OMEGA®

RESEARCH AND DEVELOPMENT, INC.

OWNER'S MANUAL
&
INSTALLATION INSTRUCTIONS

RS-6

REMOTE CAR STARTER MODULE

FOR AUTOMATIC TRANSMISSION VEHICLES ONLY

DAY - TO - DAY OPERATIONS

INSTALLATION INSTRUCTIONS

SPECIAL INSTALLATION CONSIDERATIONS

Congratulations on your purchase of the RS-6 Remote Car Starter Module. The RS-6 will allow you to start your vehicle's engine from the comfort of your home or office, to warm up the vehicle in winter and cool it down in summer before you enter it. When you leave your vehicle, simply set the climate controls for what you desire to be operating upon remote start - heater, defroster or air conditioning.

The RS-6 is an "add on" unit designed to be used in conjunction with another remote control unit such as a remote vehicle security system, a keyless entry device or a remote receiver unit. Because the host activating unit will vary from application to application, the proper button or buttons to press to activate the remote starter can only be determined by the installer.

Please take time to review this manual.

There are several safety considerations with using and installing the RS-6 Remote Car Starter. Among them are:

- This unit is for Automatic Transmission vehicles only. Attempting installation in a manual transmission equipped vehicle can result in property damage or personal injury.
- This unit is for fuel injected gasoline and diesel engines only.
- Children should not be left unattended in, or be allowed to play with the activating transmitters of a remote starter equipped vehicle.
- All installation safety features should be utilized and safety warnings heeded.

Your RS-6 Remote Car Starter is activated by remote control. This is typically done from a small radio transmitter, usually attached to your key ring. As previously stated, the RS-6 is an "add on" unit designed to be used in conjunction with host remote control unit such as a remote vehicle security system, keyless entry system or remote receiver unit. The exact activation method for your vehicle may vary. The normal activation involves pressing either a single or multiple button(s) on the transmitter. Please note that other reactions may occur, depending on the host unit. For example, if a security system's auxiliary output is being utilized, it may also disarm or it may chirp its siren. As noted earlier, the installer can determine the exact remote start activation procedure, and also inform you of the total reactions of your particular system.

Typical Activation:

1) The parking lights (if connected) will flash one time, confirming the activation command.
2) The vehicle's Ignition circuit will then turn on.
3) The Starter will engage. The Ignition circuit will remain on.
4) The engine will start to run, which will be detected by the RS-6, and the Starter will automatically be disengaged.
5) After the engine is running, the parking lights will flash twice, then pause, throughout the period that the engine is running by control of the RS-6.

- If the engine stalls, the unit will make two more attempts to restart it.
- After ten (or twenty) minutes the RS-6 will automatically turn the engine off.

The RS-6 includes multiple built-in safety features. The unit will not engage if the gear shift selector is in a forward or reverse gear position, or if the brake pedal is being pressed. The unit will not engage if the hood or if a door is opened. If the engine is running by remote control, any of these conditions will cause the engine to stop running.

The RS-6 may be deactivated by several methods. To stop the engine by remote control, you may simply press again the same transmitter button(s) used to activate the unit. Opening a door of the vehicle will cause the engine to stop running 30 seconds later. Once you have entered the vehicle, stepping on the brake pedal or removing the shifter from "Park" will deactivate the unit, stopping the engine.

While the engine is running:

- Opening a door will stop the engine 30 seconds later.
- Pressing the brake will stop the engine.
- Removing the gear shift selector from the "Park" position will stop the engine.
- Raising the hood will stop the engine.
- The RS-6 will stop the engine if it receives another activation command.

The RS-6 will not Activate if any of these safety circuits are triggered:

- An open door.
- Pressing the brake the brake pedal.
- The gear shift selector not being in "Park" or "Neutral" position.
- An open hood.

Upon deactivation, if you first used your vehicle's key to turn the ignition switch to the "on" position (do not turn the key to the "start" position), the engine will remain running after the RS-6 is deactivated.

The Valet Switch:

The RS-6 Remote Starter includes a "valet switch". This switch allows the RS-6 to used, or prevents it from being used. Consult with the installer as to the operation of the valet switch, as it can be configured to operate one of several ways. The valet switch should be used to turn the RS-6 off when desirable, such as leaving the car for servicing, letting others drive the car or having it valet parked. This switch may also be used to deactivate the unit while the engine is running.

Installation

The RS-6 is an extremely sophisticated system with multiple built-in safety and security features. It is highly recommend that this system be professionally installed, as the complexity of the modern automobile and the nature of circuits to be accessed is often beyond the abilities of most do-it-yourselfers.

This unit is to be installed on automatic transmission vehicles only! Do NOT install on manual transmission vehicles. The hood pin switch and valet switch MUST be installed.

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

Mounting the Control Module:

Choose the mounting location and route all wiring accordingly . . . the final mounting of the control module should be done after having made all wiring connections and testing the RS-6's operation. Always securely mount this module in the vehicle's interior compartment, never in the engine compartment. Ensure that moisture, vibration and temperature extremes are minimized. Acceptable locations include mounting behind the dash, behind the glovebox or other interior panels.

Main Wiring Harness Connections -
5 Primary Wires

Black Wire - (Ground): The Black wire provides Negative ground for the RS-6's operation; proper connection 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.

Red Wire - (Constant Power): The Red wire supplies constant Positive 12 Volts for the system's operation. This wire must be supplied sufficient amperage.

CONNECTION: Connect this wire to Positive battery voltage. The most common source is the battery's Positive terminal. If the battery is selected as the power source, start at the battery and route the Red wire to the control module. Carefully route the long Red wire through the firewall, using an added or existing grommet. Avoid any hot or moving parts. The fuse holder should always be close to the power source connection, not the control module. An insulated terminal is provided for the control module end; this allows cutting the Red wire to length, if desired. Connect the ring terminal attached to the fuse holder to the battery's Positive terminal. After all of the other wiring connections have been made, insert the Green 30 amp fuse into the fuse holder.

Some vehicles have a single Constant 12 Volt circuit supplying the ignition switch. A schematic of the car's electrical system will show if this is the case. If so, the Red wire may be connected at the ignition switch wiring harness, but the fuse holder and 30 amp fuse must also be used.

The use of the 30 amp fuse and the fuse holder is required! Failure to properly install the fuse holder and the 30 amp fuse will void all warranties.

Blue Wire - (Ignition #1 Output): The Blue wire is an ignition "on" 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 another activation input, 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.

Yellow Wire - (Ignition #2/Accessory Output): The Ignition #2/ Accessory Yellow wire's operation differs from the Ignition #1 Blue 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 Yellow 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 Ignition #2 or Accessory wire. This circuit in the vehicle can vary in its function. 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.

CONNECTION: Connect this Green wire to the vehicle's Starter wire. 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 when ignition key is in "start" position only (cranking the engine). 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.

If the optional anti-grind feature is also being installed, the Green Starter Output wire should be included in its connection. This simplifies the overall connections and saves time. See page xx for these instructions.

8-Wire Connector

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

CONNECTION: Connect the Yellow/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 Yellow/Black wire's operation. Attempt to remotely start the vehicle while holding the brake pedal depressed; the system should <u>not</u> respond. 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.**

White/Blue Wire - (Neutral Safety Input): This circuit is another critical safety feature which enables the system's remote start operations. Connect the White/Blue 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 White/Blue 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 White/Blue 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. Activate the RS-6 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.

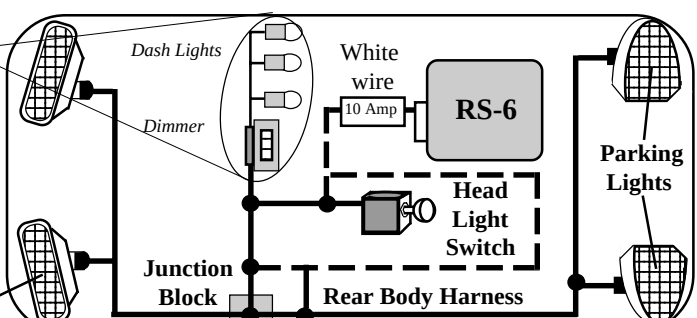
The Neutral Safety White/Blue Wire is also an option for the installation of the valet switch. When this option is chosen, splice the valet switch inline into the Neutral Safety White/Blue Wire. See page xx-xx for more valet switch information.

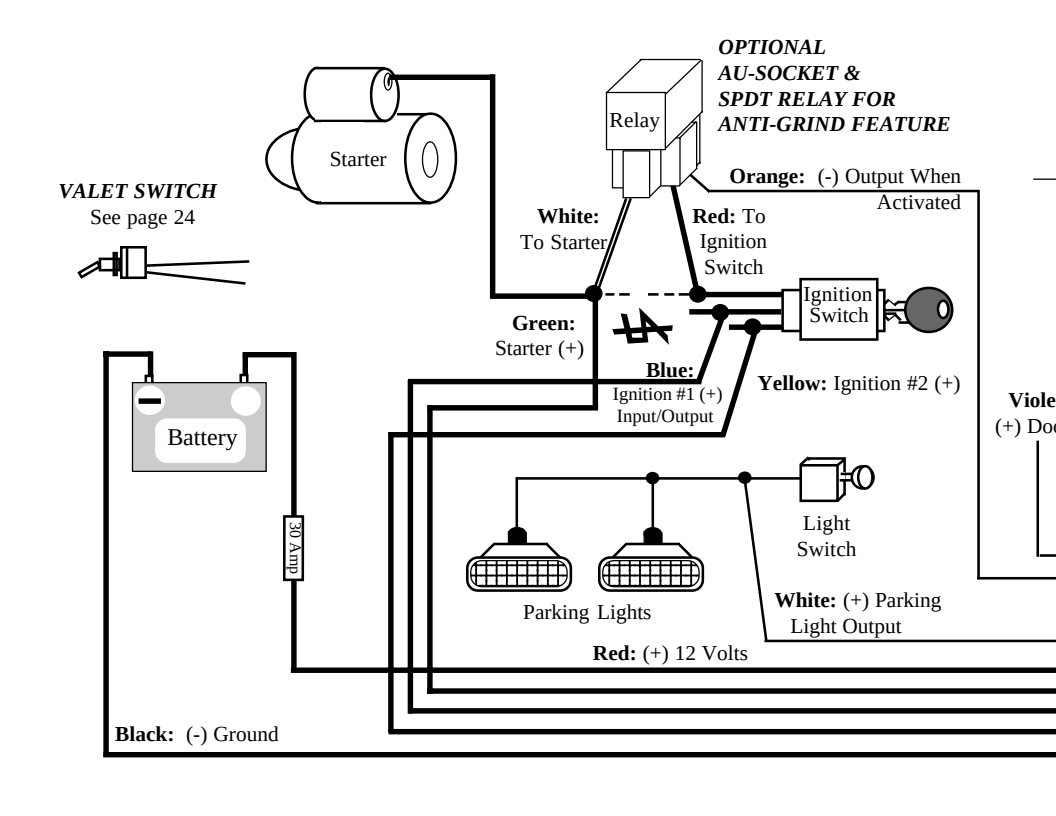
White Wire - (Positive Flashing Light Output): This is a Positive 12 Volt output to flash the vehicle's parking lights as a confirmation of the RS-6's operations.

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.

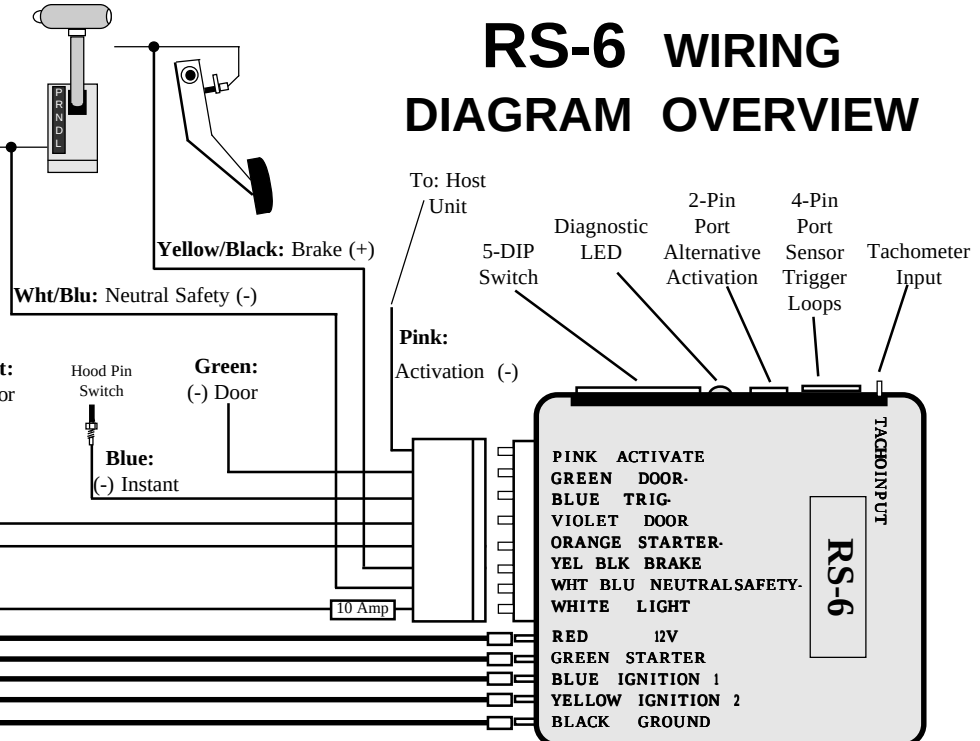
Three suggested Parking Light connections

Caution: Do not connect to the dimmer circuit! Damage to the control unit or vehicle can occur!




OPTIONAL
AU-SOCKET &
SPDT RELAY FOR
ANTI-GRIND FEATURE
Relay
Starter
VALET SWITCH
See page 24
Orange: (-) Output When Activated
White: To Starter
Red: To Ignition Switch
Ignition Switch
Green: Starter (+)
Blue: Ignition #1 (+) Input/Output
Yellow: Ignition #2 (+)
Violet
(+) Door
Battery
30 Amp
Light Switch
Parking Lights
White: (+) Parking Light Output
Red: (+) 12 Volts
Black: (-) Ground

RS-6 WIRING DIAGRAM OVERVIEW



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.

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 must be used to connect the White wire to each parking light side. 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 noticed. 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.

Blue Wire - Safety Instant Trigger: The Blue wire is a Negative safety instant trigger input. This circuit is designed for use as an open hood safety circuit, and the valet switch may also be connected to it.

CONNECTION: The included pin switch must be installed to provide this trigger circuit. Find a location in the engine compartment which will allow the pin switch to be

mounted securely in a position where it is fully depressed by the hood. Ensure that when the hood is released for opening that the pin switch extends, thus closing the circuit and grounding the Blue wire.

The Safety Trigger Blue Wire is also an option for the installation of the valet switch. When this option is chosen, ground one valet switch and splice the other valet switch wire into the Safety Trigger Blue Wire. See page xx-xx for more on the valet switch.

Connect One Of The Following:

Green Wire - (Negative Door Input): 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 Input): The Violet wire is identical to the Green Door Input 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 WIRES: Typically, only one of the Green and Violet wires need connection. An open door will prevent activation of the RS-6; after the RS-6 has started the engine, opening a door will cause the engine to stop 30 seconds later.

The correct wire in the vehicle should show the change in polarity 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.

Pink Wire - Activation Input: If the Pink wire receives a Negative pulse, the RS-6 is activated to start the engine. Once activated, another Negative pulse on the Pink wire will stop the engine. An alternative activation circuit is the 2-pin Blue port (see page xx).

CONNECTION: For most applications, an "auxiliary output" on the host security

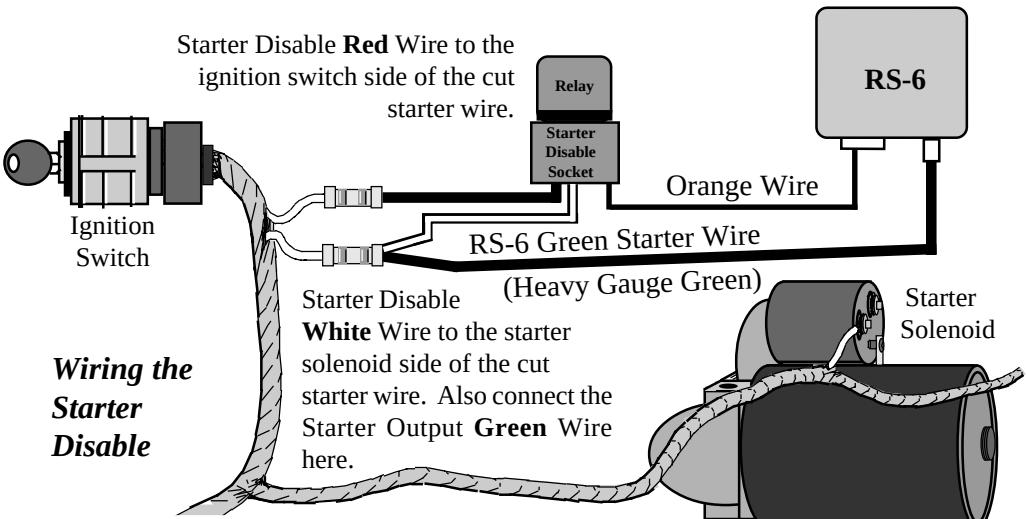
or keyless entry system is used. This is typically in the form of "trunk release" output, "second channel" or "third channel" output. Provided the host system's output circuit provides a momentary Negative output upon demand, simply splice the RS-6's Pink wire directly to the host system's output wire. If the host unit has no suitable output available, such as a basic keyless entry system, the Blue 2-pin port may be used for activation instead of the Pink wire. Of course, if the vehicle has no form of existing remote control capability, it must be added.

Orange Wire - (Optional Anti-Grind Feature): The Orange wire is a starter interrupt output, which is active whenever the RS-6 is activated. The optional Anti-Grind feature is convenient for persons forgetting not to turn the ignition key to the "start" position when driving away after using the remote starter.

CONNECTION: The anti-grind option is easily configured using an optional standard Omega starter interrupt relay socket; therefore, these instructions reflect the use of the socket and relay. The anti-grind option is best configured in conjunction with connecting the Green Starter Output wire. To interrupt the vehicle's starter circuit, the starter wire must be cut. Cutting the vehicle's starter wire will result in two sides- the "ignition switch" side and the "starter solenoid" side.

Connect the starter disable socket's Red wire to the ignition switch side, and its White wire, along with the Green Starter Output wire, to the starter solenoid side. Be sure that good, solid electrical connections are made as this generally is a high amperage circuit.

Adding the optional "Anti-Grind" feature with connection of the Green Starter Output wire



Wiring the Starter Disable

Tach Wire

Orange/Black Wire - (Tach-Sensing Wire): The Orange/Black wire is an engine speed or tachometer sensing wire. The system actually uses two different methods of monitoring the engine's starting/running status during the remote starting process- the Orange/Black tach wire, and voltage sensing. The tach wire is typically more accurate in monitoring the engine status, and its use is recommended. There is no programming involved, or need to configure the unit for one method or the other, as the system will automatically use either the tach wire input, or voltage sensing.

CONNECTION: Connect the Orange/Black 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. 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 with engine speed.

4-Wire Connector

Pair of Blue/White Wires - (Sensor #1 Input/Output):
Pair of Green/White Wires - (Sensor #2 Input/Output):

These two sets of wires will open during remote starting operation, but otherwise remain closed. When adding the RS-6 to host car alarm system, these circuits may be used

to open trigger input circuits between an auxiliary sensor and the host alarm. This will allow having the alarm remain armed during remote start operations, but not having a false alarm due the running engine being detected by the sensor.

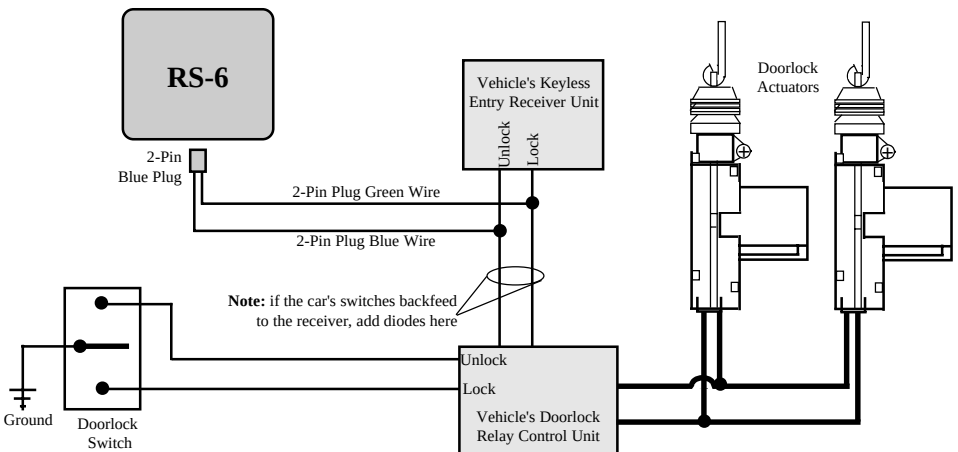
CONNECTION: Two separate circuits are provided, the Blue/White wires being on circuit, and the Green/White wires the other. Two separate sensor circuits, typically a "prewarn trigger" and "alarm trigger", can thus be accommodated. Simply cut the sensor's trigger wire(s), and connect each cut end to one set of the RS-6's wires.

2-Wire Connector

Green Wire - (Door "Lock" Input):
Blue Wire - (Door "Unlock" Input):

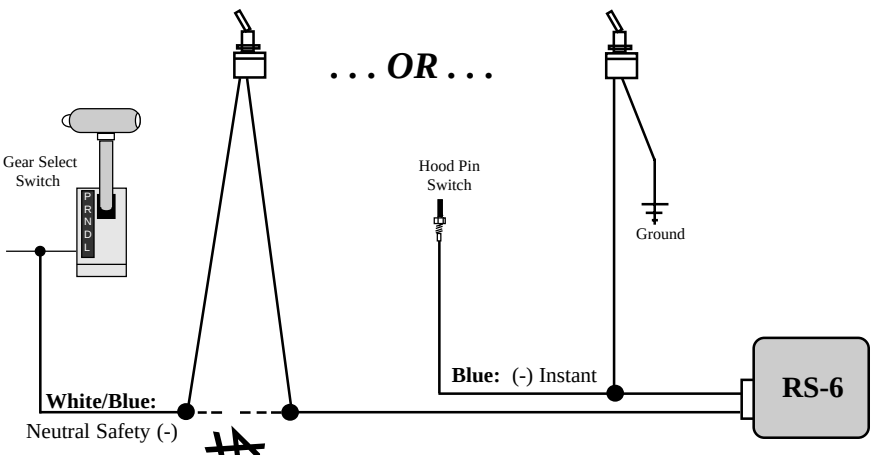
These two wires offer an alternative method of activating the RS-6. This is especially useful when no extra output is available for the RS-6's activation, such as when the host unit is a basic keyless entry system. This method of activation "reads" the doorlock wires in the vehicle's keyless entry system. If the 2-pin plug's Blue wire receives a Negative pulse, then the Green wire, and then the Blue wire again, the RS-6 will be activated. In a typical installation using this method, using the existing keyless entry transmitter to lock, unlock, then lock the doors again would activate the remote starter. When this method is utilized, the Pink activation wire is not used, and should be removed from the 8-pin pin harness, or securely taped.

CONNECTION: Connect the Green wire to the host keyless entry unit's "lock" output wire, and the Blue wire to the "unlock" output wire; these connections are best made at the host keyless entry receiver unit. This method requires that the lock and unlock input pulses be Negative; where needed, relays may be used to reverse the polarity. Check to ensure that at the chosen connection location that operating the doorlock switches does not cause Negative pulses to backfeed to the keyless entry receiver. If so, diodes may used to isolate the switches from the keyless entry receiver so that the RS-6 is only activated from the receiver, and not the switches.



The Valet Switch

The valet switch must be installed. There are two easy connection options available to the installer. The main operational differences are with the first method, using the White/ Blue Neutral Safety wire, if the switch is "on", the RS-6 will operate and if it is "off" the RS-6 will not operate. If the second method is chosen, the RS-6 will not operate if the switch is "on", and operate if it is "off".



Programming Switches

On the RS-6 module are five switches. These control certain aspects of the system's operation as follows:

SWITCH #1: This switch must be set according to the vehicle's engine type: set to the "on" position for gasoline engines, or set to the "off" position for diesel engines.

SWITCH #2: This switch sets the predetermined time that the RS-6 allows the engine to run.
Set to the "on" position, the engine run time is 10 minutes; set to the "off" position, the engine run time is 20 minutes. Please note that this "run time" is time allowed to expire before the RS-6 automatically stops the engine; all safety circuits, should one be triggered, will override the preset run time.

SWITCH #3: This switch operates an "automatic starting feature". To use this feature, the control module must be mounted in an accessible location. When this switch is turned "on", the RS-6 will thereafter automatically start the engine every three hours for the predetermined engine run time. This automatic starting will be repeated five times, unless cancelled by the ignition switch being turned "on" by the key.

SWITCH #4: This switch is an "on" or "off" switch; it must be in the "on" position for the RS-6 to operate.

SWITCH #5: This switch sets the base timing for the RS-6's starter output. The "base setting" is the total time that the RS-6 engages the starter without regards to "engine running input" from the Orange/Black Tach Wire or the voltage sensing operation. The base timing with Switch #1 in the "on" position is 1 second; in the "off" position the starter output base timing is 1.5 second. If the engine is hard to start, or if more starter output time is needed otherwise, set Switch #1 to the "off" position.

Products manufactured and sold by OMEGA RESEARCH & DEVELOPMENT, INC. (the "Company"), are warranted to be free from defects in materials and workmanship under normal use. If a product sold by the Company proves to be defective, the Company will repair or replace it free of charge within the first year and thereafter all parts to be repaired will be free with only a nominal charge for Omega Research and Development, Inc.'s labor and return shipping, to the original owner during the lifetime of the car in which it was originally installed.

All products for warranty repair must be sent postage prepaid to Omega Research & Development, Inc., P.O. Box 508, Douglasville, Georgia 30133, or send via UPS to: 981 N. Burnt Hickory Rd., Douglasville, Georgia 30134, with bill of sale or other dated proof of purchase. This warranty is nontransferable and does not apply to any product damaged by accident, physical or electrical misuse or abuse, improper installation, alteration, any use contrary to its intended function, unauthorized service, fire, flood, lightning, or other acts of God.

This warranty limits the Company's liability to the repair or replacement of the product. The Company shall not be responsible for removal and/or reinstallation charges, damage to or theft of the vehicle or its contents, or any incidental or consequential damages caused by any failure or alleged failure of the product to function properly. Under no circumstances should this warranty, or the product covered by it, be construed as a guarantee or insurance policy against loss. The Company neither assumes nor authorizes any person or organization to make any warranties or assume any liability in connection with the sale, installation, or use of this product.