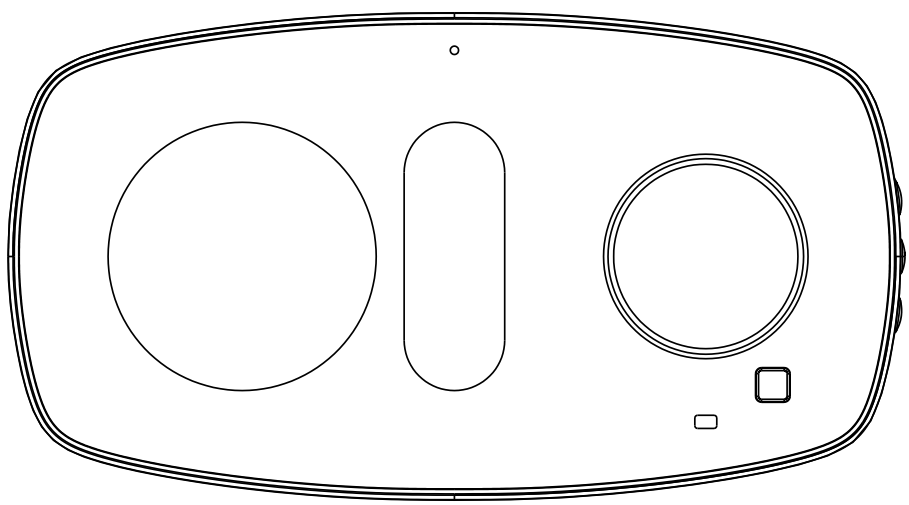


PCT503-W WiFi Multi-stage Thermostat

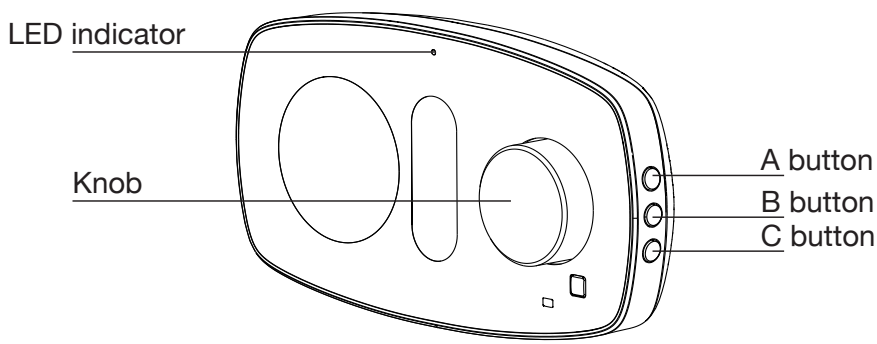
Quick Start Guide

1 Welcome

The smart thermostat makes it easier to control your household temperature. You can schedule your thermostat working hours so it will work based on your plan. With a smart thermostat, you will be able to remotely control the temperature anytime through your mobile phone.

This guide will provide you with an overview of the product and will help you get through the initial setup.

2 Get to know your device



Knob

Rotate to choose from different given options, press to select.

A button

Time and date. Press to show time and date.

B button

Away/Home mode. Press to switch between Away and Home mode.

C button

Permanent hold. Press to enter "Permanent hold" mode. This function is not available when your device is in “Away” mode.

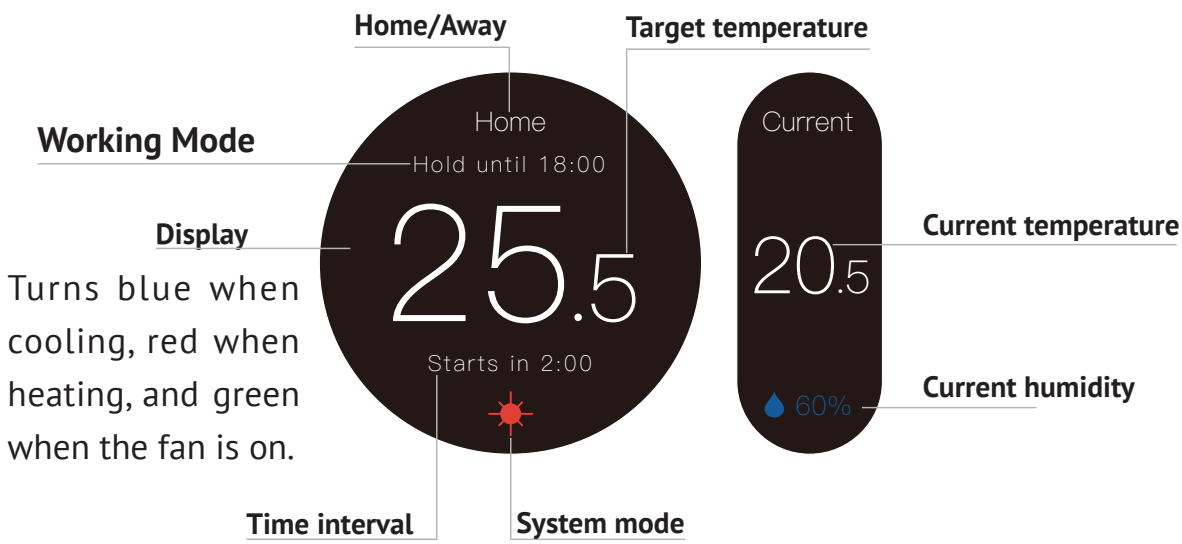
LED status

The LED status gives the following information of the thermostat:

LED status	What it means
Purple flashing	Wi-Fi disconnected, network not configured
Blue flashing	Cloud disconnected
Red and Blue flashing alternatively	Connecting to the network
Purply, Red, and Blue flashing alternatively	Network error
No LED light	Cloud connected

3 Get started

Overview



Press the Knob to enter device menu.



System. System mode (Heat/Cool/Auto/Emergency/Off).
Auto: Auto switch between heat and cool mode.
Emergency: Emergency heat, only works when heat pump is used.



Fan. Fan mode (Auto/Cycle/On).



Setting.
Date&Time: Set date and time.
Time Zone. Change time zone setting.
Brightness: Adjust screen brightness.
Away setting: Set the temperatures for away mode.
F/C: Celsius or Fahrenheit.
Equipment: Reconfigure your thermostat.
Click sound: Turn on/off the click sound.
Network: Check Wi-Fi connection or disconnect from current network.
Device info: Show device information.
Reset: Reset Network setting. Reset schedule (Clear all Schedule). Reset all settings (reset the thermostat to default factory setting).



Schedule. View or modify schedules.

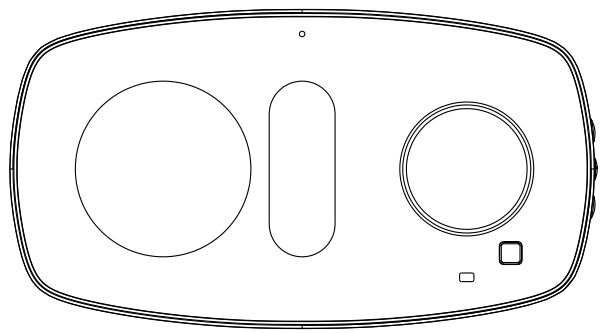


Home/Away. Switch between home and away mode to save energy.
Away. Set the thermostat to away mode when you leave.

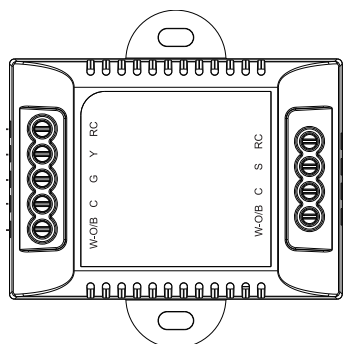
4 Installation Guide

4.1. In the box

PCT503 smart thermostat



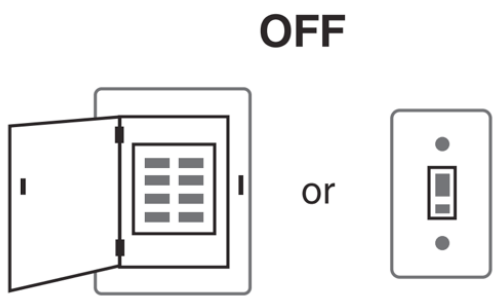
Wiring Module SWB511 (Optional)



4.2. Thermostat installation

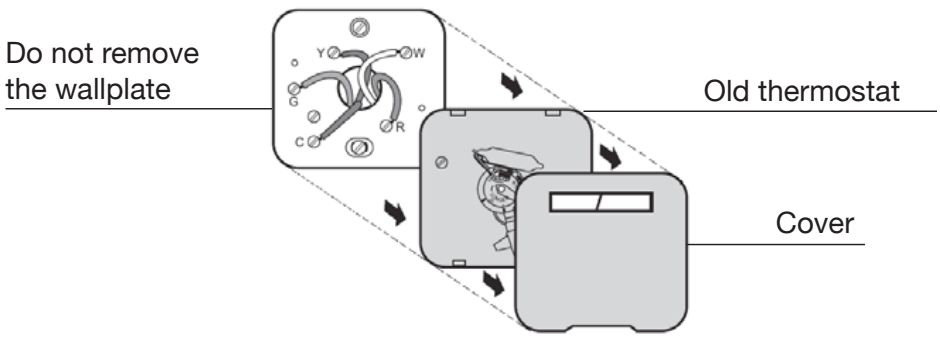
Step 1: Switch off your HVAC system

Before you started, please switch off your HVAC system. Adjust the temperature in your old thermostat to double check the system is off.



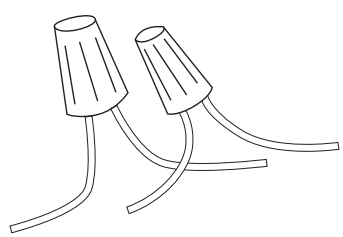
Step 2. Remove the old thermostat

Remove the old thermostat but leave the wallplate with wires attached.



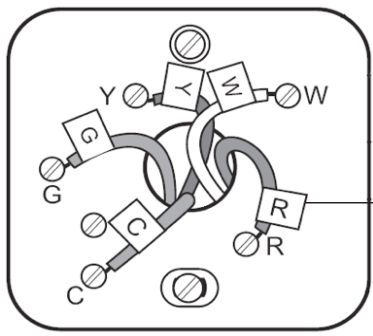
Step 3. Check the old system

The PCT503 is designed for 24VAC with 2A maximum current. If you find a thick wire with wire nuts, or if your old system is using 120v or higher voltage, it will not be compatibled with PCT503.



Step 4. Label the Wires with Tags

Use the tags provided to label the wires to help you remember.



Label the wires using wire labels as you disconnect them

Terminal designation:

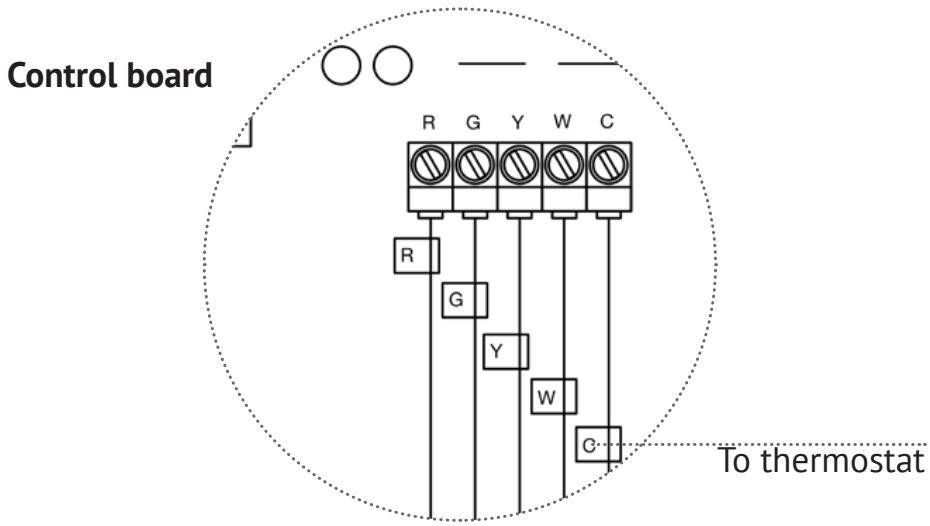
Terminals	What it means
RC	24VAC primary for cooling
RH	24VAC primary for heating
W1	1st stage Primary heating relay / Aux heat
W2	2nd stage Secondary heating relay / Aux heat
Y1	1st stage Primary cooling compressor contactor
Y2	2nd stage Secondary cooling compressor contactor
G	Fan relay
C	24VAC common*
O/B	Changeover valve for heat pumps
S	Wiring Module Connection
*	Multiple use reserved, including but not limited to: emergency heat line, humidifier control

Note: If you have the C-wire, skip the step 5 and go to step 6 directly, if you don't have the C-wire, go to step 5.

Step 5. Install the Wiring Module (Optional)

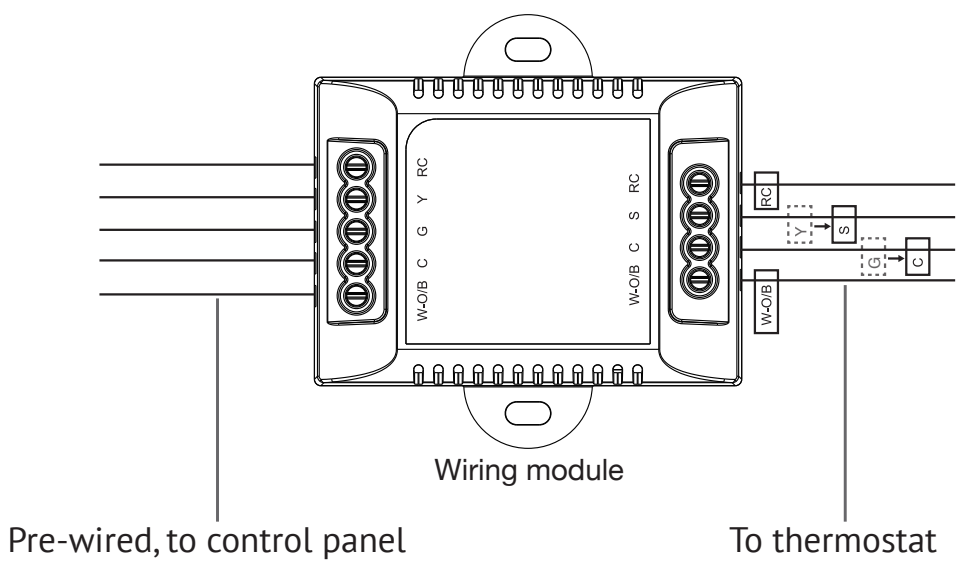
The C-wire provides power to the smart thermostat, if you don't have a C-wire in your old system, you need to install the wiring module to use the exiting wires to power your thermostat.

1. Find the control board of your HVAC system, use the tags provided to label the wires from the control board to the thermostat.

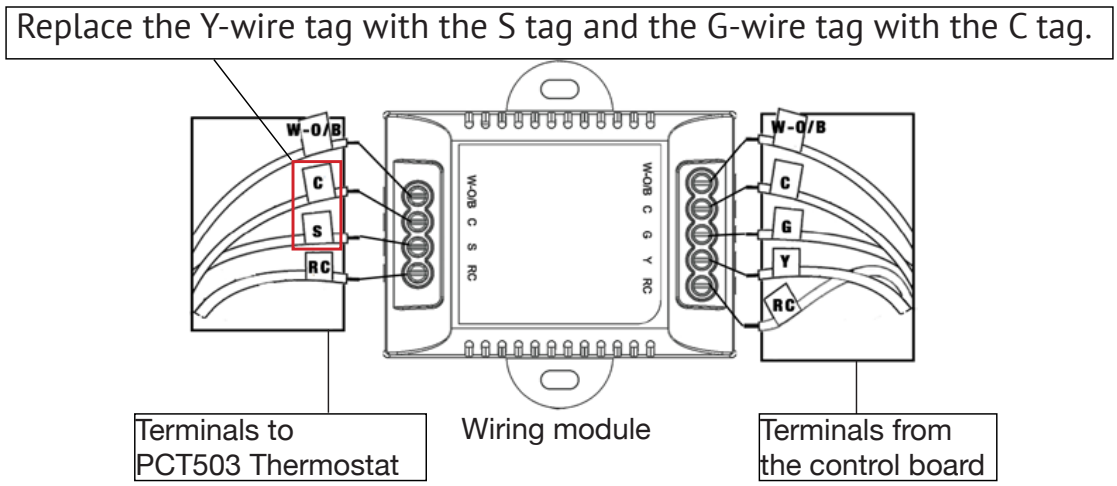


2. Disconnect the R/RC, W-O/B, Y, G wires from the control board and reconnect them correspondingly to the 4 terminals side of the wiring module. For Y-wire and G-wire, you can connect the Y-wire to S-terminal, G-wire to C terminal, then change the label of the Y-wire to the S-wire, the G-wire to the C-wire. Take a picture of your wires with new label to help you remember.

3. Generally the control board will have R, G, Y, W, C terminal, connect the pre-wired side of the wiring module (5 terminals) to the corresponding terminals.



4. Put back your control board.

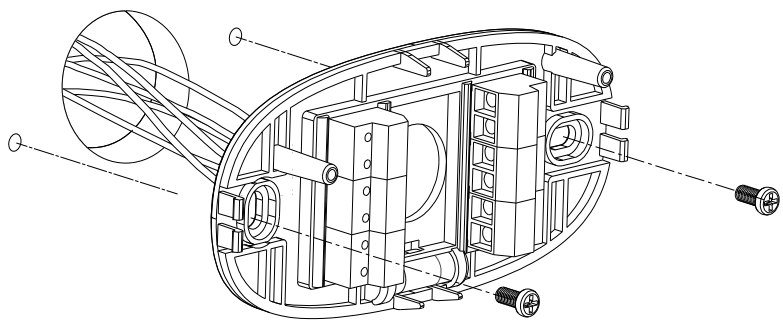


Step 6. Remove the old thermostat base

Unscrew the old thermostat base from the wall, gently pull it out and ensure the wires will not fall back into the hole.

Step 7. Attach the base of PCT503 to the wall

Bundle and insert the wires through the hole of the thermostat base, then attach the base to the wall with the screws.

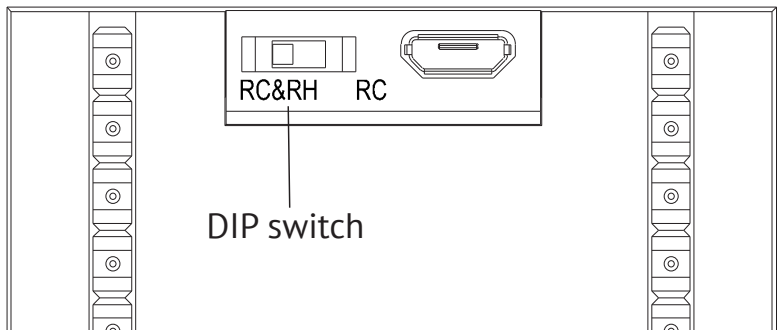


Step 8. Connect Wires

Connect wires to the corresponding terminal in the base. If you have installed a wiring module in step 5, use the picture to help you remember the name of wires. Take a picture of the wires when you done to help you remember, you will be asked for the wirings in the setup wizard again.

Step 9. Switch the DIP switch

Switch the DIP switch in the back of the thermostat to RC if you have connected both RC-wire and RH-wire to the wallplate, otherwise switch it to the RC&RH side.



Step 10. Setup the mobile app

1. Connect your mobile phone to your home Wi-Fi network.
2. Install OwonThermostat mobile App from Google play store or Apple app store,
3. Register an account using the mobile app:
   i. Launch the Owonthermostat mobile app.
   ii. Tap "Registration" on the bottom right.
   iii. Fill in the required field and tap "Register".
   iv. Use the link sent to your email address to activate your account.
   v. Now you have successfully registered your account.
4. Prepare for the network configuration:
   i. Login to your account in the mobile app.
   ii. Tap the "+" icon on the main interface.
   iii. Tap the 'scan' ( ) icon and scan the QR code on the back of the thermostat, the MAC address will be filled in automatically on the screen, then tap 'Next'.
   iv. Follow the instruction and proceed to the 'network configuration' interface, enter the password of the Wi-Fi network.

Step 11. Attach the PCT503 to the base

Gently push the PCT503 to the base until it clicks.

Step 12. Power on your system

Congratulation, you are now finished with the installation. Please power on your HVAC system.

Step 13. Setup the thermostat

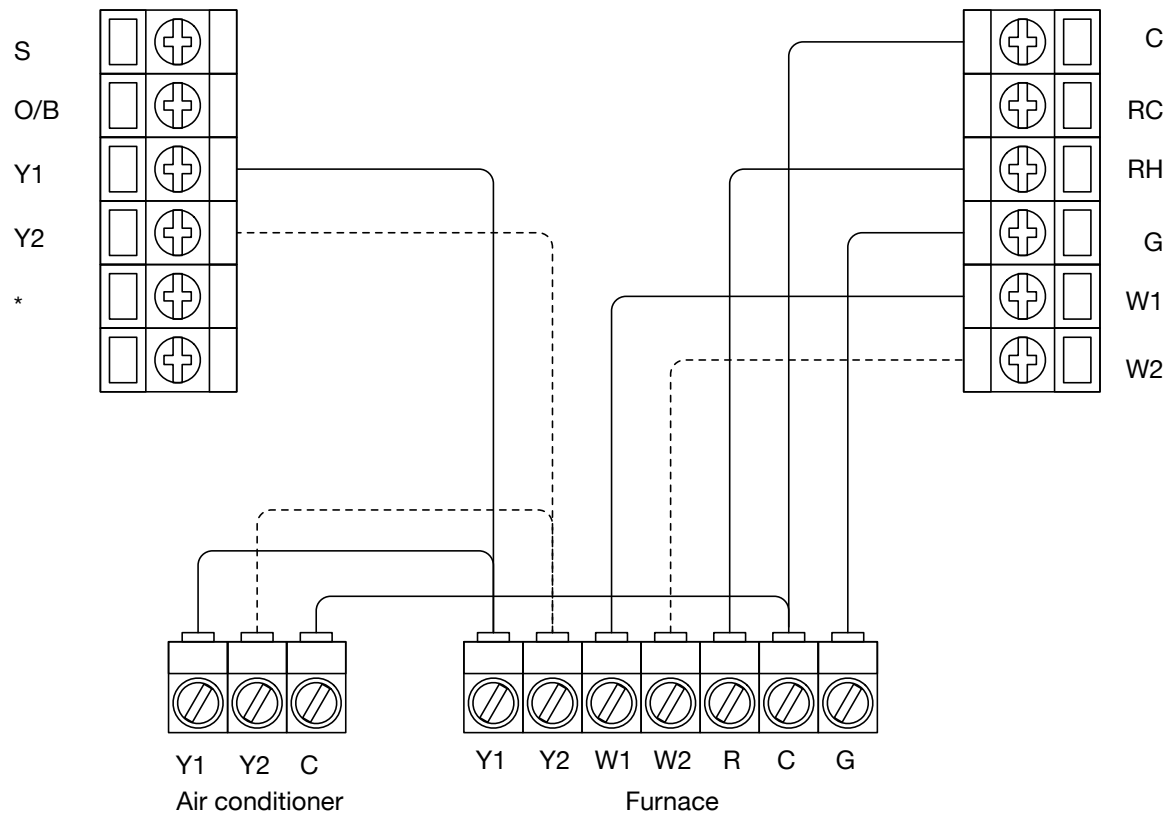
1. Follow the wizard to set up your smart thermostat. You can use the picture you take to help you remember the wiring.
2. In ‘Wi-Fi config’ interface, select "Start," and tap 'Start' on the mobile app. The thermostat will obtain the SSID and password information automatically and connect to the Wi-Fi network.
3. Tap OK to complete the process.

After the network is successfully connected, please complete all the settings and start using the thermostat. Have fun!

7.3. Wiring diagrams

Below is the wiring diagrams for common HVAC equipments.

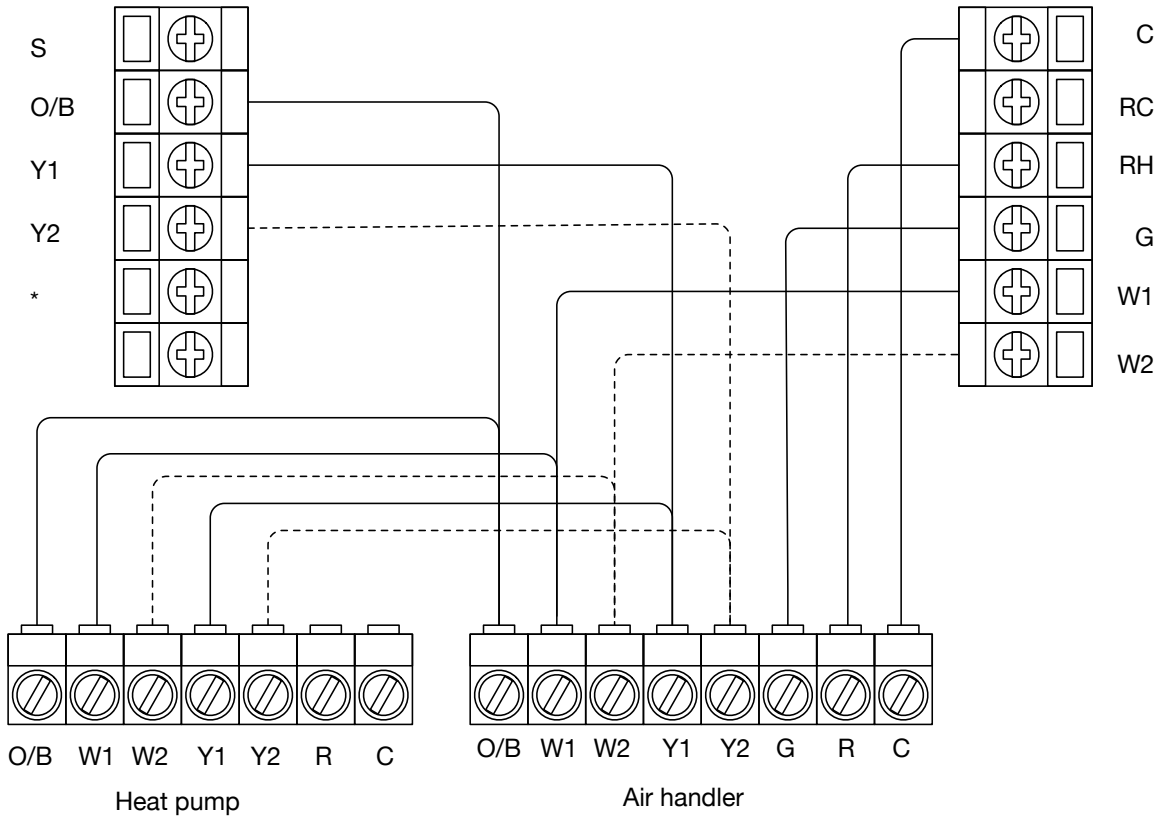
Conventional heating and cooling system



- - - - - - - - - - - - - - - For 2 heat and cool if applicable.

Remove the jumper for RC or RH, switch the DIP switch on the back of the thermostat to RC if you have connected both RC-wire and RH-wire to the wallplate, otherwise switch it to the RC&RH side.

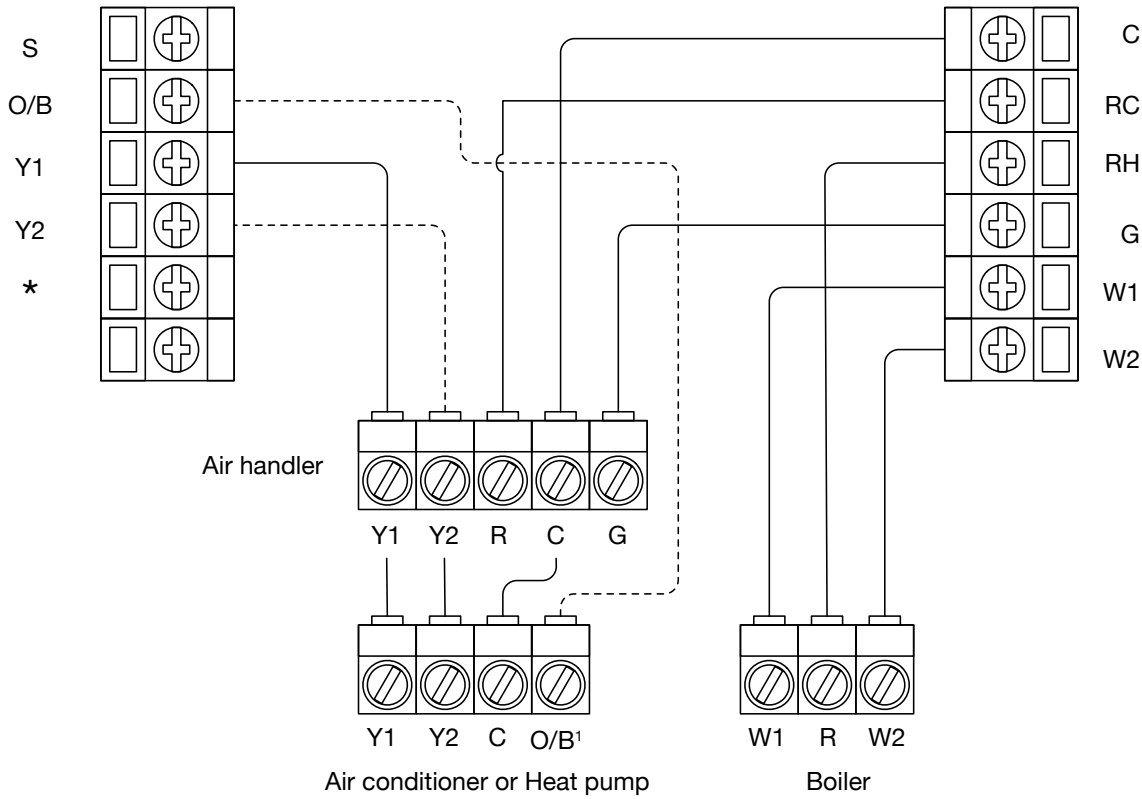
Heat pump (air or geothermal) with auxiliary heat



- - - - - - - - - - - - - - - For 2 heat and cool if applicable.

Remove the jumper for RC or RH, switch the DIP switch on the back of the thermostat to RC if you have connected both RC-wire and RH-wire to the wallplate, otherwise switch it to the RC&RH side.

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



- - - - - - - - - - - - - - - For 2 heat and cool if applicable.

1 For heat pump only.

Remove the jumper for RC or RH, switch the DIP switch on the back of the thermostat to RC if you have connected both RC-wire and RH-wire to the wallplate, otherwise switch it to the RC&RH side.

5 FAQ

1. How to connect to Wi-Fi network if you skipped the Wi-Fi config setting?

A1: Please follow below steps to connect the thermostat to the Wi-Fi network:

On **Owonthermostat mobile app**:

1. Log into the OwonThermostat mobile app.
2. Tap '+' icon and then tap the 'scan' ( ) icon to scan the QR code on the back of the thermostat, tap 'OK' to proceed.
3. Follow the on-screen instructions and get ready to set up the network.

On the **thermostat**:

1. Go to 'Setting' -> 'Network' on the thermostat, choose "Connect".
2. Select "Start" in the device and tap 'Start' on the mobile app. The thermostat will obtain the SSID and password information automatically and connect to the Wi-Fi network.
3. Tap OK to complete the process.

2. How to change the Wi-Fi network on the thermostat?

A2: Please follow below steps to change the Wi-Fi network on the thermostat.

On **Owonthermostat mobile app**:

1. Connect your mobile phone to the Wi-Fi network which you would like to connect the thermostat to.
2. Log into the OwonThermostat mobile app.
3. Go to "Setting" -> "Network configuration".
4. Type in the password of the Wi-Fi network and go to set up the thermostat.

On the **thermostat**:

1. Go to "Setting", choose "Network" -> "Reconnect".
2. Select "Start" in the device and tap 'Start' on the mobile app. The thermostat will connect to the Wi-Fi network automatically.
3. Tap OK to complete the process.

6 Technical specifications

Compatibility	
Compatible systems	• 2-stage heater and 2-stage cooling HVAC systems • Supports natural gas, heat pump, electric, hot water, steam or gravity, gas fireplaces (24 Volts), oil heat sources • Supports any combination of systems
Heat	• Up to 2 stages
Cool	• Up to 2 stages
Aux Heat	• Up to 2 Stages
Heat Pump	• Up to 2 Stages • 1 stage + 1 aux • 1 stage + 2 aux • 2 stage + 1 aux • 2 stage + 2 aux • Dual Fuel Heat Pump • 4 stage heating (2 compressor, 2 aux heat), 2 stage cooling

Wireless Connectivity	
Wi-Fi	• Wi-Fi 802.11b/g/n 2.4GHz
Output Power	• +3dBm (up to +8dBm)
Receive Sensitivity	• -100dBm
OTA	• Over-the-Air Upgradable via wifi

HVAC Control Functions

System Mode	• Heat, Cool, Auto, Off, Emergency Heat (Heat Pump only)
Fan Mode	• On, Auto, Circulation
Advanced	• Local and remote setting of the temperature • Auto-changeover between heat and cool mode (System Auto) • Compressor short cycle protection delay of 2 minutes • Failure protection by cutting off all circuit relays thanks to the Super Capacitor
Auto Mode Deadband	• 1.5° C, 3° F
Temp. Sensing Range	• −10°C to 125°C
Temp. Resolution	• 0.1° C, 0.2° F
Temp. Display Accuracy	• ±1°C
Temp. Setpoint Span	• 0.5° C, 1° F
Humidity Sensing Range	• 0 to 100% RH
Humidity Accuracy	• ±4% Accuracy through the range of 0% RH to 80% RH
Humidity Response Time	• 18 seconds to reach 63% of the next step value

Physical Specifications

Embedded Platform	• MCU: 32-bit Cortex M4; RAM: 192K; SPI Flash: 16M
LCD Screen	• 3.5" TFT Color LCD, 480*320 pixels
LED	• 3-color LED (Red, Blue, Green)
Buttons	• One rotary control wheel, 3 side-buttons
PIR Sensor	• Sensing Distance 5m, Angle 30°
Speaker	• Click sound
Data Port	• Micro USB
DIP Switch	• Power selection
Electrical Rating	• 24 VAC, 2A Carry; 5A Surge 50/60 Hz
Switches/Relays	• Latching type relay, 2A maximum loading • 1. 1st stage control • 2. 2nd stage control • 3. 3rd stage control • 4. Emergency Heating control • 5. Fan Control • 6. Heating/cooling Reverse Valve Control • 7. Common
Dimensions	• 160(L) × 87.4(W)× 33(H) mm
Mounting Type	• Wall Mounting
Wiring	• 18 AWG, Requires both R and C wires from the HVAC System
Operating Temperature	• 0° C to 40° C (32° F to 104° F)
Storage Temperature	• -30° C to 60° C
Certification	• FCC

7 Safety Handling

WARNING: Failure to follow these safety notices could result in fire, electric shock, other injuries, or damage to the Smart Thermostat and other property. Read all the safety notices below before using the Smart Thermostat.

- Avoid high humidity or extreme temperatures.
- Avoid long exposure to direct sunlight or strong ultraviolet light.
- Do not drop or expose the unit to intense vibration.
- Do not disassemble or try to repair the unit on your own.
- Do not expose the unit or its accessories to flammable liquids, gases or other explosives.

FCC Statement

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

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.