

SPST ON/OFF Switch Box

Manual ID: PIM-00000173-V002

IMPORTANT: READ CAREFULLY BEFORE ASSEMBLY AND USE.

- Proper installation of this product requires the installer to have a good understanding of automotive electronics, systems, and procedures.
- If mounting this product requires drilling holes, the installer **MUST** be sure that no vehicle components or other vital parts could be damaged by the drilling process. Check both sides of the mounting surface before drilling begins. Also de-burr any holes and remove any metal shards or remnants. Install grommets into all wire passage holes.
- If this manual states that this product may be mounted with suction cups, magnets, tape or Velcro®, clean the mounting surface and dry thoroughly prior to

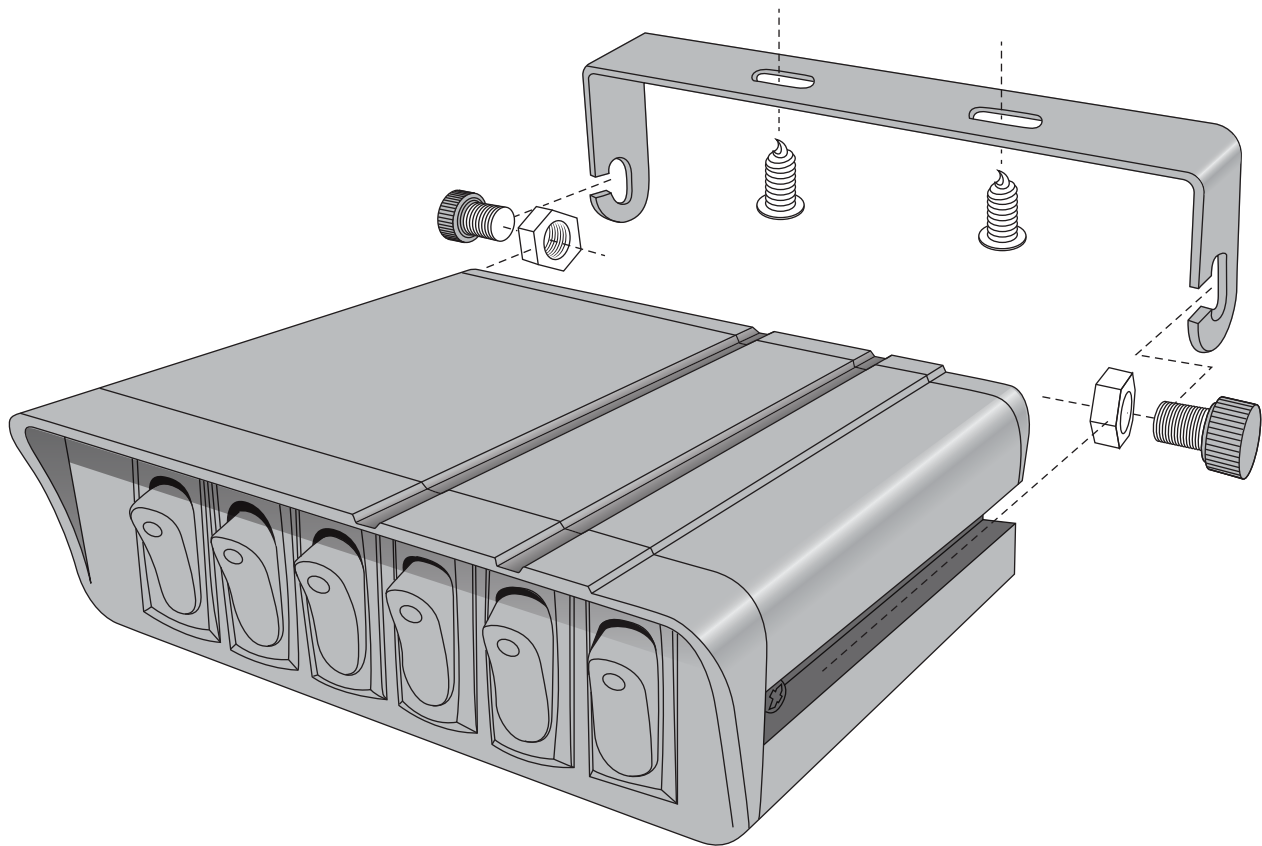
apply adhesive for maximum adhesion.

- Do not install this product or route any wires in the deployment area of your air bag. Equipment mounted or located in the air bag deployment area will damage or reduce the effectiveness of the air bag, or become a projectile that could cause serious personal injury or death. Refer to your vehicle owner's manual for the air bag deployment area. The User/Installer assumes full responsibility to determine proper mounting location, based on providing ultimate safety to all passengers inside the vehicle.
- Do not attempt to activate or control this device in a hazardous driving situation.

Installation:

NOTE: The bracket can be successfully mounted in several ways, with the included screws, machine screws and bolts, self-tapping screws, or heavy-duty double sided tape. Machine screws and bolts, self-tapping screws, or heavy-duty double-sided tape are to be supplied by the installer.

CAUTION! When drilling it is absolutely necessary to ensure that no other components or wiring will be damaged. Always check both sides of the mounting surface. If damage is likely, select a different mounting location.



Step 1: Mounting the Bracket

1. Position the bracket over the desired mounting location.
2. Mark the position of the two screw holes.
3. Determine the desired mounting method.
 - a. **Using the Included Screws**
 - i. Use a drill bit slightly smaller than the screws and drill out the previously marked holes.
 - ii. Reposition mounting bracket over holes and attach with the two screws.
 - b. **Machine Screw and Bolt Method (user supplied)**

NOTE: This method is very secure but only works if you have access to the back side of the mounting surface.

 - i. Use a drill bit slightly larger than the machine screw and drill out the two previously marked holes.
 - ii. Use a machine screw, two washers, a lock washer, and a nut in each hole to attach the bracket.
 - c. **Using Self-Tapping Screws (user supplied)**

NOTE: This method is most effective when mounting to a metal surface. If mounting to plastic the screws may loosen over time. Also, a power drill/driver must be used to install self-tapping screws.

 - i. Temporarily attach the bracket to the mounting location with tape.
 - ii. Use two self-tapping screws to attach the bracket to the mounting surface.
 - iii. Remove tape.
 - d. **Using Double-Sided Tape (user supplied)**
 - i. Position bracket on mounting surface and mark location.
 - ii. Thoroughly clean the bracket and the mounting surface with water and/or mild soap.
 - iii. Attach double-sided tape to the bracket and double check the mounting location.
 - iv. Attach the bracket to the mounting surface.

Step 2: Attaching Switch Box to the Bracket

1. Thread the included nuts a few turns onto the thumb screw/bolt.
2. Slide one nut/bolt assembly into the channel on the side of the box.
3. Repeat on the other side with the other nut/bolt assembly.
4. Position the box in the bracket so that the nuts/bolts drop into each side of the bracket.
5. Position switch box and tighten both thumb screw/bolt.

Specifications:

Input Voltage: 12V DC

Input Current: 4 Switch Model - 15A MAX Per Switch/20A MAX Per Box

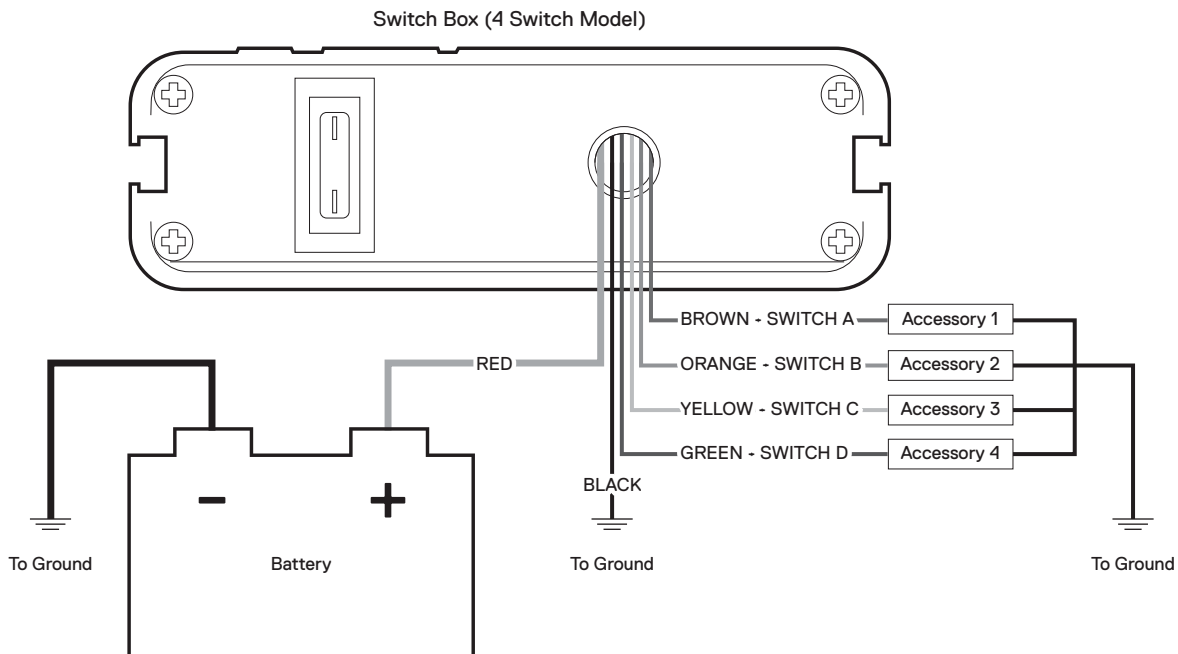
6 Switch Model - 15A MAX Per Switch/40A MAX Per Box

Wiring:

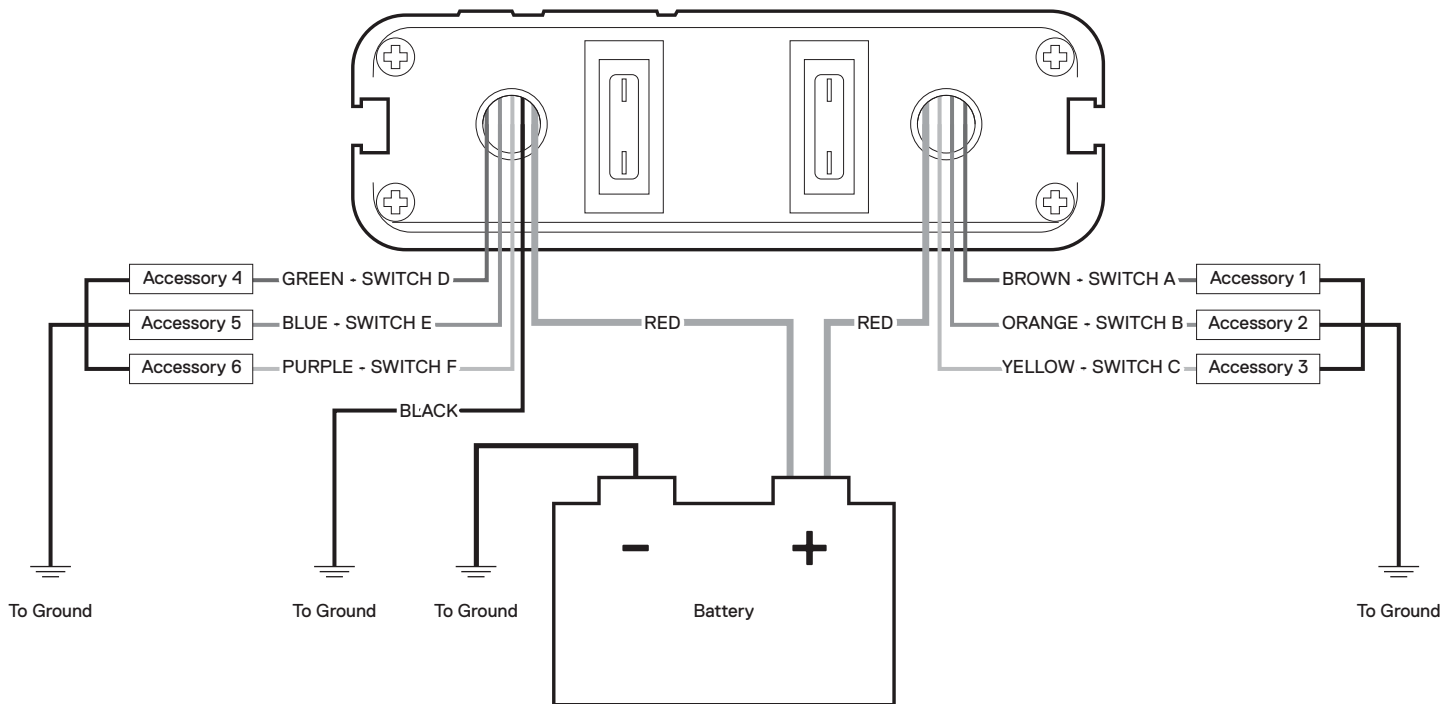
WARNING! All customer supplied wires that connect to the positive terminal of the battery must be sized to supply at least 125% of the maximum operating current. The addition of fuses as close to the positive post of the battery and between the accessories and the switch box are recommended.

- | | |
|---------------|---|
| RED | - Positive battery power in. |
| BLACK | - Chassis ground for the box only. (for LED indicator lights on switches) |
| BROWN | - Power from switch "A" out to accessory. |
| ORANGE | - Power from switch "B" out to accessory. |
| YELLOW | - Power from switch "C" out to accessory. |
| GREEN | - Power from switch "D" out to accessory. |
| BLUE | - Power from switch "E" out to accessory. (6 switch model only) |
| PURPLE | - Power from switch "F" out to accessory. (6 switch model only) |

Wiring Diagram:



Switch Box (6 Switch Model)

**Example:****#1: Low Amperage Wiring**

When the total amp draw from all your accessories is less than 20 amps and no accessory draws more than 15 amps.

Switch	Accessory	Amp Draw	Number of Units	Total Amp Draw
A	36" Light Bar	7	1	7
B	4" Fog Light	1	2	2
C	6.5" Flood Light	2	4	8
D	Rock Light	0.4	6	2.4
Total				19.4

1. Attach the red wire(s) directly to positive battery power. The easiest way to do this is by wiring directly to the battery or the positive post on the fuse box.
2. Attach the black wire(s) to ground. The best way to do this is by wiring to an existing ground bolt or stud. If this is not possible, the wire can be attached to a clean, paint-free metal surface that has continuity to the ground terminal on the battery.
 - a. To test continuity: With your DMM set to read ohms Ω , probe the negative battery terminal and the potential grounding location. If the DMM reads less than .5 ohms you have found a good grounding location.
3. Run each colored wire to the power wires of the accessories you wish to control.
 - a. In the above example, the brown wire would run to the power wire of the 36" light bar, the orange wire would run to the fog lights, the yellow wire would run to the floodlights, and the green wire would run to the rock lights.
 - b. It is also worth mentioning that the switch box does contain a 20 amp fuse, however, it would also be a good idea to install a fuse in the wire between each switch and accessory if they are not already equipped with one.
4. Attach each accessories ground wire to a suitable ground. See step 2 for information regarding the selection of an appropriate ground location.
5. Test your new switch box and enjoy!

#2: High Amperage Wiring

When the total draw from all your accessories is 20 or more amps or one of the accessories pulls 15 or more amps.

Switch	Accessory	Amp Draw	Number of Units	Total Amp Draw
A	36" Light Bar	7	1	7
B	6.5" Spot Light	2	2	4
C	12" Flood Light	5	1	5
D	6.5" Flood Light	2	2	4
Total				20

Here, the total amperage is right at the rated capacity of the switch box. In this situation, it is likely that the 20 amp fuse would fail on a regular basis.

OR

Switch	Accessory	Amp Draw	Number of Units	Total Amp Draw
A	44" Light Bar	15	1	15
B	6.5" Spot Light	2	2	4
C	6.5" Flood Light	2	2	4
D	6.5" Flood Light	2	2	4
Total				27

Here the 44" light bar is operating at 15 amps, right at the maximum rating of the switches in the box. This is a potentially dangerous situation that will cause a premature failure of the switch.

In both cases a **relay is needed** to reduce the amperage load on the box and switches.

A Brief Discussion of Relays:

1. What is a relay?

- A relay is an electromechanical device that allows a large electrical load to be controlled by a separate, much smaller load.
- A relay is composed of two separate electrical circuits. The first circuit is composed of a terminal that allows power in from a switch, an electromagnetic coil, and a terminal to ground the coil. The second circuit is composed of a terminal connected to battery power, a movable armature, a set of contacts, and a terminal wired to your accessory.

2. How a relay works.

- When low current, controlled by a switch, flows through the coil side of the relay, the coil is magnetized, the armature is pulled down, the contacts make a connection, and high current is allowed to flow from the battery to the accessory.
- Once the switch is turned off, current stops flowing through the coil, a spring returns the armature to its original position, and current is cut off to the accessory.

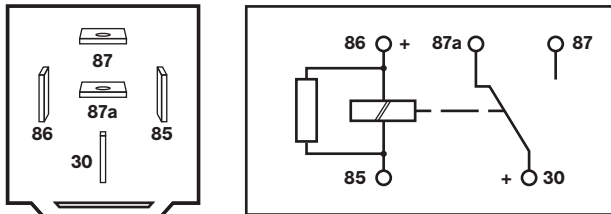
3. Benefits of a relay.

- Reduces load on OEM components.
- Larger loads than normal can be controlled by the switch as the switch never physically interacts with the larger load side of the relay.
- Heavy duty switches are not needed since only a small amount of current is required to energize the relay coil.
- It is easier to use the correct gauge wire.
- It is easier to control multiple accessories with a single switch.

4. How to wire a relay.

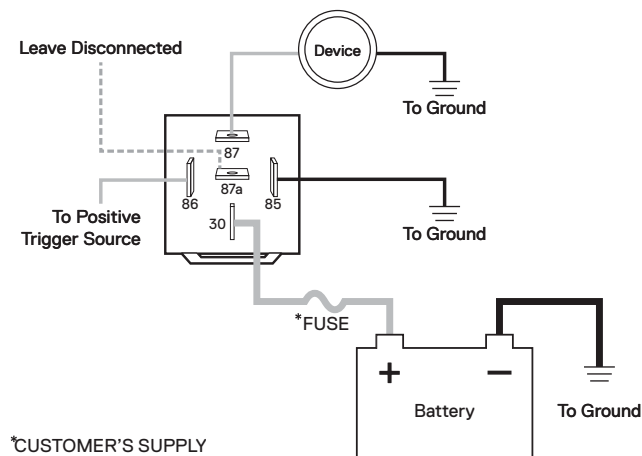
NOTE: Relays come in many different shapes, sizes, and configurations. Always verify pin location, function, and fit of any relay you are planning to use.

- One of the most common types of relays is the 5-pin Bosch style relay. This is an example of the pin layout and function of a Bosch Style relay.



- In this case, pins 85 and 86 are the low current coil circuit and pins 30 and 87 are the high current accessory circuit. In this situation we will be ignoring 87a.
- A typical Wiring setup would look like this:

Normally OFF Relay with a Positive Trigger



- To correctly wire a Bosh style relay first begin with steps one and two of the low amperage wiring procedure.
- Then wire the correctly colored wire from the switch box to pin 86 on the relay. For example, if you want to control a light bar with switch A, you would connect to brown wire to this terminal.
- Connect pin 85 to ground.
- Next, wire battery power to pin 30. It is a good idea to put a fuse in this wire.
- Now run a wire from pin 87 to your accessory.
- Finally, attach your accessories ground wire to any acceptable ground.

Optional Wiring:

If you want your switch box and accessories to function only when the car/ignition is on, a relay will need to be placed between the battery and the switch box. You will be using ACC/ignition power to trigger the relay which will then supply power from the battery to the switch box.

- Find an acceptable location to tap into ACC/ignition power (powered only when the car/ignition is on).
 - The best place to borrow power from is an unused ACC fuse terminal in the fuse box.
 - If this is not available, an ACC fuse like the horn, cigarette lighter, or radio fuse can be piggybacked with a fuse tap.
- Using a Bosch style relay, wire:
 - Pin 86 to ACC power.
 - Pin 85 to ground.
 - Pin 87 directly to the red wire on the switch box.
 - Pin 30 to positive post of battery.
 - If using part ACCEPSSWH0082 (model with 6 switches):
 - Two relays will be needed.
 - Each relay will be connected to the same ACC power source, ground, and positive post of battery.
 - But each relay (Pin 87) will need to be wired to a different red wire on the switch box.