

How To Wire Off-Road Lights, *WITHOUT* blowing a fuse or turning your vehicle into a bonfire



Every off-road driver knows the value of having the right gear when it comes to getting off the beaten path. Nobody wants to be the one getting rescued, or worse, left stranded out in the rough as the sun starts to fall below the horizon.

One essential piece of gear for a proper setup is, of course, a set of high-quality off-road lights. Not only does proper lighting enhance visibility, but it also adds a touch of style to your rig.

However, installing off-road lights can create MAJOR headaches if you don't know what you're doing.

In this blog post, I'll share some tips on **how to wire off-road lights like a pro**.



Which Wiring Method Is Right For You?

In today's era of abundance, we are often faced with an overwhelming number of choices. However, when it comes to wiring your off-road lights, **experienced adventurers** typically use one of three main options.

1. Some drivers go for the convenient approach of connecting lights to their high beams.
2. Others go for an independent control option and use a standalone toggle switch installed in their dash.
3. Last but not least, many off-roaders are choosing the master control route of combining the two methods.

All three are effective in their own way. We'll go over how to install each one and you can decide what works best for your situation.

Important: The exact steps for installing lights will depend on your vehicle, choice of lights, and method of installation. We'll go over the general info you **need to know** to get on the right path.



Does Your Vehicle Have The Juice?

Before you hook up any lights and drain your vehicle's battery, you need to know the amount of power your electrical system can support.

The alternator has a set amount of power that it can supply to your vehicle. Adding certain lights may overload the electrical output and prevent them from working properly.

First - Is your alternator functioning properly?

To know if your alternator is working properly you'll need a multimeter to test your voltage.

- 1) Set your multimeter to DCV (DC Volts)
- 2) Connect your positive lead (+) to the positive terminal of the vehicle's battery and your negative lead (-) to the negative terminal
- 3) Voltage reading should be between 12.5-12.65 volts with the engine off
- 4) Start the engine, reading should now be between 13.5-14.5 volts on a good alternator

Second - Does it have enough output?

Figuring out the capability of your alternator is easy with a simple equation.

The equation is (volts x amps = watts) meaning if you have a 100 amp alternator it would be 14.5 volts x 100 amps, producing 1450 watts. The usual load of your vehicle's

accessories requires 50-60 percent of that power. Leaving you with roughly 580 watts to spare.

You can find the amps of your vehicle's alternator by locating the stamp and/or placard on it that will have the part number and amperage.

If you'd rather not deepdive that far, you can always choose off-road lights that have **over 4,000 lumens for only 30 watts** and save yourself the hassle.

Tools To Keep In Mind

Some light kits may come with all the tools you need, but if they don't, here's a comprehensive list of tools to fill the gaps.

- Battery terminal wrench or adjustable wrench
- Crimping tool
- Crimp-style wiring connectors
- Wiring harness (with in-line fuse and relay)
- Power drill with drill bit
- Screwdrivers
- Wire strippers
- Fuse Tap (for connecting to high beams)



Convenience: The High Beam Method

This method is going to allow you the ease and speed of turning on your off-road lights by simply switching on your high beams. No extra switches to mess with.

Important: In many places, off-road lighting is illegal to have on while on public roads. If you find yourself needing your brights while traveling, you may want to go with one of the other methods.

1. Disconnect The Battery

Before starting any work on your lights, disconnect your battery to avoid electrical shock or injury. Disconnect the negative side first, followed by disconnecting the positive side.

Note: Remove the fuse from your in-line fuse holder prior to making any connections to avoid damage.

2. Mount Your Relay

Attach your relay to the wall of your engine compartment close enough to your battery to make the needed connections.

Connect the grounding wire using the same screw/bolt used when attaching the relay.

3. Install The Fuse Tap

Find the fuse for your high beams using your owners manual and remove that fuse from the slot.

Insert that fuse into your Fuse Tap (add-a-circuit) and place the full unit back into the fuse slot for your high beams.

4. Route And Connect Your Wires

Connect the red wire of your in-line fuse holder to the positive terminal of your battery.

Connect the wire of your Fuse Tap to the relay. (additional wire may be required depending on the location of your relay)

Route the wires for your lights out to the mounted location and connect them with either the supplied connectors or connectors of your choice.

Last, connect the wiring harness to the vehicle's battery. Red wire to the positive terminal, black wire to the negative terminal.

5. Reconnect Battery

Positive terminal first then negative. Ensure the connections are secure to avoid issues while on uneven terrain.

After connections are made, insert the fuse into the in-line fuse holder.

6. Test It Out

Start your vehicle and switch the high beams on. If done right, the lights will be illuminated.



Independant Control: The Toggle Switch Method

A toggle switch is perfect for those who want standalone lights that can be turned on at any time with the flip of a switch.

1. Disconnect The Battery

Before starting any work on your lights, disconnect the battery to avoid electrical shock or injury. Disconnect the negative side first, followed by disconnecting the positive side.

2. Setup Your Relay

Mount your relay close enough to the battery to make all connections. You can use an existing bolt location or install a self tapping screw in a more appropriate location. Secure the ground wire with the screw used to mount the relay.

Note: Remove the fuse from your inline fuse holder to avoid damage during install. (add an inline fuse holder if there isn't one on the supplied wiring with the lights you purchased)

3. Install The Switch

Attach the switch in a convenient location, such as on the center console or on the dash near the steering wheel. Drill a hole if needed to install the switch in the desired location.

If drilling a new hole, use care not to damage any existing wiring. Best practice is to remove the panel that you're planning on adding the switch to before creating the hole.

Keep in mind that your final setup will need to fit back into place so make sure your switch will not cause interference with objects behind it.

When routing your wires to the switch, follow the existing wiring on your vehicle through the rubber grommet in the firewall.

4. Connect The Wiring

If connectors are supplied with your lights, use them to connect the power and ground wires to each light.

If connectors are not included, strip half an inch of bare wire from each wire and slide each end in a crimp-style wiring connector.

Crimp the connector onto the wires by squeezing with a crimping tool. (use shrink tubing to protect the connection)

Connect the inline fuse wire to the positive battery terminal.

Finally, connect your wiring harness to the battery. Red wire to the positive terminal, black wire to the negative terminal.

5. Reconnect Your Battery

Connect the positive terminal first, followed by the negative terminal.

Once the battery is connected, you can place the inline fuse back into the holder.

6. Test The Operation Of Your Lights

Flip the switch and make sure your lights are working properly.



Master Control: Best Of Both Worlds

This method is great for those that want complete control over their lighting and enjoy having options to choose from, no matter the situation.

With this approach you will utilize the benefits of being connected to your high beams while also having the control of a 3-way toggle switch.

1. Disconnect The Battery

As with the other methods, before starting any work on your lights, disconnect the battery to avoid electrical shock or injury. Disconnect the negative side first, followed by disconnecting the positive side.

Note: Remove the fuse from your inline fuse holder to avoid damage during install. (add an inline fuse holder if there isn't one on the supplied wiring with the lights you purchased)

2. Mount Your Relay

Mount in a location that is close enough to your battery to make all connections. You can either use an existing bolt somewhere on your fender well or drill a new hole and install a self-tapping screw.

You can attach the ground wire to the mounting bolt/screw to keep things simple.

3. Install The 3-Way Switch

Place in a convenient location, such as on the center console or on the dash near the steering wheel.

You may need to drill a hole in the preferred location. If drilling a new hole, use care not to damage any existing wiring. Best practice is to remove the panel that you're planning on adding the switch to before creating the hole.

Keep in mind that your final setup will need to fit back into place so make sure your switch will not cause interference with objects behind it.

4. Install The Fuse Tap

Find the fuse for the high beams using your owners manual and remove that fuse from the slot.

Insert that fuse into the fuse tap (add-a-circuit) and place the full unit back into the fuse slot for your high beams.

5. Routing The Wires

The wires for your switch can usually be routed along the existing wiring harness and run through a rubber grommet in the firewall leading into the dash area. If needed, drill a new hole and install a rubber grommet to protect the wires.

Wires for your lights should be routed along existing factory wiring if possible to make sure they are in a safe location.

6. Make The Connections

Connect the in-line fuse wire to the positive terminal of your battery.

Connect the relay to the center pin of your switch to give it power. One of the outer pins will be connected to the positive terminal of the battery while the other pin is connected to the fuse tap.

Connect your lights with the provided connectors or add connectors as needed.

Connect your wiring harness to the battery. Red wire to the positive terminal, black wire to the negative terminal.

7. Reconnect Your Battery

Connect the positive terminal first, followed by the negative terminal.

Once the battery is connected, you can place the inline fuse back into the holder.

8. Make Sure Everything Works

Using your toggle switch, test out your new setup

- Center or neutral position - Off-road lights remain off
- Position 1 - Off-road lights are on, independent of the vehicle's electrical system
- Position 2 - Off-road lights are primed, lighting up when the high beams are switched on

Important Details To Remember:

- Follow the instructions provided by the manufacturer for specific details about your lights.
- Clean up the install by securing the new wires with cable ties. The golden rule is to keep wires away from anything that gets hot or ends up in motion.
- Aim your lights slightly above your low beams at a distance of 25 ft for optimal output.
- If your situation requires you to add connections or splice wires, make sure to protect those areas with shrink tubing or dielectric grease.

Conclusion

Gearing up before outdoor adventures is vital to having the time of your life in a responsible way. No self-respecting driver wants to be the one crawling along dark trails at night *hoping* to avoid the obstacles that could wreck an axle, leaving them stranded.

Equally as important, you don't want to be the rookie that fries their wiring or turns their engine block into a mobile camp fire before you even hit the road.

Adding high-quality, ruggedized lights to your rig is by far the best way to improve your setup and guarantee you make it home safely. Wiring them correctly is how you avoid major issues and ensure they light up the night the entire trip.

Whether it's an afternoon of fun with the family, a trip to the dunes with the boys, or a mountain trail ride with your partner, you'll always see the path forward with the right equipment.

After following the methods in this guide, you'll know how to wire off-road lights on any vehicle with confidence.

Which of these techniques are you going to use?