

Configuring Heat Pump Settings

Nest Learning Thermostat & Nest Thermostat E

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:

Uses AUX heat more, reach setpoints faster.

Max Savings:

Uses AUX heat less, aims for savings.

Balanced:

Uses AUX heat when needed.

Off:

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 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:

- Nest Thermostats have a **droop rate of 1°F** and can't be modified.
- Nest thermostats require a Wifi connection to read local weather data to determine the outdoor temperature. The lockout or breakpoint temperatures use the temperature provided by the Wifi connection.
- Without Wifi, the thermostat will use system performance to determine when to engage AUX or ALT heat. The thermostats do not support an outdoor temperature sensor.
- Emergency heat is by default off and must be manually changed to turn on.

 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.

Configuring Heat Pumps; Nest Learning Thermostat



Pro Setup lets you configure how the **Nest Learning 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 |
|--|---|--|--|
| <ul style="list-style-type: none"> • Gas • Electric • Oil • Propane (LP) • Geothermal | <ul style="list-style-type: none"> • Forced air • In-floor radiant • Radiators • Electric baseboard | <ul style="list-style-type: none"> • Activate • Don't activate | <ul style="list-style-type: none"> • Lockout Temps • Emergency Heat • Humidifier 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 Nest Thermostat E does not have Y2 |
| W1 | Heat Relay (Stage 1) | Alternate Heat (Stage 1) | Only activated below Lockout Temp (Dual Fuel Breakpoint), unless set to "always run when heating" |
| W2 / AUX | Heat Relay (Stage 2) / Auxiliary Heat | Alternate Heat (Stage 2) | Set compressor lockout temp or use Heat Pump Balance Nest Thermostat E does not have W2 |
| O/B | Heat Pump Reversing Valve | Heat Pump Reversing Valve | Orientation can be O or B and activated seasonally or each cycle Nest Thermostat E combines Star and O/B Terminal |
| *STAR | Emergency Heat | Emergency Heat | You can jump W1/W2 to this terminal to manually activate ALT OR AUX Heating source as E heat. |



Navigating Heat Pump Features

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| Feature Default & Range | Thermostat | Nest App | Google Home App |
|---|---|---|--|
| “Dual Fuel Breakpoint” <i>Heat Pumps with ALT</i> Default: 30 Range: 10-50, Always or Never | Settings → Equipment → Heat Pump → Compressor Lockout | Settings → Thermostat → Equipment → Dual Fuel | Thermostat Device → Settings → Device features → Thermostat → Dual fuel breakpoint |
| “Heat Pump Balance” <i>Heat Pumps with AUX</i> Default: Max Comfort Range: Max comfort, Max savings, Balanced or “Off” | Settings → Nest Sense → Heat Pump Balance | Settings → Thermostat → Equipment → Heat Pump Balance | Thermostat Device → Settings → Temperature Preferences → Heat Pump Balance |
| “Compressor Lockout” <i>Heat Pumps with AUX</i> Default: -25 Range: -25 to 32 or Always | Settings → Nest Sense → Heat Pump Balance | Settings → Thermostat → Equipment → Compressor Lockout Temp | Thermostat Device → Settings → Device features → Thermostat → Compressor Lockout |
| “Auxiliary Heat Lockout” <i>Heat Pumps with AUX</i> Default: 40 Range: 0 to 90 or Always | Settings → Nest Sense → Heat Pump Balance | Settings → Thermostat → Equipment → Auxiliary Lockout Temp | Thermostat → Settings → Device features → Thermostat → Auxiliary Heat Lockout |
| “Eco Temps” <i>All equipment</i> Heat Default: 50 Heat Range: 0 to 70 or Off Cool Default: 76 Cool Range: 76 to 90 or Off | Settings → Nest Sense → Eco Temps | Settings → Eco Temps → Set Heat/Cool | Thermostat → Settings → Device features → Temperature Preferences → Eco Temps |