Remote Lighting Network

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Remote Lighting Overview

Remote lighting allows you to operate network-based home lighting through a remote control.

The Remote Lighting kit includes a wireless smart lighting system that helps make the lighting in your home more energy efficient and easier to manage. The kit includes the following components:

Remote Control	Allows you to power on, power off, and dim groups of lights on your network.
LED Light Bulbs	Energy-efficient network light bulbs you can install into standard light fixtures.

Remote Control Components

The remote control has components that allow you to program and operate the light bulbs on your lighting network.

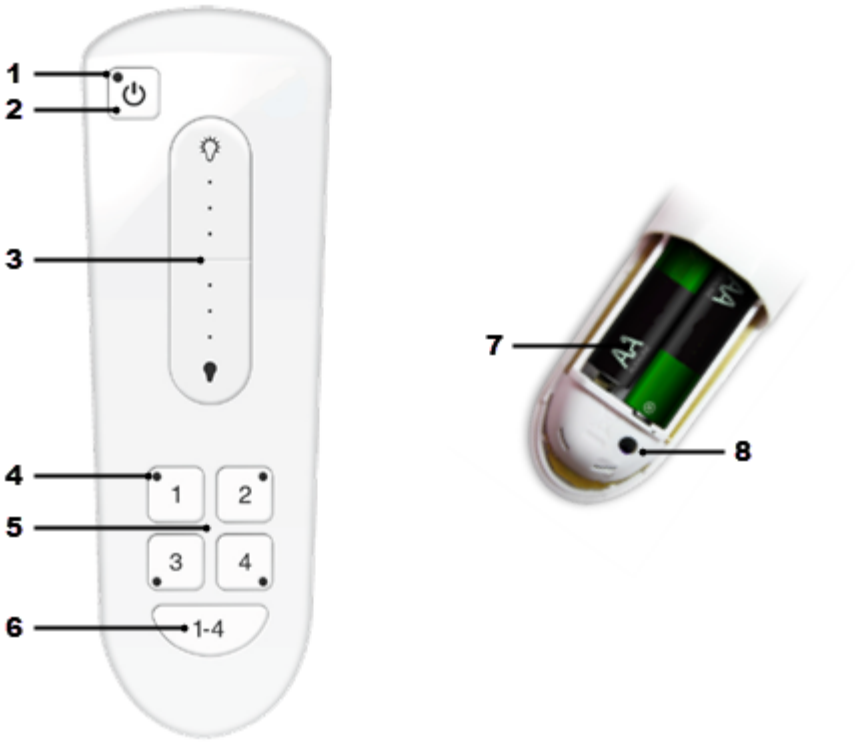

Figure 1: Front and back of remote control

#	Component	Description
1	Power button indicator	Indicator that lights or flashes during different activities with the remote control. Indicators include: Green (Power on/off or dimmer command was successfully sent to the selected lighting group), Red (Power on/off or dimmer command failed. Indicator remains red for 3 seconds), and Amber (Batteries are running low. Indicator flashes amber periodically).
2	Power button	Button that you press to turn on or off the lights in the selected lighting group(s). Lights turn on to the previous dimming level. **Note:** To turn on/off all network lights, regardless of lighting group, press and hold the power button for 3 seconds without first pressing the lighting group number button.
3	Dimmer control	Control that you press and hold to dim or brighten the lights in the selected lighting group(s). You do not have to press the power button first.

#	Component	Description
4	Lighting group number indicator	Indicator that lights or flashes during different activities with the corresponding lighting group. Indicators include: Green (Selected lighting group is activated for you to turn on/off, dim, or program. The lighting group remains activated for 5 seconds if you take no subsequent action), and Red (Lighting group was not activated for you to take action. Indicator remains red for 3 seconds).
5	Group number button	Buttons that you press to select a corresponding lighting group to operate. Also use these buttons to program lights into the lighting group. **Caution:** Do not press and hold for longer than 4 seconds unless you are programming a lighting group.
6	All group numbers	Button that you press to select all lighting groups to operate at the same time.
7	Battery compartment	Compartment on the back that holds 2 AA batteries to power the remote control. When batteries run low, the indicator light on the power button periodically flashes amber.
8	Reset button	Button that you press to manage the remote control as follows: Press and release 3 times to connect the remote control to a lighting network that already exists (for example, if you are replacing a remote control).Press and hold for 10 seconds to reset the remote control and all lighting group programming on it. **Warning:** If you reset the remote control, you must reprogram all lighting groups on it.

Basic Concepts of Network Lighting

You can network LED light bulbs together to operate wirelessly from a remote control.

Network light bulbs work with your light fixtures the same way as standard light bulbs. They are different, however, in a couple of ways:

- The lighting element in the light bulb uses energy-efficient LED technology.
- The light bulb includes wireless technology that allows the light bulb to connect to a network and be managed remotely.

Because the light bulbs can be connected to a network, you have greater flexibility in how you use them.

Examples

- You can program your lighting network so that when you press a button upon arriving home, an entryway and a hallway light turn on.
- When you go to bed, your remote control can turn off all lights on the network.
- Network lighting operates at a low level of networking power but can successfully connect at long distances because they can send information from light bulb to light bulb.
- Testing shows you should network no more than 250 light bulbs to maintain reliable performance.

Maximum Number of Network Light Bulbs

Testing shows you should network no more than 250 light bulbs to maintain reliable performance.

There is a limit to the number of light bulbs at which the performance of the lighting network begins to decrease. For example, the time it takes a light bulb to respond may start to increase if too many light bulbs are installed on the lighting network. Testing has shown that the lighting network should be limited to a maximum of 250 light bulbs to maintain reliability in performance.

Low-Power Networking

Network lighting operates at a low level of networking power but can successfully connect at long distances because they can send information from light bulb to light bulb.

The remote control and light bulbs communicate with each other using a low-power wireless networking technology. In this low-power network, the wireless devices are able to interact with each other over the network by sending data from one device to the next, using the best radio signal path on the network. This path does not have to be a direct connection between the remote control and a network light bulb. It can be through any combination of network light bulbs on the low-power network. So, while a network light bulb in a distant room might not be able to communicate directly with the remote control, it can communicate with another nearby network light bulb that will pass the signal across the low-power network until it reaches the remote control.

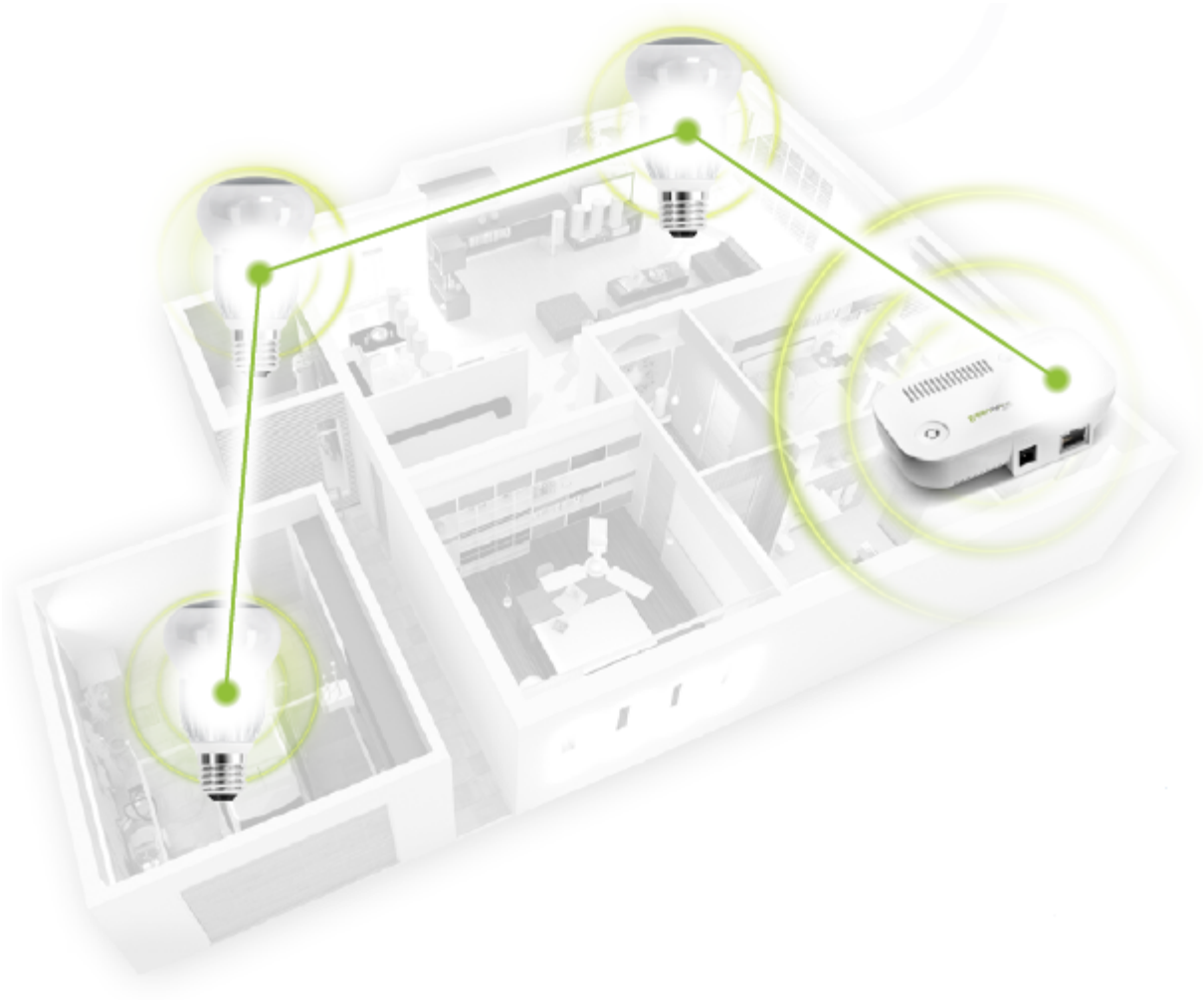

Figure 2: Wireless lighting passing information across light bulbs

Since wireless devices on a low-power network have built-in antennas for radio communication with other connected devices, they may be prone to the same reception problems that you might have with your mobile phone inside a building. Your remote control can have trouble communicating with the network lighting if their radio signals are blocked by obstacles such as large metal panels or walls containing wire mesh.

Considerations for Planning Your Lighting Network

Before installing your network lighting, you should plan how you want your lighting network to behave.

Whether you have only one wireless light bulb or you are replacing your entire home with wireless light bulbs, you should plan how you want the lighting on your network to behave.

Examples

- If you only have one light bulb you might want to place it in a central location that would be optimum for turning on and off when you are away or arrive home.
- If you have multiple light bulbs, you might want to set them up in rooms and lighting groups to be able to better manage them across your home.

Programming Light Bulbs to a Lighting Group

You can program one or more light bulbs to a lighting group to operate that group with your remote control.

Your remote control can manage up to 250 network light bulbs on the same lighting network. When you add a light bulb to the network, you can program it to one or more lighting groups. You must assign a light bulb to at least one lighting group to operate that light bulb A network light bulb that is not programmed to a lighting group will still operate when controlling all network light bulbs from the remote control.

1. Make sure your remote control is in range of the light bulbs you are adding.
2. If a network light bulb is new, you must install it by performing the following steps:
   a. Make sure power to the fixture where you are installing the light bulb is turned OFF.
   b. Remove any existing light bulb from the light fixture.
   c. Install the network light bulb into the light fixture as you would any standard light bulb.
   d. Turn power to the light fixture on.

      The light bulb begins to brighten and dim while finding the remote control's network.
   e. Repeat steps for each new network light bulb.
3. Turn power on to the fixtures containing network light bulbs you want added to the light group.
4. Turn power off to the fixtures containing light bulbs you do not want added to the light group.
5. On the remote control, press and hold the desired lighting group button for 5 seconds.

   The button indicator for the selected lighting group flashes green while the light bulb(s) are added to the group. If the indicator flashes red, the lighting group was not activated and you must try again. Light flashes red for 3 seconds if programming fails.
6. Leave the light fixture switches ON so that power is available when using your remote control to turn the light bulbs on and off. Also remember to turn on any excluded fixtures that you turned off.

Turning On/Off or Dimming a Lights

You can turn on, turn off, or dim a lighting group by pressing the group number button and then pressing the power button or the dimmer control.

You must turn on, turn off, or dim an entire lighting group together. You cannot control one individual light bulb in a group (unless only that light bulb is programmed to the group).

Before you can operate a lighting group you must program the network light bulbs you want included in that lighting group.

1. Select the lighting group(s) you want to operate:

CAUTION: When selecting a lighting group, do not press and hold the lighting group button for longer than 4 seconds. Doing so activates light bulb programming for the selected lighting group.

For this situation...	Perform this task...
Operate the lighting group that was last controlled	Do not press a lighting group button (pressing the button is optional). The most recent lighting group remains current on the remote control.
Operate one lighting group	Press the number button for the lighting group you want to operate.
Operate all lighting groups	Press the 1-4 button.

For this situation...	Perform this task...
Turn on/off all network lights regardless of programming	Do not press a lighting group button (pressing any lighting group button is irrelevant). Skip to the next step.

Note: You have 5 seconds to operate the selected lighting group once it is activated. After 5 seconds of inactivity (when the green indicator light turns of), you must start over.

The button indicator for the selected lighting group turns green when the group is activated. If the indicator turns red, the lighting group was not activated and you must try again.

2. Turn on, turn off, or dim the lighting group:

For this lighting result...	Perform this task...
Turn on/off	Press the power button. The selected lighting group turns on if it is currently off and turns off if it is currently on.
Turn on/off all network lights regardless of programming	Press and hold the power button for 5 seconds. All network lights (even if not programmed) initially turn on. Repeat this task to turn them all off.
Dim up (brighten)	Press upward on the dimmer control. You do not have to press the power button first.
Dim down (soften)	Press downward on the dimmer control. You do not have to press the power button first.

The power button indicator turns green if the signal is successfully sent. If the indicator turns red, the signal was not sent and you must start over.

The light bulbs in the selected lighting group turn on, turn off, or dim depending on your selection.

Product Specifications

The Remote Lighting Network components have specific electronic and technical specifications.

The components in your lighting network have electronic and technical specifications that are specific to the component type.

- Specifications describing the electronics and technology inside the remote control.
- Specifications describing the electronics and technology inside the LED light bulb.

Remote Control Specifications

Specifications describing the electronics and technology inside the remote control.

Feature	Specification
Power Source	(2) AA Batteries 1.5V
Max. Lamps	250
Groups	4 + All
Indicators	LED Status Indicators and Group Selection Indicators
Lifetime	>18 Months with Alkaline Batteries

LED Light Bulb Specifications

Specifications describing the electronics and technology inside the LED light bulb.

Feature	Specification
Replacement Lamp Type	A19
Voltage	120V/60Hz
Socket	E26
Power	7.5W (40W Equivalent)
Power Factor	>0.7
Energy	Energy Star Certified / EEL Rating: A