Honeywell 5000 Series Non Programmable Digital Thermostat Instruction Manual

Contents

Honeywell 5000 Series Non-Programmable Digital Thermostat

Product Information

Specifications

- Product Name: Non-Programmable Digital Thermostat
- Power Options: Battery or AC Power
- Wiring Terminal Designations: Rc, R, W, W2, Y, Y2, G, C, O/B, Aux/E, L

Installation Instructions

Wallplate Installation

1. Remove the battery holder from the thermostat.
2. Pull the wallplate from the new thermostat.
3. Pull the wires through the wire hole.
4. Position the wallplate on the wall and use a pencil to mark the hole positions.
5. Drill holes at the marked positions and tap in the supplied wall anchors.
6. Place the wallplate over the anchors and insert and tighten the mounting screws.

Power Options

For primary or backup power, you have two options:

- Insert batteries into the thermostat.
- Connect C for primary AC power (optional if batteries are installed).

Wiring Terminal Designations

The following terminal designations apply to TH5320U/TH5220D or as otherwise noted:

Terminal	Description
Rc	24VAC power from cooling transformer
R	24VAC power from heating transformer
W	Heat relay (stage 1)
W2	Heat relay (stage 2)
Y	Compressor contactor (stage 1)
Y2	Compressor contactor (stage 2)
G	Fan relay
C	24VAC common

Wiring Conventional Systems

The following wiring configurations apply to TH5320U/TH5220D or as otherwise noted:

1H/1C System (1 transformer)

- Rc: Power (cooling transformer)
- R: Power (heating transformer)
- Y: Compressor contactor
- C: 24VAC common
- W: Heat relay
- G: Fan relay

Heat-only System

- W: Heat relay
- C: 24VAC common
- Rc: Power

Heat-only System (Series 20)

- Rc: Power
- R: Series 20 valve terminal R
- Y: Series 20 valve terminal W
- C: 24VAC common
- W: Series 20 valve terminal B

Heat-only System (Normally Open Zone Valve)

- C: 24VAC common

- Rc: Power
- R: Normally open zone valve

1H/1C System (2 transformers)

- Rc: Power (cooling transformer)
- R: Power (heating transformer)
- Y: Compressor contactor
- C: 24VAC common
- W: Heat relay
- G: Fan relay

Heat-only System with Fan

- G: Fan relay
- W: Heat relay
- C: 24VAC common
- Rc: Power

Cool-only System

- Rc: Power
- G: Fan relay
- Y: Compressor contactor
- C: 24VAC common

2H/2C System (1 transformer)

- Y2: Compressor contactor (stage 2)
- W2: Heat relay (stage 2)
- G: Fan relay
- C: 24VAC common
- Y: Compressor contactor (stage 1)
- W: Heat relay (stage 1)

2H/2C System (2 transformers)

- Y2: Compressor contactor (stage 2)
- W2: Heat relay (stage 2)
- G: Fan relay
- C: 24VAC common
- Y: Compressor contactor (stage 1)
- W: Heat relay (stage 1)

FAQ

Q: How do I remove the wallplate from the thermostat?

A: Follow these steps:

1. Remove the battery holder.
2. Pull the wallplate from the new thermostat.

Q: What size holes should I drill for drywall and plaster?

A: Drill 3/16″ holes for drywall and 7/32″ holes for plaster.

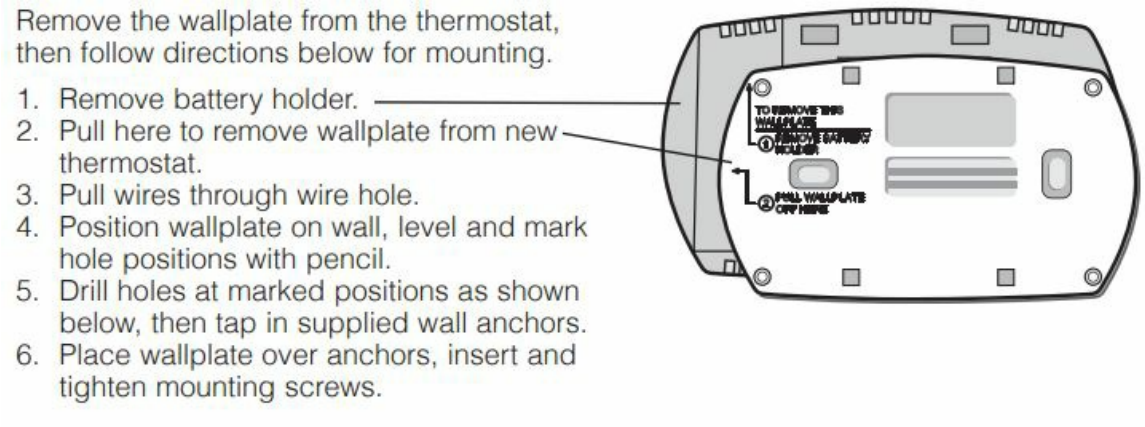
Q: Can I use batteries for primary power?

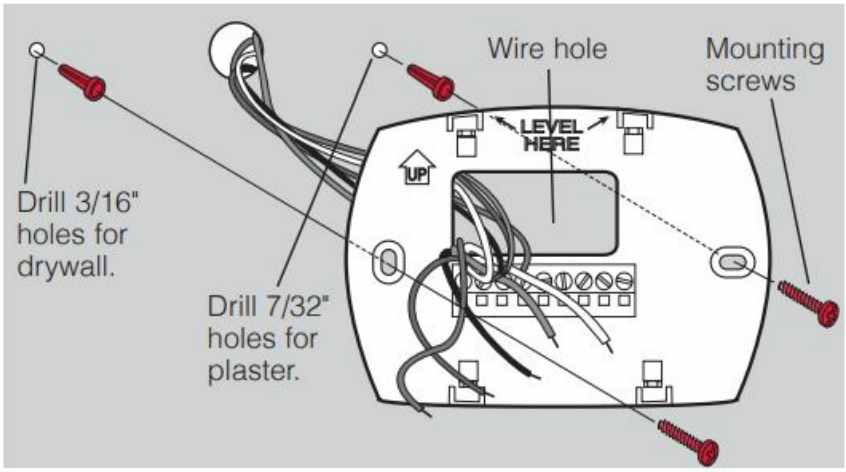
A: Yes, you can insert batteries for primary or backup power.

Q: Do I need to remove the factory-installed jumper for two-transformer systems?

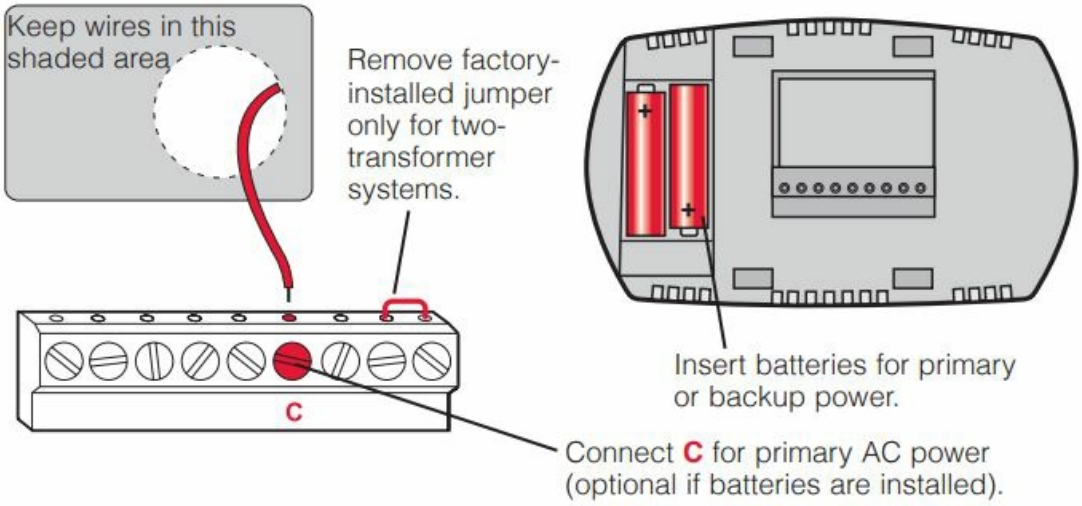
A: Yes, you should remove the factory-installed jumper only for two-transformer systems.

Wallplate installation





Power options

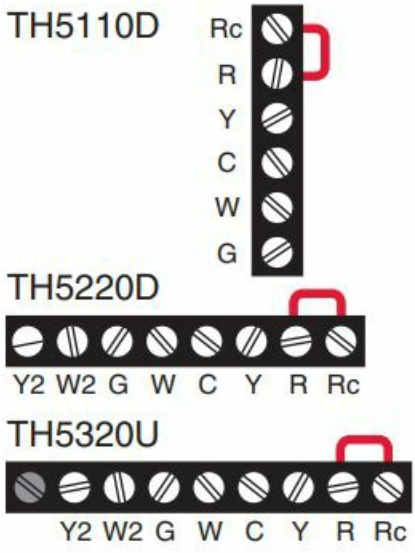


Wiring terminal designations

Shaded areas below apply only to TH5320U/TH5220D or as otherwise noted.

Conventional Terminals:

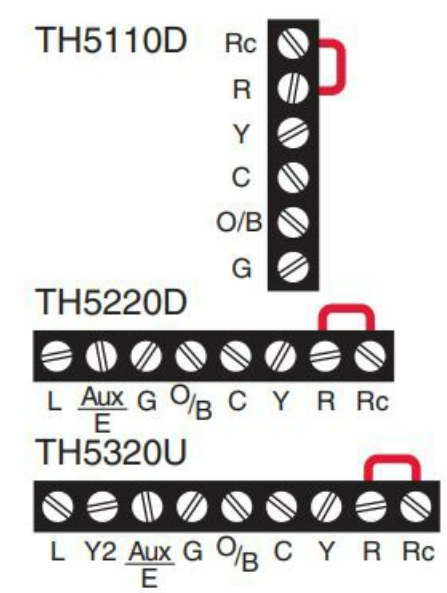
- Rc 24VAC power from the cooling transformer
- R 24VAC power from the heating transformer
- W Heat relay (stage 1)
- W2 Heat relay (stage 2)
- Y Compressor contactor (stage 1)
- Y2 Compressor contactor (stage 2)
- G Fan relay
- C 24VAC common. For 2 transformer systems, use common wire from cooling transformer.



Heat Pump Terminals:

- Rc 24VAC power from the cooling transformer

- R 24VAC power from the heating transformer
- O/B Changeover valve
- Y Compressor contactor
- Y2 Compressor contactor (stage 2) -TH5320U only
- G Fan relay Aux/E Auxiliary/Emergency heat relay
- L Sends output when set to Em. Heat
- C 24VAC common



Wiring conventional systems

Shaded areas below apply only to TH5320U/TH5220D or as otherwise noted.

1H/1C System

(1 transformer)

- Rc Power [1]
- R [R+Rc joined by jumper]
- Y Compressor contactor
- C 24VAC common [3]
- W Heat relay
- G Fan relay

Heat-only System

- Rc Power [1]
- R [R+Rc joined by jumper]
- C 24VAC common [3]

- W Heat relay

Heat-only System

(Series 20) [5]

- Rc [R+Rc joined by jumper]
- R Series 20 valve terminal “R” [1]
- Y Series 20 valve terminal “W”
- C 24VAC common [3]
- W Series 20 valve terminal “B”

Heat-only System

(normally open zone valve) [5]

- Rc [R+Rc joined by jumper]
- R Power [1]
- Y Normally open zone valve
- C 24VAC common [3]

1H/1C System (2 transformers)

- Rc Power (cooling transformer) [1, 2]
- R Power (heating transformer) [1, 2]
- Y Compressor contactor
- C 24VAC common [3, 4]
- W Heat relay
- G Fan relay

Heat-only System with Fan

- Rc Power [1]
- R [R+Rc joined by jumper]
- C 24VAC common [3]
- W Heat relay

- G Fan relay

Cool-only System

- Rc Power [1]
- R [R+Rc joined by jumper]
- Y Compressor contactor
- C 24VAC common [3]
- G Fan relay

2H/2C System (1 transformer) [6]

- Rc Power [1]
- R [R+Rc joined by jumper]
- Y Compressor contactor (stage 1)
- C 24VAC common [3]
- W Heat relay (stage 1)
- G Fan relay
- W2 Heat relay (stage 2)
- Y2 Compressor contactor (stage 2)

2H/2C System (2 transformers) [6]

- Rc Power (cooling transformer) [1, 2]
- R Power (heating transformer) [1, 2]
- Y Compressor contactor (stage 1)
- C 24VAC common [3, 4]
- W Heat relay (stage 1)
- G Fan relay
- W2 Heat relay (stage 2)
- Y2 Compressor contactor (stage 2)

NOTES
Wire specifications: Use 18- to 22-gauge thermostat wire. Shielded cable is not required.

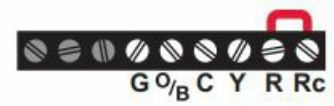
1. Power supply. Provide disconnect means and overload protection as required.
2. Remove jumper for 2-transformer systems.
3. Optional 24VAC common connection.
4. A common connection must come from the cooling transformer.
5. In Installer Setup, set the system type to Heat Only.

6. In Installer Setup, set the system type to 2Heat/2Cool Conventional.
7. In Installer Setup, set the changeover valve to O or B.
8. In Installer Setup, set the system type to 2Heat/1Cool Heat Pump.
9. In Installer Setup, set the system type to 2Heat/2Cool Heat Pump.
10. In Installer Setup, set the system type to 3Heat/2Cool Heat Pump.
11. L terminal sends a continuous output when the thermostat is set to Em. Heat. Connect to Honeywell zoning panels to switch the panel to Emergency Heat

Wiring heat pump systems

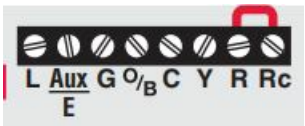
Shaded areas below apply only to TH5320U/TH5220D or as otherwise noted.

1H/1C Heat Pump System



- Rc Power [1]
- R [R+Rc joined by jumper]
- Y Compressor contactor
- C 24VAC common [3]
- O/B Changeover valve [7]
- G Fan relay

2H/1C Heat Pump System (TH5220D only) [8]



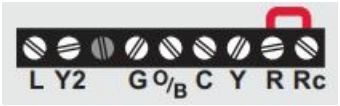
- Rc Power [1]
- R [R+Rc joined by jumper]
- Y Compressor contactor
- C 24VAC common [3]
- O/B Changeover valve [7]
- G Fan relay
- Aux/E Auxiliary/Emergency heat relay
- L Sends output when set to Em. Heat [11]

2H/1C Heat Pump System (TH5320U only) [8]

- Rc Power [1]
- R [R+Rc joined by jumper]
- Y Compressor contactor

- C 24VAC common [3]
- O/B Changeover valve [7]
- G Fan relay
- Aux/E Auxiliary/Emergency heat relay
- L Sends output when set to Em. Heat [11]

2H/2C Heat Pump System (TH5320U only) [9]



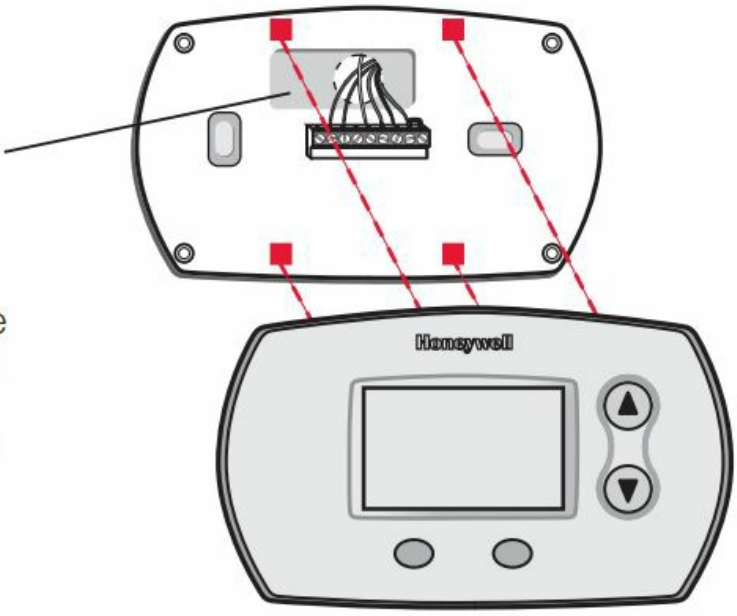
- Rc Power [1]
- R [R+Rc joined by jumper]
- Y Compressor contactor (stage 1)
- C 24VAC common [3]
- O/B Changeover valve [7]
- G Fan relay
- Y2 Compressor contactor (stage 2)
- L Sends output when set to Em. Heat [11]

3H/2C Heat Pump System (TH5320U only) [10]

- Rc Power [1]
- R [R+Rc joined by jumper]
- Y Compressor contactor (stage 1)
- C 24VAC common [3]
- O/B Changeover valve [7]
- G Fan relay
- Aux/E Auxiliary/Emergency heat relay
- Y2 Compressor contactor (stage 2)
- L Sends output when set to Em. Heat [11]

Thermostat mounting

1. Push excess wire back into the wall opening.
2. Plug wall opening with non-flammable insulation.
3. Align the 4 tabs on the wallplate with corresponding slots on the back of the thermostat.
4. Push gently until the thermostat snaps in place.



Installer setup

Follow the procedure below to configure the thermostat to match the installed heating/cooling system, and customize feature operation as desired.

1. To begin, press and hold the ▲ and FAN buttons until the display changes.
2. Press ▲ or ▼ to change settings.
3. Press NEXT to advance to next function.
4. Press DONE to exit and save settings.

Setup function Settings & options (factory default in bold)

Shaded areas below apply only to TH5320U/TH5220D or as otherwise noted.

1	**System type**	**0**	**1 heat/1 cool conventional**
		1	1 heat/1 cool heat pump (no aux. heat)
		2	Heat only — 2-wire systems, 3-wire zone valves (Series 20), and normally open zone valves
		3	Heat only with fan
		4	Cool only
		5	2 heat/1 cool heat pump (with aux. heat)
		6	2 heat/2 cool conventional
		7	2 heat/1 cool conventional
		8	1 heat/2 cool conventional
		9	2 heat/2 cool heat pump (no aux. heat) - **TH5320U** only
		10	3 heat/2 cool heat pump (with aux. heat) - **TH5320U** only
2	**Changeover valve (O/B terminal)**	**0**	**Changeover valve (O/B terminal energized in cooling)**
		1	Changeover valve (O/B terminal energized in heating)
3	**Fan control (heating)**	**0**	**Gas or oil furnace — equipment controls fan in heating**
		1	Electric furnace — thermostat controls fan in heating
5	**Stage 1 heat cycle rate** (CPH: cycles/hour)*	**5**	**For gas or oil furnaces of less than 90% efficiency**
		1	For steam or gravity systems
		3	For hot water systems & furnaces of over 90% efficiency
		9	For electric furnaces
6	**Stage 2 heat cycle rate/Auxiliary heat cycle rate** (CPH)*	**5**	**For gas or oil furnaces of less than 90% efficiency**
		1	For steam or gravity systems
		3	For hot water systems & furnaces of over 90% efficiency
		9	For electric furnaces
7	**Auxiliary heat cycle rate** (CPH)* **Only TH5320U for 3H/2C Heat Pumps**	**5**	**For gas or oil furnaces of less than 90% efficiency**
		1	For steam or gravity systems
		3	For hot water systems & furnaces of over 90% efficiency
		9	For electric furnaces

*[Other cycle rate options: 2, 4, 6, 7, 8, 10, 11 or 12 CPH]

Setup function Settings & options (factory default in bold)

Shaded areas below apply only to **TH5320U/TH5220D** or as otherwise noted.

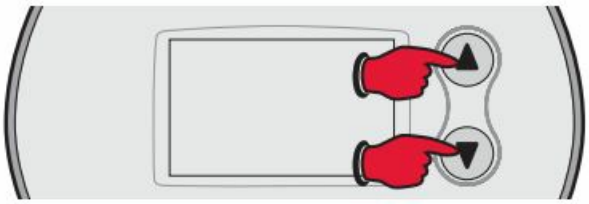
9	**Stage 1 compressor cycle rate (CPH)**	**3**	**Recommended for most compressors** [Other cycle rate options: 1, 2, 4, 5 or 6 CPH]
10	**Stage 2 compressor cycle rate (CPH)**	**3**	**Recommended for most compressors** [Other cycle rate options: 1, 2, 4, 5 or 6 CPH]
12	**Manual/Auto changeover**	**0**	**Manual changeover (Heat/Cool/Off)**
		1	Auto changeover (Heat/Cool/Auto/Off)
		2	Auto changeover only (Auto)
14	**Temperature display**	**0**	**Fahrenheit**
		1	Celsius
15	**Compressor protection**	**5**	**Five-minute compressor off time** [Other options: 0, 1, 2, 3 or 4-minute off time]
26	**Auxiliary heat control**	**0**	**Comfort**
		1	Economy
27	**Heat temperature range stops**	**90**	**Max. heat temperature setting is 90 °F (32 °C)** [Other options: 40 °F to 89 °F (4.5 °C to 31.5 °C)]
28	**Cool temperature range stops**	**50**	**Min. cool temperature setting is 50 °F (10 °C)** [Other options: 51 °F to 99 °F (10.5 °C to 37 °C)]

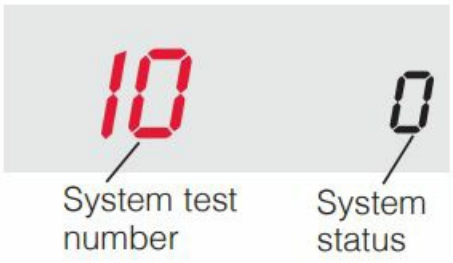
Special function

- Auxiliary heat control (Setup Function 26):
- Comfort Setting: The thermostat will prioritize comfort over economy depending on heat pump performance, load conditions and whether the thermostat is calling for the heat pump. Raising the temperature just a few degrees will often activate the auxiliary heat.
- Economy Setting: The thermostat will attempt to reach the temperature setting without activating the auxiliary heat. The thermostat will wait to activate the auxiliary heat depending on heat pump performance, load conditions and how many degrees the temperature setting is changed.

Installer system test

1. To begin, press and hold the ▲ and ▼ buttons until the display changes.
2. Press ▲ / ▼ to turn system on/off.
3. Press NEXT to advance to the next test
4. Press DONE to terminate the system test.





System test		System status	
Shaded areas below apply only to **TH5320U/TH5220D** or as otherwise noted.			
10	**Heating system**	0	Heat and fan turn off.
		1	Stage 1 heat turns on. Fan turns on if Setup Function 1 is set to 1, 5, 9 or 10 OR Setup Function 3 is set to 1
		2	Stage 2 heat turns on
		3	Stage 3 heat turns on - **TH5320U** only
20	**Emergency heating system**	0	Heat and fan turn off
		1	Heat and fan turn on
30	**Cooling system**	0	Compressor and fan turn off
		1	Compressor and fan turn on
		2	Stage 2 compressor turns on
40	**Fan system**	0	Fan turns off
		1	Fan turns on

Specifications

- Temperature Ranges
  - Heat: 40° to 90°F (4.5° to 32°C)
  - Cool: 50° to 99°F (10° to 37°C)
- Operating Ambient Temperature
  - 32° to 120°F (0° to 48.9°C)
- Shipping Temperature
  - -20° to 120°F (-28.9° to 48.9°C)
- Operating Relative Humidity
  - 5% to 90% (non-condensing) Physical Dimensions
  - **TH5220D**
    - 3-9/16” H x 5-13/16” W x 1-1/2” D 91 mm H x 147 mm W x 38 mm D TH5220D
    - 3-7/16” H x 4-1/2” W x 1-5/16” D 86 mm H x 114 mm W x 33 mm D

Electrical Ratings

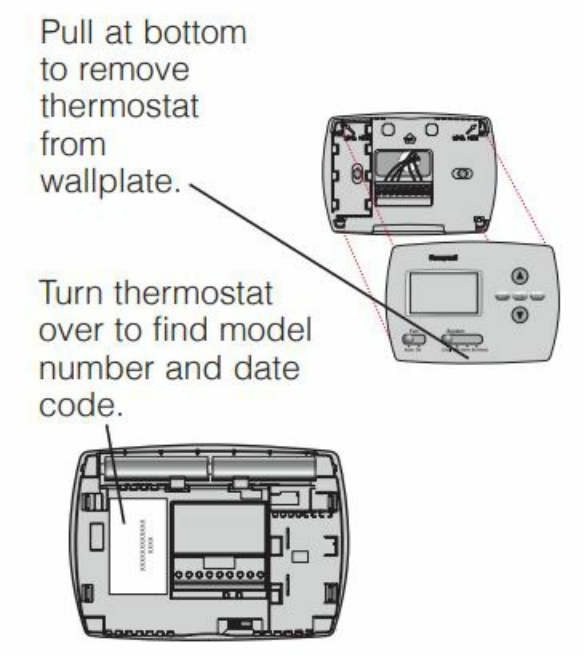
Terminal	Voltage (50/60Hz)	Running Current
W Heating	20-30 Vac	0.02-1.0 A
(Powerpile)	750 mV DC	100 mA DC
W2 (Aux/E) Heating	20-30 Vac	0.02-1.0 A
Y Cooling	20-30 Vac	0.02-1.0 A
Y2 Cooling	20-30 Vac	0.02-1.0 A
G Fan	20-30 Vac	0.02-0.5 A
O/B Changeover	20-30 Vac	0.02-0.5 A
L Output	20-30 Vac	0.02-0.5 A

Customer Assistance

For assistance with this product, please visit

- customer.honeywell.com.

Or call Honeywell Customer Care toll-free at 1-800-468-1502.



CAUTION:

- **EQUIPMENT DAMAGE HAZARD**
  - Compressor protection is bypassed during testing. To prevent equipment damage, avoid cycling the compressor quickly.

CAUTION:

- **ELECTRICAL HAZARD**
  - Can cause electrical shock or equipment damage. Disconnect power before beginning installation.

CAUTION:

- **MERCURY NOTICE**
  - If this product is replacing a control that contains mercury in a sealed tube, do not place the old control in the trash. Contact your local waste management authority for instructions regarding recycling and proper disposal.

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Documents / Resources

	Honeywell 5000 Series Non Programmable Digital Thermostat [pdf] Instruction Manual 5000 Series Non Programmable Digital Thermostat, 5000 Series, Non Programmable Digital Thermostat, Programmable Digital Thermostat, Digital Thermostat, Thermostat
	Honeywell 5000 Series Non Programmable Digital Thermostat [pdf] Instruction Manual TH5110D, TH5220D, TH5320U, 5000 Series Non Programmable Digital Thermostat, 5000 Series, Non Programmable Digital Thermostat, Digital Thermostat, Thermostat

References

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