Crime Guard
Keyless Entry and Security.

INSTALLATION MANUAL

850i^3

This unit to be installed on automatic transmission vehicles only! Do NOT install on manual transmission vehicles.

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.

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

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 determine the best location for

the 850i^3 control module, which is mounted upon completion of the installation and testing of the system.

For remote starting operation, the 850i^3 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.

The ignition switch wires usually are high amperage circuits, which means that high reliability connections must be made! Proper soldering of all connections is recommended.

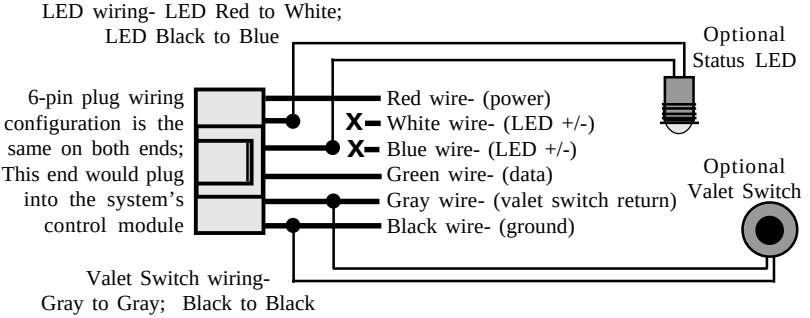
Mounting The Control Module: The Control Module contains the necessary electronics required for the system's operation. Always mount this module in the vehicle's interior compartment, in a secure location that is not easily accessible. Ensure that moisture, vibration and temperature extremes are minimized.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

Mounting The Electronic Siren: See pages XX-XX.

LED Status Light/Valet Switch/Data Port: This assembly contains the LED Status Light, Valet Switch, and Data Port for use with the FPM-1 Features Programming Module. Mount the assembly in a location where it can easily be seen by the driver, and preferably where it can be seen from outside, as the LED Status Light provides a level of visual deterrence. Two mounting methods are provided: double-sided adhesive tape, and two screws. If using the adhesive tape, properly prepare the mounting surfaces to ensure good adhesion. If using the screws for a more permanent mounting, carefully separate the housing halves, install the screws (avoid overtightening), then snap the assembly halves back together. Carefully route the wiring harness to the control module (both ends are the same) to avoid any chances of it being chafed or pinched.

Optional Customized LED & Valet Switch Mounting: The LED/Valet Switch/Data Port assembly is an integrated unit- the LED and valet switch are not removable for customized alternative mounting. If custom alternative mounting is desired, an optional replacement LED and/or valet switch may be used by making correct splices to the combination assembly's wires (see diagram on next page). If using an optional alternative LED and/or valet switch, please note that the data port can still be functional for programming purposes if the power, ground, and data wires are not cut.

Wiring for optional LED and/or Valet Switch



Instructions for Data Port Programming are included with the optional FPM-1

If desired, the optional replacement LED may be added by cutting and splicing the wires as shown in the above drawing. The optional LED may be mounted as needed, and the valet switch and data port will remain fully functional, allowing the combination holder to be mounted in a hidden but accessible location. The combination holder may be mounted by prising apart the two halves and using the two included screws, or the double-sided adhesive pad may be used.

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 AU-85TA Dual Zone Infrasonic Impact and Glass Breakage Sensor included with the Crime Guard 850i^3 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. Available as an optional service part is a socket and two relays which plug into this port, and provide and additional Ignition #1 and Starter output. Also please note that certain Omega OEM antitheft bypasses also utilize this port.

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 relay's coils.

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 alarm can partially operate, a bad ground wire connection would not likely be suspected.

Black Antenna Cable -

The Black wire attached to the control module is the coaxial antenna cable. <u>Do not connect this wire to anything or the transmitter's range will be reduced or eliminated</u>. Stretch the Black antenna cable out and as high as possible for the best operating range; the best performance is with the cable routed behind trim panels and headliner to top center of the windshield. The clear center signal conductor should be allowed to hang freely from the headliner. If desired, it can be stiffened with heat-shrink tubing or attached to the inside windshield with tape for a better cosmetic appearance.

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, if 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.

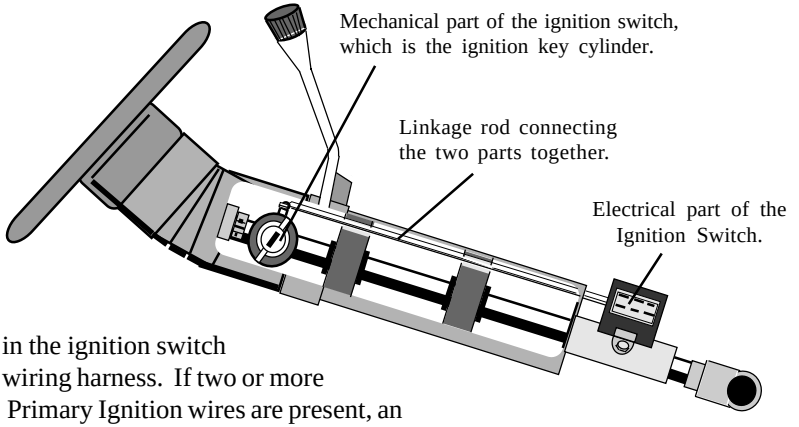
Some vehicles have a single Constant 12 Volt circuit supplying the ignition switch, while others have multiple supply circuits. A schematic of the car's electrical system will show which of these is the case. The Red and Red/White wires may both be connected to a single supply wire, or distributed between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

Cutaway View Of A Steering Column-Mounted Ignition Switch



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.

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. 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.

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.

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 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 Pages XX-XX.

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 also found in the ignition switch wiring harness. 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.

Secondary Connections - 6-Pin Connector

Orange Wire - (Negative Output While Armed): The Orange wire is a starter interrupt output, which is active whenever the security system is in an armed state. Cutting the vehicle's starter wire will result in two sides- the "ignition switch" side and the "starter solenoid" side.

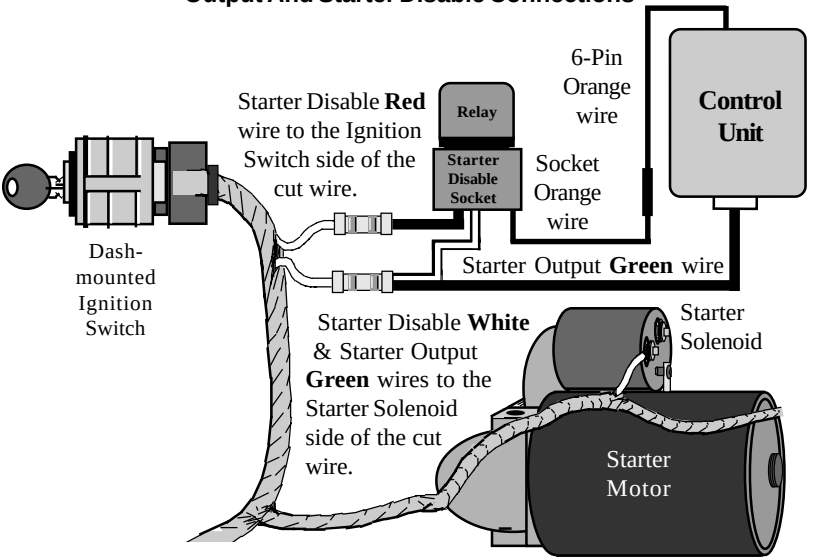
CONNECTION: To interrupt the vehicle's starter circuit, the starter wire must be located and cut. It is recommended that this connection be done as close to the ignition switch as possible. Use a voltmeter, not a test light, to find the correct wire, which is the wire from the ignition switch to the starter solenoid.

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 associated 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 as this generally is a high amperage circuit.

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



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 which 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.

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. **Always perform this test before testing the neutral safety input.**

Blue/White Wire - (Neutral Safety Input): This circuit is another critical safety feature which enables the system's remote start operations. Connect the Blue/White wire to the vehicle's Negative neutral safety wire.

CONNECTION: The target wire will show Negative Ground whenever the gear selector is in the "Park" or "Neutral" positions. Once the target wire is located, securely connect the Blue/White wire to it.

Some vehicles, however, do not have a grounding-type neutral safety switch. These vehicles instead have the starter circuit routed through a switch which closed only when the gear selector is in the "Park" or "Neutral" positions; in other gear positions the switch is open, thus preventing the starter from engaging. When installing in this type of vehicle, the Blue/White wire may be directly grounded, or connected to the parking brake warning circuit. If the later option is chosen, ensure that the parking brake warning circuit is grounded when the parking brake is applied. An electrical schematic of the vehicle or consulting Omega's vehicle wiring data base will save much time in determining the type of neutral safety circuit.

Regardless of the type of connection, the vehicle must be tested to ensure that it cannot be remotely started while 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, if needed. Engage the remote starter in each gear position. If this safety feature is operating 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. **Never fail to perform this test!** If a fault is found in the neutral safety operation, it must be corrected before returning the vehicle to the owner. If the vehicle in question lacks a neutral safety circuit, one must be fitted before installing any type of remote starting system.

Black/Yellow Wire - (Tach-Sensing Input): The Black/Yellow wire is an engine speed or tachometer sensing wire. The system actually can use one two different methods of monitoring the engine's starting/running status during the remote starting process- the Black/Yellow tach wire, and voltage sensing. The tach wire is typically more accurate in monitoring the engine status, and thus its use is recommended. If voltage sensing is desired, the system must be programmed for it. As received, the Crime Guard 850i3 is configured for "tach wire" operation. Once the system is installed, refer to the Operation Manual, enter Features Programming Mode, and change feature #29 from "tach wire" to "current sensing".

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 850i^3'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:

1) Turn the ignition switch "on", then "off".
2) Within 5 seconds, press the brake pedal 5 times.
3) Use the key to start the engine; the siren will chirp to indicate the unit is in tach learning mode.
4) When the Status Light light turns Green the tach signal is learned. Turning the ignition "off" or pressing the brake removes the unit from tach learning mode.

Yellow/Red Wire - (Factory Disarm Output): The Yellow/Red 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/Red 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.

Gray Wire - (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 page XX.

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 #22 from the preset "steady" output to a "pulsed" output.

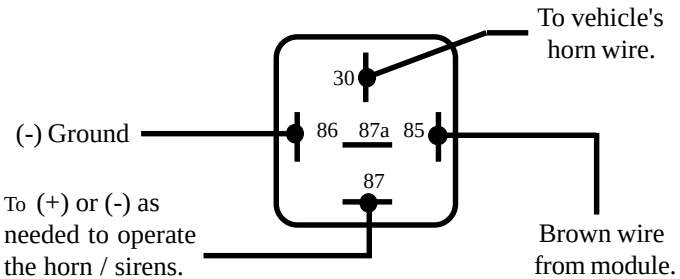
SIREN CONNECTION: The Brown wire may be connected directly to the siren's Red wire, and the siren's Black wire is connected to (-) Ground.
Mounting The Siren: Find a location in the engine compartment away from the extreme heat of the engine and manifold. A suitable location will offer a firm mounting 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 collecting inside it and to enhance sound dispersal.

HORN CONNECTION: The Brown wire may be used to sound the vehicle's existing horn, but a relay and diode 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! <u>Avoid the Airbag circuit</u>!** 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.

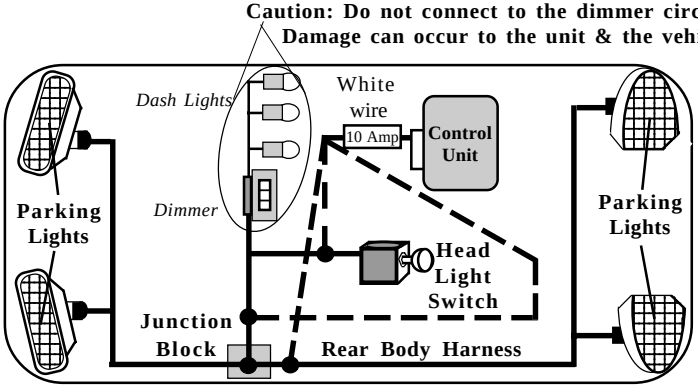
Configuring An Optional Relay: The Brown Siren / Horn output wire has a 1 Amp capacity, which, if exceeded, can damage the security system control module. In certain situations, among them multiple optional sirens or utilizing the vehicle's horn, an optional SPDT relay is required. Connect the Brown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



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, and to attract attention while the system is activated.

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

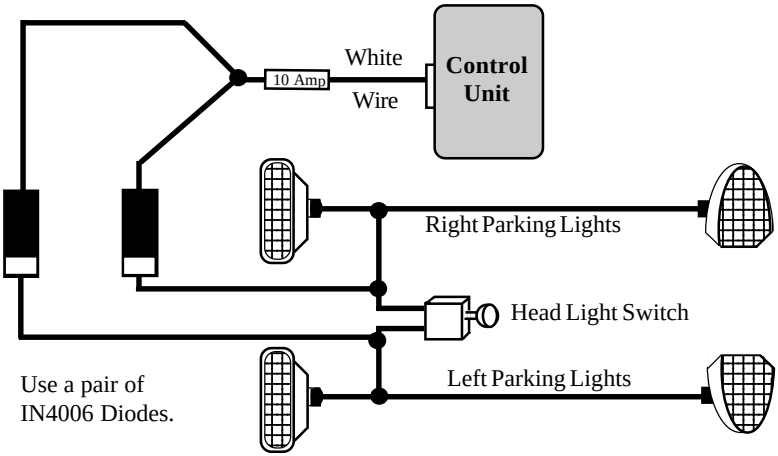


Recommended Connection Points For The White Wire

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 to the security system, a reduction of their useful life may be 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.

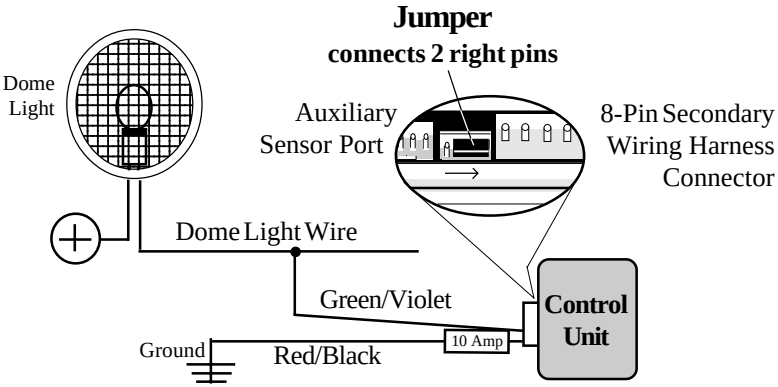
MULTIPLE PARKING LIGHT CONNECTIONS: Many European imports have separate left and right side parking lights. When left & right parking lights are on separate circuits, a pair of 6 to 10 amp diodes or a pair of SPDT relays must be used to connect the White wire to each parking light side.

Connecting Separate Left And Right Parking Lights Using Two Diodes



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



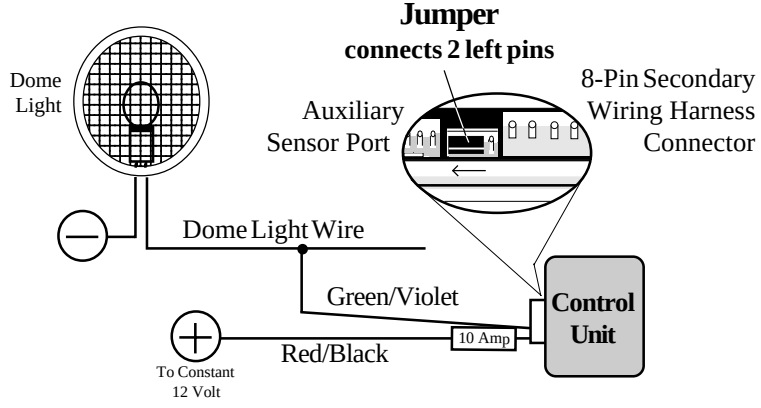
The Smart Trigger jumper must be set for "-" polarity

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".

If use of the Smart Trigger feature is not desired, do not install the polarity selection jumper. Doing so keeps separate the dome light supervision circuit 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 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

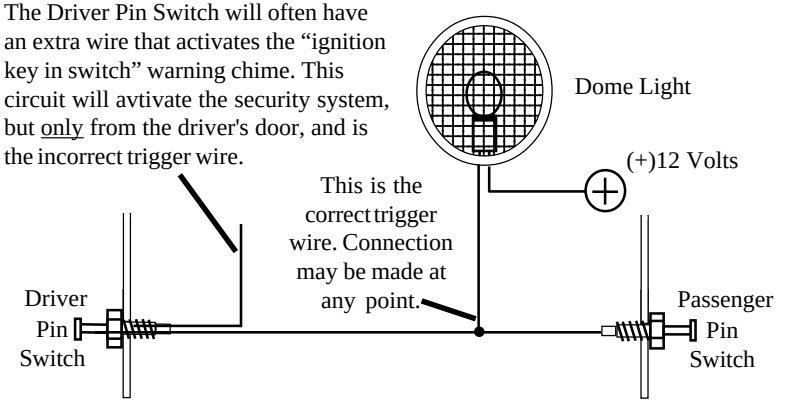
Black/Red & Green/Violet Wires - (Domelight Supervision):

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.

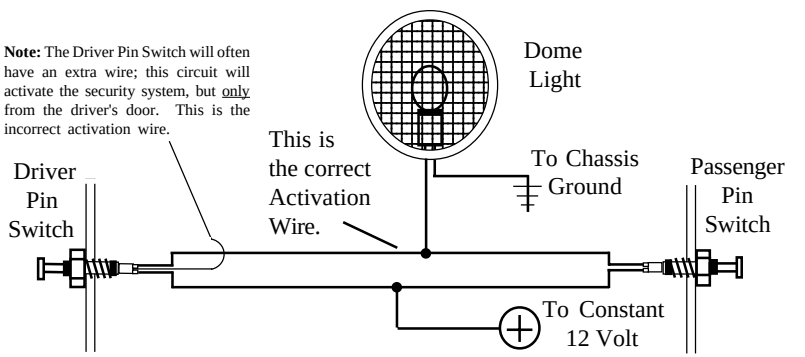
Typical Negative Switching Dome Light System

The Driver Pin Switch will often have an extra wire that activates the “ignition key in switch” warning chime. This circuit will avtivate 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



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 Smart Trigger jumper should be aligned right 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.

The proper vehicle wire to connect the Green/Violet wire to, the dome light activation wire, is common to all 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 <u>any</u> 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 which 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 which 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.

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.

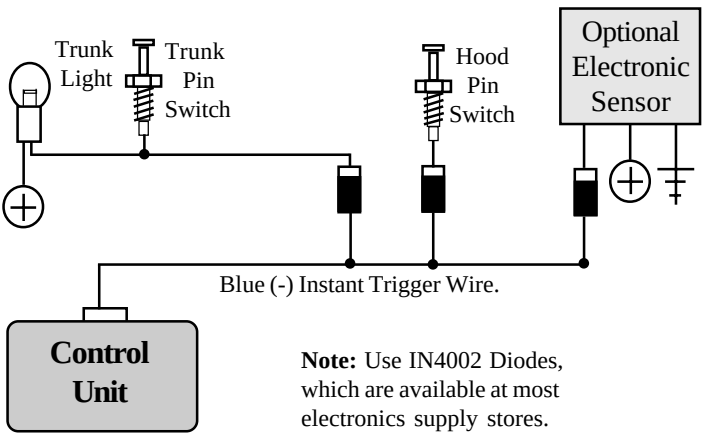
Blue Wire - Negative Instant Trigger: The Blue wire is a Negative instant trigger used primarily to detect entry into the hood or trunk area of a vehicle.

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.

Diode-Isolating Multiple Negative Instant Triggers



Note: Use IN4002 Diodes, which are available at most electronics supply stores.

Pink Wire - Additional Output: The Pink wire is an optional output similar to the Gray trunk release wire; however, this output is not capable of disarming the system when it is used and therefore 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 page XX.

Power Doorlock Interface Port - 4-Pin Connector

Plug-In Power Doorlock Interface Port: This system features a plug-in port for an optional doorlock interface, allowing it to operate the vehicle's existing power doorlocks. The 4 pin port on the system's control module produces a negative pulse for locking the doors (inside pin), a constant 12 volt pin *for the optional relay coils only* (second pin from inside), a first negative pulse for driver door unlock (second pin from outside), and a second negative pulse for unlocking all other doors (outside pin). The doorlock interface needed will depend upon the type of power doorlocks the vehicle has.

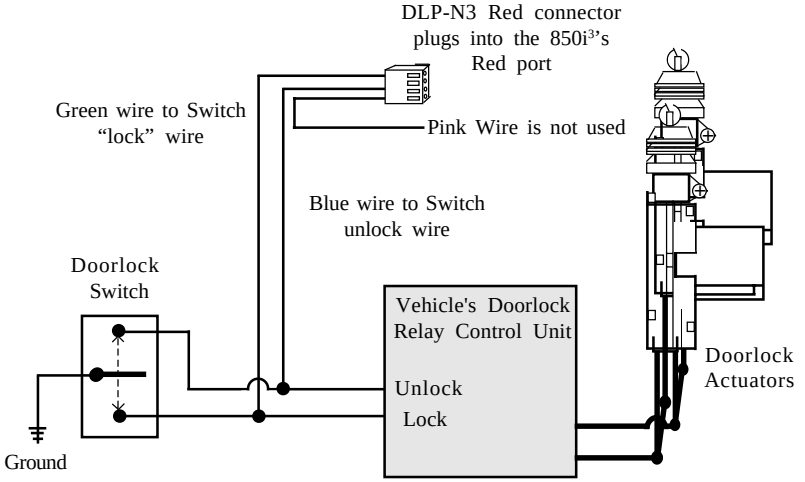
CONNECTION: Quick Interconnect Harnesses are available for power doorlock applications, and provide the necessary wiring connections; each has its own detailed, illustrated instructions. If using a universal interface, of which several models are offered, identify the type of doorlock system and obtain the correct interface. Connections, which are shown in the following pages, 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.

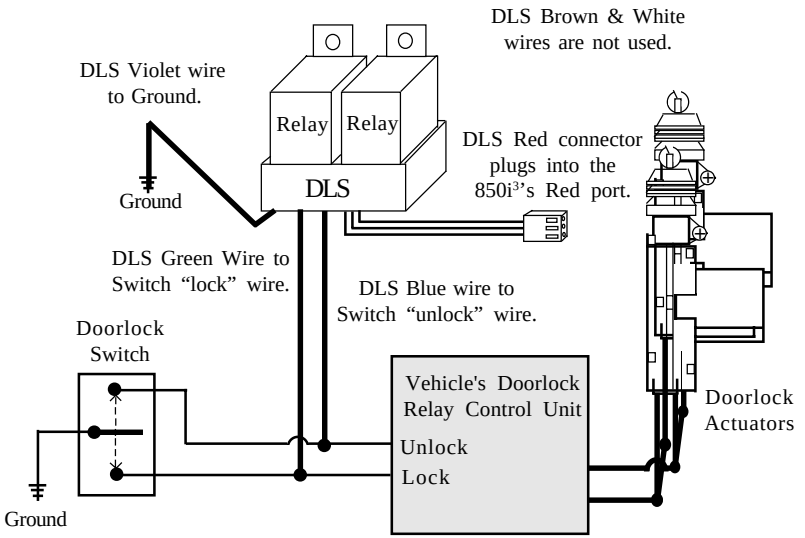
3 Wire Negative Pulse Systems: This power doorlock system is indicated by the presence of three wires at the switch. Of these, one will show constant ground, regardless of whether the switch is being operated or not (at rest). Of the remaining two wires, one will show ground when the switch is pushed 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

Text continued on page XX

3 Wire Negative Pulse Dorlocks
Using The 850i³'s Negative Outputs



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



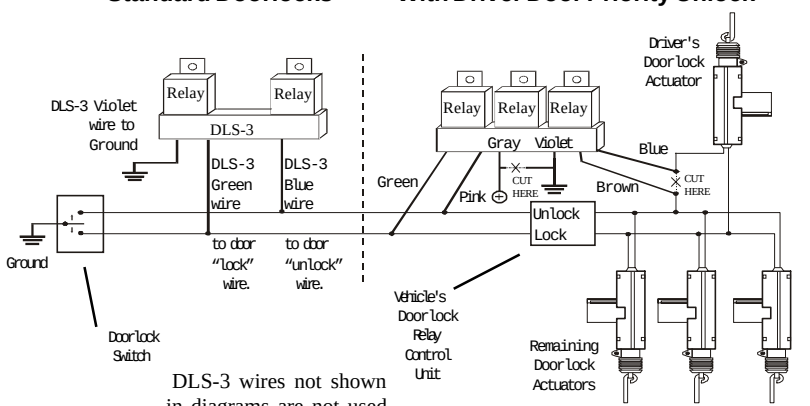
control unit with built-in relays. The correct connection point is between the switches and the relays.

The included harness can allow direct connection between the security system and the "lock" and "unlock" operation of the 3-Wire Negative Pulse system. Some doorlock systems, however, require more than the 500ma ground output that the security system's control module can accommodate. In these cases the optional model DLS and two relays must be used. When driver's door unlock priority is desired, the correct universal interface is the DLS-3.

Model DLS- The DLS is an optional dual relay socket with a harness and connector to plug into the 850i^3's control module and non-terminated wires to splice into the vehicle's wiring. The DLS and two relays are the most universal doorlock interface available. The additional relays used with it are standard 30 amp single pole, double throw (SPDT) automotive relays.

Model DLS-3- The DLS-3 is an optional triple relay socket (three relays are also needed) and is the most universal interface, which can be configured to lock and unlock all doors, or perform driver door priority unlocking. Driver door priority unlock allows the 850i^3 to lock all of the vehicle's doors, unlock only the driver's upon disarming ("driver's door priority unlock") and, if desired, a second press of the transmitter's disarm/unlock button will unlock all of the doors. The DLS-3 used with two relays can be used in place of the DLS to lock and unlock all doors ("standard doorlocks").

3 Wire Negative Pulse Doorlocks
Optional DLS-3 and 2 or 3 Relays - Driver Door Priority Unlock

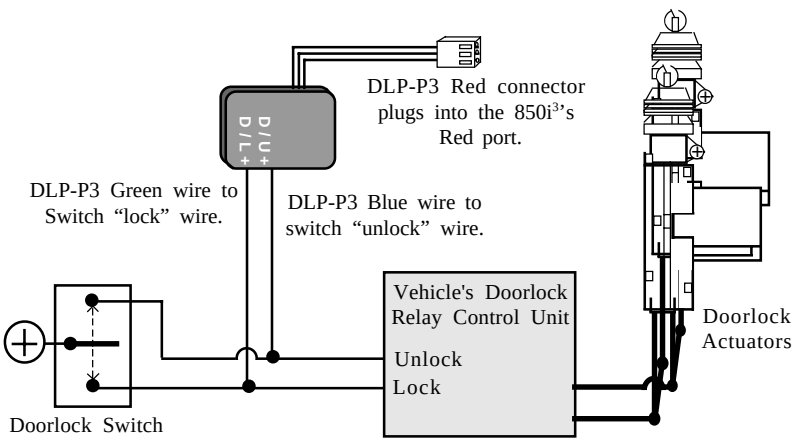


DLS-3 wires not shown in diagrams are not used.

3 Wire Positive Pulse Systems: This power doorlock system is 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 wires on the back of the switch. Of the three wires, one will be constant 12 volt positive, regardless of the switch's position. Of the two remaining wires, one will show 12 volt positive when the switch is pushed to "lock", and the other will show 12 volt positive when the switch is pushed to "unlock". Since the security system's output polarity must be reversed from negative ground to 12 volts positive, an optional doorlock interface must be used. Three interfaces are available - the models DLP-P3, or the DLS and the DLS-3 with optional SPDT relays. The DLS-3 is discussed in detail later.

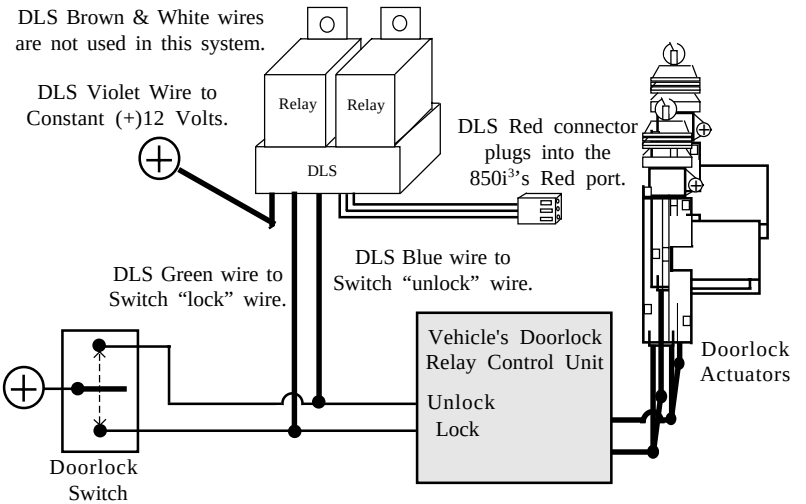
Model DLP-P3 - Three pin connector with a transistor converter network which changes the security system's negative pulse doorlock outputs to positive pulses. The DLP-P3 polarity converter allows direct connection of the 850i^{3}'s security and starting system doorlock outputs directly to a vehicle with positive pulse doorlocks. Overall length 20". Easier and more cost-efficient than using relays for vehicles that have positive pulse doorlock systems.

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

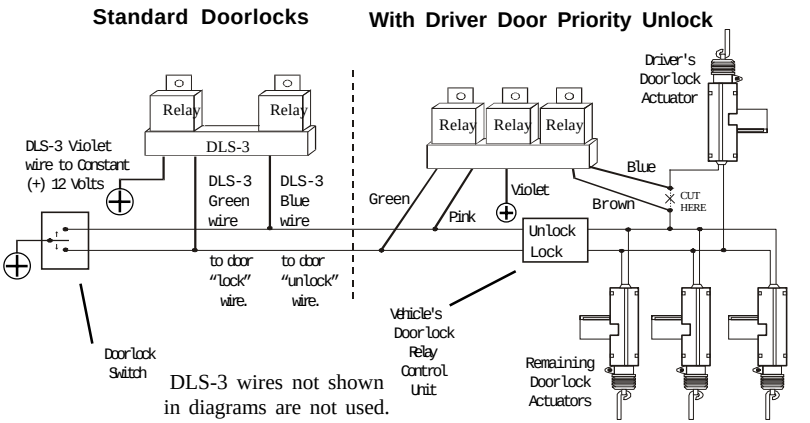


Model DLS- The DLS is an optional dual relay socket with a harness and connector to plug into the 850i^{3}'s control module and non-terminated wires to splice into the vehicle's wiring. The DLS and two relays are the most universal doorlock interface available. The additional relays used with it are standard 30 amp single pole, double throw (SPDT) automotive relays.

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



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



DLS-3 wires not shown in diagrams are not used.

Optional DLS -3 and 2 or 3 Relays - Driver Door Priority Unlock

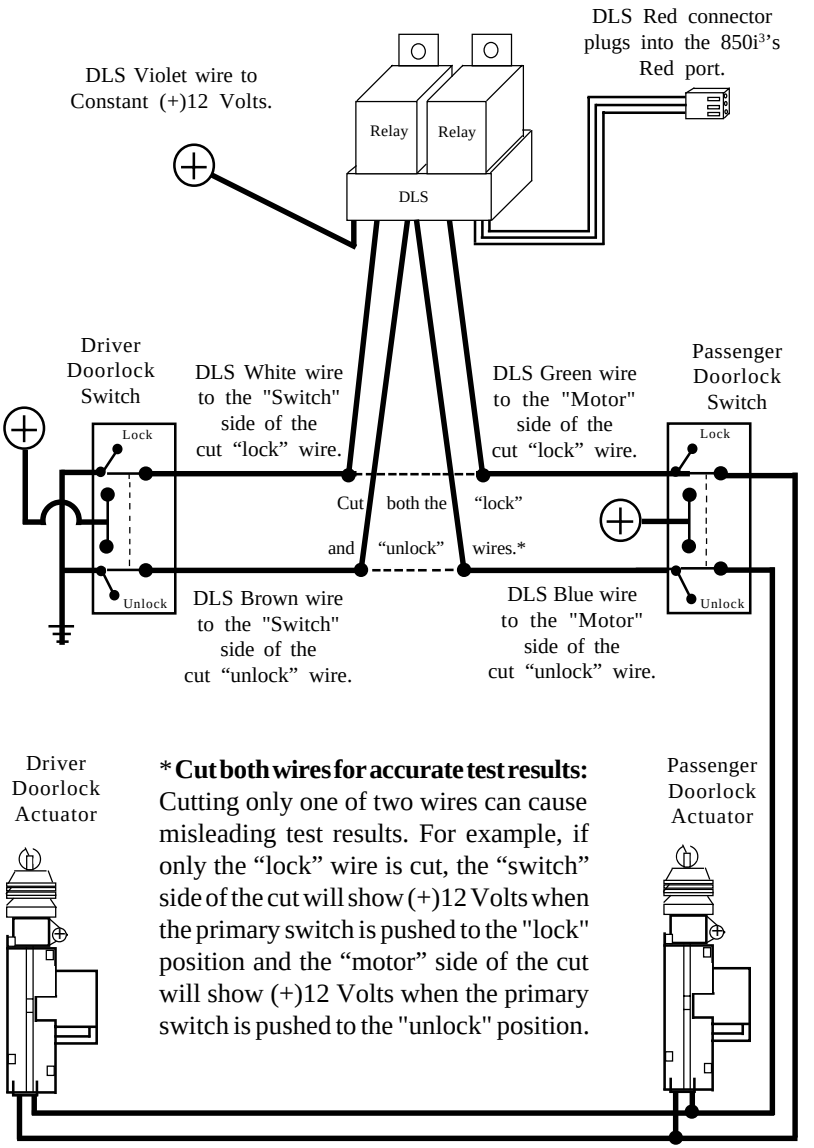
The DLS-3 is an optional triple relay socket (three relays are also needed) and is the most universal interface, which can be configured to lock and unlock all doors, or perform driver door priority unlocking. Driver door priority unlock allows the 850i^3 to lock all of the vehicle's doors, unlock only the driver's upon disarming ("driver's door priority unlock") and, if desired, a second press of the transmitter's disarm/unlock button will unlock all of the doors. The DLS-3 used with two relays can be used in place of the DLS to lock and unlock all doors ("standard doorlocks").

5 Wire Reversal Rest At Ground Systems: This power doorlock system differs 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".

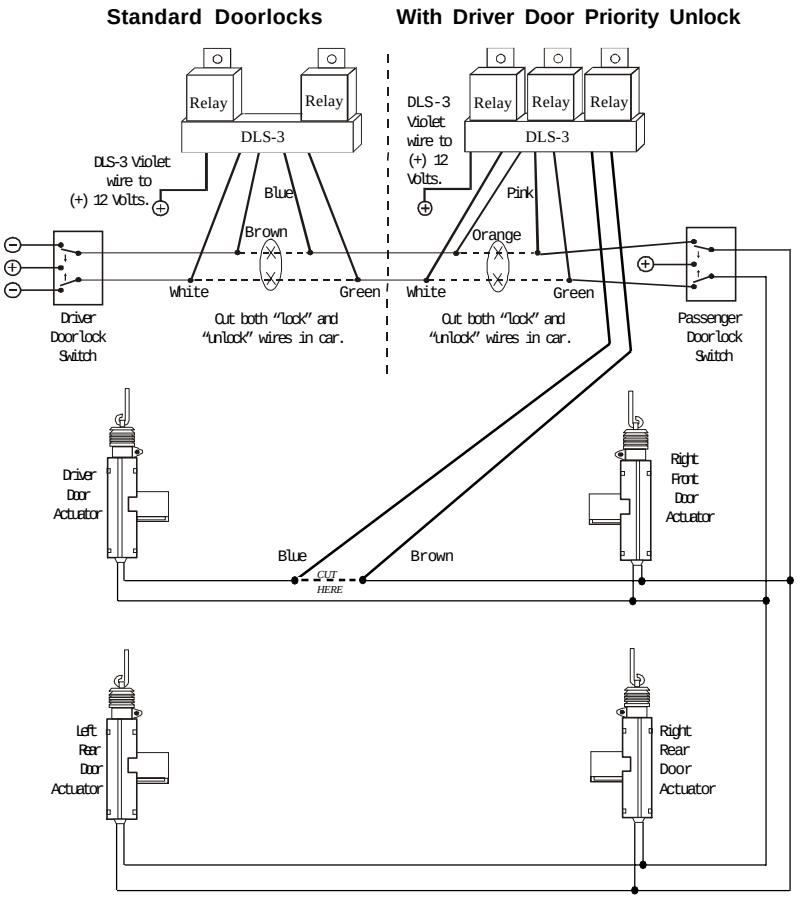
These two wires are both routed to the doorlock actuators and are connected to either end of the actuator's motor winding. When the switch is pushed to one position, one of these two wires will have 12 volts. This voltage flows through the wire to the actuator's motor winding, and since the other wire 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 diagrams, starting on the following page.

5-Wire Reversal Rest At Ground Doorlocks
Using An Optional DLS & 2 SPDT Relays



*** Cut both wires for accurate test results:** 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.

5-Wire Reversal Rest At Ground Doorlocks
Using An Optional DLS-3 & 2 Or 3 SPDT Relays



The DLS-3 is an optional triple relay socket (three relays are also needed) and is the most universal interface, which can be configured to lock and unlock all doors, or perform driver door priority unlocking. Driver door priority unlock allows the 850i^3 to lock all of the vehicle's doors, unlock only the driver's upon disarming ("driver's door priority unlock") and, if desired, a second press of the transmitter's disarm/unlock button will unlock all of the doors. The DLS-3 used with two relays can be used in place of the DLS to lock and unlock all doors ("standard doorlocks").

Programming Features

The Programmable Features are explained in detail in the Operation Manual. This checklist simplifies the features programming porcoss. 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)

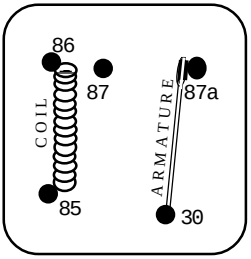
Step 3 - Press the transmitter's "Arm/Lock" button to turn the feature "on" or press the "Disarm/Unlock" button to turn the feature "off". (turning the feature "on" is indicated by one siren chirp and the Status Light being on; turning the feature "off" is indicated by two siren chirps and the Status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

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

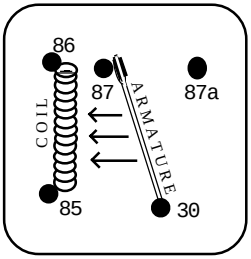
If no programming activity occurs within a 10 second period, the Features Programming Mode will expire.
The system exiting features Programming Mode is indicated by the siren briefly sounding.

#		FEATURE	DEFAULT
1	☐	Current Sensing	OFF ("Disarm/Unlock")
2	☐	3 or 210 Second Current Sensing Delay	3 Seconds (“Disarm/Unlock)
3	☐	30 / 60 Second Activated Alarm Cycle	60 Seconds ("Arm/Lock")
4	☐	3 / 45 Second Arming Delay	3 Second ("Disarm/Unlock")
5	☐	Last Door Arming	OFF ("Disarm/Unlock")
6	☐	Automatic Rearming	OFF ("Disarm/Unlock")
7	☐	Auxiliary Output #2 Also Disarms System	ON ("Arm/Lock")
8	☐	Parking Light Illumination Upon Disarm	ON ("Arm/Lock")
9	☐	Doors Lock At Ignition “On”	ON ("Arm/Lock")
10	☐	Unlock #1 At Ignition OFF	ON ("Arm/Lock")
11	☐	Unlock #2 At Ignition OFF	OFF ("Disarm/Unlock")
12	☐	Open Door Bypass To Features 9, 10, 11	ON ("Arm/Lock")
13	☐	Doors Lock With Last Door Arming	OFF ("Disarm/Unlock")
14	☐	Doors Lock With Automatic Rearming	OFF ("Disarm/Unlock")
15	☐	.8 / 3 Second Doorlock Pulse	.8 Second ("Arm/Lock")
16	☐	Double Unlock Pulse	OFF (“Disarm/Unlock”)
17	☐	Total Closure Lock Output	OFF (“Disarm/Unlock”)
18	☐	Ignition-Activated Vehicle Recovery	OFF (“Disarm/Unlock”)
19	☐	Door-Activated Vehicle Recovery	OFF (“Disarm/Unlock”)
20	☐	Transmitter-Activated Vehicle Recovery	OFF (“Disarm/Unlock”)
21	☐	Chirp Confirmation	ON ("Arm/Lock")
22	☐	Steady Siren or Pulsed Horn Output	Steady Siren (“Arm/Lock”)
23	☐	Soft or Loud Horn Confirmation Chirps	Soft (“Disarm/Unlock”)
24	☐	1 or 2 Button Arming / Disarming	2 Button ("Disarm/Unlock")
25	☐	Remote Start Run Time 10 or 20 Minutes	10 Minutes (“Disarm/Unlock”)
26	☐	Steady / Flashing Lights During Remote Start	Steady (“Arm/Lock”)
27	☐	Gasoline or Diesel Engine	Gasoline (“Arm/Lock”)
28	☐	Extended Starter Cranking Time	Minimum (“Arm/Lock”)
29	☐	“Tach Wire” or “Tachless “ Starter Operation	“Tach Wire” (“Disarm/Unlock”)
30	☐	Remote Start Preactivation	ON (“Arm/Lock”)

Universal Relay Wiring Instructions



At Rest
(Coil Not Energized)

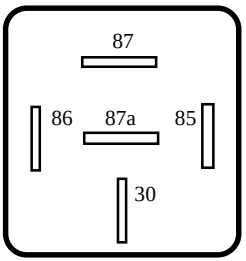


Activated
(Coil Energized)

In the views above, note the five terminals, or "pins". A relay's operation is really very simple. To understand its operation, consider the relay as having two sections - the coil, pins 85 and 86; and the contacts, pins 30, 87 and 87a. When Negative Ground is supplied to one end of the coil, and Positive Voltage is supplied at the other end, the coil creates a magnetic field which activates the relay. This magnetic field attracts the armature, which is attached to pin 30 with a flexible joint, just like a hinge. Inactivated, or "at rest", the armature connects pin 30 to pin 87a. When the relay is activated, the armature connects pin 30 to pin 87.

The terms used to describe the contact points are thus: pin 30 switches between pins 87a and 87, so it is "Common" to both and is usually referred to as COM. In the relay's normal condition, at rest, pin 30 is connected to pin 87a, making pin 87a "Normally Closed" or NC. Pin 87 is not connected to pin 30 at rest, so its status is "Normally Open" or NO.

This type of relay is defined as "Single Pole Double Throw" or SPDT. This term means that the single armature terminal (or pole, pin 30) can be connected (or "thrown") to two other terminals, pins 87a and 87. The SPDT relay is one of the most useful configurations due to its flexibility - it can be used as a switching device, to isolate circuits, to interrupt circuits and to interrupt and switch at the same time. For convenience, this booklet shows the relay's "footprint" view in its diagrams.



Footprint View