Nest Thermostat

Pro Installation and Configuration Guide

Last Updated November 2025

Getting started with the Nest Thermostat

If you're referencing this document, you are probably familiar with the Nest Thermostat. However, your customer may not be, or you may be new to a company that offers Nest thermostats. See below for important links and information to help you get a full understanding of the Nest Thermostat.

Beginner's guide to Nest thermostats	Nest Pro support articles
Nest thermostat settings menu	Nest thermostat information menu
How to tell which Nest thermostat you have	What you'll see on a Nest thermostat
Manage homes and products in the Nest app	Troubleshoot Nest thermostat help codes
Learn about the Nest Power Connector	Google Home app setup for contractors
Nest Pro resource hub	Customer "Leave Behind" support article

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How to Use This Document

What is this document?

This installation and configuration guide includes additional information that a professional installer needs to install and service the Nest Thermostat. It's not fully comprehensive, but it covers the most necessary information. It also includes links and resources to additional information.

Who is this document for?

This document is intended for any individual working with Nest thermostats in a professional capacity, with a primary focus on HVAC professionals. However, it may also be useful to professionals in other industries, such as builders, home security, custom integration, energy efficiency, and electrical. This document provides valuable information for a wide range of roles within these industries, including technicians, installers, sales representatives, managers, engineers, architects, support personnel, operations staff, and their respective wholesale partners. However, when we use the term "Pro" in this document, we are specifically referring to HVAC technicians or installers.

Tips to get the most out of this document

1. Some section headers are links to Google support pages with more detailed information about the feature or function.
2. The table of contents contains hyperlinks to the pages and sections within the document. Use these to quickly navigate to the section with information you are looking for.
3. There is a glossary at the end of this document that contains links to the pages where these terms are found within the document, as well as links to Google support articles about that term.
4. Save this document as a PDF on your phone or tablet so you can reference it when you need it, and share it with your colleagues and partners who work with Nest thermostats.

Nest Pro Program

What is the Nest Pro program?

The Nest Pro program is designed to provide great benefits for professional installers, like special pricing, pro-exclusive extended warranties, Nest Pro Rewards, and pro-specific support. A Nest Pro ID, available to registered Nest Pros, also unlocks the HVAC System Health Monitor feature, which helps Nest Pros stay connected to their customers all year round.

What is a Nest Pro ID?

Your Nest Pro ID is your company's unique 6-digit ID. You can find it at the top right corner of your Nest Pro Portal dashboard. Make sure your technicians know your Nest Pro ID and enter in on every install to unlock big benefits for you and your customers.

HVAC System Health Monitor, built into all Nest thermostats, looks out for system issues and lets customers know when something might be wrong. If your technicians enter your Nest Pro ID at each installation, your customers will get a System Health Monitor alert with your company's contact info. So it's easy for your customer to get in touch with you when they need you most.

Important: If you haven't already, select "Receive System Health Monitoring Repair Requests From Customers" on your "Settings" page in your Pro Portal account to opt in to having your company's contact information surfaced on the alerts.

Other Nest Pro benefits

Enter your Nest Pro ID at each installation to automatically earn points for each thermostat you install.
For non-thermostat devices, just submit a claim from your Nest Pro Portal under "Claim Installations" to earn your points. Use reward points to invest in your business with more Nest products to boost your bottom line. Or treat yourself or your employees to name-brand merchandise, theme park tickets, fun experiences, and so much more.

Enter your Nest Pro ID at installation to unlock extended warranties on all Nest thermostats, only available on devices installed by Nest Pros.

How to sign up

Signing up to be a Nest Pro is simple and takes very little time. Visit g.co/nestpro to become a Nest Pro and unlock key tools, tips, training, and more for your business.

Nest Pro Warranty Details

Nest Pro warranty eligibility

When a Nest thermostat is purchased from and installed by a registered Nest Pro, it includes an extended Pro warranty. The Pro-exclusive warranty adds 2 years of additional coverage, totaling 3 years of warranty coverage.

Entering the Pro ID during the installation will activate the customer's extended warranty when the following criteria has been met:

- The thermostat was sold and installed by a registered Nest Pro.
- The Nest Pro ID was input during the setup installation.
- The thermostat is connected to Wi-Fi and added to the customer's Google Home or Nest account.

Nest Pro warranty process

The customer has the option to submit a warranty claim directly with Google online using the Warranty Checker.

This will require shipping the unit to Google and may leave the customer without a thermostat without a temporary solution. The warranty process may be different depending on the issue reported.

A Nest Pro can also replace Nest thermostats according to the warranty process specific to the wholesaler where they purchased the device. This allows the Nest Pro to replace the thermostat, return the affected device to their wholesaler, and receive credit.

Please reach out to your place of purchase for their specific warranty process.

HVAC System Health Monitor

What is HVAC System Health Monitor?

HVAC System Health Monitor is a feature on Nest thermostats that can help homeowners identify potential issues with eligible heating, ventilation, and air conditioning (HVAC) systems. If a potential issue is detected, Google Nest will send the homeowner an alert via email and/or a Google Home app notification. Currently, only forced air systems are supported for HVAC System Health Monitor.

How HVAC System Health Monitor works

Sometimes, HVAC systems show warning signs that they are having issues. For example, if it takes longer than usual to cool a home, there might be a problem with the cooling system (A/C). Google Nest may send the homeowner an email alert or a Google Home app notification if a warning sign is detected.

The alert email or notification will tell the homeowner what their Nest thermostat noticed and which system (heating or cooling) may be affected. If a Pro ID was entered during the setup of a Nest thermostat, the homeowner will also be shown contact information for the contractor company who installed it.

Important: HVAC System Health Monitor is not meant to replace the diagnosis of a qualified HVAC professional. We make no endorsement, representation, or warranty about the health of the HVAC system. There may still be other issues with the HVAC system that may not trigger an alert to the homeowner.

How do you enable HVAC System Health Monitor?

HVAC System Health Monitor will only include the contractor's contact information if they are a registered Nest Pro. A person with legal signing authority for the contractor company can register for a Pro ID at g.co/nestpro. During enrollment, the legal signing authority must opt in to have the company's info surface to the customer. Post enrollment, the administrator of the Nest Pro account can also opt in by adjusting the settings under "System Health Monitor Repair Requests."

HVAC System Health Monitor alerts will surface the information of a contractor company if they are enrolled in HVAC System Health Monitor and a Pro ID is entered on the thermostat.

If a Google account is used, the homeowner will always get urgent alert notifications, but they can opt out of urgent email alerts, early warning emails, or Google Home app notifications by turning them off within the app.

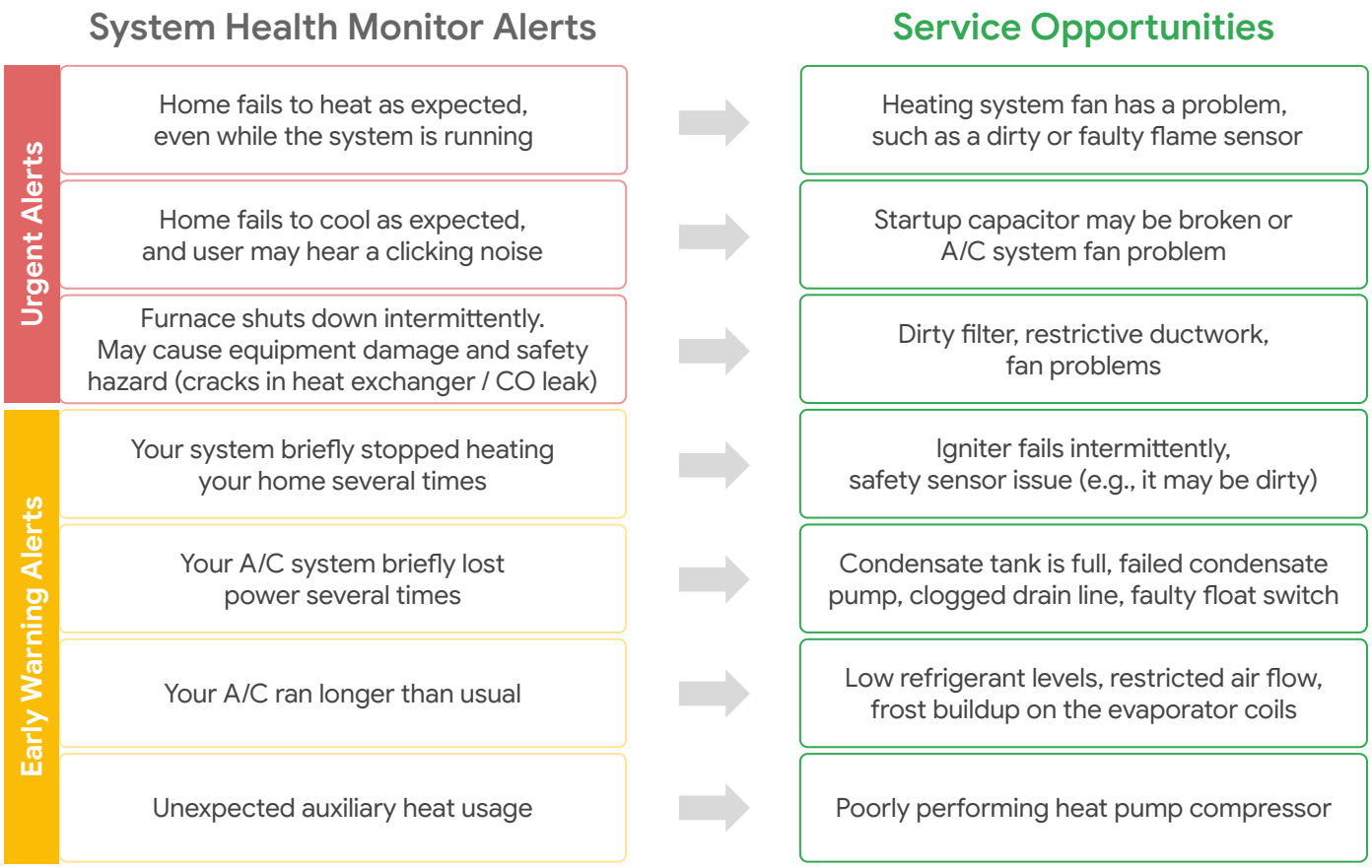
If a homeowner uses a non-migrated Nest account, they can only get urgent or early warning emails. The homeowner can turn off early warning emails by opting out in the footer of those emails.

However, homeowners cannot opt out of HVAC urgent alerts since they raise serious system issues that they need to be aware of.

Types of alerts

If a Nest thermostat detects a potential issue that may require immediate attention, Google Nest will send the homeowner an urgent alert as soon as a problem is detected. For example, if a homeowner turns on their heating system but their home became colder, this may indicate a severe HVAC problem.

If Google Nest detects an issue that should be fixed soon, an early warning alert will be sent to the homeowner within a week of detecting the problem. For example, if a homeowner's A/C is running longer than usual, this may indicate that it needs to be serviced.



I**mportant**: HVAC System Health Monitor is not meant to replace the diagnosis of a qualified HVAC professional. We make no endorsement, representation, or warranty about the health of your HVAC system. You may still experience issues with your HVAC system that we don't alert you to.

Key Features and Functionality

The following section of this document will walk through key features and functionality of the Nest thermostats. This section will contain links in the feature headers to the Google Support page for that specific feature.

There will be more details in the specific support page that cannot fit into this document. Please reference these links for additional details if necessary.

While this document will be maintained and updated, the Google Home app or Nest thermostats may have received a software update that changes the location, layout, or functionality of the app or thermostat before the changes are reflected in the documentation.

Be sure to check the Google Home app version and thermostat software version and keep the Google Home app updated for you and your customers.

Key Features and Functionality

Temperature Schedule

A user can create or adjust the temperature schedule of the thermostat in the Google Home app once the thermostat has been configured by a Pro.

Temperature presets let the user customize temperatures for when they're home, away, sleeping, and more. The user can add a preset to the schedule or adjust the temperatures of each preset. The user can also set the thermostat to "hold" a specific preset or current custom setpoint or preset for an extended period of time.

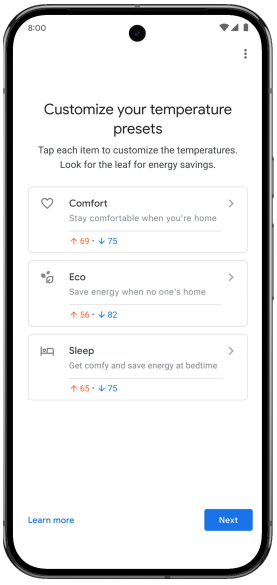
There are three ready-made presets that the thermostat will start with: Comfort, Sleep, and Eco. The user can adjust the temperatures of these presets or add their own custom presets when they add the thermostat to the Google Home app.

Savings Finder

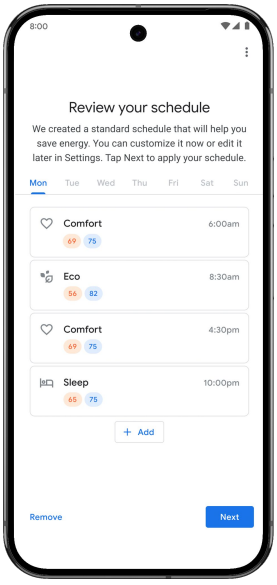
Savings Finder offers subtle suggestions in the Home app to adjust Eco temperature, Sleep temperature, and Comfort temperature schedules for the thermostat.

It will take a few days for the thermostat to learn about the system's efficiency, the home, and the user's schedule. The user will get a notification when their thermostat can use Savings Finder. An event will also appear as a priority event in the Home app's feed.

Once the user enables Savings Finder, they'll continue to receive energy-saving suggestions to adjust their thermostat temperatures in the Home app.



Setting Presets



Editing the Schedule

Energy Shift - Time of Use

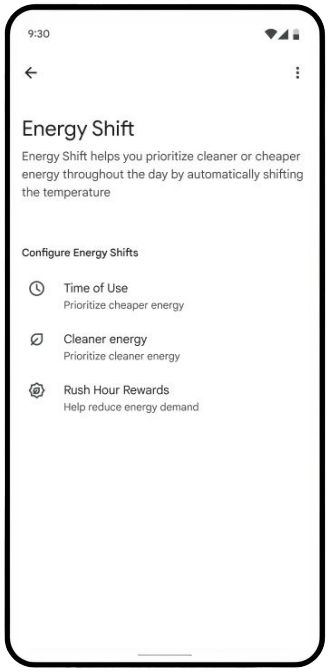
Energy Shift is a combination of features that can allow the thermostat to integrate with energy savings initiatives from their local utility provider. There are three main features combined under Energy Shift – Time Of Use, Cleaner Energy, and Rush Hour Rewards.

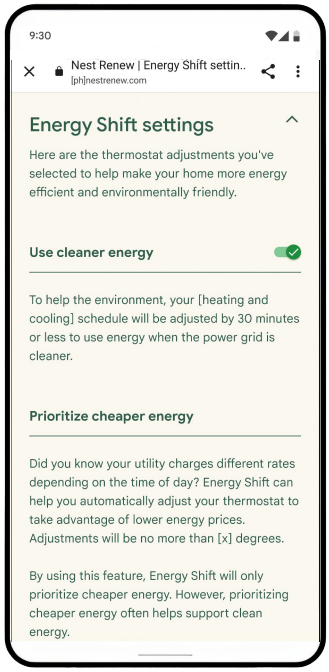
“Time of Use” allows a user to prioritize using cheaper energy if their utility provider offers Time of Use rates or billing. The user can add a rate code from their utility which will inform the thermostat of when the price of energy is more expensive for the user. When enabled, the thermostat can adjust when the system runs to avoid using energy when it is more expensive where possible. The user will be notified of any adjustments to their schedule or setpoints, and they can also see a summary of adjustments in the Time of Use page of the Google Home app.

If a user does not have a Time of Use rate available from their utility, they can still set a manual “Peak Period” for their thermostat to reference. This could be useful for customers with solar or battery systems, or for a utility that hasn’t integrated with Google services yet, but still has a Time of Use rate available to customers.

Note: The user always remains in control and can change the temperature on their Nest thermostat at any time.

Energy Shift settings are managed in the Renew Home Portal, which can be reached through the Google Home app or by visiting https://nest.renewhome.com/





Energy Shift settings can be found under the Nest Sense page in Thermostat Settings

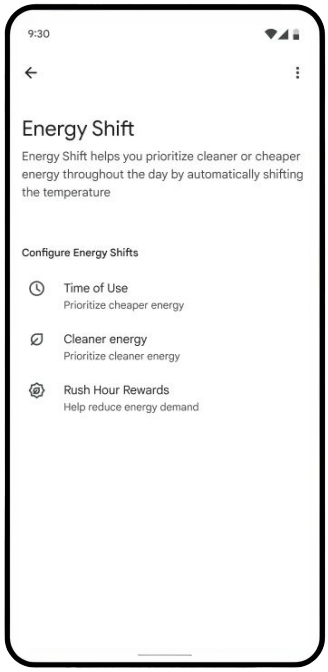
Energy Shift - Prioritize Cleaner Energy and Rush Hour Rewards

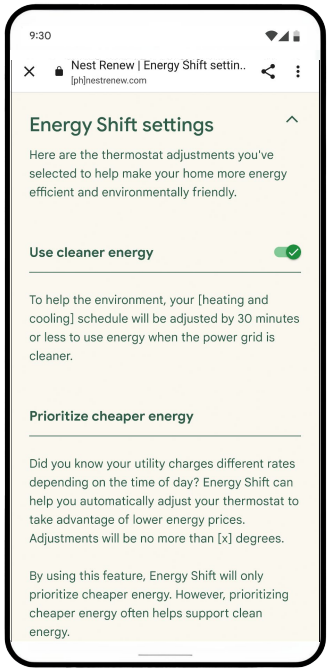
Energy Shift is a combination of features that can allow the thermostat to integrate with energy savings initiatives from their local utility provider. There are three main features combined under Energy Shift – Time Of Use, Cleaner Energy, and Rush Hour Rewards.

The “Prioritize Cleaner Energy” feature is available to users whose utility integrates with the Renew Home services and provides real-time information about the source of power generation. When enabled, the thermostat can adjust the schedule by 30 minutes to prioritize running the HVAC system when the power available on the grid is produced by “cleaner” energy sources like solar and wind.

Rush Hour Rewards is a program available through certain utility companies that allow a user to enroll their thermostat with the utility and give permission to adjust their heating or cooling setpoints if the grid is experiencing a “rush hour” from abnormally high energy consumption. Users who enroll in this program are usually given a rebate or bill credit of some sort, although each utility partner is different. Check out this link for more information.

Note: Users are never locked out from controlling their thermostat and they can always change their temperatures when enrolled in any utility program through a Nest thermostat.



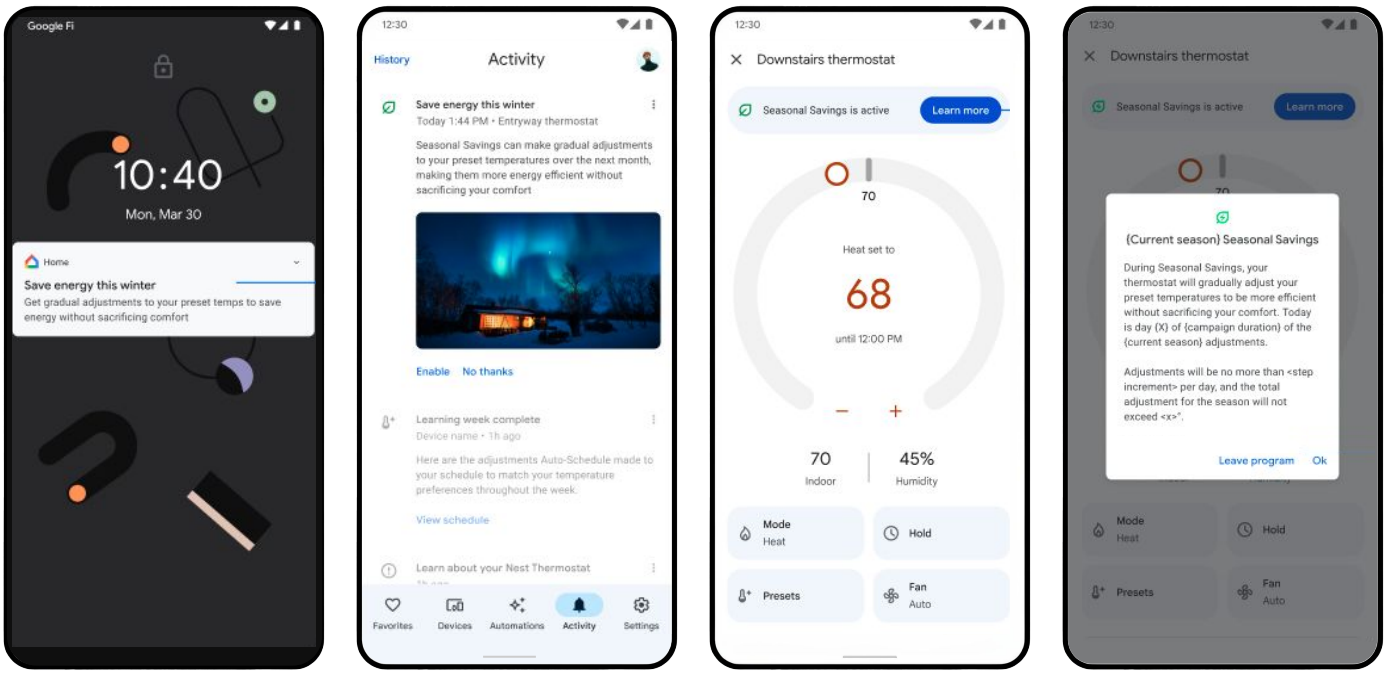


Energy Shift settings can be found under the Nest Sense page in Thermostat Settings

Seasonal Savings

Seasonal Savings is a feature that users may opt into each summer or winter. The goal of Seasonal Savings is to find energy savings without sacrificing comfort. The feature gradually adjusts preset temperatures over a 3-5 week period. After making a small adjustment toward saving energy, Seasonal Savings will wait for the user to experience the new temperature before making another adjustment. If Seasonal Savings detects that users have become uncomfortable (based on the frequency of requests for more heating or cooling) then it will stop making adjustments toward saving energy and return the preset to a comfortable temperature.

Note: If a device does not have a schedule, and a user opts that device into Seasonal Savings, a basic schedule with only Sleep and Comfort presets will be created.

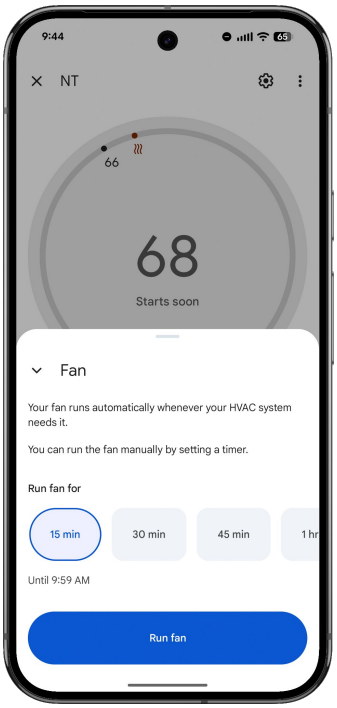


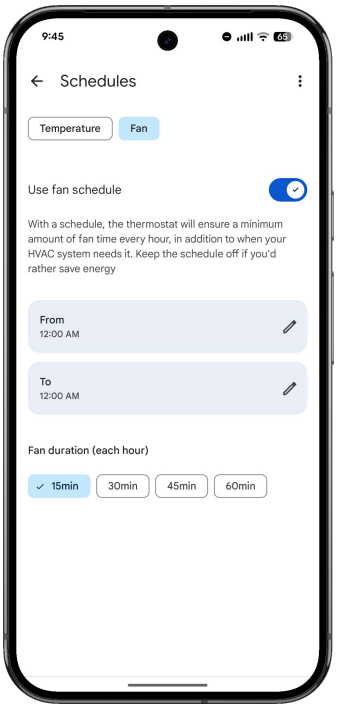
Users can opt in or opt out of the feature entirely or an individual change.
Seasonal Savings settings can be found under the Nest Sense page in Thermostat Settings.

Fan control

The Nest Thermostat can control the HVAC system fan if there is a G wire allowing independent control. The fan can be scheduled to run for 15-60 minutes each hour every day. It can also be manually engaged for a set amount of time from 15 minutes to one week. The fan can be engaged from the thermostat or the Google Home app.

Note: The user can run the system's fan independently of heating or cooling if they have a G wire. This allows the fan to run even when heating or cooling isn't active. A fan timer can start even if the thermostat is set to “off”. The user can set the fan to run a fixed schedule or manually set it to run. However, the fan can’t start based on schedule if the thermostat is set to “off”. The temperature screen will show a fan icon when the fan is running because of the fan schedule, or if the user turned the fan on manually.





Time-to-Temperature

Time-to-Temperature estimates how long a user's system takes to heat and cool their home from a manual change to the thermostat, or through the app.

The estimated time to temperature is based on prior heating and cooling cycles, and will continue to learn how the equipment performs during heating and cooling to give the user more accurate estimates.

Time-to-Temperature estimates will only appear for temperatures that the user has manually set with the thermostat or the Google Home app.

The Nest Thermostat won't display a Time-to-Temperature estimate if continuous heating or cooling is needed to maintain the temperature that has been selected, or if the temperature fluctuates unexpectedly.

Note: Time to Temperature is only an estimate. It will take time to adjust to any changes in the weather, equipment components, or maintenance of a system. Ensure your customer

Home & Away Routines

The user can automate home devices and take care of everyday tasks based on their location with Home & Away Routines in the Google Home app or with Google Home for web. If the user has an existing Nest account and wishes to use this feature, it's recommended that they migrate to a Google account.

The user can create routines in the Google Home app or as a scripted automation in Google Home for web that can use presence sensing to automatically adjust their home devices when someone arrives home or when everyone is away.

Presence in the home is determined using input from the user's phone location (if they opt in) and sensors in their smart devices, so they don't have to manually turn their devices on and off or rely on a fixed schedule. The user can decide which devices, including their phone, will determine presence.

The user will need to use the Google Home app to set up Home & Away Routines. They need to migrate their Nest account to a Google account, if they have not already done so. The user will then need to set up their smart devices in the Google Home app if needed, and follow the app instructions to set up Home & Away Routines.

When the user has Home & Away Routines enabled, they can add the Nest thermostat to the "away" routine to automatically set the thermostat to the "Eco" preset when Presence Sensing determines that everyone is away. When the user adds the thermostat to the "Home" routine, it will automatically set the thermostat to the"Comfort" setpoint when the first person returns.

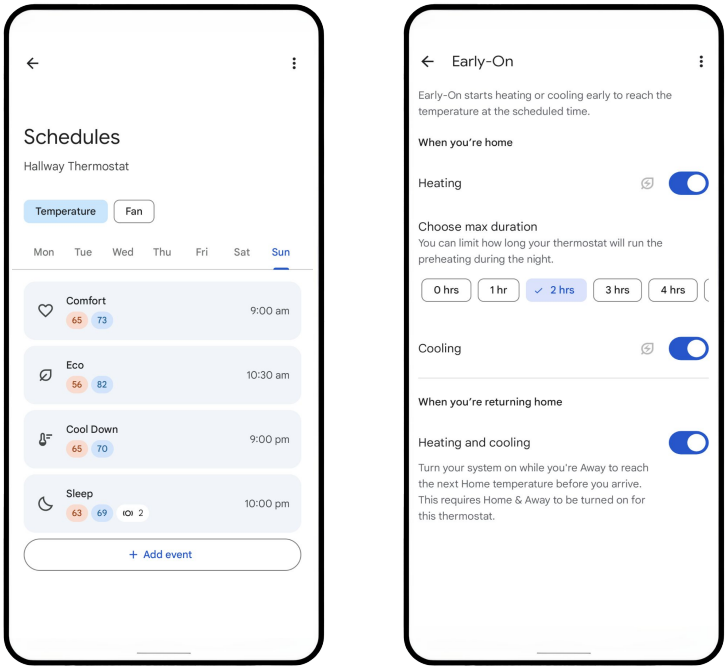
When the thermostat is included in these routines, the thermostat can utilize more intelligent features such as the Return Home preconditioning function of Early On.

Note: If the user uses both the Nest app and the Google Home app, Home & Away Routines will work seamlessly with the Nest app's Home/Away Assist. In the Home app, "Home & Away Routines" is the new name for "Home/Away," and "Presence Sensing" is the new name for "Home & Away Assist," but they work the same way. Home & Away Routines in the Google Home app can incorporate more products than Home/Away Assist in the Nest app.

For more information on the differences between Home/Away Assist and Home & Away Routines, please click this link.

Early On

This feature allows the user to schedule their thermostat around when they would like to reach a temperature instead of when they want to start running their system. A user can choose to enable Early On for cooling and heating setpoints when the home is occupied. They can also choose how long the thermostat can pre-heat the home overnight. The user can also enable Early On for when they are returning home, which will allow the thermostat to pre-heat or pre-cool while the user is away to reach the next scheduled temperature preset before they arrive. This requires Home & Away Routines to be turned on for the thermostat.



Heat Pump Balance

Heat Pump Balance optimizes how often the thermostat needs to use expensive auxiliary heat. The user will choose if they would like to prioritize more comfort, more savings, balanced, or off, and Heat Pump Balance will automatically adjust when AUX comes on by intelligently adjusting the aux lockout temperature.

Heat Pump Balance will also adjust the aux upstage timer, droop, and minimum delay based on the user's choice of Comfort vs Savings.

Heat Pump Balance must be disabled in order to manually set the aux lockout temperature, aux upstage timer, droop, and minimum delay. The compressor lockout temperature can be changed even if Heat Pump Balance is enabled.

To use Heat Pump Balance, the thermostat must also be connected to Wi-Fi. If it isn't, the thermostat won't be able to adjust or enforce the aux lockout temp.

If the user has a dual fuel system, they won't be able to use Heat Pump Balance. Instead, the user will have to set a breakpoint temperature and changeover timer manually during Pro Setup or after installation.

Nest Leaf

The Nest Leaf icon appears on the thermostat (and in the Google Home app) to tell a user when their thermostat is set to an energy-saving temperature. The leaf encourages the user to choose energy-saving temperatures that are a little lower or higher than what they might have set in the past.

Airwave

Airwave turns the compressor off shortly before reaching the target temperature. Then it runs the fan alone until it reaches the temperature the user wants.

Airwave learns exactly how much cooling can be done with the compressor is off. It automatically shuts off the compressor at the right time to help maximize energy savings.

Airwave might not activate if there is excess humidity identified by the built-in humidity sensor in the thermostat (45% RH). In more humid climates, Airwave might never activate.

True Radiant

True Radiant helps keep homes with in-floor radiant or radiator heating systems more comfortable by helping to reduce temperature swings typical of radiant systems.

True Radiant can turn heating on early to help your home warm to a scheduled temperature on time, and turn it off early to help prevent overshooting the target temperature.

You can set the limit for how early it'll turn your system on, or you can turn True Radiant off if you prefer to manually control exactly when your system starts and stops heating.

Safety Temperatures

Safety Temperatures can protect a user's home during extreme cold or hot weather. With Safety Temperatures, when the home reaches a set temperature limit, the thermostat will turn on heating or cooling even if the thermostat is set to "off". This can help ensure that the pipes won't freeze or the home won't overheat.

Air filter reminders

Air filter reminders can be enabled in the "Notifications" section of the thermostat settings. The Nest Thermostat calculates these reminders based on forced air runtimes. The number of hours before sending a reminder can be configured in the Google Home app. A user will need to enable them and indicate when they last changed their air filter.

Utility rebates and programs

Nest thermostats are eligible for rebates through local utility providers. Some rebates require enrollment in programs and features that work on Nest thermostats, such as Rush Hour Rewards. For more information about Rush Hour Rewards, visit this link. For other energy-saving features and programs, visit this link or check out the glossary for links to specific features.

How do Nest thermostats handle outdoor temperatures?

We use local weather data for the features dependent on temperature, which can be displayed on the thermostat.

We are able to read outdoor weather data without an additional sensor by connecting the Nest Thermostat to the internet using home Wi-Fi.

Outdoor temperatures are an important factor for compressor lockout temps, aux lockout temps, and dual fuel breakpoint.

Staging:

When there is a call for heating/cooling, the thermostat will not engage a second stage unless the temperature goes in the opposite direction within the first 15 minutes.

If the temperature does not go in the opposite direction from the call to heat/cool, the thermostat will wait 60 minutes for conventional heating to upstage, or 2 hours for cooling.

The second stage of heating or cooling will turn on when the user adjusts the set point 3.3°F beyond the current temperature, while the third stage will need a change of at least 7°F to activate.

At the start of a heat cycle, auxiliary heat is disabled due to the aux minimum delay. After the minimum delay, aux may be enabled if the temperature decreases or the aux upstage timer is reached. Aux is disabled if the temperature reaches the droop threshold.

Note: Staging can be adjusted using the Advanced Settings available under the “Equipment” settings page for an individual thermostat or during Pro Setup in the Google Home app.

HVAC System Compatibility

HVAC System Compatibility

System compatibility

The Nest Thermostat works with most 24V systems, including gas, electrical, oil, forced air, heat pump, and radiant.

Heating: 1, or up to 2 stages (W, and *)
Cooling: 1 and up to 2 stages (Y, *)
Power (C, R)
Fan (G)
Heat pump: with auxiliary/alternate/emergency

Wire terminals

- Y
- G
- */OB
- R
- W
- C

Networking requirements

Wi-Fi is required for software updates and remote control with the Google Home app
Wi-Fi 802.11 b/g/n, 2.4 GHz and 5GHz
Secure: AES-128, SSL/TLS, WEP, WPA/WPA2
For more information about compatible networks, visit this link.

Power:

2 AAA 1.5V alkaline batteries
Uses less than 1 kWh/month
Voltage requirement: 20-30VAC
Startup Current - 4VA
Standby Current - 2VA
Battery Voltage - 3.6V or higher required for Wi-Fi connection and updates

These values can be found in the Technical Information menu on the thermostat.(Divide VOC and VIN values by 1.414 to get the RMS voltage)

- VOC- 24-42V (with or without C wire)
- VIN - 24-42V (with or without C wire)
- Iin - 150-300 mA (with C wire)
- OR
- 20-300mA (without C wire present)
- Iin should be greater than 200 mA for all features to be enabled

Sensors:

Temperature
Humidity
Soli sensor (Motion Sense)
Ambient light
Capacitive touch
Nest utilizes local weather data over Wi-Fi instead of outdoor temperature sensors

Display:

2.4-inch QVGA IPS liquid crystal display (240 x 320 pixels) with digital brightness enhancement film and mirrored glass lens.

Box contents:

Display
Wiring plate
2 AAA 1.5V alkaline batteries
Mounting screws
Wire labels
Quick start guide
Safety and warranty document

Size and weight:

Display:
- Weight = 105 g / 3.71oz
- Diameter = 83.82mm / 3.3”
- Depth = 27.2 mm / 1.07”

Assembled (Display + Base):
- Weight = 138.9 g / 4.9 oz
- Diameter = 83.8 mm / 3.3”
- Depth = 3.0 mm / 1.07”

Trim plate:
- Weight = 47.9g / 1.69 oz
- Width = 180 mm / 7.09”
- Height = 6.1 mm / 0.24”
- Length = 112 mm / 4.41”

Conventional connectors		Heat pump with aux heat connectors		Heat pump with dual fuel connectors	
Y	Stage 1 compressor relay	Y	Stage 1 compressor relay	Y	Stage 1 compressor relay
G	Fan relay	G	Fan relay	G	Fan relay
*/OB	Stage 2 compressor relay, stage 2 heat relay	O/B	Changeover valve relay	O/B	Changeover valve relay
R	24VAC power	R	24VAC power	R	24VAC power
W	Stage 1 heat relay	W	Auxiliary heat relay	W	Alternate heat relay
C	24VAC Common wire	C	24VAC Common wire	C	24VAC Common wire

Key wiring and compatibility notes

Boilers

Boilers must use an external transformer for a source of constant 20-30 VAC when using the Power Connector. If the boiler is DC powered, the user must install a SSR between the transformer and terminal block. Many zoned boiler systems will require an upgraded transformer to provide enough power for the thermostats and relays. Check manufacturer documentation to determine the location of a common terminal on zone panels to provide constant power.

Zone panels

Nest thermostats will not work with zoned systems in which the thermostat does the activation and deactivation of the zoned dampers; usually indicated by “L” terminals. Many zone panels will require an upgraded transformer when using a smart thermostat such as the Nest Thermostat. Check the requirements of the specific zone panel or board being used.

Emergency heat

The Nest Thermostat does not support a dedicated wire for emergency heat, but it is not required. When emergency heat is activated, it will energize the W terminal alone, whether that is auxiliary heat strips or a backup furnace.

For heat pump systems equipped with auxiliary (Aux) heat, engaging the emergency heat function will activate the Aux heat strips as the primary heat source. The heat pump itself will be temporarily disabled while emergency heat remains active. In systems utilizing an alternate heat source (e.g., gas furnace), activating emergency heat will engage the W terminal. This alternate heat source will remain operational until emergency heat is manually deactivated.

Variable speed systems

The Nest Thermostat does not modulate voltage; therefore, it cannot control variable speeds on the thermostat side. If the equipment can modulate itself with a non-proprietary 24VAC input, then the Nest Thermostat will work but will require adjustments to settings to ensure efficient operation of the equipment.

Unsupported wires

Some common terminals that we do not work with are non-standard HVAC terminals; if you see terminals labeled 1, 2, 3, or A, B, or D, there is a pretty good chance that the Nest Thermostat will not work with the equipment.

There are some terminals that might fall under the standard HVAC terminals that the thermostat can treat a little differently. HVAC equipment that has sensors wired to it usually have an “S” terminal designation. Since the Nest Thermostat does all its sensor data via Wi-Fi and local weather data, it does not need the “S” wire. In this case, if all other terminals are standard HVAC wiring, the user can proceed as normal, and will just cap off the “S” wire and not use it.

Installation Features

Pro Setup

The Pro Setup process allows a technician to install and configure a Nest Thermostat on their own phone using the Google Home app even if there is no Wi-Fi available yet. This process is also significantly faster than the customer install process and allows the technician to skip through basic instructions. The Pro Setup will prompt the installer to enter a Nest Pro ID, which will activate an extended warranty and store company contact information on the thermostat and in the user's Google Home app. Once the contractor inputs their Pro ID with their Google Home app, it will be automatically filled in on any Nest Thermostat they install in the future.

Advanced settings

Advanced settings are available to be adjusted after the thermostat has been connected to Wi-Fi. Some of the available settings include compressor run times, droop, and the maintenance band. These settings can also be adjusted in the Google Home app after final configuration.

Silent relays

The Nest Thermostat uses solid-state switching instead of relays, so there's no noise when it switches on or off. You will not hear any "clicking" during system testing and activation.

Multifunctional connectors

The Nest Thermostat has one multifunctional terminal, Star(*)/OB, that can control a few different things. When used, the Google Home app will ask the installer to select the equipment connected to the terminals. For a list of compatible applications that the multifunctional connectors support, please see the wiring diagrams below or the equipment terminal details page above.

Installation Overview

What is in this section

The next three pages of this document will provide an overview of the physical installation process of the Nest Thermostat. It will also provide tips about how to provide a good experience for your customer.

After the overview section, the document will walk you through the Pro Setup process using the Google Home app. Some screens may look different depending on the equipment being configured. The Pro Setup process will finish with an overview of how the customer will connect the thermostat to their Google Home app and account.

The next portion of the document will explain some of the available settings and important information about configuring complex systems. The last portion of this section is wiring diagrams for compatible equipment.

How to use Pro Setup (high level)

The Nest Thermostat has a dedicated configuration process for Nest Pros in the Google Home app that allows the Pro to fully configure the thermostat on their own phone without the use of Wi-Fi or a customer needing to be present.

This option will appear after the thermostat QR code is scanned in the Google Home app.

After successful completion of the Pro Setup process, the Nest Thermostat offers basic control of the equipment and is ready to be connected to a customer's account. The process the homeowner follows is similar; however, after they scan the QR code, they will select "Already Installed". This will connect the thermostat to their account and home network. The customer will then be prompted to turn on/off features based on their preferences around scheduling, presence sensing, and additional comfort features.

If a technician or installer needs to use the customer's phone, they can still use the Pro Setup process and then have the customer complete the configuration once they are done. For more detailed steps about this process, see the following pages.

1. **Confirm system compatibility**

    a. Before opening the Nest Thermostat package, check all the wires connected to the current thermostat against the list of available connectors in this guide, or use the Compatibility Checker to quickly verify if the system is compatible.
    Note: The compatibility checker may suggest checking with a Pro. In that case, this guide is the best reference to determine compatibility.

2. **Briefly test the HVAC system**

    a. Test the heating, cooling, fan, and other system features with the current thermostat before installing the Nest Thermostat so you can address any existing issues.

    b. At times, outdoor weather conditions may prohibit testing of heating or cooling. In those cases, inform the customer that you cannot test and ask the customer about the system's operation and performance.

3. **Turn off power to the HVAC system**

    a. Turn off the power to the system to protect yourself and the equipment. Locate the circuit box and check to see if the circuits are labeled or if there is a circuit directory. Turn off all HVAC system circuits.

    b. If you cannot determine which circuits belong to the HVAC system, turn off the main circuit breaker after obtaining permission from your customer. Confirm the power is off by attempting to activate the HVAC system using the existing thermostat.

4. **Remove the old thermostat**

    a. Before removing the old thermostat, take a quick picture of the wiring with your phone in case it is needed for reference. Disconnect the wiring and remove the old thermostat. Use the wire labels included in Nest Thermostat Welcome Guide if needed. Be sure to leave the original thermostat, hardware, and any jumper wires with the customer. Remember that jumper wires are not needed on Nest thermostats.

5. **Offer the customer installation finishing options**

    a. You may need to cover up holes, old paint, or marks left by the old thermostat. Ask your customer if they prefer to repair the wall themselves or if they want to have the Nest trim plate installed (purchased separately). Let the customer know that the trim plate can be painted to match the wall.

6. Install the Nest Thermostat

a. Run the wires through the center of the Nest Thermostat base and attach it to the wall using the screws provided. Do not use a power drill on the screws. Over-tightening the screws can damage the circuitry in the Nest base. For paneling, plaster-and-lath, or if there is a stud behind the thermostat, pre-drill a hole using a 3/32” bit first.

b. Use the built-in level for proper alignment. Trim or re-strip any wires as necessary and connect them to their corresponding terminals on the base. Make sure the wire is straight and the connector button stays down after inserting it.

7. Configure the Nest Thermostat

a. Once the thermostat is physically installed, you will need to use the Google Home app to complete the Pro Setup process. Some settings and features are only available during the Pro Setup process.

b. Ensure that you have consulted equipment manuals for the optimal settings for your equipment configurations.

c. See the step-by-step instructions for details on how to handle installations where the customer isn’t present or there is no Wi-Fi available.

8. Test heating and cooling

a. This is vital to any installation in order to prevent a callback. After setting up the Nest Thermostat, run each part of the system for a few minutes. This will ensure that the thermostat is installed correctly and there aren’t any HVAC compatibility issues.

b. The thermostat will require Wi-Fi to fully test the equipment and report any errors.

c. See page 52 for additional details on performing post-installation testing.

10. Help your customer pair the thermostat with the Google Home app

a. If your customer already has a Google Nest product and is using the Google Home app, show them how to add the thermostat to their Google account. If it's your customer's first Google Nest product, show them how to download the Google Home app, create an account, and then add the Nest Thermostat.

b. The thermostat will display a QR code that the customer can quickly scan when prompted by the Google Home app to pair the thermostat with their app and account.

c. Correct configuration of these features will ensure that the system is performing correctly and the customer is comfortable.

d. Until the thermostat has been added to the customer account, it will only be controllable by manually adjusting the thermostat. It can be used in Heat Mode, Cool Mode, Heat/Cool mode, or set to Off. The setpoint can also be manually adjusted on the thermostat.

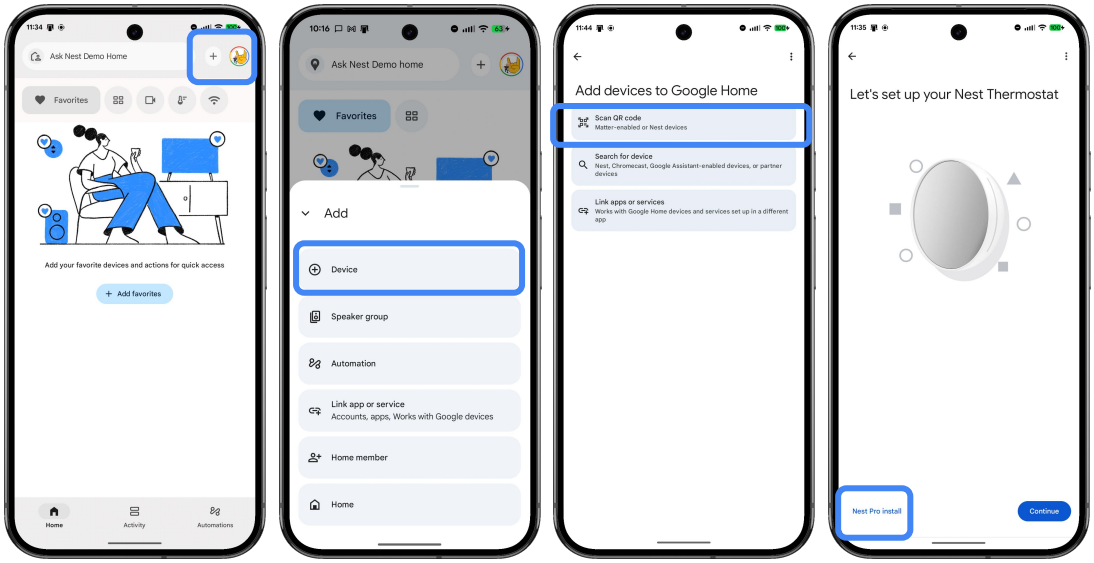
e. Adjust any advanced settings

    i. Advanced settings are available under the Thermostat Settings and can only be adjusted once the thermostat is added to a Wi-Fi network.

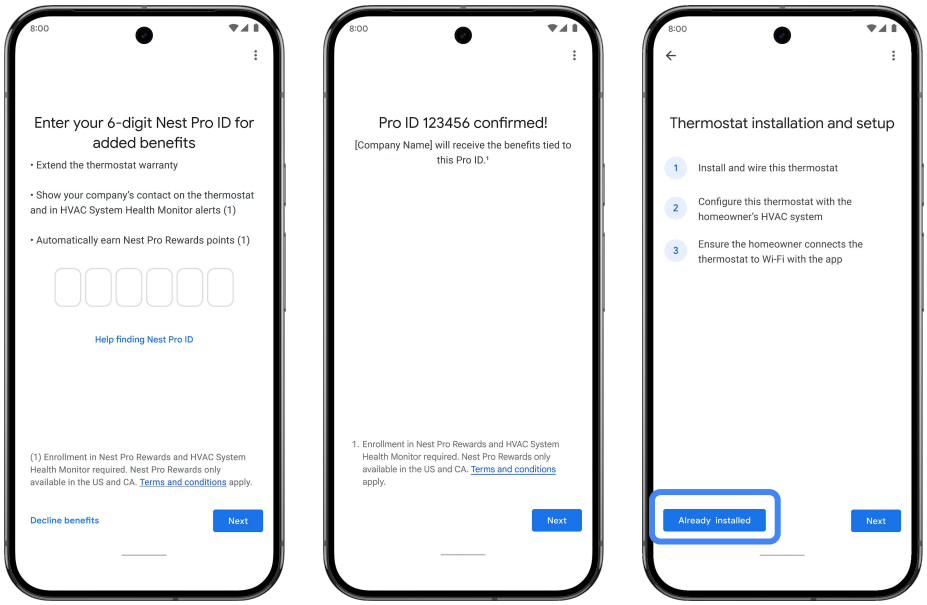
Pro Setup steps - Google Home app

On the Google Home app:

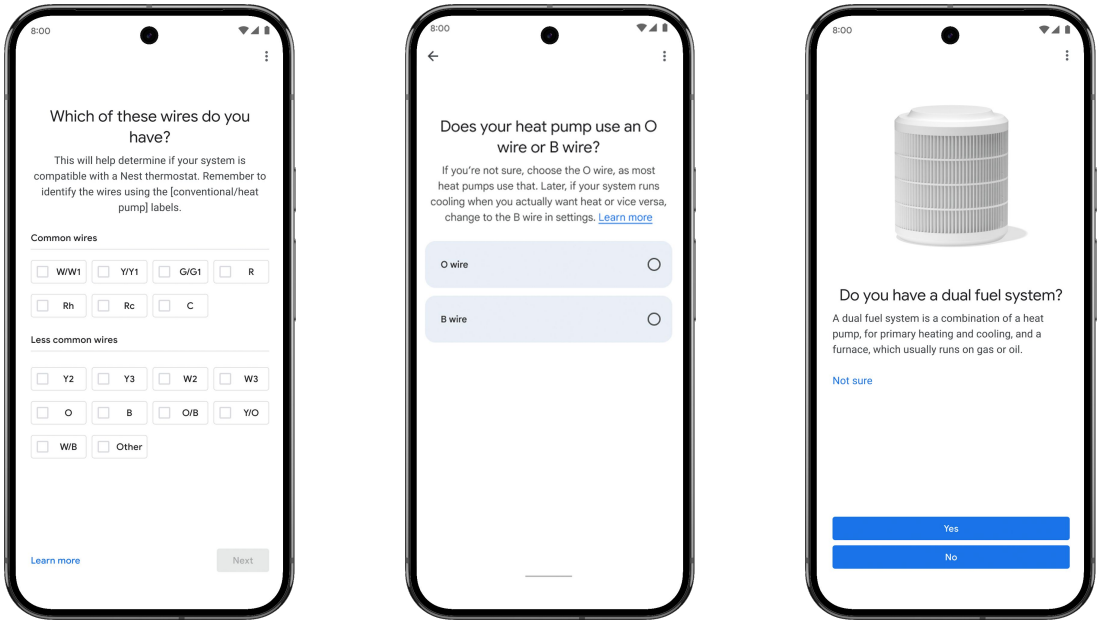
1) **Add product:** Press “+” from the Google Home app, choose “device” from the options, then press “Scan QR code”. The QR code can be found on the back of the head unit. Once the thermostat is found, select “Nest Pro Instal”I in the bottom left corner.



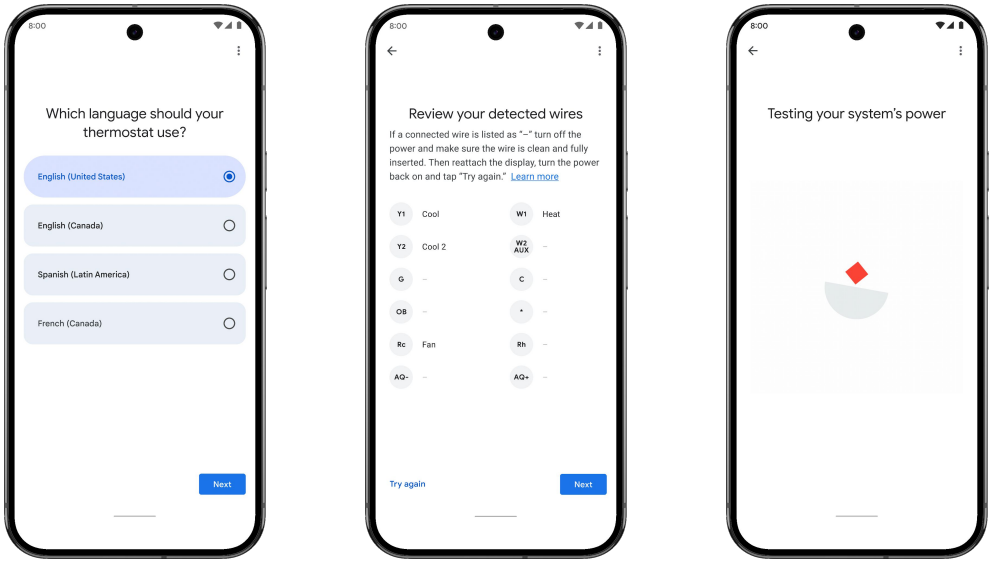
2) **Connect Pro ID to thermostat:** Enter your 6-digit Pro ID. If you do not know it, you can look it up with the link on the screen. Your Pro ID will be tied to your phone after it has been used once. Once confirmed, select **“Already installed”** to skip the physical installation instructions if the thermostat is powered on.



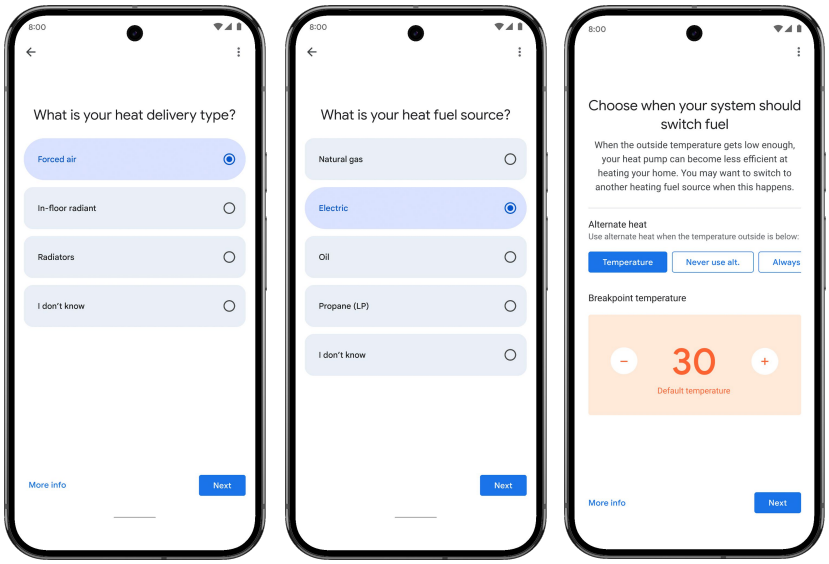
3) **Wire configuration:** Select the wire labels or terminals that are currently being used on the existing thermostat or will be used with the Nest Thermostat. **Important:** If you have a heat pump, you will need to select the orientation of the reversing valve by selecting “O” or” B”. If the O/B box is selected, it will default the orientation to O. If you have a terminal jumpered, do not select the jumped wire terminal.



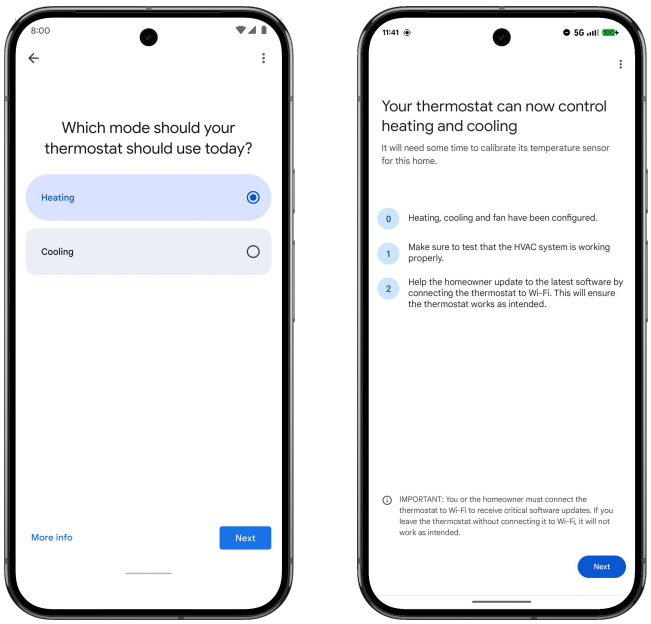
4) **Language, wire review, and power test:** Select the language the thermostat should use, then review connected wires and allow the thermostat to perform a power test.



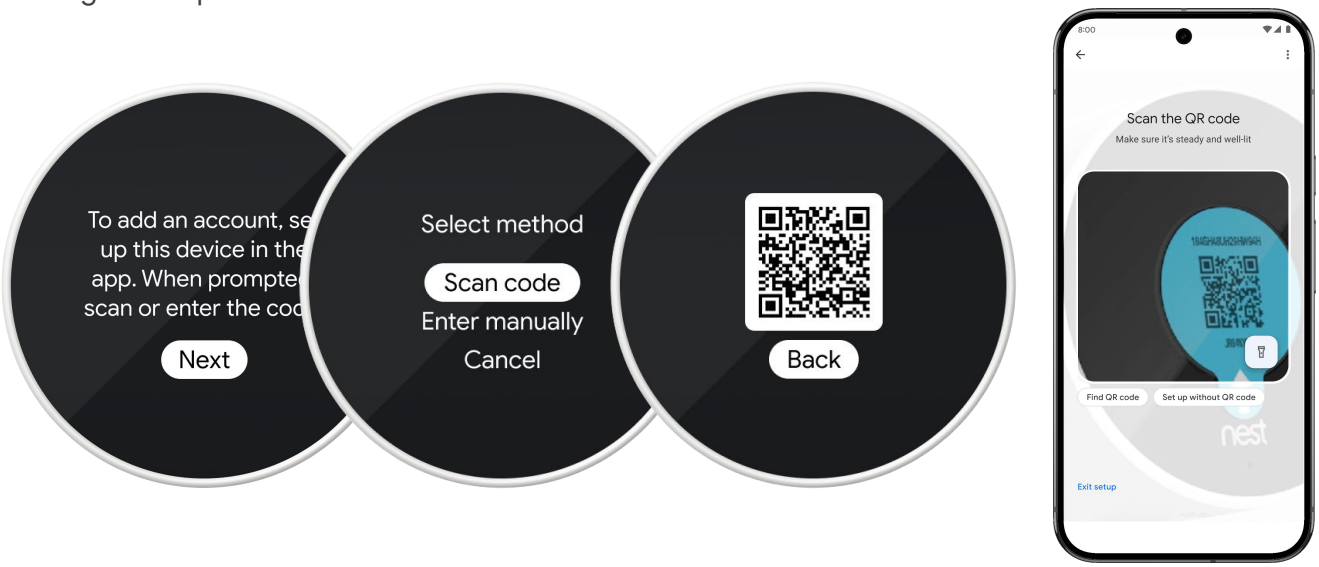
5) **Equipment configuration – heating:** Now you will configure the equipment connected to your wires, starting with the heating wires. For a conventional system, you will choose the heat source and delivery type. If the customer has a heat pump, you will be asked to configure the primary heat then alternate heating equipment.



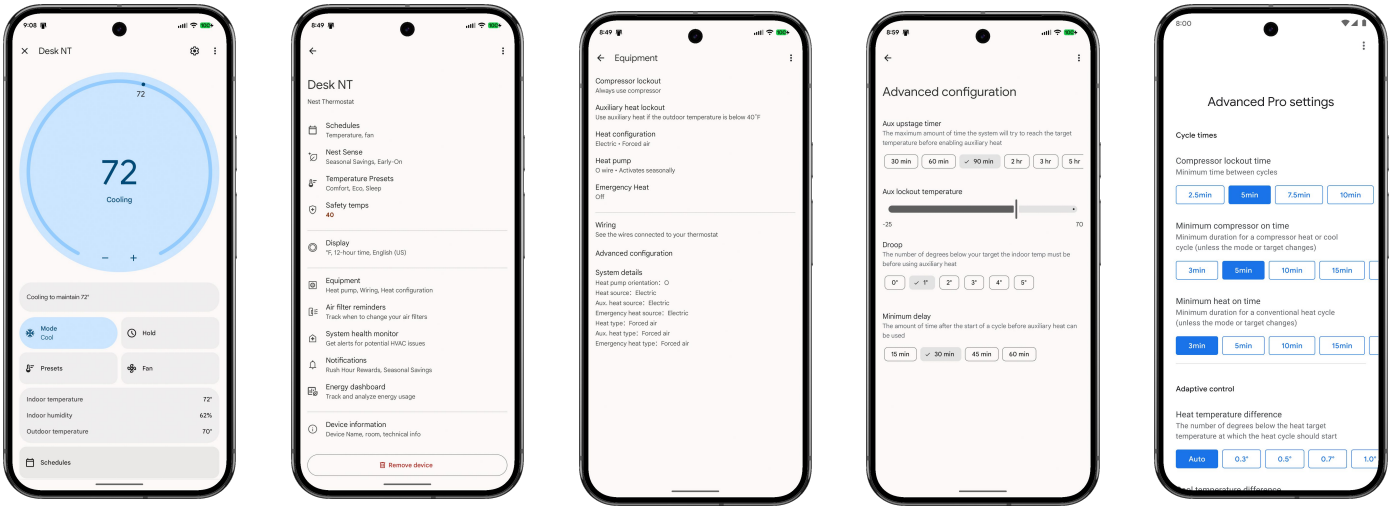
6) **Pro Setup complete:** You will indicate whether the thermostat should begin in heating or cooling mode. Then the Pro Setup process is complete and the thermostat is ready to be added to the customer's Google Home app.



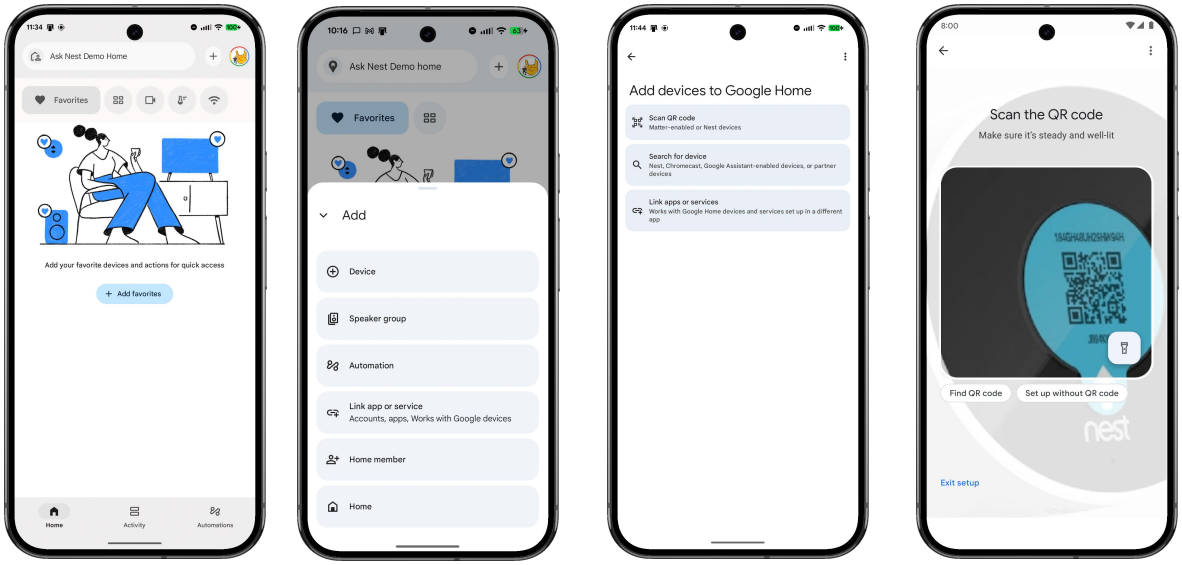
7) **End-user configuration:** The thermostat is now ready to be added to the user's Google Home app. Until it is added to an account and connected to Wi-Fi, it will heat or cool to a single setpoint that can be adjusted using the thermostat manually. The thermostat will show a QR code on the screen when initially pressed that can be scanned when prompted by the Google Home app. The next page will include the full end user configuration process.

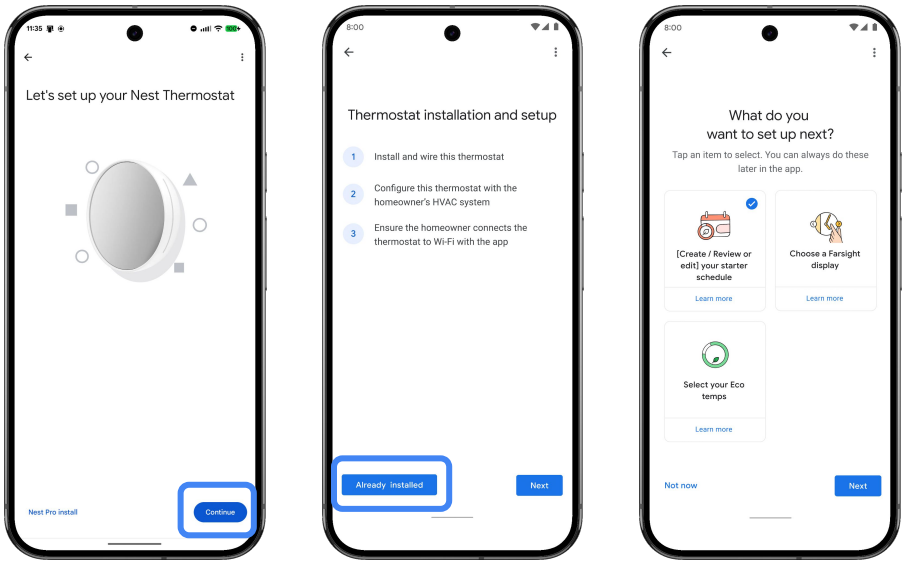


8) **Advanced settings:** Advanced settings are available on the Nest Thermostat but can only be configured after the device is connected to Wi-Fi and the customer's account. Once connected and setup, these settings can be accessed via the customers Google Home app. These can be found in the "Equipment" settings for the individual thermostat. For heat pump settings, select the "Heat Pump" tab in the "Equipment" menu. These settings will impact the sequencing of the thermostat, so be sure to consult your equipment manuals for any sequencing adjustments.



9) **End-user configuration- features:** When the customer is ready to add the thermostat to their Google Home app, they will start by adding a device. This is just like the Pro Setup process, except they will need to select “Next” instead of “Pro Install” then choose “Already Installed” to skip through installation instructions. They will be prompted to connect the thermostat to Wi-Fi enable features, and create a starter schedule. Make sure customers understand the features of the thermostat listed in the “Key Features” section of the document so they configure the thermostat for their preferences, home, equipment, and climate. **Tip**: send the customer the link found here for specific instructions for a thermostat that a Pro has already installed (g.co/nest/proinstalled)





How to configure complex systems

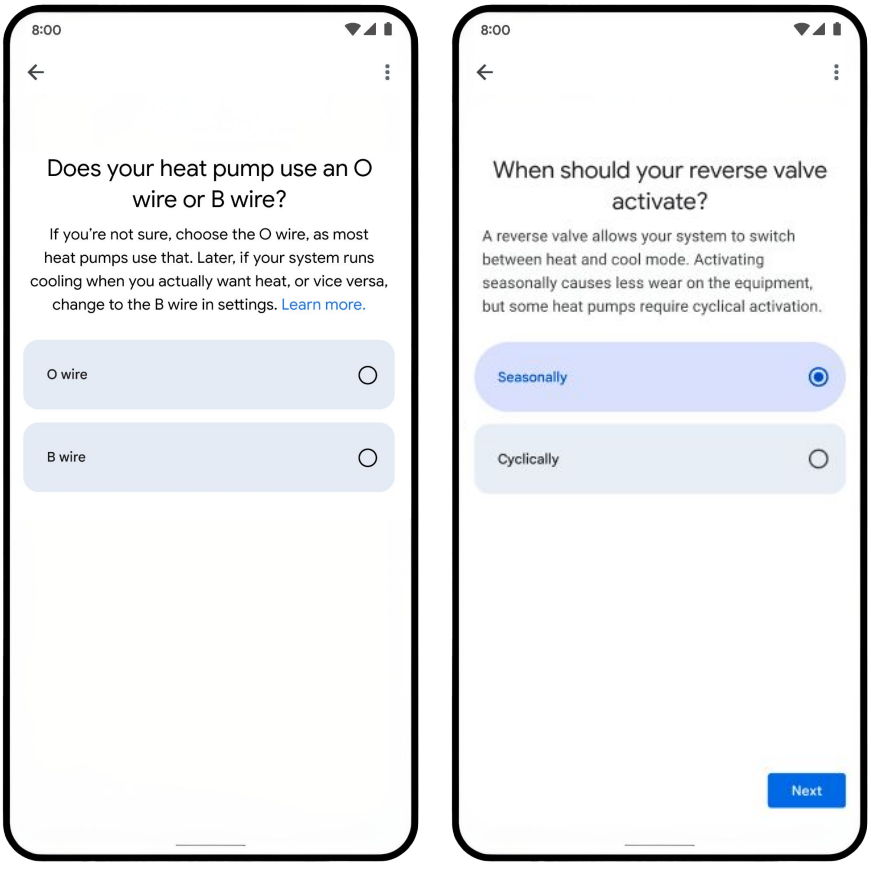
Heat pump systems

Configuring O/B wire – orientation and activation

The majority of heat pumps use an “O” orientation, so when setting up a heat pump, this will be the default orientation during configuration. The O or B orientation will be confirmed during Pro Setup, but it can be adjusted at any time after installation.

The user can choose whether to energize the O/B reversing valve “cyclically” during each heating or cooling cycle or “seasonally.” The “seasonally” option will keep the O/B wire energized when the thermostat is in the cooling mode and the orientation is set to “O” and in the heating mode when the orientation is set to “B.” This setting can also be changed in the Google Home app after installation.

The Nest Thermostat defaults to energizing seasonally to help reduce wear and tear on the reversing valve, but can be configured to be energized each cycle.



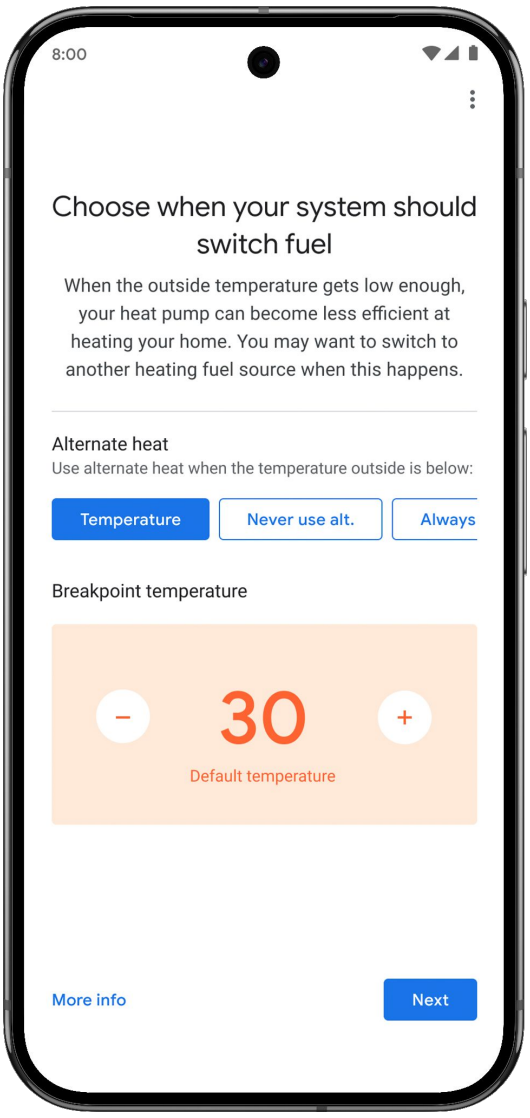
Duel fuel systems - configuring equipment

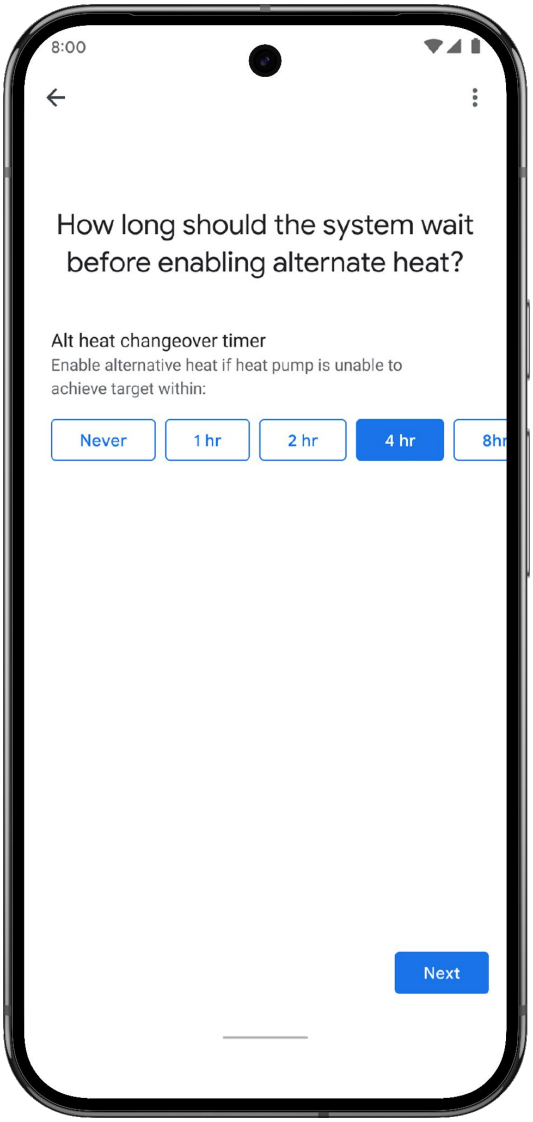
If there's an O/B and W wire connected to the Nest Thermostat, Pro Setup will ask if the heating system is dual fuel or single fuel.

For single fuel, any wires inserted into the W connector will be treated as auxiliary heat that will be used simultaneously with the heat pump when needed. Only one auxiliary heating wire is supported.

For dual fuel, any wires inserted into the W connector will be treated as alternate heat that will be used instead of the heat pump when needed. Use Pro Setup to indicate the source (gas, electric, geothermal, etc.) as well as the delivery mechanism (forced air, radiant, etc.) for the W wire. The Nest Thermostat supports one stage of Alt heat.

After installation and configuration, you can manually adjust the alternate heat upstage timer instead of using the temperature based lockout in the customer's Google Home app.





Advanced heat pump controls – auxiliary heat

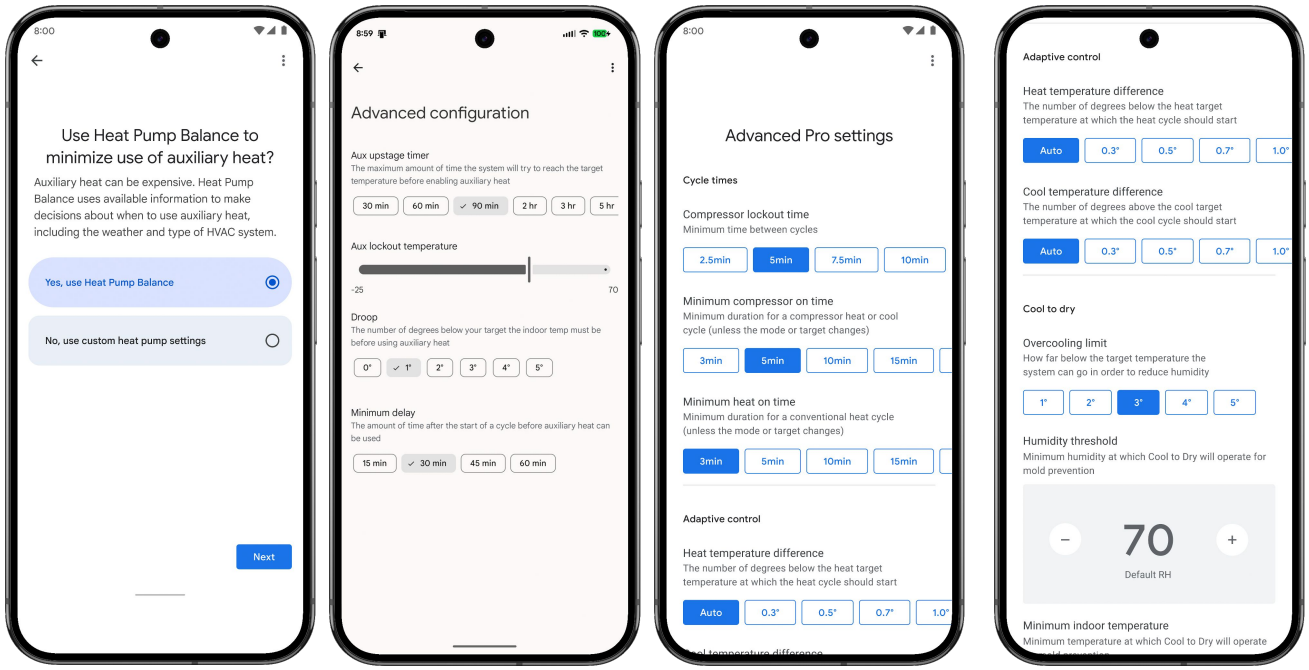
On the Nest Thermostat there are advanced controls available for heat pump systems. These custom settings are only available when “Heat Pump Balance” is disabled. The advanced settings can be adjusted once the thermostat is fully configured and connected to Wi-Fi. There are additional advanced settings available for compressor control that aren’t reflected in the “Heat Pump” specific settings. These can be found under “Advanced Settings” of the “Thermostat Equipment Settings” page in the Google Home app.

Advanced heat pump settings

Aux upstage timer – How long the thermostat uses heat pump heating to reach the target before engaging auxiliary heat.
Aux lockout temperature – If the outdoor temperature is above this temperature, auxiliary heat cannot be used.
Droop – How far the indoor temperature must be below the target before auxiliary heat can be used.
Minimum delay – The minimum amount of time after the start of a heating cycle before auxiliary heat can be used.

Advanced Pro Settings (non heat pump specific)

Compressor lockout time - Minimum time between cycles.
Minimum compressor on time - Minimum duration for a compressor heat or cool cycle.
Minimum heat on time - Minimum duration for a conventional heat cycle.
Heat temperature difference - The number of degrees below the heat target temperature at which the heat cycle should start.
Cool temperature difference - The number of degrees above the cool target temperature at which the cool cycle should start.



Standard presets and feature ranges

Function	Notes
Compressor Lockout Timer	Options: **2.5 min (default)**, 5 min, 7.5 min, 10 min
Minimum Compressor On Timer	Options: 3 min, **5 min (default)**, 10min, 15min, 20 min, 25 min, 30 min
Minimum Conventional Heat On Timer	Options: **3 min (default)**, 5 min, 10 min, 15 min, 20 min, 25 min, 30 min
Heat Temperature Difference	**Intelligently set between 0.3° and 1° degree Fahrenheit (default)** °F Options: Auto, 0.3°, 0.5°, 0.7°, 1°, 1.5°, 2° °C Options: 0.2°, 0.3°, 0.4°, 0.5°, 0.8°, 1°
Cool Temperature Difference	**Intelligently set between 0.3° and 1° degree Fahrenheit (default)** °F Options: Auto, 0.3°, 0.5°, 0.7°, 1°, 1.5°, 2° °C Options: 0.2°, 0.3°, 0.4°, 0.5°, 0.8°, 1°
Equipment Upstage Timer	1 hour for non-heat pump heating 2 hours for cooling
Filter Reminder Frequency	Options: 250 hrs, **500 hrs (default)**, 750 hrs, 1000 hrs, 1500 hrs, 2000 hrs
Safety Temperatures	Heat Default Temp: 40°F Heat Range: 35°F - 45°F Cool Default Setting: Off Cool Range: 95°F - 105°F
Eco Temperatures	Heat Default Temp: 56°F Heat Range: 40°F to 70°F Cool Default Temp: 82°F Cool Range: 76°F to 95°F

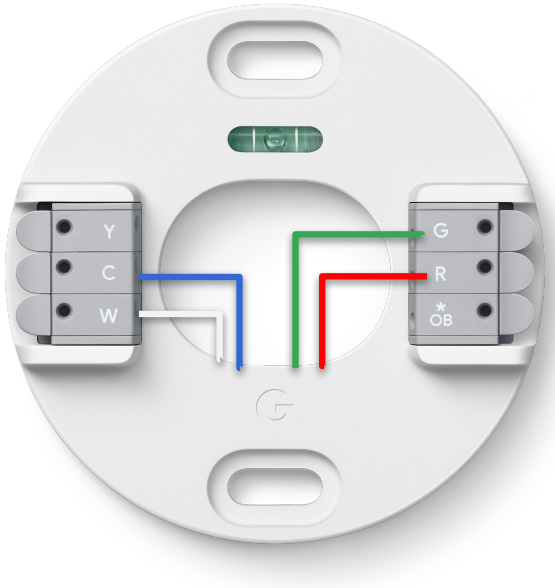
Heat pump presets and feature ranges

Function	Notes
Heat Pump Balance	Heat Pump Balance Default Setting: Balanced Options: Max Comfort, Max Savings, Balanced, Off
Auxiliary Heat Lockout Temperature	Based on Heat Pump Balance Setting °F Range: 0°F -70°F, **40°F (default)** °C Range: -18°C - 21°C, **4.5°C (default)**
Droop	Intelligently set between 0 and 2 degrees Fahrenheit °F Options: **0°F (default),** 1°F, 2°F, 3°F, 4°F, 5°F °C Options: **0°C (default),** 0.5°C, 1°C, 1.5°C, 2°C, 2.5°C
Aux Minimum Delay	Based on Heat Pump Balance Setting Options: **15 min (default)**, 30 min, 45 min, 60 min
Aux Upstage Timer	Based on Heat Pump Balance Setting Options: 30 min, 60 min, **90 min (default)**, 2 hr, 3 hr, 5 hr, 8 hr, 12 hr
Compressor Lockout Temperature (Only available for single fuel heat pump system)	Compressor Lockout Default Temp: -25°F Range: -25°F to 32°F or Always
Dual Fuel Breakpoint (Switchover temperature)	Dual Fuel Breakpoint Default Temp: 30°F Range: 10°F to 50°F, Always or Never
Dual Fuel Changeover Timer	Options: Never, 1 hr, 2 hr, **4 hr (default)**, 8 hr, 12 hr

Wiring Diagrams - Conventional

Conventional 1-stage heating

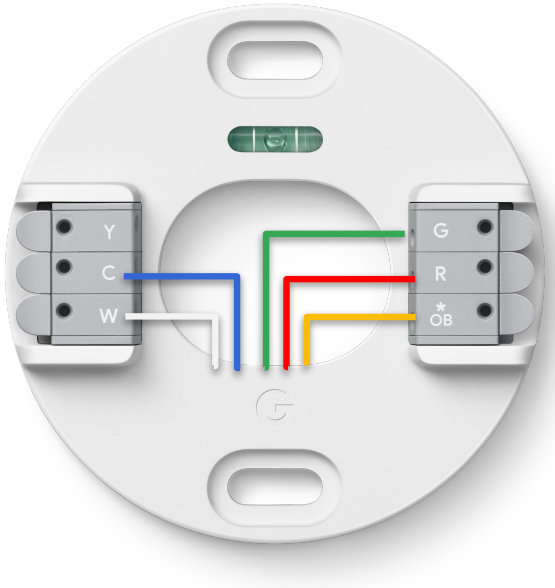
Wire Label	Function
Y	
G	Fan Relay
*/OB	
R	24VAC Power
W	Heat Relay (Stage 1)
C	24VAC Common Wire



Install Notes: Use for personal/or system notes

Conventional 2-stage heating

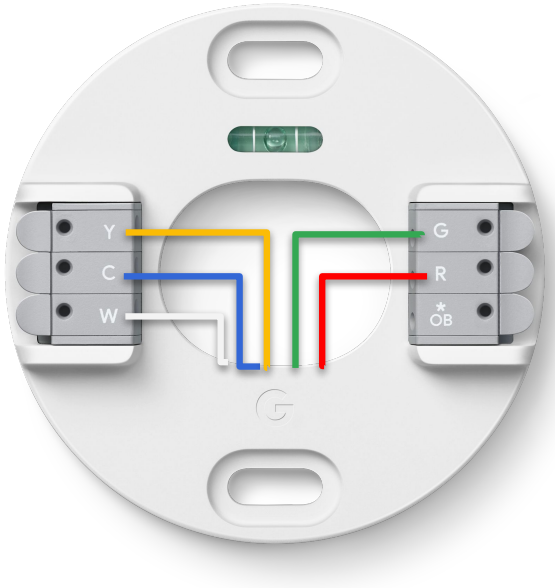
Wire Label	Function
Y	
G	Fan Relay
*/OB	Heat Relay (Stage 2)
R	24VAC Power
W	Heat Relay (Stage 1)
C	24VAC Common Wire



Install Notes: Use for personal/or system notes

Conventional 1-stage heating, 1-stage cooling

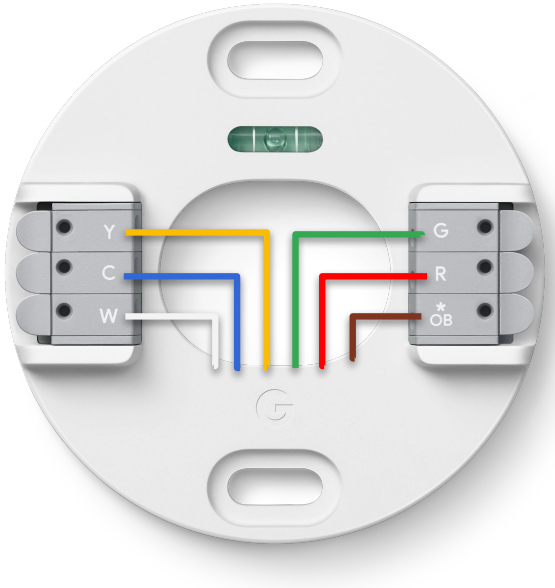
Wire Label	Function
Y	Compressor Relay (Stage 1)
G	Fan Relay
*/OB	
R	24VAC Power
W	Heat Relay (Stage 1)
C	24VAC Common Wire



Install Notes: Use for personal/or system notes

Conventional 2-stage heating, 1-stage cooling

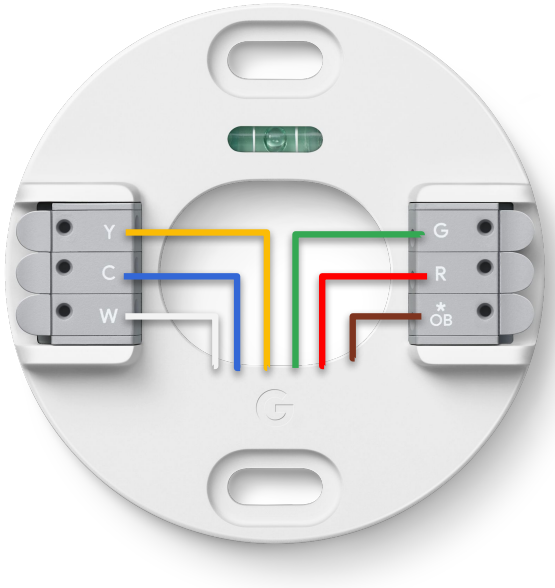
Wire Label	Function
Y	Compressor Relay (Stage 1)
G	Fan Relay
*/OB	Heat Relay (Stage 2)
R	24VAC Power
W	Heat Relay (Stage 1)
C	24VAC Common Wire



Install Notes: Use for personal/or system notes

Conventional 1-stage heating, 2-stage cooling

Wire Label	Function
Y	Compressor Relay (Stage 1)
G	Fan Relay
*/OB	Compressor Relay (Stage 2)
R	24VAC Power
W	Heat Relay (Stage 1)
C	24VAC Common Wire

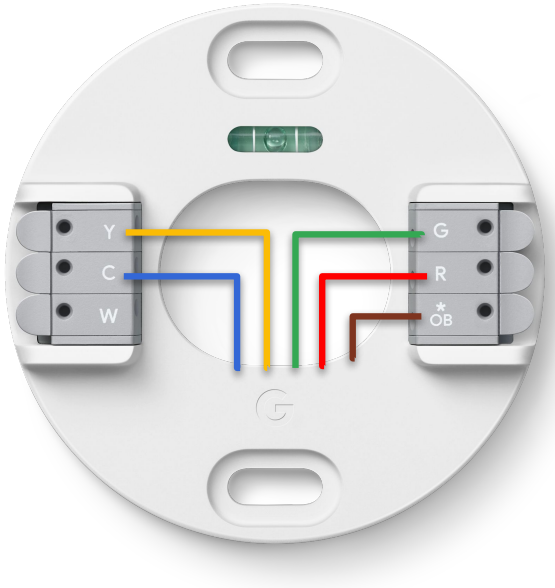


Install Notes: Use for personal/or system notes

Heat Pumps

1-Stage heat pump

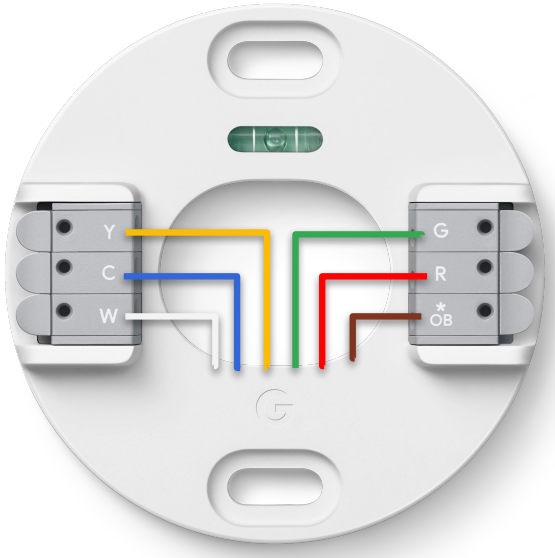
Wire Label	Function
Y	Compressor Relay (Stage 1)
G	Fan Relay
*/OB	Heat Pump Changeover Valve
R	24VAC Power
W	
C	24VAC Common Wire



Install Notes: Use for personal/or system notes

1-Stage heat pump with auxiliary heat

Wire Label	Function
Y	Compressor Relay (Stage 1)
G	Fan Relay
*/OB	Heat Pump Changeover Valve
R	24VAC Power
W	Auxiliary Heat Relay
C	24VAC Common Wire

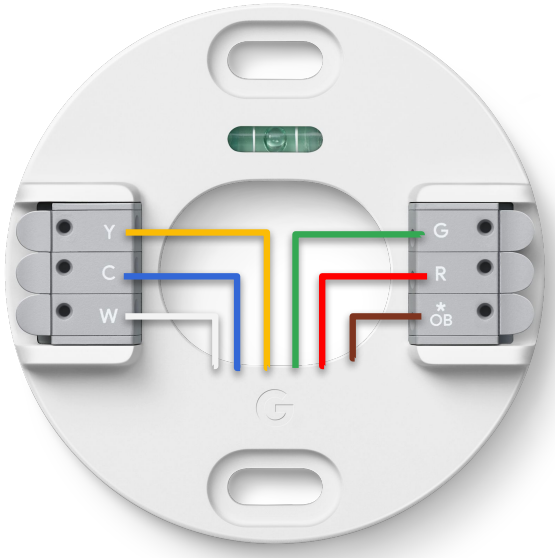


Install Notes: Use for personal/or system notes

Dual Fuel

1-Stage heat pump, 1-stage heat

Wire Label	Function
Y	Compressor Relay (Stage 1)
G	Fan Relay
*/OB	Heat Pump Changeover Valve
R	24VAC Power
W	Heat Relay (Stage 1)
C	24VAC Common Wire



Install Notes: Use for personal/or system notes

Troubleshooting

Handling unusual thermostat wiring

When a B or X wire is a common wire

Most thermostat manufacturers use C to designate the connector for the common wire. However, there are some Trane, American Standard, and York thermostats that use B for the common wire.

The NEMA standard designated the B wire as one of the change-over wires for some heat pump manufacturers. This is a simple issue to address:

1. If you're installing a Nest thermostat to control a heat pump system and the current thermostat has both a B and a C, connect B to the Nest O/B connector and connect the C to the Nest C connector.
2. If you're installing a Nest thermostat to control a heat pump system and the current thermostat has both an O and a B, connect O to the Nest O/B connector and connect the B to Nest's C connector.
3. If you're installing a Nest thermostat to control a heat pump system and the current thermostat only has a B wire, connect B to the Nest O/B connector.
4. If you're installing a Nest thermostat to control a conventional system (non heat pump) and you see a B wire connected to the current thermostat, that B is a common wire and should be connected to the C connector on the Nest base.

Important Note: If you have a B wire that is actually a common wire, not following the rules above can lead to blowing a fuse on your HVAC controller board and, most likely, damaging the Nest thermostat.

When X, W1, or W2 is an AUX wire

Some heat pump installations may have the auxiliary heat connection labelled as X, W1, or W2 on the thermostat.

You should verify that the X wire on the old thermostat is not a common wire. Once you're sure, you can assume that the X is the auxiliary heat and should be inserted into the AUX/W2 connector on the Nest thermostat.

Compressor and auxiliary heat lockout temperatures for heat pumps require Wi-Fi

The lockout temperatures are only enforced when the Nest Thermostat is connected to Wi-Fi so it can track outdoor temperatures. If Wi-Fi is not enabled, auxiliary heat will come on automatically when it takes longer than expected to reach the current target temperature.

See support.google.com for auxiliary heat for more details.

If the Nest thermostat isn't getting enough power from W or Y and there is no common (“C”) wire

Understanding power sharing – The Nest Thermostat can get power from equipment wires even if there is not a common wire through a patented power sharing process. When there is not a common wire, the thermostat will draw a small amount of power from the Y and or W wire when they are active or inactive. The Nest Thermostat has improved power sharing in a few ways. It can draw more power over the Y wire without activating the equipment. These new power sharing “states” can be identified and understood through the power readings on the next page.

We find that in the vast majority of homes, the Nest Thermostat can function normally by power sharing from the regular heating and cooling wires. But in some cases, a common wire is needed to deliver consistent power to the Nest Thermostat while allowing normal operation of the heating and cooling system. If there is a common (C) wire installed, the Nest Thermostat will not power share.

If a system can’t deliver consistent power to the thermostat to keep its battery charged or correctly control heating and cooling, users may experience one or more of these symptoms:

- Reduced thermostat battery life
- Thermostat display won’t turn on
- Thermostat motion sensing is disabled
- Thermostat occasionally disconnects from Wi-Fi
- System unexpectedly turns on or off
- System is making strange noises: chattering, stuttering, clicking, or thumping
- Heating or cooling is always on, and won’t turn off
- Heating or cooling repeatedly turns on and off in a short period
- A “Delayed” or “Starts in” message often appears on the thermostat’s screen (for example: “Heating is delayed for 2:30 mins”)
- The system fan is always running or won’t turn on
- The system fan turns on and off repeatedly in a short period
- User gets an N260 error

See the next page for detailed power requirements and how to interpret them.

There are four options to solve a power issue:

1. Use the Nest Power Connector to provide constant power.
2. Use a spare wire as a common wire.
3. Add a resistor to an existing Y or W wire.
4. Pull a new common wire.

See page 51 for details and instructions about these four solutions.

Power requirements and details

Battery – The preferred voltage of the stat is 3.9V. If the thermostat drops below 3.8V, it will enter a "Power Saver" mode where some features and functions will be disabled. You will see this on the thermostat under the "Power Info" settings page. If the voltage drops below 3.6V, the thermostat will disconnect from Wi-Fi. The included batteries are not rechargeable.

A common wire or Power Connecter MUST be used in zoned systems, heat pumps, and heat/cool only systems.

The batteries in the Nest Thermostat should last 2-4 years when there is a common wire or Power Connector installed. Without a common wire, the batteries may only last 3-6 months if power sharing is not sufficient.

Appropriate power readings - *Can be found on the thermostat under Settings> Equipment> Power Info*

Note: These values are not RMS voltage. You can divide the Voc or VIN by 1.414 to get an approximate RMS voltage the stat is reading. Always confirm voltage with a multimeter.

VIN (Voltage input)
24 to 42V
Iin (Current Intensity input)
150 to 300 mA (with common wire or power connector)
20 to 300 mA (without common wire or power connector)

Iin readings and what they mean

Iin is the input current limit the thermostat is using now. The letter next to the Iin value indicates the method of power sharing. The value should be above 20mA for full functionality. Some of the letters may be combined to provide more detail; for example, WA means that we are actively sharing power from the W wire.
Note: The thermostat will power share less frequently during the first 5 minutes of a call or heating or cooling when in the A or T mode.

- SY – Improved power sharing function being used on the Y wire.
- W – W is used for power sharing.
- Y – Y is used for power sharing.
- P – Drawing power from the Nest Power Connector. **Note:** this will confirm the Power Connector is installed and functioning correctly.
- T – Taco valve detected and utilizing a specific power sharing method for Wax Actuated Valves.
- A – Sharing power from an active wire, either W or Y.

PS values and what they mean

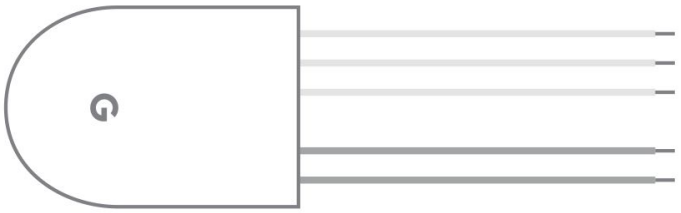
PS values are stats for the available methods of power sharing. These will provide more details, but will likely only be relevant when calling Pro Support.

- C – Maximum current draw on C-wire. Note: this will verify C wire functionality.
- Y, W, or YW – Maximum current draw on Y, W or Y+W wires when the thermostat is not activating them.
- YA or WA – Maximum current draw on Y or W wires when the thermostat is activating them.
- YP or WP – Metric to assess Power Connector presence on Y/W wires (greater than 12 typically means Power Connector is present, but there are other conditions that also need to be met for it to be detected.

1. Nest Power Connector

If the customer's thermostat has power-related issues, like the battery draining too quickly or Wi-Fi constantly disconnecting, you can typically fix them by connecting a common wire (C wire) or by installing the Nest Power Connector. Either one will provide a stable power source for your Nest thermostat when the customer's system can't deliver enough consistent power to it.

Please Note: A Power Connector is needed for each thermostat in a Zoned system.



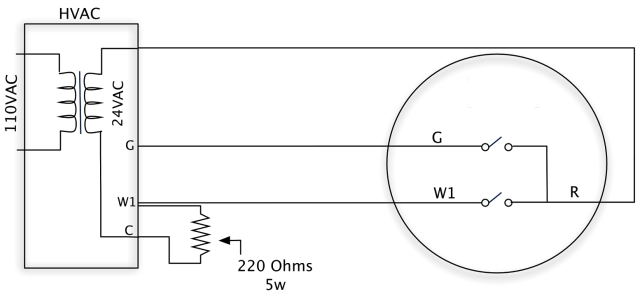
2. Use a spare wire as common wire

The easiest way to solve the problem is by using a spare wire in the thermostat wire as a common wire. Simply connect one end of the the unused wire to the common ("C") terminal in the HVAC controller and the other end to the thermostat's C terminal.

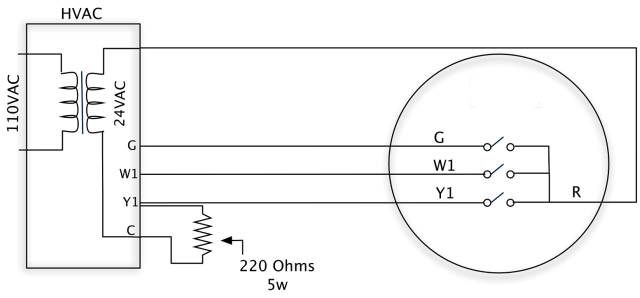
3. Add a resistor to an existing Y or W wire

We've found that many Y and W wire circuits that cannot supply enough power can be strengthened by bridging the common terminal at the HVAC equipment to W or Y through a 220-ohm, 5W resistor.

In a heat-only system, you need to bridge from common (C) to W. In a HVAC system with a Y wire, you must bridge from common (C) to Y. In a system with both W and Y, you should bridge from common (C) to Y.



Heat only systems



Heating and cooling systems

4. Pull a new C wire

Replace the thermostat wiring bundle to provide an extra wire to be used as common. Advise your customer that this will require extra work and therefore an additional cost.

Reference Materials

“How To” quick reference guide

Action	Steps
Tips on providing a good customer experience	**Demonstrate how to use the Nest Thermostat** • Basic temp changes • Home/Eco mode manual switching • Switching between heat/cool modes, etc. • Changing the temperature schedule • Running the fan **Explain key functions of the thermostat** • Explain rebates and rewards offers in your area • Explain schedule behavior and the savings finder function • Explain features like Energy History and Home Report • Explain how to add additional family members
How to check the power information on the thermostat	**How to access key power information on the thermostat** 1) Tap the side of the thermostat to bring up the Menu 2) Use the touch bar on the side of the thermostat to select “Settings” 3) Use the touch bar on the side of the thermostat to select “Equipment” 4) Use the touch bar on the side of the thermostat to select “Power Info”

Action	Steps
Testing the basic operation after installation	**Activate heating and cooling** Use the touch bar on the side of the thermostat to set the current set point above or below the current ambient temperature in the room. You’ll need to switch to and from heating and cooling modes as you do this. **Switching modes** To switch to and from heating and cooling modes, follow these steps: 1) Use the touch bar on the side of the thermostat to bring up the menu 2) Select the “Heating and Cooling” icon 3) Select “Heat” or “Cool” 4) Tap the side of the stat again to select **Note:** The compressor lockout timer for manual temperature adjustments are 2.5 minutes for heat pumps and air conditioning systems. For all other changes such as a scheduled setpoint, the lockout timer is 5 minutes.
Testing second stage or auxiliary heat after installation	**Conventional heating** Before the Nest Thermostat activates Time-to-Temperature, second stage heat will turn on when the setpoint is 4°F or greater than the room’s ambient temperature. **Heat pumps** Auxiliary heat will turn on when the setpoint is 4°F above current indoor temperature and the outdoor temperature is below 50°F, the default auxiliary heat lockout temperature. Auxiliary lockout can be turned off in the “Heat Pump” section of “Equipment” settings in order to test auxiliary heat. To test second stage or auxiliary heat at installation, just raise the temperature 4°F in heating mode with the auxiliary lockout turned off. Once Time-to-Temperature is activated, the Nest Thermostat will use this feature to manage second stage and auxiliary heat.

Action	Steps
Switch between heating, cooling, and range modes	**To switch to and from heating and cooling modes, follow these steps** 1) Tap the side of the thermostat to bring up the menu 2) Select the “Mode” Icon 3) Select “Heat”, “Cool” “Heat • Cool”, or “Off” 4) Tap the side of the thermostat again to confirm the mode selection
Heat pump: Setting compressor and auxiliary lockout temperatures	Both auxiliary and compressor lockout temperatures can be changed in the “Equipment” settings menu of the Google Home app. By default, the Nest Thermostat will lock out the auxiliary heater when the outdoor temperature is above 40°F but will not lockout the compressor at any temperature. The lockout temperatures are only enforced when the Nest Thermostat is connected to Wi-Fi so it can track outdoor temperatures. **To access the heat pump section of “Equipment” settings** 1) Navigate to the thermostat in the Google Home app 2) Select settings in the top right 3) Scroll down to Equipment 4) Select and adjust lockout temperatures
Heat pump: Change heat pump valve orientation	**Follow these steps** • Navigate to the thermostat in the Google Home app • Select settings in the top right • Scroll down to Equipment • Select “Heat Pump” • Select O wire or B wire under heat pump wire

Action	Steps
Adjust Eco heating and cooling temperatures	These temperatures are set as the final step during the setup interview. **To adjust** 1) Navigate to the thermostat in the Google Home app 2) Select Settings in the top right 3) Select “Temperature Presets” 4) Adjust “Eco”
Adjust Safety Temperatures	No matter the schedule, the Nest Thermostat will never let the home go above or below the safety temperatures. **To adjust them, follow these steps** 1) Navigate to the thermostat in the Google Home app 2) Select “Settings” in the top right 3) Adjust “Safety Temps”

Action	Steps
How to engage Emergency Heat	**Follow these steps on the Google Home app** 1. Navigate to the thermostat in the Google Home app 2. Select “Settings” in the top right 3. Scroll down to Equipment 4. Select “Emergency Heat” 5. Toggle “User Emergency Heat” to On **Follow these steps on the Thermostat** 1) Tap the side of the thermostat to access the menu 2) Scroll to “Settings” 3) Select “Emergency Heat” 4) Tap the thermostat again to select “Yes”
How to add or verify that your Pro ID is linked to the thermostat	**Follow these steps** 1) Tap the side of the thermostat to bring up the menu 2) Go to settings icon and then Nest Pro 3) If your Nest Pro information is visible, it has been linked to the thermostat 4) If it hasn’t been added during installation, select, “Enter Nest Pro ID” 5) Enter your 6-digit Pro ID which can be found in the top right of your Nest Pro dashboard 6) If another Nest Pro’s contact information is already on the thermostat, you will have the option to replace it with yours **Tip:** Customers can view your contact information by navigating to the Nest Pro section in the settings menu. They can also find it in the Google Home app in the Support section of the Settings tab.

Action	Steps
Pairing Nest with the Google Home app	**To pair the Nest Thermostat to the Google Home app, follow these steps** 1) Download the Google Home app on your customer’s phone or tablet from the Apple App Store or Google Play 2) Open the Google Home app and sign in with a Google account 3) Read and agree to Google’s Terms of Service 4) Add a Device by clicking the “+” symbol in the top right of the Google Home app 5) Scan the QR code on the thermostat and follow remaining instructions
Factory reset thermostat	**Follow these steps to access the factory reset settings** 1) Tap the side of the thermostat to bring up the menu 2) Select “Settings” 3) Select “Factory Reset”
Re-configure Wi-Fi network	**Follow these steps to update the Wi-FI network** 1) Navigate to Settings tab of the thermostat in the Google Home app 2) Select “Device Information” 3) Choose Wi-Fi, then press “OK” to begin changing network
Disconnect thermostat from account If the user wants to delete their account from the thermostat but keep the equipment settings. Useful when moving and leaving the thermostat behind	**Follow these steps to disconnect the thermostat from an account** 1) Tap the side of the thermostat to bring up the menu 2) Select “Settings” 3) Select “Account” 4) Select “Disconnect” 5) Confirm and disconnect the account

Wiring error quick reference guide

If the Nest Thermostat senses a problem with the wiring, you'll receive an "E" error. These errors must be fixed before setup can continue. "N" errors are not as critical and setup will continue, but certain features may not work.

"E" errors related to wires not being detected can be the result of a wire not being fully inserted into the connector or terminal. Ensure that all wires are fully inserted and the connector buttons are in the down position before performing additional troubleshooting.

Important Note: These errors may change with future software updates. Visit support.google.com for the latest information.

Error #	Description	What's going on?
N253	No power to W1 wire detected.	The Nest Thermostat isn't electrically detecting the W1 wire, but one is connected to the Nest base.
N254	No power to Y1 wire detected.	The Nest Thermostat isn't electrically detecting the Y1 wire, but one is connected to the Nest base.
N256	No power to G wire detected.	The Nest Thermostat isn't electrically detecting the G wire, but one is connected to the Nest base.
N259	No power to */OB wire detected.	The Nest Thermostat isn't electrically detecting the O/B wire, but one is connected to the Nest base.
N260	A C wire or Nest Power Connector is recommended for your thermostat.	There is insufficient power from Y1 and W1 to power the thermostat.
N261	Low power to C wire.	The Nest Thermostat detected abnormally low power available from the C wire.
N262	Your HVAC system needs maintenance.	Power availability from the Y wire declined to below what the thermostat needs to run.
N263	In extremely cold weather (i.e. blizzard), no power to Y1 wire detected.	The Nest Thermostat has shut down the compressor due to cold weather and thus is no longer receiving power from Y1.
E298	No system power.	The Nest Thermostat does not detect power. If a C wire is present, then power is not detected on the C wire. If a C wire is not present, and this is a single transformer system, then power is neither detected on Y1 nor on W1, or if this is a dual transformer system, then power is not detected on Y1.

Troubleshooting quick reference guide

Symptom	What's going on	Steps to fix
Unit seems to be running backwards (heat pump)	If it is heating when it is supposed to be cooling and visa versa, the orientation of the heat pump is probably incorrect.	**Follow these steps to change the heat pump orientation** 1) Navigate to the thermostat in the Google Home app 2) Select "Settings" in the top right 3) Scroll down to Equipment 4) Select "Heat pump" 5) Select O wire or B Wire under heat pump wire
Fan doesn't come on	Either there is an issue with the air handler or with the Nest Thermostat.	First, check the wiring to make sure the wires are in the right place and the wire tips are straight and fully inserted into the connectors. If that doesn't work, turn off HVAC breakers and pull out the R and the G wires. Carefully hold them together with the copper ends touching for 10-20 seconds. If the fan turns on, there may be a hardware issue with the device, so please contact Pro Support. If the fan does not turn on, there is an issue with the heating and cooling system unrelated to the Nest thermostat.

Glossary

Airwave

Alternate Heat

Auto Changeover (Heat/Cool Mode)

Auxiliary Heat

Auxiliary Lockout

Common Wire

Compatibility

Compatibility Checker Tool

Compressor Lockout Temperature

Dual Fuel

Delivery Options

Dual Fuel Breakpoint

Early On

Eco Temps

Emergency Heat

Energy History

Filter Reminders

Furnace Heads Up

Google Home App

Heat Pump Balance

Home/Away Routines

System Health Monitor

Interactive Troubleshooter Tool

Jumper Wires

Maintenance Band (Dead Band)

Nest Leaf

Nest Power Connector

Nest Pro ID

Nest Renew

Nest Sense

Nest Thermostat Sensors (built in)

Heat Pump Reversing Valve

Power Sharing

Presence Sensing

Pro Setup

Pro Warranty

Rush Hour Rewards

Safety Temperatures

Schedule

Seasonal Savings

STAR Connector

System Match

Upstage Timer

Temperature Modes

Time To Temperature

Thermostat Display Navigation

Weather Aware

Wi-Fi Network

Zoned Systems