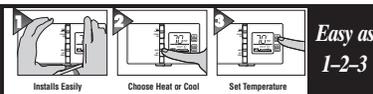


Complete, Easy to Read INSTALLATION AND OPERATING INSTRUCTIONS

LUX CAG111 SERIES SMART TEMP® DIGITAL THERMOSTAT



Easy as
1-2-3

LUX PRODUCTS CORPORATION
Mt. Laurel, New Jersey 08054, USA 43384

WARNING: Use Energizer® or DURACELL® Alkaline Batteries Only. Energizer is a registered trademark of Eveready Battery Company, Inc. DURACELL is a registered trademark of The Gillette Company, Inc.

IMPORTANT!

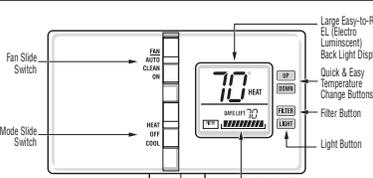
Please read all instructions carefully before beginning installation and save for future reference. Before removing any wiring from your existing thermostat, the wires must be labeled with their terminal designations. Ignore the color of the wires since they may not comply with any standard.

Thank you for your confidence in our product. To obtain the best results from your investment, please read these instructions carefully and thoroughly. You should become fully acquainted with this thermostat before installing it in your house. Follow the installation procedures carefully, and one step at a time. This will save you time and minimize the chance of damaging either the thermostat or the systems that it controls. These instructions may contain information beyond that required for your particular installation. Please save these instructions for future reference.

COMPATIBILITY

The CAG111 can be used with most single-stage 24 volt gas, oil, or electric heating and air conditioning systems, single stage heat pumps, or gas Millivolt heating systems. It cannot be used with 3 wire zone valves, 120 volt heating systems, or multi-stage heat pumps. Ask your dealer for other LUX thermostats to control those systems.

FEATURES



- 1 Stage Heat / 1 Stage Cool
- Electronic Digital - Non Programmable
- IAQ Clean Cycle™ (Patent Pending)
- Separate Filter Button
- Gas / Electric Blower Option
- Battery Powered
- Setting Temperature Range 45°F to 90°F
- Clean, Attractive Design
- Easy To Install
- EL (Electro Luminescent) Backlight Display
- Comprehensive Graphical Filter Life Monitor in Days or Percent
- Large, Easy To Read Dual-Cool/Heat Display
- F/°C Selectable Temperature Display
- Adjustable Temperature Differential / Cycle Rate
- User Temperature Offset / Display Calibration
- 5/2 Minute Selectable Minimum Run/Off Time for Short Cycle / Compressor Protection
- On-Screen Low Battery Indicator
- 1 Year Warranty

CAUTION:

The CAG111 is protected against normal static electric discharges. However, in extremely dry weather you should touch a grounded metal object before touching the CAG111 to minimize the risk of causing damage to the unit.

CLEAN CYCLE™ (PATENT PENDING)
LUX's Clean Cycle™ (Patent Pending) allows you to enable a forced air system to periodically flow air through your system's filter, cleaning the air in your home, even when heating or cooling is not being utilized. In CLEAN mode the fan maintains the pre-programmed minimum run time of fifteen (15) minutes per hour, it may run additional time as required to maintain temperature control. The algorithm used avoids additional fan run time when the 15 minute minimum has been met over the last hour through temperature control. Minimum fan run times are met by running one third of the hourly requirement at twenty (20) minute intervals. The minimum fan run time is 15 minutes per hour.

INSTALLATION

PLEASE READ ALL INSTRUCTIONS CAREFULLY BEFORE BEGINNING INSTALLATION.

CAUTION:
Turn off electricity to the appliance before installing or servicing the thermostat or any part of the system. Do not turn the electricity back on until the work is completed.

- Your thermostat is a precision instrument. Please handle it with care.
- Do not short (jumper) across the electric terminals on either the furnace or air conditioner to test the system. This may damage the thermostat and void your warranty.
- All wiring must conform to all applicable local codes and ordinances.
- This thermostat should be limited to a maximum of 1.5 amps; higher current may cause damage to the thermostat.

TOOLS REQUIRED

- #1 Phillips screwdriver (medium)
- Drill with 3/16-in. (4.8mm) drill bit
- Wire stripper/cutter

THERMOSTAT LOCATION

1. On replacement installations, mount the new thermostat in place of the old one unless the conditions listed below suggest otherwise. On new installations, follow the guidelines listed below.
1. Locate the thermostat on an inside wall, at about 5 ft. (1.5m) above the floor, and in a room that is used often.
2. Do not install it where there are unusual heating conditions, such as: direct sunlight, near a lamp, television, radiator, register, fireplace, on a wall opposite a stove, or that carries hot water pipes.
3. Do not locate in unusual cooling conditions, such as: on a wall separating an unheated room, or in a draft from a stairwell, door, or window.
4. Do not locate where air circulation is poor, such as: in a corner or alcove, or behind an open door.
5. Do not locate in a damp area. This can lead to corrosion that may shorten thermostat life.
6. Do not install the unit until all construction work and painting has been completed.

CAUTION:

- Read all instructions carefully before removing any wiring from existing thermostat.
- Wires must be labeled by their terminal letters before they are removed.
- Do not allow wires to touch each other or parts on thermostat.
- When removing wires from their terminals, ignore the color of the wires since these may not comply with any standard.

REMOVING THE OLD THERMOSTAT

1. Switch OFF the electricity to both the furnace and air conditioner; then proceed with the following:
 2. Remove cover from old thermostat. Most are snap-on types and simply pull off. Some have screws on the sides, these must be loosened first.
 3. Take note the letters printed near the wire terminals. Attach labels (enclosed) to each wire for identification by terminal letter, not color.
 4. Make sure the wires do not fall back inside the wall, and remove and label one wire at a time.
 5. Loosen all screws on the old thermostat and/or base, and remove it from the wall.

MOUNTING THE CAG111

1. Strip insulation leaving 3/8 in. (9.5mm) of bare wire on the ends and clean off any corrosion present.
2. Fill the wall opening with non-combustible insulation to prevent drafts from affecting the thermostat.

CAUTION:

Be careful not to drop the body or disturb any of the electronic parts.

3. Pull your new thermostat apart by opposite pressure on the two thumb tabs located on the bottom edge of the thermostat to separate the unit.

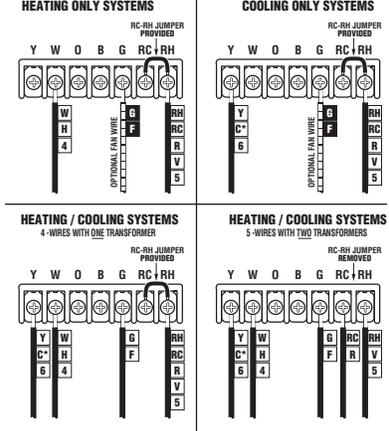
NOTE: If you are mounting the base to a soft material like plasterboard, or if you are using the old mounting holes, the screws may not hold. Drill a 3/16-in. (4.8mm) hole at each screw location, and insert the plastic anchors provided. Then mount the base as described below.

4. Hold the base against the wall. Route the wires through the larger hole adjacent to the terminal block. Position the base for best appearance (to hide any marks from an old thermostat). Attach the base to the wall with the two screws provided.

CONNECTING THE WIRES

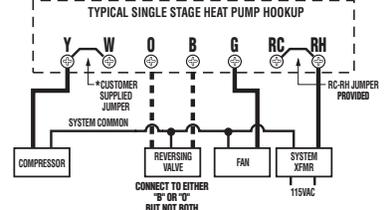
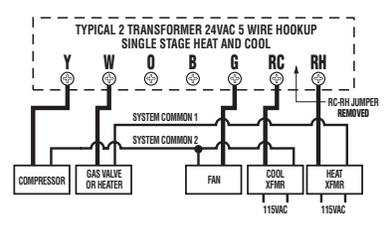
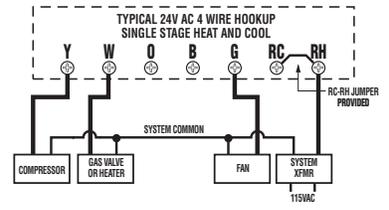
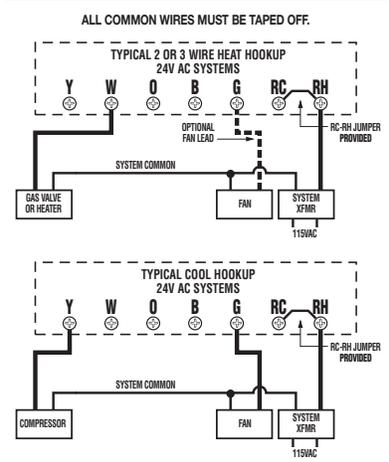
5. Clean bare wire ends must be inserted between the black clamp plate and the brass terminal.
6. Securely tighten all electrical terminal screws (even unused ones).

The diagrams below are provided for new installations or for unreferenced wires.



CAUTION:

- **ALL COMMON WIRES MUST BE TAPED OFF!**
- If a "B" wire in your system is a system common, **TAPE IT OFF.** Connecting it to the thermostat's "B" terminal may damage your system or the thermostat.
- If "Y" and "C" are both present, "C" is a common wire. **DO NOT USE IT, TAPE IT OFF!**



WIRING DIAGRAM NOTES:

1. The BOLD lines are what you should be connecting to the terminals on this new thermostat.
2. The DASHED lines are optional depending upon your system type.
3. In many cases, the thin lines shown as "SYSTEM COMMON" will not be visible at the thermostat location, they are located with your heating and cooling equipment.
4. For Heat Pumps, use the "B" or "O" wire, **NOT BOTH.** Typically neither are used in a conventional system.
5. If "Y" and "C" wires are both present, then "C" is a common wire. Tape it off.
6. If you have a "B" wire in your system which is used as a common wire, tape it off. Connecting it to the "B" terminal on this thermostat may damage your system and/or the thermostat.

COMPLETING YOUR INSTALLATION

7. See the "SETUP OPTIONS" section to configure the thermostat's options.

NOTE: Before use, remove the plastic film that is protecting the LCD display screen.

8. Install two (2) Energizer® or DURACELL™ "AA" size Alkaline Batteries at this time. **For instructions on installing the batteries, see the "BATTERIES AND MAINTENANCE" section.
9. Install your CAG111 thermostat onto its base. To do this, line up the tabs on all four corners and gently push the unit straight onto the base. Do not use unnecessary force if the body does not snap into place easily. Remove the body, line it back up and try again.
10. Turn the electrical power back ON to both your heating and/or air conditioning systems.
11. Verify that both systems (and the blower fan) are operating properly. When set to a high temperature, the heating system should provide warm air after a short time in **Heat Mode**. Likewise, a cooling system should provide cool air after a short time when set to a low temperature in **Cool Mode**. Usually, sound from the furnace and air conditioning units can be heard while either of them is running. The rush of moving air should be heard within a short time after either has been started.
12. Your installation is now complete.

NOTE: If you have an Electric Heat system and the blower does not operate after installation, locate the "Gas/Electric" option inside the back of the thermostat. Move the jumper to the "Electric" position.

SETUP OPTIONS

NOTE: This thermostat is able to be installed and used without changing the items in this SETUP OPTIONS section. These are optional, and are provided to meet your personal preferences.

HARDWARE RESET

The Hardware **RESET** button restores your thermostat's internal programming and then returns the unit back to normal operation. A press of this button is required to recognize any jumper setting changes performed at the back of the thermostat on the circuit board. This reset is a white button located inside on the back of the thermostat, on the circuit board. It is labeled **RESET**.

JUMPER SETTINGS

There are five (5) headers (or jumpers) located inside the thermostat at the rear of the circuit board. These settings can be changed from their default values by removing its corresponding black jumper cap and reinstalling the cap so that it is positioned on only one (1) of the metal pins, and not both. A change to ANY of the jumper settings will not be recognized by the thermostat until a **HARDWARE RESET** is performed. An **OPEN JUMPER** means the cap is only on one (1) metal pin, and a **CLOSED JUMPER** means the cap is on both of the metal pins. Each of these jumpers changes a different option, the choices for these options are listed in a table printed on the circuit board.

A table similar to this one shown here is printed on the thermostat's circuit board. There may be minor differences in some of the wording of your specific model, but the function of each option will be the same.

JP1 - 5 OR 2 MINUTE MINIMUM RUN/OFF TIMES

This setting changes the minimum length of time that the heating or cooling system must remain on or off before it will automatically switch to the alternate on or off state. The purpose of this feature is to provide air conditioning compressor protection by preventing brief/ undesirable on/off cycling.

JP2 - FAHRENHEIT OR CELSIUS DISPLAY FORMAT

This setting controls whether the temperature is displayed in degrees "F" or "C" on the LCD screen.

JP3 - TEMPERATURE SWING SETTING

This setting changes the size of the temperature control band with respect to the set point. The larger the swing setting, the larger the temperature control range will be. Conversely, the smaller the swing setting, the smaller (or tighter) the temperature control range will be. This setting is called **NARROW** and **WIDE**.

JP4 - GAS / ELECTRIC FAN OPERATION

This setting changes whether the system's blower fan (if applicable) is controlled by the thermostat in **HEAT** mode. Choose **ELECTRIC** if you have electric heating, and require the thermostat to control the fan. Choose **GAS** if you have a gas heating system, this will allow the furnace itself to control the operation of the blower fan.

JPS - DAYS / HOURS FILTER LIFE COUNTER

This setting will determine how the remaining filter life will be displayed on the screen. In the **DAYS** setting, the screen will count down the number of calendar days remaining before a filter change is recommended. In the (%) setting, the screen will count down the amount of percentage (%) of air filter life remaining before a filter change is recommended. Either option will display the visual bar graph.

OPERATING INSTRUCTIONS

SYSTEM MODE SWITCH:

The **MODE** switch has three positions: **HEAT, OFF, and COOL**. In the winter, set the mode switch to **HEAT** to control your heating system; in the summer, set the switch to **COOL** to control your air conditioning. In the spring and fall, or when the windows are open, you can set the switch **OFF**. When the switch is in the **HEAT** position, the word "HEAT" will be displayed next to the temperature. When the switch is in the **COOL** position, the word "COOL" will be displayed next to the temperature. Either of these indicators will be flashing if the system is currently running, or on steady if the system is not currently running.

NOTE: When the system mode switch is in the **OFF** position, it is normal for the system's blower fan ("G" terminal if used) to still become activated depending upon the position of the FAN mode switch (see below).

FAN MODE SWITCH:

The **FAN** switch has three positions: **AUTO, CLEAN, and ON**. Whenever the fan is commanded on by the thermostat, the word "FAN" will flash on the LCD display.

- In the **AUTO** position, the operation of the blower fan is determined only by the on/off cycling of the heating and cooling systems.
- When the **FAN** switch is in the **CLEAN** position, this will enable the IAQ Clean Cycle™ (Patent Pending) feature. This will assist in improving Indoor Air Quality by circulating and filtering the air by using the system's blower fan on a timed basis. Your heating and cooling systems will still work as they normally would. This Clean Cycle™ feature will ensure that the blower fan will run for a minimum of fifteen (15) minutes per hour, even if there is no demand for either heating or cooling system activation (this includes when the System Mode Switch is in the **OFF** position). The 15 minute required run time is accomplished by monitoring the amount of time the heating or cooling system has already run the fan within the past hour based upon a total of three 20 minute segments. If the required 15 minutes per hour of run time has already been met by running either the heating or cooling, there will be no additional fan run time for the Clean Cycle™ feature.
- When the **FAN** switch is in the **ON** position, the system's blower fan will be commanded **ON**, and remain **ON** while the **FAN** switch is in the **ON** position (this also includes when the System Mode Switch is in the **OFF** position).

NOTE: The **FAN** switch only works if your system provides a wire for the CAG111's "G" terminal.

PUSH BUTTONS:

There are four push buttons to the right of the unit's display screen. These are used to: adjust the set point temperature, modify the values for user changeable options, select the filter duration, and illuminate the attractive screen's backlight feature.

TEMPERATURE ADJUSTMENT:

While in **HEAT** or **COOL** mode, a single press on either the **UP** or **DOWN** button changes the set point to start flashing. Once flashing, the set point can be altered by pressing either the **UP** or **DOWN** button once per degree of change, or by holding either button down for at least two seconds to automatically increment the set point quickly in the associated direction.

AIR FILTER LIFE COUNTER

The air filter monitor feature tracks the total amount of fan run time to calculate the estimated remaining life of the filter or recommended calendar days. The LCD display shows the remaining filter life in an easy to view bar graph that can be set to display either days remaining, or percent (%) remaining (refer to the "SETUP OPTIONS" section for instructions on changing options for this feature). The default filter life is ninety (90) days. This duration may be altered by pushing the **FILTER** button on the front of the thermostat and using either the **UP** or **DOWN** buttons to cycle through the available choices of: 000, 30, 60, 90, or 120 days. A selection of 000 will disable the filter counter completely and remove the bar graph from the display. When the filter usage timer has counted all the way down, it will indicate the need for filter replacement by displaying a flashing red box containing the words "FILTER CHANGE". If you are in the **DAYS** mode (which is default), the LCD will count down to zero (0) and then back upwards to indicate the amount of the recommended filter replacement time. If you are in the percent (%) mode, the LCD will count down to zero (0) and then back upwards to indicate the amount of percentage over the recommended filter usage amount up to 100 percent. To reset the filter counter after replacing your filter, either press and hold the **FILTER** button for at least three (3) seconds, OR press the **FILTER** button once and then the **UP** or **DOWN** buttons to change to a different filter duration setting.

DISPLAY ILLUMINATION:

Pressing the **LIGHT** button will illuminate the display for easier viewing in dim light conditions. The light will remain on for approximately 10 seconds. While the light is on, the **UP** or **DOWN** buttons to cycle through the four push buttons will continue the lighting and remain on for approximately 10 more seconds.

USER TEMPERATURE CALIBRATION:

If the ambient temperature displayed on the LCD screen does not exactly match a nearby thermometer, or perhaps another thermostat in the home, the user has the ability to adjust or shift the displayed temperature. The displayed temperature can be altered by up to 5°F (or 3°C) in either direction. This adjustment is performed by first placing the System Mode switch to the **OFF** position, then by pressing and holding both the **UP** and **DOWN** buttons together for at least two (2) seconds, the lower (red) portion of the screen will display the word **SET**, and the default selection of zero (0). Press either the **UP** or **DOWN** buttons for the associated direction of change. Note: If no buttons are pressed within four (4) seconds, the thermostat will return back to normal run mode.

BATTERIES AND MAINTENANCE

INSTALLING NEW BATTERIES

The CAG111 requires batteries to be able to operate your heating or cooling system. Replace the batteries when the LO BATTERY REPLACE indicator appears on the display or the LO BATTERY icon appears.

1. To access your unit's battery location, remove the front half of the thermostat from its base plate by applying opposite pressure on the two thumb tabs located on the bottom edge of the thermostat and separate the unit.
2. The battery tray is located adjacent to the circuit board.
3. Remove the used batteries from the battery tray (if present) and install two new Energizer® or DURACELL™ "AA" size Alkaline Batteries into the battery compartment. Observe the correct polarity markings shown in the compartment.
4. Install your CAG111 thermostat back onto its base plate. To do this, line up the tabs on all four corners and gently push the unit straight onto the base. Do not use unnecessary force if the body does not snap into place easily. Remove the body, line it back up and try again.

TECHNICAL ASSISTANCE

If you have any problems installing or using this thermostat, please carefully and thoroughly review the instruction manual again. If you require assistance, please contact our **Technical Assistance Department** at 856-234-8803 during regular business hours between 8:00AM and 4:30PM Eastern Standard Time, Monday through Friday. You can also receive technical assistance online anytime day or night at <http://www.luxproducts.com>. Our web site offers you answers to the most common technical questions, and also permits you to email your questions to our technical support staff at your convenience.

WARRANTY

Limited Warranty: If this unit fails because of defects in materials or workmanship within one year of the date of original purchase, LUX will, at its option, repair or replace it. This warranty does not cover damage by accident, misuse, or failure to follow the instructions. Incidental damages resulting from the installation and use of this unit. Some states do not allow the exclusion of incidental or consequential damages, so the above exclusion may not apply to you. Please return malfunctioning or defective units (including the batteries that were being used) to the participating retailer from which your purchase was made, along with proof of purchase. Please refer to the Technical Assistance section before returning thermostat. Purchaser assumes all risks and liability for returning a thermostat with damages resulting from the installation and use of this unit. Some states do not allow the exclusion of incidental or consequential damages, so the above exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state. **Applicable in the U.S.A. only.**