



Digital Non-Programmable

Thermostats

Owner's Manual & Installation Instructions

RAK148D1

RAK164D1

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Important safety information.

⚠ WARNING! *Always turn off power at the main power supply before installing, cleaning or removing the thermostat.*

- *This thermostat is for 24 VAC applications only. Do not use on voltages over 30 VAC.*
- *All wiring must conform to local and national electrical and building codes.*
- *Do not use air conditioning when the outdoor temperature is below 50 degrees; this can damage your A/C system and cause personal injuries.*
- *Use this thermostat only as described in this manual.*

Specifications.

Electrical rating: • 24 VAC (18–30 VAC)

- 1 amp maximum per terminal
- 4 amp maximum total load

Operating temperature range: 40°F–99°F (4°C–37°C)

Temperature set range: 60°F–85°F (15°C–29°C)

Accuracy: ± 1°F (± 0.5°C)

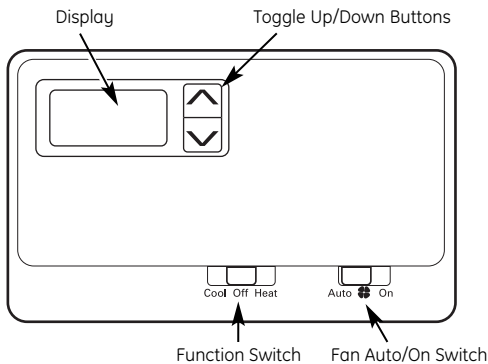
System configurations: 2-stage heat (RAK148D1 heat pump/resistance heat); 1-stage heat (RAK164D1 resistance heat); 1-stage cool

Timing: Anti-short cycle: 3 minutes (minimum compressor run time/off time). **Note:** There may be a 3 minute minimum fan run time/off time on some models.

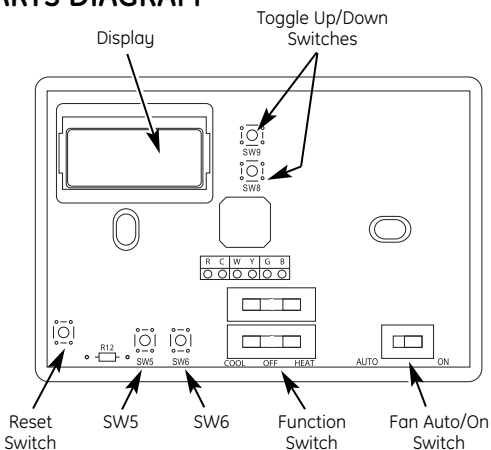
Terminations: R, C, W, Y, G, B (RAK148D1);
R, C, W, Y, G (RAK164D1)

INTRODUCTION OVERVIEW

THERMOSTAT CONTROL



PARTS DIAGRAM



INSTALLATION INSTRUCTIONS



ELECTRICAL SHOCK HAZARD—Turn off power at the main service panel by removing the fuse or switching the appropriate circuit breaker to the OFF position before removing the existing thermostat.

PACKAGE CONTENTS/TOOLS REQUIRED

Package includes: Thermostat on base, thermostat cover, wiring labels, screws and wall anchors.

Tools needed: Drill with 3/16" bit, hammer, screwdriver.

TO REMOVE EXISTING THERMOSTAT

1. Turn off power to heating and cooling system by removing the fuse or switching off the appropriate circuit breaker.
2. Remove cover of old thermostat. This should expose the wires.
3. Label the existing wires with the enclosed wire labels before removing wires.
4. After labeling wires, remove wires from wire terminals.
5. Remove existing thermostat base from wall.
6. Refer to the following section for instructions on how to install this thermostat.

TO INSTALL THERMOSTAT

IMPORTANT: *Thermostat installation must conform to local and national building and electrical codes and ordinances.*

Note: *Mount the thermostat about five feet above the floor. Do not mount the thermostat on an outside wall, in direct sunlight, behind a door or in an area affected by a vent or duct.*

TO INSTALL THERMOSTAT (cont.)

1. Turn off power to the heating and cooling system by removing the fuse or switching off the appropriate circuit breaker.
2. To remove cover, insert and twist a coin or screwdriver in the slots on the sides of the thermostat.
3. Put thermostat base against the wall where you plan to mount it. Make sure wires will feed through the wire opening in the base of the thermostat.
4. Mark the placement of the mounting holes.
5. Set thermostat base and cover away from working area.
6. Using a 3/16" drill bit, drill holes in the locations you have marked for mounting.
7. Use a hammer to tap supplied anchors in mounting holes.
8. Align thermostat base with mounting holes and feed the control wires through the wire opening.
9. Use supplied screws to mount thermostat base to wall.
10. Insert stripped, labeled wires in matching wire terminals. See "Wiring Diagrams" section of this manual.

⚠ CAUTION! *Make sure exposed portion of wires does not touch other wires.*

11. Tighten screws on terminal block. Gently tug wire to be sure of proper connection. Double check that each wire is connected to the proper terminal.
12. Seal hole for wires behind thermostat with non-flammable insulation or putty, or use a wall plate obtainable from a local hardware or home building store.

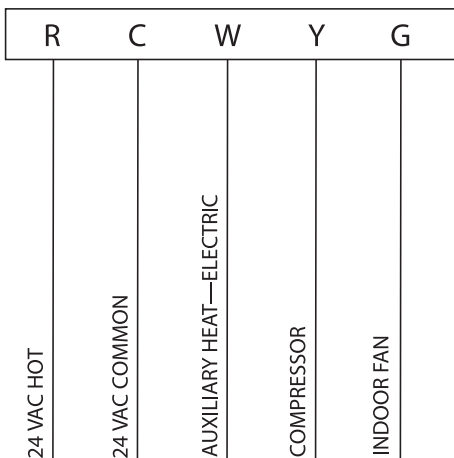
INSTALLATION INSTRUCTIONS

TO INSTALL THERMOSTAT (cont.)

13. Replace cover on thermostat by snapping it in place.
14. Turn on power to the system at the main service panel.
15. Test thermostat operation as described in "Testing the Thermostat".

Wiring diagrams.

Table 1: Terminals for five wires heat/cool system (RAK164D1 only)



Note: Connect G terminal of thermostat to Zoneline Gl terminal for low fan speed or terminal Gh for high fan speed. Only one can be selected.

Table 2: Terminals for six wires 2 heat/1 cool system (RAK148D1 only)

R	C	W	Y	G	B
24 VAC HOT	24 VAC COMMON	AUXILIARY HEAT—ELECTRIC	COMPRESSOR	INDOOR FAN	REVERSING VALVE (HEAT ACTIVE)

Note: Connect G terminal of thermostat to Zoneline G1 terminal for low fan speed or terminal Gh for high fan speed. Only one can be selected.

Configuration mode.

The configuration mode is used to set the RAK148D1 and RAK164D1 to match your heating/cooling system. These thermostats function with up to 2-stage heat pump systems (RAK148D1 only).

To configure the RAK148D1 and RAK164D1, perform the following steps:

Note: Operation being set will blink in the display.

1. Slide the **Function** switch to the **OFF** position.
2. Remove the cover of the thermostat by gently pulling on one of the corners.
3. Simultaneously hold the **SW5** and **SW6** buttons in for 5 seconds while the thermostat is in **OFF** mode.
4. Press the \vee or \wedge button to change settings within each screen.
5. Press the **SW6** button to advance to the next screen.
Note: The **SW5** button will return you to the previous screen.
6. To exit configuration mode, slide the **Function** switch to **Heat** or **Cool**.

Configuration Mode Settings

The setup screens for Configuration Mode are as follows:

1. Temperature Scale (F or C)—

Choose Fahrenheit or Celsius.

Press the \vee or \wedge button to select.

Press the **SW6** button to advance to the next screen.



2. Temperature Differential—

Stage 1—(1–9°F) (1–5°C)—

(Factory Setting is 2°F/1°C for

Each Stage)—Set the number of

degrees between your “setpoint” temperature and your “turn on” temperature for first stage.

Press the \vee or \wedge button to set differential value.

Press the **SW6** button to advance to the next screen.



3. **Temperature Differential—Stage 2—(RAK148D1 only) (1–9°F)**

(1–5°C)—Set the number of degrees between when stage 1 turns on and stage 2 turns on.

Press the \vee or \wedge button to set differential value.

Press the **SW6** button to advance to the next screen.



4. **Minimum Cool Setpoint (60, 64, 66, 68, 70, 72, 74, 76°F) (15, 17, 19, 20, 21, 22, 23, 24°C)**

Adjust to control the minimum Cool set temperature allowed.

Press the \vee or \wedge button to select.

Press the **SW6** button to advance to the next screen.



5. **Maximum Heat Setpoint (65, 70, 72, 74, 76, 78, 80, 85°F) (18, 21, 22, 23, 24, 26, 27, 29°C)**

Adjust to control the maximum Heat set temperature allowed.

Press the \vee or \wedge button to select.

Press the **SW6** button to advance to the next screen.



6. **Room temperature offset (+9°F to -9°F) (+5°C to -5°C)**

Adjust to calibrate displayed room temperature to match actual room temperature.

Press the \vee or \wedge button to select.

Press the **SW6** button to advance to the next screen.



Terminal designator descriptions.

R	— 24 VAC hot	G	— Fan
C	— 24 VAC common	B	— Heat active reversing valve (RAK148D1 only)
W	— Aux. heat		
Y	— Compressor		

Starting the thermostat.

⚠ CAUTION! Do not use air conditioning when the outdoor temperature is below 50 degrees. This can damage your air conditioning system and cause personal injuries.

1. Move the **Fan Auto/On** switch to the **Auto** position.
2. Move the **Function** switch to **Cool** or **Heat**, depending on the season.



Testing the thermostat.

Once the thermostat is installed, it should be thoroughly tested.

⚠ CAUTION! Do not use air conditioning when the outdoor temperature is below 50 degrees. This can damage your air conditioning system and cause personal injuries.

Cool Test

1. Slide **Function** switch to **Cool** mode.
2. Adjust set temperature so it is 5 degrees below room temperature.
3. Air conditioning should come on within a few seconds.
4. Adjust the set temperature so it is 2 degrees above the room temperature and the A/C should turn off. **Note:** There is a 3 minute time delay and a 3 minute minimum run time for the compressor when it turns on/off. (On some models, the fan may also have a 3 minute minimum run time/off time delay).



Heat Test

1. Slide **Function** switch to **Heat** mode.
2. Adjust set temperature so it is 5 degrees above room temperature.
3. Heat should come on within a few seconds.
4. Adjust the set temperature so it is 2 degrees below the room temperature and the heat should turn off. **Note:** There is a 3 minute time delay and a 3 minute minimum run time for the compressor when it turns on/off. (On some models, the fan may also have a 3 minute minimum run time/off time delay).



Note: "Quick Heat Recovery" is activated each time the thermostat is switched from **Off** or **Cool** modes to **Heat** mode. Electric heaters are energized until the thermostat set point is reached. Heat pump operation will resume at next call for heat (Heat pump only).

Fan Test

1. Slide **Fan Auto/On** switch to **On** position.
2. Indoor fan turns on.
3. Slide **Fan Auto/On** switch to **Auto** position.
4. Indoor fan turns off.



Operating functions.

Off

- In this mode, the thermostat will not turn on the heating or cooling devices (manual fan can operate).
- **Off** is also used to access **Setup** mode.

Cool

- In this mode, the thermostat controls the cooling system.
- Press the \vee or \wedge buttons to set the desired temperature.

Standby



Set



Operating functions.

Heat

- In this mode, the thermostat controls the heating system.
- Press the \vee or \wedge buttons to set the desired temperature.

Standby



Set



Troubleshooting tips.

Problem	Solution
No display	Check for 24 VAC at thermostat; display is blank when 24 VAC is not present.
System fan does not come on properly	Verify that wiring is correct.
Thermostat turns on and off too frequently	Adjust temperature differential (see <i>Temperature Differential</i> , Stage 1).
Fan runs continuously	Check Fan Auto/On switch. If set to ON position, fan will run continuously.
Room temperature is not correct	Verify that wall hole is plugged with putty or insulation; calibrate thermostat (see <i>Configuration mode</i>).
Auxiliary heat not on soon enough	Adjust differential for 2nd stage (RAK148D1 only) heating, if required (see <i>Configuration mode</i>).
Compressor doesn't run or turn off immediately when changing function or setting	There is a 3 minute time delay and a 3 minute minimum run time for the compressor when it turns on/off.
Fan doesn't run or turn off immediately when changing function or setting	This is normal. On some models, the fan may have a 3 minute minimum run time/off time delay.
Problem not listed above	Press the Reset button once; display will be refreshed.

Notes.

Notes.

Notes.

Thermostat Warranty.

*Staple your receipt here.
Proof of the original purchase date is
needed to validate the warranty.*

For The Period Of: **GE Will Replace:**

One Year

*From the date of the
original purchase*

Full Replacement of the thermostat which fails
due to a defect in materials or workmanship.

What GE Will Not Cover:

- Service trips to your location.
- Improper installation. If you have an installation problem, contact your installer. You are responsible for providing adequate electrical connections to the product.
- Failure of the product resulting from modifications to the product or due to unreasonable use, including failure to provide reasonable and necessary maintenance.
- In commercial locations, labor necessary to move the unit, after it has been initially installed, to a location where it is accessible for service by an individual technician; or, if the instructions included in this manual have been disregarded.
- Replacement of location fuses or the resetting of circuit breakers.
- Damage to the product caused by improper power supply voltage, accident, fire, floods or acts of God.
- Incidental or consequential damage caused by possible defects with this thermostat.

EXCLUSION OF IMPLIED WARRANTIES—Your sole and exclusive remedy is product exchange as provided in this Limited Warranty. Any implied warranties, including the implied warranties of merchantability or fitness for a particular purpose, are limited to one year or the shortest period allowed by law.

This warranty is extended to the original purchaser and any succeeding owner for products purchased for use within the USA and Canada. In Alaska, the warranty excludes the cost of shipping or service calls to your site.

Some states or provinces do not allow the exclusion or limitation of incidental or consequential damages. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state or province to province. To know what your legal rights are, consult your local, state or provincial consumer affairs office or your state's Attorney General.

Warrantor: General Electric Company, Louisville, KY 40225