

# MECHANICAL SPEEDOMETER DRIVE BOX

SPEEDBOX™ Mechanical Speedometer Drive Box.

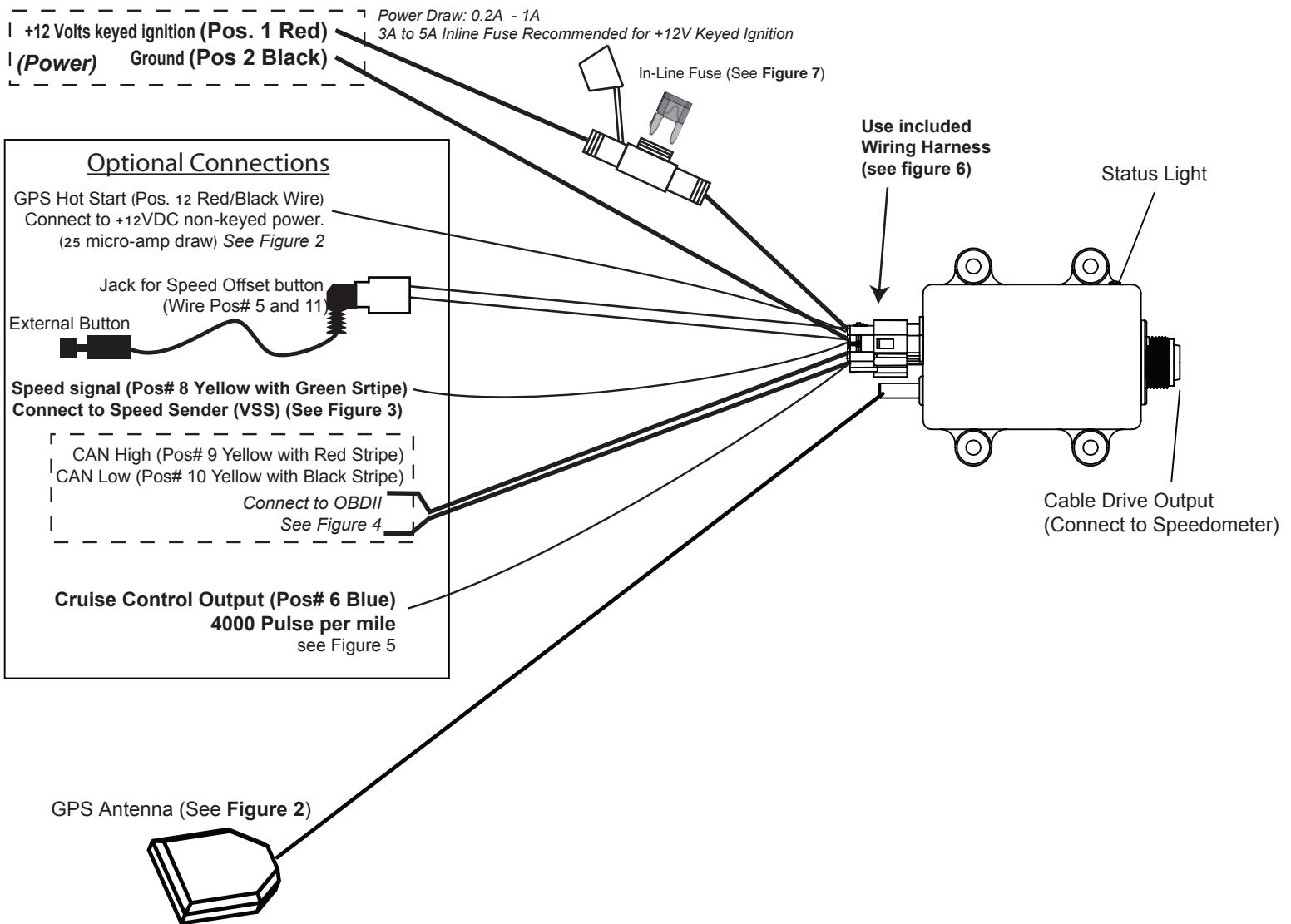
(Note: for for U.S. vehicles only)

The Speedhut SpeedBox is designed to operate a cable-driven mechanical speedometer using an electric speed signal from GPS, CAN-Bus speed data through the OBDII, or Vehicle Speed Sensor (VSS). The Speedbox can be installed in the dash or under the hood. (The Speedbox is not waterproof).

## Installation Instructions:

1. Disconnect negative (-) battery cable.
2. Connect the included mechanical speedometer cable to the back of the Mechanical Speedometer.
3. Route the cable carefully to meet up with the Speedbox™ in desired location, making sure not bend the cable around any sharp corners that could impede the cable from spinning inside the cable housing.
4. Mount the Speedbox™ on vehicle firewall (under the dash or in the engine bay).
5. Plug included wiring harness to back of Speedbox™ and connect corresponding wires to their appropriate locations within the vehicle's wiring.  
*NOTE: You do not have to connect all signal types. Pick between GPS, CAN-Bus, VSS, or use a combination. The GPS will override the VSS or CAN-Bus. If GPS signal drops then the Speedbox will automatically use the (if connected) Vehicle Speed Sensor or the CAN-Bus as a back up.*
6. Reconnect negative (-) battery cable.

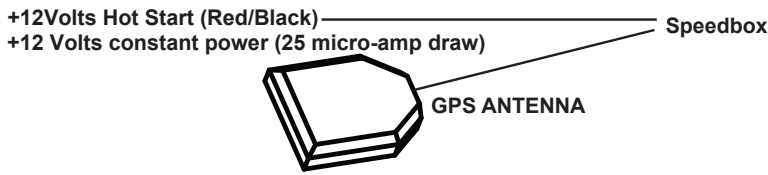
## FIGURE 1:



**WARRANTY** - Speedhut Inc. warrants to the consumer for a period of 5 years from the date of purchase that this product will be free from defects in materials or workmanship. Speedhut warrants to the consumer for a "LIFE-TIME" that the product circuit board will be free from defects in materials or workmanship. This warranty is limited to the repair or replacement of Speedhut Inc products. Speedhut Inc is not responsible for special, incidental or consequential damages or costs incurred due to the failure of this product. Modification to the product, improper use or installation, accident, water damage, abuse, unauthorized repairs or alterations voids this warranty. Speedhut Inc disclaims any liability for consequential damages due to breach of any written or implied warranty on all products manufactured by Speedhut Inc.

Please contact Speedhut Customer Support If you have a problem with this product | support@speedhut.com | 801-221-1460 (9am - 5pm MST)

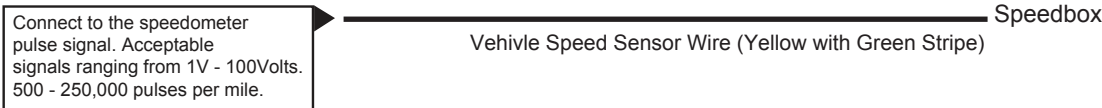
**FIGURE 2: GPS Antenna and Hot Start Wire**



**VSS or CAN-Bus operation without GPS antenna:**  
The GPS antenna needs to be connected for initial VSS or CAN-Bus calibration, after the vehicle has been driven over 20mph, the signals will know the correct pulse rate and the GPS antenna can be disconnected.

1. Connect GPS receiver antenna into back of Speedbox.
2. For best performance, mount GPS antenna with as much view of sky as possible (preferably on the roof of the vehicle). The GPS antenna is waterproof and magnetic. If the car's roof is not accessible then mount the antenna on top of the vehicle's dash with as much exposure as possible to the sky through the window.  
NOTE: Antenna is able to receive signal through some thin materials i.e. wood, glass, fiberglass, and plastic. All types of metal will block the signal.
3. Hot start feature is optional. Connecting the hot start wire to constant +12volts allows GPS to quickly acquire satellites in less than 2 seconds. This feature saves your current satellite position within the speedometer enabling it to quickly restore your position on power up when Speedometer has been powered off.  
NOTE: Please note that if the speedometer has been powered off longer than 4 hours, it could take up to 1 minute to acquire signal due to the satellites moving significantly from your location. This is normal.  
Power Draw NOTE: The hot start current draw is extremely low (25 micro-amp) and will have virtually zero impact on a vehicle's battery charge. Hot start wire should be connected directly to battery +12voltage and should remain powered 100% of the time.

**FIGURE 3: OPTIONAL Backup Connection - VSS** (Requires GPS signal for calibration, See Figure 2)



**FIGURE 4: OPTIONAL OBDII Setup** (Requires GPS signal for calibration, See Figure 2)

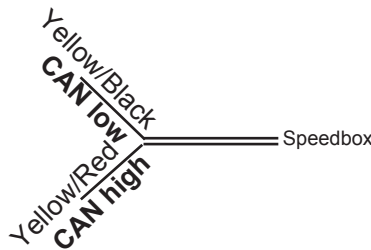
Does your vehicle support the CAN-BUS protocol?

Vehicle's OBDII connector pin numbering

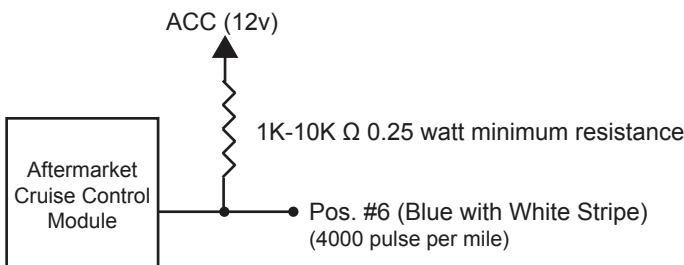
**OBDII CAN (J1979) protocol Pinout:**  
If the vehicle has wires that connect to pins 6 and 14 of the OBDII connector then the vehicle supports the CAN-BUS (J1979) protocol.  
Pin 4 -- Chassis Ground  
Pin 5 -- Signal Ground  
Pin 6 -- CAN High (data)  
Pin 14 -- CAN Low (data)  
Pin 16 -- +12volt Battery power (NOT a source for gauge power)

**OBDII Note: Speedbox will not function when used in conjunction with any other OBDII device. Cycle the Speedbox power to restore proper function.**

1. Connect power distribution requirements as shown in Figure 1. (Make sure that the vehicle battery is disconnected)
2. Connect the CAN High wire (Pos. 9) to the OBDII pin 6, Connect the CAN Low wire (Pos. 10) to the OBDII pin 14. (CAUTION: Do not connect to a OBDII system while powered. Failure to do so will throw a check engine code.)



**FIGURE 5: Open Collector output for aftermarket cruise control module connection.**



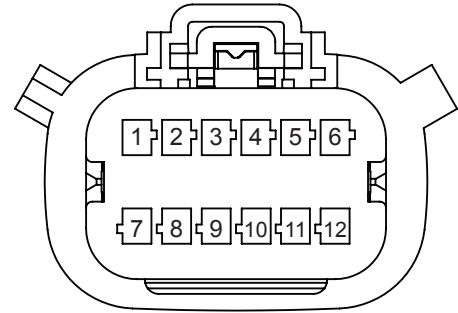
**FIGURE 6: Wiring Harness Guide**

(Power Draw: 0.2A - 1A, 3A to 5A Inline Fuse Recommended for +12V Keyed Ignition)

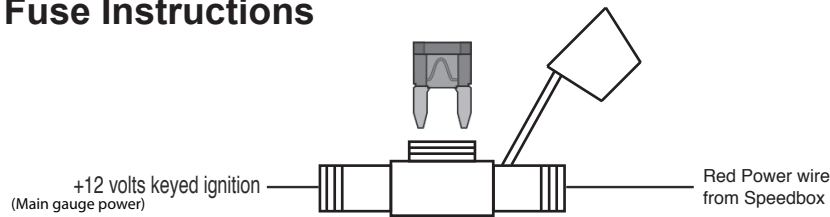
Pos.	Wire Color	Note
1)	Red	10-18v+ Switched (Ignition)
2)	Black	Vehicle Ground
3)	--	--
4)	--	--
5)	Black	Setup Button Ground
6)	Blue with White Stripe	Cruise Control Output (4000 pulse per mile)
7)	--	--
8)	Yellow with Green Stripe	Vehicle speed sensor(VSS)
9)	Yellow with Red Stripe	CAN High
10)	Yellow with Black Stripe	CAN Low
11)	Red	Setup Button (+)
12)	Red with Black Stripe	GPS 12v+ Constant*

\*GPS POWER DRAW NOTE (12v+ constant):  
This Hot Start is used to help the GPS acquire signal in a shorter time. The hot start current draw is extremely low (25 micro-amp) and will have virtually zero impact on a vehicle's battery charge. Hot Start wire should be connected directly to battery +12V and should remain powered 100% of the time.

**DIAGRAM 1:**



**FIGURE 7: In-Line Fuse Instructions**



Directions:

1. Make sure that the 3 amp fuse is secure in the fuse holder.
2. Strip the wire ends.
3. Connect wiring as shown above.

Use Butt Splice Connectors for the wiring connections. (2 Butt Splice Connectors are included)

**Speed Offset (Optional):**

The Speedbox™ is factory set to work with most USDM Mechanical Speedometers. If the speed indicated on the speedometer is consistently off (+/- 10MPH) you can apply an optional Speed Offset. The Speed Offset feature can be used to dial in the accuracy.

**IMPORTANT NOTE: The odometer will NOT be accurate when a Speed Offset is applied.**

1. While the Speedometer is connected to the Speedbox™, turn the power on to the Speedbox™.  
- Speed signal wire does not need to be connected.
2. Press and release the included setup button, the Speedbox™ will ramp up to what 60 MPH should be.
3. Holding the button down will slowly move the speedometer pointer (needle) forward, let go of the button then hold it down again to go the opposite direction.
4. Once you have moved the pointer to sit directly on to 60 MPH as indicated on the speedometer, let go of the button.  
- The Speedbox™ will store this setting and return to 0 MPH

Now the Speedbox™ will operate with the amount of cable turns-per-mile that your speedometer needs to show the correct speed.

**IMPORTANT NOTE:** If the speedometer is off then the odometer reading will be in-accurate, Speedhut recommends the speedometer be serviced and calibrated by a professional technician.