COMFORTSENSE® 8500
Commercial Programmable Thermostat

PRODUCT SPECIFICATIONS

Bulletin No. 210787
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The ComfortSense® 8500 is a commercial, electronic, 7-day, multi-stage, programmable, touchscreen thermostat.

Models are available with or without CO_2 sensing capabilities.

All models are only used with Energence® commercial rooftop units equipped with the Prodigy® Control System.

CO_2 models can be used to control Lennox' premium rooftop unit Demand Control Ventilation features based on CO_2 setpoints and conditions stored in the Prodigy® Unit Controller ECTO parameter.

Thermostats also feature enhanced capabilities including remote temperature sensing, dehumidification and control, economizer control and custom reminders.

- Easy to read 4.3 in. color screen (measured diagonally).
- LCD display with backlight shows the current and set temperature, time, inside relative humidity, system status (operating mode, schedules and occupancy) and outside temperature.
- Menu-driven programming guides user through the scheduling process showing only necessary information on each screen.
- Touchscreen interaction.
- Ergonomic design.
- Scheduled occupancy control (economizer operation) for fresh air ventilation. Designed specifically for commercial applications to satisfy fresh air ventilation needs.
- Remote Indoor Temperature Sensing with up to nine averaging sensors (indoor temperature sensors must be ordered separately).
- Compressor short-cycle protection (non-adjustable).
- Built-in Relative Humidity Sensor.
- Built-in Occupancy Sensor input connections.
- Real-time clock keeps time during power failures and automatically updates to daylight savings.
- Two user-editable Custom Reminders and a Routine System Checkup reminder.
- Two separate schedules for Work Days or Non-work Days (user selectable) with up to 4 time periods per day.
- Performance Report displays the number of hours each month the system has been operating (with Local Scheduling Function set to ON).
- Temporarily override a program schedule as by temperature.
- Holiday scheduling allows one-touch change to a pre-defined holiday schedule without having to reprogram the thermostat.
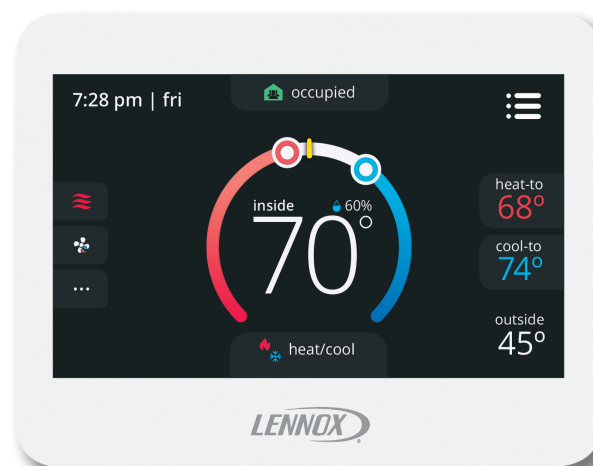
ComfortSense®

ENERGENCE®
Saving Energy with *Intelligence*™

PRODiGY™
CONTROL SYSTEM

4 Heat / 4 Cool Multi-Stage For Energence® Packaged Electric/Electric and Gas/Electric Rooftop Units (Not for Heat Pump Systems)

CONTENTS

- Outside temperature display shows current outside temperature.
- Permanent memory storage of programs
- Wallplate furnished.

WARRANTY

Two-year limited warranty.
Refer to Lennox Equipment Limited Warranty certificate for specific details.

APPROVALS

Factory preset program settings conform to EPA ENERGY STAR® recommended setpoints.
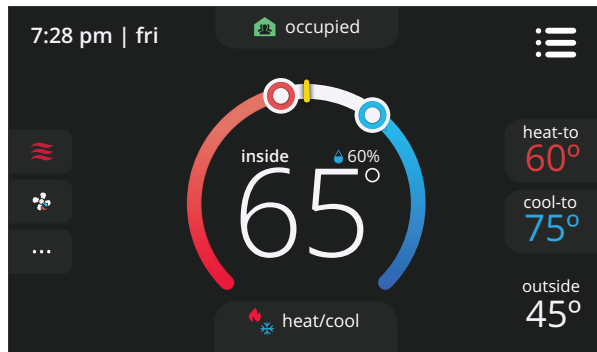
APPLICATIONS

Fully programmable thermostat provides precise comfort control and easy programmability.

Provides temperature control for packaged gas/electric and electric/electric for up to 4 heat / 4 cool multi-stage systems.

USER SETTINGS
HOME SCREEN

Temperature Settings
- Large display of current inside temperature setpoint (°F or °C)
- Heating and Cooling Setpoint Indicators on the round animated temperature band
- Current cooling setpoint temperature Button (cool-to)
- Current heating setpoint temperature Button (heat-to)

Touching the heat or cool setpoint indicators on the round temperature band, or touching the **heat-to** or **cool-to** buttons displays the heat or cool menu screens.

A tilde symbol **~** appearing under the heat-to or cool-to buttons indicates that the system is offline.

Current Room Temperature
- Yellow bar on temperature band indicates actual room temperature

Current Outside Temperature
- Displays current outside temperature in °F or °C

Time/Date Display
- Displays current time and day (supports daylight savings time changes)

Occupied/Unoccupied
- Displays Occupied or Unoccupied status

If an optional occupancy sensor is installed the thermostat will automatically change the status. NOTE - Occupancy sensor must be field provided.

Humidity Display
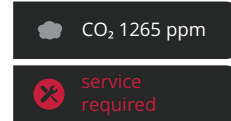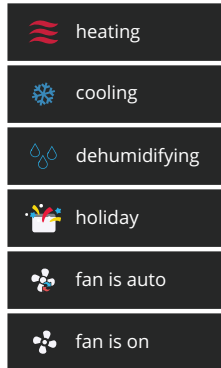- Displays current inside relative humidity above current indoor temperature

Mode
- Displays current system operating mode below current indoor temperature (heat/cool or schedule)

System Status Icons
(left side of home screen and status screen)

Owner and Technician
(Home Screen and Status Screen)

Only Visible When Enabled

≋ heating	☁ CO₂ 1265 ppm
❄ cooling	⊗ service required
◊◊ dehumidifying	
🎉 holiday	
❀ fan is auto	
❀ fan is on	

Up to four status icons can be displayed at one time on the left side of the screen.

Menu Button

Touch to display **menu** screen. See page 3.

A red circle with a number on the menu button indicates an active notification. Touch **Menu > Notifications** to view status screen.

Heat Menu Screen (not shown)

On the Home Screen, touching the heat setpoint indicators on the round temperature band, or touching the **heat-to** button displays the heat menu screen.

- Heating setpoint display
- Heating Setpoint Indicator on the round temperature band
- Plus (+) and Minus (–) buttons
- Home button (return to Home Screen)

Touch the red heat setpoint indicator on the round temperature band, or touch the **plus** or **minus** buttons to change the heating setpoint in one degree increments.

Cool Menu Screen (not shown)

On the Home Screen, touching the cool setpoint indicators on the round temperature band, or touching the **cool-to** button displays the cool menu screen.
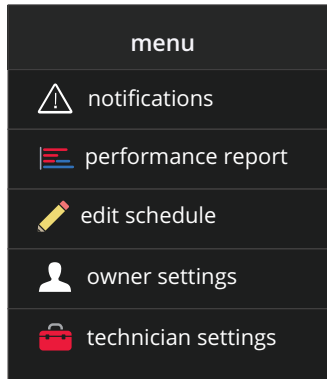
- Cooling setpoint display
- Cooling Setpoint Indicator on the round temperature band
- Plus (+) and Minus (–) buttons
- Home button (return to Home Screen)

Touch the blue cool setpoint indicator on the round temperature band, or touch the **plus** or **minus** buttons to change the cooling setpoint in one degree increments.

USER SETTINGS

MENU SCREEN

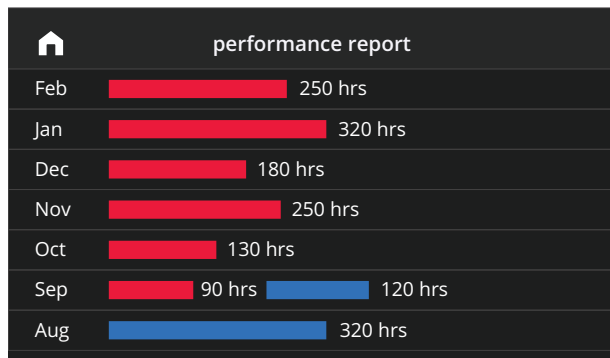

⑦ Touch each item to display the selected screen.

⑦ Touch left side of screen to return to the Home Screen.

NOTIFICATIONS

- Displays system operating system and service reminder messages

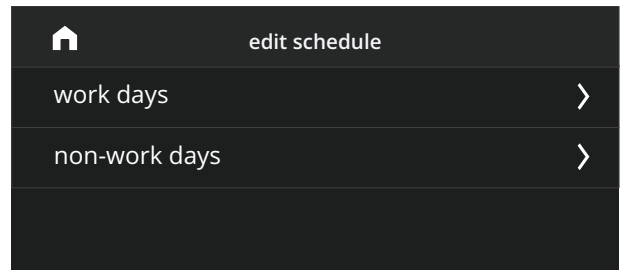⑦ Touch the status icon ⋯ on the left side of the Home Screen to view the Notifications Screen.

PERFORMANCE REPORT SCREEN

- Displays the number of hours each month the system has been operating in heating mode (red) or cooling mode (blue) in an easy-to-read graph.

⑦ Local Scheduling Function must be set to On for Performance Reports. See page 4.

EDIT SCHEDULE SCREEN

Work Days
- Select Days (mon, tue, wed, thu, fri)

⑦ Displays work days selected. Touch to edit. A checkmark indicates which work days are active.

Non-Work Days
- Days (sat, sun) (non-adjustable)
- Select Holidays

  Select Periods

⑦ Time period options are the same for both Work Days, Non-Work Days and Holidays.

- Four time periods per day (1st, 2nd, 3rd, 4th)
- Default settings:
  1st period - 6:00 am
  2nd period - 6:00 pm
  3rd period - 8:00 pm
  4th period - 10:00 pm

⑦ Touch the time bar to set the start time for each period using the **set time** window.

- Cool-To, default 78°F (adjustable 48 to 90°F)
- Heat-To, default 70°F (adjustable 45 to 90°F)

⑦ Use Plus (+) and Minus (–) buttons to adjust heating and cooling settings.

- Occupancy/Unoccupied, default occupied

⑦ Touch the pencil tool in each period screen to rename the period, delete a period or cancel editing.

⑦ Use the keyboard tool to rename a schedule or time period (maximum 30 characters).

  Select Holidays

⑦ Allows setting schedules for specific holidays (during unoccupied "Non-Work Days"). Has the same programming features as regular schedules.

- Add day

⑦ Set holiday date (d/mm/yyyy) using calendar tool.

Override Schedule (not shown)

⑦ During a scheduled time period, touching either the setpoint indicator on the temperature band or the heat-to or cool-to button on the Home Screen will initiate a temporary override. A temporary override screen is displayed and an override icon is displayed on the Home Screen. Override runs until the next scheduled time period. Touch "X" to cancel override and return to current schedule.

USER SETTINGS
OWNER SETTINGS SCREEN

⌂	owner settings	
💧	humidity	›
⚒	general	›
▭	display	›
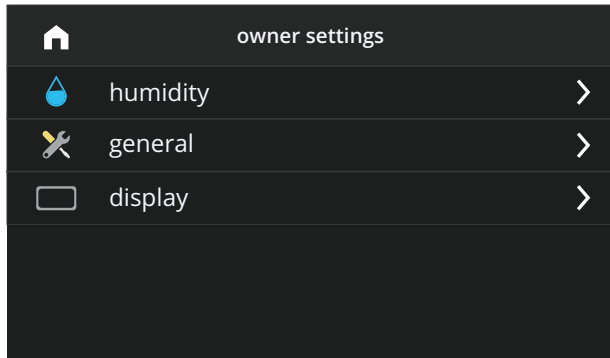
Humidity
- Slider to adjust humidity setting
  - Default 60% (adjustable 5 to 95% relative humidity)

General
- About (thermostat and service information)
  - Thermostat Information
    - Model Number
    - Serial Number
    - Hardware Revision
    - Software Revision
  - Contractor Information
    - Name
    - Address
    - Phone
    - Email
  - Website

⑦ Technician can input their contact information during technician setup using the keyboard tool (maximum 30 characters per entry).

- Screen Lock (Prevents tampering with thermostat settings, 3-digit security code)
  - Off (unlocked, no security)
  - ON (locked, prevents tampering with the thermostat)

⑦ Technician can change 3-digit security code in the Technician Settings Screen.

- Language
  - English (default)
  - Français
  - Español
  - Português
- Date & Time
  - 12 or 24 Hour setting
  - Daylight Savings - Enable or Disable (default)
  - Set Time
  - Set Date

⑦ Date and Time can be set using the **set date** screen.

Display
- Show Outdoor Temperature (on/off)
- Screen Options
  - Screen Brightness

⑦ Slide control allows screen brightness adjustment (20 to 100%).

  - Screen Saver options
    - Screen goes black when not in use
    - Screen brightness dims when not in use

⑦ Slide control allows screen brightness dimming adjustment (20 to 100%).

- Temperature Scale
  - Fahrenheit - °F (default)
  - Celsius - °C

INSTALLER SETTINGS
TECHNICIAN SETTINGS SCREEN

⌂	technician settings	
S-Bus address		5 ›
operation with Smart Hub		⬤ off
local scheduling function		⬤ off
display on home screen		›
contractor info		›
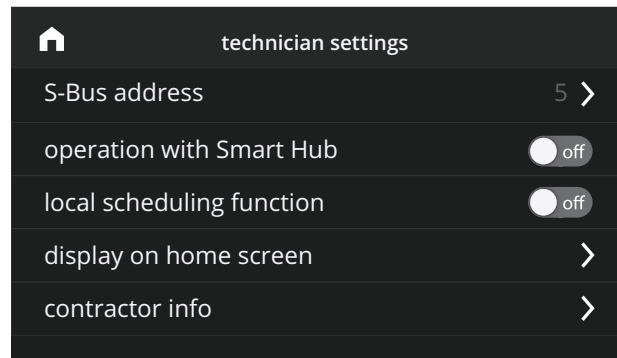
⑦ Technician must input 3-digit security code to access settings.

- S-Bus Address (up to 31)
- Plus (+) and Minus (–) buttons

⑦ Use Plus (+) and Minus (–) buttons to set S-Bus address. Must match setting on the Prodigy Unit Controller.

- Operation With Smart Hub (for future use)
  - On/Off, default Off

⑦ Must be Off to operate with Prodigy Unit Controller.

- Local Scheduling Function
  - On/Off

⑦ When set to "On" thermostat controls schedules. When set to "Off" Prodigy Unit Controller controls schedules.

- Display on Home Screen (default Off)
  - CO^2 value (CO_2 model) (On/Off)
  - RTU Function State (On/Off)
  - Service Required Alert (On/Off)

INSTALLER SETTINGS
TECHNICIAN SETTINGS SCREEN (continued)

- Contractor Information
  - Name
  - Address
  - Phone
  - Email
  - Website

ⓧ Technician can input their contact information during technician setup using the keyboard tool (maximum 30 characters).

- Temperature Sensor Configuration
  - Internal Temperature Sensor (default)
  - External Temperature Sensor(s)
    - Number of External Temperature Sensor(s) (use Plus (+) and Minus (–) buttons to select 1 to 9)
    - Type of External Sensor (select 10k or 11k)

ⓧ Touch to edit. A checkmark indicates which sensors are active.

- Offsets
  - Internal Temperature Sensor Offset (°F)
  - External Temperature Offset (°F)
    - 0°F (default), adjustable (–5 to 5°F).
  - Humidity Offset (%)
    - 0% (default), adjustable (–10 to 10%)
  - CO_2 Sensor Offset (CO_2 model)
    - 0% (default), adjustable –10 to +10 ppm

ⓧ External Temperature Offset is only available if External Temperature Sensor(s) is configured above.

ⓧ Touch the **plus** or **minus** buttons to change settings.

- Reminders
  - Custom Reminder 1
  - Custom Reminder 2
    - User defined reminders can be a custom text message (up to 20 alphanumeric characters)
    - 1 Day, 1 Week, 1 Month, 3 Month, Custom date

ⓧ Touch to edit reminder title, set date and time.

  - Routine System Checkup

ⓧ Touch to set date and time.

- Reset to Factory Defaults
  - Reset All Settings
  - Reset Owner Settings
  - Reset Technician Settings
  - Reset Reminders
  - Reset Schedule

ⓧ An alert screen confirms reset action.

- Change Owner Pin

ⓧ Technician can input a new 3-digit security code for the owner using the number pad screen.

- RTU Fan On/Auto User Control
  - On/Off (default On)

ⓧ When set to On, RTU Fan is displayed on the Home Screen and Fan Setting Option is displayed on the Owner Settings Menu.

Technician Status Icons (technician status screen)

Technician
(Technician Status Screen)

comm. status errors detected	F.A.T cooling
comm. status connected	F.A.T dehumidifying
comm. status offline	RTU fault state fault detected
occupied warmup	RTU fault state zero faults
occupied cool-down	CS fault state fault detected
F.A.T heating	CS fault state zero faults

Legend:
- CS - Thermostat
- F.A.T. - Fresh Air Temperature
- RTU - Rooftop Unit

ⓧ Touch the Technician icon [...] on the Home Screen to display the Technician Status Screen. Touch each icon for detailed information. Also see additional icons that are displayed on page 2.

SPECIFICATIONS

Order Numbers:
C0SNAJ03FF1L - 14X55
C0SNAJ22FF1L - 14X56 (With CO_2 Sensing)

Temperature Setting Range
- Heating - 45 to 90°F
- Cooling - 45 to 99°F

Humidity Settings
- Operating range - 5 to 95% relative humidity (dehumification)
- Accuracy - ± 5%

CO_2 Sensing (CO_2 Model)
- Operating range - 400 to 2000 ppm
- Accuracy - ± 40 ppm

Power Supply
- 24VAC (18 to 30VAC maximum), 50/60Hz

Clock Accuracy
- ± 10 minutes per year

Terminals
- R - 24VAC
- T (qty. 2) - External Indoor Temperature Sensor
- OC (qty. 2) - Occupancy Sensor
- CM– (minus) - SysBus Communication
- CM+ (plus) - SysBus Communication
- C - Common 24VAC

Dimensions
- Thermostat (H x W x D) - 3-5/16 x 4-5/16 x 7/8 in. (84 x 110 x 22 mm)
- Wallplate (W x H) - 5-3/4 x 4-1/2 in. (146 x 114 mm)

Backup
Non-volatile memory maintains all programming in the event of a power outage.

Optional Accessories

Indoor Room Sensors
Remote non-adjustable, wall mount

C0SNZN01AE2 (10k) - 47W37
C0SNZN08AE1 (11k) - 94L61

Up to nine of the same type indoor (room) sensors may be connected in parallel for averaging. Refer to installation instructions for additional details.
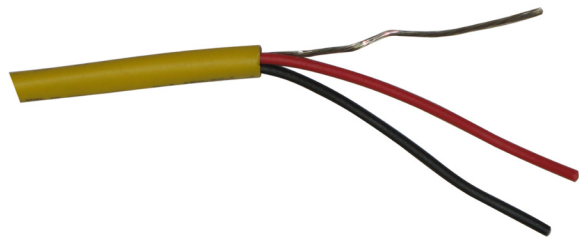
Uses standard two-wire thermostat wire.

Indoor (room) sensor wiring can be sized from 16 to 22 AWG depending on the application.

The maximum length of wire from the thermostat to the room sensor is 300 feet.

Sysbus Network Thermostat Cable (Yellow)
(NOTE - Twisted Pair wire is required for thermostat wiring)

C0MISC00AE1- (27M19) 500 ft. box
C0MISC04AE1- (94L63) 1000 ft. box
C0MISC01AE1- (68M25) 2500 ft. roll

Twisted pair 100% shielded communication cable

Twisted pair - Red and Black

22 AWG, yellow jacket, rated at 75°C, 300V

Plenum rated

Insulation - Low smoke PVC

NEC, CMP

Occupancy Sensor
Must be field provided.

LENNOX