and adjusts the recovery start time accordingly.
  It typically takes four to eight days after installation for the Chronotherm III Thermostat to adjust to the weather, your lifestyle, home construction and heating/cooling system. The thermostat calculates the LEAVE/RETURN recovery separately from the SLEEP/WAKE recovery.
- *With the Chronotherm III Thermostat you can choose* whether you want to use the Adaptive Intelligent Recovery™ feature. Use it if you want to choose the exact time that the room reaches your *comfort temperature.* Turn it off if you prefer to choose the exact time your furnace or air conditioner *comes on* to start recovery. See question 11, page 10, for details.

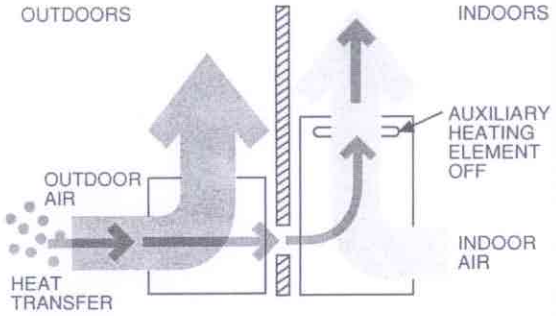
HEAT PUMPS WITH SUPPLEMENTAL HEAT

HEAT PUMPS ARE DIFFERENT

- *Heat pump systems usually have a supplemental, "second stage" heating system that operates only when necessary.* Honeywell's Chronotherm III smart thermostat for heat pumps is designed to minimize more expensive second-stage operation, indicated by the green AUX light on your switching subbase.
- *With your Chronotherm III Thermostat, you will notice that your compressor operates continuously during the recovery period.* This may appear to waste energy, but actually is more efficient. Multiple ON-OFF cycles are neither necessary to achieve comfort, nor are they as efficient for heat pump systems. By reducing the number of cycles, you reduce the strain on your system and extend equipment life.

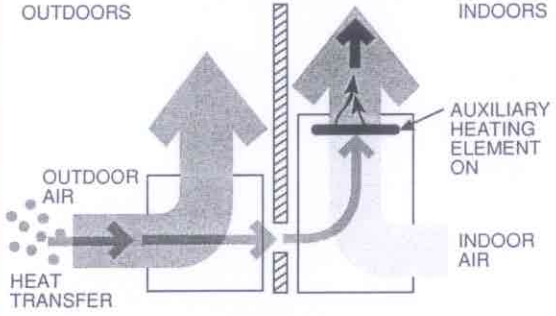
HEAT PUMPS ARE TWO SYSTEMS IN ONE

MILD WEATHER



- *In mild weather, virtually all of the demand for heat in buildings can be met by the heat pump compressor.* This "first stage" process of moving heat indoors is very economical. As the air becomes colder outside, the first stage may be unable to deliver enough heat to maintain the desired comfort level in the building.

SEVERE WEATHER



- *During high heat demand, the thermostat will call for additional "second stage" power from the auxiliary heat system.* This auxiliary heat is commonly electric "resistance" heat and is two to three times more expensive to operate than the compressor.

COMMON QUESTIONS ABOUT THE CHRONOTHERM III THERMOSTAT

1. **Why do some models of this thermostat have lights?**
   Battery-operated thermostats do not have indicator lights to conserve battery power. Others may have one or two indicator lights, depending upon the exact model and application. Consult your Honeywell Owner's Manual for specific information on these features in your thermostat.

2. **The temperature displayed on the Chonotherm III Thermostat doesn't always match the room temperature on another thermostat located right next to it. Why?**
   The Chonotherm III Thermostat is a *very* accurate instrument designed to sense both air temperature and wall temperature, much as your body does. It gives an *average* reading over a period of time. Because it adjusts itself, it will take a few days after installation to adjust to your home.

3. **How many hours in advance of my WAKE time should the furnace come on?**
   The time will vary, up to 24 minutes per degree Fahrenheit difference between the energy saving and comfort temperatures, depending upon outside temperature and performance during the past 24 hours. A microchip computer with Adaptive Intelligent Recovery™ allows the thermostat to "think" for itself and adjust the furnace or air conditioning recovery time to reach your desired comfort temperature at the programmed time. Whenever the temperature is more than one degree hotter or colder than the comfort temperature at the programmed time, the system turns on earlier the next day. This approach ensures the temperature won't over- or under-shoot the set point and allows the proper amount of time for recovery.

4. **What does the HOLD key do?**
   It bypasses *all* program settings and *holds* the temperature at the present setting. To increase or decrease the temperature while on HOLD, use the WARMER-COOLER keys. Touching RUN PROGRAM will return the device to programmed operations.

5. **How long does the HOLD key hold?**
   Forever! The HOLD button will hold the temperature indefinitely. The only way to release it is to push the RUN PROGRAM button.

6. **Do you have a Chronotherm III Thermostat that can be programmed for 7 days?**
   Yes, the T8621 can be programmed for 7 days. However, it usually requires additional wiring.

7. **How can this thermostat save energy when it comes on and off so many times early in the morning hours?**
   Two ways. First, it *saves* energy (and money) by setting back the temperature for *blocks* of time during the day or night. Second, it *conserves* energy *by recovering gradually* to the desired temperature. This prevents *overshooting* your comfort set point (and wasting energy) or *undershooting* the comfort set point (and forcing you to change the thermostat setting, also wasting energy).
   Honeywell's experts have invested years of engineering and in-home testing to assure that this is the most effective way to set back and save energy while optimizing your comfort.

8. **My thermostat has ENERGY SAVING and SYSTEM lights. Why do they both go on at the same time? (For example: during the sleep period.)**
   Because when you recover *gradually* to a next set point, you will stay in the energy-saving mode until the next programmed time is reached. But the system will operate intermittently to *gradually*

raise the temperature to your desired comfort level before the time you've set as your WAKE time. You will always be saving energy until the next period's *actual* set point is reached.

9. **Why don't all thermostat models have AUTO (automatic) changeover from heating to cooling?**
Most parts of the country don't have wide temperature swings during a 24-hour period, so it is not necessary. Desert climates, such as Phoenix, are the exception, because of wide variations in temperature which may require both the air conditioner and furnace to run during different times within a given 24-hour period.

10. **Sometimes my Chronotherm III Thermostat doesn't allow the house temperature to drop to my SLEEP setting before it starts bringing the furnace on. Why?**
Many factors affect your comfort and energy savings. If those factors, such as weather, humidity, etc. were *always* consistent, an unchanging program would work just fine. But factors *change*. The whole point of Adaptive Intelligent Recovery™ is to save energy *without* sacrificing comfort. If necessary, the Adaptive Intelligent Recovery™ will *override* your temperature settings to assure accurate temperature recovery with optimum comfort and energy savings for the *current conditons*.

11. **Can I stop the thermostat from bringing the heat on so early in the morning? How?**
By mid-1989, we will introduce a model with a switch on the back of the thermostat that will allow you to turn off Adaptive Intelligent Recovery™. Contact your heating and cooling contractor for more information.

    On thermostats without the switch, you can override Adaptive Intelligent Recovery™. However, you will only be able to set one completely automatic energy savings period; the second period must be ended manually. Also, since recovery starts at the time you programmed, the comfort temperature may not be reached by the desired time.

DO YOU HAVE A TWO STAGE HEAT PUMP?

If so, we don't recommend overriding Adaptive Intelligent Recovery™ because the amount of expensive auxiliary heat needed for recovery may cost more than the energy saved by lowering the temperature.

Here's how to override Adaptive Intelligent Recovery™:

- Set the desired WAKE program temperature.
- Set the WAKE program time 30 to 60 minutes before the time you normally get up. (You can adjust this time. If the house reaches the comfort temperature too early, set the time later; if it reaches the comfort temperature too late, set the time earlier, but don't go beyond 90 minutes.)
- Set the desired SLEEP program time and temperature. The SLEEP temperature must not be more than 10 degrees below the comfort setting.
- Set the RETURN program time to 10 minutes before your programmed WAKE time.
- Set the RETURN program temperature the same as the SLEEP temperature.
- The LEAVE program remains blank unless you want a day energy saving period (see page 12).
- The thermostat will be fooled into thinking that it doesn't need to start recovery until 10 minutes before your WAKE time. It will run the furnace constantly until the comfort temperature is reached.

EXAMPLE:

PERIOD	TIME SETTING	TEMPERATURE SETTING
WAKE	5:30 A.M.	70°F
LEAVE	——	——
SLEEP	10:00 P.M.	60°F
RETURN	5:20 A.M.	60°F

If you want a day program, do it like this:

- Set the desired LEAVE time and temperature. The thermostat will initiate an energy savings period automatically.
- The first person home must push the CHANGE TO LAST PERIOD key to start warming the house. The furnace will run constantly until the comfort temperature is reached.

Additional Questions? Consult Your Chronotherm III Owner's Guide. Or, call Honeywell Consumer Affairs: 1-800-468-1502.

TYPICAL ENERGY SAVINGS ACROSS THE U.S.

- *Save from 9 to 30% in energy costs.* Chronotherm III Thermostats offer you complete comfort *and* a low-cost easy way to save on your energy bills.
- The energy-saving amounts listed on the maps on pages 14 and 15 are based on setting the thermostat *down* in winter or *up* in summer for 8 hours.
- If the time period you choose for setback is longer, you may see even greater energy savings. The energy saving period must be at least 2 hours long to save any energy.

Find the city closest to your home. The energy savings listed will be similar to the savings you can expect.

PERCENTAGE OF HEATING ENERGY YOU CAN SAVE

ONE 10° F ENERGY SAVINGS PERIOD*
70° TO 60° F; 8 HRS./DAY

- 9% TO 11%
- 12% TO 13%
- 14% TO 15%
- 16% TO 18%

TWO 10° F ENERGY SAVINGS PERIODS*
70° TO 60° F; 8 HRS./DAY, 8 HRS./NIGHT

- 18% TO 24%
- 23% TO 25%
- 25% TO 29%
- UP TO 30%

* Savings for a 5° F, heating setback are at least 1/2 of savings for a 10° F setback.
Actual savings depend on your home, geographic location, number of energy saving periods and energy savings temperature.
If you have a heat pump, your heating savings may be greater than those shown.

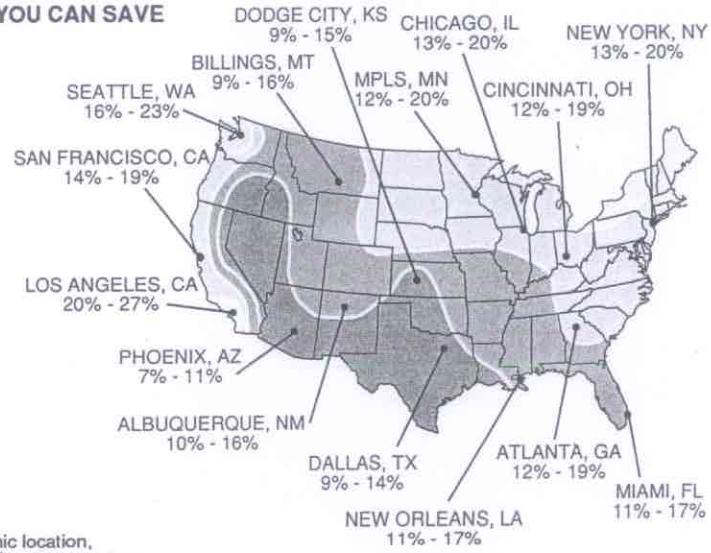
PERCENTAGE OF COOLING ENERGY YOU CAN SAVE

ONE 5° F ENERGY SAVINGS PERIOD*
75° TO 80° F; 8 HRS./DAY

- 7% TO 9%
- 10% TO 11%
- 12% TO 14%
- 15% TO 18%

TWO 5° F ENERGY SAVINGS PERIODS*
75° TO 80° F; 9 HRS./DAY, 7 HRS./NIGHT

- 11% TO 15%
- 16% TO 18%
- 19% TO 22%
- 23% TO 33%



* Actual savings depend on your home, geographic location, number of energy saving periods and energy savings temperature.