R/C Headlight and Dual-Intensity Brake Light Kit
And Built-In Failsafe

Thank you for your purchase. Your RC brake light kit is hand assembled and tested for quality assurance.

The light kit includes the following features:

- Wide-angle hyperbright red braking LEDs.
- Dual-intensity brake lights actually work with your brake servo, just like an actual car.
- Built-in failsafe - unit automatically applies brakes to your car when transmitter signal is lost.
- Selectable failsafe override timer. Brakes can be applied right away or 1 sec after signal loss.
- No extra battery needed. Unit runs off 4.8-6V receiver battery
- Signals are opto-isolated from your receiver - offers **MAXIMUM** interference protection.
- Unit works inline with your nitro throttle/brake servo or electronic speed control - *no clumsy mechanical switches needed!*
- Programmable brake threshold - sets up with any transmitter/receiver pair.
- Can be used with nitro or electric cars (1/12 to 1/4 scale with existing receiver).

PACKAGE CONTENTS

Your RC light board comes with the following:

1. Assembled RC light board w/ servo connectors
2. LED ribbon cable
3. Two 5mm wide-angle red brakelight LEDs
4. Two 5mm white headlamp LEDs
5. Two 5mm wide-angle blue foglamps (optional)

HOOKING UP YOUR BOARD

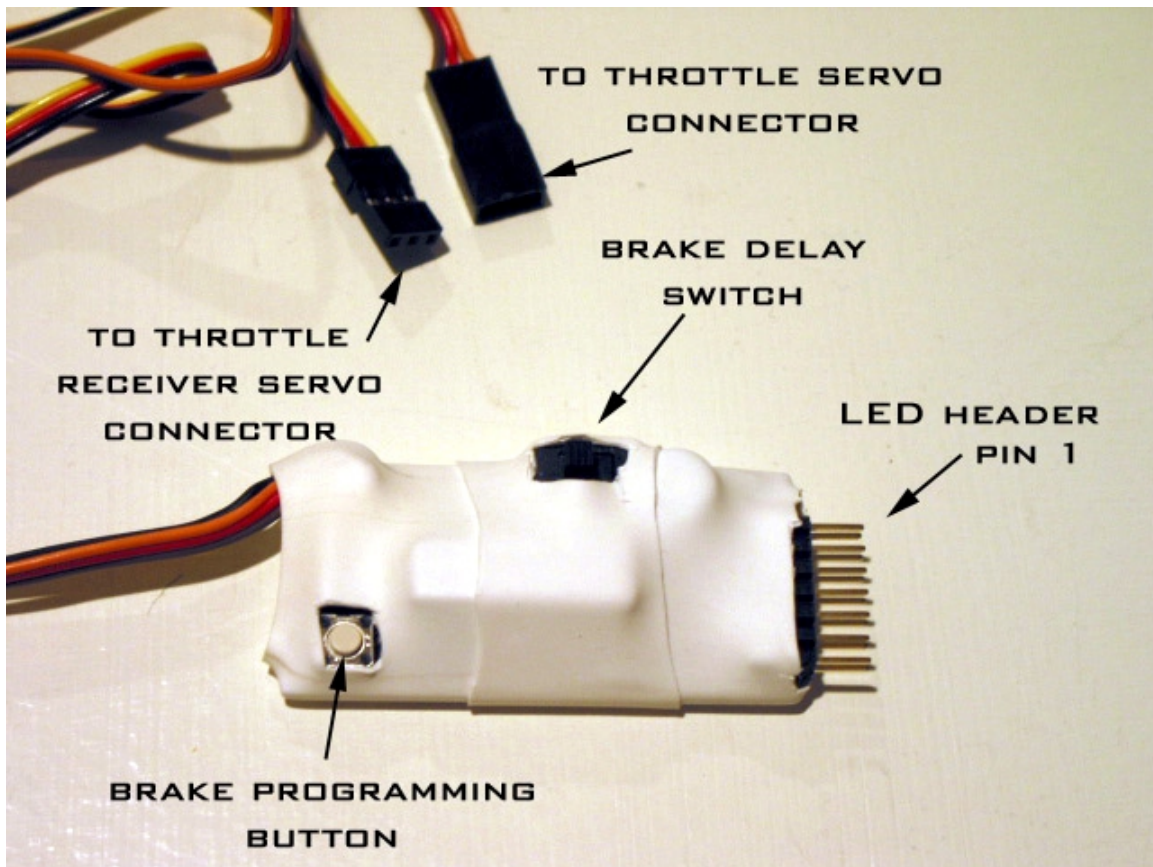Here is a picture of the assembled board (protected with heat wrap):

Figure 1

NOTE: The board is shipped with Hitec/JR servo connectors, unless otherwise specified.

For these servo connectors, the black (or brown) wire is negative, the middle red wire is positive, and the yellow (or orange) wire is the servo control line. **MAKE SURE** you abide polarity when plugging the connectors into your receiver and servo. Plugging them in wrong will damage your servo and possibly the light board! We are not responsible for damaged equipment due to user error.

<u>Servo connections</u>

First, unplug the throttle servo (or ESC for electric cars) from your receiver channel. The female servo connector on the light board plugs into your throttle receiver channel input (shown in Fig. 1). Take the male servo connector and plug it into the throttle servo or ESC throttle/brake input. You have now put the light board and failsafe "inline" with your throttle.

Here is a pic showing a nitro car setup with a throttle/brake servo setup:
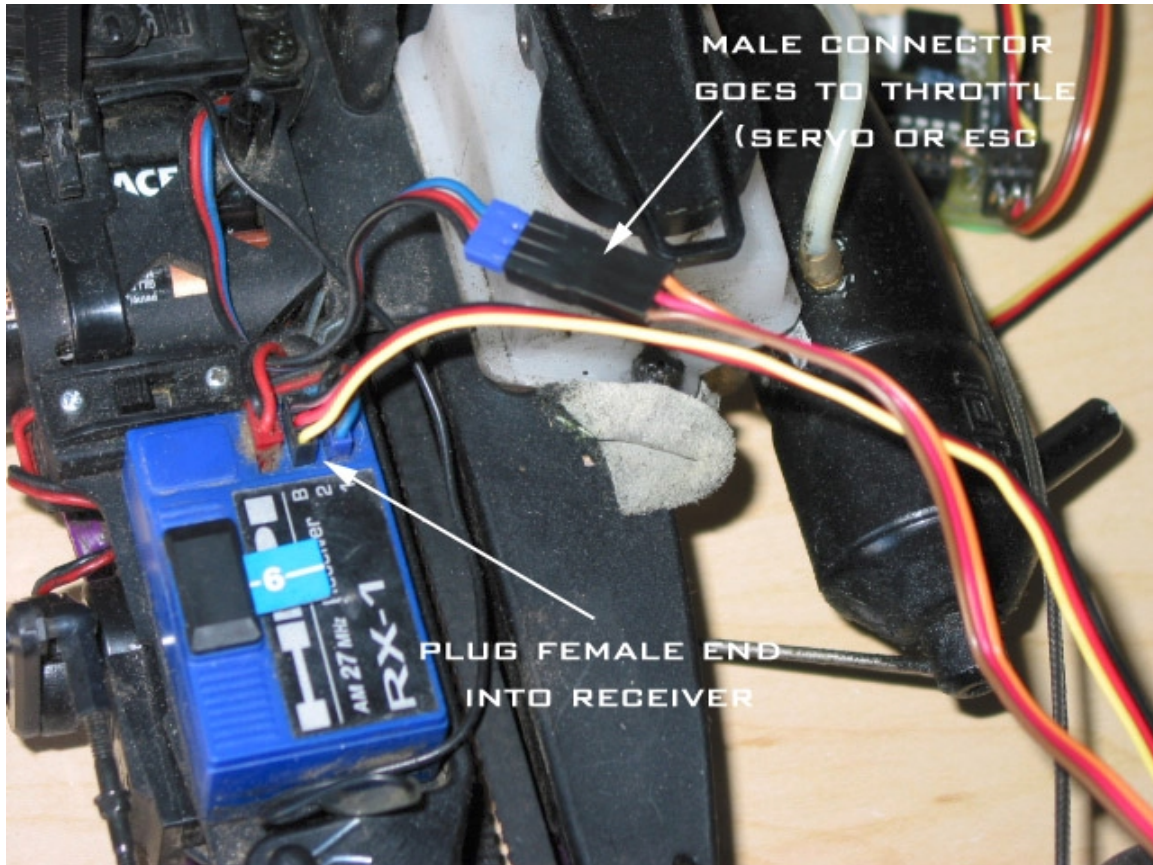

Figure 1b

This places the board inline with your receiver throttle channel and your servo (for nitro) or ESC (for electric cars).

LED connections

The included ribbon cable plugs into the LED header on the light board.

PLEASE note the polarity of the cable, or you can damage the board. Take the blue connector end of the cable and look for the yellow wire on one end. This signifies pin 1 of the LED cable.

Pin 1 on the light board is shown above in Figure 1.   Plug the cable into pin 1 so the polarity matches up. Your board and cable should match up to Figure 2.
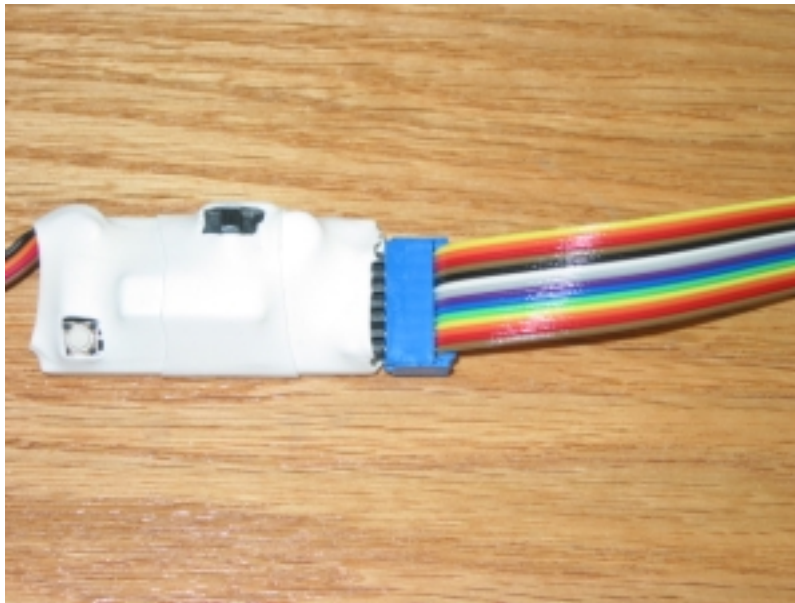
Figure 2

If you have an assembled unit and cable, all you have to do is mount the board in your RC body and program the brake threshold. If you have an unassembled kit, please refer to the end of this document for instructions on "finishing the kit".

INSTALLING THE BOARD

To install the RC light board w/ failsafe into your RC car, all you need to do is mount the board in your RC body, run the wires to the specific light areas (headlights to front of car, brake lights to back of car), then plug the board inline with your throttle servo and your receiver.

Board install:

First, plug the board into your throttle channel on your receiver and then to your throttle servo (for nitro cars) or to the electronic speed controller (for electronic cars) as shown in Figure 1b.

You can secure the board inside the car body using double-sided tape, glue, etc. Make sure the board is not around a large heat source or around the motor or electrical noise source. **This may effect operation!!**

LED install:

You can drill small holes to mount the LEDs in the body. Securing them with hot glue or epoxy is also recommended. If you want to disperse the LED light even more, you can mount them with lenses. We can sell you the lenses or you can get them at a surplus electronics shop.

Here is a pic of typically 5mm LED lenses:

After you have secured the LEDs in their locations, secure the ribbon cable to the body, so no excess is loose. You don't want the cable to get caught up in your mechanicals or even touch the engine and possibly melt!

Take the LED ribbon connector and mount it inside your body. You can separate the wires for each LED by just pulling on the spliced wires. Run the wires to the desired locations.

You can use double sided tape or Velcro to secure the wires around the inside of the body.

Here is a pic of the installed board with LED cable run throughout the body:
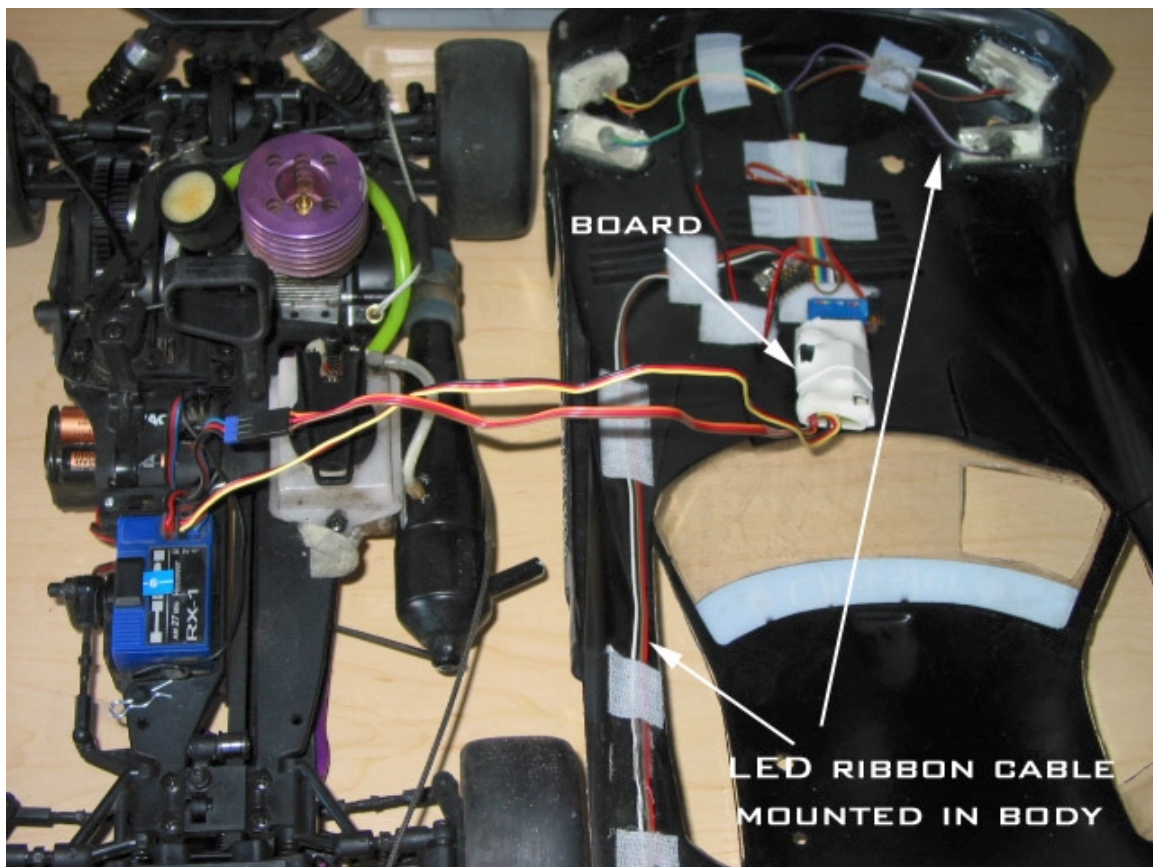
You are now ready to power up the board and program in the brake threshold for the lights and failsafe.

PROGRAMMING THE BOARD

Turn on your receiver power and the fog lamps should light up. When you turn on your transmitter, the white headlamps will also come on. When the transmitter power is lost, the headlamps automatically extinguish, telling you that the receiver has lost communication.

Once you have turned on your transmitter and the white headlamps come on, press the small pushbutton on the LED board for 2 seconds, then release it. When you release it, the headlamps should flash several times.

Now move your throttle stick to full brake, and while holding the throttle press the small pushbutton once more. The headlamps will flash again. You can now release the throttle stick on your transmitter.

Your board has successfully been programmed with your custom brake threshold!

To test it out, apply the brakes. You should see the brake lights now illuminate fully. Take off the brake and the brake lights go dim.

You can reprogram the board at any time by following the above procedure. For example, if you re-trim your servo throw or install a new ESC, you probably want to reprogram the braking threshold.

There is also a small Quicktime movie of the board being programmed, for those who would like a visual aid. You can download the movie here:

> http://www.hyperdynelabs.com/RC/rc_lights_setup.avi

The movie demonstrates a typically programming session.


FAILSAFE OPERATION

During the programming session, your board also stores off the value of full brake that you applied. If you ever lose your transmitter signal, the LED board will automatically apply full brake to your throttle servo or esc – stopping your vehicle and avoiding the runaway condition.

You can try this by turning off your transmitter. The brake lights come on fully and the headlamps should go out. If you have a nitro car with a throttle servo, you should also see the servo slew to the full brake position. It will stay here until the transmitter is turned back on. Check to see that the car is braking.

You can also set the braking delay. This is the amount of time the failsafe waits before it applies full brake during a signal outage. There are 2 selectable times, via the slide switch on the LED board.

The default position delays 250ms before applying the brakes. The second position waits 1 sec before applying the brakes. In very noisy environments or even racing conditions, you may want to set the longer delay so intermittent signal losses do not auto brake your vehicle over and over.

Here is a pic of the delay positions:
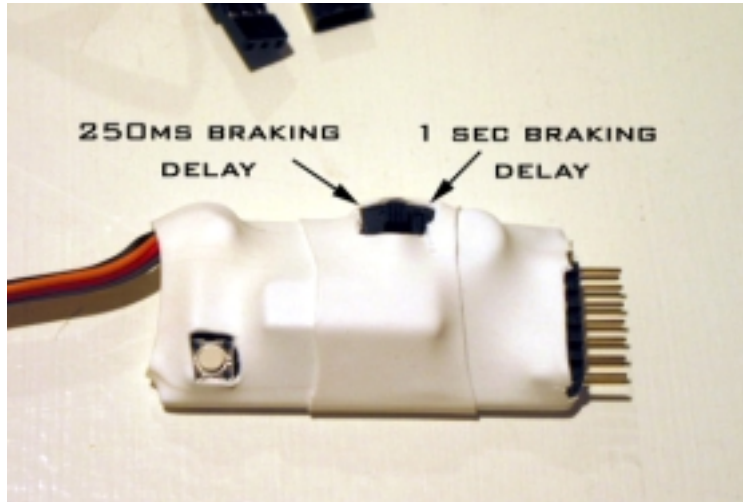
Once you have finished installation, you can re-assemble your car and try everything out. We recommend that you run your car slowly at first until you verify that the brake lights and the failsafe are working.

You can successfully test the failsafe by driving slowly and then turning off your transmitter on purpose. The car should brake and the brake lights illuminate.

If you have any problems, please contact hyperdyne@hyperdynelabs.com
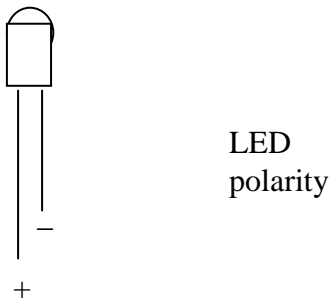
ENJOY!!

FINISHING THE KIT

If you purchased the kit version of the LED board (not fully assembled), then you have to attach the LEDs to the ribbon cable. Below are instructions on how to accomplish this. If you ordered the assembled version, you can skip this section.

The LEDs come with one lead longer than the other. They look like:

LED
polarity

The positive side of the LED is the one with the longer leg.

The ribbon cable is assumed to plug into the LED board as shown below, with the yellow wire on top signifying pin 1.
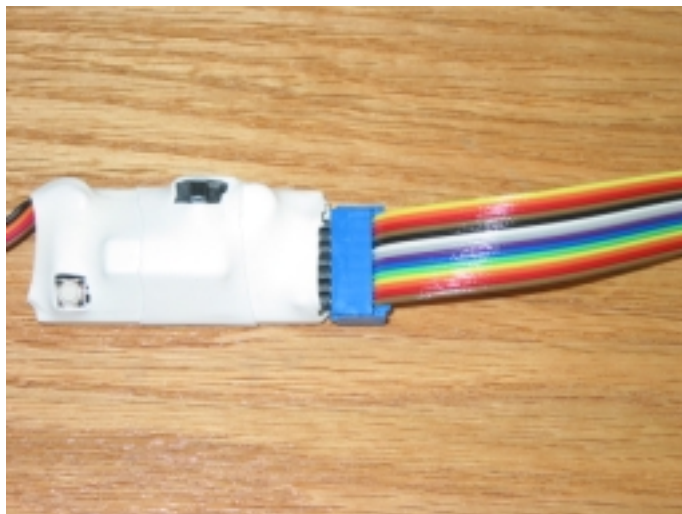
You can cut the other side of the ribbon cable (using scissors) down to the length you will need to mount inside your RC body. Be sure not to cut off too much!


You now need to prep each wire for each LED lead. First take an exacto knife and splice **carefully** between each wire so you can attach the LEDs more readily. This is shown below:
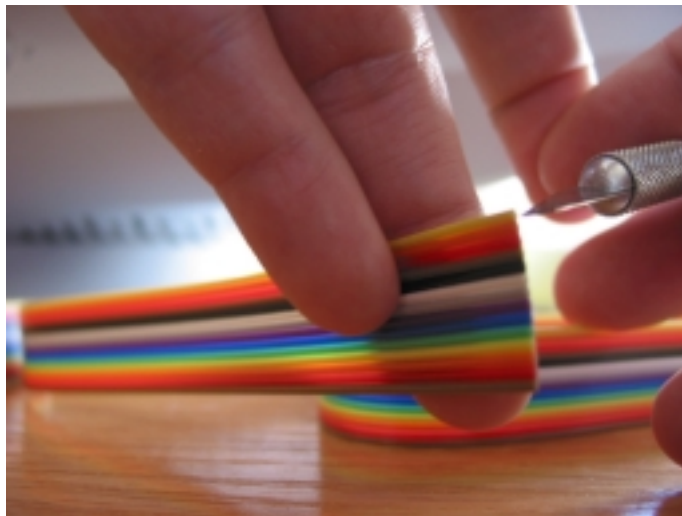
Once you separate the wires, you can pull them away from the ribbon cable (like string cheese) to give you more wire length to work with when installing the wires in your body.

The wiring diagram for the LED leads are shown next:
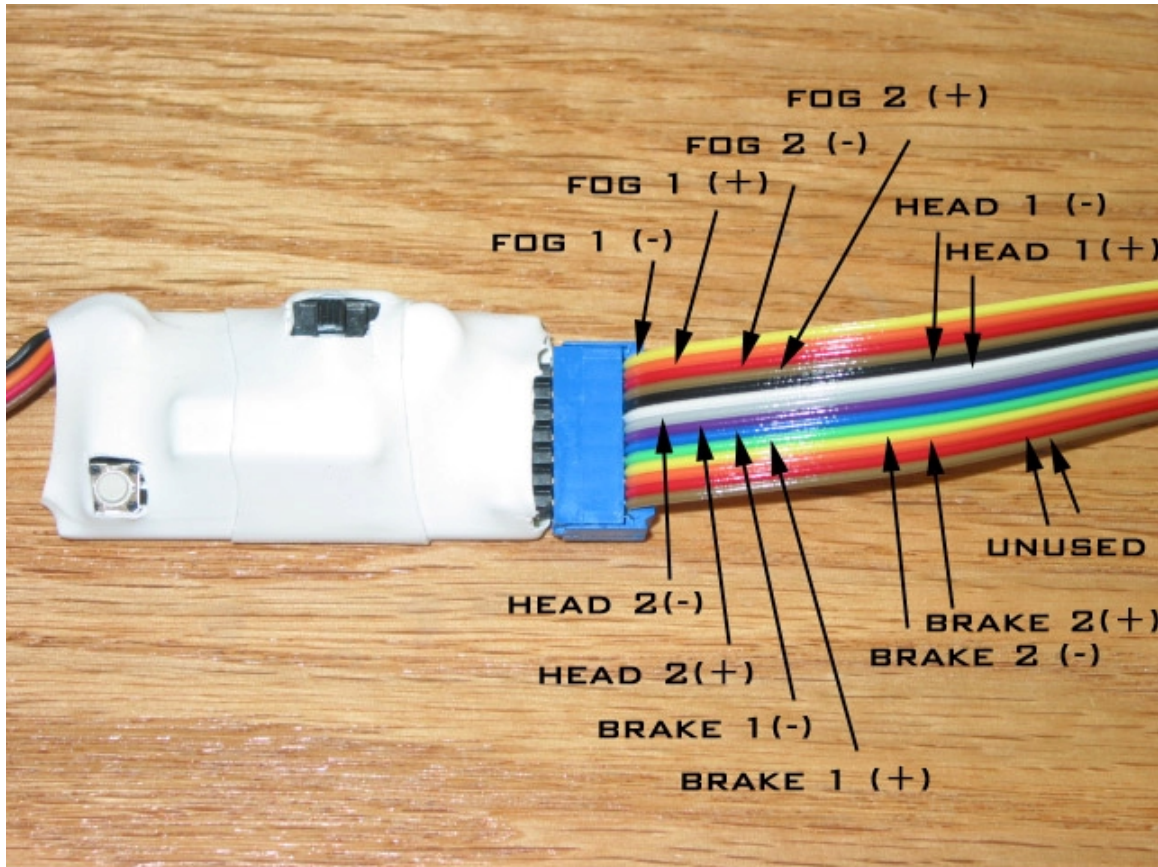
Starting at pin 1 on the top of the header (the yellow wire), the pinout is:

- Wire 1 (yellow): Foglamp 1 (-) lead
- Wire 2 (orange): Foglamp 1 (+) lead
- Wire 3 (red): Foglamp 2 (-) lead
- Wire 4 (brown): Foglamp 2 (+) lead
- Wire 5 (black): Headlight 1 (-) lead
- Wire 6 (white): Headlight 1 (+) lead
- Wire 7 (gray): Headlight 2 (-) lead
- Wire 8 (purple): Headlight 2 (+) lead
- Wire 9 (blue): Brakelight 1 (-) lead
- Wire 10 (green): Brakelight 1 (+) lead
- Wire 11 (yellow): Brakelight 2 (-) lead
- Wire 12 (orange): Brakelight 2 (+) lead
- Wire 13 unused
- Wire 14 unused

All you need to do is splice each individual wire, then solder each LED leg to the corresponding wire as shown above.

TIP: The longer lead on each of the LEDs is the positive end. The shorter lead is the negative end. You can cut the LED legs so they are easier to install. Just remember which side was positive if you cut them to be equal length!

Once you have soldered the LED legs to each wire, you are ready to install the board into your body. Please follow the instructions at the beginning of this document.

If you do not know how to solder, you can also splice each wire and wrap the corresponding wire around each LED leg. Then you can use hot glue to secure the wire to the LED lead.

Check to make sure that all the lights come on before doing your final assembly. It is easier to find any problems during installation then after assembly. After each install step, make sure the board is still operating.

If you have any problems, please contact hyperdyne@hyperdynelabs.com

NOTICE: There is no warranty on kits!! It is your responsibility to install the board. Kits cannot be returned! Be careful if you plan to use a battery source that is capable of delivering alot of current. Contact a professional if you need assistance. Hyperdyne Labs assumes no responsibility for the misuse of this kit.