

Re: is there a way to increase the light of an LED with a dial?

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- *From:* "Michael Kennedy" <Mikek400@xxxxxxxxxxxxxxxxxxxxxx>
 - *Date:* Sat, 26 Jan 2008 00:45:41 -0500
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"Victory" <bionicbuddha@xxxxxxxxxx> wrote in message
<news:d8e59073-2144-47a0-bcad-3aaa66d157a9@xx>

I forgot to add – with the 12v, the LED went all the way to it brightest and dimmest while turning the resistor. It was perfect, but with the 5V, it peaked near the top of the resistors turn, and then started to burn out. Not sure why with 5V it would burn out, but with 12V it did not.

On Jan 25, 7:29 pm, "Dave Plowman (News)" <d...@xxxxxxxxxxxxxxxxxx> wrote:

In article
<40d0ab8c-4a0d-4d17-96f4-826ac9203...@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx>,
Victory <bionicbud...@xxxxxxxxxx> wrote:

Ok, I tried something with a 10K variable resistor today at a school today (they were kind to indulge me). When I hooked up the 2 3V batteries in series to the resistor, it dimmed immediately when I turned it only slightly. The falloff of power to the LED went to the dimmest setting right away. On a whim, we hooked it up to 12V and the dimmer worked all the way through the entire turn. It was great. I am a little confused why this happened? The LED comes with 2 3V batteries in series from the \$ store and is quite bright. When hooked up to the 10K resistor, it isn't as bright. So, the next basic question is – what happened? Should i get a resistor that is less than 10K?

Re: is there a way to increase the light of an LED with a dial?

LEDs are current driven. Which in practice means a different value resistor according to the supply voltage as you need to keep the current through the LED constant for the same light output.

You can work out this series resistor value easily. The formula is:-

$$R = \frac{V_s - V_f}{I}$$

Where V_s is the supply voltage, V_f the forward voltage drop of the LED and I the current in amps. You'd need to know the spec of the actual LED to be accurate but making V_s 3V and I 0.020A will do for most white LEDs.

Which gives 150 ohms for 6 volts and 450 ohms for 12

The pot needs to go in series with a fixed resistor of the above value to set the maximum current – otherwise you could burn out the LED. The pot should be about 4 x the fixed resistor value to get a reasonably smooth dimming range.

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*Funny, I don't remember being absent minded.

Dave Plowman d...@xxxxxxxxxxxxxxxx London SW
To e-mail, change noise into sound.

Well that formula explains it all. To put it in really simple but not completely accurate terms, the resistor drops the voltage actually going to the LED. The bigger the resistor the lower the voltage that reaches the LED. So if you put a larger resistor in series before the LED you need higher input voltage to achieve the same brightness because your output voltage to the LED would be lower with a larger resistor. If you check this with a voltmeter while you are doing this it will be apparent what is happening. Higher voltage= brighter light. Higher resistance = lower output voltage and dimmer light. Does it make sense to you now?

Mike

Mike

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