Product Name: 6021z
Document Title: Install Guide ENG
Document Type Code: IBIE
Part Number: 711-002

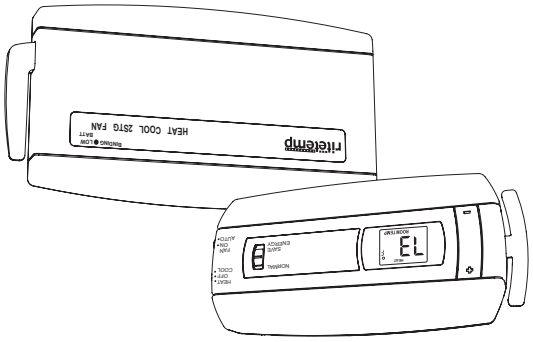
2nov07 draft 2

28oct07 initial rel

Back Cover

711-002 Printed in China

Customer Support: 877-505-2353 or
Visit our website www.ritetemp-thermostats.com

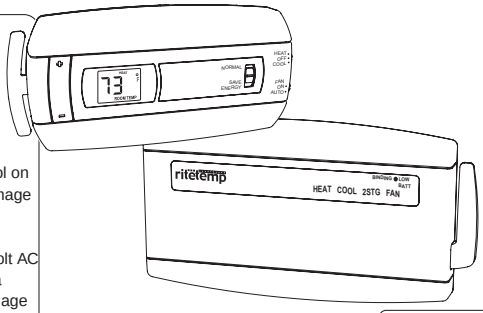


Install guide 6021z

ritetemp

Caution

- Your thermostat is a precise instrument, take care.
- Turn off electricity to the appliance before installing or servicing thermostat or any part of the system.
- Do not turn electricity back on until work is completed.
- Do not short (jumper) across electric terminals at control on furnace or air conditioner to test the system. This will damage the thermostat or Wall Unit and void your warranty.
- All wiring must conform to local codes and ordinances.
- This Thermostat/Wall Unit is designed for use with 24 volt AC and millivolt systems. The Wall Unit should be limited to a maximum of 1.0 amps; higher amperage may cause damage to the Wall Unit.

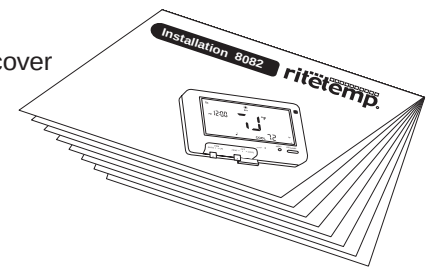


ENGLISH

Front Cover

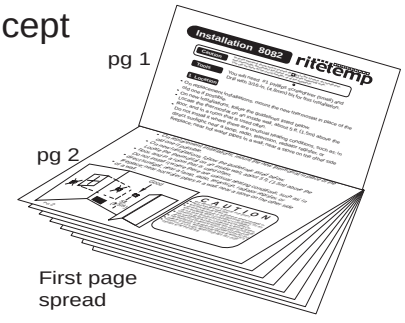
Instruction Book Concept

Front cover



pg 1

pg 2



First page spread

Install guide 6021z

ritetemp

Caution

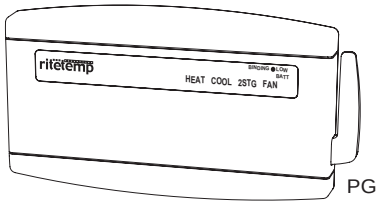
To avoid electrical shock and to prevent damage to the furnace, air conditioner, and thermostat wall unit, disconnect the power supply before beginning work. This can be done at the circuit breaker, or at the appliance.

Tools

You will need a small Phillips screwdriver and possibly a drill with 3/16-in. (4.8mm) bit for mounting the Wall Unit.

Install Wall Unit

The 6021z Wireless Thermostat system is made of two parts - The **Thermostat** and the **Wall Unit.** You will first install the Wall Unit and then configure the Thermostat.



fold and staple

Replacement installations - You can mount the Wall Unit in place of the old thermostat. Remember the "C" power wire is required for operation this supplies 24VAC to the transmitter in the Wall Unit and allows continuous communication with the Thermostat. Because the 6021z system is wireless it is easiest to mount the Wall Unit next to the HVAC unit in the basement attic or HVAC closet even in a replacement installation.

New Installation or Change of location from Wall to HVAC

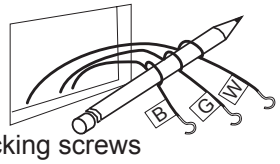
We recommend the WALL UNIT unit be installed in the same area and close to the HVAC location so it can be wired directly to the HVAC's thermostat terminals. The WALL UNIT unit has no temperature sensing devices but still should not be mounted outside or where it would be exposed to weather conditions. It can be mounted at any angle on the wall.

24VAC Power - The Wall Unit REQUIRES the HVAC 24VAC power wire (C) to work. If the C wire is not available at a previous wall installation, the C wire must be added or the Wall Unit should be mounted at the HVAC location where the C wire power is always available.

IMPORTANT : LABEL ALL WIRES BEFORE DISCONNECTING THEM!

Remove old unit

If you are going to place the Wall Unit in the same location as the old thermostats...



ï Switch electricity to the furnace and air conditioner OFF; then proceed with the following steps.
ï Remove cover from old thermostat. Most are snap-on types and simply pull off. Some have locking screws on the side or front. These must be loosened. Note the letters printed near the terminals. **Attach labels** (enclosed) to each wire for identification.

Caution

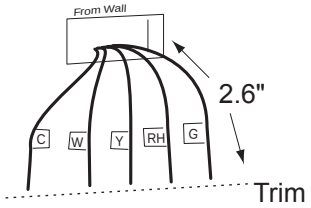
Read instructions carefully before removing any wiring from existing thermostat. Wires must be labeled before they are removed. **THERE IS NO STANDARD COLOR CODE.** When removing wires from their terminals, ignore the color of the wires since these may not comply with any standard.

ï Label the wires one at a time. You must label all the wires **before you proceed**. **With all wires labeled**, remove them from the old unit.
ï Make sure the wires do not fall back inside the wall. You can wind them around a pencil to keep them from falling.
ï Loosen all screws on the old thermostat and remove it from the wall.
ï Fill wall opening with non-combustible insulation to prevent drafts.

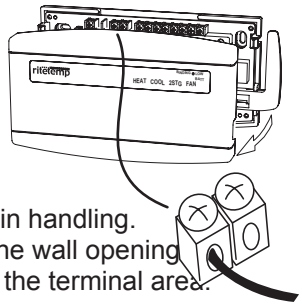
If you are going to locate the Wall Unit at the HVAC...
ï Switch electricity to the furnace and air conditioner OFF; then proceed with the following steps.
ï Open the service cover of your HVAC system and locate the thermostat terminals.
ï Remove any existing wire and run new thermostat wire to a convenient location for the 6021z Wall Unit.
ï Note what color is connected to what terminal of the HVAC system.

Prepare wires

ï You will need at least 2.6" of wire for each of your connections to the Wall Unit.
ï If you do not have enough wire, splice additional wire to allow enough slack.
ï Fan out wires below the hole as shown.



Before you Connect Wires



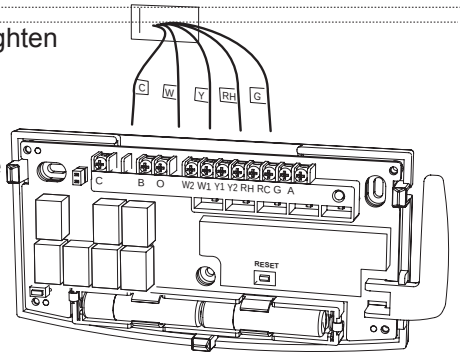
Please follow these guidelines for safe and secure wire connections.

ï Easy Terminals do not require stripping the wire.
ï Clip any bare wire from previous installation.
ï Take care not to damage the labels for each wire in handling.
ï Fan wires out as illustrated with Wall Unit below the wall opening.
ï Wires will dress behind the Wall Unit and up over the terminal area.
ï Use the Step-By-Step diagram as your guide.
ï Do not bunch wires behind Wall Unit. Feed slack back into the wall opening.

Caution

Do not allow wires to touch each other or parts on thermostat.

ï Insert the wire in the terminal and tighten the screw securely.
ï You will need to set Configuration Jumpers per the Step-By-Step diagram. A needle-nose plier may be required to modify jumper positions



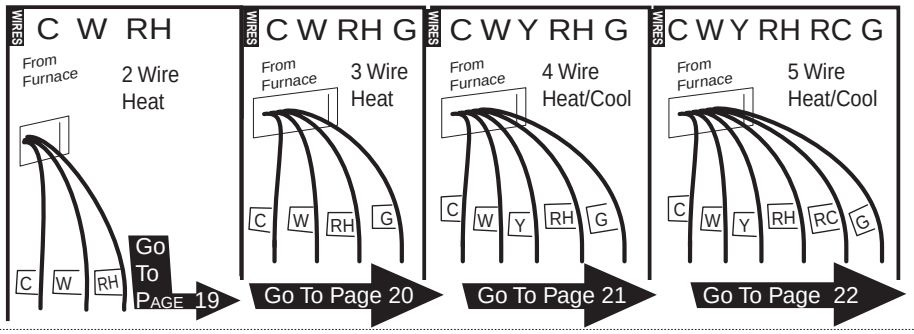
What wires do you have?

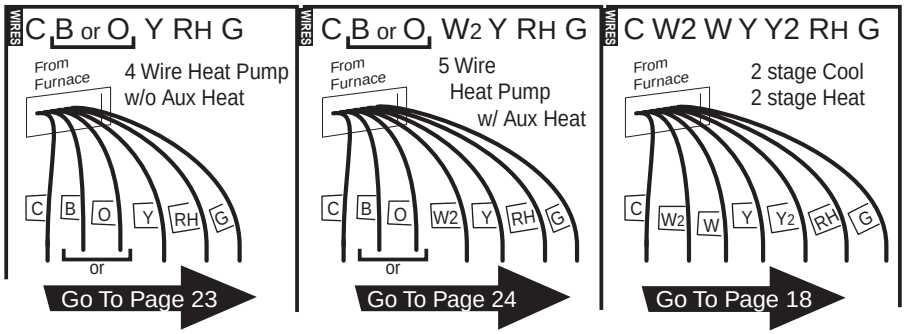
Determine which step-by-step wiring diagram below you should use. Make sure your wires are labeled. This may require you to find the 'other end' connection for each wire on your heating or air conditioning equipment and read the label there.

The Wall unit must have the 24VAC to operate. This is available as the C wire at the HVAC or a 24VAC adapter can be used connected to the RH and the C terminal.

Find the set-up diagram for your system

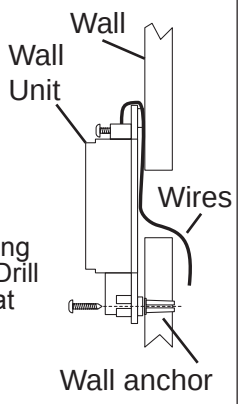
ï Find the reference page with your wiring diagram and jumper set-up information. Remember, the **C** wire or 24vdc power is required for the Wall Unit.



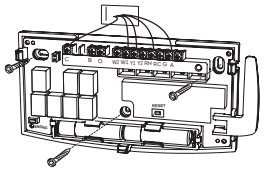


ï If you combination of wires is not above you can use the wiring table on pages 24-25 to determine your connections, or call our USA support line at 1-877-505-2353 for help.

Mount the Wall Unit

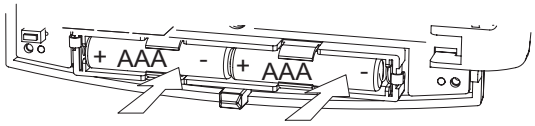


ï Hold the Wall unit against the wall, with the wires coming over the top above terminal block. The unit will cover the hole in the wall.
ï Position Wall unit for best appearance. Use the optional stand- offs if more space for wires is needed behind.
ï Attach the unit to the wall with the screws provided.
ï If you are mounting the unit to sheet rock or if you are using the old mounting holes, use the plastic anchors provided. Drill a 3/16-in.(4.8mm) hole for the insert at each screw location, then mount the base.

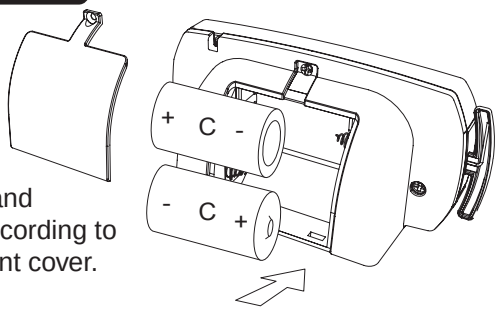


Install AAA Batteries in unit

ï The Wall Unit requires 2 AAA batteries for power loss backup.
ï Install 2 AAA alkaline batteries according to the polarity noted in the compartment. The Green LED will blink.
ï Press the **RESET** button to clear transient program memory. The green LED will Blink briefly.
NOTE: Replace the batteries when the red LOW battery indicator blinks or once a year.
ï Replace cover on Wall unit.



Install batteries in the Thermostat

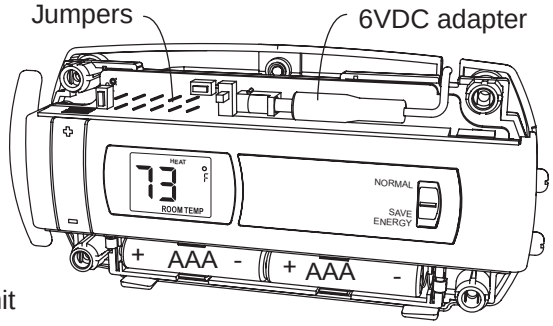


ï Remove the screw on the back cover and install 2 Alkaline C cell batteries according to noted polarity. Replace back cover.
ï Remove the bottom front cover and install 2 AAA Alkaline batteries according to noted polarity. Replace bottom front cover.

NOTE: The batteries will last over 1 year and should be replaced when the battery icon comes on, first the AAA batteries and then the C batteries.

The Thermostat can also run on the provided 6VDC plug-in adapter. It plugs into the Thermostat under the top cover.
NOTE: The Thermostat can be wall mounted by removing the "C" battery stand, the 6VDC power adapter is required for operation.

Set Thermostat Jumpers



ï Remove top cover to configure the Thermostat. Refer to the step-by-step wiring diagram you used to wire the Wall Unit. There you will find a jumper setting diagram for the Thermostat unit (pages 18 through page 24).
Push RESET on the Thermostat (anytime set up jumpers are changed, reset is required)

Make Wireless Connection

After you have finished the wiring of the WALL UNIT unit and the set the JUMPERs of the Thermostat, the two units must be radio connected before they can be used. If the BINDING LED at the WALL UNIT unit is on solid, they are connected; if it is NOT ON follow this procedure connect them.

On the WALL UNIT
Push and Hold the binding button
Touch the reset button once
When the binding LED is on solid, release the binding button

On the 6021Z THERMOSTAT
Push and Hold the binding button
Touch the reset button once
When the TEMPERATURE comes on screen, release the binding button

The above procedures clears the two radios so they can now be connected by doing the following:
Push the Wall Unit's BINDING button once.
Push the Thermostat's BINDING button once; watch the displayed countdown and wait! The two units are radio connected when the B units BINDING LED is on solid.

The ZigBee radio system

There have been many radio controlled thermostat systems but they were one way and there was no indication if they were working. The new ZigBee radio is two way, it sends the command and gets back confirmation that the command was received and implemented.

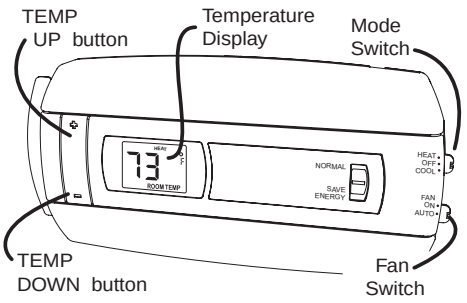
There is a radio tower icon on the Thermostat lower right display. If this icon is not there, communication has been lost. If this occurs, all HVAC functions are shut off.

Though the units are designed to work at least 100 feet from each other that distance can be affected by interference or blocking from walls etc. If your Thermostat unit cannot stay in communication (the radio tower icon does not stay on) you may need a repeater unit between the two which can be purchased at home depot.

The radio tower icon also shows a radiation pattern every time the Thermostat communicates with the WALL UNIT unit.

Check the system

Once the two units are connected, follow these procedures to verify you have correctly installed the Thermostat and its WALL UNIT unit. Because of the radio communication confirmation system, there will be a small delay between the operation and the function. Follow these procedures to verify you have correctly installed the 6021z system.



To check Fan: (If you connected the G wire - fan relay)
ï Switch the FAN switch to the ON position. You should see the FAN light go ON on the Wall Unit and verify that air is blowing from the system. Return to AUTO position for normal operation.

To check HEAT mode:
Set the mode switch to HEAT.
Set the fan switch to AUTO.
ï Using the TEMP + button raise the Target Temp to 90deg.
Allow the system 2 min to respond.
ï Verify that heat is blowing from the system. HEAT light on the Wall Unit should go ON.

To check COOL mode:
ï Set the mode switch to COOL.
ï Press the TEMP - button to a temp 5 degrees below the room temp.
Allow the system 2 minutes to respond.
ï Verify that cool air is blowing from the system. COOL light on the Wall Unit should go ON.

NOTE: If you have labeled your wires, follow the correct Step-By-Step, and these Check procedures do not operate your system call support at 1-877-505-2353

Congratulations, you have successfully installed your unit. Please proceed to the OPERATING Guide to initialize the 6021z System.

Calibration

NOTE: The Thermostat comes from the factory calibrated to +/- 1° of actual temperature. It is an accurate instrument. If you want your thermostat to display the same temperature as another thermometer in your home, you can adjust its calibration.

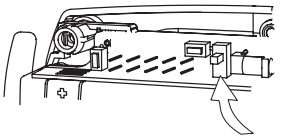
To change the calibration:

Remove the top cover.

Locate the calibration switch and slide it to the **ON** position. The current calibration factor (+/-) of the Thermostat will appear in the LCD display.

Push the UP or DOWN arrows until the desired calibration factor is reached.

Slide the Calibration switch to the **OFF** position. The new calibrated temperature will be displayed on the LCD.



Calibrate switch

WIRES **© W2 W Y Y2 RH RC G** **2 Stage Heat and Cool**

STEP 1 - Connect the **W** wire to the **W** terminal and **W2** to W2 on the Wall Unit. This connects 2 stages of heat.

STEP 2 - Connect the **Y** wire to the **Y** terminal and Y2 wire to Y2 on the Wall Unit. This connects 2 stages of cool.

STEP 3 - Connect the **RH** or **R** wire to the **RH** terminal on the thermostat. This connects the Heater/Cooler Power.

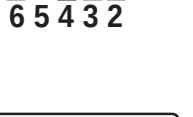
STEP 4 - Connect the **G** wire to the **G** terminal on the Thermostat. This connects to the Fan.

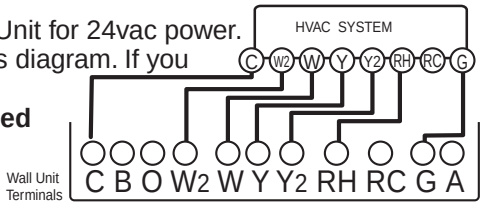
STEP 5 -**C** wire to the **C** on the Wall Unit for 24vac power.

STEP 6 - Set Config jumpers per this diagram. If you have Electric heat remove 5.

Your HVAC system is now connected to the Wall Unit.

Please Go To Page 9





WIRES © **W RH** **2 Wire Heat** Heating GAS MILLIVOLT or 24vac PG 19

STEP 1 - Connect the **R** (or RH) wire to the **RH** terminal on the Wall Unit. This connects the Heater Power to the Wall Unit.

STEP 2 - Connect the **W** wire to the **W** on the Wall Unit. This connects the heater control line to the 6021z system.

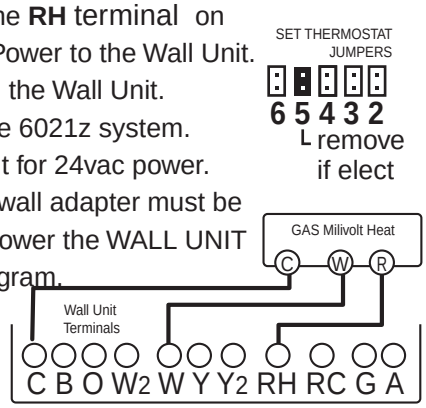
STEP 3 - **C** wire to the **C** on the Wall Unit for 24vac power.

NOTE: For gas millivolt system, a 24VAC wall adapter must be connected to the RH and C terminals to power the WALL UNIT

STEP 4 - Set Config jumpers per this diagram.

Your Heater is now connected to the Wall Unit.

Please Go To Page 9



WIRES © **W RH G** **3 Wire Heat** PG 20

STEP 1 - Connect the **R** (or RH) wire to the **RH** terminal on the Wall Unit. This connects to the Heater Power .

STEP 2 - Connect the **W** wire to the **W** terminal on the Wall Unit. This connects the heater control line to the 6021z system.

STEP 3 - Connect the **G** wire to the **G** terminal on the thermostat. This connects the Fan to the Wall Unit.

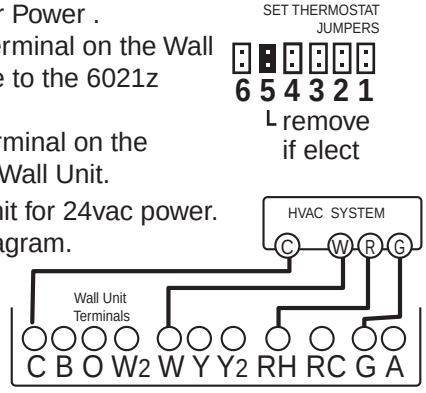
STEP 4 - **C** wire to the **C** on the Wall Unit for 24vac power.

STEP 5 - Set Config jumpers per this diagram.

If you have Electric heat remove 5.

Your system is now connected to the Wall Unit.

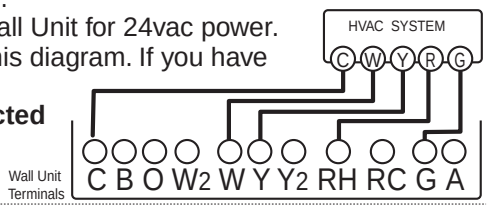
Please Go To Page 9



WIRES **C W Y RH G** **4 Wire Heat/Cool** PG 21

STEP 1 - Connect the **W** wire to the **W** terminal on the thermostat. This connects to the heater control line.
STEP 2 - Connect the **Y** wire to the **Y** terminal on the Wall Unit. This connects to the Cooler compressor.
STEP 3 - Connect the **RH** or **R** wire to the **RH** terminal on the thermostat. This connects the Heater/Cooler Power.
STEP 4 - Connect the **G** wire to the **G** terminal on the Thermostat. This connects to the Fan.
STEP 5 - **C** wire to the **C** on the Wall Unit for 24vac power.
STEP 6 - Set Config jumpers per this diagram. If you have Electric heat remove jumper 5.
Your HVAC system is now connected to the Wall Unit.

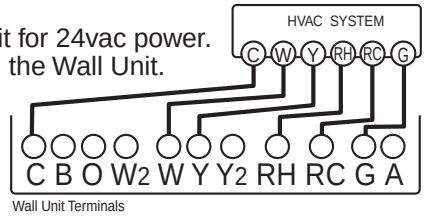
Please Go To Page 9



WIRES **C W Y RH RC G** **5 Wire Heat/Cool** PG 22

STEP 1 - Connect the **W** wire to the **W** terminal on the thermostat. This connects to the heater control line.
STEP 2 - Connect the **Y** wire to the **Y** terminal on the Wall Unit. This connects to the Cooler compressor.
STEP 3 - Connect the **RH** wire to the **RH** terminal and the **RC** wire to the **RC** terminal on the Wall Unit. This connects the Heater and Cooler Power.
STEP 4 - Connect the **G** wire to the **G** terminal on the Thermostat. This connects to the Fan.
STEP 5 - **C** wire to the **C** on the Wall Unit for 24vac power.
STEP 6 - Remove the RH/RC jumper on the Wall Unit.
STEP 7 - Set Config jumpers per this diagram. If you have Electric heat remove jumper 5.
Your HVAC system is now connected to the Wall Unit.

Please Go To Page 9



WIRES

ℂ **B** or **O Y R G** — **4 Wire Heat Pump w/o Aux**

STEP 1 - Connect **O** wire to the **O** terminal or **B** wire to the **B** terminal on the Wall Unit. (If you have *both* **O** and **B** - connect **O** wire to **O** terminal DO NOT connect **B** to **B** terminal - see pg 24 Trane for **B** wire terminal) This connects the change-over valve.

STEP 2 - Connect the **Y** wire to **Y** on the Wall Unit. This connects the Compressor.

STEP 3 - Connect the **R** wire to **RH** on the Wall Unit. This connects to the 24vac power.

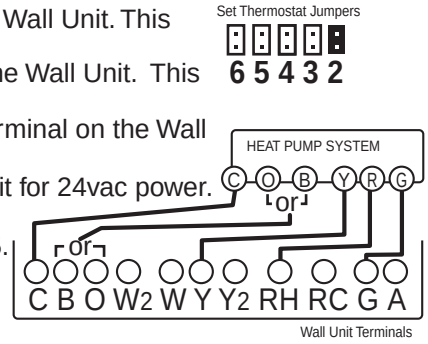
STEP 4 - Connect the **G** wire to the **G** terminal on the Wall Unit. This connects the Fan.

STEP 5 - **C** wire to the **C** on the Wall Unit for 24vac power.

STEP 6 - Set Config jumpers per this diagram. Set jumper 2. Remove jumper 5.

Your HVAC system is now connected to the Wall Unit.

Please Go To Page 9



WIRES

ℂ **B** or **O W2 Y RH G** — **5 Wire Heat Pump w/ Aux Heat**

STEP 1 - Connect **O** wire to the **O** terminal or **B** wire to the **B** terminal on the Wall Unit. (If you have *both* **O** and **B** -connect **O** wire to **O** terminal DO NOT connect **B** to **B** terminal - see pg 24 Trane for **B** wire terminal)

STEP 2 - Connect the **W2** wire to **W2** on the Wall Unit.

STEP 3 - Connect the **Y** wire to **Y** on the Wall Unit.

STEP 4 - Connect the **R** wire to **RH** on the Wall Unit.

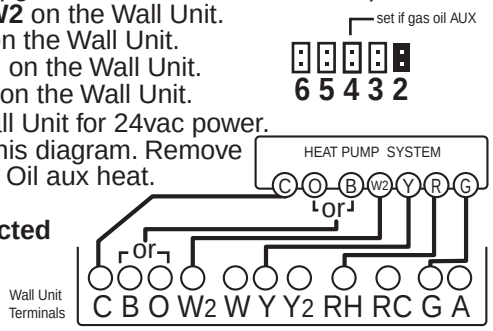
STEP 5 - Connect the **G** wire to **G** on the Wall Unit.

STEP 6 - C wire to the **C** on the Wall Unit for 24vac power.

STEP 7 - Set Config jumpers per this diagram. Remove jumper 5. Use jumper 4 for Gas or Oil aux heat.

Your HVAC system is now connected to the Wall Unit.

Please Go To Page 9



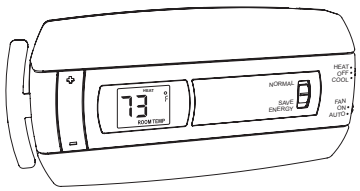
6021z Features

PG 25

The 6021z can be used with most 24 volt gas, oil or electric heating and air conditioning systems, heat pumps or gas millivolt heating systems. It cannot be used with 120 volt heating systems. Ask The Home Depot for other thermostats to control those systems.

The 6021z is digital. You can set your desired heat and cool temperature set point directly on the Large LCD display. You can easily override the set temperatures.

4-minute minimum off time in COOL protects your air conditioning system from being damaged.



Wire Reference

PG 26

Your Wires	Ritetemp Terminal
R or V or VR	RH and RC Single power for HEAT and COOL
RH or 4	RH Power for HEAT (RH not connected to RC)
RC	RC Power for COOL (RH not connected to RC)
W	W Heat control
W2	W2 2nd stage HEAT or heat pump auxiliary heat
?	A 3rd wire for zoned hot water heat (see zoned)
Y	Y COOL control
Y2	Y2 2nd stage COOL control
G or F	G FAN control
C or X	C Common 24VAC power (to power thermostat)
E	Emergency heat (do not connect, tape off)
L	System monitor (do not connect, tape off)
T	Outdoor sensor (do not connect, tape off)
B or	B Heat pump changeover (cool to heat, powered in heat)
O	O Heat pump changeover (heat to cool, powered in cool)
B and O	**SEE NOTE**

B and O
NOTE: If there are both B and O wires (Trane pump products) DO NOT CONNECT B to B terminal, connect B to C terminal

Wire Reference cont

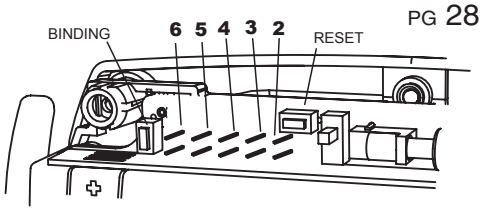
Your Wires	Ritetemp Terminal
Lennox Heat Pump	
V or VR or R	RH
M or Y	Y
Y or W or W2	W2
F or G	G
R or O	O
X or X2 or C	C
Trane Products [American Standard]	
B	C
W or W1	W2

Zoned Systems

Your Wires	Ritetemp Terminal
2 wire Zoned Hot Water	
R	RH
W	W
3 Wire Zoned Hot Water Motor Driven Valves	
R	RH
W	W
Y (the 3rd wire)	A
3 Wire Zoned Hot Water Solenoid Valves	
R	RH
W	A
Y (the 3rd wire)	W

Jumper Reference

Configuration jumpers allow your 6021z Thermostat to be adapted to many different HVAC control applications.



RESET UNIT
AFTER JUMPER CHANGE

CENTIGRADE FAHRENHEIT

CENTIGRADE
CLOSED
6
OPEN
FAHRENHEIT

FAN CONTROL

GAS/OIL
CLOSED
5
OPEN
ELECTRIC HEAT

AUX TYPE

CLOSED
PUMP AUX
GAS OR OIL
4
OPEN
PUMP AUX
ELECT

NORM/PUMP/AUX SELECT

HEAT PUMP'S
AUX ONLY — CLOSED or — HEAT PUMP CLOSED
3 — 2
OPEN — OPEN
BOTH OPEN
NORMAL HEAT (NO PUMP)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user`s authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates,uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions,may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or televsion reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

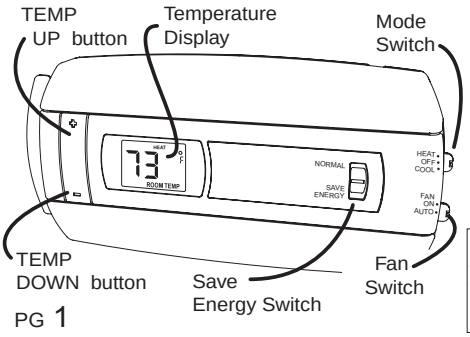
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

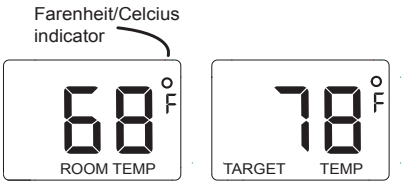
Product Name: 6021z
Document Title: Operation guide ENG
Document Type Code: IBOE
Part Number: 711-0033
7nov07 initial release
1nov07 draft1

fold and staple

Operation 6021z

rite temp





Current Temperature Display

SET Temperature Display

Statement of use: The 6021z can be used with millivolt, 24VAC, 1 and 2 stage conventional gas/oil/elec heat, 1 and 2 stage heat pumps, 2 or 3 wire zoned hot water, zoned forced air, 1 and 2 stage cooling and hybrid systems.
It cannot be used with 120 volt heating systems.

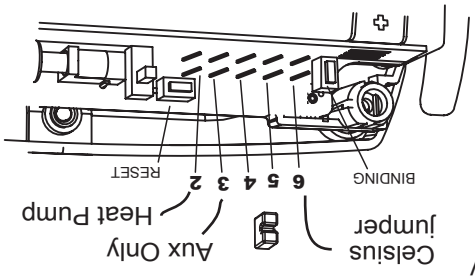
PG 1

ENGLISH

To set a Heat Pump's Aux only mode

PG 8

If you have a heat pump with auxiliary heat, and the heat pump is not working, you can use just the aux heat. To do this, change the mode switch to OFF. Now switch to aux heat only by moving the jumper from position 2 (heat pump) to position 3 (aux only). Turn mode switch back to HEAT.
NOTE: As soon as the heat pump is again working, switch mode to OFF and change the jumper from position 3 back to position 2 as aux heat is more expensive than heat pump.



Customer Support: 877-505-2353 Visit our website
www.ritetemp-thermostats.com

1711-003

Location

The Thermostat should be located in a convenient location in the living area. It is important to keep the thermostat away from HVAC registers, windows, direct sun, or a breezy areas.

Do not hold the Thermostat for long periods as your hands, this will heat it and change the displayed room temperature. If this occurs it may take 20 minutes to re-stabilize to the actual room temperature.

Configure

Set HEAT/COOL mode switch to HEAT or COOL. The unit will display the Room temperature. Set the Fan switch to AUTO.

Operate

Press the TEMP UP and TEMP DOWN buttons on the Thermostat to select the desired temperature. The TARGET icon will be displayed with your desired temperature. (Display will return to room temp in 5 sec).
In the winter, set the system switch to HEAT to control your heating system.
In the summer, set the system switch to COOL to control your AC.
In spring and fall or when windows are open,
you can set the system switch OFF.
Setting the FAN switch to AUTO automatically runs your system's fan during heating and cooling.
Setting the FAN switch to ON runs your system's fan continuously even without heating or cooling.

Save Energy Switch

The NORMAL/SAVE ENERGY switch allows you to set a comfort target temperature (NORMAL) and an offset target temperature (SAVE ENERGY) temperature. The defaults for heat targets are: NORMAL 70F, SAVE ENERGY 64F. The defaults for cool targets are: NORMAL 75F, SAVE ENERGY 80F. However, these 4 target temperatures can be set to your preference by using the +/- buttons. The save energy position could be used when you are going to work, going to bed, on vacation, etc.

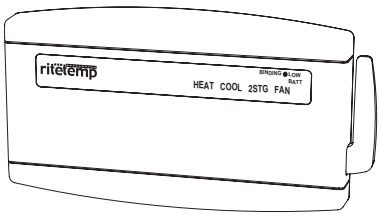
Setting the FAN switch to AUTO automatically runs your system's fan during heating and cooling. Setting the FAN switch to ON runs the systems fan continuously (if you have a G wire connected to the Wall Unit from the HVAC).

The Thermostat should not be held for very long as the heat from your hands will heat up the 6021Z and eventually change the displayed room temperature. If this occurs the HVAC system will act on this incorrect temp reading causing unreliable results.

Wall Unit Operation

HVAC FUNCTION INDICATORS - The Wall Unit will light up the words HEAT, COOL, 2 STG (for 2nd stage), and FAN. The 2 STG will light even if you do not have a 2nd stage of heat or cool. The system is always ready for the 2nd stage.

COMPRESSOR PROTECTION- The Wall Unit has a 4 minute delay for compressor protection in HEAT PUMP or COOL. This protects the compressor from to frequent cycling. When the system is in this 4 min delay, the FUNCTION INDICATORS will blink on the Wall Unit until the 4 min delay is over and then go solid and let the HVAC run.



The ZigBee radio system

The new ZigBee radio is two way, it sends the command and gets back confirmation that the command was received and implemented.

There is a radio tower icon on the Thermostat lower right display. If this icon is not there, communication has been lost. If this occurs, all HVAC functions are shut off. The radio tower icon also shows a radiation pattern every time the Thermostat communicates with the WALL UNIT unit.

Though the units are designed to work at least 100 feet from each other that distance can be affected by interference or blocking from walls etc. If your Thermostat unit cannot stay in communication (the radio tower icon does not stay on) you may need a repeater unit between the two which can be purchased at home depot.

Low Battery

LOW BATTERY Thermostat - When the batteries are low on the Thermnostat, the battery icon will flash. Remove the bottom cover and replace the two AAA batteries first. Then remove the back cover and replace the two C batteries.

LOW BATTERY WALL UNIT - When the batteries are low on the Wall Unit, the BINDING LED will turn red. Remove the top cover and replace the two AAA batteries.

F° / C° Select

The F/C jumper is under the top cover jumper #6. It determines which temperature system is displayed on the LCD display. With the jumper off, the display is Fahrenheit (default). With the jumper on both pins, the display is Centigrade. When this jumper is changed, the unit must be reset (under the top cover).