

REMOTE AUTO START

FOR KEYLESS ENTRY AND ADD-ON REMOTE START MODULES

INSTALLATION MANUAL

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

This remote start product is intended for installation on vehicles equipped with automatic transmissions and electronic fuel injection only!

DO NOT INSTALL THIS UNIT 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 observing all safety features.
- The system should be placed into the valet mode when parked inside a garage or being left for service.
- Always notify service personnel that the vehicle is equipped with a Remote Starter.
- Only start the vehicle in a well ventilated area. Do not use in a closed garage or indoors.

ITEMS INCLUDED:

- Main unit
- Remote transmitter(s)*
- Plug In LED
- Plug in program switch
- Harness kit with 2 heavy duty fuse holders
- Hood pinswitch
- Extended range receiver module*
- Owner's manual

**S models are provided with single transmitter only.*

Add-on modules do not include transmitters.

OPTIONAL ACCESSORIES:

- VAC-10 Vacuum Switch Kit
- APP-1 Universal OEM transponder bypass kit
- APV-1 GM VATS, Passlock I&II bypass kit
- PDLM-3 Power door lock relay module

Before you begin the installation:

- Verify that the vehicle is equipped with electronic fuel injection.
- Verify that the vehicle is equipped with an automatic transmission.
- Check to see if the vehicle is equipped with any type of factory security system.
- Check to see if there is a pinswitch for the hood, if not one must be installed.
- Verify that the vehicle starts and idles properly before you start the installation.
- Verify with the customer the desired location for the program switch and LED.
- Always use a multimeter when verifying vehicle wiring.

Remote Start Installation Notes:

The remote start unit senses the vehicle's successful start using one of the following methods:

1. Current sense
2. Tachometer sense
3. Spark or coil wire sense
4. Using optional vacuum switch.

If the Current Sense feature of the remote start unit does not allow proper operation, the tach sense/spark sense wire may be used, or an optional vacuum switch can be installed.

To use the tach sense/spark sense wire, set dip switch #1 to the **off** position. Connect the GREEN wire directly to the vehicle's tach wire or extend it into the engine compartment and wrap it several times around a spark plug wire or coil wire.

In situations where a tach wire is unavailable or does not allow proper operation, an optional vacuum switch can be installed. The vacuum switch is designed to be placed in line with one of the vehicle's vacuum hoses and provide a ground output until the engine is started. To use the vacuum switch, set dip switch #2 to the **off** position. Connect the YELLOW wire, from accessory plug, to one terminal of the vacuum switch and connect the other terminal to ground.

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; using the supplied inline fuse holder, connect directly to the vehicle's battery or alternate power source with a minimum 30 Amp supply.

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 (may be optionally programmed to function as a second accessory output - see *Programmable Features*).

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

- ORANGE WIRE - Main accessory output; This

provides +12V output to heater and/or air conditioning system. Some cars may have more than one accessory wire. In these vehicles add a relay(s) to power the extra accessory wire(s).

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

Main Harness:

- WHITE WIRE - Parking light output (+). Connect to the wire that switches to +12V when the parking lights are turned on. 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.

- RED WIRE - +12V battery input.

- BROWN WIRE - Sensor defeat wire. When the remote start unit is added to some alarm systems, the BROWN wire and VIOLET wire may be used as a sensor interrupt to keep the alarm from triggering when the vehicle is remote started. Cut the sensor's ground wire, connect one side to the BROWN wire, and the other side to the VIOLET wire.

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

- ORANGE WIRE - Auxiliary start input from alarm. When this remote start unit is used with an alarm system, connect the ORANGE wire to a negative auxiliary output wire from the alarm system. When the ORANGE wire receives a ground pulse, the vehicle will start.

The ORANGE wire can be optionally programmed to require three input pulses within two seconds to start the vehicle. This feature allows the remote start unit to be connected to a factory keyless entry/security system and allows the factory transmitters to start the vehicle. If this type of operation is desired, connect the ORANGE wire to the factory system's negative door-lock output wire.

- **GRAY WIRE** - Ground When Running Output (-). Connect to a relay for starter anti-grind protection. (See installation diagrams). The GRAY wire provides ground for starter anti-grind protection and when the remote start is engaged to activate an optional factory security bypass module. When the Stop-and-Go mode is engaged, the output will turn on and remain active even after pressing the brake pedal. Although the remote start shuts down when the brake pedal is pressed, the output will remain on until the ignition key is turned on and off.
- **GREEN WIRE** - Tach/Spark sense wire. If the current sensing feature does not allow desired operation, connect the GREEN wire directly to the vehicle's tach wire and set dip switch #1 to OFF. If the tach wire is not accessible, wrap the GREEN wire around a spark plug wire or coil wire several times and secure with electrical tape.
- **BLUE WIRE** - Hood switch input wire (-). Connect this wire to the hood pinswitch, this will prevent the vehicle from remote starting if the hood is opened. This is a safety input and **must** be connected on all installations.
- **VIOLET WIRE** - See BROWN wire.
- **YELLOW 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.

Plug in Connectors:

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

- **BLUE WIRE** - negative unlock output (-).
- **RED WIRE** - constant +12V low current output (+) for relay modules, or inverters. 100mA relay trigger only. Do NOT use as a power source for door lock relays.
- **GREEN WIRE** - negative lock output (-).

3-Pin Red Connector: Plug-in connector port for optional features harness.

- **GREEN/BLACK WIRE** - 3rd channel output (-). Connect to a relay for optional trunk release etc.
- **RED WIRE** - Factory Disarm output (-). Connect to the wire that requires a ground pulse to disarm the factory alarm system. The RED wire provides a ground pulse when the remote transmitter is used to unlock the doors or start the vehicle.
- **YELLOW WIRE** - Vacuum Switch output. For diesel vehicles, or vehicles where a tach wire or spark plug wire is not available, the YELLOW wire may be connected to an optional vacuum switch. Connect the other side of the vacuum switch to ground.

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

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

4-Pin Antenna Connector*: Plug-in connector port for extended range receiver. Plug harness into 4-pin connector; route cable up pillar post, place double sided tape on flat side of receiver module and place in corner of windshield.

**For programming you will need a receiver and transmitter*

Remote Programmable Features

To enter program mode:

1. Turn ignition to the on position.
2. Wait 2 seconds.
3. Within 10 seconds press program switch 5 times.
4. The LED and parking lights will turn on for 2 seconds to indicate the system is now in program mode.

To change programmable features:

Press program switch the number of times that

equal to the feature you wish to change. The LED and parking lights will flash each time the switch is pushed. (Example: to program feature #3 press the program switch 3 times).

- Press button 1 on the remote to turn the feature on, the LED and parking lights will flash once.
- Press button 2 on the remote to turn feature off- the LED and parking lights will flash twice.

System will automatically exit program mode.

NOTE: You must re-enter program mode for each feature you wish to change.

Programmable Features

Program #1: Parking Light Operation. Selects whether the parking lights remain on or flash during remote start.

- On = Constant
- Off = Flash on/off every 5 seconds.

Program #2: Remote Start Run Time

- On = 12 minutes
- Off = 24 minutes

Program #3: Door Lock Pulse Length

- On = 0.5 second door lock/unlock pulse
- Off = 3 second door lock/unlock pulse

Program #4: Door Unlock Pulse

- On = Single
- Off = Double

Program #5: Orange Wire Programming

- On = 1 Pulse Start
- Off = 3 Pulse Start

Program #6: Lock Before & After Engine Crank

- On = Lock when remote start activates
- Off = Disabled

Default Reset

To reset all programmable features to their factory default settings:

1. Turn ignition to the on position.
2. Wait 2 seconds.
3. Within 10 seconds press program switch 5 times. The LED and parking lights flash to indicate the system is now in program mode.
4. Press transmitter buttons 1 & 2. The parking lights will flash 3 times and all programmable features will be reset to the **On** position.

Dip Switch Settings

Make sure to set all dip switches in proper position prior to mounting the module.

Dip Switch #1: Tach/Spark sense

- On = Current sense
- Off = Tach/Spark sense

Dip Switch #2: Vacuum switch

- On = Current sense or tach/spark sense
- Off = Vacuum switch sense

Dip Switch #3: Starter cranking time

- On = Standard crank time
- Off = Extended crank time (auto adjusts)

Dip Switch #4: Diesel mode

- On = Standard mode
- Off = Diesel mode - Ignition turns on for 10 seconds prior to cranking the starter (to allow glow plugs to warm up).

Remote Programmable Features:

Step	Function	Button 1 (On)	Button 2 (Off)
1.	Parking Light Operation	Solid	Flash / 5 Seconds
2.	Run Time	12 Minutes	24 Minutes
3.	Door Lock Pulse Length	.75 Seconds	3 Seconds
4.	Door Unlock Pulse	Single	Double
5.	Orange Wire Programming	1 Pulse Start	3 Pulse Start
6.	Door Lock Before Engine Crank	On	Off

Valet Mode

When the Valet mode is activated, the vehicle will not start using the remote, but keyless entry functions will still operate.

To enter valet mode:

1. Turn ignition to the on position.
2. Within 5 seconds, press and hold program switch for approximately 2 seconds.
 - The LED will light solid

To exit valet mode:

1. Turn ignition to the on position.
2. Within 5 seconds press and hold program switch for approximately 2 seconds.
 - The LED will turn off

Adding or Deleting Remote Controls

When you enter the code learning mode, the system will learn new remotes and automatically delete all other remotes that were previously operating the system.

NOTE: You must code all desired remotes at this time. The remote start unit can learn a maximum of three codes.

To enter Code Learning Mode:

1. Turn ignition key on, off, on, off, and leave on within 5 seconds.
LED will flicker and parking lights will flash once.
2. Press and hold program switch for 2 seconds.
3. LED will flicker and parking lights will flash.
4. Release the program switch.
5. Program all desired remotes by pressing button #1 on each of the transmitters. The parking lights will flash after the system has learned each remote control.
6. Turn ignition key off. Remotes are now programmed to the system.

Bypassing Factory Theft Deterrent Systems

Many newer vehicles are now factory-equipped with anti-theft systems that use either a resistor coded key or a passive transponder that disables

the fuel system unless a properly coded key is inserted into the ignition cylinder. To integrate a remote starter into these vehicles, you must determine which type of factory anti-theft system is equipped, then use the proper bypass module for that system.

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 do not rely on a resistor equipped key. Instead they use a resistance code generated when the key is turned in the ignition cylinder. Both of these systems have an anti-theft indicator in the instrument cluster. To properly interface into these systems and retain full functionality of the factory anti-theft system, use the APV-I module.

The Passkey 3 system, which is found on GM vehicles 1999 and newer, is a transponder based system (described below). Use the APP-I module to integrate into Passkey 3 equipped vehicles. This module allows full functionality of the factory anti-theft system and requires the use of a spare key.

Passive Transponder Systems:

Passive transponder systems have become the most popular anti-theft system among vehicle manufacturers (Ford, Honda, BMW, Toyota, Nissan and others). This system requires use of a tiny passive transmitter housed in the base of the key. This device activates when placed close to the vehicle's ignition switch. The starter will usually crank but the fuel system will be disabled, not allowing the vehicle to run, if the transponder is not detected. To properly interface into transponder systems, use the APP-I module. This module allows full functionality of the factory anti-theft system and requires the use of a spare key.

SECURITY/REMOTE START WIRING DIAGRAM

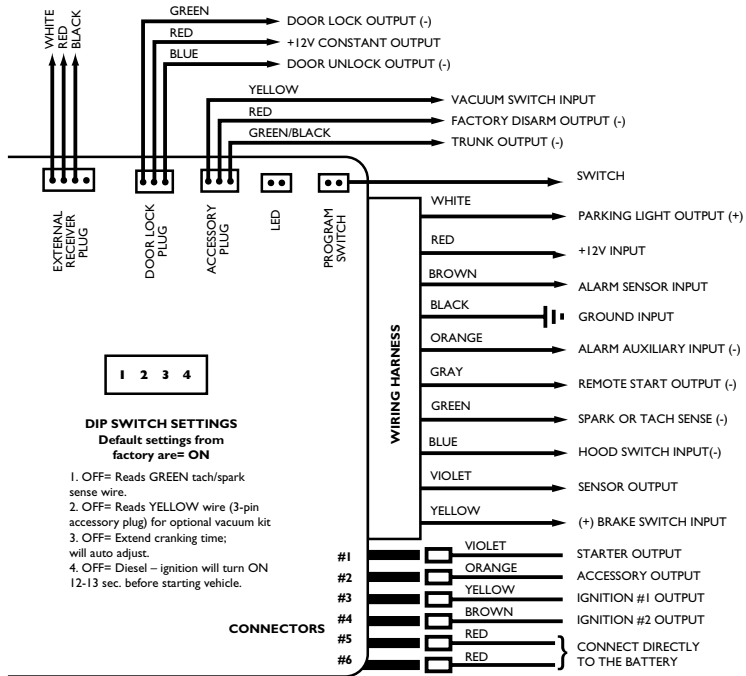
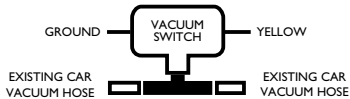


FIGURE 1. OPTIONAL VACUUM SYSTEM HOOK-UP



For vacuum switch hook-up dip switch #2=OFF

COLD START ACTIVATION

(Keyless Entry/Remote Start module only)

Automatically starts engine every 2 hrs. for 24 hrs. max.
 Hold both program switch and button #2 for 5 seconds, parking lights will flash 5 times and remain on. Engine will start and run for 30 seconds to confirm activation. Once activated the engine will start up automatically and run for a preset period of time.

COLD START DEACTIVATION

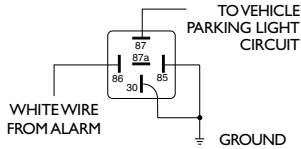
(Keyless Entry/Remote Start module only)

Hold both program switch and button #2 for 5 seconds, parking lights will flash 10 times to confirm deactivation. You may also deactivate the Cold Start feature by stepping on the brake pedal at any time or turning ON the ignition. OR...remote start the vehicle.

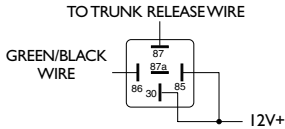
REMOTE START TROUBLESHOOTING

Problem	Probable Cause	Suggested Correction
Unit will not operate.	All power inputs are not connected to +12V.	Main Inputs heavy gage red wires and red fused wire on main harness must be connected to +12V.
Keyless Entry features operate but vehicle will not start.	Remote Start in Service Mode LED is on solid.	Turn ignition key to on position, press and hold service switch for 5 seconds. The LED will go out.
Vehicle will not remote start.	Safety inputs are triggered.	Check Brake Switch Input (Yellow Wire) (+) or Hood Input (-) (Blue Wire) shorted to ground.
Engine cranks but not long enough to allow vehicle to start.	Crank time must be increased.	Place dip switch #3 to the ON position.
RAS will not go into Code Learning or Programming Mode.	Ignition #1 (Yellow Wire) is on wrong connector - Ignition2/ Accessory2.	Connect the main ignition Input/Output to the Ignition 1 connector on the main unit.
Car horn honks and vehicle will not start.	Vehicle has a factory alarm system.	Connect red wire on accessory plug (red plug) to Factory Alarm disarm wire.
Vehicle starts without pressing Remote Transmitter.	RAS in Automatic Cold Start Activation Mode.	To exit press brake pedal or turn Ignition key on, or activate remote start using the remote transmitter.
Vehicle cranks and begins to run, then shuts off.	Voltage sense is not working. Use the spark sense.	Extend the green wire from the main harness to a spark plug wire (wrap around), Set dip switch #1 in the OFF position.
Vehicle cranks and begins to run, then shuts off.	Vehicle has a theft deterrent system that prevents starting w/o key in ignition.	See manual on Passlock/PATS theft deterrent systems.

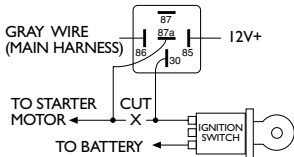
FOR NEGATIVE PARKING LIGHTS (MOST JAPANESE VEHICLES)



TRUNK RELEASE CIRCUIT DIAGRAM:



ADDED RELAY TO PREVENT GRINDING STARTER AFTER REMOTE AUTO START

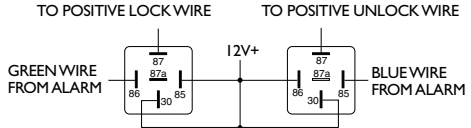


POWER DOOR LOCK DIAGRAMS:

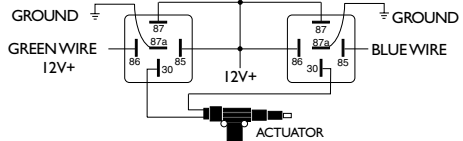
This module provides negative door lock outputs. Positive trigger or reverse polarity installations require two SPDT relays or the PDLM-3 Power Door Lock Relay Module (not included).

Connect relays as shown in the illustrations provided.

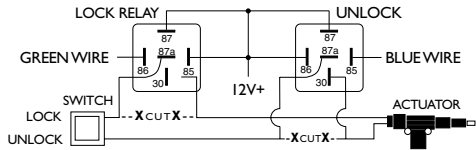
POSITIVE TRIGGER DOOR LOCK CIRCUIT:



REVERSE POLARITY (ADDING ACTUATORS):



REVERSE POLARITY USING FACTORY SYSTEMS:



STATUS INDICATOR (LED) FUNCTIONS

- On Solid = Valet Mode
- Slow Flash = Doors are Locked
- Rapid Flash = Vehicle Remote Start
- Flash 2x = COLD Start Mode
- Flash 3x = Stop and Go Mode

PARKING LIGHTS FUNCTIONS

- On Solid = Vehicle Remote Starting
- Flash 1x = Doors Locked
- Flash 2x = Doors Unlocked
- Flash 4x = Remote Starting Failed
- Flash 5x = Auto Cold Start Engaged
- Flash 10 x = Auto Cold Start Disengaged