

Troubleshooting Reverse Polarity Modules for LED Headlights

City Racer LLC

Background:

The purpose of this document is to assist with reverse polarity modules for LED headlights.

Reverse polarity modules are needed in vehicles that have switching ground headlight circuit instead of switching power circuit. In a conventional switching power circuit, ground is always connected. Power (in the form of either 12V or 24V) is asserted to turn on the light. In a switching ground circuit, power is always connected. When the ground connection is made, the light turns on.

LED headlight does not work with a switching ground circuit because the diode in the LED chip is polarity sensitive.

The supplied reverse polarity module will convert the switching ground outputs from the vehicle's lighting harness into switching power outputs.

Potential issues:

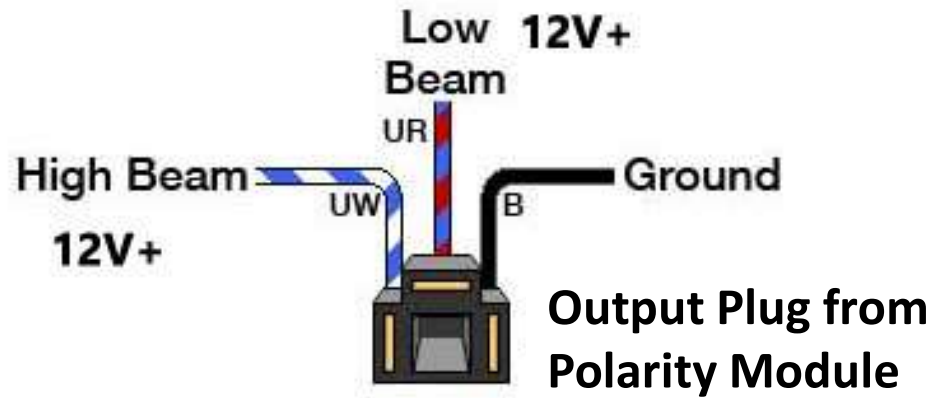
In most instances the supplied modules will properly operate the LED headlights. Simply plug the vehicle's harness into the input plug of the module and plug the LED light to the output plug of the module. Ground the single ground wire from the module and you're done.

However, for various reasons one of the following issues may occur:

1. Fuse is blown when light is plugged in
2. Low beam and/or high beam does not operate

Troubleshooting: Install both reverse polarity modules. The lower photo shows the functions of each prong on the LED light plug. Turn on low beam and verify the middle terminal in the output plug of the reverse polarity module asserts 12V. Turn on high beam and verify the the appropriate side terminal is asserting 12V (as shown below).

Note: The diagram is drawn for 12V, but the same principle applies to 24V.



H4 Connector

Diagnosis / solutions:

1. If the problem occurs on only one side while the other side works perfectly, the module is likely defective on the non-working side.
2. If troubleshooting reveals that power is not asserted in the correct terminal in the output plug of the module:
 1. It may be necessary to swap the positions of the terminals in the plug*
 2. It's possible that your vehicle doesn't have a switching ground headlight circuit. You can verify this by performing the voltage checks described in the previous page at the vehicle's harness plug.

* Removing a terminal from a plug is easy: The front of the plug has small rectangular window on one side. Stick a small screwdriver (or equivalent terminal removal tool) into the window and pull the wire out from behind. Reference video: https://www.youtube.com/watch?v=_3GoK3xE1gs