

Re: how to control LED array?

Source: <http://sci.tech-archive.net/Archive/sci.electronics.basics/2005-04/msg01296.html>

- *From:* "Anthony Fremont" <spam@xxxxxxxxxxxx>
 - *Date:* Tue, 26 Apr 2005 15:03:06 GMT
-

"Lord Garth" <LGarth@xxxxxxxxxxxx> wrote in message
[news:9psbe.423\\$gd5.117@xx](mailto:news:9psbe.423$gd5.117@xx)
>
> "Anthony Fremont" <spam@xxxxxxxxxxxx> wrote in message
> [news:flqbe.26530\\$AE6.26160@xx](mailto:news:flqbe.26530$AE6.26160@xx)
>>
>> "John Fields" <jjfields@xx> wrote in message
>>
>> <snip for brevity>
>>
>>> The display will need to be multiplexed, and the most efficient
way to
>>> do that would be to broadcast data, a byte at a time, into the row
>>> drivers and then to scan the columns. If you want to make a
>>> non-flickering display, then the pixel update rate should be
somewhat
>>> higher than 30Hz, say 50Hz just to make sure. That means that
since
>>
>> I disagree on the refresh rate. Having just experimented with PWM
on
>> some RGB LEDs, I can attest to the fact that 40Hz refresh is easily
>> visible as flicker at very low duty cycles. You will see the
annoying
>> flickering. I suggest using at least 80Hz for completely flicker
free
>> operation. Before you get all upset, I know it seems awfully high
>> compared to what's acceptable for TV and movies, but I assure you
that
>> the flicker is much more visible on the LEDs. There is plenty of
advice
>> on the net about using refresh rates around 100Hz for this very
reason.
>> Just commenting for the benefit of the OP.
>>
>>> Of course if the OP doesn't need low intensity levels, then a slower
>>> refresh may be fine.
>>

Re: how to control LED array?

>
> I was just thinking that a column multiplexing scheme as opposed to
> a row multiplexing scheme would be more likely to show strobing
> as one drove by. Is this indeed the case? (not that this is at all a
> concern
> to the OP and his 8x8 array)

I don't know if that would make any difference. My experiments were with only one LED and flickering was clearly visible at >40Hz refresh combined with low duty cycles. [I was using a software based 8 bit PWM routine (~25mS period with ~100uS resolution)] When I upped the clock speed to 8Mhz so that the period was ~12.5mS with ~50uS resolution the flicker was not visible to me even with a 1/256 duty cycle. I was also surprised by the brightness of the LED at 1/256 duty cycle, it was clearly visible.

Disclaimer: I know that a linear duty cycle is not the most appropriate method of PWM driving an LED, but it was easy to implement. With the ISR running every 50uS, you don't have allot of time to jack around. ;~)

Using an 8Mhz internally clocked 16F88, I was able to achieve my goal of imperceptibly varying the colors of an RGB LED, in a rainbow like fashion, without generating shades of grey, or taking a week to cycle thru all 16 million combinations. No biggy, but it looks allot better than those cheesy things with the built in color sequencer. ;~) My 10 month old daughter really likes the effect and IMO it's going to look really good on my scooter as full-color, adjustable accent lighting. 8~)

• *Follow-Ups:*

- ◆ **Re: how to control LED array?**
◇ *From:* Lord Garth

• *References:*

- ◆ **how to control LED array?**
◇ *From:* Michael Noone
- ◆ **Re: how to control LED array?**
◇ *From:* John Fields
- ◆ **Re: how to control LED array?**
◇ *From:* Michael Noone
- ◆ **Re: how to control LED array?**
◇ *From:* John Fields
- ◆ **Re: how to control LED array?**
◇ *From:* Anthony Fremont
- ◆ **Re: how to control LED array?**
◇ *From:* Lord Garth

Re: how to control LED array?

- Prev by Date: [*Re: how to control LED array?*](#)
- Next by Date: [*Re: infrared transmitters*](#)
- Previous by thread: [*Re: how to control LED array?*](#)
- Next by thread: [*Re: how to control LED array?*](#)
- Index(es):
 - ◆ [*Date*](#)
 - ◆ [*Thread*](#)