



ComfortSense® 5500

Installation and Setup Guide

507501-02
6/2018
Supersedes 5/2017

Table of Contents

| | |
|--|----|
| Shipping and Packing List | 2 |
| Description | 3 |
| <i>Dimensions (H x W x D)</i> | 3 |
| <i>Wall Plate Dimensions (H x W)</i> | 3 |
| <i>Compressor Short Cycle Protection</i> | 3 |
| Installation | 4 |
| <i>Installation Setup</i> | 4 |
| <i>Wiring thermostat</i> | 8 |
| Installer Settings | 10 |
| Menu | 10 |
| <i>System Setup</i> | 11 |
| <i>Residual Cool</i> | 11 |
| <i>Deadband</i> | 11 |
| <i>Smooth Set Recovery (SSR)</i> | 11 |
| <i>Dealer Information</i> | 11 |
| <i>Stage 1 Diff</i> | 11 |
| <i>Temperature Offset</i> | 11 |
| <i>Compressor Protect</i> | 11 |
| <i>Custom Reminders</i> | 12 |
| <i>Reset Settings</i> | 12 |
| <i>Energy saving Default</i> | 12 |
| <i>System Test Modes</i> | 12 |
| Unit Part (Catalog) & Serial Numbers | 13 |
| Memory Protection | 13 |
| Diagnostic Information | 14 |
| Reminder Information | 15 |
| Supported Configurations | 15 |
| Installation Checklist | 16 |

Shipping and Packing List

- 1 - ComfortSense® 5500 touchscreen, 7-day programmable thermostat with back plate
- 1 - Wall plate
- 2 - Mounting screws (M3.5x25mm self-tapping screws)
- 2 - Wall anchors
- 1 - Warranty certificate
- 1 each - Homeowner and Installer Guides

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.



IMPORTANT

Read this manual before programming the thermostat.
Use this thermostat only as described in this manual.

Description

The ComfortSense® 5500 thermostat (Catalog No. 13H13) is an electronic 7-day single-stage programmable touch screen thermostat. It also offers enhanced capabilities which include:

- worry-free memory storage feature

- menu-driven touch-screen display
- equipment maintenance reminders

This thermostat supports single-stage non-heat pump units.

Dimensions (H x W x D)

Case dimensions: 3-5/16 x 4-5/16 x 7/8 in. (84 x 110 x 22mm)

Wall Plate Dimensions (H x W)

Plate dimensions: 4-1/2" x 5-3/4" (114 x 146mm)

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 will display a snow flake icon and the word "waiting" next to it if there is a cooling compressor call.



WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life.

Installation and service must be performed by a licensed professional HVAC installer (or equivalent) or service agency.



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.



IMPORTANT

In all applications, the ComfortSense® Model 5500 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.



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.

Installation

Before beginning installation, note the type of equipment, number of stages, and any accessories being installed. This thermostat is a 24VAC low-voltage thermostat and requires a common wire to the thermostat to operate.

DO

- Shut off all power to system before installing.
- Read this entire document, noting which instructions pertain to your equipment and system requirements.
- Make sure that all wiring conforms to local and national building and electrical codes and ordinances.
- Ensure load from any thermostat connection is less than 1 AMP.

DO NOT

- Install on voltages higher than 30VAC.
- 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.
- Install on outside walls or in direct sunlight.
- Exceed thermostat wire run length greater than 300 feet (91m).

Installation Setup

1. Unpacked the thermostat and open the case with a thin-blade screwdriver. Place between wall base and unit and twist to separate unit from base.
2. Select a location for the thermostat about 5 feet (1.5m) above the floor in an area with good air circulation at average temperature.
3. Do not install the thermostat where it can be affected by:
 - Drafts or dead spots behind doors and in corners.
 - Not close to entrance or automatic doors.
 - Not close to heat generating equipment such as kitchen equipment.
 - Not in an enclosed environment unless a remote indoor sensor is used.
 - 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.

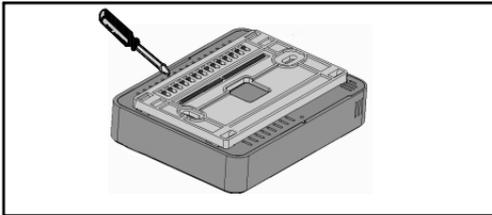
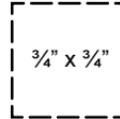


Figure 1. Removing Back Plate

4. Use steps **A** through **J** (step **J** applicable when using provided wall plate) to install the thermostat.

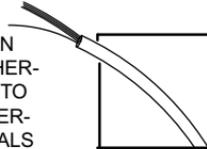
CUT OR DRILL A SMALL HOLE
FOR THERMOSTAT WIRING

A



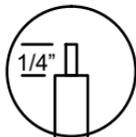
PULL ABOUT 3" OF THERMOSTAT
WIRE THROUGH OPENING AND RE-
MOVE OUTER THERMOSTAT WIRE
JACKET.

THIS WILL HELP IN
ROUTING THE THER-
MOSTAT WIRING TO
THE PROPER THER-
MOSTAT TERMINALS



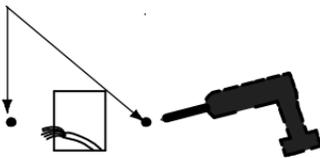
B

- C** TRIM 1/4" INSULATION FROM
END OF EACH WIRE

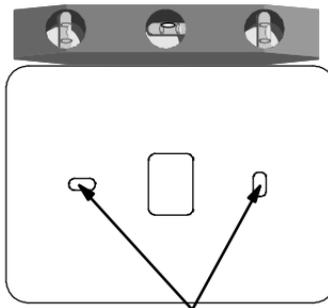


DRILL 3/16" HOLES AT MARKED LOCATIONS
ON WALL FOR ANCHORS

E



(USE A LEVEL) ALIGN WALL PLATE



D

USE UNIT WALL PLATE AS TEMPLATE TO MARK
DESIRED MOUNTING HOLE LOCATIONS ON WALL.

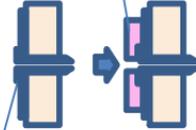
NOTE: INSTALLATION OF WALL PLATE IS
OPTIONAL.

Thermostat Installation with Wall Plate

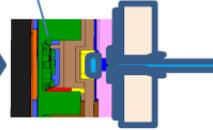
F - Place wall plate over holes in wall.



H - Attach back plate to wall plate.



J - Attach thermostat to back plate.

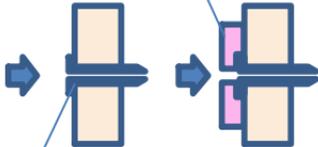


G - Insert wall anchors through wall plate into wall.

I - Insert provided screws through back and wall plates into wall anchors.

Thermostat Installation without Wall Plate

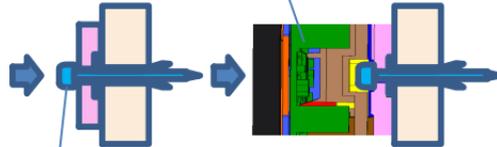
G - Place back plate over wall anchors in wall.



F - Insert wall anchors through wall plate into wall.

H - Insert provided screws through back plate into wall anchors.

I - Attach thermostat to back plate.



Wiring thermostat

1. Connect wiring between thermostat, indoor unit, and outdoor unit as shown in the appropriate wiring diagram.
2. Seal the hole in the wall with a suitable material to prevent drafts from entering the thermostat case.
3. Configure thermostat and equipment for system type (gas or electric heat), program the thermostat, and test system.

TERMINAL DESIGNATIONS

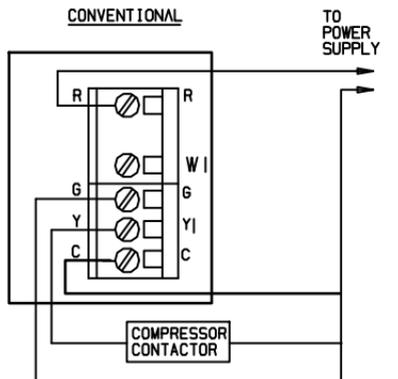
C - Common 24 VAC

G - Fan relay

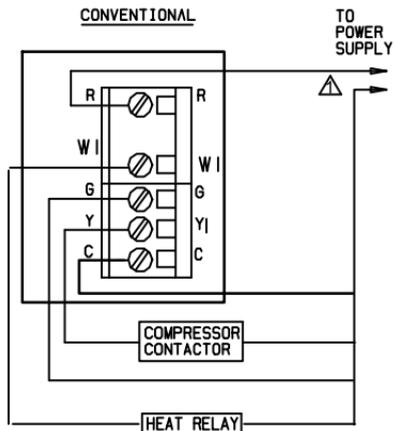
W1 - 1st stage heating (electric or gas heat)

Y1 - 1st stage cooling

R - 24VAC power

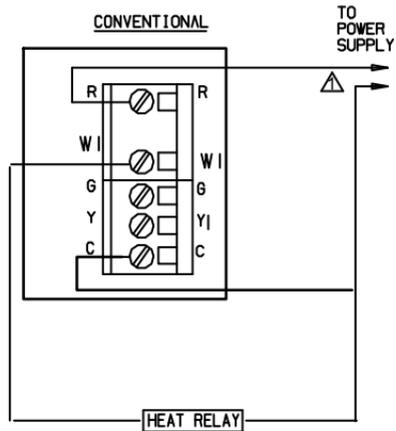


TYPICAL COOL ONLY SYSTEM



**TYPICAL CONVENTIONAL SINGLE-STAGE
HEAT / COOL SYSTEM**

⚠ POWER SUPPLY. PROVIDE DISCONNECT MEANS
AND OVERLOAD PROTECTION AS REQUIRED



△ POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED

Installer Settings

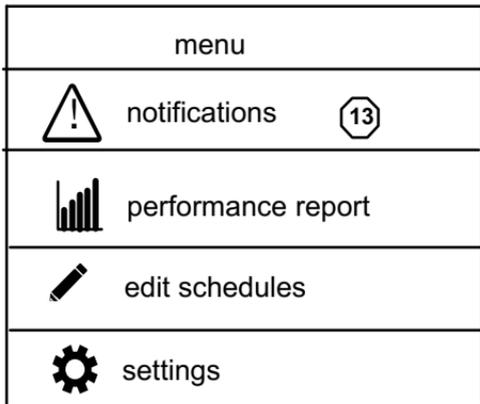


Figure 2. Installer Menu Screen

Menu

1. Touch **menu** option from the home screen.
2. Touch and hold the **settings** option on the menu. This will display the **installer settings** notice and then menu.

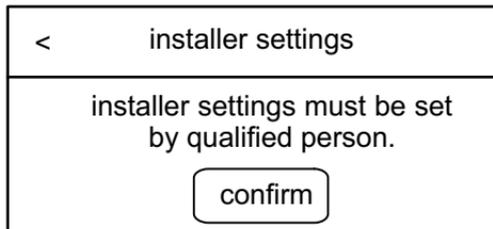


Figure 3. Installer Menu Screen Confirmation

3. Available options are as follows:

| installer settings | |
|-----------------------|---|
| system setup | > |
| residual cool | > |
| dead band | > |
| smooth set recovery | > |
| contact information | > |
| stage 1 diff | > |
| temperature offset | > |
| compressor protect | > |
| custom reminder | > |
| reset setting | > |
| energy saving default | > |
| system test mode | > |

System Setup

Sets the thermostat heat options.

| | |
|----------------------|-----------------|
| < | system settings |
| indoor unit settings | |
| No heat | |
| gas/oil | ✓ |
| electric | |

Figure 4. System Setup

Residual Cool

Default is 0 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. Options are 0, 30, 60, 90 and 120 minutes. Touch < to return to previous menu.

Deadband

Default is 3°F (2°C). The deadband setting is the minimum difference between the cooling and heating set points. This setting is used in cool/heat mode to ensure smooth equipment operation. The deadband is adjustable from 3 to 8°F. Use the + or - option

to select desired deadband. Touch < to return to previous menu.

Smooth Set Recovery (SSR)

Options are enable or disable. Default is Disabled. When enabled, smooth set back begins recovery up to two hours before the programmed time so that the programmed temperature is reached at the corresponding programmed event time. Assume 12°F per hour for gas/electric heating and 6°F per hour for first stage compressor based cooling. With Smooth Set Back disabled, the control will start a recovery at the programmed time.

Dealer Information

This allows the installer to add dealer name, address, phone, email, website and number.

Touch < to return to previous menu.

Stage 1 Diff

The default is 1.0°F but can be programmed between 0.5° and 8.0°F in 0.5°F increments. Touch < to return to previous menu.

Temperature Offset

Default is 0°F. This setting can be used to offset the displayed space temperature by up to +/- 5°F. This offset also applies to the control temperature. Touch < to return to previous menu.

Compressor Protect

Default is ON and it can be turned OFF, however only for one compressor cycle and then it will revert back to ON.

If the system is running in compressor protection, the home screen displays "WAIT" only if there is cooling call for the compressor (Y1).

If compressor protection is running and there is a demand for electric heating, the system waits for the compressor protection timer to expire.

Custom Reminders

Two custom reminders may be rename on this screen to the desired name (name is limited to 19 characters). After entering the new name, touch the done key to return to the customer reminder screen.

To set a reminder go to the User Settings screen and select **reminders**. The reminder setting screen will appear and a list all of the predefined reminders plus the two custom reminders will appear at the end of the list.

Scroll to CUSTOM REMINDER 1 or 2 (or renamed titles). Touch the title to select the reminder. By default all reminders are set to disabled. Touch disable to choose from 3mon, 6mon, 12mon, 24mon or custom date.

When finished, touch < to return to previous menu.

Reset Settings

To reset the thermostat to factory defaults, scroll to RESET SETTINGS and touch to select. Read the message and to continue touch **CONFIRM**.



IMPORTANT

RESET SETTINGS erases all programming and returns the thermostat to the factory conditions, including the installer settings. Use this only as a last resort.

Energy saving Default

Energy saving recommended set points for heating and cooling can help save energy. The time and temperatures reference in table 1 are pre-programmed into the thermostat to achieve energy savings.

Scroll to ENERGY SAVING DEFAULT and touch to select. Read the message on the screen and to continue, touch **CONFIRM**.

Table 1. Energy Saving Set Points

| Time | Heating | Cooling |
|-------------|----------------|----------------|
| Wake | 70°F (21°C) | 78°F (25°C) |
| Leave | 62°F (17°C) | 85°F (29°C) |
| Return | 70°F (21°C) | 78°F (25°C) |
| Sleep | 62°F (17°C) | 82°F (28°C) |

System Test Modes

After the thermostat has been installed and set-up, the installer may run a system test function (ac-

cessed through the installer settings menu). Test include cooling, heating and fan outputs.

Select system test mode. A pop-up will be displayed indicating all equipment will be stopped. Touch **confirm** to continue.

Touching the **OFF** button next to the desired option will change the status to **ON** and will enable the relay for that terminal. Touching again will turn **OFF** the relay. Touch the left arrow (<) to exit the system test mode.

| system test mode | |
|------------------|---|
| Y1 |  |
| W1 |  |
| G |  |

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.

Unit Part (Catalog) & Serial Numbers

A label on the back of the thermostat is visible through an opening in the back of base plate. This identifies the Lennox Catalog Number, Part Number and Serial Number. Separate the base plate 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 and date information, however, a lithium battery will remember clock / date information for as long as it has a charge (approximately 24 hours). When power down occurs (due to a power outage) the thermostat is able to switch off all relays. When power is restored the thermostat will be in heat /cool mode so either mode can run to re-satisfy the temperature setting in the home. Day and time (schedules) may be off due to battery power loss.

Diagnostic Information

| Error Code | Screen Text | Priority 0:high 1:middle 2:low | Message Type | Condition | System Action | Action to Clear / Recovery Condition |
|------------|-----------------------------|---|--------------|--|---|--|
| 4 | high temperature protection | 0 | critical | High temperature protection when outdoor ambient temperature exceeds 96°F (35.6°C). | All stages of heat are turned off by safety relay. This error is displayed on notification screen. | Once temperature drops below 96°F (35.6°C), the system resume operation. |
| 5 | temperature sensor error | 0 | critical | Local temperature sensor is out of range -40°F to 158°F. There is a finite difference between main thermistor and sub-thermistor which is greater than 5°F. | Indoor temp is displayed as "--" on the home screen. This will STOP all temperature related operation. All stages of heat are turned off by safety relay. This error is displayed on notification screen. | Either thermostat will have to be replace or if the sensor returns to normal operating range, the error message will automatically clear and the system will resume operation. |
| 7 | memory error | 0 | critical | EEPROM error (Power ON) | System will restore using to Energy Star defaults and resume operations. This error is displayed on notification screen. | Thermostat will need to be replaced. |
| 8 | memory error | 0 | critical | EEPROM error (Operating) | System will operate in normal mode operation until power off. This error is displayed in notification screen. | |

Reminder Information

| Error Code | Screen Text | Message Type | Action to Clear / Recovery Condition |
|------------|-----------------------------------|--------------|---|
| 12 | replace media filter | reminder | Touch either done to clear the reminder or remind later button. |
| 13 | replace UV lamp | | |
| 14 | replace humidity pad | | |
| 15 | routine system check-up | | |
| 16 | replace metal insert for pure air | | |
| 17 | user editable | | |
| 18 | user editable | | |

Supported Configurations

This thermostat supports air conditioner systems only with single speed compressors.

| | Backup/ Indoor Heat | Comp. stages | Indoor Heat Stages | Heat Stages | 1st Heat Stage | Cool Stages | 1st Cool Stage |
|--------|---------------------|--------------|--------------------|-------------|----------------|-------------|----------------|
| Non HP | GAS/OIL OR ELEC. | 1 | 1 | 1 | W1 | 1 | Y1 |
| Non HP | NONE | 1 | 0 | | | 1 | Y1 |

Installation Checklist

| Item Number | Item | Yes | No |
|-------------|---|-----|----|
| 1 | Is the thermostat level where mounted on the wall? | | |
| 2 | Is the thermostat installed away from direct sunlight or discharge air vents? | | |
| 3 | Has the thermostat been wired correctly based on the type of equipment installed (air handler, outdoor unit and accessories)? | | |
| 4 | Is the thermostat wiring secured tightly to the terminals? | | |
| 5 | Is the common wire (terminal C) connected? | | |
| 6 | Has the System Test Mode located under the installer settings been used to verify proper operation? | | |