

XT302C Deluxe Programmable Heat-Cool Thermostat

18-HD25D7-5

INSTALLER'S GUIDE

APPLICATION

The XT302C Deluxe Programmable Heat-Cool Thermostat provides electric control of 24 Vac single-zone multistage systems. Refer to Table 1 for a general description of the thermostat. This thermostat requires a common wire to supply power.

Table 1. Description of XT302C.

Model	System	Changeover	System Selection	Fan Selection	Comments
XT302C	Multistage	Automatic	Heat-Off-Cool-Auto	On-Auto	System and fan selections are done by keyboard.



RECYCLING NOTICE

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

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

Wallplate Installation

Position wallplate horizontally on the wall or on a 2 in. x 4 in. wiring box.

1. Position and level the wallplate for appearance only (the thermostat will function properly even when not level).

INSTALLATION

When Installing this Thermostat...

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.

Location

Install the thermostat about 5 ft (1.5m) above the floor in an area with good air circulation at average temperature. See Fig. 1. Avoid installing the thermostat where it can be affected by the following:

- Drafts, or dead spots behind doors and in corners.
- Hot or cold air from ducts.
- Radiant heat from sun or appliances.
- Concealed pipes and chimneys.
- Unheated (uncooled) areas such as an outside wall behind the thermostat.

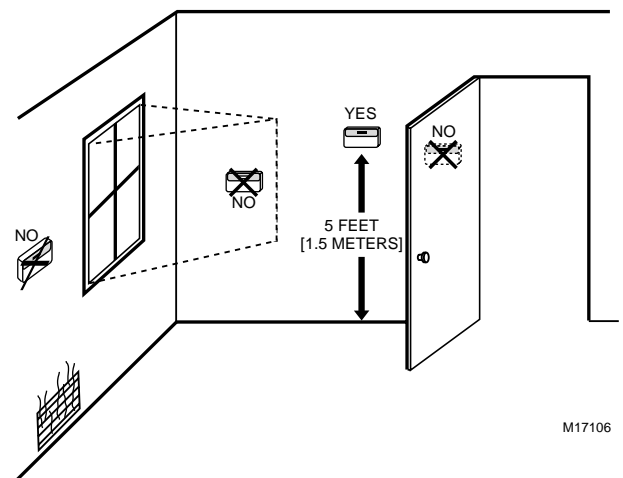


Fig. 1. Typical location of thermostat.



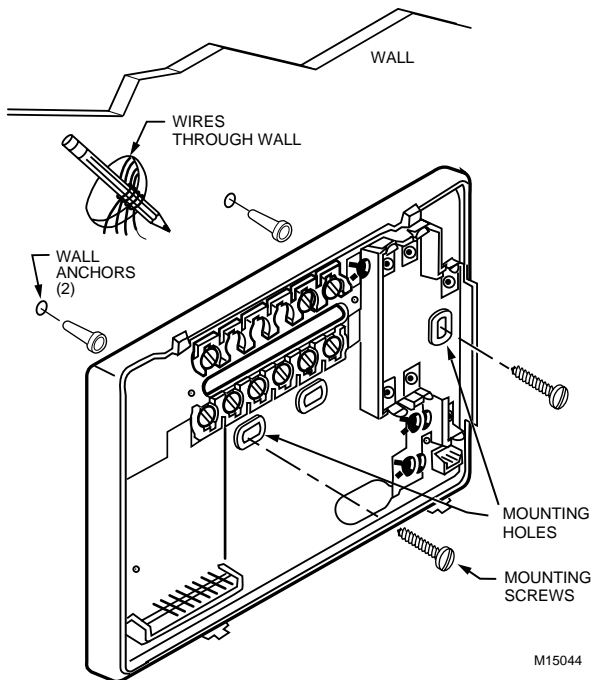


Fig. 2. Mounting the wallplate.

2. Use a pencil to mark the mounting holes. See Fig. 2.
3. Remove the wallplate from the wall and drill two 3/16 inch holes in the wall (if drywall) as marked. For firmer material such as plaster, drill two 7/32 inch holes. Gently tap anchors (provided) into the drilled holes until flush with the wall.
4. Position the wallplate over the holes, pulling wires through the wiring opening.
5. Loosely insert the mounting screws into the holes.
6. Tighten mounting screws.

WIRING

All wiring must comply with local electrical codes and ordinances. Refer to Fig. 3 for typical hookup diagram. A letter code is located near each terminal for identification.

⚠ WARNING

Electronic Shock or Equipment Damage Hazard. Can shock individuals or cause equipment damage.

Disconnect power before wiring to prevent electrical shock or equipment damage.

1. Loosen the terminal screws on the wallplate and connect the system wires. See Fig. 4.

NOTE: Use 18 gauge, color-coded thermostat cable for proper wiring.

2. Securely tighten each terminal screw.
3. Push excess wire back into the hole.
4. Plug the hole with nonflammable insulation to prevent drafts from affecting the thermostat.

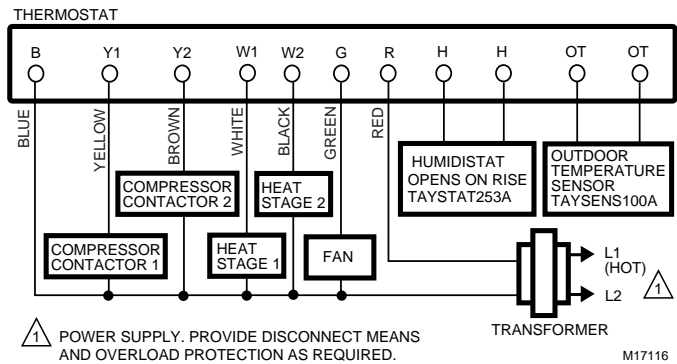


Fig. 3. Typical hookup of XT302C in a heat cool system.

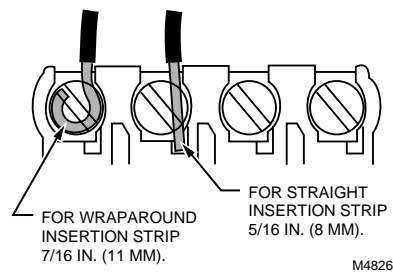


Fig. 4. Proper wiring technique.

Mounting Thermostat

1. Engage tabs at the top of the thermostat and wallplate. See Fig. 5.
2. Press lower edge of case to close and latch.

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

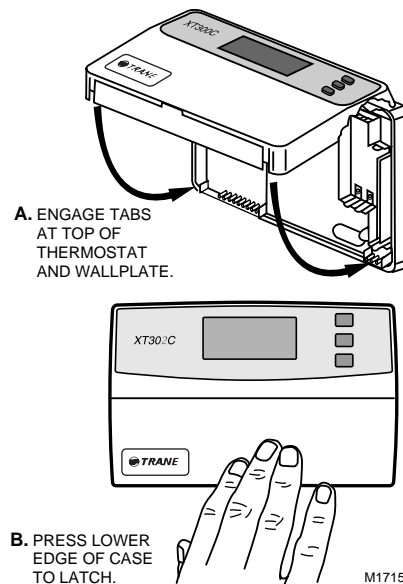


Fig. 5. Mounting thermostat on wallplate.

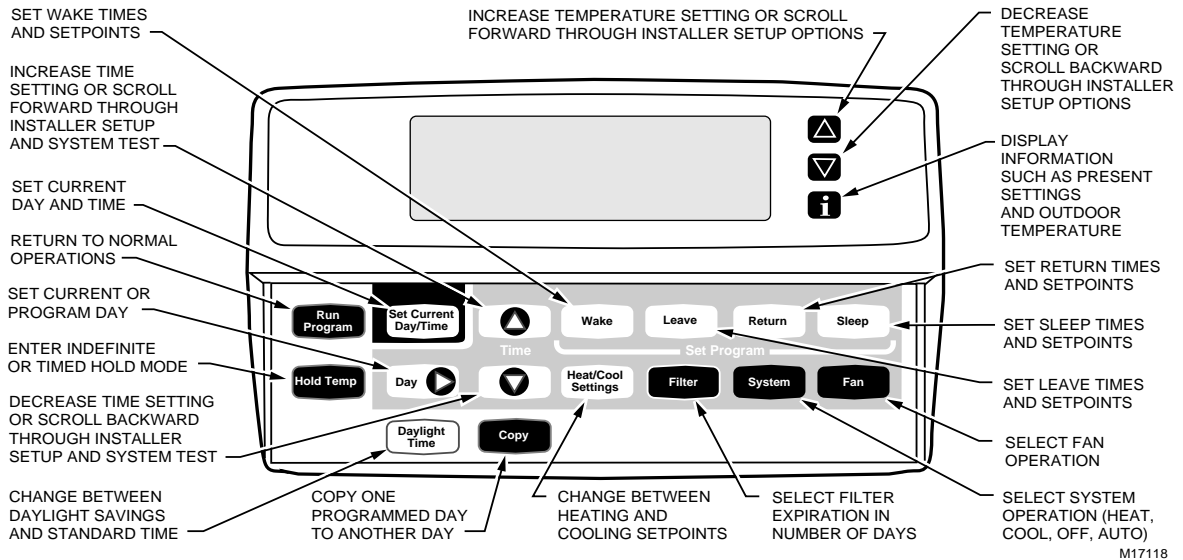


Fig. 6. XT302C key locations and descriptions.

Using Thermostat Keys

The thermostat keys are used to:

- Set current day and time,
- Program times and setpoints for heating and cooling,
- Temporarily override program temperatures,
- Display present setting,
- Configure Installer Setup,
- Check Self-Test,
- Display outdoor temperature (optional accessory),
- Set the system operation, and
- Set the fan operation.

See Fig. 6 for keypad explanation.

System settings control the thermostat operation as follows:

Heat: The thermostat controls the heating.

Off: Both the heating and cooling are off.

Cool: The thermostat controls the cooling.

Auto: The thermostat automatically changes between heating and cooling operation, depending on the indoor temperature.

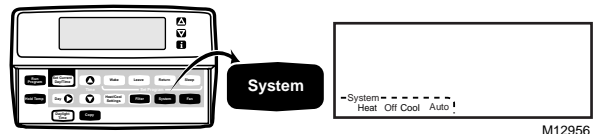


Fig.7. System key location and display.

SETTINGS

System and Fan Settings

The system default setting is Heat and the fan default setting is Auto. Use the System and Fan keys to change the settings. See Figs. 7 and 8. The fan settings can be set for each program period individually. The system selection is for all the program periods.

Fan settings control the system fan as follows:

On: Fan operates continuously.

Auto: Fan operates with equipment.

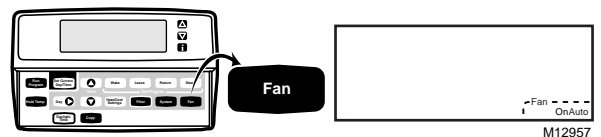


Fig. 8. Fan key location and display.

NOTE: Always press the keys with your fingertip or similar blunt tool. Sharp instruments like a pen or pencil point can damage the keyboard.

Temperature Settings

Refer to Table 2 for the default program. For 7-Day and 24-Hour Operation, the settings are the same for each day of the week. Refer to the Owners Guide, Pub. No. 22-5127-04, for instructions on changing the default settings.

Table 2. Default Program Settings.

Period	Time	Heat Setpoint	Cool Setpoint	Fan Setting
Wake	6:00 AM	70°F (21°C)	78°F (25.5°C)	Auto
Leave	8:00 AM	62°F (16.5°C)	85°F (29.5°C)	Auto
Return	5:00 PM	70°F (21°C)	78°F (25.5°C)	Auto
Sleep	10:00 PM	62°F (16.5°C)	82°F (28°C)	Auto

The Leave, Return and Sleep periods may be cleared. For example, the daytime energy-savings period (from Leave to Return) may not be used by the homeowner. To clear any period, follow the instructions in the Owners Guide in the *Clearing Schedule Period* section.

Comfort-R™ CONTROL	<input type="checkbox"/> OFF	<input type="checkbox"/> ON	
Adaptive Intelligent Recovery™ CONTROL (A HONEYWELL TRADEMARK)	<input type="checkbox"/> ON	<input type="checkbox"/> OFF (CONVENTIONAL RECOVERY)	
COOLING DROOP	<input type="checkbox"/> ON	<input type="checkbox"/> OFF	
TEMPERATURE DISPLAY	<input type="checkbox"/> FARENHEIT (°F)	<input type="checkbox"/> CENTIGRADE (°C)	
CLOCK FORMAT	<input type="checkbox"/> 24-HOUR CLOCK FORMAT	<input type="checkbox"/> 24-HOUR CLOCK FORMAT	
SYSTEM SETTING (HEATING AND COOLING SETTING)	<input type="checkbox"/> AUTO/MANUAL (SYSTEM AUTOMATICALLY SELECTS HEAT OR COOL; YOU CAN SELECT HEAT, COOL OR OFF.)	<input type="checkbox"/> MANUAL ONLY (YOU SELECT HEAT, COOL OR OFF.)	<input type="checkbox"/> AUTO ONLY (SYSTEM AUTOMATICALLY SELECTS HEAT OR COOL)
OUTDOOR TEMPERATURE DISPLAY	<input type="checkbox"/> NO OUTDOOR TEMPERATURE IS DISPLAYED	<input type="checkbox"/> NO OUTDOOR TEMPERATURE IS DISPLAYED	
PROGRAMMING	<input type="checkbox"/> 7-DAY PROGRAMMING	<input type="checkbox"/> 24-HOUR PROGRAMMING	<input type="checkbox"/> CONSTANT TEMPERATURE SETPOINT PROGRAMMING

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Figure 9. Customizing Your Thermostat chart, from Owners Guide, Pub. No. 22-5127-04.

INSTALLER SETUP




The Installer Setup is used to customize the thermostat for specific systems. Some of the options include Comfort-R™ control activation, Fahrenheit vs. Centigrade temperature display, outdoor temperature display (requires outdoor sensor installation), and system changeover. Installer Setup numbers are listed in Table 3. The table includes all the configuration options and the factory-settings for the XT302C Deluxe Programmable Multistage Thermostat .

NOTE: For most applications, the thermostat factory-settings apply. Review the factory settings in Table 2 and if no changes are necessary, go to the Installer Self-Test section.

IMPORTANT

The chart *Customizing Your Thermostat* found in the beginning of the Owners Guide (see Fig. 9) must be completed. The homeowner identifies the options you install by referring to this chart.

Installer Setup Procedure

1. Press and hold the **Information** , **Increase** , and **Decrease**  keys at the same time until all display segments and the first setup number displays (all display segments appear for approximately three seconds before the setup number displays). See Figs. 11 and 12.

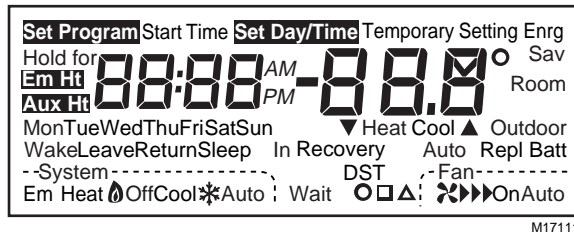


Fig. 10. Display of all the segments of the LCD.

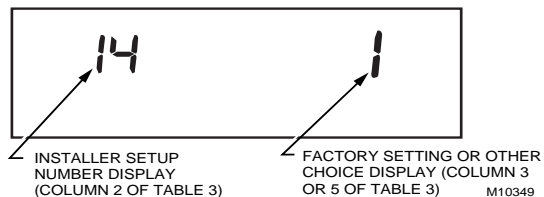


Fig. 11. Display of Installer Setup number and option.

- To advance to the next Installer Setup, press **Time** △.
- To change a setting, press **Increase** ▲ or **Decrease** ▼.
- To scroll the Installer Setup numbers backwards, press **Time** ▽.
- To exit the Installer Setup, press **Run Program**.

IMPORTANT

Only configurable numbers display. *Example: Installer Setup Number 1 does not display because it is not configurable. Review the factory settings in Table 3 and make any desired changes in the Actual Settings column. When the Installer Setup is complete, review the settings to confirm that they match the system and the boxes you checked in the Customizing Your Thermostat chart located in the Owners Guide.*

! CAUTION

Equipment Damage Hazard.
Can cause permanent equipment damage.
 Electric heat systems must be configured to 1 in Installer Setup number 2 to prevent equipment damage caused by the system running without the fan.

Table 3. Installer Setup Options for the XT302C.

Select	Press Time ▲ or ▼ Installer Setup Number	Press Increase ▲ or Decrease ▼ to change setting				Actual Setting
		Factory Setting		Other Choices		
		Display	Description	Display	Description	
Programming	42 Press Time ▼ to bypass 2-41 and go directly to setup #42	0	7-day programming	1 or 2	1—24-hour programming 2—No programming	
Fan operation	2	0	Conventional applications where <i>equipment</i> controls fan operation in heat mode	1	Applications where <i>thermostat</i> controls fan operation in heat mode	
Number of heating Stages	3	2	2 heating stages	0 or 1	0—no heating 1—1 heating stage	
Stage 1 heating cycle rate	4	3	3—3 cph recommended 5, 6, or 9 cph not recommended	5, 6, or 9	5—5 cph 6—6 cph 9—9 cph	
Stage 2 heating cycle rate	5	5	5—5 cph recommended 3, 6, or 9 cph not recommended	3, 6, or 9	3—3 cph 6—6 cph 9—9 cph	
Number of Cooling Stages	8	1	1 cooling stage	0 or 2	0—no cooling 2—2 cooling stages	
Stage 1 cooling cycle rate	9	3	3—3 cph recommended 2 or 5 cph not recommended	2 or 5	2—2 cph 5—5 cph	
Stage 2 cooling cycle rate	10	3	3—3 cph recommended 2 or 5 cph not recommended	2 or 5	2—2 cph 5—5 cph	
System setting adjustment	12	0	Auto changeover	1 or 2	1—Manual changeover 2—Auto changeover only	

(continued)

Table 3. Installer Setup Options for the XT302C (continued).

Select	Press Time ▲ or ▼ Installer Setup Number	Press Increase ▲ or Decrease ▼ to change setting				Actual Setting
		Factory Setting		Other Choices		
		Display	Description	Display	Description	
Adaptive Intelligent Recovery™ control	13	0	Adaptive Intelligent Recovery (a Honeywell trademark) control is activated (system starts early so setpoint is reached by start of program period)	1	Conventional recovery (system starts recovery at programmed time)	
Degree temperature display	14	0	Temperature displays in °F	1	Temperature displays in °C	
Clock format	16	0	12-hour clock format	1	24-hour clock format	
Extended fan operation in heating ^a	19	0	No extended fan operation after the call for heat ends	1, 2 or 3	1—Fan operation extends 30 seconds after the call ends. 2—Fan operation extends 60 seconds after the call ends. 3 —Fan operation extends 90 seconds after the call ends.	
Extended fan operation in cooling	20	0	No extended fan operation after the call for cool ends	1, 2 or 3	1—Fan operation extends 30 seconds after the call ends. 2—Fan operation extends 60 seconds after the call ends. 3 —Fan operation extends 90 seconds after the call ends.	
Outdoor temperature display (select models)	24	0	No outdoor temperature displays	1	Outdoor temperature displays. Requires a TAYSENS100A Outdoor Sensor.	
Comfort-R™ Enable	28	0	No fan delay	1 or 2	1—30 seconds 2—15 seconds	
Minimum Deadband Between Heating and Cooling in Auto Changeover Mode	30	4	Heating and cooling setpoints can be set no closer than 4°F (2°C)	3 thru 10	Heating and cooling setpoints can be set no closer than the chosen value: 3—3°F (1.5°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)	
Minimum On Time (Heat)	32	5	5-minute minimum on time for compressor	0 thru 15	Minimum number of minutes (0 thru 15) the compressor will be on during call for heat	

(continued)

Table 3. Installer Setup Options for the XT302C (continued).

Select	Press Time ▲ or ▼ Installer Setup Number	Press Increase ▲ or Decrease ▼ to change setting				Actual Setting
		Factory Setting		Other Choices		
		Display	Description	Display	Description	
Minimum On Time (Cool)	33	10	10-minute minimum on time for compressor	0 thru 15	Minimum number of minutes (0 thru 15) the compressor will be on during call for cool	
Temperature range stops in heating	34	85	Highest setpoint heating can be set to	55 to 85	Temperature range (1°F increments) heating setpoint can be set to	
Temperature range stops in cooling	35	65	Lowest setpoint cooling can be set to	65 to 99	Temperature range (1°F increments) cooling setpoint can be set to	
Temperature display adjustment	37	0	No difference in displayed temperature and actual room temperature	3, 2, 1, -1, -2, or -3	3—Display adjusts to 3°F higher than actual room temperature 2—Display adjusts to 2°F higher than actual room temperature 1—Display adjusts to 1°F higher than actual room temperature -1—Display adjusts to 1°F lower than actual room temperature -2—Display adjusts to 2°F lower than actual room temperature -3—Display adjusts to 3°F lower than actual room temperature	
Minimum Off Time (Heat)	38	5	5 minute minimum off time for the compressor	0 thru 15	Minimum number of minutes (0 thru 15) the compressor will be off between calls for heat	
Minimum Off Time (Cool)	39	5	5 minute minimum off time for the compressor	0 thru 15	Minimum number of minutes (0 thru 15) the compressor will be off between calls for cool	
Cooling Droop	41	1	Cooling droop activated	0	No cooling droop	
Programming	42 Press Time ▼ to bypass 2-41 and go directly to setup #42	0	7-day programming	1 or 2	1—24-hour programming 2—No programming	

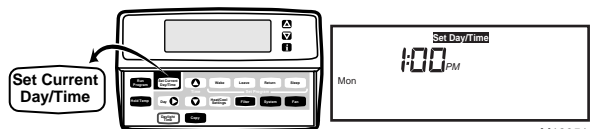
IMPORTANT

Review the settings to confirm that they match the system. Press **Run Program** to exit the Installer Setup. The thermostat saves the Installer Setup changes and initiates a reset in order to operate using the new settings.

NOTE: For initial installations only, set the current day and time following the setup reset.

Setting Current Day and Time

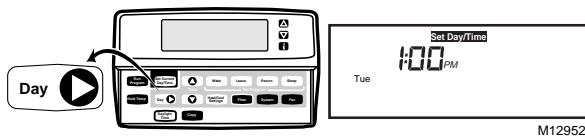
1. Press **Set Current Day/Time**.



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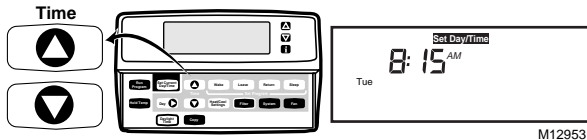
NOTE: On initial power up or after an extended power loss, 1:00 pm flashes on the display until a key is pressed.

2. Press **Day** until the current day displays.



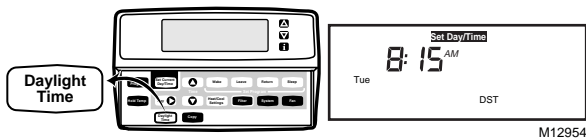
NOTE: Sun=Sunday, Mon=Monday, Tue=Tuesday, Wed=Wednesday, Thu=Thursday, Fri=Friday, Sat=Saturday.

3. Press **Time ▲** or **Time ▼** until the current time displays.

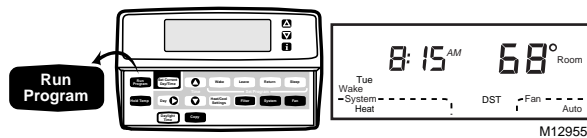


NOTE: Tapping the Set Current Day/Time will change the time in one hour increments.

NOTE: If the current time is Daylight Savings Time, press **Daylight Time** until DST displays.



4. Press **Run Program**.



INSTALLER SELF-TEST

Use the Installer Self-Test to check the thermostat operation. Refer to Table 4 for a list of the available self-tests.

CAUTION

Equipment Damage Hazard.
Equipment damage can occur if the compressor is cycled too quickly.

The minimum off time is deactivated during the Installer Self-Test.
Perform the test so that the compressor is cycled slowly.

To start the self-test:

Press and hold the **Increase ▲** and **Decrease ▼** keys at the same time until all display segments and the number 10 appears (all displays segments appear for approximately three seconds before the test number displays). See Figs. 12 and 13.

Table 4. Tests Available In The Installer Self-Test.

Test Number	Self-Test Description
10	Heating Equipment
30	Cooling Equipment
40	Fan Equipment
50	Comfort-R Terminals (H-H)
60	Keyboard Operation
70	Device Information

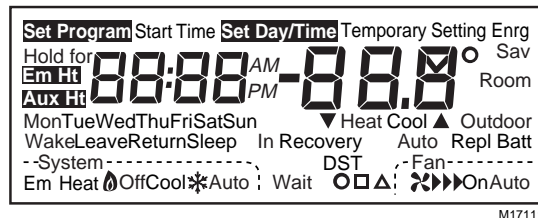


Fig. 12. Display of all the segments of the LCD.

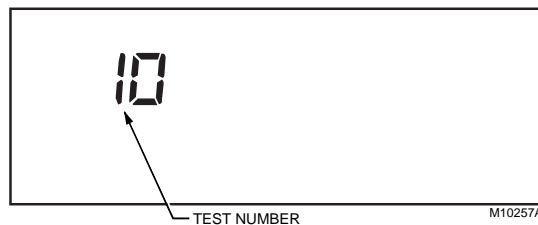


Fig. 13. Display of test number.

Refer to Table 5 for the directions and results of the specific tests.

NOTE: Press **Time ▲** to advance to the next test and **Time ▼** to go back to the previous test. Press **Run Program** to exit the self-test. This mode times out 5 minutes after the last key press.

NOTE: Press **Time ▼** to return to the previous test or **Time ▲** to advance to the next test.

NOTE: To exit, press **Time ▲** or **Time ▼** then **Run Program**.

Table 5. Installer Self-Test Options.

Key to Press	Test Number	Description
Heating Equipment Self-Test (10)		
Time △	10	Enter heating equipment self-test.
Temp ▲	11	First stage heat turns on. When Installer Setup number 2 is 1, the system fan is also energized.
Temp ▲	12	Second stage heat turns on.
Temp ▼	11	Second stage heat turns off.
Temp ▼	10	First stage heat turns off.
Cooling Equipment Self-Test (30)		
Time △	30	Enter cooling equipment self-test.
Temp ▲	31	First stage cool and fan turn on.
Temp ▲	32	Second stage cool turns on.
Temp ▲	31	Second stage cool turns off.
Temp ▼	30	First stage cool and fan turn off.
Fan Equipment Self-Test (40)		
Time △	40	Enter fan equipment self-test.
Temp ▲	41	Fan turns on.
Temp ▼	40	Fan turns off.
Comfort-R Terminals Self-Test (50)		
Temp △	50	Enter Comfort-R self-test.
Temp ▼	51	Reads HH terminals. If the terminals are open and Comfort-R is enabled, display reads % humidity. If the terminals are closed no % humidity displays.
Keyboard Operation Self-Test (60)		
Time △	60 7	Enter keyboard operation self-test.
Temp ▲	60 9	Increase test number displays.
Temp ▼	60 8	Decrease test number displays.
Day	60 11	Day test number displays.
Copy	60 12	Copy test number displays.
System	60 3	System test number displays.
Fan	60 10	Fan test number displays.
Set Current Day/Time	60 1	Set Current Day/Time test number displays.
Run Program	60 15	Run Program test number displays.
Daylight Time	60 19	Daylight Time test number displays.
Heat/ Cool Settings	60 5	Heat/Cool Settings test number displays.
Wake	60 0	Wake test number displays.
Leave	60 14	Leave test number displays.
Return	60 16	Return test number displays.
Sleep	60 2	Sleep test number displays.
Filter	60 17	Filter test number displays.
i	60 13	Information test number displays.
Device Information Self-Test (70) - Refer to following section.		

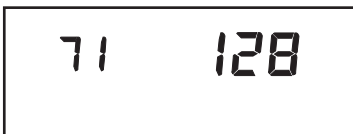
DEVICE INFORMATION SELF-TEST (70)

1. Press **Temp ▲** and **▼** keys simultaneously, then press **Time ▽** to access the thermostat information.



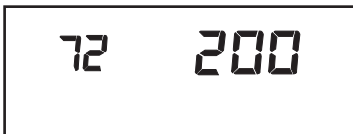
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2. Press **Increase ▲** to display the production date code in a 3-digit format. The first two digits represent the month and the third digit represents the last digit of the year (Example: 128=December 1998).



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3. Press **Increase ▲** again to display the software identification code. (Example: 200 = software ID code 200)



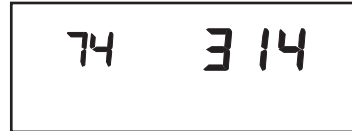
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4. Press **Increase ▲** again to display the software revision number (Example: 001=Revision number 1).



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5. Press the **Increase ▲** again to display the model identification number. (Example: 314 = Model ID 314)



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6. Press **Run Program** to exit the self-test. The self-test mode times out 5 minutes after the last key press.

CHECKOUT

Outdoor Temperature Sensor (optional accessory)

Expose the outdoor temperature to outdoor air for a minimum of five minutes before reading.

TROUBLESHOOTING GUIDE

Symptom	Possible Cause	Action
Display will not come on.	Thermostat is not being powered.	Check for 24 Vac between R and W terminals. Check if the circuit breaker is tripped—reset the circuit breaker. Check if the system fuse is blown—replace the fuse. Check if the power switch on the HVAC equipment is in the Off position—set to the On position. Check wiring between thermostat and HVAC equipment—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.
Temperature displaying digits as dashes (---).	Internal temperature measurement failure.	Contact distributor or retailer.
Temperature settings will not change. (Example: Cannot set the heating higher or the cooling lower.)	The upper or lower temperature limits were reached.	Check the temperature setpoints: Heating limits are 55 to 85°F (13 to 29°C). Cooling limits are 65 to 99°F (18 to 37°C).
	The setpoint temperature range stops were configured.	Check Installer Setup numbers 34 and 35 and reconfigure the setpoint stops.

(continued)

TROUBLESHOOTING (Continued).

Symptom	Possible Cause	Action
Heating will not come on.	No power to the thermostat.	Check for 24 Vac between R and W terminals. If missing 24 Vac: Check if the circuit breaker is tripped—reset the circuit breaker. Check if the system fuse is blown—replace the fuse. Check if the power switch on the HVAC equipment is in the Off position—set to the On position. Check wiring between thermostat and HVAC equipment—replace any broken wires and tighten any loose connections. If 24 Vac is present, proceed with troubleshooting.
Heating will not come on.	Thermostat minimum off time is activated.	Wait up to five minutes for the system to respond.
	System selection is not set to Heat.	Set system selection to Heat.
	Heating setpoint is below room temperature.	Check heating setpoint. Set heating setpoint to desired temperature.
Cooling will not come on.	No power to the thermostat.	Check for 24 Vac between R and W terminals. If missing 24 Vac: Check if the circuit breaker is tripped—reset the circuit breaker. Check if the system fuse is blown—replace the fuse. Check if the power switch on the HVAC equipment is in the Off position—set to the On position. Check wiring between thermostat and HVAC equipment—replace any broken wires and tighten any loose connections. If 24 Vac is present, proceed with troubleshooting.
	Thermostat minimum off time is activated.	Wait up to five minutes for the system to respond. Enter Installer Setup number 39. Reconfigure minimum off time (if required).
	System selection is not set to Cool.	Set system selection to Cool.
	Cool setpoint is above room temperature.	Check cooling setpoint. Set cooling setpoint to desired temperature.
Heating or cooling come on momentarily and shut off	Heat or cool circuit is opening up or becoming high impedance.	Add resistor in parallel with load or install interface relay.
System on indicator (flame=heat, snowflake=cool) displays, but no warm or cool air is coming from the registers.	Heating equipment turns on the fan when the furnace has warmed up to a setpoint.	Wait a minute after seeing the on indicator and then check the registers.
	Heating or cooling equipment is not operating.	Verify operation of heating or cooling equipment in self-test.
Outdoor temperature not displayed or is incorrect.	Option not activated.	Enter Installer Setup number 24 and set to 1. Thermostat must have OT terminals and a TAYSENS100A installed.
	Outdoor sensor is connected incorrectly.	Refer to TAYSENS100A installation instructions and check wiring between the thermostat and sensor.
	Wrong sensor.	Replace sensor with TAYSENS100A sensor.
	Filter expired.	Refer to the <i>Filter Indication</i> section in the Owner's Guide, Pub. No. 22-5127-04
System on indicator reads Filter and backlight is flashing.	Filter expired.	Refer to the <i>Filter Indication</i> section.
Time displaying digits as three E's (EEE).	Internal memory failure.	Contact distributor or retailer.



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