



RT5

Non-Programmable Electronic Thermostat

1 Heat/1 Cool
Manual Changeover
Battery or Hardwired

- For use with Friedrich PTAC units ONLY
- Backlit Display
- Filter Check
- Status Indicator Light
- Relay Outputs
(minimum voltage drop in thermostat)
- Two-Speed Fan



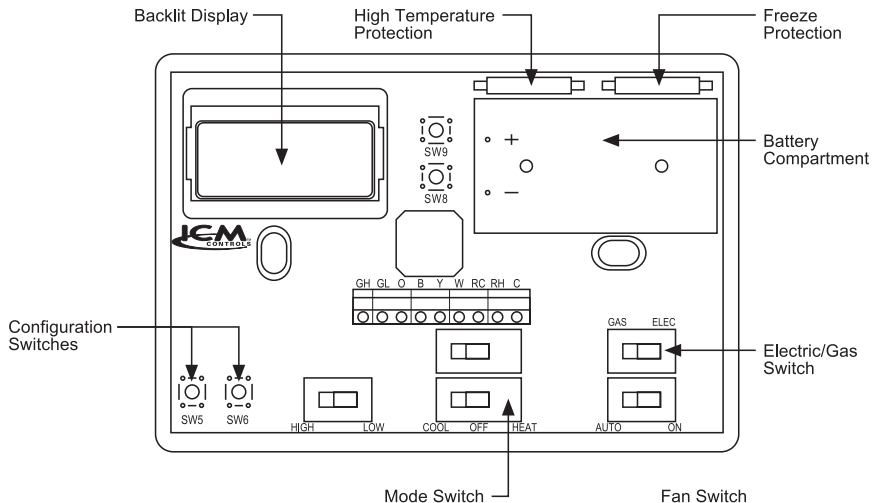
Installation, Operation & Application Guide

Friedrich

Table of Contents

Parts Diagram.....	1
Specifications	2
Important Safety Information	2
Package Contents/Tools Required	2
To Remove Existing Thermostat.....	3
To Install Thermostat	3
Wiring Diagrams	5
Configuration Mode	6
Testing the Thermostat	9
Mode of Operation.....	10
Troubleshooting.....	11

Parts Diagram



Specifications

Electrical rating:

- 24 VAC (18-30 VAC)
- 1 amp maximum per terminal
- DC Power: 3.0 VDC (2 "AA" batteries included)
- 3 amp maximum total load

Temperature control range: 45°F to 90°F (7°C to 32°C) **Accuracy:** ± 1°F (± 0.5°C)

System configurations: 1-stage heat, 1-stage cool, heat pump, electric

Timing: *Anti-short Cycle:* 5 minutes

Backlight Operation: Battery for 5 seconds, hardwired for 10 seconds

Terminations: RC, RH, W, Y, B, O, GL, GH, C

Important Safety Information

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

- This thermostat is for 24 VAC applications only; do not use on voltages over 30 VAC
- Do not short across terminals of system control to test operation; this will damage your thermostat and void your warranty
- 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

Package Contents/Tools Required

Package includes: RT5 thermostat on base, thermostat cover, wiring labels, screws and wall anchors, Installation, Operation and Application Guide

Tools required for installation: Drill with 3/16" bit, hammer, screwdriver

To Remove Existing Thermostat



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.*

1. Turn off power to the heating and cooling system by removing the fuse or switching the appropriate circuit breaker off.
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



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.*

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.

1. Turn off power to the heating and cooling system by removing the fuse or switching the appropriate circuit breaker off.

To Install Thermostat (continued)

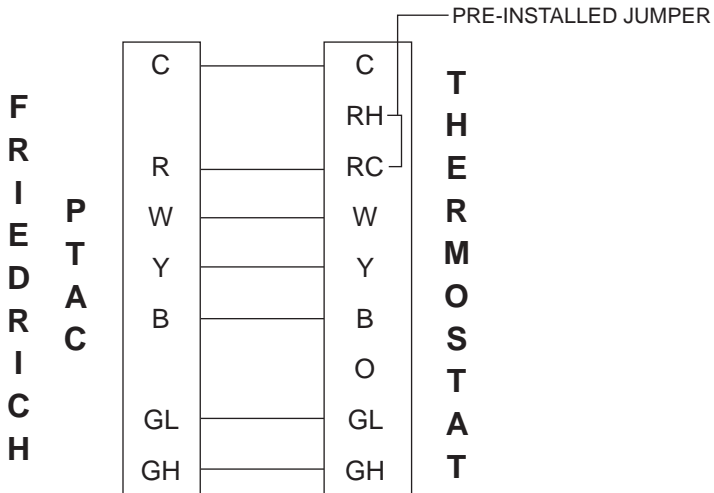
2. To remove cover, insert and twist a coin or screwdriver in the slots on the sides of the thermostat.
3. Put thermostat base against the wall where you plan to mount it (Be sure wires will feed through the wire opening in the base of the thermostat).
4. Mark the placement of the mounting holes.
5. Set thermostat base and cover away from working area.
6. Using a 3/16" drill bit, drill holes in the places 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 wire opening.
9. Use supplied screws to mount thermostat base to wall.
10. Insert stripped, labeled wires in matching wire terminals. See "Wiring Diagram" section of this manual (Page 5).

CAUTION!: *Be 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.
13. Set **Elec/Gas** switch to
Electric = heat pump, electric strip heat
14. Replace cover on thermostat by snapping it in place.
15. Turn on power to the system at the main service panel.
16. Test thermostat operation as described in "Testing the Thermostat" (Page 9).

Heating/Cooling

HARDWIRED



Configuration Mode

The configuration mode is used to set the RT5 to match your heating/cooling system. The RT5 functions with Friedrich PTAC models.
Ensure that the thermostat is configured for air conditioning with ELECTRIC HEAT ONLY.

To configure the RT5, perform the following steps:

1. Remove the cover of the thermostat by gently pulling on one of the corners.
2. Simultaneously hold the **SW5** and **SW6** buttons in for 5 seconds while the RT5 is in **OFF** mode.
3. Press the \vee or \wedge button to change settings within each screen.
4. Press the **SW6** button to advance to the next screen.
***Note:** The **SW5** button will return you to the previous screen.
5. To exit configuration mode, slide the **Mode** switch to **Heat** or **Cool**.

Configuration Mode Settings

The nine (9) setup screens for Configuration Mode are as follows:

1. **Heat pump and Non Heat Pump** – Press the \vee or \wedge button to configure as heat pump, or non-heat pump system. For heat pumps, there will be an anti-short cycle delay for heating and cooling
• 0 = Non-heat pump system
Press the **SW6** button to advance to the next screen.
2. **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.



Configuration Mode Settings (continued)

3. **Temperature Differential (1°F to 3°F) (0.5°C to 1.5°C)** – Set the number of degrees between your “setpoint” temperature and your “turn on” temperature.
Press the \vee or \wedge button to set differential value.
Press the **SW6** button to advance to the next screen.



4. **Minimum Cool Setpoint (45°F to 75°F) (7°C to 24.0°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 (55°F to 90°F) (13°C to 32°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) (+4.5°C to -4.5°C)

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

** **Note:** When not set to 0, **ROOM** will display

Press the \vee or \wedge button to select.

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



7. **Maximum compressor cycles allowed per hour** (-, 2-6)

- = as many as needed, 2-6 = maximum cycles/hour

Press the \vee or \wedge button to select.

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



8. **Filter Check time** (300-800, ---)

Set **Fan Run Time** (in hours) when **Check Filter** is displayed or set to --- to disable.

Press the \vee or \wedge button to select.

** **Note:** To reset filter counter to zero and clear \checkmark filter warning, press the \vee and \wedge buttons simultaneously for 5 seconds.

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



(500 Hours)

9. **Status Indicator Light** (Lt 0 or 1)

0 = Status indicator never on

1 = Status indicator on with first stage

Press the \vee or \wedge button to select.

** **Note:** Red light indicates heating cycle and green light indicates cooling cycle

Slide the **Mode** switch to **Heat** or **Cool** to exit configuration.



Testing the Thermostat

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

CAUTION!: *Do not energize the air conditioning system when the outdoor temperature is below 50 degrees. It can result in equipment damage or personal injury.*

Cool Test

1. Slide **Mode** 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. Status indicator may come on.
4. Adjust the set temperature 2 degrees above the room temperature and the A/C should turn off. There may be a fan delay on your system.

** **Note:** There is a five minute time delay to protect the compressor after it turns off. To temporarily bypass the five minute delay, slide the **Mode** switch to **OFF** for 2 seconds and then back to **Cool**.



Cool Off Heat

Heat Test

1. Slide **Mode** switch to **Heat** mode.
 2. Adjust the set temperature so it is 5 degrees above the room temperature.
 3. Heat should come on within a few seconds. Status indicator may come on.
 4. Adjust the set temperature so it is 2 degrees below the room temperature and the heat should turn off. There may be a fan delay on your system.
- ** **Note:** For heat pumps, there is a five minute time delay to protect the compressor after it turns off. To temporarily bypass the five minute delay, slide the **Mode** switch to **OFF** for 2 seconds and then back to **Heat**.



Cool Off Heat

(Testing the thermostat continued on Page 10)

(Testing the thermostat continued from Page 9)

Fan Test

1. Slide **Fan** switch to **On** position.
2. Indoor fan turns on.



3. Slide **Fan** switch to **Auto** position.
4. Indoor fan turns off.



Mode of Operation

The RT5 is a single-stage heat, single-stage cool thermostat.

The RT5 can use 24 VAC or batteries as a power supply. The RT5 can be hardwired and have no batteries installed in the battery compartment. It can also run on battery power only. When batteries are installed and the thermostat is hardwired, the batteries will run the thermostat during a power outage.

When operating on battery power, the backlight will be on for 5 second intervals. When hardwired, the backlight will be on for 10 second intervals.

The thermostat activates a heating appliance when the room temperature is below the heat set temperature (by the differential temperature). It will turn off when the room temperature is one degree above the heat set temperature. With heat pumps, the thermostat will not let the compressor come on for five minutes after it turns off. This protects your compressor.

When the room temperature is greater than the cool set temperature (by the differential temperature), the cooling device is activated. It will turn off when the room temperature is one degree below the cool set temperature. The thermostat will not let the compressor come on for five minutes after it turns off. This protects your compressor.

The RT5 has the following operating modes: **OFF**, **Heat** and **Cool**. In **OFF** mode, the thermostat will not turn on heating or cooling devices. In the **Heat** mode, the thermostat controls the heating system. In the **Cool** mode, the thermostat controls the cooling system. The indoor fan can be turned on in all operating modes using the **Fan** switch.

Troubleshooting

Symptom	Remedy
No display	<p>For Hardwired Installation Check for 24 VAC at thermostat; display is blank when 24 VAC is not present</p> <p>For Battery Installation Display is blank when batteries are drained or installed incorrectly</p>
System fan does not come on properly	<p>Verify wiring is correct</p> <p>Check position of gas/electric switch</p>
Thermostat turns on and off too frequently	Adjust temperature differential (see "Temperature Differential," Step 3, Page 6)
Fan runs continuously	Check fan On/Auto switch, ON position runs indoor fan continuously
Fan operates at wrong speed	Slide High/Low fan switch to correct position
Room temperature is not correct	Verify wall hole is plugged with putty or insulation; calibrate thermostat (see "Configuration," Step 6, Page 8)
<u>ROOM</u> displays	Room temperature offset is not zero (see "Configuration," Step 6, Page 8)
Status indicator	<p>Green light – Cooling operation</p> <p>Red light – Heating operating</p> <p>Status indicator option ON (see "Configuration," Step 9, Page 8)</p>
✓ filter displays	<p>Fan run time has exceeded filter check time set in configuration (see "Configuration," Step 8, Page 8)</p> <p>To reset counter to zero and clear ✓ filter warning, press the ∨ and ∧ button simultaneously for 5 seconds</p>

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