LUTRON

For Your Information ...

Using 2000 Watt Loads on 16 Amp Dimmers

Introduction

Lutron Commercial dimmers that are rated to operate at 16 amps on a 120 volt feed have a maximum load of 1920 watts (120 volts x 16 amps). You'll notice Lutron allows the use of a connected lamp load rated up to 2000 watts. Due to the inherent voltage drop of Lutron dimmers, a combination of lamps with a total manufacturers specified rating of up to 2000 watts at 120 volts may be used on Lutron Commercial dimmers. A 2000 watt rated lamp load will operate below the maximum rating of 1920 watts on the output of the dimmer.

Overview

The power devices and filtering components in a dimmer cause the output voltage to be reduced even when the dimmer is in the full-on state. At full conduction, the voltage drop in the dimmer reduces the output voltage to 115 volts on a 120 volt line. As a result, even at full-on, lamps connected to the dimmer will be operating at 115 volts. When operated at a lower voltage, the power used by the lamp is also reduced. Lamps that would run at 2000 watts at 120 volts will operate at only 1837 watts down at 115 volts. 1837 watts of load is below the dimmer's 1920 watt rating.

Dimmer Voltage Drop

Switched Example	Dimmed Example
Lights connected to a switch see the full line voltage.	A dimmer at full-on reduces the voltage to the load to 115 volts.
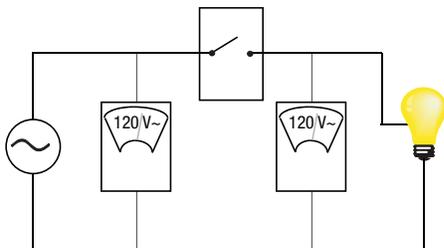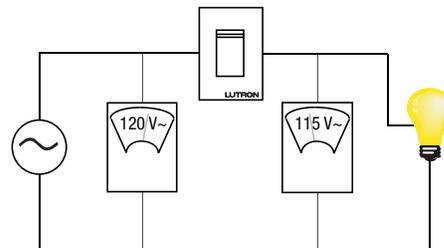
Switched Example	Dimmed Example
In this case, the lamps are being operated at full voltage and power rating.	In this case, the lamps are being operated at a reduced voltage and therefore, at reduced power.

When the lamps are being operated at a lower voltage, the power used by the lamp is lower than what is marked on the lamp.
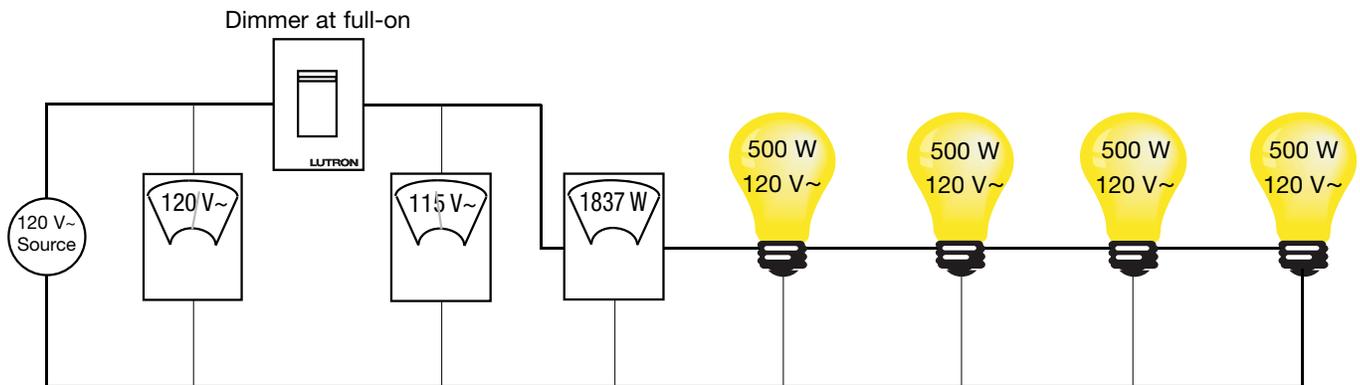
Rated Values:
4 lamps x 500 W = **2000 watts at 120 volts**

$$\text{Lamp Resistance} = R_{Lamp} \quad \frac{(V_{RATED})^2}{P_{RATED}} = \frac{(120 \text{ volts})^2}{2000 \text{ watts}} = 7.2 \text{ ohms}$$

Actual Load:
Voltage = V_{ACTUAL} = 115 volts

$$\text{Actual Power} = \frac{(V_{ACTUAL})^2}{R_{LAMP}} = \frac{(115 \text{ volts})^2}{7.2 \text{ ohms}} = \textbf{1837 watts}$$

$$\text{Current} = \frac{115 \text{ volts}}{7.2 \text{ ohms}} = 15.9 \text{ amps}$$

Lamps rated for 2000 watts at 120 volts operate at 1837 watts when connected to a Lutron Commercial grade dimmer at full-on. This is below the dimmer's 1920 watt rating, and is therefore allowed.

Worldwide Technical and Sales Assistance

If you need assistance, call the toll-free
Lutron Technical Support Center.
Please provide exact model number when calling.
24 hours/day + 7 days/week

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Need additional assistance? Call the Lutron Technical Support Center *1-800-523-9466.*
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