SMM501/501-H Surveillance Mode Module™

2013-2015 Ford Police Interceptor SUV
2013-2017 Ford Police Interceptor Sedan

Introduction

The SMM501 for Ford Police Interceptors (Sedan & Utility) uses either the vehicle's OEM sensors or InterMotive Hawkeye System to inform an officer if anyone is behind the vehicle. The OEM sensors can include Blind Spot Information System (BLIS) and/or Rear Backup sensors with the backup camera if equipped. Anytime Surveillance Mode is active, the rear camera (located on the rear-view mirror) will be turned on. If any of the sensors detect a presence while in Surveillance mode, the system will activate a chime indicating a sensor has been tripped, all the door's will lock, and the driver's window will roll up (the sedan has the option to roll up the Driver's and Passenger's window) and the reverse 'back-up' lights will flash.

SMM501 Options

SMM501-AH: Surveillance Mode with HAWK Backup System instead of OEM reverse sensing system. Refer to Hawk501-A Instructions for installation.

Installation Instructions

Disconnect vehicle battery before proceeding with installation

IMPORTANT - READ BEFORE INSTALLATION

It is the installer's responsibility to route and secure all wiring harnesses where they cannot be damaged by sharp objects, mechanical moving parts and high heat sources. Failure to do so could result in damage to the system or vehicle and create possible safety concerns for the operator and passengers.

It is important to avoid placing the module where it could encounter strong magnetic fields from high current cabling connected to motors, solenoids, etc. Also avoid radio frequency energy from antenna's or inverters next to the module. Finally, avoid high voltage spikes in vehicle wiring by always using diode clamped relays when installing upfitter circuits.

SMM501 Module

Remove the lower dash panel below the steering column area and find a suitable location to mount the SMM module. Locate the module in an area away from any external heat sources (engine heat, heater ducts, etc.). Do not mount the module until all wire harnesses are routed and secure. The last step is to mount the module.

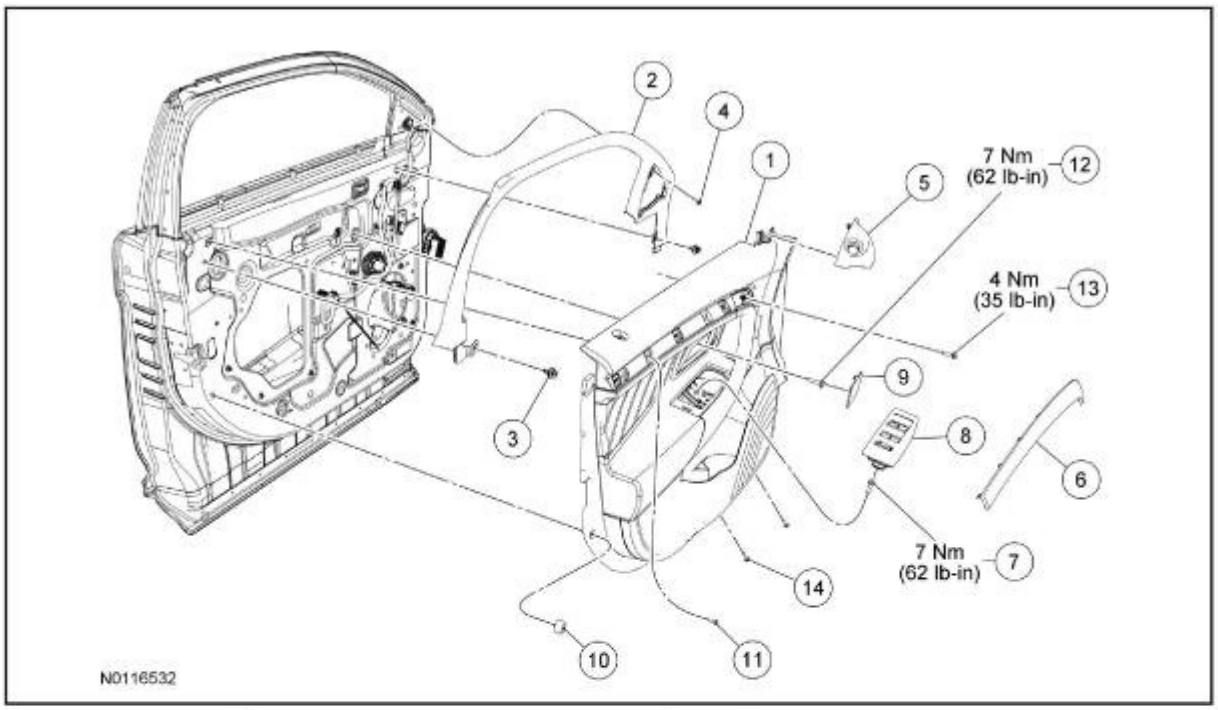
Installation for Automatic Window Function

To install Surveillance Mode, it will be necessary to tap into the driver's side window switch. The procedure differs between the Sedan and the Utility Interceptor. Remove the drivers door trim panel following the appropriate instructions.

Door Trim Panel — Front

Sedan

NOTE:
LH shown, RH similar.



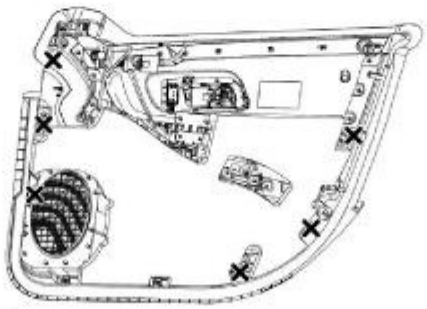
Item	Part Number	Description
1	23942 RH/ 23943 LH	Front door trim panel
2	51753 LH/ 51752 RH	Front door window garnish moulding
3	W713297	Front door window garnish moulding pushpin retainers (2 required)
4	W705314	Front door window garnish moulding screw
5	17D720 (RH) / 17A703 (LH)	Sail panel
6	239A01 LH/ 239A00 RH	Front door trim panel upper applique
7	W500214	Front door trim panel center bolt
8	14524AA (RH) / 14525AA (LH)	Front door master window switch
9	22621 LH/ 22620 RH	Front door inside door handle escutcheon
10	W714296	Front door trim panel rear screw and bumper assembly
11	W706476	Front door trim panel upper rear screw
12	W711685	Front door inside door handle bolt
13	W500214	Front door trim panel upper applique bolt
14	W708392	Front door trim panel lower screw (2 required)

Removal and Installation

1. Remove the sail panel.
   - If equipped, disconnect the electrical connector.
2. Remove the front door inside door handle escutcheon.
3. Remove the front door inside door handle bolt.
   - To install, tighten to 7 Nm (62 lb-in).

(Continued)

4. Remove the front door master window switch and disconnect the electrical connector.
5. Using a suitable trim tool, remove the front door trim panel upper applique.
6. Remove the front door trim panel upper applique bolt.
   - To install, tighten to 4 Nm (35 lb-in).
7. Remove the front door trim panel upper rear screw.
8. Remove the 2 front door trim panel lower screws.
   - To install, tighten to 1 Nm (9 lb-in).
9. Remove the front door trim panel rear screw and bumper assembly.
   - To install, tighten to 1 Nm (9 lb-in).
10. Remove the front door trim panel center bolt.
    - To install, tighten to 7 Nm (62 lb-in).
11. Remove the front door trim panel.
    - Using a pushpin removal tool, pull the front door trim panel outward to release the retaining pushpins.
    - Disconnect the inside door handle cable.
    - Disconnect the electrical connectors.



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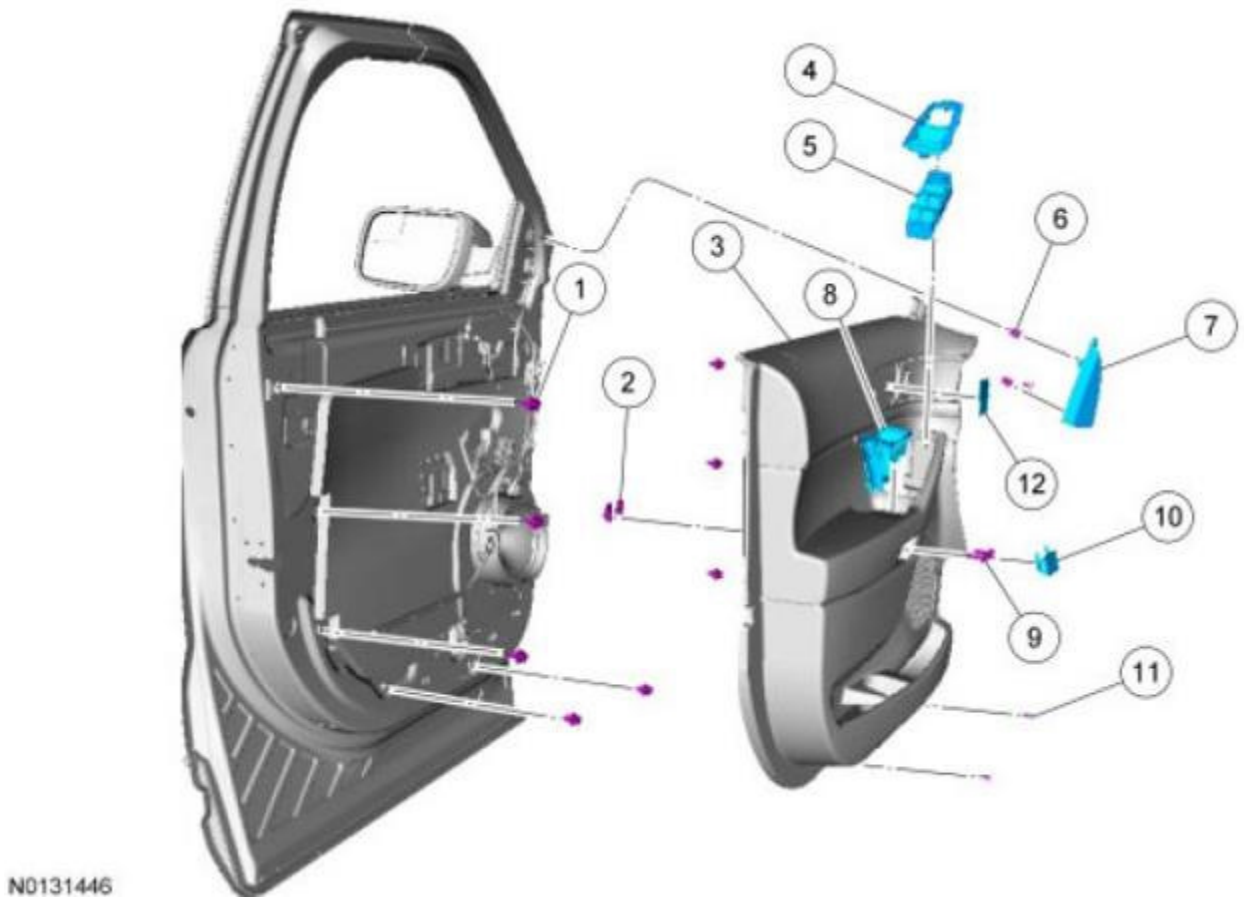
12. ***NOTICE:***
    To avoid damage to the front door trim panel, remove any retaining clips from the front door and attach them to the front door trim panel before installing.

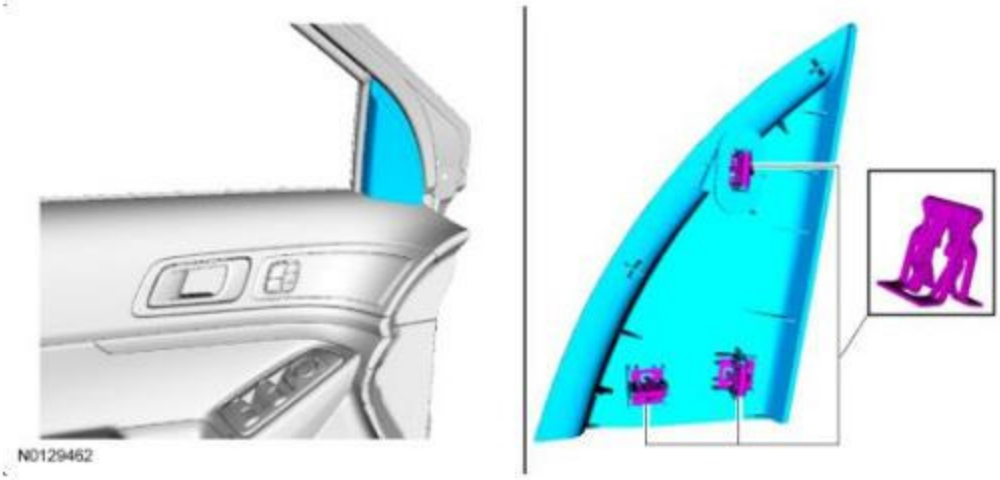
After removing the door trim panel, continue to the "routing wire into door panel" section.



Item	Service Part Number	Description	Torque	Material Name	Notes
1	W713297	Front door trim panel retaining clip (8 required)	-	-	-
2	W520832	Front door trim panel nut (2 required)	-	-	-
3	23942 / 23943	Front door trim panel (Right Hand (RH) / LH)	-	-	-
4	14524 / 14525	Front door window switch bezel (Right Hand (RH) / LH)	-	-	-
5	14529	Front door window switch (Right Hand (RH) / LH)	-	-	-
6	W710338	Sail panel clip (3 required)	-	-	-
7	17K709	Sail panel (Right Hand (RH) / LH)	-	-	-
8	22634 / 22635	Front door trim panel handle cup (Right Hand (RH) / LH)	-	-	-
9	W505424	Front door trim panel bolt (2 required)	7 Nm (62 lb-in)	-	-
10	24056 / 24057	Front door trim panel bolt cover (Right Hand (RH) / LH)	-	-	-
11	W708392	Front door trim panel screw (2 required)	1 Nm (9 lb-in)	-	-
12	22620	Front interior door handle bolt cover	-	-	-

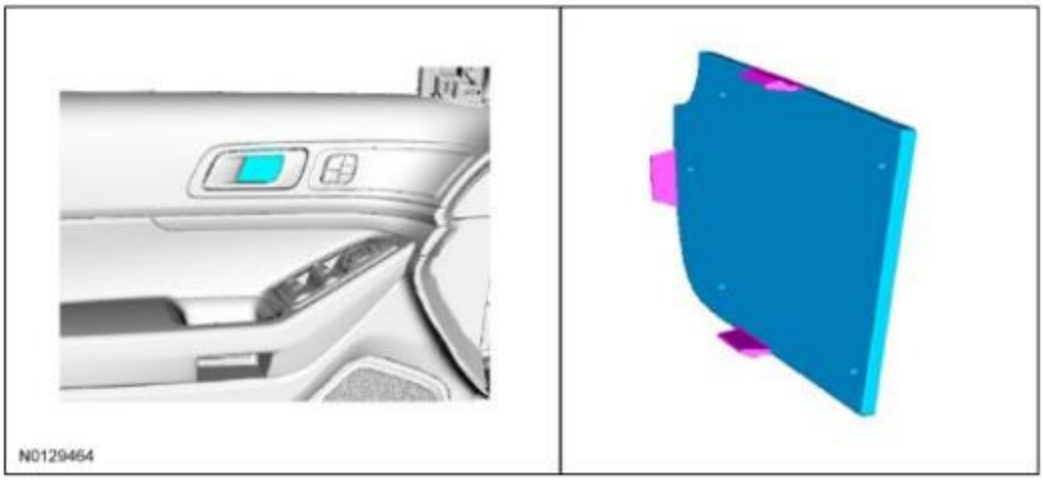
Removal

1. Using a non-marring tool, release the 3 sail panel clips and remove the sail panel.



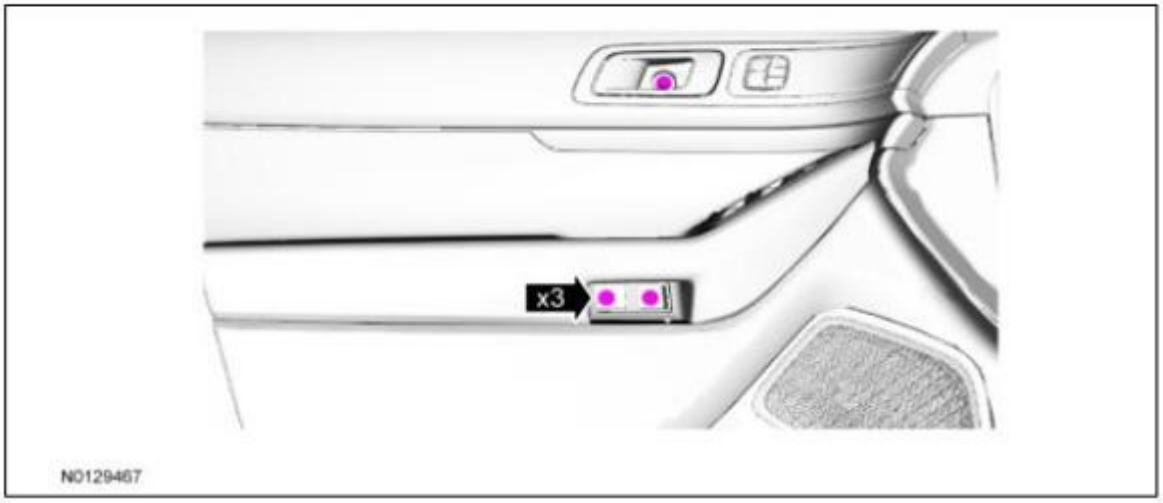
2. Remove the front window control switch. REFER to Section 501-11, Window Control Switch.

3. Using a non-marring tool, remove the front interior door handle bolt cover.

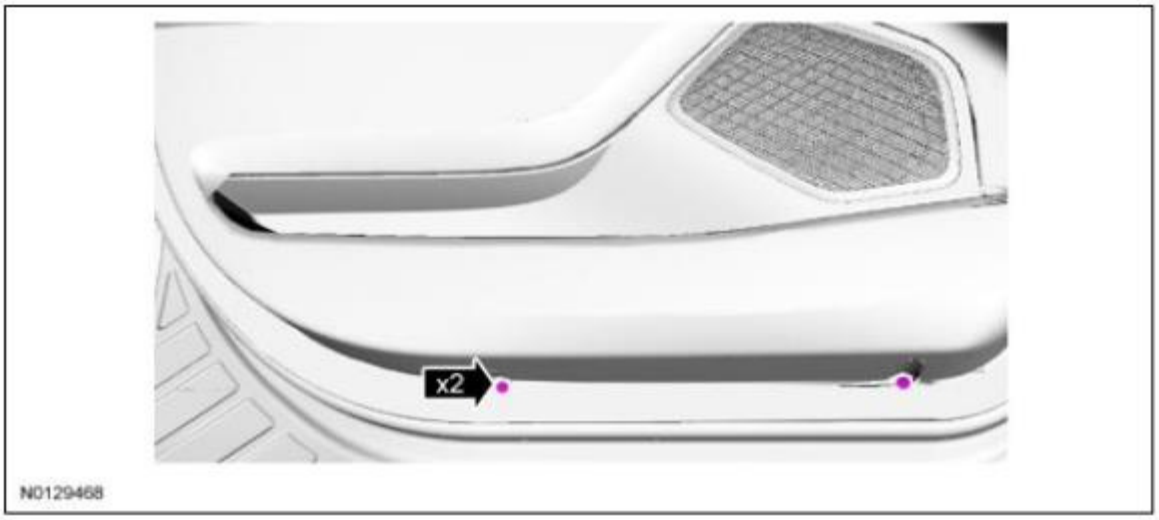


4. Using a non-marring tool, remove the front door trim panel bolt cover.

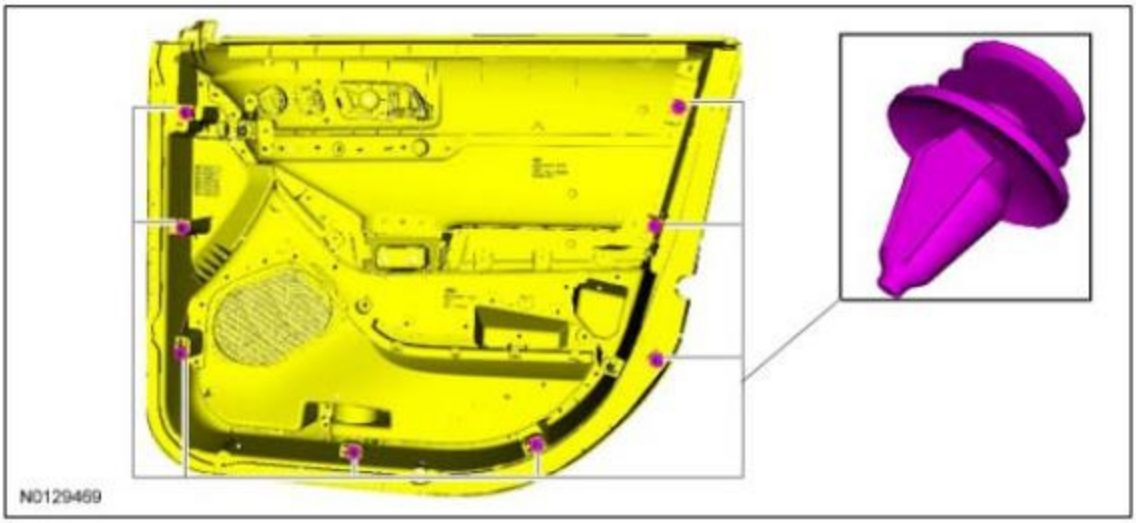
5. Remove the interior door handle bolt and the 2 front door trim panel bolts.



6. Remove the 2 front door trim panel screws.

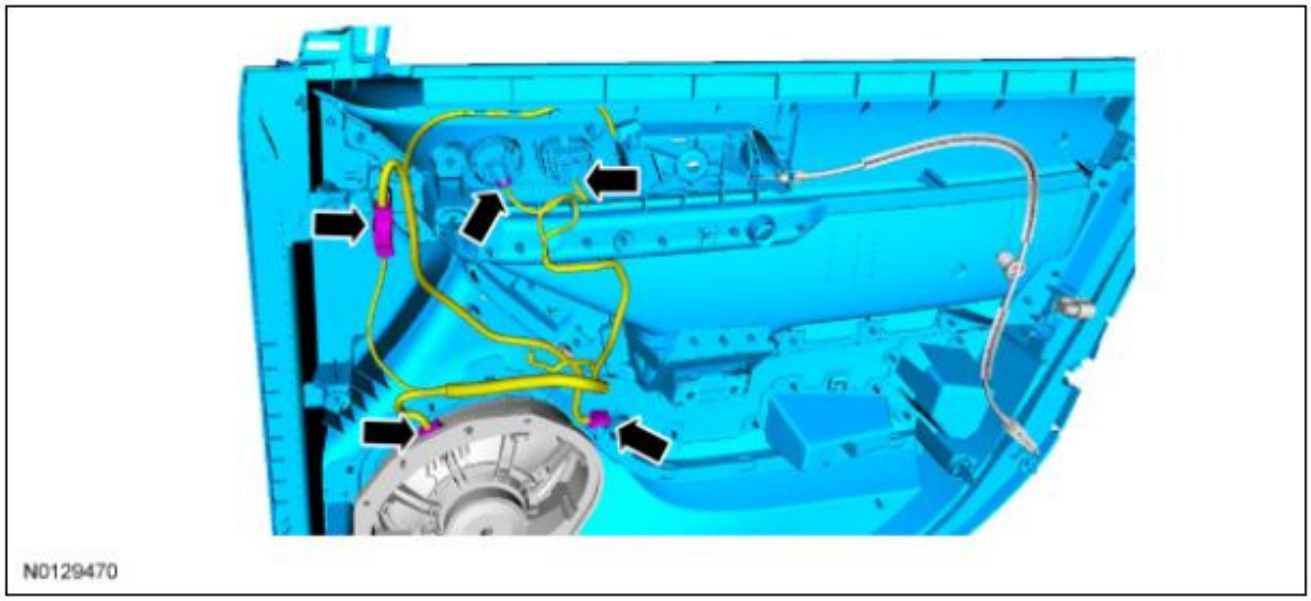


7. Using a non-marring tool, release the 8 front door trim panel clips.



8. **NOTE:** *High-end options shown, all others similar.*

Disconnect the door trim panel electrical connector.



9. Release the front interior door handle cable and remove the front door trim panel.

After removing the door trim panel, continue to the "routing wire into door panel" section.

Routing Wire into Door Panel (Sedan and Utility)

It's recommended to drill a hole in the driver's side kick panel (see photo). The hole must be large enough to accommodate a single loomed wire and a grommet. Route the Blue wire from pin 3 of the 8 pin connector through the hole.

Remove the boot between the vehicle and the door and route the Gray wire through the boot and into the door panel. Removing the speaker from the door panel may be necessary.

Install a grommet in the hole previously drilled in the kick panel.

After routing the Gray wire into the door panel, continue to the "Tapping into the Window Switch" section. Follow the instructions for the appropriate vehicle as the procedure differs between the Sedan and the Utility Interceptor.

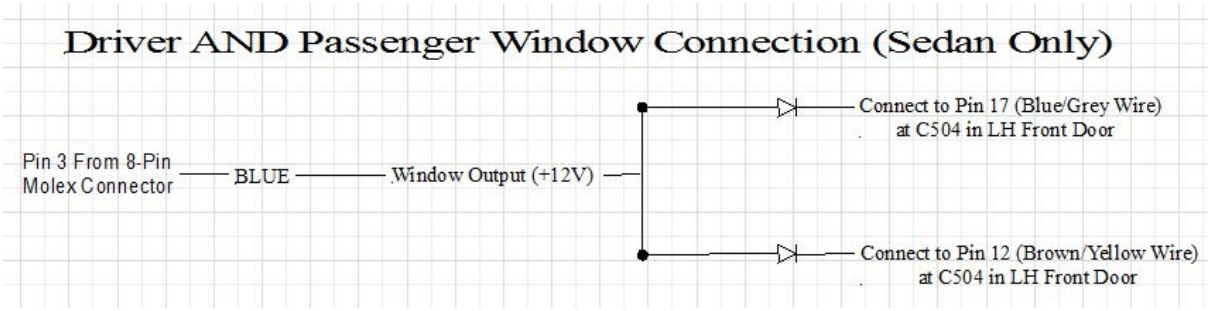
Tapping into the Window Switch

Sedan Only - Driver's Door Only

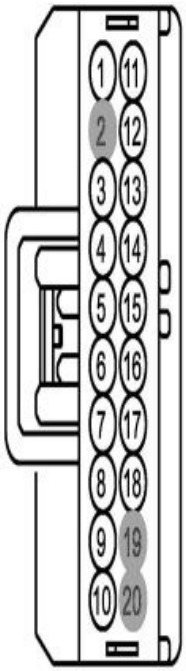
Locate the master Window Adjust Switch (20 pin connector) and connect the Blue wire from Pin 3 on the 8 pin connector at the SMM module to the Blue/Gray wire Pin 17 using solder and tape.

Driver's Door AND Passenger's Door

Locate the master Window Adjust Switch (20 pin connector) and connect the Blue wire from Pin 3 on the 8 pin connector at the SMM module to the Blue/Gray wire Pin 17 and the Brown/Yellow wire Pin 12 using solder and tape. Install a diode as shown in the wiring diagram below.



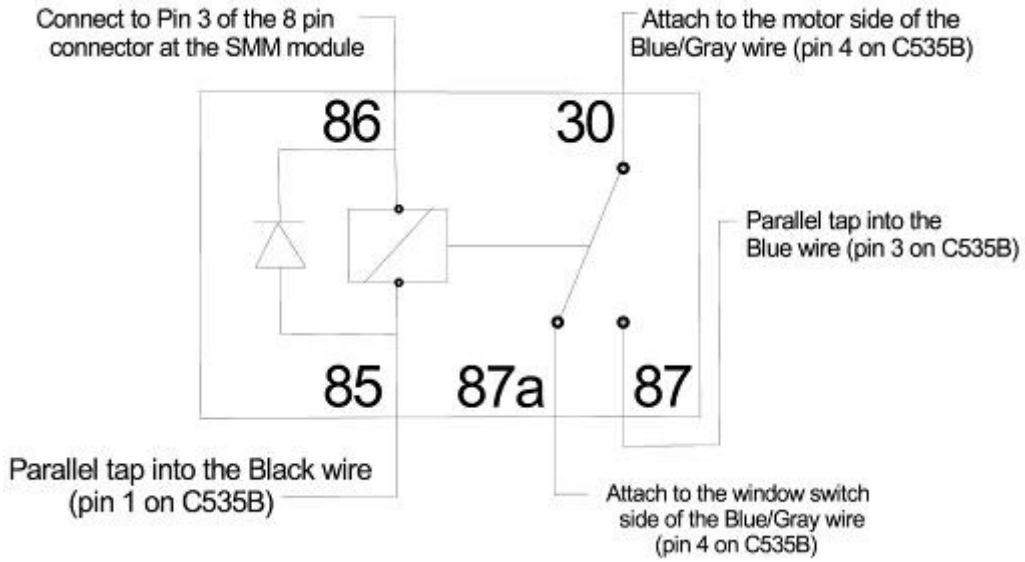
Connector:	Description	Color	Harness	Base Part #	Service Pigtail
C504	MASTER WINDOW ADJUST SWITCH	BK	14631	14529A	Not Available



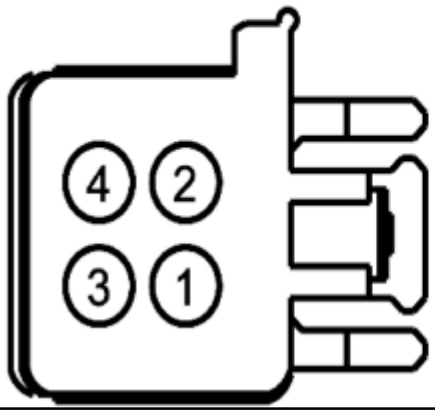
Pin	Circuit	Gauge	Circuit Function	Qualifier
1	GD233 (BK)	22	GROUND - COWL SIDE/PILLAR A LEFT (BC3T)	
2	*	*	Not Used	
3	CPW14 (VT-WH)	22	SWITCH - POWER WINDOW DRIVER # PASSENGER LOCK OUT (ENABLE)	
4	CPM23 (GY)	22	SWITCH - POWER MIRROR # COMMON ALL MOTORS (LEFT AND RIGHT)	
5	CPM16 (BN-BU)	22	SWITCH - POWER MIRROR # LEFT MIRROR RIGHTWARD (IF PLUS)	
6	CPM17 (BU-GN)	22	SWITCH - POWER MIRROR # LEFT MIRROR UPWARD (IF PLUS)	
7	CPM20 (BN-WH)	22	SWITCH - POWER MIRROR # RIGHT MIRROR RIGHTWARD (IF PLUS)	
8	CPM21 (YE-VT)	22	SWITCH - POWER MIRROR # RIGHT MIRROR UPWARD (IF PLUS)	
9	CPW74 (YE-GN)	22	SWITCH - POWER WINDOW DRIVER # FRONT PASSENGER LOCK OUT BYPASS	
10	CBP32 (GN-VT)	22	FUSE - 32 OR CIRCUIT BREAKER	
11	CPW12 (GN-OG)	22	SWITCH - POWER WINDOW DRIVER # FRONT PASSENGER DOWN	
12	CPW13 (BN-YE)	22	SWITCH - POWER WINDOW DRIVER # FRONT PASSENGER UP	
13	CPW17 (BN-GN)	22	SWITCH - POWER WINDOW DRIVER # REAR RIGHT DOWN	
14	CPW18 (GY-VT)	22	SWITCH - POWER WINDOW DRIVER # REAR RIGHT UP	
15	CPW16 (BU-OG)	22	SWITCH - POWER WINDOW DRIVER # REAR LEFT UP	
16	CPW15 (YE)	22	SWITCH - POWER WINDOW DRIVER # REAR LEFT DOWN	
17	CPW11 (BU-GY)	22	SWITCH - POWER WINDOW DRIVER # DRIVER UP	
18	CPW10 (YE-VT)	22	SWITCH - POWER WINDOW DRIVER # DRIVER DOWN	
19	*	*	Not Used	
20	*	*	Not Used	

Utility Only

1. Locate 4 pin Connector on window switch (C535B).
2. Cut the Blue/Gray wire (pin 4 on C535B) and attach the motor side of this wire to Pin 30 of the relay.
3. Attach the window switch side of the Blue/Gray wire to pin 87A of relay.
4. Using solder and tape, parallel tap into the Blue wire (pin 3 on C535B) and attach to pin 87 of the relay.
5. Using solder and tape, parallel tap into the Black wire (pin 1 on C535B) and attach to pin 85 of the relay.
6. Locate the Blue wire, Pin 3 (8 pin connector) on the SMM module and attach to pin 86 of the relay.



Connector: C535B — Description: MASTER WINDOW CONTROL SWITCH — Color — Harness: 14631 — Base Part #: part# N/A — Service Pigtail: See Below



Pin	Circuit	Gauge	Circuit Function	Qualifier
1	GD233 (BK)	12	GROUND - COWL SIDE/PILLAR A LEFT	
2	CPW10 (YE-VT)	12	SWITCH - POWER WINDOW DRIVER # DRIVER DOWN	
3	CBP01 (BU)	12	FUSE - 40 OR CIRCUIT BREAKER	
4	CPW11 (BU-GY)	12	SWITCH - POWER WINDOW DRIVER # DRIVER UP	

Operating Instructions—Surveillance Mode

To enter Surveillance Mode, ALL five preconditions must be met:

- Transmission must be in park.
- Vehicle speed must be zero.
- Driver door must be closed.
- Service brake must not be applied.
- Momentarily ground the Green/White wire Pin 8 on the 8 pin connector.

To exit Surveillance Mode, any condition may be applied:

- Pin 8 on the connector Green/White wire momentarily grounded.
- Driver door is opened.
- Service brake is pressed.

Note: exiting surveillance mode results in the AM/FM radio clicking off momentarily as well as causing the headlights to briefly flash.

If Flashing Reverse Lights are enabled, the Reverse lights will flash at about 10 hertz when a presence is detected. This will turn off when either of these conditions are met:

- The transmission is cycled out of park.
- Disable Surveillance mode momentarily (grounding input on Green/White wire).
- Cycling the key position.

Outputs

There are two discrete outputs which can be used with external devices. An output is turned on when Surveillance Mode is enabled, the other output is turned on when a sensor is tripped while in Surveillance Mode. Each output is rated at 1/2A and is intended to drive relay coils or other low current loads. The outputs can be used as POWER or GROUND outputs depending on how the circuits are connected.

Desired Activated Output

	Pin 1: Yellow	**Pin 5: Purple**
Power	Use as output	Provide 12 Volts
Ground	Provide Ground	Use as output

Desired Detected Output

	Pin 2: Orange	**Pin 6 :Brown**
Power	Use as output	Provide 12 Volts
Ground	Provide Ground	Use as output

NOTE: If outputs are not being used, Pins 1 and 2 must be grounded for the module to work properly

Diagnostics

Diagnostic mode is entered by shorting the two "Test" pads together on the module. The module provides diagnostic LEDs which illuminate according to the following table.

Settings	LED	ON	OFF
Input Sense	LED1	Active Power	Active Ground
Flashing Reverse Lights	LED2	Enabled	Disabled
BLIS Trigger	LED3	Enabled	Disabled
Hawkeye	LED4	Enabled	Disabled

Surveillance Mode Status Codes

Status Codes provide the current status of the Surveillance Mode system. The on-board "Status" LED will flash a 2-digit code as shown in the table. The first digit will flash, wait one second, flash the second digit, then wait four seconds before the next code. The Status Codes continue to flash until the module is reset (cycle key), or the test input is momentarily grounded again.

Status Code	Description
1-1	Ready
2-3	TR not = to Park
2-4	VSS > 0
2-5	Driver Door Open
2-6	SB pressed
3-3	Surveillance Mode Activated
4-4	Surveillance Mode Detected Presence
5-5	Reverse Lights Flashing

Toggle Surveillance Mode Input Sense

The Input Trigger is defaulted to Active Ground, the following procedure must be performed to toggle the toggle the input to Active Power:

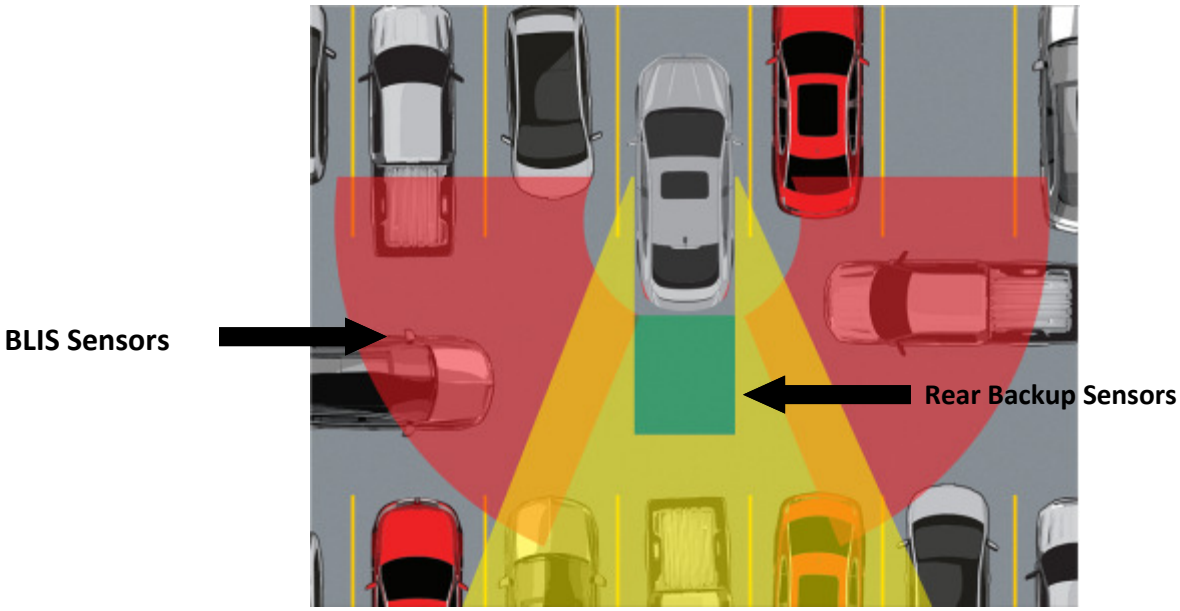
1. Short the test pads on the module and verify the Status LED illuminates.
2. Open Driver Door.
3. Apply parking brake and place Transmission in NEUTRAL.
4. Apply service brake **THREE** times within 5 seconds. All LED's will flash once and turn off for confirmation.
5. Cycle the key for the changes to take affect.

Repeating this procedure will toggle the Trigger ON/OFF.

Toggle BLIS Trigger

The BLIS Trigger is defaulted ON, the following procedure must be performed to toggle the BLIS Trigger off:

1. Short the test pads on the module and verify the Status LED illuminates.
2. Close Driver Door
3. Apply parking brake and Place Transmission in DRIVE.
4. Momentarily ground Pin 4 **THREE** times within 5 seconds. All LED's will flash once and turn off for confirmation.
5. Cycle the key for the changes to take affect.
6. Repeating this procedure will toggle the Trigger ON/OFF.



Surveillance Mode Programming Utility

This optional utility (available for free at **http://www.intermotive.net**) can be used to change the following settings:

- Input Sense* - Active Ground or Active High (Active Ground is default setting)
- Reverse Lights - Enabled or Disabled (Enabled is default setting)
- BLIS Trigger* - Enabled or Disabled (Enabled is default setting)
- Hawkeye - Enabled or Disabled (disabled is default setting)

* Can also be changed without the utility by following the instructions on pages 13 and 14.

Requirements

- Java Runtime Environment (v1.6.0_18 or later) must be installed on your computer prior to running this utility. Most PC's have Java installed. The most recent version can be obtained for free at **http://java.com/en/download/manual.jsp**
- The Surveillance Mode Programming Utility is a free Intermotive software program that will need to be loaded onto you PC. The files are available from the download page at www.intermotive.net. It is recommended that an "Intermotive" folder be created to store the files.
- USB to Serial cable (part number a-IPU) which is a one-time purchase. This kit is required for all programming and is recommended to be kept in a central location.

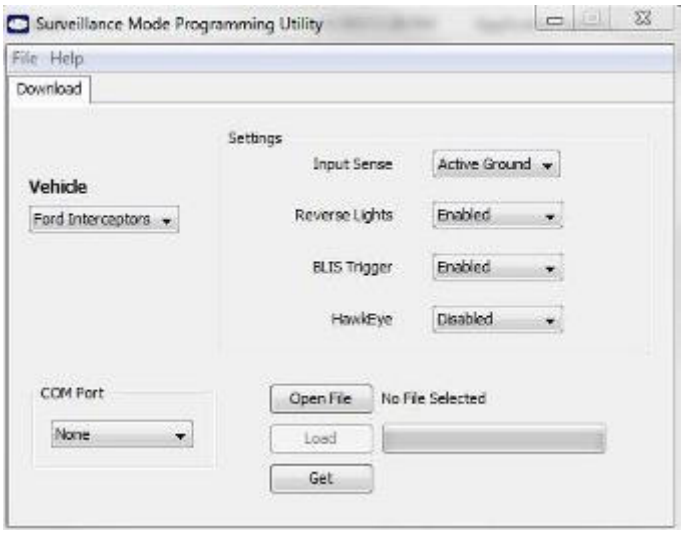
Once the Surveillance Mode Programming Utility has been run and the specific configuration has been created, it can be downloaded onto the SMM module(s) with the Programming Utility.

Configuration with a laptop (using the Surveillance Mode Programming Utility)

Ensure that the proper driver is installed for the USB to Serial download cable. This driver can be found at: **http://www.ftdichip.com/Drivers/VCP.htm**

1. To install the programming utility, unzip the Surveillance Mode Programming Utility folder to your local hard drive.
2. Create a shortcut on the desktop if necessary, but do not separate the Surveillance Mode Programming Utility.exe file from the rxtxSerial.dll file!
3. Plug in the USB cable (Part# s-h37a) prior to starting the application.
4. Double click the Surveillance Mode Programming Utility.exe file to launch.

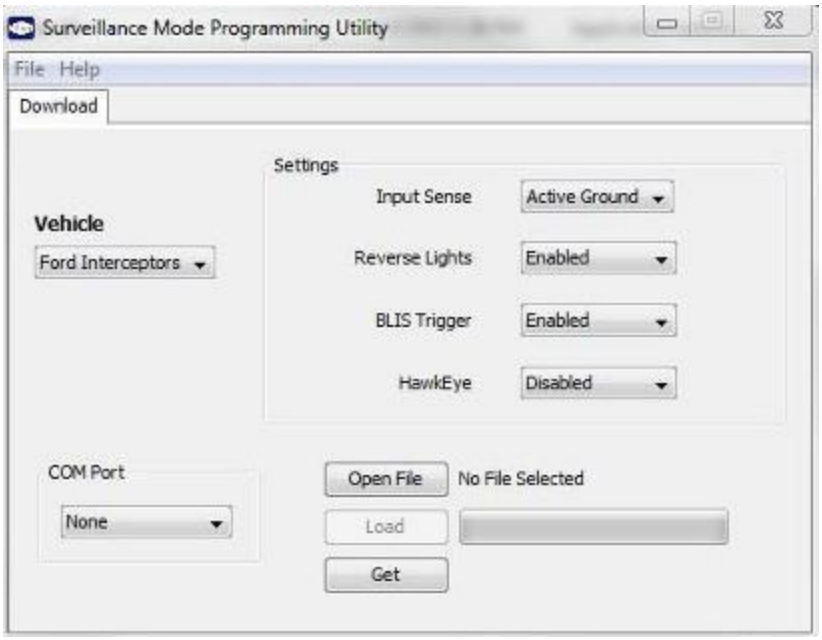
This screen will come up. ⟶



If the program does not launch, close all applications and reinstall the Java Runtime Environment and the Surveillance Mode Programming Utility.

Setting the Surveillance Mode Programming Utility Configuration

1. Configure the settings as desired.
2. Select "Save Configuration" under the "File" tab.
3. Enter a configuration name (up to 16 characters) and click "OK".



InterMotive Module Desktop Power/Ground Supply

The InterMotive Module Desktop Power/Ground Supply (part number s-6w-powersupply) allows programming the SMM on your desk. The Module Desktop Power/Ground Supply consists of a 120V AC to 12VDC adapter with a Male 6-Pin Molex connector (also included is a 6-Pin to 4-Pin adapter harness—which is needed for the SMM).

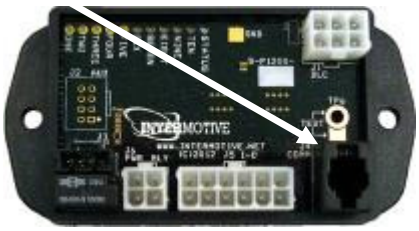
Note: Do not have the Surveillance Mode Programming Utility opened until instructed.

1. Plug the Module Desktop Power/Ground Supply inverter into a 120V AC power source.
2. Locate the 4-Pin Female connector on the module but do not plug in the power adapter until indicated in the following steps.
3. Plug the phone jack into the J4 COMM port of the SMM module and the USB plug into the computer.

Loading an SMM Configuration File

Open the Surveillance Mode Programming Utility. Under the "Download" tab on the Programming Utility, choose the COM Port the USB cable is connected to.

Note: This can be determined on Windows XP by right-clicking on 'My Computer' and selecting 'Properties.' From this window select the 'Hardware' tab and click on 'Device Manager.' In the Device Manager window, expand the 'Ports' menu and the download cable will display as 'USB Serial Port.'


J4 COMM Port

Click the 'Open File' button.

1. Open the IMS file to load on the SMM module. (this file must already be loaded on the computer).
2. Click the 'Load' button on the computer screen. "Waiting" will come up next to the progress bar. This means the program is waiting for power to be applied.
3. Plug in the 4 pin connector of the power adapter in the SMM module. The progress bar on the computer screen will display status as the configuration loads and take approximately 2 seconds or less. Configuration is loaded once the scree says "DONE" and programming is complete.
4. To verify that the correct data was loaded to the module, disconnect the 4 pin connector from the module and press the 'Get' button on the screen. Plug in the 4 pin connector and the information will be displayed.

To program another module with the same configuration file, start with step 2.

SMM501 Module Mounting

Ensure all harness are properly connected and routed, and are not hanging below the dash area. Mount the SMM501 module using screws or double sided tape. Reinstall the lower dash panel.

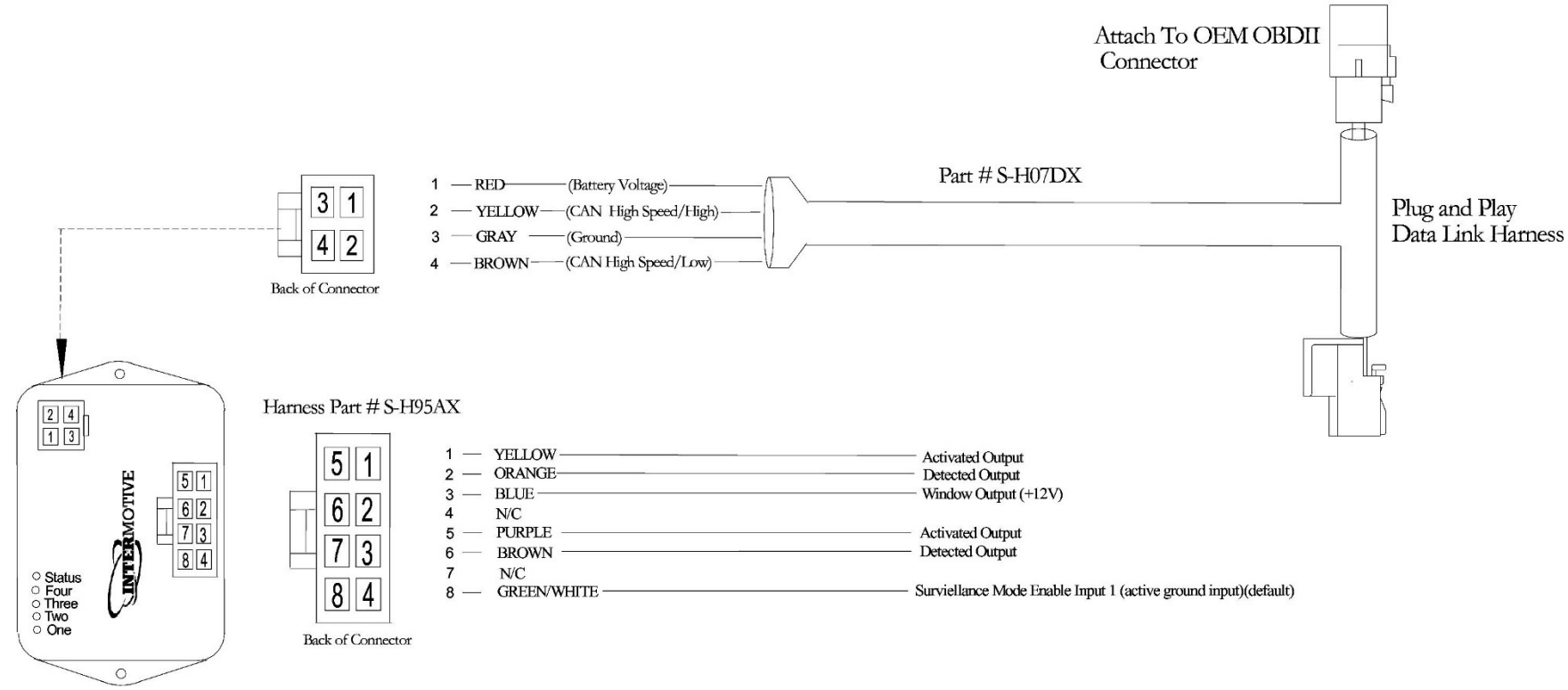
Reconnect Vehicle Battery

Surveillance Mode Post Installation instructions

Preferably test with two people so one person can activate the rear sensors.

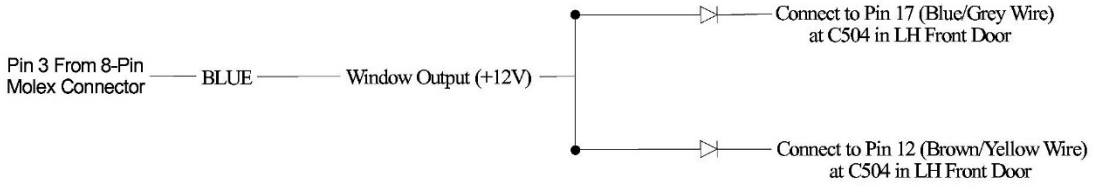
1. Place car in Park, close the driver door, and do not apply the Service Brake.
2. Roll the driver and passenger door window all the way down and unlock doors.
3. Apply Surveillance Mode input and verify rear camera turns on.
4. Have one person trip the sensors by walking behind the vehicle.
5. Verify that the window goes up, all doors lock, the reverse 'back-up' lights flash, and the rear camera stays on.
6. Open driver door to exit surveillance mode and verify rear camera turns off. The rear lights should continue to flash.
7. Apply Surveillance Mode input again to turn off the system.
8. Verify that the Reverse 'back-up' lights stop flashing.

U.S. Patent #9,469,261



SMM 501-A
Part # S-M 1100-182

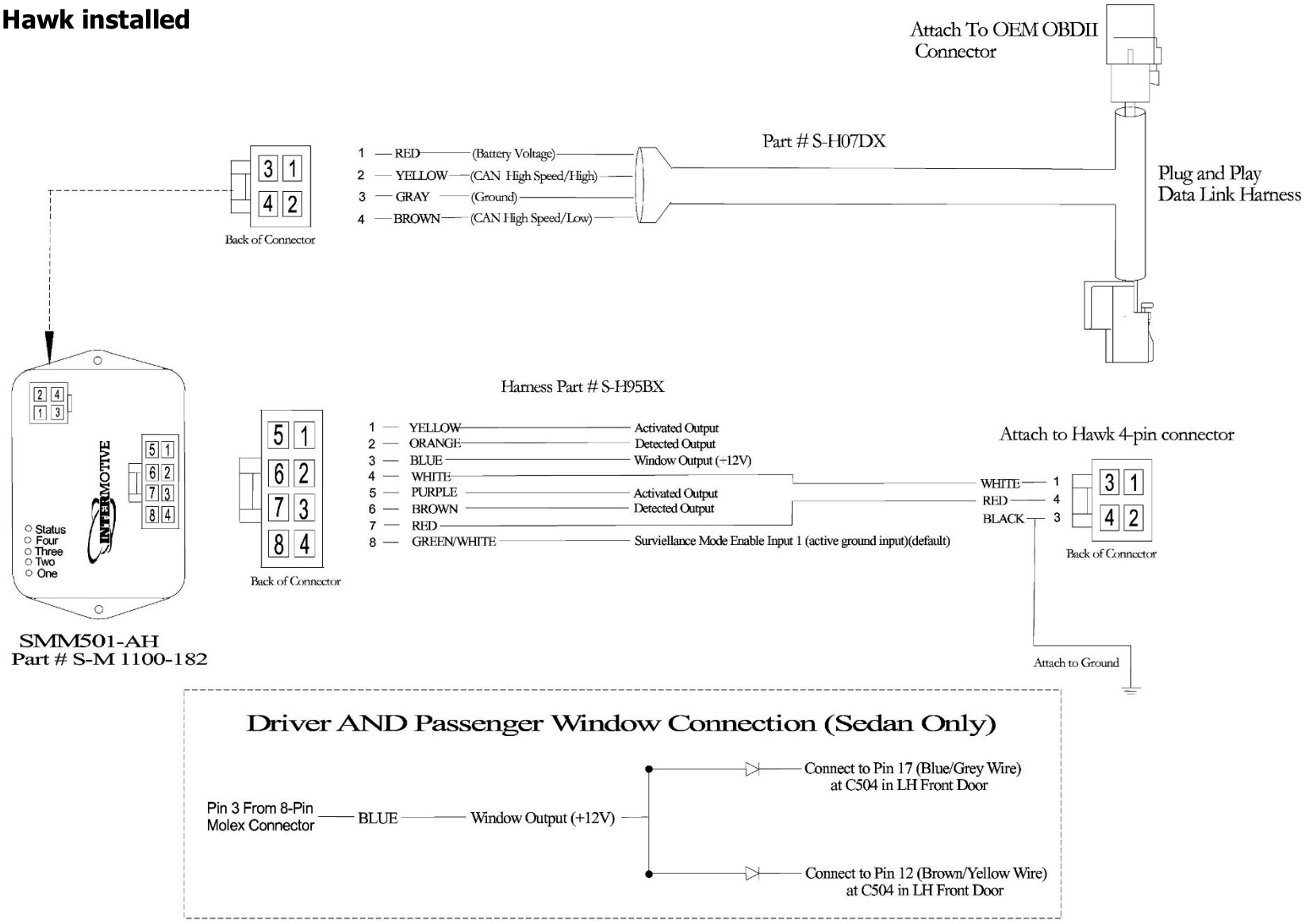
Driver AND Passenger Window Connection (Sedan Only)



Submit product registration at www.intermotive.net

If the SMM fails any step in the System Operation Test, review the installation instructions and check all connections.
If necessary, call InterMotive Technical Support at (530) 823-1048

With Hawk installed



Driver AND Passenger Window Connection (Sedan Only)

Submit product registration at www.intermotive.net

If the SMM fails any step in the System Operation Test, review the installation instructions and check all connections.
If necessary, call InterMotive Technical Support at (530) 823-1048