Nest Pro

Configuring Heat Pump Settings

Nest thermostats

For Heat Pumps with AUX Heat Strips: the thermostat will use a feature called **"Heat Pump Balance"**, which allows the thermostat to automatically determine your lockout temperatures in a range based on the settings shown below. The thermostats continuously optimize the heat pump by actively adjusting auxiliary heat usage based on temperature and performance.

Max Comfort	Max Savings	Balanced	Off
Uses AUX heat more, reach setpoints faster.	Uses AUX heat less, aims for savings.	Uses AUX heat when needed.	Uses manually set lockout temps.

For Heat Pumps with Secondary Heating Source: Manually set a **"Dual Fuel Breakpoint"** (compressor lockout temperature or balance point), which is the setpoint that turns on alternate heat. Dual Fuel heat sources are referred to as "Alternate Heat" and will never run when heat pump heat is running. Heat Pump Balance does not apply to Dual Fuel Systems.

O/B or *O/B Terminal: Designate heat pump wire to **O or B wire** and select the **activation.**

- **"Each cycle"** Only energizes O/B terminal with a call for heating/cooling.
- **"Seasonally"** Constantly energizes O/B terminal in Heat/Cool mode.

Important Details:

- The default equipment upstage time for Nest thermostats is 1 hour for non-heat pump heating 2 hours for cooling.
- Default droop is 1°F on the Nest Thermostat and 0°F on the Nest Learning Thermostat (4th gen)
- All Nest thermostats require a Wi-Fi connection to read local weather data to determine the outdoor temperature. The lockout or breakpoint temperatures use the temperature provided by the Wi-Fi connection.
- Without Wi-Fi, the thermostat will use system performance to determine when to engage AUX or ALT heat or observe the advanced configuration options. Nest thermostats do not support an outdoor temperature sensor.
- Emergency Heat can be engaged from the thermostat or Home app.

During setup, you must select **Single Fuel** for heat pumps with AUX heat strips, or **Dual Fuel** for systems with a gas furnace or other backup heat source.

Nest Pro

Configuring Heat Pumps

Nest Learning Thermostat (4th gen)

Pro Setup lets you configure how the Nest Learning Thermostat (4th gen) controls each wire connected to it. Note the source, options, fan activation, and equipment specific details of your thermostat and configure each wire according to its function.

Source	Delivery	Fan	Equipment Specific
• Gas • Electric • Oil • Propane (LP) • Geothermal	• Forced air • In-floor radiant • Radiators • Electric baseboard	• Activate • Don't activate	• Lockout Temps • Emergency Heat • Hum/Dehum activation • Pre-Heating • Nest Sense Features

Terminal	AUX	Dual Fuel	Notes
Y1	Compressor Relay (Stage 1)	Compressor Relay (Stage 1)	1st Stage Heat Pump Heating/Cooling
Y2	Compressor Relay (Stage 2)	Compressor Relay (Stage 2)	2nd Stage Heat Pump Heating or Cooling Can be Heat or Cool only
W1	Not Used	Alternate Heat (Stage 1)	Only activated below Lockout Temp (Dual Fuel Breakpoint), or after changeover timer unless set to "always run" when heating
W2 / AUX	Heat Relay (Stage 2) / Auxiliary Heat	Alternate Heat (Stage 2)	If there is only a wire in W2/Aux and not W1, the thermostat will automatically be configured as a single fuel system
O/B	Heat Pump Reversing Valve	Heat Pump Reversing Valve	Orientation can be O or B and activated seasonally or each cycle
*STAR	Emergency Heat (E), Humidification or Dehumidification	Emergency Heat (E), Humidification or Dehumidification	If there is no wire in this terminal, Emergency Heat will activate W2/Aux in single fuel systems or W1 and W2 for Dual Fuel systems
AQ+	Humidification, Dehumidification or Ventilation	Humidification, Dehumidification or Ventilation	If using both a humidifier and a dehumidifier, one can be connected to the (*)Star terminal and the other to the AQ+ terminal
AQ-	Second Wire from Equipment in AQ+ (if applicable)	Second Wire from Equipment in AQ+ (if applicable)	Connect wires to AQ+ and AQ- if you are connecting a 2-wire humidifier/dehumidifier

Nest Pro

Configuring Heat Pumps

Nest Thermostat

Pro Setup lets you configure how the Nest Thermostat controls each wire connected to it. Note the source, options, fan activation, and equipment specific details of your thermostat and configure each wire according to its function.

Source	Delivery	Fan	Equipment Specific
• Gas • Electric • Oil • Propane (LP) • Geothermal	• Forced air • In-floor radiant • Radiators • Electric baseboard	• Activate • Don't activate	• Lockout Temps • Emergency Heat • Pre-Heating • Nest Sense Features

Terminal	AUX	Dual Fuel	Notes
Y1	Compressor Relay (Stage 1)	Compressor Relay (Stage 1)	1st Stage Heat Pump Heating/Cooling
W1	Not Used	Alternate Heat (Stage 1)	Only activated below Lockout Temp (Dual Fuel Breakpoint), or after changeover timer unless set to "always run" when heating
O/B *STAR	Heat Pump Reversing Valve Heat Relay (Stage 2) **OR** Compressor Relay (Stage 2)	Heat Pump Reversing Valve AUX/ALT Heat (Stage 2) **OR** Compressor Relay (Stage 2)	Orientation can be O or B and activated seasonally or each cycle Set Heat Pump Balance or Compressor/AUX Heat Lockout Temperatures on the app You can jump W1 to this terminal to manually activate ALT Heating source as E heat

To change or update wiring details after installation:

1. Select Thermostat device tile in the Google Home app
2. Go to Settings > Equipment > Wiring > Update Wiring

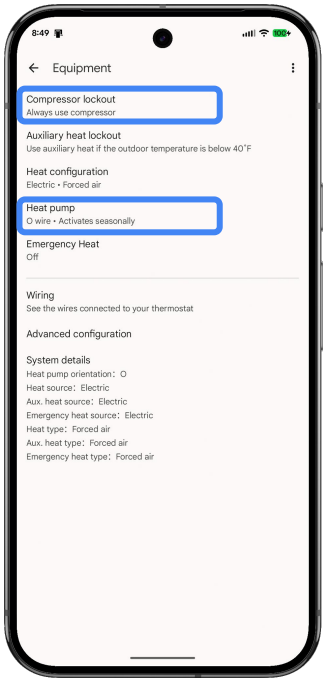
Nest Pro

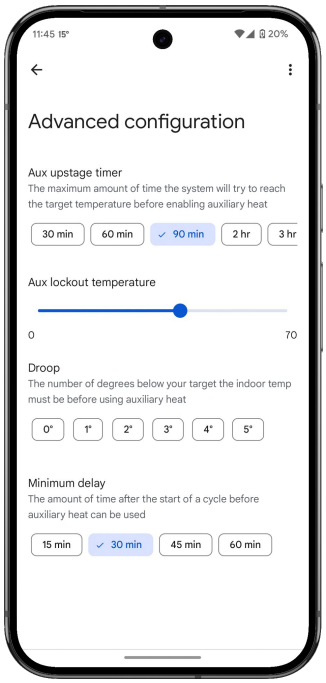
Custom Heat Pump Settings

Nest thermostats

The following Custom Settings are available during the Pro Setup and can be adjusted after configuration through the customer's Google Home app. For a **Single Fuel system,** the custom settings include; Auxiliary Lockout Temp, Aux Upstage Timer, Droop or Minimum Delay.
For a **Dual Fuel system,** you will always choose an Alternate Heat Lockout Temp, but can also choose an Alternate Heat Changeover timer that will work in tandem with the lockout temp.

Feature Default & Range	Google Home App
"Auxiliary Upstage Timer" *Heat Pumps with AUX* **Default:** 90 minutes **Range:** 30 min, 60 min, 90 min, 2 hr, 3 hr, 5 hr, 8 hr, 12 hr	Thermostat ⟶ Settings ⟶ Equipment ⟶ Heat Pump ⟶ Advanced Configuration ⟶ - Auxiliary Upstage Timer - Auxiliary Lockout Temp - Droop - Minimum Delay
"Auxiliary Lockout Temp" *Heat Pumps with AUX* **Default:** 40°F **Range:** 0°F to 70°F, Always or Never	
"Droop" *Heat Pumps with AUX* **Default:** 0°F **Range:** 0°F, 1°F, 2°F, 3°F, 4°F, 5°F	
"Minimum Delay" *Heat Pumps with AUX* **Default:** 15 minutes **Range:** 15 min, 30 min, 45 min, 60 min	
"Alternate Heat Changeover Timer" *Dual Fuel / Heat Pumps with Alt* **Default:** 4 hours **Range:** 1 hr, 2 hr, 4 hr, 8 hr, 12 hr	Thermostat ⟶ Settings ⟶ Equipment ⟶ Heat Pump ⟶ Advanced Configuration ⟶ Alternate Heat Changeover Timer
"Alternate Heat Lockout Temp" *Dual Fuel / Heat Pumps with Alt* **Default:** 30°F **Range:** 10°F to 50°F, Always or Never	Thermostat ⟶ Settings ⟶ Equipment ⟶ Dual Fuel Breakpoint⟶



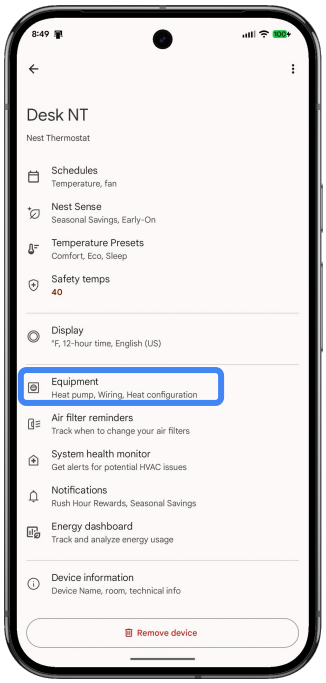


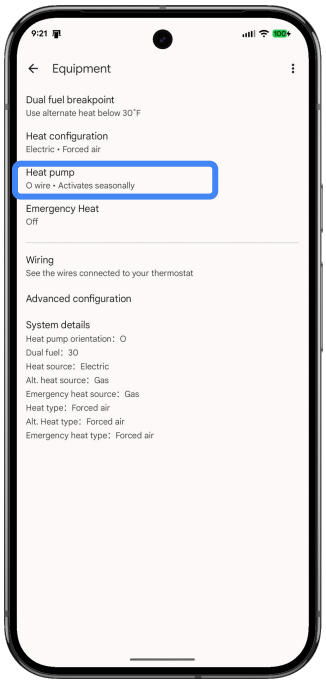
Nest Pro

Navigating Heat Pump Features

Nest thermostats

Feature Default & Range	Google Home App
“Dual Fuel Breakpoint” *Heat Pumps with Alt* **Default:** 30°F **Range:** 10°F to 50°F, Always or Never	Thermostat ⟶ Settings ⟶ Equipment ⟶ Dual Fuel Breakpoint⟶
“Heat Pump Balance” *Heat Pumps with AUX* **Default:** Max Comfort **Range:** Max comfort, Max savings, Balanced or “Off”	Thermostat ⟶ Settings ⟶ Equipment ⟶ Heat Pump ⟶ Use Heat Pump Balance
“Compressor Lockout” *Heat Pumps with AUX* **Default:** -25°F **Range:** -25°F to 32°F or Always	Thermostat ⟶ Settings ⟶ Equipment ⟶ Compressor lockout
“Auxiliary Heat Lockout” *Heat Pumps with AUX* **Default:** 40°F **Range:** 0°F to 70°F or Always	Thermostat ⟶ Settings ⟶ Equipment ⟶ Auxiliary Heat Lockout
“Emergency Heat” **Default:** Off **Range:** Manual “On” or “Off”	Thermostat ⟶ Settings ⟶ Equipment ⟶ Emergency Heat





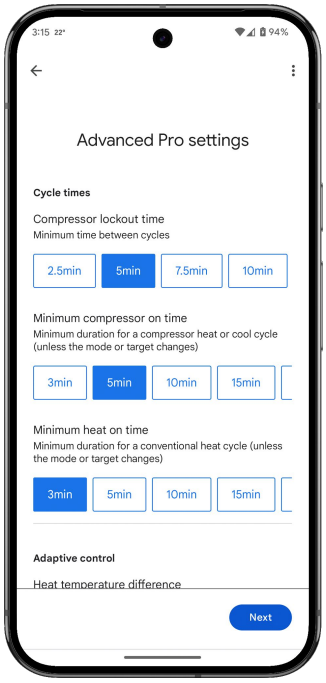
Nest Pro

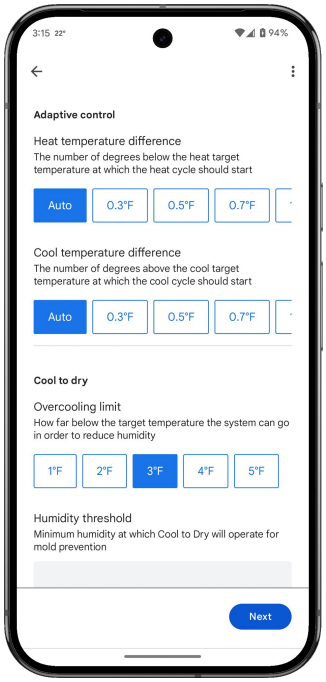
Other Advanced Pro Settings

Nest Thermostats

The following **Advanced Pro Settings** are available during the Pro Setup and can be adjusted after configuration through the customer's Google Home app. Some of these settings will impact Heat Pump functionality. For more information check out the Pro Install Guide

Equipment Settings	Preset or Range
Compressor Lockout Time Minimum time between cycles	**2.5 min (default)**, 5 min, 7.5 min, 10 min
Minimum Compressor On Time Minimum duration for a compressor heat or cool cycle (unless the mode or target changes)	3 min, **5 min (default)**, 10 min, 15 min, 20 min, 25 min, 30 min
Minimum Heat On Time Minimum duration for a conventional heat cycle (unless the mode or target changes)	**3 min (default)**, 5 min, 10 min, 15 min, 20 min, 25 min, 30 min
Heat Temperature Difference Number of degrees below the heat target at which the heat cycle should start	**Intelligently set between 0.3 and 1 °F** °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 Number of degrees below the heat target at which the cool cycle should start	**Intelligently set between 0.3 and 1 °F** °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 To Dry - Overcooling Limit* How far below the target temperature the system can go in order to reduce humidity	°F Options: 1°, 2°, **3° (default)**, 4°, 5° °C Options: 0.5°, 1°, **1.5° (default)**, 2°, 2.5°
Cool To Dry - Humidity Threshold* Minimum humidity at which Cool to Dry will operate for mold prevention	55%RH, 60%RH, 65%RH, **70%RH (default)**, 75%RH, 80%RH
Cool To Dry - Minimum Indoor Temperature* Minimum temperature at which Cool to Dry will operate for mold prevention	°F Options: 68° - 85°, **80°F (default)** °C Options: 20° - 29°, **27°C (default)**
Filter Reminder Frequency Time between user reminders based on expected HVAC filter life	250 hrs, **500 hrs (default)**, 750 hrs, 1000 hrs, 1500 hrs, 2000 hrs





** Only available on the Nest Learning Thermostat (4th gen)*