



Ranger 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

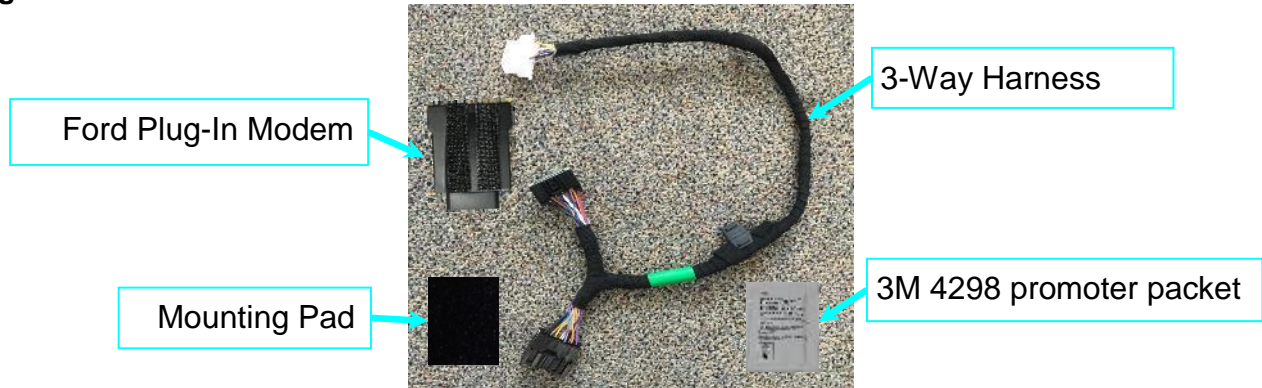
Tools: shop tools	Panel removal tool
Plastic gloves (optional)	

Record of Revision History:

Revision	Description	Pages Affected	Release Date
1	Initial release of Ford Plug-In Modem kit to support Ranger vehicles.	All	29-June-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 following trim panels from left hand (LH) side of the instrument panel (IP) to access the Ford Plug-In Modem mounting position and the harness routing.

- Remove IP knee panel
 - Pull handle of knee panel to open for access to remove two plastic screw fasteners.
 - Note: the screw expands the fastener to hold the panel.
 - Set panel aside.

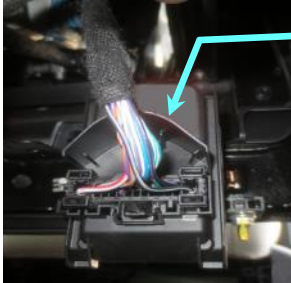


- Remove both LH side driver floor trim panels to access harness location:
 - Lift up panel 1 then panel 2.
 - Set panels aside.





- 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.)



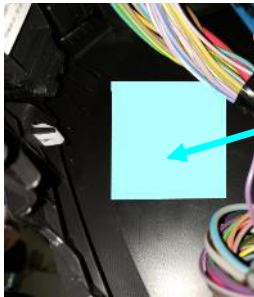
- The GWM is located slightly to the left and below the steering wheel.
- The GWM is attached to the knee panel bracket in the driver knee zone.
 - Disconnect vehicle harness electrical connector.



2. Vehicle Preparation

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

- 2.1.1 The modem's mounting location is inside the IP structure near the head light switch; visually inspect the surface to ensure it is free of any contaminants.



Surface prep: the mounting surface is highlighted in the pictures to left; the surface should be clean and dry.

- Clean the surface area slightly larger than the mounting pad with the isopropyl alcohol wipe provided before applying the 3M promoter.

- 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 loop 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--.

- 2.3 Application of promoter to the mounting surface.

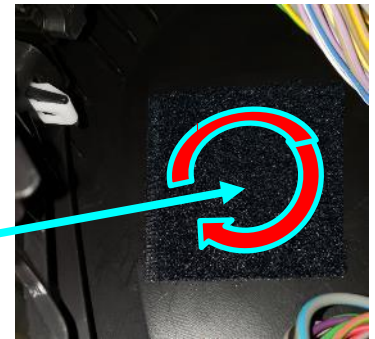
- 2.3.1 Apply a thin coating of promoter to the cleaned surface highlighted area pictured above in the surface prep section.

- 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 after promoter application 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; use picture to the right as a guide. Firmly rub pad into place, removing any air bubbles trapped under it to ensure good adhesion to the surface.



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 through an opening to the left of the GWM to the mounting surface.

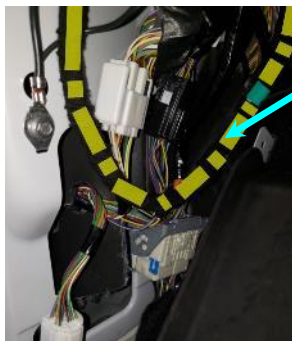
3.1.1 Install the 3-Way harness.

- Connect the SDLC female connector to the GWM.
- Connect the SDLC male connector to the vehicle harness electrical connector disconnected from the GWM earlier.

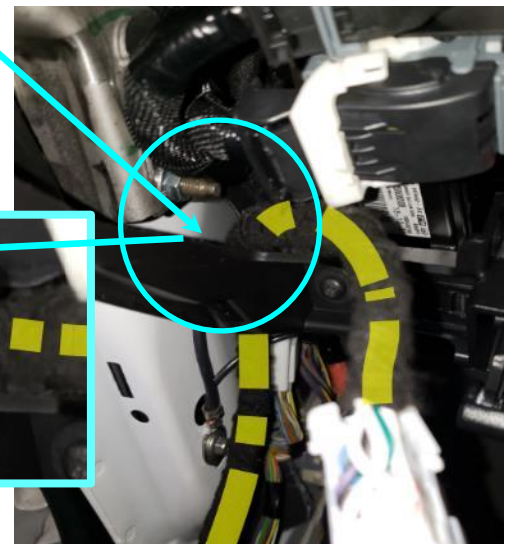
Note: Connections to the GWM and vehicle harness are critical. Please insure secure connection before performing an ignition on and engine start.



- Route the harness modem connector up through the gap between the driver's foot well wall and the GWM.
 - Picture to right has harness route highlighted and the picture below is a magnification of the opening with the harness.



- The harness will loop in its final position behind the foot well trim panel removed earlier.

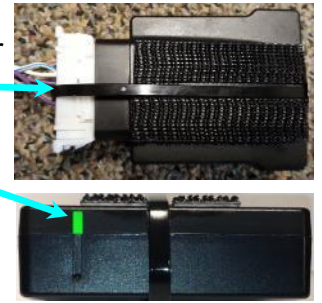




- Connect the harness modem connector to the Ford Plug-In Modem.
- Secure modem and harness modem connector with tie strap (see pictures below.)



- 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 the harness connections. Full testing is completed in the Validation Process section below.

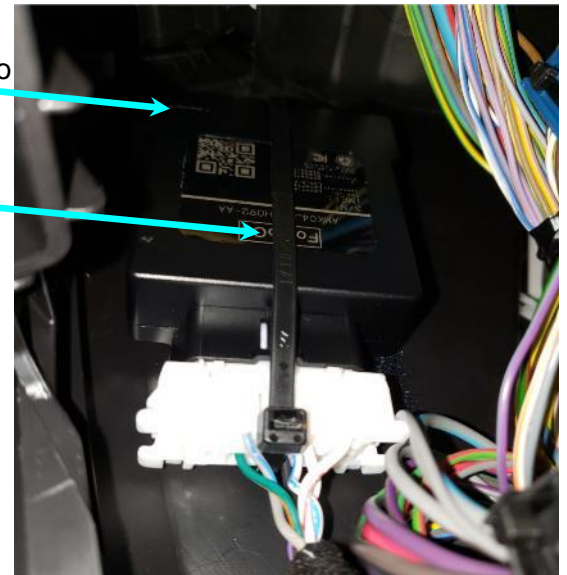
4. Ford Plug-In Modem Installation

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.

- Position the modem above the pad in the IP with the harness pointing down towards the foot well, as pictured to the right.
- Fasten the modem to the loop near the head light switch.
 - Press modem against mount and wiggle modem 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.



Ranger MY19 – Ford Plug-In Modem Kit NA Installation Guide
Revision Date: 06-AUG-2019

Revision Number: 2

- 6.1.1 The 3-Way harness loops behind the foot well trim panel - secure the harness with the tie straps (PIA) to a hard point and not to other harnesses



- 6.2 Verify that the Ford Plug-In Modem is firmly mounted on the pad.
- 6.3 Re-install the trim panels by reversing removal order.
- 6.4 Place Ford Plug-In Modem Kit Warranty card into glove box.