



AL-2000-E

**BACK COVER
PRINTER'S NOTE:
production back cover
is to be printed with gray
scale front cover; this is a
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INSTALLATION MANUAL

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#	FEATURE	DEFAULT SETTING
1	<input type="checkbox"/> Selectable Code Override	1 & 0 (see page 26)
2	<input type="checkbox"/> Last Door Arming	OFF (UNLOCK)
3	<input type="checkbox"/> Automatic Rearming	OFF (UNLOCK)
4	<input type="checkbox"/> Starter Interrupt Circuit	ON (LOCK)
5	<input type="checkbox"/> Automatic Starter Interrupt	OFF (UNLOCK)
6	<input type="checkbox"/> Ignition Activated Override	OFF (UNLOCK)
7	<input type="checkbox"/> Doors Lock With Last Door Arming	OFF (UNLOCK)
8	<input type="checkbox"/> Doors Lock With Automatic Rearming	OFF (UNLOCK)
9	<input type="checkbox"/> Doors Lock With Ignition	ON (LOCK)
10	<input type="checkbox"/> Ignition OFF Unlock #1	ON (LOCK)
11	<input type="checkbox"/> Ignition OFF Unlock #2	ON (LOCK)
12	<input type="checkbox"/> Open Door Bypass To Previous Three Features	ON (LOCK)
13	<input type="checkbox"/> Confirmation Chirps	ON (LOCK)
14	<input type="checkbox"/> Confirmation Chirps In Valet Mode	OFF (UNLOCK)
15	<input type="checkbox"/> Activated Alarm Cycle	60 Seconds (LOCK)
16	<input type="checkbox"/> Lights On Upon Disarm	ON (LOCK)
17	<input type="checkbox"/> Disarm Alarm Upon Trunk Release	ON (LOCK)
18	<input type="checkbox"/> Doorlock Pulse Time	.8 second (LOCK)
19	<input type="checkbox"/> Double Unlock Pulse	OFF (UNLOCK)
20	<input type="checkbox"/> Arming Delay	3 Seconds (LOCK)
21	<input type="checkbox"/> Pulsed Horn / Steady Siren Output	Steady Siren (UNLOCK)
22	<input type="checkbox"/> Horn Confirmation Chirp Volume	Medium Loud (II)
23	<input type="checkbox"/> Total Closure Lock Output	OFF (UNLOCK)
24	<input type="checkbox"/> Alarm Functions Bypass	OFF (UNLOCK)
25	<input type="checkbox"/> Ignition Activated Anti-Carjacking Protection	OFF (UNLOCK)
26	<input type="checkbox"/> Door Activated Anti-Carjacking Protection	OFF (UNLOCK)
27	<input type="checkbox"/> Remote Activated Anti-Carjacking Protection	OFF (UNLOCK)
28	<input type="checkbox"/> Open Door Warning Upon Arming	OFF (UNLOCK)
29	<input type="checkbox"/> III Button Operates "Panic" or 3rd Channel Output	Panic (LOCK)
30	<input type="checkbox"/> Remote Start Run Time 10 or 20 Minutes	10 Minutes (UNLOCK)
31	<input type="checkbox"/> Steady / Flashing Lights During Remote Start	Steady (LOCK)
32	<input type="checkbox"/> Gasoline or Diesel Engine	Gasoline (LOCK)
33	<input type="checkbox"/> Extended Starter Cranking Time	Minimum (LOCK)
34	<input type="checkbox"/> "Tach Wire" or "Tachless" Starter Operation	"Tachless" (LOCK)
35	<input type="checkbox"/> Manual Transmission Remote Starting	OFF (UNLOCK)
36	<input type="checkbox"/> Turbo Timer	OFF (UNLOCK)

Programming Features

The Programmable Features are explained in detail in the Operation Manual. This checklist simplifies the features programming process. Before attempting feature programming, please refer to the Operation Manual for the features' description and programming details.

To best use this checklist, mark each applicable box with "\ " next to the feature to be changed before entering features Programming Mode. As each feature is programmed, change its mark to "X".

To program features, follow these steps:

Step 1 - Turn the ignition "off", and press the Valet Switch 5 times. (the system will respond a siren chirp, then briefly sounding the siren and the Status Light begins flashing Red)

Step 2 - Press the Valet Switch the same number of times as the desired feature number. (the system will acknowledge the Valet Switch entry by repeating the same number of siren chirps and the Status Light flashes in Red an equal amount)

Step 3 - Press the transmitter's "Arm/Lock" button to turn the feature "on" or press the "Disarm/Unlock" button to turn the feature "off". (turning the feature "on" is indicated by one siren chirp and the Status Light being on; turning the feature "off" is indicated by two siren chirps and the Status Light being off)

Repeat - Steps 2 and 3 for each remaining feature to be changed

If no programming activity occurs within a 10 second period, the Features Programming Mode will expire. The system exiting features Programming Mode is indicated by the siren briefly sounding.

Instructions for programming transmitters and full instructions for programming features may be found in the Operation Manual.

Instructions for programming transmitters and features may be found in the Operation Manual.

If this unit is installed on a manual transmission vehicles, the installation instructions and operating procedure MUST be followed as described.

The remote engine starting feature should not be used when the vehicle is parked in an enclosed structure or garage!

The included hood pin switch MUST be installed.

This Installation Manual explains the installation and connection of this system's wiring connections utilizing the included Universal Harness. Certain Omega Quick Interconnect Harnesses, which plug directly into the vehicle's existing wiring harnesses, are available.

Installation Considerations

Before Starting The Installation: This entire booklet should be read before starting the installation. An understanding of which control module wires are to be used and their functions is essential. Installations will vary from car to car , as some control module wire connections are required, while others are optional. Before starting the installation, it should be determined which control module wires will be used. Most installers will list these wires, then "map out" the installation by locating and noting the target wires in the vehicle. This will also deter-

mine the best location for the control module, which is mounted upon completion of the installation and testing of the system.

For remote starting operation, the Excalibur AL-2000-E duplicates, with on-board microprocessor control circuitry and relays, the same actions that occur within the ignition switch as when the key is used to start the engine. Because of this, most of the main wiring harness connections will be made at the ignition switch harness. This will be located around the steering column area. **Caution! Avoid the Airbag circuit!** Especially avoid any harness or wires encased in Yellow or Red tubing or sleeves. Do not use a standard test light, as it can deploy an airbag or damage on-board computers and sensors if the wrong circuits are probed. A Digital Multimeter (DMM) should be used. The ignition switch wires typically are high amperage circuits, which means that high reliability connections must be made! Proper soldering of all connections is recommended.

Mounting The Control Module: The Control Module contains the necessary electronics required for the system's operation. Always mount this module in the vehicle's interior compartment, in a secure location that is not easily accessible. Ensure that moisture, vibration and temperature extremes are minimized. Acceptable locations include mounting behind the dash, behind the glovebox or other interior panels.

Mounting The System Transceiver: The AL-2000-E 2-way system has a remotely-mounted transceiver section for superior range. The transceiver unit may be mounted directly to an interior glass by utilizing the attached adhesive pad (clean and prepare the glass before adhering). The best operating range performance is obtained by mounting the transceiver placed as high as possible in the vehicle, with the smaller rod-like end pointed upwards. Avoid mounting this unit close to metal parts or structure of the vehicle.

The **Status Light** and **Valet Switch** are contained within the transceiver unit, and therefore require no special installation considerations. This places the 2-color Status Light in a good position to be seen, both inside and outside of the vehicle, and the Valet Switch at a convenient location to the user. The user may customize the switch presses required

How to change the White Wire from “Accessory” to “Ignition” operation:

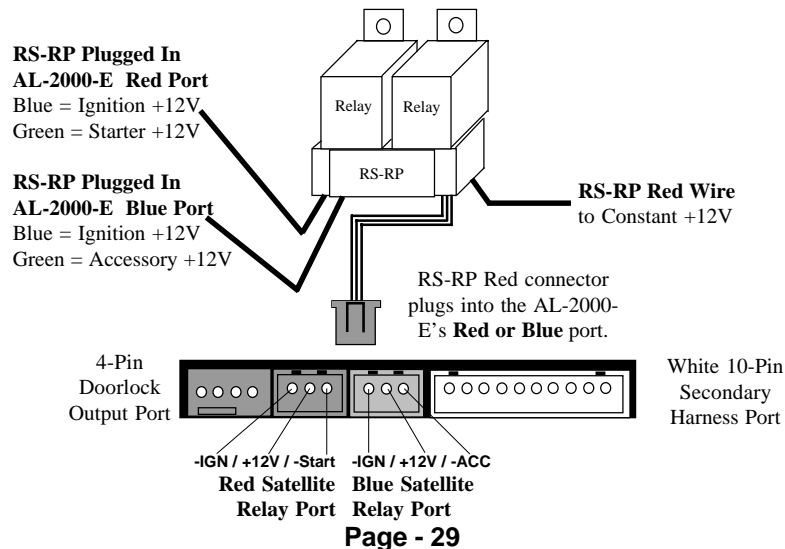
The White Accessory wire's operation may be changed to instead have “Ignition” operation (accessory drops out during “start”, ignition does not). To change this operation:

- Step 1** - Remove 4 screws and open the control module case.
- Step 2** - Locate the jumper on the rear edge (without plugs) of the PCB.
- Step 3** - Remove the jumper from the position marked “ACC” and install it on the other position marked “IGN”.
- Step 4** - Reassemble the control module case.

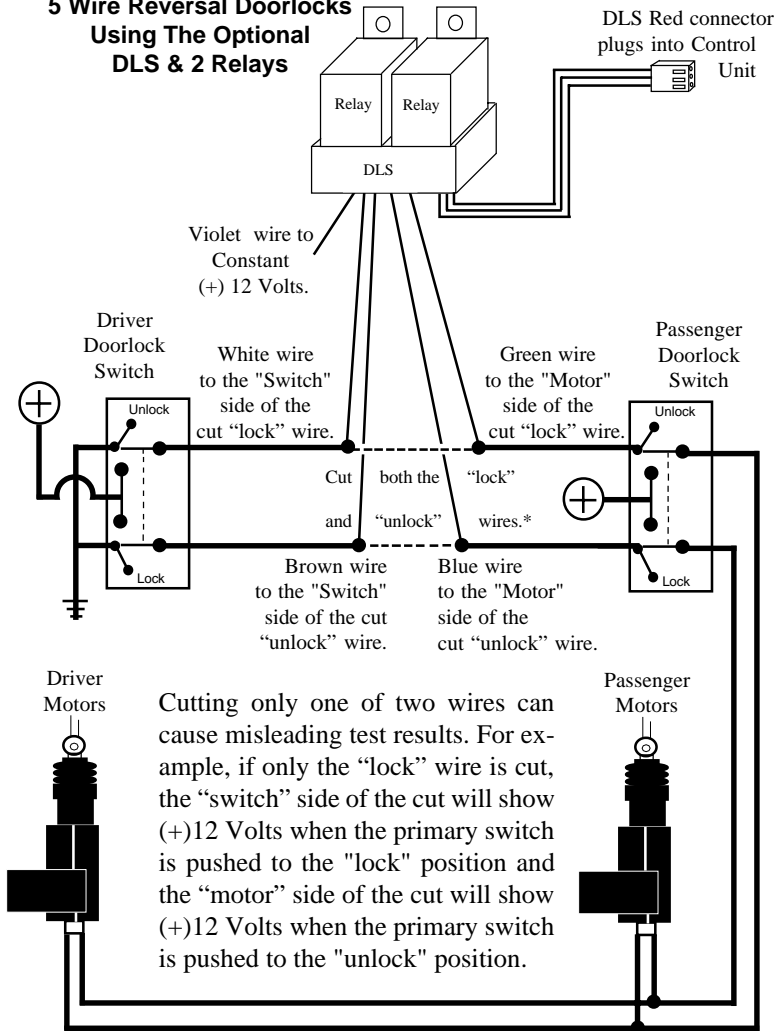
If more Ignition, Accessory, or Start circuits are needed, utilize the Satellite Relay Ports' outputs to drive optional relays, described below.

Dual Remote Start Satellite Relay Ports: These ports are for cases when a particular vehicle requires that more than one Ignition #1, Accessory, or Starter circuit be powered up. Available as an optional service part is a socket and two relays (part # RS-RP) that plugs into either or both of these ports (if using two RS-RP). Omega plug-in OEM antitheft bypasses also utilize the Red port.

The pin-outs of both Red and Blue ports are shown with the RS-RP wiring. These outputs are Negative 250mA, and a third pin in both ports is +12 Volts for the optional relay's coils.



5 Wire Reversal Doorlocks Using The Optional DLS & 2 Relays



Cutting only one of two wires can cause misleading test results. For example, if only the "lock" wire is cut, the "switch" side of the cut will show (+)12 Volts when the primary switch is pushed to the "lock" position and the "motor" side of the cut will show (+)12 Volts when the primary switch is pushed to the "unlock" position.

to perform an Emergency Override with Programmable Feature #1 (the factory setting is the most convenient "1 press").

Optional Valet Switch Mounting: Should it be desired, an optional extra Valet Switch which may substituted for the one built into the transceiver unit, and mounted in another location.

Mounting The Electronic Siren: The electronic "2-n-1 Psycho Siren" must be mounted external to the vehicle, but not vulnerable. The engine compartment typically offers the best mounting location opportunities. See page 14 for specific mounting details.

Dual Auxiliary Sensor Ports: This allows the easy plug-in addition of a further optional sensor. Each of the ports is dual-zoned: the first zone will respond by chirping the siren only; and the second zone will respond by triggering the system. These ports supply constant 12 volt power, grounded output when the system is armed, a negative instant trigger, and a negative prewarn trigger. Both sensor ports have identical operation. The Dual Zone Shock Sensor included with the Excalibur AL-2000-E is packaged with its own instruction sheet.

Dual Remote Start Satellite Relay Ports: In some cases, a particular vehicle may require more than one Ignition #1 circuit or more than one Starter circuit to be powered up. The control module has a Red 3-pin port providing these two circuits as Negative outputs, which allows easy addition of further external relays.

Also present is a Blue 3-pin port, which supplies Negative outputs for a further Ignition output, and an Accessory output. The third pin in both ports is +12 Volts for the optional relays' coils.

See page 29 for specific information on using these ports.

Main Power Connections - 6-Pin Connector

Black Wire - (Ground): The Black wire provides Negative ground for the system; proper connection of this wire is important.

CONNECTION: Using the correctly sized crimp-on ring terminal, connect the Black wire to the metal frame of the vehicle, preferably using an existing machine-threaded fastener. Make sure that the ring terminal attached to the Black wire has contact with bright, clean metal. If necessary, scrape any paint, rust or grease away from the connection point until the metal is bright and clean. If the control module has an insufficient ground connection, the security system can find partial ground through the wires that are connected to other circuits, and function, but not correctly. As the system can partially operate, a bad ground wire connection would not likely be suspected, and in many cases a poor ground is difficult to diagnose.

Red & Red/White Wires - (Constant Power Input):

The Red and Red/White wires supply constant Positive 12 Volts for the system's operation. These wires must be supplied sufficient amperage.

CONNECTION: Connect these wires to Positive battery voltage; both wires must be connected. One source is the battery's Positive terminal, and another potential source is the power supply wires at the ignition switch.

If the battery is selected as the power source, and the Red and Red/White wires must extended, the added wire must be at least the same gauge, or preferably heavier, than the Red and Red/White wires. Carefully route the wires through the firewall, using an added or existing grommet. Avoid any hot or moving parts.

Some vehicles have a single Constant 12 Volt circuit supplying the ignition switch, while others have multiple supply circuits. A schematic of the car's electrical system will show which of these is the case. The Red and Red/White wires may both be connected to a single supply wire, or distributed between multiple supply circuits.

In either case, the included fuse holders and 30 amp fuses must be used. The fuse holders should always be close to the power source connection, not the control module. Remove the 30 amp fuses before making the holders' connections, and only reinsert them after all of the other wiring connections have been made. **Caution! The use of the 30 amp fuses and**

suspect a 5 Wire Reversal system. One will be constant 12 volt positive, regardless of the switch's position. Of the two remaining wires, one will show Positive when the switch is pushed to "lock", and the other will show Positive when the switch is pushed to "unlock".

CONNECTION: Two options are available for connecting to 3 Wire Positive Pulse doorlocking systems- the DLP-P3 polarity reversal interface, and the DLS and two relays. If driver's door unlock priority is desired, use the optional DLS-3. The diagrams on the previous page show how to connect either of the DLP-P3 or DLS and 2 relay optional interfaces.

5 Wire Reversal Rest At Ground Systems differ from the Negative and Positive Pulse systems in the fact that there are no relays or doorlock control unit. In this type of system, the switches themselves supply the positive voltage directly to the doorlock actuators, and, more importantly, provide the return ground path. The correct doorlock interface for this type of system is the optional DLS or DLS-3 and 2 or 3 relays. The important thing to remember is the wires in this system *rest at ground*, which means that the wires must be "opened", or cut, to make the connections.

Examine the wires on the back of the switch. Normally five wires will be found. Of these wires, one will be constant 12 volts positive, regardless of the switch's position. Two wires will be grounded regardless of the switch's position. Of the two remaining wires, one will show 12 volts positive when the switch is pushed to "lock", and the other will show 12 volts positive when the switch is pushed to "unlock".

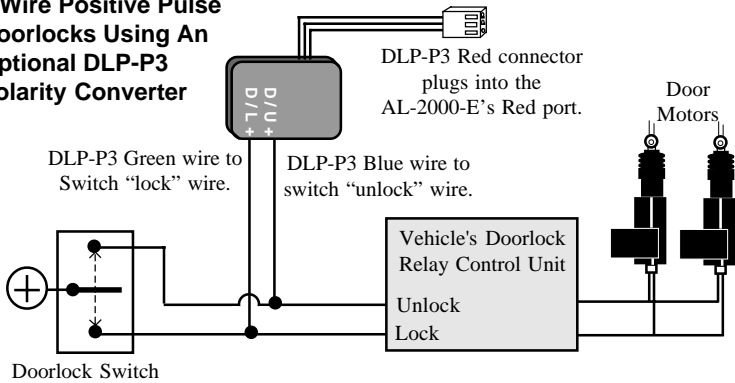
These two wires are both routed to the doorlock actuators and are connected to either end of the actuator's motor winding. When the switch is pushed to one position, one of these two wires will have 12 volts. This voltage flows through the wire to the actuator's motor winding, and since the other wire is still resting at ground an electrical circuit is completed. When the switch is pushed to the opposite position the electrical flow is reversed. When the correct wires are found, they must be cut. Notice in the diagram (following page) that the driver's switch is the primary switch and referred to as the "switch" wires. The wires that go to the secondary switch are referred to as the "motor" wires. Even though the cut is made between the switches, the two sides are still correctly called the "switch" and the "motor" sides, with consideration of "Primary" and "Secondary" switch; please see the diagram on the following page.

with built-in relays; make connections between the switches and the relays.

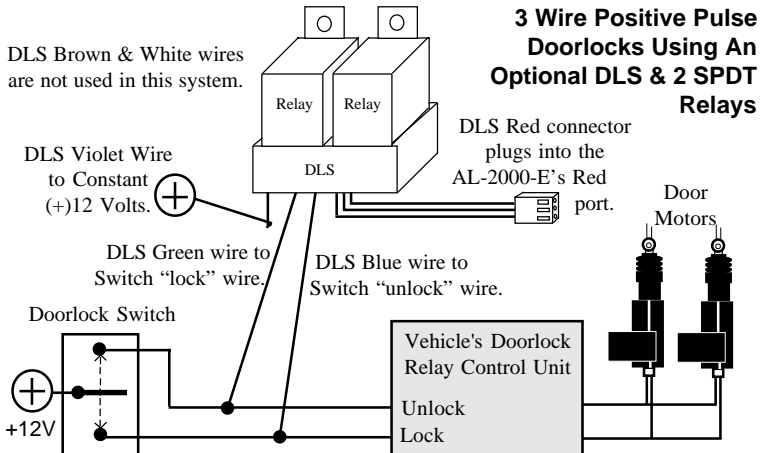
CONNECTION: The included harness (DLP-N4) can allow direct connection between the security system and a 3-Wire Negative Pulse system. If more than the 500mA Ground output that the security module can provide is required, use the optional model DLS and two relays. When driver's door unlock priority is desired, use the optional DLS-3.

3 Wire Positive Pulse Systems are very similar to the Three Wire Negative Pulse system except the vehicle's doorlock switches use 12 volt positive pulses to operate the vehicle's doorlock relays or control unit. Examine the three wires on the back of the switch; **if more than three,**

3 Wire Positive Pulse Doorlocks Using An Optional DLP-P3 Polarity Converter



3 Wire Positive Pulse Doorlocks Using An Optional DLS & 2 SPDT Relays

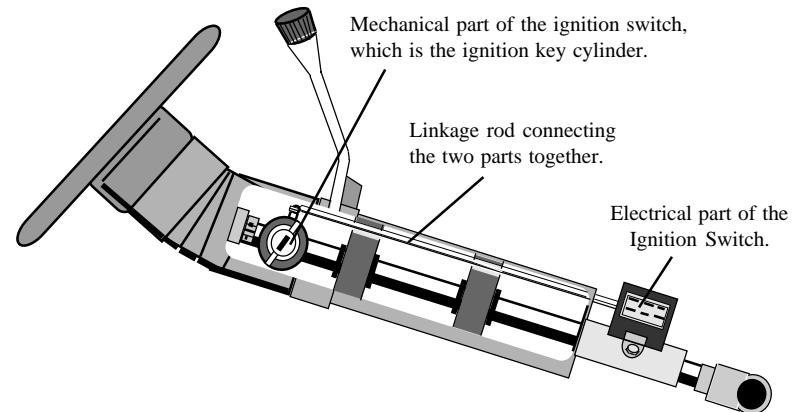


the fuse holders are required! Failure to properly install the fuse holder and the 30 amp fuse will void all warranties.

Yellow Wire - (Ignition #1 Input/Output): The Yellow wire is an ignition "on" input to the security system. This connection is critical to the proper operation of many of the security system's features. Also note that this circuit is both an input and output. When remote starting, this output supplies 12 Volts Positive to the vehicle's ignition circuit. This output stays active while the starter is engaged, and continues to supply power to the ignition circuit for the duration of the remote start engine run period. If the system detects a violated safety circuit, receives a transmitter command to stop running, or if the programmed run time expires, this output will stop supplying power, which stops the running engine.

CONNECTION: This wire must be connected to the vehicle's Ignition #1 (also known as Primary Ignition) wire. The proper vehicle wire will measure Positive 12 Volts when the ignition key is in the "Run" and "Start" positions and no voltage in the "Off" and "Accessory" positions. This wire is found in the ignition switch wiring harness. If two or more Primary Ignition wires are present, an optional dual relay socket and one or two relays may be used on the additional wire(s). If more than three Primary Ignition wires are present, you will also need an optional additional relay for each wire (see page 29 for use of the Satellite Relay Ports).

Cutaway View Of A Steering Column-Mounted Ignition Switch



White Wire - (Accessory Output): The White Accessory wire's operation differs from the Yellow Ignition #1 wire's operation. When remote starting, this output supplies 12 Volts Positive to the vehicle's chosen circuit as soon as remote starting is activated, but stops while the starter is engaged. Once the engine starts and the starter disengages, this wire returns to having 12 Volts Positive output. From this point in the remote starting cycle the White wire continues to supply power to the chosen vehicle circuit for the duration of the remote start engine run period.

CONNECTION: Connect this wire to the vehicle's Accessory wire. This circuit in the vehicle can vary in its function. Typically, its primary function is to supply power to the Heat, Ventilation and Air Conditioning (HVAC) system. The connection point for this wire is also found in the ignition switch wiring harness. In some cases the correct vehicle wire will show Positive 12 Volts in the "Run" and "Accessory" ignition key positions but in other vehicles it will show the voltage only in the "Run" ignition key position. This output should not be used if the vehicle's wire also shows voltage when the ignition key is in the "Start" position.

NOTE: If needed, the White Accessory wire may be programmed to operate as an ignition output (see above text for difference). See page 29 for instructions on how to convert the White wire to Ignition.

Green Wire - (Starter Output): When remote starting, this output supplies 12 Volts Positive to the vehicle's starter circuit. The Green wire is best connected when installing the starter interrupt circuit. Its connection point must be on the starter side of the interrupt, not the Ignition Switch side. This is easily accomplished when installing the starter interrupt by combining the Green Starter Output wire with the starter interrupt's White wire and then connecting both of these wires to the starter side of the cut vehicle wire. This is explained in further detail on the next page.

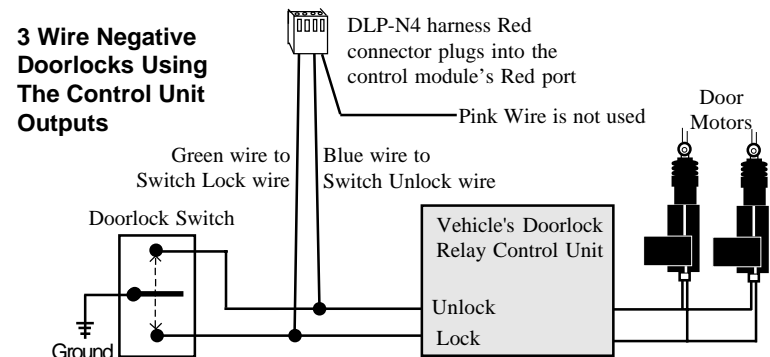
CONNECTION: Connect this Green wire to the vehicle's Starter wire. This wire will show Positive 12 Volts when the ignition key is in the "Start" position only. This wire is found in the ignition switch wiring harness, and it is important to make this connection on the ignition switch side of, and not on the starter side of, the neutral safety switch. Some vehicles have a second Starter wire known as a "Cold Start" wire. When this second wire is present, if the two Starter wires are the same circuit you may connect both of these wires to the Green wire. If the two Starter wires are separate circuits, an additional relay is recommended.

Plug-In Power Doorlock Interface Port: The AL-2000-E features a plug-in port for an optional doorlock interface which can operate the vehicle's existing power doorlocks. The 4 pin port on the system's control module produces a negative pulse output for locking the doors (included DLP-N4 doorlock harness Green wire), a constant 12 volt pin *for the optional relay coils only* (open cavity on DLP-N4), a first negative pulse output for driver door unlock (DLP-N4 Blue wire), and a second negative pulse output for unlocking all other doors (DLP-N4 Pink wire).

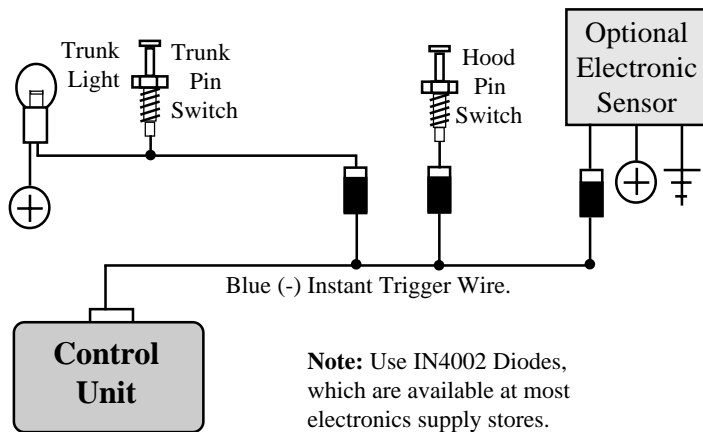
All connections should be with proper terminals, connectors, or by soldering and insulating with quality vinyl electrical tape or heat shrink tubing. All wiring should be carefully routed to avoid the possibility of chaffing or otherwise being damaged.

The vast majority of power doorlocks are found as three system types: 3 wire negative pulse, 3 wire positive pulse and 5 wire reversal, rest at ground. Other power doorlock systems which may be encountered are the vacuum pump types found in older Mercedes vehicles and the single wire, dual-voltage which has appeared in some late model vehicles. The best way to identify a doorlock system is to examine the doorlock switch's wiring.

3 Wire Negative Pulse Systems are typically indicated by the presence of three wires at the switch. Of these, one will show constant ground, regardless of whether the switch is being operated or not (at rest). Of the remaining two wires, one will show ground when the switch is pushed to the "lock" position, and the other wire will show ground when the switch is pushed to the "unlock" position. With the switch at rest, these two wires will read voltage, usually 12 volt positive but in some cases less. The wires from the switches operate doorlock relays or a doorlock control unit



Diode-Isolating Multiple Negative Instant Triggers



Pink Wire - Negative 3rd Channel or Option Output:

The 3rd Channel Pink wire is an optional output similar to the 2nd Channel Gray trunk release wire; however, this output is not capable of disarming the system when it is used and therefore has no audible or visual confirmation.

CONNECTION: For most applications an optional relay will be needed; connect the Pink wire to relay pin #85, and connect Constant Positive 12 Volts to relay pin #86. Connect pin #30 to power, or ground, as needed. Pin #87 is the output, and connected to the target wire. Please refer to the relay wiring instructions on the back cover.

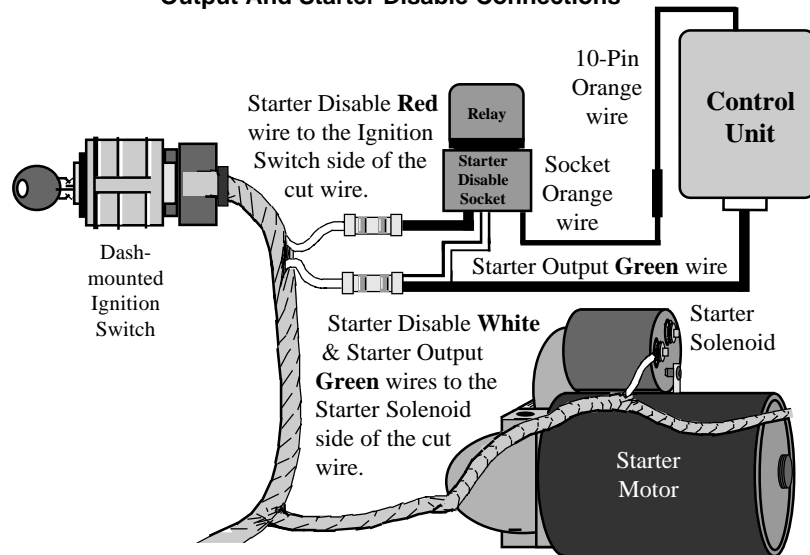
Power Doorlock Interface Port - 4-Pin Connector

The AL-2000-E "out of the box" can be directly connected to 3 Wire Negative doorlocking systems. An optional interface, such as the DLS and 2 relays shown here, will be needed for other types of power doorlocking systems. Omega also offers other specialty doorlocking interfaces; all include their own detailed instructions.

Secondary Connections - 10-Pin Connector

Orange Wire - (Negative Output While Armed); Red & White Wires - (Starter Interrupt): The Orange wire is a starter interrupt output, which is active whenever the security system is in an armed state.

Dash-Mounted Ignition Switch Showing Starter Output And Starter Disable Connections



CONNECTION: Connect the 10-pin connector's Orange wire to the Orange wire of the starter interrupt relay socket. To interrupt the vehicle's starter circuit, the starter wire must be located and cut. Cutting the vehicle's starter wire will result in two sides- the "ignition switch" side and the "starter solenoid" side. It is recommended that this connection be done as close to the ignition switch as possible. Use a Digital Multimeter (DMM), not a test light, to find the correct wire.

CAUTION! Avoid the airbag circuit! Improper use of a test light can cause deployment of the airbag, which may result in bodily injury! Test

lights can also damage on-board computers and sensors.

The starter wire will read Positive 12 Volts only when ignition key is in "start" position (cranking the engine). Cut this wire at a suitable location. Confirm that this is the correct wire by turning the ignition switch to the "start" position; the starter should not engage.

Connect the starter disable socket's Red wire to the ignition switch side. As mentioned in the previous section, connect both the Starter Output Green wire **and** the starter disable socket's White wire to the starter solenoid side. Be sure that good, solid electrical connections are made.

Red/Black Wire - (Positive Brake Input): The Red/Black wire **must** be connected. It is a critical safety feature which disables remote starting operations whenever the brake pedal is pressed.

CONNECTION: Connect the Red/Black wire to the brake switch wire that shows Positive 12 Volts when the brake pedal is pressed. The brake switch is typically located above the brake pedal, and usually mounted to the brake pedal support bracket. Always make this connection in a fashion ensuring its long-term reliability; soldering is highly recommended.

Always perform this test before testing the safety input (next section). Upon completing the installation, always test the Red/Black wire's operation. Attempt to remotely start the vehicle while holding the brake pedal depressed; the system should respond with one long and four short chirps. Release the brake pedal and remotely start the engine. Once running, pressing the brake pedal should stop the engine.

Blue/White Wire - (Safety Input): This circuit performs a critical safety function for remote start operations. It's connection depends on whether the vehicle has an automatic or manual transmission, or use of the Turbo Timer feature.

AUTO TRANSMISSION CONNECTION: The target wire will show Negative Ground whenever the gear selector is in the "Park" or "Neutral" positions, and have voltage or be neutral when it is not. The target wire is typically at a switch at the shifter base or on its linkage, and once located securely connect the Blue/White wire to it.

Some vehicles do not have a grounding-type neutral safety switch, but instead route the starter circuit through a switch that is closed only when the gear selector is in the "Park" or "Neutral" positions; in other gear positions the switch is open, preventing the starter from engaging. In this

Notes, both types: The correct wire will show this change when any of the doors are opened. If the vehicle has delay dome lights, remember to take this into account when testing the wire. If the pin switch is mounted in the metal structure of the vehicle, and the dome light goes out when the switch is removed, suspect a grounding-type dome light system. While the traditional pin switch is mounted in the front door jamb area, also be aware that many vehicles utilize other types of switch devices to operate the interior lights. Some imports have a sliding type of switch and many have the pin or sliding switches in the rear door jamb area. In addition, some vehicles utilize switches in the doors, either connected to the exterior door handles or to the latching mechanism. A vehicle which has the dome lights illuminating when the exterior door handle is lifted is an example of this type of switching system. Also be aware of vehicles which diode-isolate each door. Typically, this is usually encountered with dash displays that indicate individual doors being ajar. The proper wire to connect to in this type of system is the common wire which is routed to the dome light itself.

Blue Wire - Negative Instant Trigger: The Blue wire is a Negative instant trigger used primarily to detect entry into the hood or trunk area of a vehicle. It is also an important safety circuit for remote starting operations; installation of a hood pin switch is required.

CONNECTION: The included pin switches may be installed to provide this trigger circuit; or, if there are existing switches (example: a light in the luggage compartment or a "Trunk Ajar" light in the dash), the Blue wire may be connected directly, provided this is a negative ground switching circuit.

An indication of such a circuit is the wire having no voltage present when the hood or trunk is open, and up to 12 volts when the hood or trunk is closed. This wire cannot be used with mercury switch types of hood or trunk lights. If the vehicle is equipped with a usable trunk or hood circuit, locate the proper wire and splice the Blue wire directly to the vehicle's wire.

When wiring more than one of the vehicle's circuits and/or additional circuits to this wire, diode-isolation may be required to maintain each circuit's proper operation. An example would be wiring a hood pin switch and trunk light switch together. Without isolating, the trunk light will turn illuminate whenever the hood is raised. Also, diode-isolation is necessary when combining electronic sensors together, or when adding a sensor in the same circuit as the pin switches.

The proper vehicle wire to connect the Green/Violet wire to, is the dome light activation wire; this wire is common to all of the door pin switches. The correct wire will change polarity as the doors are opened and closed.

If the vehicle uses a Negative switching dome light system, the activation wire will have no voltage present and show chassis ground when the doors are opened, and up to 12 volts when the doors are closed. The correct wire will show this change when any of the doors are opened. If the vehicle has delay dome lights, remember to take this into account when testing. **The dome light activation wire is the same wire that the Green or Violet wire will be connected to if either is used instead of Smart Trigger.**

Green & Violet Wires -

(Negative & Positive Door Triggers): If not using the Smart Trigger feature, either the Green Negative Door Trigger or the Violet Positive Door Trigger wire must be connected. If the Smart Trigger feature is being utilized, do not connect the Green Negative Door Trigger or the Violet Positive Door Trigger; insulate the ends and secure the wires. Or, remove these wires from the 8-pin harness completely by depressing the lock tabs on each wire's terminal, and then pulling the wire and terminal from the 8-pin connector.

Green Wire - (Negative Door Trigger): The Green wire is an "open door" input to the control module for vehicles having *Negative switching* door pin switches.

CONNECTION: Connect the Green wire to a wire in the vehicle that is common to all the door pin switches; the correct wire in this type of dome light/door jamb pin switch system will have no voltage present and will also show chassis ground when the doors are opened, and up to 12 volts when the doors are closed.

Violet Wire - (Positive Door Trigger): The Violet wire is identical to the Green Door Trigger wire, with the sole exception that it is an open door input to the control module for vehicles having *Positive 12 volt* door pin switches.

CONNECTION: Connect the Violet wire to a wire in the vehicle that is common to all the door pin switches; the correct wire for this type of dome light/door jamb pin switch system will have 12 volts present when the doors are opened, and chassis ground when the doors are closed.

type of vehicle, the Blue/White wire may be connected to the parking brake warning circuit.

MANUAL TRANSMISSION OR TURBO TIMER CONNECTION:

The target wire must have Ground when the parking brake is applied, and either has voltage or is neutral when the parking brake is not applied. This wire is typically at a switch on the base of the parking brake lever, or on the bracket above or about the parking brake foot pedal. Securely splice the White/Blue wire to the vehicle wire having the described characteristics. **Be sure to program as soon possible feature #35 "Manual Transmission Remote Starting" and/or feature #36 "Turbo Timer".**

Regardless of the type of connection, the vehicle must be tested to ensure that it cannot be remotely started in forward or reverse gears.

Before returning the vehicle to the owner, place the vehicle in a parking lot or other open area. Sit in the driver's seat and be ready to apply the brake. **Automatic-** Engage the remote starter in each gear position. If this safety feature is connected properly, remote starting will only be possible if the gear selector is the "Park" or "Neutral" positions; in all other positions the system will instead respond with one long and one short chirp and the starter will not engage. **Manual-** Program feature #35, and then ensure that remote starting will not occur unless the pre-setting, exiting, lock the doors with the transmitter operation is done.

Never fail to perform this test! If a fault is found in the safety circuit operation, it must be corrected before returning the vehicle to the owner.

Black/Yellow Wire - (Tach-Sensing Input): The Black/Yellow wire is an engine speed or tachometer sensing wire. The system can use one of two different methods of monitoring the engine's starting/running status during the remote starting process- the Black/Yellow tach wire, and "tachless", or voltage sensing. The tach wire is typically more accurate in monitoring the engine status, and thus its use is recommended. If tach wire sensing is desired, feature #34 must be programmed for it. Once the system is installed, refer to the Operation Manual, enter Features Programming Mode, and change feature #34 from "tachless" to "tach wire". After connection of the Black/Yellow wire, the unit must "learn" the vehicle's tach signal (below).

CONNECTION: Connect the Black/Yellow wire to the vehicle's tach wire, which is typically found in the engine compartment, although in some cases it may also be located inside the vehicle. **Caution! Route this wire carefully to prevent its possible shorting to ground.** To use a

multimeter to verify the correct tach wire, set it for AC Volts scale. The correct wire will read 1 to 6 volts AC with the engine idling, and the reading will increase when engine speed (RPM) increases.

TACH LEARNING PROCEDURE: As mentioned, the tach wire method is typically more accurate in monitoring the engine status, and a special "learning procedure" programs the tach signal to the AL-2000-E's microprocessor. The tach learning procedure should be performed after the installation has been completed, but before activating the remote start feature. To perform the procedure:

Step 1 Turn the ignition switch "on", then "off".

Step 2 Within 5 seconds, press the brake pedal 5 times.

Step 3 Use the key to start the engine; the siren will chirp to indicate the unit is in tach learning mode.

Step 4 When the Status Light turns Green the tach signal is learned.

Turning the ignition "off" or pressing the brake removes the unit from tach learning mode.

Yellow/Green Wire - (Factory Disarm Output): The Yellow/Green wire produces a Negative pulse output whenever the system is disarmed or remotely starts the engine. This output may be used to disarm a factory-installed alarm, if the vehicle is so equipped.

CONNECTION: Connect the Yellow/Green wire to the vehicle's factory disarm wire. This wire will show Negative polarity when a key is held in the "unlock" position in the door key cylinder. This wire can usually be located in either kick panel, in the wiring harness from the door, as it is routed between the door key cylinder and the factory alarm.

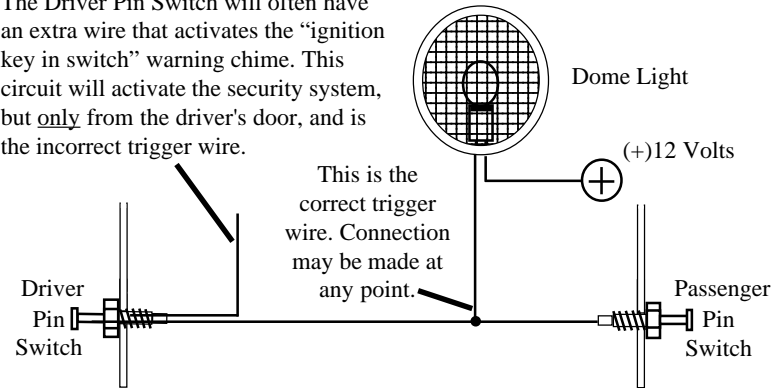
Yellow/Red Wire - (Factory Arm Output): The Yellow/Red wire produces a Negative pulse output whenever the system turns off the engine after it has been remotely started. This output may be used to arm a factory-installed alarm, or, if the vehicle is equipped with a Retained Accessory Power circuit, this output can be used to "spike" the door pin switch wire, which will turn off the Retained Accessory Power circuit.

CONNECTION: To arm a factory alarm after remote start engine run stops, connect the Yellow/Red wire to the vehicle's factory arm wire. This wire will show Negative polarity when a key is held in the "lock" position in the door key cylinder. This wire can usually be located in either kick panel, in the wiring harness from the door, as it is routed between the door

Smart Trigger jumper should be aligned to the left two pins. If the Smart Trigger feature is not desired, do not install the polarity selecting jumper. If this is done, either the Green Negative door trigger wire or the Violet Positive Door Trigger wire **must be connected** in order for the control unit to detect an open door. Once the Smart Trigger jumper has been properly configured, the Green/Violet wire may be connected to the vehicle's dome light activation wire.

Typical Negative Switching Dome Light System

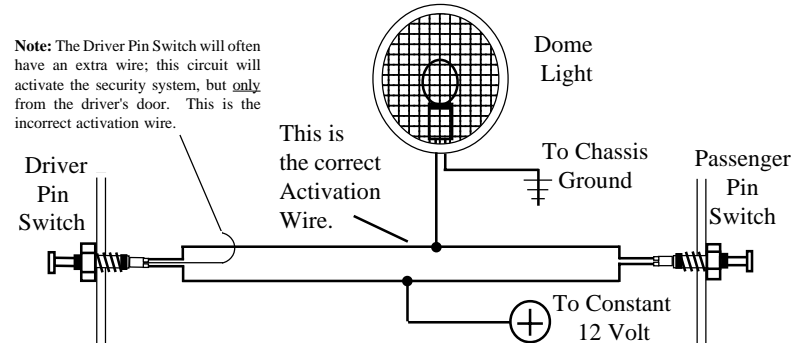
The Driver Pin Switch will often have an extra wire that activates the "ignition key in switch" warning chime. This circuit will activate the security system, but only from the driver's door, and is the incorrect trigger wire.



The correct wire for a Positive switching type of dome light/door jamb pin switch system will have 12 volts present when the doors are opened, and chassis ground when the doors are closed.

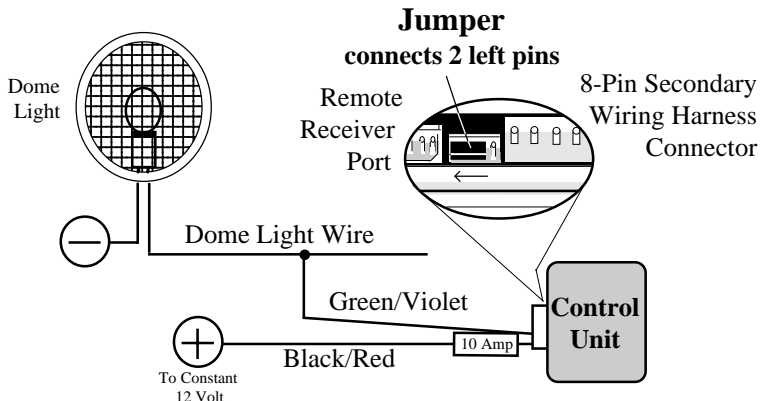
Typical Positive Switching Dome Light System

Note: The Driver Pin Switch will often have an extra wire; this circuit will activate the security system, but only from the driver's door. This is the incorrect activation wire.



cases, when opting for automatic rearming or last door arming, it may be preferable to not use the Smart Trigger, and connect the appropriate door trigger wire for the best operation of the automatic arming or rearming feature.

Setting Positive Dome Light Smart Trigger



The Smart Trigger jumper must be set for "+" polarity

Black/Red & Green/Violet Wires -

(Domelight Supervision Input/Output): The Black/Red and Green/Violet wires are provided for domelight supervision, which illuminates the interior lights of the vehicle upon disarming.

CONNECTION BLACK/RED: The polarity of the dome light supervision output must be selected by the connection of the Black/Red wire as Positive or Negative. Determine which polarity the vehicle uses to operate the dome light; this is either "Negative switching" or "Positive switching"; the following pages explain more on how to determine which type is present. Then, connect the Black/Red wire to Positive or Negative as needed.

CONNECTION GREEN/VIOLET: After connection of the Black/Red wire is completed, the next step is to **install the Smart Trigger jumper in the correct polarity setting.** If the Black/Red wire was connected to Negative polarity, the Smart Trigger jumper should be aligned to the right two pins; if the Black/Red wire was connected to Positive polarity, the

key cylinder and the factory alarm.

To use this wire to turn off Retained Accessory Power, locate a vehicle wire within the door or doorjamb which shows Negative when the door is open. Should such a wire be found which is positive, a relay is needed to reverse the Yellow/Red wire's Negative output to Positive.

Gray Wire - (2nd Channel or Negative Trunk Release Output):

The Gray wire is an optional output; typically the primary use is for trunk release. Unless the vehicle's existing trunk release switch draws no more than 250mA, an optional relay must be used.

CONNECTION: Connect the Gray wire to relay pin (85), and connect Constant Positive 12 Volts to relay pin (86). Connect pin 30 to power, or ground, as needed. Pin #87 is then connected to the vehicle's trunk wire. Please refer to the relay wiring instructions on the back cover.

White Wire - (Negative Arm Input) & Brown Wire (Negative Disarm Input):

The White and Brown wires will respectively arm and disarm the AL-2000-E when they receive Negative pulses. These wires may be used to easily connect the AL-2000-E to an Omega vehicle tracking system.

CONNECTION: To use the AL-2000-E with the tracking unit, connect the White wire to the tracking unit Green Negative door lock output wire, and connect the Brown wire to the tracking unit Blue Negative door unlock output wire. The vehicle's doorlock interface connections are then made directly to the AL-2000-E.

Pink/Black Wire - (Remote Start External Activation Input):

If the Pink/Black wire receives a Negative pulse the remote start operation will be activated. Even if this wire is used to activate remote starting, the transmitter or transceiver's normal button assignment will also operate remote starting.

CONNECTION: Connect the Pink/Black wire directly any output which gives a Negative pulse. If using the AL-2000-E with another device such as a telematics tracking system, connect the Pink/Black wire to the device's accessory output wire.

Secondary Connections - 8-Pin Connector

Brown Wire - (Positive Siren Output): The Brown wire is a 1 Amp Positive output designed to operate the electronic siren for audible confirmations, and also to sound if the alarm is triggered. An alternative to the siren is to program the alarm to pulse this output to sound the vehicle's horn by adding an optional relay. This would require changing Programmable Feature #21 from the preset "steady" output to a "pulsed" output.

SIREN CONNECTION: The Brown wire may be connected directly to the siren's Red wire, and the siren's Black wire is connected to (-) Ground.

SIREN MOUNTING: Find a location in the engine compartment away from the extreme heat of the engine and manifold. A suitable location will offer a firm mounting surface, will also allow sound dispersion out of the engine compartment, and not be accessible to a thief. The siren must be pointed downward to avoid moisture getting inside it and to enhance sound dispersal.

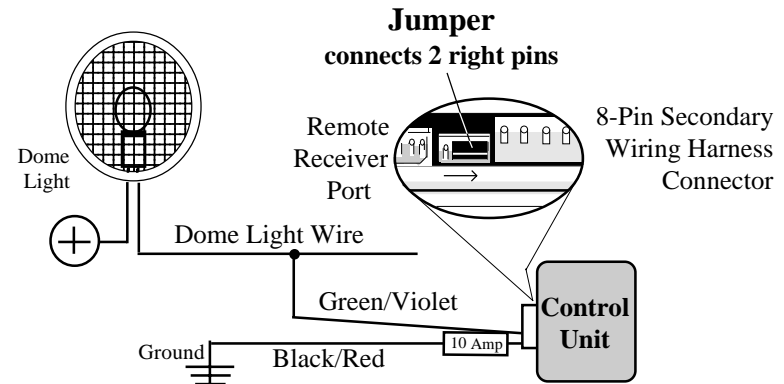
BLACK WIRE LOOP ON SIREN: Cut the short Black wire loop on the siren for louder confirmation chirps.

HORN CONNECTION: The Brown wire may be used to sound the vehicle's existing horn, but a relay must be used to switch the polarity to Negative. The horn switch wire is typically found at the steering column. Use a digital multimeter (DMM) to identify the horn wire. **CAUTION! Avoid the Airbag circuit!** The correct wire will show Positive 12 Volts normally, and no voltage when the horn is honked. Direct connection of the Brown wire to the horn itself is not recommended because the average horn requires more than the 1 amp output that the Brown wire supplies. One alternative is to disconnect the horns, then operate the horn switch. A clicking sound from the vehicle will confirm the presence of a horn relay. Another alternative is to check a wiring schematic of the vehicle in question.

Configuring An Optional Relay: The Brown Siren / Horn output wire has a 1 Amp capacity, which, if exceeded, can damage the security system control module. In certain situations, among them multiple optional sirens or utilizing the vehicle's horn, an optional SPDT relay is required.

Smart Trigger Feature: This unit has a unique "Smart Trigger" feature which saves installation time while offering enhanced integration flexibility. The Green/Violet Domelight Supervision output wire has an additional function; it is also a door trigger input circuit, serving the same purpose as either the Green or Violet door trigger wires.

Setting Negative Dome Light Smart Trigger



The Smart Trigger jumper must be set for "-" polarity

To use the Smart Trigger feature, if the Green/Violet Domelight Supervision output wire is connected correctly, it is not necessary to connect either the Green Negative Door Trigger or the Violet Positive Door Trigger wire.

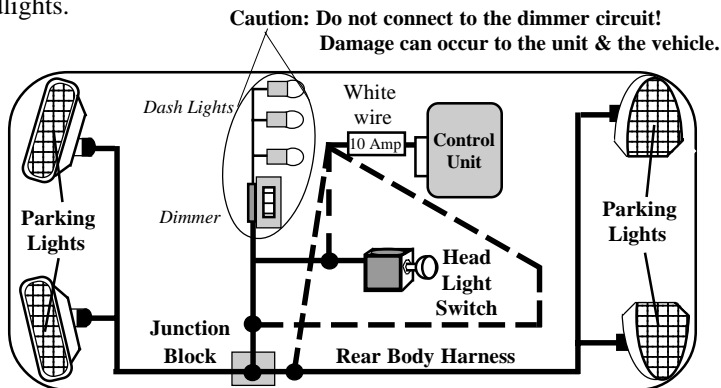
The Smart Trigger feature may be used or not used, as desired by the installer. If Smart Trigger is utilized, please note that **the polarity must be programmed** (via the jumper connector on the side of the control module) for "positive switching dome light" or "negative switching dome light". When done, connect the Smart Trigger to the vehicle's dome light activation wire.

If use of the Smart Trigger feature is not desired, do not install the polarity selection jumper. Doing so keeps the dome light supervision circuit separate from the door trigger circuits. The Red/Green and Green/Violet wires may then be connected for the Domelight Supervision only, and either the Green Negative Door Trigger or the Violet Positive Door Trigger wire must be connected for the system's door trigger. In some

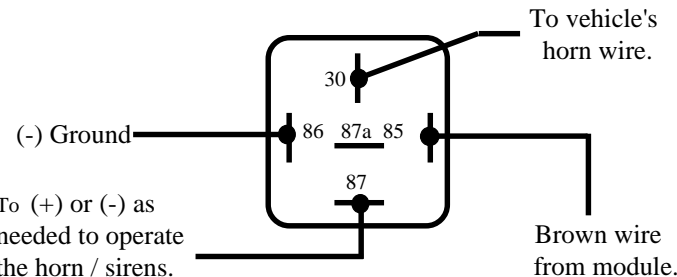
to the security system, a reduction of their useful life may occur. If flashing the headlights is still desired, a relay must be used, since the headlight's current draw exceeds the 7 amp rating of the built-in relay. If flashing headlights and parking lights are desired, use two relays - configure one relay to supply the parking lights and the other relay to supply the headlights.

Connect the Brown wire to pin 86, ground pin 85, connect pin 87 to Negative or Positive 12 Volts as needed, and connect pin 30 to the sound generating device's wire.

Optional Relay For Horn Wiring Diagram

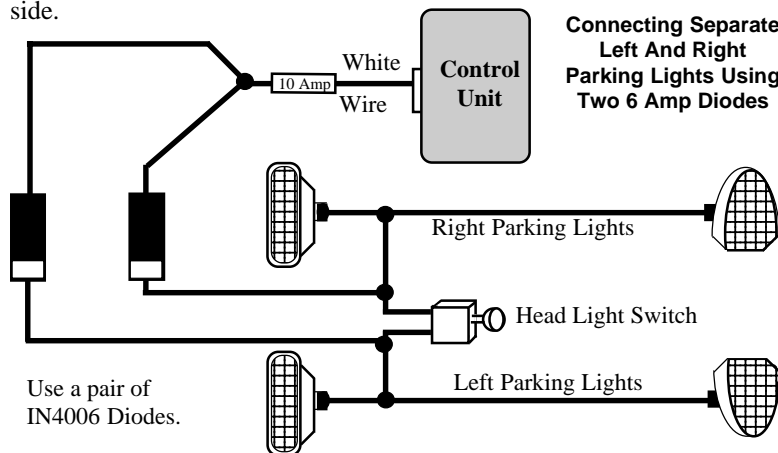


Recommended Connection Points For The White Wire



White Wire - (Positive Flashing Light Output): This is a Positive 12 Volt output to flash the vehicle's parking lights for visual arming confirmation, to illuminate them for disarming confirmation, to confirm remote starting, and to attract attention while the system is activated.

MULTIPLE PARKING LIGHT CONNECTIONS: Many European imports have separate left and right side parking lights. When left & right parking lights are on separate circuits, a pair of 6 to 10 amp diodes or a pair of SPDT relays must be used to connect the White wire to each parking light side.



CONNECTION: Connect this wire to the vehicle's Positive 12 Volt parking light circuit, which can usually be found at the following locations: at the headlight switch, at the fuse/junction block, or in the rear body harness in the driver kick panel. Some vehicles, notably Toyota, have a parking light relay which is triggered by a Negative Ground circuit from the headlight switch. The White wire can still be connected directly in these vehicles by finding the parking light circuit after the relay, typically at the Fuse/Junction Block.

The correct wire will show Positive 12 Volts when the headlight switch is in the "Parking Light" and "Head Light" positions. When such a wire is located, also test to ensure that it is non-rheostated: while metering the wire, operate the dash light dimmer control. The correct wire will show no change in voltage when the dimmer is operated. Do not connect the White wire to a rheostated (dimmer) circuit! This will backfeed the parking lights through the rheostat or illumination control module, and possibly cause damage to the vehicle or security system control unit. Flashing the headlights is not recommended. The halogen headlights found in modern vehicles are not designed to be rapidly turned on and off, and if connected

