

# ADVANCED KEYS

## Push-Start Ignition System

### INSTALLATION GUIDE



#### Product Features:

- Push-Start Ignition Operation
- OEM Push-Start Button
- One-Touch Engine Tach Ignition
- Backup Ignition Relays
- Diesel Wait-to-Start Input
- Immobilizer Bypass Enable Trigger
- Remote Start Function
- Compatible with Aftermarket Alarms
- Compatible with OEM Vehicle Setup

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## PRODUCT CONTENTS

The following list of components are included in this system:

- |                        |                        |
|------------------------|------------------------|
| 1 – Push-Start Module  | 1 – Installation Guide |
| 1 – Accessory Harness  |                        |
| 1 – Push-Start Button  |                        |
| 1 – Button Ring Mount  |                        |
| 1 – Ignition Key Cover |                        |

# WARNING AND SAFETY INFORMATION

## PRODUCT SAFETY AND LEGAL DISCLAIMER

- This product shall be installed by a certified technician therefore a certain level of competence and knowledge are therefore assumed when reading this guide.
- This guide is provided as a GENERAL installation instructions and vehicle subjected to installation maybe different.
- This product is designed based on vehicle regulatory standard. Please observe your local public road traffic law and regulations prior to installation.
- Exercise due-diligence when installing this product. The manufacturer and distributors of this product will not accept any vehicle damage or personal injury resulting from the installation of this product. Installation of this product is acceptance of this statement and releases the manufacturer/distributors of this product from any direct or indirect liabilities.
- Once installation is complete, please return this guide along with other documentations included in this product back to customer for future reference. The manufacturer/distributors of this product does not guarantee this particular version will be available at a later date.

## PRE-INSTALLATION CONSIDERATIONS

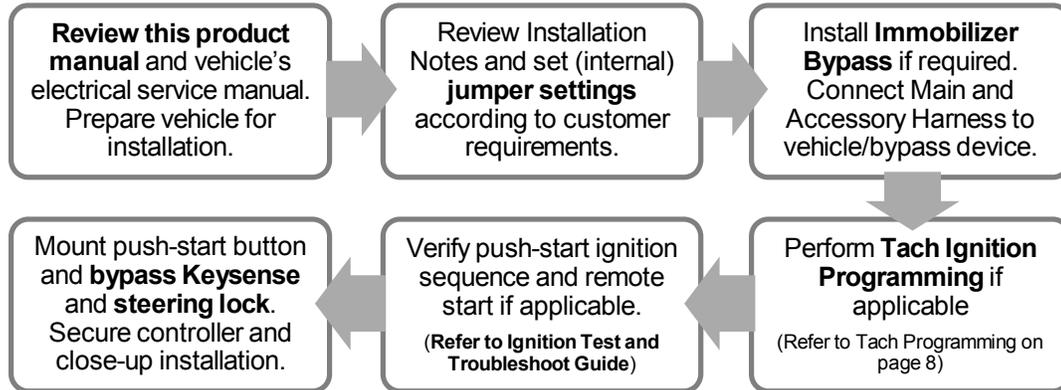
- Carefully read and understand the User Manual, Installation Guide and Electrical Service Information for the subjected vehicle before begin work.
- Install in a well-lit, dry, covered area away from the elements and keep at least one window open all time during installation. Do not leave key inside ignition switch and /or detection range. Prepare all tools required for the installation. Special tools maybe necessary depending on vehicle.
- Verify the vehicle has proper grounding and does not have any outstanding electrical/functional issues prior to installation.
- To avoid short circuit, it is recommended to pull-out related fuses before installation and put them back when installation is complete.
- Only locate necessary wires related to the installation (most required wiring are under driver dash/kick panel areas) and connect to the unit according to the wiring diagram. Use a Multimeter to verify and confirm wire's function, polarity before connecting or disconnecting. We strictly prohibit testing or modifying the vehicle's ECU, airbag and ABS systems.
- Begin function tests on the system after verifying and ensuring all wires have been connected correctly and insulated properly.



**DO NOT power up the module before it is properly grounded. Should the unit be powered before being grounded, serious damage to internal components could occur.**

## INSTALLATION OVERVIEW

Use following steps as a guide to install this system:



## INSTALLATION NOTES

### Jumper Settings

For security purposes, jumpers are located inside the controller unit. Please remove casing screws to access jumpers and do so with care and only when unit is **powered off**.



After making a jumper settings change you must cycle the power to reboot the Push-Start controller for the setting change(s) to take effect.

**JP1:** This jumper select Tach (default) or Tachless Ignition Mode.

Under Tach Mode, with a single-tap of the push-start button will trigger automatic START (crank) of the engine until it reaches the programmed Tach value (Engine Tach Input required, see **Tach Ignition Programming**).

Under Tachless Mode, it allows the user to press-and-hold the push-start button and manually START (crank) the engine for as long as the button being pressed.

**JP2:** This jumper sets how the Push-Start Module is enabled via the “Push-Start Enable” input. The (default) jumper setting requires a secure signal from Smart Key Module’s “Push-Start Module Control” output to enable the Push-Start function.

The (non-default) jumper setting accepts a GND signal to enable the Push-Start module and under this mode:

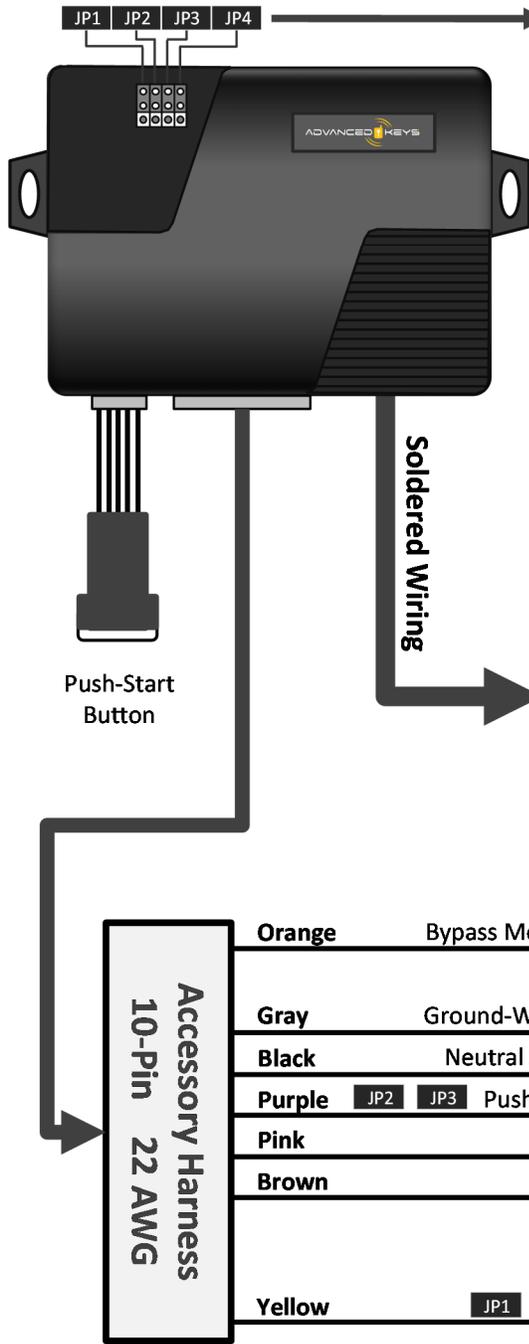
- **A single GND pulse** to the “Push-Start Enable” input will enable the Push-Start function for 30 seconds and this input signal can come from the **unlock** or the **disarm** output of a vehicle or aftermarket alarm devices. Additional GND pulse will extend the 30 seconds enable timer.
- **A constant GND source** to the “Push-Start Enable” input will enable Push-Start function for as long as the GND signal is present and this input signal can come from a programmable output of an aftermarket devices or a GND latch/switch on the vehicle.

**Note:** Push-Start Module will ignore Enable input changes after it enters ACC, ON or RUN mode. Under the non-default setting, the Wait-to-Start input also functions as a disable input. If system is enable by a GND signal and in a “READY” state, a single GND pulse (rising edge of the signal) to the Wait-to-Start input will disable the push-start function immediately.

**JP3:** This jumper determines the Remote Start function is enabled or disabled. Remote Start function is enabled by default, change to disable if remote start function is not required.

**JP4:** Unused, do not change from default jumper setting.

# PUSH-START MODULE WIRING DIAGRAM



## Jumper Settings:

	Default Settings	Optional Settings
JP1	Tach Ignition	Tachless Ignition
JP2	Smart Key Enable	Ground Enable
JP3	Remote Start Enable*	Remote Start Disable*
JP4	N/A	N/A

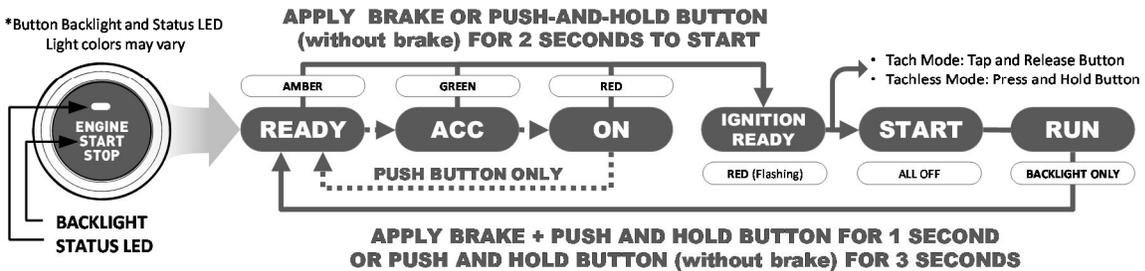
\*Remote start function only available with Advanced Keys' Smart Key module.

## Legend:



# PUSH-START OPERATION

\*Button Backlight and Status LED  
Light colors may vary



## MAIN HARNESS (8PIN 14-16AWG) WIRING DESCRIPTIONS

<b>Pink</b>	OUTPUT	-	500mA	<b>Negative START</b>	OPTIONAL
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Connect this output to a data bypass module or vehicle's Negative(-) triggered Starter input. This output is rated for 500mA. **DO NOT use this output to drive Starter Motor's Negative(-) side directly.**

<b>White</b>	OUTPUT	+	30A	<b>Positive START</b>	
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Connect this output to vehicle's Starter input at the ignition switch.

**IMPORTANT:** Ensure that the ignition current is not rated more than 30A. Connect to external relay with higher current rating if required.

<b>Red</b>	INPUT	+	30A	<b>Battery +12V</b>	
------------	-------	---	-----	---------------------	--

Connect to a constant +12V supply wire at the ignition switch. Ensure that the OEM input power wire is fused for more than 30A.

**Note:** When no suitable +12V source available, connect to vehicle's power supply at the fuse junction box or connect directly to the B+ terminal on the battery.

<b>Blue</b>	OUTPUT	+	30A	<b>ON 2 / 2nd Ignition Output</b>	
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If applicable, connect this output wire to vehicle's secondary ignition (ON 2) input at the ignition switch. This output will be +12V in ON and RUN state and OFF during START (crank) State.

<b>Green</b>	OUTPUT	+	30A	<b>ON 1 / Primary Ignition Output</b>	
--------------	--------	---	-----	---------------------------------------	--

Connect this output wire to vehicle's primary ignition (ON) input at the ignition switch.

<b>Black</b>	INPUT	-		<b>Ground</b>	
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Connected to bare, unpainted metal on chassis. It is recommended to use a factory ground bolt rather than a self-tapping screw. Screws tend to get loose or rusted over time and lead to erratic electrical problems.

<b>Red</b>	INPUT	+	30A	<b>Battery +12V</b>	
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Connect to a constant +12V supply wire at the ignition switch. Ensure that the OEM input power wire is fused for more than 30A.

**Note:** When no suitable +12V source available, connect to vehicle's power supply at the fuse junction box or connect directly to the B+ terminal on the battery.

<b>Yellow</b>	OUTPUT	+	30A	<b>ACC</b>	
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Connect this output wire to vehicle's accessory (ACC) input at the ignition switch. This output will be OFF during START (crank) state.

## IGNITION OUTPUTS STATE TABLE

Following table shows state of the ignition outputs when system is in ACC, ON, START and RUN mode:

System State	Button Status LED	ACC	ON 1	ON 2	START
OFF	All Off	-	-	-	-
Ready	Amber	-	-	-	-
ACC	Green	12v	-	-	-
ON	Red	12v	12v	12v	-
Step On Brake	Red (Flashing)	No Change to Any Output			
START (Crank)	All Off	-	12v	-	12v
RUN (ON)	Backlight Only	12v	12v	12v	-

## ACCESSORY HARNESS (10PIN 22AWG) WIRING DESCRIPTIONS

<b>Orange</b>	OUTPUT	+	250mA	<b>Bypass Module Control</b>	OPTIONAL
---------------	--------	---	-------	------------------------------	----------

This wire provides a constant 250mA positive output while the system is in ACC, ON and START states. The output can be used to activate external relays, bypass device and bypass (+)type keysense input etc.

<b>Grey</b>	OUTPUT	-	500mA	<b>Ground-When-Running</b>	OPTIONAL
-------------	--------	---	-------	----------------------------	----------

This output provides a constant 500mA negative output while the system is in ACC, ON (RUN) and START states. This output activates 0.5 seconds before ACC and it can be used to activate external relays, bypass devices and bypass (-)type keysense input etc.

<b>Black</b>	INPUT	-		<b>Neutral Safety Switch</b>	OPTIONAL
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Required for remote start function only. Connect this input to a ground source when vehicle is in PARK or NEUTRAL gear position. This will prevent the vehicle from remote started while in a drive gear. See Remote Start Function section for more information on how to connect and test this input.

**IMPORTANT:** If connected make sure to perform the Neutral Safety Switch Testing under the Remote Start Function section to verify input is functioning by preventing vehicle remote started in drive gear.

<b>Purple</b>	INPUT	-		<b>Push-Start Enable</b>	REQUIRED JP2
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Connect this input to the “Push-Start Module Control” output of the Advanced Keys’ Smart Key module. **Note:** Depending on Jumper Setting (JP2), this input can connect to a externally ground signal from other device/system to enable this system. See Jumper Setting under Installation Note for more information.

<b>Pink</b>	INPUT	-		<b>Wait-to-Start / Push-Start Disable</b>	OPTIONAL
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**This input is not required for non-diesels engine vehicle.** Connect this input to the negative side of the Glow Plug Light. This input monitors the Glow Plug Light output for Diesel Vehicle and system will delay the engine START signal until the Glow Plug Light goes out. Depending on ignition type:

**Tach Ignition:** While system is in READY mode, apply the brake and tap the push-start button to START.

If Wait-to-Start input senses Glow Plug Light is ON, system will delay engine cranking (flashing Red) until the Glow Plug Light turns OFF then system will engage the engine to START. If push-start button was pressed again before the Glow Plug Light turned OFF system will default to ON state instead.

**Tachless Ignition:** While system is in READY mode, apply the brake and press-and-hold the push-start button to START. If Wait-to-Start input senses Glow Plug Light is ON, system will delay engine cranking (flashing Red) until the Glow Plug Light turns OFF then system will then engage the engine to START. Release the button once engine is running. If brake or push-start button was released earlier than Glow Plug Light turned OFF system will default to ON state instead.

**Remote Start:** Once remote start is triggered system will wait up to 18 seconds until the Glow Plug Light goes out before remote starting the engine.

**Note:** Wait-to-Start function is only valid in “READY” state. If starting from ACC or ON state system will START (crank engine) right away without any delay. Wait-to-Start input also functions as disable input. If system is in “READY” state and it is enable through a GND signal (JP2 Non-default), a single GND pulse (rising edge of the signal) to Wait-to-Start input will disable the push-start function immediately.

<b>Brown</b>	INPUT	+		<b>Brake Input</b>	REQUIRED
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Connect this input to a Brake pedal switch on the vehicle that sees a +12v when brake applied, GND or float when released. **Note:** Connect this input directly to vehicle’s Brake Switch, recommend avoid using Data/Interface bypass device’s brake output. Also this input is required for engine start, stop and programming, therefore it is essential that input is proper connected and tested before using this system.

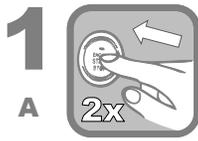
<b>Yellow</b>	INPUT	~		<b>Engine Tach</b>	JP1 OPTIONAL
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Connect this input to a suitable Tach or engine RPM signal source with at least 3 volts (AC) and 20 Hz or faster signal when engine is at the idle speed. Common Tach reference are: Data bypass module’s Tach output, negative side of an injector, ignition coil or at the Engine Control Module (ECM).

**Note:** This input need not be connected when jumper (JP1) selects Tachless Ignition mode. In Tachless Ignition mode engine crank time is depended on how long the Push-Start button being pressed.

## TACH IGNITION PROGRAMMING

This function allows automatic START (crank) of the engine by a single-tap the push-start button. Prior to programming, check to ensure Tach input and Ignition (ACC, ON and START) with applicable immobilizer bypass device are connected/programmed. To enter Tach Programming Mode, make sure vehicle's ignition is in OFF state and Push-Start system is enabled with button's Status LED light showing Amber.



**1<sup>st</sup> Time Programming:**  
Press the button 2 times by switching from OFF > ACC > ON and then go to **Step 2**



Button LED will flash Green / Red alternately to indicate programming mode is active.



**Re-programming Tach:**  
Press the button 3 times by switch from OFF > ACC > ON and then press-and-hold the button



(within 1 minute)  
Push and hold down button to START the engine (without brake)



After holding button for **10+ seconds** button LED will begin to flash Green / Red alternately to indicate programming mode is active.



Release the button after engine is running



Release the push-start button and then go to **Step 3**



Once engine reaches idle RPM (within 4-min) press-and-release the brake to program in the tach signal

**6** Engine will **continue to run** if Tach signal **successfully** programmed. OR Engine will **shutdown** (Ignition OFF) if **failed** to register the Tach signal.

- Note:**
- You may repeat the above steps anytime to program new tach signal.
  - Verify Tach signal if programming failed. Tach input require a 3v-16v and minimum 20Hz signal.
  - Refer to Ignition Test and Troubleshooting and FAQ for more troubleshooting information.

## PUSH-START SYSTEM FUNCTION DESCRIPTION

**To START the Engine :**

\*Please see page 5 for over all Push-Start Operation sequence and depending on Tach Mode jumper (JP1) setting:

### Tach Mode

- Apply the brake under any mode (OFF, ACC or ON) and tap the start button once to START.
- Alternatively in an emergency situation, without applying the brake while in OFF state, press-and-hold the start button for 2 seconds to START.
- **Under the Tach mode, if system failed to sense the Tach signal (i.e. engine stall) it will exit to the Ignition (ON) mode. You can restart engine by apply the brake and press the start button.**

### Tachless Mode

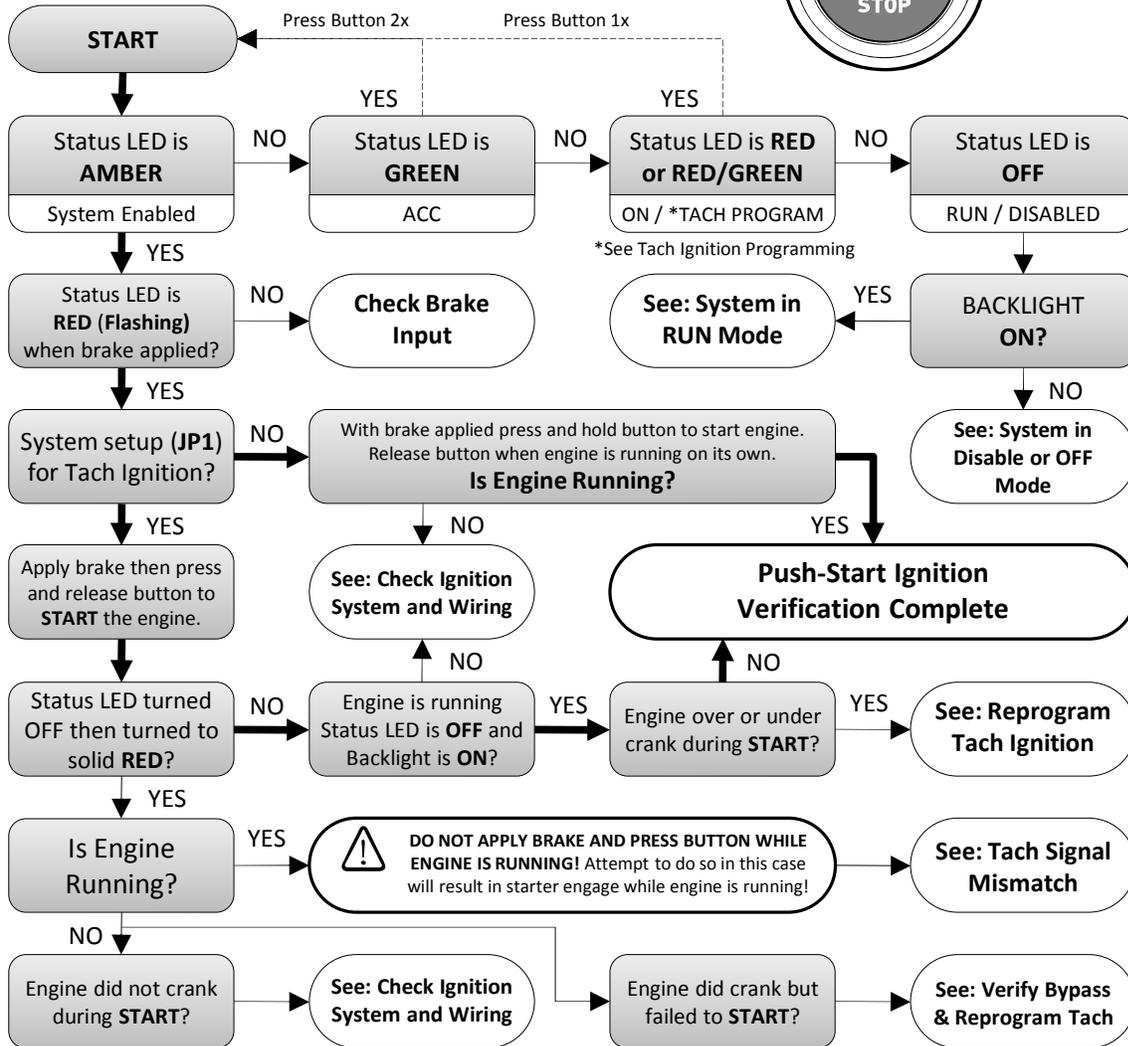
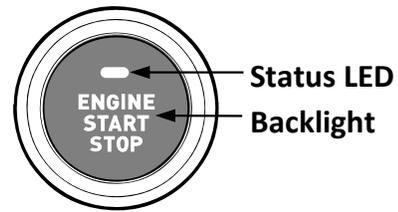
- Apply the brake under any mode (OFF, ACC or ON), press-and-hold the start button to engage engine to START, release the start button after engine started.
- Alternatively in an emergency situation, without applying the brake while in OFF state, press-and-hold the start button for 2 seconds to engage engine to START, release button after engine started.
- **Under the Tachless mode, if system failed to start the engine it will enter the RUN mode. You must exit the RUN mode by performing a “turn-off the engine” before attempt to restart.**

**To TURN-OFF the Engine**

- Apply the brake then press-and-hold the button for one second to turn OFF the ignition.
- **Alternatively in an emergency situation, without applying the brake, press-and-hold the button for 3 seconds to turn OFF the ignition.**

# IGNITION TEST AND TROUBLESHOOTING

Use the flow diagram/table below to verify Push-Start ignition function and use it for troubleshoot ignition issues. Normal operation follows the thick arrows and should arrive at the “Push-Start Ignition Verification Complete” decision block:



System Status	Status Description
<b>System in RUN Mode</b>	System switch to <b>RUN</b> mode when it registered engine is running. In this state the Status LED is <b>OFF</b> and Backlight is <b>ON</b> . Depress the brake and hold button for 2 seconds to return to <b>OFF</b> or <b>READY</b> mode.
<b>System in Disable or OFF Mode</b>	Push-Start module is either not powered ON or enabled by the 22AWG purple “Push-Start Enable” input. Check input power and make sure correct enable input is supplied to device based on jumper (JP2) – See Jumper Setting
<b>Check Brake Input</b>	System failed to sense brake input, verify input receives +12v when brake is applied.
<b>Check Ignition System and Wiring</b>	System attempted to <b>START</b> but vehicle did not respond. Make sure shifter is <b>PARK</b> or <b>NEUTRAL</b> position and wirings at the vehicle’s ignition inputs are correct and connected properly.
<b>Reprogram Tach Ignition</b>	If engine over or under crank during <b>START</b> , perform Tach Ignition Programming steps again. For under-crank, on programming step 8 release the brake before engine reaches the idle RPM. For over-crank, on programming step 8 release brake at the idle RPM when engine is at running temperature.
<b>Tach Signal Mismatch</b>	Input Tach signal is missing, invalid or mismatched against the programmed Tach signal. System defaulted back to <b>IGNITION ON</b> Mode. To turn vehicle <b>OFF</b> , ( <b>DO NOT APPLY BRAKE</b> ) press push-start button once. Verify Tach signal output from the vehicle (3v-16v and 20Hz minimum) and perform Tach Ignition programming.
<b>Verify Bypass and Reprogram Tach</b>	System were able to <b>START</b> the engine however: A) Transponder signal missing and vehicle fail to disable immobilizer. Verify Immobilizer bypass is working. B) System may under-crank the engine. Program Tach at higher RPM than idle. See Reprogram Tach Ignition above.

## REMOTE START FUNCTION (OPTIONAL)

A built-in Remote Start function is available when system is connected with an Advanced Keys Smart Key System. To enable remote start function the following conditions are required:

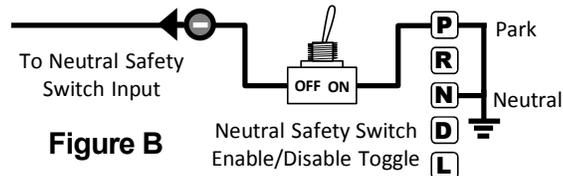
- All Internal Jumpers JP1, JP2 and JP3 are set at their default position.
- Purple “Push-Start Enable” input is connected to the AK-103 Smart Key System or newer.
- Tach Ignition has been successfully programmed.
- Neutral Safety Switch input must be connected correctly and passed Neutral Safety Switch Testing (see below) to provide protection from remote starting in gear other than “PARK” or “NEUTRAL”.

### Neutral Safety Switch Connection

In most automatic transmission vehicle the shifter has a built-in mechanism that lock-out the starter and prevent ignition while in drive gear. If vehicle has the built-in starter lock-out, connect Neutral Safety Switch input directly to ground as shown in **Figure A**. If the vehicle does not have starter lock-out function, connect Neutral Safety Switch input as shown in **Figure B**.



**Figure A**



**Figure B**

Once Neutral Safety Switch input has been connected the starter lock-out function must be tested. Use the following steps to confirm this safety feature:

### Neutral Safety Switch Testing

1. Make sure there is sufficient clearance around the vehicle allow for small movement.
2. Make sure there isn't any other active systems connected to ignition.
3. Engage the emergency or hand brake.
4. Turn the key to the ON position to releases the shifter interlock.
5. Place the car in drive (D) and turn the key to OFF position.
6. Have a person in the driver seat and place foot over the brake pedal (without step on the brake pedal) and be ready to step on the brake if the vehicle starts.
7. While outside the proximity range, trigger the remote start via Smart Key remote.
8. If the starter engages, immediately step on the brake to shut the remote start. Verify brake input if the starter does not shutdown. If the starter does not engage then safety system is working.



**Not recommend enable and using remote start function on a manual transmission. Do not return the vehicle to the customer until this safety feature is working properly.**

### Remote Start Ignition Takeover

Use the following steps to takeover from a remote started vehicle without shutting down the engine:

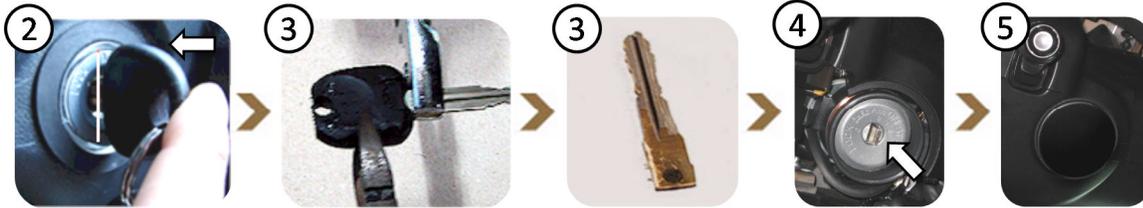
1. Approach and disarm the vehicle with a valid Smart Key.
2. Enter the vehicle without stepping on the brake.
3. Press the push-start button **once** to switch to ACC mode and wait until Green Status LED light turns OFF and Backlight turns ON.
4. Step on the brake to exit Remote Start mode and switch to normal RUN mode.
5. Vehicle is now safe to take out of the PARK/NEUTRAL gear for driving.



It is responsibility of this product's installer to ensure that the vehicle cannot be remote started while it in drive gear. It is user's responsibility to ensure that the vehicle remain in “PARK” or “NEUTRAL” after remote started to prevent vehicle from moving before taking over the ignition. **Please ensure the remote starter is disabled by toggle OFF the Neutral Safety Switch input before servicing. (See Figure B)**

## STEERING COLUMN LOCK BYPASS

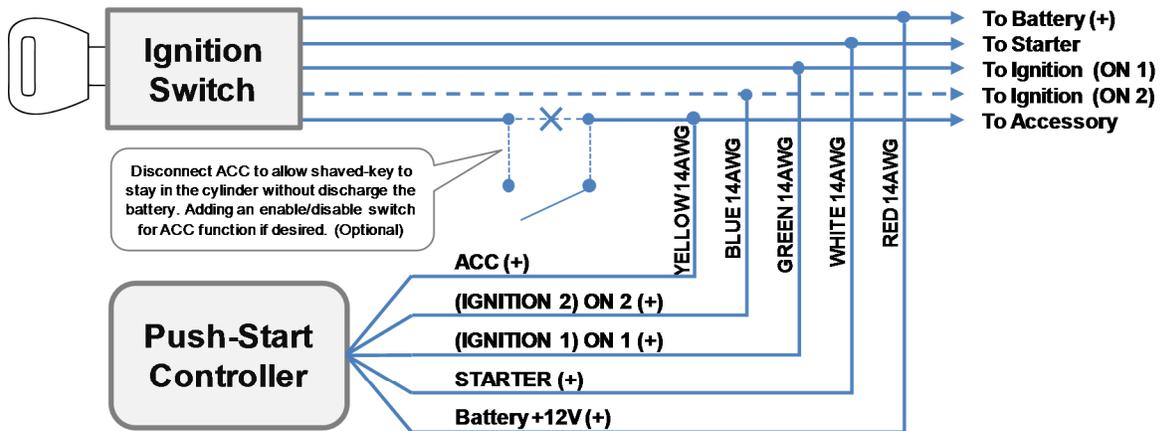
To achieve complete keyless ignition, OEM steering column lock anti-theft feature needs to be bypassed. We do not recommend disabling the steering column lock permanently by removing the cylinder lock, however the “Shaved-Key” method is an easy and completely reversible way to bypass this function:



1. Have a local locksmith duplicated a factory key.  
**Note: Do not modify factory keys, it is not required. Duplicate the key blade only not the RF chip inside.**
2. Mark on the key when it is fully inserted into the key cylinder.
3. With the help of pliers and cutter, shave off the key above the marking.
4. Insert the shaved key into the key cylinder and switch to ACC position.
5. Optionally, cover the key cylinder with optional key cover to conceal the key cylinder.
6. Bypass vehicle ACC and Keysense input as shown in the following Wiring Diagram.

## IGNITION WIRING DIAGRAM

Follow the wiring diagram below and connect Push-Start Module outputs to the Ignition wiring:



This wiring method also taking into consideration that a shaved-key has been used in ACC position for steering lock bypass. Disconnect the ACC input to the vehicle so shaved-key left in the key cylinder's ACC position does not consume vehicle battery. To retain the full functionality of the key cylinder, add a toggle or latch switch (not included) at the ACC disconnect. This switch allows manual enable / disable the ACC input to the vehicle.

To bypass the Push-Start system and operate the vehicle with OEM key, close the switch to enable ACC and remove the shaved-key from the key cylinder and insert OEM key to operate the vehicle normally.

**Note:** There are multiple ways to bypass steering column. Advanced Keys does not recommend permanent disabling the mechanism and is not responsible for any damage, theft and accidents which could result from steering lock bypass modification in any ways or forms.

## KEYSENSE FUNCTION BYPASS (Required if Steering Lock is Bypassed)

Most vehicle has an mechanical key trigger that gets activated when a key is inserted into the key cylinder. Keysense input usually activates certain pre-programmed reactions such as (not limited to) door-chime, turn ON dome light, headlight and instrument cluster illumination, disabling the OEM remote/key's ability to lock/unlock doors and release trunk etc. Since the steering column lock bypass require a key to be present in the cylinder, some vehicle's keysense trigger may need to be bypassed.

Check and verify Keysense input polarity and connect as follow:

- (+)Bypass Module Control Output to Positive Triggered Keysense Input
- (-)Ground-When-Running Output to Negative Triggered Keysense Input

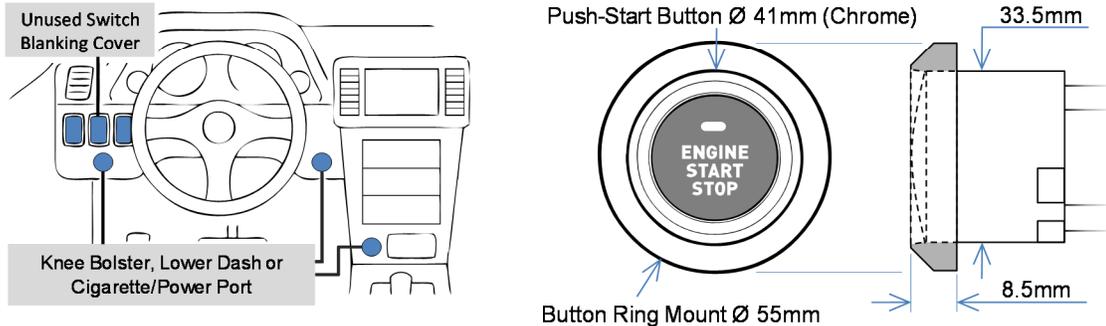


**Note:** Wiring method above is intended as a general reference and it does not necessarily represent the specific vehicle requirement.

## PUSH-START BUTTON INSTALLATION

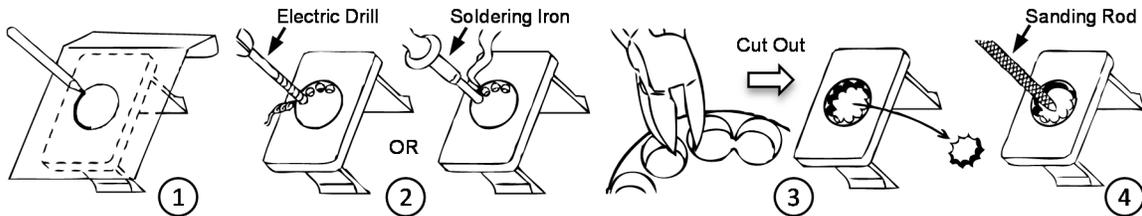
This system features a standard OEM design/manufactured push-start button which provide an OEM look as well as time tested durability. Refer to suggested locations below install/mount the push-start button on a firm and flat surface that is directly accessible and within an arm's reach by the driver.

An exact  $40\text{mm} \pm 0.25\text{mm}$  diameter circular cut-out is needed to securely mount the button **without** the Button Ring Mount. When install **with** the Button Ring Mount, the circular cut-out can be between 40-45mm. See Push-Button Cut-Out section below for detailed method in making a cut-out hole.



### Making a Cut-Out Hole for the Push-Start Button

Use a 40mm hole-saw to drill a cut-out if available or use the following method to make the cut-out:



1. Place a template against the desired installation spot and trace a 40mm diameter circle.
2. Create openings on the inside of the circle with a drill or soldering iron.
3. With the help of a cutter, connect the openings to cut out the material in the middle.
4. Use a round file to smooth the edge until button can be fitted in the cut-out tightly.

Insert the wire/connector and the push-button through the Button Ring Mount and then through the cut-out. Push the button down until fully seated around the Button Ring Mount over the cut-out. Apply adhesive around the Button Ring Mount backing if desired.

**How does Push-Start Ignition work and how do I know it is working normally?**

Refer to "Push-Start Operation Overview" on page 5 for Push-Start Ignition Sequence and follow the "IGNITION TEST AND TROUBLESHOOTING" diagram on page 9 to verify system operation.

**Why is the Push-Start button dead / not working?**

Check system's input power and make sure there is a proper signal applied to "Push-Start Enable" input depending on Jumper 2 (JP2) setting. Amber Status LED indicates system is Ready.

**Why is the system turns the Ignition power ON every time I connect power to it?**

As a safety feature to prevent power sag/flash or sudden loss of power while system is running (RUN mode), it will default back to RUN Mode when power is resumed. To exit RUN mode, apply the brake and press and hold the button for 2+ sec to switch back to READY or OFF mode.

**The Push-Start will activate ACC and ON, but engine would not start/crank when I START?**

1. Before START, make sure button Status LED is flashing RED light when brake is applied.
2. Make sure **shifter is in Park or Neutral** position.
3. If this is a manual transmission vehicle, the clutch will need to be pressed or bypassed.
4. Check voltage and for open fuses on the main 8-pin harness Battery 12v+ inputs.
5. Make sure the starter wire is connected on the starter side of any starter kill device / relay
6. Check connections. Make sure that all harnesses connectors are fully plugged and seated with no back-out pins and making solid connections to the vehicle wiring.

**The vehicle starts, but immediately stops:**

1. Does the vehicle have an immobilizer? The vehicle's immobilizer can cut the fuel and/or spark during unauthorized START and it needs to be bypassed.
2. Is the system programmed for Tach Ignition? If so, reprogram Tach as signal maybe too low. See IGNITION TEST AND TROUBLESHOOTING section for more info.
3. Is the system programmed for Tachless Ignition? If so, make sure button is pressed long enough to allow engine to run on its own.

**The vehicle starts, but the starter over / under crank when start:**

1. Is the system programmed for Tach ignition? If so, follow "Reprogram Tach Ignition" steps as shown in the IGNITION TEST AND TROUBLESHOOTING section.
2. Check the connection to the vehicle's Tach signal wire and make sure the wire is not broken or shorted to ground leading to the system.
3. Is an ignition or accessory output wire connected to the starter wire of the vehicle? Verify the color of the starter wire in the vehicle and confirm that an ignition or an accessory output is not connected to that wire.

**Why is button status LED flashing Green/Red when attempt to crank the engine?**

Check battery, there is not enough power to crank engine and keep system running at the same time. System required minimum 10v to operate and if voltage drops below 10v while starter is engaged it will effectively turn OFF the system. This cause the Ignition/Start to drop out simultaneously. Status LED flashes Green/Red to indicate system is initializing/rebooting after power has been restored.

**Why is my push button turn solid Red after started?**

System failed to sense Tach during start and defaulted back to IGNITION ON Mode. Turn vehicle OFF first by press push-start button once (DO NOT APPLY BRAKE). Verify Tach signal output from the vehicle and perform Tach Ignition programming.



**If engine is running DO NOT attempt to START again. (Press the Push-Start button while brake is applied) This will cause the engine to over crank.**

**My engine is running how do I turn it off?**

1. If the Status LED is solid Red, see question "Why is my push button turn solid Red after started?"
2. If the Status LED is OFF and Backlight is ON, then system is in RUN mode. To exit RUN mode, apply the brake and press and hold the button for 2+ sec to switch back to READY or OFF mode.

**Why is engine crank again when try to turn off the engine?**

See question "Why is my push button turn solid Red after started?"

**Why do I have to press button 2x to start engine?**

Some vehicle does not supply power to brake switch output when vehicle is in OFF state. Brake input becomes active only when vehicle is in ACC or Ignition (ON) state. Look for an alternative brake output signal from vehicle or install an separate brake input trigger switch at the brake. DO NOT modify OEM vehicle brake sensor/switch under any circumstances.

**How do I enter Tach programming mode?**

See page 8 for Tach Ignition Programming Instructions.

**Why is the jumpers setting change is not working?**

Make sure to disconnect the two +12v input power to reboot system for setting changes to take effect.

**The remote-start button will not activate the remote start:**

1. Is remote working and within operating range? Has the remote-start button held long enough?
2. Is the neutral safety switch input receiving proper ground?
3. Can the vehicle started by Push-Start Button under Tach ignition mode? Make sure Remote-Start function is enabled (JP3)
4. Check connections. Make sure that the harnesses are fully plugged into the module and making good connections to the vehicle wiring.
5. Check voltage and for open fuses on the main 8-pin harness Battery 12v+ inputs.

**How do I drive my car after remote started?**

See "Remote Start Ignition Takeover" section under the REMOTE START FUNCTION on page 10.

**What if I am having other issue that is not list here?**

Please contact [support@advancedkeys.com](mailto:support@advancedkeys.com) for additional help .

## CLOSING UP

- Connecting the wire harnesses and power ON the controller, check and confirm system operations (Refer to Ignition Test and Troubleshooting) verify functions of the vehicle are in working order.
- Make sure all wiring connection are insulated properly. Place and secure control units to locations inside trim panels and bundle all lose wiring. Put back all trim panels
- When mounting the controller unit in the vehicle, consider the location carefully. You should make sure that you avoid any location where the controller is exposed to moisture, extreme heat or interfere with moving parts on the vehicle which hampers driving.
- Explain all functions related to the end-user of this system.

## REFERENCES INFORMATION

### PRODUCT SPECIFICATIONS

Controller operating voltage range: ..... 10 VDC – 16 VDC  
 Controller Stand by power: ..... ≤ 20mA @ 12 VDC  
 Avg. controller operating power: ..... ≤ 80mA@12VDC  
 Devices operating temperature range: ..... -25°C – +85°C  
 Push Button Diameter: .....40mm  
 Push Button Dimensions: ..... 76mmL x 40mmW x 40mmH  
 Base Controller Dimensions: .....115mmL x 90mmW x 30mmH

### PRODUCT REGISTRATION

Installer of this system to is requested to fill out the following information as a proof of installation to the end-user of this system. For manufacture warranty to take immediate effect please request the end-user to update the following information at: <http://www.advancedkeys.com/registration.htm>

Company / Installer Name:		Phone Number:
Installer Address:		Date of Installation:
Vehicle Manufacture:	Model:	Year:
Interface/Bypass Module Used: YES <input type="checkbox"/> NO <input type="checkbox"/> If YES specify bypass make/model/firmware version:		Steering Column Lock Bypassed: YES <input type="checkbox"/> NO <input type="checkbox"/> If YES specify bypass method used:
System Ignition Mode: Tach <input type="checkbox"/> Tachless <input type="checkbox"/> System Enabled by: Smart Key <input type="checkbox"/> Third Part Device <input type="checkbox"/> Reviewed Product Operation with End-User: YES <input type="checkbox"/> NO <input type="checkbox"/>		Remote Start Function Enabled: YES <input type="checkbox"/> NO <input type="checkbox"/> If YES is Neutral Safety Switch tested and working? Tested and Working <input type="checkbox"/> Not Tested <input type="checkbox"/>

Additional Comments:

## WARRANTY

This warranty from the manufacturer Advanced Keys Incorporated ("AK") warrants the original purchaser AK' products from AK website or authorized distributor of their products the permission to return product that is defective, suffering poor workmanship or DOA dead on arrival to AK for discretionary repair based on the type of failure. Failure of products cannot be exacerbated by the end user and failures must be under normal use with proper installation by a certified, experienced installer for which this warranty covers. Should a defective product be found, installation costs incurred to install remove and troubleshoot the device will remain solely with the end user and AK will not be responsible for these or associated costs with the exception of the defective product in question. Repair or exchange costs for defective products will be the responsibility AK in addition to shipping costs associated with shipping the unit back to the customer but not from the customer, external costs to this AK is not responsible for. Loss, theft, misuse, neglect, accidents, alterations, defacement, shipping – AK cannot be held responsible for the above end user imposed damage to its products. Customers in shipping areas prone to loss, theft, damage should request shipping insurance to be added at cost the user, installer, distributor or dealer. Liability AK for repair or exchange will not exceed the MSRP of the product in question and thus limited to that cost. This warranty is limited to a time period no greater than 12 months from the original date of purchase from AK and cannot be extended. This warranty exists with the unit and not the vehicle or user. Repair units or exchange units are covered from the date of return to the user for the duration not exceeding 12 months. This warranty is in lieu of all other AK warranties or liabilities. Warranty claims by the user or installer must be submitted within a period of 18 months of the date of purchase. The product in question must be discovered damaged or defective within 12 months of purchase for warranty eligibility however a claim must be submitted within 18 months of the date of purchase. Dealers/Installers/Distributors: The above applies to customers of AK authorized 3rd Party sellers which are defined as end users of the above parties. The above parties may provide an extended warranty provisions or add other warranties however AK is not a party to these provisions and thus not responsible for any warranties extended beyond this warranty. The above parties will not decrease, shorten, mitigate nor void this warranty provided by AK to the end user. AK cannot provide a warranty guarantee of functionality, installation, shipping delivery or merchantability between the end user and the above parties. Users are encouraged to work directly with these parties. Advanced Keys will within reason, make attempts to ensure its products are merchantable for its distributors/installers/dealers. Product damaged through shipping, abuse, neglect, alteration, mishandling, accident, defacement or "act of God" is not the responsibility of AK. Defective or DOA product will be replaced/repared at no cost to the above parties with the exception of freight to AK repair center of which the above parties are responsible for. Freight will be paid by AK for repaired/replaced product back to the above parties. Customers that have purchased from the above parties are eligible for a 12 month warranty however must work with above parties of which they purchased the unit from to determine warranty eligibility. AK will assist its direct customers. Warranty Return: To determine if your unit is eligible for repair contact the representative you purchased the unit from and request warranty repair/exchange. If you cannot reach your sales representative then please contact AK. You will require date and proof of purchase and description of the defect. Do not send units for repair without an approved warranty claim.

## FCC COMPLIANCE

This device has been tested and found to comply with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. The manufacturer is not responsible for any radio or TV interference caused by unauthorized modification to this equipment and such modifications could void the user's authority to operate the equipment.

## CANADIAN COMPLIANCE

This Class B digital apparatus complies with Canadian ICES-003  
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

In the interest of product improvement, specifications are subject to change without notice.