



MANUAL / AUTOMATIC TRANSMISSION
MULTI-CHANNEL
REMOTE STARTER SYSTEM

AS-2272

Installation Guide

Notice

The manufacturer will accept no responsibility for any electrical damage resulting from improper installation of the product, be that either damage to the vehicle itself or to the unit. This unit must be installed by a certified technician using all safety devices supplied. Please note that this guide has been written for properly trained Autostart technicians: a certain level of skills and knowledge is therefore assumed. Please review the installation guide carefully before beginning any work.

Warning

Before installing the unit, if installing on a vehicle with a **manual** transmission, test that the OEM Door Switch contacts of the vehicle work well, and that the Parking Brake system operates properly. If installing on a vehicle with an **automatic** transmission, test that the vehicle does not start when the gearshift lever is in the "Drive" position. If it starts in gear, reset the remote starter to manual transmission.

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Introduction

This Guide contains all information pertinent to the installation. Most (if not all) features are grouped in the User Guide. Therefore, should you need information on a feature, please refer to the User Guide.

Included in the Kit

Before beginning the installation, please review the Installation Guide —particularly the Wiring Diagram and the Programming Options.

Note: It is very important that you familiarize yourself with the programming and operation of the system, even if you have already installed a similar system in the past.

There are many great new features you may overlook if you do not read the Guide—you would not maximize the potential of the unit. Prior to the installation, make sure that all the hardware components required to install the system are in the box.

The following is a list of components included in the kit:

- 1 – Control Unit
- 2 – Two-button transmitters
- 1 – Antenna interconnect cable
- 1 – 6-pin main ignition harness
- 1 – 5-pin secondary harness
- 1 – 3-pin secondary harness
- 1 – 12-pin accessories harness
- 1 – Hood pin-switch
- 1 – Warning label
- 1 – User Guide
- 1 – Quick Installation Guide

Please note: the plug-in valet button is not included with this model.

Installation Tools

Here is a list of basic tools and supplies you will need to test and install safely:

- Digital multimeter (DMM), neon 'trouble' light that is carpet safe, fender protector, carpet protector
- Soldering iron, solder, electrical tape, wire tie straps, split loom, diodes, resistors, relays
- Wire cutters, wire strippers, wire crimpers, needle nose pliers
- Sharp knife, panel poppers, various screw drivers
- Socket set, wrench set, drill with drill bits, plastic fish tool (for fishing wires through the firewall)

Installation Points to Remember

- ◆ On vehicles with a manual transmission, **always** ensure that all doors will get the unit out of ready mode. Switch the wire used so that it is triggered by all Doors.
- ◆ Make sure that the Parking brake and Door switch contacts work properly.
- ◆ When working on a vehicle, always leave a window open.
- ◆ **Never** leave the keys in the car. Leave them on a workbench with a window rolled down.
- ◆ If possible, remove courtesy light fuse to prevent battery drain.
- ◆ **The Programming Assistance Button (a.k.a. PAB):** The PAB is mounted on the side of the unit. This push button mimics the hood-pin switch in order to avoid having to get out of the vehicle and pressing the hood-pin switch. **The PAB will work only when the hood is up.**
- ◆ Inspect vehicle for any body damage or electrical problems.
- ◆ **Always solder and tape all connections.**
- ◆ Keep the transceiver away from other types of antennas (GPS/OnStar®).
- ◆ Never install the control unit where it could interfere with normal operation or obstruct service technicians.
- ◆ Always use a grommet when running wires into the engine compartment.
- ◆ Never run wires through bare or sharp metal.
- ◆ Do not disconnect the battery on vehicles equipped with air bags and anti-theft radios.
- ◆ Never ground the control unit to the steering column.
- ◆ Make sure that all the switches and controls operate properly.
- ◆ Verify that the vehicle starts and idles properly.
- ◆ Make sure that all safety equipment is installed: the valet button (if installed), the hood switch, and the warning label.

◆ When wiring in parallel, make sure to isolate each connection with a diode in order to avoid feedback and possible damage.

Examples:

Wiring a clutch bypass and a transponder module to the ground out when running wire: At the junction point, where Ground Out when running “splits” and goes to each device, a diode is inserted on each of those lines.

Multiple or separate door pin connections:

When joining all door pins together to the door pin input wire of the module, each wire must be isolated with a diode to prevent feedback.

N.B.: *The above examples reflect common situations where diodes are used to isolate. Please note that there are numerous other scenarios where diode isolation is required.*

◆ Always make sure that any external relays or modules added to the Remote Starter module are properly fused and diode isolated.

◆ When testing the Shock Sensor, never test on glass with an opened hand, and never hit glass hard enough as to break it. When testing on metal or plastic, make sure the testing does not result in damage to the vehicle (i.e.: dents, broken glass, damaged trims, etc.).

◆ Vehicles equipped with daytime running lights may not allow the installer to view certain programming results since the daytime running lights do not go out (**Note:** The Parking Light output relay in the module gives two “clicks” per flash, 1 “click” for ON and 1 “click” for OFF).

◆ Parking Light flashes referred to in this manual refer to the Parking Light output of the module and not that of the vehicle.

Installation Order

The following is a suggested order for the Installation procedure. It is intended as a guide for novices, to help make the process of installing a remote starter module easier. Time is wasted by rewiring the module when mistakes are made. Also, the neatness of the installation is lessened every time the module is taken down and the wiring is "corrected". A messy installation is harder to trouble shoot if there are problems later on. The actual "how to install" is not covered by this list; the order of the installation process is the focus.

- Before you get started, make sure the vehicle starts and idles properly with the Ignition key, and that the electrical system is not compromised in any way.
- After deciding what options are to be added to the basic installation, you can start by looking for the wires that will be needed.
- Remember to be careful when removing the panels that are covering the wires you are searching for.
- Once all of the wires have been found, they should be tested to verify that they are the correct ones you will need for the installation.
- When all the wires pass the test, they can be stripped to expose the wire (over one inch of plastic should be removed).
- It is always better to strip more than you need. A common way cold solder joints happen is when not enough plastic is stripped off the vehicle's wire, so during the soldering process the plastic from the wire melts and flows into the connection instead of the solder.
- Decide where the module is going to be mounted. It is ALWAYS mounted inside the passenger compartment, and never in the engine bay. Under the driver's side of the dash there is usually enough room for the module to fit. Once the location has been decided, proceed to the next step.
- Mount the antenna and run the cable to the location where the module is going to be mounted. The antenna will get the best range when it is high up in the vehicle, and not obstructed by metal. The most common choice is the center of the windshield at the top, behind the rear view mirror, and at least one inch below the tint strip. Another location should be used if there is another antenna in this location, compass, or other device that may interfere with the range of the start module.
- Mount the Valet switch and LED (if applicable). Make sure they are close enough to the selected module mounting location so they will plug in when the module is mounted. If the wires are too short, they will have to be extended.
- In the engine compartment, mount the hood pin in a suitable location. Search along the firewall for an OEM grommet you run the wires through. If you cannot find an OEM grommet to use, you will have to drill a hole. The hole must be big enough for all of your wires to fit through. To be safe drill the hole out a little bigger so the wires will not get squished. We recommend using an aftermarket grommet whenever you drill a hole through the firewall. This will protect the wires from rubbing against the bare metal and possibly shorting out. If you are installing an alarm / starter combo module, mount the siren in the engine compartment at this time.
- The next step is to pre-wire the module. This is done on your work bench, and not in the vehicle. Connect any external modules and relays that may be needed for you install. Tape or tie-trap wires that are going to be routed to the same areas of the vehicle. This will keep things neat

when the module is in the vehicle. The fuses on the power wires should be removed during the pre-wire stage. The fuses will not be put back in until the powering stage of the installation.

- Once the pre-wiring is finished, the module can be brought into the vehicle. Before the module is mounted, connect the antenna, the valet switch, shock sensor (if applicable) and LED to the module. With everything connected to the module, it can now be mounted in the vehicle. Use tie-straps to secure it to the vehicle. Make sure the module and harnessing do not interfere with any moving parts, and do not obstruct access to diagnostic ports, or fuse boxes. It should be up in the dash, high enough that it won't get kicked by accident.
- Once the module is secured, route the wires to the previously stripped wires they correspond to (leave the engine compartment wires for last). Tie strap them up as you go, so they do not interfere with anything else.
- When all of the passenger compartment wires are ran to their locations, you can route the engine compartment wires through the firewall.
- With the engine compartment wires out the way, you can begin making the connections in the passenger compartment. Strip about an inch of wire past where the connection is going to be made. This extra bit of wire is wrapped around the exposed OEM wire to secure in place while you are soldering.
- When all of the wires have been connected, solder the connections. When the solder has cooled, the connections are then individually taped up, to isolate them.
- Return to the engine bay and route the start module wires to their corresponding connections.
- Solder the engine compartment wire once the connections are made. When the solder has cooled, the connections are then individually taped up, to isolate them.
- Use your DMM to verify that your ground location is good before grounding the module.
- The last step before programming is to power up the module. Replace the power fuses on the power wire fuse holders. The module will flash the Park lights twice to confirm the power-up.
- If you are installing an alarm / starter combo module, the siren will be sounding at this point. Place the module into Valet mode to silence the siren. Take the module out of valet mode to continue the programming (**note:** the module default programming is passive arming; after exiting valet mode, the alarm will start the countdown for passive arming. You have 30 seconds to begin the remote control programming procedure, before the module rearms).
 - Program the remote control
 - Program the tach signal
 - Change the programming of the options, if necessary
 - Test the module's operations
 - If all of the testing is successful, the installation is completed and the vehicle can be put back together.

A basic introduction to the Relay

What is a relay?

A device that responds to a small current or voltage change by activating switches or other devices in an electric circuit. An electromagnetic switch, remote-controlled switch, a switching device.

Why are Relays used?

Relays can have several purposes in remote car starter installations. They are used mainly for isolation, inversion, interruption, strengthening current, and for **powering multiple wires from one source SAFELY**.

How does it work?

The basic relay consists of a coil and a set of contacts. The most common relay mechanism is electromagnetic. When voltage is applied to the coil, current passes through the wire and creates a magnetic field. This magnetic field pulls the contacts together and holds them there until the current flow in the coil has stopped.

Relays come in all varieties and types, but for the applications that concern us, we will concentrate on the **Single Pole Double Throw (SPDT) 12 Volts relay**.

Naming Convention:

Usually the relay's manufacturer will include an electrical diagram on the relay displaying the role of each terminal and how they interact with each other. These terminal numbers are standard, and can be used with any SPDT relay.

85 & 86: The Coil. These inputs energize the coil when one is +12 Volts, and the other is Negative. They are usually non-polarized, so it does not matter which one is positive (+) or negative (-).

87: Normally Open (N/O). When the coil is energized, 87 is connected to 30.

87A: Normally Closed (N/C). When the coil is at rest, 87A is connected to 30.

30: Common. When the relay is at rest, 30 is connected to 87A. When the coil is energized, it is then moved and makes contact with 87 (**note:** in a SPDT relay, 30 can never be connected to 87 and 87A at the same time; 30 is connected to **either** 87 OR 87A).

What happens:

When there is no voltage across the COIL (terminals 85 and 86), the relay's movable contact ARM (connected to terminal 30) is held, by SPRING tension, against terminal 87a (normally closed circuit).

When 12 volts is applied to the COIL (terminals 85 and 86), the ARM (connected to terminal 30) is pulled in by the electromagnet (COIL) so that it physically connects to terminal 87 (normally open circuit).

Remember, there is no polarity on a relay's coil. This means that you may apply positive from the battery to either terminal 85 **OR** 86, and then Ground the OTHER terminal to activate the relay. In other words, you may use either a positive or negative trigger to energize the relay.

Keep in mind that when the relay is energized, if the positive **OR** the ground connection on the coil is broken, the ARM switches the connection between 30 back from 87 to 87a.

Quenching Diodes:

It was said earlier that you energize a relay by applying positive from the battery to either 85 OR 86 and grounding the other terminal. This is not absolutely true: some relays are "polarized" if they have a quenching/suppression diode (a diode installed between the coil terminals 85 and 86, which could be internal or external). To activate the coil on this type of relay, make sure that the +12 Volts trigger is on the same terminal of the relay as the Cathode (- or striped side) of the

quenching/suppression diode, and that the Negative trigger is on the same terminal of the relay as the Anode (+ or non-stripped side) of the quenching/ suppression diode.

When a relay's coil is energized, a magnetic field is created and energy is stored in the coil. When power is removed from the coil, the magnetic field collapses. This causes a Reverse Voltage to be generated and can sometimes reach 200 volts. A quenching diode absorbs this reverse voltage spike.

A closer look at a relay:

Now that you know what the main inscriptions are on the relay, take a look on the side, and you will see another inscription: i.e. **(12 VDC, 40/ 30 A)**

12 VDC: This indicates the coil voltage rating. For an Automotive relay, it's usually 12 Volts DC.

40/ 30 A: This indicates the current carrying capability of the contacts 30, 87, & 87A.

40: Indicates that the normally closed circuit (30 and 87a) can safely handle a maximum of 40 amps of current.

30: Indicates that the normally open circuit (30 and 87) can safely handle a maximum of 30 amps of current.

Examples: The following examples demonstrate some of the most common uses for relays: isolation, inversion, interruption, strengthening current, and for powering multiple wires from one source SAFELY.

Powering multiple wires from one source safely:

Example: Powering a second Ignition

Problem: You need to power Multiple Ignition wires to remote start the vehicle, but your module only has one Ignition output available.

Solution: You will need to add a second ignition relay to power the second ignition wire. **(Jumping Ignition 1 to Ignition 2 is NEVER recommended. Always use a relay. The vehicle circuits are isolated for a reason; the wiring of the remote star module should reflect this.)**

The relay connections:

85: Connects in parallel to the Ignition 1 output from the remote start module. This becomes the positive side of the coil.

86: Connects to the **Ground Out when Running** wire from the remote start module. This becomes the negative side of the coil.

87: Connected to a Fused +12 Volts source that is capable of supplying power for the vehicle's second ignition wire. This becomes the source of power for the 2nd ignition wire.

87A: No connection. This terminal is not used in this application.

30: **Connects to the vehicle's second ignition wire.** This becomes the output of the 2nd ignition relay.

Comments: The relay is only energized when the vehicle is running by remote start. When started with the Key, the relay is not energized and the integrity of the stock system has been preserved.

Isolation:

Example: Isolating a Parking light output

Problem: Some vehicle circuits need to be isolated from feedback. In some cases, when a vehicle is remote started, feedback occurs on a circuit and powers another device or switch that was not intended to be powered during the remote starts.

The following example will be a Positive (+) Parking Light circuit that feeds back and activates the windshield wipers during remote starts.

Solution: When power is applied to the OEM Parking light wire, it back feeds through the parking light switch and activates the wipers. Where the connection was made from the start modules' Parking light output and the vehicle's parking light circuit, the OEM parking light wire is cut to isolate the parking light switch and the actual parking lights. A Relay is added to the parking light circuit so that power from the remote start module is only sent to the parking lights and not the parking light switch.

The relay connections:

85: Connects to the +12 Volt Parking light output from the remote start module. This becomes the positive side of the coil.

86: Connects to a Negative source, i.e. the spot where the remote start module is grounded. This becomes the negative side of the coil.

87: Connects to the +12 Volt Parking light output from the remote start module. This becomes the power supply for the vehicle's parking lights. The OEM parking light wire is cut. The side that is still connected to the switch becomes the "Switch Side". The side that is still connected to the Parking lights becomes "Parking Lights Side".

87A: Connects to the "Switch Side" of the cut OEM parking light wire.

30: Connects to the "Parking Light Side" of the cut OEM parking light wire.

Comments: When the relay is at rest, the OEM Parking light wire is connected (through 87A & 30) and allowed to operate normally. When the remote start module powers the Parking lights, the OEM parking light wire is opened, and power from the remote start module is sent only to the actual Parking Lights (from 87 through 30).

Inversion:

Example: Activating a Positive Trunk release switch

Problem: The vehicle's power trunk release switch is activated by a positive (+) pulse, and the remote start module's Trunk output is negative (-).

Solution: A relay is used to invert the negative signal from the start module to a positive signal before it is sent to the OEM switch.

The relay connections:

85: Connects to the start module's Trunk release output wire. This becomes the negative side of the coil.

86: Connects to a fused +12 Volts source. This becomes the positive side of the coil.

87: Connects to a fused +12 Volts source. This becomes the supply for the positive trunk release.

87A: No connection. This terminal is not used in this application.

30: Connects to the OEM trunk wire in the vehicle.

Comments: At rest, the trunk switch is allowed to operate normally. When the Trunk button on the remote is pressed, the negative Trunk output from the remote start module triggers the relay. When

the relay is activated, +12 volts from 87 is sent through 30, and the OEM trunk switch is activated, by the positive pulse.

Interruption:

Example: Creating a Starter Kill relay to prevent unauthorized starting of the vehicle.

Problem: The OEM starter circuit needs to be disabled only when theft is attempted.

Solution: A relay is used to interrupt the OEM starter wire. There is an output on the remote start module especially for this purpose (Starter Kill output).

The relay connections:

85: Connects to the Starter Kill output wire from the remote start module. This becomes the negative trigger for the coil.

86: Connects to the vehicle's Ignition wire. This becomes the positive trigger for the coil.

87: No connection. This terminal is not used in this application. The vehicle's OEM start wire is cut. The side of the wire that is still connected to the Ignition switch becomes the "Key Side" of the starter wire. The side of the wire that is still connected to the starter motor becomes the "Starter Side" of the starter wire.

87A: Connects to the "Key Side" of the cut OEM starter wire.

30: Connects to the "Starter Side" of the cut OEM start wire.

Comments: At rest the relay is not active, and +12 volts on the starter wire passes through the relay (through 87A & 30) normally. The Starter Kill output wire on the remote start module is activated when the **LOCK** button is pressed on the remote control. When a theft attempt happens, and the thief powers the Ignition circuit (to hot wire the vehicle), and the Starter Kill was **ARMED** (by the **LOCK** button on the remote), the starter kill relay activates. The OEM start wire is now open, (does not make connection) because 30 is no longer connected to 87A, and the vehicle is unable to start.

Strengthening current:

Example: Strengthening an output

Problem: A vehicle has a negative (-) trigger Trunk release wire. The module has a negative Trunk release output wire. The remote start module is unable to supply the necessary current to activate the vehicle's Trunk release wire.

Solution: A Relay is used to provide the necessary negative current to activate the vehicle's Trunk release wire.

The relay connections:

85: Connects to the start module's Trunk release wire output. This becomes the Negative trigger for the coil.

86: Connects to a fused +12 Volt source.

87: Connects to a Negative source, i.e. the spot where the remote start module is grounded. This becomes the supply for activating the vehicle's Trunk release wire.

87A: No connection. This terminal is not used in this application.

30: Connects to the vehicle's Trunk release wire.

Comments: At rest the relay is not active and the vehicle's Trunk release switch is allowed to operate normally. When the Trunk release button is pressed on the remote control, the start

module's Trunk release output activates the relay. The ground signal is sent from 87 through 30 to the vehicle's Trunk release wire activating the switch and opening the trunk.

Harness Description

6-pin Main Ignition Harness (a.k.a. The Primary harness)

The two Red wires are the power inputs for the module; the other wires are for recreating the actions of the Ignition switch during remote starts. On most vehicles these wires are connected at the vehicle's Ignition switch.

Wire		Description
1	RED (+) 12 V Battery	Connect to the largest 12 V supply wire at the Ignition harness. Ensure that the OEM power wire is fused for more than 30 A. NOTE: Certain new vehicles have no suitable 12 volts source at the IGNITION switch (the 12 Volt wire is too small to supply the necessary current). In this case, the fuse box, or the B+ connection on the battery is recommended. If wires need to be extended, you must protect them with additional fuses connected at the entry source.
2	VIOLET (+) 30 A starter output	Connect to the Starter wire of the vehicle (at the IGNITION switch). The source wire should have +12 V with the Ignition Key in the Crank position only.
3	RED (+) 12 V Battery	Connect to the largest 12 V supply wire at the Ignition harness. Ensure that the OEM power wire is fused for more than 30 A. NOTE: certain new vehicles have no suitable 12 volts source at the IGNITION switch (the 12 Volt wire is too small to supply the necessary current). In this case, the fuse box, or the B+ connection on the battery is recommended. If wires need to be extended, you must protect them with additional fuses connected at the entry source.
4	PINK (+) 30 A ignition output	Connect to Ignition wire of the vehicle. The source wire should have +12 V with the Ignition Key in the Ignition On (Run) and Crank positions. Warning: some vehicles have more than one IGN wire at the IGNITION switch for powering the heater blower motor. Use the 5th relay (pin F) and extra relays to power up any extra IGN. wires if necessary. DO NOT JUMP WIRES at the IGNITION switch, this will compromise the OEM electrical system. If wires need to be extended, you must protect them with additional fuses connected at the entry source.
5	ORANGE (+) 30 A Accessories output	This wire is for powering the heater blower motor. It is usually classified as an Acc. (no power in the crank position.) if it tests as an IGNITION (power in the crank pos.) then power it as an IGNITION (5th relay, or extra relay). Warning: some vehicles have more than one ACC wire at the IGNITION switch for powering the heater blower motor. Use the 5th relay (pin F) and extra relays to power up any extra ACC. wires if necessary. DO NOT JUMP WIRES at the IGNITION switch, this will compromise the OEM electrical system.
6	PINK/WHITE (+) 30 A 5th relay output	This high-current output can be used to power a 2 nd IGNITION or a 2 nd ACCESSORY or a 2 nd STARTER WIRE . See jumper settings on page 18 for correct output. Additional IGNITIONS, ACCESSORIES, or STARTER WIRES must use external relays. DO NOT JUMP WIRES at the IGNITION switch, this will compromise the OEM electrical system.

5-pin Secondary Harness (a.k.a. the secondary harness)

This harness has the remaining wires used in basic remote starter installations, positive parking light output, the safety shut down inputs, and the ground wire for the module.

Wire		Description
1	BLACK (-) Chassis ground input	This wire must be connected to bare, unpainted metal (the Chassis or true Body ground).
2	VIOLET/WHITE (AC) Tachometer input	This wire tells the module if the Engine is running or not. It requires at least 1.8 volts (AC) and 1.5 Hz (or faster) at idle. Common Tach references are: the negative side of an injector, the negative side of an Ignition Coil, Camshaft sensor, Crankshaft sensor or the Engine Control Module (ECM). NOTE: A Tach signal that is too low will cause the module to "over crank" and a Tach signal that is too high will cause the module to "under crank".
3	GRAY (-) Hood switch input	For safety reasons, this wire must be connected to the hood pin provided in the box or to the OE hood pin. This input will disable or shut down the Remote Starter when the hood is opened. It can also be used for programming purposes.
4	BROWN (+) brake switch input	This wire must be connected to the brake Light switch of the vehicle. The wire should be +12 V only while the brake pedal is pressed. This input will shut down the Remote Starter if the brake pedal is pressed. It is also used for programming and therefore it is essential that it is installed.
5	WHITE (+) 12 V Parking Light output	This wire provides a +12 V output (15 A max.) and must be connected to the Parking Light wire that tests +12 V when the Parking lights are ON. Note: Ensure that the voltage does not vary when the dimmer control switch is turned up or down. If this is the case, it is not the right wire. There is also a negative Parking Light output on the 3-pin side connector. Only one of these two different outputs needs to be connected.

12-pin Accessories Harness

This harness has the remaining wires used in some remote starter installations as well as the optional user convenience outputs.

Wire		Description
1	RED/WHITE (-) Trunk output	500 mA negative output. This can be used to control trunk release (1-sec. pulse).
2	LIGHT GREEN (-) Lock	Programmable 500 mA 1/10-sec., 7/10-sec. or 4-sec. negative output.
3	BLUE (-) Unlock	Programmable 500mA 1/10-sec., 7/10-sec., 4-sec. or 1/4-sec. double-pulse negative output.
4	LIGHT GREEN/WHITE (-) Arm	Max 500 mA negative output when the doors are locked by remote control. This wire will provide a negative output 1/4 sec. before the lock pulse, and go off 1/8 sec after it. Note: The system will also give a rearm pulse on this wire after remote-start shutdown.
5	LIGHT GREEN/BLACK (-) Disarm	Max 500 mA 1-sec. negative pulse when the Doors are unlocked by remote control. Connect to the OEM Disarm wire of the vehicle. Note: The system will also give a disarm pulse on this wire before remote starts.

6	VIOLET (+) Door pin input	<p>This input should be used in vehicles that use a positive-switching Dome Light circuit. Connect to a Door trigger wire testing +12 V with a Door open.</p> <p>CAUTION! You can only use a negative or a positive connection. In other words, only the NEGATIVE DOOR INPUT or the POSITIVE DOOR INPUT wire is connected. It is essential that the Module be connected in such a way as to allow each Door to turn off Ready Mode: the driver-side Door Pin does not constitute by itself a sufficient connection.</p>
7	ORANGE (-) Starter Kill (armed output)	<p>The unit is equipped with a selectable passive- or active-arming Starter Kill circuit that will immobilize the vehicle when the system is armed. This wire will provide a constant 500-mA negative output when the system is armed (locked by remote) or if remote started. This wire should be connected to a Single Pole Double-Throw Relay (This wire will connect to pin 85, on the Relay, and pin 86 will be connected to the Ignition wire).</p> <p>A second benefit of the Starter Kill is the Anti-Grind feature. When the vehicle has been remote started the Anti-Grind prevents the starter motor from re-engaging when the ignition key is inserted in the Ignition switch and accidentally turned to the CRANK position (The Starter Kill output becomes active during remote starts).</p>
8	BLACK/WHITE (-) Parking brake Input	<p>Connect to the negative Parking brake Indicator Light wire of the vehicle. This wire is found at the parking brake lever itself.</p> <p>Note: The wire should test ground when the Parking brake is engaged.</p>
9	WHITE/BLUE (-) External Trigger input	N/A
10	BLUE/BLACK (-) Ground out when running	<p>500 mA constant negative output when running.</p> <p>This output becomes active before remote Ignition On, and shuts off when the module is shut down.</p> <p>Note: If multiple relays or modules are connected to the ground out wire, make sure that each one of them is diode-isolated from the others. Otherwise feedback effects may occur, which could damage the vehicle and/or the modules, relays, and bypass modules.</p>
11	GREEN (-) Door Input	<p>This input should be used in vehicles using a negative-switching Dome Light circuit. Connect to the Door trigger wire that tests ground with a Door open.</p> <p>It should be noted that the installer should use either the positive or the negative Door input, and never use both of them simultaneously.</p>
12	GRAY/BLACK (+) Glow-plug input	<p>This positive input will monitor the Glow Plug Light in Diesel Mode: it will wait until the Glow Plug Light goes out to crank the Engine. Connect to the side of the Glow Plug Light that becomes positive when the Light is on.</p> <p>Note: In Diesel Mode there is an 18-sec. crank timing delay (or approximately 25-sec. if the run time is set to 30 min.): if the Glow Plug Light is still on after the delay expires, the module will proceed to start the Engine.</p> <p>(Also known as the "wait-to-start light".) The purpose of the Glow-plug circuit on diesel vehicles is to pre-heat the Combustion Chamber before the vehicle is started.</p> <p>When a Remote Starter is installed on a diesel vehicle, the Glow- plug section of the Ignition circuit must be activated and allowed to operate before the vehicle is remote-started. For that purpose, the Glow-plug input wire of the module must be connected to the Glow-plug indicator light of the vehicle. The module will only accept positive Glow-plug input signals, if the signal is negative, use a relay to invert its polarity. A diode must be added between the negative Glow-plug trigger on the relay and the negative Glow-plug wire of the car. This is to prevent feedback effects on the Glow-plug indicator light on the instrument cluster: the light on the dash would come on because of the feedback, even though the circuit is off.</p> <p>When the user remote-starts the vehicle:</p> <p>The module will power up the Ignition circuit and wait to engage the Starter Motor while the Glow-plug indicator light is still on.</p> <p>The module will engage the Starter Motor as soon as the Glow-plug light (+) goes out.</p> <p>Minimum waiting time is 3 seconds.</p> <p>Maximum waiting time is 30 seconds (approximately).</p>

	<p>If no Glow-plug wire is found on the vehicle, the Glow-plug input on the module may be "timed out". The module will power up the Ignition and Glow-plug circuits and simply wait for the time-out before starting.</p> <p>Keeping the Glow-plug input wire of the module unconnected will hold the ignition ON for the preprogrammed delay.</p> <p>Please program the tach before connecting the glow-plug input to the vehicle.</p>
--	--

3-pin Harness

Wire	Description
1 VIOLET/BLACK N/A	N/A
2 LIGHT BLUE (-) AUX 1 Output	500 mA negative output. Can be programmed for the following option: <ul style="list-style-type: none"> Horn confirmation on 1st press of the LOCK button.
3 WHITE/BLACK (-) Parking lights output	500 mA negative Parking Light output Note: Ensure that the voltage does not vary when the dimmer control switch is turned up or down. If this is the case, it is not the right wire. There is also a positive Parking Light output. Only one of these two different outputs needs to be connected.

Additional Ports

Port	Description
1 Temperature Sensor (Optional)	N/A
2 RS-232 Port	For D2D connection; is used to interface bypasses and door locks convenience module (check bypass list for compatibility and functionalities).
3 INV-200 Port	Is used to interface the pulse inverter for door locks option.
4 Bypass/GPS Port	Is used for analog connection to some bypass units (check bypass list for compatibility and functionalities).
5 Pager Port	Is used to connect an optional AS-200P pager (to use this option, make sure to program pager option in Menu 3, Feature 5, Option 4).

Entering Programming Mode

This allows the installer to program the unit. Once the system is in programming mode, the installer will have up to 20 seconds to select one of the sub-menus. If the installer fails to select a sub-menu before the 20-second delay, the system will exit programming mode and the installer will have to select again one of the 2 methods to get access to it.

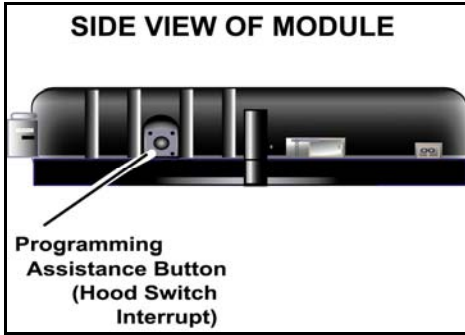
Using the Hood Pin	Using the Antenna Programming Assistance Button (A.P.A.B.)
<ul style="list-style-type: none"> Press and hold the hood pin for 4 seconds. 	<ul style="list-style-type: none"> Make sure that the hood is closed.
<ul style="list-style-type: none"> Release the hood pin. The parking lights will turn ON. 	<ul style="list-style-type: none"> Turn the ignition key to the IGNITION ON (RUN) position.
<ul style="list-style-type: none"> While the parking lights are ON, press the hood pin once more and release immediately. The parking lights will turn ON and stay ON for 20 seconds. 	<ul style="list-style-type: none"> Within 5 seconds, press the programming button on the antenna twice for 1 second each time. The LED will come ON solid.
<ul style="list-style-type: none"> You now have 20 seconds to select one of the sub-menus. 	<ul style="list-style-type: none"> You now have 20 seconds to select one of the sub-menus.

Note: To exit programming mode, close the hood.

Note: To exit programming mode, press on the antenna button **once** (the LED will come **ON**) and release.

Remember: You can use the programming Assistance button instead of the hood pin at any time the hood is up.

The Programming Assistance Button (a.k.a. PAB)



The PAB is located on the side of the module. This push button mimics the hood-pin switch in order to avoid having to get out of the vehicle and pressing the hood-pin switch. **The PAB will work only when the hood is up.**

Once inside the programming options, the installer has a selection of many different sub-menus:

- a) Transmitter Programming
- b) Programming Options
- c) Honk Horn Timing* (*if available)
- d) Tach Programming

Manual or Automatic Transmission

This module may be installed on vehicles with manual or automatic transmissions. It is originally configured for manual transmissions. If the vehicle you are working on is automatic, it is mandatory to make a few quick and easy modifications before the unit is connected. **In the event that the configuration requires changes afterwards, a complete reset will be necessary before those changes become effective.**

To install this unit in a vehicle with a manual transmission:

1. Make sure the **Yellow** loop on the PC board is connected.
2. Connect the **Black/White** handbrake wire located on the 12-pin harness to the vehicle handbrake switch.
3. Connect the **Violet (+)** door input **OR** the **Green (-)** door input wire located on the 12-pin harness to the vehicle door pin wire, which monitors all the doors of the vehicle (only use 1 of the 2 door trigger inputs).
4. Make sure the **Violet/White** TACH wire is plugged in – the TACH wire **MUST** be hooked up when the module is set for a manual transmission.
5. Make all your regular connections.
6. Power up the unit by first inserting the 5-pin connector, then the 6-pin connector and finally the 12-pin connector. The parking lights will flash **4 times** to confirm that the unit is in manual mode.
7. When learning the transmitter, the parking lights will flash **5 times** quickly, confirming that the module is set to manual mode.
8. **Upon the first successful remote start, the system will lock the transmission settings to manual mode.**

To install this unit in a vehicle with an automatic transmission:

1. Cut the loop on the pc board (**Yellow** wire).
2. Make sure the **Black/White** handbrake wire is not connected to any of the vehicle circuits.
3. Make all the regular connections.
4. Power up the unit. The parking lights will flash **4 times**.
5. When learning the first transmitter, the parking lights will flash **5 times** quickly then give **2 slow flashes**, confirming that the module is set to automatic mode.
6. **Upon the first successful remote start once the yellow loop has been cut, the system will lock the transmission settings to automatic mode.**

Note: If upon pressing the **II** button, the parking lights give **3 slow flashes**, make sure that the **Black/White** handbrake wire is not connected and that the yellow loop is cut and isolated.

Transmitter Programming Procedure

1. **Enter programming mode (see on page 14)** — the parking lights will stay on for up to 20 seconds.
2. Before the lights go out, turn the ignition key to the **OFF** position, then to **IGNITION ON (RUN)** and immediately back to the **OFF** position.
3. Press and hold the **I** button and keep it down until the parking lights flash 5 times quickly.
4. The transmitter has been stored in memory.

Note: Each unit can store 4 remotes in its memory.

Entering Programming Options

1. **Enter programming mode (see on page 14)** — the parking lights will stay on for up to 20 seconds.
2. Before the lights go out, press and hold the brake pedal and then press one of the following buttons:

BUTTON I to access menu 1; or
BUTTON IIto access menu 2.

3. The parking lights will flash and the horn will honk (if programmed) once or twice to confirm entry into a menu.
4. Release the brake pedal.

Once the desired menu has been selected, the unit will fall (by default) into feature #1 of that menu; you can now select the option you want in feature 1. Once this option has been chosen, the unit will move on to feature 2 of the menu selected, and so on.

BUTTON I	for	Option 1,
BUTTON II	for	Option 2,
BUTTON I & II	for	Option 3.

Programming Options

MENU 1	<small>*INDICATES DEFAULT SETTING</small>
FEATURE 1 – Ignition-controlled door locks	
OPTION 1*	Ignition-controlled door locks DISABLED
OPTION 2	Ignition-controlled door locks ENABLED
FEATURE 2 – Secure Lock	
OPTION 1*	Secure lock DISABLED
OPTION 2	Standard secure lock ENABLED
FEATURE 3 – Starter Kill arming mode	
OPTION 1*	Passive arming (60 sec.)
OPTION 2	Active arming
OPTION 3	Passive arming (1 min.)
Note: When SK is armed, pressing I will always give an UNLOCK output (when in MENU 2 FEATURE. 6, opt.1)	

FEATURE 4 – Door lock pulse timing	
OPTION 1*	7/10-sec. lock / unlock pulses
OPTION 2	4-sec. lock / unlock pulses
OPTION 3	7/10-sec. lock pulse and two 1/4-sec. unlock pulses
FEATURE 5 – LED flashing	
OPTION 1*	ENABLED (without starter kill → will flash only when ignition is OFF)
OPTION 2	DISABLED
OPTION 3	ENABLED (with starter kill → will ONLY flash when the starter kill engages. This option should be selected ONLY if the starter kill is installed.)
FEATURE 6 – Bypass	
OPTION 1*	Trilogix
OPTION 2	ADS
OPTION 3	Fortin
FEATURE 7 – Bypass Type	
OPTION 1*	Two-Way communication
OPTION 2	One-Way communication

MENU 2	<i>* INDICATES DEFAULT SETTING</i>
FEATURE 1 – Engine Run Time	
OPTION 1	Run Time = 3 minutes in gas mode / 8 minutes diesel mode
OPTION 2*	Run Time = 15 minutes in gas mode / 20 minutes diesel mode
OPTION 3	Run Time = 25 minutes in gas mode / 30 minutes diesel mode
FEATURE 2 – Idle Mode & Turbo Mode (auto) / Turbo Mode (manual)	
OPTION 1	Idle mode & turbo mode DISABLED (AUTO) / turbo mode DISABLED (MANUAL)
OPTION 2*	Idle mode & turbo mode ENABLED (AUTO) / turbo mode DISABLED (MANUAL)
OPTION 3	Idle mode & turbo mode ENABLED (AUTO) / turbo mode ENABLED (MANUAL)
FEATURE 3 – Engine type and Cold Weather Mode	
OPTION 1	Diesel mode with 20-minute run time in cold weather mode (30-sec. wait to start delay)
OPTION 2*	Gas mode with 3-minute run time in cold weather mode
OPTION 3	Diesel mode with 8-minute run time in cold weather mode (18-sec. wait to start delay)
FEATURE 4 – Lock / unlock or horn output (when Menu 2, Feature 6, Option 1 is programmed)	
OPTION 1	N/A
OPTION 2*	Constant output when button I is pressed > 3 sec. (first press will give a (-) output on LOCK wire; second press will give a (-) output on UNLOCK wire)
OPTION 3	Horn confirmation upon the 1 st press of the LOCK button.
FEATURE 5 – Pager (Pager sold separately)	
OPTION 1	Pager ENABLED
OPTION 2*	Pager DISABLED
FEATURE 6 – Remote Functions	
OPTION 1	Button I = Lock/Unlock, Button II = Start/Stop, Button I & II = Trunk
OPTION 2*	Button I = Stop, Button II = Start, Button I & II = Trunk
FEATURE 7 – Ready Mode Option	
OPTION 1	Enabled by handbrake
OPTION 2*	Enabled by remote

Virtual Tach System

* Virtual Tach System combines the latest microcontroller technology and a complex algorithm that took years to develop. VTS is able to effectively monitor the engine starting sequence and release the starter at the right time without physically connecting the tach wire to the remote starter. The VTS constantly monitors the data and readjusts itself automatically in order to maximize its capability to start the engine properly in any weather or deteriorating battery condition (*automatic transmission only*).

Optional Time Delay Adjustment in Virtual Tach System

Follow these steps to program crank time adjustment, if needed:

1. **Enter programming mode (see on page 14)** — the parking lights will stay on for up to 20 seconds.
2. Before the lights go out, press and hold the brake pedal and press the **I** and **II** buttons simultaneously — the parking lights will flash 4 times. **Do not release the brake pedal.**

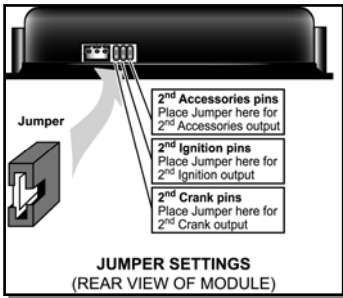
3. Press the **I** button if you wish to increase the time delay or the **II** button if you want to decrease it. **The time delay will be increased or decreased by 50ms. and the parking lights will flash once every time the I or II button is pressed.**
4. Press the **I** and **II** buttons together to save the settings you have entered.
5. Release the brake pedal – the time delay programming is now complete.

Multi-speed Tach Programming

1. **Enter programming mode (see on page 14)** — the parking lights will stay on for up to 20 seconds.
2. Before the lights go out, press and hold the brake pedal and press the **I** and **II** buttons simultaneously — the parking lights will flash 4 times. At that point, release the brake pedal.
3. Start up the engine and allow the vehicle to reach regular engine idle speed.
4. Once the engine is running at normal idle speed, press the brake pedal and keep it down until you hear the parking lights output click 5 times.
5. Release the brake pedal — the tach programming is now complete.

Other Features of the Module

Fifth Relay Output (2nd IGN, ACC or CRANK)



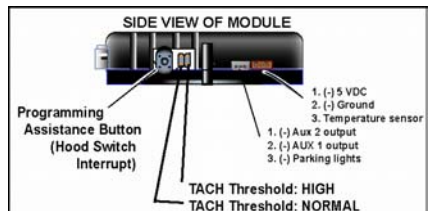
Remote car starters of this series are equipped with an on-board high-current programmable 5th relay that can be used to power a second ignition, accessory or crank wire. The unit uses 3 sets of pins; each set corresponds to a specific function of the output. In order to activate one of the three possible functions, you must place the jumper (supplied) on one of the three sets of pins and connect the 14 AWG wire to the second **IGN. / ACC. / CRANK** wire of the vehicle.

Caution!

Only one set of pins can be used at one time. Using more than one jumper may result in serious damage to the vehicle. The relay output rating on this unit is 25a at most. Defective oem solenoid switches can sometimes draw up to 50 or 60a, causing the 30a fuse to blow. Always verify your circuit with an appropriate measuring device.

Tach jumper settings

Some new vehicles have a higher TACH voltage threshold, which would fall out of the normal TACH trigger circuit of the remote car starter. Changing the jumper to TACH Threshold HIGH will allow the module to properly detect the TACH signal.



Clutch Bypass

In order to remote start a manual transmission vehicle, the clutch switch must be bypassed. Clutch safety switch circuits can take many forms. Listed below are the most common ones. Some vehicles may also have a separate or combined switch on the clutch pedal for cruise control. Usually a cruise control switch reacts the moment you touch the pedal, whereas a clutch switch reacts only when the pedal is near the floor. Once the circuit type has been determined, you must recreate what happens electrically at the switch, with the remote start module, to bypass the clutch during remote starts. Relays are often used to accomplish this. Always use the Ground Out When Running (G.O.) as the negative trigger on your clutch bypass relays, as it is only active during remote starts. NEVER permanently bypass a clutch switch. Do not attempt this if you are unfamiliar with the use of relays and diode isolation.

Before any wiring attempts, test and record the way each wire tests in the following positions:

Without the pedal pressed:

- ◆ test the wire with the Ignition OFF
- ◆ test the wire with the Ignition ON
- ◆ test the wire with the Key in the start position

With the pedal pressed:

- ◆ test the wire with the Ignition OFF
- ◆ test the wire with the Ignition ON
- ◆ test the wire with the Key in the start position

With this information for every wire at the switch, determining what type of clutch switching system you have will be easy.

Direct Feed:

The simplest type of system to test and bypass is the "Direct Feed" system. This circuit simply interrupts the +12v signal starter wire from the ignition switch to the starter solenoid. There are 2 wires in this circuit, the "key side" wire which goes from the clutch pedal to the Ignition switch, and the "solenoid side" which goes from the clutch switch to the starter motor. When the key is turned to the start position without pressing the pedal, you will test 12v only on one of the wires at the clutch switch; this is the key side. When the pedal is pressed down and the key is in the crank position, the other wire will also read 12 volts; this is the solenoid side wire. Connect the starter output from the remote starter to the solenoid side wire.

Note: In the next two systems a Relay in the vehicle interrupts the start wire between the Ignition switch and the starter motor. With the key in the start position and the clutch pedal pressed, the relay energizes and allows the start signal to reach the starter motor. In these systems a wires from the clutch triggers the relay when the pedal is pressed. There will be another wire at the clutch switch that supplies the signal to the trigger wire (either positive or negative, depending on the system).

Negative:

In a Negative system, when the clutch is pressed, a negative signal is sent to the relay. The relay energizes when the Key is turned to the start position. The 12volts from the start wire is allowed to pass through the relay and to the starter motor. One of the wires at the clutch will test as negative; this is the supply wire. The relay's negative trigger wire will only show negative when the pedal is pressed (some vehicles also require the Ignition system to be powered). If there is nothing else connected to the Ground Out When Running (G.O.) wire from the remote start module, the G.O. wire should be strong enough to trigger the vehicle's clutch relay. If there are other devices or

modules connected to the G.O. Wire, a relay (and diodes) may have to be added to strengthen the negative current going to the clutch bypass.

Positive:

Very similar to the negative system, except that the vehicle's clutch relay is triggered by 12 volts instead of a negative signal. In a Positive system, when the clutch is pressed; a positive (12 volts) signal is sent to the relay. The relay energizes when the Key is turned to the start position. The 12 volts from the start wire is allowed to pass through the relay and to the starter motor. One of the wires at the clutch will test as 12 volts; this is the supply wire. The relay's positive trigger wire will only show positive when the pedal is pressed (some vehicles also require the Ignition system to be powered). A relay is needed to send 12 volts to the trigger wire from the start module during start attempts.

Normally Closed (N/C):

Note: There are different types of this system used by various vehicle manufacturers; the following is used to illustrate how these systems work in general.

A Relay is also used in these types of systems to interrupt the starter wire. In the previous two examples, the clutch was bypassed by engaging the clutch relay; with this system you bypass the clutch by preventing the clutch relay from engaging. When the Ignition Key is turned to the start position the relay energizes and interrupts the start wire when the pedal is not pressed. When the Ignition key is turned to the start position and the pedal is pressed, the relay does not energize and the start signal reaches the starter motor.

In a N/C system the supply wire is connected to the relay's trigger wire at rest (pedal not pressed). When the pedal is pressed, the connection is broken between the supply wire and the relay's trigger wire (this disengages the relay). To verify that you have a N/C system, disconnect the clutch switch: the vehicle should start without the clutch pedal being pressed. When you test the trigger wire with your DMM meter, the trigger wire will test as 12 volts or negative when the pedal is not pressed. It should read as an open circuit (or Float) when the pedal is pressed.

Please note: Your probe may also show feedback from the other end of the circuit. The Polarity of the Trigger wire does not matter in this system, since all you need to do in order to bypass it is to use a relay to interrupt it during remote starts.

Installation-programmable Features

The following features can be programmed according to the needs of the installation and the requirements of the user:

Ignition-controlled Door Locks

This feature will **LOCK** all doors when the brake pedal is pressed while the ignition key is in the **IGNITION ON (RUN)** position. The unit will **UNLOCK** all doors when the ignition key is turned to the **OFF** position.

Secure Lock

This feature allows the module to control certain OEM factory alarm systems without requiring the use of other wires for disarming the OEM alarm. (Namely, this feature is designed for OEM systems that use the factory lock wire to arm the alarm and the unlock wire to disarm it.)

➤ **Standard Secure Lock:**

If this Option is selected, upon receiving a remote **START** signal, secure lock will **unlock** the doors (disarming the factory Alarm); 1/2 second after the remote start, it will **relock** the doors. Four seconds after shutdown, secure lock will **relock** all doors (**arming** the system once again).

Please note that most OEM systems will **not** rearm the alarm while the engine is running, but **will** lock the doors.

Starter Kill Arming Mode

Note: It can only be activated if button **I** is programmed as **LOCK** or **UNLOCK** button.

The Starter Kill (if installed) can be configured by the installer either to **Passive Mode** (so as to arm automatically) or **Active Mode** (so as to require the user's intervention for arming). By default, the Remote Car Starter is configured to **Passive Mode**.

➤ **Passive mode:**

- To **arm** the Starter Kill, press the **I** button on the transmitter, **OR**
- In Passive Mode, the Starter Kill will also automatically arm 1 minute (by default) or 3 minutes (if configured this way) after the ignition is turned **OFF** or once the last door is closed (if the doors are monitored).
 - **The LED on the antenna will flash quickly during the countdown preceding the activation of the Starter Kill.**
 - **Once the activation countdown expires, the LED will send a series of quick double flashes to indicate that the Starter Kill is now armed.**
- To **disarm** the Starter Kill, press the **I** button on the transmitter.
 - **The Starter Kill will automatically rearm itself after 1 minute (by default) or 3 minutes (if configured this way) if no door is left opened (if the doors are monitored) and the ignition is not turned ON.**

➤ **Active Mode:**

- To **arm** the Starter Kill, press the **I** button on the transmitter.
 - **The parking lights will flash once.**
 - **The LED on the antenna will flash slowly.**
 - **If remote door locks are installed, this will also lock the doors.**
- To **disarm** the Starter Kill, press the **I** button on the transmitter.
 - **The parking lights will flash twice.**
 - **The LED on the antenna will remain OUT.**
 - **If remote door locks are installed, this will also unlock the doors.**

Lock Pulse Duration

- **Option 1:** 7/10-sec. **LOCK** and 7/10-sec. **UNLOCK** pulses by default.
- **Option 2:** 4-sec. **LOCK/UNLOCK** pulses.
- **Option 3:** A single 7/10-sec. **LOCK** pulse and two ¼-sec. **UNLOCK** pulses.
Used for double-pulse Disarm/Unlock systems

Flashing LED

To gain access to this feature, make sure the Flashing LED option has been enabled at the time of programming.

- **Flashing LED ON:** The LED will flash at all times (being passive or active arming) to denote that the Starter Kill is active.
 - **Active arming:** the LED flashes normally.
 - **Passive arming:** the LED will flash at a faster rate during the countdown until the Unit is armed, at which time the flashing rate will slow down.
 - **In Valet Mode:** the LED will be on solid.
- **Flashing LED OFF:** The LED will **not** flash when the module is armed (passive or active arming). However, if the module is in Valet Mode, the LED will remain on solid when the Ignition is **OFF**.

Bypass

Remote starters of this series offer three possibilities for bypass D2D: they are compatible with Trilogix, ADS and Fortin bypasses (**Trilogix by default**).

Engine Run Time

On a gas engine, the Remote Car Starter can be programmed to run the engine for 3, 15, or 25 minutes (15 minutes by default). On a diesel engine, the Remote Car Starter can be programmed to run the engine for 8, 20, or 30 minutes (20 minutes by default).

Idle Mode

Convenience feature: Idle Mode allows the user to keep the engine running and the doors locked while they stop, for example, at a convenience store or for a short delivery.

This feature allows the user to let the remote starter take control of the vehicle (i.e. no Key in the Ignition Switch) while the engine is running.

To leave the vehicle in Idle Mode if the vehicle has an **automatic transmission**:

1. With the engine running, make sure to release the brake pedal and press the **II** button on the remote control until the parking lights come on.
2. Remove the key and exit the vehicle. The engine will continue running.
3. Lock the doors if needed.

Note: The engine will continue running until the user re-enters the vehicle or until the expiration of the engine run time.

If the vehicle has a **manual transmission**, Idle Mode can be activated **through the same routine as that used for Ready Mode (see in this Guide)**; at the last step, the buttons **I & II** are pressed together.

Note: If the pre-programmed run-time expires or if the user shuts down the engine by remote control, the vehicle will enter Ready Mode.

Caution!!! Do not leave children or pets unattended in a vehicle standing in Idle Mode.

Turbo Mode

If Turbo Mode is configured at installation, it will allow a turbocharger to idle down after the user leaves the vehicle: the unit will take over the vehicle and keep it running for 60 seconds (or until it is shut down by remote control), then shut down the engine.

If the vehicle has an automatic transmission, proceed as follows to set the system to Turbo Mode:

1. With the engine running, make sure to release the brake pedal and press the buttons **I & II** on the transmitter until the parking lights come **ON**.
2. Remove the key from the ignition switch. **The engine will continue running.**
3. Exit the vehicle and close all doors, hood and trunk.
4. **Press the buttons I & II to lock the doors (the engine will shut down after 60 seconds).**

Note: If the vehicle has a **manual transmission**, Turbo Mode can be activated only if button **I** is programmed as **LOCK** or **UNLOCK** button. Turbo Mode is activated through the same routine as that used for Ready Mode; at the last step, the button **I** is pressed.

Note: The vehicle will enter Ready Mode once the engine run time expires.

Cold Weather Mode

If the vehicle has a manual transmission, Ready mode should be set before entering cold weather mode. When cold weather mode is active, the engine starts every 2 hours and runs for 3 minutes (or for 8 or 20 minutes with diesel engines). Cold weather mode automatically ends after 24 hours (or 12 starts).

To enter Cold Weather Mode:

- Press and hold the **II** button for 3 seconds or until the parking lights flash three (3) times.

To exit Cold Weather Mode, do any one of the following actions:

- Open the hood.
- Start the engine by remote.
- Start the engine with the key.
- Press and hold the **II** button for three seconds (the parking lights will flash once).

To verify whether the system is in Cold Weather Mode (automatic transmissions only):

- Press the brake pedal:
- If the vehicle is in cold weather mode, the parking lights will stay on while the pedal is pressed.

Valet Mode

When the vehicle is in Valet Mode, the remote starter function is disabled. If the vehicle needs to be serviced, or if it is parked indoors, the Valet Mode will prevent the engine from being remote-started accidentally.

➤ Any of the following features will put the remote car starter into Valet Mode:

- **Ignition Valet:** This feature allows the user to put the system into Valet Mode by using the **ignition key**.
- **Valet switch:** This feature allows the user to put the system into Valet Mode by using a **push button switch (optional)**.

To put the system i n t o Valet Mode

• To put the system i n t o Valet mode using the KEY (Ignition Valet Mode):

- a. Insert the ignition key into the ignition switch. Within 10 sec., turn the key 5 times successively into the **IGNITION/RUN** and **OFF** positions.

The parking lights will flash three times.

- b. Turn the ignition **OFF**.

The LED on the antenna will come ON solid to indicate that the vehicle has successfully entered Valet mode.

• To put the system i n t o Valet mode using the PUSH BUTTON SWITCH (Valet Switch Mode):

- a. Insert the ignition key into the ignition switch.
- b. Turn the key into the **ON** position
- c. Within 5 seconds, press the push button switch until the parking lights flash **3 times**.
- d. Release the push button and turn the ignition to the **OFF** position.

The LED on the antenna will come ON solid to indicate that the vehicle has successfully entered Valet mode.

To put the system o u t o f Valet Mode

• To put the system o u t o f Valet mode using the KEY (Ignition Valet Mode):

- a. Insert the ignition key into the ignition switch. Within 10 sec., turn the key 5 times successively into the **IGNITION/RUN** and **OFF** positions.

The parking lights will flash twice.

- b. Turn the ignition **OFF**.

The LED on the antenna will flash quickly to indicate that the vehicle is now out of Valet mode.

• To put the system o u t o f Valet mode using the PUSH BUTTON SWITCH (Valet Switch Mode):

- a. Insert the ignition key into the ignition switch.
- b. Turn the key into the **ON** position.

- c. Press the push button switch until the Parking lights flash **twice**.
- d. Release the push button and turn the ignition to the **OFF** position.
The LED on the antenna will flash quickly to indicate that the vehicle is now out of Valet mode.

Panic Mode

Note: Panic mode can only be activated if the horn option has been adequately installed and programmed by the installer. Button **I** has to be programmed as **LOCK** and **UNLOCK**.

In an emergency situation, the user can activate panic mode by pressing and holding the **I** button for approximately 3 seconds until the horn honk starts and the parking lights flash. This will:

- shut down the engine
- disarm the Starter Kill and
- unlock or lock the doors (with the **I** button)
- activate the horn for 25 sec.

Panic Mode will automatically shut down after 25 sec.

Note: To stop panic mode before the end of its delay, press the **I** button until the sound signal stops.

The AUX 1 / Horn Output

➤ Horn Confirmation:

AUX 1 can be programmed to trigger the horn upon locking the doors with the transmitter. When horn confirmation is activated, panic mode is enabled. If horn confirmation is disabled, panic mode will not be available, but constant while pressed of **LOCK/UNLOCK** will be activated.

The Trunk Output

This 500 mA negative output gives a 1-second pulse when the **I & II** buttons are pressed together (if the ignition is **OFF** or during a remote start).

Ready Mode Option

If the vehicle has a **manual transmission**, please read the following indications. In order to start the vehicle by remote, the unit must first be set to Ready Mode. If the unit is not set to Ready Mode, it cannot remote start the vehicle.

Please note that Ready Mode can be enabled by the remote or the handbrake, depending on the option that was selected. Therefore, you must follow the appropriate procedure between the two described below in order to set the vehicle into Ready Mode.

Once the system is set to Ready Mode, the vehicle can be remote started and stopped at any time. The system will exit Ready Mode if a door, the hood or the trunk is opened, if the brake pedal is pressed, if the parking brake is disengaged or if the ignition key is turned to the **IGNITION ON (RUN)** position.

To set the system to Ready Mode:

If Ready Mode is enabled by remote	If Ready Mode is enabled by handbrake
1. Ensure that all the doors, hood and trunk are closed. Make sure that the gear selector is in the neutral position.	
2. With the engine already running, apply the parking brake once and release the brake pedal. Make sure to release the brake pedal.	2. With the engine already running, apply the parking brake twice and release the brake pedal. Make sure to release the brake pedal. The parking lights will flash 3 times quickly and remain lit. Skip to step 4.
3. Within 20 sec. of engaging the parking brake, press and hold I or II on the	-

transmitter. The parking lights will flash 3 times quickly and remain lit.	
4. Remove the key: the engine will continue running.	
5. Exit the vehicle and close all doors, hood and trunk.	
6. Press for approx. 1 second either button: I or II .	

Note: The vehicle will also enter Ready Mode once the engine run time expires.

Resetting the module to default features

Resetting the module is not a required process. Most of the time, you can avoid resetting the module by fixing the issue directly at the root of the cause.

To reset the module:

1. Enter programming mode.
2. In 10 seconds or less, press the brake pedal 6 times.
3. The parking lights will flash 8 times, confirming the reset.

On some vehicles such as BMWs and certain Volkswagens, pressing the brake pedal without the key in the ignition **ON** position will not work. If this is the case, simply leave the ignition **ON** while performing the reset.

Closing Up

- Use tie-wraps or screws to properly secure the starter module and keep the wiring away from any moving parts such as the parking brakes or steering column shafts. Mount all switches in good and accessible locations where they do not risk getting kicked or hit accidentally.
- Most comebacks are the result of misunderstandings about how a product works or performs. Take the time to properly explain all functions and features to the customers before they leave the premises. Doing this will save time and money.
- Always make all your connections before plugging in the module, and be sure to test all functions properly before closing up the installation.
- Show the customer where the optional valet switch has been installed and place the warning label in a visible location under the hood.

Testing

Before putting back the vehicle together, it is recommended to check that the system operates properly. The following testing procedures should be used to verify proper installation and operation of the system. Before testing, make sure that all connections are soldered and that the unit is plugged in.

- If installed on a MANUAL transmission, make sure the system properly enters and exits ready mode (see earlier in this Guide).**
- Remote-start the engine and listen for starter drag.** If the starter cranks for too long, carry out another tach programming procedure.
- Hood switch shutdown.** With the vehicle running under the remote car starter, open the hood; the vehicle should shut down. If it does not shut down, check the hood pin-switch and its connector.
- Brakes shutdown circuit.** With the vehicle running under the remote car starter, press and release the brake pedal. The engine should shut down immediately. If the engine continues to run, check the brakes switch connection.

- ❑ **OEM alarm control.** Make sure the module is able to arm and disarm the oem alarm (if applicable).
- ❑ **Door locks and trunk testing.** Make sure each of these options respond to the transmitter (if installed).
- ❑ **Starter kill option.** Sit inside the vehicle with all doors closed. Arm the vehicle, then try to start the engine with the key. The engine should not start. If the engine starts, rewire the starter kill to reach proper operation.
- ❑ **Valet mode.** Make sure the remote car starter is able to properly enter and exit valet mode. When setting the remote car starter into valet mode, pressing the lock button will lock the doors without activating the starter kill. (Refer to the user guide for further information on valet mode.)
- ❑ **Idle mode.** Make sure the vehicle properly enters and exits idle mode.

Troubleshooting Poor Transmitting Range

Many factors may affect the operating range of the transmitter. Some of these are:

- The condition of the battery in the transmitter.
- The operating environment (for example: downtown radio-frequency noise, airports, cellular phone towers...).
- Metal: any type of metal will affect operating range. This includes the vehicle itself.
- The shape of the vehicle can affect range as well (vans in general have less range).
- The shape of the roof and A-pillars brings about considerable radio-frequency deflection (in this case, the signal from the remote control). As a result, the direction in which the vehicle is facing in relation to the remote control can affect the range. Straight on (standing in front of the vehicle) generally gives you the greatest range; the second best performance is from the back. Using the remote control from either side of the vehicle will usually give the lowest range.
- The range will be significantly lower in a crowded parking lot than in open space.
- The transmitter's antenna may be partially covered by the user's fingers. Always hold the transmitter high, approximately at shoulder height, and ensure your fingers are not covering the antenna.
- The operating range will be somewhat lower on vehicles equipped with an aftermarket or factory alarm.

Diagnostics – Parking Light Flash Table

Flashes	Description	
1	<ul style="list-style-type: none"> • Doors locked, starter kill armed • Run time has expired • I & II buttons pressed • Start signal received by the module • Cold weather mode cancelled 	
2 slow flashes followed by 8 quick flashes	<ul style="list-style-type: none"> • Reset from manual to automatic 	
2	<ul style="list-style-type: none"> • Doors unlocked, starter kill disarmed • Remote start attempt cancelled by remote • Exiting ignition valet 	<ul style="list-style-type: none"> • Power-up reset • Board set from manual to automatic; power ON • Power ON to OFF (automatic transmission).
3 Slow (automatic transm.)	<ul style="list-style-type: none"> • Parking brake is engaged 	<ul style="list-style-type: none"> • Yellow loop has been reconnected
3	<ul style="list-style-type: none"> • Entering and exiting ready mode 	<ul style="list-style-type: none"> • Entering ignition valet
4	<ul style="list-style-type: none"> • +12 V detected on the brake input wire either while cranking or during run time • Entering multi-speed tach programming • Entering time delay adjustment in virtual tach system • Board set from automatic to manual; power ON • Power ON to OFF (manual transmission). 	
5 Fast	<ul style="list-style-type: none"> • Tach signal programmed • New transmitter programmed 	
6	<ul style="list-style-type: none"> • A remote start was attempted while a tach-before-crank signal was detected before cranking 	
8	<ul style="list-style-type: none"> • Unit reset. 	
10	<ul style="list-style-type: none"> • A ground (-) signal was detected on the hood pin input wire 	
1 – pause – 2	<ul style="list-style-type: none"> • There was a remote start attempt while the vehicle was in valet mode • Failed start: vehicle's low battery voltage 	
ON SOLID for 3 seconds....	...followed by 1 flash	Exiting cold weather mode
	...followed by 3 flashes	Entering cold weather mode
ON continuously	<ul style="list-style-type: none"> • Idle mode: Idle mode is engaged • Run time: The vehicle has been remote started and is in run time 	
ON 2 seconds	<ul style="list-style-type: none"> • The hood has been opened and a ground (-) signal has been detected on the hood pin input wire 	
ON 4 seconds	<ul style="list-style-type: none"> • Locking or unlocking a door (with door pulses configured to 4 sec.) 	
ON 20 seconds	<ul style="list-style-type: none"> • The hood pin has been flashed and you now have access to the programming options 	
Constantly flashing up to 25 sec.	<ul style="list-style-type: none"> • Panic mode is triggered 	

Troubleshooting Q & A

The following are some common installation-related issues.

A problem or symptom is given and then possible solutions and/or suggestions as to areas to verify are enumerated.

1. **I cannot program the remote control.**

- Do the parking lights come on when you open the hood? (Does the hood pin work?)
- Is the antenna plugged in?
- Does the light on the remote control turn on when you press the button?
- Is the ignition wire connected properly?
- Are you waiting too long between programming steps?
 - After flashing the hood pin and turning the key to **ON**, WAIT for 2 seconds.
 - Turn the key **OFF**, **ON**, **OFF**, then keep pressing the I button repeatedly until you get 5 light flashes from the module.

The entire process should take less than 20 seconds.

2. **The car will not start by remote.**

- Does the light on the remote light up when you press the button?
- Is the starter in valet mode?
- Does the vehicle have passive antitheft security (PATS, VATS, PASSLOCK, TRANSPONDER)?

3. **The starter motor cranks for 8 seconds but the car will not start.**

- Are you on the correct ignition wire?
- Does the car have more than 1 ignition?

4. **The car cranks briefly then quits.**

- Have you bypassed the passive security (PASSLOCK, PASSKEY III, PATS...)?
- Have you adjusted tach?
- Is the vehicle's battery weak?

5. **The parking lights come on for 8 seconds but the starter motor will not crank.**

- Does the car have an aftermarket starter kill?
- Have you bypassed the VATS or Passlock II?
- Is the start wire hooked up correctly?
- Has the clutch been bypassed properly (for standard transmissions)?

6. **The car starts but starter stays engaged.**

- Make sure ignition and crank are not common with the key out (connected at rest). May have to add relay (i.e. Tercel, Altima).
- Did you make an auto tach adjustment?
- Weak tach signal?
- Bad ground?

7. **The car starts by remote but then the starter re-engages.**

- Check ground wire.
- Is tach programmed?

8. **The car starts on its own.**

- Is the module in cold weather mode?
- Program remote 4 times (another remote may be programmed to your module).
- Is external trigger shorting out to ground?

9. **I get one long flash when I press the button trying to go into ready mode.**

- Check tach circuit.

10. **The factory alarm goes off when I start by remote.**

- Did you hook up the disarm wire?

- Do you have the correct OEM disarm wire?
 - Did you program the disarm wire?
11. **The ABS and the CHECK ENGINE light come on in the dash.**
 - Are you missing a second ignition or accessory?
 12. **The car starts and runs but the heater blower motor does not work.**
 - Incorrect accessory wire.
 - Does it have more than one accessory?
 13. **The car starts, the heater works but the air conditioning system does not.**
 - Missing second accessory (common on some Fords).
 14. **The CHECK ENGINE light comes on and the vehicle does not shift; it feels sluggish.**
 - Missing second ignition (common on some GMs).
 15. **On cold mornings the parking lights come on, go out, and then flash twice slowly.**
 - Check for a weak car battery (try using the cold weather mode option).
 16. **The car does not start and the parking lights flash 4 times.**
 - Check brake circuit.
 - Check for blown rear parking light (feedback).
 17. **The vehicle runs for 8 seconds then shuts down. I have 12 volts on starter wire the whole time but no over crank.**
 - Did you make an auto tach adjustment (new GM trucks, cars and mini vans)?
 18. **The car runs for about 5 seconds, shuts down and restarts; it does this 3 times.**
 - Check voltage on tach wire.
 - Try an alternate tach source.
 19. **The car starts by remote but the range is poor.**
 - Is the car tinted?
 - Does it have an aftermarket alarm?
 - Is the antenna mounted below the tint strip?
 - Using the correct remote?
 - Change remote battery.
 - Heated front windshield (Taurus, Crown Victoria)?
 - Metal film in windshield (GM Mini vans)?
 20. **I get excellent range when the vehicle is not running but almost none when it is running.**
 - Check for loose spark plug boot or faulty ignition wires, cracked cap.
 - Try disconnecting blower motor.
 21. **The radio stays on after the vehicle shuts down.**
 - Retained Accessory Power will keep power to radio for approximately 10 - 15 minutes or until it sees a door open (Fords, GM's R.A.P.).
 22. **The headlights stay on after the car shuts down by remote.**
 - Switch headlight switch from auto to normal (Toyotas).
 - On some vehicles, opening a door will shut the headlights off. Pulse the driver's door pin with the rearm wire.
 23. **I get no 12v reading at all at the brake pedal, depressed or not.**
 - Some vehicles require the ignition be on (BMW).
 24. **The parking lights flash on their own.**
 - Check hood pin adjustment.
 - Bad ground?

25. **I blow fuses every time I try the remote door locks and I have already installed a relay.**
 - Door locks are reverse polarity, and not positive trigger.
26. **I blow fuses every time I try the remote trunk release and I have already installed a relay.**
 - Trunk release is reverse polarity, and not positive trigger.

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