



Installation guide

ecobee<sub>3</sub>



# Welcome!

If you have questions, we have answers.

Visit **[ecobee.com/Support/ecobee3](https://ecobee.com/Support/ecobee3)** for tutorials, how-to videos and FAQs.

Technical support is also available by email or by phone:

**[support@ecobee.com](mailto:support@ecobee.com)**

**1.877.932.6233** (North America)

**1.647.428.2220** (International)

## Compatible systems

ecobee3 works with most centralized residential heating and cooling systems.

**Heating:** up to 2 stages

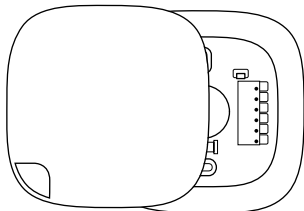
**Cooling:** up to 2 stages

**Heat pumps:** 1 or 2 stages + up to 2 stages auxiliary heat

**Accessories:** Dehumidifier, humidifier or ventilation device

# Items included in box

- A ecobee3 thermostat with back plate and trim plate
- B Remote Sensor and stand
- C Power Extender Kit (optional)
- D Large trim plate
- E Screws and drywall plugs
- F Information booklets
- G Double-sided adhesives

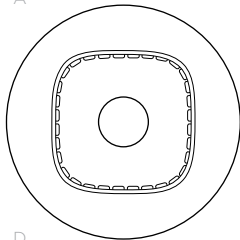


A



B

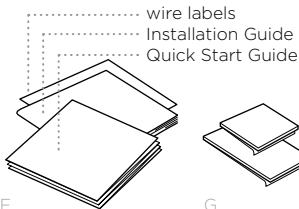
C



D



E



F

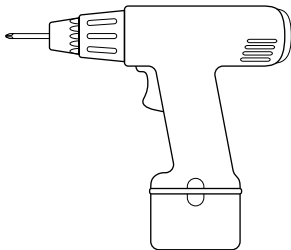
G

## Items you'll need

- A Phillips screwdriver
- B Drill for mounting anchors with  $\frac{3}{16}$  inch drill bit



A



B



**Tip:** Review all the instructions before you start to ensure that there are no surprises during installation.

**Tip:** For accurate temperature readings, install your ecobee3 in a conditioned space, on an interior wall, and away from direct heat sources.

# Overview of steps

Installing your ecobee3 home climate system is easy. Just follow these steps and you'll be done before you know it.

## **Step 1**

page 8

### **Power off your HVAC system**

Before doing anything else, power off your system.

## **Step 2**

page 9

### **Label the wires**

Label each wire with the provided stickers.

## **Step 3**

page 11

### **Install Power Extender Kit**

The PEK is not required for all installs. If you have a wire labelled "C" or "common", skip to step 4.

## **Step 4**

page 14

### **Attach back plate to wall**

Secure the back plate to your wall with the provided screws.

## **Step 5**

page 16

### **Connect wires to ecobee3**

Use the stickers from step 2 as a guide and insert the wires into ecobee3 terminal blocks.

## **Step 6**

page 18

### **Power on your HVAC system**

Power back on your HVAC equipment. Your ecobee3 will automatically power on and guide you through setup.

## **Step 7**

page 19

### **Install remote sensor**

Stand in front of your ecobee3 and pull the plastic tab on the remote sensor to automatically connect it to your thermostat.

# Terminal descriptions

|            |                                                                                                     |
|------------|-----------------------------------------------------------------------------------------------------|
| <b>G</b>   | Fan                                                                                                 |
| <b>Rc</b>  | Cool transformer                                                                                    |
| <b>Rh</b>  | Heat transformer                                                                                    |
| <b>O/B</b> | Heat pump reversing valve                                                                           |
| <b>Y</b>   | Y1, Y2: Used for 1 - 2 stages of conventional A/C or 1 - 2 stages of heat pump compressor           |
| <b>W</b>   | W1, W2: Used for 1 - 2 stages of conventional heat or 1 - 2 stages of auxiliary heat with heat pump |
| <b>C</b>   | 24VAC common                                                                                        |
| <b>ACC</b> | Accessory (+/-): Used for dehumidifiers, humidifiers, ventilators, HRVs or ERVs                     |

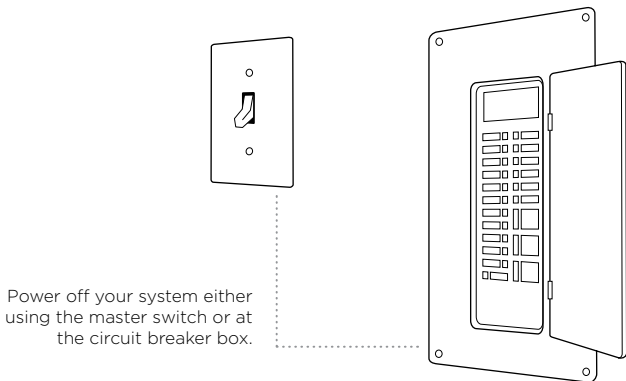


**Warning!** *ecobee3 is designed for 24VAC with a 2A maximum current. Do not connect it to line (high) voltage or millivolt systems.*

# Step 1. Power off your HVAC system

Before doing anything else, power off your system. If your HVAC equipment doesn't have a master switch, go to your circuit breaker box and turn off the breaker.

Verify that the equipment is off by attempting to adjust the temperature your existing thermostat. The thermostat will show the temperature change but your cooling or heating should not come on.

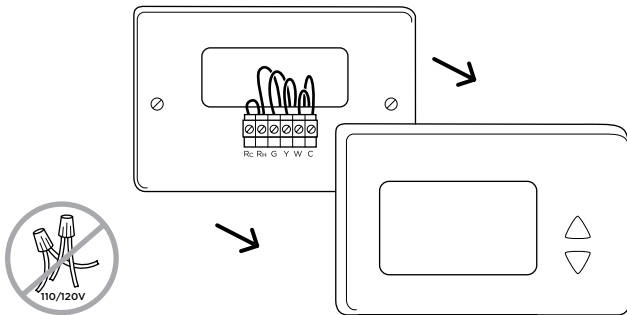




**Note:** If you don't have an existing thermostat, *skip to step 3.*

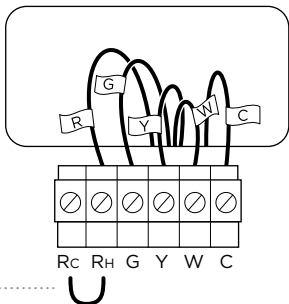
## Step 2. Label the wires

Remove the cover from your old thermostat. Most snap off easily but some may be attached by screws.



**Warning!** If your old thermostat has 110/120V wires capped with wire nuts, it is a high voltage system and is not compatible with your ecobee3.

1. Look at the wires coming out of the wall. Take a picture for reference.
2. Using the old thermostat base as a guide, label each wire going into your old thermostat with the provided stickers.



Discard any jumper wires between R<sub>H</sub>, R<sub>c</sub>, or R. Your ecobee3 does not need them.

3. If you have used the wire label C, please skip step 3 and proceed directly to step 4. If you have NOT used the wire label C, proceed to Step 3: Install Power Extender Kit (PEK).



**Tip:** If the wires have completely different labels, please call ecobee support to help with wiring.



**Note:** The PEK is not required for all installs. If you have a wire labelled “C” at your thermostat, **skip to step 4**.

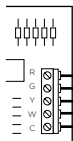
## Step 3. Install Power Extender Kit (PEK)



**Warning!** This step requires you to work with wiring at your HVAC Control Board. If you are not comfortable working with your HVAC wiring, contact ecobee customer support or hire a professional installer.

Some thermostats do not have a C-wire. The C-wire is used to reliably provide power to the thermostat. In this case, the PEK can use the existing wires to power your thermostat.

**At your utility closet**

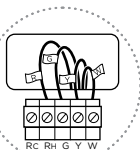


HVAC  
control board



Power  
Extender Kit

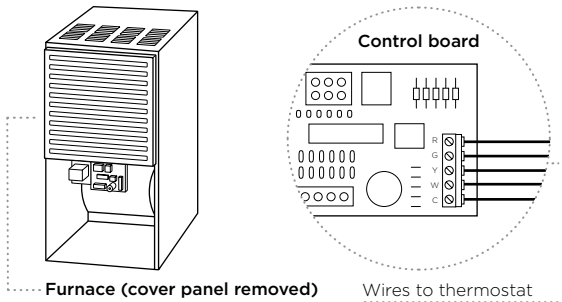
**At your thermostat**



Existing  
thermostat wires

The PEK requires your system to have the following wires:

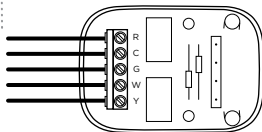
- 4 wires: W, Y, G, and R (or Rc or Rh), or
  - 3 wires: Y, G, and R (or Rc or Rh)
1. Remove the cover panel from your HVAC equipment.
  2. Locate the control board and take a picture of it for reference.
  3. Using the stickers provided, label the wires on the control board leading to the thermostat.



**Tip:** The control board will generally have R, G, Y, W, C terminal designations.

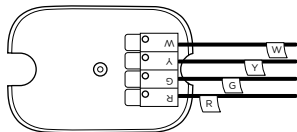
### Power Extender Kit cover

Pre-installed wires  
to HVAC control board



### Power Extender Kit base

Wires connecting  
to thermostat

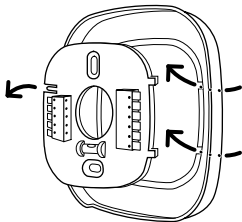


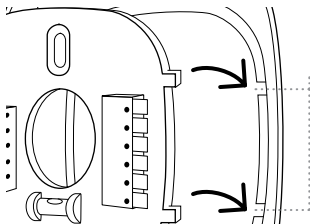
4. Open up the PEK. It has two rows of terminals (one side is for thermostat connections, the other side, pre-wired, is for the control board connections).
5. Disconnect the wires from the control board and reconnect them to the corresponding terminals on the thermostat side of the PEK.
6. Using the wires provided with the PEK, connect the terminals on the equipment side of the PEK to the corresponding terminals on the control board.
7. Close the PEK and use the provided double-sided tape on the back to mount it in a dry location that doesn't strain the wires. The PEK can be safely placed on any free space on an inside wall of your HVAC unit.
8. Close the HVAC cover panel.

## Step 4. Attach back plate to wall

1. Gently remove the old thermostat base by unscrewing it from the wall. Make sure the wires do not fall back into the wall.
2. Position the back plate of your ecobee3 on your wall, using the built-in level to make sure it's straight. Mark the mounting holes on your wall in pencil.
3. Drill mounting holes for the drywall anchors.
4. The back plate must be used with a trim plate. If the smaller trim plate does not cover the marks left by the previous thermostat, you can attach the larger trim plate instead.

Remove the back plate by gently pushing the back of its left side towards you.

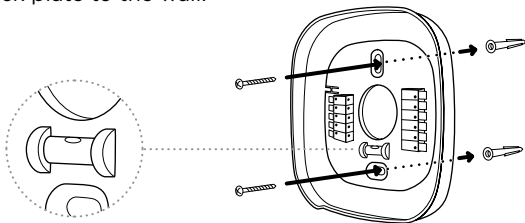




Insert the back plate using the tabs on the right as a guide. It will snap into place when correctly inserted.

## Secure the back plate

Use the drywall anchors and screws provided to secure the back plate to the wall.



**Tip:** ensure the back plate is straight by centering the bubble on the built-in level.

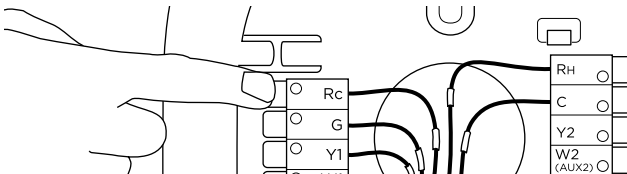
## Step 5. Connect wires to ecobee3



**Tip:** If you are replacing an existing thermostat, use the stickers as a guide when inserting the wires into the ecobee3 terminal blocks.

The wires from the wall should plug easily into the terminal blocks. To release a wire, press down on the lever.

When installed correctly, the release lever of the terminal block will lower to indicate engagement. Tug on the wires to ensure they are engaged in the terminal.



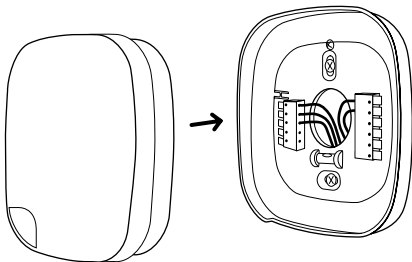
**Warning!** If you installed the PEK in step 3, the R (or Rc or Rh) wire must connect to the Rc terminal on the ecobee3, or the thermostat will not power on.

If you need help with the wiring, refer to the reference diagrams at the back of this guide:

- For conventional heating and cooling systems, see page 29.
- For heat pumps (air or geothermal), see page 30.
- For boilers or radiant heat systems, see page 31.
- For accessory devices like dehumidifiers, humidifiers, or ventilators, see pages 32-35.
- For PEK installations, see page 36.

## **Attach thermostat**

Push any excess wires back into the wall, and connect your ecobee3 thermostat to the base.



## Step 6. Power on ecobee3

Power your HVAC equipment back on. Your ecobee3 will automatically power on. If your ecobee3 does not power on, see page 27 for troubleshooting.

Follow the on-screen instructions. ecobee3 will guide you through the setup, which includes:

- Equipment configuration (HVAC and accessories)
- Set your preferences (choose °F or °C, heating and cooling setpoints, thermostat name)
- Set up wi-fi
- Register your ecobee3 online



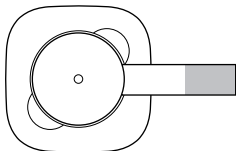
**Tip:** The settings on your ecobee3 can be changed at any time from the main menu.

## Step 7. Install remote sensor

Ordinary thermostats only read the temperature in one location. ecobee3 uses multiple temperature readings from remote sensors to deliver comfort more reliably.

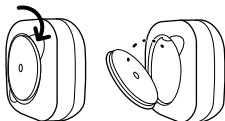
### Pair the sensor at the thermostat

1. To activate your remote sensor, ensure your ecobee3 is awake by standing in front of it or touching the screen.
2. Pull the plastic tab on your remote sensor and it will power on and connect to your ecobee3 automatically.



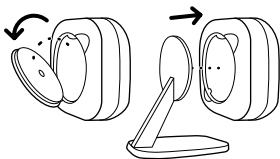
Stand in front of your ecobee3 and pull the plastic tab on the remote sensor to automatically pair it with your thermostat.

3. Your ecobee3 will detect your remote sensor and ask you to name it. You can verify a successful connection on your thermostat. If your sensor does not connect with the ecobee3, simply remove the battery, wait 2 minutes, and re-insert the battery to restart the detection process.

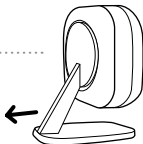


..... To access the battery, pop the remote sensor back cover off using the ridges provided.

To attach the remote sensor stand, remove the smaller back cover and pop the stand into place.

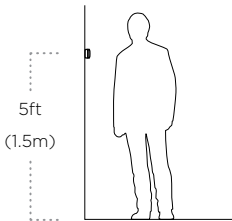
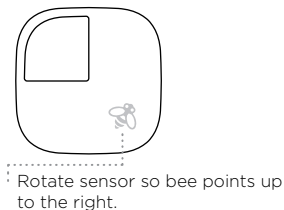


To remove the remote sensor stand, pull the base outwards.



## Find a location

Place your remote sensor at a height of approx. 5ft / 1.5m on an interior wall, away from direct heat/cool sources (eg. fireplace, air vents, etc.) If the sensor is out of range of your ecobee3 (approx. 45 ft / 13.7 m) the thermostat will show N/A, meaning it cannot connect to the remote sensor. When in range, they will automatically reconnect.



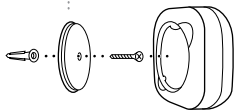
**Warning!** Do not place the remote sensor in direct sunlight, near vents or window openings, or in enclosed areas such as drawers, closed cabinets or closets as this will distort the temperature readings.

## Install the remote sensor

Using the materials provided, install the remote sensor in one of three ways:

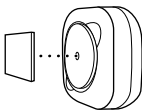
### Option 1.

Attach to a wall using the screw provided.



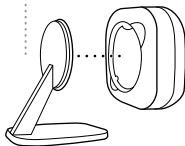
### Option 2.

Attach to a wall using the adhesive provided.



### Option 3.

Place on a flat surface using the stand provided.



**Tip:** For accurate occupancy and temperature sensing, make sure your remote sensor has an unobstructed view of the room, and can sense the ambient room temperature (it cannot do so from an enclosed space).

# Remote sensor features

## Smart Home/Away

If your ecobee3 senses that you are home during your scheduled Away period, or away during your scheduled Home period, it will automatically override your schedule to maximize comfort and savings.

## Follow Me

Control your comfort by averaging the temperature of the selected sensors that detect motion (Enabled) or all of the selected sensors in your home, regardless of motion (Disabled).

## Comfort Wise

The ecobee3 has been designed to maximize user comfort and control but also provide protection and peace of mind. If the ecobee3 loses connectivity with the remote sensor, or the temperature reading of the ecobee3 and remote sensor differ by greater than a configured amount, then the reading from that remote sensor will not be used to determine the home temperature.

# Remote sensor tips

## Can I turn off the occupancy sensor?

You may want to sense temperature without tripping the motion sensor. Select a location for your remote sensor where it can sense the ambient room temperature, without having a clear view of the room (turned away from the room, or tucked behind your family portrait).

## Storing your remote sensor

If you do not wish to use the remote sensor, delete it from the ecobee3 sensors menu and disconnect the battery before storing it. This will prevent the sensor from trying to heat the inside of your storage closet!

## Ideal locations

Have pets or curious children? To prevent your remote sensor from being jostled or bumped off its stand, affix your sensor to the wall using the adhesive or screw provided, or simply place it out of reach.

# Congratulations, you're done!

Register your ecobee3 at **ecobee.com** to control it from your smartphone, tablet or desktop, and to access free online energy management tools.

Download the free ecobee3 mobile app on iTunes and the Google Play store.

# Menu options

To access the thermostat menu, touch the screen and press 



## **System**

Selects mode of operation: heat/cool/auto/off, fan on/auto



## **Schedule**

Configures temperature according to time and day



## **Comfort Settings**

Configures temperature for different occupancy states (Away, Home, Sleep)



## **Vacation**

Configures temperature for a specific future time period



## **Settings**

Configures display preferences (°F/°C, date, brightness), wi-fi, and equipment operating parameters (thresholds, sensors, etc)



## **Reminders**

Displays any reminder or alert messages



## **About**

Displays technical information about your thermostat

# Troubleshooting

If your ecobee3 does not power on, please check the following:

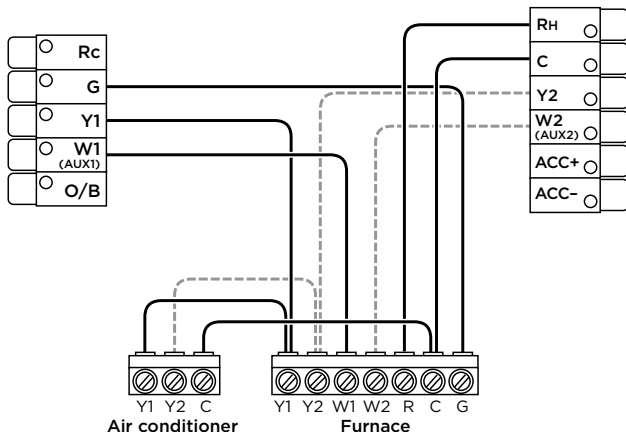
1. Check that all wires are properly inserted into the terminal blocks at the thermostat. Tug on the wires to ensure they are not loose.
2. Some HVAC equipment has a safety switch that cuts off power to the equipment if the equipment cover panel is not closed properly. Please ensure the cover panel of the equipment is closed properly.
3. If you installed the PEK, ensure R wire is connected to Rc only and G wire is inserted properly into the terminal.
4. If you have a multi-meter, please check the AC voltage between Rc and C or Rh and C and ensure it is 24V.
5. If your device still does not power on, please call ecobee support at **1.877.932.6233** (North America), **1.647.428.2220** (International).

## Wiring diagrams

The following pages provide wiring diagrams for common HVAC equipment configurations.

Need help with your ecobee3 wiring? Find how-to videos and tutorials on **[ecobee.com/HowTo](https://ecobee.com/HowTo)**

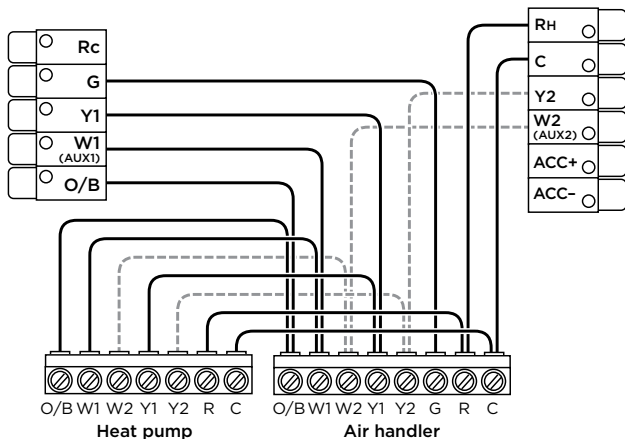
## Conventional heating and cooling (up to 2 stages each)



--- Stage 2 heat and cool  
if applicable

**Note:** Do not jumper Rc or Rh, ecobee3 does this automatically. R can go into either Rc or Rh terminals on your ecobee3.

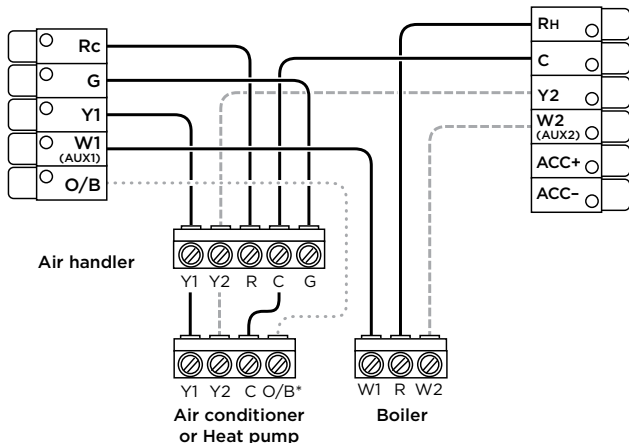
## Heat pump (air or geothermal) with auxiliary heat



--- Stage 2 compressor and auxiliary heat if applicable

**Note:** Do not jumper Rc or Rh, ecobee3 does this automatically. R can go into either Rc or Rh terminals on your ecobee3.

# Boiler or radiant system with air handler and conventional cooling or heat pump



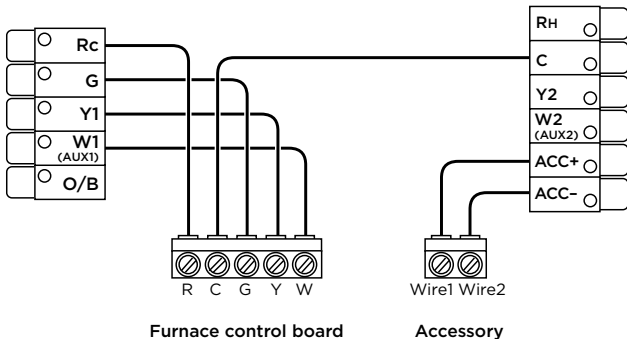
**Note:** Do not jumper Rc or Rh, ecobee3 does this automatically. R can go into either Rc or Rh terminals on your ecobee3.

## Accessory devices

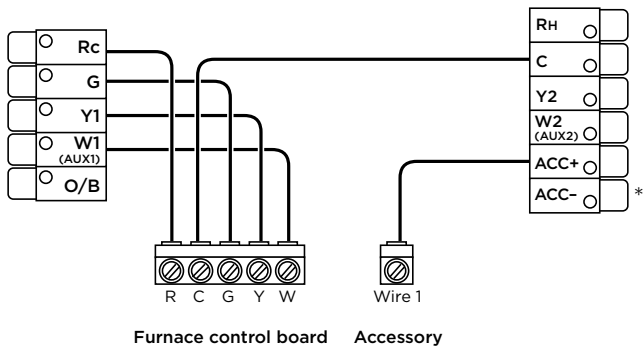
The ecobee3 can control an accessory HVAC device like a humidifier, dehumidifier, or ventilation device from its ACC terminals.

**Note:** You will need to configure the accessory device when you first power on your ecobee3.

### 2-wire accessory (humidifier/dehumidifier/ventilator)



## 1-wire accessory (humidifier/dehumidifier/ventilator)

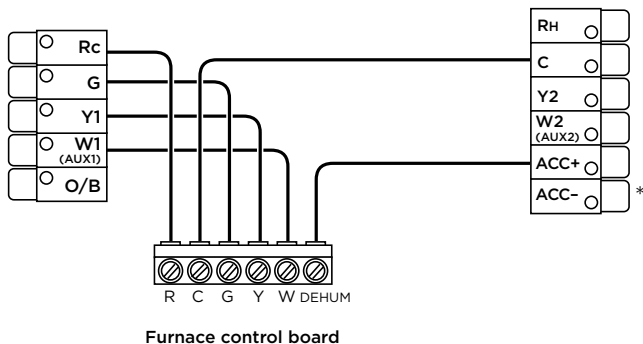


\*ecobee3 automatically connects Rc to ACC- when 1-wire configuration is selected during accessory setup.



**Warning!** Damage may occur if accessory is connected to ACC-.

## 1-wire/Integrated dehumidifier

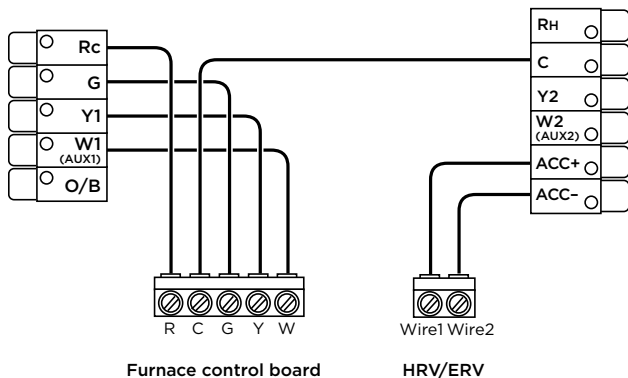


\*ecobee3 automatically connects Rc to ACC- when 1-wire configuration is selected during accessory setup.



**Warning!** Damage may occur if accessory is connected to ACC-.

## HRV/ERV

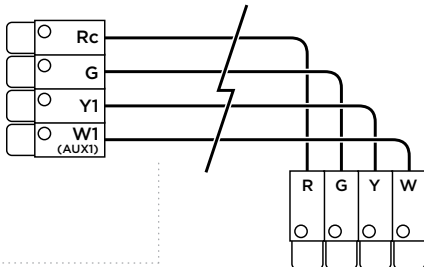


**Note:** To determine which wires from your ERV/HRV need to be connected to the ACC+/ACC- terminals on your ecobee3, you will need to refer to your ERV/HRV manual. The two wires will be listed under configurations that enable “optional auxiliary control for high speed fan” or “dry contact timer configuration”.

## PEK thermostat wiring

### ecobee3 terminals

The R wire needs to go into the Rc terminal on your ecobee3



Wires coming out the wall and connecting to HVAC equipment

### PEK terminals

# Approvals

This product was designed and built in accordance to RoHS directive 2002/95/EC and contains no hazardous substances as defined by this directive.

## FCC Compliance Statement

This equipment has been tested and found to comply with the limits for Class B digital devices, 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 instruction manual, 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 to an outlet on a different circuit from the receiver.

- Consult the dealer or an experienced radio/TV contractor for help.

To satisfy FCC/IC RF exposure safety requirements, a separation distance of 8 inches (20 cm) or more should be maintained between this device and persons. To ensure compliance, operation at closer than this distance is not allowed.

FCC ID: WR9EBSTATZBE3      IC: 7981A-EBSTATZBE3

Warning: Changes or modifications not expressly approved by ecobee Inc. could void the user's authority to operate the equipment.

## **3-Year Limited Warranty**

ecobee warrants that for a period of three (3) years from the date of purchase by the consumer ("Customer"), the ecobee3 (the "Product") shall be free of defects in materials and workmanship under normal use and service. During the warranty period, ecobee shall, at its option, repair or replace any defective Products, at no charge. Any replacement and/or repaired device are warranted for the remainder of the original warranty or ninety (90) days, whichever is longer.

If the product is defective, call Customer Service at 1-877-932-6233. ecobee will make the determination whether a replacement product can be sent to you or whether the product should be returned to the following address: ecobee Customer Service, 250

University Ave, Suite 400, Toronto, Ontario, M5H 3E5, Canada. In the event of a failure of a Product, Customer may:

(a) if Customer did not purchase the Product directly from ecobee, contact the third party contractor from whom the Product was purchased to obtain an equivalent replacement product, provided the contractor determines that the returned Product is defective and Customer is otherwise eligible to receive a replacement product;

(b) contact ecobee directly for service assistance at 1-877-932-6233 and ecobee will make the determination whether an advance equivalent replacement Product can be sent to Customer with return shipping supplies (in which case a hold shall be put on Customer's credit card for the value of the replacement Product until ecobee has received the defective Product). Product should be returned to the following address: ecobee Customer Service, 250 University Ave, Suite 400, Toronto, Ontario, M5H 3E5, Canada. If the returned Product is found by ecobee to be defective and Customer is otherwise eligible to receive a replacement product, no amount shall be charged to Customer's credit card; or

(c) ship the defective Product directly to ecobee, in which case Customer shall contact ecobee directly at 1-877-932-6233, so ecobee can make the required shipping arrangements. Upon receipt of the defective Product, ecobee will ship an equivalent replacement product to Customer, provided the returned Product is found by ecobee to be defective and Customer is otherwise eligible to receive a replacement product.

This warranty does not cover removal or reinstallation costs and shall not apply if the damages were found to be caused by something other than defects in materials or workmanship, including without limitation, if the Product:

- was operated/stored in abnormal use or maintenance conditions;
- is repaired, modified or altered, unless ecobee expressly authorizes such repair, modification or alteration in writing;
- was subject to abuse, neglect, electrical fault, improper handling, accident or acts of nature;
- was not installed by a licensed Heating Ventilating and Air Conditioning (HVAC) contractor; or
- was installed improperly.

ecobee's sole responsibility shall be to repair or replace the Product within the terms stated above. ECOBEE SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE OF ANY KIND, INCLUDING ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING, DIRECTLY OR INDIRECTLY, FROM ANY BREACH OF ANY WARRANTY, EXPRESS OR IMPLIED, OR ANY OTHER FAILURE OF THIS PRODUCT. Some US states and Canadian provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

ecobee's responsibility for malfunctions and defects in materials and workmanship is limited to repair and replacement as set forth

in this warranty statement. All express and implied warranties for the product, including but not limited to any implied warranties and conditions of merchantability and fitness for a particular purpose, are limited to the three-year duration of this limited warranty. No warranties, whether expressed or implied, will apply after the limited warranty period has expired. Some US states and Canadian provinces do not allow limitations on how long an implied warranty lasts, so this limitation may not apply.

ecobee neither assumes responsibility for nor authorizes any other person purporting to act on its behalf to modify or to change this warranty, nor to assume for it any other warranty or liability concerning this product.

This warranty gives you specific rights, and you may also have other rights which vary from jurisdiction to jurisdiction. If you have any questions regarding this warranty, please write to ecobee Customer Service, 250 University Ave, Suite 400, Toronto, Ontario, M5H 3E5, Canada.







We're here to help

[ecobee.com](http://ecobee.com) | [support@ecobee.com](mailto:support@ecobee.com) | 1.877.932.6233

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