

Dimmers Buying Guide

By reducing the amount of energy provided to the lighting fixtures they control, dimmers are an easy and effective way to save energy and extend the life of the bulb. They also offer an ideal way to create ambiance in a room or adjust lighting to meet the requirements of a specific task or activity. There are a number of factors to consider when choosing a dimmer to ensure the desired results are achieved:

- 1) Dimmer and Bulb Compatibility
- 2) Dimmer Wiring Options - Single Pole, 3-Way, Multi-Location Dimming
- 3) Dimmer Wattage
- 4) Dimmer Style



Dimmer and Bulb Compatibility

With the wide variety of bulbs now available on the market it is important to choose a dimmer wisely since not all dimmers are designed to control all types of bulbs. Pairing dimmers and bulbs which are incompatible can result in lights flickering and fluttering, limited dimming range, slow start-up, and inconsistent illumination. To avoid these types of issues it is important to know the features of the types of dimmers available and compare them to your needs and the type of bulb you wish to use.

Dimmer Type	When to Use
Universal	Universal Dimmers are designed to control incandescent, halogen, dimmable LED and dimmable CFL bulbs. They offer full-range dimming, smooth start-up, and eliminate flickering and fluttering of lights. When using LED or CFL bulbs with a dimmer, be sure that the packaging on the bulb indicates that it is DIMMABLE. Most dimmer and bulb manufacturers provide bulb compatibility information on their websites that can be referenced to ensure that the brand/type of dimmer chosen will function properly with the bulb selected.
Incandescent/Halogen	Incandescent/Halogen Dimmers are designed to control incandescent and halogen bulbs. They are not designed to control LED and CFL bulbs nor dimmable LED and CFL bulbs and using them to do so may result in inconsistent or limited performance. Additionally, incandescent dimmers are not safety listed with Underwriters Laboratories (UL) to control LED and CFL bulbs nor dimmable LED and CFL bulbs.
Electronic Low Voltage Dimmer (ELV)	ELV Dimmers control electronic low voltage transformers (ELVs) and dimmable LED power supplies such as those found in ELV track lighting, under cabinet lighting and LED strips. ELV Dimmers require a neutral wire for installation.
Magnetic Low Voltage Dimmer (MLV)	MLV Dimmers are suitable for recessed lights which are most often magnetic low voltage. Magnetic low voltage lights tend to be larger and heavier than electronic low voltage.
Fluorescent	Fluorescent Dimmers control only fluorescent fixtures that incorporate rapid start fluorescent lamps and dimming ballasts.
High Wattage Dimmers	Dimming devices specifically designed to control high wattage lighting, generally 1000W. It is recommended, however, that a 1000W dimmer be used to control any lighting exceeding 600W. This would include large chandeliers or recessed lighting that controls multiple bulbs with total wattage exceeding 600W.
Dimming Sensor	This innovative device combines the lighting level control of a dimmer with the energy savings and convenience of a motion sensor. It is compatible with dimmable LED, dimmable CFL, incandescent and halogen bulbs.

Dimmer Wiring Options

Single Pole Dimming

Control one light from one location.



Three-Way Dimming

Controls one light from two locations. Usually, in a three-way application, the dimmer is at one location from which the user can switch lights on/off AND control the brightness setting. The second location is generally a three-way switch that allows turning the lights on/off but only at the brightness level set by the dimmer. For instance, the ability to turn on/off the same light in a staircase from one location at the bottom of the stairs and another location at the top of the stairs.



Up to Four or More Locations

Multi-location dimming is designed for lights controlled by multiple companion dimmers, allowing full dimming control from four or more locations. For added convenience, digital dimmers offer flexibility of multi-location dimming via remote.



How Dimmers Work

Dimmers control the brightness of lighting by controlling the amount of electrical energy supplied to the bulb. They do this using an electronic component called a triac. The triac is a very fast-acting switch that can turn on and off hundreds of times a second. When a dimmer is turned to full brightness, the triac keeps almost all of the power turned on to supply the lighting it controls. But when the lighting is dimmed, the triac turns the power off for a longer period so the bulb receives less electrical energy and in turn gives off less light.

Rebates

Did you know that rebates are often available for purchasing and installing energy efficient lighting through manufacturers, State rebate programs and local power companies? For instance, many CFL and LED bulbs qualify as do sensors and Energy Star products. Some rebates come in the form of fixed dollar amounts while others are based upon the KWH saved over a period of time. Before you buy it pays to investigate what rebates might be available to you.

Learn more at:
www.leviton.com/rebates

Dimmer Wattage

Dimmers come in various models which are designed to control different wattage levels and loads. You should select a dimmer based upon your wattage requirements. The easiest way to do this is as follows:

- Add up the total wattage of the bulbs you wish to control. For example, a fixture with four 60W bulbs has a total wattage of 240 (4 bulbs x 60 watts).
- You can use a 600W dimmer to control this load.

It is advisable to use only one type of bulb - combining different bulb types, for example incandescent with LED, may result in diminished performance.

Dimmer Styles

Dimmers come in a variety of styles to meet both the decorative and functional needs of the user.



Slide - This contemporary design utilizes a slide bar to control the level of light. The ON/OFF function varies by model and may be either a rocker switch or push button switch. The ON/OFF function preserves the dimming level.



Rotary - Traditional in appearance, a rotary dimmer switches lights ON/OFF by either turning or pushing the knob. Once the lights are ON, lighting may be adjusted to the desired level.



Toggle - Takes the traditional toggle switch and features two touch pads alongside the ON/OFF toggle for dimming and brightening lights. Some models utilize the actual toggle to control dimming.



Digital - Touch dimmers provide full-range dimming with the touch of a finger, as well as one touch for ON at preset, again for OFF, and touch and hold to dim and brighten. Various digital dimmers also include a programming option.

Lamp Dimmers - These devices are designed to provide dimming control for plug-in lamps, rather than for lighting fixtures. They come in three styles:



Tabletop - The cord of this dimmer is plugged into the outlet. Then the cord from the lamp is plugged into an outlet on the dimmer and the dimmer sits on a table or desk providing easy access to regulate the level of light desired. No wiring is required.

Cord - These dimmers are installed directly on the line cord of any plug-in lamp.

Socket - Replaces standard bulb holder on lamps for dimmer conversion. Allows ON/OFF switching and dimming control of lamps using a turn knob.

FAQs

Why should I consider using a dimmer?

Dimmers provide three basic benefits. They create ambiance by giving the user the ability to adjust light levels appropriate to the activity, they reduce energy consumption for greener living and, based upon reduced energy consumption, help lower electric bills.

Can I replace a standard wall switch with a dimmer?

Yes. A dimmer easily replaces a standard wall switch.

How do I know what type of dimmer to buy?

You can select a dimmer based upon the fixture or the type of light source you wish to control. Dimmer switches are generally used for ceiling mounted fixtures. They come in a variety of styles including traditional rotary and contemporary slide models. Tabletop, cord dimmers and socket dimmers are used for plug-in lamps.

How many watts can a dimmer handle?

Dimmers come in various models which are designed to control different wattage levels and loads. The most common ratings are 600W and 1000W Incandescent Dimmers. Some models will have alternate load ratings, for example 150W LED or CFL. You should select a dimmer based upon your wattage requirements. The easiest way to do this is to add up the total wattage of the bulbs you wish to control. For example, a fixture with four 60W bulbs has a total wattage of 240. You can use a 600W dimmer to control this.

It is advisable to use only one type of bulb – combining different bulb types, for example incandescent with LED, may result in diminished performance.

What is a Universal Dimmer?

Universal Dimmers are designed to control incandescent, dimmable LED and dimmable CFL bulbs. They offer full-range dimming, smooth start-up, and eliminate flickering and fluttering of lights.

How does a Universal Dimmer differ from an Incandescent Dimmer?

Incandescent Dimmers are designed to control incandescent bulbs. Unlike Universal Dimmers, they are not designed to control LED and CFL bulbs and using them to do so may result in inconsistent or limited performance. Additionally, incandescent dimmers are not safety listed with Underwriters Laboratories (UL) to control LED and CFL bulbs.

What are the benefits of using a Universal LED/CFL compatible dimmer?

The benefits of using this dimmer include smooth operation for precise dimming, low level starting and flicker-free operation when used with incandescent and dimmable LED/CFL bulbs. It is designed to provide optimized performance when used on dimmable LED or dimmable CFL bulbs. Even if you are currently using Incandescent bulbs, you can future proof by installing the Universal Dimmer to ensure compatibility in the future with dimmable LED/CFL bulbs. For quality assurance, in addition to performance, the Universal Dimmers have been evaluated and approved by UL specifically for dimmable LED and dimmable CFL bulbs.

What types of bulbs can be used with Universal Dimmers?

Dimmable LEDs, dimmable CFLs, incandescent and halogen bulbs are all compatible with the Universal Dimmers. It is recommended that only LED and CFL bulbs that are labeled as DIMMABLE be used with Universal Dimmers. The packaging on the bulb should identify it as dimmable.

Will I save energy if I dim LED and CFL bulbs?

Yes, dimming any bulb reduces energy consumption and is the perfect way to set the ambiance for any occasion. Below is an example of the energy savings* realized when you dim incandescent, dimmable CFL or dimmable LED bulbs.

Relative Light Output (% Dimmed)	75W Incandescent (Wattage)	26W CFL (Wattage)	17W LED (Wattage)
100%	75W	26W	17W
75%	63W	18W	12W
50%	51W	13W	7W
20%	34W	7W	3W

*Energy savings may vary.

Can I use an incandescent-ONLY dimmer on dimmable LED/CFL bulbs?

A standard incandescent dimmer can be used to dim dimmable LED/CFL bulbs; however performance may vary. In some instances, it will work perfectly and in others you may experience issues such as flickering, reduced dimming range and fluttering. The Universal Dimmers are a better option because they are specifically designed to optimize performance when paired with dimmable LED and dimmable CFL bulbs.

Can I use an Electronic Low Voltage dimmer on dimmable LED/CFL bulbs?

In many cases, Electronic Low Voltage (ELV) dimmers will provide acceptable dimming range and performance. These dimmers do require connection to a neutral wire which is often not available in older construction. In addition, Electronic Low Voltage dimmers are typically a more expensive solution.

Dimming Solutions for Energy Efficient Lighting

Dimmer Type	Incandescent	Universal	Electronic Low Voltage
Benefits	<p>Most common for residential</p> <p>Does not require a neutral connection</p> <p>Low cost</p>	<p>Designed specifically for LEDs and CFLs</p> <p>Safety listing for LEDs and CFLs</p> <p>Program/adjustment features</p> <p>Does not require a neutral connection</p>	<p>Provides better performance with LEDs and CFLs</p> <p>Neutral is required</p> <p>Best for track lighting and under cabinet lighting</p>

What makes dimming a dimmable LED/CFL bulb different than dimming an incandescent bulb?

Dimmable LED/CFL bulbs contain electronic circuitry not present in incandescent bulbs. Therefore, it is difficult to achieve the same smooth start and complete dimming range as one sees with incandescent bulbs. Universal Dimmers are designed to interact with the electronic circuitry, providing smooth low level dimming on the majority of bulbs by the major manufacturers.

What is the difference between single pole and 3-way applications?

Single pole means controlling one or more lighting fixtures from one location. 3-way is the ability to control one or more lighting fixtures from two separate switch locations. An example of a 3-way is the ability to control the same fixture from a switch at the top of a staircase and from another switch at the bottom of the staircase.

Sometimes the bulbs make a buzzing sound when I use my dimmer. What can I do about this?

Filament hum is caused by the way dimmers control power to the bulb 120 times per second and is typically a problem with inexpensive bulbs. Upgrade to higher quality, name brand bulbs to eliminate or greatly reduce hum.

Can a dimmer control a ceiling fan?

No. A dimmer can damage the motor in a ceiling fan. There are controls designed specifically to control ceiling fans and they are generally called fan speed controls.

What is heat sink?

Some dimmers, usually those with higher wattage ratings (1500W, 2000W), contain a metal mounting strap on the dimmer that has fins designed to dissipate heat from the device. If more than one dimmer is being installed in a multi-gang situation, the user will be required to break off the fins before installing. Please refer to installation instructions for when it is necessary to remove the fins.

Is de-rating required when installing more than one Dimmer in the same wallbox?

De-rating may be required if you have two or more dimmers sharing a wallbox. If you install more than one dimmer next to each other and are using incandescent bulbs, it is required that you reduce the load that each dimmer can control (de-rating). No de-rating is required when using dimmable LED or dimmable CFL bulbs in multi-dimmer installations. Refer to the de-rating chart in the dimmer instructions for maximum load per dimmer.

De-Rating Chart

Dimmer Type	1 Dimmer	2 Dimmers	3 Dimmers
Incandescent Dimmer	600W per dimmer	500W per dimmer	400W per dimmer
Electronic Low Voltage Dimmer	400VA (320W) per dimmer	350VA (280W) per dimmer	250VA (200W) per dimmer
Universal Dimmer	600W incandescent 150W Dimmable LED/CFL Per dimmer	500W incandescent 150W Dimmable LED/CFL Per dimmer	400W incandescent 150W Dimmable LED/CFL Per dimmer

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