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OLS Bosch Style SPDT 12V DC 30/40 Amp Relay

SKU: PSZACCEPS131R, 177R, 178R, 180R

Note: Installer of this product must have a good understanding of automotive electronics, systems, and procedures.

IMPORTANT: READ CAREFULLY BEFORE ASSEMBLY AND USE.

- Installer of this product must have a good understanding of automotive electronics, systems, and procedures.
- In the case that holes must be drilled in order to properly mount the product, the installer must examine both sides of the mounting surface before drilling begins. It is the installer's responsibility to be sure that no vehicle components or vital parts could be damaged by the drilling process. De-burr any holes in order to remove metal shards and remnants. Use grommets in all wire passage holes.
- Deployment area of the vehicle air bags must be cleared. Do not install this product or route any electrical wires near the air bags deployment areas. Refer to your vehicle owner's manual for the air bag deployment area. Products or wires mounted in the air bag deployment area will damage, reduce the effectiveness of the air bag, or even act as a projectile which may cause serious injury or death. The user/installer of this product assumes full responsibility in determining the proper mounting location while prioritizing the safety of all passengers in the vehicle.

What is a relay?
A relay is an electrically operated switch which is capable of handling heavy loads and can be turned on/off with a low-power input of current and voltage.

How does a relay work?
When an electric current is pass through the coil (solenoid) present in the relay, the coil becomes magnetized and attracts or repels an armature, which the moving armature either connects or separates two switching contacts in the relay, allowing or terminating the flow of the main load of power. The attraction of the switching contacts is known as Normally Open (NO), and the separation of the switching contacts is known as Normally Closed (NC). The maximum amperage rating for both the NO and NC switching contacts are often listed on the relay itself.

In most circumstances, a relay works by the user turning on a basic on/off switch, which provides a very low amount of current to the relay, magnetizing its solenoid thus moving the armature to connect or separate the contact in the relay (this is when an audible click can be observed), and the flow of the heavier load of power is either activated or terminated.

Why use a relay?
There are couple of reasons why a relay should be used.

1. Energy Efficiency
The longer the distance a load of current has to travel, the more likely for the voltage to take a dip or for power to be lost in the form of heat which are generated due to excessive resistance as the current passes through the wires. Both voltage drops and power lost as the form of heat hinders the performance of the equipment being powered on and drains the battery more than necessary. A relay is usually mounted in the immediate vicinity of the vehicle battery and lies in between the power source and the equipment; thus allowing the heavy load drawn by the equipment to travel the shortest possible distance. On the other hand, using a simple switch to supply the equipment with power directly without the use of a relay demands the current to travel a longer distance from the battery, into the cabin where the switch is, then out of the cabin to the equipment being powered up. Not using a relay in a wiring schematic where heavy loads will incur often compromises the performance of the equipment while unnecessarily straining the power source.

2. Prolong Life of Equipment
Most relays are made so it operates in an extremely quick fashion. The quick on/off action with a relay is to prevent excessive or prolong arcing between the contacts. Arcing takes place when the position of a switch is turned on or off while it is under a load. The arc energy generated, often times accompanied by a visible spark, causes degradation of the contacts leading it sometimes to be welded shut or fail to connect due to excessive buildup as a result of the destructive arc energy. The use of a relay ensures that the damaged resulted from arcing is kept to a minimum, prolonging the life span of the equipment, switch, and all components used in the particular schematic.

3. Ease of Setup
Once the function of a relay is understood, it can be incorporated into various types of setup. Multiple equipment can be powered on or off together with a single switch inside the cabin of a vehicle. A smaller gauged wire to be connected between a switch in the cabin and relays in the engine bay can be routed and fed through the firewall much more easily than heavy gauge wires connected directly from the equipment to the switch. A relay with double throw can be incorporated into various setups eliminating excessive number of switches that may otherwise be necessary.

4. Cost effective
Both switches and wires rated to handle a higher amperage cost more than its counterpart with lower ratings. Utilizing a relay in a schematic minimizes the length of the heavier gauge wire needed, and omits the need of a heavier duty switch, thus lowering the over cost of the setup.

Pins on the OLS PSZACCEPS131R SPDT 12V DC 30/40 AMP Relay
- **85**: To be connected to the ground chassis. Serves as the common ground connection to activate and magnetize the internal coil.
- **86**: To be connected to a positive input 12V DC input. This is where a switch connected to a 12V DC input will be connected to on the relay. When power is sent to the relay through pin 86, the circuit is completed with pin 85 connected to a common ground, which activates and magnetizes the internal coil.
- **87a**: Normally closed contact, also known as NC. In the case which the internal coil is not activated or not magnetized, pin 87a is closed and connected to pin 30, which pin 30 can be connected to either a 12V DC positive input or to the ground chassis.
- **87**: Normally open contact, also known as NO. The connection between pin 87 and pin 30 is only made when the internal coil is activated or magnetized, which pin 30 can be connected to either a 12V DC positive input or to the ground chassis.
- **30**: Common contact which can be connected to a 12V DC power input or to the ground chassis depending on the desired application. Pin 30 is always connected with pin 87a until the coil is magnetized, which pin 30 then becomes connected with pin 87.

Specifications:
Contact Form: SPDT Single Pole Double Throw
Coil Voltage: 12V DC
Coil Current: 160 mA
Switching Voltage: 14V DC Max
Contact Current Rating: NO – 40A @ 14V DC, NC: 30A @ 14V DC; PSZACCEPS180R: NO – 80A @ 14V DC, NC: 60A