

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

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*Source:* <http://sci.tech--archive.net/Archive/sci.electronics.repair/2008-01/msg01146.html>

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- *From:* "Arfa Daily" <[arfa.daily@xxxxxxxxxxxxx](mailto:arfa.daily@xxxxxxxxxxxxx)>
  - *Date:* Thu, 24 Jan 2008 16:55:27 GMT
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"Michael Kennedy" <[Mikek400@xxxxxxxxxxxxxxxxxxxxx](mailto:Mikek400@xxxxxxxxxxxxxxxxxxxxx)> wrote in message  
[news:Z\\_Cdnc1tfZi4KwXanZ2dnUVZ\\_tqtnZ2d@xxxxxxxxxxxxx](news:Z_Cdnc1tfZi4KwXanZ2dnUVZ_tqtnZ2d@xxxxxxxxxxxxx)

"Arfa Daily" <[arfa.daily@xxxxxxxxxxxxx](mailto:arfa.daily@xxxxxxxxxxxxx)> wrote in message  
[news:diZlj.32794\\$a61.16999@xxxxxxxxxxxxxxxxxxxxxxxxxxxxx](news:diZlj.32794$a61.16999@xxxxxxxxxxxxxxxxxxxxxxxxxxxxx)

"Michael Kennedy" <[mikek400remthis@xxxxxxxxxxxxx](mailto:mikek400remthis@xxxxxxxxxxxxx)> wrote in message  
[news:G9Ondnd0VHtxBagranZ2dnUVZ\\_jmdnZ2d@xxxxxxxxxxxxx](news:G9Ondnd0VHtxBagranZ2dnUVZ_jmdnZ2d@xxxxxxxxxxxxx)

"Arfa Daily" <[arfa.daily@xxxxxxxxxxxxx](mailto:arfa.daily@xxxxxxxxxxxxx)> wrote in message  
[news:5JDlj.1081\\$HV6.836@xxxxxxxxxxxxxxxxxxxxxxxxxxxxx](news:5JDlj.1081$HV6.836@xxxxxxxxxxxxxxxxxxxxxxxxxxxxx)

"Michael Kennedy"  
<[mikek400remthis@xxxxxxxxxxxxx](mailto:mikek400remthis@xxxxxxxxxxxxx)> wrote  
in message  
[news:4JudnT1vx6hOOwvanZ2dnUVZ\\_qmlnZ2d@xxxxxxxxxxxxx](news:4JudnT1vx6hOOwvanZ2dnUVZ_qmlnZ2d@xxxxxxxxxxxxx)

"James Sweet"  
<[jamessweet@xxxxxxxxxxxxx](mailto:jamessweet@xxxxxxxxxxxxx)>  
wrote in message  
[news:Y7Alj.8931\\$4b6.560@xxxxxxxxxxxxx](news:Y7Alj.8931$4b6.560@xxxxxxxxxxxxx)

"Victory"  
<[bionicbuddha@xxxxxxxxxxxxx](mailto:bionicbuddha@xxxxxxxxxxxxx)>  
wrote in  
message  
<news:ab24aa3c-3838-4c03-b20d-0b9db6f6c09d@xxxxxxxxxxxxxxxxxxxxx>

I  
guess  
I

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am  
looking  
for  
a  
dimmer  
or  
something  
for  
it  
–  
just  
a  
dial  
that  
can  
turn  
the  
light  
up  
to  
full  
or  
down  
a  
little  
depending  
on  
what  
I  
want.  
But  
I  
want  
it  
to  
be  
controllable  
with  
a  
dial  
or  
something.  
I  
hope  
that  
is  
clearer.  
Thanks  
for  
the  
quick

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

response  
and  
looking  
forward  
to  
the  
next  
one!

You want a  
variable  
resistor. The  
value  
depends on  
the  
particular  
LED  
but you  
might try  
2.5K or 5K.

Yes, James is right. You  
don't want a variable resistor  
like I said.  
You want a variable resistor.  
haha. I'm terrible at typing.

Mike

It may not work with a simple variable  
resistor because at higher  
settings, the current will increase enough to  
probably just burn out  
the small piece of the pot track that's still in  
circuit. A fixed  
resistor will also still be needed to limit the  
full brightness  
current. In order to get a decent control  
range, without risk of  
over-running the pot's track and wiper, I  
would suggest that a small  
transistor needs throwing into the mix to  
control the LED current,  
whilst the pot is left the low-current job of

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controlling the transistor's base. If I get time today, I'll give it a try.

Arfa

Arfa, How much current are we talking about here? If this is what I'm imagining in my head with 2 or 3 led's it shouldn't draw much power. I guess he could have one of those 5w led flashlights, but that was not what I had in mind when he said dollar store.

Mike

Hi Mike.

Well, if you reckon on a maximum current of say 20mA per LED, then for 3, that's 60mA. Depending on what rail voltage he's figuring on running it from, there's a good chance that if he was just using a pot on its own – even allowing for still using any original limiting resistor – that when he got towards the low end of his pot, he might be getting towards the dissipation limits of the track and the wiper structure. Most carbon track pots that you are likely to pick up at a 'general' electronics store, are only rated to a few mW, and are not designed to carry current. There are exceptions such as wirewounds, and some plastic tracked types. It just seemed to me that the addition of a 20c transistor guaranteed that the pot would not be damaged the first time it was turned up.

Someone mentioned pulse drive, which is the better way to do it, both from linearity of control and LED life angles, but you are then into either a specialist driver IC, or something like a 555 timer IC and a couple of extra Rs and Cs and \*still\* the pot as well.

Arfa

I wasn't saying that your idea was bad, but just thought it might be a little over complicated considering the OP's apparent electronics knowledge. I agree that using a transistor would be best for reliability. The only reason I questioned you is that in the past I have used pots for exactly this, but then again that was before all of these high power blue / white LEDs existed too.

No probs. It's just that I have used pots before in temporary 'power' lashup applications, and have found today's minuscule tracks to really not be up to

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the job. If the OP is just using say 6v worth of batteries – and he's gonna need at least 4 volts worth to run a white LED – then it would probably be OK, but the wipers on these modern pots are pretty delicate, and the contact area on the track is very small, so I just figured that even given his apparent limited electronic knowledge, a 'helper' transistor, which really is very simple to connect into the circuit, would be a good idea, if the scenario was that this thing was going to get turned up and down regularly.

Arfa