

Install Guide CT101

Radio Thermostat

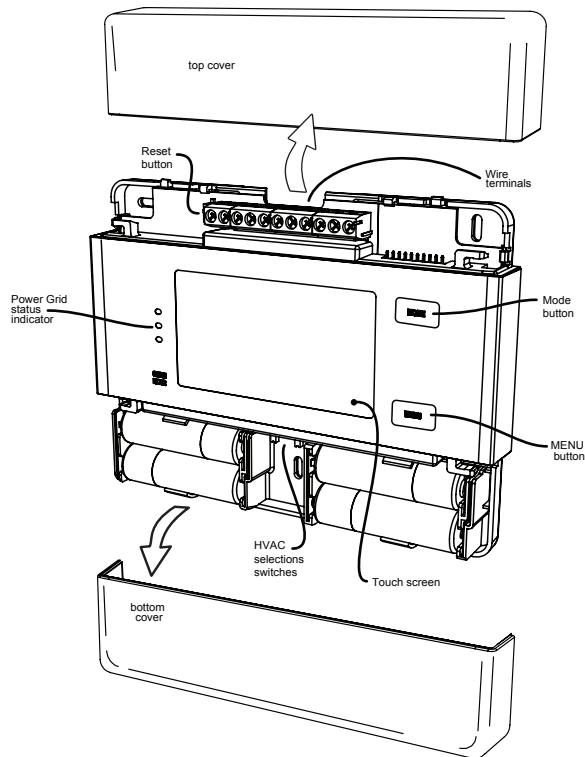
Radio Thermostat Company of America

Caution

- Your thermostat is a precise instrument, handle it with care.
- Turn off electricity to the HVAC system 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 the control on the furnace or air conditioner to test the system. This may damage the thermostat.
- All wiring must conform to local codes and ordinances.
- This thermostat is designed for use with 4AA alkaline batteries and/or 24 volt AC C wire (or a 12-24 AC or DC source) and millivolt gas systems. Each thermostat relay load should be limited to 1.0 amp; higher amperage may cause damage to the thermostat.

Caution

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



TOOLS

You will need a small Phillips screwdriver and a drill with 3/16-in. (4.8mm) bit for wall mounts.

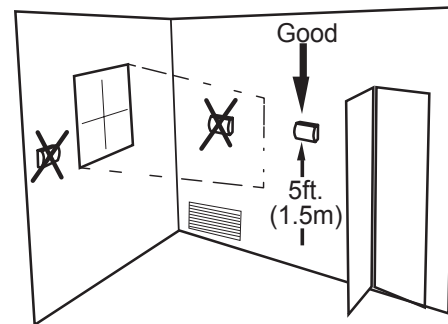
LOCATION

Replacement installations - mount the CT101 in place of the old thermostat.

A new location will require moving your wiring.

For new installations and relocating the CT101 - follow the guidelines listed below:

- Locate the thermostat on an inside wall, about 5 ft. (1.5m) above the floor, and in a room that is used often.
- Do not install it where there are unusual heating conditions, such as: in direct sunlight; near a lamp, radio, television, radiator register, fireplace; near hot water pipes in a wall; or near a stove on the other side of a wall.
- Do not locate in unusual cooling conditions, such as: on a wall separating an unheated room; or in a draft from a stairwell, door, or window.
- Do not locate in a damp area. This can lead to corrosion that will shorten thermostat life.
- Do not locate where air circulation is poor, such as: in a corner, an alcove; behind an open door.
- Do not install the CT101 until all construction and painting has been completed.
- This thermostat does not require leveling.



REMOVE OLD UNIT

⚠ Switch OFF electricity to the HEATING and COOLING systems.

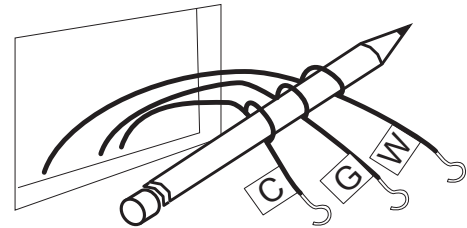
Then follow these steps:

- 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. DO NOT remove wires. 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 and **LABEL THEM** by the lettered terminal where they were screwed.

- 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.
- Make sure the wires do not fall back inside the wall. You can wind them around a pencil to keep them from falling.
- Loosen all screws on the old thermostat and remove it from the wall.

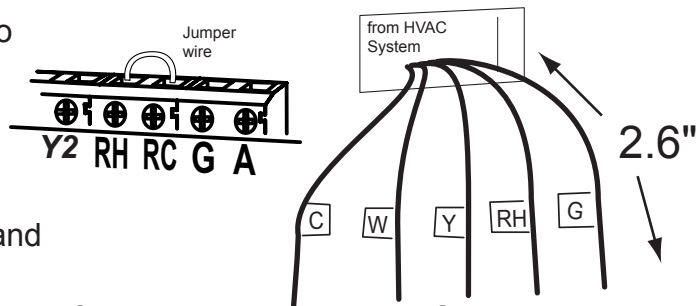


What wires do you have?

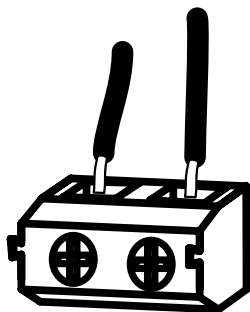
Make sure your wires are labeled. This may require you to find the 'other end' connection for each wire on your heating or air conditioning equipment and read the label there. Refer to the Wire Reference page at end of install section for better understanding of wire labels from different HVAC system makers.

⚠ IMPORTANT: The CT101 runs on 4 AA alkaline batteries and/or the C wire if available. If you do not have a C wire you can run a new wire from the HVAC or use a standard 12-24V [AC or DC] wall transformer. A constant power source is required when using a radio module.

⚠ IMPORTANT: If you have both RH and RC you need to remove the jumper wire between these 2 terminals.



Prepare Wires

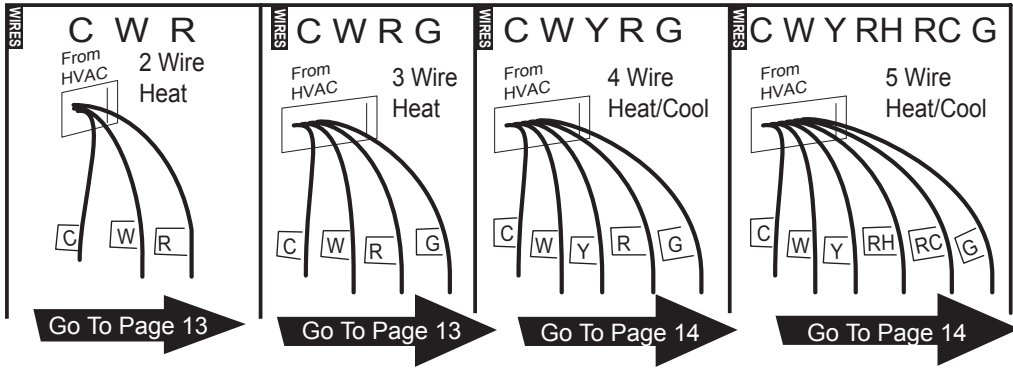


Wire Terminals

Please follow these guidelines for safe and secure wire connections:

- You will need at least 2.6" of wire for each of your connections to the CT101.
- If you do not have enough wire, splice additional wire to allow enough slack.
- Terminals accept wires from 16-22awg.
- Fan out wires below the hole as shown.
- Remove insulation 1/8" from the tip of each wire.
- When handling, take care not to damage the labels for each wire.

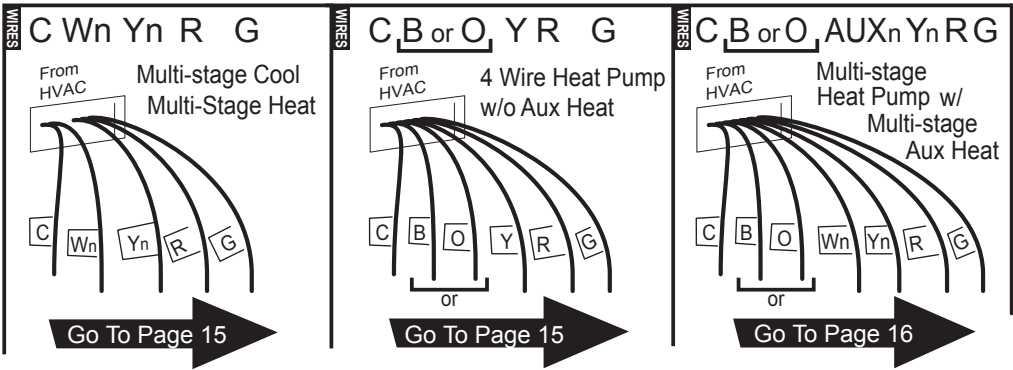
Find the step-by-step diagram for your system



- Select the reference page with your wiring diagram and set-up information below.

- The C-wire is optional but preferred for all installations [shown dotted in diagrams].

- Hot Water systems accessories are on Page 16



- If your combination of wires is not above you can use the wiring table at the end if the install section to determine your connections, contact customer support for help.

- “Fan out” wires as illustrated with CT101 below the wall opening. As in the example: fan out the wires so that the C wire is above the C terminal, the W above the W. This allows the CT101 to fit snug to the wall.

Caution

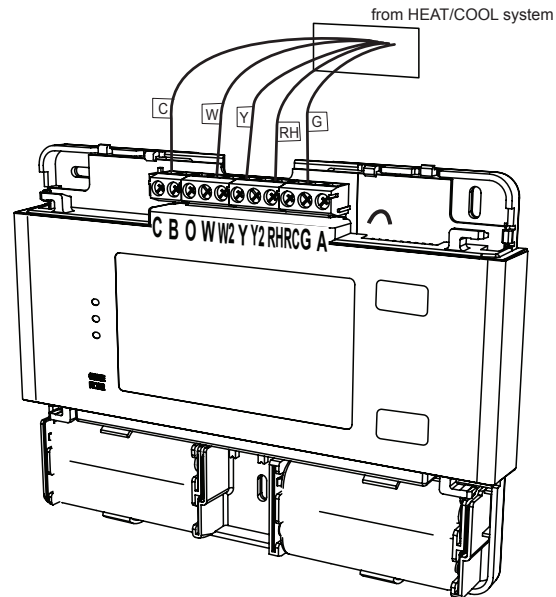
Do not allow wires to touch each other or parts on thermostat.

- Position the Wires behind the CT101 and up over the terminal area.
- Do not bunch wires behind the CT101. Feed any slack back into the wall opening.

Connect Your Wires

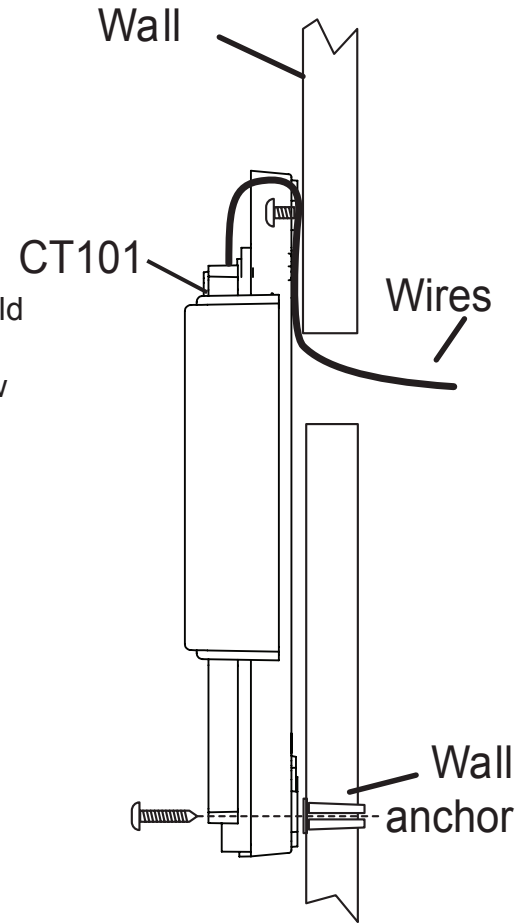
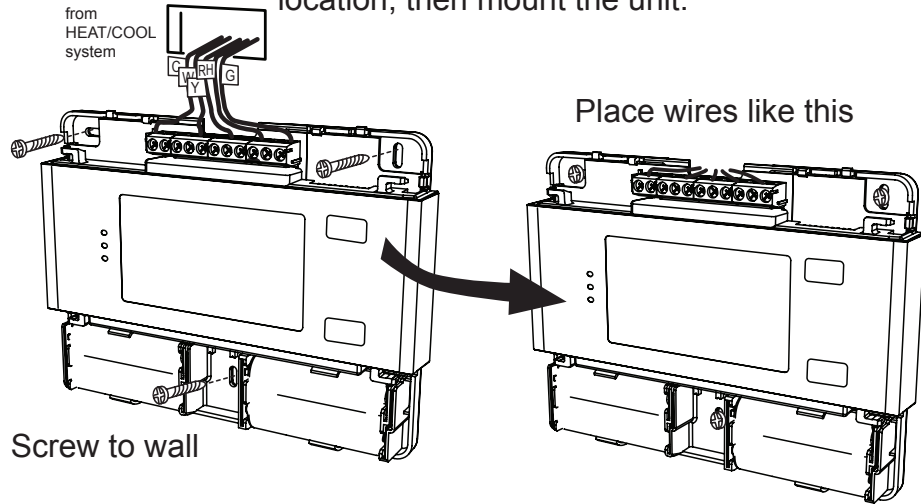
- Connect labeled wires only to a terminal with the same letter label.
 - Insert the wire in the terminal well and tighten the screw securely.
- NOTE: If you wish you can mount the CT101 to the wall first, and then connect the wires.

- The CT101 can be externally powered with a power source rated from 12V to 24V, AC or DC, at 300ma or greater. If used, connect to the C and RH terminals (no polarity).



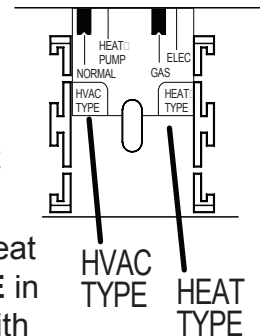
Mount the 101 to Wall

1. Hold the CT101 against the wall, with the wires coming over the top; above terminal block. The CT101 will cover the hole in the wall.
2. Position CT101 for best appearance.
3. Attach the CT101 to the wall with the screws provided.
4. If you are mounting the CT101 to sheet rock or if you are using the old mounting holes, use the plastic anchors provided.
5. Mark first and drill a 3/16-in.(4.8mm) hole for the insert at each screw location, then mount the unit.



HVAC Selection

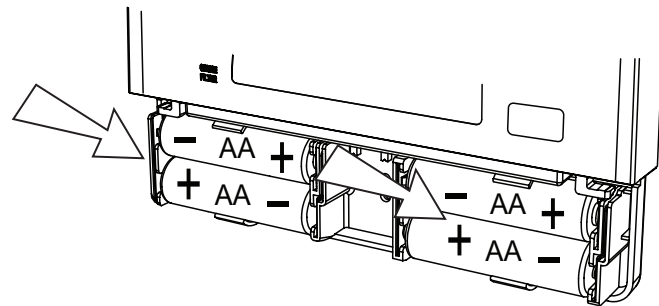
- Set the **HVAC TYPE** switch in the **NORM** position if you have conventional natural gas, propane, oil, or electric heat. If you have a HEAT PUMP system set the **HVAC TYPE** switch to **HP**. They are located in the battery compartment.
- Set the **HEAT TYPE** switch in the **GAS** position if you have normal gas or oil heat or if you have a heat pump with gas or oil auxiliary heat. Put the **HEAT SOURCE** in the **ELEC** position if you have normal electric heat or if you have a heat pump with electric auxiliary heat.



Install 4 AA Batteries

- Install 4 AA alkaline batteries [required] following the marked polarity in the battery compartments. Put the battery in negative end first against the spring, then push the positive end in.

⚠ IMPORTANT: Press the RESET button (under top cover) to implement the HVAC switch selections.



- With all the wires connected it is time to turn the AC power back on. Do this at the breaker you used to switch it off. The CT101 will power-up in the OFF mode. Your CT101 is not configured to operate your HVAC system yet. You must now configure your thermostat for your HVAC system.



Caution

Special Thermostat Battery Cautions

Always replace the batteries as soon as the “Low Batt” flashes. The thermostat is a battery powered device. You must be responsible to replace batteries before they run out. Failure to replace batteries can result in overheating or excessive cooling of your house.

- Even if the “Low Batt” indicator does not flash, you should always replace the batteries at least once a year. Replacing the batteries also helps to prevent leakage that can corrode and damage the thermostat.

- If you are leaving your home for a month or more, you should replace the batteries as a precaution against battery failure in your absence.

- Always use new alkaline batteries.

- Failing to replace the batteries, when necessary, could cause the thermostat to lose power or malfunction. If the thermostat loses power, then the thermostat will not control the temperature which could result in your HVAC system not functioning as you intended and lead to possible damage from overheating or excessive cooling.

- If the thermostat batteries fail with the heat OFF, this can result in NO HEAT and possible frozen or broken pipes and water damage.

- If the thermostat batteries fail with the cool OFF, this can result in NO COOL and could cause possible damage or excessive temperatures.

BATTERY WARNING

Do Not Mix Old And New Batteries.

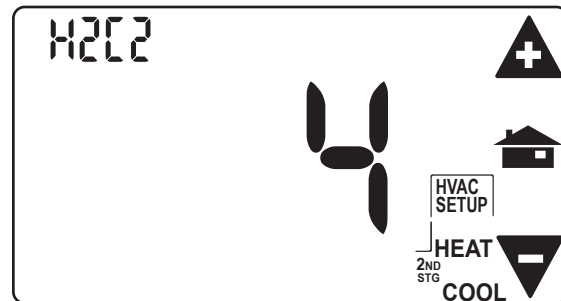
Do Not Mix Alkaline, Standard (Carbon - Zinc),
Or Rechargeable (Nickel - Cadmium) Batteries

**DO NOT DISPOSE OF BATTERIES IN FIRE. BATTERIES
MAY EXPLODE OR LEAK.**

HVAC Setup on Screen

⚠ IMPORTANT: Make sure the CT101 is powered up and the mode is set to OFF. HVAC selection switches must be set first [pg 8].

- With mode in OFF press MENU and touch HVAC SET UP.
- Use +/- icons to select HVAC SET UP number on screen. The LCD display will show your selection and indicate the number of stages you have selected. During setup, 2nd stage will blink when both heat and cool have 2nd stages.



If you have a Normal HVAC system and you want fast temperature recovery...

- | | | |
|----------------------------|--------|---|
| HEAT and COOL | select | 1 |
| 2 stage HEAT, 1 stage COOL | select | 2 |
| 1 stage HEAT, 2 stage COOL | select | 3 |
| 2 stage HEAT, 2 stage COOL | select | 4 |

If you have a HEAT PUMP HVAC system...

- | | | |
|-----------------------------------|--------|---|
| HEAT PUMP with no AUX heat | select | A |
| 2stage HEAT PUMP with no AUX | select | b |
| HEAT PUMP with AUX heat | select | C |
| HEAT PUMP with 2stage AUX heat | select | d |
| 2stg HEAT PUMP with AUX heat | select | E |
| 2stg HEAT PUMP with 2stg AUX heat | select | F |

⚠ Caution

Do not change the HVAC setup or HVAC selection switches if the thermostat is included to Z-Wave network. The HVAC system must be changed, first EXCLUDE the thermostat from the network, change the HVAC setup, and INCLUDE the thermostat to the network.

Test Installation

Follow these procedures to verify you have correctly installed the CT101.

TO CHECK FAN (If you connected the G wire):

Touch the fan icon on the HOME screen to turn the fan **ON**.
Verify that air is blowing from the system.
Touch the fan icon again to return to **AUTO**.

TO CHECK HEAT

Set the mode to **HEAT** by pressing the MODE button until **HEAT** is displayed.

Touch the temperature display to bring up the MANUAL screen.

Touch the **+** icon and raise the target temp to 90°F; allow the system 2 minutes to respond.

Verify that heat is blowing from the system. Return the Target Temperature to a normal setting. Return mode to **OFF** by pressing the mode button.

If you have a heat pump, leave in off for 4 minutes before checking COOL.

TO CHECK COOL (do not operate AC if the outside temp is below 65°F)

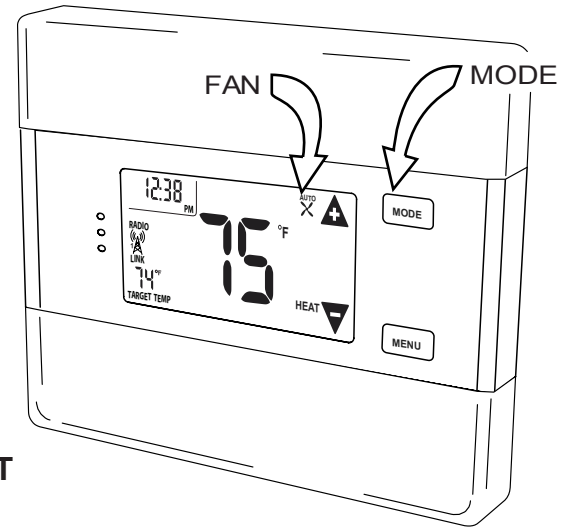
Set the mode to **COOL** by pressing the MODE button until **COOL** is displayed.

Touch the **-** icon and lower cool Target Temperature to 50°F.

Allow the system 5 minutes to respond.

Verify that cool air is blowing from the system.

Return mode to **OFF** by pressing the mode button.

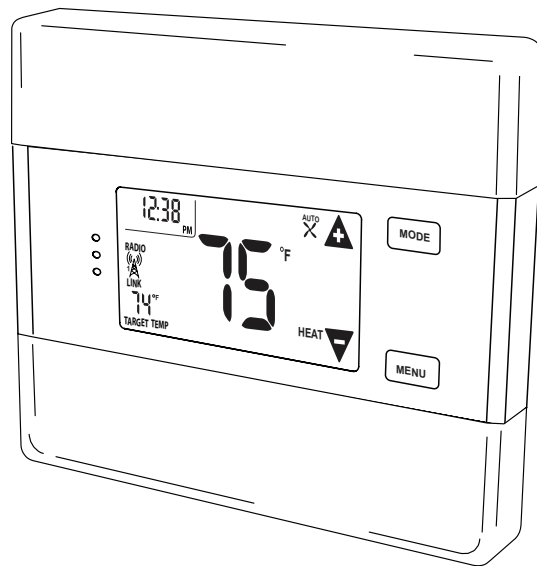


Congratulations, you have successfully installed your unit. Please proceed to the OPERATING Guide to initialize the CT101.

⚠ IMPORTANT: If you have labeled and connected your wires and followed the correct HVAC setup, and your system still does not operate, contact technical support.

STATEMENT OF USE: This thermostat can be used with 4AA batteries, 24VAC (C wire), 24VAC adapter, heating and cooling systems and also millivolt heating. It cannot be used with line voltage systems. This thermostat is digital and your desired heat or cool temperatures can easily be set on the large touch screen with the +/- buttons. A minimum 4 minute off time protects the compressor from damage.

This thermostat runs on 4AA batteries. The CT101 can be externally powered with a power source rated from 12V to 24V, AC or DC, at 300ma or greater. If used, connect to the C and RH terminals (no polarity). The 24VAC "C" wire is the other side of the 24VAC heating transformer and can be found where the other thermostat wires connect at the wall or at the furnace. Do not use the common or ground side of the line voltage.



Step-by-step wiring diagrams

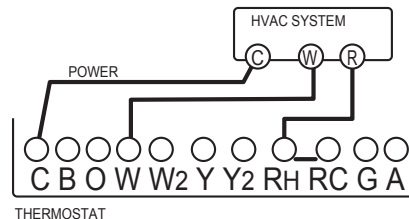
C W RH 3 Wire Heat GAS MILLIVOLT or 24VAC system

STEP 1 - Connect the R (or RH) wire to the RH terminal. This connects the heat power.

STEP 2 - Connect the W wire to the W terminal. This connects the heat.

STEP 3 - Connect the C wire to the C terminal. Your heater is now connected to the CT101.

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C W RH G 4 Wire Heat

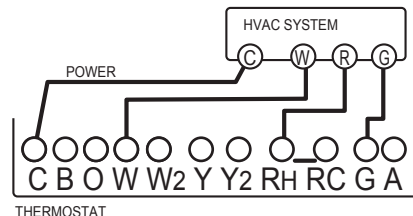
STEP 1 - Connect the R (or RH) wire to the RH terminal. This connects the heat power.

STEP 2 - Connect the W wire to the W terminal. This connects the heat.

STEP 3 - Connect the G wire to the G terminal on the thermostat. This connects the fan.

STEP 4 - Connect the C wire to the C terminal. Your system is now connected to the CT101.

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WIRING C W Y RH G 5 Wire Heat/Cool

STEP 1 - Connect the W wire to the W terminal. This connects the heat.

STEP 2 - Connect the Y wire to the Y terminal. This connects the cooling compressor.

STEP 3 - Connect the RH or R wire to the RH terminal. This connects the power.

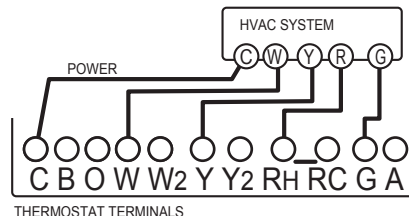
STEP 4 - Connect the G wire to the G terminal on the thermostat.

This connects the fan.

STEP 5 - Connect the C wire to the C terminal.

Your HVAC system is now connected to the CT101.

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WIRING C W Y RH RC G 6 Wire HEAT/Cool

STEP 1 - Connect the W wire to the W terminal. This connects the heat.

STEP 2 - Connect the Y wire to the Y terminal. This connects to the cooling compressor.

STEP 3 - Disconnect the Rc and Rh terminals by placing the Rc-Rh switch in the UP position.

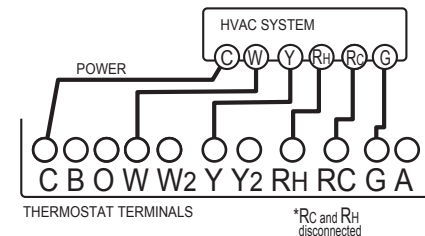
STEP 4 - Connect the RH wire to the RH and the RC wire to the RC terminals. This connects power.

STEP 5 - Connect the G wire to the G terminal. This connects the fan.

STEP 6 - Connect the C wire to the C terminal.

Your HVAC system is now connected to the CT101.

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WIRING C Wn Yn RH G Multi-stage Heat and Multi-stage Cool

The CT101 can handle up to 2 stages of HEAT and 2 stages of

COOL.

STEP 1 - Connect the W, W2 wires to the W terminals.

This connects the stages of HEAT.

STEP 2 - Connect the Y and Y2 wires to the Y terminals.

This connects the stages of COOL.

STEP 3 - STEP 5 - Connect the RH or R wire to the RH terminal.

This connects the power.

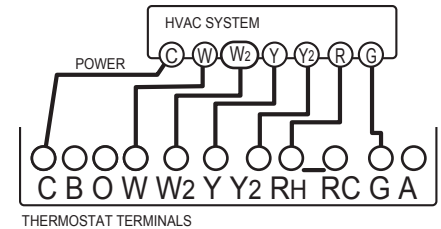
STEP 4 - Connect the G wire to the G terminal.

This connects the fan.

STEP 5 - Connect the C wire to the C terminal.

Your HVAC system is now connected to the CT101.

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THERMOSTAT TERMINALS

WIRE C B or O Y R G

4 Wire Heat Pump (heat/cool) without Auxiliary Heat

STEP 1 - Connect O wire to the O terminal or B wire to the B. This connects the change-over valve.

If you have both O and B - connect only the O wire to the O terminal and DO NOT connect B to B terminal (see wire reference under Trane for B wire terminal).

STEP 2 - Connect the Y wire to Y terminal. This connects the compressor.

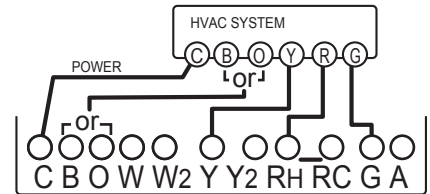
STEP 3 - Connect the R wire to RH. This connects the power.

STEP 4 - Connect the G wire to the G. This connects the fan.

STEP 5 - Connect the C wire to the C terminal.

Your HVAC system is now connected to the CT101.

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THERMOSTAT TERMINALS

WIRE C O or B AUXn Yn RH G

Multi-stage Heat Pump with Multi-stage

Aux Heat

The CT101 can handle up to 2 stages of Pump compression and 2 stages of AUX heat.

STEP 1 - Connect O wire to the O terminal **or** B wire to the B. This connects the change-over valve. If you have both O and B - connect only the O wire to the O terminal and DO NOT connect B to B terminal (see wire reference under Trane for B wire terminal).

STEP 2 - Connect the AUX 1, AUX 2, to the AUX 1 and 2 respectively. This connects the auxiliary heat.

STEP 3 - Connect the Y and Y2 wires to the Y terminals.

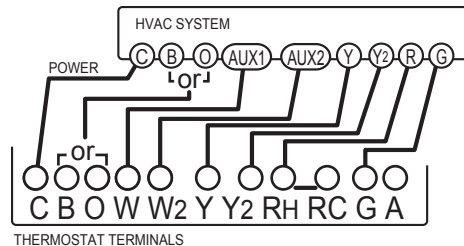
This connects the compressor.

STEP 4 - Connect the R wire to RH terminal. This connects the power.

STEP 5 - Connect the G wire to G terminal. This connects the fan.

STEP 6 - Connect the C wire to the C terminal.

Your HVAC system is now connected to the CT101.



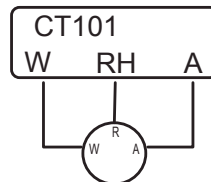
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Accessory Wiring -

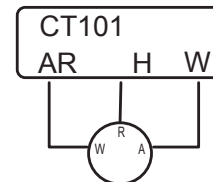
Zoned Hot Water Heat -

For Solenoid valve or Motor valve connect the wires based on diagrams below to the correct terminal on the CT101. USE ONLY IN HEAT MODE. The third wire on your valve may be called 6, Y, or G (see page 18). As always the CT101 must be powered by 24vac

FOR 3WIRE ZONED HOT WATER



MOTOR VALVE



SOLENOID VALVE

Wire Reference Table

Possible Wires What They Control

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 jumper clip removed)
RC	RC Power for COOL (RH not connected to RC jumper clip removed)
W	W Heat control
W2	W2 2nd stage HEAT or heat pump auxiliary heat
W3	W3 3rd stage HEAT or 2nd stage of 2 stage auxiliary heat
Y	Y COOL control or 1st stage compression for heat pump
Y2	Y2 2nd stage COOL control or 2nd stage compression for a heat pump
G or F	G FAN control
C or X	C 24VAC power (to power thermostat) NOTE: TRANE uses B for this connection
H	H External Humidifier
DH	DH External De-Humidifier
EX	EX external fresh air baffle
B	B Heat pump changeover (cool to heat, powered in heat)
O	O Heat pump changeover (heat to cool, powered in cool)
B and O	⚠ IMPORTANT: If there are both B and O wires (Trane pump products) DO NOT CONNECT B to B terminal, connect B to C terminal. If not a Trane product tape off B.
E	n/a Emergency heat (do not connect, tape off)
L	n/a System monitor (do not connect, tape off)
T	n/a Outdoor sensor (do not connect, tape off)

Wire Reference cont.

Possible Wires

What They Control

Lennox Heat Pump

V or VR or R

RH Power for HEAT

M or Y

Y COOL control

Y or W or W2

W2 2nd stage HEAT

F or G

G Fan control

R or O

O

X or X2 or C

C

Trane Products [American Standard]

B

C 24VAC power (to power thermostat)

W or W1

W2 2nd stage HEAT

X2

Emergency heat (do not connect, tape off)

Zoned Hot Water

2 wire

Your Wires

Thermostat Terminal

R

RH

W

W

3 Wire

Motor Driven Valves

R or 5

RH (power)

W or 4

W (heat ON)

Y or G or 6 (the 3rd wire)

A (heat OFF)

3 Wire

Solenoid Valves

R

RH (power)

W

A (heat ON)

Y or G (the 3rd wire)

W (heat OFF)

FCC 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 television 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.

BATTERY WARNING

Do Not Mix Old And New Batteries.

Do Not Mix Alkaline, Standard (Carbon - Zinc), Or Rechargeable (Nickel - Cadmium) Batteries

DO NOT DISPOSE OF BATTERIES IN FIRE. BATTERIES MAY EXPLODE OR LEAK.

To Include CT101 in a Z-Wave® Network

The CT101 is a Z-Wave® compliant thermostat. It has an onboard radio that can be included with an existing Z-Wave® network. This device can be used on a network with products from different vendors. To connect to a network follow these steps:

- 1) Set your primary controller to INCLUDE mode to add the thermostat as a node on your network (see your specific controller's User Manual for detailed instructions).
- 2) Press/Touch the MATE button on the MENU screen. A large r1 will be displayed.
- 3) This will bring you to the network include screen. Confirm by touching MATE again. This will initiate the mating process. The MATE icon and the status indicator LEDs will blink.
- 4) When a device has joined a network the LINK icon will appear under the radio tower. Similarly, when you are trying to exclude [ie. leave] a network, the icon LINK will disappear when the node has successfully left the network.
- 5) Your controller will indicate the thermostat was successfully added to its network (see your specific controller's User Manual for details.)

Z-Wave® Reference

The CT101 can work in the same network with any other certified Z-Wave device, regardless of manufacturer/vendor. See your specific Z-Wave® controller's User Manual for detailed instructions on operating your thermostat. If your controller supports full thermostat device class functions then the following remote features are available:

- a) Up and Down Temperature Control
- b) Change between HEAT and COOL modes
- c) Read the current temperature
- d) Set/Read the indicator
- d) Set/Read the Fan mode
- e) Set/Read the clock (on certain CT models only)
- f) Set/Read the user display area (on certain CT models only)

Factory Default Restore

Performing a Factory Default Restore will return your thermostat to the state it was in when it left the factory. This means that all of its configuration and parameters will be returned to their default values. This includes resetting its Z-Wave network information, removing it from its previous network. To perform this action, the thermostat must be in OFF mode. Wait until the radio wave icons on the left side of the screen stop blinking then touch the screen once to turn on the back light and then hold the center of the screen for about 8 seconds until the thermostat beeps.

Behavior Note: When power is first applied to this device it will broadcast a Hail message followed by a Node Information frame. This behavior is to maintain backwards compatibility with older controllers that work with this line of devices.

Advanced Z-Wave® Information

The CT101 supports compliant mapping of the Z-Wave® BASIC_COMMAND_CLASS to the CT thermostat “Energy Saving” and “Comfort Mode” as follows:

Basic Set (Value = 0x00) = Set Energy Saving Mode

Basic Set (Value = 0x01-0x63 & 0xFF) = Set Comfort Mode

Energy Savings applies a 4° F setback to the existing set point temperature to comply with EPA recommendations for energy savings.

Association group:

This device support one association group, and up to two nodes in that group. If at least one node is added to association group one (1), the thermostat will send the following association reports when the respective state has changed:

- Thermostat Mode Report
- Thermostat Operating State Report
- Fan Mode Report
- Fan State Report
- Setpoint Report (for all supported setpoints)
- Sensor Multilevel Report (if enabled by Configuration Command Class)

The association command class can be configured to send encapsulated reports via the Multi Instance Command Class or the Multi Channel Command Class. If the association configuration commands are sent

inside encapsulated commands, the thermostat will respond with encapsulated reports of the same type (Multi Instance v1 or Multi Channel v3). Encapsulation is the only way to configure the thermostat to send humidity sensor multilevel association reports.

For example, if an Association Set is encapsulated in a Multi Channel Command Encapsulation command is sent to the humidity instance (2), then the thermostat will encapsulate all un-solicited humidity sensor multilevel reports in the Multi Channel Command Encapsulation Command. The default instance is the temperature instance (1). If the Association Set is sent un-encapsulated then the thermostat will send all un-solicited temperature sensor multilevel reports unencapsulated.

All association reports other than the humidity multilevel are in the default instance (1). The thermostat will encapsulate the association reports based on the last Association Set encapsulation type received (i.e. un-encapsulated, Multi Instance v1, or Multi Channel V3).

Anti-theft:

The Anti-theft Command Class is used to disable a subset of supported/controlled command classes in the thermostat if the thermostat is being excluded and re-included into a Z-Wave network again. The thermostat supports version 2 of the Anti-theft Command Class. This command class is typically used when installing a thermostat in a public location such as a hotel room or conference center. The command class allows the user to lock the thermostat to the actual Z-Wave network and to render it useless if it is removed from the local network without being unlocked. Another application would be to protect service provider owned products from leaving the service providers network before they are paid for.

The following command classes are disabled when Anti-theft protection is engaged:

Basic Command Class	Thermostat Fan State Command Class
Clock Command Class	Thermostat Setpoint Command Class
Indicator Command Class	Version Command Class
Manufacturer Specific Command Class	Configuration Command Class
Multilevel Sensor Command Class	Battery Command Class
Thermostat Mode Command Class	Association Command Class
Thermostat Operating State Command Class	Anti-theft Command Class
Thermostat Fan Mode Command Class	Multi Channel Command Class*

* Only supported if a humidity sensor is present.

Configuration Parameters:

This device supports the following configuration parameters:

Parameter	Name	Set/Get	Default	Values
1	Temp Reporting Threshold	Set/Get	2	0 to 4
2	HVAC Settings	Get Only	N/A	see details
3	Utility Lock Enable/Disable	Set Only	0	0 to 127
4	C-Wire/Battery Status	Get Only	N/A	0 or 1
5	Humidity Reporting Threshold	Set/Get	2	0 to 3
6	Auxiliary/Emergency	Set/Get	0	0 or 1
7	Thermostat Swing Temp	Set/Get	2	1 to 8
8	Thermostat Diff Temp	Set/Get	4	4 to 12
9	Thermostat Recovery Mode	Set/Get	2	1 or 2
10	Temp Reporting Filter	Set/Get		see details
11	Simple UI Mode Enable/Disable	Set/Get	1	0 or 1
12	Multicast Enable/Disable	Set/Get	0	0 or 1

1. Temperature Reporting Threshold (8-bit)

This value determines the reporting threshold when association reporting is enabled. Unsupported values will be ignored.

Value	Threshold
0	Disabled
1	0.5 °F
2	1.0 °F
3	1.5 °F
4	2.0 °F

2. HVAC Settings (32-bit)

Byte 1 = HVAC Setup: Normal (0x01) or Heat Pump (0x02)

Byte 2 = Aux Setup(Gas (0x01) or Electric (0x02)) & Number of Auxiliary Stages (Heat Pump)/Number of Heat Stages (Normal)

Byte 3 = Number of Heat Pump Stages

Byte 4 = Number of Cool Stages

3. Utility Lock (8-bit)

If set to 0, the utility lock is disabled, all other values, 1-255, will enable the utility lock.

4. C-Wire/Battery Status (8-bit)

If 0x01, the thermostat is being powered form a C-wire, if 0x02, the thermostat is being powered off of batteries.

5. Humidity Reporting Threshold (8-bit)

This value determines the reporting threshold when association reporting is enabled. Unsupported values will be ignored.

6. Auxiliary/Emergency Enable/Disable (8-bit)

If set to 0, auxiliary / emergency heat is disabled, all other values, 1-255, will enable the auxiliary / emergency heat. This can only be enabled when the thermostat is set to Heat Pump mode.

7. Thermostat Recovery Mode (8-bit)

The Thermostat Recovery Mode can be either fast (0x01) or economy (0x02).

8. Thermostat Reporting Filter(16-bit):

Set Command Definition

7	6	5	4	3	2	1	0
Command Class = COMMAND_CLASS_CONFIGURATION							
Command = CONFIGURATION_SET							
Parameter = 0x0A							
Default	RESERVED S			ize = 0x04			
Precision (0x00)	S	cale B			ound Size (0x01)		
Temperature Filter Lower Bound							
Precision (0x00)	S	cale B			ound Size (0x01)		
Temperature Filter Upper Bound							

Thermostat Reporting Filter Report Command Definition

7	6	5	4	3	2	1	0
Command Class = COMMAND_CLASS_CONFIGURATION							
Command = CONFIGURATION_SET							
Parameter = 0x0A							
Temperature Filter Lower Bound							
Temperature Filter Upper Bound							

Parameter (8-bit)

The parameter is set to 10 (0x0A) for the temperature reporting filter.

Default (1-bit)

If the default bit is set, the upper bound is zero (0) and the lower bound is 124. This disables the filter.

Size (3-bit)

The Size field must be set to 4 (100b).

Precision (3-bits)

The precision field describes what the precision of the temperature filter value. The filter must be zero (0x00).

Scale (2-bits)

The scale field indicates the temperature scale used, 0 indicate the use of the Celsius temperature scale and 1 indicates use of the Fahrenheit scale.

Bound Size (3-bits)

The size field indicates the number of bytes used for the temperature filter value. This field must be one (0x01).

Temperature Filter Lower Bound (8-bit)

The thermostat will report ambient temperature changes for temperature values less than the lower bound. This field must be between 0F and 124F. By default, this value is 124F (report all temperature changes).

Temperature Filter Upper Bound (8-bit)

The thermostat will report ambient temperature changes for temperature values greater than the upper bound. This field must be between 0F and 124F. By default, this value is 0F (report all temperature changes).

9. Multicast Enable/Disable (8-bit)

If set to 0, multicast is disabled, if set to 1, will enable the multicast.