OMEGA

RESEARCH AND DEVELOPMENT, INC.

# OPERATING & INSTALLATION INSTRUCTIONS

## RS-3A

### DELUXE REMOTE STARTER UNIT FOR

### AUTOMATIC TRANSMISSION VEHICLES ONLY

# Contents

## Introduction & Safety Considerations

Congratulations on your purchase of the RS-3A Remote Starter add-on unit. The RS-3A offers you the convenience of starting of your vehicle's engine, with the press of a button from the comfort of your home or office, allowing your vehicle to warm up in winter and cool down in summer.

The RS-3A is an "add-on" unit designed to be used in conjunction with an additional remote control vehicle accessory such as a security alarm or keyless entry system.

We 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.

There are several important safety considerations with using and installing the RS-3A remote starter unit. Among them are:

- This unit is for vehicle with an automatic transmission only. Installation in a vehicle equipped with a manual transmission can result in property damage or personal injury.
- This unit is for fuel injected gasoline or diesel engines.
- Children should not be left unattended in, or be allowed to play with the activating transmitters of any remote starter equipped vehicle.

## Remote Starting

**<u>To Remote Start The Vehicle</u>: Press the necessary button or button combination on the host system's transmitter.**

1) The parking lights will turn on to confirm the starting process.
2) The ignition circuit will turn on.
3) Within a few seconds the parking lights will turn off and the starter will engage.
4) The engine will start, run, and the starter will be disengaged.
5) The parking lights will turn back on while the RS unit is controlling the engine.
6) If the engine stalls, the RS unit will make two attempts to restart 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. Upon entering the vehicle place the ignition key in the switch and turn it to the "On" position. **Do not turn the key to the "Start" position.**

**<u>Deactivation</u>**

- Stepping on the brake pedal will turn the engine off.
- Opening the hood will turn the engine off. If the hood is open when an activation attempt is made, the RS unit will not respond, and will not start the engine.
- Turning “on” the Valet Switch will also stop the engine.

**Valet Mode**

The RS unit may be placed into a “valet mode” which prevents the remote start feature from being activated. Valet Mode should always be used when you do not wish for remote start to be operated, such as when you leave your vehicle with a valet parking attendant, mechanic or if you loan it to another person. An “on/off toggle” switch, the Valet Switch, is used for this, and it is typically mounted within easy reach of the driver. To engage the Valet Mode:

- At any time simply flip the Valet Switch to the “on” position. Three seconds later the parking lights will flash 3 times to indicate Valet Mode.

Once the RS unit is in Valet Mode, an attempt to remote start will instead be acknowledged by 3 parking light flashes, but no starting attempt.

- To turn off Valet Mode, with the ignition switch “On” simply flip the Valet Switch

Switch “off”; the parking lights will flash once. If the Valet Switch is turned “off”

## Installation Cautions and Warnings

**Do not attempt to install this Remote Car Starter into a manual transmission vehicle! Doing so could cause serious property damage, personal injury, and will void all warranties!**

**Be aware of, and avoid, any airbag circuitry! Due to the fact that an installer will not be in a normal, upright seated position, severe injury may occur in an accidental airbag deployment!**

**The use of a Digital Multimeter (DMM) or Volt-Ohm Meter (VOM) instead of a standard testlight is required. This can greatly reduce the risk of an accidental airbag deployment or on-board computer damage.**

**Battery gases are explosive! Avoid sparks and do not smoke while working near the vehicle's battery!**

**Always protect wires routed through the firewall from sharp metal edges and hot parts of the engine! Always fuse positive wires at their source!**

## Installation Instructions

# IMPORTANT!

**After reading this manual, start the installation by affixing the WARNING DECAL to a visible area in the engine compartment!**

**Installation Considerations:** 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 wires 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 RS control module, which is mounted upon completion of the installation.

This Remote Start Unit duplicates the actions that occur within the ignition switch when you use your key to start the engine. Because of this, most of the main wiring harness connections will be made at the ignition switch harness. The ignition switch wires usually are high amperage circuits, which means that high reliability connections must be made- soldering of all connections is recommended.

**Caution!** *Avoid the Airbag circuit!* Especially avoid any harness or wires encased

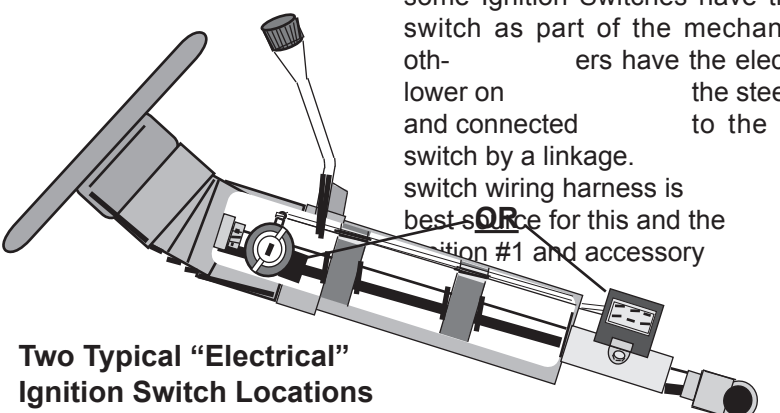
## W I R I N G - 5 Wire Connector

**(Two 12-Gauge) Red Wires: *Constant +12 Volts Input***

***Connection Required.*** Connect both Red wires to constant 12 Volts. The source used must supply adequate amperage. The most common sources are the battery's Positive terminal and the ignition switch wiring harness. Good reliable

some Ignition Switches have the electrical switch as part of the mechanical switch; oth- ers have the electrical switch lower on the steering column and connected to the mechanical switch by a linkage. The ignition switch wiring harness is the best source for this and the ition #1 and accessory

**OR**



**Two Typical "Electrical" Ignition Switch Locations**

**12-Gauge Green Wire: *Starter Output Connection Required.*** Connect the Green wire to the vehicle's Starter wire. This wire will show +12 Volts only when the ignition key is in the "Start" position. This wire is also found in the ignition switch wiring harness (see diagram on previous page). Some vehicles have a second Starter wire known as a "Cold Start" wire. When this is encountered, an optional relay may be needed, configured to the 3-pin Red port, to energize the second Starter wire (pages 22-23).

**Note:** If a security system is present which utilizes a starter interrupt circuit, the Green wire must be connected to the Starter Motor side of the interrupt.

**12-Gauge Blue Wire: *Ignition Output Connection Required.*** Connect the Blue wire to the vehicle's Ignition wire (also known as "Primary Ignition"). This wire will show +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 (see diagram on previous page).

**Note:** If two or more Primary Ignition wires are present, you will need to connect an optional relay or relays to the 3-pin Red port (see pages 22-23).

## 12-Gauge Yellow Wire: *Accessory Output*

***Connection Required.*** Connect the Yellow wire to the vehicle's Accessory wire. This circuit supplies power to the Heat, Ventilation and Air Conditioning (HVAC) system. This wire will show 12 Volts when the ignition key is in the "Run" and "Accessory" positions and No voltage in the "Start" and "Off" positions. The connection point for this wire is also found in the ignition switch wiring harness (see diagram on page 8).

## W I R I N G - 9 Wire Connector

## 22-Gauge Black Wire: *System Ground*

***Connection Required.*** Connect the Black wire to a very good, clean chassis ground. A recommended connection is to an existing machine-thread bolt, either in the driver's kick panel, steering column area or a major structural member behind the dash. Small dash braces are not adequate, and the area must be clean, bright metal. Use of a sheet metal screw or otherwise grounding to the vehicle's sheet metal is least desirable, and in some cases will result in an inadequate grounding of the system.

## 22-Gauge Yellow/Black Wire: *(+) Brake Input*

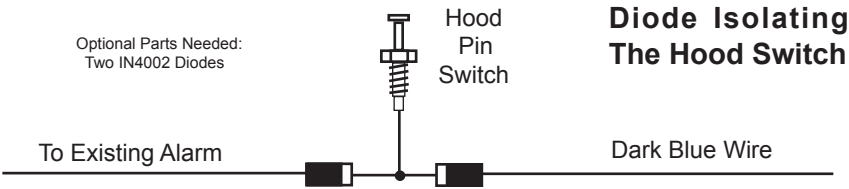
***Connection Required-*** **The Yellow/Black wire must be connected.** It is part a critical safety feature which disables the RS unit whenever the brake pedal is pressed. Connect the Yellow/Black wire to the brake switch wire which shows +12 Volts when the brake pedal is pressed. The brake switch is 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 Yellow/Black wire's connection, thoroughly test the operation of this circuit.

## 22-Gauge Dark Blue Wire: *(-) Hood Input*

***Connection Required-*** **The Hood Safety Switch must be installed and the Dark Blue wire must be connected.** This prevents operation of the RS unit if the hood is open.

Carefully install the included pin switch so that it is open (pin down) when the hood is shut and closed (pin up) when the hood is open. Connect the Dark Blue wire to the pin switch and carefully route this wire through the firewall, using an added or existing grommet, avoiding any hot or moving parts.

If there is an existing hood pin switch for an alarm system, you may use it for




Instead of using a pin switch to monitor the hood's open or shut status, an Omega
AU-46 Mercury Tilt Switch may used. Connect one of the AU-46's wires to Nega-

**22-Gauge <u>Orange/Black Wire</u>:** ***Engine Detect Input Connection Required.*** The Orange/Black wire is the engine detect wire. The RS unit utilizes <u>two different</u> methods of monitoring the vehicle during the remote starting process. Consider both methods before deciding which one to use. Normally the Smart Start method is used, especially for diesel engine applications in which the vehicle has no true tach signal available. An adjustment control and LED indicator for each method are on the side of the unit's case.

## 1) Smart Start:

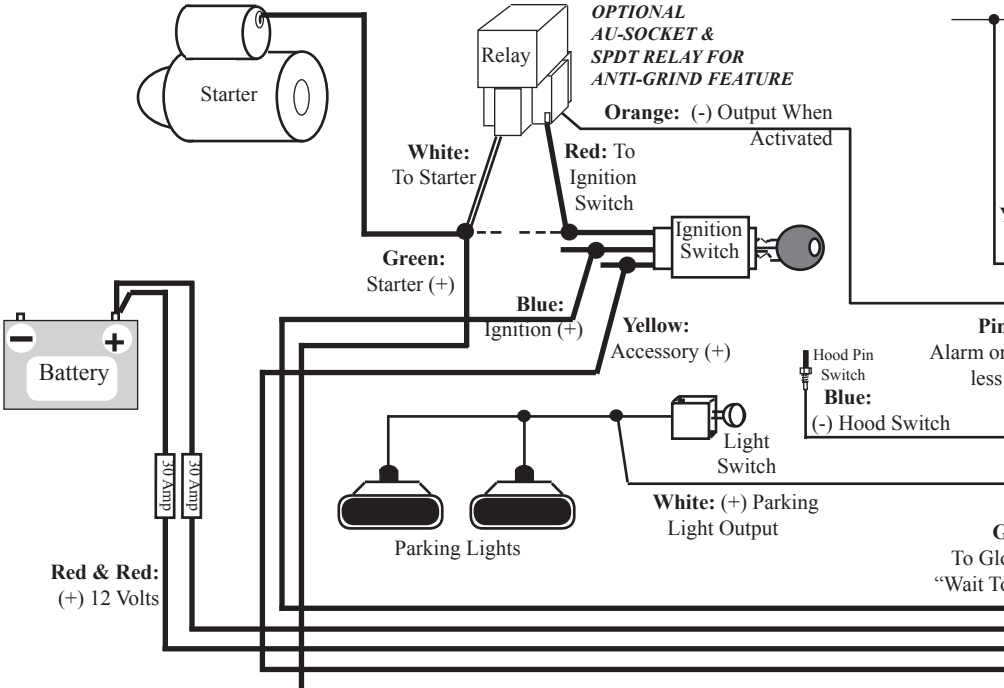
This method uses a voltage sensing circuit which reads the vehicle's voltage before attempting to start, and then monitors for a voltage increase which occurs when the alternator has output. The Orange/Black wire connects to a constant 12 Volt source; the recommended location is the vehicle's battery. Once all of the wiring connections are made, the Smart Start voltage sensing input must be adjusted, and Programmable Feature #5 offers two levels of the starter motor preset cranking times. To make the initial Smart Start adjustment:

1) Position the selector switch for Smart Start (right position).

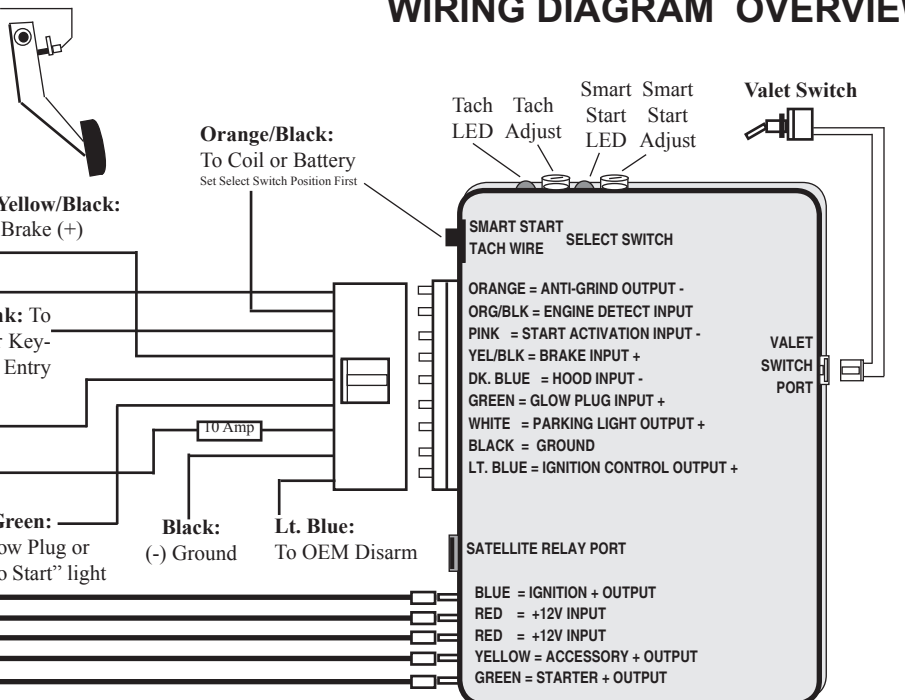
2) Locate the Smart Start adjustment and LED indicator on the side of the unit.
Ensure that both adjustment screws are completely counterclockwise.

3) Now start the engine with the key; then, turn the Smart Start adjustment screw slowly clockwise until the LED indicator begins to flash. The flashes confirm that the unit is sensing the engine.

4) Turn the engine off.


Starter
Relay
OPTIONAL
AU-SOCKET &
SPDT RELAY FOR
ANTI-GRIND FEATURE
Orange: (-) Output When Activated
White: To Starter
Red: To Ignition Switch
Ignition Switch
Green: Starter (+)
Blue: Ignition (+)
Yellow: Accessory (+)
Battery
Hood Pin Switch
Blue: (-) Hood Switch
Light Switch
30 Amp
30 Amp
Parking Lights
White: (+) Parking Light Output
Red & Red: (+) 12 Volts

# WIRING DIAGRAM OVERVIEW



a. Without starting the engine, turn the ignition key to the “On” position.
b. If the LED indicator remains off the unit has been properly tuned.
c. If the LED indicator flashes there is noise on the Orange/Black wire’s connection and it will be necessary to relocate the connection.

## 2) Tach Sense:

If the vehicle is generally hard to start (example: requiring the starter to be engaged for more than 1 second) this method will produce more consistent remote starting. With this method the Orange/Black wire reads the engine speed (tach) information from a wire in the vehicle. The Orange/Black wire connects to the vehicle’s tach wire, which is 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 will increase with engine speed. An additional adjustment control and LED indicator allows tuning the unit’s tach wire sensitivity.

1) Position the selector switch for Tach Sense (left position).

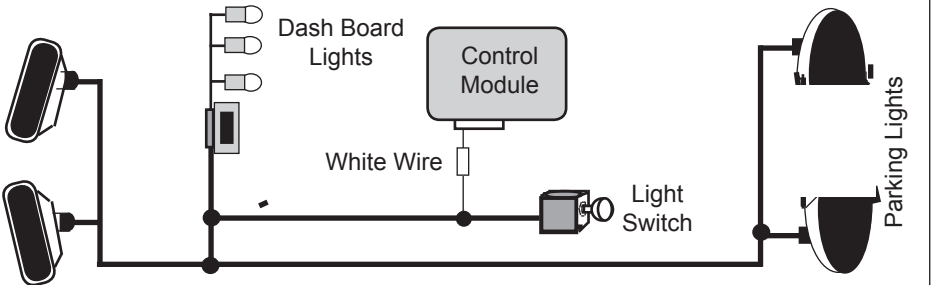
2) Locate the Tach Sense adjustment and LED indicator on the side of the

3) Start the engine with the key; then turn the Tach Sense adjustment screw slowly clockwise until the LED indicator illuminates solid.

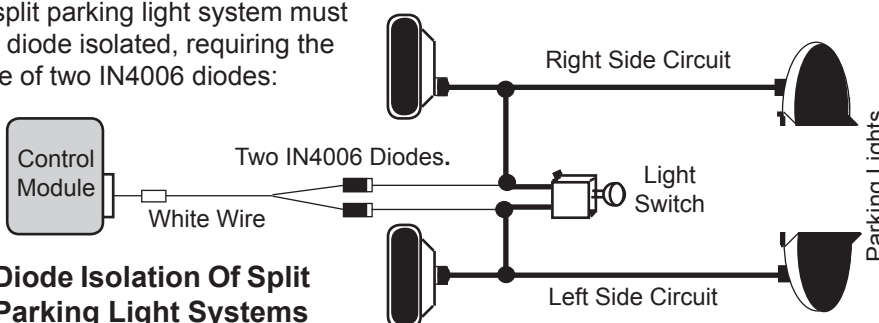
- To increase sensitivity, thus the crank time, turn the adjustment screw counterclockwise.
- To decrease sensitivity, thus the crank time, turn the adjustment screw

**22-Gauge White Wire: *Parking Light Output Connection Recommended.*** The White wire is a +12 Volt output to the vehicle's exterior parking lights and its function is to visually confirm remote start and Valet Mode operations. The parking lights are also used as indicators when programming features. Connect the White wire to the vehicle's 12 Volt parking light circuit as shown in the accompanying diagrams. The correct wire will show 12 Volts only when the headlight switch is in the "Parking Light" and "Head Light" positions. This wire can usually be found at the headlight switch, and various other locations within the vehicle, such as the rear body harness or firewall connector. **Caution:** When such a wire is located, be sure to also test 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. Some vehicles have a parking-light relay which is triggered by a Negative signal from the headlight switch. In these vehicles, the White wire must be connected after the relay, usually at the Fuse/Junction Block. Do NOT connect the White

## Typical Parking Lights Connection




directly to the vehicle's headlights. An external relay is required. Vehicles having a split parking light system must be diode isolated, requiring the use of two IN4006 diodes:




**Diode Isolation Of Split Parking Light Systems**

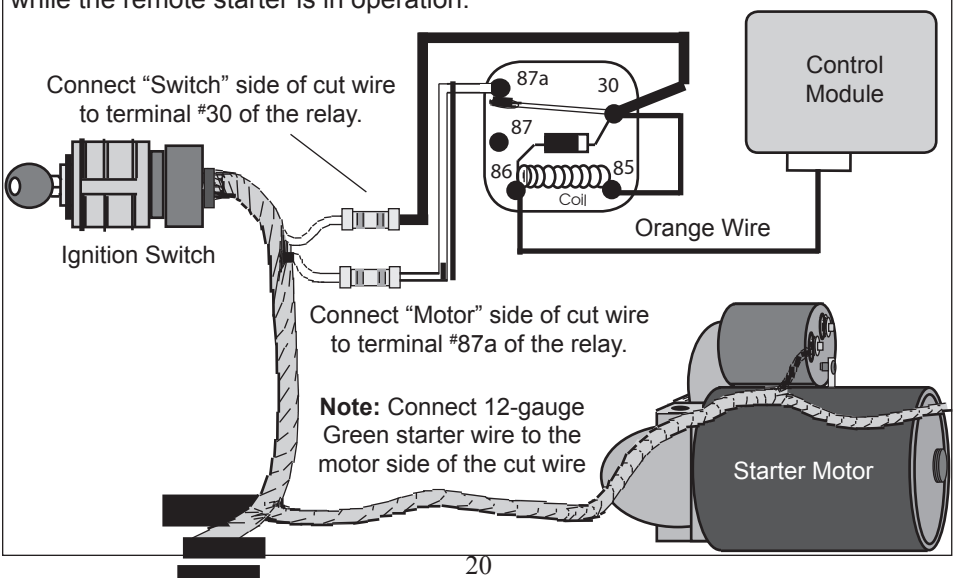
## 22-Gauge Pink Wire: *(-) Start Activation Input*

***Connection Required.*** The Pink wire is how the RS-3A is activated for remote start operation. This wire is to be connected to an alternative device such as an existing keyless entry or alarm system. If the Pink wire receives a Negative pulse, the RS unit will start the vehicle's engine, provided that all safety circuits are in the proper status. After the engine has been started by remote control, another Negative pulse on the Pink wire will turn the RS unit off, stopping the engine. Connect the Pink wire to an available auxiliary output of the existing host system, or if there is no available auxiliary output, the "2 Pulse Activation" programmable feature may be used to activate the remote start operation. This feature is typically used with an existing keyless entry system.

Should it be desired to activate the RS unit's remote start operation from an existing keyless entry system, programmable feature #6 will configure the Pink wire to activate the remote start feature only if it receives two Negative pulses within 10 seconds. This allows configuring the RS unit to remote start when the OEM transmitter's "LOCK" button is pressed twice. In most cases the existing keyless entry system will have Negative switching door lock circuits to which the Pink wire may be connected directly. In the other cases, an optional relay is needed to reverse Positive polarity to Negative. When feature #6 is selected for "two pulse" operation, once the RS unit has started the engine, the Pink wire

## 22-Gauge Orange Wire: *Anti-Grind Output Connection If Desired.*

The function of the Orange wire is to provide a 250mA Negative auxiliary output which may be used to operate a starter motor "Anti-Grind" relay, which prevents accidental starter grind should the key be turned while the remote starter is in operation.



## 22-Gauge Green Wire: *(+) Glow Plug Input*

***Connection If Needed.*** The Green wire allows the RS-3A to be used with diesel engines. Connect the Green wire to the wire in the vehicle which powers the glow plugs, or the wire which illuminates the "Wait To Start" light on the instrument panel. When connected, the RS unit will not engage the starter if the Green wire has +12 Volts; in other words, using this wire simply delays the RS unit's engagement of the starter. If the "Wait To Start" light in the vehicle has a Negative switching circuit, it can still be used by simply reversing the polarity with an optional relay.

## 22-Gauge Light Blue Wire: *(+) Ignition Control Output*

***Connection If Needed.*** Since the RS-3A is activated by a host unit, the host unit should also deactivation, or turning off the engine once it is started. The host unit, however, may not operate when the vehicle's ignition is "On". The Light Blue wire has +12 Volt output when the ignition key is "On", but when the ignition is on during remote start operation.

If the host unit stops operating during remote start operation cut its existing +12 Volt ignition supply wire and connect the Light Blue wire to the host unit side of the cut (insulate the unused original supply wire). This will allow the host unit

## W I R I N G - 3 Wire Connector

This harness, which plugs into the Red 3-pin port on the control module, can be used, if needed, to configure optional relays to energize additional Ignition or Starter circuits. Also, Omega OEM security bypass interfaces use the Red

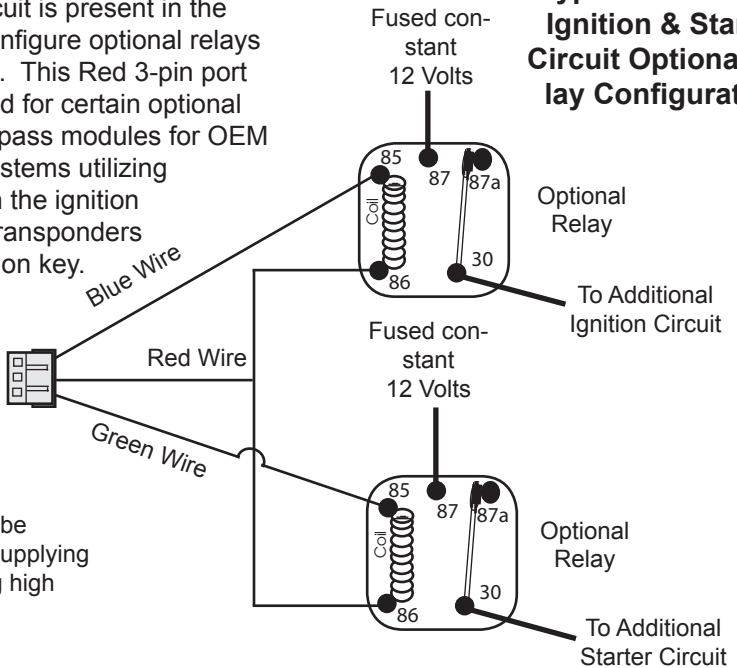
**22 Gauge <u>Blue Wire</u>:** ***500mA Negative Ignition Output Connection If Needed.*** This 22 gauge Blue wire is a 500mA Negative output having basically the same operation as the 12 gauge Blue Ignition output. If two or more Primary Ignition wires are present in the vehicle an optional relay is needed, connected to this wire as shown in the diagram on the next page.

**22 Gauge <u>Red Wire</u>:** ***+12 Volt Output For Optional Relay Coil Connection If Needed.*** The Red wire supplies constant 12 Volts that can be used to power the relay's coil only- DO NOT use this Red wire for the

**22 Gauge <u>Green Wire</u>:** ***500mA Negative Starter Output Connection If Needed.*** This 22 gauge Green wire is a 500mA Negative output, which has the same operation as the 12 gauge Green Starter output. If a second Starter wire is present in the vehicle, an optional relay will be needed, connected to the 22 gauge Green wire as shown in the diagram on the next page.

## Typical Additional Ignition & Starter Circuit Optional Relay Configuration

In cases where an additional Ignition or second Starter circuit is present in the vehicle, configure optional relays as needed. This Red 3-pin port also is used for certain optional Omega bypass modules for OEM security systems utilizing resistors in the ignition switch or transponders in the ignition key.




The wires used and the power source for the optional relays must be capable of supplying and carrying high amperage.

## Valet Switch

### Valet Switch:

Mount this switch in a location that's easily accessible to the user. Route the wires to the RS unit's control module and plug the 2-wire connector into the matching 2-pin port on the control module. The Valet Switch is used to place the system into Valet Mode and for Features Programming Mode. In everyday operation, the "on" or "off" status of this switch controls Valet Mode. For the Features Programming Mode, this switched is toggled "on" and "off" within 7 seconds of the ignition switch being turned "Off".

## Programmable Features

The RS-3A has three programmable features. These features can be changed when the unit is in Features Programming Mode by selecting the feature with the valet switch, then changing its setting by pressing the brake pedal. Please note that there are actually six features which are accessible, but only features #4 to #6 apply to the RS-3A. The unused first three features are only applicable to the RS-3A's companion model, the RS-7K2.

The three usable features, and their default and optional settings, are:

| # | FEATURE | DEFAULT | OPTION |
|---|---|---|---|
| #1 | NOT APPLICABLE | N/A | N/A |
| #2 | NOT APPLICABLE | N/A | N/A |
| #3 | NOT APPLICABLE | N/A | N/A |
| #4 | Engine Running Time | 15 Minutes | 30 Minutes |
| #5 | Starter Cranking Time (in seconds) | .8, 1.2, 1.5 | 1.2, 1.5, 2 |
| #6 | 1 Or 2 Pulse Remote Start Activation | 1 Pulse | 2 Pulses |

**To access Features Programming Mode and changing features:**

1) Turn the ignition switch “On”, then “Off”.

2) Within 7 seconds flip the Valet Switch “on” and “off” 5 times. The parking lights flash once indicating Features Programming Mode.

3) Select the feature to be changed by flipping the Valet Switch the same number of times as the feature number (i.e.- 4 presses, 5 presses, or 6 presses); the RS-unit’s response is an equal number of parking light

4) Once the feature has been confirmed by the parking light flashes, press the brake pedal to change the feature; the RS unit will flash the parking lights once to indicate that the selected feature is in the “default” setting, or twice to indicate that the feature is in the “optional” setting. Once the feature has been selected, each press of the brake toggles the feature setting- the brake can be pressed multiple times until the feature is in the desired setting.

5) Select another feature by repeating step 3), or allow the unit to exit Features Programming Mode by simply not performing any programming actions- after 8 seconds the RS unit briefly turns on the parking lights to indicate its exit from Features Programming Mode.

**The programmable features:**

Features #1-#3 ARE NOT USED BY THE RS-3A.

Feature #4- “Engine Running Time” selects the remote start engine run period to be 15 minutes or 30 minutes.

Feature #5- “Starter Cranking Time” slightly lengthens the starter engagement, which is useful for vehicles which may have difficult-to-start engines.

Feature #6- “1 Or 2 Pulse Remote Start Activation” changes the Pink “Start Activation Input” wire’s operation so that two Negative pulses instead of one is required for an external device to activate the remote starting feature. This feature allows an existing keyless entry system to activate the RS unit, and

# LIMITED LIFETIME WARRANTY

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, 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.