



An ISO 9001:2008 Registered Company

HL510-B

Fast Idle, Lift Interlock,

2009-2012 Ford E Series 5.4L, 6.0L, 6.8L

Contact InterMotive for additional vehicle applications.

Introduction

The Gateway HL510-B module represents the next generation of Fast Idle and Lift Interlock capabilities from InterMotive Vehicle Controls. The HL510-B provides a number of benefits for the installer and user. 1/4th the size of its predecessor, easier, faster installation, which integrates **both** Fast Idle and Lift Interlock functions. There are fewer non-interchangeable connectors, simplifying installation and ensuring proper connection.

Installation Instructions

Be sure the vehicle's battery is disconnected before proceeding with installation.



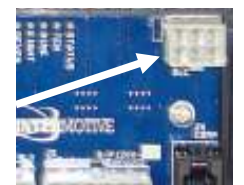
WARNING
Disconnect the battery to
prevent setting a check engine
light.

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.

Remove the lower dash panel below the steering column and find a suitable location to mount the module. Do not actually mount the module until all wire harnesses are routed and secure. The last step of the installation is to mount the module. It is recommended the module be mounted with two screws, however 2-sided foam tape may also be used. Be careful to route the harnesses such that the tilt steering column does not contact them in the full down position. When installing the harnesses, leave several inches of take-out such that the module can be removed if necessary.

Data Link Harness Installation

- Locate the vehicle OBDII Data Link Connector. It will be mounted below the lower left dash panel.
- Remove the mounting screws for the OBDII connector. Plug the Red connector from the HL510-B Data Link Harness into the vehicle's OBDII connector. Ensure the connection is fully seated and secure with the supplied wire tie.
- Mount the Black pass through connector from the HL510-B Data Link Harness in the former location of the vehicle's OBDII connector.
- Secure the HL510-B Data Link harness so that it does not hang below the lower dash panel.
- Plug the free end of the Data Link harness into the mating 6-pin connector on the HL510-B module.



InterMotive Inc.
11395 New Airport Rd. Suite A
Auburn, CA 95602

Phone: (530)-823-1048
Fax: (530)-823-1516

www.intermotive.net
products@intermotive.net
HL510-B-02-INS

LED Display Panel Mounting—Black 4-pin connector

Locate a suitable position on the dashboard, within view of the driver to mount the LED Display Panel. Make sure that there is open space behind the dash where the panel is mounted. The harness is 40" in length, which is the maximum distance the display can be from the module. Drill a 5/8" hole in the dash where you wish the center of the display to be. Attach the Black 4-pin connector of the LED Display Panel Harness to the module. Run the other end of the harness under the dash and out through the 5/8" hole. Attach the end to the LED Display Panel. Ensure the panel is level and secure using supplied screws.

Control Inputs, Output and Lift Inhibit Connections - 12-pin I/O connector.

The HL510-B provides three ground side inputs and one ground side output.

Lift Inhibit pin-2: Grounding this input will prevent the module from supplying power on its Wheel Chair Lift Output pin.

Door Ajar pin-5: (Optional input), connect this wire only if the optional Door Ajar panel is used and an additional door connection is desired. Insert the green wire (provided with panel) into the connector and lengthen as needed, using solder, heat shrink and tape. Connect to the door switch so that a ground is supplied when the door is open.

Transmission=Park pin-9: This output can be used to control upfitter circuits, by providing a ground when the transmission is in Park. Maximum current draw is 1/2 amp.

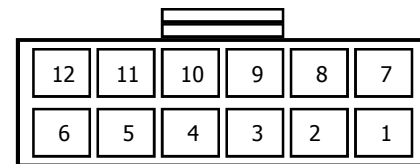
Fast Idle— Engage pin-10: This input pin can be connected to a ground side switch to activate Fast Idle.

An 12-pin mating connector is provided along with 5 terminals (two extra). To use any of these inputs/output, properly crimp a connector terminal provided to the installer supplied wire using the correct crimping tool. (Molex Part# 11-01-0197), and insert into the correct connector pin housing.

Make sure the terminals are fully seated in the connector. The largest wire that can be used with these terminals is 16 AWG. Snap this connector into the HL510-B module's 12-pin connector.

12-pin connector pin out definition

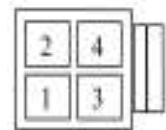
- Pin #1 - Not Used
- Pin #2 - Inhibit input - (GND) to Inhibit Lift
- Pin #3 - Not Used
- Pin #4 - Not Used
- Pin #5 - GREEN Wire (Door Ajar Input) * Optional
- Pin #6 - Not Used
- Pin #7 - Not Used
- Pin #8 - Not Used
- Pin #9 - Transmission=PARK (output (GND))
- Pin #10 - Fast Idle- Engage
- Pin #11 - Not Used
- Pin #12 - Not Used



Back of Connector



Mating 12 pin I/O Connector provided



Back of connector

Lift Connector 4-pin

The HL510-B module provides a 4-pin connector to enable wheel chair lift operation, the pins are defined as follows:

- Pin #1 - Not Used
- Pin #2 - Lift power/Vehicle Secure output (Orange wire), connect to Wheel Chair Lift to enable operation.
- Pin #3 - Lift door input (Gray wire), connect to Lift Door switch, grounded when door open.
- Pin #4 - Lift power input (Yellow wire), connect this to a 12V fused ignition source, hot in run and crank.

HL510-B

Post Installation Testing

Reconnect the battery to enable system testing

THE FOLLOWING PROCEDURE MUST BE PERFORMED TO VERIFY PROPER INSTALLATION

Fast Idle System Testing:

1. Place wheel chocks at front and rear of one tire and set the Park Brake. Place transmission in the "Park" position and start engine.
2. Apply a ground to IO port pin #8 and verify fast idle engages to 1500 RPM for gas and 1200 RPM for diesel engines.
3. Turn on all vehicle loads, when battery voltage drops below 12.5 volts, fast idle should engage and increase to 1500 RPM for gas and 1200 RPM for diesel engines.
4. With foot firmly on service brake, shift vehicle out of Park and the fast idle should disengage when vehicle is removed from the Park position.
5. Shift back into Park position and fast idle should re-engage.
6. Depress the service brake for 1 second. Fast idle should temporarily stop anytime the brake pedal is depressed, but should automatically re-engage after approximately 2 seconds once the brake pedal is released.
7. Place transmission shift lever in the "Neutral" position, turn on all vehicle loads and allow the vehicle battery voltage to drop below 12.5 volts. The system should not activate.
8. Place transmission shift lever in the "Park" position and turn off the engine.

The Fast Idle System is properly installed only if it passes all of the above steps.

Lift Interlock System Testing:

The following checks must be made after installation of the system, to ensure correct and safe operation of the lift. If any of the checks do not pass, do not deliver the vehicle. Recheck all connections as per the installation instructions.

Begin the checklist with the vehicle in the following state:

- Lift stowed
- Lift Door closed
- Park Brake set (PB)
- Transmission in Park (P)
- Ignition off (Key off). Wait until the module goes into "Sleep" mode (all panel LEDs OFF) which takes approximately 5 minutes.



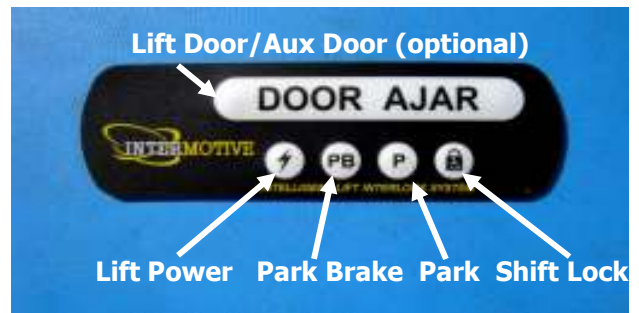
HL510-B

Post Installation Testing (continued)

1. Turn ignition key on (to "Run"), verify the module wakes up and all 5 LEDs illuminate for approximately 2 seconds. The lower icon LEDs are backlit and should remain illuminated whenever the module is awake.
2. Verify that the Park LED, the Park Brake LED, and the Shift Lock LED remain illuminated.
3. Attempt to deploy the lift. The lift must not deploy with the Lift Door closed.
4. With key on, Lift Door open, Park Brake set and transmission in Park, all 5 LEDs will be illuminated. Attempt to deploy the lift. The lift should deploy. Stow the lift.
5. With key on, Lift Door open, transmission in Park, release Park Brake, verify that the Park Brake (PB) and Vehicle Secure LEDs go out, attempt to deploy the lift. The lift should not deploy.
6. With key on, Lift Door closed, Park Brake set, make sure transmission will not shift out of Park.
7. With key on, Lift Door open, Park Brake released, make sure transmission will not shift out of Park.
8. With key on, Lift Door closed, Park Brake released and the Service Brake applied, the transmission shift lever should be able to shift out of Park.

Optional LED Display Panel

1. Turn ignition on (to "Run"), verify the module wakes up and all LEDs illuminate for approximately 2 seconds.
2. Verify that the Park LED, Park Brake LED, and the Shift Lock LED remain illuminated.
3. Attempt to deploy the lift. The lift must not deploy with the Lift Door closed.
4. With key on, Lift Door open, Park Brake set and transmission in Park, all LEDs will be illuminated. Attempt to deploy the lift. The lift should deploy. Stow the lift.
5. With key on, Lift Door open, transmission in Park, release Park Brake, verify that the Park Brake (PB) and Vehicle Secure LEDs go out, attempt to deploy the lift. The lift should not deploy. Make sure the transmission will not shift out of Park.
6. With key on, Lift Door closed, Park Brake set, make sure the transmission will not shift out of Park.
7. With key on, Lift Door open, Park Brake released, make sure transmission will not shift out of Park.
8. With key on, Lift Door closed, Park Brake released and the service brake applied, the transmission shift lever should be able to shift out of Park.



Optional input: If equipped with a connection for an additional door (Aux Door) the Door Ajar LED will blink on the display panel until the door is closed. If the **Lift Door** is open, the Door Ajar LED will stay on steady, taking priority over the additional door input.
Note: All LEDs are active and there is no display backlighting.

HL510-B

Operating Instructions

Advanced Fast Idle Operation:

The Advanced Fast-Idle System (AFIS) option of the HL510-B includes Charge-Protect and Manual engage modes. Charge-Protect is a feature that maintains vehicle charging system voltage by increasing and controlling vehicle idle speed when necessary. Whenever charging system voltage falls below a minimum voltage of 12.5V, this AFIS feature will increase idle speed and maintain fast idle until one of the safety conditions is no longer met, the user cycles the shift lever or the user manually disengages fast idle. The Charge-Protect and Manual engage modes also require that all safety conditions are met.

Safety conditions that must be met to engage or maintain Fast Idle operation

Vehicle NOT moving (speed = 0 MPH).
Service Brake NOT pressed.
Vehicle Transmission Range in Park
RPM inside of safe operating range.
Transmission Fluid Temperature below 250° F.
Engine Coolant Temperature below 230° F.

Fast Idle may be initiated by either a manual or automatic Fast Idle trigger. The AFIS strategy can only command elevated idle when certain safety conditions are met (see above section). Fast Idle operation can be terminated by a safety condition violation. If a Fast Idle operation terminates due to a safety condition violation, automatic Fast Idle is unavailable until Park is de-asserted and re-asserted. (Shift out of Park and back into Park). The base Fast Idle RPM level is determined by the type of engine (Gas or Diesel) in the vehicle. For Gas engine vehicles, the idle speed is 1500 RPM and Diesel applications remain fixed at 1200 RPM.

Manual Fast Idle Start Trigger:

Fast Idle Input – ground applied to 8 Pin connector Pin #8 of the HL510-B Module, such as an input from Coach AC.

Automatic Fast Idle Start Trigger:

Charge Protection - Battery voltage less than 12.5V.

Fast Idle Disengagement Triggers:

Safety Condition Violation.
Engine Coolant Temperature > 230° F.
Open or battery voltage on 8 Pin connector Pin #8 while in Fast Idle caused by fast idle input.
Transmission Fluid Temperature above 250° F.

Note: Fast idle will temporarily stop anytime the brake pedal is depressed, but will automatically reengage after approximately 2 seconds once the brake pedal is released.

Note: When additional electrical or A/C loads are in use, engine RPM may drop. The AFIS feature will then raise the RPM back up to the fast idle speed. When the load is removed, engine RPM will increase. AFIS will then lower the RPM back to the fast idle speed.

HL510-B Operating Instructions (continued)

Lift Operation:

The Intelligent Lift Interlock System of the HL510-B is a microprocessor driven system for controlling wheelchair lift operation. Lift operation will only be allowed when all of the following conditions are met:

- The vehicle is in "Park"
- The parking brake is applied.
- The vehicle ignition is on.
- The lift door is open.
- Lift inhibit is not activated.

The HL510-B will not allow the vehicle to be shifted out of park if the lift door is open. As an added feature, it also will not allow the vehicle to be shifted out of park when the parking brake is applied. This feature eliminates excessive parking brake wear due to driving with the parking brake applied.

If the vehicle has Daytime Running Lights, they will be activated when the Lift Door is Open and/or the Park Brake is On and the Ignition key is On.

When the vehicle is first started, or if the key is turned to the "Run" position, the five upper LED's (Active), on the display panel will illuminate for 2 seconds as a prove out of the LED's. The lower Icon LED's are (Backlit) and should remain illuminated whenever the HL510-B module is awake. The module will stay awake for several minutes after the ignition is turned off.

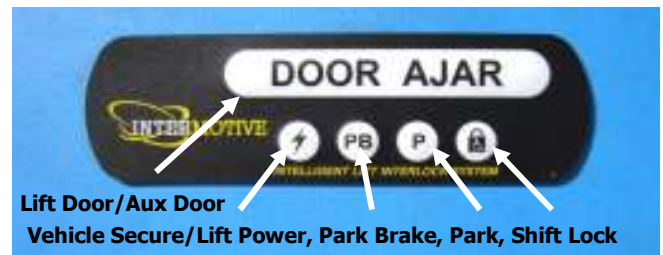


Optional Door Ajar Display Panel

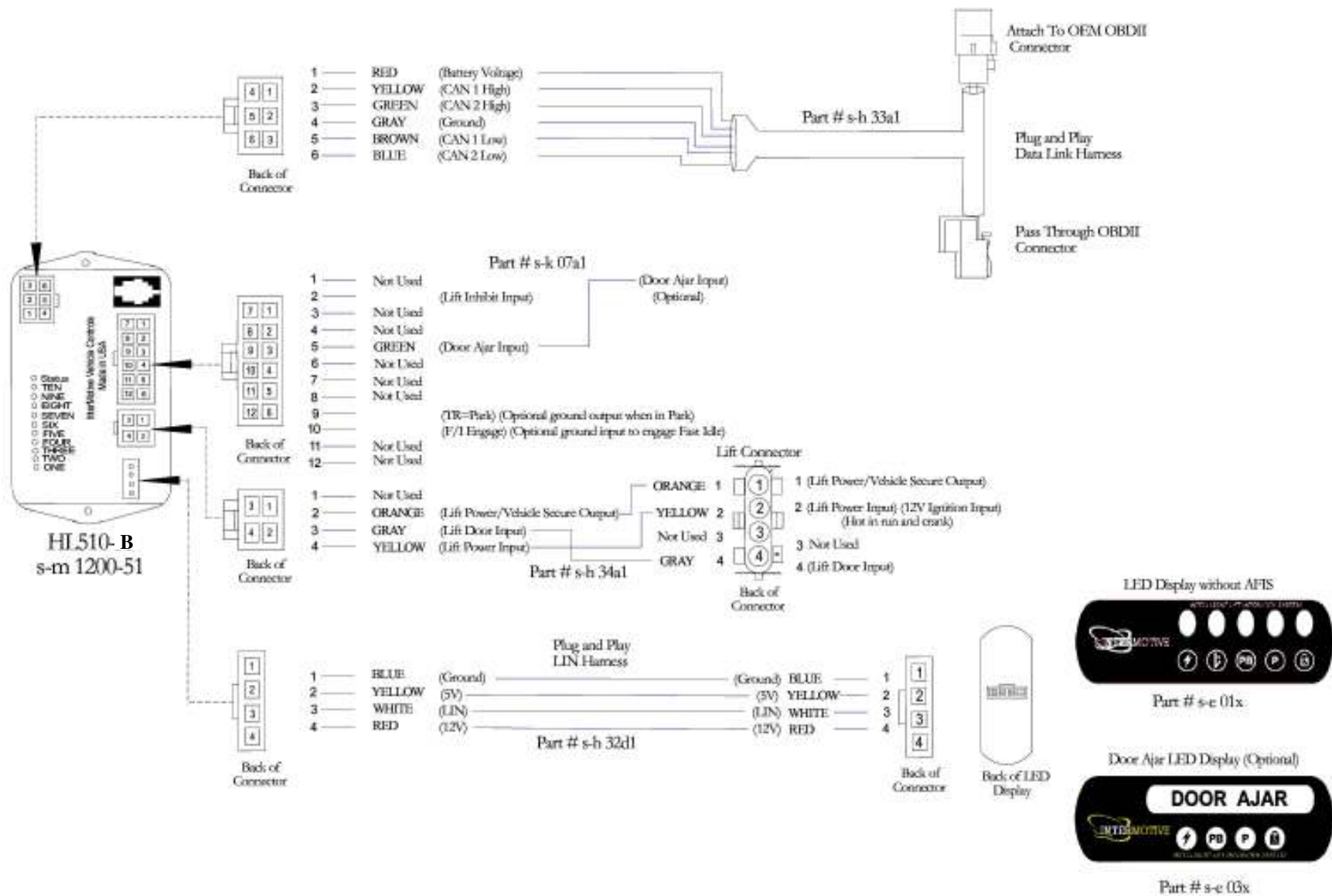
LED function and prove out is the same as the Standard Display Panel, except that all LEDs are (Active) and remain illuminated whenever the module is awake.

After prove out, the operation of the LED panel is as follows:

- Vehicle Secure – Illuminates in green if the lift is enabled. This means that all conditions for lift operation have been met and the lift has been supplied a vehicle secure signal.
- Park Brake – Illuminates in red when the parking brake is applied.
- Park - Illuminates in red when the vehicle transmission is in the park range.
- Lift Door - Illuminates in red when the lift door is open.
- Shift Lock - Illuminates in Red when the lift door is open and/or the parking brake is applied. If illuminated, the driver will not be allowed to shift out of park.
- Confirmation Signal – The vehicle lamps and radio will cycle briefly when the ignition is on and the lift door is initially closed. This is a confirmation signal sent from the Ford Econoline controller.



The HL510-B initializes when the vehicle ignition is on. After the initialization, the HL510-B requests various vehicle data by sending data request messages across the OEM CAN diagnostic data network and all control logic is performed. When the HL510-B module has been running and the vehicle ignition is turned to the off or accessory positions, the module goes into a low current consumption "sleep" mode. This may take up to 5 minutes.



Submit product registration at www.intermotive.net

If the HL510-B fails any step in the Post Installation Test, review the installation instructions and check all connections. If necessary, call

InterMotive technical support @ (530) 823-1048.

HL510-B-02-CAD