Re: Optical Sensor (different from the 2−d sensor)

Source: http://sci.tech−archive.net/Archive/sci.electronics.design/2008−07/msg01032.html

- *From*: Tim Wescott <tim@xxxxxxxxxxxxxxx>
- *Date*: Tue, 08 Jul 2008 09:56:13 −0700

Howhurley wrote:

> On Jul 7, 3:05 pm, Tim Wescott <t...@xxxxxxxxxxxxxxxx> wrote:
>
> > Howhurley wrote:
> >
> > > Hi again. I am looking for an optical sensor, probably LED based,
> > > maybe laser diode, that can be mounted on a thin PCB. It needs to be
> > > fairly small. I am designing a small retroreflective system from
> > > inside a slot machined into a molding with a piece of reflective tape
> > > approx 3 ft away.
> > > Any takers on this one?
> >
> > LEDs and lasers both emit light.
> >
> > Do you mean you want a sensor designed specifically for use with a
> > retroreflector?
> >
> > You're probably stuck with using a PIN photodiode and LED, and doing
> > your own optics.
> >
> > But your request is so vague it's impossible to tell.
> >
> > How bright are the other lights in the room? How many of these devices
> > will be in the room working together? Does it have to work while
> > looking at it's brother right next to the reflective tape? How wide is
> > the slot? How much accuracy can you pay for? Etc.
> >
> > −−
> >
> > Tim Wescott
> > Wescott Design Serviceshttp://www.wescottdesign.com
> >
> > Do you need to implement control loops in software?
> > "Applied Control Theory for Embedded Systems" gives you just what it says.

> I want to project an LED or laser beam perpendicularly out of a .33 inch aluminum slot. I want to "see" the reflection from reflective tape. up to 3 ft away and tell when the beam is broken. I was thinking that I could modulate the frequency of the transmitter and use a uP with the capability to have a fairly small window so I can eliminate extraneous "noise."
>
> I probably could put the detector on the opposite side instead of the tape.
>
> I was also thinking, if I did that, I could use a couple line collimated lasers, frequency modulated, so an individual reciever would be able to tell if the source was interrupted.
>
> Thanks again for your response.

Sorta like the ones you can buy from Radio Shack, only smaller?

Should work.

I would try first with an LED or laser + a PIN photodiode. If you _really_ want to distinguish your signal from others you'll use a pseudo−noise sequence to turn the thing on and off; if you're sane you'll just use a fixed tone and hope that there's nothing else in the room on frequency.

You may have more of a challenge minimizing the coupling between the transmitter and receiver with no reflection than you do with anything else.

−−

Tim Wescott
Wescott Design Services
http://www.wescottdesign.com