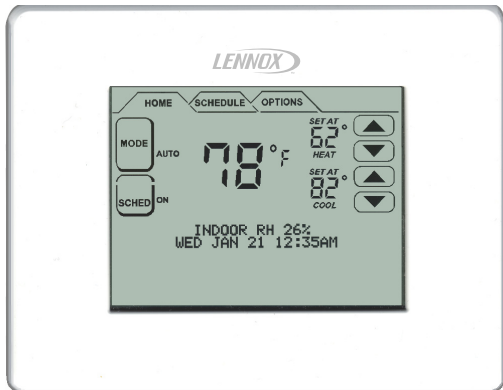




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Shipping and Packing List

- 1 - ComfortSense® Model L7742U touch screen, 7-day programmable thermostat
 - 2 - Mounting screws (M3.5x25mm self-tapping screws)
 - 2 - Wall Anchors
- 1 each - Installation Quick-Start Guide, Programming & Application Guide, Homeowner's Manual, Warranty card, Warranty Audit tag

05/09



PROGRAMMING AND APPLICATION GUIDE

ComfortSense® 7000 Series

Model L7742U Touch Screen Programmable Thermostat

CONTROLS

506228-01

05/09

Supersedes 04/09

 Technical
Publications
Litho U.S.A.

IMPORTANT

Read this manual before programming the thermostat.

Use this thermostat only as described in this manual.

IMPORTANT

In all applications, the ComfortSense® Model L7742U thermostat can only be used with all residential units and approved commercial split-system matches, and those which meet the following installation criteria:

- installation uses 18 GAUGE thermostat wire or larger,
- thermostat wire run length DOES NOT EXCEED 300' (91m),
- load from any thermostat connection is 1 AMP or LESS.

If used with Harmony II® Zone Control System, consult Application Note H-04-5.

506228-01



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NOTE - This thermostat is equipped with automatic compressor protection to prevent potential damage due to short cycling or extended power outages. The short cycle protection provides a 5-minute delay between heating or cooling cycles to prevent the compressor from being damaged.



CAUTION

This is a 24VAC low-voltage thermostat. Do not install on voltages higher than 30VAC.

Do not short (jumper) across terminals on the gas valve or at the system control to test installation. This will damage the thermostat and void the warranty.



WARNING

Always turn off power at the main power source by switching the circuit breaker to the OFF position before installing or removing this thermostat.

All wiring must conform to local and national building and electrical codes and ordinances.

Do not switch system to cool if the outdoor temperature is below 45°F (7°C). This can damage the cooling system.

These instructions are intended as a general guide and do not supersede local codes in any way. Consult authorities having jurisdiction before installation.

Check thermostat for shipping damage. If you find any damage, immediately contact the last carrier.

ComfortSense® Model L7742U Thermostat (Catalog No. Y2081)

Description

The ComfortSense® Model L7742U thermostat is an electronic 7-day universal multi-stage programmable touch screen thermostat. It also offers enhanced capabilities which include:

- humidification measurement and control,
- dew point adjustment control,
- dehumidification measurement and control,
- Humiditrol® Enhanced Dehumidification Accessory (EDA) capability,
- equipment maintenance reminders,
- worry-free memory storage feature,
- menu-driven display.

This thermostat supports heat pump units or non-heat pump units, with up to 4 stages of heating (dual fuel units) and 2 stages of cooling.

Dimensions

Screen dimensions: 3-7/16" (87 mm) width x 2-9/16" (65 mm) height

Case dimensions: 5-7/8" (149 mm) width x 4-9/16" (116 mm) height x 1-1/4" (31mm) depth

Features

Compressor Short Cycle Protection

A 5-minute compressor short cycle protection timer begins when a compressor output is de-energized. Also, if a power loss occurs, the system will go into compressor protection mode and display WAIT in the display if there is a cooling or compressor heating call.

Outdoor Temperature Sensor

An outdoor temperature sensor (**X2658**) is required for dual fuel applications, balance points, dew point humidity control, and with Humiditrol® EDA.

In addition to measuring and displaying outdoor temperature, the outdoor sensor provides dew point adjustment and control for all models. If used with this thermostat, the sensor enables optimal heating equipment operation via programmable balance points.

NOTE - The outdoor sensor uses standard thermostat wiring; it may be wired using two wires of a multi-wire cable.

When the outdoor sensor is connected, the temperature can be displayed in the information display area (see figure 2).

NOTE - For proper operation of Humiditrol® EDA applications, the outdoor sensor (X2658) MUST be installed.

"L" Input

"L" input from the equipment is used to notify the user of an outdoor equipment fault by displaying "HVAC ERROR DETECTED" when one of the following conditions exist:

- "L" terminal is activated with 24VAC and Y1 has been activated for 5 minutes (units without LSOM, but which use Service Light Monitor Kit), OR,
- LSOM error signal is detected on "L" input and Y1 has been activated for 5 minutes.

NOTE - The L input is used for diagnostic information purposes only, it is not intended to provide equipment protection.

Touch Screen Display

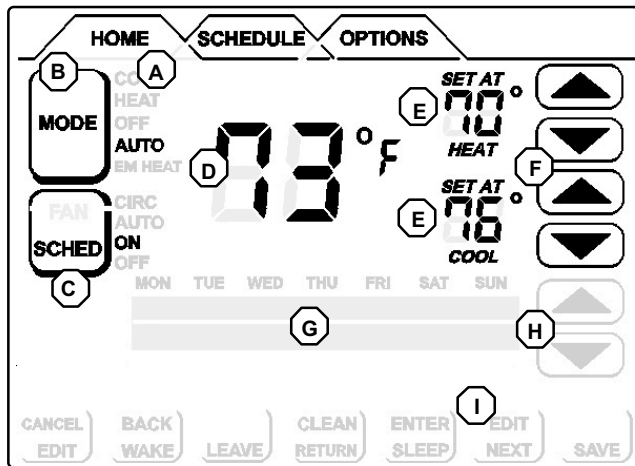


Figure 1. Touch screen display

Press the screen anywhere - the first press turns on the backlight.

A Selection Tabs - Press to select: HOME (normal display), SCHEDULE (for programming), OPTIONS (to set fan operation, alerts, service reminders, and other user and installer settings).

B MODE - press to cycle through HEAT, COOL, AUTO (autochangeover), OFF, EM HEAT (emergency heat).

C SCHED (schedule) - press to change between ON and OFF.

D Displays room temperature.

E Displays the current operation *SET AT* point(s). If MODE is set to AUTO (autochangeover), both HEAT and COOL setpoints are displayed.

F Up/down arrows used for adjusting temperature up or down; if in AUTO (autochangeover) mode, two sets of up/down arrows appear.

G Information display area, displays different information depending on the tab selected:

- HOME tab: displays outdoor temperature (if outdoor sensor X2658 is installed), indoor relative humidity (RH), which mode is calling, hold settings information, service reminders.
- SCHEDULE tab: displays the event being programmed;
- OPTIONS tab: displays a scrolling list of installer- and user-adjustable parameters, including filter and service reminder periods, etc.

H Schedule time adjustment, User/Installer Settings up/down arrows:

- HOME screen: not visible except when executing a HOLD SETTING)
- SCHEDULE and OPTION screens: used to adjust schedule and option settings.

I Dynamic keys - not visible in HOME screen unless executing a HOLD SETTING. For SCHEDULE and OPTIONS settings, these keys appear and change depending on the selection. See the schedule and options sections for details.

Home Screen—Current Conditions & Temperature Settings

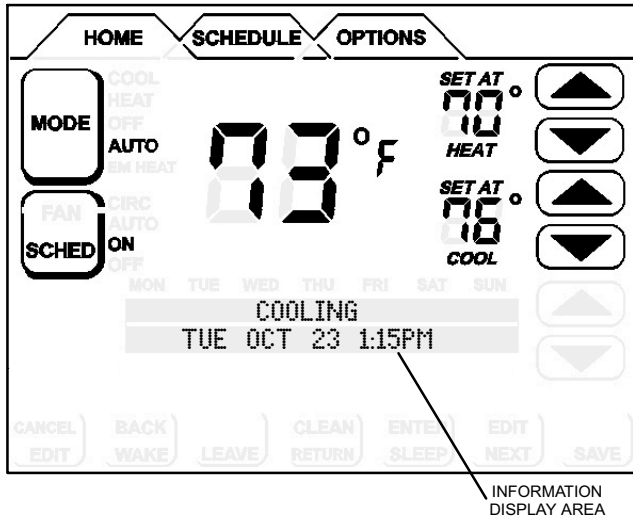


Figure 2. Home Screen

The HOME screen (figure 2) displays indoor temperature and outdoor temperature if the outdoor sensor is installed. Other system operational information, such as indoor relative humidity (if turned on in user settings), dehumidifying, cooling or heating, will alternately be displayed in the information display.

Equipment operation information appears in the boxes along the left side of the home screen to indicate cooling or heating equipment operation setting, and whether scheduled programming is ON or OFF. From these boxes, users can change the unit's mode to HEAT, COOL, AUTO (autochangeover - default), EM HEAT (emergency heat for heat pump applications including dual fuel and HP with Electric Heat), or OFF.

The user can also decide whether to operate the unit per the programmable schedule, or in a non-programmable mode using the SCHED box.

Controlling Heat/Cool Modes of Operation



On initial power up or after an a power loss over 2 hours, the thermostat powers up at the HOME screen in the AUTO position. If it powers up after a power loss of less than 2 hours, it assumes the last mode set. Pressing MODE repeatedly scrolls through all the modes—AUTO, EM HEAT, COOL, HEAT, then back to OFF.

HEAT, COOL and OFF modes are as each name implies. AUTO (autochangeover) allows the thermostat to switch between Heating and Cooling, whichever mode is dictated by the indoor temperature.

EM HEAT (emergency heat) bypasses the first stage of heating (any stage[s] of heat pump heating) and goes directly to the heat stage used for maximum heating to more quickly warm a very cold house.

When the indoor temperature decreases or increases, the HEATING or COOLING cycle will turn on based on the displayed mode. When the HVAC system is on, the INFORMATION DISPLAY AREA (shown in figure 3) will display one or several operational messages (listed in the table below). If the outdoor sensor is connected and is turned on in user settings, outdoor temperature will be included in the displays. The table below summarizes the information messages.

When the faults, errors, and service information displays appear, dynamic keys will appear under the second line entries, REMIND, CLEAR, SERVICE, or RESET. Press the box to perform the action.

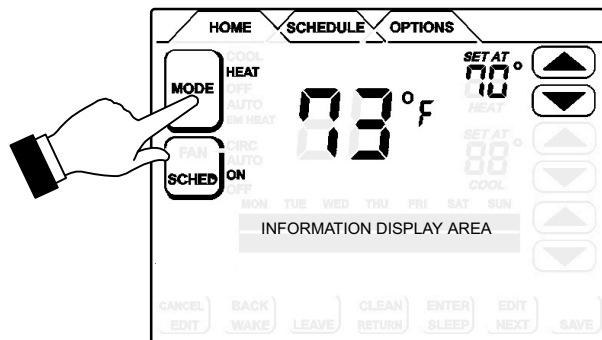


Figure 3. Home Screen

Information Display Area table

Faults, Errors, and Service Information		Operating Information	
TEMP SENSOR ERROR, MEMORY ERROR CALL FOR SERVICE	Top line: fault/error Bot. line: action	SET DATE/TIME Default DATE/TIME <MON JAN 1 12:00 PM>	[First time start up msg]
NO OUTDOOR SENSOR CALL DEALER INFO	Top line: fault/error Bot. line: action	HEATING, COOLING, HUMIDIFYING, DEHUMIDIFYING, SYSTEM OFF, OUTDOOR TEMP xxF, INDOOR RH x% MON SEP 24 3:00 PM	Top line: operation msgs Bottom line: date & time
REPLACE: MEDIA FILTER; UV LAMP; HUM PAD; METAL INSERT REMIND RESET	Top line: serv. req'd Bot. line: action	SCHEDULE ON, SCHEDULE OFF, WAIT, FAN ON, FAN CIRC MON SEP 24 3:00 PM	Top line: operation msgs Bottom line: date & time
ROUTINE SYS CHECK-UP REMIND RESET	Top line: serv. req'd Bot. line: action	HOLD SETTING UNTIL MON SEP 24 3:00 PM	PRESS SCHED TO RESUME PROGRAM [Alternating msgs during a held schedule]
NO OUTDOOR SENSOR, HUM SENSOR ERROR, HVAC ERROR DETECTED REMIND SERVICE	Top line: fault/error Bot. line: action		
DEALER INFORMATION (Edited to show dealer contact information (2 lines))	Contact Installing Dealer		

Controlling the Fan Operation

Fan Modes



If backlight is not on continuous, press the screen anywhere to turn on the backlight. Press the OPTIONS tab to access the FAN mode control.

Press FAN button; repeated presses scroll through all the modes, AUTO, ON, and CIRC (circulate).

- AUTO—the fan is following schedule.
- ON—the fan is NOT following the schedule and runs continuously until it is changed from the OPTIONS screen.
- CIRC—the fan is following schedule and cycles during periods of equipment inactivity. Cycle time is dependent on user settings FAN CIRCULATE (Page 11).

If FAN mode displays AUTO and ON or CIRC was selected during scheduling for the current period, the thermostat will indicate the current fan mode in the information display (FAN ON or FAN CIRC).

In the CIRC mode, the user can cycle the fan for a programmed

percentage of active time per hour, during periods of equipment inactivity (i.e., heating or cooling equipment not running). The fan is ON for 5 minutes at a time. The user may change the percentage of ON time that the fan is on (see FAN CIRCULATE [Page 11]):

Fan Program

The user can program the fan to be ON, AUTO, or CIRC during a program event period. While scheduling the event, if the fan is set to ON, it will remain on during the entire event. If it is set to CIRC, it will circulate during equipment inactivity per user programmable cycles (see FAN CIRCULATE, Page 11). If set to AUTO, the fan will come on with the equipment to serve the heating/cooling demand and go off accordingly.

NOTE - When the OPTIONS screen FAN mode is changed to ON or CIRC, whatever was scheduled is ignored - the fan will either be ON or it will CIRCULATE per the user-programmed intervals (USER SETTINGS - FAN CIRCULATE (Page 11). When FAN - AUTO is selected in the OPTIONS screen, the schedule is followed.

Controlling the Schedule



If backlight is not on continuous, press the screen anywhere to turn on the backlight.

From the HOME screen press SCHED; repeated presses toggle the schedule ON and OFF. If ON, the system follows the program developed by the user (Page 8).

If OFF, the system operates as a non-programmable thermostat—the user must make changes when desired. The autochangeover feature continues to operate based on the manual user inputs.

The fan mode is displayed on the SCHEDULE screen when programming the thermostat and can be changed only during schedule editing (after EDIT is pressed). Fan settings in OPTIONS screen will OVER-RIDE the scheduled fan operation.

Schedule tab—Programming

If backlight is not on continuous, press the screen anywhere to turn on the backlight. Press the SCHEDULE tab along the top of the screen. The display changes to programming mode (figure 4) and shows the current settings.

EVENTS DAILY 2 OR 4—The thermostat may be programmed for two or four (default) events per day. The names for the events are: WAKE, LEAVE, RETURN, and SLEEP. The selected time for an event to occur is based on when you want the event to **begin**. Four events (default) are common for working households. To change to two events per day, see page 11. When set for two events per day, the display would appear as: "WAKE (or SLEEP) PERIOD BEGINS".

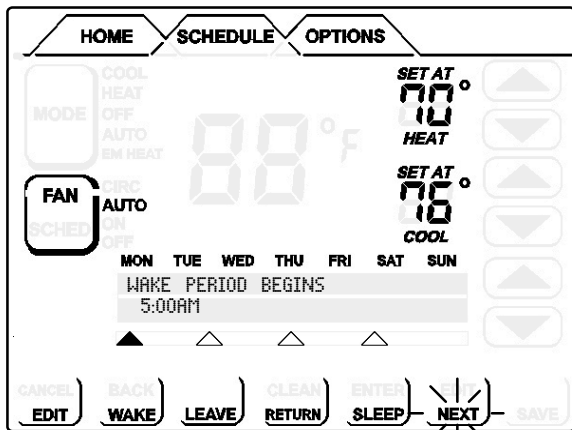


Figure 4. Schedule Screen

Programming may be performed in groups of days or individual days, as follows:

A MON TO SUN - allows every day to be set the same.

B MON TO FRI (weekday programming) and SAT TO SUN (weekend programming).

C MONDAY through SUNDAY allows individual days of the week to be programmed separately.

NOTE - After using one of the groups of days described above, the program allows you to subsequently change individual days to suit your needs.

To get to the different groupings of days, press EDIT, then press NEXT repeatedly to scroll to the desired grouping.

Programming Complexity

The programming process for groups of days or individual days is the same, except in the amount of times required to go through the process.

Full Week—The least complex program is the full week "MON TO SUN" program, wherein the events for every day of the week are the same. This requires one time through the event programming process.

Work Week—Next in complexity to the full week program is the work week program wherein the events are set for a typical work week (MON TO FRI) and different events are set for the weekend (SAT TO SUN). This requires two times through the events.

Day by Day—Most complex because this requires going through the programming process 7 times.

Schedule tab—Programming (continued)

Days & Events Programming process

Action	Display shows...
1 Press SCHEDULE tab	SCHEDULE screen
2 Press EDIT	UP/DOWN arrows on right-hand side of screen; EDIT changes to CANCEL
3 Press NEXT to highlight the desired grouping of days	Days change to match selected group, e.g. MON TUE WED THU FRI
4 Press an event: WAKE (default), LEAVE, RETURN, & SLEEP to select for programming	Filled triangle above event indicates which event is selected for change
5 Press UP/DOWN arrows to select desired temperature	After change is made, SAVE appears in the bottom right-hand of the screen
6 Press FAN repeatedly to select desired fan mode	Fan indicator displays selection (ON, AUTO, or CIRC)
7 Press UP/DOWN arrows to adjust start time for selected event	Information area displays start time
8 Repeat steps 4 - 7 for all remaining events.	
(If you selected other than MON TUE WED THU FRI SAT SUN), continue; otherwise, skip to step 11.	
9 Press NEXT for the next group or the next day	Days change to match selected group, e.g. SAT SUN
10 Repeat steps 3 through 8 for the remaining days, if necessary.	
11 Press SAVE when all events and days are programmed as desired	The changes are made and the schedule screen reappears.

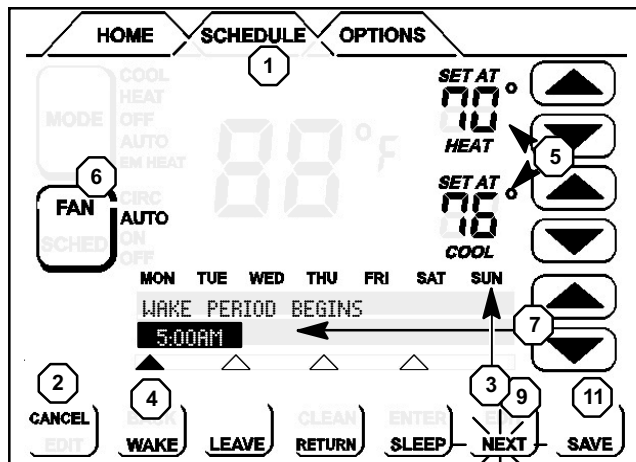


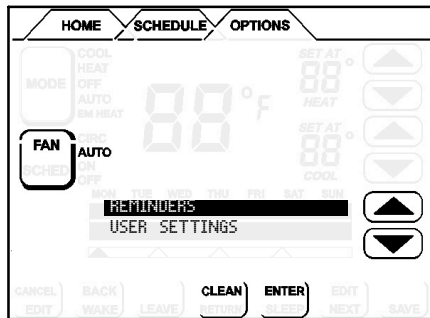
Figure 5. Programming days and events

Options tab—Reminders/User Settings

CLEAN button [OPTIONS TAB > [CLEAN]]

When you select the OPTIONS tab, two buttons appear near the bottom of the screen labeled CLEAN and ENTER. Press the CLEAN button to deactivate the “touch” zones for 30 seconds. Clean the screen with a soft cloth and a mild glass cleaning solution.

The Options screen provides user and installer access to the various features for setup and access to the reminders.



Reminders [OPTIONS TAB > REMINDERS > [ENTER]]

Set timers from 1 to 24 months in either calendar time or system run time. Reminders appear when it is time to service the following (for more details on REMINDERS, see Page 33):

REPLACE MEDIA FILTER DUE FRI JUN 12 09	REPLACE UV LAMP DUE FRI SEP 11 09
ROUTINE 5Y'S CHECK-UP DUE IN 2160 HOURS	PURE AIR MAINTENANCE DUE FRI SEP 11 09
REPLACE HUM PAD DUE FRI JUN 12 09	((CUSTOM REMINDER 1) DUE WED OCT 21 09

User Settings [OPTIONS TAB > USER SETTINGS > [ENTER]]

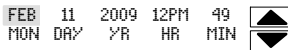
12 OR 24 HOUR	Page 10	F/C	Page 10
BACKLIGHT INTENSITY	Page 12	FAN CIRCULATE	Page 11
BACKLIGHT SETTING	Page 12	HEATING LIMIT	Page 12
COOLING LIMIT	Page 12	HUMIDITROL ADJUST	Page 12
DATE/TIME	Page 10	HUMIDITY SETTING	Pages 12, 20, 22
DISPLAY INFO	Page 11	SECURITY LOCK	Page 12
EVENTS DAILY 2 OR 4	Page 11	VIEW CONTACT INFO	Page 11

Press the OPTIONS tab; use the arrows to select USER SETTINGS. Press ENTER.



The following items are available for modifying. Follow the instructions for each parameter.

DATE/TIME—Set month, day, year, hour, and minute using DATE/TIME option. Select DATE/TIME; press ENTER. Small, filled up-arrow is the selected column; use up/down arrows to adjust; press box below each small up-arrow to select each column. Adjust; press SAVE.

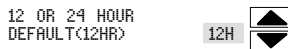


CANCEL [] [] [] [] [] SAVE

F/C—default is Fahrenheit; to change to Celsius, scroll to F/C; press ENTER. Use arrows to change to C; press SAVE.

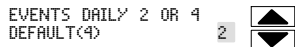


12 OR 24 HOUR clock—default is 12H; to change, scroll to 12 OR 24 HOUR; press ENTER. Use arrows to change to 24H; press SAVE.



Options tab—User Settings (continued)

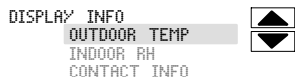
EVENTS DAILY 2 OR 4—default is 4; to change, scroll to EVENTS DAILY 2 OR 4; press ENTER. Use arrows to change to 2; press SAVE.



VIEW CONTACT INFO—scroll to VIEW CONTACT INFO from the user settings menu; press ENTER. Use BACK to return to menu. (To set this to display on the home screen, see DISPLAY INFO.)

DISPLAY INFO—controls what is displayed in the field below the temperature and above the time on the HOME screen; it may display OUTDOOR TEMP, INDOOR RH (relative humidity), and CONTACT INFO or any combination of the three, or none if all three are set to OFF.

Scroll to DISPLAY INFO; press ENTER. Use arrows to select OUTDOOR TEMP, INDOOR RH or CONTACT INFO; press ENTER.



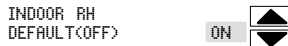
NOTE - When turning ON the OUTDOOR TEMP option "OUTDOOR SENSOR REQUIRED" will display if the physical sensor is not installed.

NOTE - If outdoor sensor is not present and if user tries to select the options DISPLAY INFO -> OUTDOOR TEMP or HUMIDITROL a message is displayed "OUTDOOR SENSOR REQUIRED" instead of scroll options for these menus. Information about installing the sensor is described on Page 32.

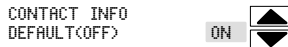
For OUTDOOR TEMP, select ON or OFF; then press SAVE.



For INDOOR RH, use arrows to select ON or OFF; then press SAVE.



For CONTACT INFO, select ON or OFF; then press SAVE.




FAN CIRCULATE—As an option to running the fan all the time, fan circulate allows the user to decide how much the fan will run during periods of equipment inactivity. The fan ON time is always set to 5 minutes. This option will cause the fan to come on more or less frequently. The default is 35%; to change, scroll to FAN CIRCULATE; press ENTER. Use arrows to change to 15, 25, or 45%; press SAVE.




- 15% (9 minutes fan run time per hour)
- 25% (15 minutes fan run time per hour)
- 35% (21 minutes fan run time per hour)
- 45% (27 minutes fan run time per hour).

Options tab—User Settings (continued)

COOLING LIMIT—This limits the temperature at which the thermostat may be set for cooling (default is 50°); to change to any degree between 45°F and 90°F, scroll to COOLING LIMIT; press ENTER. Use arrows to change to desired temperature; press SAVE.


COOLING LIMIT
DEFAULT<50°F> 55°F 

HEATING LIMIT—This limits the temperature at which the thermostat may be set for heating (default is 85°); to change to any degree between 45°F and 90°F, scroll to HEATING LIMIT; press ENTER. Use arrows to change to desired temperature; press SAVE.

HEATING LIMIT
DEFAULT<85°F> 80°F 


HUMIDITY SETTING—See separate sections - Humidify (Page 20) and Dehumidify (Page 22).

HUMIDITROL ADJUST—If Humiditrol® is enabled in the installer settings, then this adjustment affects overcooling operation. Overcooling ranges from 2°F below the **cooling** setpoint (MIN setting) down to 2°F above the **heating** setpoint (MAX setting). Halfway between the two settings is the MID setting. The default setting is MAX; to change to MID or MIN, scroll to HUMIDITROL ADJUST; press ENTER. Use arrows to scroll to MID or MIN; then press SAVE.


HUMIDITROL ADJUST
DEFAULT <MAX> MIN 

NOTE - Humiditrol® does not function if the outdoor temperature is 95°F or greater nor when the indoor temperature is 65°F or less.

BACKLIGHT SETTING—default is POWER SAVE; scroll to BACKLIGHT SETTING; press ENTER. Use arrows to change to CONTINUOUS; press SAVE.

BACKLIGHT SETTING
DEF<SAVE> POWER SAVE 

BACKLIGHT INTENSITY—default is 100%; scroll to BACKLIGHT INTENSITY; press ENTER. Use arrows to change to 20 to 100% in 20% increments; press SAVE.

BACKLIGHT INTENSITY
DEFAULT<100%> 80% 

SECURITY LOCK—default - no locks at all - this provides two methods of locking the thermostat:


Answer YES to ALLOW TEMP ADJUST—anyone can make temperature setpoint changes without entering a 3-digit code.

Answer NO to ALLOW TEMP ADJUST—prevents making any changes at all until the 3-digit code is entered.

Scroll to SECURITY LOCK and press ENTER; ALLOW TEMP ADJUST screen appears; press box below YES or NO.

ALLOW TEMP ADJUST
YES NO
CANCEL

The ENTER LOCK CODE screen appears.

ENTER LOCK CODE 
0 0 0
↑ ↑ ↑
CANCEL SAVE

To enter the lock code, press box below each small up-arrow to select each column. Use up/down arrows to enter a number, then press the box below the next number and repeat to enter a 3-digit lock code; write down the number for future reference; press SAVE.

NOTE - If the security code is forgotten or misplaced, use the universal code "864" to unlock.


Options tab—Installer Settings


Installer Settings

[OPTIONS TAB > INSTALLER SETTINGS > [ENTER] [ENTER]]

COMPRESSOR PROTECT	Page 17	LOW BALANCE POINT	Page 14
CONTACT INFORMATION	Page 16	RESET SETTINGS	Page 16
CUSTOM REMINDERS	Page 16	RESIDUAL COOL	Page 14
DAYLIGHT SAVING TIME	Page 16	SMOOTH SET BACK	Page 14, Page 15
DEADBAND	Page 14	SSR STG2 LOCK OUT	Page 14
DEHUMIDIFICATION	Page 21	STAGE DELAY/DIFFERENTIAL	
DIFFERENTIAL SETTINGS	Page 24	SETTINGS	Page 14, Page 24
ENERGY STAR DEFAULT	Page 17	STG 1 DIFF	Page 24
H/C STGS LOCKED IN	Page 25	STG 2 DIFF thru STG 4 DIFF	Page 24
HIGH BALANCE POINT	Page 14	STG DELAY TIMERS	Page 24
HUMIDITY OFFSET	Page 17	STG2 HP LOCK TEMP	Page 25
HUMIDITY SETTING	Page 14	SYSTEM SETUP	Page 13
HUMIDIFICATION	Page 19	SYSTEM TEST MODES	Page 18
		TEMPERATURE OFFSET	Page 17

Press **OPTIONS** tab for the main options screen, then use the arrows to select **INSTALLER SETTINGS**. Press **ENTER**.

INSTALLER SETTINGS 



CANCEL ENTER

After the first **ENTER**, the following appears:

MUST BE SET BY
QUALIFIED PERSON



CANCEL ENTER

Press **ENTER** again to access installer settings. (**CANCEL** returns to the main **OPTIONS** screen.)



The following items may be modified. Follow the instructions for each parameter. Note that some options will not appear for all setups (e.g. only Heat Pumps will have Low and High Balance Points; otherwise, these do not appear).

SYSTEM SETUP—Sets the thermostat for operation with a heat pump or non-heat pump and defines the number of compressor stages and the number of backup heat stages. The default settings for the system are Non-heat Pump, Gas/Oil, 2 compressor stages, 2 indoor heat stages.

Use arrows to select from the list; then press **ENTER**.

SYSTEM SETUP 
NON HEAT PUMP 
HEAT PUMP
COMPRESSOR STAGES
INDOOR HEAT STAGES



For **NON HEAT PUMP**, use arrows to select backup heat: **NO HEAT**, **GAS/OIL**, or **ELECTRIC**; then press **SAVE**.

NON HEAT PUMP 
NO HEAT 
GAS/OIL
ELECTRIC

For **HEAT PUMP**, use arrows to select backup heat: **NO BACKUP HEAT**, **DUAL FUEL (GAS/OIL)**, or **ELECTRIC**; then press **SAVE**.

HEAT PUMP 
NO BACKUP HEAT 
DUAL FUEL (GAS/OIL)
ELECTRIC

For **COMPRESSOR STAGES**, use arrows to select either 1 or 2 compressor stages; then press **SAVE**.


COMPRESSOR STAGES 
2 

For **INDOOR HEAT STAGES**, use arrows to select 1 or 2 indoor heat stages; then press **SAVE**.


INDOOR HEAT STAGES 
2 

Options tab—Installer Settings (continued)


RESIDUAL COOL—default is zero seconds. This is the time, in seconds, that the fan runs after a call for cooling is satisfied in order to deliver any residual cooling ability from the coil and ductwork into the conditioned space. Scroll to RESIDUAL COOL; press ENTER. Use arrows to select seconds: 0, 30, 60, 90, and 120; press SAVE.

RESIDUAL COOL
DEFAULT<0S> 60S 

LOW BALANCE POINT—default 25°F (heat pump only, and if outdoor sensor installed). If outdoor temperature is below programmed Low Balance Point, compressor heating is not allowed. Use arrows to select OFF or any point from -20°F to the High Balance Point setting in 1.0°F steps; press SAVE.

LOW BALANCE POINT
DEFAULT<25°F> 25°F 


HIGH BALANCE POINT—default is 50°F (heat pump only, and if outdoor sensor installed). If outdoor temperature is above the High Balance point, then auxiliary heat is not allowed. High Balance Point cannot be set closer than 2°F above the Low Balance Point. For example, if LBP is 25°F, HBP must be at least 27°F. Use arrows to select OFF or any point from the Low Balance Point up to 75°F in 1.0°F steps; press SAVE.

HIGH BALANCE POINT
DEFAULT<50°F> 45°F 

DEADBAND—default is 4°F. The deadband setting is the minimum difference between the cooling and heating setpoints. This setting is used in autochangeover mode to ensure smooth equipment operation and allows for flexibility in Humiditrol® EDA operation. The deadband is adjustable from 3 to 8°F.


DEADBAND
DEFAULT<4°F> 5°F 

SMOOTH SET BACK—(SSR) default is OFF. When enabled, smooth set back begins recovery up to 2 hours before the programmed time so that the programmed temperature is reached at the corresponding programmed event time. Assume 12°F per hour for first stage gas/electric heating and 6°F per hour for first stage compressor based heating or cooling. With Smooth Set Back disabled, the control will start a recovery at the programmed time. Scroll to SMOOTH SET BACK; press ENTER. Use arrows to select between ON or OFF. Press SAVE.

SMOOTH SET BACK
DEFAULT<OFF> ON 

NOTE - Smooth Set Back and STG2 Lock Out operations vary depending on equipment. See table 1 on Page 15.

SSR STG2 LOCK OUT—[not available if SMOOTH SET BACK is OFF] default is 20 minutes. Scroll to SSR STG2 LOCK OUT; press ENTER. Use arrows to select OFF or the number of minutes before the programmed event time that stage 2 is allowed to operate (OFF or 20 to 120 minutes in 10 minute increments). Press SAVE.

SSR STG2 LOCK OUT
DEFAULT<20MIN> 40MIN 

HUMIDITY SETTING—See separate sections - Humidification (Page 19) and Dehumidification (Page 21).

STAGE DELAY AND DIFFERENTIAL SETTINGS—The differential or delay settings in the Installer Settings menu are:

STG DELAY TIMERS
STG 1 DIFF
STG 2 DIFF
STG 2 DELAY
STG 3 DIFF
STG 3 DELAY
STG 4 DIFF
STG 4 DELAY
H/C STGS LOCKED IN
STG 2 HP LOCK TEMP

See Page 24 for more stage delay and differential details.

Options tab—Installer Settings (continued)

Table 1. Smooth Set back Recovery (SSR) & SSR Stg 2 Lock Out Operation

Equipment Available	SSR = Enabled; SSR Stg 2 lock out = enabled	SSR = Enabled; SSR Stg 2 lock-out = disabled (off)
1 stage HP with 1 or 2 stages elec backup	Run HP (Y1) only; all backup heat (W1/W2) enabled 20 - 120 min before wake up setpoint	Run HP (Y1) and have available backup heat (W1/W2) as needed.
2 stage HP with 1 or 2 stages elec backup	Run HP (Y1/Y2) only; all backup heat (W1/W2) enabled 20 - 120 min before wake up setpoint	Run HP (Y1/Y2) and have available backup heat (W1/W2) as needed.
1 stage HP with 1 stage gas/oil backup	Run HP (Y1) only; all backup heat (W1) enabled 20 - 120 min before wake up setpoint	Run HP (Y1) until a 2nd stage demand is needed (by time/temp. differential); then HP operation must stop and changeover and lock in to W1 heat until setpoint reached.
1 stage HP with 2 stages gas/oil backup or modulation furnace	Run HP (Y1) only; all backup heat (W1/W2) enabled 20 - 120 min before wake up setpoint	Run HP (Y1) until a 2nd stage demand is needed (by time/temp differential); then HP operation must stop and changeover to W1/W2 heat as needed; lock in W1/W2heat until setpoint reached.
2 stage HP with 1 stage gas/oil backup	Run HP (Y1/Y2) only; all backup heat (W1/W2) enabled 20 - 120 min before wake up setpoint	Run HP (Y1/Y2) until a 2nd stage demand is needed (by time/temp. differential); then HP operation must stop & changeover and lock in to W1 heat until setpoint reached
2 stage HP with 2 stages gas/oil backup or modulation furnace	Run HP (Y1/Y2), all backup heat (W1/W2) enabled 20 - 120 min before wake up setpoint	Run HP (Y1/Y2) until a 2nd stage demand is needed (by time/temp. differential); then HP operation must stop & changeover and lock in to W1/W2 heat until setpoint reached.
2 stages gas/oil heat or modulation furnace	Run W1 only; W2 enabled 20 - 120 min before wake up setpoint	Run W1 heat and bring on W2 heat until setpoint reached.
1 stage cooling	Run Y1 to wake up set point	Run Y1 heat until setpoint reached.
2 stage cooling	Run Y1 during recovery enable Y2 field wake up set point	Run Y1 & Y2 heat as needed until setpoint reached.

Options tab—Installer Settings (continued)

SYSTEM TEST MODES—After the thermostat has been installed and set-up, the installer may run a system test function (accessed through the installer settings menu), to test all cooling, heating, Emergency Heating stages and FAN outputs. Scroll to SYSTEM TEST MODES and press ENTER; select TEST OUTPUTS and press ENTER.

```
SYSTEM TEST MODES
TEST OUTPUTS
```

SCROLL arrows move through a list of all signals, Y1 ON, Y1 OFF, Y2 ON, Y2 OFF, etc. With a signal displayed, press ENTER to start the test, (e.g. Y1 ON selected, press ENTER brings on Y1; Y1 OFF selected, press ENTER shuts off Y1. CANCEL, pressed at anytime during tests will return the previous screen and also disable any test and puts the thermostat back into normal mode.



NOTICE

Risk of equipment damage.

Can cause compressor failure.

In dual fuel system applications, do not turn on heat pump and furnace at the same time in system test mode.

All HVAC components can be tested to confirm the signals between thermostat and unit are being sent and were received.

NOTES - After 5 minutes without a test being initiated, the test modes is disabled and system goes back to the normal mode (i.e. HOME screen).

When in SYSTEM TEST MODE, the compressor minimum off timer is bypassed.

```
TEST OUTPUTS
```

```
OFF
Y1 ON
Y1 OFF
Y2 ON
Y2 OFF
W1 ON
W1 OFF
W2 ON
W2 OFF
FAN (G) ON
FAN (G) OFF
H ON
H OFF
D ON
D OFF
O ON (B OFF)
B ON (O OFF)
```



Humidification

INSTALLER SETTINGS

Humidification (adding moisture to air) is provided only when the thermostat is in **heat mode**. The humidification signal (H terminal) to the humidifier (off when the thermostat is in the COOL mode) controls humidification. When the thermostat is powered, the H terminal is normally inactive (open circuit) in any mode (HEAT, COOL, OFF). When a humidification demand is present, H terminal and G terminal are energized (24V).

HUMIDITY SETTING—default OFF. **Installer settings must be turned on before the user will have control over the humidity.** The mode selected determines how the user can adjust the relative humidity (RH). The installer settings include BASIC, PRECISION, DEW-POINT, and OFF.

BASIC & PRECISION—these thermostat modes allow the user to control the relative humidity (RH) between 15 and 45%. The following conditions must be met for either mode to operate:

- humidification mode has been enabled, and
- the unit is in HEAT mode, and
- humidification demand exists (24V present at H), and

Additionally, the **BASIC** mode requires:

- heat demand exists (Y energized for heat pump heating, or W energized for gas heat [W may be energized with G de-energized]).

Scroll to HUMIDITY SETTINGS; press ENTER. Press the box below HUMIDIFY.

HUMIDIFY MODE
HUMIDIFY DEHUMIDIFY
| |
| |

Use up/down arrows to select BASIC or PRECISION; press ENTER.

HUM MODE SETTING
DEF<OFF> PRECISION

Default setting is 45% RH. Use up/down arrows to define what NEW SETPOINT IS (between 15 to 45%); then press SAVE.

HUM SETPOINT
DEFAULT <45%> 40%

DEW POINT—Dew point adjustment mode will change the humidification setpoint based on the outdoor temperature and a user-defined dew point adjustment setting.

NOTE - In dew point adjustment mode, the humidification setpoint has no effect whatsoever on unit operation. Only the user-defined dew point adjustment setting affects operation per the following formula:

$RH_{\text{setpoint}} = \frac{\text{Outdoor Temp } (^\circ\text{F})}{2} + 25 + RH_{\text{user dew point adjustment}}$
Where: $RH_{\text{user dew point adjustment}}$ cannot exceed +/-15% and RH_{setpoint} minimum is 15% and cannot exceed 45%.

Scroll to HUMIDITY SETTINGS; press ENTER.

HUMIDIFY MODE
HUMIDIFY DEHUMIDIFY
| |
| |

Press the box below HUMIDIFY. Use up/down arrows to select DEW-POINT; press ENTER.

HUM MODE SETTING
DEF<OFF> DEWPOINT

Use up/down arrows to select new DEW POINT ADJ setpoint (between +15 to -15%); then press SAVE.

DEW POINT ADJ
DEFAULT <0%> -5%

NOTE - Dew point adj available only when outdoor sensor is attached.

Humidification (continued)

USER SETTINGS

BASIC & PRECISION—if set up by the installer settings for BASIC or PRECISION, this adjustment controls the relative humidity (RH) between 15 and 45%.

Scroll to HUMIDITY SETTINGS; press ENTER. Press the box below HUMIDIFY.

```

HUMIDIFY  MODE
HUMIDIFY  DEHUMIDIFY
  ▲         ▲
  └         ┘

```

Use up/down arrows to change the humidity setpoint (between 15 and 45%); press SAVE.

```

HUM SETPOINT
DEFAULT (45%)  40%  ▲▼

```

DEWPOINT—if set up by the installer settings for dew point, this adjustment (only when in heating mode) will change the humidification setpoint based on the outdoor temperature and a user-defined dew point adjustment setting. When humidifying, if condensation forms on the windows, the dew point should be adjusted in the range of -15 to -5%; if the home feels dry, set dew point upward in the range of +5 to +15%.

Scroll to HUMIDITY SETTINGS; press ENTER. Press the box below HUMIDIFY.

```

HUMIDIFY  MODE
HUMIDIFY  DEHUMIDIFY
  ▲         ▲
  └         ┘

```

Use up/down arrows to change the dew point (between +15 and -15%); press SAVE.

```

DEW POINT ADJ
DEFAULT (0%)  -5%  ▲▼

```

NOTE - Dew point adj available only when outdoor sensor is attached.

OFF—if OFF is selected in installer settings for both humidify and dehumidify, this message appears when HUMIDITY SETTING is pressed:

```

HUMIDITY MODES OFF

```

If OFF is selected by the installer settings for HUMIDIFY but DEHUMIDIFY is on, the dehumidification menu appears (this setpoint adjustment has NO effect on humidification):

```

DEHUM SETPOINT
DEFAULT (50%)  45%  ▲▼

```

Dehumidification

INSTALLER SETTINGS

Dehumidification (removing moisture from air) can occur only when the thermostat is in **cool mode**. When a dehumidification demand is present, a dehumidification signal (0VAC - open circuit) is present at the D terminal. This is used to reduce the speed of the indoor blower during dehumidification. At the same time, the Y1 and Y2 (if available) terminals become activated with 24VAC. The H terminal is inactive (0VAC - open circuit) during dehumidification.

NOTE - The D terminal is ALWAYS activated (24VAC) when the thermostat is in HEAT or OFF mode; it is only inactive (0VAC - reverse logic) during dehumidification.

Dehumidification adjustment will change the relative humidity (RH) setting between 45 to 60% RH (default setting is 50% RH). The lower the number, the more humidity will be removed from the air.

HUMIDITY SETTING—default OFF.

Installer settings must be turned on before the user will have control over the humidity.

The mode selected determines how the user can adjust the relative humidity (RH). The installer settings include BASIC, PRECISION, HUMIDITROL, and OFF.

Dehumidification Modes

In **BASIC** mode, dehumidification occurs if these conditions are met and signals are present at specific terminals:

- dehumidification has been enabled on installer settings, and
- the unit is in COOL mode, and
- dehumidification demand exists (RH above setpoint), and
- cooling demand exists (Y1 energized).

In **PRECISION** mode, dehumidification occurs if all BASIC conditions are true, except cooling demand may or may not be present. Maximum over cool from cooling set point is 2°F.

HUMIDITROL mode requires:

- outdoor sensor must be installed and setup
- dehumidification has been enabled on installer settings, and
- the unit is in COOL mode, (or if in AUTO, there has been at least one thermostat cooling call made prior to the dehumidification demand), and
- a dehumidification demand exists (RH above setpoint), and
- outdoor temperature is below 95°F, and
- indoor temperature is above 65°F, and
- the room temperature meets Humiditrol adjustment parameters as follows:
 - **MAX** adj. - Indoor temp > 2°F above heating setpoint
 - **MID** adj. - Indoor temp > $\frac{\text{HEAT SETPOINT} + \text{COOL SETPOINT}}{2}$
 - **MIN** adj. - Indoor temp > 2°F below cooling setpoint

Scroll to HUMIDITY SETTINGS; press ENTER. Press the box below DEHUMIDIFY.

```

HUMIDITY  MODE
HUMIDIFY  DEHUMIDIFY
  ▲       ▲
  └       ┘

```

Use up/down arrows to scroll to BASIC or PRECISION; press ENTER.

```

DEHUM MODE SETTING  ▲
DEF<OFF>  PRECISION  ▼

```

Default setting is 50% RH. Use up/down arrows to change the %RH; press SAVE.

```

DEHUM SETPOINT
DEFAULT <50%>  45%  ▲
                ▼

```

Dehumidification (continued)

The **AUX** setting is used when a whole home dehumidifier is used for dehumidification. This requires:

- whole home dehumidifier has been wired to thermostat per dehumidifier installation instructions, and
- dehumidification has been enabled on installer settings, and
- the unit is in COOL mode, (or if in AUTO, there has been at least one thermostat cooling call made prior to the dehumidification demand), and
- a dehumidification demand exists (RH above setpoint).

USER SETTINGS

BASIC, PRECISION, HUMIDITROL, AUX—If installer has set up for BASIC, PRECISION, HUMIDITROL or AUX, this adjustment controls the relative humidity (RH) between 45 and 60% (default 50%).

Scroll to HUMIDITY SETTINGS; press ENTER. Press the box below DEHUMIDIFY.

```
HUMIDITY MODE
HUMIDIFY DEHUMIDIFY
  ▲           ▲
  ─┘         ─┘
```

Use up/down arrows to change the humidity setpoint (between 45 and 60%); press SAVE.

```
DEHUM SETPOINT
DEFAULT (50%)  45%  ▲▼
```

OFF—if OFF selected in installer settings for both humidify and dehumidify, this message appears when HUMIDITY SETTING is pressed:

```
HUMIDITY MODES OFF
```

If OFF is selected by the installer settings for DEHUMIDIFY but HUMIDIFY is on, the humidification menu appears (this setpoint adjust has NO effect on dehumidification):

```
HUM SETPOINT
DEFAULT (45%)  40%  ▲▼
```

Humiditrol® Enhanced Dehumidification Accessory

If a Humiditrol® EDA is present in the equipment at hand, then the ComfortSense® Model L7742U thermostat must be configured to properly operate the Humiditrol® EDA as follows (see Figure 15 [Page 34] for the Humiditrol® EDA operation flowchart):

From the OPTIONS screen, select INSTALLER SETTINGS. Scroll to HUMIDITY SETTINGS and press ENTER; select DEHUMIDIFY.

```
HUMIDITY MODE
HUMIDIFY DEHUMIDIFY
  ▲           ▲
  ─┘         ─┘
```

Scroll to HUMIDITROL and press ENTER.

```
DEHUM MODE SETTING
DEF(OFF) HUMIDITROL  ▲▼
```

Set the dehumidification setpoint; then press SAVE.

```
DEHUM SETPOINT
DEFAULT (50%)  45%  ▲▼
```

Check the HUMIDITY SETTINGS in user settings to confirm that the user has control of the dehumidification setting.

The ComfortSense® Model L7742U thermostat is now configured to operate the Humiditrol® accessory.

NOTE - Humiditrol® EDA operation requires use of an outdoor sensor. If sensor is not connected and Humiditrol® EDA is enabled, "OUTDOOR SENSOR REQUIRED" is displayed in the information display.

Dehumidification (continued)

ComfortSense® Model L7742U thermostat operation with Humiditrol enabled

Cooling only—*Dehumidification will only occur if:*

- a dehumidification demand is present,
- a cooling demand is not present,
- outdoor temperature is less than 95°F,
- indoor temperature is not cooler than 65°F or cooler than the heating setpoint + 2°F (IF the difference between cooling and heating setpoints is greater than the deadband).

In this case, 24 VAC is removed from the “D” terminal and “Y1 & Y2” terminal (if available) becomes activated with 24VAC. This cycles the indoor variable speed motor to the dehumidification speed and cycle Y2 “ON” to the outdoor unit. Cooling has priority over Humiditrol® calls.

Heating only—*Thermostat will cycle heating “ON” and “OFF” to maintain heating setpoint. Dehumidification functions are disabled.*

Autochangeover—*Dehumidification will only occur if a dehumidification demand is present, a cooling demand is not present, outdoor temperature is less than 95°F, indoor temperature is above 65°F and the indoor temperature is not cooler than 2°F above heating setpoint.*

In this case, the 24 VAC is removed from the “D” terminal and the “Y1 &

Y2” terminal (if available) becomes activated with 24VAC. This will cycle the indoor variable speed motor to the dehumidification speed and cycle Y2 “ON” to the outdoor unit. Cooling calls have priority over Humiditrol® calls. Humiditrol® mode is allowed to overcool up to 2°F above the heating setpoint.

Note: If the last thermostat demand was a heating demand, the thermostat does not require a cooling demand before Humiditrol® operation.

Humidification Sensor Fault

If the humidification sensor fault occurs, then the H terminal becomes inactive, and the D terminal goes to 24V.

Dew point adjust is only available when an outdoor sensor is attached.

Other Humiditrol® EDA Notes:

If the outdoor sensor is disconnected while HUMIDITROL is enabled, the thermostat will not allow operation in dehumidification mode.

Set point range: 45 to 60% Relative Humidity (RH). Factory default - 50%.

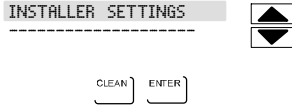
Relative Humidity controls to within 2% on either side of RH set point. When the “D” terminal is activated with 24VAC, dehumidification is inactive.

BASIC, PRECISION and HUMIDITROL modes are deactivated by default from the factory.

As a precaution, regardless of how low the heating setpoint has been set, Humiditrol® dehumidification is inhibited below 65°F indoor temperature.

Stage Delay & Differential Settings (Installer settings)

Press **OPTIONS** tab for the main options screen, then use the arrows to select **INSTALLER SETTINGS**. Press **ENTER**.



After the first **ENTER**, the following appears:

MUST BE SET BY
QUALIFIED PERSON



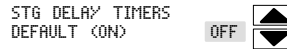
Scroll to **STG DELAY TIMERS**. The following stage delay and differential settings are available for modifying. Follow the instructions for each parameter.

STAGE DELAY AND DIFFERENTIAL SETTINGS—The differential or delay settings in the Installer Settings menu are:

STG DELAY TIMERS (not on single stage models)
STG 1 DIFF (all models)
STG 2 DIFF (2 stage models)
STG 2 DELAY (not on single stage models OR if timers turned off)
STG 3 DIFF (2-stage heat pumps w/backup heat)
STG 3 DELAY (not on single stage models OR if timers turned off)
STG 4 DIFF (2-stage heat pumps w 2-stages backup heat)
STG 4 DELAY (not on single stage models OR if timers turned off)
H/C STGS LOCKED IN
STG 2 HP LOCK TEMP

STG DELAY TIMERS—default ON. When ON, all stage delay timers (stages 2, 3, and 4) are enabled and will serve to bring on additional stage(s) of cooling or heating on a timed basis (default 20 minutes) in cases when the previous stage of heating or cooling will not raise or lower the room temperature to the set point in a given time.

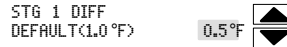
When OFF is selected all stage delay timers are disabled. This means stages are changed based on the temperature and not their timer delays. Scroll to **STG DELAY TIMERS**; press **ENTER**.



DIFFERENTIAL SETTINGS—The differentials below and shown in the figures 6 through 13 are defaults and are adjustable for different system setups.

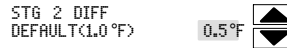
STG 1 DIFF—Stage 1 differential is used in all thermostats. The default is 1.0°F but can be programmed between 0.5° and 8.0°F in 0.5°F increments.

Scroll to **STG 1 DIFF**; press **ENTER**. Select the desired differential. Press **SAVE**.



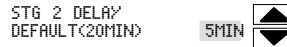
STG 2 DIFF thru STG 4 DIFF (where applicable)—The default is 1.0°F but can be programmed between 0.5° and 8.0°F in 0.5°F increments.

Scroll to **STG 2 DIFF** (or 3 or 4); press **ENTER**. Select the desired differential. Press **SAVE**.



2nd thru 4th STAGE DELAY timer (where applicable)—If **STG DELAY TIMERS** is turned ON, the default delay is 20 minutes but can be programmed from 5 to 120 minutes in 5-minute increments. If first stage fails to advance the ambient temperature toward the setpoint by 1.0°F in the programmed delay time, then the second stage is activated.

Scroll to **STG 2 DELAY** (or 3 or 4); press **ENTER**. Select the desired delay. Press **SAVE**.



Stage Delay & Differential Settings (Installer settings) (continued)

H/C STGS LOCKED IN—default NO (heat/cool stages are turned off separately). If changed to YES, heat/cool stages are turned off together (see figures 6 through 13). Scroll to H/C STGS LOCKED IN; press ENTER. Use arrows to select between NO or YES. Press SAVE.

H/C STGS LOCKED IN
DEFAULT <NO> YES

STG2 HP LOCK TEMP—default OFF (heat pump stage 2 operates normally). Use this setting in dual fuel applications to lock in the 2nd stage compressor when the outdoor temperature is at or less than the LOCK TEMP set point. Scroll to STG2 HP LOCK TEMP; press ENTER. Use arrows to select a LOCK TEMP between -40 and 75°F. Press SAVE.

STG2 HP LOCK TEMP
DEFAULT <OFF> 25°F

Configuration	Figure
Multi-stage Cooling for Heat Pump/Non-Heat Pump	6
Heating - Non-Heat Pump (1 or 2 stages)	7
Heating - Heat Pump with NO backup heat	7
Heating - Heat Pump w/electric heat (2-stage: 1compr/1backup)	7
Heating - Heat Pump w/electric heat (3 stage: 2compr/1backup)	8
Heating - Heat Pump w/electric heat (3 stage: 1compr/2backup)	8
Heating - Heat Pump w/electric heat (4 stage: 2compr/2backup)	9
Heating - dual fuel (2-stage: 1compr/1backup)	10
Heating - dual fuel (3 stage: 1compr/2backup)	11
Heating - dual fuel (3 stage: 2compr/1backup)	12
Heating - dual fuel (4 stage: 2compr/2backup)	13

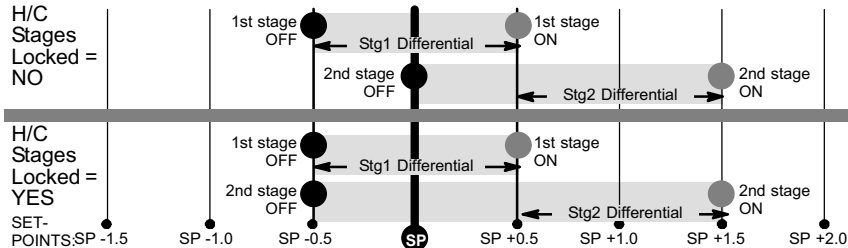


Figure 6. Cooling - 1 or 2 stages

Stage Delay & Differential Settings (Installer settings) (continued)

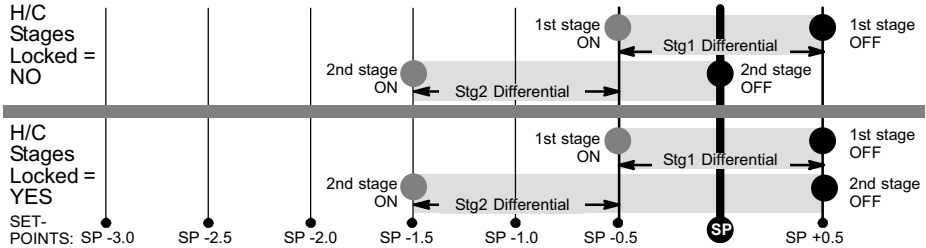


Figure 7. Heating - Non-Heat Pump or Heat Pump w/o backup heat - 1 or 2 stages

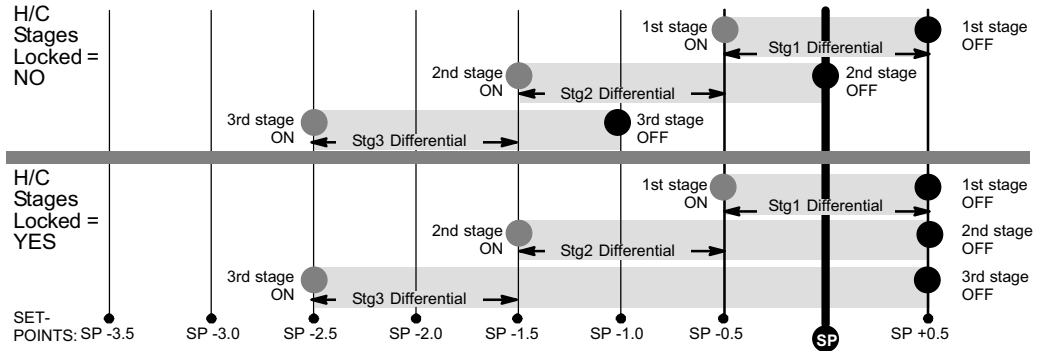


Figure 8. Heating - Heat Pump w/electric - 3 stage (2 compressor / 1 backup OR 1 compressor / 2 backup)

Stage Delay & Differential Settings (Installer settings) (continued)

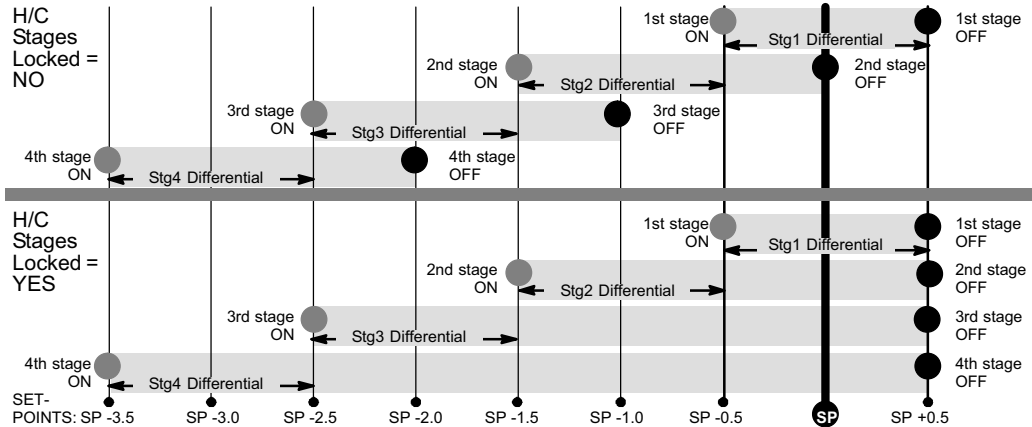


Figure 9. Heating - Heat Pump w/electric - 4 stage (2 compressor / 2 backup)

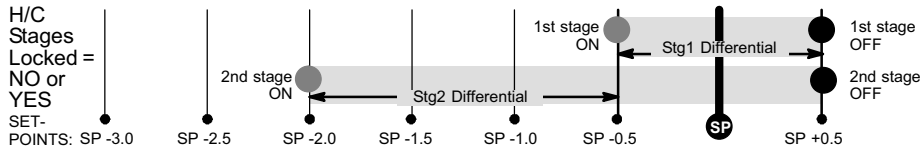


Figure 10. Heating - dual fuel - 2 stage (1 compressor / 1 backup)

Stage Delay & Differential Settings (Installer settings) (continued)

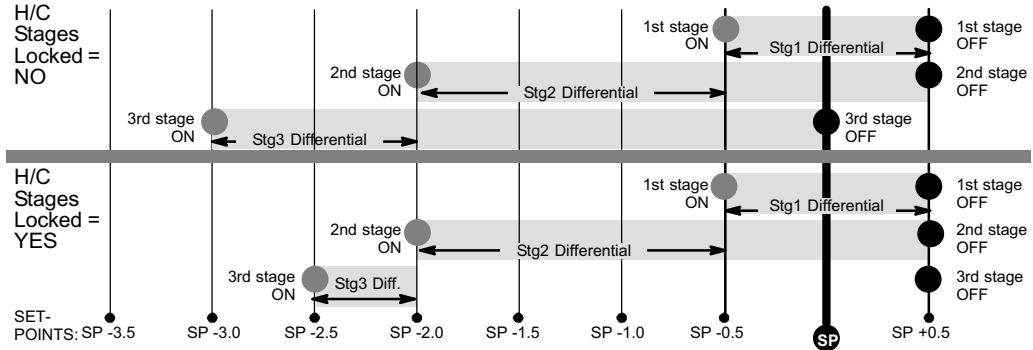


Figure 11. Heating - dual fuel - 3 stage (1 compressor / 2 backup)

Stage Delay & Differential Settings (Installer settings) (continued)

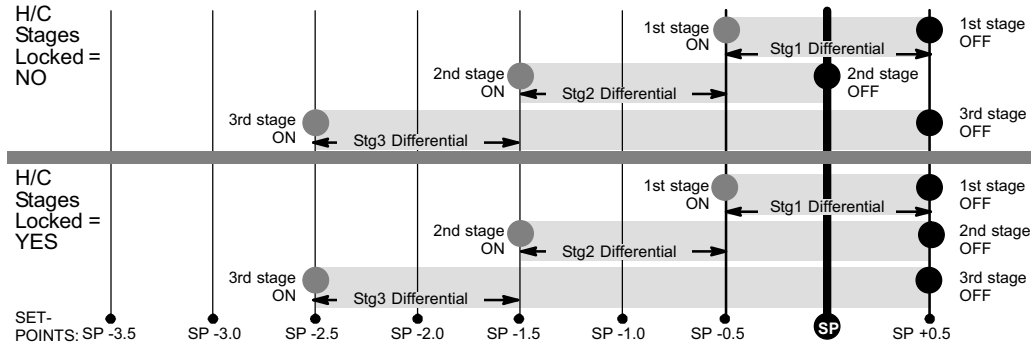


Figure 12. Heating - dual fuel - 3 stage (2 compressor / 1 backup)

Stage Delay & Differential Settings (Installer settings) (continued)

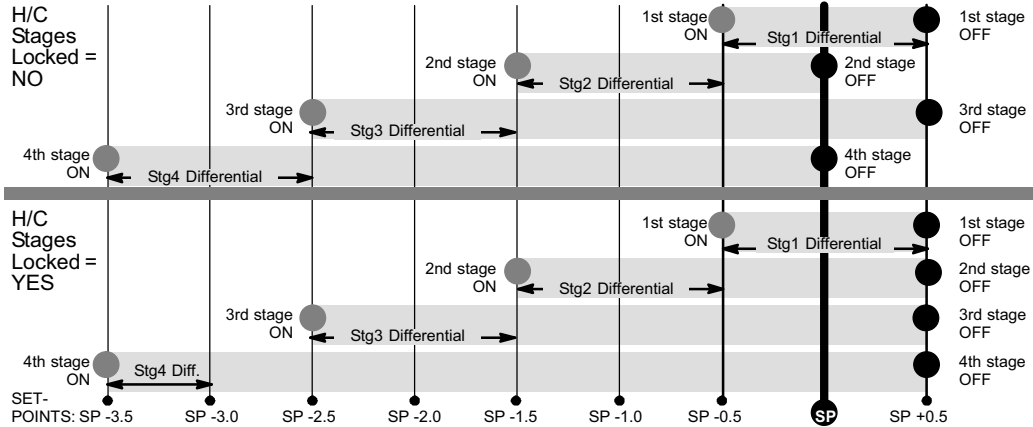


Figure 13. Heating - dual fuel - 4 stage (2 compressor / 2 backup)

Temporary Temperature Change (Pausing the Schedule)

Two types of temperature changes may be made: temporary (while in the SCHEDULE ON mode) or permanent (while in SCHEDULE OFF).

NOTE - If autochangeover is enabled at the time a temperature hold is invoked, the thermostat MAY CHANGE OVER from heating to cooling and vice versa, to maintain the temperature hold setpoint. The autochangeover deadband (minimum separation between the heat and cool set points) is still used to determine whether changeover occurs. This applies to all of the following hold modes.

Temporary Temperature Changes (schedule ON)

While the system is running with the schedule ON, any change to the temperature settings may be made for the default time (approximately 3 hours) or for as long or short a time as you wish. Therefore, following the procedure will set a HOLD on the schedule for a few hours or for up to 45 days. Figure 14 shows a typical screen set in the AUTOchangeover mode. If the SYSTEM were set in HEAT, COOL, or EM HEAT mode, only the top set of arrows appear.

1. On the home screen, press the UP or DOWN arrow to adjust to the desired temperature.
2. A set of arrows appears to the right of the information display; use these arrows to adjust the hold period for as long as desired, or, if not changed, this setting will hold for approximately 3 hours.
3. Press SAVE.
4. After saving, "ON" next to the SCHED button flashes slowly, and the information display alternates between the following:

HOLD SETTING UNTIL
Wkd MMM DD HH:MM:MM

and

PRESS SCHED TO
RESUME PROGRAM

5. After the 3 hours expires, the scheduled programming will resume, OR, press SCHED to cancel the hold.

Permanent Temperature Changes (schedule OFF - non-programmable operation)

To make a change for an undefined time span, the schedule must be turned OFF. The setpoint is maintained indefinitely.

1. From the home screen, press SCHED to turn the scheduled programming OFF.
2. Press the UP or DOWN arrow to set the temperature to the desired temperature.

The information display field continues to display the active mode, outdoor temperature, indoor relative humidity. Turning the schedule back ON (press SCHED box on home screen) will cancel a permanent hold and return to the event-programmed mode.

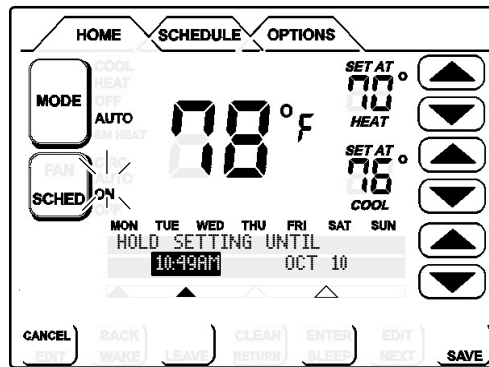


Figure 14. Setting a Hold on the Schedule

Optional Remote Outdoor Sensor

The outdoor sensor (X2658) may be required, especially when using Humiditrol® EDA applications. In addition to measuring and displaying outdoor temperature, the outdoor sensor provides dew point adjustment and control for all models. If used with this thermostat, the sensor enables optimal heating equipment operation via programmable balance points. The screen will display NO OUTDOOR SENSOR until the outdoor sensor is installed, the feature is turned on in the USER SETTINGS, in the DISPLAY INFO option. The outdoor temperature is displayed in the information display (lower center of the screen).

NOTE - For proper operation of Humiditrol® EDA applications, the outdoor sensor MUST be installed.

In many applications, the ComfortSense® Model L7742U thermostat displays the temperature sensed by the remote outdoor sensor. With

the heat pump system, the remote outdoor sensor helps determine when to turn on the second stage of heating for optimal comfort.

When the outdoor sensor is connected, the temperature displays in the information display area (below the indoor temperature display).

Installing Remote Outdoor Sensor

Install the remote outdoor sensor on a northern wall of the home, away from direct sunlight or other heat sources that may affect its sensitivity.



IMPORTANT

The outdoor sensor must be connected to operate a system with a Humiditrol® accessory.

Service Reminders

The user may turn on and turn off the following service reminders (all of which default to OFF) in either chronological time and/or run time and may be reset (to default) or delayed (snooze) at any time:

- Replace Media Filter
- Routine Sys (System) Check-up
- Replace Hum (Humidifier) Pad
- Replace UV Lamp
- PureAir™ Maintenance

NOTE - When chronological time is selected, the timer runs based on the calendar. When time is selected in run time, the timer runs based on the time the specific output is ON (e.g. Fan output for Media Filter).

When the reminder time (either calendar time or run time) has elapsed, the system displays a screen from which the user can either RESET or DELAY the reminder.

The user can reset the timer either before it has expired (i.e. reminder is set to 6 months and user decides to reset it to 6 months or change it to different value at the end of 4th month) or when the time has expired and a reminder message has been displayed.

When a reminder is turned off, the indicator will not be activated even if the timer is expired. Note that setting filter reminder to 0 (OFF) will not reset the timers, but will deactivate the filter indicator.

In the case of a power interruption:

- *lithium battery has charge*—the total accumulated time is maintained (i.e. the counter does not recycle to zero).
- *lithium battery has NO charge*—the due date of reminders is maintained.

Unit Part (Catalog) & Serial Numbers

A label on the back of the thermostat is visible through an opening in the back of baseplate. This identifies the Lennox Catalog Number, Part Number and Serial Number. Separate the baseplate from the thermostat to see additional manufacturing information.

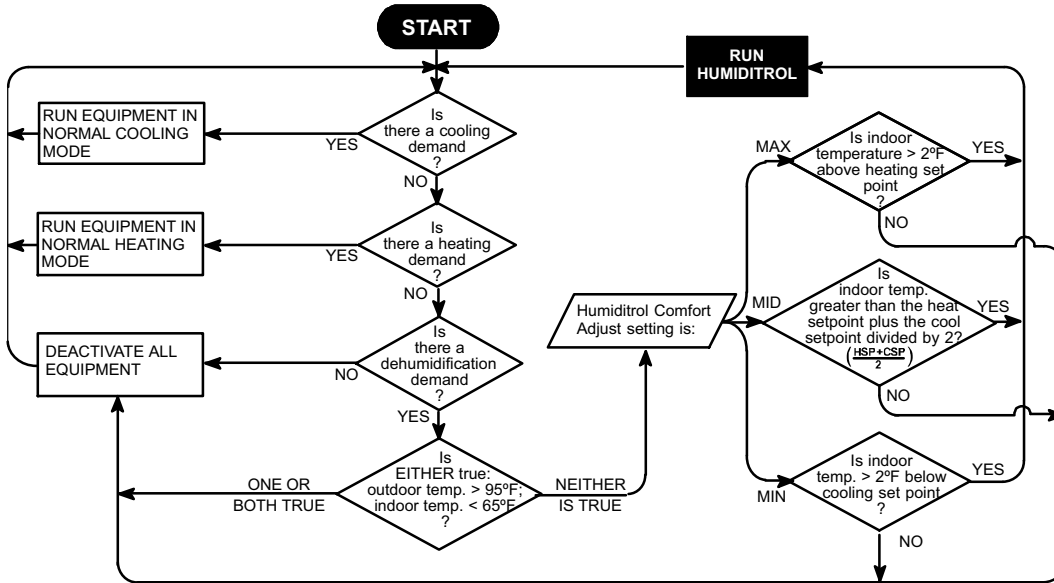
Memory Protection

The thermostat stores all the information concerning its programming (state, mode, program information, last temperature measured) in a nonvolatile memory.

This function avoids the loss of the state of the thermostat when a power-down occurs. The only thing that might be lost is the clock, however, a lithium battery will remember clock information for as long as it has charge (approximately 30 days). When power down occurs (due to a power outage) the thermostat is able to switch off all relays. The O and B relay will maintain their last state.

Appendix A. Flow Diagrams and Wiring Diagrams

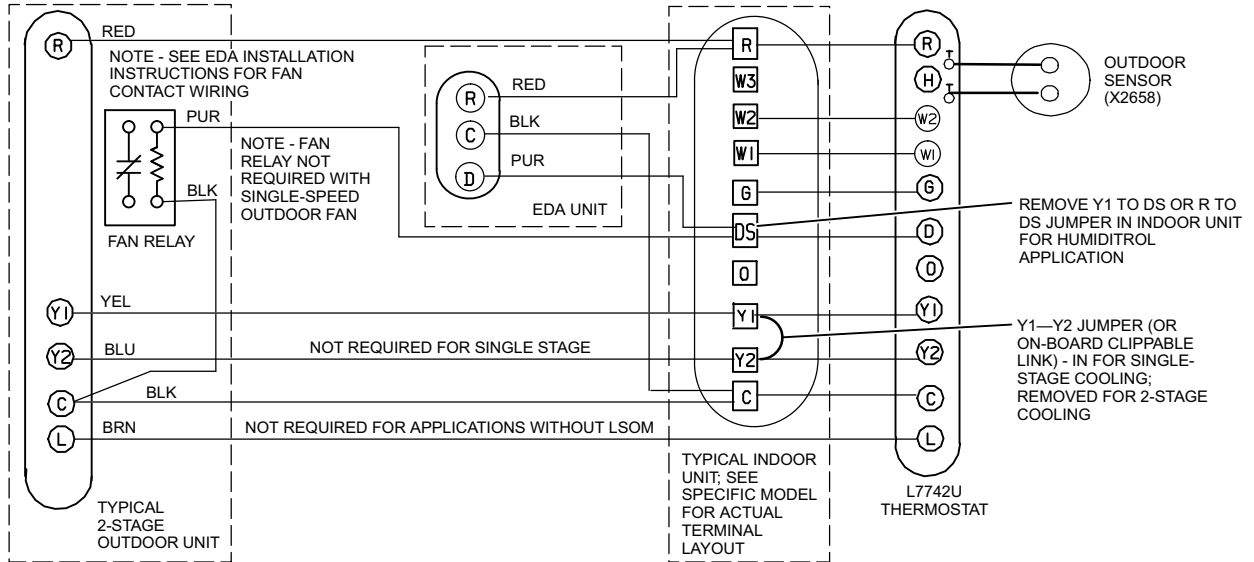
Figure 15. ComfortSense® Model L7742U Thermostat Operation with Humiditrol® EDA Enabled



Wiring Diagrams

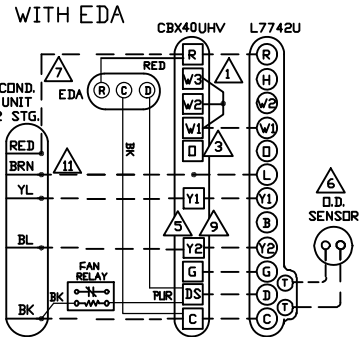
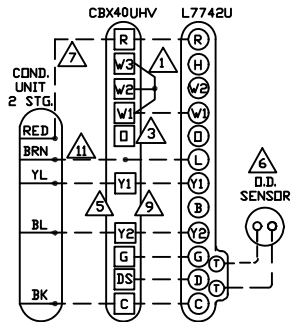
Thermostat wiring connections with various units, including dual fuel, zone control, and applications that include the Humiditrol® Enhanced Dehumidification Accessory (EDA). See figures 17, 18 and 19. For whole home dehumidifier, refer to the installation instruction for the dehumidifier.

Figure 17. Enhanced Dehumidification Accessory Typical Wiring Diagram

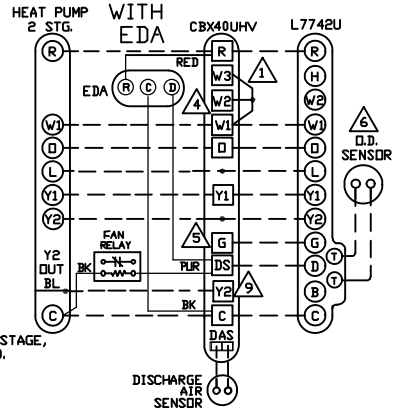
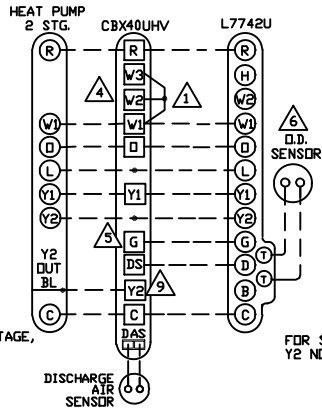


**Figure 18. CBX40UHV
Wiring Diagrams**

- ▲** WHEN 2-STAGE HEAT IS USED, T*STAT IS CONFIGURED FOR MULTI-STAGE HEAT, CONNECT T*STAT W2 TO AIR HANDLER & REMOVE JUMPER BETWEEN W1 & W2.
- ▲3** DO NOT CUT ON-BOARD LINK FROM R TO D. IT IS USED FOR CONDENSING UNIT APPLICATIONS.
- ▲4** CUT ON-BOARD LINK FROM R TO D ON AIR HANDLER.
- ▲5** CUT ON-BOARD LINK FROM R TO DS WHEN DEHUMIDIFICATION D TERMINAL IS USED.
- ▲6** OUTDOOR SENSOR FOR OUTDOOR TEMP. DISPLAY, OPTIONAL HUMIDIFIER DEW POINT CONTROL, HEAT PUMP BALANCE POINTS & DUAL FUEL BALANCE POINTS.
- ▲7** RED WIRE TO OUTDOOR CONDENSING UNIT USED ONLY FOR UNITS WITH LSDM.
- ▲9** FOR 2-STAGE CUT ON-BOARD LINK FROM Y1 TO Y2 ON AIR HANDLER.
- ▲11** BROWN WIRE USED ONLY ON COND. UNITS WITH LSDM.



CONDENSING UNIT APPLICATIONS



HEAT PUMP APPLICATIONS

FOR SINGLE STAGE,
Y2 NOT USED.

FOR SINGLE STAGE,
Y2 NOT USED.

NOTE: NOT ALL UNUSED TERMINALS
ARE SHOWN ON T*STAT DIAGRAMS.

Figure 19. Thermostat Wiring Diagrams

⚠ WHEN 2-STAGE HEAT IS USED, T'STAT IS CONFIGURED FOR MULTI-STAGE HEAT. CONNECT T'STAT W2 TO AIR HANDLER W2 & REMOVE JUMPER BETWEEN R & W2.

⚠ CUT ON-BOARD LINK FROM DS TO R (V914 CLIPPABLE CONNECTION ON FURNACE/JUMPER ON AIR HANDLER) WHEN DEHUMIDIFICATION OR HARMONY CONTROL IS USED.

⚠ DO NOT CUT ON-BOARD LINK FROM R TO D (V951 CLIPPABLE CONNECTION ON FURNACE/JUMPER ON AIR HANDLER). IT IS USED FOR CONDENSING UNIT APPLICATIONS.

⚠ CUT ON-BOARD LINK FROM R TO D (V951 CLIPPABLE CONNECTION ON FURNACE/JUMPER ON AIR HANDLER).

⚠ REMOVE DS TO Y1 JUMPER WHEN DEHUMIDIFICATION D TERMINAL IS USED.

⚠ OUTDOOR SENSOR FOR OUTDOOR TEMP. DISPLAY, OPTIONAL HUMIDIFIER DEF. POINT CONTROL, HEAT PUMP BALANCE POINTS & DUAL FUEL BALANCE POINTS.

⚠ RED WIRE TO OUTDOOR CONDENSING UNIT USED ONLY FOR UNITS WITH L5DM.

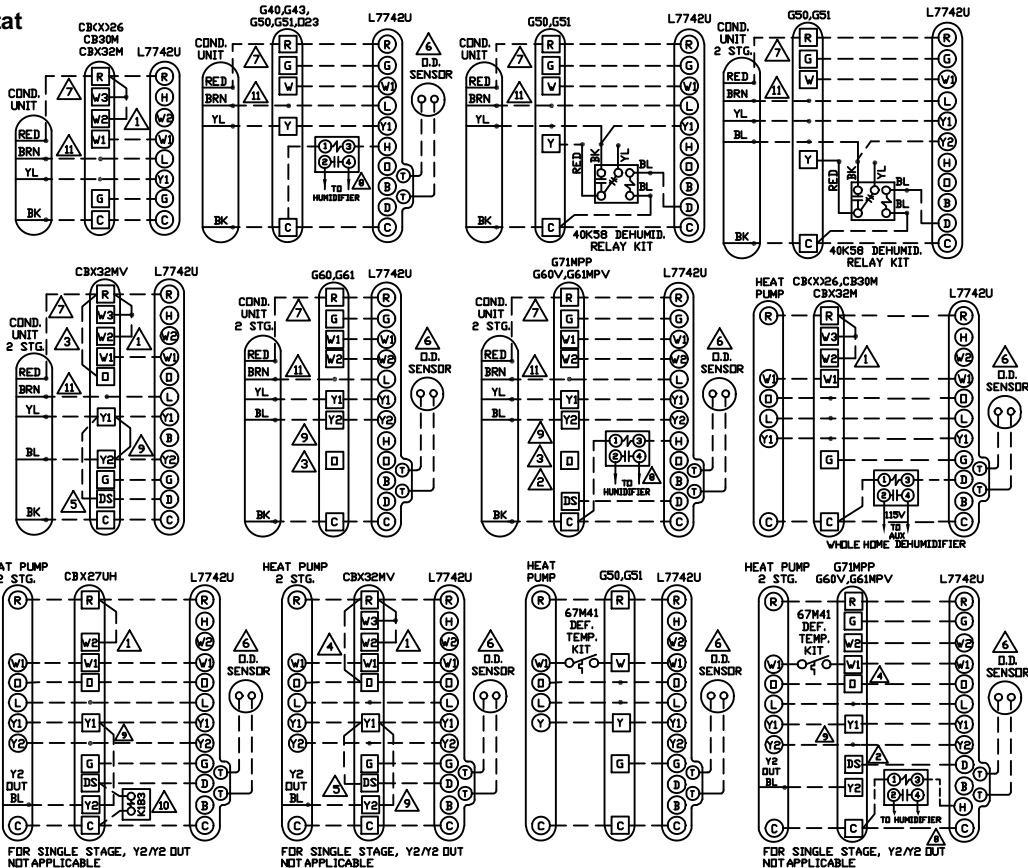
⚠ FOR HUMIDIFIER, 48G95 (OR EQUIVALENT) ISOLATION RELAY REQUIRED (COIL 24VAC, 5VA MAX.). CAN BE USED WITH ALL T'STAT APPLICATIONS.

⚠ FOR 2-STAGE CUT ON-BOARD LINK FROM Y1 TO Y2 (V418 CLIPPABLE CONNECTION ON FURNACE/JUMPER ON AIR HANDLER).

⚠ K183 DEHUMIDIFICATION RELAY KIT (CG4V62) REQUIRED WHEN USING D TO DS TERMINALS WITH CBX027 UNITS.

⚠ BRN/WN WIRE USED ONLY ON COND. UNITS WITH L5DM.

NOTE: NOT ALL UNUSED TERMINALS ARE SHOWN ON T'STAT DIAGRAMS.



Appendix B. Diagnostic Information and Hidden Menu Tables

Diagnostic Information Table

	Condition	Display Text (Screen1)	Display Text (Screen2)	System Action	Action to Clear / Recovery Condition
ERROR MESSAGE	AC power loss for more than 250ms (1/4 second)	—		Lithium Battery will remember the clock for 30 days. All outputs will be off and O/B will remember the last state.	When AC power is restored, normal operation resumes.
	CPU memory error OR ROM error <i>Note: If either of these errors occur, the display goes blank and all relays are disabled.</i>	—	ROM error	No Operation	Replace Thermostat
	Hi temperature protection: room temp. exceeds 96F (35.6C)	—		All stages of heat are turned off.	If temperature goes down, it will start working again. (Need to reduce temperature in space.)
	Local Temp Sensor error: local temp sensor reads out of range -40F to 158F	TEMP SENSOR ERROR CALL FOR SERVICE	Contact Info. Screen	Indoor temp is displayed as "EE" on the home screen. This will STOP all temperature related operation.	User - call dealer number from contact information screen and request thermostat replacement, OR If the sensor reads back to within the normal operating range, the error message will be cleared. Start working again.
	EEPROM error (Power ON)	MEMORY ERROR CALL FOR SERVICE	Contact Info. Screen	System shall restore everything to ENERGY STAR® Default and operate. If lithium Battery has charge, it will remember the previous stored settings.	User - call the dealer to replace thermostat.
	EEPROM error (Operating)	MEMORY ERROR CALL FOR SERVICE	Contact Info. Screen	System shall operate in normal mode operation until power off.	User - call the dealer to replace thermostat.

table continued on next page

	Condition	Display Text (Screen1)	Display Text (Screen2)	System Action	Action to Clear / Recovery Condition
ERROR MESSAGE	Outdoor Sensor error with Humiditrol® enabled (OR ODT was used for balance point control only): outdoor sensor reads out of range (-50F to 180F)	NO OUTDOOR SENSOR REMIN D SERVICE	See REMIND/SERVICE notes	No Humiditrol or Humidity operation is run. D terminal stays activated and other operation will keep working. Stat will stop the operation that requires ODT info i.e. between point control & stage lock in. Stat will switch the control to the operation that does not require ODT information. The display of Outdoor sensor from HOME will be turned OFF. If user turns on the display from USER SETTINGS, this error is displayed again.	If the outdoor sensor reads a value out of its normal range. (User can call the dealer to replace outdoor sensor)
	Outdoor Sensor error with Dew point control enable: outdoor sensor reads out of range (-50F to 180F)	NO OUTDOOR SENSOR REMIN D SERVICE	See REMIND/SERVICE notes	No Dew point control or Humidity operation is run. D terminal stays activated and other operation will keep working. Stat will stop the operation that requires ODT info i.e. between point control & stage lock in. Stat will switch the control to the operation that does not require ODT information. The display of Outdoor sensor from HOME will be turned OFF. If user turns on the display from USER SETTINGS, this error is displayed again.	If the outdoor sensor reads a value within its normal range. (User can call the dealer to replace outdoor sensor)

table continued on next page

	Condition	Display Text (Screen1)	Display Text (Screen2)	System Action	Action to Clear / Recovery Condition
ERROR MESSAGE	Humiditrol and Dew point disable and Outdoor sensor reads out of range (installer setting OUTDOOR SENSOR is set to YES)	NO OUTDOOR SENSOR REMINd CLEAR SERVICE	See REMINd/CLEAR/SERVICE notes	The display of Outdoor sensor from HOME will be turned OFF. If user turns on the display from USER SETTINGS, this error is displayed again. NOTE: This error would not occur if the system is in Armchair programming.	If the outdoor sensor reads a value within its normal range. (User can call the dealer to replace outdoor sensor). User can also use CLEAR to erase the error.
	Hum sensor error (With Humidifier or Dehumidifier): conditions are 0%: Stat will detect error 0-10%: Stat may detect error 10-90%: Normal operation 90-93%: Stat may detect error 93%: Stat will detect error	HUM SENSOR ERROR REMINd SERVICE	See REMINd/SERVICE notes	All the humidity operation will stop and the reading for humidity will not be valid. This message indicates something seriously wrong with the thermostat. The display of Indoor Humidity from HOME will be turned OFF. If user turns it on again, the error is displayed.	Replace Thermostat
	Hum sensor error (Without Humidifier or Dehumidifier): sensor reads out of range 0% to 100%	HUM SENSOR ERROR REMINd SERVICE	See REMINd/SERVICE notes	The reading for humidity will not be valid. This message indicates something seriously wrong with the thermostat. The display of Indoor Humidity from HOME will be turned OFF. If user turns it on again, the error is displayed.	Replace Thermostat
	L input detection	HVAC ERROR DETECTED REMINd SERVICE	See REMINd/SERVICE notes	Message is displayed in the information display area. Outside unit may stop working.	If the L signal is removed, the message is cleared. OR User can call the dealer.

table continued on next page

	Condition	Display Text (Screen1)	Display Text (Screen2)	System Action	Action to Clear / Recovery Condition
REMINDERS	Media Filter	REPLACE MEDIA FILTER REMIND RESET	See REMIND/RESET notes	Displayed on both lines on HOME.	User either push RESET or REMINDER button
	UV Lamp	REPLACE UV LAMP REMIND RESET	See REMIND/RESET notes	Displayed on both lines on HOME.	User either push RESET or REMINDER button
	Humidity Pad	REPLACE HUM PAD REMIND RESET	See REMIND/RESET notes	Displayed on both lines on HOME.	User either push RESET or REMINDER button
	Routine sys check up	ROUTINE SYS CHECK-UP REMIND RESET	See REMIND/RESET notes	Displayed on both lines on HOME.	User either push RESET or REMINDER button
	PureAir™ maintenance	REPLACE METAL INSERT REMIND RESET	See REMIND/RESET notes	Displayed on both lines on HOME.	User either push RESET or REMINDER button
STATUS	Initial Power Up OR recovery from power loss of more than the life of lithium battery (System does not know its Date/Time)	SET DATE/TIME Default DATE/TIME (MON JAN 1 12:00 PM)		Message is displayed on the dot Part.	User has to set the current date/time to get rid of this message. If higher priority Reminder or Error message occur then that message will be displayed first.
	Heating (only when system is in Heat Call)	HEATING Date/Time		Displayed on first line. Second line has Date/Time info on it	When call is ended OR when higher priority reminder/error occurs
	Cooling (only when system is in cool call)	COOLING Date/Time		Displayed on first line. Second line has Date/Time info on it	When call is ended OR when higher priority reminder/error occurs
	Auto (When in heat or cool call)	HEATING or COOLING Date/Time		Displayed on first line. Second line has Date/Time info on it	When call is ended OR when higher priority reminder/error occurs
	Humidifying (only when system is humidifying)	HUMIDIFYING Date/Time		Displayed on first line. Second line has Date/Time info on it	When call is ended OR when higher priority reminder/error occurs
	Dehumidifying (only when system is in dehumidifying)	DEHUMIDIFYING Date/Time		Displayed on first line. Second line has Date/Time info on it	When call is ended OR when higher priority reminder/error occurs
	System Off	SYSTEM OFF Date/Time		Displayed on first line. Second line has Date/Time info on it	When call is ended OR when higher priority reminder/error occurs
Outdoor temperature (when selected User settings)	OUTDOOR TEMP XXF Date/Time		Displayed on first line. Second line has Date/Time info on it	Is user de-selects from User settings or higher priority reminder/error occurs	

table continued on next page

	Condition	Display Text (Screen1)	Display Text (Screen2)	System Action	Action to Clear / Recovery Condition
STATUS	Indoor Humidity (when selected from User settings)	INDOOR RH XX% Date/Time		Displayed on first line. Second line has Date/Time info on it	Is user de-selects from User settings or higher priority reminder/error occurs
	Schedule ON (User turns on the schedule)	SCHEDULE ON Date/Time		Message is displayed on first line for 3seconds.	Message will disappear after 3 seconds or if higher priority Error/Reminder occurs
	Schedule OFF (User turns off the schedule)	SCHEDULE OFF Date/Time		Message is displayed on first line for 3seconds.	Message will disappear after 3 seconds or if higher priority Error/Reminder occurs
	Temporary Hold On (User had set a Temporary hold on set points)	HOLD SETTING UNTIL Date/Time	PRESS SCHED TO RESUME PROGRAM	Message is displayed on the screen and system has a temporary hold on temperature.	Message will disappear when user hits SCHED or if higher priority Error/Reminder occurs
	Compressor Protection timer (5min) is running	WAIT		Message is displayed on the screen whenever compressor protection is running AND cooling/heating demand exists.	Message will disappear when compressor protection run expires OR there is no cooling or heating demand.
	FAN mode is set to AUTO on home (follow the schedule) and ON in the current period of schedule & (system is not heating or cooling)	FAN ON		Message is displayed on the first line of dot matrix	The Message goes away if: 1 - User changes FAN mode from AUTO to ON or CIRC On home 2 - User changes FAN mode in the schedule from ON to something else
	FAN mode is set to AUTO on home (follow the schedule) and CIRC in the current period of schedule & (system is not heating or cooling)	FAN CIRC		Message is displayed on the first line of dot matrix	The Message goes away if: 1 - User changes FAN mode from AUTO to ON or CIRC On home 2 - User changes FAN mode in the schedule from CIRC to something else

Available System Settings

Setup	HEAT PUMP Configurations												NON HEAT PUMP Configurations						
	Gas/ Oil	Gas/ Oil	None	Gas/ Oil	Gas/ Oil	None	Elec	Elec	None	Elec	Elec	None	G/O or Elec	G/O or Elec	None	G/O or Elec	G/O or Elec	None	
Backup/ Indoor Heat																			
Comp. Stages	1	1	1	2	2	2	1	1	1	2	2	2	1	1	1	2	2	2	2
Indoor Heat Stgs	1	2	0	1	2	0	1	2	0	1	2	0	1	2	0	1	2	0	0
Total Heat Stgs	2	3	1	3	4	2	2	3	1	3	4	2	1	2	0	1	2	0	0
1st Heat Stage	Y1	Y1	Y1	Y1	Y1	Y1	Y1	Y1	Y1	Y1	Y1	Y1	W1	W1		W1	W1		
2nd Heat Stage	W1	W1		Y1+Y2	Y1+Y2	Y1+Y2	Y1+W1	Y1+W1		Y1+Y2	Y1+Y2	Y1+Y2		W1+W2			W1+W2		
3rd Heat Stage		W1+W2		W1	W1			Y1+W1+W2		Y1+Y2+W1	Y1+Y2+W1								
4th Heat Stage					W1+W2							Y1+Y2+W1+W2							
1st Em Heat Stage	W1	W1		W1	W1		W1	W1		W1	W1								
2nd Em heat Stage		W1+W2			W1+W2			W1+W2			W1+W2								
Cool Stages	1	1	1	2	2	2	1	1	1	2	2	2	1	1	1	2	2	2	2
1st Cool Stage	Y1	Y1	Y1	Y1	Y1	Y1	Y1	Y1	Y1	Y1	Y1	Y1	Y1	Y1	Y1	Y1	Y1	Y1	Y1
2nd Cool Stage				Y1+Y2	Y1+Y2	Y1+Y2				Y1+Y2	Y1+Y2	Y1+Y2					Y1+Y2	Y1+Y2	Y1+Y2
Indoor Heat Stgs	X	X		X	X		X	X		X	X		X	X		X	X		X
Outdoor Sensor	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Residual Cool	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Low Balance Pt.	X	X		X	X		X	X		X	X								
High Balance Pt.	X	X		X	X		X	X		X	X								
Stg Delay Timers	X	X		X	X	X	X	X		X	X	X			X		X	X	X
Stg 1 Diff	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Stg 2 Diff	X	X		X	X	X	X	X		X	X	X		X		X	X	X	X
Stg 2 Delay	X	X		X	X	X	X	X		X	X	X		X		X	X	X	X
Stg 3 Diff		X		X	X		X	X		X	X								
Stg 3 Delay		X		X	X		X	X		X	X								
Stg 4 Diff					X						X								
Stg 4 Delay					X						X								
H/C Stgs Locked In		X		X	X	X	X	X		X	X	X		X		X	X	X	X
Stg 2 Hp Lock Temp				X	X					X	X								
Humiditol Adjust																			

If Dehumidification mode is not equal to HUMIDITROL.

LEGEND ■ FILLED-IN CELL INDICATES SELECTION IS NOT AVAILABLE (IS HIDDEN) FOR THE SPECIFIC CONFIGURATION