RC Light Controller

Instructions for use

Introduction

Thanks for using the LANE Boys RC light controller!

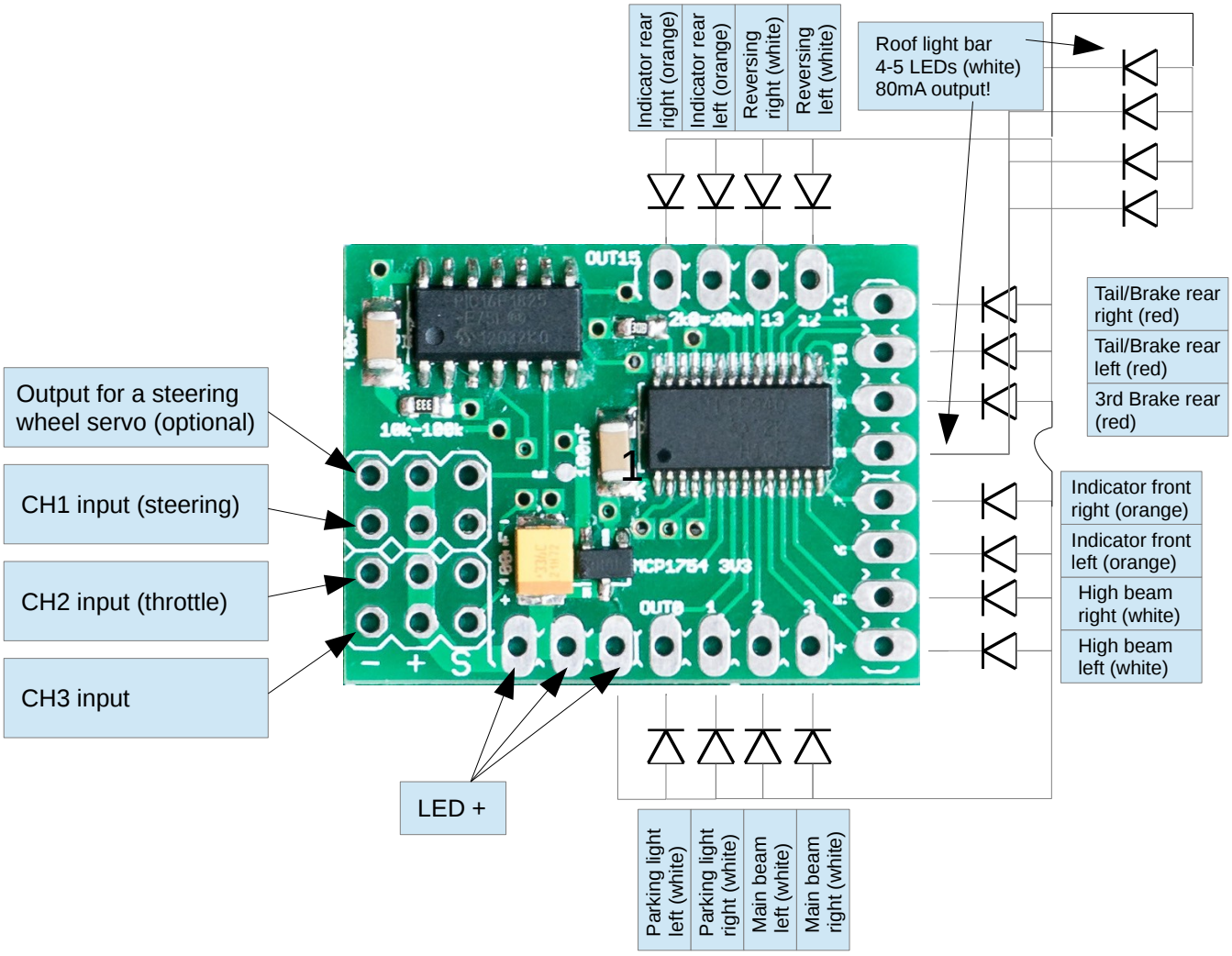
The light controller supports the following features:

- 16 LED outputs, constant-current driven for optimal LED performance
- Parking, Low-beam, High-beam and a roof light bar can be switched on/off manually using CH3
- Brake and Reverse lights are automatically controlled by monitoring the throttle channel. The brake lights now automatically turn on for a short, random time when the throttle goes to neutral.
- Combined tail and brake light function in a single LED through controlling the brightness of the LED.
- Separate brake light function for a 3rd brake light
- High current output (80mA) to drive a roof light bar with 4-5 LEDs
- Indicators only come on when you want to. You have to stay in neutral for 1 seconds, then hold the steering left/right for one second before they engage. This way normal driving does not trigger the indicators.
- Hazard lights can be switched on/off using CH3
- Programmable servo output designed to drive a steering wheel or a figures head
- Automatic center and end-point adjustment for all channels

Connecting the light controller to your RC car

The light controller is powered from the receiver power supply in the car. The input signals of channels CH1, CH2 and CH3 need to connected to the steering, throttle and auxiliary channels of your receiver. For steering and throttle you will need to utilize a Y-cable.

The following diagram shows the connections on the light controller:



The (+) connections of all LEDs are connected together to the terminals “LED +”. For soldering convenience there are three terminals that carry “LED +”.

Each LED output is designed to drive a single LED. The outputs are driven with a constant current for optimal LED performance and uniform brightness. Do not connect a resistor in line with the LEDs, it is not necessary for this light controller!

An exception is output OUT8, which has been programmed to sink 80 mA. It is designed to drive four to five LEDs connected in parallel, e.g. for a light bar on the roof of a vehicle. Do not connect only a single LED to this output as the high current may damage the LED!

The light controller also can drive a small servo in synchronization with the steering input. This is designed to turn the steering wheel in the cabin of a truck. The center, endpoints and direction can be fully programmed (see below).
Note: do not connect the steering servo of your vehicle to this output as it may affect performance and reliability!

Operation

After turning the power on, the main beam LEDs will turn on for about three seconds. During this time ensure that steering and throttle are kept in neutral position.

If instead of the main beam lights the front indicators light up, this means that the input channels CH1, CH2 and CH3 do not receive proper signals from the receiver. Turn the power off and check all connections.

After initializations all lights turn off and the system is ready to use. It is advisable to let the light controller know the endpoints of steering and throttle before driving off. To do this simply move the steering fully left, then fully right. Hold the car in the air safely and pull the throttle full forward, then full backward – ensuring that the drive train does not get damaged.

When driving, the brake and reverse lights will now come on according to the throttle input. The indicators can be engaged by keeping both steering and throttle neutral for one second, then turning the steering into the direction the indicators should show. Once they are engaged you can start driving and they will turn off after a short delay when the car goes straight, or immediately when the car turns in the other direction.

Several functions of the light controller are operated manually through the auxiliary channel CH3. Since there are quite a few functions the concept of “clicks” is employed. Similar to the operation of a computer mouse, one can press the CH3 button on the transmitter repeatedly within a short time to invoke different functions.

One click: Turn on more lights at each click: Parking, Main beam, High beam, Roof lights

Two clicks: Turn the lights down; reverse of one click

Three clicks: toggle all lights on and off

Four clicks: toggle hazard lights (all indicators flash) on and off

Here are two videos showing the operation:

http://youtu.be/ljf41gerEWU

http://www.youtube.com/watch?v=96EBejcPZ_Y

Configuration

The direction of the steering and throttle channels can be programmed to match the car. To do this perform **seven** clicks on channel CH3. The indicators on one side and the main beam lights will turn on. Move the steering wheel on the transmitter into the direction of the indicators that light up (i.e. of the indicators on the left side of the car light up, turn the steering wheel left). When successful the indicators will turn off.

Now engage the throttle forward. When successful the main lights will turn off, programming channel reversing has finished and the light controller will resume normal operation.

The steering and throttle direction are stored persistently so this configuration has to be carried out only once after installing the light controller.

In case a steering wheel servo is utilized, the center point and end points can be configured independently of the car steering.

To set up the steering wheel servo perform **eight** clicks on channel CH3. Both left and right

indicators will turn on and the steering wheel servo will follow directly the steering input on the transmitter. Turn the steering wheel on the transmitter to the position that the steering wheel servo is centered and click channel CH3 once. Now the left indicators will light up. Move the steering wheel on the transmitter to the position that shall be used for full left on the steering wheel servo. Note that this may require that you need to turn the steering wheel on the transmitter right, if the servo is reversed. Don't worry, this is correct and lets the light controller know which way to turn the steering wheel servo. Hold the transmitter steering in position while clicking channel CH3 once. Now the right indicators will turn on. Perform the same procedure as for the left end point and click channel CH3 once.

The center and end points should now be correct, the steering wheel should follow in the same way as the car. The settings are stored persistently and are not affected by steering trims and endpoint adjustments. After changing endpoints and trim you need to restart the light controller though so that it learns the new settings.

Technical data

Operating voltage: 4.8V – 10V (receiver voltage up to 2S LiPo directly)

Constant current outputs: 20 mA for channels 0-7 and 9-15; 80 mA for channel 8

Dimming: constant current in 63 steps (i.e. PWM is not utilized)

LED configuration: common Anode (i.e. common plus pole, minus pole goes to individual outputs of the light controller)

Have fun with RC!

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http://laneboysrc.blogspot.com/

http://www.youtube.com/user/laneboysrc

http://www.flickr.com/people/78037110@N03/

https://github.com/laneboysrc/rc-light-controller.git