

H-DLM507-A

Door Lock/Unlock Module

2023-2024 Ford F250-F600

Contact InterMotive for additional vehicle applications.



Introduction

The Door Lock/Unlock Module provides ambulance and other builders the ability to lock or unlock the complete chassis using a hidden switch or keypad even with the key out of the ignition. It provides lock and unlock inputs which will trigger a lock or unlock for both the cab **and** patient compartment. It also recognizes lock/unlock requests from the OEM fob or cab door lock switches which also cause the patient compartment to lock/unlock.

The DLM507 requires minimal connections to OEM wiring since most of the functionality is managed through the vehicle network (Gateway connector). No removing door panels and tapping into door solenoids or switches is required. In addition to the Plug and Play Gateway connection, the only OEM connections required are two door ajar wires. See schematic on last page.

Installation Instructions

Disconnect vehicle battery before proceeding with installation



WARNING

Disconnect the battery to prevent setting a check engine light.

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 near the module. Finally, avoid high voltage spikes in vehicle wiring by always using diode clamped relays when installing upfitter circuits.

This document is broken into the following set of steps:

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Module Information



Main Module
820-00012-007



Sub Module
820-00240-006

Module Mounting Locations



Find a suitable location under the passenger kick-panel to mound the main module.



Install the sub module below the window control module panel. Mount using the provided adhesive.

DLC Installation

DLM507 Module

Remove the lower dash panel below the steering column area and find a suitable location to mount the DLM507 module. Locate the module in an area away from any external heat sources (engine heat, heater ducts, etc.). Do not actually mount the module until testing is completed and all wire harnesses are routed and secure. The last step will be to mount the module.

Data Link Harness Installation

The Ford Super Duty has an OEM Gateway module located on the other side of the SYNC 4 module, which is behind the center console. Follow the steps below to access it:



DLC Installation Instructions (continued)

1. Remove the RH instrument panel trim using a trim removal tool. The trim starts at the ignition switch and ends at the silver clip. The glove compartment can be opened to better access the back side of the trim.



2. Using a trim removal tool, pop out the upper right corner of the lower steering column close out panel. Position it away from the center stack.



3. Remove the 4 bolts (Size: 7mm) located at the top of the center stack.

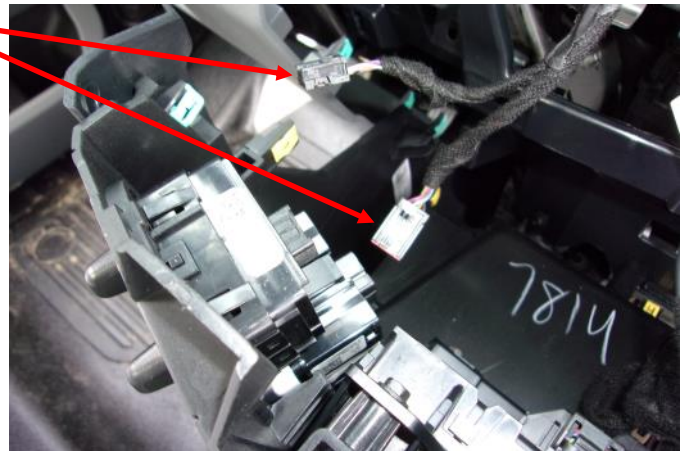


DLC Installation Instructions (continued)

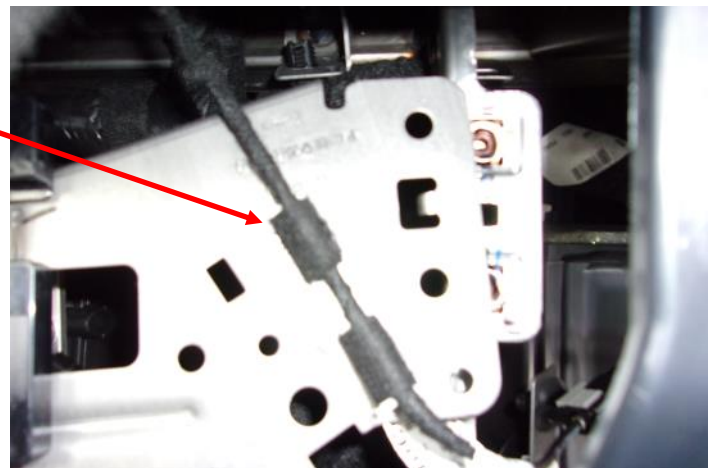
4. Release the clips on both sides of the center stack using a trim removal tool. Position the center stack away from the mounting points.



5. Disconnect the 2 connectors behind the center stack.



6. Detach the push-mount cable tie from the bracket and position the cable out of the way.

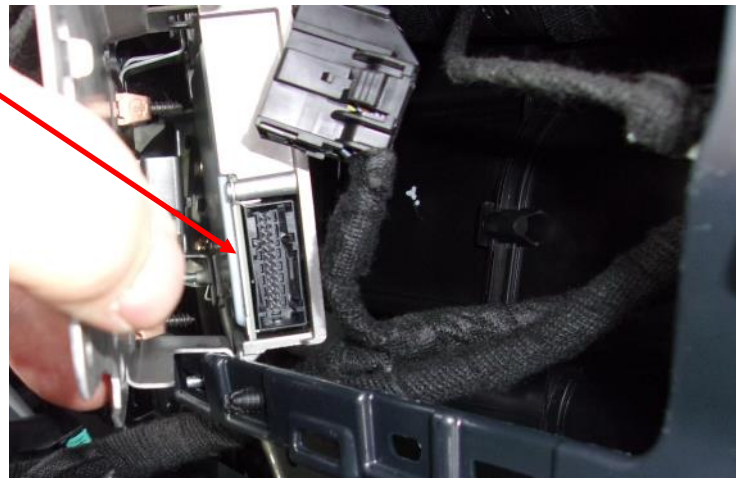


DLC Installation Instructions (continued)

7. Remove the 4 bolts (Size: 7mm) and position the bracket away from the mounting points to access the Gateway Module. The Gateway Module is located behind the bracket.



8. Disconnect the Gateway Connector by pressing down on the tab and pulling the connector away from the module.



9. Install the Datalink Harness between the Gateway Module and the disconnected Gateway Connector.



10. Run the 6-pin connector of the datalink harness to the mounting location of the DLM507 module.

11. After the Datalink Harness is installed, reverse the installation procedure to reassemble.

DLC Installation Instructions (continued)

Caution: Keying up the vehicle with the gateway harness disconnected will set multiple DTCs and illuminate the Instrument Cluster Wrench light. Make sure the 26 pin T harness is fully seated in the gateway module & connected to the OEM harness before turning the ignition switch on.

Note: There may be other options available. Contact Sales for the latest information.



Picture 2.
DLM507 data
link connector

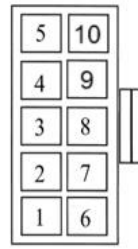


Part Number 840-00294

I/O Harness Installation

To the right is the I/O harness. It contains the required door ajar connector wiring.

For installation see text below.



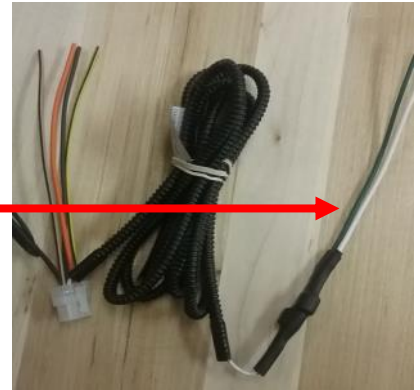
Back of Connector for
Harness # 840-00344



I/O Harness Part # 840-00344

Door Ajar Connections

The DLM507 I/O Harness (840-00344) has a long Driver/Passenger Door Ajar white wire (pin 6) with convolute jacketing. It splits near the end into white and green wires. Route this wire over to the passenger side kick panel.



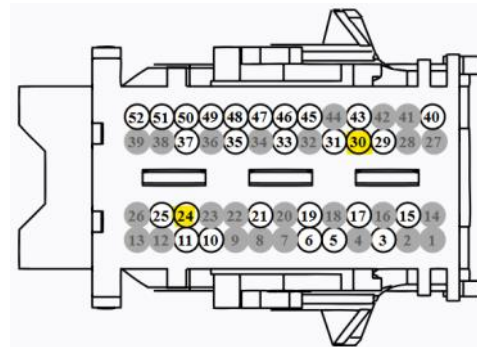
- Remove the plastic trim panel exposing the BCM below the glove box compartment.
- Locate the connector C2280D (See next page for details)
- You may need to trim back the electrical tape on the harness for better access to the wires from the C2280D connector.
- **Note: Performing one step at a time, these connections must be made using solder and electrical tape.**
- Locate white wire of connector C2280D (front passenger door ajar). **NOTE: There are two White wires in this harness connected to C2280D. Make sure to perform test in Step 1 to verify the correct wire.**
 1. With connector C2280D plugged into the BCM, verify with voltmeter and piercing probe there is 12 volts when corresponding door is open and 0V when door is closed.
 2. Strip approx. 0.5" of insulation from this BCM wire, being careful not to cut the wire.
 3. Connect the DLM507's Driver/Passenger Door Ajar matching color wire and solder and tape it.
- Locate green/violet wire of connector C2280D (front driver door ajar). **NOTE: There are two wires in this harness that have Green/Blue wires connected to C2280D. Make sure to perform test in Step 1 to verify the correct wire.**
- Repeat Steps 1-3 on green/blue wire.

I/O Harness Installation continued

Connector C2280D - Black

Pin 24 - White

Pin 30 - Green/Blue

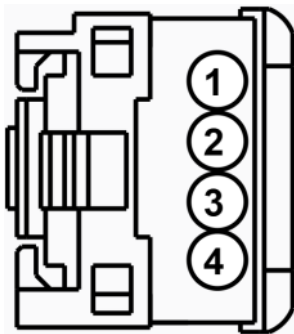


Installing Sub Module

The sub module (Part number: 820-00240-006) controls the door locking mechanisms for the OEM doors. These are the instructions for installing it.

4-Wire Fob Posi-tap

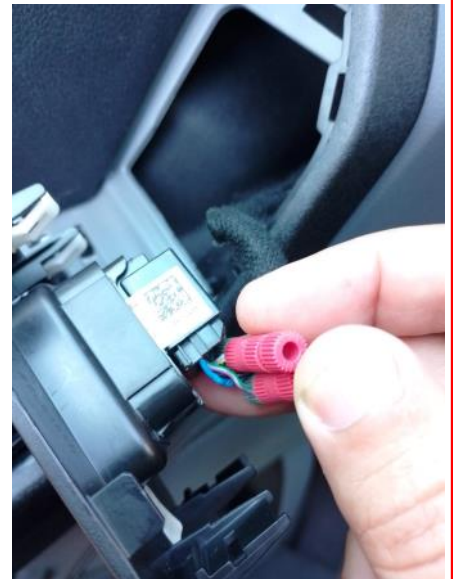
- Red - Power, taps into Yellow/Gray wire on Window Control module pictured at the bottom right
- Black Ground, taps into Black wire on Window Control module pictured at the bottom right
- Yellow - taps into Violet/Green wire on Door Lock Module to the right
- Violet - taps into the Gray/Yellow wire on the Door Lock Module to the right



Door Lock Module Connector

Driver Door Panels:

Pop out panels below to access Window Control and Locking module (attached to bottom of each panel)



Door Lock Module

- (PIN 2) - Violet/Green
- (PIN 4) - Gray/Yellow



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Window Control Module

- (PIN 1) - Yellow/Gray
- (PIN 4) - Black



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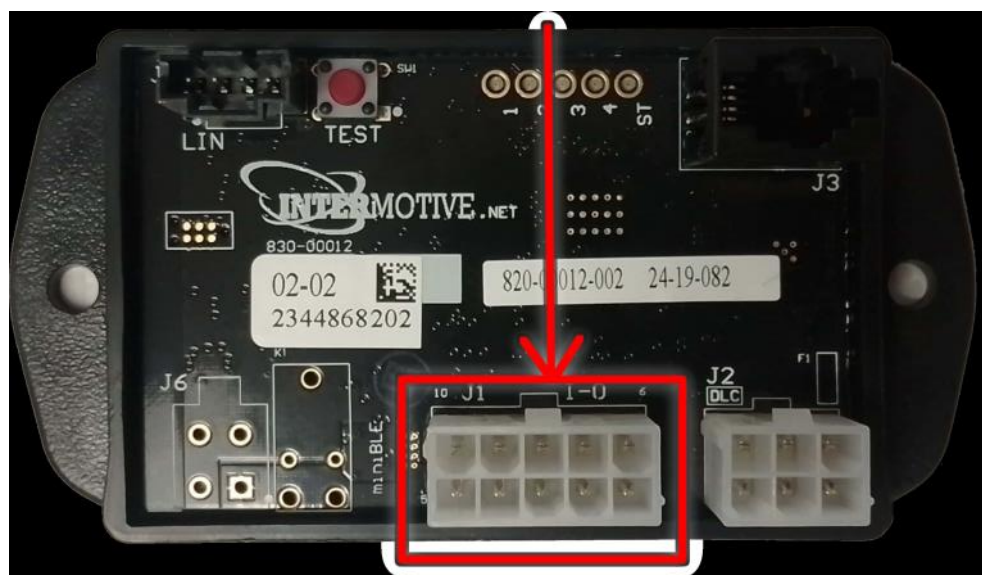
Window Control Module

- (PIN 10) - Yellow/Gray
- (PIN 11) - Black

Pinout Definitions

10-pin I/O connector pinout definition

- **Lock Input**, Pin #6, TAN/BLACK - (Gnd activated input from switches). This input is intended to be connected to upfitter lock keypads/switches installed on the ambulance/vehicle. Multiple switches can be wired together to this input.
- **Unlock Input**, Pin #9, YELLOW/BLACK - (Gnd activated input from switches). This input is intended to be connected to upfitter unlock keypads/switches installed on the ambulance/vehicle. This input is low-true. Multiple switches can be wired together to this input.
- **Lock Output**, Pin #3 - BROWN - (pulsed 12V to patient compartment). Used to send signal to motor reversing relays which control door lock actuators to lock passenger compartment doors.
- **Unlock Output**, Pin #8 - ORANGE - (pulsed 12V to patient compartment). Used to send signal to motor reversing relays which control door lock actuators to unlock passenger compartment doors.
- **Door Ajar**, Pin #7 - WHITE - Driver/Passenger Door Ajar connection at BCM. Required for proper operation.
- **No Connects**: Pins #1, #2, #4, #5, #10



Post Installation

- Reconnect vehicle battery after all connections have been made.
- The DLM507 module should still be temporarily hanging down to allow viewing of the LEDs for testing (after testing, module should be placed in it's permanent location).

Post Installation Vehicle Verification

- If the vehicle key is Off, the module LEDs should be "VIN scrolling" if this is the first time it has been installed and powered up. Turn the key to Run to allow the module to acquire the VIN and recognize the vehicle. The LEDs should go off.
- With key in Run, module LEDs that continue to scroll indicate an unrecognized chassis or model year, and the module will not operate. Contact Intermotive. No LEDs on a powered up module indicate a compatible vehicle type.
- Shut off key and remove key from ignition for the following tests.

Post Installation Operational Test

The following tests ensure that all connections have been made correctly and that the module is functioning properly.

A lock command from any source on the vehicle (OEM door switches, key fob, upfitter switches/keypads) should lock **all** doors on the vehicle, including the cabin doors and the patient compartment. Similarly, any unlock command from any source should unlock **all** doors on the vehicle, including the cabin doors and the patient compartment.

Lock Verification Procedure:

The DLM507 implements a required verification procedure in which a lock command from any source on the vehicle will (after a 10 second delay) cause the door actuators in the cabin to go through a quick lock-unlock-lock sequence every time the doors are locked. This behavior is considered normal and verifies correct operation of the system. The lock actuators in the patient compartment do not do this, and will simply lock.

Verification

Test 1—Locking / Unlocking the Vehicle with the Key Fob

- Exit the vehicle, close all doors and perform an initial unlock with the key fob. Ensure that all doors on the cabin and patient compartment have been unlocked.
- Press lock with the key fob. After a 10 second delay, the vehicle will perform a lock verification procedure (lock-unlock-lock) as described above. Ensure that all doors on the cabin and the patient compartment are locked.
- Unlock with the key fob. Ensure that all doors on the cabin and the patient compartment have been unlocked.

Test 2—Locking / Unlocking the Vehicle with Upfitter Switch/Keypad

- Ensure that all doors on the cabin and the patient compartment can be locked and unlocked from any of the upfitter/patient compartment switches. Any lock procedure from any switch will cause the cabin locks to perform the verification procedure.

Test 3—Door Ajar Test

- Close all cabin doors and open the driver's door. Press lock on the driver's door switch while keeping the driver's door open.
- After a 10 second delay, the system should perform its lock verification procedure (lock-unlock-lock). If the vehicle enters into a continuous loop of locking and unlocking the doors, an incorrect connection has been made to the green/violet wire of connector C2280D at the BCM.
- Close all cabin doors and open the front passenger door. Press lock on the front passenger door switch while keeping the front passenger door open.
- After a 10 second delay, the system should perform a lock verification procedure (lock-unlock-lock). If the vehicle enters into a continuous loop of locking and unlocking the doors, an incorrect connection has been made to the white wire of connector C2280D at the BCM.

If the system fails any of the above tests, check the related wiring. If necessary, call InterMotive Technical Support at 530-823-1048. Do NOT release vehicle for service unless it has passed ALL of the above tests.

Secure Harnesses and Module

Once the system has passed all of the above tests:

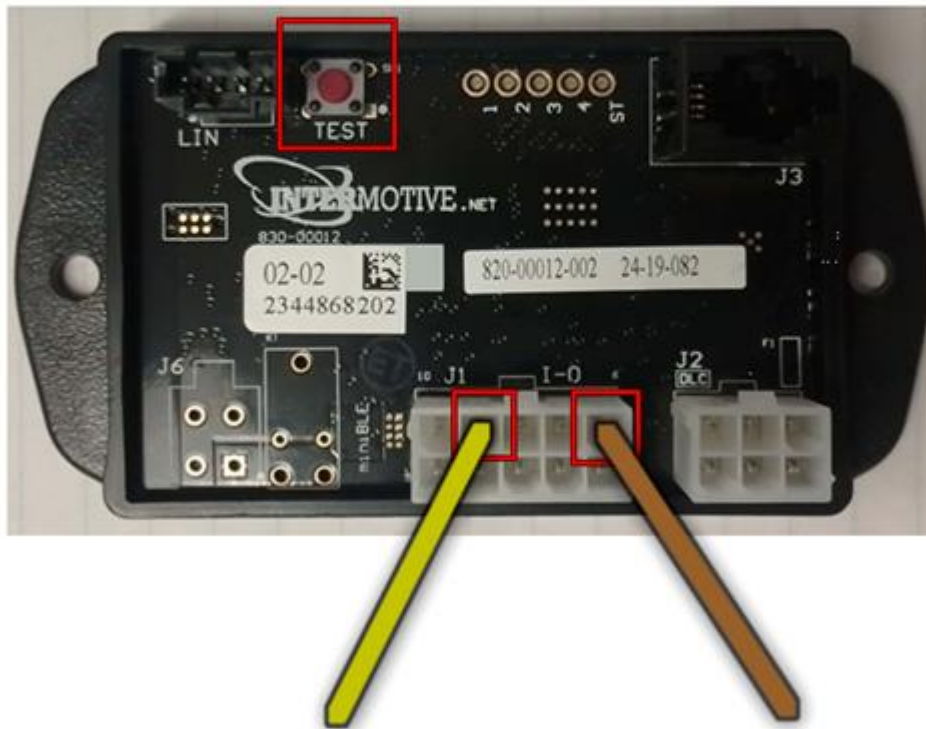
- Mount the module in desired location.
- secure the module harnesses so they do not hang below the lower dash panel.

VIN Scroll

- Note: the module will "VIN scroll" its LEDs the first time it is plugged in with the battery connected and the key off. Turn key to Run to allow module to read the VIN and accept the vehicle. The LEDs should stop flashing.

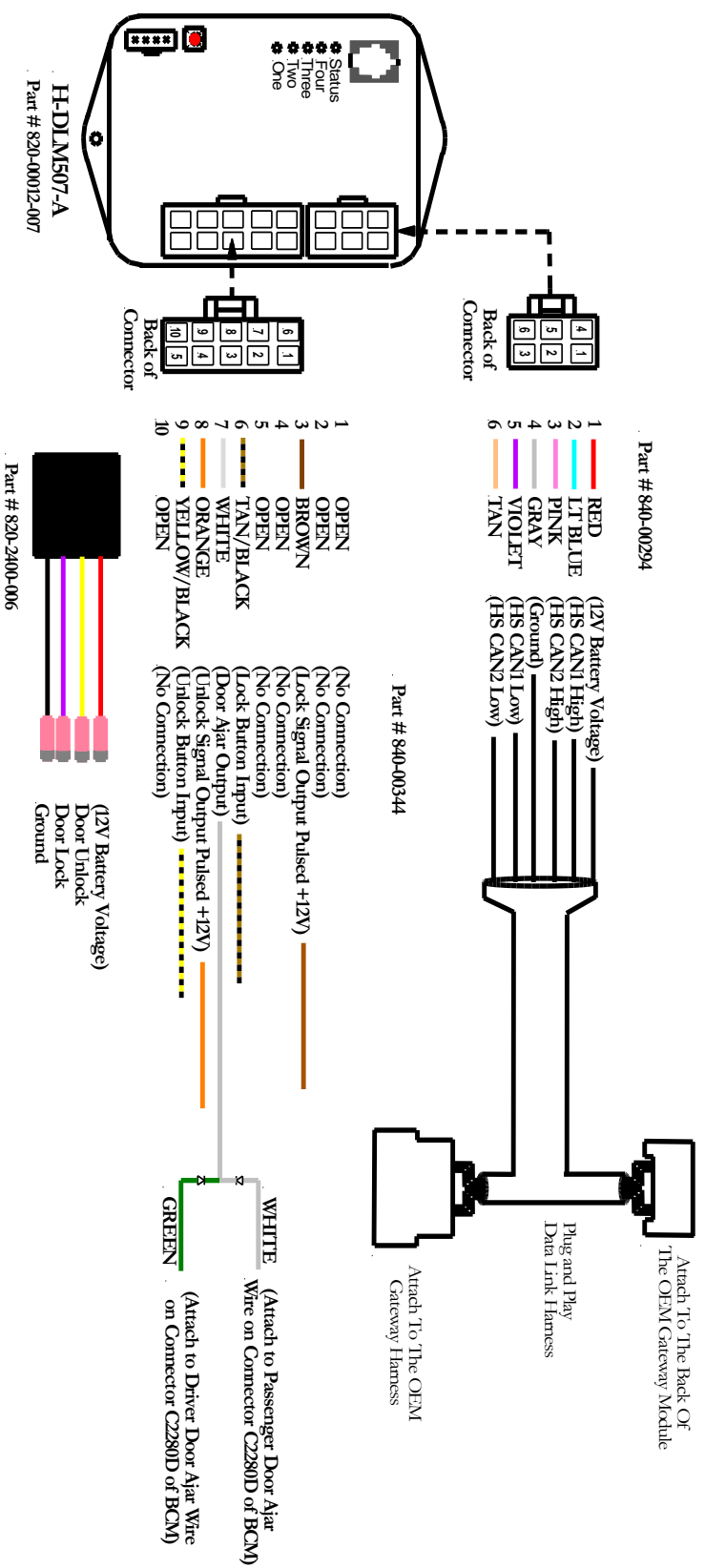
Pairing procedure

(Reconnect main module to door fob)



1. Connect the Lock (Tan/Black) and Unlock (Yellow/Black) wires (pin 6 and pin 9) to Ground.
2. While these wires are connected to Ground, press and hold the red button until LED 4 turns on.
3. Disconnect Ground from the Lock and Unlock wires. Wait until LED 4 turns off.
4. To test the door lock, connect the desired wire to Ground. (One wire at a time. Tan/Black for Lock, Yellow/Black for Unlock) If the modules paired correctly, then the door lock will cycle to the commanded state.

Kit Wiring Diagram



Submit product registration at www.intermotive.net

If the DLM507 fails any step in the Post Installation Test, review the installation instructions and check all connections. If necessary, call Intermotive Technical Support at (530) 823-1048.