Cannondale / ATK - Status Lights Wiring

Basic Operation:

All of the functionality of the status lights is controlled by the ECU. All three LEDs share a common power source (12vdc) on the accessory connector. Each LED's state is changed via its own pin on the accessory connector. When connected, the lights will function as follows:

LED Action	*Power LED*	*Sensor LED*	*Temp LED*
Off	Power Off	No faults	Normal
On Solid	Power On	N/A	N/A
Slow Blink	Voltage low (below 10 volts)	Fault detected	Hot (90° C)
Fast Blink	Voltage low (below 9 volts)	N/A	Critical (110° C)

You can connect any combination of the three lights. So, if you are only interested in the engine temperature, then you can just hook up the temp LED.

Equipment Required:

Quanity	Part Number	Description
2	Radio Shack 276-080	LED Holder (Come 2 in a package)
1	Radio Shack 276-041	Red LED (Come 2 in a package)
1	Radio Shack 276-022	Green LED (Come 2 in a package)
1	Radio Shack 276-021	Yellow LED (Come 2 in a package)
2	Radio Shack 271-1115	470 Ohm resistor (Comes in assorted package)
1	Radio Shack 271-1116	560 Ohm resistor (Comes in assorted package)
1	-	4 conductor wire
4	www.laddinc.com 1060-20-0122-PS	Male pin to connect to the female accessory pins
1	-	Shrink tubing to cover the connections (1 foot)
1	-	Soldering iron and solder
Optional	www.laddinc.com DTM04-12PA	Receptacle

NOTE – The resistor values were calculated for the LEDs listed above. If you use different LEDs, you will have to calculate the values you will need for them. The system is powered from 12 volts.

Wiring:

Refer to *Figure 1* for a wiring diagram.

1. Find a location to mount the LED holders and drill a 5/16 (for holders listed) hole for each holder you are installing.
2. Remove the rubber plugs from the bottom of the LED holders, and insert the LEDs into the rubber plugs. The LEDs are inserted into the holders from the bottom, so if there is enough room to insert the LEDs, then go ahead and install the holders into your mounting location.
3. Solder one 470 Ohm resistor to the positive side of the Red LED.
4. Solder one 470 Ohm resistor to the positive side of the Green LED.
5. Solder one 560 Ohm resistor to the positive side of the Yellow LED.
6. Make sure to cover all of the following connections with shrink tubing.
7. Using some spare wire, solder all three positive terminals of the three LEDs together. Make sure the wires are long enough to mount the LEDs.

The following steps are using 4 conductor phone wire. If you are using different wire, the colors may be different.

8. Solder the black wire of the 4 wire phone cable to the three positive leads of the LEDs.
9. Solder the Green wire of the 4 wire phone cable to the negative terminal of the green LED.
10. Solder the Yellow wire of the 4 wire phone cable to the negative terminal of the yellow LED.
11. Solder the Red wire of the 4 wire phone cable to the negative terminal of the red LED.
12. Mount the LEDs into their holders, and route the cable down though the air box and into the ECU try for connection to the accessory connector.
13. Connect the black wire of the 4 wire phone cable to pin 1 of the accessory connector. This is the 12 volts that will power the LEDs.
14. Connect the Green wire of the 4 wire phone cable to pin 5 of the accessory connector. This is the ground that switches the state of the LED.
15. Connect the Yellow wire of the 4 wire phone cable to pin 6 of the accessory connector. This is the ground that switches the state of the LED.
16. Connect the Red wire of the 4 wire phone cable to pin 7 of the accessory connector. This is the ground that switches the state of the LED.

You are now finished!

Checking your work:

Like I said above, the LEDs are controlled by the ECU. If your LED does not light, check your connections.

Power LED - This should illuminate when power is applied to the ECU. This LED will usually blink when trying to start the engine. It will stay on for a minute after power is removed from the ECU.

Sensor Fault LED – I haven't figured out how to check this one. It is usually on when you first power up the ECU, then will go out once the engine is running. Disconnecting the cooling fan should trigger a fault and turn the light on.

Temp LED – The temp sensor uses resistance to send data back to the ECU. Therefore, we can disconnect the coolant sensor and place a resistor across the connector going back to the ECU to test this. With the ECU powered on (the engine doesn't need to be running), connect a resistor(s) ranging between 250 and 200 Ohms across the terminals of the coolant connector going to the ECU. This will trigger a HOT (slow blink) warning. Now, connect a resistor(s) ranging between 150 and 100 Ohms across the terminals of the coolant connector going to the ECU. This will trigger a CRITICAL (fast blink) warning. Make sure to connect it back up to the coolant sensor when finished.

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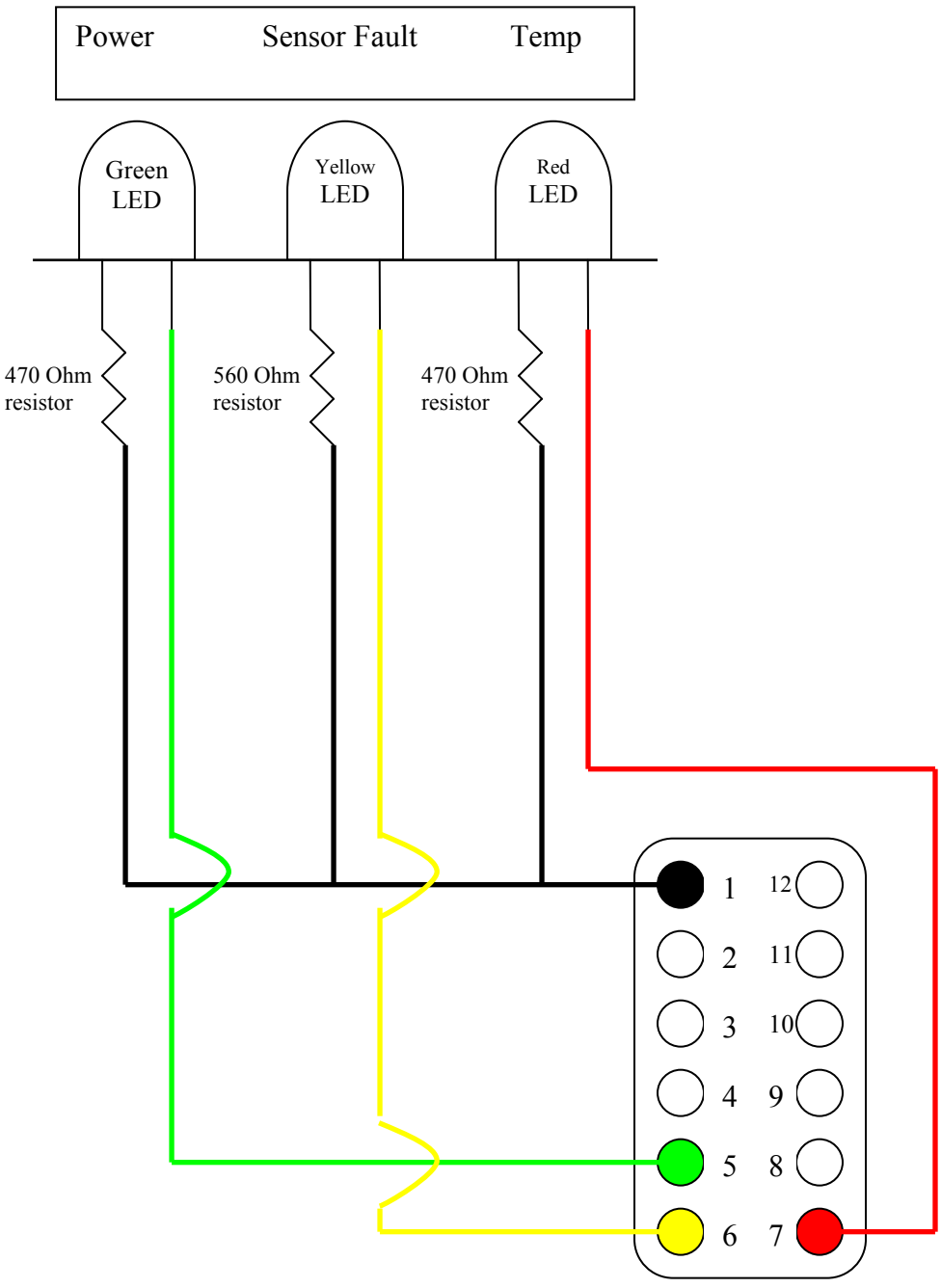

Figure 1 – Status Light Wiring Diagram