SMART HOME MONITORING

ZEN Thermostat™

Manufacturer's Installation Guide

ROGERS™

ZEN Thermostat Online Install Guide

The ZEN thermostat is designed to be installed by DIY customers and HVAC installers. The ZEN online installation guide (www.zenthermostat.com/install) should be the first point of call for any installation. It provides step-by-step instructions for installing and configuring ZEN, which are customised to the specific wiring configuration of the user.

Complex or Unusual Installations

The ZEN Online Installation Guide works for over 90% of install situations. However, if a wiring combination is not recognised, the user is notified.
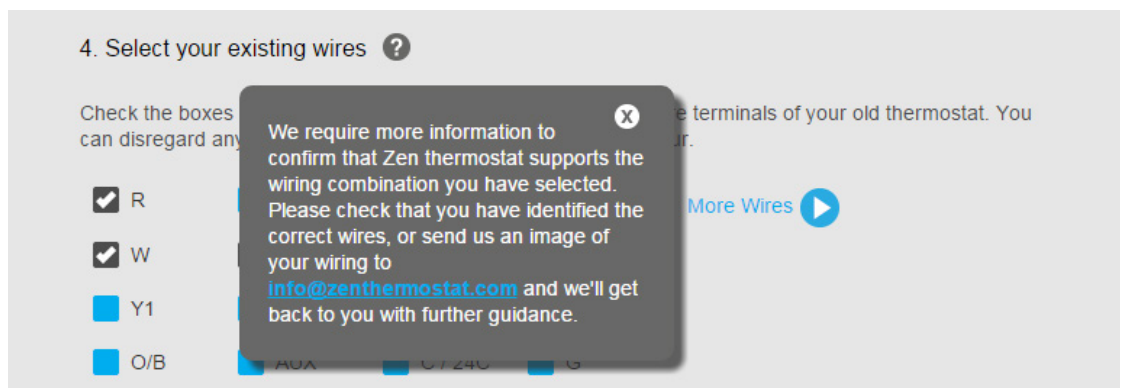
The next steps are:

1. User provides more information to support centre via email. An image of the existing thermostat wiring is very valuable.

2. Support centre responds with:
    ›   Advice on how to wire up the ZEN thermostat and which configuration code to use
    ›   If the installation is complex, a recommendation to call a HVAC technician.
    ›   If the installation is not compatible with ZEN, a recommendation to return ZEN to the place of purchase

If there is any uncertainty about the configuration, ZEN recommends calling a HVAC technician

ZEN Installation Tips and Tricks

Precautions and Safety

As with all electrical equipment, the first step in installation should be to turn off the main breaker.

The ZEN thermostat works on low voltage systems rated at 24 volts, with a maximum current rating of 2A per relay. This is the common voltage for most furnaces, heat pumps and air conditioning systems.

ZEN will not work on line voltage systems of 110 volts or higher. These systems are typically European systems or electric baseboard systems.

If the wiring is installed in a junction box, it is also likely to be 110V or higher.

Usually, these systems will have thick black, white or red wires connected with wire nuts on the thermostat.

If the HVAC system is not compatible with ZEN, please return ZEN to the place of purchase.

WARNING

Extra Low Voltage only. Do not connect to mains voltages.
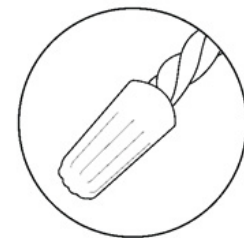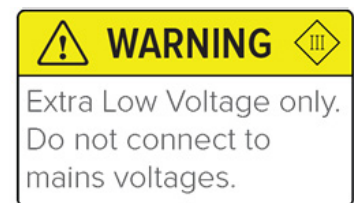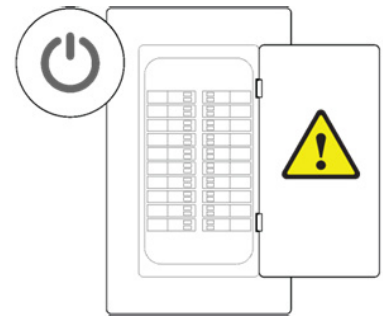
Removing the existing thermostat main display

Most thermostats allow you to remove the main unit and provide access to a wall plate which holds the wiring terminals.
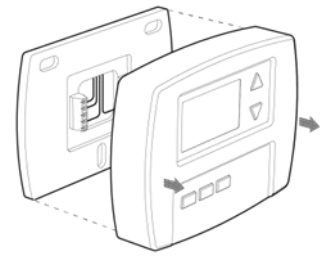
Removing the existing thermostat differs between models. It usually requires:

› Snapping it off the wall with moderate pressure
› Undoing small screws
› Lifting locking tab and rotating the thermostat

If you are unable to pull it off, please refer to your thermostat manufacturer's website or manual for removal instructions.

⚠️ **Some old thermostats contain mercury in a sealed tube. Contact the Thermostat Recycling Corporation at www.thermostat-recycle.org/ for information on how and where to properly and safely dispose of your old thermostat.**
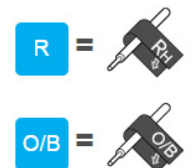
Wire Labelling

There is no single standard for wire colours and thermostat connections. However, most thermostats have terminal blocks with wire labels. The way in which the old thermostat is wired and labelled is one of the best guides for how to wire up the ZEN thermostat. Correctly identifying the wires that exist ensures that all the functions of your heating and cooling system will be able to be controlled by the ZEN thermostat.

If you are unsure or your wire terminals are unlabelled, tracing the wires back to the HVAC system is the best way to determine what each wire does.

ZEN provides wire labels in the package, which should be used to label the wire before they are removed from the old thermostat terminals.

The ZEN online installation guide provides a detailed description of which label should be applied to which wire. Once the old thermostat is removed, the best way of identifying wires is through the ZEN labels. The wiring diagrams provided by ZEN are all based on the ZEN labelling format

The basic connectors for a home thermostat can be found in the table below:

Terminal	Description	Alternate Labeling
R	Power side of 24V transformer	V
Display	Power side of 24V heating switch	4
Rc	Power side of 24V cooling switch	
C	Common side of 24V	24C, 24
Y	Switched power for cooling	Y1
W	Switched power for heating	W1
G	Switched power for fan	
Y2	Switched power for second stage cooling	
W2	Switched power for second stage heating	
E	Emergency heat enable	AUX
O/B	Reversing valve activation	O, B

Wire Preparation and Insertion

Disconnecting the wires from the existing thermostat may require a screwdriver to undo the terminals.

Once removed, it is important to check that the wires are in good condition so that they make good electrical contact.

Check wires have between 5/16 - 3/8in (8-10mm) exposed core.
If they don't, you may need to cut and re-strip them.
If you have stranded wire, ensure that all strands are safely captured in the terminal.

If the installation guide has specified that some wires should not be connected, ensure that they are properly insulated.


5/16 - 3/8in
(8-10mm)
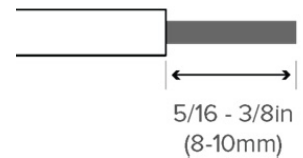
Link Removal and Insertion

Many thermostats use links to connect common circuits together.

ZEN does not require re-use of old links. It comes complete with 2 links, which are located on the rear of the main unit.

The links can be removed by pulling gently and inserted by pushing them into place.

Configuration of the links is determined based on the information entered into the online install guide. The function of each link configuration is shown below:
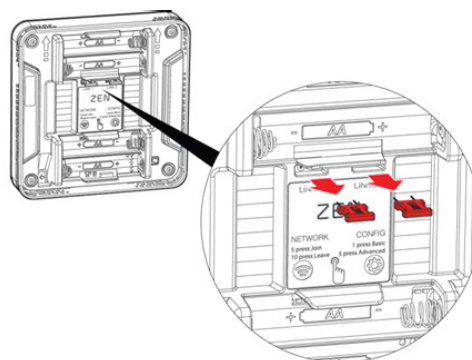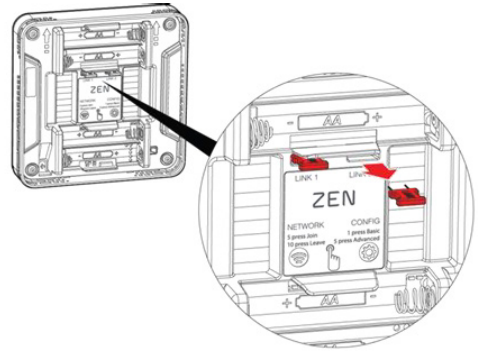

Link 1 and Link 2

› Rc and Rh connected to common return

› Aux connected to same return as Rh

› Applies to most single stage systems and heatpump systems
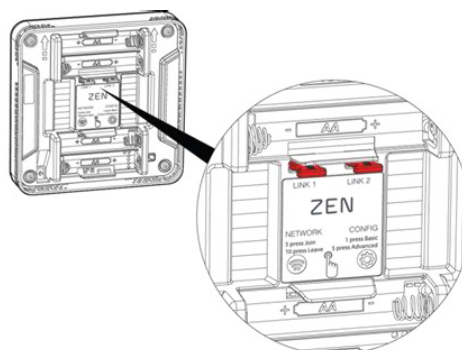
Link 1 Only

› Rc and Rh on separate return circuits

› Aux connected to same return as Rh

› Applies to systems which have separate heating and cooling equipment

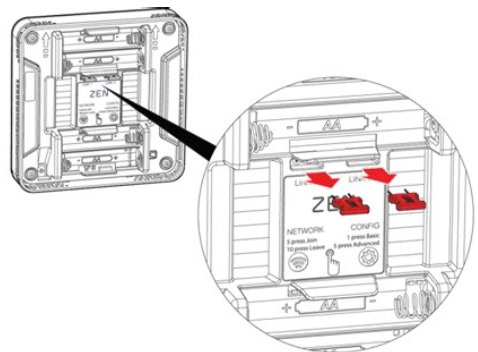## Link 2 Only

› Rc and Rh connected to a single return circuit

› Aux connected to separate return circuit

› Applies to most heatpump systems where the auxiliary heat system is separate equipment
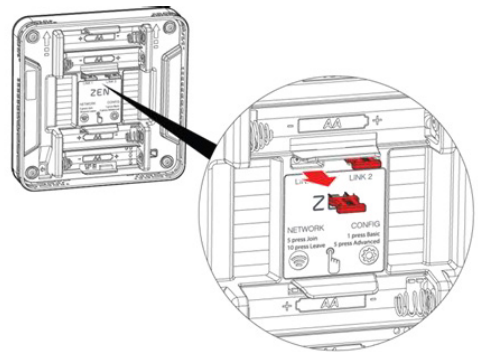
No Links

› This configuration is never used

Mounting the ZEN Wallplate

The ZEN wallplate should be mounted so that the bundle of wires comes out through the centre of the wallplate.

Use a level to help align the wall plate, then mark the mounting holes on either side.

The mounting hardware supplied in the ZEN package consists of 2 wall anchors and 2 screws. The wall anchors are suitable for use on both drywall and plaster.

Use a 1/4in (6mm) drill bit to drill holes for the wall plugs. Ensure that the wires are kept out of the way when drilling.

Insert the wall anchors into the holes. Attach the wallplate using the screws provided. Take note of the orientation arrow which should point upwards.
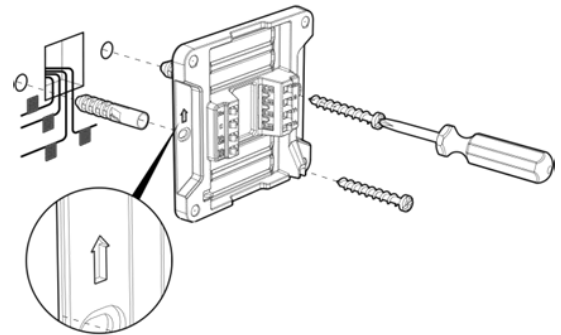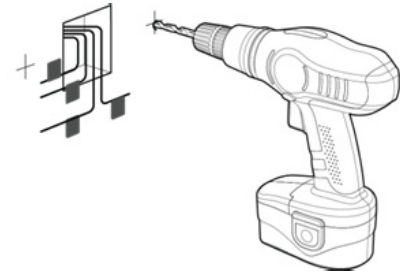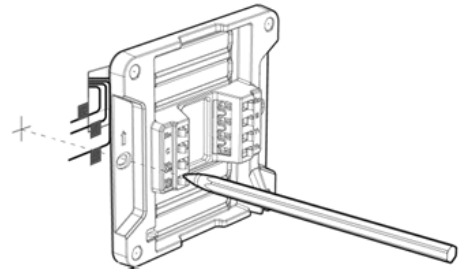
If your previous thermostat was larger, you may choose to use the blanking plate to cover any unsightly areas.

The blanking plate is sandwiched between the wall plate and the wall and does not require any extra screws to attach.

The blanking plate can be used in either portrait or landscape orientation
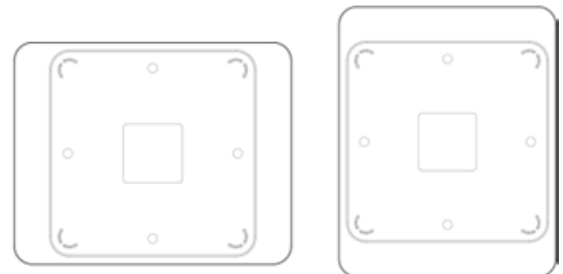
Attaching the Main Display

ZEN requires 4 AA batteries to operate the main display, even when a C-wire is connected.

If a C-wire is available, the batteries are only used when the unit is off the wall and will last indefinitely.

If no C-wire is present, the batteries will last for 2 years under typical use conditions. The main display attaches to the wall plate by magnets located at each corner.

Once located, the electrical connection is made between the terminals on the wall plate and the main display.

There is also a small push switch on the rear of the main unit which is used to determine if the main display is on the wall.

When the main display is on the wall, the ZEN user interface allows for setting the temperature and mode of the HVAC system

When the main display is removed from the wall, it enters PREFS mode which allows setting of the thermostat preferences.
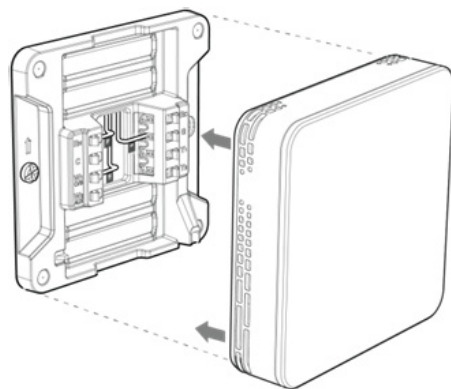
## Configuring ZEN

ZEN uses a configuration code to set the important working parameters required by a thermostat. These include the type and number of heating and cooling stages. A detailed description of the ZEN configuration codes is given in the following section.

When first installed, ZEN does not have any configuration set. The display will show "ZEN" until the CONFIG button is pressed and configuration is entered.

This sequence is intended to force the user or installer to determine the correct configuration of the device before they can operate the heating or cooling. This reduces the likelihood of damaging the HVAC system through incorrect installation.

Some existing thermostats have dipswitches that may change the configuration of the existing wire labels. If the thermostat you are replacing has multiple rows of wire labelling, make sure to check for dipswitches that may alter the configuration. Finding the original installation manual will assist you in getting the configuration set up correctly.

ZEN HVAC Configuration System

ZEN uses a configuration code to set the important working parameters required by a thermostat. These include the type and number of heating and cooling stages.

Basic configuration is suitable for most installations and is highly recommended for DIY installs.

Basic configuration allows the user to enter a 3-digit code which provides all the information required to configure the thermostat.

The first step in setting the basic configuration is to remove ZEN from the wall, turn it over so the rear of the display is accessible, then press the CONFIG button *once.*
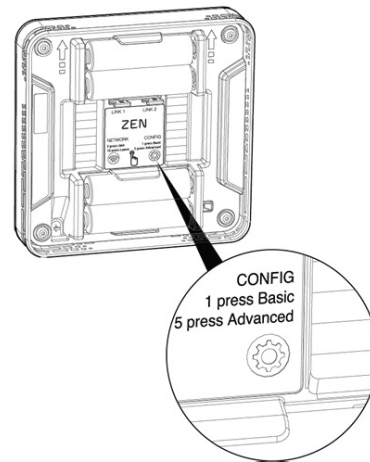
ZEN Basic Configuration Code

The ZEN online installation guide automatically determines the required configuration code based on the following items entered by the user:

› Wiring of the old thermostat
› Type of heating system

The configuration code is a 3 digit alpha-numeric code. Each digit has a distinct function:

The possible values for each digit, and their meaning, are shown on the following page.
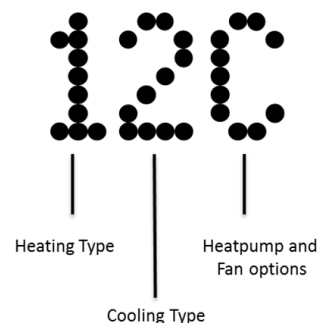
Changing the Basic Configuration

Once in basic configuration mode:

› Touch up or down to scroll through the list of configurations

› Centre touch to select the configuration

› The code will flash to confirm selection

› Exit configuration mode by placing the display back on the wall plate.

Effect on User Interface

The ZEN thermostat user interface automatically adjusts to only show the heating and cooling options that are available in the configuration.

As an example, if the configuration is set to 10A (1 stage heating, no cooling, no fan control), then the user will be able to select Heating mode but not Cooling or Fan Control mode.

If the configuration is set to 31P (heatpump heating and cooling with emergency heat and fan control), then the user will be able to select Heating, Cooling, Emergency Heat and Fan Control mode.

Heating Type

The most important heating control parameter that is affected by the heating type is the maximum cycles per hour (CPH) that is used for each heating type. In particular, heatpump systems require fewer cycles per hour to ensure that the compressor is not cycled too often which can cause it to lock up.

Digit	Heating Type	Cycles per Hour
0	No heating	N/A
1	Single Stage, Fuel (Gas or Oil)	6
2	Single Stage, Electric	12
3	Single Stage, Heatpump	3
4	Single Stage, Hydronic	3
5	Not used	N/A
6	2 Stage, Fuel (Gas or Oil)	6
7	2 Stage, Electric	12
8	2 Stage, Heatpump	3
9	2 Stage, Hydronic	3

Cooling Type

Digit	Heating Type	Cycles per Hour
0	No cooling	N/A
1	Single Stage, Heatpump, Evaporative or Hydronic	3
2	Not used	N/A
3	Not used	N/A
4	Not used	N/A
5	Not used	N/A
6	2 Stage, Heatpump, Evaporative or Hydronic	3
7	Not used	N/A
8	Not used	N/A
9	2 Stage, Hydronic	N/A

Heatpump and Fan Options

Digit	Fan Control	Has Emergency Heating?	Switching changeover valve cools	Has a change-over valve
A	N	N	N	N
B	Y	N	N	N
C	N	Y	N	N
D	Y	Y	N	N
E	N	N	Y	N
F	Y	N	Y	N
G	N	Y	Y	N
H	Y	Y	Y	N
I	N	N	N	Y
J	Y	N	N	Y
K	N	Y	N	Y
L	Y	Y	N	Y
M	N	N	Y	Y
N	Y	N	Y	Y
O	N	Y	Y	Y
P	Y	Y	Y	Y

Advanced Settings

Advanced configuration allows a professional HVAC installer to set more detailed system parameters.

⚠️ **Any changes made in advanced configuration will override basic configuration settings, so it recommended that only a knowledgeable HVAC installer use the Advanced settings.**
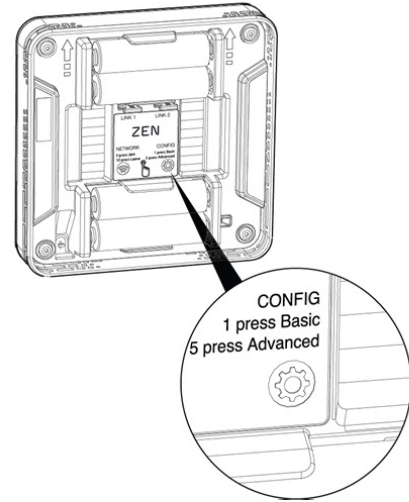
The first step in setting the advanced configuration is to remove ZEN from the wall, turn it over so the rear of the display is accessible, then press the CONFIG button *5 times.*

Changing the Advanced Settings

Once in advanced settings mode:

› Touch left or right to move to the setting items
› Touch up or down to change the value for each setting
› Center touch to select the setting
› The setting will flash to confirm selection
› Exit advanced settings mode by placing the display back on the wall plate

Advanced Settings Using the Online Installation Guide

The recommended method for determining the correct Advanced Settings is through the ZEN online installation guide.

The guide will show an "Advanced Settings" button at the end of the installation workflow.

Click on the blue arrow to enter the advanced settings page.
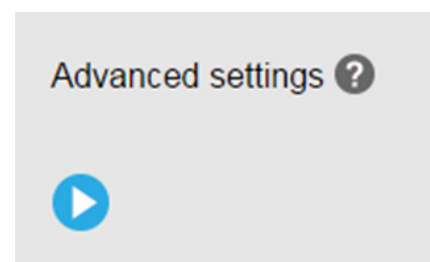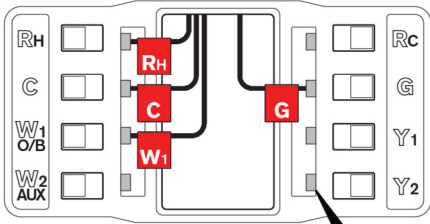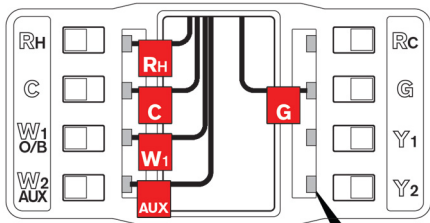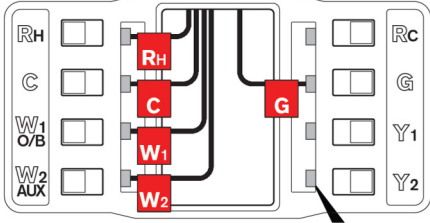
Resetting the Advanced Settings

The Advanced Settings are retained even when batteries are replaced or an OTA upgrade is made.
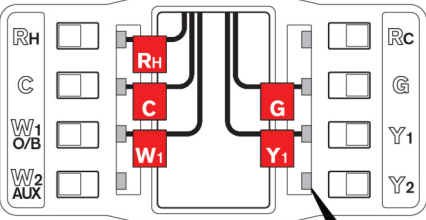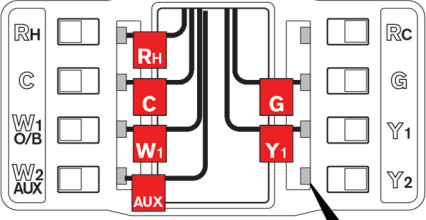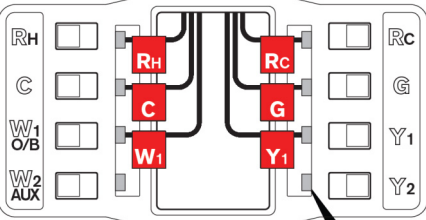
If the basic configuration is changed, the Advanced Settings will be lost.

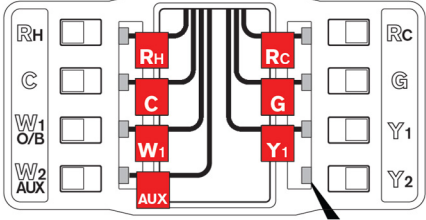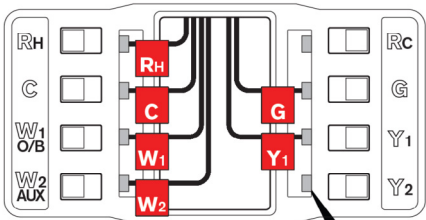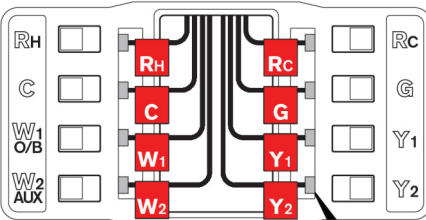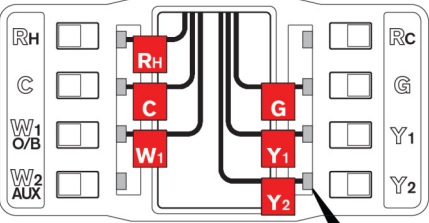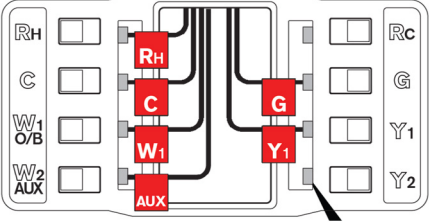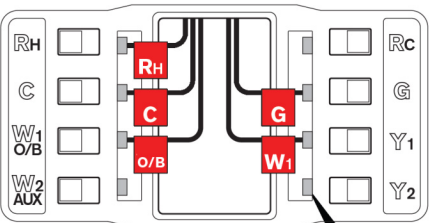The Advanced Settings can be reset to the factory default by pressing the CONFIG button *20 times*

Typical Wiring Configurations
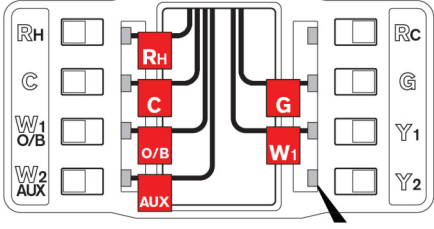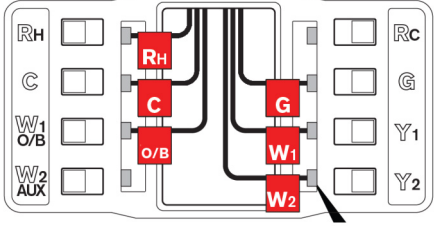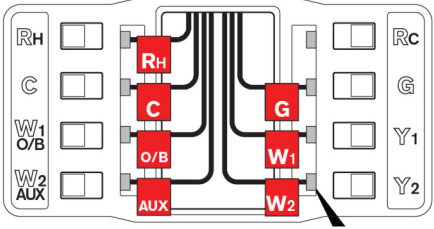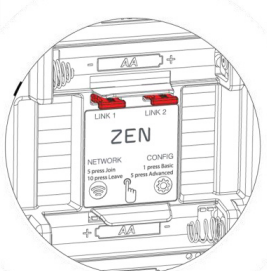
Wiring Diagram	Links	CONFIG Code
1 stage heating 		10A – 10B 20A – 20B 30A – 30B 40A – 40B
1 stage heating with emergency heat 		10C – 10D 20C – 20D 30C – 30D 40C – 40D
2 stage heating 		60A – 60B 70A – 70B 80A – 80B 90A – 90B
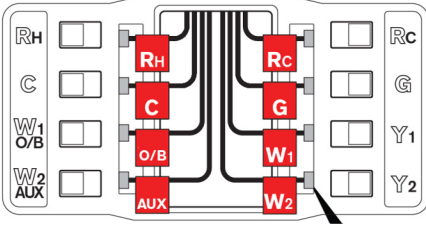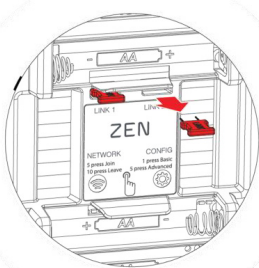
Wiring Diagram	Links	CONFIG Code
1 stage heating and 1 stage cooling 		11A – 11B 21A – 21B 31A – 31B 41A – 41B
1 stage heating and 1 stage cooling with emergency heating 		11C – 11D 21C – 21D 31C – 31D 41C – 41D
1 stage heating and 1 stage cooling (Separate Rh and Rc wires) 		11A – 11B 31A – 31B 21A – 21B 41A – 41B

Wiring Diagram	Links	CONFIG Code
1 stage heating, 1 stage cooling and emergency heat (separate Rh and Rc wires)		11C – 11D 31C – 31D 21C – 21D 41C – 41D
2 stage heating and 1 stage cooling		61A – 61B 71A – 71B 81A – 81B 91A – 91B
2 stage heating and 2 stage cooling (Separate Rh and Rc wires)		66A – 66B 76A – 76B 96A – 96B

Wiring Diagram	Links	CONFIG Code
1 stage heating and 2 stage cooling		16A – 16B 26A – 26B 46A – 26B
1 stage heating and 2 stage cooling, with emergency heat		16C – 16D 26C – 26D 46C – 26D
1 stage reversible heat pump (heat and cool)		31I 31J 31M 31N

Wiring Diagram	Links	CONFIG Code
1 stage reversible heat pump (heat and cool) with emergency heat		31K 31L 31O 31P
2 stage reversible heat pump (heat and cool)		86I 86J 86M 86N
2 stage reversible heat pump (heat and cool) with emergency heat		86K 86L 86O 86P

Wiring Diagram	Links	CONFIG Code
2 stage reversible heat pump (heat and cool) with emergency heat (separate Aux and Rh return)		86K 86L 86O 86P

Useful Links

ZEN Thermostat Website   www.zenthermostat.com
ZEN Thermostat support email   info@zenthermostat.com
ZEN Thermostat Online Installation Guide   www.zenthermostat.com/install
ZEN Thermostat FAQ   www.zenthermostat.com/faq