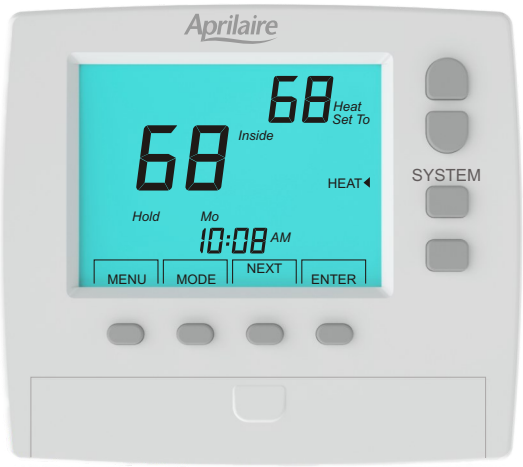
Aprilaire®

Model 8710
Wireless Thermostat

Safety & Installation Instructions



READ AND SAVE THESE INSTRUCTIONS

TABLE OF CONTENTS

APPLICATION

The Model 8710 is a 7-day programmable, battery powered thermostat that communicates via an RF wireless data link to a control module located near the HVAC equipment.

The Model 8710 can control single stage, multi-stage and heat pumps with up to 3 stages of heating and 2 stages of cooling.

FEATURES

- Manual or programmable selection with up to four schedules per day.
- Wireless 915MHz proprietary protocol with up to 100' transmission range.
- Easy access, front-loading battery compartment. 2 AA batteries included.

SPECIFICATIONS

Compatible Equipment	Single stage, multi-stage and heat pumps (3 heat / 2 cool)
Output Terminals	W1/B, O, W2/E, Y1, Y2, G
Fan Operation	Gas or electric
LED Indicator	Multi-color indicates heating, cooling and fan calls.
Communications	Wireless, 915MHz, proprietary protocol
Range	Up to 100 feet
Control Module Power	24VAC, 2.4VA
Control Module Housing	Molded plastic
Control Module Dimensions	5.09 x 2.65 x 1.10 inches (WHD)
Thermostat Dimensions	5.00 x 4.50 x 1.00 inches (WHD)

CONTROL MODULE

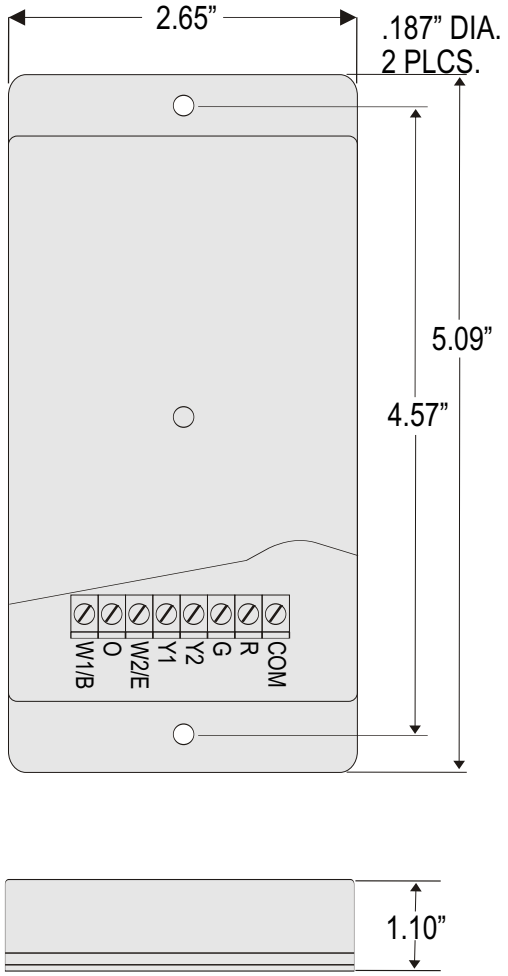
1 INSTALLATION

The control module should be installed close to the equipment being controlled. Do not install it within a metal enclosure that might interfere with wireless communications. Only standard 18 gauge thermostat wire is required to wire the module to the equipment.

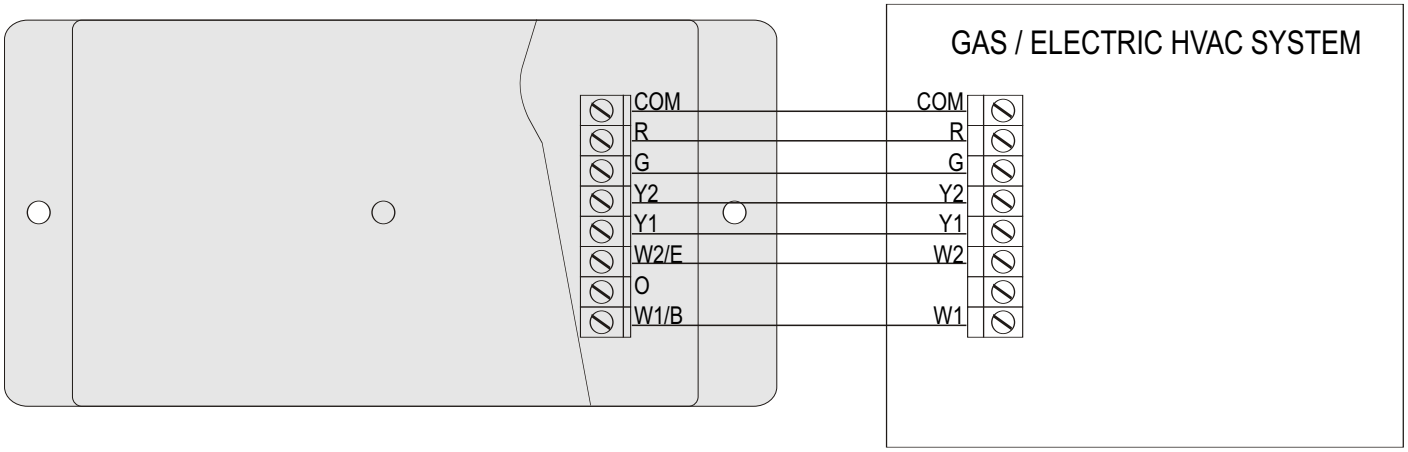
Two #6 sheet metal mounting screws are included or the module can be installed with double-backed adhesive tape.

2 WIRING

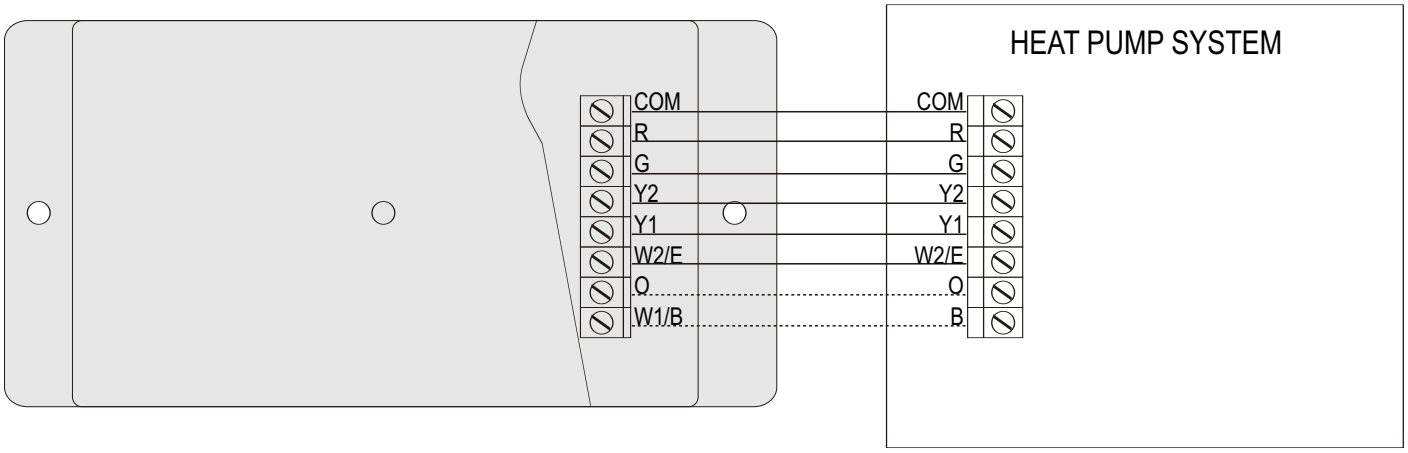
The control module is powered by the 24VAC from HVAC system. The diagrams below show wiring when configured for Gas / Electric and Heat Pump systems. Refer to the wiring diagrams on the following page.



WIRING - GAS / ELECTRIC (UP TO 2 HEAT / 2 COOL)



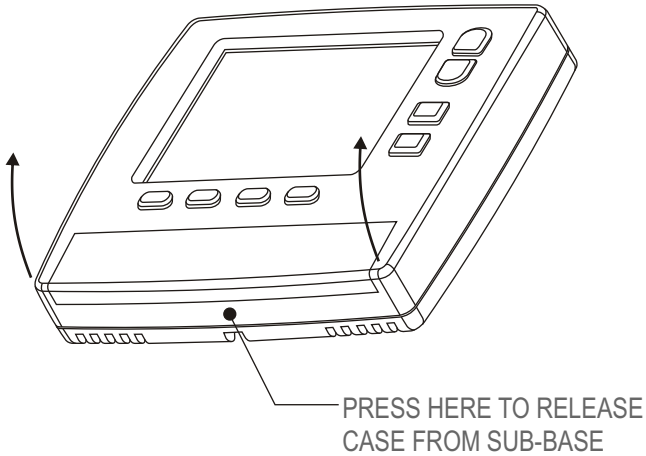
WIRING - HEAT PUMP (UP TO 3 HEAT / 2 COOL)



THERMOSTAT

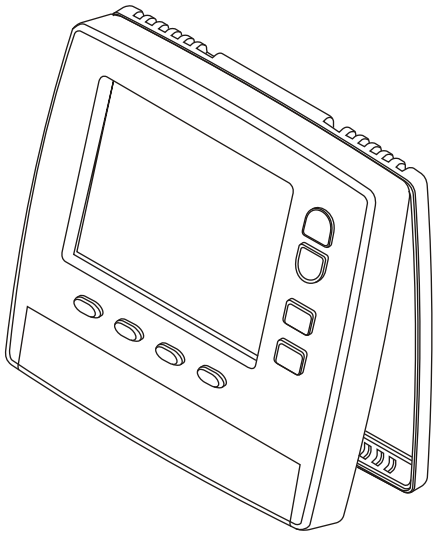
3 LOCATION

The thermostat should be located in an area that represents the ambient space temperature and within 100 feet of the control module. Do not install the thermostat in an area where drafts are present, near the floor, behind doors or on an external wall. Avoid placing the thermostat in areas where the air movement is limited, affected by direct sunlight or other areas not typical of the temperature in the space.



4 REMOVING THE SUB-BASE

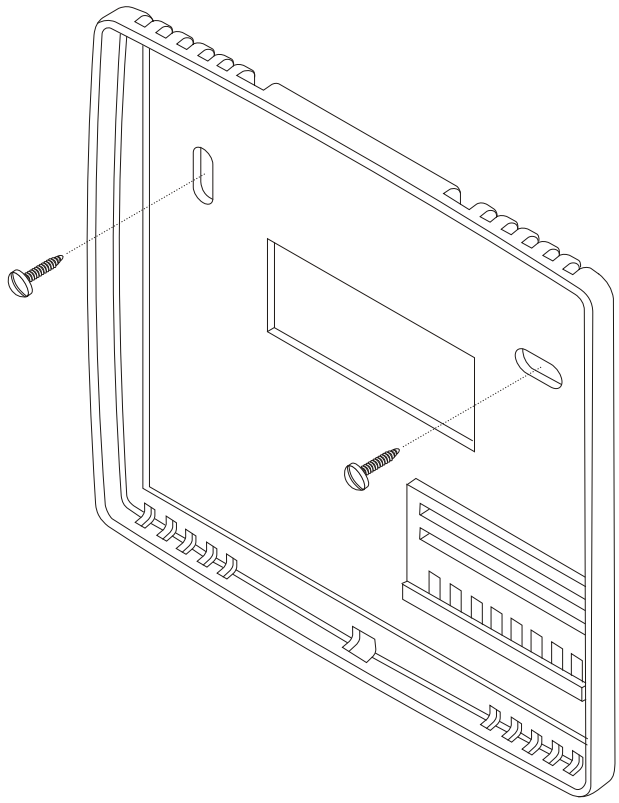
Hold the sub-base with one hand, press the case as shown to the right and pull the bottom of the thermostat from the sub-base. Refer to the illustration to the right.



5 INSTALLING THE SUB-BASE

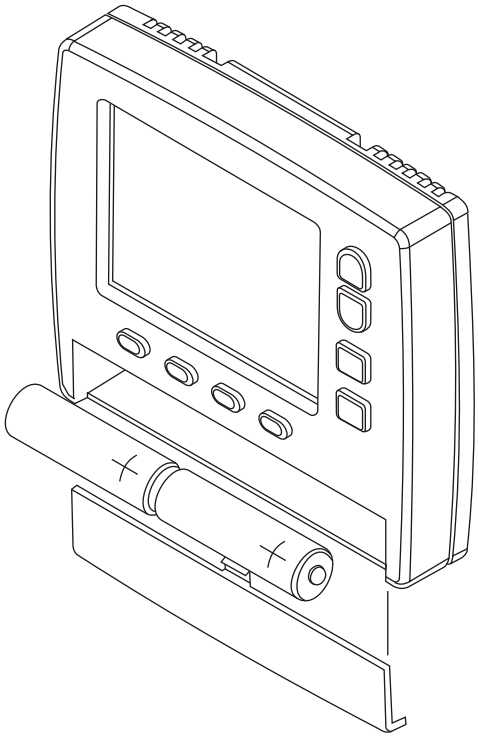
The thermostat should be installed approximately 5 feet above the floor.

Level the sub-base for appearance and use the wall anchors and screws provided.



6 INSTALLING BATTERIES

Slide the battery cover off and install two AA batteries included with the thermostat. Install the batteries with the positive terminals to the right as shown. Replace the battery cover.



The LCD will display the time of day, the setpoint temperature and the room temperature.

7 THERMOSTAT INSTALLER OPTIONS

The thermostat and control module are factory set to **Zone = 01** and **Home = 01** and are linked. After the first communication (an equipment call), the thermostat will display **LINKED** on the screen.

If only one wireless thermostat/control module set is used in an application and there are no other units installed within 500 feet, the thermostat and control module can be left with the factory default setting of **Zone = 01** and **Home = 01.**

Installer options can be accessed by pressing and holding the **ENTER** key for seven seconds. The LCD displays Option 01. Skip Options 1, 2 and 3 by pressing the **NEXT** key until Option 04 is displayed. (See Installer Options Chart on page 9 or Option 04 on page 12). Press **CANCEL** anytime to exit installer options.

APPLICATIONS USING MULTIPLE THERMOSTAT AND CONTROL MODULE SETS

If multiple wireless thermostat/control module sets are used that are less than 500 feet away from one another, the zone and/or home number for each thermostat must be changed and each thermostat needs to be **Linked** to a control module. It's helpful to have the thermostat and control module near each other while setting the Zone and Home numbers and linking.

Anytime the Zone and/or the Home number is changed in the thermostat, **LINK** blinks on the display indicating that the thermostat needs to be linked with a control module. The thermostat displays **LINKED** when successfully linked with a control module.

START THE LINKING PROCESS

Make sure the thermostat and control module are powered and the module LED is blinking green.

Press and hold the **PUSHBUTTON** on the control module. The LED turns yellow. Continue holding until the LED blinks red/yellow, then release. The module will continue blinking red/yellow for about six minutes until the module is linked to a thermostat or power is removed.

Go to Option 01, page 10.
For troubleshooting, see page 18.

RESETTING FACTORY DEFAULTS

To reset the factory defaults, remove the batteries and re-install them while holding the **SYSTEM** key. All prior changes will default to the factory settings. This will require setting the Zone and Home number and linking to a control module, resetting the time of day and programming schedules if necessary. Refer to the Installer Options Chart default settings to make any additional changes.

INSTALLER OPTIONS CHART

Option	Description
01	Zone number Range 1 to 8 Default 1
02	Home number Range 1 to 32 Default 1
03	Program Control Module with Zone and Home address
04	Equipment Type Range GE or HP Default GE
05	Indoor Fan Operation Range GA or EL Default GA
06	Minimum Off Time Range 1 to 9 minutes Default 0
07	Minimum Run Time Range 1 to 9 minutes Default 0
08	Maximum allowable heating setpoint Range 60 to 85F Default 85

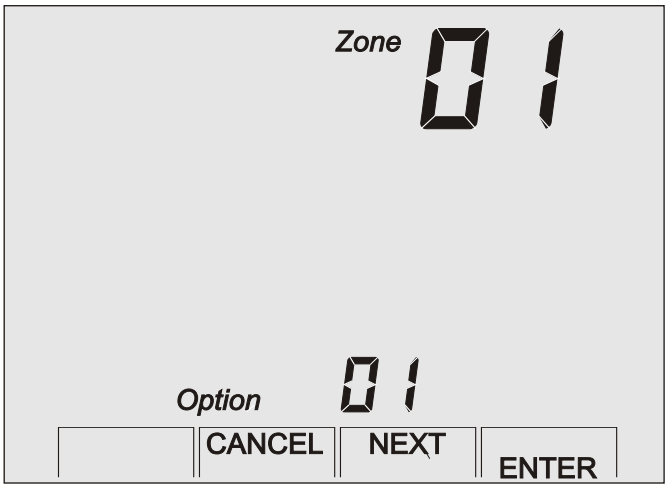
Option	Description
09	Minimum allowable cooling setpoint Range 55 to 80F Default 65F
10	Heat/Cool Setpoint Differential Range 2 to 6F Default 2F
11	Stage 1 Temperature Differential Range 1 to 4F Default 1F
12	Stage 2 Temperature Differential Range 1 to 10F Default 3F
13	Stage 3 Temperature Differential Range 1 to 12F Default 5F
14	Staging Time Range On or Off Default Off
15	Staging Time When 14 = On Range 15 - 30 (1 Minute Increments) Default 15
16	Calibrate Temperature Range NA Default NA

8 SETTING THE ZONE NUMBER

Skip this option if using default setting Zone 01 by pressing the **NEXT** key..

1. Press and hold the **ENTER** key for seven seconds to display Option 01, setting the Zone Number.
2. Use the **UP** and **DOWN** keys to change the Zone number, then press the **NEXT** key.

When changing Zone numbers, the first thermostat / module set can use the factory default setting of **Zone = 01.** Set the second set to **Zone = 02**, third set to **Zone = 03**, etc.

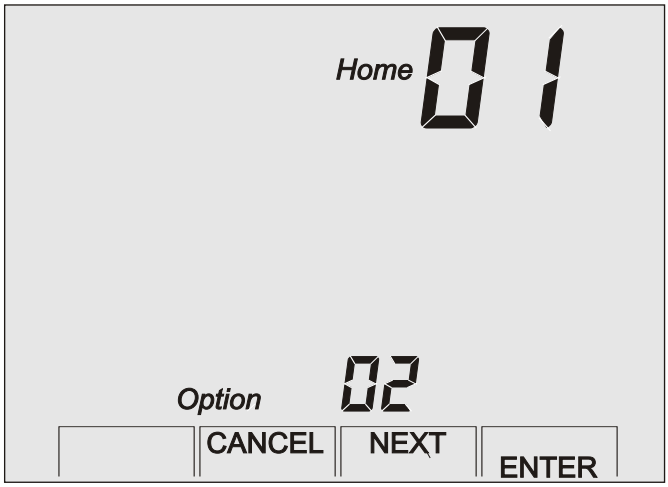


9 SETTING THE HOME NUMBER

Skip this option if using the default setting Home 01 by by pressing the **NEXT** key.

The **Home** number only needs to be changed if there are neighboring installations that are less than 500 feet away from one another. If there are no neighboring installations, use the factory default **Home = 01**.

1. Use the **UP** and **DOWN** keys to change the **Home** number if necessary.
2. Press the **NEXT** key.



10 PROGRAMMING THE CONTROL MODULE

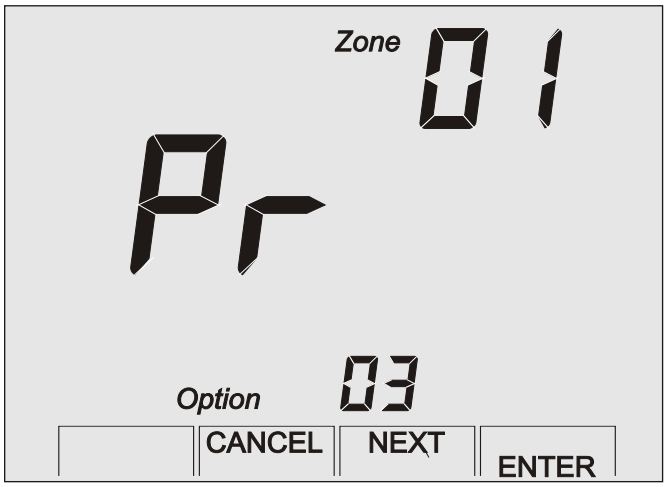
This option **Links** the thermostat to a control module. If the thermostat does not need to be linked to a module, skip this option by pressing the **NEXT** or **CANCEL** key.

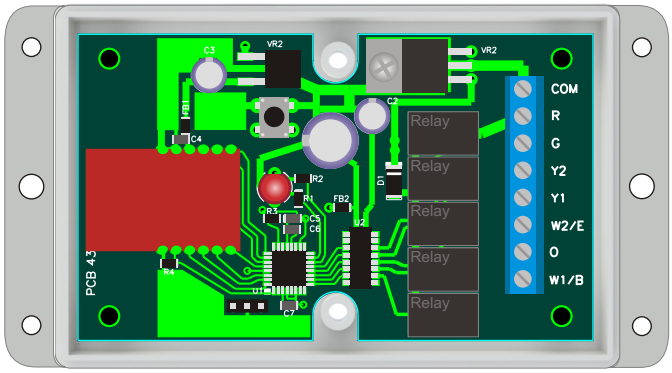
1. Press the **ENTER** key to Link . The thermostat returns to the Home screen. Once linked, the thermostat displays **LINKED** and the control module LED blinks green.

Test Communication - Initiate a heating call. The control module LED will change to red indicating successful communication from the thermostat. Set the thermostat system mode back to **Off**.

Remove batteries from thermostat and remove power to the control module before linking additional units.

Continue set up by accessing the installer options. Skip Options 1, 2 and 3 by pressing the **NEXT** key until Option 04 is displayed.

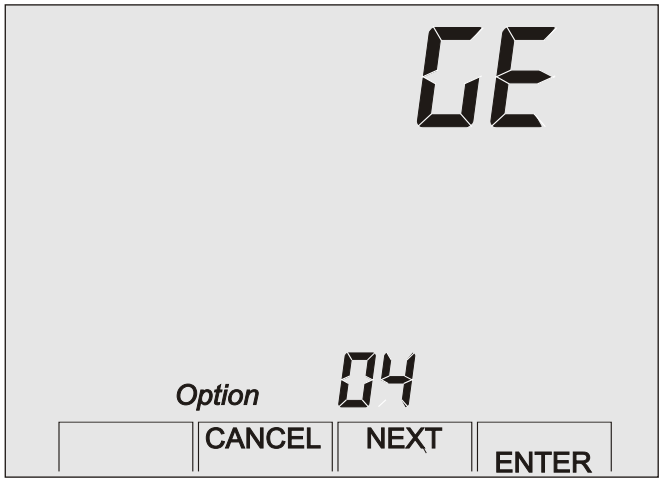




LED INDICATION
Flashing Green - No Calls
Solid Yellow - First stage cooling
Flashing Yellow - Second stage cooling
Solid Red - First stage heating
Flashing Red - Second stage heating
Solid Green - Fan
Flashing Green & Red - No signal

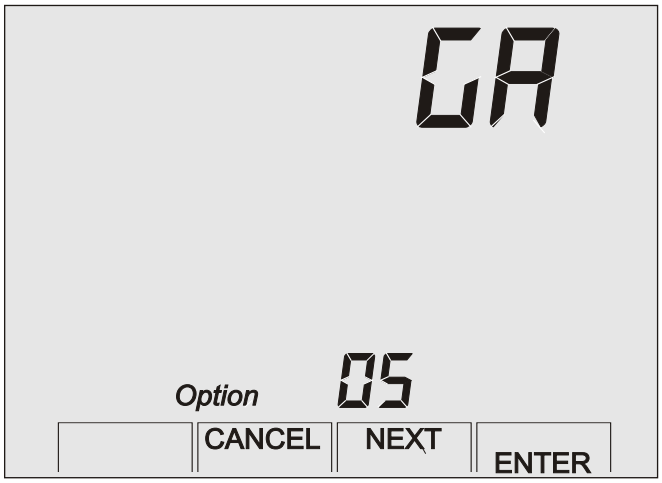
11 SELECTING EQUIPMENT TYPE

The control module can be set for either gas/electric or heat pump operation. Press the **NEXT** key to select **Option 04** and press the **Up** or **Down** key to select GE = Gas/Electric or HP = Heat Pump operation.



12 FAN OPERATION

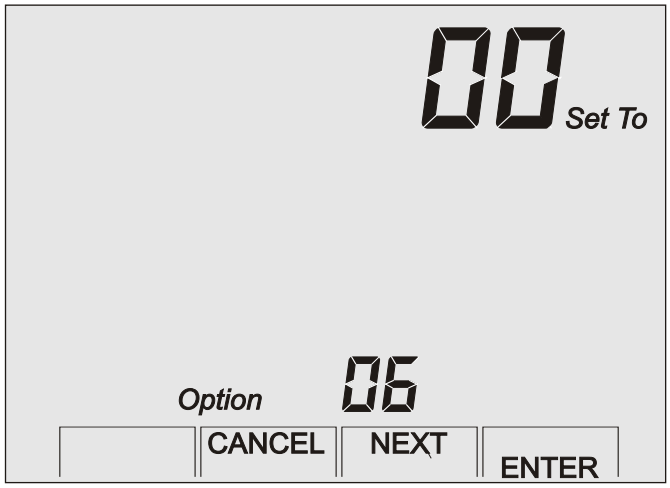
Press the **NEXT** key to select **Option 05.** The fan can be set to GA = Gas operation where the equipment activates the HVAC system fan during heating calls or to EL = Electric operation where the module activates the fan during heating calls. In heat pumps and all cooling calls, the module activates the fan (G) terminal.



13 MINIMUM OFF TIME

The minimum Off time prevents the compressor from restarting too quickly. Large HVAC systems should use a longer Off time. The minimum Off time and the minimum Run time also influence the cycling rate.

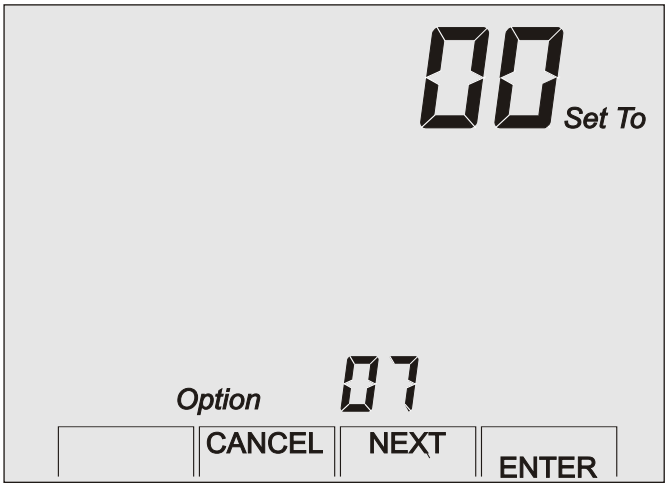
Press the **NEXT** key to select **Option 06** and press the **Up** or **Down** key to set the Minimum Off Time.



14 MINIMUM RUN TIME

The Minimum Run Time influences the cycling rate and helps to evaporate condensation in heat exchangers.

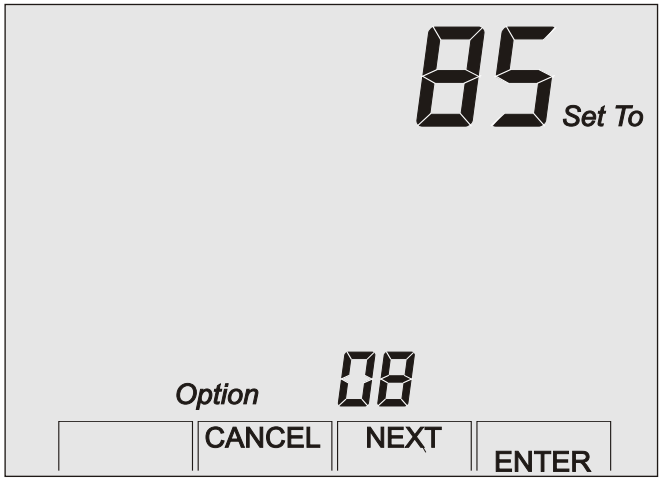
Press the **NEXT** key to select **Option 07** and press the **Up** or **Down** key to set the Minimum Run Time.



15 HEATING SETPOINT LIMIT

The maximum heating setpoint the user can set is 60 to 85F.

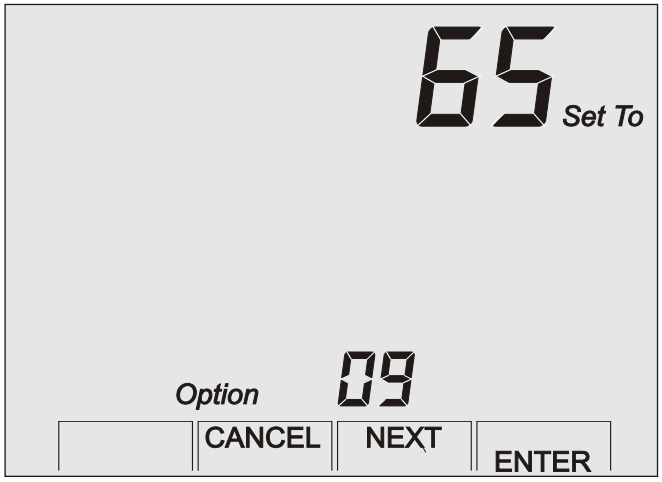
Press the **NEXT** key to select **Option 08** and press the **Up** or **Down** key to set maximum allowable heating setpoint.



16 COOLING SETPOINT LIMIT

The maximum cooling setpoint the user can set is 55 to 80F.

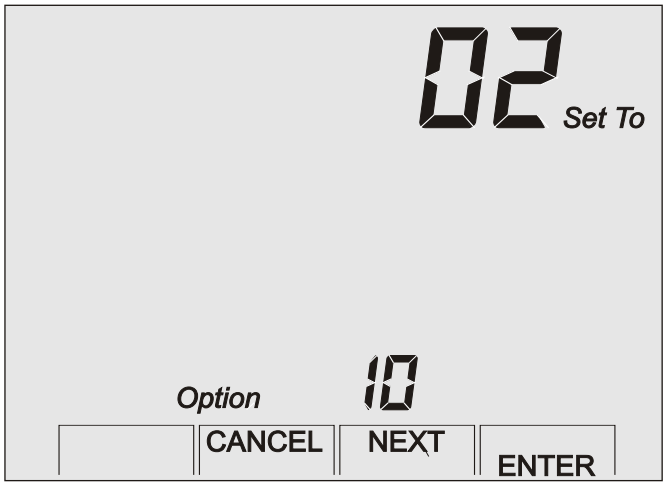
Press the **NEXT** key to select **Option 09** and press the **Up** or **Down** key to set maximum allowable cooling setpoint.



17 HEAT / COOL SETPOINT DIFFERENTIAL

The Heat/Cool temperature differential prevents the heating setpoint from being set above or too close to the cooling setpoint, resulting in inadvertent cycling between heating and cooling.

Press the **NEXT** key to select **Option 10** and press the **Up** or **Down** key to set the setpoint differential.

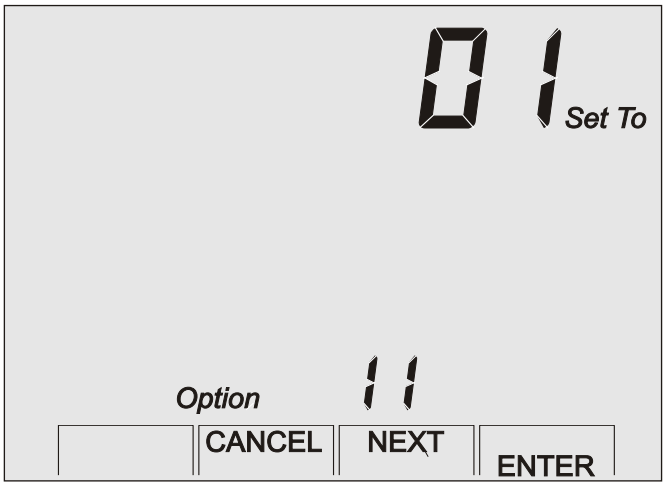


18 FIRST STAGE DIFFERENTIAL

First stage temperature differential determines the sensitivity of the thermostat. A lower differential will cause the thermostat to cycle more often with smaller temperature swings.

If the temperature differential between indoor temperature and setpoint temperature is greater than the first stage temperature differential, first stage heating or cooling will be activated.

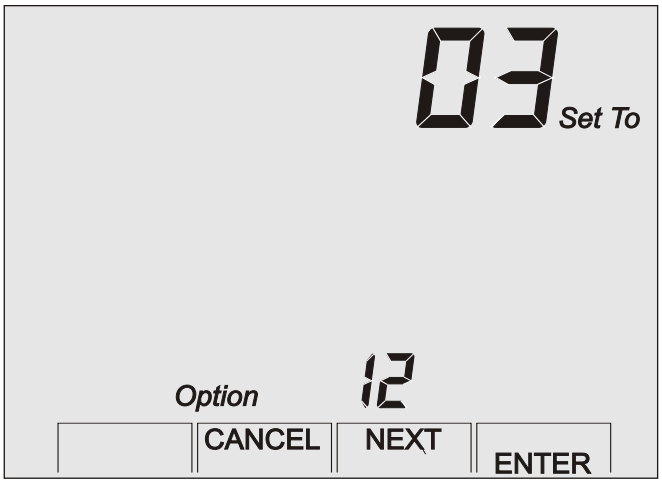
Press the **NEXT** key to select **Option 11** and press the **Up** or **Down** key to set the first stage differential.



19 SECOND STAGE DIFFERENTIAL

Second stage temperature differential determines when the equipment advances from first to second stage. If the temperature differential between indoor temperature and setpoint exceeds the second stage temperature differential, the equipment activates second stage heating or cooling.

Press the **NEXT** key to select **Option 12** and the **Up** or **Down** key to set the second stage temperature differential. If the first stage temperature differential is greater than third stage temperature differential, first stage differential will automatically be incremented.

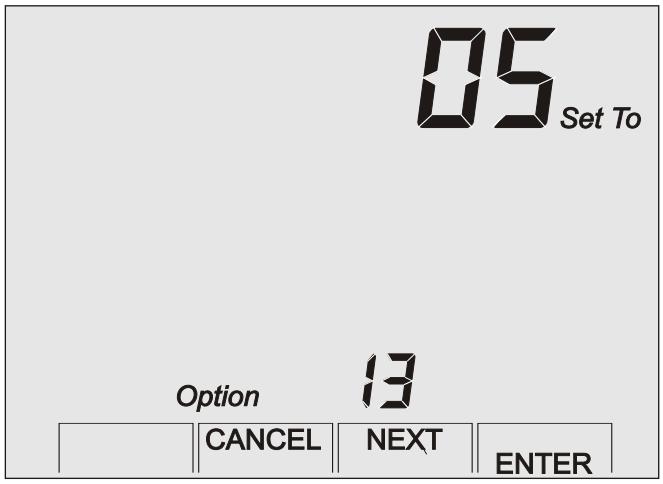


Note: Each stage differential is set at the desired number of degrees from the setpoint not the previous stage.

20 THIRD STAGE DIFFERENTIAL

Third stage temperature differential determines when the equipment advances from second to third stage. Setting the differential temperatures the same for second stage and third stage turns second and third stage on at the same time.

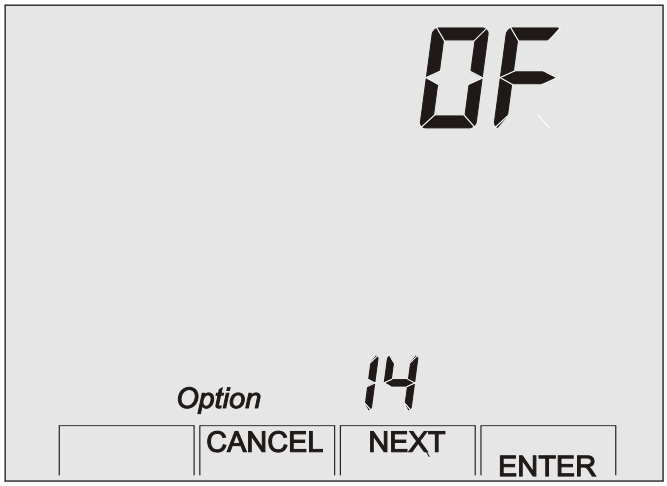
Press the **NEXT** key to select **Option 13** and the **Up** or **Down** key to set the third stage temperature differential. The third stage temperature differential cannot be set below the second stage differential.



21 TIMED UPSTAGING - ON or OFF

Timed Upstaging will turn on the next stage even though the temperature differential has not been reached.

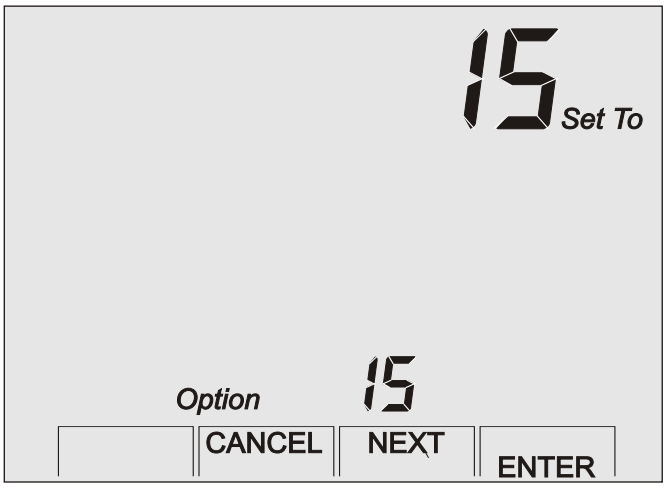
Press the **NEXT** key to select **Option 14** and the **Up** to turn Timed Upstaging On or press the **Down** key to turn Timed Upstaging Off.



22 UPSTAGING TIME

If Timed Upstaging is turned on, Option 15 is used to set the stage timing.

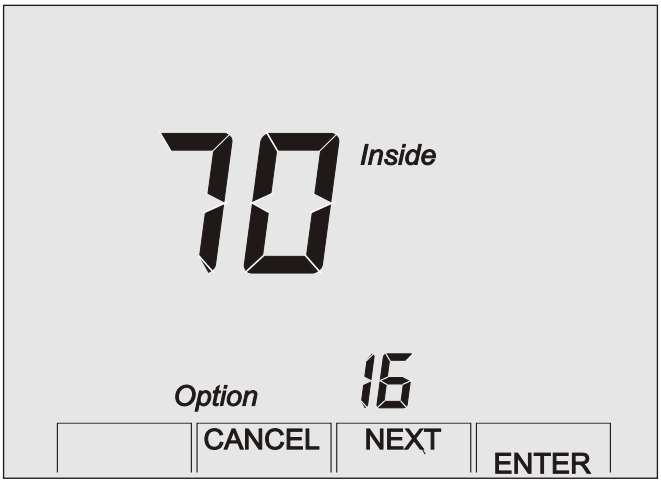
Press the **NEXT** key to select **Option 15** and the **Up** or **Down** key set the stage timing.



23 CALIBRATING THE TEMPERATURE SENSOR OFFSET

Typically, it is not necessary to adjust the temperature calibration offset from the factory setting. If calibration is necessary, a high quality electronic digital thermometer must be used. Place the thermometer sensor probe next to the thermostat sensor and allow five minutes before comparing the temperature readings.

Press the **NEXT** key to select **Option 16** and use the **Up** or **Down** keys to adjust the temperature calibration offset. Press **ENTER** key to save the options and return to normal thermostat operation.



24 TROUBLESHOOTING THERMOSTAT AND CONTROL MODULE LINKING

Need to terminate control module linking

The control module blinks red/yellow when waiting to be linked with a thermostat. To terminate the linking process in the module, either remove power to the module and then power back on or wait about six minutes for it to time out. LED will blink green. The control module retains its home and zone number. Relink to a thermostat if necessary

Changed Zone or Home number but didn't complete linking sequence

If necessary, terminate control module linking outlined above. Relink the thermostat and control module by starting the linking process outlined on page 8 and link the units by using options 1, 2 and 3 outlined on pages 10 and 11.

Mistakenly pressed ENTER in Option 03

Relink the thermostat and control module by starting the linking process outlined on page 8 and link the units by using options 1, 2 and 3 outlined on pages 10 and 11.

Not sure what thermostat goes with what module

Relink each thermostat and control module set by starting the linking process outlined on page 8 and link the units by using options 1, 2 and 3 outlined on pages 10 and 11.

This installation manual should not be left with unauthorized users as it contains installer setup functions which, if not correctly set, may cause damage to the HVAC equipment or seriously affect performance.

This manual is to be used in conjunction with the supplied Owner's Manual.

Although great care has been taken in preparation of this manual, Research Products Corporation takes no responsibility for errors or omissions contained herein. It is the responsibility of the installer to ensure that this thermostat and the equipment connected to it operate in a safe and efficient manner.

Due to ongoing product improvements, Research Products Corporation reserves the right to change the specifications of the Model 8710 wireless thermostat or its components without notice.

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