REMOTE AUTOSTART SYSTEM

WITH KEYLESS ENTRY AND NETWORK INTERFACE

INSTALLATION MANUAL

BEFORE INSTALLING THIS PRODUCT PLEASE READ THIS INSTALLATION MANUAL THOROUGHLY!!

Before You Begin

This system is intended for installation on vehicles equipped with automatic transmissions and electronic fuel injection only! DO NOT INSTALL THIS SYSTEM INTO A MANUAL TRANSMISSION VEHICLE AS IT COULD RESULT IN SERIOUS INJURY OR DEATH.

• This product must be installed by qualified personnel according to these instructions and and observing all safety features.

• Verify that the vehicle is equipped with electronic fuel injection and automatic transmission.

• Check to see if the vehicle is equipped with any type of factory security system.

• Check to see if there is a pin switch for the hood, if not one must be installed.

• Verify that the vehicle starts and idles properly before starting the installation.

• Always use a multi-meter when verifying vehicle wiring.

• Before mounting the product, verify with the customer the desired location for the valet switch and LED.

• Set the Polarity Jumper inside the main unit first. (see Jumper Settings, Page 12)

High-Current Wire Connections:

• RED WIRE #1 -Main power input; using the supplied inline fuse holder, connect directly to the vehicle's battery or alternate power source with a minimum 30 Amp supply.

• RED WIRE #2 - Secondary power input; see above. Note: If not connecting directly to the vehicle's battery, it is recommended to use separate power sources (minimum 30 Amp each) for each red power wire.

• BROWN WIRE - Second ignition output; connect to the wire that switches +12V and does not drop out during cranking. This wire may be optionally programmed for use as a second accessory wire or second starter wire. (see Programmable Features, Page 4)

• ORANGE WIRE - Main accessory output; +12V output to heater and/or air conditioning system. For cars with more than one accessory wire add a relay(s) to power the extra accessory wire(s) or program the BROWN wire for second accessory.

• YELLOW WIRE - Main ignition output; connect to the main ignition wire that switches +12V and does not drop out during cranking.

• VIOLET WIRE - Starter output; connect to the vehicle's starter wire.

Main Harness:

• GREEN/WHITE WIRE - Brake switch input wire. Connect this wire to the brake switch wire that provides +12V when the brake pedal is pressed. This is a safety input and **must** be connected on all installations.

• BLACK/GRAY WIRE - Tachometer input. If the Smart Start feature fails to start properly, connect the BLACK/GRAY wire directly to the vehicle's tach wire or negative fuel injector wire, and program Step #14 to Tach Start.

• WHITE/RED WIRE - Auxiliary 2 output (-) 500mA. Connect to a relay or module for an optional feature such as power window activation, etc. This output may be programmed for momentary, timed, or latched operation.

• BLACK/WHITE WIRE - Dome Light output (-) 500mA. Connect to a relay to activate the vehicle's dome light. NOTE: The dome light relay's output is usually connected to the same wire used for the door trigger input (See GREEN and VIOLET door trigger wires).

• YELLOW WIRE - +12V Ignition input. Connect to a main ignition wire at the ignition switch harness. This wire shows +12V when the ignition is on and while cranking. The voltage must not drop when the car is starting.

• BLUE/YELLOW WIRE - Glow Plug input (+). For diesel engines connect to the glow plug wire in the instrument cluster that shows +12V when the the glow plug (wait-to-start) light is on, then shows ground when the light turns off. For vehicle's equipped with a negative glow plug wire (shows ground when the wait-to-start light is on) a relay is required. (see Relay Diagrams)

• BLUE/WHITE WIRE - Passenger Unlock output (-) 500mA. Connect to an optional relay to unlock the passenger doors when the system is configured for Driver Priority Unlocking.

• BLUE/ORANGE WIRE - Ground When Running Output (-). This wire provides a ground when the remote start is engaged to activate an optional factory security bypass module.

• BLACK WIRE - Ground input (-). Connect to a solid chassis ground that is clean and free of paint or dirt.

• RED WIRE - +12V Battery input #3. Connect the red fused wire on the main harness to a constant +12V source. This wire is the power input for the module.

• VIOLET WIRE - Positive door trigger (+). Connect to the door switch circuit wire that shows +12V when the door is open. This type of door circuit is usually found on Ford vehicles.

• GREEN WIRE - Negative door trigger (-). Connect to the door switch circuit wire that shows ground when the door is open.

• WHITE/BLACK WIRE - Hood switch input wire (-). Connect this wire to the hood pin switch to prevent the vehicle from starting if the hood is open. This is a safety input and must be connected on all installations.

• ORANGE WIRE - Locked output (-) 500mA. Connect to a relay for optional starter defeat and anti-grind protection. (See Relay Diagrams).

• VIOLET/WHITE WIRE - Factory Disarm output (-). Connect to the wire that requires a ground pulse to disarm the factory alarm. The VIOLET/WHITE wire provides a ground pulse when the remote transmitter is used to unlock the doors or start the vehicle.

• WHITE/VIOLET WIRE - Factory Arm output (-). Connect to the wire that requires a ground pulse to arm the factory alarm. The WHITE/VIOLET wire provides a ground pulse when the remote start shuts down.

• BROWN WIRE - Audible status output (+) 3A. Connect an optional siren for lock/unlock chirps.

• GRAY WIRE - Auxiliary 1 output (-) 500mA. Connect to a relay for optional features such as trunk release, etc. This output is programmable for momentary, timed, or latched operation.

• WHITE WIRE - Parking Light output (+/-) 10A relay. Connect to the vehicle's parking light wire. If the vehicle's parking light circuit exceeds 10 Amps a relay is required. For vehicle's with independent left and right parking light circuits, the parking light wires must be connected using diodes to keep the circuits separate. NOTE: Do not connect the WHITE wire to the vehicle's headlight circuit.

• BROWN/WHITE WIRE - Horn output (-) 500mA. Connect to an optional relay to activate the vehicle's horn. This wire is also programmable for use as a 3rd ignition output if necessary (optional relay required).

Plug-in Connectors

4-Pin White Connector: Auxiliary Start inputs. **For add-on start module installation only.**

• WHITE WIRE - 3 pulse start input (-). Connect to the door lock wire of an OEM security/keyless entry system. Pressing the system's lock button 3 times within 3 seconds will start the vehicle.

• BLACK WIRE - Not Used.

• BLUE WIRE - Auxiliary start input (-). Connect to the auxiliary output wire from an aftermarket security system.

• RED WIRE - Not Used.

2-Pin Blue Connector: Plug-in connector for Valet switch. Mount the switch in an area that is easily accessible from the driver's position.

2-Pin Red Connector: Plug-in connector for LED. Mount LED in an area where it may be easily seen from either side of the vehicle.

3-Pin White Door Lock Connector: Plug-in connector for door lock harness or optional door lock relay module (PDLM-3).

• BLUE WIRE - Unlock output (-) 500mA.

• RED WIRE - Relay trigger only (+) 300mA. Low current output for relay modules, or inverters. Do NOT use as a power source for door lock relays.

• GREEN WIRE - Lock output (-) 500mA.

3-Pin White Network Connector: The plug-in network connector port is on the side of the main module. This network port may be used with the optional personal computer interface for diagnostics, software customization and expanded programming options. The network also offers connection to optional accessories.

Entering Programming

To enter System Programming:

1. Turn on ignition.
2. Within 5 seconds, press valet switch 5 times.
   - The lights will flash 3 times, indicating that you have entered Programming.
3. Press the valet switch the number times equal to the Feature you want to change.
   - The lights will flash each time the valet switch is pressed.
4. Within 5 seconds, press the transmitter button corresponding to the desired operating mode for that Feature.
   - The lights will flash to indicate the setting.
     One flash = Button 1
     Two flashes = Button 2
     Three flashes = Button 3
5. Repeat steps 3 and 4 to change additional features.
6. Turn off ignition to save changes.
   - The lights will flash once to confirm exit.

Note: The optional FM transmitter may not be used for feature programming.

Programmable Features

1. Ignition Locking. Automatically locks the doors when the ignition is turned on. The system will not lock the doors if any door is open when the ignition is turned on.

2. Ignition Unlocking. Automatically unlocks the doors when the ignition is turned off. Select from all door unlock, driver's door only unlock, or no unlock. (Note: Driver's door only unlock requires wiring the system for Passenger Unlock. see Two Step Unlocking Diagrams.)

3. Door Unlock Pulse - Single/Double. Selects between a single pulse or a double pulse door unlock output.

4. Door Lock Pulse Width. Selects between a 1-second and a 3-second output for vehicles equipped with vacuum door locking systems.

5. Auxiliary 2 Auto Activate on Lock. When selected, the Auxiliary 2 output will activate when the Lock button is pressed.

6. Auxiliary Function 1 - Selectable for Momentary, Timed, or Latched operation.

When Momentary operation is selected, the system will provide an output for as long as the Transmitter button is held.

When Latched operation is selected, the system will provide an output that turns on when the transmitter button is pressed and turns off when the transmitter button is pressed again.

When Timed operation is selected, the system will provide an output that turns on for 10 seconds each time the transmitter button is pressed. If the button is pressed again during the 10 seconds, the output will turn off.

7. Auxiliary Function 2 - Selectable for Momentary, Timed, or Latched operation.

8. Not Used.

9. Remote Start in Valet Mode. Determines if remote start operates while in valet mode.

10. Not Used.

11. Not Used.

12. Engine Run Time. Selects between 12 and 24 minute run cycle.

13. Cold Temperature Starting. Allows the vehicle to automatically start and run every 2 hours or every hour for severe cold weather.

14. Engine Start Sense. Selects between Smart Start for tachless operation, or Tach Start for actual RPM monitored starting. (see Step #15 and *Engine Programming for Remote Start* below)

15. Engine Programming. Pressing transmitter button 1 "learns" the RPM. For diesel vehicles, after learning Tach signal enter step #15 again and set for diesel by pressing button 3. (see *Engine Programming for Remote Start* below)

16. FM Transmitter Module. Pressing Button 1 learns the add-on FM module ID for FM transmitter compatibility. Pressing button 2 allows FM transmitter learning. After pressing button 2 on the AM remote, press transmitter button 1 on each FM remote (max 2).

17. Ignition 2 Relay Programming. Selects between second ignition, second accessory, or second starter output operation for heavy gauge BROWN wire.

18. Horn Output. Selects between horn output or ignition 3 output for the horn wire.

Engine Programming for Remote Start

In order for the system to properly start and run the vehicle, the unit must be able to determine if the engine is cranking or if the engine is actually running. This system is equipped with two means of detecting the engine's run status: Smart Start and Tach Start.

The **Smart Start** feature detects the engine's run status by interpreting certain characteristics of the engine, without requiring connection to the vehicle's tachometer wire. This feature allows faster installation, but may not work with all vehicles, or in extreme temperatures.

Programmable Features

Step	Function	Button 1	Button 2	Button 3
1.	Ignition Locking	On	Off	
2.	Ignition Unlocking	All Doors	Driver only	Off
3.	Door Unlock Pulse	Single	Double	
4.	Door Lock Pulse Width	1 second	3 seconds	
5.	Auxiliary 2 Auto Activate on Lock	Off	On	
6.	Auxiliary 1 Output	Momentary	10 seconds Timed	Latched
7.	Auxiliary 2 Output	Momentary	10 seconds Timed	Latched
8.	Not Used			
9.	Remote Start in Valet Mode	Disabled	Enabled	
10.	Not Used			
11.	Not Used			
12.	Engine Run Time	12 minutes	24 minutes	
13.	Cold Temperature Starting	Every 2 hours	Every hour	
14.	Engine Start Sense	Smart Start	Tach Start	
15.	Engine Programming	Learn RPM	Gas Engine	Diesel Engine
16.	FM Module Program (optional)	Learn Module	Learn FM Transmitter	
17.	Ignition 2 Relay Programming	Ignition 2	Accessory 2	Starter 2
18.	Horn Output	Horn Output	Ignition 3 Output	

The **Tach Start** feature requires connection to the vehicle's tachometer wire, or an injector (-) wire if the tach wire is not available. The Tach Start feature provides reliable operation with virtually any vehicle and in severe temperature extremes. When Tach Start is selected, the vehicle's tach signal must be "learned" through system programming. (see below)

To Program the Tach Start feature:

1. Enter System Programming. (see Entering Programming)
2. Program Step #14 to Tach Start using transmitter button 2.
3. Re-enter system programming, and go to Step #15.
4. Immediately start the vehicle with the key to avoid the programming sequence timing out.
5. Press transmitter button 1 to learn the vehicle's tach signal.
   - The LED will flash once if the tach was learned.
   - The LED will flash 5 times if the tach was not learned.
6. Turn off ignition to save settings.

The default setting for the engine mode is **Gas Engine**. For diesel vehicles, the engine type for Step #15 must be set to **Diesel Engine**. When programmed for diesel engines, the BLUE/YELLOW wire (glow plug input) is monitored to make sure the glow plugs have warmed up before the engine begins cranking. If the glow plug wire is not connected, the unit has a built-in timer that waits 15 seconds before cranking the starter.

Complete Default Reset

Following this procedure will set all Programmable Features to factory default settings.

1. Enter System Programming.
2. Press Transmitter Button 3.
   - The lights will flash 6 times indicating the reset signal was received.
   - All Programming options are now set to factory default settings.
3. Turn ignition off.

Adding Transmitters

To add a new transmitter to the system have the desired transmitters ready and follow the Code Learning sequence.

To enter Code Learning Mode:

1. Turn the ignition on, off, on, off and leave on.
   - The lights will flash 3 times.
2. Press the Valet switch.
   - The status LED will turn on red.
   - The lights will flash 5 times.
3. Press the Lock Button on the transmitter.
   - The lights will flash once.
4. Press Lock Button on the transmitter again.
   - The lights will flash twice.
5. Repeat steps 3 and 4 for each additional transmitter.
6. Turn off the ignition.
   - The lights will flash 3 times.

Factory Theft Deterrent Systems

Many newer vehicles are factory-equipped with anti-theft systems that disable the fuel system unless a properly coded key is inserted into the ignition cylinder. In these vehicles, first determine the type of anti-theft system, then install the proper bypass module.

General Motors Anti-theft Systems:

Many late-model GM vehicles are equipped with one of three basic anti-theft systems; Passkey, Passlock, and Passkey 3. Standard Passkey systems are easily identified by the resistor chip visible on the shaft of the key. Passlock systems use a normal key, but feature an ignition cylinder that generates a resistance code when the key is turned to start the vehicle. To properly interface into these systems and retain full functionality of the factory anti-theft system, a VATS/PASSLOCK bypass module must be installed.

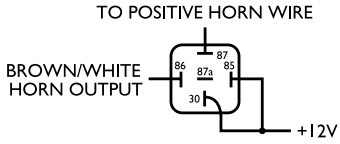
The Passkey 3 system, which is found on GM vehicles 1999 and newer, is a transponder based system described below.

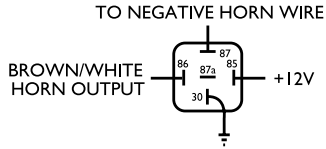
Passive Transponder Systems:

Passive transponder systems (commonly found on late model Ford, Honda, Chrysler, Toyota, Nissan and other vehicles) feature a tiny passive transmitter housed in the base of the key. This passive device activates when placed close to the vehicle's ignition switch, sending a signal that enables the vehicle's fuel delivery system. If the transponder key is not detected, the starter will crank but the fuel system will be disabled, not allowing the vehicle to run. To properly interface these systems, a transponder bypass module must be installed. These modules allow full functionality of the factory anti-theft system and may require the use of a spare key.

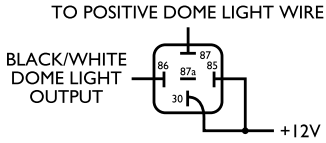
RELAY WIRING DIAGRAMS

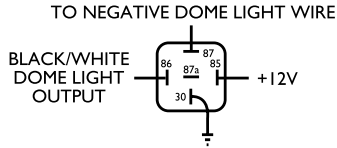
HORN HONK DIAGRAMS



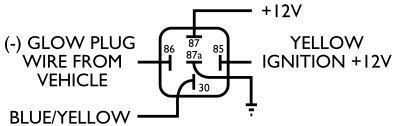


DOME LIGHT DIAGRAMS

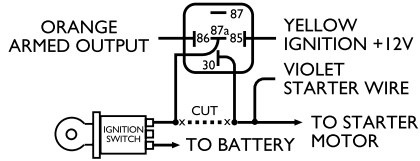




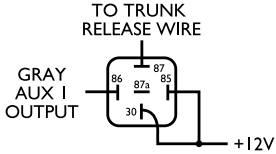
NEGATIVE GLOW PLUG



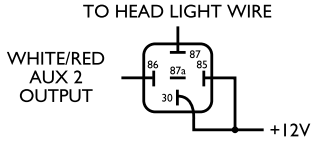
STARTER DISABLE / ANTI-GRIND



TRUNK RELEASE DIAGRAM



OPTIONAL HEADLIGHT ACTIVATION

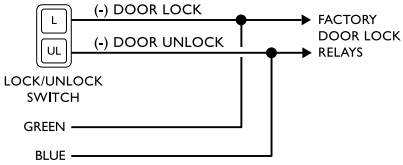


Program the Auxiliary 2 output for timed operation and the headlights will turn on with Aux 2 for the pre-set timer duration then automatically turn off.

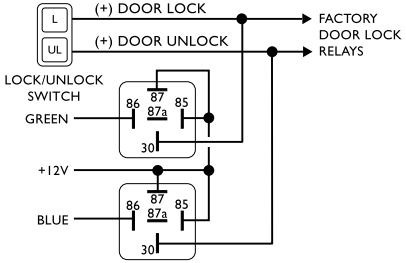
Program the Auxiliary 2 output for latched operation and the headlights will turn on with Aux 2 and remain on until the Auxiliary 2 function is pressed again.

DOOR LOCK WIRING DIAGRAMS

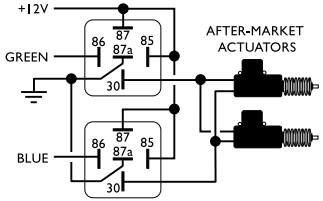
NEGATIVE PULSE LOCK SYSTEM



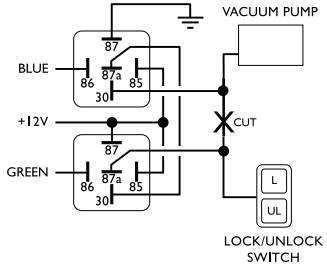
POSITIVE PULSE LOCK SYSTEM



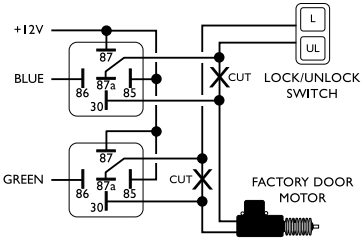
ADDING ACTUATORS



VACUUM LOCK SYSTEM

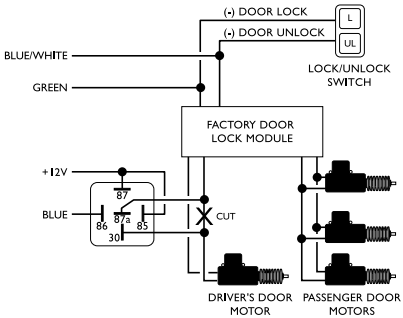


REVERSE POLARITY LOCK SYSTEM

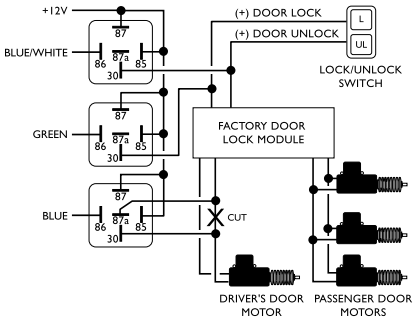


OPTIONAL TWO-STEP UNLOCK WIRING DIAGRAMS

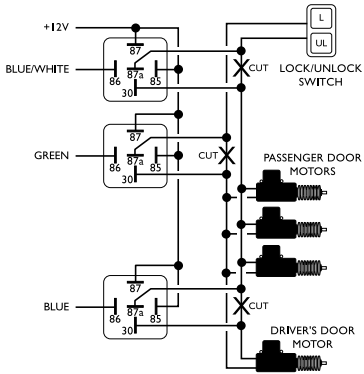
TWO-STEP UNLOCK NEGATIVE PULSE



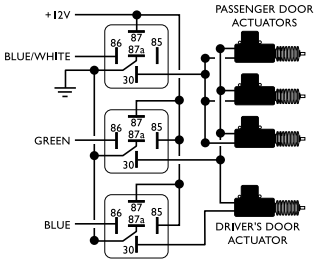
TWO-STEP UNLOCK POSITIVE PULSE



TWO-STEP UNLOCK REVERSE POLARITY



TWO-STEP UNLOCK ADDING ACTUATORS



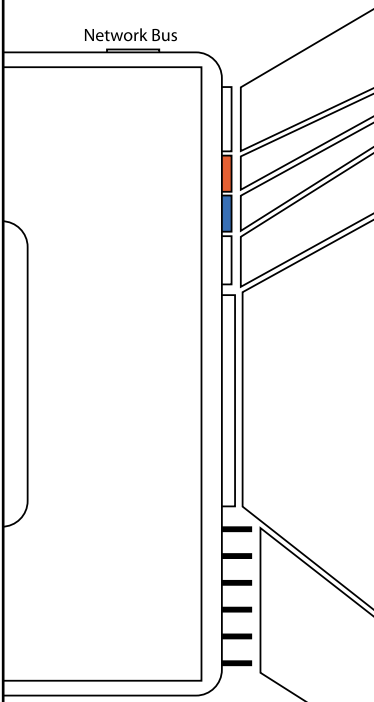
TROUBLESHOOTING

Problem	Probable Cause	Suggested Correction
Range is poor.	Antenna wire is grounded; Module is picking up interference from vehicle's electrical system.	Make sure antenna is not connected to ground; Relocate module or route antenna away from computer modules.
Vehicle will not remote start.	Safety inputs are triggered. System is in Valet mode.	Check brake switch input (+) or hood input (-). Exit Valet mode.
Vehicle cranks and begins to run, then shuts off.	Smart Start is not compatible with this vehicle; Vehicle's tach signal is not learned.	Connect the BLACK/GRAY wire, and program the unit to learn the vehicle's tach signal.
Vehicle cranks but will not run.	Vehicle has a factory theft deterrent system that prevents starting w/o key in ignition.	See Bypassing Factory Theft Deterrent Systems.
Keyless entry does not operate with remote.	Wrong door lock polarity; Wrong lock wires connected.	See door lock diagram; Verify vehicle lock/unlock wires.
Ignition triggered door lock feature does not operate.	Yellow wire shows +12V; Door is open; Door trigger input wrong polarity.	Connect yellow wire to proper ignition wire; Close door; Change door trigger polarity.
Car horn honks when system disarmed and door is opened.	Vehicle's factory security system needs to be disarmed.	Locate the disarm wire (usually located in driver's kick panel) and connect VIOLET/WHITE wire to disarm factory system.
Car will not start and system does not function properly.	Vehicle battery dead or drops below 9 volts during cranking.	Charge or replace battery.
Diesel vehicle cranks at incorrect time (before wait-to-start light turns off or long after light turns off,.	Glow plug wire not connected; Glow plug wire connected to wrong wire; Wrong glow plug wire polarity.	Connect BLUE/YELLOW wire to glow plug wire; Connect to correct glow plug wire in vehicle; Check glow plug wire polarity and use a relay to change (see Relay Diagrams).

TROUBLESHOOTING CONTINUED

Problem	Probable Cause	Suggested Correction
System will not enter Code Learning Mode.	Ignition was not left in the on position after turning it on & off three times; Sequence not performed rapidly enough (5 sec.); Valet switch is defective or not plugged in.	Leave ignition in on position; Repeat procedure quicker; Replace valet switch.
Parking lights do not flash.	Wrong wire connected, Wrong polarity selected, or RED Wire #1 not connected to battery power.	Connect WHITE wire to proper wire, Reverse jumper polarity (see Jumper Settings), Connect RED wire #1 to +12V.
Door locks do not lock or unlock correctly, or action is reversed	Defective GREEN or BLUE wire in door lock connector plug, GREEN and BLUE wires reversed, or wrong door lock wiring diagram used.	Check GREEN and BLUE wires on door lock connector plug; Verify vehicle's type of door lock system; Reverse wiring to door relays.
Illuminated Entry does not activate on upon unlock.	External relay required, or Wrong polarity wired for relay.	Add relay (see Relay Wiring Diagrams; Reverse relay polarity.

WIRING DIAGRAM



White	3 pulse start input (-)
Black	Not Used
Blue	Single pulse start input (-)
Red	Not Used

LED

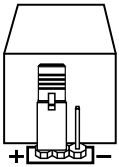
Valet Switch

Green	Lock output (-) 500mA
Red	+12V relay trigger output 300mA
Blue	Unlock output (-) 500mA

Green/White	Brake input (+)
Black/Gray	Tachometer input
White/Red	Auxiliary 2 output (-) 500mA
Black/White	Dome light output (-) 500mA
Yellow	Ignition input (+)
Blue/Yellow	Glow plug (wait-to-start) input (+)
Blue/White	Passenger unlock output (-) 500mA
Blue/Orange	Remote start output (-) 500mA
Black	Ground
Red	+12V Battery input #3
Violet	Door trigger input (+)
Green	Door trigger input (-)
White/Black	Hood input (-)
Orange	Locked output (-) 500mA
Violet/White	Factory alarm disarm output (-) 500mA
White/Violet	Factory alarm arm output (-) 500mA
Brown	Piezo / siren output (+) 3A
Gray	Auxiliary 1 output (-) 500mA
White	Parking light output (+/- built-in relay)
Brown/White	Horn output (-) 500mA

Violet	Starter output
Yellow	Ignition 1 output
Orange	Accessory output
Brown	Ignition 2 output
Red	+12V Battery input #1
Red	+12V Battery input #2

JUMPER SETTINGS



Parking Light Relay

The output polarity for the built-in parking light relay is determined by the placement of the jumper on the 3 pins in front of the relay. The default settings is illustrated on the left.

Jumper on Center Pin and Left Pin = Positive Output
Jumper on Center Pin and Right Pin = Negative Output