Can I light a LED off the receiver?

by erkrystof - Tuesday, July 19, 2011

http://www.hoverandsmile.com/can-i-light-a-led-off-the-rx/

A youtube viewer asks:

> Im using a spectrum dx6i and ar6200 receiver in my Traxxas Rustler VXL. Can I just run a led light with a servo connector straight to my RX. Im assuming the RX is using 5 vdc and most leds are 12 vdc. Ive found some strip lights at walmart, hobby king and rclights.com. Im assuming that is the simplest setup. I just want to make a straight connection from the RX to the LED and turn it on or off from my extra open channel on my RX.

Let's break this down a little bit, piece by piece, because, unfortunately, given the type of components you're talking about, it's not as simple as we all would like.

I'm assuming your receiver is getting power from your speed controller's BEC or a battery pack. Either way, you *can* light a LED or two from a receiver, but keep in mind that the receiver isn't really supplying the power. The pins on your receiver are merely creating a power bus, and the smaller the receiver is the less current you should put through that bus (current makes heat). Most likely a handful of LEDs aren't going to be a problem. I'm not talking strips, I'm talking individual bulb LEDs you'd have to wire yourself with resistors (if you are so inclined). It sure is possible though, because you've got 5 volts to play with you could probably wire 2 LEDs in series, and multiple pairs in parallel.

However, you mention 12 volt LEDs. A lot of the single bulb type LEDs you'd find from radio shack generally run 2-3 volts, and like you stated, you're looking at LED strips. Regardless, you can only light a LED circuit if the supply voltage (your 5 volts) is greater than or equal to the voltage required for your LED circuit. So if you do have a 12 volt LED strip, you won't be able to illuminate it with the small 5 volts piped through your receiver.

So now you have strips, and a full strip can easily take around 400ma worth of current. Myself, I wouldn't want that much power going through my ESC's BEC into the receiver, keep that for the servos. I don't do any car R/C at this point, but in our airplane setups a BEC typically supports 2-3 amps for park/medium sized aircraft, and I'd rather have that current for my servos and keep the BEC less taxed with powering lights. I recommend lighting strip LEDs directly off a battery, either from a lipo balance plug or a separate pack.

So, you'll need more power than the RX can provide through the ESC's Battery Eliminator Circuit. However, you still want to control it through your transmitter, to switch them on or off, right? Well, all is not lost! You can use a brushed speed control, I've used a couple in the past to control lights with a transmitter, but what would probably be easiest outside of wiring your own components would be to pick up a 'receiver controlled switch', something like a Pico Switch or Battle Switch from Dimension

http://www.hobbyking.com/hobbyking/store/uh_viewitem.asp?idproduct=8833 and http://www.dimensionengineering.com/PicoSwitch.htm) The reason you can't switch a simple dc circuit on or off with your receiver port is that flicking a switch on your transmitter doesn't actually block power to your receiver pins, they're always on, it's the signal on the signal wire that changes. The + and - pins on your receiver don't change. Without a switch like those mentioned above you could create your own, but it requires electronics knowledge beyond hooking wires to wires.

In summary, I would recommend powering strip LEDs from the battery pack, either your craft's main pack or a separate 3S (12Volt) Li-Po battery. To control the lights with your transmitter switch, use a pico switch, brushed speed controller, or a hobby king example receiver controlled switch. (Or google 'rc receiver controlled switch').

Hope that helps! For more detail, we have an entire LED lighting series available: http://www.hoverandsmile.com/nightflying.

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