

T7300F Series 2000 Commercial Microelectronic Conventional or Heat Pump Thermostat

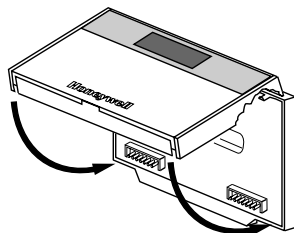
TRADELINE®

INSTALLATION INSTRUCTIONS

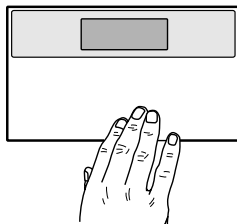
APPLICATION

The T7300F Thermostat provides electronic control of 24 Vac commercial single zone heating, ventilating and air conditioning (HVAC) equipment. When used with a Q7300A,G,L Subbase, the thermostat is automatically configured for conventional heat/cool applications. When used with a Q7300H Subbase, the thermostat is configured for conventional or heat pump applications, depending on subbase model. When used with a Q7300C,D Subbase, the thermostat is automatically configured for heat pump applications. The T7300F is also field configurable for automatic or manual changeover between heating and cooling. The system and fan selections are made by keyboard entry. All T7300F Thermostats require a common wire to supply power.

A. ENGAGE TABS AT TOP OF THERMOSTAT AND SUBBASE OR WALLPLATE.



B. PRESS LOWER EDGE OF CASE TO LATCH.



M4824A

Fig. 1. Mount thermostat on subbase.



RECYCLING NOTICE

If this control is replacing a control that contains mercury in a sealed tube, do *not* place your old control in the trash.

Contact your local waste management authority for instructions regarding recycling and the proper disposal of the old thermostat.

INSTALLATION

When Installing this Product...

1. Read these instructions carefully. Failure to follow the instructions can damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After completing installation, use these instructions to check out the product operation.

Mount Thermostat on Subbase

The thermostat mounts on the subbase after it is installed.

1. Engage tabs at the top of thermostat and subbase. See Fig. 1.
2. Press lower edge of case to latch.

NOTE: To remove the thermostat from the wall, first pull out at the bottom of the thermostat; then remove the top.

SETTINGS

Using Thermostat Keys

The thermostat keys are used to:

- set current time and day,
- program times and setpoints for heating and cooling,
- override the program temperatures,
- display present setting,
- set system and fan operation,
- configure Installer Setup,
- check Installer System Test

See Fig. 2 for key information.



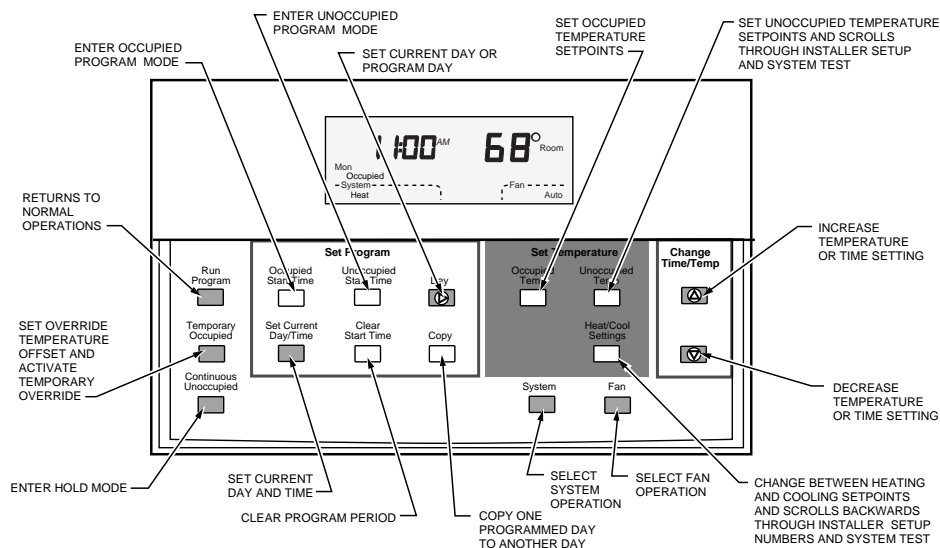


Fig. 2. Thermostat key locations and descriptions.

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Set System and Fan (select models)

The system default setting is Heat. The fan default is set so the fan operates continuously in Occupied and Recovery mode and with the heating or cooling equipment in Unoccupied mode. Use the System and Fan keys to change the settings.

The system settings are:

- Em Heat (Q7300C,D and H heat pump models): Emergency heat relay is on continuously. Thermostat cycles highest stage of heat. Cooling system is off. Compressor is de-energized.
- Heat: Thermostat controls the heating.
- Off: Both the heating and cooling are off.
- Cool: Thermostat controls the cooling.
- Auto: Thermostat automatically changes between heating and cooling operation depending on the indoor temperature.

The fan settings are:

- On: Fan operates continuously.
- Auto: Equipment controls the fan in the Unoccupied mode. The Intelligent Fan™ operation (Installer Setup number 17) offers three choices for the fan operation in Occupied mode:
 - fan turns on only when there is a call for heating or cooling,
 - fan operates continuously in Occupied mode,
 - fan is on continuously in Occupied and recovery modes.

Set Temperature

Refer to Table 1 for the default temperature setpoints. See Owners Guide form number 63-4356 for complete instructions on changing the setpoints.

Table 1. Default Temperature Setpoints.

Control	Occupied	Unoccupied
Heating	70°F (21°C)	55°F (13°C)
Cooling	78°F (25.5°C)	90°F (32°C)

INSTALLER SETUP

NOTE: For most applications, the thermostat factory-settings do not need to be changed. Review the factory-settings in Table 2 and if no changes are necessary, go to the Installer System Test section.

The Installer Setup is used by the installer to customize the thermostat to specific systems. Installer Setup numbers are listed in Table 2. The table includes all the configuration options available.

A combination of key presses are required to use the Installer Setup feature.

- To enter the Installer Setup, press and hold the Heat/Cool Settings key with both the increase Δ and ∇ decrease keys until the first number is displayed. All display segments appear for approximately three seconds before the number is displayed. See Fig. 3 and 4.

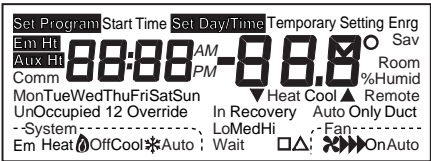


Fig. 3. LCD display of all segments.

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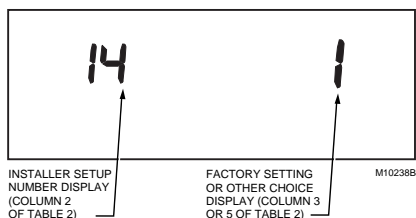


Fig. 4. Installer Setup number and setting display.

- To advance to the next Installer Setup number, press the Unoccupied Temp key.
- To return to a previous Installer Setup number, press the Heat/Cool Settings key.
- To change a setting, use the increase Δ or ∇ decrease key.
- To exit the Installer Setup, press the Run Program key. The Installer Setup is automatically exited if no key presses are made for four minutes.

Installer Setup numbers are listed in Table 2.



CAUTION

Possible equipment damage.
Fan must be running when system is operating or equipment damage can result.

Heat pump and electric heat systems must be configured in Installer Setup 2 to prevent equipment damage caused by the system from running without the fan.

IMPORTANT

Only configurable numbers are shown on the device. Example: If thermostat does not have a system key, Installer Setup Number 12 will not be displayed. Review Table 2 factory-settings and mark any desired changes in the Actual Setting column. When Installer Setup is complete, review the settings to confirm that they match the system.

Table 2. Thermostat Installer Setup Options.

Select	Installer Setup Number (Press Unoccupied Temp Key to change)	Factory Setting		Other Choices (Press Δ or ∇ key to change)		Actual Setting
		Display	Description	Display	Description	
Not used.	1	—	—	—	—	—
Fan operation ^a .	2	0	Conventional applications where equipment controls fan operation in heat mode.	1	Electric heat applications where thermostat controls fan operation in heat mode.	
Output stages of heating.	3	Depends on subbase.	Stages of heat.	0, 1, 2, or 3	0—No heating. 1—One stage of heat. 2—Two stages of heat. 3—Three stages of heat.	
Heating cycle rate.	4	4	Stage 1—4 cph.	3, 6, 8 or 9	3—3 cph used for hot water systems or high efficiency furnaces. 6—6 cph used for conventional systems. 8—8 cph used for conventional systems. 9—9 cph used for electric heat systems.	
	5	4	Stage 2—4 cph.			
	6	4	Stage 3—4 cph.			
	7	4	Emergency heat relay is on continuously. Highest stage of heat cycles at 4 cph (Q7300C,D,H [heat pump models only]).			
Output stages of cooling.	8	Depends on subbase.	Stages of cooling.	0, 1, 2 or 3	0—No cooling. 1—One stage of cool. 2—Two stages of cool. 3—Three stages of cool.	
Cooling cycle rate.	9		Stage 1—4 cph.	3	3—3 cph. 4—4 cph.	
	10		Stage 2—4 cph.			
	11		Stage 3—4 cph.			
System setting adjustment (models with System key).	12	Depends on model.	System selection.	0, 1 or 2	0—System setting key is operational. 1—Auto setting is disabled. 2—Auto only setting.	

(Continued)

Table 2. Thermostat Installer Setup Options (Continued).

Select	Installer Setup Number (Press Unoccupied Temp key to change)	Factory Setting		Other Choices (Press Δ or ∇ key to change)		Actual Setting
		Display	Description	Display	Description	
Not used.	13	—	—	—	—	—
Degree temperature display.	14	0	Temperature is displayed in °F.	1	Temperature is displayed in °C.	
Displaying temperature.	15	0	Temperature is displayed.	1	Temperature is not displayed.	
Clock format.	16	0	12-hour clock format.	1	24-hour clock format.	
Intelligent Fan™ operation.	17	2	Fan operates continuously in Occupied and Recovery mode. Fan operates with call for heating or cooling in Unoccupied mode.	0 or 1	0—Fan only operates with calls for heating or cooling in Occupied and Unoccupied modes. 1—Fan operates continuously in Occupied mode. Fan operates with calls for heating or cooling in Unoccupied mode.	
Auxiliary Contact Operation.	18	0	0—Time-of-day contacts.	1	1—Economizer contacts.	
Extended fan operation in heating ^a .	19	0	No extended fan operation after the call for heat ends.	1	Fan operation is extended 90 seconds after the call for heat ends.	
Extended fan operation in cooling.	20	0	No extended fan operation after the call for cool ends.	1	Fan operation is extended 90 seconds after the call for cool ends.	
Fan key adjustment (models with Fan key).	21	0	Fan setting key is operational.	1	Fan setting key is Auto only.	
Remote sensing.	22	0	Remote sensing not activated.	1	Remote sensing activated.	
Temperature averaging network ^b .	23	0	Temperature averaging disabled.	1	Temperature averaging between local sensor and remote sensor(s) activated.	
Not used.	24	—	—	—	—	—
Keypad lockout level (keypad lockout is enabled and disabled by dip switch 1 on back of thermostat).	25	0	No lockout.	1 or 2	1—Lockout all keys on thermostat except system and fan settings, temporary setpoint, clock and day adjustments. 2—Lockout all keys except set Current Day/Time, increase Δ and decrease ∇ keys. 3—Lockout all keys except temporary occupied, Set Current Day/Time (for clock, day adjustments).	

^a Number 2 must be set to 1 to extend fan operation.

^b Number 22 must be set to 1 and remote sensor(s) must be installed.

(Continued)

Table 2. Thermostat Installer Setup Options (Continued).

Select	Installer Setup Number (Press Unoccupied Temp Key to change)	Factory Setting		Other Choices (Press Δ or ∇ key to change)		Actual Setting
		Display	Description	Display	Description	
Duration of temporary override.	26	3	3—Three hour override.	1, 8 or 12	1—One hour override. 8—Eight hour override. 12—Twelve hour override.	
Not used.	27 thru 29	—	—	—	—	—
Deadband.	30	2	Heating and cooling setpoints can be set no closer than 2°F (1.1°C).	3 thru 10	Heating and cooling setpoints can be set no closer than the chosen value: 3—3°F (1.7°C) 4—4°F (2°C) 5—5°F (2.5°C) 6—6°F (3°C) 7—7°F (3.5°C) 8—8°F (4°C) 9—9°F (4.5°C) 10—10°F (5°C)	
Interstage control point (Q7300C,D only).	31	0	Disabled.	1 thru 12	Temperature has to change more than the chosen value before the system calls for the next stage. (Example: 68°F (20°C) is the heat setpoint, 2°F (1.1°C) is the interstage setting, temperature is 65.5°F (18.5°C), the second stage turns on, brings the temperature to 66°F (19°C) and turns off. The heat pump continues to run until the setpoint is met.)	
Minimum on-time.	32	2	2-minute minimum on- time for heating and cooling.	0 or 1	No minimum on-time or 1-minute minimum on-time for heating and cooling.	
Minimum off-time for the compressor.	33	4	4-minute minimum off- time for the compressor.	0, 1, 2, 3 or 5	Minimum number of minutes (0 thru 5) the compressor will be off between calls for the compressor.	
Temperature range stops in heating.	34	90	Highest setpoint for heating.	40 to 89	Temperature range (1°F [0.6°C] increments) for heating setpoint.	
Temperature range stops in cooling.	35	45	Lowest setpoint for cooling.	46 to 99	Temperature range (1°F [0.6°C] increments) for cooling setpoint.	
Not used.	36	—	—	—	—	—

(Continued)

Table 2. Thermostat Installer Setup Options (Continued).

Select	Installer Setup Number (Press Unoccupied Temp Key to change)	Factory Setting		Other Choices (Press Δ or ∇ key to change)		Actual Setting
		Display	Description	Display	Description	
Temperature display adjustment.	37	0	No difference in displayed temperature and actual room temperature.	1 thru 6	1—Display adjusts to 1°F (0.6°C) higher than actual room temperature. 2—Display adjusts to 2°F (1.1°C) higher than actual room temperature. 3—Display adjusts to 3°F (1.7°C) higher than actual room temperature. 4—Display adjusts to 1°F (0.6°C) lower than actual room temperature. 5—Display adjusts to 2°F (1.1°C) lower than actual room temperature. 6—Display adjusts to 3°F (1.7°C) lower than actual room temperature.	
Minimum off-times in heating.	38	4	4—4-minute minimum off-time.	0, 1, 2, 3, or 5	Minimum number of minutes (0 thru 5) the heating equipment will be off between calls for heat.	
Not used	39	—	—	—	—	—
Installer Setup lockout (keypad lockout is enabled and disabled by dip switch 1 on back of thermostat).	40	0	0—No Installer Setup lockout.	1	1—Installer Setup lockout activated.	

IMPORTANT

Review the settings to confirm that they match the system. Press Run Program to exit the Installer Setup. Be sure to set the current day and time immediately.

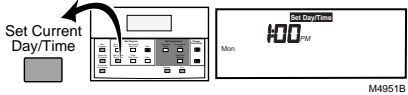
2. Press Day until the current day is displayed.

NOTE: Sun=Sunday, Mon=Monday, Tue=Tuesday, Wed=Wednesday, Thu=Thursday, Fri=Friday, Sat=Saturday.

Set Current Day and Time

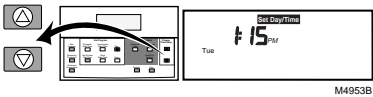
1. Press Set Current Day/Time.

NOTE: On initial power up or after an extended power loss, 1:00 pm flashes on the LCD until a key is pressed.

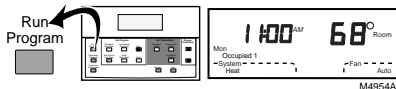


3. Press increase Δ or decrease ∇ until the current time is displayed.

NOTE: Tapping the Set Current Day/Time will change the time in one hour increments.



4. Press Run Program.



INSTALLER SYSTEM TEST

Use the Installer System Test to check the thermostat configurations and operation. Refer to Table 3 for a list of the available system tests.

Table 3. Installer System Tests.

Test Number	System Test Description
10 to 19	Heating equipment can be turned on and off.
20 to 29	Emergency heat (Q7300C,D,H [heat pump models only]) equipment can be turned on and off.
30 to 39	Cooling equipment can be turned on and off.
40 to 49	Fan equipment can be turned on and off.
60 0 to 60 19	Keyboard keys test.
70 to 79	Thermostat information including date code, software versions and subbase identification are displayed.

To start the system test:



CAUTION

Possible Equipment Damage.
Equipment damage can result if compressor is cycled too quickly.

The minimum off time for compressors is bypassed during the Installer System Test.

Press and hold the increase Δ and ∇ decrease keys, at the same time, until 10 appears. All segments of the LCD are displayed for three seconds before 10 appears. See Fig. 5 and 6.

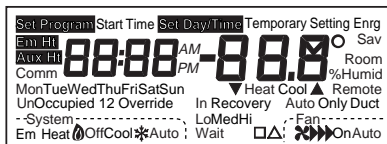


Fig. 5. LCD Display of all segments.

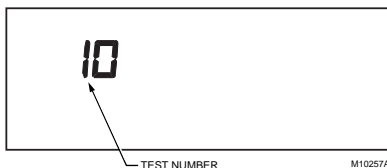


Fig. 6. Test number display.

NOTE: If a duct temperature sensor is installed, the duct temperature is also displayed.

Refer to Table 4 and Thermostat Information section for directions and results of the specific system tests.

NOTE: Press Run Program to exit the system test. The system test times out after four minutes without any key presses.

Table 4. Installer System Test Options.

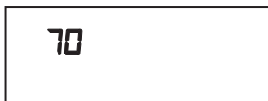
Key to Press	Test Number	Description
Heating Equipment System Test		
Heat/Cool Settings	10	Enter heating equipment system test.
Δ	11	Stage-one heat turns on. The system fan is also energized.
Δ	12	Stage-two heat turns on. Stage-one heat and system fan remain on.
Δ	13	Stage-three heat turns on. Stage-one and stage-two heat with the system fan are on.
∇	12	Stage-three heat turns off.
∇	11	Stage-two heat turns off.
∇	10	Stage-one heat and system fan turn off.

Table 4. Installer System Test Options (Continued).

Key to Press	Test Number	Description
Emergency Heating Equipment System Test (Q7300C,D,H [heat pump models only]).		
Heat/Cool Settings	20	Change from heating to emergency heating equipment system test.
Δ	21	Emergency heat and system fan turn on.
Δ	22	Highest stage heat turns on.
▽	21	Highest stage heat turns off.
▽	20	Emergency heat turns off.
Cooling Equipment System Test		
Heat/Cool Settings	30	Change from heating or emergency heating to cooling equipment system test.
Δ	31	Stage-one cooling and system fan turn on.
Δ	32	Stage-two cool turns on. Stage-one cool and system fan remain on.
Δ	33	Stage-three cool turns on (Q7300G only). Stage-one and stage-two cool with system fan remain on.
▽	32	Stage-three cool turns off.
▽	31	Stage-two cool turns off.
▽	30	Stage-one cool and system fan turn off.
Fan Equipment System Test		
Heat/Cool Settings	40	Change from cooling to fan equipment system test.
Δ	41	Fan turns on.
▽	40	Fan turns off.
Key Operation System Test		
Heat/Cool Settings	60 2	Change from fan to key operation system test.
Unoccupied Temp	60 0	Unoccupied Temp test number is displayed.
Occupied Temp	60 1	Occupied Temp test number is displayed.
Δ	60 3	Increase test number is displayed.
▽	60 5	Decrease test number is displayed.
Clear Start Time	60 7	Clear Start Time test number is displayed.
Day	60 8	Day test number is displayed.
Copy	60 9	Copy test number is displayed.
Unoccupied Start Time	60 10	Unoccupied Start Time test number is displayed.
System (select models)	60 11	System test number is displayed.
Fan (select models)	60 12	Fan test number is displayed.
Set Current Day/Time	60 14	Set Current Day/Time test number is displayed.
Run Program	60 15	Run Program test number is displayed.
Temporary Occupied	60 16	Temporary Occupied test number is displayed.
Occupied Start Time	60 17	Occupied Start Time test number is displayed.
Continuous Unoccupied	60 19	Continuous Unoccupied test number is displayed.

Thermostat Information

1. Press the Heat/Cool Settings key to access the thermostat information.



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2. Press the increase Δ key to display the production date code. The first two large digits are the month and the third digit is the last digit of the year. (Example: 036 = March 1996.)



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3. Press the increase Δ key again to display the software identification code. (Example: 02 = software ID code 2.)



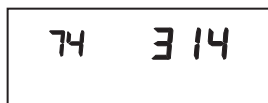
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4. Press the increase Δ key again to display the software revision number. (Example: 001 = revision number 1.)



M10229

5. Press the increase Δ key again to display the EEPROM identification code. (Example: 314 = EEPROM ID 314.)



M4933A

6. Press the increase Δ key again to display the subbase identification code. (Example: HP = heat pump subbase.)



M10290

7. Press Run Program to exit the system test mode. The system test times out after four minutes without any key presses.

Set Keypad Lockout Switch

The dip switch 1 on the back of the thermostat activates the lockout features. The switch must be set to the ON position (up) to activate the lockout feature. See Fig. 7. The factory-setting is off (down). Remove the thermostat from the subbase and set the switch to ON if keypad lockout is desired. The level of lockout is determined by the Installer Setup numbers 25 and 40.

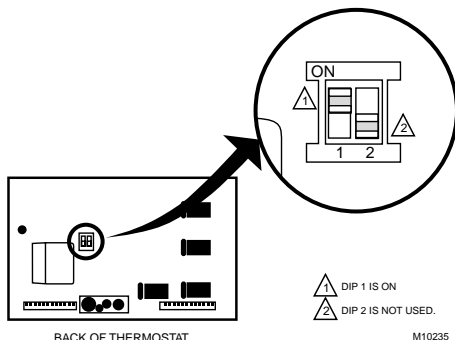


Fig. 7. Set keypad lockout dip switch 1 on back of thermostat.

NOTE: If changing Installer setup number 25 or 40, set dip switch 1 to ON prior to entering Installer setup.

TROUBLESHOOTING GUIDE

Symptom	Possible Cause	Action
Display does not turn on.	Thermostat is not powered.	<ul style="list-style-type: none"> Check that the X terminal is connected to the system transformer. Check for 24 Vac between X and R or RH terminals. <ul style="list-style-type: none"> If missing 24 Vac: <ul style="list-style-type: none"> check if the circuit breaker is tripped; if so, reset the circuit breaker. check if the system fuse is blown; if so, replace the fuse. check if the power switch on the HVAC equipment is in the Off position; if so, set to the On position. check wiring between thermostat and HVAC equipment and replace any broken wires and tighten any loose connections. If 24 Vac is present, proceed with troubleshooting.
Temperature display is incorrect.	Room temperature display has been reconfigured.	Enter Installer Setup number 37 and reconfigure the display.
	Thermostat is configured for °F or °C display.	Enter Installer Setup number 14 and reconfigure the display.
	Bad thermostat location.	Relocate the thermostat.
	Display shows two dashes and a degree sign.	Installer Setup 22 is set for remote sensing and the sensor is missing or the circuit is open or shorted.
Temperature settings will not change. (Example: Cannot set heating higher or cooling lower.)	Upper or lower temperature limits were reached.	Check the temperature setpoints: <ul style="list-style-type: none"> Heating limits are 40 to 90°F (7 to 31°C) Cooling limits are 45 to 99°F (9 to 37°C)
	The setpoint temperature range stops were configured.	Check Installer Setup number 34 and 35 and reconfigure the setpoint stops.
	Keypad is locked. When a locked key is pressed, LOC flashes on the LCD.	<ul style="list-style-type: none"> Reset dip switch 1 on the back of the thermostat to enable the keypad. Enter Installer Setup number 25 or 40 and reconfigure keypad lockout level.
Unable to configure Installer Setup	Installer Setup is locked out.	Reset the dip switch 1 on the back of the thermostat to enable the keypad.
Temperature settings change from original setting.	Heating and cooling setpoints set too close together. There is a deadband in automatic changeover thermostat models. Example: cool setpoint = 72, deadband = 3, heat setpoint = 68, changing heat setpoint to 70 automatically changes the cool setpoint to 73.	<ul style="list-style-type: none"> Check that the heating setpoint is lower than the cooling setpoint. Check Installer Setup number 30 to identify the deadband between heating and cooling setpoints. Reconfigure if desired.
Room temperature is out of control.	Remote temperature sensing is not working.	Checkout all remote sensors.

(Continued)

TROUBLESHOOTING GUIDE (Continued).

Symptom	Possible Cause	Action
Heating does not turn on.	No power to the thermostat.	<ul style="list-style-type: none"> • Check that the X terminal is connected to the system transformer. • Check for 24 Vac between X and R or RH terminals. <ul style="list-style-type: none"> — If missing 24 Vac: <ul style="list-style-type: none"> — check if the circuit breaker is tripped; if so, reset the circuit breaker. — check if the system fuse is blown; if so, replace the fuse. — check if the system switch at the equipment is in the Off position; if so, set to the On position. — check wiring between thermostat and HVAC equipment and replace any broken wires and tighten any loose connections. — If 24 Vac is present, proceed with troubleshooting.
	Thermostat minimum off-time is activated and wait indicator is displayed.	<ul style="list-style-type: none"> • Wait up to five minutes for the system to respond. • Enter Installer Setup number 38. Reconfigure minimum off-time (if required).
	System selection is not set to Heat.	Set system selection to Heat.
Cooling does not turn on.	No power to the thermostat.	<ul style="list-style-type: none"> • Check that X terminal is connected to the system transformer. • Check for 24 Vac between X and R or RC and Y terminals. <ul style="list-style-type: none"> — If missing 24 Vac: <ul style="list-style-type: none"> — check if the circuit breaker is tripped; if so, reset the circuit breaker. — check if the system fuse is blown; if so, replace the fuse. — check if the system switch at the equipment is in the Off position; if so, set to the On position. — check wiring between thermostat and HVAC equipment and replace any broken wires and tighten any loose connections. — If 24 Vac is present, proceed with troubleshooting.
	Thermostat minimum off-time is activated and wait indicator is displayed.	<ul style="list-style-type: none"> • Wait up to five minutes for the system to respond. • Enter Installer Setup number 33. Reconfigure minimum off-time (if required).
	System selection is not set to Cool.	Set system selection to Cool.
System on indicator (flame=heat, snowflake=cool) is displayed, but no warm or cool air is coming from the registers.	Conventional heating equipment turns on the fan when the furnace has warmed up to a setpoint.	Wait one minute after the on indicator lights and then check the registers.
	Heating or cooling equipment is not operating.	Verify operation of heating or cooling equipment in self-test.
24 Vac across all terminals.	This is an arc suppression voltage. Placing a load on the terminal drops the voltage to zero.	No action.

Honeywell

Home and Building Control

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