PCT503-TY WiFi Multi-stage Thermostat

Quick Start Guide

Safety Handling

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

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
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

Overview of this 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.
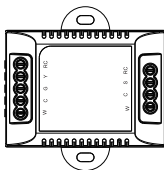
This guide will provide you with an overview of the product and will help you understand how to use it.
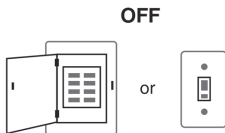
2 In the box

PCT503-TY smart thermostat
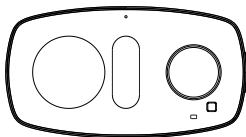
Wiring Module SWB511 (Optional)
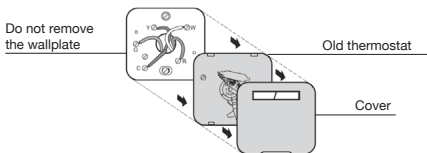
3 Installation Guide

Step 1. Switch off your HVAC system

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

OFF

Step 2. Remove the old thermostat

Remove the old thermostat cover from the wall, keep the wallplate with wires.

Do not remove
the wallplate
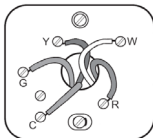
Old thermostat

Cover

Step 3. Check the old Thermostat's backplate

If you find a thick wire with wire nuts, or if your old system is using 120v or 240v, it will not be compatibled with PCT503. If all good, please continue to the next step.
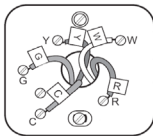
Step 4. Take a photo

Take a picture of the wires connected to the terminal of your old thermostat. You may need to reference this photo later on.

Step 5. Label the Wires with Tags

Carefully disconnect and label the wires from your old themostat one wire at a time, using the label (label 1)provided.


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

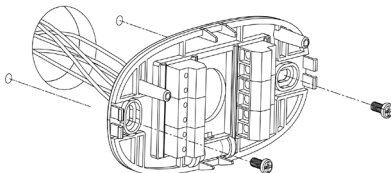## Guide 1: Install the thermostat with a C-wire

Step 1. 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.
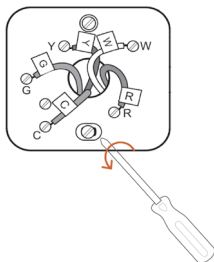
Step 2. Attach the base of PCT503 to the wall

Bundle and insert the wires through the hole of the thermostat base, then attach the base to the wall with the screws.
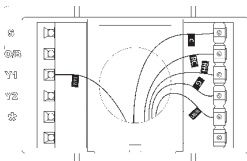
Step 3. Connect Wires

Connect wires to the corresponding terminal in the base. Take a picture of the wires when you finished. You may need to refer it for the wirings in the setup wizard later on.
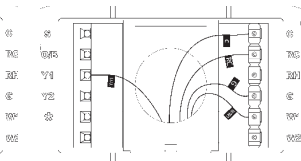
Do you have more than one R wire(R, RC, and RH)?

YES :   **NO** :

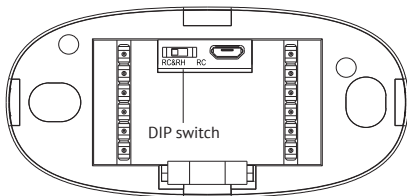R or RC wire into the RC terminal

RH wire into the RH terminal

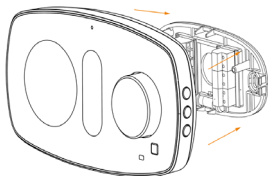R, RC, or RH wire into the RC terminal

Step 4. Switch the DIP

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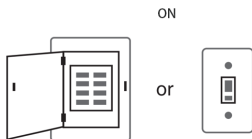

DIP switch

Step 5. Attach the PCT503 to the base

Gently press the PCT503 into the base until it clicks.

Step 6. Power on your system

Congratulation, the installation is finished. Please power on your HVAC system.

Step 7. Setup the thermostat

Follow the instructions on your smart thermostat to complete the setup. You can use the picture you took to help you remember the wiring （turn to page18）.

Guide 2: Install the thermostat without a C-wire (Optional)
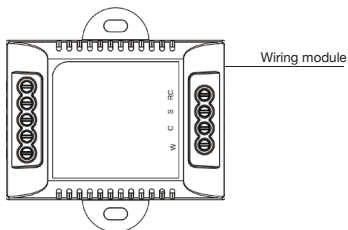
CHECKPOINT: 3 OR 4 WIRES

The wiring module requires your system to have the following wires:

4 wires: W/W1, Y/Y1, G, and R (or Rc or Rh)

or 3 wires: Y/Y1, G, and R (or Rc or Rh)

If you don't have those wires, your system might not be compatible. Please contact the local dealer.

Install the wiring module to use the exiting wires to power your thermostat.
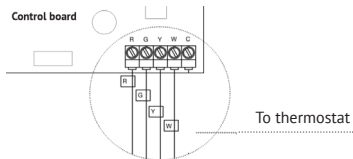

Wiring module

Step 1. Find the HVAC terminals

Find the control board of your HVAC system. Take a picture of the wires connected to the terminals of your old thermostat. You may need to reference this photo later on.
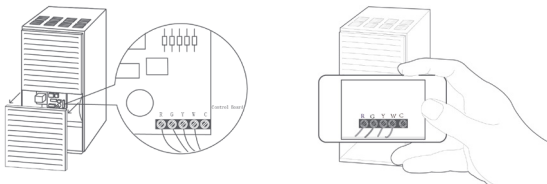
Step 2. Label the wires
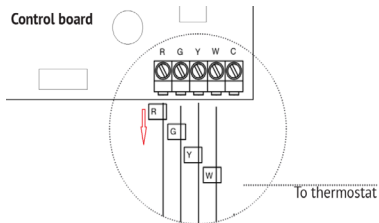
Use the tags provided (label 2) to label the wires from the control board to the thermostat.

Step 3. Disconnect the wires

Disconnect the R/RC, W, Y, G wires from the control board.
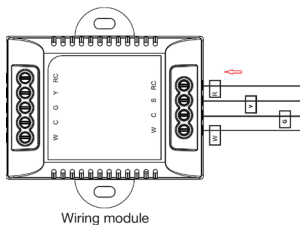

Step 4. Connect the wiring module

Reconnect them correspondingly to the 4 terminals side of the wiring module.

R/RC/RH→RC   **W/W1→W**   **G→C**   **Y/Y1→S**

Wiring module

Step 5. Connect the wires

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.

Pre-wired, to control panel
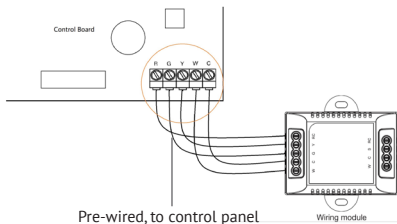
Step 6. Close the HVAC cover panel

Close the HVAC cover panel securely and reture to your thermostat.
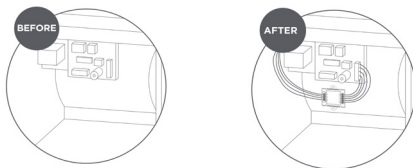
Step 7. Remove the old thermostat base

Unscrew the old thermostat base from the wall, gently pull it out and ensure the wires will not fall back into the hole.
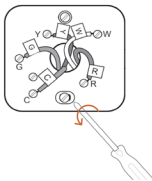
Step 8. Attach the base of PCT503 to the wall

Bundle and insert the wires through the hole of the thermostat base, then attach the base to the wall with the screws.
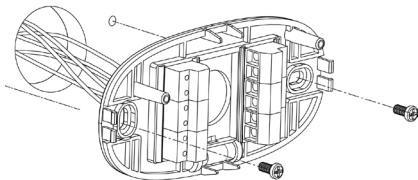
Step 9. Attach the tags

Attach the tags provided(label 2 Thermostat) to the wires as shown below:

R/RC/RH→RC   G→C   Y→ S

Step 10. Connect the wires to the corresponding terminal

First, connect 3 wires as shown below:

RC   C   S

Then connect other wires to the corresponding terminal in the base. Take a picture of the wires when you finished. You may need to refer it for the wirings in the setup wizard later on.
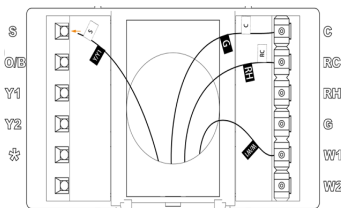
Step 11. Switch the DIP

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

DIP switch
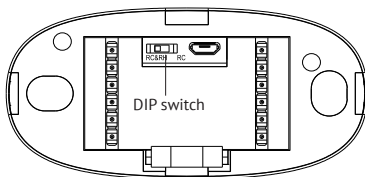
Step 12. Attach the PCT503 to the base

Gently press the PCT503 into the base until it clicks.

Step 13. Power on your system

Congratulation, the installation is finished. Please power on your HVAC system.

ON

or
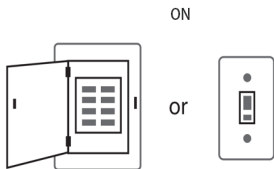
Step 14. Setup the thermostat

Follow the instructions on your smart thermostat to complete the setup. You can use the picture you took to help you remember the wiring.

Wiring diagrams

Below is the wiring diagrams for common HVAC equipments.

Conventional heating and cooling system
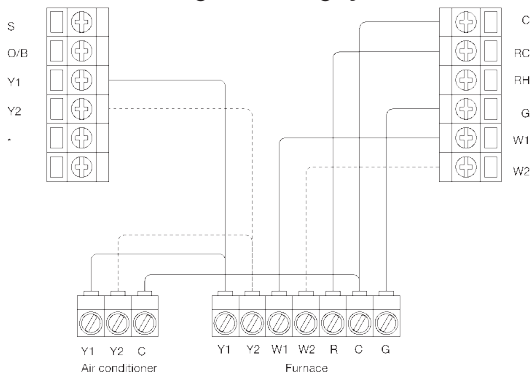
For dual heat and cooling system, if applicable.

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
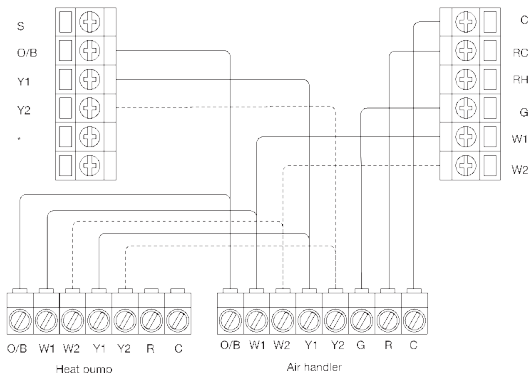
Heat pump

Air handler

- - - - - - - - - - - - - - - For dual heat and cooling system, if applicable.

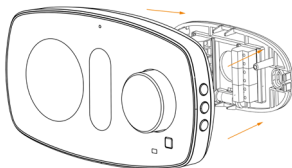Remove the jumper for RC or RH, switch the DIP switch on the back of the thermostat to RC if you have connected both RC-wire and RH-wire to the wallplate, otherwise switch it to the RC&RH side.

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

S		C
O/B		RC
Y1		RH
Y2		G
*		W1
		W2

Air handler

Y1   Y2   R   C   G

Y1   Y2   C   O/B¹

Air conditioner or Heat pump

W1   R   W2

Boiler

- - - - - - - - - - - - - -   For dual heat and cooling system, 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.

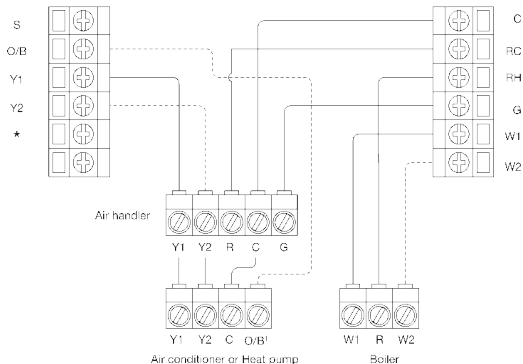# Congratulations,
you have completed the wiring!

To complete your setup, follow the instructions on the configuration guide below.
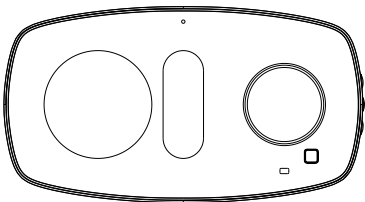
In here you'll find:
— Meet your thermostat
— App and device user guide
— Troubleshooting
— Technical specifications

Welcome

The next guide will provide you with an overview of the SmartLife app and will help you understand how to use the smart thermostat. You will be able to remotely control the temperature anytime through your mobile phone.

4 Get to know your device
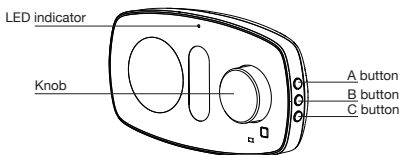
Knob
Rotate to choose from different given options, press to select.

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. Hold current target temperature regardless of the schedule. This will over ride the current schedule.

LED status

The LED status gives the following information of the thermostat:

LED status	What it means
Red LED flashing	Rapidly flashing(2 times/second):Smart configuration mode
	Slowly flashing(once every 3 second):AP mode
Red LED solid on	Device has connected with router successfully
No light	Device can not connect with router

5 Get started

To get started, you will need:

- Connect your smart mobile phone to your home Wi-Fi network.
- A smart phone

Then follow the steps below:

1. Power on your devices
2. Ensure the LED indicator is flashing red rapidly, if not, please reset the device by the following methods.
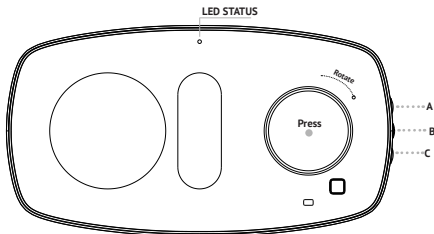
Rotary button: Rotate the button for more options, press to select .

Option 1:

When the device's LED indicator is steady on or slowly flashing; press and hold button A for 5 seconds until the LED indicator flashes quickly.

Option 2: Menu page > **Settings** > **Reset**

1. Press the rotary button to enter menu page
2. Rotate to Setting
3. Press to enter Setting
4. Rotate to Reset
5. Press Reset to select the item

5.1 APP installation

IOS devices:
Download "*SmartLife*" in Appstore
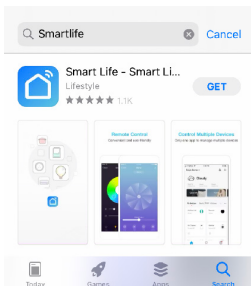
Android devices:
Download "*SmartLife*"app in Google play
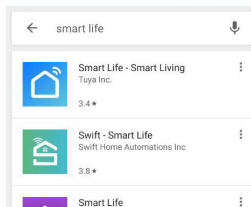
5.2 Add devices

1.Open SmartLife APP

2.Login with existing account,if you are new user you will have to create an account

3.If there is no device in your list, please tap "*Add device*" button to add

4.If there is a device or devices in the list, please click the "**+**" button at the top right corner to add devices
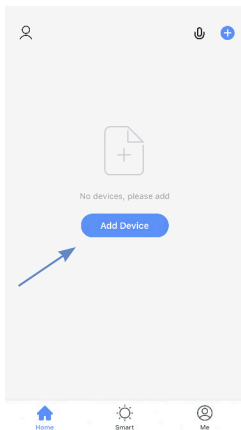
5.Add the thermostat in "***Small home appliance***"list manually
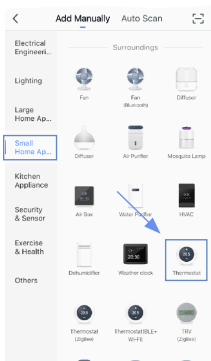
6.Enter your home Wi-Fi account and password(Only support 2.4Ghz Wi-Fi), then tap "***Confirm***" button
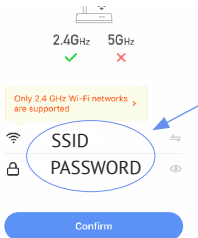
7.Place the router, mobile phone and thermostat as close as possible
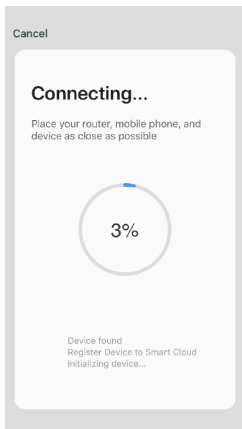
8.Waiting for connection to complete
9.After the device has been added, you can rename the device and tap"***Finish***" to enter the adjustment interface.

Overview

Home/Away

Target temperature

Working Mode

Display

Blue: Cooling
Red: Heating
Green: Fan is on.

Home

Hold until 18:00

25.5

Starts in 2:00

Current

20.5

🔵 60%

Current temperature

Current humidity

Time interval

A two-minute countdown
is set to protect the
compressor.

System mode

Cooling/Heating/
Emergency heating/Auto
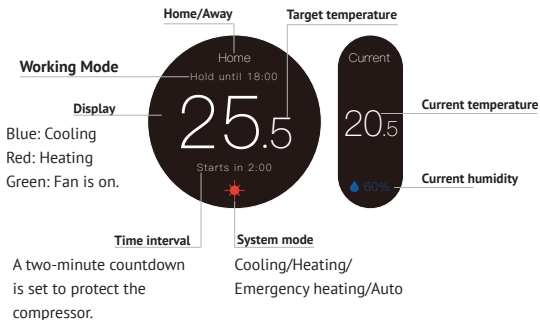
Home page mode

There are four working modes on the device you can use.

• Following Schedule: Follow the settings of schedule to adjust the temperature.

Home

Schedule: Sleep

21.5

Current

20.5

🔵 60%
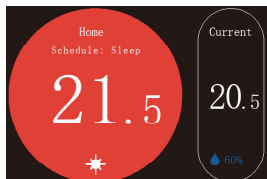
• Permanent Hold: Hold current target temperature regardless of the schedule.
This will over ride the current schedule settings.
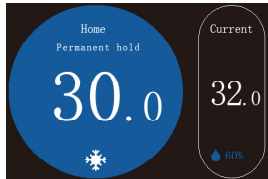
• Away: Target temperature when you are not at home(regardless of the schedule)
 You can change target temperature on the setting menu.
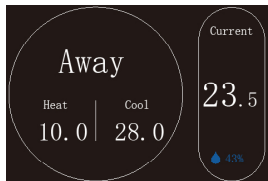
• Temporary Hold: Keep the current target temperature until the next scheduled
 activity begins (This selection only exists when you are adjusting the target
 temperature under **FollowingSchedule** mode.)

Device menu (Press the Knob to enter).

System.
Off: Turn the system off
Cool: Cooling only
Heat: Heating only
Auto: Automatic control of heating and cooling based on ambient temperature
Emergency Heat: This only works when the device connects Heat pump and W wire

Fan.
Auto:Automatically adjust Fan while heating or cooling
Cycle:Runs at intervals to circulate air
On:Runs continuously

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: Whether the device is connected to the cloud
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. Set Schedule to change the temperature automatically
-Press the button to get into Schedule setting and rotate to select the day you want to set.

-Press the button and modify your start time and target temperature.
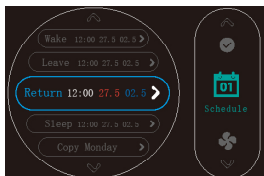
-You can copy this Schedule to other day, or you can select "done" to complete your configuration.
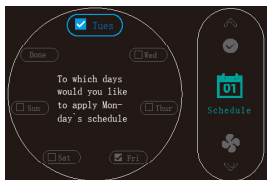
Note: You can rotate the button to change target temperature at the main interface, but it will get into "Temporary Hold".

🏠   **Home/Away**. Switch between home and away mode to save energy.
      Away. Set the thermostat to away mode when you leave.
      Home mode: Following Schedule, Temporary Hold, Permanent Hold

✅   **Done**. Complete the configuration and return to main interface.

5.3 App Overview:

Home management ········ My home ∨   𝕌 + ········ Add Device

Location ········ ☼ **Welcome Home** ········ Voice Control
Information   Set your home location for more informa... >

All Devices   ⋯ ········ Room
                                                              Management

Device List ········ ▢ Living room

🏠   ☼   ⊙
Home   Smart   Me

Main menu:

Home:

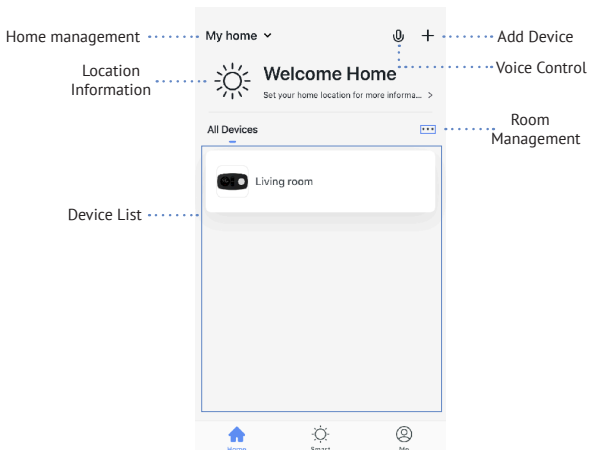1. Device list

   You can check the added device, tap one to enter control page

2. Location information

   You can check the local weather forecast

3. Home management

   Add or delete items and manage home names, rooms, locations, and members

4. Voice control (Temporarily not available on Smart Life App. You can use Alexa to
   control the device by voice. Please refer to the FAQ for more details)

Smart: Create smart scene and add automatic function(Temporarily not available)

Me: Personal settings

System Mode ....

Current temperature and humidity ....

Device info ....

Target temperature ....
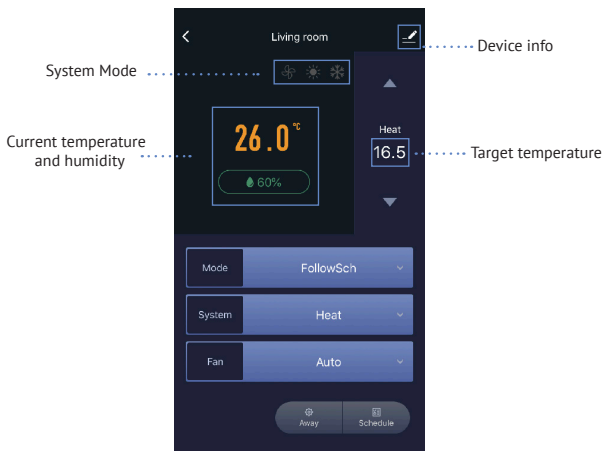
Control board:

Select the target thermostat in device list then enter the control board.

• Device info

You can check and edit device info here, check and upgrade the firmware

• System mode

Display the work mode of current device (Fan on, Heat on, Cool on)

• Target temperature

Heat: Turn on the heat when the current temperature drops below the set temperature.

Cool: Turn on the air conditioner when the current temperature rises above the set temperature.

- Mode: Work mode

  FollowSch: Follow the settings of schedule to adjust the temperature

  PerHold: Hold current target temperature regardless of the schedule.This will over ride the current schedule settings

  Away: Settings for when you are not at home

  TempHold: Keep the current target temperature unchanged until the next scheduled activity begins (This selection only exists when you are adjusting the target temperature under **FollowSch** mode.)

- System: Temperature control Mode

  Off: Turn the system off

  Cool: Cooling only

  Heat: Heating only

  Auto: Automatic control of heating and cooling based on ambient temperature

  Emergency Heat: This only works when the device connects Heat pump and W wire

- Fan:Fan

  Auto:Automatically adjust Fan while heating or cooling

  Cycle:Runs at intervals to circulate air

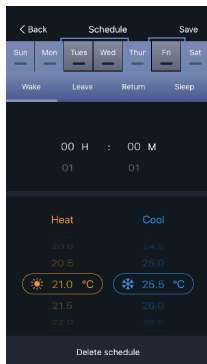 On:Runs continuously

- Away: Settings for when you are not at home

- Schedule: Set Schedule to change the temperature automatically

Schedule settings:

Tap the Schedule needed to be modified, or tap the top right "*Edit*"button to set.

Multiple operation:

After setting the temperature range, tap "*Save*" button to save the schedules.

Delete Schedule: All schedules will be deleted after the button is pressed.

6 FAQ

1.Only need to pair one device

If there are many devices in the current environment, while you only want to pair one device, press button A for 5 seconds when the LED light is quick flashing, then wait for the LED to turn to slow flashing, then select "**Other Mode**"
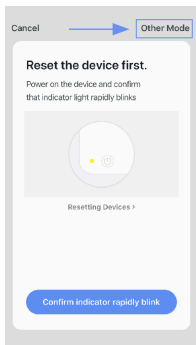
Select **AP Mode**, then pair the device
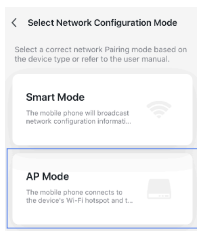
Connect to the Wi-Fi hotspot of the device: **"SmartLife-XXX"**
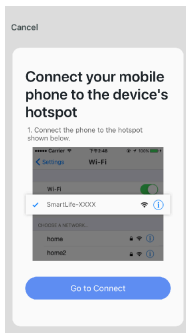
It will take a few time to connect to the Smartlife wifi.After the connection is completed, go back to the app and continue pairing according to the above method.

2.How to share my device for family use?

Option1: If you need to share with others, add them to your home list
(Tap **Me** > **Home Management** > **Add members**)
Option2: You can enter the single device control page in the app
(Tap the button at the top right corner > **Share device** > **Add sharing**)

3.Device-connection failure?

• Part1:Check the connection

1.Confirm the device is powered on.
2.Confirm the device is under config mode (LED light is rapidly/ slowly flashing), and pair the device in corresponding methods.
3.Confirm the device, mobile phone, router are as close as possible.
4.Please confirm the network is stable.

 Check method: Put the phone or ipad besides your device and make sure they are in the same network environment, try to open a website to judge if the network can be used.
5.Confirm adding device is under 2.4G WI-FI channel, if 2.4G and 5G WIFI use the same name, it is recommended to change to a different name.
6.Confirm the entered router password is correct.

• Part2:Check configuration of the router

1.Confirm that the router's broadcast enabled, and not allow to hide Wi-Fi.
2.Make sure that the router has the DHCP service enabled. If it is not enabled, device cannot connect with internet.
3.Confirm that router's encryption method is WPA2-PSK, authentication type is AES, or both are set up as automatic.
4.Make sure the connected devices don't reach the router's amount limit.
5.If router enables MAC address filter, please try to remove the device from MAC filter list and make sure router is allowing device to be connected.
6.If it still doesn't work, it may be that the router is not compatible with the device. It is recommended that you replace the router and try again.

4.What if the device is offline?

1.Please confirm whether the device is powered on.

2.Please confirm whether the device or the network has been cut off, If so, please reconnect the network, it may need some time to recover. Please check the status 2 minutes later.

3.Please confirm the network is stable. (Check method: Put the phone or ipad besides your device and make sure they are in the same network environment, try to open a website to judge if the network can be used.)

4.Please confirm whether the home Wi-Fi network is normal, or whether the Wi-Fi name and password has been modified. If necessary, remove the device and add again.

5.If the network is normal, but the device is still offline, please check if there are too many Wi-Fi connections. Please try to restart the router, wait for 5 minutes and observe the status of the device.

6.Check if the firmware is the latest version, the App side checks the path: **Me** > **Settings** > **About** , then you can check the updates.

7.If there still have problems after the above checking, it is recommended to remove the device and add it again.(You can enter the single device control page in the app ,then tap the button at the top right corner > **Remove Device**)

5.Enable Alexa voice control

Before using Alexa, there are a few things you need to know:
Voice support:

1.Adjust (increase or decrease) the temperature on the Heat, Cool or Emergency Heat system mode.
Voice control command:
 "Alexa, set thermostat to 20 degrees."
 "Alexa, make it cooler here."
 "Alexa, make it warmer here."
 "Alexa, increase the thermostat by 2 degrees."
 "Alexa, decrease the thermostat by 2 degrees."

2.Ask about the current temperature on the Auto, Off system mode

Voice control command:

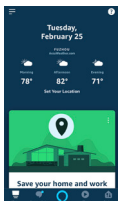 *"Alexa, what is the temperature of my thermostat?"*

Voice unsupport:

1. System mode switching.

2. Fan mode switching.
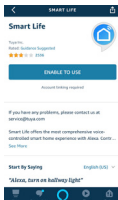
Follow the steps below to enable your alexa

1.Open your Alexa App

2.Tap the icon ☰ on the top-left corner of the App to get into "Skills&Games" interface.

3.Search "Smart Life" and enable the app to use the alexa.

4.Log in to your Smart Life account and allow it to discover your devices.

5.Once the device is identified successfully, Alexa can be used to control the device by voice.

Support

If you have questions, we have answers.
Technical support is available by email :

info@owon.com

Compatible systems

The PCT503 Thernostat works with most centralized residential heating and cooling 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

The app supports both **Android** and **IOS**