



F150 Ford Plug-In Modem Kit Bill of Material – Part in Assembly (PIA):

Part Description	PIA Quantity
Ford Plug-In Modem (modem)	1
3-Way Harness	1
Ford Plug-In Modem Kit Installation part set	1
Warranty Card	1
Install Card – URL for accessing installation instructions	1

Ford Plug-In Modem Kit Installation part set content:	Quantity	P/N
Adhesive backed mounting pad	1	28675051
3M 4298 Promoter Packet	1	28675052
Alcohol wipe	1	28675054
Tie Straps -14.5"	5	28682870

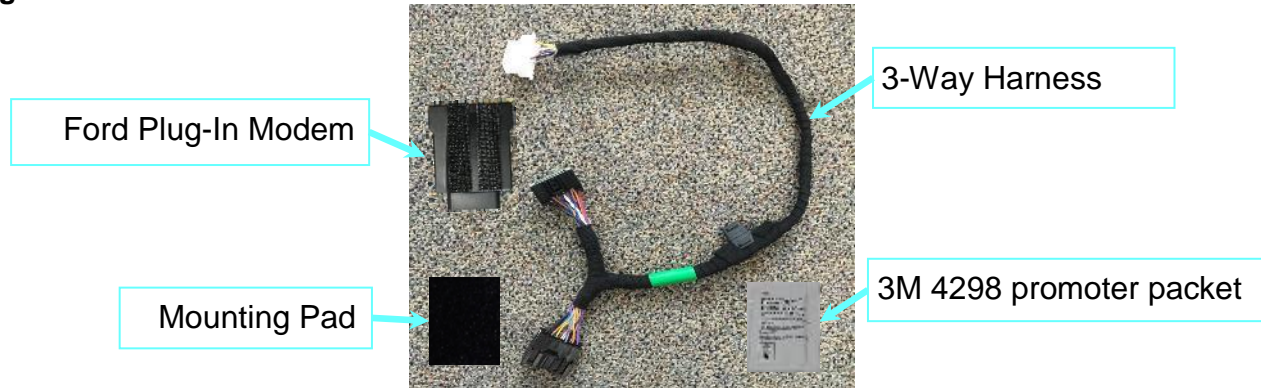
Tools: shop tools	Panel removal tool
Plastic gloves (optional)	

Record of Revision History:

Revision	Description	Pages Affected	Release Date
1	Initial release of Ford Plug-In Modem kit to support F150 vehicles.	All	21-Apr-2019
2	Proof reading corrections	All	06-Aug-2019



## Ford Plug-In Modem Kit – Content



## Ford Plug-In Modem Kit – Installation Procedure – Pre-install list

- Read the installation procedure thoroughly before proceeding; modem location and orientation are critical to cellular/GPS connectivity and the kit's overall performance.
- Run standard vehicle diagnostics to check if any codes are set before the Ford Plug-In Modem installation. Repair vehicle if necessary before proceeding.
- Refer to Ford Workshop Manual Instructions for vehicle disassemble and reassemble instructions. All torque values are 1.5Nm+/-0.2Nm (13.3In-Lbs+/-1.8In-Lbs) unless otherwise specified in workshop manual or in these instructions.
- Set all fasteners aside for reassembly.
- Ensure the ignition switch is off, engine is off, and all accessories are off – remove key from ignition and set aside.
- The Electronic Serial Number (ESN) located on the top of the Modem and the outside of the Ford Plug-In Modem Kit box is required to validate proper installation. **Tip:** Take a picture or record the ESN for use later

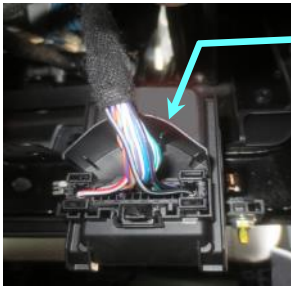
## 1. Vehicle Disassembly

1.1 Remove the instrument panel (IP) left hand vent trim panel to access the Ford Plug-In Modem mounting position and the harness routing.

- Open the driver door to access the vent trim panel.
- Use a panel removal tool to release trim panel, set panel aside.
- Take care not to break off the vent trim panel tab.
- Remove screw below HVAC duct to access the top surface of the duct, set screw aside.



1.2 Disconnect the vehicle harness electrical connector from the Gateway Module A (GWM) (also known as: Smart Data Link Connector) for the harness installation (Ignition must be off including all accessories off.)



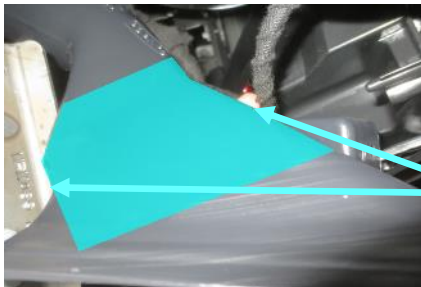
- The GWM is located slightly to the left and below the steering wheel.
- The GWM is attached to the knee panel bracket in the driver knee zone.
  - Disconnect vehicle harness electrical connector.



## 2. Vehicle Preparation

2.1 Inspect the Ford Plug-In Modem's mounting location surface prep.

2.1.1 The modem's mounting location is on the top surface of the duct, position the duct slightly down and visually inspect the surface to ensure it is free of any contaminants.

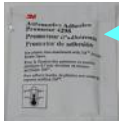


Surface prep: the top surface of the duct should be clean and dry before applying the 3M promoter.

- Clean the surface area slightly larger than the mounting pad with the isopropyl alcohol wipe provided.
- Use area highlighted in picture for promoter application next.

2.2 Promoter application instructions

The kit contains a 3M 4298 promoter packet and an adhesive backed pad for mounting the Ford Plug-In Modem. (Please follow the 3M application instructions included in the next step to prepare the mounting surface for the pad.)



3M 4298 packet contains an applicator sponge soaking in promoter liquid - the liquid contents of the packet should be used as soon as possible after opening.

3M 4298 Application instructions - Hold the packet upright and avoid squeezing the packet. The packet can be opened by tearing across the packet at the notches. This will expose the sponge applicator. Do not remove the sponge or squeeze a freshly opened packet to prevent spillage. Handling the bottom section of the packet should enable application of 3M adhesion promoter 4298 with no mess. Apply a thin, uniform coating to the bonding surface, using the minimum amount that will fully coat the surface. A wet coating thickness of 0.002 inch or less is recommended. Apply promoter to the areas that will be covered with adhesive side of mounting pad. Although drying times may vary due to temperature and/or humidity, a drying time of 30 to 90 seconds is typically indicative of this thickness. The promoter should be dry before applying pad. Reference: 3M. "Adhesion Promoter 4298 for Professional Market Applications." 3M Multimedia, March-2003. Web. 22-July-2014

[http://multimedia.3m.com/mws/mediawebserver?mwsId=SSSSSufSevTsZxtUNY\\_G5xfSevUqevTSevTSevTS\\_eSSSSS--](http://multimedia.3m.com/mws/mediawebserver?mwsId=SSSSSufSevTsZxtUNY_G5xfSevUqevTSevTSevTS_eSSSSS--).

2.3 Application of promoter to the mounting surface.

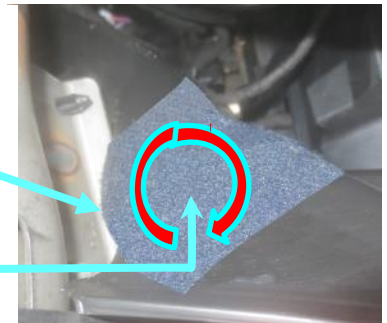
2.3.1 Apply a thin coating of promoter along the flat surface and over the edge on each side of the HVAC duct in the highlighted area pictured above in the surface prep section.

2.4 Application of the mounting pad on the prepared surface.



Note: the promoter must be dry before applying the mounting pad: dry time is 30 to 90 seconds and not more than one hour. Make sure the surface remains free from contaminants prior to pad application.

- Remove the clear plastic from the adhesive backing on pad and apply the pad to the prepared surface, aligning pad corner to left side of the duct, wrapping it over the right side of duct; use picture to the right to properly align pad. Firmly rub pad, removing any air bubbles trapped under it to ensure good adhesion to the duct.



### 3. Ford Plug-In Modem Kit 3-Way Harness Routing and Connections

3-Way Harness:

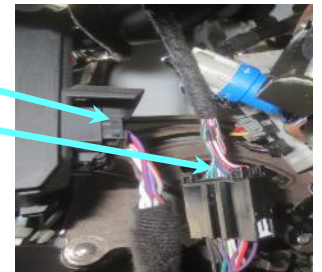
- Ford Plug-In Modem (modem) Connector
- Smart Data Link Connector (SDLC) Connectors
  - SDLC female connector
  - SDLC male connector



3.1 The 3-Way harness is installed in the driver side foot well from the GWM up to the HVAC duct.

3.1.1 Install the 3-Way harness.

- Connect the SDLC female connector to the GWM.
- Connect the SDLC male connector to the vehicle harness electrical connector disconnected from the GWM earlier.
- Route the harness Ford Plug-In Modem connector up through the IP to the trim panel opening, above the duct mounting location.



**Note:** Connections to the GWM and vehicle harness are critical. Please insure secure connection before performing an ignition on and engine start.

- Connect the harness modem connector to the Ford Plug-In Modem.
- Secure modem and harness modem connector with tie strap (see pictures below.)
  - Position the tie strap on the labeled surface of modem with the strap's head at the edge of the harness modem connector.
  - Wrap the free end of the tie strap around the modem and through the center of the connector without pinching wires.



The modem has a status LED used to check connectivity. The two key colors/significance are:

- White - modem has power.
- Blinking green – modem is receiving and transmitting vehicle data. (Requires engine start.)



**Note:** If the LED does not light up check each harness connection



## 4. Ford Plug-In Modem Installation

The Ford Plug-In Modem has two strips of dual lock attached to the modem case; the dual lock side attaches to the mounting pad; maintain separation between dual lock and mounting pad until modem is in its final position. (Use a slip of paper to assist with separation.)



### 4.1 Install the Ford Plug-In Modem on the duct.

- Position the modem above the pad with the harness routed towards the right, use picture to locate the modem properly.
  - The modem's location is **critical**; use paper between the modem and the pad, reposition the duct onto the locator pin while adjusting the modem's location to ensure clearance with the duct above it.
- Fasten the modem to the loop with the harness routed down and to the right.
  - Hold modem in position and remove the paper.
  - Press modem against mount and wiggle modem down into pad.



## 5. Ford Plug-In Modem Validation Process

Validation of proper installation and confirmation that the Ford Plug-in Modem is receiving and transmitting data depends on both GPS and cellular network strength.

- To complete validation technicians will need access to the internet and the VIN and the Plug-in Modem ESN. The Plug-in Modem ESN is located on top of the Modem
- Finally, validation requires that the vehicle to be keyed on. If the vehicle has been off for more than 15 minutes, please complete step 5.2 before attempting validation

### 5.1 Insert the key into the ignition.

### 5.2 Start the engine.

- Turn the ignition on,
- Start the engine,
- Run engine for 30 seconds, and
- Turn the ignition to "Off". Wait up to 15 minutes with engine off before restarting (Modem vehicle configurations are down loaded in modem light sleep mode)

### 5.3 Access validation website: <https://cdvt.ford.com/>

### 5.4 Input VIN and ESN. If installation validation is successful, the website return screen will display all green indicators. Proceed to Step 5.7

### 5.5 If validation was not successful, please follow the following steps in order:

- Step 1: Wait 30 seconds, re-enter the required information and submit again, if successful proceed to Step 5.7
- Step 2: Verify that all of the electrical connector connections are fully inserted and secure. Follow the validation steps again beginning at Step 5.2, if successful proceed to Step 5.7
- Step 3: If the plug-in modem has power and the modem display has a blinking green light, please ensure that the vehicle is in a location where its GPS location can be determined and there is a



strong cellular signal. Turn the vehicle on and let it run for an extended period (5-7 minutes) before turning it off. Follow the validation steps beginning at Step 5.4, if successful proceed to Step 5.7

- 5.6 Remove the Ford Plug-in Modem Kit hardware and install a new Ford Plug-in Modem Kit (modem and 3-way harness). Begin the validation process again at Step 5.2 and/or contact the Ford Commercial Solutions Business Center at the phone number listed on the Warranty Card
- 5.7 Run standard vehicle diagnostics to check if any codes were set during the Ford Plug-In Modem Kit installation. If there are no codes, proceed to next section, if there are codes, clear and retest. If codes remain after retest, make the required vehicle repairs, clear codes, and retest. Repeat until retest produces no codes.

## 6. Installation Review, Vehicle Reassembly, and Completion

- 6.1 Verify that the Ford Plug-In Modem harness is clear of all moving components and the foot zone.
  - 6.1.1 Loop any excess Ford Plug-In Modem Kit wiring onto itself and secure with the tie straps to a hard point on the IP, not to other wiring harnesses.
- 6.2 Verify that the Ford Plug-In Modem is firmly mounted on the duct.
  - 6.2.1 Reposition duct onto the pin and secure it with the screw.
- 6.3 Re-install the duct trim panel removed during the vehicle disassembly.
- 6.4 Place Ford Plug-In Modem Kit Warranty Card into glove box.