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## **Operation & Installation Manual (V- 55RS) Keyless RFID Push Button Start & Security System**

# **Keyless** **Starter 3RS** **Model # GTS-3RS (with Remote Start)** **For Automatic Transmission only**

### **DISCLAIMER:**

*This installation manual is designed for the professional installer with a good understanding of automotive electrical systems, and if the vehicle is so equipped, the ability to disable the steering column locking mechanism. To ease in proper installation, we recommend that the installer READ THIS MANUAL thoroughly before beginning the installation. This manual is provided as a GENERAL GUIDELINE and the information contained herein may differ from your vehicle. Gallo Technologies and its' vendors shall not be liable for any accident resulting from the misuse of this product. **GTS-3RS is not to be used in a manual Transmission vehicle.** This product is designed to be professionally installed into a vehicle in which all systems and associated components are in perfect working condition. DAMAGE to the GTS-3RS unit resulting from incorrect installation or failure to follow guidelines stated in this manual, will not be covered under warranty and will be subject to repair or replacement charges. Links to nation-wide Alarm installers can be found on our web site at [www.GalloTech.com](http://www.GalloTech.com).*

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## 1.1 INTRODUCTION

## **IMPORTANT: READ ALL INSTRUCTIONS BEFORE INSTALLATION**

GTS-3RS has been designed to eliminate the need for an ignition key to unlock, start and stop the vehicle, and provide a high level of security. GTS-3RS makes use of a sophisticated electronic technology called Passive RFID (Radio Frequency Identification). This technology allows all the same functions done by an ignition key but completely hands free. Example: just walk up to the vehicle with the RFID key FOB in your pocket or purse and the doors will unlock automatically. After sitting in the vehicle the driver can press the "Start Stop Engine" button one time momentarily and the accessories will turn ON, OR Press and hold the "Start Stop Engine" button and the Ignition will turn ON or will start if the brake is pressed. Put it in gear and drive away. To turn the vehicle off simply push the "Start Stop Engine" button for 1.5 sec. and the engine will stop. After opening the door and walking away from the vehicle, the doors will automatically lock and the accessories will turn OFF. Functions such as trunk release, car locating, an auxiliary channel, shock sensor, and other security functions are standard with GTS-3RS.

### **Installation Requirements for GTS-3RS:**

1. **Automatic transmission only. (GTS-3RS is not for use with a manual transmission.)**
2. ***If the vehicle is equipped with a locking steering column, the steering column lock must be disabled. Mechanically locking steering columns can be disabled by removing the steering column shroud and key lock assembly and removing the column locking pin. A cut key blank method can also be used. Insert a cutoff key blank in the ignition and turn to the ON position. This method requires that all electrical connections to the ignition key be disabled.***
3. **Vehicle can be gasoline or diesel. Fuel injection is preferred. Carbureted engines typically are not compatible with Remote Start operation.**
4. **If the vehicle is equipped with a factory security key system, a security by-pass module will be required (not included). The by-pass module will be activated when GTS-3RS is in the start and engine running mode. Security by-pass modules are specific to each vehicle make, model, year. These vehicle specific bypass modules can be supplied by the installer, or can be purchased through aftermarket by-pass module suppliers such as "Xpresskit" or "Fortin Electronic Systems". We do not recommend using "IDataLink" modules as they are not compatible with GTS-3RS.**
5. **Vehicles must have a properly functioning Park/neutral safety switch.**
6. **Must have a properly functioning emergency brake with a negative (-) switch.**
7. **Requires operational (positive (+) or negative (-)) door pin switches.**
8. **Power door locks are required for maximum security & convenience.**
9. **GTS-3RS must be connected to the parking lights.**

To ease and reduce installation time, we suggest you consider the following points before starting:

1. Check all vehicle manufacturer cautions and warnings regarding electrical service (AIR BAGS, ABS BRAKES, ENGINE / BODY COMPUTER AND BATTERY). Use extreme care and do not probe any wires of the SRS system.
2. Additional vehicle specific wiring diagrams and other helpful installation information can be found on our web site at [www.gallotech.com/support.php](http://www.gallotech.com/support.php)
3. Determine the most suitable locations for all components to be placed. These components include: The control module, "**Start Stop Engine**" button, siren or possible extra relays.
4. GTS-3RS can be installed with or without the ignition switch. If the ignition switch is left functional then the vehicle can be started with either the key or the "Start Stop Engine" button. The column lock however, must be disabled. See **Figure 1 Option 1** (page-10)
5. Use a Digital Multi-Meter or 12-volt Test Probe (High-Impedance) to test and locate all connections. Conventional Test Lights can damage a vehicle's computer systems.
6. Record all color codes of vehicle wiring to be used for reference. This will save time by not having to re-test the same wires over again. Mark all vehicle wires with masking tape.
7. After locating and marking the appropriate wires, DISCONNECT the (+) POS terminal at the battery.
8. Determine the type of door locking system the vehicle has before connecting any wires. Incorrect connection can result in damage to the **GTS-3RS** and/or vehicle locking system. There are several types of door lock systems in vehicles today. Listed below are many types of common locking systems:
  - **Negative Trigger (-): Many Imports; Late model Ford & General Motors** (Figure 3 page 13)  
Negative trigger door lock systems send a Negative (Ground) pulse to existing factory relays to lock and unlock the vehicle doors.
  - **Positive Trigger (+): Many General Motors; Chrysler / Dodge / Plymouth** (Figure 4 page 14)

Positive trigger door lock systems send a Positive (+12V) pulse to existing factory relays to lock and unlock the vehicle doors.

- **Electric vacuum pump: Pre-'95 Mercedes-Benz and Audi** (Figure 5 page 14)
- **Reverse Polarity: Many Ford/Lincoln/Mercury/Dodge/Chrysler/Plymouth and early 90's GM Trucks** (Figure 6 page 14)  
The door lock/unlock motors are controlled directly from the lock and unlock switches in the door. The lock and unlock wires rest at Negative Ground when not in use. When the lock or unlock button is pressed, one of the circuits is "Lifted" and replaced with +12V causing a lock or unlock to occur.
- **Single Wire (Dual Voltage): Late model Chrysler/Dodge/Plymouth Vehicles, some year 2000 and newer GM vehicles** (not shown)  
Dual Voltage systems have lock/unlock switches that send varying levels of Positive voltage OR Negative ground current to the SAME wire for both lock and unlock. When the vehicle's Body Computer Module (BCM) or door lock module senses different voltages on this wire, the system will either lock or unlock. Single wire door lock systems require relays and resistors. This type system requires that you have a good working knowledge of their operation before attempting installation of **GTS-3RS**.
- **Data bus Systems 2003 and newer.** (not shown)  
Data bus systems send low current "Data messages" to the door lock controllers in order to lock and unlock the vehicle. To install aftermarket systems in these vehicles, an interface module can be used to convert the regular lock/unlock pulses into "Data messages". This type system requires that you have a good working knowledge of their operation before attempting installation of **GTS-3RS**

## 1.2 KEY FOB OPERATION:

When approaching the vehicle with the RFID FOB in the pocket or purse, the presence of the RFID FOB will be recognized by the control module. The doors will then unlock and the vehicle will be ready to start using the "**Start Stop Engine**" button. The green LED on the "**Start Stop Engine**" button will flash. An ignition key is not required. After turning the engine OFF using the "**Start Stop Engine**" button and the driver leaves the vehicle with the RFID FOB in his/her pocket/purse, the accessories will turn OFF (equivalent to turning the key off) the doors will lock and the ARMED mode will be activated. The Red LED on the "**Start Stop Engine**" button will flash continuously while in the armed mode. *The small LED on the key FOB will flash green when the FOB is within detection range of the vehicle. When the small LED flashes red, the key FOB battery should be replaced.* The four buttons on the RFID FOB can be used to activate/deactivate other functions:



### (Lock Button): Arm/Remote- Lock/Panic/Siren-Stop

#### a.) Arms the system and locks the doors with one press

- Siren will chirp 1X and parking lights flash 1X, doors will lock. The Red LED on the "**Start Stop Engine**" button will flash slowly.
- Shock Sensor will become active after 15 sec.
- The alarm will chirp and parking lights will flash 3X if all the doors are not closed during arming.
- If the alarm siren has been triggered, pressing this button one time will silence the siren and keep the system in the **armed** mode.

#### b.) Panic:

- Holding this button for over 2 seconds will cause the siren to sound for 10 seconds and the system will remain in the **armed** mode.

#### c.) Lock only (when vehicle occupied)


- When the ignition is **ON**, and the system is **disarmed**, pressing this button will lock the doors. The system will stay in the **disarmed** mode.

NOTE: Siren chirp off/on is user programmable. See Table 1 option #5 page 9.



### (Unlock Button): Disarm/Remote-Unlock/Trunk release.

#### a.) Disarm the system and unlock the doors with one press



- Siren will chirp twice and the parking lights will flash twice. The doors will unlock and the system will be in the **disarmed** mode.
- Within 5 seconds after pressing the  button, if a door is not opened or the ignition is not **ON**, the system will automatically rearm and relock the doors.

- If the system has been triggered while in the **armed** mode, the siren will chirp and the parking lights will flash four times, when the unlock button is pressed.

**b.) Unlock only (when vehicle occupied)**

- When the ignition is **ON**, and the system is **disarmed**, pressing  button will unlock the doors. The system will stay in the **disarmed** mode.

**c.) Trunk Release:**



- Press and hold  button for 2 sec. the lamps will flash 4 times the doors will unlock and the trunk will open and the system will be in the **disarmed** mode. The system will not re-arm unless the lock button  is pressed 1X. Trunk release can also automatically rearm. See “Table 1 Option # 7 page 9

NOTE: Siren chirp off/on is user programmable. See Table 1 option 5.





**Auxiliary Button: Auxiliary output**

**a.) When Function Option #9 is set to default (unlock doors):**

- Press and hold  button for 2sec, the doors will unlock and the Auxiliary output will activate. The system will disarm; pressing the  button will rearm the system.

**b.) When Function Option #9 is set to optional (do not unlock doors):**

- Press and hold  button for 2sec, the doors will not unlock and the Auxiliary output will activate. The system will disarm; pressing the  button will rearm the system.


NOTE: 1.Auxiliary output duration time is user programmable. See “Table 1, Option # 8.page 9.

2. Auxiliary output can also automatically rearm. See “Table 1 Option # 7 page 9.




**Locating/Function Button: Auto Door Lock /Car-Locating/Remote Start**


**a.) Auto Door Lock enable or disable:** (doors will or will not auto lock when walking away from the car)

- When the system is in the disarmed mode, pressing and holding  button for 2 sec will enable or disable the RFID auto door lock function. (parking lights flash 1 time when disabled or parking lights will flash 3 times when enabled )

**b.) Car Locating:**

- When the system is **armed**, holding  button for more than 2 seconds, the siren will chirp and the parking lights will flash five times.

**c.) Remote Start:**

- When the system is in the armed mode, the doors are closed, the hand brake is set, and the Key FOB is out of range, the engine can be started by pressing  button 2x within 2 sec of each push. See Sec 1.4 page 6 for complete Remote Starting operation.

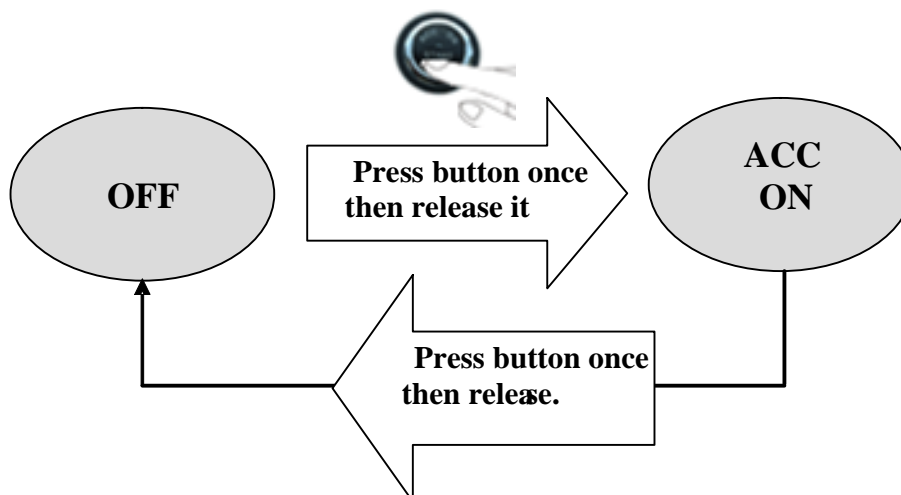
**1.3 “PUSH START STOP” Button Operation**

**Turning ACC, IGN1, IGN2 ON/OFF and Starting the Engine:**

When in Disarm mode and the RFID key FOB is in detection range.

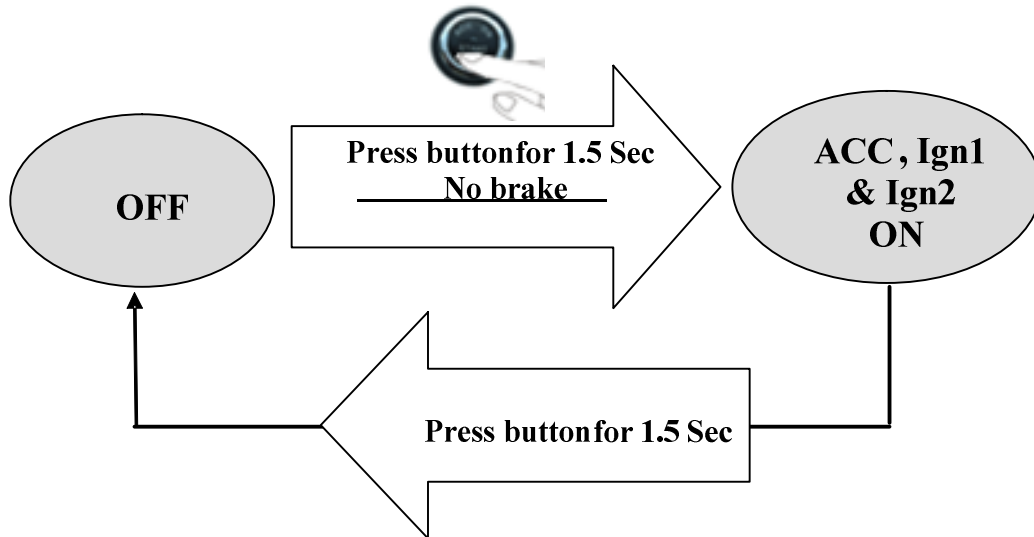
**To Turn ACC ON/OFF**

Press “**Start Stop Engine**” button 1X then release, ACC will turn ON; press “**Start Stop Engine**” button 1X again then release, ACC will turn OFF.



**To Turn ACC, IGN 1 and IGN 2 ON/OFF with no engine start.**

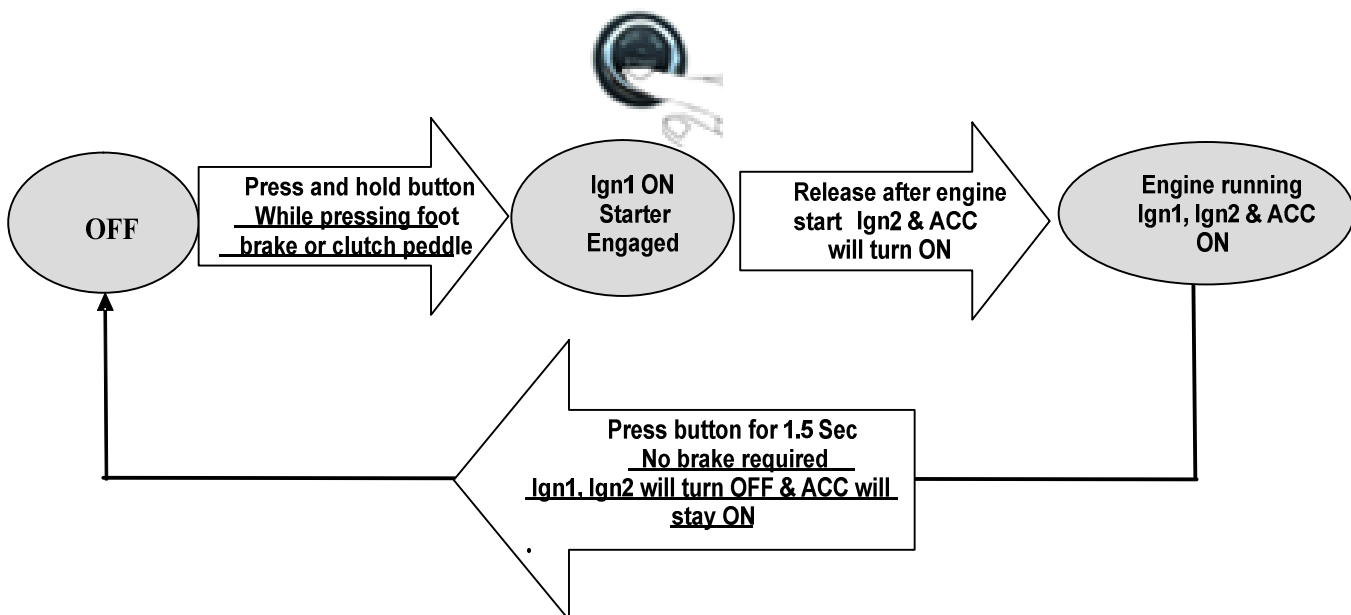
Press “**Start Stop Engine**” button and hold for 1.5 sec. without pressing the brake/clutch peddle, ACC, IGN 1 and IGN2 will turn ON and the engine will not start. To turn ACC, IGN1 and IGN2 OFF, press and hold for 1.5 sec. “**Start Stop Engine**” button, or when the RFID key FOB is taken out of range, ACC, IGN1 and IGN2 will turn OFF automatically.



**To Start / Stop Engine.**

**To Start Engine:** While pressing the brake peddle, Press “**Start Stop Engine**” button and hold until the engine starts. IGN 1 will turn ON, the starter will engage and the engine will start. After the engine has started, release the “**Start Stop Engine**” button, ACC, IGN1 and IGN2 will turn ON.

**To Stop Engine:** press “**Start Stop Engine**” button for 1.5 sec. IGN 1 and IGN 2 will turn OFF and the engine will stop. ACC will remain ON until (a.) the “**Start Stop Engine**” button is pressed one time, or, (b.) the key FOB is moved out side the vehicle and is out of range.




## 1.4 Remote Start Set Up & Operation

**Remote Start Setup:** Installer must determine if voltage or Tach RPM detection is to be used. Both methods will work in most vehicles; however the Tach signal method requires additional setup and the availability of an appropriate Tach signal from the vehicle. **If the Tach signal method is used, Program Option #13 must be changed to “Tach Signal” before the tach wire (C3 Pin 21 light blue) is connected.**

Voltage/ Tach signal detection Options: The system will detect the engine is running by either a voltage rise or the proper Tach signal output. See Table 1 option 13 to set the voltage/tach detection option.



- **Voltage detection option:** By way of connector C3 Pin 2, the system will look for a 1 volt voltage rise after Remote start has been activated. If the voltage does not increase by 1 volt, the system will try to start one more time. If the voltage does rise by 1 volt or higher, the parking lights will flash every 2 sec, indicating a running engine. The connector C3 Pin 21 (light blue) wire should not be connected to a Tach signal if voltage detection is used.
- **Tach signal detection option:** To use the Tach signal detection option the connector C3 Pin 21 (light Blue) wire must be connected to one of the appropriate tach signals, i.e. Vehicle's tachometer sense wire or Neg (-) terminal of a fuel injector, or Neg(-) terminal of an ignition coil. **Do not connect the C3 pin 21 (light blue) Tach input wire if voltage detection is used.**
  - **Tach signal (RPM) learning:** The Tach signal detection circuit will detect an over-rev or under-rev condition based on the normal idle RPM. If the engine starts in the Remote Start mode, and the idle is less than ½ or greater than 2x the normal idle RPM, the Remote Start sequence will stop and the engine will turn OFF.

After connecting the Tach wire to the appropriate tach signal (above), **the normal idle speed must be learned into memory** using the following steps:

- Start the engine and let it idle at its normal idle RPM.
- Press the Valet button 7 times and hold it on the 7<sup>th</sup> press for approx 5 sec. When the parking lights flash 3 times, release the Valet button.
- The Green LED on the “Start/Stop Engine” button will start to flash rapidly.
- When the engine is running at its normal idle speed, press the FOB “Door Unlock” button  1 time. The parking lights will flash 3 times indicating the idle RPM has been learned.
- Turn OFF the engine.


**Remote Start Operation:** The following conditions must be met before Remote Starting: **1.)** Table 1, option 1 must be in the default (ON) mode, **2.)** System in the armed mode, **3.)** Key FOB out of range (more than 15 feet away), **4.)** Hand brake is set, **5.)** Doors are closed, and **6.)** Automatic trans. gear selector in Park/neutral position.

Press  button 2 times (approx. 2 sec between presses). Remote Start cycle will begin.

- If the engine does not start on the first attempt (detected by voltage rise or Tach signal) the system will automatically try to restart one more time. If engine does not start on the second attempt the system will shut down. Remote Start can be reactivated again by pressing  2 more times.
- When the engine does start the parking lights will flash every 2 sec, After 10 / 15 minutes (selectable) the engine will turn OFF and the system will remain in the armed mode. Parking lights will stop flashing.
- Pressing the  button 1 time, will turn the engine OFF or stop the Remote Start operation.

After Remote Start has been activated and the engine is running, the driver may approach the vehicle with the key FOB. The doors will unlock and the driver can enter the vehicle. The engine will keep running. The parking lights will continue to flash indicating the turn OFF time (10 or 15 min) is still active. **If the driver wants to drive the vehicle the handbrake or foot brake must be released.** The parking lights will stop flashing. **Do not drive the vehicle if the parking lights are flashing as the engine will turn OFF once the 10/15 minute timer runs out.**

**To Stop Engine Running:** Any one of the following steps will turn the engine OFF after it has been Remote Started:

Press  1 time, open a door (alarm will also sound) or release the hand brake.

## 1.5 FUNCTION OPTIONS

**GTS-3RS** has numerous user programmable features that can be enabled or modified according to user's preferences. This section explains each of the user configurable functions. See Sec. 1.6 "**Key FOB & Programming Function Set-Up Options**" for details on how to modify programmable features.

**Valet Mode:** In DISARM mode, Pressing the valet switch for over 5 seconds will activate valet mode. Siren will chirp 2 times and the green "Start Stop Engine" button LED will stay ON (not flashing).

To deactivate valet mode (normal status), press the valet switch for over 5 seconds. The siren will chirp one time and the green "Start Stop Engine" button LED will flash slowly.

In Valet mode all alarm function and auto door locking will be disabled. The key FOB buttons can lock and unlock doors, but not the trunk or auxiliary output. If the key FOB is in range, the vehicle can be started with the "**Start Stop Engine**" button.

### See Table 1 "Function Option Chart" (page-9)

#### 1. Remote Start Enable/Disable:

**Remote Start Enabled (default):** Engine can be started using Remote Start function.

**Remote Start Disabled (optional):** Engine can not be started using Remote Start function.

#### 2. Remote Start Run Time:

**Run Time 10 minutes (Default).** When the engine is started using remote start, the engine will automatically turn OFF after 10 minutes.

**Run Time 15 minutes (optional).** When the engine is started using remote start, the engine will automatically turn OFF after 15 minutes.

#### 3. Gasoline or Diesel Engine:

**Gasoline Engine (default):** When the engine is started with Remote Start, there will be a 0 sec delay after the Ign1 turns ON before the started is engaged.

**Diesel Engine (optional):** When the engine is started with Remote Start, there will be a 15 sec delay after the Ign1 turns ON, before the starter is engaged.

#### 4. Ignition 2 output Enable/Disable during Engine start:

**Disabled (default):** IGN2 output is OFF during the engine start sequence and ON after the engine is started. (Duplicates the action of ACC).

**Enabled:** IGN2 output is ON during the engine start sequence and stays ON after the engine is started. (Duplicates the action of IGN1).

#### 5. Silent Arm/Disarm:

**ON (default):** Siren does not chirp when locking / unlocking the doors.


**OFF:** Siren chirps when locking / unlocking the doors.

#### 6. Foot-Brake Door lock/unlock:

**ON (default):** 15 seconds after starting the engine the doors will automatically lock when the foot brake is pressed. Doors will automatically unlock when the engine is turned OFF.

**OFF:** After starting the engine the doors will not automatically lock.

#### 7. Auto Rearm:

**OFF (default):** The system will not automatically rearm and relock itself after the system has been **disarmed** by pressing the trunk release or auxiliary output button. The system can be rearmed by pressing the  (lock button) 1 time.

**ON:** The system will automatically rearm and relock itself 15 seconds after the system is **disarmed** by pressing the trunk release or auxiliary output button

#### 8. Auxiliary output Time:

**2 Sec (default)** Auxiliary output pulse length set to 2 sec. Use this setting if unlocking passenger shaved doors

**15 Sec (optional)** Auxiliary output pulse length set to 15 sec. Use this setting for a window close operation.

### **9. Auxiliary Output (Door unlock Option):**

**Unlock Doors (default)** When the Auxiliary output is activated the central doors will also unlock.



**Do Not Unlock Doors (optional)** When the Auxiliary output is activated the central doors will not unlock.

**NOTE:** The Auxiliary Output is a low current output (125ma max.). A relay must be used to activate devices such as door poppers, trunk release or window close modules

### **10. Electrical Siren/ Horn:**

**Electrical Siren (default):** Set if the 6 tone siren (included) is used.


**Horn:** Set if the vehicle's horn is to be used instead of the 6 tone siren. An additional relay may be required. The control module siren output is a low current output (125ma max.) and must go through a relay to operate a vehicle's horn.

**11. Central Locking Time:** When pressing  or  the electrical pulse sent to the door locking/unlocking mechanism can be set at either 0.8 seconds or 4 seconds. Most cars will function properly when this option is set to the factory default of 0.8 seconds.

**(Default):** 0.8 sec pulse

**(Option):** 4 second pulse

**12. Door Unlock Pulses:** Some vehicles require 1 unlock pulse to unlock the driver's door only and a second pulse to unlock all doors. Most vehicles only require 1 unlock pulse (Default setting) to unlock all doors.

**1 Pulse (Default):** 1 unlock pulse. Set to unlock drivers door only in 2 pulse vehicles then press  again to unlock all doors. Also use for vehicles requiring only 1 pulse to unlock all doors.

**2 Pulses (option):** 2 unlock pulses. Set to unlock all doors in vehicles requiring 2 pulses. **Central Locking Time #11** must be set to default (0.8 sec) for 2 pulse operation.

### **13. Voltage/Tach Engine running detection**

**Voltage (alternator) detection (default):** When starting the engine with Remote Start, The system will wait for a few seconds to determine if the voltage has risen as a result of the engine running.



**Tach Signal detection (optional)** When starting the engine with Remote Start, The system will wait for a few seconds to determine if a Tach signal has been detected as a result of the engine running. See Sec 1.4 for details.

**14. Return Factory Default:** Resets all Function Options to factory default settings.

## **1.6 Key FOB & PROGRAM FUNCTION SET UP**


### **A. Code learning (for replacement transmitters only)**


**Transmitter (Key FOB) Code learning:** The Key FOBs have been matched to the control module at the factory. If replacement key FOBs are used they must first be learned to the Control Module before they will function.

1. System must be in Disarm mode (green "Start/Stop Engine" button LED flashing). Both key FOBs should be in the vehicle.
2. Press the valet switch 3 times; on the 3<sup>rd</sup> press hold the valet switch for over 5 seconds, it will enter the code learning mode. The green "Start/Stop Engine" button LED will light solid green, and the parking lights will flash 2 times.
3. Immediately (within 5 seconds) press the  button on the first key FOB. The parking lights will flash 4 times. Then press the  button on the second FOB within 5 sec. The parking lights will again flash 4 times. Code learning is now complete.



## B. Function Programming:

1. System must be in Disarm mode (green "Start/Stop Engine" button LED flashing).
2. Press valet switch 5 times, hold on the 5<sup>th</sup> press for over 5 seconds, parking lights will flash 2 times.
3. According to the "Function Option Chart" below, you can set up the required function by pressing the Valet Switch the number of times indicated in Table 1 page 9.
4. Immediately after pressing the valet switch the number of time indicated, press the  button on the key FOB. If the parking lights flash 3 times, the default setting for that function has been set. If the parking lights flash 1 time, the alternate setting has been set.

Note: After entering the "Function Programming" mode, the  button must be pressed on the key FOB within 5 seconds. If not, the system will exit the "Function Programming" mode and the parking lights will flash 4 times. Repeat steps 1 thru 4 for each additional programming function.

**Table 1: FUNCTION OPTION CHART**

Press Valet Switch # of Times	Programmable Function	Function Default Lights flash 3 times	Function Alternate Lights flash 1 time
1	Remote start	<b><u>Enable</u></b>	Disable
2	Remote start run time	<b><u>10 min</u></b>	15 min
3	Gasoline/Diesel Engine	<b><u>Gasoline Engine</u></b>	Diesel Engine
4	Ignition 2 output Enable/Disable during Engine start	<b><u>Ignition 2 OFF during Engine Start</u></b>	Ignition 2 ON during Engine Start
5	Silent arm/Disarm	<b><u>ON</u></b>	OFF
6	Foot-Brake Door lock/unlock	<b><u>ON</u></b>	OFF
7	Auto Rearm	<b><u>OFF</u></b>	ON
8	Auxiliary output time	<b><u>2 sec duration</u></b>	15 sec duration
9	Aux output door unlock	<b><u>Unlock Doors</u></b>	Do not Unlock Doors
10	Electric siren/horn	<b><u>Siren</u></b>	Horn
11	Central Door lock Time (for 1 Pulse only)	<b><u>0.8sec.</u></b>	4sec
12	Door unlock Pulses	<b><u>1 Pulses</u></b>	2 Pulses(0.8sec*2)
13	Voltage/Tach Engine running detection	<b><u>Alternator(Voltage)</u></b>	Tach sensor
14	Return all to factory default		

# 1.7 INSTALLATION INSTRUCTIONS

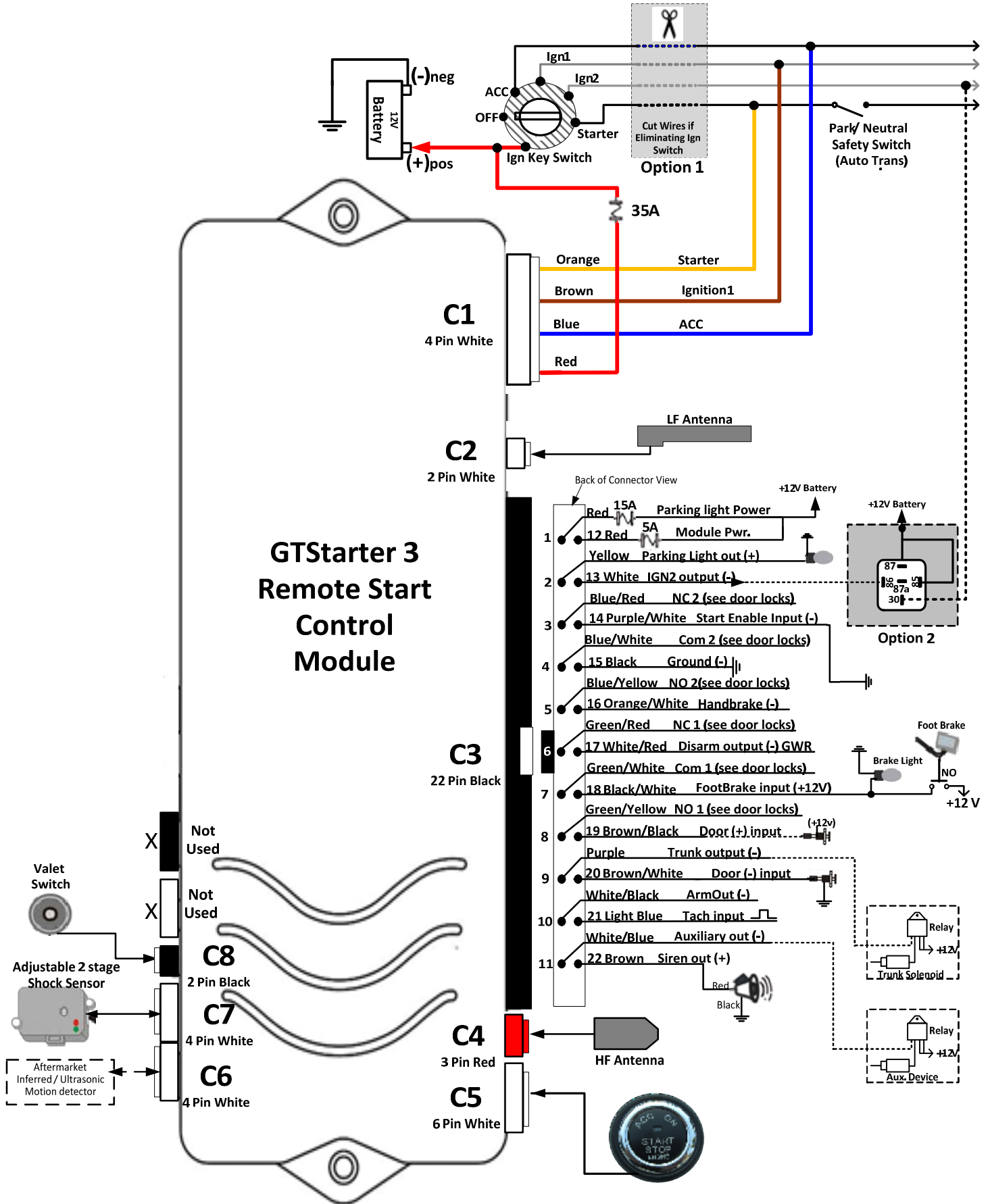


Figure 1

**Figure 1 Option 1** – The user has the option of keeping the original ignition switch or completely removing it. If the ignition switch is kept operational, do not cut the wires and the vehicle can be started with either the “Start/Stop Engine” button or the ignition key. If eliminating the Ignition Switch, cut all wires as shown. The vehicle can then only be started using the “Start Stop Engine” button.

**Figure 1 Option 2** - Use this wiring to energize (Max 125 ma) an optional relay when your vehicle uses both an IGN 1 & IGN 2 circuits during starting, running and accessories. The relay AMP rating (typically 30 A) will need to be high enough to carry the load for your vehicle’s IGN 2 circuit.

## **Installing Connector C1: 4 Pin (White) Wire Harness (Battery, Ign1, Starter, ACC)**

**IMPORTANT:** See Figure 1 Option 1 above before cutting any ignition switch wires.

### **C1: RED – Battery Supply Power from Ignition Switch.**

The RED wire is used to power the GTS-3RS starting circuitry, Ign1, and ACC. Before connecting this wire you must first find the **BAT** wire coming from the ignition switch or it can be connected directly to the + (pos) terminal on the battery. The **BAT** wire is used to supply +12v battery power to the entire vehicle. Solder connect the C1 RED wire (w/ 35amp fuse) to the **BAT** wire coming from the Ignition switch or battery. At the same time that you connect the C1: RED wire, also solder connect the 2 small RED fused wires from connector **C3**. (Pin 1 & 2)

### **C1: ORANGE – Starter Output.**

Before connecting this wire you must first find the **START** wire coming from the ignition switch. The **START** wire is used to send +12v (15A max) through the Park/Neutral safety switch (automatic transmission) to the starter solenoid. Insure that you DO NOT by-pass the Park / Neutral switch; otherwise the engine could be started while in Drive or Reverse.

### **C1: BLUE – ACC Power Output**

The C1: BLUE wire applies +12 v (30A max) signal from the Control Module to power the Accessory (ACC) circuits. The ACC circuit has power applied to it only when the ignition key is in the ACC position or when the “Start Stop Engine” button is in the ACC mode. No power is applied during the engine starting cycle.

Solder connect the C1: BLUE wire to the **ACC** wire coming from the ignition switch.

### **C1: BROWN – IGN 1 Power Output**

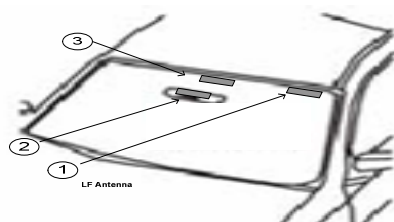
The **IGN 1** wire is used to send +12v (30A max) to the ignition system and engine computer when the ignition key or “Start Stop Engine” button is in the **ON** and **START** position. Solder connect the C1 BROWN wire to the **IGN 1** (ignition/computer) wire coming from the Ignition switch.

## **Installing Connector C2: 2 Pin (White) Low Frequency (LF) Antenna Wire Harness.**

The LF antenna is used for the RFID circuitry. The antenna must not be placed directly on any metal surface. **The antenna must be mounted in a horizontal position.** Plug in the white 2 pin LF antenna into the Control Module as indicated in **Figure 1**.

The best location is usually on the top of the windshield glass on the driver's side. To optimize the RFID range other locations on a glass surface can be tested. Before permanently attaching the antenna, experiment with different locations that may further optimize the key FOB range.

### **LF Antenna Optional Mounting Locations**



#### **LF Antenna mounting requirements:**

- \* LF Antenna must be mounted in a **Horizontal** position
- \* LF Antenna must not be mounted to metal. Glass mounting surface only!
- \* Mount LF Antenna at least ½" away from metal surfaces.

#### **Location Options:**

1. Preferred location. Mount ½ " below top windshield rail and 1" from "A" pillar.
2. Mount ½" below top windshield rail and in the center of the windshield.
3. Back side of rear view mirror. Do not mount to mirror if the mirror material is metal. Plastic mirror housing only.

## **Installing Connector C3: 22 Pin (Black) Wire Harness (Main Harness)**

See Figure 1 for pin number and location.

**Pin 1. (RED) Parking Light Pwr. w/15A fuse** Used to power the parking lights. Connect this wire to Bat + 12v.

**Pin 2. (Yellow) Parking Lights Out (+).** Connect to the vehicles parking light circuit. If parking lights require more than 10 amps (not normal) use an external 30 Amp relay.

**Pin 3. (Blue/Red) NC-2** Used for central door locks. See Figure 2, 3, 4, 5, 6 for your vehicle's door lock system.

**Pin 4. (Blue/White) Com-2** Used for central door locks. See Figure 2, 3, 4, 5, 6 for your vehicle's door lock system.

**Pin 5. (Blue/Yellow) NO-2** Used for central door locks. See Figure 2, 3, 4, 5, 6 for your vehicle's door lock system.

**Pin 6. (Green/Red) NC-1** Used for central door locks. See Figure 2, 3, 4, 5, 6 for your vehicle's door lock system.

**Pin 7. (Green/White) Com-1** Used for central door locks. See Figure 2, 3, 4, 5, 6 for your vehicle's door lock system.

**Pin 8. (Green/Yellow) NO-1** Used for central door locks. See Figure 2, 3, 4, 5, 6 for your vehicle's door lock system.

**Pin 9. (Purple) Trunk output (-).** Trunk Release Output Neg. (-). Connect to the trunk release Neg. (-) trigger wire on the vehicle's trunk release relay. In the event that a trunk release is to be added to the vehicle, an additional relay and trunk release solenoid will be required.

**Pin 10. (White/Black) Arm Output (-)** Is a neg. (-) output when the alarm is triggered. Can be used to activate other alarm triggered devices. (125 ma max.)

**Pin 11. (White/Blue) Auxiliary output (-)** This is a low current (-) output (125ma max). It can be used to activate the (-) neg side of a relay that may be used for operating the passenger door of a shaved door vehicle, an extra trunk release or an electric window close operation. Connect to a window close module (not included) with a Neg. (-) input. Follow the window close module instructions for wiring to window motors. Do not connect this wire directly to the vehicle's window close switch. The output duration can be either 2 sec or 15 sec per Table #1 option 8, page 9.

**Pin 12. (RED) Module Power. w/5A fuse** Used to power the GTS-3RS Control Module. Connect this wire to Bat + 12v.

**Pin 13. (White) Ignition 2 output (-)** Used to activate an additional relay so that an IGN 2 circuit may be used when the vehicle requires its use. Not all vehicles require an IGN 2 circuit. Pin4 must be connected to the (-) neg terminal of the relay. See Figure 1, option 2.

**Pin 14. (Purple/White) Start Enable input (-) input.** Connect to a good chassis ground (-).

**Pin 15. (Black) Ground (-)** Connect to a good chassis ground (-).

**Pin 16. (Orange/White) Handbrake (-).** Connect to the handbrake switch that is neg (-) when handbrake is set.

**Pin 17. (White/Red) Disarm Output (-) Ground While Running (GWR).** Connect to the Neg (-) input of a security bypass device. These devices are used in the event that the vehicle has an OEM security system that prevents starting the vehicle without the security key. The proper security by-pass module for the specific vehicle can be found at [www.gallotech.com/support](http://www.gallotech.com/support). Follow the instruction that came with the by-pass module.

This wire is activated only during engine starting and running. When the engine is turned OFF there will be no GWR output.

**Pin 18. (Black/White) Foot Brake input (+)** (+12v) Foot Brake Switch Input Used for auto door lock function and Starting. Connect to Foot brake switch terminal that has +12v only when foot brake is depressed.

**Pin 19. (Brown/Black) Door (+) input. Pos. (+) Door Switch Input.** Connect to a Pos. (+) Door Trigger switch. If the vehicle has "-" Neg. Door Trigger use the (Brown/White, Pin 18) wire instead. Tape or wire nut wire if not used.

**Pin 20. (Brown/White) Door (-) input. Neg. (-) Door Trigger switch Input.** Connect to the Neg. (-) Door Trigger switch. If the vehicle has "+" Pos Door Trigger, use the (Brown/Black), Pin 16) wire instead. Tape or wire nut wire if not used.

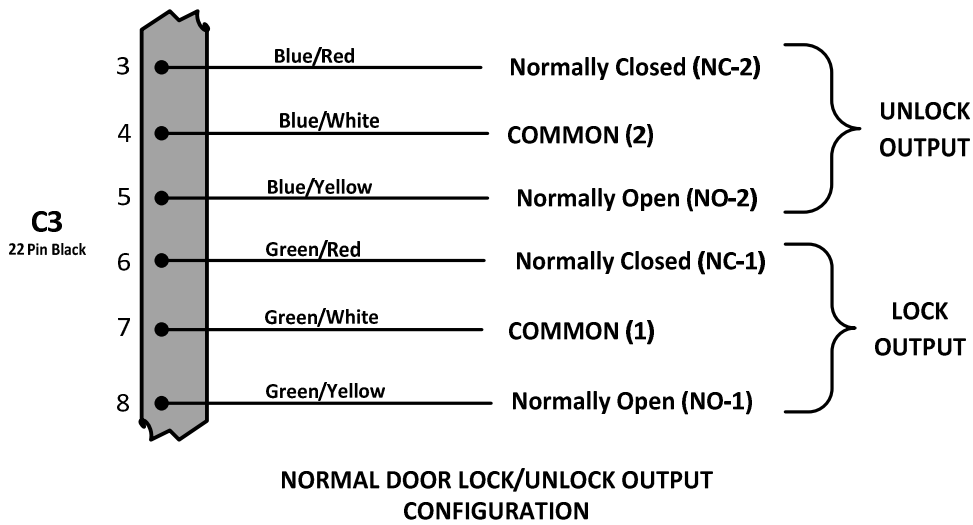
**Pin 21. (Light Blue) Tach Input. Before connecting see Sec 1.4 "Voltage/ Tach signal detection Options".**

**Pin 22. (Brown) Siren/Horn output (+).** +12v Output. Connect to the RED Siren wire. Connect the second siren (Black) wire to a good chassis ground. If the vehicle's horn is used; connect Pin 22 (Brown) wire to the (+) pos terminal on the horn relay. Do not connect directly to the horn. Table #1 option 10 must be changed to either Siren or Horn.

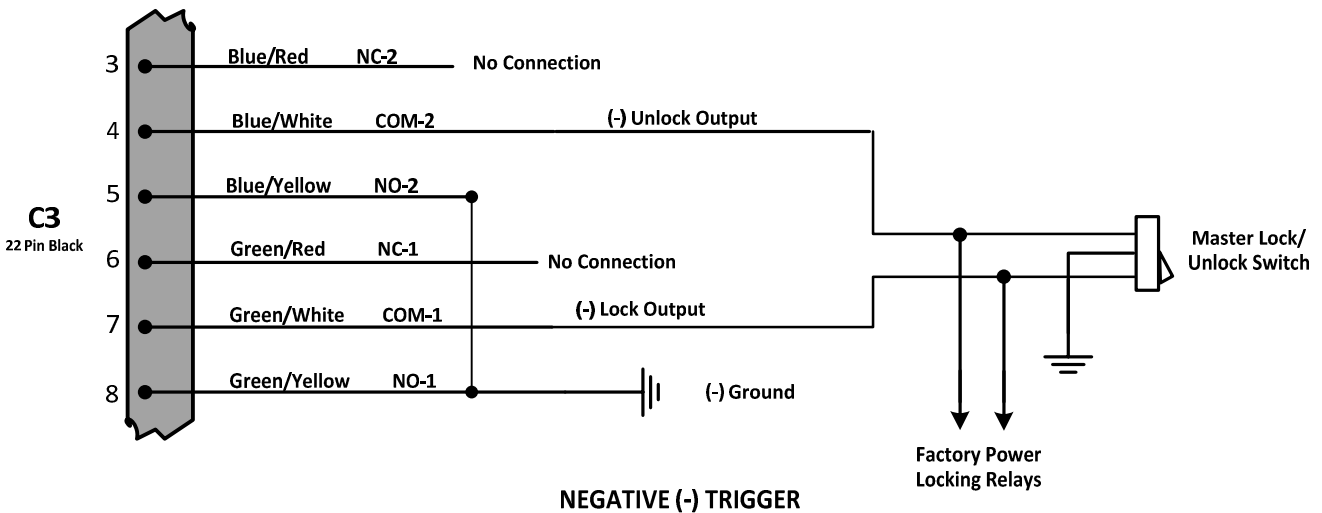
**Power Door Lock Connections:**

Determine the Door Locking/Unlocking circuitry that your vehicle is equipped with. Fig. 2 shows the door lock/unlock output relay & Pin number configuration of the C3 Control Module connector. The majority of vehicles come equipped with either Neg (-) Fig. 3 or Pos. (+) Fig. 4 Trigger circuits. Find the location of the appropriate circuitry for your vehicle (Make, Model, Year Diagrams can be found on our web site at [www.GalloTech.com](http://www.GalloTech.com)) If the Trigger wire is 0v when the Lock/unlock switch is depressed then you have a Neg. (-) trigger (Fig. 3). If the trigger wire is +12v when depressing the Lock/unlock switch then you have a Pos. (+) Trigger (Fig 4). For Pre- '95 Audi or Mercedes Benz vacuum motor operation use Fig. 5. For Reverse Polarity applications, were the lock and unlock wires rest at Negative Ground, use Fig. 6.

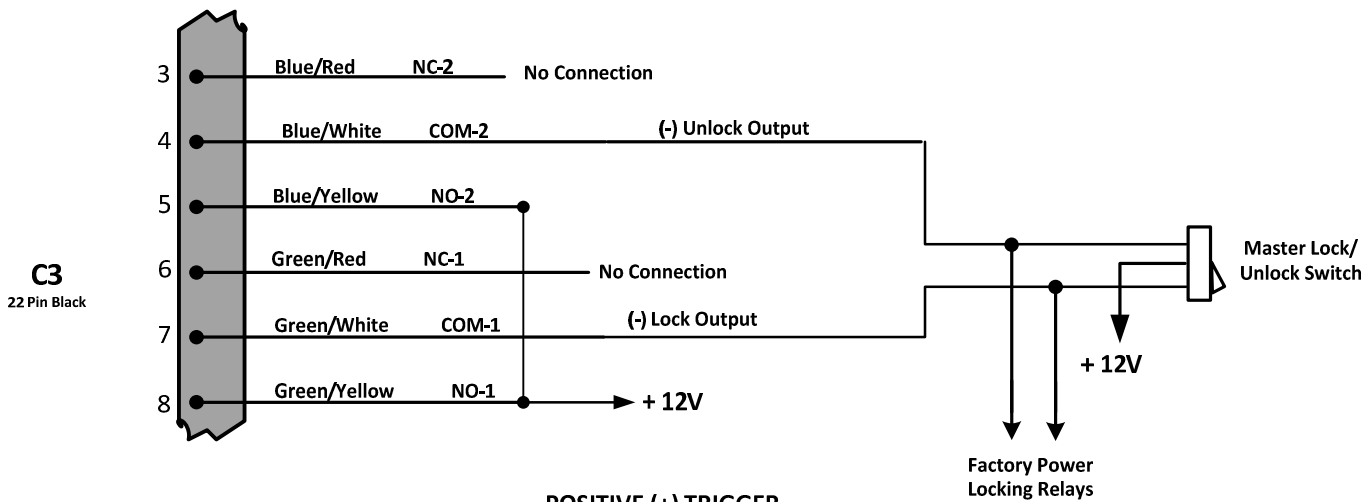
**C3: 22 PIN WIRE HARNESS DIAGRAMS:  
Only Door Locking/Unlocking Pins #'s shown below**



**Figure 2**

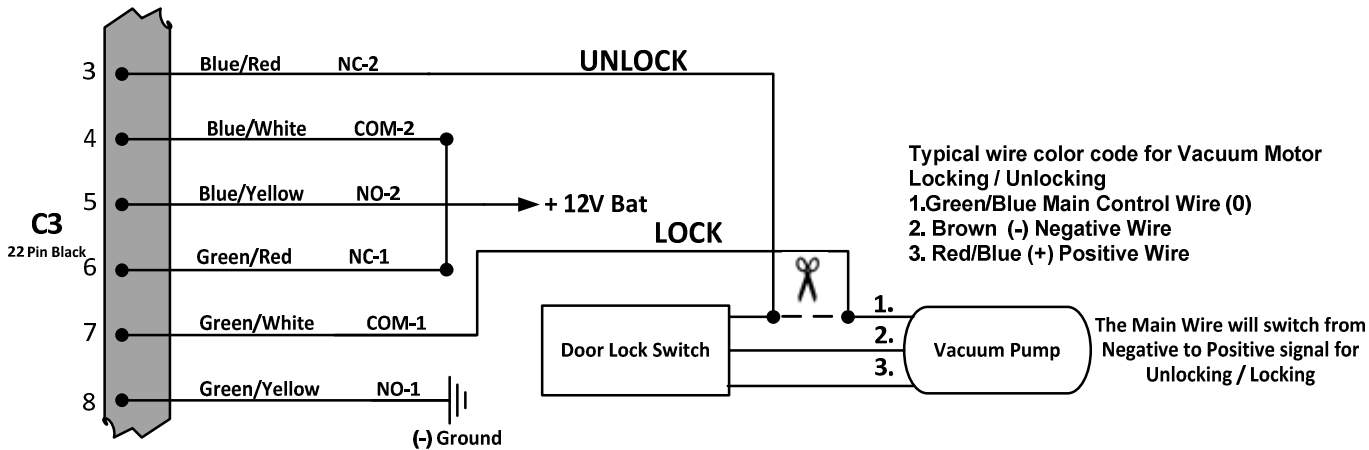


**Figure 3**



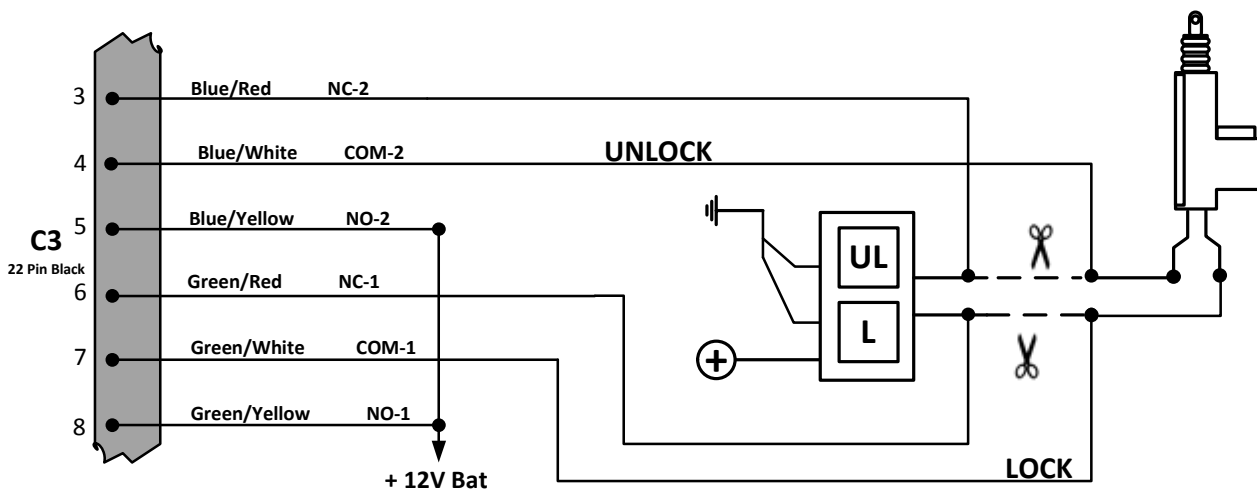
POSITIVE (+) TRIGGER

Figure 4



VACUUM OPERATED (older) Audi & Mercedes Benz

Figure 5



Reverse Polarity

Figure 6

#### **Installing Connector C4: 3 Pin (RED) Wire Harness - HF Antenna**

The HF antenna is used for the high frequency receiver that operates the remote access functions such as remote door locking, and car locating. For maximum range the antenna should be mounted above the dash board level. The antenna can be mounted under the dash however the detection range may be reduced. Caution should be taken as the antenna whip is metal and the installer should insure that the whip will not interfere / short out any under-dash wiring. Connect the 3 Pin (Red) connector to the Control Module as shown in **Figure 1**.

#### **Installing Connector C5: 6 Pin (White) “Start/Stop Engine” button switch**

The “**Start Stop Engine**” button can be surface mounted in a convenient location on the dash. The Black bezel around the switch is removable to customize the installation. The high strength double stick adhesive disk is to be used on the back side of the switch for mounting purposes. Once attached, it will be difficult to remove. Make certain that the back of the button and the mounting surface is thoroughly cleaned with **isopropyl alcohol** to remove any dirt, grease or vinyl dressing materials. **DO NOT use acetone, MEK, lacquer thinner or any other harsh chemicals as they will destroy paint, vinyl and plastic.** The adhesive will not come loose or degrade as long as the surface has been cleaned thoroughly. Attach the adhesive disk to the back of the button first. If you choose to mount the button on the dash with the wire hidden behind the button then drill a 1/2” dia. hole in a location where the small wire and connector can be fed through the dash. It is recommended that the hole be drilled just below the centerline of the final switch location, approximately where the wires exit the back of the switch. Rout the “**Start Stop Engine**” button wire to the module. Connect the C5 (White) 6 pin connector to the module as shown in **Figure 1**.

#### **Installing Connector C6: 4 PIN (White) Wire Harness Shock sensor (included) or motion device.**

**Shock Sensor (included)** – The adjustable 2 stage shock sensor or an aftermarket motion sensor can be connected to either Connector C6 or C7. The shock sensor should be mounted on a rigid member of the vehicle. Typically it is best attached to the steering column. The shock sensor should never be mounted on the outside of the vehicle where it is not protected from exposure to moisture. Connect the 4 Pin (White) connector to both the shock sensor and the Control Module as shown in **Figure 1**.

**Aftermarket Motion sensor (not included)** – A 4 wire motion sensor must be used. Chances are the connectors may not be the same as the GTS-3RS. If connecting an aftermarket sensor to GTS-3RS go to our Support web page ([www.gallotech.com/support](http://www.gallotech.com/support)) for the proper wiring configuration.

#### **Installing Connector C7: 4 PIN (White) Wire Harness Shock sensor (included) or motion device.**

See Connector C6 above. Installation is the same for both connectors.

#### **Installing Connector C8: 2 Pin (Black) Valet Switch wire harness**


The Valet Switch should be mounted under the dash or in the glove box so that it can be accessed from time to time to change or modify the programmable functions of GTS-3RS. Connect the 2 pin (Black) connector to the Control Module as shown in **Figure 1**.

## **1.8 FINAL INSTALLATION**

- 1. Recheck all electrical connections to be certain they are connected in the proper locations and check that all connections are wrapped with a good quality electrical tape or shrink tubing. Connect all 8 module connectors to the Control Module. All connectors are indexed so that they can only be installed in one direction. The Control Module should be secured under the dash using cable ties or equivalent. If the vehicle is equipped with a locking steering column, it must be permanently disabled before**

attempting to drive the vehicle. Reconnect the battery and thoroughly test all starting functions. If the key FOBs are not detected by the control module, then re-learn both key FOBs. See Sec. 1.6 (A) for code learning instructions Program the module to the functions that you desire following Sec. 1.6 “Key FOB & Program Function Setup” and Table 1 “Function Option Chart” .

2. **Test the starting function:**

- a. **“Start Stop Engine” button Starting:** Press and hold the **“Start Stop Engine”** button without pressing the brake peddle, making certain that the vehicle will not start. The engine must only start when the brake is pressed and the vehicle is in Park or Neutral. Check to make sure the vehicle does not start when the gear selector is in Drive or Reverse. If the engine starts in Drive or Reverse, then the wiring connections (C3, Pin 14 & 19) to the Control Module and the connections to the Park / Neutral switch (C1 (Orange) must be rechecked per Figure 1.
- b. **Remote Starting:** Set the Handbrake, move the key FOB out of range (>15 feet) and put the system in the armed mode (**“Start Stop Engine”** LED flashing Red). Press the  2 times. IGN 1 will turn ON and then the Starter will engage. Once the engine starts ACC will turn ON and the parking lights will flash every 2 sec.

## 1.9 TROUBLESHOOTING

### ENGINE CRANKS BUT WILL NOT START:

- 1. Check Ignition switch wiring. See Sec. 1.7 “Installing Connector C1. Some vehicles require 2 separate ignition wires IGN 1 and IGN 2 for the vehicle’s ignition system to function properly. If the vehicle requires both IGN 1 & IGN 2 then follow the instructions in **Sec 1.7 (C3, Pin 4) and Table 1 “Function Option Chart” Option 4.**
- 2. If the vehicle has a security key, check that the security by-pass module is installed properly. See connector C3, Pin 12 (White/Red) (GWR) wire installation instructions.

### ENGINE STARTS IN DRIVE OR REVERSE GEAR:

Check the location of C1: ORANGE (Starter output) wire. It MUST be connected to the vehicles starter wire close to the ignition switch, making certain that the Park/Neutral lockout is not bypassed.

### AN ACCESSORY (RADIO, HEATER FAN, ETC.) DOES NOT TURN OFF DURING ENGINE CRANKING AND/OR TURN BACK ON AFTER CRANKING:

- a.) Check the connections of C1: wire harness for the correct connection points. See **Figure 1**. There are usually only two positions on the ignition switch which disconnect power to the accessories during engine cranking. ACC and/or IGN 2. In some vehicles IGN 2 is used for either accessories like the heater fan, or is some times used as an additional ignition system wire and may be required for starting (see **Table 1 “Function Option Chart” Option 4**). Check the specific wiring diagrams for your Make, Model, and Year vehicle. Many of these can be found at [www.gallotech.com/support.php](http://www.gallotech.com/support.php) .
- b.) Check all fuses connected to the Control Module wire harnesses. If any are blown then there must be a short in the system. Check all wiring thoroughly.

### DOORS LOCK/UNLOCK WHEN THEY SHOULD UNLOCK/LOCK:

Connector C3 Pin 13 and Pin 9 wires have been incorrectly connected to the vehicles Master Lock switch. Reversing the Lock and unlock wires Pin 13 & Pin 9 at the C3 connector of the Control Module should correct the problem.

## INSTALLATION NOTES
